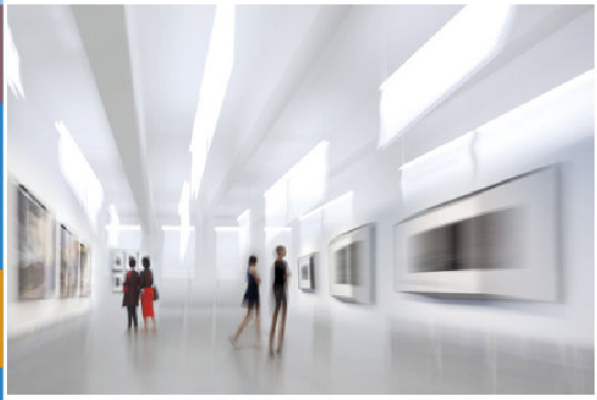

# eCultSkills
## Guião para Formação

Lifelong Learning Programme

O projeto de Transferência de Inovação eCult Skills foi financiado com o apoio da Comissão Europeia. Esta comunicação reflete apenas as opiniões do autor e a Comissão não poderá ser responsabilizada por qualquer uso que possa ser feito das informações nele contidas.

## Índice

## 1. Como utilizar este documento

O Guia de Formação oferece uma orientação para instituições de formação europeias e para todas as pessoas envolvidas na elaboração de currículos nesta área, na medida em que descrevem, em detalhe, conhecimento, capacidades e competências necessários para empregos na área da cultura digital. Além disso, estas orientações fazem referência aos principais quadros europeus que fazem uma descrição transparente e comparável de qualificações: o Quadro Europeu de Qualificações (QEQ) e o Quadro de e-Competências (Qe-C).

O manual está organizado da seguinte forma:

Os capítulos fornecem ao leitor informações básicas consideradas importantes para a compreensão integral do documento. Os capítulos contêm indicadores sobre os públicos-alvo e destacam um aspeto muito importante a ter em consideração: a diferença entre perfis funcionais e categorias profissionais. No final, faz uma breve introdução aos níveis de referência (QEQ e Qe-C)[1]. É, igualmente, realizada uma breve introdução aos capítulos e subcapítulos analisados nas Diretrizes/Orientações de Formação:

**Capítulo 1: Introdução ou Como utilizar o manual**

Nesta secção é disponibilizada toda a informação necessária sobre como este manual pode ser utilizado na formação de e-profissionais na área cultural.

**Capítulo 2: Princípios básicos para facilitar eventos de aprendizagem**

Os subcapítulos entre *Atitude formativa* e *Checklist* elencam algumas sugestões para elaborar, implementar, avaliar e adaptar o processo de aprendizagem para o desempenho de funções e profissões na área da e-Cultura. Contém também uma breve introdução sobre o processo de avaliação.

**Capítulo 3: Perfis**

Neste capítulo são descritos os 5 perfis funcionais, assim como os níveis de referência e todos os resultados de aprendizagem das diferentes e-competências [2].

**Capítulo 4: Metodologia de Formação**

Neste capítulo são disponibilizadas algumas sugestões gerais sobre metodologias de ensino e aprendizagem. A metodologia aqui aplicada é descrita passo-a-passo, de forma a alcançar os resultados de aprendizagem necessários e desejados.

**Capítulo 5: Avaliação da Formação**

Esta secção disponibiliza uma explicação pormenorizada sobre as diferentes técnicas de avaliação que podem ser aplicadas pelos formadores.

**Capítulo 6: Estudo de Caso**

O perfil selecionado do Guia de Formação é o Gestor de Ativos Culturais Digitais. No Curso de Formação Piloto preparado para este perfil são descritas as Informações do Curso, os Cinco Passos para Preparar um Ambiente DAM, as sessões de formação, de acordo com as e-competências da DCAM, assim como os resultados de aprendizagem de cada competência e os métodos de avaliação. A bibliografia e links

[1] Relativamente a estes níveis de referência, consultar o Anexo 8.3. e o Anexo 8.4.

[2] Relativamente a estes resultados de aprendizagem, consultar o Anexo 8.1.1. e o Anexo 8.2.

úteis sobre manuais de procedimentos, normas, documentos e artigos disponibilizados constituem uma grande fonte informação para o curso de formação piloto.

**Capítulo 7: Referências**

Este capítulo contém uma lista de literatura relevante.

**Capítulo 8: Anexos**

Contêm documentação de contexto útil, incluindo a Metodologia de definição dos resultados de aprendizagem para cada perfil funcional, o método para escrever os Resultados de Aprendizagem, os Quadros Europeus (QEQ e Qe-C) utilizados, a metodologia de formação das 14 competências do perfil escolhido como estudo de caso e Referências e Recursos Gerais para o módulo de formação.

Os títulos dos capítulos foram escolhidos para disponibilizar uma primeira orientação na utilização do documento. Não é necessário trabalhar no documento do início ao fim; diferentes públicos-alvo terão diferentes interesses, logo o seu enfoque será maior em determinados capítulos do que noutros.
O objetivo do Guia de Formação é disponibilizar um conjunto abrangente de unidades de aprendizagem que devem ser desenvolvidas por organizações de Ensino e Formação Profissional (EFP) nas organizações culturais (doravante designadas de museus) e que se baseiam nos resultados da aprendizagem.
É disponibilizada uma descrição para cada perfil da função específica no contexto de uma organização. É, igualmente, apresentada uma descrição das unidades de aprendizagem sugeridas, estruturadas a partir de uma perspectiva orientada para os resultados, o que significa que os resultados da aprendizagem estão relacionados com o Quadro Europeu de Qualificações (QEQ).

### 1.1 Contexto

De acordo com a European Statical System Network on Culture (Outubro 2012), os empregos culturais na Europa representam cerca de 3% do total de emprego. O investimento na cultura mostra resultados extraordinários em termos de benefícios económicos; um euro investido resulta, por vezes, em dez vezes mais.

Nos últimos 20 anos, com a difusão da Internet e o uso intensivo de ferramentas e dispositivos informáticos, os hábitos dos cidadãos europeus mudaram completamente. Esta mudança de comportamento teve também repercussões nas instituições de património cultural como museus ou sítios arqueológicos. Os museus são, pela sua missão, guardiões do passado com uma visão para o futuro. Transmitem uma imagem das artes, cultura, história e sociologia. Preservam um conjunto intrínseco de artefactos reunidos – na maioria das vezes – num ambiente não relacionado. Os visitantes podem, simplesmente, apreciar a beleza dos objetos ou querer aprender sobre eles. Todavia, com o desenvolvimento das novas tecnologias digitais, querem também interagir com os objetos, envolver-se em coleções digitais (por exemplo, Pinterest) ou tornar-se co-curadores (por exemplo, o Rijks-Studio).

Não obstante estes desenvolvimentos, apenas alguns profissionais do setor da cultura tiveram acesso a formação em *media* digitais, ainda que, hoje em dia, se tenham tornado indispensáveis para as suas atividades diárias.

O projeto eCult Skills centra-se nas e-competências necessárias para empregos na área do património cultural. *E-cultura* pode ser definida como as tecnologias digitais que ajudam a aceder e experimentar o conteúdo patrimonial cultural. São, por exemplo, essas capacidades e competências que trazem as tecnologias digitais para as coleções de museus.

O e-Cult Skills é um projecto desenvolvido no âmbito da Transferência de Inovação Leonardo da Vinci. Os resultados são baseados em análises realizadas pelo Observatório e-Cult Skills, pelo Observatório e-Jobs e pelos parceiros envolvidos no projeto. O projeto foi financiado pelo Programa Leonardo da Vinci da Comissão Europeia. Foi realizado por organizações de seis países europeus (Grécia, Alemanha, Eslovénia, França, Portugal, UE). No âmbito do projeto, o consórcio realizou uma pesquisa aprofundada de forma a definir os principais *conhecimentos*, *capacidades* e *competências* que serão exigidos num futuro próximo no mercado de trabalho das TIC e dos museus.

Os parceiros colaboraram, de forma muito próxima, com museus, instituições de formação, bem como com decisores politicos e especialistas na área do emprego digital no setor cultural, de forma a reunir consenso sobre as necessidades de formação neste domínio, a nível europeu. Neste sentido, foi definido um compêndio de cinco (5) Perfis Especializados Europeus, que se encontram incluídos e descritos neste Guia de Formação.

Os cinco (5) perfis funcionais e-Cultura[3] foram identificados como as futuras funções essenciais para colmatar a lacuna entre Cultura e as tecnologias digitais:

- Consultor Cultural para as TIC;
- Guia Cultural de TIC;
- Gestor de Ativos Culturais Digitais;
- Gestor de Experiência Cultural Interativa;
- Gestor de Comunidade Cultural Online.

O objetivo deste documento é destacar os conhecimentos, capacidades e e competências mais relevantes, de forma a ir ao encontro das funções profissionais descritas pelo projeto eCult Skills.

O ponto central incide na forma como o aluno/aprendente/profissional é capaz de aplicar essas qualificações em termos de conhecimentos, capacidades e competências nas suas tarefas diárias para apoiar o desenvolvimento da organização.

Estas capacidades poderão ser resultados de aprendizagem, experiências de trabalho de aprendizagem em trabalhos ou tarefas semelhantes ou fora da vida profissional.
Por esta razão, este documento não fornece um método de aprendizagem passo-a -passo. Ou seja:

- Não é uma coleção de receitas;
- Não é um guia do género “Preencha o espaço em branco”;
- Apresenta algumas abordagens e exemplos para alcançar um determinado resultado de aprendizagem.

[3] Falamos sempre sobre perfis funcionais de e-empregos e não sobre categorias profissionais de e-empregos.

Este documento poderá ser usado não só para formação inicial, mas também para a formação ao longo da vida. Cada unidade de aprendizagem elenca os resultados de aprendizagem a alcançar por um professional, de forma a ficar qualificado para desempenhar cada uma das 5 funções em e-cultura no mercado de trabalho europeu. E a questão é quem poderá realmente beneficiar deste documento. Na seção seguinte, serão abordados os públicos-alvo deste manual.

Todos os resultados apresentados neste documento são os resultados de análises de mercado, baseadas em investigação documental e de campo, como entrevistas e inquéritos a profissionais, técnicos de recrutamento, equipa do museu, formadores, que nos permitiram ter uma visão clara das capacidades, conhecimentos e competências necessárias na área dos museus. Através da investigação realizada, foi posssível identificar e entender a forma como estas tarefas são realizadas em empresas e organizações na Europa. Este facto permitiu-nos definir perfis funcionais precisos, de acordo com as necessidades do mercado de trabalho e apresentar, através deste Guia de Formação, um exemplo sobre como formar os conhecimentos, capacidades e competências necessários.
Este documento pode ser utilizado não só para formação inicial, como também para formação ao longo da vida. Cada unidade de aprendizagem sugere quais são os resultados de aprendizagem que devem ser alcançados por um profissional, de forma ficar qualificado para desempenhar estes 5 perfis funcionais em e-cultura no mercado de trabalho europeu. A questão é quem pode realmente beneficiar deste documento. Na seção seguinte, serão abordados os públicos-alvo que poderão utilizar este manual.

### 1.2 Os Públicos-alvo

O Guia de Formação destina-se às seguintes pessoas ou instituições na área do património cultural:

- Organizações de formação na área da Cultura;
- Organizações culturais;
- Empresas que trabalham no setor criativo e a sua equipa;
- Estudantes e profissionais do setor cultural.

As orientações auxiliam as organizações de formação na identificação dos níveis exigidos pelo mercado de trabalho, de acordo com os níveis de referência europeus, derivados do Quadro de e-Competências, publicadas pelo Comité Europeu de Normalização. O Quadro de e-Competências baseia-se directamente no Quadro Europeu de Qualificações (QEQ). As organizações de Formação Profissional para a Educação (EFP) estão interessadas em adaptar a sua oferta de formação às necessidades emergentes no mercado no que respeita a novas áreas a nível europeu e que, simultaneamente, desejem ser mais competitivas no mercado. Este manual apoiá-las-á na adaptação dos seus cursos de formação.

Organizações culturais, como museus ou instituições criativas, podem identificar e comparar as competências necessárias na sua organização e definir o nível alcançado (através de formação ou experiência) pelos seus colaboradores. Além disso, o Guia de Formação ajuda os museus a definir as necessidades de formação da sua equipa. Apoiam, igualmente, as organizações culturais na contratação ou gestão de formadores que irão melhorar as capacidades dos colaboradores. Estas orientações ajudá-

los-ão ainda a identificar e definir as competências externas necessárias dos profissionais de museus, de forma a recrutar novos colaboradores qualificados.

Estudantes ou profissionais do setor cultural têm a capacidade de comparar as suas competências às exigidas no mercado de trabalho. Podem identificar as suas necessidades de formação para alcançar os níveis necessários e identificar as organizações de formação adequadas para melhorar as suas competências, de forma a serem capazes de responder às necessidades de organizações culturais e, portanto, serem suficientemente qualificados para postos de trabalho no sector.

De uma forma geral, o Guia de Formação apresenta informação relevante para todas as partes interessadas no conhecimento, capacidades e competências necessárias para ter sucesso no mercado de trabalho no domínio da Assistência à Autonomia no Domicílio em toda a União Europeia (UE).

## 2 Príncipios básicos para facilitar eventos de aprendizagem

### 2.1. Objetivo

Este capítulo tem como objetivo aumentar o conhecimento sobre conceção, implementação, avaliação e adaptação dos processos de aprendizagem para o desempenho de funções e profissões e-Cultura, de acordo com as recomendações da European Quality Ensurance in Vocational Education and Training (EQAVET)[4]. O objetivo é ser capaz de responder às seguintes perguntas:

- Como poderá determinar o nível dos participantes antes do processo de aprendizagem?
- Como poderá planear e gerir o processo de aprendizagem?
- Como poderá avaliar e reestruturar o processo de formação?

### 2.2. Introdução

Ed Mahood (Dekra Akademie, 2011) define o processo de formação como *"todas as atividades que são realizadas para permitir que uma pessoa conheça bem as tarefas"*. O formador ou facilitador tem, por natureza, uma compreensão básica do processo e é capaz de avaliar e selecionar a abordagem mais eficaz para uma dada situação, no sentido de alcançar os resultados esperados, de acordo com a situação de cada formando, bem com o cargo a ocupar no final do processo de aprendizagem.

O processo de formação é bem sucedido quando:

- Os participantes foram envolvidos na definição e aperfeiçoamento dos seus próprios objetivos de aprendizagem.
- O conteúdo é coerente com os problemas reais enfrentados pelos participantes em situações reais de trabalho.
- Avaliação e feedback significativos são fornecidos aos participantes e à equipa de formação.

[4] As recomendações podem ser encontradas no website EQAVET: http://www.eqavet.eu/gns/home.aspx. Em Portugal, poderá ser consultado o website da Agência Nacional para a Qualificação do Ensino Profissional : http://www.anqep.gov.pt

O processo de formação não seria concebido de forma eficaz, se não se considerasse o conhecimento ou experiência prévios do formando, o chamado "comportamento de formação".

### 2.2.1. Atitude formativa

Em muitos casos, é dada pouca atenção à experiência relevante e atitude ou comportamento dos participantes na seleção de um programa de aprendizagem. É importante considerar os seguintes pontos:

- Quais são as competências necessárias para entrar no programa de formação, de forma a maximizar as oportunidades dela beneficiar?
- Quais as características pessoais que podem afetar o sucesso do processo de formação?

*"*O comportamento inicial inclui os conhecimentos prévios, atitudes e competências que o aprendente já possui que são relevantes para a tarefa de aprendizagem ou tema e que possa exigir que os aprendentes demonstrem **antes** de iniciar o seu módulo. Tal inclui educação e experiência prévias que o aprendente traz para o novo contexto de aprendizagem. O objetivo final do módulo será levar o aprendente de onde ele está (comportamento inicial) para onde gostaria que ele estivesse (tendo dominado os objetivos de aprendizagem ou comportamento no final). "*

(Russell, 1974, p. 65)

### 2.2.2. Questões fundamentais

Excetuando as questões básicas, existem algumas outras fundamentais que se referem ao perfil e ao contexto do participante, facilitando a conceção do processo de aprendizagem:

- Quais são as competências específicas que o participante deverá ser capaz de desenvolver de forma a beneficiar da formação?
- Quais são as características dos participantes da sessão de formação?
- Em que é que estão interessados?
- Quais são as suas motivações?
- Têm preocupações ou problemas específicos?
- Em que língua poderão realizar a formação?
- Quanto tempo poderão dedicar a esta sessão de formação?
- Que organização prática terão de gerir para participar na formação?
- Irão os participantes usar/praticar as capacidades/competências aprendidas logo após a sessão?

### 2.2.3. Advertência

Existem também aspetos importantes a ter em atenção quando se desenha o processo de aprendizagem! Em primeiro lugar, os conhecimentos, capacidades e competências prévios são essenciais para serem comunicados aos formandos. E é importante verificar se as suas capacidades correspondem às suas necessidades. Caso não se defina aquilo que é necessário para ter sucesso, os participantes podem assumir que serão capazes de participar com sucesso, quando na realidade não. Tal pode levá-los a falhar os objetivos da formação. Também para os outros, poderão ser adiados na sua progressão e, como consequência, criar-se um mau ambiente.

A diversidade de experiências e contextos é uma vantagem, podendo fomentar o pensamento crítico e a resolução criativa de problemas. Uma das questões críticas pode ser o regulamento excessivo dos requisitos de admissão, mas, ao mesmo tempo, aceitar participantes que poderão não ter sucesso pode conduzir à frustração e ao fracasso.

Pedir aos formandos que descrevam alguns momentos especiais da sua vida laboral, em que a situação corresponde aos resultados da aprendizagem, é uma vantagem para aumentar a motivação e interesse na formação. Este pode, eventualmente, ser o tema da primeira sessão de formação. Perguntando-lhes, por exemplo, o que sabem e o que não sabem sobre um determinado assunto. Outra boa forma de integrar os participantes e começar a alcançar os objetivos é o apoio de outros formandos.

### 2.2.4. Sessões de aprendizagem

Uma sessão de aprendizagem é qualquer evento planeado e organizado, com o objetivo de, no final do processo, os formandos serem capazes de implementar os resultados no seu dia-a-dia profissional.

Durante a sessão, os formandos assimilam conhecimentos, capacidades, atitudes e comportamentos, de forma a melhorar as suas competências e cumprir as tarefas estabelecidas. A conceção de uma sessão de aprendizagem é seguida de regras e princípios específicos.

### 2.2.5. Príncipios e práticas

Para estruturar uma sessão, é necessário começar por identificar os resultados de aprendizagem pretendidos. Estes deverão estar em consonância com as necessidades e expectativas dos participantes e relacionados com as funções e objetivos do indíviduo e da organização.
Os objetivos deverão ser tangíveis, realistas, mensuráveis, motivadores, desenvolvidos dentro de um prazo realista, de forma a que possam ser alcançados.

Relativamente aos prinícipios, é importante considerar o seguinte aspeto: envolver os aprendentes ativamente no processo de aprendizagem, adaptando métodos de aprendizagem participativos que permitam interação, integrar conhecimento, capacidades e competências desenvolvidas pelos outros participantes, apoiando a partilha de experiências através de debates, sessões de grupo, exemplos reais, estudos de casos, *role-plays*, resolução de problemas individualmente ou em grupos.

É, igualmente, importante ter em linha de conta a forma como os formandos serão capazes de colocar em prática aquilo que aprenderam. Se tal não acontecer, a sessão de aprendizagem será, no final, um desperdício de tempo e dinheiro para o formador.

### 2.2.6. Lembrete

Existem alguns aspetos essenciais a considerar ao aplicar um método de formação. Apresentam-se, de seguida, seis pontos importantes na escolha do método de formação adequado:

1. Considerar quais os resultados da aprendizagem pretendidos. Serão novas competências e/ou tecnologias, técnicas inovadoras para antigas competências, um comportamento diferente no local de trabalho?
2. Verificar o método que se pretende utilizar e se este é coerente com os resultados da aprendizagem desejados.
3. Considerar a experiência e expectativas dos participantes. Quem será formado? Novos colaboradores, colaboradores a termo certo, quadros superiores, etc.?
4. Considerar as suas competências pessoais enquanto formador/facilitador.
5. Qual o orçamento da formação? Quais os recursos, instalações disponíveis? Considera que a formação trará valor acrescentado para a sua organização? O tempo do formador e dos formandos deverá ser considerado no orçamento da sessão.
6. Mesmo que seja utilizada uma variedade de métodos, o formando não deverá ser sobrecarregado.

### 2.2.7. Avaliação

Ainda que alguns profissionais façam distinção entre análise e avaliação, consideramos que a diferença é muito pequena e baseia-se, em grande parte, em diferenças culturais. Assim, neste documento, consideramos estes termos como sinónimos.
O processo de avaliação inicia-se com a conceção de uma sessão de formação e envolve planeamento, discussão, criação de consenso, medição, análise e melhoria, de acordo com os objetivos de aprendizagem.
Em primeiro lugar, não existe um "livro de receitas" para a avaliação de formação; em algumas situações, uma determinada abordagem poderá ser valiosa, enquanto que em outra situação (ou pessoa) não.

A avaliação deverá ser estruturada de acordo com:

- Os objetivos de aprendizagem justificados;
- Os resultados de aprendizagem (incluindo o nível alcançado no final do processo de formação);
- Os participantes;
- A comunicação;
- O calendário;
- A estrutura a ser usada;
- As fontes financiamento.

O objetivo da avaliação é medir como o formando é capaz de aplicar e usar aquilo que aprendeu, comparando essa aprendizagem com o nível pretendido definido antes da sessão. Tal pode ser aferido através de exercícios ou de um debate bem preparado.
A forma mais eficiente é investigar situações reais de trabalho e analisar como é que o formando utilizou aquilo que aprendeu.

### 2.2.8. Sugestões úteis

De forma a avaliar uma sessão de formação, devem ser implementados seis pontos essenciais:

1. Planear a avaliação desde o início da preparação da sessão.
2. Ser claro sobre aquilo que será avaliado.
3. Verificar que todos os *feedbacks* dos participantes são claros e abrangentes.
4. Permitir que os participantes deem o seu *feedback* completo (positivo ou negativo), incluindo recomendações para futuros exercícios.
5. Selecionar o formulário adequado para a avaliação: mapas de conceitos, entrevista, questionários, exercícios, *role-plays*, grupos de análise, *checklists*, etc.
6. Avaliar todo o processo de aprendizagem e não apenas um único evento de formação.

### 2.2.9 *Checklist*

Utilize esta *checklist* para avaliar a forma como a formação foi estruturada:

| | | |
|---|---|---|
| O plano de formação considerou aquilo que os participantes necessitam de saber e fazer como resultado desta formação? | Sim ☐ | Não ☐ |
| Sabe o que é "bom desempenho"; ou seja, aquilo que um bom professional deve fazer de acordo com o perfil funcional? | Sim ☐ | Não ☐ |
| Conhece quais as lacunas que existem entre aquilo que os formandos sabem e aquilo que precisam de saber para desempenhar as suas funções com sucesso? | Sim ☐ | Não ☐ |
| Irá a formação ajudar a preencher esta lacuna? | Sim ☐ | Não ☐ |
| Num primeiro momento, irá o método de formação proposto ao encontro das competências, conhecimentos e atitudes (objetivos de aprendizagem) a serem ensinadas? | Sim ☐ | Não ☐ |
| Irá envolver ativamente os participantes na sua experiência de aprendizagem, através de debate e de uma variedade de atividades? | Sim ☐ | Não ☐ |
| Incentiva os participantes a partilhar os seus conhecimentos e experiências com os outros durante a formação? | Sim ☐ | Não ☐ |
| Estabeleceu uma estrutura de avaliação adequada de forma avaliar o processo de formação e a aprendizagem do participante? | Sim ☐ | Não ☐ |

## 2.3 Conclusão

Independentemente de ser um formador ou facilitador experiente, novo na área de formação ou com pouca experiência na facilitação da aprendizagem, existem muitos aspetos que precisam de ser cuidadosamente considerados:

- Os participantes com os cinco perfis funcionais específicos e os seus contextos,
- As razões: porque motivo vai realizar a formação e o que comunicar, quais os métodos de aprendizagem e avaliação mais apropriados para a sessão?

## 3. Perfis Funcionais

A tabela principal dos Perfis Funcionais contém a seguinte informação[5]:

- *Designação* do Perfil Funcional com algumas designações alternativas.
- O *Resumo* apresenta brevemente a função que o profissional vai desempenhar.
- A *Missão* é um resumo da função do profissional na organização.
- *Resultados*: são os principais aspetos que o profissional tem de cumprir na sua função.
- *Principais funções* elenca as funções que o profissional irá desempenhar numa organização cultural.
- *Contexto* descreve em que contexto a missão é cumprida.
- *KPI's* descreve os Indicadores Chave de Desempenho da função na organização.
- A tabela com as e-competências necessárias no perfil functional detalhadas.

Para cada Perfil Funcional correspondem as e-competências adequadas, uma vez que deriva do conteúdo da e-competência descrita no Qe-C. Além da descrição genérica (na Dimensão 2), é dado o nível de demonstração desta competência (Nível 1 -5) (na Dimensão 3) e os conhecimentos e competências relevantes (na Dimensão 4).

Esta tabela principal é seguida dos resultados de aprendizagem de cada módulo. De modo a preparar as sessões de formação, é necessário definir primeiro os resultados de aprendizagem da formação e os métodos de avaliação adequados.

Cada curso de formação é específico de acordo com o perfil funcional e tem como objetivo capacitar os formandos com o conhecimento e competências descritos nessa função.

### 3.1 Perfis Funcionais ⇔ Categorias Profissionais

Cada categoria profissional numa organização, empresa, serviço público, museu, organização cultural, etc. é uma mistura de diferentes funções. Por exemplo, o Gestor de Comunidade de um museu é, muitas vezes, também um *marketer*, um gestor da organização, um guia, etc. Um colaborador de uma organização pode ter diferentes funções, mesmo se o trabalho tiver uma designação diferente. Por exemplo, da mesma forma um guia cultural pode também ser um curador e terem funções diferentes na organização.

Ao analisamos um perfil funcional, concentramo-nos na função propriamente dita, na missão, que é o cerne da tarefa dedicada a esta função. É claro que o profissional poderá, igualmente, ter outras tarefas e funções na sua categoria profisssional.

A partir da análise, percebemos que, na maioria dos casos, especialmente em estruturas de pequenas dimensões, a categoria profissional é uma mistura de diferentes perfis funcionais e cada organização mistura as funções de forma diferente. Cada organização tem a sua própria mistura, dependendo da organização interna, da experiência da organização e dos colaboradores, da experiência e formação dos

[5] Para a tabela de cada um dos 5 perfis funcionais, consultar o Anexo 8.1.

profissionais que fazem parte da organização e dos profissionais disponíveis no mercado de trabalho. Na subseção que se segue serão analisados os níveis de EQF e Qe-C aplicados no âmbito do projecto.

### 3.2 Níveis de referência

Cada Estado-Membro da UE tem o seu próprio nível de referência para definir formações tanto ao nível académico como de aprendizagem ao longo da vida. Este documento não se refere a uma formação nacional ou estrutura educativa que, raramente, poderá ser comparada a outro. A nível europeu, o Quadro Europeu de Qualificações (QEQ) é uma referência comum e cada quadro nacional de educação está relacionado com o QEQ.

Além disso, alguns dos quadros europeus estão relacionados com a duração dos estudos, enquanto o Quadro Europeu de Qualificações se baseia nos resultados de aprendizagem e não no conteúdo. No final do processo de aprendizagem, os resultados podem ser descritos com Conhecimentos, Capacidades e Competências especifícas. O Quadro Europeu de Qualificações tem 8 níveis, começando no nível 1 (básico) até ao 8 (conhecimento de nível elevado) [6].

Desde 2003, o Comité Européen de Normalisation (CEN) [7] tem vindo a trabalhar com os profissionais e formadores com o objetivo de publicar uma referência comum para competências relacionadas com as TIC, dado que empresas e organizações precisam de referências para avaliar as competências relacionadas com as TIC dos seus colaboradores (atuais e potenciais). Definições padronizadas de níveis de competência são úteis para vários intervenientes, tais como: gerentes e departamentos de Recursos Humanos em empresas e outras organizações (tanto no setor público como no privado), organizações de formação e instituições de ensino (incluindo ensino superior), assim como para investigadores e decisores políticos.

O Quadro de e-Competência - Qe-C deriva diretamente do QEQ e os seus descritores estão directamente adaptados às competências relacionadas com as TIC. Com o objetivo de descrever os perfis funcionais e-Cultura, adaptámos o Quadro de e-Competências para a área específica de e-Cultura. O Qe-C tem 5 níveis diretamente relacionados com os 8 níveis do QEQ. Os níveis 1 e 2 do QEQ não se encontram contemplados no domínio das TIC, pois representam Capacidades e Competências de Conhecimento muito básicas; os níveis 4 e 5 do QEQ encontram-se implementados no mesmo nível 2 de Qe-C [8].

| Nível de e-Competência | Nível QEQ |
|---|---|
| 5 | 8 |
| 4 | 7 |
| 3 | 6 |
| 2 | 5 e 4 |
| 1 | 3 |

Figura 1. Os 5 níveis de Qe-C relacionados com os 8 níveis de QEQ

[6] Para mais informação sobre o QEQ, consultar o Anexo 8.3.
[7] O website do CEN : http://www.cen.eu/Pages/default.aspx
[8] Para mais informação sobre o Quadro de e-Competência publicado pelo CEN, consultar o Anexo 8.4.

Uma breve descrição das ferramentas utilizadas, o QEQ e Qe-C, é apresentada abaixo.

### 3.2.1 O Quadro Europeu de Qualificações (QEQ)

O Quadro Europeu de Qualificações foi publicado no início do século com o objetivo de permitir a comparação de qualificações a nível europeu. A forma tradicional de formação centrava-se no conteúdo e, no final da sessão de formação, era avaliado o nível de conhecimento. A empregabilidade e a identificação das necessidades de formação são realizadas em empresas, numa mistura entre Conhecimento, Capacidades e Competências.
O QEQ criou 8 níveis para avaliar o nível de conhecimentos, capacidades e competências. Os descritores para estes níveis são bastante simples e permitem avaliar a autonomia e a capacidade de integrar todas as missões da organização, assim como os seus objetivos a longo prazo. O QEQ não é específico de nenhuma atividade no mercado de trabalho, é adaptável a todas as áreas.

### 3.2.2 O Quadro de e-Competências (Qe-C)

Este quadro europeu foi criado como uma aplicação do QEQ especializado para a área de TI.
Foram identificadas várias competências e resultados de aprendizagem essenciais pelo CEN/ISSS *(European Committee for Normalisation to issue a Information Society Standardisation System)* e definidas com particular enfoque em TI e em postos de trabalho CICT e formações.

O Quadro de e-Competências Europeu (Qe-C) disponibiliza uma referência de 40 competências, conforme exigido e aplicado no local de trabalho de Tecnologia de Comunicação e Informação (TIC), utilizando uma linguagem comum para as competências, capacidades e níveis de proficiência que possam ser compreendidos em toda a Europa.

As definições de competências e níveis são, essencialmente, genéricos e não se relacionam, por exemplo, com ferramentas técnicas, mas sim com a capacidade de desempenhar as funções do trabalho. Não interessa qual o software usado. Interessa sim a capacidade para conceber um resultado, por exemplo, para desenvolver uma imagem para a organização que apoio as vendas, a reputação da empresa, etc.

No Qe-C, os termos são bastante genéricos para serem utilizados por todas as profissões.

O objetivo do projeto eCult Skills é adaptar as descrições dos resultados e níveis para as funções mais específicas na área cultural. É claro que os resultados do projecto têm que estar de acordo com o QEQ e com o Qe-C. Devem ser genéricos para todas as funções necessárias no domínio cultural.

Os perfis funcionais são apresentados com vários itens em 4 dimensões, de acordo com a estrutura do Quadro de e-Competências.

- Dimensão 1: é a área de e-Competências, Planear, Criar, Executar, Capacitar, Gerir.
- Dimensão 2: é uma explicação genérica da competência.

• Dimensão 3: explica o nível de proficiência através de um descritor, que é diferente para cada nível alcançado pelo profissional.
• Dimensão 4: contém alguns exemplos para entender melhor o perfil funcional neste item.

## 4. Metodologia de formação

A partir da análise das necessidades do mercado de trabalho, compreendemos que para cada Perfil Funcional são necessárias e-competências e e-capacidades, de forma a realizar as exigentes tarefas e a ser competitivo a nível europeu. O Guia de Formação apresenta um manual no qual se descreve a forma como adaptar os Quadros Europeus e os níveis relacionados durante a formação dos futuros profissionais da cultura. É um manual essencial que deve ser utilizado para adquirir as características desses cinco Perfis Funcionais, juntamente com as competências e capacidades necessárias.

Nesta secção é descrita a metodologia que deverá ser seguida para planear e gerir um programa de formação para os Perfis Funcionais. De forma a preparer as sessões de formação, é necessário definir, em primeiro lugar, os **resultados de aprendizagem** e os **métodos de avaliação** adequados. Ou seja, é necessário definir aquilo que se quer que o formando aprenda para, assim, alcançar as qualificações (conhecimentos, capacidades, competências) descritas para cada função e a forma como se avaliará o processo de formação.
Cada curso de formação é específico para um perfil funcional e tem como objetivo permitir que os formandos adquiram o conhecimento e as competências de determinada função[9].

Com base no que foi acima descrito, a metodologia de preparação de sessões de formação para uma determinada função consiste no seguinte:

1. Criação de uma tabela com a frequência de cada competência em todas as funções.
2. Definição da respectiva unidade/resultado de aprendizagem para cada competência na função.
3. Desenvolvimento das directrizes da formação, através da recolha de definições das unidades de aprendizagem.
4. Adaptação das diretrizes de formação resultantes para o âmbito da função.
5. Avaliação de todo o processo de formação.

A metodologia proposta baseia-se nos seguintes pressupostos:

1. As unidades de aprendizagem são modulares;
2. Os módulos de formação (definidos internamente – considerando materiais, métodos, abordagens, ferramentas de formação) podem basear-se em uma ou várias unidades de aprendizagem (definidos externamente- descrevendo os principais resultados a serem alcançados pela formação);
3. Será descrita uma unidade de aprendizagem em separado para cada competência que faz parte da definição de uma determinada função.
4. A unidade de aprendizagem terá em conta todos os principais resultados de aprendizagem na área de competência correspondente, dado que estes surgem em cada função relacionada com esta competência.
5. Deve ser definido um conjunto de técnicas de avaliação para cada área de competência (e, portanto, para cada unidade de aprendizagem).

[9] As descrições de funções baseiam-se na noção de e-competências e no nível adequado (os níveis mais elevados 4 e 5 são para especialização/para os profissionais mais especializados).

O processo de formação pode ser sintetizado selecionando as unidades de aprendizagem para as áreas de competência. Reúne as técnicas de avaliação correspondentes e adapta-as no âmbito do cargo.

No capítulo seguinte[10] deste manual é feita uma descrição mais analítica, até mesmo dos passos precisos da metodologia recomendada e aplicável em qualquer caso. Como estudo de caso da metodologia de formação de uma categoria profissional, é apresentado o paradigma do Gestor de Ativos Culturais Digitais.

[10] Consultar o capítulo 6.

## 5. Avaliação da formação

Os perfis funcionais criados no âmbito do projeto eCult Skills foram elaborados a partir de uma análise do mercado de trabalho e correspondendo às necessidades das empresas, que se adequam à maioria das organizações. No entanto, de acordo com o mercado, a história e a cultura dos perfis funcionais podem variar de uma organização para outra.
Definir um método de avaliação adaptável a todas as organizações e para diferentes perfis funcionais é fundamental. A metodologia proposta é uma abordagem global para a avaliação, adequada para os resultados de aprendizagem fundamentais selecionados para os perfis funcionais. Podem ser adaptados a outros perfis funcionais e outros resultados de aprendizagem que a organização considerar essenciais.

