eCult

Ausbildungs-Richtlinien

Das eCult Skills Transfer of Innovation Projekt wurde mit Unterstützung der Europäischen Kommission finanziert.

Dieses Dokument gibt nur die Ansichten der Autoren wieder und die Kommission kann nicht für jeglichen Gebrauch der hierin enthaltenen Informationen zur Verantwortung gezogen werden.

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1. Wie man dieses Dokument verwendet

Die Ausbildungs-Richtlinien bieten Anleitung für europäische Trainingsinstitutionen und für alle Personen, die an der Erstellung von Lehrplänen in diesem Bereich beteiligt sind, indem sie detailliert beschreiben, welches Wissen und welche Fertigkeiten und Kompetenzen erworben werden müssen, um sich für einen Job im digitalen Kulturfeld zu qualifizieren.

Darüber hinaus nehmen diese Richtlinien Bezug auf die europäischen Rahmenwerke, das Europäische Qualifikations-Rahmenwerk (EQF) und das e-Kompetenz Rahmenwerk (e-CF) und erleichtern somit die Transparenz und Vergleichbarkeit von Qualifikationen.

Das Handbuch weist folgende Struktur auf:

Die einzelnen Kapitel vermitteln dem Leser Hintergrundinformationen, die für das volle Verständnis des Dokuments wichtig sind. Sie enthalten Verweise auf die Zielgruppen und unterstreichen den Unterschied zwischen Rollen- und Jobprofilen. Letztlich stellen sie eine kurze Einführung der Referenzlevel (EQF und e-CF) bereit[1]. Diese führt kurz in die Kapitel und Unterkapitel ein, die in den Ausbildungsrichtlinien analysiert werden:

Kapitel 1: Einführung oder Wie man das Handbuch verwendet

Am Anfang der Ausbildungsrichtlinien befindet sich die Einführung, in der beschrieben wird, wie dieses Handbuch dazu verwendet werden kann e-Fachpersonal im Kulturbereich auszubilden.

Kapitel 2: Grundprinzipien: Lernveranstaltungen erleichtern

Die Unterkapitel von Trainingseinstellung bis hin zu den Checklisten geben Tipps für die Erstellung, Umsetzung, Evaluierung und Anpassung des Lernprozesses für e-Kulturfunktionen und Berufe. Sie enthalten ebenfalls eine kurze Einführung in den Beurteilungsprozess.

Kapitel 3: Rollenprofile

In diesem Kapitel werden die fünf Rollenprofile sowie ihre Referenzlevel und die Lernergebnisse der verschiedenen e-Kompetenzen beschrieben[2].

Kapitel 4: Ausbildungs-Methodologie

Das Handbuch gibt einige allgemeine Empfehlungen für die Lehr-und Lernmethodologie. Die hier angewandte Methodologie wird Schritt für Schritt betrachtet, um die erwünschten Lernergebnisse zu erreichen.

[1] Betreffend der Referenzlevel, lesen Sie bitte den Anhang 8.3. und 8.4.

[2] Betreffend der Lernergebnisse, lesen Sie bitte den Anhang 8.1.1. und 8.2.

Kapitel 5: Beurteilung der Ausbildung

Dieser Abschnitt erklärt die verschiedenen Beurteilungstechniken, die von den Ausbildern verwendet werden können, detailliert.

Kapitel 6: Fallstudien

Für diese Richtlinien wurde das Rollenprofil des Managers von digitalen Kulturgütern als Pilot-Trainingskurs gewählt. In diesem Trainingskurs werden Kursinformationen, die fünf Schritte zur Einführung eines DAM Ökosystems und die Lerneinheiten mit den e-Kompetenzen sowie die Lernergebnisse für jede Kompetenz und mögliche Beurteilungsmethoden beschrieben. Das Literaturverzeichnis verweist auf nützliche Quellen für einen Pilot-Trainingskurs. Zu diesen gehören unter anderem Verfahrenshandbücher, Standards, wissenschaftliche Publikationen und Artikel.

Kapitel 7: Referenzen

Dieses Kapitel listet die Literatur, auf die sich dieses Handbuch bezieht.