### 5.1 Objetivos da avaliação

A avaliação é a parte mais essencial e crucial do processo de aprendizagem. Assim, o nível alcançado pelo formando deve ser avaliado no final da sessão de aprendizagem. O processo de avaliação é importante pelas seguintes razões:

- Perceber se os conhecimentos, capacidades e competências obtidos durante as sessões foram corretamente aplicados pelos formandos e se os formandos são capazes de os utilizar ou adaptar à sua vida profissional. Tal ajuda a equipa de formação a identificar os pontos a melhorar ao desenhar o processo de formação.
- Está em conformidade com as recomendações EQAVET.
- No caso de uma certificação, um diploma ou certificado de avaliação no final da formação, emitido pela instituição de formação; o objetivo é que o reconhecimento de competências seja claro, compreensível e que corresponda às necessidades dos técnicos de recrutamento.
- Os técnicos de recrutamento não conhecem todas as organizações que oferecem programas de formação.
- A avaliação é credível para os técnicos de recrutamento.
- É uma ferramenta essencial que permite que os formandos saibam quais os aspetos que precisam de melhorar para alcançarem o nível requerido para entrar com sucesso no mercado de trabalho.
- Para a gestão de recursos humanos; a avaliação dos colaboradores é essencial para gerir a empresa, para reunir equipas de valor, nas quais as competências estão bem organizadas.

Avaliações e atualizações regulares de formação são essenciais para manter o conhecimento, capacidades e competências a longo prazo dentro das organizações.

### 5.2 Bases da avaliação

O objetivo é definir o nível que o formando alcançou no final da sessão de formação e de que forma se encontra capaz de o implementar na sua vida profissional, no contexto de uma organização cultural, de acordo com os objetivos da organização, no contexto do mercado.

No final da sessão de formação, o nível alcançado pelos formandos tem de ser avaliado com a seguinte frase: o formando é capaz de cumprir as tarefas descritas na Dimensão 2 do perfil funcional e ao nível descrito pelo descritor da Dimensão 3[11].
O objetivo do QEQ é avaliar a forma como o formando é capaz de implementar os seus conhecimentos, capacidades e competências no trabalho diário, independentemente do contexto de aprendizagem (formal, informal/formação através da experiência) em que foi adquirido. É necessário definir se o formando é capaz de implementar as suas competências no nível 2, 3, 4 ou 5, ou se está acima ou abaixo dos descritores disponibilizados.

O ideal é que o(s) formador(es) e o formando cheguem a acordo quanto ao nível alcançado. Se não alcançarem um consenso, o nível atribuído é o menor entre os propostos pelo formandor e pelo formando. A este nível, existe um acordo no qual o formando e os formadores concordam que o formando é capaz de o implementar na sua vida profissional. A avaliação baseia-se, principalmente, no descritor da dimensão 3[12]. Este apresenta diferentes formulações, de acordo com o nível desejado. Existem graus nos descritores: para passar de um nível para o outro, existe maior conhecimento, autonomia no exercício da proficiência, maior agilidade, capacidade de conduzir outros colegas e é isso que tem de ser avaliado durante o processo.

### 5.3 Como avaliar os níveis?

A forma mais eficiente de chegar a um acordo sobre um nível para um resultado de aprendizagem entre o formador e o formando é seguir técnicas específicas. Dado que se tratam de competências na área laboral, é necessário colocar a avaliação no contexto de trabalho.

Por esta razão, existem diferentes técnicas possíveis, tais como:

1. <u>O Estudo de Caso</u>

Defina um estudo de caso no contexto de uma organização cultural. Defina qual o tipo de organização, o mercado, a equipa, o que foi feito anteriormente, quais as restrições, as vantagens competitivas, os impedimentos.
Quando todo o contexto é bem descrito, o formando tem de explicar o que vai fazer, como vai fazer, quais as ferramentas, quais os recursos na organização ou externos irá utilizar.
Este poderá ser um exercício escrito ou uma explicação oral.

No final do exercício, o formando e o formador apresentam uma proposta de nível e explicam por que escolheram este nível. Discutem durante alguns minutos a avaliação. Se chegarem a um acordo, o nível poderá ser certificado. Se não alcançarem um consenso, o nível certificado é o mais baixo como denominador comum. (Um terceiro, outro formador ou um profissional experiente poderá ser envolvido para determinar o nível final; o processo tem de ser claramente definido antes do início da formação).

[11] Consideramos o nível mais elevado que o formando pode desempenhar de forma eficaz. A Dimensão 4 consiste em exemplos não exaustivos de conhecimentos e competências para esta e-Competência (Dimensão 2).
[12] É importante lembrar que a Dimensão 3 explica o nível de proficiência através de um descritor, que é diferente para cada nível alcançado pelo profissional.

2. A avaliação contínua

Durante a sessão de formação, foram utilizadas como exercício diferentes situações; existiram, igualmente, sessões de grupo, reflexões colaborativas, etc. Estes exemplos podem ser também considerados como estudos de caso.
Para a avaliação, o processo é o mesmo utilizado no estudo de caso anteriormente mencionado. O formando e o formador estabelecem um nível e discutem sobre o porquê da escolha deste nível. Se ambos concordarem, podem certificá-lo; se não concordarem o mais baixo é o denominador comum. (Um terceiro, outro formador ou um profissional experiente poderá ser envolvido para determinar o nível final; o processo tem de ser claramente definido antes do início da formação).

3. Avaliação de escolha múltipla

Considerando uma situação contextual, são propostas diferentes ações e o formando seleciona a(s) mais adequada(s).
De seguida, o formando e o formador avaliam as boas e más decisões e determinam a que nível se referem.

4. Perguntas/ Respostas

Especificamente com a finalidade de conhecimento, é possível estabelecer algumas perguntas, cujo formando deverá responder escrita ou oralmente. De seguida, as respostas são avaliadas e discutidas entre o formador e o formando. O processo é semelhante, com o acordo no que respeita a um nível; caso contrário, o nível mais baixo é selecionado, sempre acompanhado de uma explicação.

### 5.4 Resumo

Esta metodologia é adequada para avaliar todos os resultados de aprendizagem, independemente de serem ou não parte dos resultados de aprendizagem fundamentais selecionados. Poderão ser utilizados de acordo com o contexto e os constrangimentos da organização selecionada. Todos os resultados de aprendizagem que são importantes para o técnico de recrutamento podem ser adaptados.

É essencial configurar, de forma correta, o contexto, de forma a permitir que os formandos escolham as decisões adequadas.
Explicar porque é que um nível é escolhido pelo formando ou pelo formador é importante, pois permite compreender melhor o formando e progredir na aplicação eficiente do seu conhecimento no contexto de trabalho.

Se o contexto for bem definido e o processo bem desenhado, é possível avaliar os diferentes resultados de aprendizagem simultaneamente. Este é o motivo pelo qual não é proposto um método de avaliação diferente para cada resultado de aprendizagem ou para cada perfil funcional.

Esta metodologia é adequada para todos os resultados de aprendizagem em cada perfil funcional. Mesmo os resultados de aprendizagem adicionais que possam aparecer ser essenciais – e que ainda não

se encontrem elencados nos resultados de aprendizagem genéricos – podem ser avaliados através desta metodologia.

### 5.5 Exemplo de avaliação

Para proporcionar uma melhor compreensão deste documento, será apresentado de seguida um estudo de caso para o perfil funcional, os resultados de aprendizagem relacionados e os resultados da sessão de formação sobre como deverão ser analisados e avaliados.

Por esta razão, durante o processo de formação, o avaliador, assim como o formando, têm de responder à questão: é o formando capaz de... (utilizando o descritor do resultado de aprendizagem)?

Caso o formando não esteja numa situação familiar, é importante tentar colocá-lo num contexto em que tenha referências suficientes (um museu local ou que o formando conheça melhor); um museu na região ou cidade que o formando conheça bem. O caso é, então, estabelecido, definindo o contexto e dando informações úteis, como:

- A dimensão e a história do museu, da organização, o número de colaboradores que trabalham no museu, as empresas subcontratadas, os parceiros, a forma como os serviços estão organizados e são definidos os colaboradores com quem o formando estará em contacto.
- Os objetivos do museu, os objetivos definidos pelo diretor a longo prazo, conselho de administração, organizações de financiamento (cidade, região).
- Os visitantes, a estrutura do público, quaisquer problemas ou pontos fracos do museu, vantagens competitivas.
- A missão do museu, qualquer estratégia apoiada pelo diretor e as ferramentas, orçamento, apoios/fundos.

É pedido ao formando que conceba um plano de gestão para o museu, tendo em conta as informações fornecidas e que faça a sua melhor proposta com base numa análise SWOT e nas resultados obtidos. De seguida, são analisadas as propostas do formando e avalia-se se estão de acordo com os resultados de aprendizagem do perfil funcional.
No processo de avaliação, é fundamental avaliar não só o que foi trabalhado, mas também outras experiências (anteriores) do formando. A formação não formal e informal, bem como os resultados da experiência de trabalho devem ser tidos em conta. O importante é o nível do resultado de aprendizagem alcançado pelo formando no final da formação.
Para uma melhor compreensão e aplicação da metodologia aqui descrita, foi selecionado um perfil das 5 categorias profissionais de e-cultura desenvolvidas no âmbito do projecto eCult Skills.

## 6. Estudo de Caso de Gestor de Ativos Culturais Digitais: o curso de formação piloto

O perfil de Digital Cultural Asset Manager foi selecionado como estudo de caso para o Guia de
Será uma análise do perfil e das qualificações necessárias, focando a forma como se poderá aplicar a metodologia descrita durante a formação sobre este perfil e como este curso seria implementado desde a sua conceção até à sua realização.

### 6.1. Informação sobre o curso (Objetivos, Tipo de Curso, Público-Alvo, Sumário)

- Objetivos

O curso de formação piloto de gestor de ativos culturais digitais ou digital curator tem como objetivo disponibilizar uma introdução sobre a forma como planear, criar, executar, gerir e permitir um ambiente DAM no setor cultural.

- Tipo de Curso

Este curso de formação piloto é um curso de auto-formação on-line que incluirá o acompanhamento de um tutor. Os materiais e os recursos foram recolhidos nos principais centros de investigação e indústria.

- Público-Alvo

Os formandos interessados neste curso devem ter alguma experiência com coleções de instituições culturais, tais como museus, arquivos e bibliotecas. Devem facilmente reconhecer e interpretar uma política de gestão de coleções e conhecer os procedimentos básicos sobre gestão física de coleções e documentação. Conhecer os padrões de documentação essenciais publicados pelo ICOM, ICA e IFLA é, igualmente, importante.
Necessitam, igualmente, de ter algumas competências básicas em questões tecnológicas, como formatos de arquivo ou preservação digital, e em ferramentas como aplicações de edição de metadados ou hardware e software de digitalização.

- Sumário

Este curso de formação piloto foi criado de acordo com as especificações do perfil de Gestor de Ativos Culturais Digitais, desenvolvido no âmbito do projeto eCult Skills (http://ecultskills.eu) e disponível em http://www.e-jobs-observatory.eu/role-profiles/digital-cultural-asset-manager, incidirá nas diferentes áreas de e-competência descritas nas especificações detalhadas do perfil. Estas áreas de e-competência são:

1. Planear;
2. Criar;
3. Capacitar;
4. Executar;
5. Gerir.

In the course we will introduce this areas first and then we will learn about the specific competences included in these main areas, identifying each competence with the correspondent area (in brackets after the title). The competences that we'll work in this course are:

No curso serão introduzidas, em primeiro lugar, estas áreas e, depois, trabalhar-se-ão as competências específicas incluídas nestas áreas principais, identificando cada competência com a área correspondente (entre parênteses após o título). As competências que serão trabalhadas neste curso são:

- Desenvolvimento do Plano de Gestão dos Ativos Digitais (PLANEAR);
- Planeamento de Produtos/Serviços (PLANEAR);

- Monitorizacação de Tendências Tecnológicas (PLANEAR);
- Inovação (PLANEAR);
- Documentação (CRIAR);
- Aquisição (CAPACITAR);
- Gestão da Informação e do Conhecimento (CAPACITAR);
- Identificação das Necessidades (CAPACITAR);
- Disponibilização do Serviço (EXECUTAR);
- Gestão de Problemas (EXECUTAR);
- Prospetiva (GERIR);
- Gestão do Risco (GERIR);
- Gestão de Relação (GERIR);
- Gestão da Qualidade dos Ativos Digitais (GERIR).

Os formandos terão uma introdução sobre cada competência e as suas necessidades e, em seguida, os tópicos mais importantes sobre o tema da competência serão apresentados como orientação para a aprendizagem. Para cada competência, existirão resultados de aprendizagem específicos, métodos de avaliação e uma lista de recursos úteis para o tema.

Cada competência terá, igualmente, uma lista de palavras-chave que permitem que os formandos pesquisem e organizem o curso, de acordo com as suas expectativas, preferências e necessidades.

### 6.2. Introdução

A Gestão de Ativos Digitais é, tal como definido no Glossário DAM[13], "um termo coletivo aplicado ao processo de armazenamento, catalogação, pesquisa e disponibilização de arquivos informáticos (ou ativos digitais)." Estes ativos podem ser apresentados em diferentes formatos, tais como áudio, texto, imagens, fontes, modelos 3D, software, código, etc., e representam uma parte vital na sociedade de informação em que vivemos.

Atualmente, a produção de informações é massiva. Tal como Eric Schmidt (ex-CEO da Google) referiu na conferência Techonomy, em 2010, "A cada dois dias, nós criamos tanta informação como desde o início da civilização até 2003. Isto é algo como cinco exabytes de dados". Ainda que este número impressionante possa (e deva) ser minimizado pela quantidade de informação que não é útil ou que é deliberadamente apagada pelos seus autores – só para citar dois exemplos possíveis de informação não reutilizável – devemos preparar-nos (a nós próprios e às instituições em que trabalhamos) para este novo cenário. Para o fazer, é necessário planear e criar estratégias digitais que podem fazer face à quantidade de informação criada, fornecendo-nos as ferramentas para capitalizar os esforços e o investimento realizado.
No setor cultural, estes ativos digitais, ou ativos digitais culturais são, muitas vezes, representações digitais de coleções; contudo, em muitos casos, são conteúdos originalmente digitais, como programas informáticos, arte digital, meios interativos e muitos outros tipos de informação digital disponibilizados por museus, arquivos e bibliotecas aos seus públicos. Estas coleções digitais têm as suas próprias regras,

[13] Para mais informação, consultar http://damglossary.org.

organização, contexto e especificações jurídicas que devem ser abordadas de uma forma específica pelo Gestor de Ativos Culturais Digitais ou Curador Digital.

No final do curso, o formando deverá ser capaz de planear, criar, executar, capacitar e gerir a coleção de ativos digitais de uma instituição cultural, utilizando as ferramentas mais adequadas para disponibilizar ao seu público (interno e externo) os resultados adequados.
De forma a alcançar este objetivo, este curso oferece uma "visita guiada" pelo tema da gestão de ativos digitais no setor cultural. Juntamente com muitos outros temas, será trabalhada a definição e desenvolvimento de uma estratégia digital, normas, especificações de sistemas DAM no setor cultural, reutilização de informação[14] ou questões legais na Europa.

**O que é um Gestor de Ativos Culturais Digitais, de acordo com o perfil desenvolvido no âmbito do projeto eCultSkills?**
Também designado de Gestor de Ativos Digitais ou Curador Digital, "trabalha com a preservação, gestão e exploração (incluindo monetização) do conteúdo cultural de origem digital ou digitalizado num museu ou outra instituição cultural (doravante designada apenas como museus), quer num espaço físico ou virtual". A sua missão, de acordo, uma vez mais, com o perfil funcional, é conceber, administrar e explorar uma coleção museológica digital, tal como definido na missão do museu e do plano estratégico. Ainda que esta função específica não exista na maioria dos museus europeus, pensamos que o desenvolvimento tecnológico e a massificação das novas tecnologias, juntamente com a consciencialização do público sobre o nosso património cultural, irá fornecer a "tempestade perfeita" em instituições culturais de pequena e média dimensão para mudar esta situação e criar ou incluir no seu organigrama esta categoria profissional.
No entanto, muitos museus e instituições culturais, que enfrentam as necessidades da sociedade de informação atual, já desenvolveram e criaram novas estratégias e abordagens relativamente a este tema, com a participação de profissionais com as competências descritas neste perfil. Por exemplo, é possível visualizar a obra (mais aclamada) de Amsterdam Rijskmuseum no Museum Online Collection (https://www.rijksmuseum.nl/en) e ler mais sobre o trabalho do museu num texto intitulado "Democratizar o Rijksmuseum" por Joris Pekel para a Europeana Foundation, disponível em: http://pro.europeana.eu/files/Europeana_Professional/Publications/Democratising%20the%20Rijksmuseum.pdf.

**O que é esperado de um Gestor de Ativos Culturais Digitais, de acordo com o perfil desenvolvido no projeto eCultSkills?**
Os avanços tecnológicos rápidos e contínuos que estão a ocorrer desde a última década mudaram radicalmente a forma como os museus e os seus profissionais lidam com a informação digital criada nessas instituições, ou seja, os ativos digitais que agora pode ser vistos como uma coleção museológica. Uma coleção digital que necessita, tal como a física, de uma política de coleção estruturada e detalhada e que pode ser utilizada pelo museu para a sua missão.

Assim, as competências de um Curador Digital descritas nesta categoria professional definem as ferramentas que lhe permitirão realizar as seguintes tarefas:

[14] Para mais informação sobre o conceito COPE – Create Once, Publish Everywhere, consultar: http://www.programmableweb.com/news/cope-create-once-publisheverywhere/2009/10/13

1. Organizar as coleções culturais digitais, após seleção e classificação, para facilitar a descoberta, acesso e utilização das coleções;
2. Preservar o ativo cultural digital, de acordo com as normas internacionais (transformação do formato, emulação de hardware/software);
3. Explorar, utilizar (incluindo monetização) e fornecer acesso ao conteúdo/objetos digitais em termos de funcionalidade, viabilidade técnica e confiabilidade (métodos de acesso, autenticação, compatibilidade) e monetização;
4. Proteger e salvaguardar a coleção digital do museu (direitos de autor, conteúdo com marca d'água, criptografia).

É também responsável por:

1. Sustentabilidade e operacionalidade de ativos digitais - manutenção operacional de ativos digitais;
2. Aconselhar a gestão do museu nas melhorias em todos os aspectos relativos à coleção de ativos digitais.

E deve ser um contribuidor ativo para:

1. Análise de usabilidade (Sistema DAM, website, redes sociais, etc.)
2. Otimização de motor de busca;
3. Concorrência comercial da marca

O curso irá guiá-lo através de alguns documentos, manuais, recursos disponíveis on-line (outros cursos, webinars, etc.) que explicam os aspetos mais importantes das competências descritas.

### 6.3. Cinco passos para preparar um ambiente DAM (Planear – Criar – Capacitar – Executar – Gerir)

Este curso de formação, tal como foi acima referido, está organizado de acordo com as especificações do perfil de Gestor de Ativos Culturais Digitais desenvolvidos pelo projeto eCult Skills.
Neste perfil, existem 5 áreas de e-competências diferentes que abrangem as competências específicas necessárias no perfil de Gestor de Ativos Culturais Digitais. Estas áreas representam os cinco passos essenciais para preparar o museu para a introdução de um sistema DAM como uma ferramenta fundamental para gerir as coleções digitais, ajudando a cumprir a missão da instituição.
Neste capítulo, serão introduzidos estes passos como orientação para que os formandos reconheçam as principais implicações da implementação do sistema DAM numa instituição cultural. Estes cinco passos podem ser utilizados, de acordo com as necessidades dos formandos, globalmente como ponto de partida para aprender sobre DAM, ou um por um, caso o formando esteja interessado num problema específico, como por exemplo, a compra de um sistema DAM.
Em qualquer dos casos, estes passos devem ser utilizados neste curso como referências para cada competência e como orientação para a organização de um ambiente DAM.

**Planear**

Considerando que a instituição pretende gerir a coleção de ativos digitais, o primeiro passo é prepará-la para as necessidades e especificações desta combinação e para as novas tarefas. Cada setor tem necessidades específicas e o setor cultural não é a exceção.

Assim, para desenvolver um plano adequado para gerir uma coleção de ativos digitais neste setor, é necessário conhecer os principais desafios e resultados. Para tal, poderá consultar o número temático "Sistemas de gestão de ativos digitais para o Setor Cultural e Património Científico", publicado pelo Consórcio DigiCULT e disponível em: http://www.digicult.info/downloads/thematic_issue_2_021204_low_resolution.pdf(PDF).

Este artigo concentra informação útil sobre a importância da gestão de ativos digitais no setor. Já os artigos intitulados **"Como é que Artefactos Culturais se Transformam em Ativos Digitais?"**, de Michael Lua, e **"DAMS *versus* CMS"**, por Norbert Kanter, são essenciais para o trabalho a desenvolver.
Neste recurso encontra-se disponibilizada bibliografia útil (cf. **"Literatura Selecionada"** na página 38). Recomenda-se, igualmente, a leitura do livro book **"Defining the DAM Thing: How Digital Asset Management Works"** de David Doering.
No website do Consórcio DigiCULT, encontram-se também disponíveis alguns recursos úteis (http://www.digicult.info).

Outro recurso essencial é o artigo **"Gestão de Ativos Digitais e Museus - Uma Introdução"**, disponível no repositório de recursos da Canadian Heritage Information Network (CHIN) (http://www.rcip-chin.gc.ca/contenu_numeriquedigital_content/fiches_techniques-tip_sheets/gestion_contenus_numeriques-digital_assets_management-eng.jsp).
Neste artigo, é apresentada uma breve introdução ao DAM no setor museológico e algumas referências a outros documentos.

Conhecer os detalhes e necessidades específicos do sector cultural relativamente a DAM é um tema primordial neste curso; no entanto, é, igualmente, importante reconhecer alguns princípios importantes sobre gestão de museus. Ainda que este curso não tenha como objetivo abordar aspetos de gestão em museus ou instituições culturais, é essencial que um gestor de ativos digitais saiba como o DAM poderá ser implementado neste tipo de organizações.
O setor cultural tem uma antiga e importante tradição relativamente à documentação e gestão de coleções. Esta implica um esforço significativo (e contínuo) em investigação e desenvolvimento de novas ferramentas, normas e procedimentos, com a introdução de novas tecnologias. Uma instituição do Reino Unido, a Museum Documentation Association (MDA), agora designada Collections Trust (CT), realizou um esforço significativo no desenvolvimento de SPECTRUM, uma Norma de Gestão de Coleções britânica, que é utilizada por mais de 20.000 instituições em mais de 40 países.

No âmbito da Collections Trust (CT), foi desenvolvido um quadro que se baseia na missão do museu e na política de gestão de coleções, consideradas como os documentos básicos a serem implementados num sistema de gestão de coleções adequado, que assegure os procedimentos corretos para:

1. Desenvolvimento de coleções;
2. Informação sobre coleções;
3. Preservação de coleções (físicas e digitais);
4. Acessibilidade às coleções.

A norma SPECTRUM encontra-se disponível para download no website da Collections Trust. O URL direto é o seguinte: http://www.collectionstrust.org.uk/collections-link/collections-management/spectrum.

Juntamente com esta norma, foi recentemente publicado o ESPECTRUM DAM. Constitui um documento complementar criado como um manual de boas práticas para integrar a gestão de ativos digitais numa prática de Gestão de Coleções com base em (ou compatível com) essa norma. Este documento também está disponível on-line em: http://www.collectionstrust.org.uk/collections-link/collections-management/spectrum/item/1688-spectrum-digital-asset-management.

Considerando as necessidades específicas do setor cultural, é o momento de preparar e desenvolver um plano para implementar o DAM na instituição.

Sobre as competências específicas deste passo, consultar:
**Desenvolvimento do Plano de Gestão dos Ativos Digitais**
**Planeamento de Produtos/Serviços**
**Monitorização de Tendências de Tecnologia**
**Inovaçao**

**Criar**
Ainda que cada instituição durante um processo de implementação DAM tenha de seguir as mesmas regras, normas e questões jurídicas, existem questões e necessidades específicas que deverão ser abordadas de uma maneira diferente, de acordo com as singularidades da instituição.
Para cumprir esse objetivo, o gestor de ativos digitais deve, de acordo com o plano de DAM, criar e estabelecer documentação de apoio que permita o planeamento do ambiente, com funções e características previamente definidas. Da mesma forma, o gestor de ativos digitais deverá preparar e manter manuais específicos que permitam que os profissionais de museus sejam produtivos com as ferramentas à sua disposição.

Estes documentos constituem uma ferramenta útil para a equipa de organização e são, por norma, um requisito para sistemas de acreditação de museus, como o implementado no Reino Unido (Cf. mais informação sobre o Museum Accreditation Scheme britânico, gerido pelo Arts Council, em: http://www.artscouncil.org.uk/what-we-do/supporting-museums/accreditation-scheme/).

Sobre as competências específicas deste passo, consultar:
**Documentação**

**Capacitar**
Após toda a preparação descrita nas etapas anteriores deste curso, esta percorrerá as fases necessárias para a existência de um sistema DAM (DAMS) num museu.
Uma boa forma de preparar o gestor de ativos digitais para ser um campeão DAM durante o processo de implementação na instituição encontra-se descrita num artigo interessante de James Rourke, publicado pela Fundação DAM, intitulado "O Papel do Gestor DAM antes e pós a implementação" e disponível em: http://damfoundation.org/?p=31235.
Poderá ser considerado neste passo, bem como nos seguintes (Executar e Gerir). Algumas das questões aqui exploradas são também importantes e devem, igualmente, estar implícitas na documentação produzida pelos curadores digitais na fase anterior (Criar).

Apesar disso, serão também analisadas as tarefas administrativas necessárias do processo de aquisição, de acordo com o contexto jurídico aplicado e as regras e políticas do museu.

Como foi acima referido, a gestão de ativos digitais consiste em tarefas e decisões de gestão relativas à ingestão, anotação, catalogação, armazenamento, recuperação e distribuição de ativos digitais (cf. Wikipedia: https://en.wikipedia.org/wiki/Digital_asset_management).

Estas tarefas e decisões são realizadas de acordo com normas, processos e procedimentos que permitem que dados brutos possam ser transformados em conhecimento e, portanto, em informação cultural acessível.
Nesta área, será explicada, pormenorizadamente, a competência **"Identificação de Necessidades"**. Embora as tarefas de gestão de ativos digitais sejam baseadas em normas e especificações comuns a todas as instituições ou coleções digitais, existem sempre necessidades específicas (utilizador, coleção ou museu) que devem ser reconhecidas e abordadas durante a implementação do sistema DAM.

É essencial reconhecer, para este curso de formação, as características essenciais de um sistema DAM. Estas orientarão o processo de aquisição e implementação.
Para estabelecer a lista de características principais para usar como referência, é importante ler a lista publicada pela Fundação DAM: **Dez Características Centrais de um DAM** - http://damfoundation.org/?page_id=31752.

Estas 10 características devem ser utilizadas como critério para a escolha e avaliação dos diferentes sistemas disponíveis no mercado.

Sobre as competências específicas deste passo, consultar:
**Aquisição**
**Gestão de Conhecimento e Informação**
**Identificação de Necessidades**

**Executar**
Estabelecidos os primeiros passos para implementar um sistema DAM numa instituição cultural, é o momento de começar a trabalhar com ele, certificando que o sistema está a funcionar e que poderá ser preservado sem (ou com pouco) esforço. Executar um sistema DAM, após planeamento e permitindo uma implementação DAM é, de certa forma, um teste para as fases anteriores do projeto. Se algo estiver mal planeado ou se a identificação de necessidades for imprecisa, será possível verificá-lo quando o sistema começar a gerir a coleção digital.

Utilizando novamente o artigo de James Rourke sobre como ser um campeão DAM (disponível em http://damfoundation.org/?p=31235 como referência), é possível afirmar que, após a aquisição e implementação, o gestor de ativos digitais é responsável por "uma série de funções adicionais [...], que giram, essencialmente, em torno de evangelismo, manutenção e governação".

Estas funções, adicionadas às anteriores, implicam que o gestor de ativos digitais tem de abordar toda a manutenção das relações internas e externas do sistema, certificar a utilização de normas (a terminologia poderá vir a ser uma situação caótica, se não controlada), verificar os fluxos de trabalho

face  aos resultados finais, manter o funcionamento da infraestrutura, gerir a equipa ou, entre outras tarefas, atuar como um ponto de contacto central entre todas as partes interessadas (instituições, departamentos, equipa, fornecedores, etc.).

Neste ponto, o gestor de ativos digitais deverá funcionar como um farol para todos os envolvidos. Deverá ser um forte defensor da estratégia definida, assegurando que os objetivos estabelecidos foram alcançados. Para o fazer, é necessário monitorizar todos os aspetos do ambiente DAM (infraestrutura, software, normas, fluxos de trabalho, metadados, sistema de busca e resultados) e resolver quaisquer problemas.

Um bom recurso para utilizar relativamente a estes temas é a segunda parte da Extensis DAM Best Practices Guide, intitulada **"Tirar o máximo partido do seu DAM"**, disponível em: http://doc.extensis.com/DAM-Best-PracticesGuide-EN.pdf.

Sobre as competências específicas deste passo, consultar:
**Disponibilização do Serviço**
**Gestão de Problemas**

**Gerir**
Esta etapa final focará as tarefas necessárias para manter o funcionamento do ambiente DAM e alcançar os objetivos traçados na estratégia, mas também para preparar o futuro gestor de ativos digitais no museu.

Um dos principais problemas que os museus (e outras instituições) enfrentam, numa época de constantes mudanças, é a obsolescência do sistema. É bastante comum, principalmente em museus de pequenas e médias dimensões, que dependem de orçamentos baixos e de apoio financeiro instável ou com equipas pequenas e não-permanentes para implementar diferentes tipos de sistemas, defender os mais importantes que, após alguns anos, se tornam obsoletos e necessitam de atualização. Em alguns casos, também bastante comuns, o sistema precisa ser substituído por um novo, mais recente e tecnologicamente mais evoluído. Esse tipo de situação pode levantar questões sobre perda ou dano, o que representará um grande esforço e recursos financeiros de forma a ser minimizada.
De forma a prevenir esta situação, o gestor de ativos digitais ou curador digital deverá agir como um "profeta" ou pessoa que pode antecipar o futuro com base em factos e informações relativas aos diferentes aspetos do ambiente DAM. Ou seja, tem de apresentar uma investigação, organização e capacidade analítica eficiente, de modo a identificar potenciais problemas, necessidades, benefícios ou tendências que podem ajudar a manter ou melhorar o sistema instalado e em funcionamento.

No setor cultural, isto significa que um curador digital precisa de estar focado nas necessidades dos interessados internamente e fornecer-lhes os produtos ou serviços adequados. Por exemplo, o serviço ou produto adequado disponibilizado aos utilizadores de arquivo, quando o microfilme se tornou obsoleto e caro, foi a digitalização e disponibilização online dessa informação. Outro exemplo é com a massificação da utilização de *smartphones* e *apps*, os audioguias geralmente disponíveis nos museus e galerias foram substituídos por *apps* interativas de baixo custo.

Atualmente, alguns museus conseguem "prever" o futuro, tal como a Cooper Hewitt - Smithsonian Design Museum fez com **"The New Cooper Hewitt Experience"**. Informação sobre este interessante projeto pode ser encontrada em: http://www.cooperhewitt.org/new-experience/.

Poderá verificar como foi possível neste artigo: http://www.cooperhewitt.org/new-experience/designing-pen/.

Sobre as competências específicas deste passo, consultar:
**Prospetiva**
**Gestão do Risco**
**Gestão de Relação**
**Gestão da Qualidade dos Ativos Digitais**

### 6.4. Sessões de Formação

O Gestor de Ativos Culturais Digitais é uma categoria professional nova muito específica e importante, que foi despoletada pelo uso massivo da tecnologia e pelo contexto da era da informação em que vivemos. De facto, o setor cultural é, nos dias de hoje, confrontado com necessidades do público em informação que promova diferentes interpretações e permita a criação de conhecimento fora das instituições de autoridade habituais, como museus, bibliotecas e arquivos.

Esta situação é nova para museus e instituições culturais, pois, até muito recentemente, eram utilizados para comunicar o resultado da investigação das suas coleções aos seus públicos e, hoje, com o cenário digital atual, os seus públicos pretendem estabelecer uma conversa, na qual a sua opinião e contribuição são bem-vindas. O acervo digital (o resultado de processos de digitalização ou a reunião de material originalmente digital) representa uma parte muito importante da missão do museu e é essencial para garantir a conformidade com uma das funções básicas do museu: a comunicação.

De forma a estar preparado para esta responsabilidade, o curador digital deve adquirir algumas competências e capacidades necessárias para planear, implementar e gerir um ambiente DAM, de acordo com as necessidades específicas de um museu ou de outras instituições culturais.

Nesta área do curso, serão focadas todas as competências incluídas no perfil de Gestor de Ativos Culturais Digitais. O formando poderá utilizar as diferentes competências para construir uma estrutura específica de aprendizagem, de acordo com as suas suas necessidades, ou seguir os cinco passos sugeridos apresentados no ultimo capítulo.

Será apresentado, para cada competência, um texto introdutório sobre o contexto e as competências necessárias. No âmbito deste texto, serão dadas algumas referências e recursos básicos que deverão ser lidos/ouvidos/consultadas para aprender sobre essa competência específica.

Estes recursos serão complementados com uma lista de referências obrigatórias que deverão ser lidas/ ouvidas/consultadas para completar a sessão de formação. Cada referência ou recurso deverá ser discutido com o tutor e colegas, através da plataforma de aprendizagem.

Após a descrição de cada competência, estarão disponíveis os resultados de aprendizagem para cada uma ou sessão do curso, assim como os métodos de avaliação específicos para avaliar o sucesso da formação. As metodologias de avaliação propostas deverão ser discutidas, tal como estabelecido pelo projeto eCultSkills, pelos participantes do curso (tutor e formandos) para definir os níveis a avaliar em cada sessão de formação.

Uma lista de palavras-chave que representam o conteúdo de cada sessão de formação/competência facilitará a escolha do utilizador/formando do módulo do curso mais adequado para as suas necessidades. O perfil de Gestor de Ativos Culturais Digitais apresenta catorze (14) e-competências específicas que serão analisadas no Anexo[15].

[15] Consultar o Anexo 8.5. Estudo de caso: As 14 e-competências do Gestor de Ativos Culturais Digitais desenvolvidos e avaliados nas sessões de formação.

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## 8. Anexos

### Annex 8.1. The 5 Role Profiles

**Cultural ICT Consultant**

| | | | |
|---|---|---|---|
| **Role title** | **Cultural ICT Consultant** | | |
| **Also known as** | Cultural ICT Ambassador / Cultural ICT Advisor/ Cultural ICT Specialist | | |
| **Relevant professions** | | | |
| **Summary statement** | Analyses museums' (or other cultural institutions') and their audiences' needs, defines and specifies solution requirements and evaluates installed solutions. | | |
| **Mission** | To identify the best-suited solutions, according to the museums' and audiences' needs, requirements and financial resources and deliver advice on how new technologies can enhance collections and make them more attractive to all types of audiences on- and off-line, but also attract new audiences and ensure their return. | | |
| **Deliverables** | **Accountable for** | **Responsible for** | **Contributor to** |
| | Evaluation of customer needs. | Solution specifications. | Market analysis. |

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| | Provision of advice on the development of an ICT strategy, which will benefit both the museum and its audiences.<br><br>Development of guidelines for the implementation of this strategy in the most effective and efficient manner.<br><br>Advice on selection of adequate products and services. | Liaising between ICT providers and museum staff. | User requirements definition.<br><br>Suggestion of relevant ICT products/services.<br><br>Quality control.<br><br>Assessment of ethical issues. |
| **Main task/s** | **Related to museums' and audiences' needs:**<br><br>• To evaluate museums' and audiences' needs and formulate options.<br>• To interface technology and museum needs.<br>• To understand the expectations of museums and audiences.<br>• To foresee the impact of technological solutions responding to the museums and its audiences' needs. | | |

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| | **Related to the provision of advice on the ICT strategy and solutions:**<br><br>• To advise on the elaboration of the institution's ICT strategy.<br>• To plan time, cost and quality of the designed and specified solution including a return on investment analysis of the deployment of ICT solutions.<br>• To raise awareness on information technology innovations and their potential value to the museum.<br>• To engage museums in the adoption of new technologies for improved access to cultural heritage.<br>• To remain informed of the state-of-the art as well as new and emerging technologies and systems and to share this information with museums<br>• To provide advice on the selection of products and solutions.<br>• To advise on the preparation and negotiation of contracts with suppliers.<br>• To advise on compliance with standards and regulations on ICT.<br>• To provide advice on how to optimize the use of existing tools and systems.<br>• To act as a relay between ICT providers/commercial service providers and museums. |
| **Environment** | Works as an external consultant or internally within (larger) museums. Is at the crossroad of the museum management team, permanent or temporary exhibitions curators, communication and marketing teams (incl. web services) and audience services teams. |

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| **KPI's** | • Percentage of recommendations accepted by management.<br>• Spread of recommendations on strategic, tactical and operational level.<br>• Percentage of projects delivered on time, within budget, within scope and according to quality requirements.<br>• Increased interest shown by audiences in the museum on- and off-line.<br>• Promotion of museums as a showcase of effective use of new technologies. |

**Cultural ICT Guide**

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| **Role title** | **Cultural (ICT-enabled) Guide** |
| **Also known as** | ICT-enabled interdisciplinary interpreter of Cultural Heritage |
| **Relevant professions** | - Art historian *<br>- Curator *<br>- Cultural Heritage Interpreter *<br>- Tour guide *<br>- Cultural experience developer<br>- Multimedia content developer**<br>- Pedagogical professions related to art, culture, history and multimedia*<br>- Museum staff (guards) that are trained by a specialist to act as intermediary between the museum collections, the technologies |

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| | used and the audience.<br><br>*with additional relevant knowledge of ICT<br>** with additional relevant knowledge of museology | | |
| **Summary statement** | Has a flawless knowledge of content which s/he interprets to the audience/visitors and high-level familiarity with technology (ICT) used as new / innovative way of presenting art work, exhibitions or any other form of cultural heritage. | | |
| **Mission** | The Cultural ICT Guide's fundamental mission is the presentation of cultural heritage content through ICT tools to improve audience experience. A specific quality of the ICT Cultural Guide is to understand the interactivity of ICT devices or solutions favourable to attracting audiences in terms of transforming them from passive to active participants, using ICT in her/his investigative process. | | |
| **Deliverables** | **Accountable for** | **Responsible for** | **Contributor to** |
| | Audience satisfaction in terms of use of the technology and experience of the cultural collection. Documenting user feedback. Encouraging users / audience to use ICT for a better interdisciplinary | Effective and competent interpretation with use of technology. Comprehensive use of technology. | Proposal for upgrading technology. |

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| | experience in understanding and learning about cultural heritage. | Understandable instructions for users /audience.<br>Correct and safe use of technology. | |
| **Main task/s** | • To promote knowledge and understanding of cultural heritage through ICT.<br>• To promote improved understanding of cultural diversity and cross-cultural dialogue through ICT.<br>• To define target groups (children, local visitors, tourists, educational institution representatives, Cultural Heritage professionals, VIPs, etc.) for different types of interaction.<br>• To identify target visitors based on their knowledge level of ICT.<br>• To explain / present an ICT-enabled supportive environment in museums. | | |
| **Environment** | The Cultural ICT Guide works in museums and other cultural heritage institutions. Usually s/he works in a team alongside ICT specialists and experts of cultural heritage, museologists, curators, art historians, education experts. | | |

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| | The Cultural ICT Guide can be a specially trained, museum staff member who has been up-skilled to understand the technologies used and the opportunities they offer in interacting with the audience. |
| **KPI's** | • Number of new audience willing to undergo a new experience and time spent on the tools (quantitative measurement).<br>• Level of interest/excitement (qualitative measurement).<br>• Positive impact for cultural heritage stakeholders obtained by innovative experience and/or edutainment concepts for visitors. |

**Digital Cultural Asset Manager**

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| **Role title** | **Digital Cultural Asset Manager** | | |
| **Also known as** | Digital Asset Manager, Digital Curator | | |
| **Relevant professions** | Cultural Informatics / Cultural ICT Manager | | |
| **Summary statement** | Deals with the preservation, management and exploitation (incl. monetization) of the born-digital or digitized cultural content in a museum or other cultural institution (hereinafter referred to only as museums), whether in a physical or virtual space. | | |
| **Mission** | To undertake the design, administration, and exploitation (incl. monetization) of a digital museum collection, according to the management plan. | | |
| **Deliverables** | **Accountable for** | **Responsible for** | **Contributor to** |

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| | Organization of the digital cultural collections, after selection and classification, to facilitate the collections' discovery, access and use.<br><br>Preservation of the digital cultural asset according to international standards (format transformation, hardware/ software emulation). | Evaluation of the final format of the digital asset.<br><br>Documentation of the management of the digital asset.<br><br>Form of metadata selected (descriptive, administrative, structural or technical) – semantic management of the digital assets. | Usability analysis (website, application).<br><br>Search engine optimization.<br><br>Competitor benchmarking. |
| | Exploitation (incl. monetization) and provision of access to the digital content/objects in terms of functionality, technical feasibility and reliability (methods of access, authentication, | Sustainability and operability of the digital assets – operational maintenance of the digital assets<br><br>Advice the museum management on improvements. | |

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| | compatibility) and monetization.<br><br>Protection and safeguarding of the museum digital collection (copyright, watermarked content, cryptography). | | |
| **Main task/s** | • To develop, administer and improve on an ongoing basis the museum's digital preservation, management and exploitation plan for all born-digital or digitized cultural content/objects (aka digital assets).<br>• To develop, manage and optimize the museum's digital collection.<br>• To be aware of the national/international conventions or/and legal frameworks for the protection of digital cultural property.<br>• To collaborate with museum staff in facilitating their work with digital cultural assets.<br>• To develop a robust grounding within the museum in theories, methods and concepts of digital cultural asset management.<br>• To remain informed about new technologies and developments in ICT. | | |

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| **Environment** | Collaborates with technology suppliers and, within the museum, with the:<br>• Management<br>• Physical curation departments<br>• Communication department |
| **Role title** | **Interactive Cultural Experience Developer** |
| **Also known as** | Exhibit interactive designer |
| **Relevant professions** | Cultural informatics developer, Designer in digital cultural products, Digital exhibition planner |
| **Summary statement** | Designs, develops and implements innovative and interactive experiences involving digital content through physical and virtual interfaces and channels. |
| **Mission** | To contribute to an exhibition, by designing, developing and implementing interactive and multimedia installations that result in a meaningful experience for all types of audiences, and serve the transmission of the message of the exhibition. |

| | Accountable for | Responsible for | Contributor to |
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| **Deliverables** | Development of interactive and multimedia experience and their ICT requirements that are relevant to the exhibition's content.<br><br>Design of the scripts for the interactive experience in the exhibitions. | Description of the ICT requirements for each application.<br><br>Assuring links between on-site installations and online tools.<br><br>Development of accessibility tools for all types of visitors including those with special needs.<br><br>Development of interactive guidelines by evaluation and impact analysis. | Design of the exhibition together with the curators and the educational department.<br>Audience research. |

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| **Main task/s** | • To develop interactive installations and tools that are relevant to the content of the museum/exhibitions and that result in a meaningful experience to all types of audiences.<br>• To facilitate the relation between the different museum teams: curators, ICT, education, marketing, communication.<br>• To remain informed of new technological solutions.<br>• To guarantee that the interactive installations and tools fit well to the needs of all types of the audiences |
| **Environment** | Works with the exhibition curators and the educational service, with the goal of detecting interactive potential in the exhibition design. Works with the ICT team, acting as intermediary between exhibition design, ICT, education, marketing and communication. |
| **KPI's** | • Diversity of relevant means/supports/installations used to connect the audiences with the exhibition content<br>• Size and frequency of museum audience (traffic)<br>• Evaluation of the museum experience (qualitative and quantitative analysis) |

**Online Cultural Community Manager**

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| **Role title** | **Online Cultural Community Manager** |
| **Also known as** | New Media Manager, Digital Communication Manager |

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| **Relevant professions** | | | |
| **Summary statement** | Being aware of the needs of the online community, the Online Cultural Community Manager creates and manages an engaging, attractive, accessible and collaborative online community for all stakeholders (audiences, colleagues, educational institution representatives, Cultural Heritage professionals, donors, decision makers, etc.). S/He designs and implements guidelines for the museum's or other cultural institution's (hereinafter referred to only as museums) online communication strategy. | | |
| **Mission** | To create and manage a sense of community between the museum and its online stakeholders through a strategic communication plan that meets the objectives of the first and the needs of the latter. | | |
| **Deliverables** | **Accountable for** | **Responsible for** | **Contributor to** |
| | Management of content of all online channels | Research of the online community | Organisation of events and other PR activities. |

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| | (website, newsletter, social media, forums, blogs, Pinterest...) of the museum.<br><br>Online communication strategy and plan.<br><br>Quick and effective resolution of issues and reply to inquiries (feedback mechanism for the museum). | (background, motivation, etc.).<br><br>Online interaction with all stakeholders of the museum, according to the museum's protocol.<br><br>Promotion of community engagement online activities.<br><br>Analysis of user feedback. | (in order to create physical community);<br><br>Loyalty/maintenance of user community.<br><br>Overall communication strategy and plan of the museum. |
| **Main task/s** | • To design guidelines for the museum's online communication strategy.<br>• To research the characteristics of the online community.<br>• To create and add relevant curated content in all online channels of communication of the museum that meets its objectives and the needs of its stakeholders.<br>• To respond to and follow-up all online incoming inquiries.<br>• To moderate forums. | | |

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| | • To conduct web analytics and analyse them in order to assess whether objectives are met. |
| **Environment** | Usually works in tandem with the communication, marketing and PR team. Spends much of her/his time online, validating the effectiveness of the collaboration tools. |
| **KPI's** | • Stakeholder satisfaction and loyalty.<br>• Community engagement.<br>• Statistics/analytics of stakeholders' online activity.<br>• Museum's webpage ranking. |

| Cultural ICT Consultant |
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| A1. IS and Organizational Strategy Alignment | | | | | | |
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| **Module** | **Knowledge** | **Comprehension** | **Application** | **Analysis** | **Synthesis** | **Evaluation** |
| **IS solutions** | | Recognizes the impact of the two long IS solutions to the museum | Can apply two long term innovative IS solutions in the museum | Can determine the requirements for the proposed processes related to ICT services | Can present at least three long term innovative IS solutions for the museum | Can decide the best suited IS solution for the museum |
| | | | Can contribute to the museum's ICT strategy | Can analyze feasibility in terms of costs/ benefits | | |
| **Organization/ Museum** | Knows five museum's aims and organizational objectives | Can identify five museum needs | | Can analyse five long term museum needs | Can suggest two strategic IS policy decisions to the museum | Can optimize the organizational/ museum processes through ICT apps |
| | | Understands the museum benefits in deploying the new technologies | | | | |
| | | Understands the museum benefits in deploying the new technologies | | | | |
| **Stakeholders/audience** | Knows five audience needs | Can identify five audience needs | | Can analyse five long term audience needs | Can suggest two strategic IS policy decisions to the stakeholders | |
| **ICT strategy** | | | Can provide IS strategic leadership | Can analyse feasibility of cost/ benefit | Can develop an ICT strategy suitable for the museum | |
| | | | Can demonstrate high degree of interpersonal skills | | | |
| **Impact of ICT** | | Understands the impact of deploying new technologies in the museum | Can interpret five advantages of implementing ICT | Can analyse the effects of implementing ICT | | Can review the effects of ICT implementations |

| A2. Service Level Management | | | | | | |
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| **Module** | **Knowledge** | **Comprehension** | **Application** | **Analysis** | **Synthesis** | **Evaluation** |
| **Service Level Agreement** | Knows the definition of the Service Level Management | Can use three quality management techniques | Can establish three contracts for service performance levels | Can analyse the service provision records | Can formulate the SLAs based on an ICT strategy | Can select the appropriate quality management techniques |

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| | Knows the SLA documentation<br>Presents three elements forming the metrics of SLA | | Can apply the Service Level Agreements upon the museum ICT strategy | | | Can predict and measure the potential service disruptions |
| **Organization/ museum** | Defines five needs of the museum | Recognizes the museum's service performance levels | | | Can revise the SLAs according to the museum objectives | |
| **Stakeholders/ audience/ decision makers** | Defines five needs of stakeholders | | | | | |
| **ICT Standards** | Knows three ICT security standards<br>Knows three ICT quality standards | | Can operate the three ICT security standards<br>Can operate three ICT quality standards | | | |
| **Impact analysis** | Knows the impact of service level non – compliance on museum's performance | | | Can analyse the impact of service level non – compliance on museum's performance | | Can evaluate the impact of service level non – compliance on museum's performance |

| **A3. Business Plan Development** | | | | | | |
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| **Module** | **Knowledge** | **Comprehension** | **Application** | **Analysis** | **Synthesis** | **Evaluation** |
| **ICT and management** | Knows three emerging technologies (interactive/ multimedia installation/tool/ application)<br>Knows three present market needs | Can report three present market needs<br>Can identify four main milestones in a management plan | Can demonstrate three emerging technologies (interactive/ multimedia installation/tool/ application) | Provides analysis of the present market environment | Addresses the design and structure of a business plan | Evaluates the product features based on the business plan |
| **Organization/ museum** | | Can identify five museum needs and goals | Can use the web technology for the museum's benefit | Can analyse the museum's environment | Can make a SWOT analysis based on the museum's strategy | |

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| **Stakeholders/ audience/ users** | | Can identify five stakeholders needs and goals | Can record five requirements of stakeholders and users | | | |
| **Strategy (IS/ Online Communication/ Digital Asset Management)** | | Can conduct an IS/ online communication/ digital asset management strategy | Applies strategic thinking in exploitation of ICT | | Can manage the creation of the best suited IS strategy | Can recommend the best online communication plan |
| | | | Can apply three risk and opportunity assessment techniques | | Can explain how the online communication plan complement the overall communication strategy | Can evaluate the best digital asset management strategy |
| **Impact analysis** | | Can identify the risks and the opportunities of the plan | | Can analyse the impact of two business management plans on stakeholders | | |
| | | | | Can analyze the impact of functional/ technical changes on users | | |

| **A4. Product/ Service Planning** | | | | | | |
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| **Module** | **Knowledge** | **Comprehension** | **Application** | **Analysis** | **Synthesis** | **Evaluation** |
| **Planning** | Can label four basic decision – making methods | Can describe four basic decision – making methods | Can apply four basic decision – making methods | Can produce quality plans | Can generate optimization methods in the product/ service planning | Can evaluate basic decision – making methods |
| | Can define the different plans | | Can use optimization methods | | | |
| **Management Methodologies** | Knows two structured project management methodologies | | Can operate two project management methodologies | Can analyze two project management methodologies | Can formalize two project management methodologies | Can assess two project management methodologies |
| **Organization/ museum** | | Can identify five museum needs and goals | | | | |
| **Decision makers/users** | Knows five organization need analysis techniques | Can identify five decision makers/users needs and goals | | | Can manage adequate information for the decision makers | |
| | | Can identify the key users | | | | |

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| **Documentation** | Knows how to document a plan | Can classify complex documents | Can predict three documentation requirements for the digital asset management plan | Can identify three additional documentation requirements for the digital asset management plan | Can develop two digital asset management plans and the related documentation | |
| **Impact analysis** | | Can identify ten museum advantages and improvements of managing the change request process | | | | |

| **A7. Technology Trend Monitoring** | | | | | | |
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| **Module** | **Knowledge** | **Comprehension** | **Application** | **Analysis** | **Synthesis** | **Evaluation** |
| **Technology** | Can name three emerging technologies and their relevant applications | | | Can investigate three latest ICT technological developments<br>Can investigate three ICT technological developments in managing digital assets | Can propose three latest ICT technological developments | Can recommend three latest ICT technological developments |
| **Market** | | Can identify three vendors and providers of the ICT solutions | Can select two vendors/ providers of the most promising ICT solutions | | | Can evaluate and justify the proposed vendors/ providers of ICT solutions |
| **Information** | Knows the relevant sources of information (magazines, conferences, events, newsletters, opinion- leaders, | Can discriminate the two most promising sources of information | | | Can propose the two most promising sources of information | Can assess the two most promising sources of information in the strategic decision - making |

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| | on-line – forum etc.) | | | | | |
| **Museum** | Knows five museum goals and needs | Identifies five museum advantages and improvements of adopting ICT | Can relate the existing products with the museum's needs | Can illustrate expert guidance and advice to the museum teams | Can propose three options for strategic decisions | Can decide the best ICT for the museum |
| **Audience** | Knows five audience goals and needs | | | | | Can take strategic decisions predicting ICT solutions for audience- oriented processes |

| **A8. Sustainable Development** | | | | | | |
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| **Module** | **Knowledge** | **Comprehension** | **Application** | **Analysis** | **Synthesis** | **Evaluation** |
| **ICT energy consumption** | Knows the term "ICT energy consumption" | Can clarify the meaning of "ICT energy consumption" | Can manipulate "ICT energy consumption" | | | Can relate the ICT energy consumption with the ICT purchasing/ sales policy |
| **Sustainable IS Development** | Can name three eco responsibilities | Can predict two constraints to sustainability | Can apply two latest sustainable development strategies | Can examine the two sustainable development strategies | | |
| **Museum** | Knows five museum's goals | Can report two sustainable solutions for the museum | | Can connect the sustainable development strategies with the museum's goals | Can explain to the museum staff the deployment of sustainable development | |
| **Impact** | Knows the impact of ICT solution in the museum's strategy | | | | | |

| **A9. Innovating** | | | | | | |
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| **Module** | **Knowledge** | **Comprehension** | **Application** | **Analysis** | **Synthesis** | **Evaluation** |
| **Thinking** | Can present novel and open thinking | | Applies innovative thinking | Can identify four appropriate resources | Can generate two innovation processes techniques in the provision of solutions | Can assess the two innovation processes techniques in the provision of solutions |

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| | | | Can demonstrate revolutionary concepts | | Can devise two creative solutions for supporting the digital asset management plan | |
| **Technology** | Knows three latest technological applications | | Applies technological awareness | Can identify five advantages of adopting new technologies | | Can recommend innovative changes to the ICT strategy |
| **Business/ Market** | Knows three business and market trends | | | | | |
| **Museum** | Knows five museum's goals and needs | | Applies the technological solutions to the museum needs | | | Evaluates the technological solutions to the museum needs |
| **Audience/users** | Knows five audience goals and needs | | Applies the technological solutions to the audience needs | Can analyse different target groups of audience (needs/ characteristics) | | Evaluates the technological solutions to the audience needs |
| **Impact** | | | | Analyze the impact of functional/ technical changes on audience/ users | | |

| **C2 . Change Support** | | | | | | |
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| **Module** | **Knowledge** | **Comprehension** | **Application** | **Analysis** | **Synthesis** | **Evaluation** |
| **Technology and market** | Knows existing ICT application technical architecture | Can identify functional specifications of the information system | | Can analyse how business processes are integrated and their dependency upon ICT applications | | |
| | Knows at least three ICT solutions | Can identify the advantages of at least three information security management | | | | |
| **Organisation** | | | Can transfer information to ICT team | Can connect museum needs and ICT solutions | | |

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| **Communicatio** | Know at least three communication techniques | | Can apply at least three communication techniques with ICT staff members | | | |
| | Recognises the importance of preciseness | | Demonstrates a high degree of interpersonal skills | | | |
| **Impact Analysis** | Knows at least three management tools and technique | Can estimate actions to mitigate the impact of changes (training, documentation, new processes…) | | Can analyse the impact of functional/technical changes on users | Can manage change management tools and technique | |
| | | | | | Can plan evaluation, design and implementation methodologies | |

| **D1. Information Security Strategy Development** | | | | | | |
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| **Module** | **Knowledge** | **Comprehension** | **Application** | **Analysis** | **Synthesis** | **Evaluation** |
| **Strategy** | Knows the definition of information security strategy | | Can develop a formal information security strategy | | Can design the best information security strategy | Decide the best information security strategy |
| **Museum** | Knows the Information strategy of the museum | | | Analyses critically the museum's information security strategy | Makes the required changes in museum's information security strategy | Recommends the best information security strategy for the museum |
| **Standards/ best practices** | Knows the potentials and opportunities of standards | | Uses two standards and best practices for information security | | Can create through standards/ best practices, objectives for information, integrity, availability and data privacy | |
| **Mobile Technology** | Knows four threats in mobile security | | Can use different service models and operational translations | | | Can predict all external and internal threats |

| **D2. ICT Quality Strategy Development** | | | | | | |
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| **Module** | **Knowledge** | **Comprehension** | **Application** | **Analysis** | **Synthesis** | **Evaluation** |
| **Museum** | Knows four museum needs | Can decode the museum's culture | | | Can establish ICT quality in museum culture | Can match museum needs with the existing products |

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| | Can define three museum objectives | | | | Can establish online communication applications quality in museum culture | |
| **Audience** | Knows four audience needs | | | Can identify four audience expectations | Can manage to satisfy four audience expectations | Can match audience needs with the existing products |
| **Standards/ best practices** | Knows the potentials and opportunities of standards for ICT quality | Can indicate three ICT quality standards | Uses two standards and best practices for ICT quality | | Can create through standards/ best practices, objectives for service management, product and process quality | |
| | | Can identify two standards for online community applications/ tools/solutions | Applies two standards for online community applications/ tools/solutions | | | |
| **Communication** | Can list three online communication applications (existing & emerging) | | | Can identify the best online communication applications (existing & emerging) | | |
| **Impact analysis** | | | | Can analyse the impact of functional/ technical changes on museum and audience needs | | |

| **D3. Education and Training Provision** | | | | | | |
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| **Module** | **Knowledge** | **Comprehension** | **Application** | **Analysis** | **Synthesis** | **Evaluation** |
| **ICT training programs** | Defines two ICT training programs | Identifies five training needs | Can organize two ICT training programs | | Can propose two ICT training programs | Can assess the ICT training programs so to address change demand |
| | | | | | Can develop alternative training programs | Assesses the alternative training programs |
| **Skills** | Can enumerate five existing learning skills | Can identify learning skills gaps | | Can analyse systematically the skills gaps | Can formulate means to address the skills gaps | Can decide which skills are in-house and which out-sourced |
| **Museum staff** | Knows four museum needs | | Can organize training/ education schedules to meet | | Can design curricula and training programs to meet the | Can match museum needs with the existing products |

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| | Can identify three museum staff ICT education needs | | museum staff ICT education needs | | museum staff ICT education needs | |
| **Audience** | Knows four audience needs<br>Can identify three audience ICT education needs | | Can organize training/ education schedules to meet audience ICT education needs | | Can design curricula and training programs to meet the audience ICT education needs | Can match audience needs with the existing products |
| **Methodologies** | Can record two training needs analysis methodologies<br>Can name two competence and skill analysis methodologies | | | | | |

| **D4. Purchasing** | | | | | | |
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| **Module** | **Knowledge** | **Comprehension** | **Application** | **Analysis** | **Synthesis** | **Evaluation** |
| **Market** | Knows the current market for relevant products/services | Can select two suppliers/ products/services | Can select two products/ services that improve digital asset management | Can investigate the best suppliers/ products/services for the museum | | Can decide on the ultimate procurement policy |
| | | | Can select two products/ services that improve museum ICT strategy | Can examine the evaluation of process/ timeliness/cost/quality for products/ services | | |
| | | | Can use two benchmarking methods to find best tools/ systems | Can analyses received proposals/ offers | | |
| **Museum** | Knows four museum needs | | | | Can make recommendations on the best purchasing policy for the museum | Can match museum needs with the existing products |
| | Knows the museum purchasing policy/ budget | | | | Can manage museum purchasing budget | |
| **Audience** | Knows four audience needs | | | | | Can match audience needs with the existing products |

| D10. Information and Knowledge Management | | | | | | |
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| **Module** | **Knowledge** | **Comprehension** | **Application** | **Analysis** | **Synthesis** | **Evaluation** |
| **Process** | Knows two digital asset management processes | Can select the appropriate ICT devices/ tools for management of the digital assets (organization, discovery, preservation, access and use) | Can apply the appropriate ICT devices/ tools for management of the digital assets (organization, discovery, preservation, access and use) | Can analyse two digital asset management processes | Makes available the digital assets | Can justify the most suitable digital asset management process |
| | Knows two data mining methods | | Correlates digital assets and knowledge | Can apply two data mining methods | Can set up the most appropriate digital asset structures | |
| **Museum** | Knows four museum needs | | | | | Can recommend the most appropriate digital asset structure for the museum |
| **Audience** | Knows four audience needs/ requirements | | | | Can formalize the audience requirements | |
| **Information** | Knows two information distribution policies | Translate museum behavior into structured information | Can create the appropriate information structure | Applies two innovative solutions according to appropriate the information structure | Makes information available | |
| | | | Correlates information and knowledge | | | |

| D11. Needs Identification | | | | | | |
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| **Module** | **Knowledge** | **Comprehension** | **Application** | **Analysis** | **Synthesis** | **Evaluation** |
| **Technology and market** | Can look for and enumerate three ICT suitable for museums | Can describe three ICT and their application in museums | Can operate or apply three ICT in museums | Can analyze cost / benefit of three ICT in museums | Can present ICT solution cost / benefit | Can assess emerging ICT and their possible application in museum context |
| | | | | | Can present digital asset management solution cost / benefit | Can evaluate digital asset, interactive and multimedia installations/tools/applications using cost / benefit analysis |

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| **Organization** | | Can identify museum needs and goals, organizational chart, information, communication and control processes | | Can analyze three digital asset management processes.<br>Can analyze three online communication processes | Can formalize three digital asset management processes.<br>Can formalize three online communication processes | |
| **Stakeholders and users** | Knows five stakeholder and user need analysis techniques | Can identify ten museum key stakeholders and users. | Can demonstrate the application of three needs analysis techniques | Can analyze twenty requirements of museum key stakeholders and users | | Can select the appropriate needs analysis technique based on criteria |
| | | | Can record twenty requirements of museum key stakeholders and users | | | Can match user key stakeholder and user needs with existing ICT applications and products |
| **Communication** | Knows five communication techniques | | Can demonstrate the application of three communication techniques<br>Can present ICT solution cost / benefit<br>Can present digital asset management solution cost / benefit | Can analyze online communication processes | Can formalize online communication processes | Can select the appropriate communication technique based on criteria |

| **E.1 Forecast Development** | | | | | | |
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| **Module** | **Knowledge** | **Comprehension** | **Application** | **Analysis** | **Synthesis** | **Evaluation** |
| **Technology and market** | Knows the market size and relevant fluctuations | Can identify at least two methods to generate sales forecasts in relation to current market share | Can apply at least three large scale data analysis techniques (data mining) | Can connect museum and audience needs with products in the market | Can combine museum and audience needs with interactive and multimedia installations/tools/applications developed | |

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| | Knows accessibility of the market according to current conditions (e.g. government policies, emerging technologies, social and cultural trends, etc.) | Can interpret external research data and analyse information | Can apply new emerging technologies (e.g. distributed systems, virtualisation, mobility, data sets)<br>Can apply at least three methods to analyze information and business processes | | | |
| **Organisation** | Can interpret the extended supply chain operation<br>Knows museum's budget dedicated to ICT development | | | Can identify organisational processes and the way they are integrated and their dependency upon ICT applications<br>Can compare sales and production forecasts of forthcoming/newly launched ICT tools and solutions and analyse potential mismatches<br>Can connect museum and audience needs with products in the market | Can combine museum and audience needs with interactive and multimedia installations/tools/applications developed | |
| **Stakeholders and Users** | Knows museum and audience needs<br>Knows at least three museum and audience need analysis techniques | | | Can connect museum and audience needs with products in the market | | |
| **Communication** | | | | Can analyze in at least three different ways information and online communication processes | | |

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| **Impact Analysis** | | | Can apply at least three what-if techniques to produce realistic outlooks | Can identify organisational processes and the way they are integrated and their dependency upon ICT applications<br>Can identify four business advantages and improvements of adopting emerging technologies for the museum<br>Can analyze three future developments in business process and technology application<br>Can analyse feasibility in terms of costs and benefits | | |

| **E.3 Risk Management** | | | | | | |
|---|---|---|---|---|---|---|
| **Module** | **Knowledge** | **Comprehension** | **Application** | **Analysis** | **Synthesis** | **Evaluation** |
| **Technology and market** | Knows at least three evaluation, design and implementation methodologies | | | | | |
| **Organisation** | Can identify at least four corporate values and interests | | Can solve at least three conflicts | | | |
| **Communication** | | | Can interpret museum's risk analysis outcomes and risk management processes | | | |

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| | | | Can interpret museum's risk analysis outcomes and risk management processes applicable to interactive and multimedia installations/tools/applications | | | |
| | | | Can interpret museum's risk analysis outcomes and risk management processes to digital asset management | | | |
| **Risk Management** | Knows at least three good practices (methodologies) and standards in risk analysis | | Can apply at least three risk and opportunity assessment techniques | Can develop risk management plan to identify required preventative actions | | |
| | | | Can apply risk analysis taking into account corporate values and interests | Can design and document the processes for risk analysis and management | | |
| | | | Can calculate the return on investment compared to risk avoidance | Can design and document the processes for risk analysis and management applicable to interactive and multimedia installations/tools/applications | | |

| **E.4 Relationship Management** | | | | | | |
|---|---|---|---|---|---|---|
| **Module** | **Knowledge** | **Comprehension** | **Application** | **Analysis** | **Synthesis** | **Evaluation** |
| **Organisation/Museum** | Knows at least four museum processes including, decision making, budgets and management structure | Can identify at least four objectives of the museum | Can demonstrate empathy towards museum staff needs | Can determine museum's challenges and risks as long as they are relevant to digital asset management | Can establish realistic expectations to support development of mutual trust | |
| | | Can identify museums, staff | | Can examine ongoing commitments to ensure fulfillment | Can propose at least three solutions to meet museums, | |

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| | | and technology providers needs | | | staff and technology providers needs | |
| | | Can identify at least three challenges and risks of the museum | | | | |
| **Stakeholders /audience/users** | | Can identify at least three objectives of stakeholders | | Can determine stakeholders' objectives as long as they are relevant to digital asset management | Can examine and arrange resources to meet stakeholder requirements | |
| | | Can identify at least three potential win-win opportunities for user/audience and museum | | | Can propose at least three techniques to respond to audience needs and their motivation | |
| **Communication** | Can present good and bad news to avoid surprises | Can express him/herself also at least in one foreign language | Can demonstrate good interpersonal skills | | | |

| **E.5 Process Improvement** | | | | | | |
|---|---|---|---|---|---|---|
| **Module** | **Knowledge** | **Comprehension** | **Application** | **Analysis** | **Synthesis** | **Evaluation** |
| **Process** | Can show a high level of innovation and creativity | Can identify at least three research methods, benchmarks and measurements methods | | Can identify how museum's organisational processes are integrated and their dependency upon ICT applications | Can design (compose, decument and catalogue) essential processes and procedures | |
| | Know at least two techniques to resource optimisation and waste reduction | Can identify three evaluation, design and implementation methodologies | | | Can propose three process changes to facilitate and rationalise improvements | |
| | | Can explain existing internal processes | | | Can manage to implement two process changes | |

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| | | Can identify at least three relevant developments in ICT and their potential impact on processes | | | | |
| **Organisation/Museum** | | | | Can identify at least three organisational advantages and improvements of adopting emerging technologies for the museum | | |
| **Communication** | | | | | Can explain (defend, argue, justify) | |

| **E.6 ICT Quality Management** | | | | | | |
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| **Module** | **Knowledge** | **Comprehension** | **Application** | **Analysis** | **Synthesis** | **Evaluation** |
| **Standards/Best practices/Quality** | Knows which methods, tools and procedure are applied within the museum and where they should be applied | Understands regulations and standards in energy efficiency and e-waste | Can apply the IS internal quality audit approach | Can determine technologies and standards to be used during the deployment | Can manage quality audits | |
| | Knows three ICT quality standards | Understands the museum's enterprise architecture and internal standards | Can operate three ICT quality standards | Can analyse (monitor, understand and act upon) quality indicators | | |
| | | Can recognize the potential and opportunities of relevant standards and best practices | Can apply digital asset management quality standards | | | |
| | | Understands the importance of being ethical | | | | |

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| **Technology** | | | Can apply all the required technologies (web/ cloud/mobile) and environmental requirements | Can determine at least three technologies and standards to be used during the deployment | | |
| **Museum** | | Understands the museum's enterprise architecture and internal standards | Can illustrate how methods, tools and procedures can be applied to implement the museum's quality policy | | | |
| **Process** | | | Can select at least three measures to evaluate effectiveness and efficiency of the overall process | Can analyse process steps to identify at least three strengths and weaknesses | | |

| **E.7 Business Change Management** | | | | | | |
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| **Module** | **Knowledge** | **Comprehension** | **Application** | **Analysis** | **Synthesis** | **Evaluation** |
| **Business Process** | | | Can apply at least three evaluation, design and implementation methodologies | Can analyse information and online communication processes in at least three different ways | Can construct and document a plan for implementation of process enhancements | Can optimize museum business strategy and processes |
| | | | Can apply at least four project management standards and tools | Can connect how business processes are integrated and their dependency upon ICT applications | | Can interpret information and business processes in at least three different ways |
| | | | | Can connect how museum's online communication processes are integrated into the online marketing mix and dependent upon ICT applications | | Can evaluate costs and benefits of business changes |
| | | | | | | Can predict future developments in organisational process and technology application |

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| **ICT strategy** | Knows at least three digital strategies | | Can apply digital strategies | | Can propose at least two appropriate ICT solutions based upon benefit, risks and overall impact | |
| | | | | | Can propose at least three organisational advantages and improvements of adopting emerging technologies | |
| **Communication** | | | | | Can explain (defend, argue, justify) | |
| **Impact** | | | | Can analyse costs and benefits of museum's organisational changes | Can propose at least three appropriate ICT solutions based upon benefit, risks and overall impact | Can predict the impact of business changes on the museum and human resources |
| | | | | | Can revise and explain effects of implementations | Can predict the impact of business changes on legal issues |
| | | | | | | Can predict the impact of business changes related to online communication on the museum and human resources |
| | | | | | | Can predict organisatonal advantages and improvements of adopting emerging technologies |

| Cultural (ICT-enabled) Guide | | | | | | |
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| C1. User Support | | | | | | |
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| **Module** | **Knowledge** | **Comprehension** | **Application** | **Analysis** | **Synthesis** | **Evaluation** |
| **Technology and Market** | Know two software distribution methods | Can identify tree relevant ICT user application in museums | Can solve at least two online incidents following prescribed procedures | Can analyse at least three symptoms of user error or technical failure | Can combine software distribution methods to software fixes | |
| | Knows at least two sources of information for identifying potential solutions | Can deploy at least three support tools to systematically trace source of error or technical failure | | | | |
| | Knows two techniques to structure database and to organize content | | | | | |
| | Knows at least two ICT users applications | | | | | |
| **Organisation** | Knows at least two sources of information for identifying potential solutions | | | | | |
| **Stakeholders and Users** | Knows at least two techniques to interrogate users | Can identify user's errors | Can apply at least two techniques to solve minor incidents | | | |
| | Knows at least three techniques to record users feedback | | | | | |
| **Communication** | Knows communication techniques (such as defend, argue, justify) | Recognizes the importance of clear communication in at least two incidents of mis-communication with users | Can demonstrate the application of three communication techniques | | | |
| | Knows at least one foreign language | | Can provide clear instructions on how to progress in three different cases | | | |