Kapitel 8: Anhänge

Die Anhänge enthalten nützliche Hintergrundinformationen einschließlich der Methodologie zur Bestimmung der Lernergebnisse für jedes Rollenprofil, der Methoden zum Festhalten der Lernergebnisse, der hier verwendeten Europäischen Qualifikationsrahmenwerke (EQF und e-CF), der Trainingsmethodologie für die 14 Kompetenzen des als Fallstudie gewählten Profils und allgemeine Referenzen und Ressourcen für das Trainingsmodul.

Die Kapitelüberschriften geben einen ersten Überblick über die Verwendung dieses Dokuments. Es ist nicht erforderlich, das gesamte Dokument von Anfang bis Ende durchzuarbeiten. Die verschiedenen Zielgruppen sollten sich auf die für sie relevanten Kapitel konzentrieren.

Die Ausbildungsrichtlinien stellen ein umfassendes Set an Lerneinheiten bereit, die von den Berufs-und Bildungsinstitutionen (VET) für die kulturellen Institutionen (nachfolgend als Museen bezeichnet) entwickelt werden und auf Lernergebnisse basieren sollten.
Für jedes Profil wird die spezifische Rolle in einem organisatorischen Kontext beschrieben und Lerneinheiten empfohlen. Diese sind Output-orientiert, d.h. sie basieren auf dem EQF.

1.1 Hintergrund

Gemäß des Netzwerks des Europäischen Statistischen Systems für Kultur (Oktober 2012) repräsentieren Arbeitsplätze im kulturellen Bereich etwa 3% der Gesamt-beschäftigung in Europa. Investitionen in die Kultur zeigen spektakuläre wirtschaftliche Vorteile. Ein Euro an investiertem Kapital resultiert oft im Zehnfachen.

Durch die Ausbreitung des Internets und den technischen Fortschritt haben sich die Gewohnheiten der europäischen Bürger in den letzten 20 Jahren vollkommen verändert. Von dieser Verhaltensänderung sind auch Museen oder archäologische Stätten betroffen. Museen sind gewissermaßen die Wächter der Vergangenheit mit Visionen für die Zukunft. Sie vermitteln ein Bild der Kunst, Kultur, Geschichte und Soziologie und erhalten eine wesentliche Anzahl an Artefakten- oft in einer fremden Umgebung.

Besucher können einfach nur die Schönheit der Objekte genießen, oder auch etwas über sie lernen.

Zunehmend wollen sie auch mittels der neuen digitalen Technologien an digitalen Sammlungen teilhaben (z.B. Pinterest) oder zu Co-Kuratoren werden (z.B. Rijks-Studio). Trotz dieser Entwicklungen wurden nur wenige Fachkräfte im kulturellen Bereich mit Trainingsprogrammen für digitale Medien weitergebildet, obwohl dies heutzutage unerlässlich für ihre alltäglichen Aufgaben ist.

Das eCult Skills Projekt fokussiert sich auf die e-Kompetenzen, die in Berufen im kulturellen Bereich benötigt werden. E-Kultur kann als digitale Technologie definiert werden, die dabei hilft, das kulturelle Erbe zu erreichen oder zu erfahren. Beispielsweise als die Fertigkeiten und Kompetenzen, die den Einsatz digitaler Technologien in der Museumssammlung ermöglichen.

E-Cult Skills ist ein Projekt, das im Rahmen der Leonardo da Vinci Transfer-Projekte entwickelt wurde. Die Ergebnisse basieren auf Analysen, die vom e-Cult Skills Observatorium, dem e-Jobs Observatorium und den am Projekt beteiligten Partnern durchgeführt wurden. Das Projekt wurde von den Leonardo da Vinci Programmen der Europäischen Kommission initiiert und finanziert. Organisationen aus sechs europäischen Ländern (Griechenland, Deutschland, Slowenien, Frankreich, Portugal, EU) führten es durch. Die Partner führten umfassende Recherchen aus, um die wesentlichen *Kenntnisse, Fertigkeiten und Kompetenzen* zu bestimmen, die in der nahen Zukunft in den Museen und am IKT Job Markt gefragt werden.

Um eine Übereinstimmung der Trainingsbedarfe europaweit zu garantieren, arbeitete das Konsortium eng mit Museen, Trainingsinstitutionen sowie politischen Entscheidungsträgern und Experten im Bereich digitaler Kulturjobs zusammen. Auf dieser Basis wurde eine Übersicht von (fünf) Europäischen Fachprofilen erstellt, die alle in den vorliegenden Ausbildungsrichtlinien enthalten und beschrieben sind.

Fünf (5) e-Kultur Jobrollen-Profile[3] werden in Zukunft eine entscheidende Rolle spielen und die Kluft zwischen Kultur und digitalen Medien schließen:

- IKT Berater für Kultur
- Führer im Kulturbereich (mit IKT Fachwissen)
- Manager von digitalen Kulturgütern
- Entwickler für interaktive kulturelle Erfahrungen
- Manager der Online Community für Kultur

Das Dokument soll die wichtigsten Kenntnisse, Fertigkeiten und Kompetenzen für die im eCult Skills beschriebenen beruflichen Rollen aufzeigen.

Entscheidend ist, wie der Auszubildende die Qualifikationen (Kenntnisse, Fertigkeiten und Kompetenzen) in seine/ihre alltäglichen Aufgaben integriert und so die Entwicklung der jeweiligen Organisation unterstützt.

[3] Wir sprechen immer von e-Job Rollenprofilen und nicht e-Job Berufsprofilen.

Diese Fähigkeiten können Lernergebnisse aus Trainingsprogrammen, Arbeitserfahrungen aus ähnlichen Jobs oder Aufgaben, oder von außerhalb der Arbeitswelt sein.
Aus diesem Grund bietet das Dokument keine Schritt für Schritt Anleitung zum Lernen. In anderen Worten:

- Es stellt keine Rezeptsammlung dar
- Man füllt keine Lücken oder Blankoformulare aus
- Es bietet einige Ansätze und Beispiele um ein bestimmtes Lernergebnis zu erreichen

Alle Inhalte dieses Dokuments sind Ergebnis der Marktanalysen und basieren auf Computer-und Feldrecherchen, d.h. Interviews und Umfragen mit Experten, Personalvermittlern, Museumsangestellten und Ausbildern. Diese Gruppen haben es uns ermöglicht, eine klare Vision der Fertigkeiten, Kenntnisse und Kompetenzen zu erhalten, die im Museumsbereich benötigt werden.

Durch diese Recherchen konnten wir auch ergründen und bestimmen, inwieweit diese Aufgaben in Unternehmen und Organisationen in Europa erfüllt werden. So konnten wir die Rollenprofile präzise und in Einklang mit dem Marktbedarf definieren und Ansätze aufstellen, wie man diese Kenntnisse, Fertigkeiten und Kompetenzen am besten trainiert.

Jede Lerneinheit empfiehlt Lernergebnisse, die vom Fachpersonal erreicht werden sollten um für diese fünf e-Kultur-Jobrollen am europäischen Arbeitsmarkt qualifiziert zu sein. Es bleibt die Frage, wer von diesem Dokument alles profitieren kann. Im folgenden Abschnitt werden wir die Zielgruppen dieses Handbuchs vorstellen.

1.2 Die Zielgruppen

Die Ausbildungsrichtlinien richten sich an folgende Personengruppen und Institutionen:

- Trainingsorganisationen die Fachpersonal im Kulturbereich ausbilden
- Kulturorganisationen
- Unternehmen im Kreativsektor und ihre Angestellten
- Studenten und Fachpersonal im Kultursektor

Die Richtlinien helfen Trainingsorganisationen dabei das Niveau zu bestimmen, das vom Job Markt gefragt wird. Dies geschieht in Übereinstimmung mit den Europäischen Referenzlevels, die vom e-Kompetenz Rahmenwerk abgeleitet und vom Europäischen Normungs-Komitee erlassen wurden.
Das e-Kompetenz-Rahmenwerk basiert direkt auf dem Europäischen Qualifikations-Rahmenwerk.
Die Berufsbildungsorganisationen (VET) sind daran interessiert, ihre Trainingsangebote den aufkommenden Marktanforderungen für neue Bereiche auf europäischer Ebene anzupassen und wollen gleichzeitig wettbewerbsfähig bleiben. Dieses Handbuch wird die VET Institutionen dabei unterstützen ihre Trainingsprogramme zu erstellen und anzupassen.