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| **Impact Analysis** | | Can deploy at least three support tools to systematically trace source of error or technical failure | | Can analyse at least three symptoms of user error or technical failure | Can manage to code issues to support growth and integrity of online support tools | |

| **D11. Needs Identification** | | | | | | |
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| **Module** | **Knowledge** | **Comprehension** | **Application** | **Analysis** | **Synthesis** | **Evaluation** |
| **Technology and market** | Can look for and enumerate three ICT suitable for museums | Can describe three ICT and their application in museums | Can operate or apply three ICT in museums | Can analyze cost / benefit of three ICT in museums | Can present ICT solution cost / benefit | Can assess emerging ICT and their possible application in museum context |
| | | | | | Can present digital asset management solution cost / benefit | Can evaluate digital asset, interactive and multimedia installations/tools/applications using cost / benefit analysis |
| **Organization** | | Can identify museum needs and goals, organizational chart, information, communication and control processes | | Can analyze three digital asset management processes | Can formalize three digital asset management processes | |
| | | | | Can analyze three online communication processes | Can formalize three online communication processes | |
| **Stakeholders and users** | Knows five stakeholder and user need analysis techniques | Can identify ten museum key stakeholders and users | Can demonstrate the application of three needs analysis techniques | Can analyze twenty requirements of museum key stakeholders and users | | Can select the appropriate needs analysis technique based on criteria |
| | | | Can record twenty requirements of museum key stakeholders and users | | | Can match user key stakeholder and user needs with existing ICT applications and products |
| **Communication** | Knows five communication techniques | | Can demonstrate the application of three communication techniques | Can analyze online communication processes | Can formalize online communication processes | Can select the appropriate communication technique based on criteria |
| | | | Can present ICT solution cost / benefit | | | |

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| | | | Can present digital asset management solution cost / benefit | | | |

**Digital Cultural Asset Manager**

| **A3. Business Plan Development** | | | | | | |
|---|---|---|---|---|---|---|
| **Module** | **Knowledge** | **Comprehension** | **Application** | **Analysis** | **Synthesis** | **Evaluation** |
| ICT and management | Knows three emerging technologies (interactive/ multimedia installation/tool/ application) | Can report three present market needs | Can demonstrate three emerging technologies (interactive/ multimedia installation/tool/ application | Provides analysis of the present market environment | Addresses the design and structure of a business plan | Evaluates the product features based on the business plan |
| | Knows three present market needs | Can identify four main milestones in a management plan | | | | |
| **Organization/ museum** | | Can identify five museum needs and goals | Can use the web technology for the museum's benefit | Can analyse the museum's environment | Can make a SWOT analysis based on the museum's strategy | |
| **Stakeholders/ audience/ users** | | Can identify five stakeholders needs and goals | Can record five requirements of stakeholders and users | | | |
| **Strategy (IS/ Online Communication/ Digital Asset Management)** | | Can conduct an IS/ online communication/ digital asset management strategy | Applies strategic thinking in exploitation of ICT | | Can manage the creation of the best suited IS strategy | Can recommend the best online communication plan |
| | | | Can apply three risk and opportunity assessment techniques | | Can explain how the online communication plan complement the overall communication strategy | Can evaluate the best digital asset management strategy |
| **Impact analysis** | | Can identify the risks and the opportunities of the plan | | Can analyse the impact of two business management plans on stakeholders | | |
| | | | | Can analyze the impact of functional/ technical changes on users | | |

**A4. Product/ Service Planning**

| Module | Knowledge | Comprehension | Application | Analysis | Synthesis | Evaluation |
|---|---|---|---|---|---|---|
| Planning | Can label four basic decision – making methods | Can describe four basic decision – making methods | Can apply four basic decision – making methods | Can produce quality plans | Can generate optimization methods in the product/ service planning | Can evaluate basic decision – making methods |
| | Can define the different plans | | Can use optimization methods | | Can develop and maintain plans | |
| | | | | | Can manage the change request processes | |
| **Management Methodologies** | Knows two structured project management methodologies | | Can operate two project management methodologies | Can analyze two project management methodologies | Can formalize two project management methodologies | Can assess two project management methodologies |
| **Organization/ museum** | | Can identify five museum needs and goals | | | | |
| **Decision makers/users** | Knows five organization need analysis techniques | Can identify five decision makers/users needs and goals | | | Can manage adequate information for the decision makers | |
| | | Can identify the key users | | | | |
| **Documentation** | Knows how to document a plan | Can classify complex documents | Can predict three documentation | Can identify three additional documentation | Can develop two digital asset management plans and the related documentation | |
| | | | requirements for the digital asset management plan | requirements for the digital asset management plan | | |
| **Impact analysis** | | Can identify ten museum advantages and improvements of managing the change request process | | | | |

| **A7. Technology Trend Monitoring** | | | | | | |
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| **Module** | **Knowledge** | **Comprehension** | **Application** | **Analysis** | **Synthesis** | **Evaluation** |

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|---|---|---|---|---|---|---|
| **Technology** | Can name three emerging technologies and their relevant applications | | | Can investigate three latest ICT technological developments<br>Can investigate three ICT technological developments in managing digital assets | Can propose three latest ICT technological developments | Can recommend three latest ICT technological developments |
| **Market** | | Can identify three vendors and providers of the ICT solutions | Can select two vendors/ providers of the most promising ICT solutions | | | Can evaluate and justify the proposed vendors/ providers of ICT solutions |
| **Information** | Knows the relevant sources of information (magazines, conferences, events, newsletters, opinion- leaders, on-line – forum etc.) | Can discriminate the two most promising sources of information | | | Can propose the two most promising sources of information | Can assess the two most promising sources of information in the strategic decision - making |
| **Museum** | Knows five museum goals and needs | Identifies five museum advantages and improvements of adopting ICT | Can relate the existing products with the museum's needs | Can illustrate expert guidance and advice to the museum teams | Can propose three options for strategic decisions | Can decide the best ICT for the museum |
| **Audience** | Knows five audience goals and needs | | | | | Can take strategic decisions predicting ICT solutions for audience- oriented processes |

| **A9. Innovating** | | | | | | |
|---|---|---|---|---|---|---|
| **Module** | **Knowledge** | **Comprehension** | **Application** | **Analysis** | **Synthesis** | **Evaluation** |
| **Thinking** | Can present novel and open thinking | | Applies innovative thinking | Can identify four appropriate resources | Can generate two innovation processes techniques in the provision of solutions | Can assess the two innovation processes techniques in the provision of solutions |

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| | | | Can demonstrate revolutionary concepts | | Can devise two creative solutions for supporting the digital asset management plan | |
| **Technology** | Knows three latest technological applications | | Applies technological awareness | Can identify five advantages of adopting new technologies | | Can recommend innovative changes to the ICT strategy |
| **Business/ Market** | Knows three business and market trends | | | | | |
| **Museum** | Knows five museum's goals and needs | | Applies the technological solutions to the museum needs | | | Evaluates the technological solutions to the museum needs |
| **Audience/users** | Knows five audience goals and needs | | Applies the technological solutions to the audience needs | Can analyse different target groups of audience (needs/ characteristics) | | Evaluates the technological solutions to the audience needs |
| **Impact** | | | | Analyze the impact of functional/ technical changes on audience/ users | | |

| **B5. Documentation Production** | | | | | | |
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| **Module** | **Knowledge** | **Comprehension** | **Application** | **Analysis** | **Synthesis** | **Evaluation** |
| **Documentation** | Knows two standards in documentation | Can clarify the requirements of documentation | Applies standards to define document structure | | | |
| | Knows four objectives of documentation | | Can produce documents describing interactive products/ tools/ applications | | | |
| | | | Can produce documents describing products/ tools/ applications for online communication | | | |

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| | | | Can produce documents describing products/ tools/ applications used for digital asset management | | | |
| **Technical documents** | Knows different documents for designing/ developing and deploying products/ applications/ services | | | | | |
| **Tools** | Knows three tools for production/ editing and distribution of professional documents | | | | | |
| | Knows two tools for multimedia presentation tools | | | | | |
| **Technology** | Knows two museum ICT technologies | | | | | |

| **C3. Service Delivery** | | | | | | |
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| **Module** | **Knowledge** | **Comprehension** | **Application** | **Analysis** | **Synthesis** | **Evaluation** |
| **Technology and market** | Knows how to interpret digital asset management application requirements | Can identify at least three digital asset management applications delivery actions | Can examine digital asset management applications | Can analyze three practices and stardards in digital asset management applications | | |
| | Knows how to complete documentation used in digital asset management applications delivery | Can identify failures in digital asset management applications delivery actions | Can examine digital asset management infrastructure management | Can analyse at least three web, cloud and mobile technologies | | |
| | | | | Can examine digital asset management applications delivery provision | | |

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| **Organisation** | | Can interpret the organisation's digital asset management strategy | | Can identify at least three processes which comprise the organisation's digital asset management strategy | | |
| **Stakeholders and Users** | | | | Can determine manpower workload / requirements for efficient and cost effective service provision | | |
| **Communication** | | Can report digital asset management applications delivery provision to superiors | | | | |

| **C4. Change Support** | | | | | | |
|---|---|---|---|---|---|---|
| **Module** | **Knowledge** | **Comprehension** | **Application** | **Analysis** | **Synthesis** | **Evaluation** |
| **Technology and market** | | Can identify at least three evaluation, design and implementation methodologies<br>Can identify at least two applications and availability of diagnostic tools | | | | |
| **Organisation** | Knows the museum's overall ICT infrastructure and key components<br>Knows the museum's critical situation escalation procedures | | Can select digital asset management solution that fits the budget of the museum | Can critically analyse at lease three digital asset management solutions | | |

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| **Communication** | | Recognises the importance of preciseness | Can demonstrate the application of three communication techniques | Can identify the appropriate resources to deployed internally or externally to minimise outages | | |
| **Impact Analysis** | Knows at least three rist management techniques | Can identify the link between system infrastructure elements and impact of failure on related business processes | Can identify progress of issues throughout lifecycle | | Can propose solutions to at least two critical component failure | |
| | | | | | Can manage risk management audits | |
| | | | | | Can propose appropriate resources to maintenance activities, balancing cost and risk | |

| **D4. Purchasing** | | | | | | |
|---|---|---|---|---|---|---|
| **Module** | **Knowledge** | **Comprehension** | **Application** | **Analysis** | **Synthesis** | **Evaluation** |
| **Market** | Knows the current market for relevant products/services | Can select two suppliers/ products/services | Can select two products/ services that improve digital asset management | Can investigate the best suppliers/ products/services for the museum | | Can decide on the ultimate procurement policy |
| | | | Can select two products/ services that improve museum ICT strategy | Can examine the evaluation of process/ timeliness/cost/quality for products/ services | | |
| | | | Can use two benchmarking methods to find best tools/ systems | Can analyse received proposals/ offers | | |
| **Museum** | Knows four museum needs | | | | Can make recommendations on the best purchasing policy for the museum | Can match museum needs with the existing products |

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| | Knows the museum purchasing policy/ budget | | | | Can manage museum purchasing budget | |
| **Audience** | Knows four audience needs | | | | | Can match audience needs with the existing products |

| **D10. Information and Knowledge Management** | | | | | | |
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| **Module** | **Knowledge** | **Comprehension** | **Application** | **Analysis** | **Synthesis** | **Evaluation** |
| **Process** | Knows two digital asset management processes | Can select the appropriate ICT devices/ tools for management of the digital assets (organization, discovery, preservation, access and use | Can apply the appropriate ICT devices/ tools for management of the digital assets (organization, discovery, preservation, access and use) | Can analyse two digital asset management processes | Makes available the digital assets | Can justify the most suitable digital asset management process |
| | Knows two data mining methods | | Correlates digital assets and knowledge | Can apply two data mining methods | Can set up the most appropriate digital asset structures | |
| **Museum** | Knows four museum needs | | | | | Can recommend the most appropriate digital asset structure for the museum |
| **Audience** | Knows four audience needs/ requirements | | | | Can formalize the audience requirements | |
| **Information** | Knows two information distribution policies | Translate museum behavior into structured information | Can create the appropriate information structure | Applies two innovative solutions according to appropriate the information structure | Makes information available | |
| | | | Correlates information and knowledge | | | |

| **D11. Needs Identification** | | | | | | |
|---|---|---|---|---|---|---|
| **Module** | **Knowledge** | **Comprehension** | **Application** | **Analysis** | **Synthesis** | **Evaluation** |
| **Technology and market** | Can look for and enumerate three ICT suitable for museums | Can describe three ICT and their application in museums | Can operate or apply three ICT in museums | Can analyze cost / benefit of three ICT in museums | Can present ICT solution cost / benefit | Can assess emerging ICT and their possible application in museum context |

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|---|---|---|---|---|---|---|
| | | | | | Can present digital asset management solution cost / benefit | Can evaluate digital asset, interactive and multimedia installations/tools/applications using cost / benefit analysis |
| **Organization** | | Can identify museum needs and goals, organizational chart, information, communication and control processes | | Can analyze three digital asset management processes | Can formalize three digital asset management processes | |
| | | | | Can analyze three online communication processes | Can formalize three online communication processes | |
| **Stakeholders and users** | Knows five stakeholder and user need analysis techniques | Can identify ten museum key stakeholders and users. | Can demonstrate the application of three needs analysis techniques | Can analyze twenty requirements of museum key stakeholders and users | | Can select the appropriate needs analysis technique based on criteria |
| | | | Can record twenty requirements of museum key stakeholders and users | | | Can match user key stakeholder and user needs with existing ICT applications and products |
| **Communication** | Knows five communication techniques | | Can demonstrate the application of three communication techniques | Can analyze online communication processes | Can formalize online communication processes | Can select the appropriate communication technique based on criteria |
| | | | Can present ICT solution cost / benefit | | | |
| | | | Can present digital asset management solution cost / benefit | | | |
| **Impact analysis** | | Can identify ten museum advantages and improvements of adopting new | | Analyse the impact of functional/technical changes on key stakeholders and users | | Can evaluate digital asset, interactive and multimedia installations/tools/applications using cost / benefit analysis |

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| | | technologies based on user experience | | | | Can evaluate the impact of functional/technical changes on key stakeholders and users |

| **E.3 Risk Management** | | | | | | |
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| **Module** | **Knowledge** | **Comprehension** | **Application** | **Analysis** | **Synthesis** | **Evaluation** |
| **Technology and market** | Knows at least three evaluation, design and implementation methodologies | | | | | |
| **Organisation** | Can identify at least four corporate values and interests | | Can solve at least three conflicts | | | |
| **Communication** | | | Can interpret museum's risk analysis outcomes and risk management processes | | | |
| | | | Can interpret museum's risk analysis outcomes and risk management processes applicable to interactive and multimedia installations/tools/applications | | | |
| | | | Can interpret museum's risk analysis outcomes and risk management processes to digital asset management | | | |
| **Risk Management** | Knows at least three good practices (methodologies) | | Can apply at least three risk and opportunity assessment techniques | Can develop risk management plan to identify required preventative actions | | |

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| | and standards in risk analysis | | Can apply risk analysis taking into account corporate values and interests | Can design and document the processes for risk analysis and management | | |
| | | | Can calculate the return on investment compared to risk avoidance | Can design and document the processes for risk analysis and management applicable to interactive and multimedia installations/tools/applications | | |

| **E.4 Relationship Management** | | | | | | |
|---|---|---|---|---|---|---|
| **Module** | **Knowledge** | **Comprehension** | **Application** | **Analysis** | **Synthesis** | **Evaluation** |
| **Organisation/Museum** | Knows at least four museum processes including, decision making, budgets and management structure | Can identify at least four objectives of the museum | Can demonstrate empathy towards museum staff needs | Can determine museum's challenges and risks as long as they are relevant to digital asset management | Can establish realistic expectations to support development of mutual trust | |
| | | Can identify museums, staff and technology providers needs | | Can examine ongoing commitments to ensure fulfillment | Can propose at least three solutions to meet museums, staff and technology providers needs | |
| | | Can identify at least three challenges and risks of the museum | | | | |
| **Stakeholders/audience/users** | | Can identify at least three objectives of stakeholders | | Can determine stakeholders' objectives as long as they are relevant to digital asset management | Can examine and arrange resources to meet stakeholder requirements | |
| | | Can identify at least three potential win-win opportunities for user/audience and museum | | | Can propose at least three techniques to respond to audience needs and their motivation | |

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|---|---|---|---|---|---|---|
| **Communication** | Can present good and bad news to avoid surprises | Can express him/herself also at least in one foreign language | Can demonstrate good interpersonal skills | | Can explain (defend, argue, justify) | |

| **E.6 ICT Quality Management** | | | | | | |
|---|---|---|---|---|---|---|
| **Module** | **Knowledge** | **Comprehension** | **Application** | **Analysis** | **Synthesis** | **Evaluation** |
| **Standards/Best practices/Quality** | Knows which methods, tools and procedure are applied within the museum and where they should be applied | Understands regulations and standards in energy efficiency and e-waste | Can apply the IS internal quality audit approach | Can determine technologies and standards to be used during the deployment | Can manage quality audits | |
| | Knows three ICT quality standards | Understands the museum's enterprise architecture and internal standards | Can operate three ICT quality standards | Can analyse (monitor, understand and act upon) quality indicators | | |
| | | Can recognize the potential and opportunities of relevant standards and best practices | Can apply digital asset management quality standards | | | |
| | | Understands the importance of being ethical | | | | |
| **Technology** | | | Can apply all the required technologies (web/ cloud/mobile) and environmental requirements | Can determine at least three technologies and standards to be used during the deployment | | |
| **Museum** | | Understands the museum's enterprise architecture and internal standards | Can illustrate how methods, tools and procedures can be applied to implement the museum's quality policy | | | |

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| **Process** | | | Can select at least three measures to evaluate effectiveness and efficiency of the overall process | Can analyse process steps to identify at least three strengths and weaknesses | | |

| **Interactive Cultural Experience Developer** |
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| **A3. Business Plan Development** | | | | | | |
|---|---|---|---|---|---|---|
| **Module** | **Knowledge** | **Comprehension** | **Application** | **Analysis** | **Synthesis** | **Evaluation** |
| **ICT and management** | Knows three emerging technologies (interactive/ multimedia installation/tool/ application) | Can report three present market needs | Can demonstrate three emerging technologies (interactive/ multimedia installation/tool/ application) | Provides analysis of the present market environment | Addresses the design and structure of a business plan | Evaluates the product features based on the business plan |
| | Knows three present market needs | Can identify four main milestones in a management plan | | | | |
| **Organization/ museum** | | Can identify five museum needs and goals | Can use the web technology for the museum's benefit | Can analyse the museum's environment | Can make a SWOT analysis based on the museum's strategy | |
| **Stakeholders/ audience/ users** | | Can identify five stakeholders needs and goals | Can record five requirements of stakeholders and users | | | |
| **Strategy (IS/ Online Communication/ Digital Asset Management)** | | Can conduct an IS/ online communication/ digital asset management strategy | Applies strategic thinking in exploitation of ICT | | Can manage the creation of the best suited IS strategy | Can recommend the best online communication plan |
| | | | Can apply three risk and opportunity assessment techniques | | Can explain how the online communication plan complement the overall communication strategy | Can evaluate the best digital asset management strategy |

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| **Impact analysis** | | Can identify the risks and the opportunities of the plan | | Can analyse the impact of two business management plans on stakeholders<br>Can analyze the impact of functional/ technical changes on users | | |

| **A4. Product/ Service Planning** | | | | | | |
|---|---|---|---|---|---|---|
| **Module** | **Knowledge** | **Comprehension** | **Application** | **Analysis** | **Synthesis** | **Evaluation** |
| **Planning** | Can label four basic decision – making methods<br>Can define the different plans | Can describe four basic decision – making methods | Can apply four basic decision – making methods<br>Can use optimization methods | Can produce quality plans | Can generate optimization methods in the product/ service planning<br>Can develop and maintain plans<br>Can manage the change request processes | Can evaluate basic decision – making methods |
| **Management Methodologies** | Knows two structured project management methodologies | | Can operate two project management methodologies | Can analyze two project management methodologies | Can formalize two project management methodologies | Can assess two project management methodologies |
| **Organization/ museum** | | Can identify five museum needs and goals | | | | |
| **Decision makers/users** | Knows five organization need analysis techniques | Can identify five decision makers/users needs and goals<br>Can identify the key users | | | Can manage adequate information for the decision makers | |
| **Documentation** | Knows how to document a plan | Can classify complex documents | Can predict three documentation requirements for the digital asset management plan | Can identify three additional documentation requirements for the digital asset management plan | Can develop two digital asset management plans and the related documentation | |
| **Impact analysis** | | Can identify ten museum advantages and improvements of managing the | | | | |

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| | | change request process | | | | |

| A6. Application Design | | | | | | |
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| **Module** | **Knowledge** | **Comprehension** | **Application** | **Analysis** | **Synthesis** | **Evaluation** |
| **ICT and Designing** | Knows how to design data structures<br>Knows the general functional specifications in design<br>Can outline three software developments methods and their rationale<br>Can name two mobile technologies | Defines four requirements for designing | Organizes the overall planning of the design | | Integrates all aspects needed in designing (interoperability, usability, security) | Assesses the models designed based on a common framework |
| **Museum** | Knows five museum needs | Associates the application with the museum needs | | | | |
| **Audience** | Knows five audience needs | Associates the application with the museum needs | | | | |
| **Techniques** | Knows two need analysis techniques | Can recognize threat modeling techniques | Applies three different application development methods<br>Selects appropriate technical options for optimization | | | Evaluates the suitability of the three application methods |
| **Communication** | | | | | Establishes systematic communication with the users | |
| **Impact** | | | | Can analyze the impact of functional/ technical changes on audience | | |

| A7. Technology Trend Monitoring | | | | | | |
|---|---|---|---|---|---|---|
| **Module** | **Knowledge** | **Comprehension** | **Application** | **Analysis** | **Synthesis** | **Evaluation** |
| **Technology** | Can name three emerging technologies and their relevant applications | | | Can investigate three latest ICT technological developments<br>Can investigate three ICT technological developments in managing digital assets | Can propose three latest ICT technological developments | Can recommend three latest ICT technological developments |
| **Market** | | Can identify three vendors and providers of the ICT solutions | Can select two vendors/ providers of the most promising ICT solutions | | | Can evaluate and justify the proposed vendors/ providers of ICT solutions |
| **Information** | Knows the relevant sources of information (magazines, conferences, events, newsletters, opinion- leaders, on-line – forum etc.) | Can discriminate the two most promising sources of information | | | Can propose the two most promising sources of information | Can assess the two most promising sources of information in the strategic decision - making |
| **Museum** | Knows five museum goals and needs | Identifies five museum advantages and improvements of adopting ICT | Can relate the existing products with the museum's needs | Can illustrate expert guidance and advice to the museum teams | Can propose three options for strategic decisions | Can decide the best ICT for the museum |
| **Audience** | Knows five audience goals and needs | | | | | Can take strategic decisions predicting ICT solutions for audience- oriented processes |

| A9. Innovating | | | | | | |
|---|---|---|---|---|---|---|
| **Module** | **Knowledge** | **Comprehension** | **Application** | **Analysis** | **Synthesis** | **Evaluation** |
| **Thinking** | Can present novel and open thinking | | Applies innovative thinking | Can identify four appropriate resources | Can generate two innovation processes techniques in the provision of solutions | Can assess the two innovation processes techniques in the |

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| | | | Can demonstrate revolutionary concepts | | Can devise two creative solutions for supporting the digital asset management plan | provision of solutions |
| **Technology** | Knows three latest technological applications | | Applies technological awareness | Can identify five advantages of adopting new technologies | | Can recommend innovative changes to the ICT strategy |
| **Business/ Market** | Knows three business and market trends | | | | | |
| **Museum** | Knows five museum's goals and needs | | Applies the technological solutions to the museum needs | | | Evaluates the technological solutions to the museum needs |
| **Audience/users** | Knows five audience goals and needs | | Applies the technological solutions to the audience needs | Can analyse different target groups of audience (needs/ characteristics) | | Evaluates the technological solutions to the audience needs |
| **Impact** | | | | Analyze the impact of functional/ technical changes on audience/ users | | |

| **B1. Application Development** | | | | | | |
|---|---|---|---|---|---|---|
| **Module** | **Knowledge** | **Comprehension** | **Application** | **Analysis** | **Synthesis** | **Evaluation** |
| **Applications** | Can name three applications<br>Can design applications | Can develop systemically three applications | Can operate three applications | Can optimize application development, maintenance, performance | | |
| **Software** | Knows the appropriate software programs<br>Knows two power consumption models | | Applies software architectures<br>Can operate systems & software platforms | | | |
| **Hardware** | Knows hardware tools/components/architectures | | Can apply hardware tools/components/architectures | | | |
| **Museum** | Knows five needs of the museum staff | | | | | |

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| **Audience** | Knows all types of audiences | | Can develop documentation applications according to audience needs | | | |
| | Knows five audience needs | | Can operate validation tests with the audience representatives | | | |
| **Documentation** | Can document applications | | | | | |

| **B2. Component Integration** | | | | | | |
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| **Module** | **Knowledge** | **Comprehension** | **Application** | **Analysis** | **Synthesis** | **Evaluation** |
| **System** | Knows the hardware/ software/ sub system components | | Can employ integration of hardware/ software/ sub system components into an existing/new system | | | |
| | | | Can examine the system's capacity and performance | | | |
| **Documentation** | | | Can employ documentation on all activities | | | |
| **Integration** | Knows four integration testing techniques | | Operates integration techniques | | Can create an integration process for the entire integration cycle | |
| **Audience** | Knows five audience needs | | Can match the audience needs with existing products | | | |
| **Impact** | Knows the impact of the system integration on the organization | | | | | |

| **B3. Testing** | | | | | | |
|---|---|---|---|---|---|---|
| **Module** | **Knowledge** | **Comprehension** | **Application** | **Analysis** | **Synthesis** | **Evaluation** |
| **Test programs** | Knows how to organize test programs | | Can design tests of interactive and multimedia installations/ tools/applications | | | |

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| | | | Can prepare and conduct tests of interactive and multimedia installations/ tools/applications | | | |
| **Documentation** | | Can report tests and results | Can demonstrate documentation of tests and results to users/ designers/ maintainers | | | |
| **Test Process** | Knows different sorts of tests | | Can develop the management & evaluation of test process | | | |

| **B4. Solution Deployment** | | | | | | |
|---|---|---|---|---|---|---|
| **Module** | **Knowledge** | **Comprehension** | **Application** | **Analysis** | **Synthesis** | **Evaluation** |
| **Technology** | Knows four technologies & standards during implementation | Can select a technological solution that will result in a meaningful interactive experience | Can apply all the required technologies (web/cloud/mobile)<br>Can operate implementation of solutions | | | |
| **System** | Can identify the components of a system | | Can demonstrate accountability for solution provision<br>Can solve the interoperability of a system<br>Can operate under guidance and in accordance with detailed instructions | | | |
| **Documentation** | Can record all relevant information (equipment addresses, configuration, performance data) | | Can operate documentation of all relevant information (equipment addresses, configuration, performance data) | | | |

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| **Communication** | | | Illustrates comprehensive communication with stakeholders | | | |
| | | | Can show the transition of the message of a specific museum exhibition/collection | | | |

| **B5. Documentation Production** | | | | | | |
|---|---|---|---|---|---|---|
| **Module** | **Knowledge** | **Comprehension** | **Application** | **Analysis** | **Synthesis** | **Evaluation** |
| **Documentation** | Knows two standards in documentation | Can clarify the requirements of documentation | Applies standards to define document structure | | | |
| | Knows four objectives of documentation | | Can produce documents describing interactive products/ tools/ applications | | | |
| | | | Can produce documents describing products/ tools/ applications for online communication | | | |
| | | | Can produce documents describing products/ tools/ applications used for digital asset management | | | |
| **Technical documents** | Knows different documents for designing/ developing and deploying products/ applications/ services | | | | | |
| **Tools** | Knows three tools for production/ editing and distribution of professional documents | | Applies tools for production/ editing and distribution of professional documents | | | |

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| | Knows two tools for multimedia presentation tools | | | | | |
| **Technology** | Knows two museum ICT technologies | | | | | |

| **C1. User Support** | | | | | | |
|---|---|---|---|---|---|---|
| **Module** | **Knowledge** | **Comprehension** | **Application** | **Analysis** | **Synthesis** | **Evaluation** |
| **Technology and Market** | Know two software distribution methods | Can identify tree relevant ICT user application in museums | Can solve at least two online incidents following prescribed procedures | Can analyse at least three symptoms of user error or technical failure | Can combine software distribution methods to software fixes | |
| | Knows at least two sources of information for identifying potential solutions | Can deploy at least three support tools to systematically trace source of error or technical failure | | | | |
| | Knows two techniques to structure database and to organize content | | | | | |
| | Knows at least two ICT users applications | | | | | |
| **Organisation** | Knows at least two sources of information for identifying potential solutions | | | | | |
| **Stakeholders and Users** | Knows at least two techniques to interrogate users | Can identify user's errors | Can apply at least two techniques to solve minor incidents | | | |
| | Knows at least three techniques to record users feedback | | | | | |
| **Communication** | Knows communication techniques (such as defend, argue, justify) | Recognizes the importance of clear communication in at least two incidents of mis-communication with users | Can demonstrate the application of three communication techniques | | | |
| | Knows at least one foreign language | | Can provide clear instructions on how to progress in three different cases | | | |

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| **Impact Analysis** | | Can deploy at least three support tools to systematically trace source of error or technical failure | | Can analyse at least three symptoms of user error or technical failure | Can manage to code issues to support growth and integrity of online support tools | |

| **C2. Change Support** | | | | | | |
|---|---|---|---|---|---|---|
| **Module** | **Knowledge** | **Comprehension** | **Application** | **Analysis** | **Synthesis** | **Evaluation** |
| **Technology and market** | Knows existing ICT application technical architecture | Can identify functional specifications of the information system | | Can analyse how business processes are integrated and their dependency upon ICT applications | | |
| | Knows at least three ICT solutions | Can identify the advantages of at least three information security management | | | | |
| **Organisation** | | | Can transfer information to ICT team | Can connect museum needs and ICT solutions | | |
| **Communication** | Know at least three communication techniques | | Can apply at least three communication techniques with ICT staff members | | | |
| | Recognises the importance of preciseness | | Demonstrates a high degree of interpersonal skills | | | |
| **Impact Analysis** | Knows at least three management tools and technique | Can estimate actions to mitigate the impact of changes (training, documentation, new processes…) | | Can analyse the impact of functional/technical changes on users | Can manage change management tools and technique | |
| | | | | | Can plan evaluation, design and implementation methodologies | |

| **C4. Change Support** |
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| Module | Knowledge | Comprehension | Application | Analysis | Synthesis | Evaluation |
|---|---|---|---|---|---|---|
| **Technology and market** | | Can identify at least three evaluation, design and implementation methodologies<br>Can identify at least two applications and availability of diagnostic tools | | | | |
| **Organisation** | Knows the museum's overall ICT infrastructure and key components<br>Knows the museum's reporting procedures<br>Knows the museum's critical situation escalation procedures | | Can select digital asset management solution that fits the budget of the museum | Can critically analyse at least three digital asset management solutions | | |
| **Communication** | | Recognises the importance of preciseness | Can demonstrate the application of three communication techniques | Can identify the appropriate resources to deployed internally or externally to minimise outages | | |
| **Impact Analysis** | Knows at least three rist management techniques | Can identify the link between system infrastructure elements and impact of failure on related business processes | Can identify progress of issues throughout lifecycle | | Can propose solutions to at least two critical component failure<br>Can manage risk management audits<br>Can propose appropriate resources to maintenance activities, balancing cost and risk | |

| **D11. Needs Identification** | | | | | | |
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| **Module** | **Knowledge** | **Comprehension** | **Application** | **Analysis** | **Synthesis** | **Evaluation** |

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| **Technology and market** | Can look for and enumerate three ICT suitable for museums | Can describe three ICT and their application in museums | Can operate or apply three ICT in museums | Can analyze cost / benefit of three ICT in museums | Can present ICT solution cost / benefit | Can assess emerging ICT and their possible application in museum context |
| | | | | | Can present digital asset management solution cost / benefit | Can evaluate digital asset, interactive and multimedia installations/tools/applications using cost / benefit analysis |
| **Organization** | | Can identify museum needs and goals, organizational chart, information, communication and control processes | | Can analyze three digital asset management processes. | Can formalize three digital asset management processes. | |
| | | | | Can analyze three online communication processes | Can formalize three online communication processes | |
| **Stakeholders and users** | Knows five stakeholder and user need analysis techniques | Can identify ten museum key stakeholders and users. | Can demonstrate the application of three needs analysis techniques | Can analyze twenty requirements of museum key stakeholders and users | | Can select the appropriate needs analysis technique based on criteria |
| | | | Can record twenty requirements of museum key stakeholders and users | | | Can match user key stakeholder and user needs with existing ICT applications and products |
| **Communication** | Knows five communication techniques | | Can demonstrate the application of three communication techniques | Can analyze online communication processes | Can formalize online communication processes | Can select the appropriate communication technique based on criteria |
| | | | Can present ICT solution cost / benefit | | | |
| | | | Can present digital asset management solution cost / benefit | | | |

| **E.1 Forecast Development** | | | | | | |
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| **Module** | **Knowledge** | **Comprehension** | **Application** | **Analysis** | **Synthesis** | **Evaluation** |

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| **Technology and market** | Knows the market size and relevant fluctuations | Can identify at least two methods to generate sales forecasts in relation to current market share | Can apply at least three large scale data analysis techniques (data mining) | Can connect museum and audience needs with products in the market | Can combine museum and audience needs with interactive and multimedia installations/tools/applications developed | |
| | Knows accessibility of the market according to current conditions (e.g. government policies, emerging technologies, social and cultural trends, etc.) | Can interpret external research data and analyse information | Can apply new emerging technologies (e.g. distributed systems, virtualisation, mobility, data sets) | | | |
| | | | Can apply at least three methods to analyze information and business processes | | | |
| **Organisation** | Can interpret the extended supply chain operation | | | Can identify organisational processes and the way they are integrated and their dependency upon ICT applications | Can combine museum and audience needs with interactive and multimedia installations/tools/applications developed | |
| | Knows museum's budget dedicated to ICT development | | | Can compare sales and production forecasts of forthcoming/newly launched ICT tools and solutions and analyse potential mismatches | | |
| | | | | Can connect museum and audience needs with products in the market | | |
| **Stakeholders and Users** | Knows museum and audience needs | | | Can connect museum and audience needs with products in the market | | |
| | Knows at least three museum and audience need analysis techniques | | | | | |

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| **Communication** | | | | Can analyze in at least three different ways information and online communication processes | | |
| **Impact Analysis** | | | Can apply at least three what-if techniques to produce realistic outlooks | Can identify organisational processes and the way they are integrated and their dependency upon ICT applications | | |
| | | | | Can identify four business advantages and improvements of adopting emerging technologies for the museum | | |
| | | | | Can analyze three future developments in business process and technology application | | |
| | | | | Can analyse feasibility in terms of costs and benefits | | |

| **E.3 Risk Management** | | | | | | |
|---|---|---|---|---|---|---|
| **Module** | **Knowledge** | **Comprehension** | **Application** | **Analysis** | **Synthesis** | **Evaluation** |
| **Technology and market** | Knows at least three evaluation, design and implementation methodologies | | | | | |
| **Organisation** | Can identify at least four corporate values and interests | | Can solve at least three conflicts | | | |
| **Communication** | | | Can interpret museum's risk analysis outcomes and risk management processes | | | |