Kulturelle Organisationen sowie Museen oder kreative Institutionen können die in ihrer Organisation benötigten Kompetenzen herausfiltern, vergleichen und ein Level für ihre Angestellten festlegen (durch Training oder Erfahrung). Weiterhin helfen die Ausbildungsrichtlinien den Museen dabei, die

Trainingsbedarfe für ihre Angestellten zu bestimmen. Sie unterstützen sie Kulturorganisationen bei der Einstellung von oder dem Umgang mit Trainern. Diese Richtlinien helfen ihnen dabei externe Kompetenzen zu bestimmen, die das Museumspersonal benötigt um qualifizierten Nachwuchs einzustellen.

Studenten oder Fachkräfte im Kultursektor können ihre Kompetenzen mit den am Job Markt geforderten vergleichen. Sie können ihre Trainingsbedarfe für ein bestimmtes Level bestimmen und Trainingsorganisationen finden, die ihnen dabei helfen ihre Fertigkeiten zu verbessern, so dass sie den Anforderungen der Kulturorganisationen entsprechen und somit ausreichend qualifiziert für Jobpositionen dieses Sektors sind.

Allgemein enthalten die Ausbildungsrichtlinien wichtige Informationen für alle Interessengruppen, die daran interessiert sind herauszufinden, welche Kenntnisse, Fertigkeiten und Kompetenzen erforderlich sind um am Arbeitsmarkt im Bereich Kultur europaweit erfolgreich zu sein.

2 Grundprinzipien: Lernveranstaltungen erleichtern

2.1. Ziel

Dieses Kapitel soll für den Entwurf, die Umsetzung, die Beurteilung und die Anpassung des Lernprozesses für e-Kultur Funktionen und Berufe in Übereinstimmung mit den Empfehlungen der Europäischen Qualitätssicherung in der Berufsausbildung (EQAVET)[4] sensibilisieren. Das Ziel besteht darin, folgende Fragen beantworten zu können:

- Wie können Sie das Niveau Ihrer Teilnehmer vor dem Lernprozess bestimmen?
- Wie können Sie den Lernprozess planen und managen?
- Wie können Sie den Trainingsprozess evaluieren und umstrukturieren?

2.2. Einführung

Ed Mahood (Dekra Akademie 2011) beschreibt den Trainingsprozess als "*alle Aktivitäten, die unternommen werden, um einer Person gute Kenntnisse der Aufgabe zu ermöglichen".* Im Wesentlichen hat der Trainer oder Facilitator ein grundlegendes Verständnis des Prozesses und ist in der Lage, die effektivsten Ansätze für eine gegebene Situation auszuwählen und zu beurteilen, so dass die angestrebten Ergebnisse unter Berücksichtigung der Situation des Auszubildenden und der Arbeitsposition, die der Lernende nach dem Prozess innehält, erreicht werden.

Der Trainingsprozess ist erfolgreich wenn:

- Die Teilnehmer an der Bestimmung ihrer eigenen Lernziele beteiligt wurden.
- Der Inhalt kohärent mit realen Problemen ist, denen die Teilnehmer in realen Arbeits-Situationen begegnen.

[4] Die Empfehlungen sind auf der Website des EQAVET zu finden : http://www.eqavet.eu/gns/home.aspx

- Er effektiv beurteilt wurde und die Teilnehmer sowie das Ausbildungsteam Feedback erhalten haben.

Der Trainingsprozess könnte nicht effektiv sein, wenn wir die vorherigen Kenntnisse oder Erfahrungen des Auszubildenden nicht berücksichtigen – das so genannte “Ausbildungsverhalten”.

2.2.1. Trainingseinstellung

In vielen Fällen wird den relevanten Erfahrungen und der Einstellung oder dem Verhalten der Teilnehmer bei der Auswahl eines Lernprogramms nur wenig Bedeutung zugemessen. Es ist jedoch wichtig, die folgenden Punkte im Kopf zu behalten:

- Welche Kenntnisse sind für das Trainingsprogramm erforderlich und maximieren die Chance vom Training zu profitieren?
- Welche persönlichen Charakteristika können den Erfolg des Trainingsprozesses beeinflussen?