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| | | | Can interpret museum's risk analysis outcomes and risk management processes | | | |
| | | | applicable to interactive and multimedia installations/tools/applications | | | |
| | | | Can interpret museum's risk analysis outcomes and risk management processes to digital asset management | | | |
| **Risk Management** | Knows at least three good practices (methodologies) and standards in risk analysis | | Can apply at least three risk and opportunity assessment techniques | Can develop risk management plan to identify required preventative actions | | |
| | | | Can apply risk analysis taking into account corporate values and interests | Can design and document the processes for risk analysis and management | | |
| | | | Can calculate the return on investment compared to risk avoidance | Can design and document the processes for risk analysis and management applicable to interactive and multimedia installations/tools/applications | | |

| **E.4 Relationship Management** | | | | | | |
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| **Module** | **Knowledge** | **Comprehension** | **Application** | **Analysis** | **Synthesis** | **Evaluation** |
| **Organisation/Museum** | Knows at least four museum processes including, decision making, budgets and management structure | Can identify at least four objectives of the museum | Can demonstrate empathy towards museum staff needs | Can determine museum's challenges and risks as long as they are relevant to digital asset management | Can establish realistic expectations to support development of mutual trust | |
| | | Can identify museums, staff | | Can examine ongoing commitments to ensure fulfillment | Can propose at least three solutions to meet museums, | |

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| | | and technology providers needs | | | staff and technology providers needs | |
| | | Can identify at least three challenges and risks of the museum | | | | |
| **Stakeholders/audience/users** | | Can identify at least three objectives of stakeholders | | Can determine stakeholders' objectives as long as they are relevant to digital asset management | Can examine and arrange resources to meet stakeholder requirements | |
| | | Can identify at least three potential win-win opportunities for user/audience and museum | | | Can propose at least three techniques to respond to audience needs and their motivation | |
| **Communication** | Can present good and bad news to avoid surprises | Can express him/herself also at least in one foreign language | Can demonstrate good interpersonal skills | | Can explain (defend, argue, justify) | |

| **E.6 ICT Quality Management** | | | | | | |
|---|---|---|---|---|---|---|
| **Module** | **Knowledge** | **Comprehension** | **Application** | **Analysis** | **Synthesis** | **Evaluation** |
| **Standards/Best practices/Quality** | Knows which methods, tools and procedure are applied within the museum and where they should be applied | Understands regulations and standards in energy efficiency and e-waste | Can apply the IS internal quality audit approach | Can determine technologies and standards to be used during the deployment | Can manage quality audits | |
| | Knows three ICT quality standards | Understands the museum's enterprise architecture and internal standards | Can operate three ICT quality standards | Can analyse (monitor, understand and act upon) quality indicators | | |

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| | | Can recognize the potential and opportunities of relevant standards and best practices<br>Understands the importance of being ethical | Can apply digital asset management quality standards | | | |
| **Technology** | | | Can apply all the required technologies (web/ cloud/mobile) and environmental requirements | Can determine at least three technologies and standards to be used during the deployment | | |
| **Museum** | | Understands the museum's enterprise architecture and internal standards | Can illustrate how methods, tools and procedures can be applied to implement the museum's quality policy | | | |
| **Process** | | | Can select at least three measures to evaluate effectiveness and efficiency of the overall process | Can analyse process steps to identify at least three strengths and weaknesses | | |

| **Online Cultural Community Manager** |
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| **A3. Business Plan Development** | | | | | | |
|---|---|---|---|---|---|---|
| **Module** | **Knowledge** | **Comprehension** | **Application** | **Analysis** | **Synthesis** | **Evaluation** |
| **ICT and management** | Knows three emerging technologies (interactive/ multimedia installation/tool/ application) | Can report three present market needs | Can demonstrate three emerging technologies (interactive/ multimedia | Provides analysis of the present market environment | Addresses the design and structure of a business plan | Evaluates the product features based on the business plan |

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| | Knows three present market needs | Can identify four main milestones in a management plan | installation/tool/ application) | | | |
| **Organization/ museum** | | Can identify five museum needs and goals | Can use the web technology for the museum's benefit | Can analyse the museum's environment | Can make a SWOT analysis based on the museum's strategy | |
| **Stakeholders/ audience/ users** | | Can identify five stakeholders needs and goals | Can record five requirements of stakeholders and users | | | |
| **Strategy (IS/ Online Communication/ Digital Asset Management)** | | Can conduct an IS/ online communication/ digital asset management strategy | Applies strategic thinking in exploitation of ICT | | Can manage the creation of the best suited IS strategy | Can recommend the best online communication plan |
| | | | Can apply three risk and opportunity assessment techniques | | Can explain how the online communication plan complement the overall communication strategy | Can evaluate the best digital asset management strategy |
| **Impact analysis** | | Can identify the risks and the opportunities of the plan | | Can analyse the impact of two business management plans on stakeholders | | |
| | | | | Can analyze the impact of functional/ technical changes on users | | |

| **A4. Product/ Service Planning** | | | | | | |
|---|---|---|---|---|---|---|
| **Module** | **Knowledge** | **Comprehension** | **Application** | **Analysis** | **Synthesis** | **Evaluation** |
| Planning | Can label four basic decision – making methods | Can describe four basic decision – making methods | Can apply four basic decision – making methods | Can produce quality plans | Can generate optimization methods in the product/ service planning | Can evaluate basic decision – making methods |
| | Can define the different plans | | Can use optimization methods | | Can develop and maintain plans | |
| | | | | | Can manage the change request processes | |
| **Management Methodologies** | Knows two structured project management methodologies | | Can operate two project | Can analyze two project management methodologies | Can formalize two project management methodologies | Can assess two project management methodologies |

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| | | | management methodologies | | | |
| **Organization/ museum** | | Can identify five museum needs and goals | | | | |
| **Decision makers/users** | Knows five organization need analysis techniques | Can identify five decision makers/users needs and goals<br>Can identify the key users | | | Can manage adequate information for the decision makers | |
| **Documentation** | Knows how to document a plan | Can classify complex documents | Can predict three documentation requirements for the digital asset management plan | Can identify three additional documentation requirements for the digital asset management plan | Can develop two digital asset management plans and the related documentation | |
| **Impact analysis** | | Can identify ten museum advantages and improvements of managing the change request process | | | | |

| **A7. Technology Trend Monitoring** | | | | | | |
|---|---|---|---|---|---|---|
| **Module** | **Knowledge** | **Comprehension** | **Application** | **Analysis** | **Synthesis** | **Evaluation** |
| **Technology** | Can name three emerging technologies and their relevant applications | | | Can investigate three latest ICT technological developments<br>Can investigate three ICT technological developments in managing digital assets | Can propose three latest ICT technological developments | Can recommend three latest ICT technological developments |
| **Market** | | Can identify three vendors and providers of the ICT solutions | Can select two vendors/ providers of the most promising ICT solutions | | | Can evaluate and justify the proposed vendors/ providers of ICT solutions |

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| **Information** | Knows the relevant sources of information (magazines, conferences, events, newsletters, opinion-leaders, on-line – forum etc.) | Can discriminate the two most promising sources of information | | | Can propose the two most promising sources of information | Can assess the two most promising sources of information in the strategic decision - making |
| **Museum** | Knows five museum goals and needs | Identifies five museum advantages and improvements of adopting ICT | Can relate the existing products with the museum's needs | Can illustrate expert guidance and advice to the museum teams | Can propose three options for strategic decisions | Can decide the best ICT for the museum |
| **Audience** | Knows five audience goals and needs | | | | | Can take strategic decisions predicting ICT solutions for audience- oriented processes |

| **A9. Innovating** | | | | | | |
|---|---|---|---|---|---|---|
| **Module** | **Knowledge** | **Comprehension** | **Application** | **Analysis** | **Synthesis** | **Evaluation** |
| **Thinking** | Can present novel and open thinking | | Applies innovative thinking | Can identify four appropriate resources | Can generate two innovation processes techniques in the provision of solutions | Can assess the two innovation processes techniques in the provision of solutions |
| | | | Can demonstrate revolutionary concepts | | Can devise two creative solutions for supporting the digital asset management plan | |
| **Technology** | Knows three latest technological applications | | Applies technological awareness | Can identify five advantages of adopting new technologies | | Can recommend innovative changes to the ICT strategy |
| **Business/ Market** | Knows three business and market trends | | | | | |
| **Museum** | Knows five museum's goals and needs | | Applies the technological solutions to the museum needs | | | Evaluates the technological solutions to the museum needs |
| **Audience/users** | Knows five audience goals and needs | | Applies the technological solutions to the audience needs | Can analyse different target groups of audience (needs/ characteristics) | | Evaluates the technological solutions to the audience needs |

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| **Impact** | | | | Analyze the impact of functional/ technical changes on audience/ users | | |

| **B5. Documentation Production** | | | | | | |
|---|---|---|---|---|---|---|
| **Module** | **Knowledge** | **Comprehension** | **Application** | **Analysis** | **Synthesis** | **Evaluation** |
| **Documentation** | Knows two standards in documentation | Can clarify the requirements of documentation | Applies standards to define document structure | | | |
| | Knows four objectives of documentation | | Can produce documents describing interactive products/ tools/ applications | | | |
| | | | Can produce documents describing products/ tools/ applications for online communication | | | |
| | | | Can produce documents describing products/ tools/ applications used for digital asset management | | | |
| **Technical documents** | Knows different documents for designing/ developing and deploying products/ applications/ services | | | | | |
| **Tools** | Knows three tools | | Applies tools for production/ editing and distribution of | | | |
| | for production/ editing and distribution of professional documents | | | | | |

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| | Knows two tools for multimedia presentation tools | | professional documents | | | |
| **Technology** | Knows two museum ICT technologies | | | | | |

| **C1. User Support** | | | | | | |
|---|---|---|---|---|---|---|
| **Module** | **Knowledge** | **Comprehension** | **Application** | **Analysis** | **Synthesis** | **Evaluation** |
| **Technology and Market** | Know two software distribution methods | Can identify tree relevant ICT user application in museums | Can solve at least two online incidents following prescribed procedures | Can analyse at least three symptoms of user error or technical failure | Can combine software distribution methods to software fixes | |
| | Knows at least two sources of information for identifying potential solutions | Can deploy at least three support tools to systematically trace source of error or technical failure | | | | |
| | Knows two techniques to structure database and to organize content | | | | | |
| | Knows at least two ICT users applications | | | | | |
| **Organisation** | Knows at least two sources of information for identifying potential solutions | | | | | |
| **Stakeholders and Users** | Knows at least two techniques to interrogate users | Can identify user's errors | Can apply at least two techniques to solve minor incidents | | | |
| | Knows at least three techniques to record users feedback | | | | | |
| **Communication** | Knows communication techniques (such as defend, argue, justify) | Recognizes the importance of clear communication in at least two incidents of mis- | Can demonstrate the application of three communication techniques | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | Knows at least one foreign language | communication with users | Can provide clear instructions on how to progress in three different cases | | | |
| **Impact Analysis** | | Can deploy at least three support tools to systematically trace source of error or technical failure | | Can analyse at least three symptoms of user error or technical failure | Can manage to code issues to support growth and integrity of online support tools | |

| **C4. Problem Management** | | | | | | |
|---|---|---|---|---|---|---|
| **Module** | **Knowledge** | **Comprehension** | **Application** | **Analysis** | **Synthesis** | **Evaluation** |
| **Technology and market** | | Can identify at least three evaluation, design and implementation methodologies<br>Can identify at least two applications and availability of diagnostic tools | | | | |
| **Organisation** | Knows the museum's overall ICT infrastructure and key components<br>Knows the museum's reporting procedures<br>Knows the museum's critical situation escalation procedures | | Can select digital asset management solution that fits the budget of the museum | Can critically analyse at least three digital asset management solutions | | |
| **Communication** | | Recognises the importance of preciseness | Can demonstrate the application of three communication techniques | Can identify the appropriate resources to deployed internally or externally to minimise outages | | |
| **Impact Analysis** | Knows at least three rist management techniques | Can identify the link between system | Can identify progress of issues throughout lifecycle | | Can propose solutions to at least two critical component failure | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | infrastructure elements and impact of failure on related business processes | | | Can manage risk management audits<br>Can propose appropriate resources to maintenance activities, balancing cost and risk | |

| **D2. ICT Quality Strategy Development** | | | | | | |
|---|---|---|---|---|---|---|
| **Module** | **Knowledge** | **Comprehension** | **Application** | **Analysis** | **Synthesis** | **Evaluation** |
| **Museum** | Knows four museum needs<br>Can define three museum objectives | Can decode the museum's culture | | | Can establish ICT quality in museum culture<br>Can establish online communication applications quality in museum culture | Can match museum needs with the existing products |
| **Audience** | Knows four audience needs | | | Can identify four audience expectations | Can manage to satisfy four audience expectations | Can match audience needs with the existing products |
| **Standards/ best practices** | Knows the potentials and opportunities of standards for ICT quality | Can indicate three ICT quality standards<br>Can identify two standards for online community applications/ tools/solutions | Uses two standards and best practices for ICT quality<br>Applies two standards for online community applications/ tools/solutions | | Can create through standards/ best practices, objectives for service management, product and process quality | |
| **Communication** | Can list three online communication applications (existing & emerging) | | | Can identify the best online communication applications (existing & emerging) | | |
| **Impact analysis** | | | | Can analyse the impact of functional/ technical changes on museum and audience needs | | |

| **D11. Needs Identification** | | | | | | |
|---|---|---|---|---|---|---|
| **Module** | **Knowledge** | **Comprehension** | **Application** | **Analysis** | **Synthesis** | **Evaluation** |

| | | | | | | |
|---|---|---|---|---|---|---|
| **Technology and market** | Can look for and enumerate three ICT suitable for museums | Can describe three ICT and their application in museums | Can operate or apply three ICT in museums | Can analyze cost / benefit of three ICT in museums | Can present ICT solution cost / benefit | Can assess emerging ICT and their possible application in museum context |
| | | | | | Can present digital asset management solution cost / benefit | Can evaluate digital asset, interactive and multimedia installations/tools/applications using cost / benefit analysis |
| **Organization** | | Can identify museum needs and goals, organizational chart, information, communication and control processes | | Can analyze three digital asset management processes | Can formalize three digital asset management processes | |
| | | | | Can analyze three online communication processes | Can formalize three online communication processes | |
| **Stakeholders and users** | Knows five stakeholder and user need analysis techniques | Can identify ten museum key stakeholders and users. | Can demonstrate the application of three needs analysis techniques | Can analyze twenty requirements of museum key stakeholders and users | | Can select the appropriate needs analysis technique based on criteria |
| | | | Can record twenty requirements of museum key stakeholders and users | | | Can match user key stakeholder and user needs with existing ICT applications and products |
| **Communication** | Knows five communication techniques | | Can demonstrate the application of three communication techniques | Can analyze online communication processes | Can formalize online communication processes | Can select the appropriate communication technique based on criteria |
| | | | Can present ICT solution cost / benefit | | | |
| | | | Can present digital asset management solution cost / benefit | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| **Impact analysis** | | Can identify ten museum advantages and improvements of adopting new technologies based on user experience | | analyse the impact of functional/technical changes on key stakeholders and users | | Can evaluate digital asset, interactive and multimedia installations/tools/applications using cost / benefit analysis<br>Can evaluate the impact of functional/technical changes on key stakeholders and users |

| **D12. Digital Marketing** | | | | | | |
|---|---|---|---|---|---|---|
| **Module** | **Knowledge** | **Comprehension** | **Application** | **Analysis** | **Synthesis** | **Evaluation** |
| **Strategy** | Knows two digital marketing plans | Can identify two digital marketing plans | Can apply two digital marketing tactics | | Can develop an effective digital marketing plan | |
| **Technological tools** | Can record three analytical tools<br>Can name the digital marketing areas (search/display/email/social media/ mobile marketing) | | Can use three analytical tools | | | |
| **Web technologies** | Knows five social media | Can recognize four web technologies<br>Understands the online environment (how it works) | Can assess the effectiveness of websites (technical performance/ speed) | Can inspect the web analytics | Can manage the e-reputation | |
| **User/ audience** | Knows four user needs<br>Knows all user target groups | | Can assess the engagement of the user based on analytical reports<br>Uses the web technology to increase user/ audience satisfaction | | | |

| **E.1 Forecast Development** |
|---|

| Module | Knowledge | Comprehension | Application | Analysis | Synthesis | Evaluation |
|---|---|---|---|---|---|---|
| **Technology and market** | Knows the market size and relevant fluctuations | Can identify at least two methods to generate sales forecasts in relation to current market share | Can apply at least three large scale data analysis techniques (data mining) | Can connect museum and audience needs with products in the market | Can combine museum and audience needs with interactive and multimedia installations/tools/applications developed | |
| | Knows accessibility of the market according to current conditions (e.g. government policies, emerging technologies, social and cultural trends, etc.) | Can interpret external research data and analyse information | Can apply new emerging technologies (e.g. distributed systems, virtualisation, mobility, data sets) | | | |
| | | | Can apply at least three methods to analyze information and business processes | | | |
| **Organisation** | Can interpret the extended supply chain operation | | | Can identify organisational processes and the way they are integrated and their dependency upon ICT applications | Can combine museum and audience needs with interactive and multimedia installations/tools/applications developed | |
| | Knows museum's budget dedicated to ICT development | | | Can compare sales and production forecasts of forthcoming/newly launched ICT tools and solutions and analyse potential mismatches | | |
| | | | | Can connect museum and audience needs with products in the market | | |
| **Stakeholders and Users** | Knows museum and audience needs | | | Can connect museum and | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | Knows at least three museum and audience need analysis techniques | | | audience needs with products in the market | | |
| **Communication** | | | | Can analyze in at least three different ways information and online communication processes | | |
| **Impact Analysis** | | | Can apply at least three what-if techniques to produce realistic outlooks | Can identify organisational processes and the way they are integrated and their dependency upon ICT applications | | |
| | | | | Can identify four business advantages and improvements of adopting emerging technologies for the museum | | |
| | | | | Can analyze three future developments in business process and technology application | | |
| | | | | Can analyse feasibility in terms of costs and benefits | | |

| **E.4 Relationship Management** | | | | | | |
|---|---|---|---|---|---|---|
| **Module** | **Knowledge** | **Comprehension** | **Application** | **Analysis** | **Synthesis** | **Evaluation** |
| **Organisation/Museum** | Knows at least four museum processes including, decision making, budgets and management structure | Can identify at least four objectives of the museum | Can demonstrate empathy towards museum staff needs | Can determine museum's challenges and risks as long as they are relevant to digital asset management | Can establish realistic expectations to support development of mutual trust | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | Can identify museums, staff and technology providers needs | | Can examine ongoing commitments to ensure fulfillment | Can propose at least three solutions to meet museums, staff and technology providers needs | |
| | | Can identify at least three challenges and risks of the museum | | | | |
| **Stakeholders/audience/users** | | Can identify at least three objectives of stakeholders | | Can determine stakeholders' objectives as long as they are relevant to digital asset management | Can examine and arrange resources to meet stakeholder requirements | |
| | | Can identify at least three potential win-win opportunities for user/audience and museum | | | Can propose at least three techniques to respond to audience needs and their motivation | |
| **Communication** | Can present good and bad news to avoid surprises | Can express him/herself also at least in one foreign language | Can demonstrate good interpersonal skills | | Can explain (defend, argue, justify) | |

| **E.6 ICT Quality Management** | | | | | | |
|---|---|---|---|---|---|---|
| **Module** | **Knowledge** | **Comprehension** | **Application** | **Analysis** | **Synthesis** | **Evaluation** |
| **Standards/Best practices/Quality** | Knows which methods, tools and procedure are applied within the museum and where they should be applied | Understands regulations and standards in energy efficiency and e-waste | Can apply the IS internal quality audit approach | Can determine technologies and standards to be used during the deployment | Can manage quality audits | |
| | Knows three ICT quality standards | Understands the museum's enterprise architecture and internal standards | Can operate three ICT quality standards | Can analyse (monitor, understand and act upon) quality indicators | | |
| | | Can recognize the potential and opportunities of relevant standards and best practices | Can apply digital asset management quality standards | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | Understands the importance of being ethical | | | | |
| **Technology** | | | Can apply all the required technologies (web/ cloud/mobile) and environmental requirements | Can determine at least three technologies and standards to be used during the deployment | | |
| **Museum** | | Understands the museum's enterprise architecture and internal standards | Can illustrate how methods, tools and procedures can be applied to implement the museum's quality policy | | | |
| **Process** | | | Can select at least three measures to evaluate effectiveness and efficiency of the overall process | Can analyse process steps to identify at least three strengths and weaknesses | | |

| **E.7 Business Change Management** | | | | | | |
|---|---|---|---|---|---|---|
| **Module** | **Knowledge** | **Comprehension** | **Application** | **Analysis** | **Synthesis** | **Evaluation** |
| **Business Process** | | | Can apply at least three evaluation, design and implementation methodologies | Can analyse information and online communication processes in at least three different ways | Can construct and document a plan for implementation of process enhancements | Can optimize museum business strategy and processes |
| | | | Can apply at least four project management standards and tools | Can connect how business processes are integrated and their dependency upon ICT applications | | Can interpret information and business processes in at least three different ways |
| | | | | Can connect how museum's online communication | | Can evaluate costs and benefits of business changes |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | processes are integrated into the online marketing mix and dependent upon ICT applications | | Can predict future developments in organisational process and technology application |
| **ICT strategy** | Knows at least three digital strategies | | Can apply digital strategies | | Can propose at least two appropriate ICT solutions based upon benefit, risks and overall impact | |
| | | | | | Can propose at least three organisational advantages and improvements of adopting emerging technologies | |
| **Communication** | | | | | Can explain (defend, argue, justify) | |
| **Impact** | | | | Can analyse costs and benefits of museum's organisational changes | Can propose at least three appropriate ICT solutions based upon benefit, risks and overall impact | Can predict the impact of business changes on the museum and human resources |
| | | | | | Can revise and explain effects of implementations | Can predict the impact of business changes on legal issues |
| | | | | | | Can predict the impact of business changes related to online communication on the museum and human resources |
| | | | | | | Can predict organisatonal advantages and improvements of adopting emerging technologies |

**Annex 8.1.1. Methodology for defining the learning outcomes for each role profile – the example of e-competence D11.**

In figure 1, is shown the description of a sample competence (D.11. Needs identification). In the following, the steps of the proposed methodology will be described in detail. The activities of each step will be analyzed and examples based on the competence D.11. will be provided.

| | | |
|---|---|---|
| **Dimension 1**<br><br>e-Comp. area | D. ENABLE | |
| **Dimension 2**<br><br>e-Competence: Title + generic description | **D.11. Needs Identification**<br>Actively listens to key stakeholders. e.g. children, local audiences, tourists, decision makers, educational institution representatives, Cultural Heritage professionals, museum employees, to articulate~~s~~ and clarif~~y~~ their needs. Manages the relationship with all stakeholders to ensure that the solution is in line with business requirements. Proposes different solutions (e.g. make-or-buy), by performing contextual analysis in support of user centered system design. Advises the museum on appropriate solution choices. Acts as an advocate engaging in the implementation or configuration process of the chosen solution. | |
| **Dimension 3**<br><br>e-Competence proficiency levels | **Level 1** | |
| | **Level 2** | |
| | **Level 3** | Establishes reliable relationships with key stakeholders, e.g. children, local audiences, tourists, decision makers, educational |

| | | |
|---|---|---|
| e-1 to e-5, related to EQF levels 3 to 8 | | institution representatives, Cultural Heritage professionals, museum employees, and helps them clarify their needs. |
| | **Level 4** | Exploits wide ranging specialist knowledge of the key stakeholders to offer possible solutions to their needs. |
| | **Level 5** | Provides leadership in support of the management team's strategic decisions. Helps key stakeholders to envisage new ICT solutions, fosters partnerships and creates value propositions. |
| **Dimension 4**<br><br>Knowledge examples<br><br>*Knows/Aware of/Familiar with* | K1 emerging technologies and the relevant market applications<br>K2 museum needs<br>K3 key stakeholders needs<br>K4 organisation processes and structures<br>K5 customer need analysis techniques<br>K6 communication techniques<br>K7 "Story telling" techniques | |
| Skills examples<br><br>*Is able to* | S1 analyse and formalise business processes<br>S2 analyse customer requirements<br>S3 present ICT solution cost / benefit<br>S4 match key stakeholders needs with existing products<br>S5 analyse the impact of functional/technical changes on key stakeholders | |

*Figure 1. Sample description of an e-CF competence (D.11. Needs identification)*

## STEP 1: Create a table showing the occurrence of each competence across job roles

Table 1 shows the e-CF competences that are being used in the definition of eCulture job roles. In each cell, the e-CF levels that each competence has to be mastered per profile are shown. Overall, 31 competences are used.

| e-CF Competences | Cultural ICT Consultant | Cultural (ICT-enabled) Guide | Digital Cultural Asset Manager | Interactive Cultural Experience Developer | Online Cultural Community Manager |
|---|---|---|---|---|---|
| **A.1. IS and Museum Strategy Alignment** | 4, 5 | | | | |
| **A.2. Service Level Management** | 3,4 | | | | |
| **A.3. Management Plan Development** | 4,5 | | 3, 4, 5 | 3,4 | 3,4 |
| **A.4. Product / Service Planning** | 2,3, 4 | | 2,3,4 | 2, 4 | 2,3,4 |
| **A.6. Application Design** | | | | 1,2,3 | |
| **A.7. Technology Trend Monitoring** | 4,5 | | 4 | 4 | 4 |
| **A.8. Sustainable Development** | 3,4 | | | | |
| **A.9. Innovating** | 4,5 | | 4 | 4,5 | 4,5 |
| **B.1. Application Developing** | | | | 1,2,3 | |
| **B.2. Component Integration** | | | | 2,3,4 | |
| **B.3. Testing** | | | | 2,3 | |
| **B.4. Solution Deployment** | | | | 1,2,3 | |
| **B.5. Documentation Production** | | | 1,2,3 | 1,2,3 | 1,2,3 |
| **C.1. User Support** | | 2 | | 1,2 | 1,2,3 |
| **C.2. Change Support** | 2, 3 | | | 2,3 | |
| **C.3. Service Delivery** | | | 2 | | |
| **C.4. Problem Management** | | | 2,3 | 2,3 | 2,3 |
| **D.1. Information Security Strategy Development** | 4,5 | | | | |
| **D.2. ICT Quality Strategy Development** | 4,5 | | | | 2 |
| **D.3. Education and Training Provision** | 1,2,3,4 | | | | |
| **D.4. Purchasing** | 2,3,4 | | 2,3 | | |
| **D.10. Information and Knowledge Management** | 4,5 | | 3,4,5 | | |
| **D.11. Needs Identification** | 3,4,5 | 3,4 | 3,4 | 3,4 | 3,4 |
| **D.12. Digital Marketing** | | | | | 2,3 |

| | | | | | |
|---|---|---|---|---|---|
| **E.1. Forecast Development** | 3,4 | | | 3,4 | 3,4 |
| **E.3. Risk Management** | 2,3,4 | | 2,3 | 2,3 | |
| **E.4. Relationship Management** | 3,4 | | 3 | 3 | 4 |
| **E.5. Process Improvement** | 3,4 | | | | |
| **E.6. Quality Management** | 2,3,4 | | 2,3,4 | 2,3,4 | 2,3,4 |
| **E.7. Change Management** | 3,4,5 | | | | 3,4 |

*Table 1. Participation of e-CF competences per job role (with e-CF level)*

## STEP 2: Define learning unit for each competence

The definition of a learning unit contains the following activities:

a. Write competence transversal description
b. Write learning outcomes
c. Define assessment techniques

***STEP 2a. Writing the competences transversal description***

Since each competence may take part in several job roles, albeit with slightly different content, in this step, for each competence, a table containing all definitions (Table 2) and level descriptions (Table 3) is compiled.

In Table 2, all definitions of D.11 competence across all job roles are gathered. These correspond to Dimension 2 of e-CF. Similar requirements or sub-competences are marked using the same color. Then, one can see that, a generic description of D.11 competence can be as follows (colors match the ones used in Table 2):

1. Be able to actively listen (to internal / external key stakeholders and users, e.g. children, local audiences, tourists, decision makers, educational institution representatives, Cultural Heritage professionals, museum employees)
2. Be able to articulate and clarify their needs and perform contextual analysis
3. Manage the relationship with all stakeholders (to ensure that the solution is in line with museum and user requirements)
4. Propose different solutions (i.e. make or buy) and advise the museum (on appropriate solution choices)
5. Engage in the implementation or configuration process of the chosen solutions

| | |
|---|---|
| **Cultural ICT consultant** | Actively listens to key stakeholders. e.g. children, local audiences, tourists, decision makers, educational institution representatives, Cultural Heritage professionals, museum employees, to articulate and clarify their needs. Manages the relationship with all stakeholders to ensure that the solution is in line with business requirements. Proposes different solutions (e.g. make-or-buy), by performing contextual analysis in support of user centered system design. Advises the museum on appropriate solution choices. Acts as an advocate engaging in the implementation or configuration process of the chosen solution. |
| **Cultural ICT guide** | Actively listens to audience, articulates and clarifies their needs. Proposes different solutions customised to the identified audience needs. Advises the museum's management team on appropriate solution choices. |
| **Digital cultural asset manager** | Actively listens to internal / external users, articulates and clarifies their needs. Manages the relationship with all stakeholders to ensure that digital asset management is in line with museum requirements. Proposes different solutions (e.g. make-or-buy), by performing contextual analysis in support of user centered system design. Advises the museum's management team on appropriate solution choices. Acts as an advocate engaging in the implementation or configuration process of the chosen solutions. |
| **Interactive cultural experience developer** | Actively listens to internal / external key stakeholders, e.g. museum staff and representatives of its audience, articulates and clarifies their needs. Manages the relationship with all stakeholders to ensure that the solution is in line with museum and user requirements. Proposes different solutions (e.g. make-or-buy), by performing contextual analysis in support of user centered system design. Advises the museum's management team on appropriate solution choices. Acts as an advocate engaging in the implementation or configuration process of the chosen solution. |
| **Online cultural community manager** | Actively listens to internal / external key stakeholders, articulates and clarifies their needs. Manages the relationship with all stakeholders to ensure that the solution is in line with museum requirements. Proposes different solutions, by performing contextual analysis in support of user centered online communication plan. Advises the organisation's management team on appropriate solution choices. Acts as an advocate engaging in the implementation or configuration process of the chosen components of the plan. |

*Table 2. Definitions of D.11 competence across job roles*

In Table 3, the description of the proficiency levels for competence D.11 across all job roles are given. These correspond to Dimension 3 of e-CF (note that e-CF levels map to EQF levels). One can see that D.11 competence in all profiles is required to be demonstrated at e-CF levels 3 and 4, while in one profile, level 5 must be demonstrated as well.

One can see that **in level 3**, the professional should be able to:

1. Establish reliable relationships with key stakeholders and users, and
2. Clarify their needs

Clearly, the ability to actively listen is necessary in order to establish reliable relationships.

**In level 4**, the professional should be able to:

1. Offer possible solutions to key stakeholders and users, using his/her expert knowledge of their needs (therefore level 4 supersedes level 3), and
2. Provide expert guidance (by proposing solutions and supplier)

In some cases, the professional should also engage in the implementation or configuration process of the chosen solutions.

**In level 5**, the professional should be able to:

1. Provide leadership in support of the management team's strategic decisions,
2. Help key stakeholders to envisage new ICT solutions,
3. Foster partnerships and
4. Create value propositions

Clearly these call for the competence to be exercised to the highest possible EQF level.

| | LEVEL 3 | LEVEL 4 | LEVEL 5 |
|---|---|---|---|
| **Cultural ICT consultant** | Establishes reliable relationships with key stakeholders, e.g. children, local audiences, tourists, decision makers, educational institution representatives, Cultural Heritage professionals, museum employees, and helps them clarify their needs. | Exploits wide ranging specialist knowledge of the key stakeholders to offer possible solutions to their needs. | Provides leadership in support of the management team's strategic decisions. Helps key stakeholders to envisage new ICT solutions, fosters partnerships and creates value propositions. |
| **Cultural ICT guide** | Establishes reliable relationships with audience and helps them clarify their needs. | Uses her/his knowledge on the audience needs to suggest possible solutions, customisations of tools/applications/services. | |
| **Digital cultural asset manager** | Establishes reliable relationships with users and helps them clarify their needs. | Exploits wide ranging specialist knowledge of the user needs to offer possible solutions to their needs. Provides expert guidance to the user by proposing solutions and supplier. | |

| | | | |
|---|---|---|---|
| **Interactive cultural experience developer** | Establishes reliable relationships with key stakeholders, museum staff and representatives of the audience, and helps them clarify their needs. | Exploits wide ranging specialist knowledge of the key stakeholders, museum staff and representatives of the audience to offer possible solutions their-needs. Provides expert guidance to all by proposing solutions and supplier. | |
| **Online cultural community manager** | Establishes reliable relationships with key stakeholders and helps them clarify their needs. | Exploits wide ranging specialist knowledge of the key stakeholders (see summary statement) to offer possible solutions to their needs. Provides expert guidance to the key stakeholders by proposing solutions and supplier. | |

*Table 3. Description of various levels for D.11 competence across job roles*

***STEP 2b. Writing the learning outcomes***

Firstly, a table containing all knowledge and skill items (e-CF dimension 4) is compiled (Table 4). Note that, most of these items are in effect the result of the contextualization of the generic knowledge and skill items listed in the D.11 competence of e-CF (shown in the first row of Table 4); extra items are colored in red.

| | KNOWLEDGE | SKILL |
|---|---|---|
| **Generic e-CF** | K1 emerging technologies and the relevant market applications<br>K2 business needs<br>K3 organisation processes and structures<br>K4 customer need analysis techniques<br>K5 communication techniques<br>K6 "Story telling" techniques | S1 analyse and formalise business processes<br>S2 analyse customer requirements<br>S3 present ICT solution cost/benefit |
| **Cultural ICT consultant** | K1 emerging technologies and the relevant market applications<br>K2 museum needs<br>K3 key stakeholders needs<br>K4 organisation processes and structures<br>K5 customer need analysis techniques<br>K6 communication techniques<br>K7 "Story telling" techniques | S1 analyse and formalise business processes<br>S2 analyse customer requirements<br>S3 present ICT solution cost / benefit<br>S4 match key stakeholders needs with existing products<br>S5 analyse the impact of functional/technical changes on key stakeholders |
| **Cultural ICT guide** | K1 technologies and their relevant applications<br>K2 museum's goals<br>K3 audience needs / expectations<br>K4 museum processes and structures<br>K5 audience needs' analysis techniques<br>K6 communication techniques<br>K7 "Story telling" techniques | S1 analyse audience requirements<br>S2 match audience needs with existing ICT applications<br>S3 analyse the impact of functional/technical changes on audience<br>S4 identify museum advantages and improvements of adopting new technologies based on user experience |
| **Digital cultural asset manager** | K1 emerging technologies and the relevant market applications<br>K2 museum's needs<br>K3 user needs<br>K4 museum processes and structures<br>K5 user need analysis techniques<br>K6 communication techniques<br>K7 "Story telling" techniques | S1 analyse and formalise digital asset management processes<br>S2 analyse user requirements<br>S3 present digital asset management solution cost / benefit<br>S4 match user needs with existing products<br>S5 analyse the impact of functional/technical changes on user |
| **Interactive cultural experience developer** | K1 emerging technologies and the relevant market applications<br>K2 key stakeholders needs<br>K3 museum processes and structures<br>K4 user need analysis techniques<br>K5 communication techniques<br>K6 "Story telling" techniques | S1 analyse and formalise asset management processes<br>S2 analyse audience requirements<br>S3 evaluate interactive and multimedia installations/tools /applications cost / benefit<br>S4 match key stakeholders needs with existing products |

| | | |
|---|---|---|
| | | S5 analyse the impact of functional/technical changes on key stakeholders |
| **Online cultural community manager** | K1 emerging technologies and the relevant market applications<br>K2 museum's communication needs<br>K3 key stakeholders needs<br>K4 museum processes and structures<br>K5 audience need analysis techniques<br>K6 communication techniques<br>K7 "Story telling" techniques | S1 analyse and formalise online communication processes<br>S2 analyse museum and audience requirements<br>S3 present ICT solution cost / benefit<br>S4 match key stakeholders needs with existing products<br>S5 analyse the impact of functional/technical changes on key stakeholders |

*Table 4. Knowledge and skill items for D.11 competence across all job roles*

Secondly, similar knowledge and skill items are merged, resulting to broad (knowledge and skill) items. For the D.11 competence, these are:

1. **Technology and market** (knowledge of emerging technologies and the relevant market applications, present ICT solution cost/benefit)
2. **Organization** (business needs, museum needs, museum goals, organisation processes and structures, museum processes and structures, museum communication needs, analyse and formalise business processes, analyse and formalise digital asset management processes, analyse and formalise online communication processes)
3. **Stakeholders and users** (customer need analysis techniques, audience needs analysis techniques, user need analysis techniques, key stakeholders needs, audience needs / expectations, user needs, analyse customer requirements, analyse museum and audience requirements, analyse user requirements, match key stakeholders needs with existing products, match audience needs with existing ICT applications match user needs with existing products, match key stakeholders needs with existing products)
4. **Communication** (communication techniques, "Story telling" techniques, present ICT solution cost / benefit, present digital asset management solution cost / benefit, analyse and formalise online communication processes)
5. **Impact analysis** (analyse the impact of functional/technical changes on key stakeholders, identify museum advantages and improvements of adopting new technologies based on user experience, analyse the impact of functional/technical changes on user, evaluate interactive and multimedia installations/tools /applications cost / benefit)

***These five broad items will form the Core learning outcomes of the learning units.***

In the third step, for each of the broad knowledge and skill items, learning outcomes are produced, following the ABCD approach and using verbs appropriate to the Bloom taxonomy level. This step entails allocation of learning outcomes to one of the six levels of Bloom taxonomy. In Table 5, the outcome of this step regarding D.11 competence is shown.