* „Eingangsverhalten beinhaltet das Wissen, die Einstellungen oder Fertigkeiten, welche der Lernende bereits besitzt, die relevant für die Lerntätigkeit oder den fachlichen Stoff sind und die von den Lernenden vor Beginn des Moduls zu demonstrieren erwartet werden können. Dies schließt vorherige Bildung und Erfahrung, die der Lernende in den neuen Lernkontext hineinbringt, mit ein. Das Endziel des Moduls ist es, den Lernenden von seinem Standpunkt (Eingangsverhalten) aus dahin zu bringen, wo Sie ihn gerne sehen würden (Erreichen der Lernziele oder abschließendes Verhalten)“

(Russell, 1974, p. 65)

2.2.2. Kernfragen

Neben den grundlegenden Fragen gibt es einige Schlüsselfragen bezüglich des Profils und des Hintergrunds des Teilnehmers, die den Entwurf des Lernprozesses erleichtern:

- Über welche spezifischen Fertigkeiten muss der Teilnehmer verfügen um das Training erfolgreich zu absolvieren?
- Welche Charakteristika weisen die Teilnehmer der Trainingseinheiten auf?
- Was sind ihre Interessen?
- Was sind ihre Motivationen?
- Haben sie Bedenken oder Probleme?
- In welcher Sprache können sie dem Training folgen?
- Wie viel Zeit können sie für diese Trainingseinheit aufbringen?

- Welche praktischen organisatorischen Probleme müssen sie verwalten um am Training teilzunehmen?
- Werden die Teilnehmer die gelernten Fertigkeiten direkt nach der Einheit verwenden?

2.2.3. Warnhinweis

Es gibt auch wichtige Hinweise, die beim Entwurf des Lernprozesses beachtet werden müssen! Als erstes müssen die vorausgesetzten Kenntnisse, Fertigkeiten und Kompetenzen an die Studenten weitergegeben werden. Es ist auch wichtig zu überprüfen, ob ihre Fähigkeiten den Anforderungen entsprechen. Wird nicht präzise bestimmt, was für den Erfolg erforderlich ist, könnten Studenten sich überschätzen. Das könnte dazu führen, dass sie ihre Trainingsziele nicht erreichen. Die anderen könnten dann ebenfalls in ihrem Fortschritt behindert werden oder unter der schlechten Atmosphäre leiden.

Vielfältige Erfahrungen und Hintergründe sind ein Vorteil und können das kritische Denken und die kreative Problemlösung fördern.
Ein Problem könnte die Überregulierung der Zugangsvoraussetzungen sein, jedoch auch die Zulassung von Studenten, die nicht mit Frustration und Versagen umgehen können.

Die Auszubildenden könnten in der ersten Trainingsstunde von einigen besonderen Momenten aus ihrem Arbeitsalltag berichten, die mit den Lernergebnissen verknüpft sind und so die Motivation und das Interesse am Training steigern. Der Trainer könnte fragen, welche Fertigkeiten ihnen beim jeweiligen Thema fehlen und was sie schon wissen und können. Die Unterstützung der anderen Auszubildenden ist wichtig um alle zu integrieren und gemeinsam die Ziele zu erreichen.

2.2.4. Lerneinheiten

Eine Lerneinheit ist eine geplante und organisierte Veranstaltung mit dem Ziel, dass der Auszubildende nach Abschluss des Lernprozesses die Lernergebnisse in die alltägliche Umgebung integrieren kann.

Während einer Einheit lernt der Auszubildende die notwendigen Kenntnisse, Fertigkeiten, Einstellung und das notwendige Verhalten um seine Fähigkeiten zu verbessern und so die entworfenen Aufgaben auszuführen. Die Erstellung einer solchen Lerneinheit basiert auf spezifischen Regeln und Prinzipien.

2.2.5. Prinzipien und Praktiken

Der Entwurf einer Lerneinheit muss mit dem Festlegen der anvisierten Lernergebnisse beginnen. Diese Lernergebnisse sollen mit den Anforderungen der Teilnehmer und den Erwartungen, der Rolle des Einzelnen sowie den Organisationszielen übereinstimmen.

Die Ziele müssen realistisch, messbar und motivierend sein und in einem realistischen Zeitrahmen erreichbar sein.