The Learning Outcomes that relate to specific job roles (contextualized learning outcomes) have been colored.

The outcome of this step is a list of learning outcomes per unit of the module.

***STEP 2c. Define assessment techniques***

***STEP 3: Prepare training material –*** one separate training session for each of the job roles on the basis of the learning units (and core competences defined therein)

***STEP 4: Adapt training methods/ Fine-tuning***

When all learning units are ready and all profiles covered, we need to check whether learning outcomes, evaluation methods, KPIs, responsibilities and deliverables are covered

| Module | Knowledge | Comprehension | Application | Analysis | Synthesis | Evaluation |
|---|---|---|---|---|---|---|
| Technology and market | Can look for and enumerate three ICT suitable for museums | Can describe three ICT and their application in museums | Can operate or apply three ICT in museums | Can analyze cost / benefit of three ICT in museums | Can present ICT solution cost / benefit<br>Can present digital asset management solution cost / benefit | Can assess emerging ICT and their possible application in museum context<br>Can evaluate digital asset, interactive and multimedia installations/tools/applications using cost / benefit analysis |
| Organization | | Can identify museum needs and goals, organizational chart, information, communication and control processes | | Can analyze three digital asset management processes.<br>Can analyze three online communication processes | Can formalize three digital asset management processes.<br>Can formalize three online communication processes | |

| | | | | | | |
|---|---|---|---|---|---|---|
| Stakeholders and users | Knows five stakeholder and user need analysis techniques | Can identify ten museum key stakeholders and users. | Can demonstrate the application of three needs analysis techniques<br>Can record twenty requirements of museum key stakeholders and users | Can analyze twenty requirements of museum key stakeholders and users | | Can select the appropriate needs analysis technique based on criteria<br>Can match user key stakeholder and user needs with existing ICT applications and products |
| Communication | Knows five communication techniques | | Can demonstrate the application of three communication techniques<br>Can present ICT solution cost / benefit<br>Can present digital asset management solution cost / benefit | Can analyze online communication processes | Can formalize online communication processes | Can select the appropriate communication technique based on criteria |
| Impact analysis | | Can identify ten museum advantages and improvements of adopting new technologies based on user experience | | analyse the impact of functional/technical changes on key stakeholders and users | | Can evaluate digital asset, interactive and multimedia installations/tools/applications using cost / benefit analysis<br>Can evaluate the impact of functional/technical changes on key stakeholders and users |

*Table 5. Learning outcomes per module for D.11 competence*

**Annex 8.2. – Writing the learning outcomes**

The adoption of learning outcomes in the educational process marks a shift from the traditional "teacher centred" approach to a "student centred" approach. In the former model, only teachers were responsible for the content to be taught and the instructional strategy to be used. Course descriptions consisted of the content that would be covered in lectures, while assessment focused on how well the students absorbed this content. The "student centred" model adopts an "outcome-based" approach, focusing on what the students will learn, master and be able to do as they progress through the course.

Various definitions of a learning outcome appear in the literature. The common ground among them is that learning outcomes describe:

- what the learner has achieved rather than the intentions of the teacher;
- what the learner can demonstrate at the end of a learning activity.

In this document we shall adopt the following definitions (EQF, 2008):

- A **"learning outcome"** is a statement of what a learner knows, understands and is able to do on completion of a learning process, which is defined in terms of knowledge, skills and competence;
- **"Knowledge"** means the outcome of the assimilation of information through learning. Knowledge is the body of facts, principles, theories and practices that is related to a field of work or study. In the context of the European Qualifications Framework, knowledge is described as theoretical and/or factual;
- **"Skills"** means the ability to apply knowledge and use know-how to complete tasks and solve problems. In the context of the European Qualifications Framework, skills are described as cognitive (involving the use of logical, intuitive and creative thinking) or practical (involving manual dexterity and the use of methods, materials, tools and instruments);
- **"Competence"** means the proven ability to use knowledge, skills and personal, social and/or methodological abilities, in work or study situations and in professional and personal development. In the context of the European Qualifications Framework, competence is described in terms of responsibility and autonomy.
- **"Qualification"** means a formal outcome of an assessment and validation process which is obtained when a competent body determines that an individual has achieved learning outcomes to given standards;

The learning outcome approach requires, first of all, a change in perspective and a new way of approaching teaching goals, in order to develop valid courses. Then, the actual process of writing the learning outcomes is a consequence of these changes.

The following general guidelines may be of assistance when writing learning outcomes:

- Use the ABCD / SMART approaches in writing the learning outcomes

- Each learning outcome should refer to one and only level in Benjamin Bloom's taxonomy
- Avoid complicated sentences. If necessary use more one than one sentence to ensure clarity
- Each learning outcome should contain one and only one action verb; use the list of verbs associated with each level in the taxonomy
- Avoid vague terms like know, understand, learn, be familiar with, be exposed to, be acquainted with, and be aware of. These terms are associated with teaching objectives rather than learning outcomes
- The learning outcomes must be observable, measurable and capable of being assessed
- Bear in mind the timescale within which the outcomes are to be achieved. There is always the danger that one can be over-ambitious when writing learning outcomes. Ask yourself if it is realistic to achieve the learning outcomes within the time and resources available
- Before finalizing the learning outcomes, ask your colleagues and possibly former students if the learning outcomes make sense to them

**The ABCD and SMART approaches**

In order to write useful learning outcomes, we suggest adopting the ABCD approach (Mager, 1984):

- **Audience:** determines who will master the outcome. A very common way to begin a learning outcome is: "The student will be able to…"
- **Behavior:** says what a learner is expected to be able to perform as a result of achieving the learning outcome, or, in other words, how will the student demonstrate achievement of the outcome
- **Condition:** describes the important conditions (if any) under which student's performance is to occur
- **Degree:** wherever possible, describes the criterion of acceptable performance by describing how well the learner must perform in order to be considered acceptable.

Note that the verb used to describe a desirable behaviour in a learning outcome must be observable. However, a performance can be overt or covert. The former refers to any kind of performance that can be observed directly, whether that performance be visible or audible, while the latter refers to performance that cannot be observed directly, performance that is mental, invisible, cognitive, or internal. A performance can be covert as long as there is a direct way determining whether it satisfies the outcome. "A direct way" means a single behavior that will indicate the covert skill.

When specifying the condition, one should be detailed enough to be sure the desired performance would be recognized by another competent person. Here are some questions to ask:

- What will the learner be allowed to use?
- What will the learner be denied?
- Under what conditions the desired performance is expected to occur?
- Are there any skills that the student specifically should not develop?

Examples of degrees: time limits, accuracy, quality. By specifying the acceptable level of performance for each outcome, one has the means for determining whether instruction is successful. Both the teacher and the student would know the quality of performance necessary to work for or exceed.

Examples of well written outcomes are:

- "Given a sentence written in the past or present tense, the student will be able to re-write the sentence in future tense with no errors in tense or tense contradiction."
- "Given the opportunity to work in a team with several people of different races, the student will demonstrate a positive increase in attitude towards non-discrimination of race, as measured by a checklist utilized/completed by non-team members."
- "Given 3 minutes of class time, the student will solve 9 out of 10 multiplication problems of the type: 5 X 4 = _____."
- "Given a map of Europe, the student will be able to list 8 capital cities in 5 minutes".

Legend:

- Audience - Green
- Behavior - Red
- Condition - Yellow
- Degree - Blue

The ABCD approach can be combined with the SMART approach for better results:

- **Specific** means that the learning outcome describes the knowledge, skills and competences that a learner should be able to demonstrate following exposure to a learning activity.
- **Measurable** means that achievement of learning objectives can be measured by specific evaluation methods during or after the session.
- **Action-oriented** means that the objective includes an action verb that demonstrates change or acquisition of knowledge, skills or competences.
- **Reasonable** means that the objective reflects realistic expectations of knowledge, skills and competences acquisition/change given the conditions for instruction.
- **Time-bound** means that the objective specifies a time frame in which learners are expected to achieve the learning objective(s)—usually by the end of the session.

Examples of SMART outcomes:

- Following this session, participants will describe four factors that increase the risk of HIV transmission in women.
- After attending the lecture and studying the assigned handouts, participants will list three types of tests.

Legend:

- Specific - Magenta
- Measurable - Blue
- Action oriented - Red
- Reasonable - Green
- Time bound - Yellow

**To include:**

**The taxonomy of Benjamin Bloom**

Contemporary approaches to writing learning outcomes are based on the work of Benjamin Bloom (1913 – 1999), who studied in Pennsylvania State University, USA and graduated with bachelor and master degrees from that institution. He then worked with Ralph Tyler at the University of Chicago and graduated with a PhD in Education in 1942.Bloom identified three domains of learning – cognitive, affective and psycho-motor – each of which is organized as a series of levels or pre-requisites. It is suggested that one cannot effectively — or ought not try to — address higher levels until those below them have been covered (it is thus effectively serial in structure). The three domains can be defined as follows (Atherton, 2011):

- **Cognitive:** it is the most widely used of the three domains. It refers mostly to knowledge structures and contains a classification (or taxonomy) of thinking behaviors from the simple recall of facts up to the process of analysis and evaluation (Bloom et al, 1956). A revised taxonomy of levels has been proposed by Anderson and Krathwohl (2001).
- **Affective:** it is concerned with values, or more precisely perhaps with perception of value issues, and ranges from mere awareness (Receiving), through to being able to distinguish implicit values through analysis (Bloom, Krathwohl and Masia, 1964).
- **Psycho-Motor:** it mainly emphasizes physical skills involving co-ordination of the brain and muscular activity and is commonly used in areas like laboratory science subjects, health sciences, art, music, engineering, drama and physical education. Bloom never completed work on this domain, and there have been several attempts to complete it. One of the simplest versions has been suggested by Dave (1970); a more detailed one by Simpson (1972).

As well as providing a basic sequential model for dealing with topics in the curriculum, Bloom's taxonomy also suggests a way of categorizing levels of learning, in terms of the expected ceiling for a given course.

**Cognitive domain**

Bloom's work is most advanced in the cognitive domain and provides a framework in which one can build upon prior learning to develop more complex levels of understanding. It is frequently used for writing learning outcomes, since it provides a ready-made structure and list of verbs. The use of the correct verbs is the key to the successful writing of learning outcomes.

Bloom's taxonomy of cognitive domain consists of the following six levels (Bloom et al, 1956, Kennedy et al, 2006):

1. **Knowledge:** may be defined as the ability to recall or remember facts without necessarily understanding them. Some of the action verbs used to assess knowledge are:
   *Arrange, collect, define, describe, duplicate, enumerate, examine, find, identify, label, list, memorise, name, order, outline, present, quote, recall, recognise, recollect, record, recount, relate, repeat, reproduce, show, state, tabulate, tell.*

2. **Comprehension**: may be defined as the ability to understand and interpret learned information. Some of the action verbs used to assess comprehension are:
   *Associate, change, clarify, classify, construct, contrast, convert, decode, defend, describe, differentiate, discriminate, discuss, distinguish, estimate, explain, express, extend, generalise, identify, illustrate, indicate, infer, interpret, locate, paraphrase, predict, recognise, report, restate, rewrite, review, select, solve, translate.*

3. **Application**: may be defined as the ability to use learned material in new situations, e.g. put ideas and concepts to work in solving problems. Some of the action verbs used to assess application are:
   *Apply, assess, calculate, change, choose, complete, compute, construct, demonstrate, develop, discover, dramatise, employ, examine, experiment, find, illustrate, interpret, manipulate, modify, operate, organise, practice, predict, prepare, produce, relate, schedule, select, show, sketch, solve, transfer, use.*

4. **Analysis**: may be defined as the ability to break down information into its components, e.g. look for inter-relationships and ideas (understanding of organisational structure). Some of the action verbs used to assess analysis are:
   *Analyse, appraise, arrange, break down, calculate, categorise, classify, compare, connect, contrast, criticise, debate, deduce, determine, differentiate, discriminate, distinguish, divide, examine, experiment, identify, illustrate, infer, inspect, investigate.*

5. **Synthesis**: may be defined as the ability to put parts together. Some of the action verbs used to assess synthesis are:
   *Argue, arrange, assemble, categorise, collect, combine, compile, compose, construct, create, design, develop, devise, establish, explain, formulate, generalise, generate, integrate, invent, make, manage, modify, organise, originate, plan, prepare, propose, rearrange, reconstruct, relate, reorganise, revise, rewrite, set up, summarise.*

6. **Evaluation:** may be defined as the ability to judge the value of material for a given purpose. Some of the action verbs used to assess evaluation are:
   *Appraise, ascertain, argue, assess, attach, choose, compare, conclude, contrast, convince, criticise, decide, defend, discriminate, explain, evaluate, grade, interpret, judge, justify, measure, predict, rate, recommend, relate, resolve.*

A more detailed classification of verbs per level can be found in BCIT (1996) and online.

Bear in mind that, when writing learning outcomes, try to avoid overloading the list with outcomes which are drawn from the lower levels of Bloom's taxonomy, but also try to challenge the students to use what they have learned by including some learning outcomes drawn from the higher levels.

**Affective domain**

In order to describe the way in which we deal with things emotionally, Bloom and his colleagues developed five major categories (Bloom, Krathwohl and Masia, 1964):

1. **Receiving**. This refers to a willingness to receive information, e.g. the individual accepts the need for a commitment to service, listens to others with respect, shows sensitivity to social problems, etc.
2. **Responding**. This refers to the individual actively participating in his or her own learning, e.g. shows interest in the subject, is willing to give a presentation, participates in class discussions, enjoys helping others, etc.
3. **Valuing.** This ranges from simple acceptance of a value to one of commitment, e.g. the individual demonstrates belief in democratic processes, appreciates the role of science in our everyday lives, shows concern for the welfare of others, shows sensitivity towards individual and cultural differences, etc.
4. **Organisation.** This refers to the process that individuals go through as they bring together different values, resolve conflicts among them and start to internalise the values, e.g. recognises the need for balance between freedom and responsibility in a democracy, accepts responsibility for his or her own behaviour, accepts professional ethical standards, adapts behaviour to a value system, etc.
5. **Characterisation**. At this level the individual has a value system in terms of their beliefs, ideas and attitudes that control their behavior in a consistent and predictable manner, e.g. displays self reliance in working independently, displays a professional commitment to ethical practice, shows good personal, social and emotional adjustment, maintains good health habits, etc.

A set of verbs that can be used to express learning outcomes in the affective domain includes:
*act, adhere, appreciate, ask, accept, answer, assist, attempt, challenge, combine, complete, conform, cooperate, defend, demonstrate (a belief in), differentiate, discuss, display, dispute, embrace, follow, hold, initiate, integrate, justify, listen, order, organise, participate, practice, join, share, judge, praise, question, relate, report, resolve, share, support, synthesise, value*

A more detailed classification of verbs per level can be found in BCIT (1996) and online.

**Psychomotor domain**

Dave (1970) proposed a hierarchy consisting of five levels:

1. **Imitation**: Observing the behaviour of another person and copying this behaviour. This is the first stage in learning a complex skill.
2. **Manipulation**: Ability to perform certain actions by following instructions and practicing skills.

3. **Precision**: At this level, the student has the ability to carry out a task with few errors and become more precise without the presence of the original source. The skill has been attained and proficiency is indicated by smooth and accurate performance.
4. **Articulation**: Ability to co-ordinate a series of actions by combining two or more skills. Patterns can be modified to fit special requirements or solve a problem.
5. **Naturalisation**: Displays a high level of performance naturally ("without thinking"). Skills are combined, sequenced and performed consistently with ease.

Subsequently, Simpson (1972) developed a more detailed hierarchy consisting of seven levels:

1. **Perception**: The ability to use observed cues to guide physical activity.
2. **Set (mindset)**: The readiness to take a particular course of action. This can involve mental, physical and emotional disposition.
3. **Guided response**: The trial-and-error attempts at acquiring a physical skill. With practice, this leads to better performance.
4. **Mechanism:** The intermediate stage in learning a physical skill. Learned responses become more habitual and movements can be performed with some confidence and level of proficiency.
5. **Complex Overt Responses:** Physical activities involving complex movement patterns are possible. Responses are automatic and proficiency is indicated by accurate and highly coordinated performance with a minimum of wasted effort.
6. **Adaptation:** At this level, skills are well developed and the individual can modify movements to deal with problem situations or to fit special requirements.
7. **Origination:** The skills are so highly developed that creativity for special situations is possible.

A set of verbs that can be used to express learning outcomes in the affective domain includes:
*Adapt, adjust, administer, alter, arrange, assemble, balance, bend, build, calibrate, choreograph, combine, construct, copy, design, deliver, detect, demonstrate, differentiate (by touch), dismantle, display, dissect, drive, estimate, examine, execute, fix, grasp, grind, handle, heat, manipulate, identify, measure, mend, mime, mimic, mix, operate, organise, perform (skilfully), present, record, refine, sketch, react, use.*

A more detailed classification of verbs per level can be found in BCIT (1996) and online.

**Methodology for writing learning outcomes**

Given the above, we propose the following methodology for developing usable learning outcomes:

- **Step 1:** Collect data related to the topic of the course or the knowledge / skill / competence of the module and prepare a textual description
- **Step 2:** Analyze the meaning of every word given and define every unknown term
- **Step 3:** Differentiate between knowledge, skill and competence; these correspond to different levels in Bloom's taxonomy
- **Step 4:** Apply the ABCD approach to create one learning outcome for each knowledge, skill or competence

- **Step 5:** Evaluate the learning outcomes for clarity, coherence, completeness (with respect to the domain AND to Bloom's taxonomy levels) and ability to be assessed
- **Step 6:** Go to step 1 if any of the above conditions is not met and repeat the cycle

Note that steps 1 and 2 belong the Preparation phase, steps 3 and 4 belong to the Development phase and steps 5 and 6 belong to the Evaluation phase. Here is an example of the application of the methodology to the definition of learning outcomes for Webmaster, one job profile developed in project PIN. For the construction of learning outcomes specific data was used: the job profile of Webmaster, the competence B1, Design and development (e-Competence Framework), which belongs to competence area Build and a set of Technical skills, including:

- T01: Has knowledge of netiquette, interactive virtual environment, Social networks, etc.
- T02: Has knowledge of online usability requirements
- T04: Can create media elements
- T05: Can draft texts clearly, concisely, correctly

*Preparation Phase*

- Step 1: Collect data for the Webmaster's job, research associated qualifications and get additional information from a professional Webmaster.
    - E.g. read the analytical description of this job profile from the text developed in the context of PIN.
- Step 2: Analyze the descriptions, especially those that refer to qualifications or competences. Link qualifications with a curriculum that develops Webmaster related degrees. Research the study guide, find related courses and study the content and purpose of these courses.
    - E.g. For the technical skill "T01: Has knowledge of netiquette, interactive virtual environment, Social networks, etc.", the word netiquette must be clarified and how it can be linked to studies leading to Webmaster related degrees

*Development Phase*

- Step 3: Take under consideration the words used in description of outcomes. This will help classification of the learning outcomes in the taxonomy.
    - E.g. For the technical skill "T04: Can create media elements", the verb can states capability, as a result there are expected learning outcomes mainly at the higher levels of Application and Synthesis and probably less at levels of Knowledge and Comprehension.
    - In contrast the technical skill "T01: Has knowledge of netiquette, interactive virtual environment, Social networks, etc.", the substantive knowledge refers more to the low levels of Knowledge and Comprehension.
- Step 4: After getting a direction for the levels, which will represent the expected action to be performed, follows the choice of the appropriate verb (from the verb-list which is included in each Bloom level). This verb supports conceptually the learning outcome.

- E.g. For the technical skill "T01: Has knowledge of netiquette, interactive virtual environment, social networks, etc." after understanding the words netiquette and virtual environment and having comprehended Webmaster's responsibilities, follows the choice of verb that completes the learning outcome and relates it to the appropriate level. In this case, the verb is chosen for the Knowledge level and will be associated with the background that Webmaster has in Network Theory. As a result, the following learning outcome is derived:
  - Knowledge: After completing this course, the student will be able to define using 500 words how network theory views social relationships.

*Evaluation Phase*

- Step 5: The learning outcomes are evaluated for clarity, coherence, completeness (with respect to the domain AND to Bloom's taxonomy levels) and ability to be assessed.

E.g. the above learning outcome adopts both ABCD and SMART approaches; it can be assessed by asking the student to write an essay using 500 words on how network theory views social relationships.

**Annex 8.3. The EQF leaflet**
Please see document attached

**Annex 8.4. The European e-Competence Framework 3.0.**
Please see document attached

**Annex 8.5. Case study: The 14 e-competences of Digital Cultural Asset Manager developed and evaluated in the training sessions**
There will be a complete methodology analyzed on how to train the 14 e-competences so to achieve the competences and the skills according to the Profile. Specifically there will be a statement, the learning outcomes, keywords, the resources and the assesment methods for each e-competence required for the DCAM.

**8.5.1 Digital Asset Management Plan Development**

When the institutions start to make the preparatory arrangements to implement DAM, they should create in advance, like with the physical collections, a collections' policy. This document is the basis of a good system implementation and should allow the answering of all questions derived from the museum employees during the process.

In order to learn how to design and develop a collection management policy please follow the American Alliance of Museums (AAM) **"Developing a Collections Management Policy"** resource available at: http://www.aam-us.org/docs/continuum/developing-a-cmp-final.pdf?sfvrsn=2 or use an example of the Metropolitan Museum's collection policy available at:

http://www.metmuseum.org/about-the-museum/collections-management-policy.

Taking that in consideration you can start working on the museum's Digital Asset Management Plan focusing on three essential areas:

1. **Human resources or Digital People:**
2. **Digital Strategy;**
3. **Digital systems.**

These three focus areas are described in the former Collections Trust CEO, Nick Poole, posts on Going Digital. Please read them. They are available at:

1. **Going Digital Part 1: Digital People - http://www.collectionstrust.org.uk/blog/past-posts/item/13500-going-digital-part-1-digital-people;**
2. **Going Digital Part 2: Digital Strategies - http://www.collectionstrust.org.uk/blog/past-posts/item/13506-going-digital-part-2-digital-strategy;**
3. **Going Digital Part 3: Digital Systems - http://www.collectionstrust.org.uk/blog/latest-posts/item/13509-going-digital-part-3-digital-systems.**

In this posts Nick Poole tries to explain all the aspects in a Collection Trust campaign in order to promote the development of Internet and new technology used in the UK museums. These three detailed materials can be implemented in your Digital Asset Management Plan.

The resources published by CT in the Going Digital program page can help you see in a wider picture the issues concerning the plan. These are available at:
http://www.collectionstrust.org.uk/collections-link/going-digital.

You can prepare a detailed business plan with costs, risks, strengths and weakness based on these three areas. These resources will help you preparing the next issue of this course.

**Learning outcomes**
At the end of the training session the learner:

- Knows three emerging technologies (interactive/ multimedia installation/tool/ application);
- Knows three present market needs;
- Can report three present market needs;
- Can identify four main milestones in a management plan;
- Can identify five museum needs and goals;
- Can identify five stakeholders needs and goals;
- Can conduct an IS/ online communication/ digital asset management strategy;

- Can identify the risks and the opportunities of the plan
- Can demonstrate three emerging technologies (interactive/ multimedia installation/tool/ application);
- Can use the web technology for the museum's benefit;
- Can record five requirements of stakeholders and users;
- Applies strategic thinking in exploitation of ICT;
- Can apply three risk and opportunity assessment techniques;
- Provides analysis of the present market environment;
- Can analyse the museum's environment;
- Can analyse the impact of two business management plans on stakeholders;
- Can analyse the impact of functional/ technical changes on users;
- Addresses the design and structure of a business plan;
- Can make a SWOT analysis based on the museum's strategy;
- Can manage the creation of the best suited IS strategy;
- Can explain how the online communication plan complement the overall communication strategy;
- Evaluates the product features based on the business plan;
- Can recommend the best online communication plan;
- Can evaluate the best digital asset management strategy;

**Keywords**
Museum Mission; Collections Policy; DAM Planning; DAM Ecosystem; Build; Needs; Strategies; Communication; Analysis; Evaluation;

**Resources**

The following resources are mandatory for this session along with the ones cited in the training session introduction session. Please read / hear / see them and discuss it with your tutor and colleagues. For general guidance please see the chapter General References and Resources.

| Resource | Available at: | Description |
|---|---|---|
| 10 Steps to a Successful Digital Asset Management Implementation | http://www.opentext.com/connect/global/sso_download_open?docpath=/product/opentext/media-management/ten-steps-to-a-successful-digital-asset-management-implementation-pdf | A 10 step approach to DAM system implementation. |
| A Framework of Guidance for Building Good Digital Collections | http://www.niso.org/publications/rp/framework3.pdf | A guideline from the National Information Standards Organization to build digital collections with quality. |

| Resource | Available at: | Description |
|---|---|---|
| A Business-Planning Template: Considerations for Cultural Heritage Organizations and Their Digital Asset Programs | http://www.clir.org/pubs/reports/pub124/template.html | The template described here is intended to help cultural heritage institutions prepare a plan about DAM. |
| How to Develop a Digital Asset Management Strategy [Infographic] | http://www.cmswire.com/cms/digital-asset-management/how-to-develop-a-digital-asset-management-strategy-infographic-022899.php | A specific infographic about DAM Strategy development. |
| Digital Asset Management: Implementing A Strategy | http://www.daydream.co.uk/digital-asset-management-implementation.asp | The process of implementing a Digital Asset Management strategy using a DAM system. |
| A global DAM strategic planning methodology – FirmCo: Business strategy and goals. | http://www.palgrave-journals.com/dam/journal/v6/n2/pdf/dam20104a.pdf | An article by Skiff Wager describing a case study about a DAM implementation and strategy development in a business company. |
| DAM, You Can Do It: Getting Started with Digital Asset Management | http://wcanada.sla.org/2012/05/22/dam-you-can-do-it-getting-started-with-digital-asset-management/ | An article by Dawn Bassett on how to get started with DAM. |
| Digital Asset Management: Elements of an Institutional Program | http://www.dartmouth.edu/~library/col/0607/docs/DukeDartmouth.pdf?mswitch-redir=classic | A report about the Duke/Dartmouth project on Digital Asset Management. |

**Assessment methods**

To assess the training session the tutor should prepare/ask a case study using relevant context regarding the learner's situation or specific needs (if the training session occurs in a museum they should use the museum situation to build the case study). An example of context for a case study to a DAM plan development could be:

The X Museum has a collection of 10000 objects covering the history of the City X since the 19th Century. This museum is situated at the city centre and was founded 10 years ago by the city municipality. The museum staff is composed by one historian, two guards, one administrative official and one curator. The museum wants to be more relevant for its community and has in place a digital strategy with the main goal to be recognized as a important references to the study

of X city and a place of edutainment for younger audiences. The museum want to use the digital collection to promote the museum and engage more audiences (virtual and physical ones) to their premises.

Please discuss with your tutor and colleagues and write a DAM plan based on the resources that you've read/listen/seen in this training session.

**This training session is a specific part of the first step to prepare a DAM ecosystem - PLAN. Please read also the specific chapter above.**

### 8.5.2 Product / Service Planning

For product and service planning you will need to have in mind the resources read above so to define the overall management plan. Nevertheless you will need to assess the institution status on digital asset management. To do so, the DAM Foundation created this tool: The DAM Maturity Model (available at http://dammaturitymodel.org).

Using this tool will enable you and your institution to audit and improve the DAM capabilities. The DAM Maturity Model (DAM-MM) uses 15 dimensions organized in four categories to define the digital asset management ecosystem:

1. People;
2. Information;
3. Systems;
4. Processes.

Please read the information at the DAM-MM website and download the Maturity Model and asses your institution ecosystem by using that MM. It will help you to define current and target status, regardless the point of development of your organisation.
The DAM case studies published by DAM Foundation will be helpful at this (and other) point of the plan development. They are available at http://damfoundation.org/?cat=11.

Another must-read resource is the presentation entitled **"Implementation of systems for Media / Digital Asset Management Systems in 10 Steps"** by Kara van Malssen, from the Poland National Audiovisual Institute, available at:
http://pt.slideshare.net/kvanmalssen/implementation-mam-10steps.

**Learning outcomes**

At the end of the training session the learner:

- Can label four basic decision – making methods;
- Can define the different plans;
- Knows two structured project management methodologies;
- Knows five organization need analysis techniques;
- Knows how to document a plan;

- Can describe four basic decision – making methods;
- Can identify five museum needs and goals;
- Can identify five decision makers/users needs and goals;
- Can identify the key users;
- Can classify complex documents;
- Can identify ten museum advantages and improvements of managing the change request process;
- Can apply four basic decision – making methods;
- Can use optimization methods;
- Can operate two project management methodologies;
- Can predict three documentation requirements for the digital asset management plan;
- Can produce quality plans;
- Can analyse two project management methodologies;
- Can identify three additional documentation requirements for the digital asset management plan;
- Can generate optimization methods in the product/ service planning;
- Can develop and maintain plans;
- Can manage the change request processes;
- Can formalize two project management methodologies;
- Can manage adequate information for the decision makers;
- Can develop two digital asset management plans and the related documentation;
- Can evaluate basic decision – making methods
- Can assess two project management methodologies

**Keywords**

Planing; Project methodology; Technical documentation; Reports; Digital Asset Management Models; Implementation; Diagnosis and analysis;

**Resources**

The following resources are mandatory for this session along with the ones cited in the training session introduction session. Please read / hear / see them and discuss it with your tutor and colleagues. For general guidance please see the chapter General References and Resources.

| Resource | Available at: | Description |
|---|---|---|
| Getting the product and service plan right | http://pt.slideshare.net/roymogg/the-marketing-mix-price-the-bizface-on-line-mba | A brief presentation about product and service planning. Not focused on DAM, but it can help the discussion. |
| Introduction to Decision Making Methods | http://academic.evergreen.edu/projects/bdei/documents/decisionmakingmethods.pdf | An article by János Fulop about decision-making methods. |

| Resource | Available at: | Description |
|---|---|---|
| Building a Scalable Digital Asset Management Platform in the Cloud | https://youtu.be/kJq0y1wwioY | A presentation about the a scalable DAM platform in the cloud. |
| Service focus | http://www.optimityadvisors.com/IndustryExperience/MediaEntertainment/ServiceFocus/ | A brief but important text about Service focus. |
| Information Governance Maturity Model | http://eiarquivos2013.weebly.com/uploads/1/6/7/0/16700556/a_maturity_model_for_information_governance.pdf | A presentation about Information Governance and service delivery. |
| Guidelines for producing effective documentation | http://www.technical-communicators.com/articles/Guidelines_for_producing_effective_documentation.pdf | A short article with a 9 rules approach to produce effective documentation. |
| Digital Asset Management Plan template | https://www.idigbio.org/wiki/images/2/20/NMNH_Digital_Asset_Plan_Template.pdf | A digital asset management plan template from the Smithsonian Institution that can be analysed in this context. |
| How to maximize your content management strategy with DAM | http://www.widen.com/blog/how-to-maximize-your-content-management-strategy-with-digital-asset-management-part-1 | A two part article about DAM implementation and best pratices. |

**Assessment methods**

To assess the training session the tutor should prepare/ask a case study using relevant context regarding the learner's situation or specific needs (if the training session occurs in a museum they should use the museum situation to build the case study). An example of context for a case study to product or service planning could be:

The X Museum has a collection of 10000 objects covering the history of the City X since the 19th Century. This museum is situated at the city centre and was founded 10 years ago by the city municipality. The museum staff is composed by one historian, two guards, one administrative official and one curator. The museum wants to be more relevant for its community and has in

place a digital strategy with the main goal to be recognized as an important reference to the study of X city and a place of edutainment for younger audiences.

The museum wants to use the digital collection to promote the museum and engage more audiences (virtual and physical ones) to their premises. The museum is using a digital management system for almost one year and has only 500 objects/digital assets recorded. The only person using the system is the museum curator, but the museum board wants to make available at last 75% of the collection in 6 months.

Please discuss with your tutor and colleagues and write a product/service plan based on the resources that you've read/listen/seen in this training session.

**This training session is a specific part of the first step to prepare a DAM ecosystem - PLAN. Please read also the specific chapter above.**

### 8.5.3 Technology Trend Monitoring

Trend monitoring in the cultural sector regarding the use of technologies that can benefit in some way the digital collection management is a huge task.

Everyday we find new technology, new tools, faster systems, new hardware, etc. that can help museums to accomplish the tasks implied in DAM management. In many ways these technologies can help us, but some times they can be a problem to a well-implemented management and documentation system, because they have an extended learning and implementation curve or they don't reply to the institution needs or to the expectations of their audiences.

Therefore a digital curator needs to stay informed about the most recent developments and research in issues like standards, technology (hardware or software), web development, etc. Usually a curator can stay informed by subscribing and reading selected and renowned scientific journals and by participating in conferences, workshops, scientific meetings or trade fairs organised by vendor associations.

These more traditional forms of trend monitoring are still important, but today a digital asset manager can't forget the online tools at his disposal. Above all, the social networks have the power to quickly disseminate information about a new technology, standard or a specific and important event about DAM. To learn more about this subject you can read "What's Trending In Dam, Take-Home Messages From Henry Stewart Dam New York" by James Rourke at the DAM Foundation blog (available at http://damfoundation.org/?p=31799).

There are some monitoring tools for social networks that a digital asset manager should learn about and use regularly. A list of these tools, with a small description, can be found at http://smallbiztrends.com/2012/09/20-free-social-media-monitoring-tools.html.