Zu den wichtigsten Prinzipien gehören: Die Lernenden aktiv am Lernprozess beteiligen, partizipative Lernmethoden (ermöglichen Interaktion) anpassen und die Kenntnisse, Fertigkeiten und Kompetenzen der anderen integrieren, Erfahrungen durch Diskussionen austauschen, Gruppensitzungen, beispielhaften Alltagssituationen, Fallstudien, Rollenspiele, individuelle Problemlösung oder Problemlösung in Gruppenarbeit.

Beobachten Sie, inwieweit die Auszubildenden in der Lage sind, das Gelernte umzusetzen. Wenn sie dies nicht können und wenn die Lernenden nicht dazu motiviert werden, wird die ganze Lerneinheit am Ende eine Zeit- und Geldverschwendung sein.

2.2.6. Erinnerung

Es gibt einige wichtige Punkte für den Einsatz einer Trainingsmethode. Hier finden Sie 6 essentielle Gesichtspunkte für die Wahl einer geeigneten Methode:

1. Überlegen Sie sich, welche Lernergebnisse Sie anstreben. Sind es neue Fertigkeiten, neue Technologien, neue Techniken für alte Fertigkeiten oder ein anderes Arbeitsplatzverhalten?
2. Überprüfen Sie die Methode die Sie verwenden wollen und ob diese kohärent mit den angestrebten Lernergebnissen ist.
3. Berücksichtigen Sie die Erfahrungen und Erwartungen der Teilnehmer. Wer wird ausgebildet? Neue Angestellte, Kurzzeit -Arbeiter, höheres Management, etc.?
4. Betrachten Sie ihre persönlichen Fertigkeiten als Trainer
5. Wie hoch ist Ihr Trainingsbudget? Und welche Ressourcen und Fazilitäten sind verfügbar? Können Sie etwas einsetzen, das Mehrwert bringt? Ihre Zeit und die Zeit Ihrer Studenten muss für das Budget der Einheit berücksichtigt werden.
6. Wenn Sie mehrere Methoden kombinieren, achten Sie darauf Ihre Studenten nicht zu überladen.

2.2.7. Beurteilung

Auch wenn einige Experten zwischen Beurteilung und Evaluierung unterscheiden, sind wir der Ansicht, dass der Unterschied sehr klein ist und hauptsächlich auf kulturellen Unterschieden basiert. Daher werden wir in diesem Dokument die beiden Begriffe als Synonyme behandeln.

Der Beurteilungsprozess beginnt mit der Erstellung der Trainingseinheit und beinhaltet die Planung, Diskussion, Konsensbildung, Messung, Analyse und Verbesserung in Einklang mit den Lernzielen.

Zunächst ist festzuhalten, dass es keine allgemeingültigen Rezepte für die Trainingsevaluierung gibt. In manchen Situationen kann ein Ansatz sehr wertvoll sein, während er in einer anderen Situation (oder bei einer anderen Person) gar nicht mehr passt.

Die Evaluierung muss sich an den folgenden Punkten orientieren:

- gerechtfertigte Ziele
- Lernergebnisse (einschließlich des Levels, das am Ende des Trainingsprozesses erreicht wird)
- Teilnehmer
- Kommunikation
- Timing
- Den verwendeten Rahmenwerken
- Finanzquellen

Ziel der Beurteilung ist es zu messen, inwieweit der Auszubildende in der Lage ist das Gelernte umzusetzen. Dieses neue Können soll mit dem angestrebten Level verglichen werden, das vor Beginn der Trainingseinheit festgelegt wurde. Die Überprüfung kann durch Übungen oder durch eine gut vorbereitete Diskussion erfolgen. Am effizientesten ist es, reale Arbeitssituationen anzusprechen und zu analysieren, wie der Auszubildende das neue Wissen einsetzt.

2.2.8. Hilfreiche Tipps

Folgende sechs Punkte stellen sicher, dass die Lerneinheit vollständig evaluiert werden kann:

1. Planen Sie die Evaluierung vor dem Beginn der Einheit.
2. Machen Sie Sich klar, was Sie evaluieren wollen.
3. Stellen Sie sicher, dass das Feedback der Teilnehmer klar und umfassend ist.
4. Lassen Sie sich detailliertes Feedback von den Teilnehmern geben (positiv oder negativ) sowie Empfehlungen für zukünftige Übungen.
5. Wählen Sie eine geeignete Form für die Evaluierung: Concept maps, Interview, Fragebögen, Übungen, Rollenspiele, Fokusgruppen, Checklisten, etc.
6. Evaluieren Sie den gesamten Lernprozess und nicht nur eine einzelne Veranstaltung.

2.2.9 Checkliste

Nutzen Sie diese Checkliste um zu evaluieren, wie Sie Ihr Training strukturiert haben:

Berücksichtigt der Trainingsplan, was die Teilnehmer tatsächlich wissen müssen und nach Abschluss des Trainings tun sollen?	Ja ☐	Nein ☐
Wissen Sie, was ‘gute Leistung´ bedeutet, in anderen Worten, was man tun muss, um eine gute Leistung in der neuen Rolle zu erbringen?	Ja ☐	Nein ☐
Wissen Sie, welche Lücken zwischen dem was Anbieter wissen und dem, was sie wissen müssen bestehen und welches Wissen genau erforderlich ist um ihre Rolle erfolgreich auszuführen?	Ja ☐	Nein ☐
Wird Weiterbildung dabei helfen diese Lücke zu schließen?	Ja ☐	Nein ☐
Zu Beginn: Erfüllt die Trainingsmethode die Fertigkeiten, Kenntnisse und Einstellung (Lernziele), die unterrichtet werden sollen?	Ja ☐	Nein ☐

Werden die Teilnehmer aktiv durch Diskussionen und eine Bandbreite an Aktivitäten in ihre Lernerfahrung miteinbezogen?	Ja ☐	Nein ☐
Ermutigen Sie Teilnehmer ihre Expertise und Erfahrungen mit den anderen im Training zu teilen?	Ja ☐	Nein ☐
Haben Sie einen adäquaten Evaluierungsprozess etabliert um den Trainingsprozess, den Lernprozess und die Anwendung zu beurteilen?	Ja ☐	Nein ☐

2.3 Schlussfolgerung

Unabhängig davon, ob Sie ein erfahrener Ausbilder oder Facilitator oder neu in diesem Bereich sind und Ihnen noch die Erfahrung fehlt Lerninhalte zu erleichtern, es gibt viele Themen, die sorgfältig betrachtet werden sollten:

- Die Teilnehmer mit den spezifischen fünf Rollenprofilen und ihre Hintergründe,
- Die Gründe: Warum unternehmen Sie das Training, was wollen Sie kommunizieren, welche Lern-und Beurteilungsmethoden könnten am besten für den geplanten Workshop geeignet sein?

3. Rollenprofile

Die Haupttabelle der Rollenprofile enthält die folgenden Informationen[5]:

- *Name* des Rollenprofils mitsamt alternativer Rollentitel.
- Ein Summary Statement, das kurz zusammenfasst, was die Fachkraft in seiner/ihrer Position tun wird[6].
- Die *Aufgabe* gibt die Rolle des Experten innerhalb der Organisation wieder.
- *Ergebnisse:* die wichtigsten Ergebnisse, die der Angestellte in seiner Rolle abliefern muss.
- *Hauptaufgaben:* zeigen auf, was der Experte in seiner Kulturorganisation leistet.
- *Umgebung* beschreibt den Kontext, in dem die Aufgaben ausgeführt werden.
- *KPI* beschreibt die wesentlichen Leistungsindikatoren für die Rolle in der Organisation.
- Eine Tabelle mit den detaillierten e-Kompetenzen, die für das Rollenprofil benötigt werden.

Für jedes Rollenprofil sind die korrespondierenden e-Kompetenzen gegeben, die auf dem e-CF basieren. Neben der allgemeinen Beschreibung (in Dimension 2), werden die Ausführungslevel (Level 1-5) (in Dimension 3) und die relevanten Kenntnisse und Fertigkeiten (in Dimension 4) beschrieben.

Auf die Haupttabelle folgen die Lernergebnisse jedes Lernmoduls. Um die Lerneinheiten vorzubereiten müssen zuerst die Lernergebnisse des Trainings und die geeigneten Beurteilungsmethoden ausgewählt werden.