You can also monitor trends through professional associations (the International Council of Museums (ICOM), which is the most important at the museum sector – www.icom.museum) or by participating in webinars and online courses available regularly on the web.

The participation in professional associations will help the digital curator to stay informed in implementing and using specific DAM systems and strategies since many times these associations develop training sessions and courses in this field of expertise. The DAM Foundation has a free online course entitled "Introduction to Digital Asset Management" that will help the newcomers into the DAM issues. This five parts course is available at http://damfoundation.org/?course=intro.

Visiting thematic blogs, vendor websites and experimenting online software demos are another forms to monitor technology trends. A specific DAM systems vendor, Canto, has a diverse offer of resources, including webinars, available for free online as well (https://www.canto.com/dam-resources/).

Trend monitoring is an essential part for the innovation competences investigated to a digital curator.

**Learning outcomes**

At the end of the training session the learner:

- Can name three emerging technologies and their relevant applications;
- Can investigate three latest ICT technological developments;
- Can investigate three ICT technological developments in managing digital assets;
- Can propose three latest ICT technological developments;
- Can recommend three latest ICT technological developments;
- Can identify three vendors and providers of the ICT solutions;
- Can select two vendors/ providers of the most promising ICT solutions;
- Can evaluate and justify the proposed vendors/ providers of ICT solutions;
- Knows the relevant sources of information (magazines, conferences, events, newsletters, opinion- leaders, on-line – forum etc.);
- Can discriminate the two most promising sources of information;
- Can propose the two most promising sources of information
- Can assess the two most promising sources of information in the strategic decision – making;
- Knows five museum goals and needs;
- Identifies five museum advantages and improvements of adopting ICT;
- Can relate the existing products with the museum's needs;
- Can illustrate expert guidance and advice to the museum teams;
- Can propose three options for strategic decisions;
- Can decide the best ICT for the museum;
- Knows five audience goals and needs;
- Can take strategic decisions predicting ICT solutions for audience- oriented processes;

**Keywords**

New technology; Analysis; Needs diagnosis; Market knowledge; Strategy; Information sources; Social Networks; Training; Research;

**Resources**

The following resources are mandatory for this session along with the ones cited in the training session introduction session. Please read / hear / see them and discuss it with your tutor and colleagues. For general guidance please see the chapter General References and Resources.

| Resource | Available at: | Description |
|---|---|---|
| Digital Asset Manegement News | http://digitalassetmanagementnews.org | DAM News is a website with revelant information about DAM (Vendors, resources, news, features, etc.). |
| CMS Wire | http://www.cmswire.com | CMSwire is a web magazine that covers a range of useful topics to DAM. |
| Top 10 social media analytics tools: The VentureBeat index | http://venturebeat.com/2013/12/20/top-10-social-media-analytics-tools-the-venturebeat-index/ | 10 Social Media analytics tools described by VentureBeat that can be used to analyse social networks about DAM. |
| Social Media Analysis tool | http://sysomos.com | A product to analyse data from Social Media |
| Social Media Analysis services | http://www.socialbakers.com/products/analytics | A service from SocialBakers to analyse social media. |
| Free Social Media Analysis tools | http://www.socialmediatoday.com/marketing/2015-03-10/9-best-free-social-media-analytics-tools | Some free and online available tools for social network monitoring. |

**Assessment methods**

The most appropriate method to use in this training session is a questionnaire (Questions/answers) to determine the knowledge and skills absorbed by the learners. The questionnaire should focus on the learning outcomes defined to the session according with the level of expertise and specific needs of each learner. The tutor and learner should discuss the answers after the period determined to finish this task.

Some questions examples could be:

1. Please list five museum goals on the digital asset management ecosystem?
2. Please name the principal and most reliable source of information about DAM in the cultural sector?
3. Why do you think that is the most reliable source of information about DAM in the cultural sector?
4. Please name three emergent technologies and their application in the DAM ecosystem of a museum?
5. If your institution needs to buy a specific system for DAM who may them contact and why? Please name three or more vendors.
6. If your museum wants to make the collection available online what kind of tools do you recommend for them to use?
7. According with the plan defined in the training session "DAM Plan Development" please name a specific product to deal with the Digital Asset Collection online accessibility?

**This training session is a specific part of the first step to prepare a DAM ecosystem - PLAN. Please read also the specific chapter above.**

### 8.5.4 Innovating

This is the most difficult competence for a digital asset manager or a digital curator to attain. To accomplish this competence he must have proficiency with all the competences needed to plan, implement and manage a DAM ecosystem, but he also needs to do research regarding any DAM issue (technology, standards, terminology, informatics, etc.).

In some countries there are university degrees and other technical courses that can help a digital curator to be involved in research and innovation. The Digital Curation Center, a "world-leading centre of expertise in digital information curation with a focus on building capacity, capability and skills for research data management" has published a list of some international courses that might be useful to check: (http://www.dcc.ac.uk/training/data-management-courses-and-training).

In Portugal, for instance, there is a postgraduate course at the Nova University of Lisbon that is focused on information management and digital curation (in Portuguese available at http://fcsh.unl.pt/ensino/pos-graduacoes-pt/gestao-e-curadoria-da-informacao), but is very common to find this kind of courses in universities with archives, libraries and museum studies.

The digital curator should have, alongside with the research habits referred, implemented in the institution a system to receive feedback from the internal users and from external sources (audiences, costumers, in-house visitors, etc.). This kind of interaction will potentiate creative

thinking, new concepts, public engagement and social impact through the products delivered by a DAM ecosystem.

There are many forms to do this (social networks monitoring, user feedback, surveys, website analytics, etc.), but a Return on investment (ROI) approach such as the one described by Ralph Windsor (available at http://digitalassetmanagementnews.org/features/how-to-avoid-wasting-your-dam-budget-an-roi-oriented-approach-to-digital-asset-management-implementation/) can give us a perspective with financial data alongside with the more qualitative information about the implementation of a DAM system.

Another way to promote innovation within internal and external audiences is to engage them in the innovation process. Smithsonian Institution (http://www.si.edu) has done it by creating an wiki called **"SI Web and New Media Strategy Wiki"** (available at https://smithsonian-webstrategy.wikispaces.com) for the Smithsonian's Web and New Media strategy development (2009-2014) that is (still) open for public (internal and external) participation in that process.

These kinds of tools should be used according to the mission and policies of your institution and they don't apply in any scenario. So you must use those more appropriate for your case.

**Learning outcomes**

At the end of the training session the learner:

- Can present novel and open thinking;
- Knows three latest technological applications;
- Knows three business and market trends;
- Knows five museum's goals and needs;
- Knows five audience goals and needs;
- Applies innovative thinking;
- Can demonstrate revolutionary concepts;
- Applies technological awareness;
- Applies the technological solutions to the museum needs;
- Applies the technological solutions to the audience needs;
- Can identify four appropriate resources;
- Can identify five advantages of adopting new technologies;
- Can analyze different target groups of audience (needs/ characteristics);
- Analyze the impact of functional/ technical changes on audience/ users;
- Can generate two innovation processes techniques in the provision of solutions;
- Can devise two creative solutions for supporting the digital asset management plan;
- Can assess the two innovation processes techniques in the provision of solutions;
- Can recommend innovative changes to the ICT strategy;
- Evaluates the technological solutions to the museum needs;
- Evaluates the technological solutions to the audience needs;

**Keywords**

Research; Training; New technologies; Market knowledge; Audience feedback; Innovation; New tools; Creative thinking; Teamwork; Strategy;

**Resources**

The following resources are mandatory for this session along with the ones cited in the training session introduction session. Please read / hear / see them and discuss it with your tutor and colleagues. For general guidance please see the chapter General References and Resources.

| Resource | Available at: | Description |
|---|---|---|
| The New Cooper Hewitt Experience | http://www.cooperhewitt.org/new-experience/ | This project intend to change the way that museum visitors interact with the museum collection with the help of a interactive tool with the shape of a pen. |
| Cleveland Art Museum Collections Wall | http://www.clevelandart.org/gallery-one/collection-wall | The Collection Wall, a 40-foot interactive, multitouch, MicroTile wall, displays in real time all works of art from the permanent collection currently on view in the galleries. |
| Cleveland Art Museum ArtLens app | http://www.clevelandart.org/gallery-one/artlens | ArtLens is an app developed by the Cleveland Museum of Art that allows you to explore works in the permanent collection both at the museum and from home. |
| Museums and the Web | http://www.museumsandtheweb.com | A useful platform with a lot of information about recent museum innovation and new technologies applied to the sector. |
| MuseumNext | http://www.museumnext.com/conference/ | MuseumNext is a major conference on the future of museums. |

**Assessment methods**

Innovation is difficult to learn and therefore is difficult to assess as well. However this training session can be assessed with the help of a case study where the tutor and the learner(s) could

evaluate the skills needed to develop this competence. An example of context for a case study about innovating could be:

The Museum X had digitised the physical collection to respond to the continuous educational and promotional needs identified with their staff and external audiences. 30.000 art objects dated from the 17th and 18th centuries compose the museum collection. This university museum uses this collection with educational and research purposes and the museum audiences (mainly art history students and researchers) need specific raw metadata information (according with standards) and also tools for information analysis. Nevertheless the museum wants also to engage with other audiences to increase their online and onsite visitors. They will need, as well, to transform the metadata in curated information that could be transformed in knowledge by this specific audience target.

This situation is quite common but the museum board wants to develop a single answer to the scientific community and to the other audiences with a single and innovative web platform where you can learn about the collections and also use the information available in art history studies and research.

Please discuss with your tutor and colleagues and write an essay discussing on a innovative answer for the museum website needs based on the resources that you've read/listen/seen in this training session.

**This training session is a specific part of the first step to prepare a DAM ecosystem - PLAN. Please read also the specific chapter above.**

### 8.5.5 Documentation Production

In the museum sector the production of documentation to use, support and enable collections management systems (CMS) or DAM systems, is quite common. They are often called Procedure Manual or Staff Handbook and they provide the details needed to guide the institution staff across the processes and procedures established. They are already in use for the physical museum collections, so in order to assure the integration of the digital asset management specifications they must be reviewed according with the specifications detailed at the DAM plan.

A good procedural manual must start to define the organisation work environment (that must be checked with safety and health regulations and laws applied in) and the specific roles and responsibilities of every department and staff that is involved in digital asset management tasks.

This documentation should focus on the four areas determined by Collections Trust in the framework cited in the Plan topic of this course:

1. Collections development;
    a. Defines procedures and processes for acquisition, entry, disposal and deaccession;

2. Collections information;
    a. Defines procedures and processes for inventory control, location, cataloguing, valuation, audit, rights management, documentation metadata, etc.;
3. Collections preservation;
    a. Defines procedures and processes for risk management, loss or damage, digital preservation, condition checking, formats, etc.;
4. Collections accessibility;
    a. Defines procedures and processes for loans, exploitation (including monetization) and every use of the digital assets collection.

This document shouldn't be a repetition of the Collections Management Policy, but it should be instead a how-to guide with step-by-step instructions on how to proceed, according with the institution mission and collections policy, when a specific task is needed.

Alongside with these step-by-step instructions the procedural manual should also include definitions on:

1. Information input:
    a. Rules for terminology, metadata, file formats, edition tools and other issues related with collections management;
2. Information output:
    a. Standards, templates, classification on different categories of information, legal context and all the other issues related with collections' use and accessibility. In this area you might consider to define the system reporting (internal and external) capabilities.

At the end you should also include information about the document version and establish the review period of the procedures manual. The review process is fundamental for a up-to-date manual according to the DAM specifications and needs and should be established if anything is altered in the DAM ecosystem.

The SPECTRUM DAM document (available at http://www.collectionstrust.org.uk/collections-link/collections-management/spectrum/item/1688-spectrum-digital-asset-management), cited above in the Plan session, is a essential guide to enable the production this documentation.

To prepare the production of this documentation you can read and use the following examples:

- California State Parks Museum: Collections Management Handbook (PDF) - http://www.parks.ca.gov/pages/22491/files/museum_collections_mgmt_handbook_revised_2007.pdf.

- MIT Museum Collections Manual (PDF) - http://web.mit.edu/museum/collections/manual.html.

- University of California Santa Barbara Libraries: Collections Manager's Manual (HTML) - http://collman.library.ucsb.edu.

- Museum of Texas Tech University: Collections Management Procedures (PDF) - https://www.depts.ttu.edu/museumttu/Materials%20for%20web/operations/CM%20Procedures%20final%206-14-06.pdf.

- Birmingham Museums: Collections Management Framework (PDF) - http://www.birminghammuseums.org.uk/system/resources/W1siZiIsIjIwMTUvMDYvMDkvdmN6N2JxbHRtX0NvbGxlY3Rpb25zX01hbmFnZW1lbnRfRnJhbWV3b3JrXzIwMTVfMTkucGRmIl1d/BMT%20Collections%20Management%20Framework.

It is also useful to read the reference book "The Manual of Museum Management" by Gail and Barry Lord (available also online) as a guide for the documentation process.

At the end of the training session, the learner is able to create and develop a Procedure Manual that is a guide for all the processes, procedures, rules, tools and outputs of the museum's DAM system.

**Learning outcomes**

At the end of the training session the learner:

- Knows two standards in documentation;
- Knows four objectives of documentation;
- Knows different documents for designing/ developing and deploying products/ applications/ services;
- Knows three tools for production/ editing and distribution of professional documents;
- Knows two tools for multimedia presentation tools;
- Knows two museum ICT technologies;
- Can clarify the requirements of documentation;
- Applies standards to define document structure;
- Can produce documents describing interactive products/ tools/ applications;
- Can produce documents describing products/ tools/ applications for online communication;
- Can produce documents describing products/ tools/ applications used for digital asset management;

**Keywords**

Standards; Documentation; Planning; Strategy; Product development; Service development; Reporting; Data structure definition; Information interchange; Information reuse; Knowledge creation;

**Resources**

The following resources are mandatory for this session along with the ones cited in the training session introduction session. Please read / hear / see them and discuss it with your tutor and colleagues. For general guidance please see the chapter General References and Resources.

| Resource | Available at: | Description |
|---|---|---|
| Object ID | http://archives.icom.museum/objectid/ | Object ID is an international standard for describing cultural objects. It is the result of years of research in collaboration with the museum community, international police and customs agencies, the art trade, insurance industry, and valuers of art and antiques. |
| A day in the life – Museum registrar | https://youtu.be/wUw-VWILF0Q?list=PL4xukRGEJAjPreqi--B4VFFHnBikbiGVP | A short video about the work of museum registrars with the physical collections and documentation production. |
| Collections Trust | http://www.collectionstrust.org.uk | The Collections Trust is the UK professional association for collections management. |
| SPECTRUM | http://www.collectionstrust.org.uk/collections-link/collections-management/spectrum | SPECTRUM is the most used collection management standard in the museum sector. It's available in different languages. |
| The SPECTRUM Community | http://www.slideshare.net/nickpoole/welcome-to-the-spectrum-community | An introduction to the SPECTRUM Community by Nick Poole. |
| SPECTRUM DAM Resources | http://www.collectionstrust.org.uk/collections-link/collections-management/spectrum/spectrum-dam-resources | SPECTRUM resources about DAM. |

| Resource | Available at: | Description |
|---|---|---|
| What is Digital Asset Management & why should you do it? | https://youtu.be/C-ZbG2iS21c | A presentation by David Walsh from the Imperial War Museums about DAM |

**Assessment methods**

The best way to assess the acquisition of skills and competences needed in this training session is to build a case study that helps the learners to produce a specific documentation manual to be used in the daily work with the collections. An example of context for a case study about innovating could be:

The X Museum has a collection of 10000 objects covering the history of the City X since the 19th Century. This museum is situated at the city centre and was founded 10 years ago by the city municipality. The museum staff is composed by one historian, two guards, one administrative official and one curator. The museum wants to be more relevant for its community and has in place a digital strategy with the main goal to be recognized as an important reference to the study of X city and a place of edutainment for younger audiences.

The museum wants to use the digital collection to promote the museum and engage more audiences (virtual and physical ones) to their premises. The museum is using a digital management system for almost one year and has only 500 objects/digital assets recorded. The only person using the system is the museum curator, but the museum board wants to make available at last 75% of the collection in 6 months.

Please discuss with your tutor and colleagues and write the information input needs in a documentation manual to respond to this situation based on the resources that you've read/listen/seen in this training session.

**This training session is a specific part of the second step to prepare a DAM ecosystem - BUILD. Please read also the specific chapter above.**

### 8.5.6 Purchasing

Purchasing a DAM system isn't simple. There are many relevant issues to consider before the final choice or even before starting the procurement process to buy the wanted solution.

The first step needed to do when your institution decides to manage the digital assets collection is to analyse its current state.

You can do it by analysing the processes used before the implementation of a DAM system and the needs defined in the DAM plan. You should consider at this point the user's roles and responsibilities, staff skills and number, existing technological infrastructure (hardware and software), internal and external publics, digital collection dimension, physical collections digitization status, digital preservation issues, terminology used, processes with failures, excessive documentation backlogs, etc.

You can use the approach defined by Collections Trust in SPECTRUM and examine the current status according with collection development, documentation, preservation and accessibility (Cf. SPECTRUM at:
http://www.collectionstrust.org.uk/collections-link/collections-management/spectrum).
The DAM Maturity Model (http://dammaturitymodel.org) cited above is also a good tool for the current status analysis.

The second step needed to acquire and implement a DAM system is to identify and involve the stakeholders. You should involve everyone affected by a DAM implementation in your institution (IT department, curators, other digital curators, partners, marketing and communication departments, vendors and (above all) the institution board and managers) since their contribution will lead to a successful system. From the stakeholders you can get information about:

1. Priorities;
2. Current status of digital assets management;
3. Current ecosystem problems and non resolved issues;
4. Defining strategies to accomplish success in the medium and long run;
5. Specific needs and audience requests.

Afterwards, you can establish a representative task force that can manage the purchasing and implementation processes, according to the specifications determined in the DAM plan and the information gathered from the stakeholders' participation.

This task force, or DAM implementation managing team, will have the responsibility for all the projects, but still the involvement of stakeholders is crucial for success.

The task force should be responsible for:

1. Implementing the strategy defined in the DAM plan;
2. Defining the short, medium and long-term objectives;
3. Setting selection criteria;
4. Selecting the system;
5. Defining standards;
6. Defining training and creating training documentation;
7. Defining user's roles;

This project management team would be a great help for implementation, but now in many small museums throughout Europe is quite common to have a very small team, or even only one technician with the skills necessary for this task. In that case you should consider bringing in an outside expert in DAM. He/she can help these small institutions with the implementation process.

Another issue of extreme relevance for the purchasing process is the definition of standards that you should include in your ecosystem. In the cultural sector there is a wide range of relevant standards (some of them for the same purpose) that you must know and include in your selection criteria. They'll be fundamental for the success of a DAM System's implementation. This wide array include standards for metadata, terminology, formats, descriptions, cataloguing, etc. and a organized list that can be read at the Athena Project (http://www.athenaeurope.org) booklet entitled **"Digitisation: standards landscape for European museums, archives, libraries"** that is available at: http://www.athenaeurope.org/index.php?en/110/promotional-material/11/10-booklet-digitisation-standards-landscape-for-european-museums-archives-libraries.

In most cases available on the market you should be able to have a demo or trial software to experiment the applications proposed to you by vendors, but you should always ask or find referrals or experiences from similar customers to evaluate every single functionality publicized.

Last, but not least, you should take a deep look at the administrative part of your procurement process. This part of the process presupposes that the digital asset manager understands and applies the mission statement of the museum and the legislature.

Since purchasing and implementing your DAM system, is a complex project, you should read these guiding documents:

- SPECTRUM Digital Asset Management - http://www.collectionstrust.org.uk/collections-link/collections-management/spectrum/item/1688-spectrum-digital-asset-management.

- SPECTRUM DAM Resources - http://www.collectionstrust.org.uk/collections-link/collections-management/spectrum/spectrum-dam-resources.

- Extensis[16]: Digital Asset Management Best Pratice Guide - http://doc.extensis.com/DAM-Best-PracticesGuide-EN.pdf.

For selection criteria or software comparison you can use the following tools available online:

- Choose a DAM System – by Collections Trust – http://www.collectionstrust.org.uk/collections-link/collections-management/spectrum/item/13715-choose-a-dam-system.

[16] Extensis is a vendor of DAM Systems (http://www.extensis.com).

- 10 Core Characteristics Listing Of Qualified Dam Vendors[17] – by DAM Foundation - http://damfoundation.org/?p=31619/.

- Bynder[18] Vendor Comparison Guide - http://info.getbynder.com/vendor-comparison-guide.

It might also be useful to take in consideration the example budget, published by Collections Trust, that is available at: http://www.collectionstrust.org.uk/media/documents/c1/a924/f6/DAM_example_budget.pdf. It will help you defining the cost structure of a DAM system implementation.

**Learning outcomes**

At the end of the training session the learner:

- Knows the current market for relevant products/services;
- Knows four museum needs;
- Knows the museum purchasing policy/ budget;
- Knows four audience needs;
- Can select two suppliers/ products/services;
- Can select two products/ services that improve digital asset management;
- Can select two products/ services that improve museum ICT strategy;
- Can use two benchmarking methods to find best tools/ systems;
- Can investigate the best suppliers/ products/services for the museum;
- Can examine the evaluation of process/ timeliness/cost/quality for products/ services;
- Can analyse received proposals/ offers;
- Can make recommendations on the best purchasing policy for the museum;
- Can manage museum purchasing budget;
- Can decide on the ultimate procurement policy;
- Can match museum needs with the existing products;
- Can match audience needs with the existing products;

**Keywords**

Market Knowledge; Budget analysis; Needs; Vendor; Benchmark techniques; Legal context; Purchasing process management; Procurement policy; Strategy;

**Resources**

[17] In this article you'll find a tool to measure any vendor compliance with the 10 core characteristics of a DAM system.
[18] Bynder is a vendor of DAM Systems (https://www.getbynder.com/en/).

The following resources are mandatory for this session along with the ones cited in the training session introduction session. Please read / hear / see them and discuss it with your tutor and colleagues. For general guidance please see the chapter General References and Resources.

| Resource | Available at: | Description |
|---|---|---|
| Top Digital Asset Management Software Products | http://www.capterra.com/digital-asset-management-software/ | A list of software available with reviews and classifications |

**Assessment methods**

The most appropriate methodology to assess the Purchasing training session is continuous evaluation. The learner along with the tutor should continually make some exercises and discuss along with other learners, through the learning platform, the best way to purchase a DAM system according with different scenarios defined by the tutor with the learners' collaboration. These scenarios should address specific issues like:

1. Legal context;
2. Museum needs;
3. Museum constraints;
4. Different museum budgets;
5. Museum strategy on documentation/procurement/ICT
6. Audience needs;
7. Vendors;
8. System specifications;
9. Standards;
10. Evaluation methods for DAM systems;
11. Return on investment evaluation;

The learner and the tutor should discuss the result of these exercises, regardless of its form, after their conclusion.

**This training session is a specific part of the third step to prepare a DAM ecosystem - ENABLE. Please read also the specific chapter above.**

### 8.5.7 Information and Knowledge Management

Managing a digital asset collection, as we see is a difficult and complex task. A digital curator needs to be aware and acknowledged of a wide range of tools, policies, legal issues, communication, etc. and, in many cases, an expert in the specific thematic field of the collection (art, history, sciences, etc.).

Despite this complexity, the digital curator must always turn the data available for the collections into information and then create the tools that will allow figuration of information into knowledge for the audiences and users.

To facilitate that chain of events the digital curator or digital asset manager, should start by using standards for every single aspect of the DAM ecosystem. Standards are a unique way to enable the use (and therefore reuse) of information.

A guidance tool available in the specific standard landscape for museums, libraries and archives is the (above cited) booklet entitled **"Digitisation: standards landscape for European museums, archives, libraries"** (available at: http://www.athenaeurope.org/index.php?en/110/promotional-material/11/10-booklet-digitisation-standards-landscape-for-european-museums-archives-libraries) where you can find the specifications and different types of standards applied to this sector. This document includes also the basic concepts (metadata, digitisation, interoperability, types of standards) that will help you to understand some technical issues, but the main objective of this resource is to list the different standards for use (see chapter 2).

These kind of standards are produced by many museums or projects, but before starting exploring the benefits of using them a digital curator should visit three international recognised organisations in the areas of museum, libraries and archives:

- ICOM – International Council of Museums – http://www.icom.museum.
    - See mainly the work carried out by CIDOC, the ICOM international committee for documentation, and the standards produced by or with this committee collaboration. A leading interoperability standard that you must know is CIDOC-CRM (or ISO 21127:2006).
- IFLA - The International Federation of Library Associations and Institutions - http://www.ifla.org.
    - An organization that deals with standards for libraries and have published, among other, the Functional Requirements for Bibliographic Records (FRBR).
- ICA – International Council on Archives - http://www.ica.org.
    - A organization that works in the archives' field and has developed, among many others, the ISAD(G) standard for archival description that has been used by every professional in this field of expertise.

These specific standards will help you to organise, document, preserve, publish and provide access to your collections, but nowadays you will also need to acknowledge other types of standards and tools that are essential for managing information and knowledge about your

collection. These include database knowledge, web communication standards, development tools and code languages, social networks applications, legal environment, communication tools and skills or hardware and network infrastructure knowledge.

At the end of the day your focus should be the successful relation between your museum and the public.

To get more information on this topic, please read the white paper about the future of Museum Standards by Nick Poole available at: http://www.collectionstrust.org.uk/blog/past-posts/item/947-where-next-for-museum-standards and the presentations that he published entitled "Where next for Museum Documentation?" (available at: http://www.slideshare.net/nickpoole/where-next-for-museum-documentation) and "Communicating through objects and collections" (available at: http://www.slideshare.net/nickpoole/communicating-through-objects-and-collections-belgrade).

**Learning outcomes**

At the end of the training session the learner:

- Knows two digital asset management processes;
- Knows two data mining methods;
- Knows four museum needs;
- Knows four audience needs/ requirements;
- Knows two information distribution policies;
- Can select the appropriate ICT devices/ tools for management of the digital assets (organization, discovery, preservation, access and use);
- Translate museum behavior into structured information;
- Can apply the appropriate ICT devices/ tools for management of the digital assets (organization, discovery, preservation, access and use);
- Correlates digital assets and knowledge;
- Can create the appropriate information structure;
- Correlates information and knowledge;
- Can analyze two digital asset management processes;
- Can apply two data mining methods;
- Applies two innovative solutions according to appropriate the information structure;
- Makes available the digital assets;
- Can set up the most appropriate digital asset structures;
- Can formalize the audience requirements;
- Makes information available;
- Can justify the most suitable digital asset management process;
- Can recommend the most appropriate digital asset structure for the museum;

**Keywords**

Documentation processes: Digital Asset Management processes; Needs; Market knowledge; Digital curation; Digital information context; New technology; Process implementation; Data structure; Data analysis;

**Resources**

The following resources are mandatory for this session along with the ones cited in the training session introduction session. Please read / hear / see them and discuss it with your tutor and colleagues. For general guidance please see the chapter General References and Resources.

| Resource | Available at: | Description |
|---|---|---|
| DAM and Metadata | http://www.databasics.com.au/solutions/dam/dam_meta.html | A brief article about DAM metadata standards |
| Why Interoperability Standards Are So Critical To The Future Of Digital Asset Management | http://digitalassetmanagementnews.org/features/why-interoperability-standards-are-so-critical-to-the-future-of-digital-asset-management/ | An article by Andreas Mockenhaupt (Director of Professional Services at Canto – a vendor company) about the importance of interoperability in DAM |
| DAM Standads and Specification Organizations | http://www.dameducation.com/digital-asset-management-standards-specifications/ | A reference list of some key standards and the organizations that produce them. |
| Getty Research Institute vocabularies | http://www.getty.edu/research/tools/vocabularies/ | A specific group of reference vocabularies for the heritage sector. |
| Canadian Heritage Information Network | http://www.rcip-chin.gc.ca/index-eng.jsp | The Canadian Heritage Information Network (CHIN) enables museums and other heritage institutions to connect with each other and their audiences through digital technologies. |
| CIDOC-CRM | http://www.cidoc-crm.org | The CIDOC Conceptual Reference Model provides definitions and a formal structure for describing the implicit and explicit concepts and relationships used in cultural heritage documentation. |

**Assessment methods**

The most appropriate method to use in this training session is a questionnaire (Questions/answers) to determine the knowledge and skills absorbed by the learners. The questionnaire should focus on the learning outcomes defined to the session according with the level of expertise and specific needs of each learner. The tutor and learner should discuss the answers after the period determined to finish this task.

Some questions (examples) could be:

1. Please name the three essential organizations that produce standards for the MLA institutions?
2. Please list three mandatory standards for museum documentation?
3. Name the fields of an object information record using Object ID?
4. List the standards that a museum should use to make the collection available online?
5. What is the standard that help museums with collections management procedures?
6. What is the name of the standard developed by CIDOC that is being used in the Archive and Libraries sector as well?
7. Why standards are important to fulfil the audiences needs on collections information?
8. What kind of standards is available for digitisation in the MLA sector according with the Athena Project?

**This training session is a specific part of the third step to prepare a DAM ecosystem - ENABLE. Please read also the specific chapter above.**

### 8.5.8 Needs Identification

In the last section of this training session we'll go through the methods available to identify specific institution needs regarding a DAM system implementation and use.

In many aspects there are some basic needs for a DAM system that are covered in the above sections of this training session. In every single tool you don't need to identify the application's needs in formatting metadata, since it is a standard functionality.

Needs identification methods should address the singularities of your museum and the DAM ecosystem. For instance, if your organisation needs to publish information in social network profiles, and you need a specific format, dimension or integration you are facing specific needs. If you have a specific CMS implemented, and you want to integrate it at your DAM system processes and procedures, you are facing specific needs as well.

To identify the specific needs of your institution the best way is to take into consideration to the museum's internal and external users that have specific needs regarding to the DAM ecosystem. They'll give you processes workflow, input functionalities, system outputs (reports, analytic data,

etc.), terminology standards to use, information categories needs according to different audiences, etc. You can read a good example of needs identification in a final report (with methodology explained) from University of California Libraries at: http://libraries.universityofcalifornia.edu/groups/files/ngts/docs/pots/pot1_lt1a_finalreport_july2012.pdf.

As in other sessions a good way to organise your questionnaire is by using the SPECTRUM collections framework focusing the questions on matters of information, preservation, accessibility and development of your digital assets collection.

Please read the DAM case study about Museum Victoria, available at: http://www.palgrave-journals.com/dam/journal/v5/n3/full/dam20094a.html and visit the presentation of a case study about the Pitt Rivers Museum DAM implementation, also available online at: http://www.palgrave-journals.com/dam/journal/v5/n3/full/dam20094a.html. These two documents are good examples for the work needed here.

**Learning outcomes**

At the end of the training session the learner:

- Can look for and enumerate three ICT suitable for museums;
- Knows five stakeholder and user need analysis techniques;
- Knows five communication techniques;
- Can describe three ICT and their application in museums;
- Can identify museum needs and goals, organizational chart, information, communication and control processes;
- Can identify ten museum key stakeholders and users;
- Can identify ten museum advantages and improvements of adopting new technologies based on user experience;
- Can operate or apply three ICT in museums;
- Can demonstrate the application of three needs analysis techniques;
- Can record twenty requirements of museum key stakeholders and users;
- Can demonstrate the application of three communication techniques;
- Can present ICT solution cost / benefit;
- Can present digital asset management solution cost / benefit;
- Can analyze cost / benefit of three ICT in museums;
- Can analyze three digital asset management processes;
- Can analyze three online communication processes;
- Can analyze twenty requirements of museum key stakeholders and users;
- Can analyze online communication processes;
- Analyze the impact of functional/technical changes on key stakeholders and users;
- Can present ICT solution cost / benefit;
- Can present digital asset management solution cost / benefit;
- Can formalize three digital asset management processes;

- Can formalize three online communication processes;
- Can formalize online communication processes;
- Can assess emerging ICT and their possible application in museum context;
- Can evaluate digital asset, interactive and multimedia installations/tools/applications using cost / benefit analysis;
- Can select the appropriate needs analysis technique based on criteria;
- Can match user key stakeholder and user needs with existing ICT applications and products;
- Can select the appropriate communication technique based on criteria;
- Can evaluate digital asset, interactive and multimedia installations/tools/applications using cost / benefit analysis;
- Can evaluate the impact of functional/technical changes on key stakeholders and users;

**Keywords**

Needs (internal and external) knowledge; Analysis; Organization diagnosis; ROI analysis; Communication skills; Assessment; Standards; Process implementation; Process workflows analysis; Market knowledge;

**Resources**

The following resources are mandatory for this session along with the ones cited in the training session introduction session. Please read / hear / see them and discuss it with your tutor and colleagues. For general guidance please see the chapter General References and Resources.

| Resource | Available at: | Description |
|---|---|---|
| Five tips to identify business goals for DAM | http://digitalassetmanagement.com/blog/five-tips-business-goals-dam/ | An article with five specific points to take in consideration on identifying needs. |
| Methodology to identify Information needs | http://kslibassoc.org/pdf/klcideninfnneed.pdf | A presentation by Francis J. Devadason with a method to identify needs in the information sector. |
| A Methodology for the Identification of Information Needs of Users | http://archive.ifla.org/IV/ifla62/62-devf.htm | An article by Francis J. Devadason and P. Pratap Lingam about methods to identify information needs. |

**Assessment methods**

To assess this training session on Needs identification we can use two different methods: Case Studies and Multiple choices evaluation. The tutor and learners should determine the most appropriate one for each competence or skill defined for this role profile.

To assess acquisition of some skills in this session the tutor should give a context and ask for an essay about the most appropriate methods to determine the museum needs to implement a DAM ecosystem. An example of a case study context could be:

The X Museum has a collection of 10000 objects covering the history of the City X since the 19th Century. This museum is situated at the city centre and was founded 10 years ago by the city municipality. The museum staff is composed by one historian, two guards, one administrative official and one curator. The museum wants to be more relevant for its community and has in place a digital strategy with the main goal to be recognized as an important reference to the study of X city and a place of edutainment for younger audiences.

The museum wants to use the digital collection to promote the museum and engage more audiences (virtual and physical ones) to their premises. The museum is using a digital management system for almost one year and has only 500 objects/digital assets recorded. The only person using the system is the museum curator, but the museum board wants to make available at last 75% of the collection in 6 months.

Please discuss with your tutor and colleagues and determine the methodology that should be used to list the museum needs to deal with the museum goals in this situation based on the resources that you've read/listen/seen in this training session.

For multiple-choice evaluation the tutor, along with the learner, can use the above-described context and then ask what kind of methodologies are more appropriate to establish the museum needs. In this specific context we could use the following choices:

1. To determine the museum needs you should gather information on the relevant sources on DAM systems available online like blogs, DAM system vendors websites, DAM specialists websites, DAM scientific journals, etc.;
2. To determine the museum needs you should use questionnaires and interviews to gather information with the relevant stakeholders of the museum (staff, board, trustees, audiences, etc.);
3. To determine the museum needs you should use other museum examples gathered in case studies published online about the DAM implementation in worlds biggest museums;

At the end of each exercise the tutor and learner should discuss the results and define the next steps on continuous evaluation (if this assessment methodology was the chosen one).

**This training session is a specific part of the third step to prepare a DAM ecosystem - ENABLE. Please read also the specific chapter above.**

### 8.5.9. Service Delivery

Once your museum has the DAM system up and running it'll start to deliver a service that couldn't or shouldn't be interrupted in any circumstances and it must be delivered in compliance with the quality goals defined in the DAM plan/strategy.

The digital asset manager needs to be proactive to ensure that the system is running and he must be able to put together a monitoring system that acts in the following points of stress:

- Infrastructure
    - Regardless of the choice between a cloud solution and an in premises installation, your infrastructure should be closely monitored. There are some monitoring tools available directly from your system software, but is recommended to find a vendor that ensures the infrastructure security (with a cloud solution) or, in case of in premises network and servers, find a monitoring tool that allows the digital asset manager in compliance with the IT department to plan upgrades to its capacity (bandwidth, storage space, processing speed, etc.). In this case the IT department should have a monitoring and reporting tools like the ones provided by Splunk (http://www.splunk.com);
- Workflows and procedures
    - Monitoring the procedures and workflows is an essential task after you start to manage a digital assets collection. To do this you must go randomly to a product of a workflow or procedure and compare it in correlation with the quality and objectives determined in the strategy plan. If they don´t match, the digital asset manager needs to go through the workflow or procedure to determine and solve the wrong step or steps;
- Standards and information control
    - As we saw before, standards are the best way to enable the use of a cultural institution collection (digital or physical). They help you organizing the collection's metadata and data, they provide structured databases and terminology for collections documentation and they are responsible for the success of a good search engine. Nevertheless a digital asset manager or curator must create a check routine to see if metadata, terminology, classifications, name attributions, file location, etc. are matching with the previously defined rules. Using the reporting and search features of the DAM system is the best way to do it;
- Integration
    - DAM systems can help you organizing your digital asset collections, but they aren't the only systems used in museums or cultural institutions. They are commonly integrated with other tools and systems that use digital assets for managing,

documentation, communication and other purposes. These integrations represent a stress point because there are many reasons for them to fail: a new system version, hardware upgrades, new web technology, etc. The digital asset manager must have a complete records on the specifications of every integration in the DAM ecosystem, so he can act appropriately when needed (you can find a good example of integration documentation on the presentation by Paul Bevan available at http://www.dpconline.org/component/docman/doc_download/178- );

- Operational staff

    - Maybe the most sensible part of a DAM implementation and operation is the staff that works together. Don't get the wrong message. The staff that will work with the DAM system is a key part of the system and you should always check for their needs and cooperate with them, listen about the system problems and review with them the difficulties on implementing the procedures and workflows defined. The digital asset manager, as the responsible for the DAM ecosystem should collaborate with the staff manager to ensure the professional needs and the number of professionals needed for the DAM tasks;

- Help and operational documentation

    - Another crucial task for maintaining the DAM ecosystem is the help and operation documentation. The digital asset manager should always have the procedure manual, help documentation and log problems, system failures, suggestions for new features and system analytics up-to-date. This task can only be done with the help of all stakeholders involved that will enable the continuous verification of the DAM ecosystem. It's very important the version control and the dissemination of the recent material available.

If carried out correctly, this tasks will help you in the next point of this learning session about how to manage DAM ecosystem problems.

**Learning outcomes**

At the end of the training session the learner:

- Knows how to interpret digital asset management application requirements;
- Knows how to complete documentation used in digital asset management applications delivery;
- Can identify at least three digital asset management applications delivery actions;
- Can identify failures in digital asset management applications delivery actions;
- Can interpret the organization's digital asset management strategy;
- Can report digital asset management applications delivery provision to superiors;
- Can examine digital asset management applications;

- Can examine digital asset management infrastructure management;
- Can analyze three practices and standards in digital asset management applications;
- Can analyze at least three web, cloud and mobile technologies;
- Can examine digital asset management applications delivery provision;
- Can identify at least three processes which comprise the organization's digital asset management strategy;
- Can determine manpower workload / requirements for efficient and cost effective service provision;

**Keywords**

DAM process analysis; DAM ecosystem assessment; Reporting; Documentation product delivery; Digital curation; Metadata; Standards; DAM Applications; Documentation workflows analysis; Resources assessement;

**Resources**

The following resources are mandatory for this session along with the ones cited in the training session introduction session. Please read / hear / see them and discuss it with your tutor and colleagues. For general guidance please see the chapter General References and Resources.

| Resource | Available at: | Description |
|---|---|---|
| Overview of Digital Asset Management Systems | https://net.educause.edu/ir/library/pdf/DEC0203.pdf | An overview of DAM Systems in high dregree studies that can be helpful in this training session. |
| DAM If You Do! BlueStream Digital Asset Management Infrastructure | http://www.nmc.org/pdf/2008-King.pdf | A article about DAM and supporting infrastructures presented at the NMC 2008 Summer Conference. |
| When You Think DAM, Think Integration | http://www.cmswire.com/cms/digital-asset-management/when-you-think-dam-think-integration-028304.php | A article by John Horodyski about the relevance of integration in DAM Systems. |
| The Open Archival Information System Reference Model: Introductory Guide | http://www.dpconline.org/component/docman/doc_download/347-introduction-to-oais-introduction-to-oais?q=integration | A document about the OAIS reference model that can help with integration. |
| An interview with Katrina Sluis, Digital Curator at | http://www.furtherfield.org/features/interviews/interview-katrina-sluis-digital-curator-photographers-gallery | An inside view of one example of a digital curator work. |

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| the Photographers' Gallery | | |
| Thinking like a digital curator: Creating internships in the Cognitive Apprenticeship Model | https://www.academia.edu/2738683/Thinking_like_a_digital_curator_Creating_internships_in_the_Cognitive_Apprenticeship_Model | Conference proceedings about digital curation work. |
| Documentation Production Under Next Generation Technologies | http://eprints.cs.vt.edu/archive/00000163/ | An article that describes the development of the Abstraction Refinement Model as a basis for linking the development and maintenance tasks in software systems. |

**Assessment methods**

The most appropriate method to assess the Service delivery training session is to build a questionnaire to evaluate the acquisition of skills and competences defined in the digital curator role profile. The questionnaire should focus on the learning outcomes defined to the session according with the level of expertise and specific needs of each learner. The tutor and learner should discuss the answers after the period determined to finish this task.

Some questions (examples) could be:

1. Please name the principal processes in digital asset management?
2. Please name three points of stress in a DAM ecosystem that should be monitored closely by the Digital Asset Manager?
3. Please name three technologies that can help to integrate DAM systems with other systems used in the museum?
4. How can standards help to evaluate the service delivery of your DAM ecosystem?
5. Define the staff needed in a small museum to deliver a continuous service in the DAM Ecosystem?
6. What measures should a Digital Asset Manager take to prevent a service delivery interruption?
7. What is the basic infrastructure needed to implement DAM in any museum?
8. How can a digital curator evaluate quality in service delivery?

**This training session is a specific part of the fourth step to prepare a DAM ecosystem - RUN. Please read also the specific chapter above.**

### 8.5.10 Problem Management

In a DAM ecosystem of a museum it's quite probable that some problems will appear. As we have seen before there are so many issues in the ecosystem for the same purpose and some of them can go wrong even if the digital asset manager or the stakeholders act in the proper way. Solving problems (not seek for a culprit), or better, implementing a strategy to manage problems is a key issue when the system is running in your institution.

The primary objective of problem management is to prevent incidents from happening, and to minimize the impact of incidents that cannot be prevented. When a digital asset manager implement a problem management strategy he acts on problem and error controls and he is proactive to resolve or prevent problems. The goal in the institution strategy is to minimize their impact in the DAM ecosystem, no matter the cause, and prevent the recurrence of significant problems that affect the system's normal use.

To implement a problem management strategy the digital curator will need information on every single incident or problem founded and reported by him or by the team. So the first task is the implementation of a knowledge system that is used by everyone on the DAM system. This tool should allow users to report problems and incidents and classify them according with a pre-determined list of problem types. It's helpful if the system allows users to classify the problem's priority. This tool informs the digital manager to act and resolve the problem to its causes.

Problem management isn't a unique attribution of the digital asset manager. In many problems he will only act as an interaction facilitator between all the parts involved in the problem or incident resolution. In matter of fact he should be more likely a problem management analyst and controller. A person that knows every single aspect of the system and can understand the root problems so to explain them to the vendor support team or allocate the necessary resources (internal and external) to minimise or resolve them.

To implement a problem management system that can minimise the incidents or prevent them please read and use the resource published by ITSM community at: http://www.itsmcommunity.org/downloads/Sample_Process_Guide_-_Problem_Management.pdf and adapt it to your institution needs. This resource isn't focused on DAM, but can be adapted to DAM systems as well.

**Learning outcomes**

At the end of the training session the learner:

- Knows the museum's overall ICT infrastructure and key components;
- Knows the museum's reporting procedures;
- Knows the museum's critical situation escalation procedures;
- Knows at least three risk management techniques
- Can identify at least three evaluation, design and implementation methodologies;
- Can identify at least two applications and availability of diagnostic tools;

- Recognizes the importance of preciseness;
- Can identify the link between system infrastructure elements and impact of failure on related business processes;
- Can select digital asset management solution that fits the budget of the museum;
- Can demonstrate the application of three communication techniques;
- Can identify progress of issues throughout lifecycle;
- Can critically analyze at least three digital asset management solutions;
- Can identify the appropriate resources to deployed internally or externally to minimize outages;
- Can propose solutions to at least two critical component failure;
- Can manage risk management audits;
- Can propose appropriate resources to maintenance activities, balancing cost and risk;

**Keywords**

Organisation assessment; Needs; Risk management; Diagnostic tools; Act on failure; Planning; Resources management; Audits techniques knowledge; Services and products lifecycle;

**Resources**

The following resources are mandatory for this session along with the ones cited in the training session introduction session. Please read / hear / see them and discuss it with your tutor and colleagues. For general guidance please see the chapter General References and Resources.

| Resource | Available at: | Description |
|---|---|---|
| RPR Problem Diagnosis | https://www.academia.edu/15686081/RPR_Problem_Diagnosis | A book about methodologies used in problem management in the IT sector. |
| Reactive Proactive Problem Management | https://www.academia.edu/15681876/Reactive_Proactive_Problem_Management | A presentation about reactive and proactive problem management. |
| Pareto Analysis | https://en.wikipedia.org/wiki/Pareto_analysis | Pareto analysis is a creative way of looking at causes of problems because it helps stimulate thinking and organize thoughts. |
| RPR problem diagnosis | https://en.wikipedia.org/wiki/RPR_problem_diagnosis | RPR (rapid problem resolution) its a problem diagnosis method that |

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| | | can be used in this field as well. |

**Assessment methods**

The most appropriate methodology to assess the Problem management training session is continuous evaluation. The learner along with the tutor should continually make some exercises and discuss along with other learners, through the learning platform, the best way to manage problems found in the DAM ecosystem according with different scenarios defined by the tutor with the learners' collaboration. These scenarios should address specific issues like:

1. Museum dimension;
2. Museum or collections constraints;
3. Different museum budgets;
4. Museum strategy on documentation and/or ICT;
5. Product delivery problems;
6. Different incidents and system failures;
7. System specifications;
8. Standards;
9. Information quality;
10. Evaluation methods for DAM systems;
11. Maintenance plan and activities;

The learner and the tutor should discuss the result of these exercises, regardless of its form, after their conclusion.

**This training session is a specific part of the fourth step to prepare a DAM ecosystem - RUN. Please read also the specific chapter above.**

### 8.5.11 Forecast Development

In this first topic of the manage learning session we are going to explore the ability and the tools available for a digital curator investigate the internal and external needs and the evaluation process needed in order to implement the DAM in the products and services provided by the museum. To help the digital asset manager fulfilling the tasks successfully it's better to act in two plans: internal and external.

The digital curator needs to collect and analyse information separately, internally and externally and then connect the essential dots if needed.

Internally the task is simpler. First of all the digital asset manager should control and have access to all the report and managing tools that allow him to see the current status of the DAM ecosystem. With this tools and the proper administrator profile he can verify:

1. Workload and staff number needs;
2. Progression of the digitisation process;
3. System failures;
4. Hardware problems and needs;
5. Integration issues;
6. Workflow or procedures problems and needs;
7. DAM system capacity.

Secondly, it's easier to get feedback (or implement a feedback process) internally. The digital asset manager has (or should have) facilitated access to every internal stakeholder and gives them the tools to report any malwares or malfunctions of the system (incidents, problems, needs, old hardware, integration issues, etc.). A good way to gather information from internal sources is to conduct interviews with staff members from different departments about the DAM ecosystem. They'll give qualitative information about DAM questions in your institution environment.

Gathering information from external sources is more difficult and often less precise. Nevertheless the digital asset manager has some specific tools available to analyse external user's information on the DAM products and services. These tools are website's or repository analytics, that give us data about terms used, items viewed and downloaded, products purchased, services used, categories of information asked for, social network sharing, etc. In some museums requests by users for material such as publications, publicity, research or other specific purposes are also a good information source when you are preparing the viability of the system. In order to analyse external information is often useful to listen to your audiences or external stakeholders. They can do this, as well, through the use of surveys or specific in-house interviews about the use of digital assets.

Finally the digital asset manager should also pay attention to all forms of information (internal and external) indirectly connected to the use of the DAM products and services. These

information sources come from journals, magazines, scientific research, vendors, new laws and legal contexts, new institution policies, procedures or rules, new hardware and so on, that can, in any way, be a improvement to the current status of the DAM system used.

These specific tasks should be carried out regularly and the digital asset manager should prepare a systematic approach using information for upgrades, new tools, services or products. Implementing these tasks in the DAM policy of your institution might seem rare for the board, but a digital curator should be able to see this described, as it is his job responsibility.

**Learning outcomes**

At the end of the training session the learner:

- Knows the market size and relevant fluctuations;
- Knows accessibility of the market according to current conditions (e.g. government policies, emerging technologies, social and cultural trends, etc.);
- Can interpret the extended supply chain operation;
- Knows museum's budget dedicated to ICT development;
- Knows museum and audience needs;
- Knows at least three museum and audience need analysis techniques;
- Can identify at least two methods to generate sales forecasts in relation to current market share;
- Can interpret external research data and analyze information;
- Can apply at least three large scale data analysis techniques (data mining);
- Can apply new emerging technologies (e.g. distributed systems, virtualization, mobility, data sets);
- Can apply at least three methods to analyze information and business processes;
- Can apply at least three what-if techniques to produce realistic outlooks;
- Can connect museum and audience needs with products in the market;
- Can identify organizational processes and the way they are integrated and their dependency upon ICT applications;
- Can compare sales and production forecasts of forthcoming/newly launched ICT tools and solutions and analyze potential mismatches;
- Can connect museum and audience needs with products in the market;
- Can analyze in at least three different ways information and online communication processes;
- Can identify organizational processes and the way they are integrated and their dependency upon ICT applications;
- Can identify four business advantages and improvements of adopting emerging technologies for the museum;
- Can analyze three future developments in business process and technology application;
- Can analyze feasibility in terms of costs and benefits;
- Can combine museum and audience needs with interactive and multimedia installations/tools/applications developed;

**Keywords**

Market knowledge; Data analysis; Audiences needs analysis; Business processes; Communication; ROI Analysis; Market knowledge; Services and products development; Product placement;

**Resources**

The following resources are mandatory for this session along with the ones cited in the training session introduction session. Please read / hear / see them and discuss it with your tutor and colleagues. For general guidance please see the chapter General References and Resources.

| Resource | Available at: | Description |
|---|---|---|
| How to Choose the Right Forecasting Technique | https://hbr.org/1971/07/how-to-choose-the-right-forecasting-technique | A description about the forecast techniques and methods available. |
| CMS Wire | http://www.cmswire.com | CMSwire is a web magazine that covers a range of useful topics to DAM. |
| Top 10 social media analytics tools: The VentureBeat index | http://venturebeat.com/2013/12/20/top-10-social-media-analytics-tools-the-venturebeat-index/ | 10 Social Media analytics tools described by VentureBeat that can be used to analyse social networks about DAM. |
| Technology forecasting | https://en.wikipedia.org/wiki/Technology_forecasting | An Wikipedia article about technology forecasting. |

**Assessment methods**

The best way to assess the acquisition of skills and competences needed in this training session is to build a case study that helps learners on how to act in a specific situation regarding the issues developed in this session. An example of context for a case study about forecast development could be:

The X Museum has a collection of 10.000 objects covering the history of the City X since the 19th Century. This museum is situated at the city centre and was founded 10 years ago by the city municipality. The museum staff is composed by one historian, two guards, one administrative

official and one curator. The museum wants to be more relevant for its community and has in place a digital strategy with the main goal to be recognized as an important reference to the study of X city and a place of edutainment for younger audiences.

The museum wants to use the digital collection (digital assets representing the physical collection) to promote the museum and engage more audiences (virtual and physical ones) to their premises. The museum is using a digital management system for almost one year and has almost 9.000 objects/digital assets recorded. The only person using the system is the museum curator (the digital curator as well), but the museum board wants to use collections information to build new and innovative products according with audiences needs.

Please discuss with your tutor and colleagues and write an essay about the ways and techniques available to match audience and museum needs and develop specific answers to respond to this situation based on the resources that you've read/listen/seen in this training session.

**This training session is a specific part of the fifth step to prepare a DAM ecosystem - MANAGE. Please read also the specific chapter above.**

### 8.5.12 Risk Management

Risk management is often forgotten in many institutions. In the cultural sector and despite of the long tradition in this area, because of the high risks concerning physical collections (Cf. the Risk management program area at Collections Trust - http://www.collectionstrust.org.uk/collections-link/risk-management), we can still find many museums and cultural institutions with no risk management strategies implemented in their digital collections.

Studies in this area are focused in some specific issues about digital collections like, for instance, file formats (Cf. "Risk Management of Digital Information: A File Format Investigation" available at: http://www.clir.org/pubs/reports/pub93/pub93.pdf or **"Risk Management of Digital Information: Case Study for Image File Format"** available at: https://www.library.cornell.edu/preservation/IMLS/CLIRImageStudy.pdf.). But it is easy to see that studying file format issues, website availability and transformations or some domain-specific requirements don't really help museums to build a risk assessment methodology to define, classify, analyse and, finally manage the risks of their digital collections.

Nevertheless efforts are made in many museums and research centres to take into account risk management when developing digital assets policies and strategies. That can help to prevent information loss or damage and to minimise the effects of these kinds of events. One of this studies, published by Barbara Borghese (available at: https://www.academia.edu/1022982/Digital_Preservation_and_Life_Cycle_Management_of_Digital_Collections), help museums and cultural institutions to define a risk assessment methodology or a risk management policy based on these functional areas:

- Insurance
  - Ad-hoc insurance covers for digital objects not widely available and possibly higher in cost;

- Access/Display
  - Possible damage to the object (software/hardware failure, physical support is obsolete, etc.);

- Storage
  - Corruption/loss of digital object due to incorrect storage- Possible unsustainable cost due to lack of appropriate storage programme;

- Preservation
  - Corruption/loss of the digital object due to lack of appropriate preservation strategy- Higher than expected or planned-for cost of preservation due to inappropriate choice of preservation strategy or standard;

- Conservation
  - Corruption/loss of the digital object due to lack of appropriate conservation strategy;
  - Loss of value due to alteration of the original format/content of the digital object;

- Disposal
  - Risk of disposing a digital object that is not supposed to be disposed (loss of value).

So in order to define a risk assessment method that your institution can use as the basis for a risk management system you can analyse the current status of the DAM ecosystem by the institution functional needs. A very important step in the risk management policy is the participation of all museum departments in the risk assessment. So the first task for a digital curator is to publicize it, by all means possible, to be used by the internal and external stakeholders. Knowing the risk management policy is a first and very important step to reduce to a minimum the resources needed when something goes wrong.

Please read also, as guidance for this subject, the **"Framework Of Guidance For Building Good Digital Collections"** a National Information Standards Organization (NISO), a recommended practice that is available at: http://www.niso.org/publications/rp/framework3.pdf or http://www.niso.org/publications/rp/ and, for example, please read the British Library Digital Preservation Strategy[19] available at: http://www.bl.uk/aboutus/stratpolprog/collectioncare/digitalpreservation/strategy/BL_DigitalPreservationStrategy_2013-16-external.pdf.

**Learning outcomes**

[19] The chapter about risks is a must-read for this subject.

At the end of the training session the learner:

- Knows at least three evaluation, design and implementation methodologies;
- Can identify at least four corporate values and interests;
- Knows at least three good practices (methodologies) and standards in risk analysis;
- Can solve at least three conflicts;
- Can interpret museum's risk analysis outcomes and risk management processes;
- Can interpret museum's risk analysis outcomes and risk management processes applicable to interactive and multimedia installations/tools/applications;
- Can interpret museum's risk analysis outcomes and risk management processes to digital asset management;
- Can apply at least three risk and opportunity assessment techniques;
- Can apply risk analysis taking into account corporate values and interests;
- Can calculate the return on investment compared to risk avoidance;
- Can develop risk management plan to identify required preventative actions;
- Can design and document the processes for risk analysis and management;
- Can design and document the processes for risk analysis and management applicable to interactive and multimedia installations/tools/applications;

**Keywords**

Evaluation; Assessment; Risk analysis; Risk Management; DAM processes analysis and assessment; Strategy; Planning; Documentation; Reporting;

**Resources**

The following resources are mandatory for this session along with the ones cited in the training session introduction session. Please read / hear / see them and discuss it with your tutor and colleagues. For general guidance please see the chapter General References and Resources.

| Resource | Available at: | Description |
|---|---|---|
| Risk management | https://en.wikipedia.org/wiki/Risk_management | An Wikipedia article about risk management. |
| ISO Risk Management standards | http://www.iso.org/iso/home/standards/iso31000.htm | Using ISO 31000 can help organizations increase the likelihood of achieving objectives, improve the identification of opportunities and threats and effectively allocate and use resources for risk treatment. |
| Risk Management plan | https://en.wikipedia.org/wiki/Risk_management_plan | An Wikipedia article about risk management plan. |

| | | |
|---|---|---|
| Create Risk Management Plan – Template | http://www.pmhut.com/project-management-process-phase-2-planning-create-risk-management-plan | A template to create a risk management plan. |

**Assessment methods**

The most appropriate method to assess the Risk management training session is to build a questionnaire to evaluate the acquisition of skills and competences defined in the digital cultural asset manager role profile. The questionnaire should focus on the learning outcomes defined to the session according with the level of expertise and specific needs of each learner. The tutor and learner should discuss the answers after the period determined to finish this task.

Some questions (examples) could be:

1. Museums should address specific issues, like file formats, or they should address major issues like strategy? Why?;
2. Please name the functional areas that should be addressed in a Risk Management policy for museum digital collections?;
3. Name at least one methodology to analyse risks on a museum digital collection?
4. Data loss is a major issue on museum documentation in what functional area(s) this specific issue should be addressed? Why?
5. Documentation standards are a key factor to minimize risks. Is this true? Why?
6. The Risk Management Policy should be a public document? Why?

**This training session is a specific part of the fifth step to prepare a DAM ecosystem - MANAGE. Please read also the specific chapter above.**

### 8.5.13 Relationship Management

This competence should be generally applied to all job profiles in a museum and a good professional should hold so to fulfil successfully his or her job tasks.

To be able to accomplish the relationship management, a digital curator needs to know the institution environment and every internal or external stakeholder that's related with the DAM ecosystem (such as the board, the IT department, physical collections departments, audiences, museum visitors, etc.) and able to manage a stable and continuous connection with them when asking for or delivering some product or service. He needs to know the institution's processes, procedures, objectives and management structure and bear in mind the institution's mission and policies.

Some good communication skills are greatly appreciated in this competence, but the digital curator must perform pro-actively so to create empathy with the institution staff and the decision-making structure. Creating networks, joint programs with other departments, internal and external DAM workshops, using social network tools (like wikis, for instance), etc. are some specific operations that a digital asset manager could carry out in order to establish a useful relationship network.

A good example of the use of a tool for this is the example, above cited, of the Smithsonian Web And New Media Strategy Wiki (http://smithsonian-webstrategy.wikispaces.com/Strategy+--+Themes), but there are other ways to do this, like the Hack Days where museums and other cultural institutions ask their audiences to participate in the development of new services and products using the digital assets collection (you can see many examples of this initiatives at: http://openglam.org/category/hack-days/).

Another good tool to promote relationship management in your institution is to ask your human resources department to build a Welcome Manual for Staff that can provide newcomers (or everyone) with all the useful information about the institution.

**Learning outcomes**

At the end of the training session the learner:

- Knows at least four museum processes including, decision making, budgets and management structure;
- Can present good and bad news to avoid surprises;
- Can identify at least four objectives of the museum;
- Can identify museums, staff and technology providers needs;
- Can identify at least three challenges and risks of the museum;
- Can identify at least three objectives of stakeholders;
- Can identify at least three potential win-win opportunities for user/audience and museum;
- Can express him/herself also at least in one foreign language;
- Can demonstrate empathy towards museum staff needs;
- Can demonstrate good interpersonal skills;
- Can determine museum's challenges and risks as long as they are relevant to digital asset management;
- Can examine ongoing commitments to ensure fulfillment;
- Can determine stakeholders' objectives as long as they are relevant to digital asset management;
- Can establish realistic expectations to support development of mutual trust;
- Can propose at least three solutions to meet museums, staff and technology providers needs;
- Can examine and arrange resources to meet stakeholder requirements;
- Can propose at least three techniques to respond to audience needs and their motivation;
- Can explain (defend, argue, justify);

**Keywords**

Assessment; Strategy; Organisation management structure; Communication; Languages; Staff needs assessment; Interpersonal skills; Resources management; Teamwork; Planning; DAM ecosystem; Strategy;

**Resources**

The following resources are mandatory for this session along with the ones cited in the training session introduction session. Please read / hear / see them and discuss it with your tutor and colleagues. For general guidance please see the chapter General References and Resources.

| Resource | Available at: | Description |
|---|---|---|
| Explicating Relationship Management as a General Theory of Public Relations | https://www.researchgate.net/publication/232982036_Explicating_Relationship_Management_as_a_General_Theory_of_Public_Relations | A paper by John A. Ledingham about the theory of relationship management in the Public relations sector. |
| Business Relationship Management Institute | http://brminstitute.org | An website about BRM with some resources that can help to understand the concepts of this field of expertise. Use as reference only. |
| Customer Relationship Management (CRM): Theory and Practice | http://pt.slideshare.net/stetsonhatter/customer-relationship-management-crm-theory-and-practice | A presentation by J. Todd Bennet about the theory and practice of CRM. |

**Assessment methods**

The most appropriate method to assess the Risk management training session is to build a questionnaire to evaluate the acquisition of skills and competences defined in the digital cultural asset manager role profile. The questionnaire should focus on the learning outcomes defined to the session according with the level of expertise and specific needs of each learner. The tutor and learner should discuss the answers after the period determined to finish this task.

Some questions (examples) could be:

1. Please list four museum objectives in a DAM system implementation;
2. According with the DAM definition please name the museum functional needs in a DAM system?
3. Do you think participation and collaborative tools like Wikis can be used to benefit a DAM ecosystem? Why?

4. How can we determine and evaluate the specific needs of each stakeholder in a DAM ecosystem?
5. How can we act to match the stakeholders needs with the DAM ecosystem and products?
6. Please name three objectives of the physical collections curators in a DAM system implementation process?
7. Please explain why DAM is the right answer for the stakeholders needs?

**This training session is a specific part of the fifth step to prepare a DAM ecosystem - MANAGE. Please read also the specific chapter above.**

### 8.5.14 Digital Asset Management Quality Management

Quality is the main issue when delivering a product or service from a DAM system in museums. Nevertheless it's quite common when we go through museum online collections systems or repositories to find digital assets with low resolution and bad quality media. These quality problems are, in great measure, caused by financial and copyright reasons.

Preserving and running up a digital asset management system is expensive for many museums. The needs of DAM are relevant and demand an investment that isn't reachable by many small and medium size institutions because they need to have the human and technological resources to establish a DAM ecosystem. At the same time there are a lot of questions about rights management and there can be noticed inappropriate use of digital assets collections by unauthorised user, other than the museum, so museums, create digital asset collections with low quality. More information about this subject in the **"Managing Intellectual Property for Museums"** by Rina Elster Pantalony available at: http://www.wipo.int/edocs/pubdocs/en/copyright/1001/wipo_pub_1001.pdf.

To cope with these issues, efforts can be done two major fields: politics and technology. The first one is promoting, in the cultural sector, the strategies for use of open data e.g. the European Commission funded projects like OpenGLAM (http://openglam.org), an initiative that promotes free and open access to digital cultural heritage held by Galleries, Libraries, Archives and Museums and defends that concept (Cf. The Open Definition at http://opendefinition.org). The second one is the investment in new technology development, new tools, services or products that can help museums and cultural institutions to deal with these issues. A good example is the Google Art Project (Cf. https://www.google.com/culturalinstitute/project/art-project), from Google Cultural Institute, that helps museums to create and publish a digital assets collection (mostly) with Google resources.

A disruptive project in this area was the Rijskmuseum project making it's collections available online with the highest quality possible and without restrictions in use (Cf. Joris Pekel from Europeana Foundation article **"Democratising the Rijskmuseum"** at http://pro.europeana.eu/files/Europeana_Professional/Publications/Democratising%20the%20

Rijksmuseum.pdf). Before the Rijskmuseum's initiative, not a single museum was even thinking to do so, but after that the museums started to see the benefits of such endeavour and made it the actual trend.

Nevertheless, this trend, the strategy followed by Risjkmuseum, and other international reference museums, can't be applied by every single museum. So, in order to take quality management to your DAM ecosystem you must first define quality indicators (mainly related with the products and services delivered) that allow you to assess the production and distribution chain of the current digital asset management strategy.

A great way to measure quality in museum digital asset collections and management is by using standards as a reference. As we mentioned before, standards are the best way to enable the use of museum collections and they are used to promote quality in Museum Accreditation Schemes like the one found in the UK: (Cf. Accreditation Scheme at http://www.artscouncil.org.uk/what-we-do/supporting-museums/accreditation-scheme/) or in other countries (Cf. Clara Camacho thesis about this subject available at: http://dspace.uevora.pt/rdpc/handle/10174/11718 (only in Portuguese).

Another way is to apply general standards like the ISO 9000 International Standards for quality management systems (QMS), commonly used in manufacturing or services industries, to quality management in museum or digital asset information systems. A very good work about this subject is the thesis by Fred H. Karr, available at: http://digital.library.unt.edu/ark:/67531/metadc5571/ and entitled **"Quality Management in Museum Information Systems: A Case Study of ISO 9001-2000 as an Evaluative Technique".**

Quality management is an intrinsic matter for every museum, so the digital curator should have in mind that museums already use quality management methods in which digital asset quality management should be embedded. There are many studies and publications about this subject, but a good starting point can be the book **"Quality in Museums"**, available at: http://culturalinformatics.org.uk/sites/culturalinformatics.org.uk/files/quality.pdf, and edited by Massimo Negri, especially the articles by Kenneth Hudson and Margherita Sani.

In quality management, as in the other topic of this course, a digital curator must consider the ICOM Code of Ethics (available at: http://icom.museum/the-vision/code-of-ethics//L/0/) since it is first tool to work with museum (even digital) collections.

**Learning outcomes**

At the end of the training session the learner:

- Knows which methods, tools and procedure are applied within the museum and where they should be applied;
- Knows three ICT quality standards;
- Understands regulations and standards in energy efficiency and e-waste;
- Understands the museum's enterprise architecture and internal standards;
- Can recognize the potential and opportunities of relevant standards and best practices;

- Understands the importance of being ethical;
- Understands the museum's enterprise architecture and internal standards;
- Can apply the IS internal quality audit approach;
- Can operate three ICT quality standards;
- Can apply digital asset management quality standards;
- Can apply all the required technologies (web/ cloud/mobile) and environmental requirements;
- Can illustrate how methods, tools and procedures can be applied to implement the museum's quality policy;
- Can select at least three measures to evaluate effectiveness and efficiency of the overall process;
- Can determine technologies and standards to be used during the deployment;
- Can analyze (monitor, understand and act upon) quality indicators;
- Can determine at least three technologies and standards to be used during the deployment;
- Can analyze process steps to identify at least three strengths and weaknesses;
- Can manage quality audits;

**Keywords**

Quality management; Legal environment; Standards; Sector regulations and laws; ICOM Code of Ethics; Implement quality assessment; Quality indicators analysis; Audits;

**Resources**

The following resources are mandatory for this session along with the ones cited in the training session introduction session. Please read/ hear/ see them and discuss it with your tutor and colleagues. For general guidance please see the chapter General References and Resources.

| Resource | Available at: | Description |
|---|---|---|
| Knowledge Management: An Introduction and Perspective | http://www.emeraldinsight.com/doi/abs/10.1108/13673279710800682 | An article about the ways to produce quality information that can be transformed into knowledge by users. |
| ISO 9000 - Quality management – Implementation guidance | http://www.iso.org/iso/iso9001implementation_guidance.pdf | A guide to implement a ISO 9000 standard in your organisation DAM ecosystem. |

**Assessment methods**

The best way to assess the acquisition of skills and competences in this training session is to build a case study that helps learners on how to act about quality management processes.

An example of context for a case study about this session theme could be:

The X Museum has a collection of 10.000 objects covering the history of the City X since the 19th Century. This museum is situated at the city centre and was founded 10 years ago by the city municipality. The museum wants to be more relevant for its community and has in place a digital strategy with the main goal to be recognized as an important reference to the study of X city and a place of edutainment for younger audiences.

The museum wants to use the digital collection (digital assets representing the physical collection) to promote the museum and engage more audiences (virtual and physical ones) to their premises. The museum is using a digital management system for almost one year and has almost 9.000 objects/digital assets recorded. The only person using the system is the museum curator (the digital curator as well), but the museum board wants to use collections information to build new and innovative products according with audiences needs. The museum board is focused on delivering high quality information and products using the digital collection.

Please discuss with your tutor and colleagues and write an essay about the ways and techniques available to provide and insure quality in the DAM ecosystem outputs based on the resources that you've read/listen/seen in this training session.

**This training session is a specific part of the fifth step to prepare a DAM ecosystem - MANAGE. Please read also the specific chapter above.**

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**General Online Resources**

COPE – Create Once, Publish Everywhere (NPR concept) - http://www.programmableweb.com/news/cope-create-once-publish-everywhere/2009/10/13

DAM Learning Center - http://www.damlearningcenter.com.

DAM Education - http://www.dameducation.com

DAM Scientific Journals - http://www.henrystewartpublications.com/jdmm

DAM Terminology - http://damglossary.org.

DAM Systems Vendor Resources - https://www.canto.com/dam-resources/

Digital Curation Center - http://www.dcc.ac.uk

MET Collection Management Policy - http://www.metmuseum.org/about-the-museum/collections-management-policy

**Research articles**

Digital Curation: The Emergence of a New Discipline - http://ijdc.net/index.php/ijdc/article/viewFile/184/251

Skilling Up to Do Data: Whose Role, Whose Responsibility, Whose Career? - http://www.ijdc.net/index.php/ijdc/article/viewFile/126/133

How To Avoid Wasting Your DAM Budget: An ROI Oriented Approach To Digital Asset Management Implementation - http://digitalassetmanagementnews.org/features/how-to-avoid-wasting-your-dam-budget-an-roi-oriented-approach-to-digital-asset-management-implementation/

10 Core Characteristics Listing Of Qualified Dam Vendors - http://damfoundation.org/2015/01/12/10-core-characteristics-listing-of-qualified-dam-vendors/

A Business-Planning Template: Considerations for Cultural Heritage Organizations and Their Digital Asset Programs - http://www.clir.org/pubs/reports/pub124/template.html

The TOWS matrix - A tool for situational analysis: http://www.sciencedirect.com/science/article/pii/0024630182901200

**University courses:**

Master in Digital Curation (Robert Gordon University, Aberdeen) - http://www.rgu.ac.uk/information-communication-and-media/study-options/distance-and-flexible-learning/digital-curation

Master in Digital Curation (Johns Hopkins University, Washington) - http://advanced.jhu.edu/academics/certificate-programs/digital-curation-certificate/

Digital Curation Center information about courses - http://www.dcc.ac.uk/training/data-management-courses-and-training