Jeder Trainingskurs ist spezifisch an das Rollenprofil angepasst und zielt darauf ab, dem Auszubildenden die in der Rolle beschriebenen Kenntnisse und Fertigkeiten zu vermitteln.

3.1 Rollenprofil ⇔ Jobprofil

Wir haben festgestellt, dass jedes Jobprofil in einer Organisation, einem Unternehmen, im öffentlichen Dienst, im Museum, in Kulturorganisation, etc. eine Mischung aus verschiedenen Rollen ist. So ist z.B. der Community Manager eines Museums oft auch der Vermarkter, ein Manager der Organisation, ein Führer, etc. Ein Angestellter in einer Organisation kann verschiedene Rollen haben, auch wenn der Job sich namentlich unterscheidet. In der gleichen Weise, wie ein Kulturführer auch Kurator sein und verschiedene Aufgaben in der Organisation haben kann.

Wenn wir ein Rollenprofil analysieren, konzentrieren wir uns auf die Rolle selbst: auf die Mission, die das Herzstück der Aufgabe für die Rolle ist. Natürlich kann der Experte auch andere Aufgaben und Rollen in seinem/ihrem Profil haben.

Wir haben bei der Analyse herausgefunden, dass in den meisten Fällen, vor allem in kleinen Strukturen, das Jobprofil eine Mischung aus verschiedenen Rollenprofilen darstellt und jede

[5] Für Informationen zur Tabelle für jedes der 5 Rollenprofile, lesen Sie bitte Anhang 8.1.
[6] Achtung: Rollenprofile sind keine Jobprofile, ein Angesteller in einer Organisation kann verschiedene Rollen ausüben, auch wenn der Jobtitel verschieden ist.

Organisation die Rollen unterschiedlich kombiniert. Jede Organisation hat seine eigene Kombination, die auf der internen Organisation, der Betriebserfahrung, von den Angestellten, von der Erfahrung und der Ausbildung der Experten, die in der Organisation verfügbar sind, und von den auf dem Arbeitsmarkt verfügbaren Arbeitskräften abhängt. Im nächsten Unterkapitel werden die EQF und e-CF Level analysiert, die im Projekt Anwendung fanden.

3.2 Referenzlevels

Jeder EU-Mitgliedsstaat hat sein eigenes Referenzlevel um Ausbildungen sowohl auf akademischem, als auch lebenslangem Lernniveau zu definieren. Dieses Dokument bezieht sich nicht auf ein nationales Training oder ein Bildungsrahmenwerk, das kaum mit anderen verglichen werden kann. Auf europäischer Ebene bildet das Europäische Qualifikationsrahmenwerk (EQF) eine gemeinsame Referenz und jeder nationale Bildungsrahmen steht mit dem EQF in Beziehung.

Weiterhin sind manche europäische Rahmenwerke mit der Dauer der Ausbildung verknüpft, während das Europäische Qualifikationsrahmenwerk auf den Lernergebnissen und nicht auf dem Lerninhalt basiert. Nach Abschluss des Lernprozesses können die Ergebnisse mit spezifischen Kenntnissen, Fertigkeiten und Kompetenzen beschrieben werden. Das Europäische Qualifikationsrahmenwerk verfügt über acht Level von 1 (grundlegend) bis 8 (hohes Expertise Niveau).[7]

Seit 2003 hat die Europäische Kommission für Standardisierung[8] (European Committee for Normalization - CEN) mit Experten und Ausbildern zusammengearbeitet, um ein gemeinsames Rahmenwerk für IKT-verwandte Fertigkeiten zu entwickeln, da Unternehmen und Organisationen Benchmarks benötigen um die IKT Fertigkeiten ihrer (aktuellen und potentiellen) Angestellten zu beurteilen.
Standardisierte Definitionen von Fertigkeitslevels sind nützlich für verschiedene Interessengruppen wie: Manager und Personalabteilungen in Unternehmen und anderen Organisationen (sowohl im öffentlichen als auch privaten Sektoren), Trainingsanbieter und Bildungsinstitutionen (einschließlich der höheren Bildung) sowie Forscher und politische Entscheidungsträger.

Das e-Kompetenz Rahmenwerk- eCF ist direkt vom EQF abgeleitet und seine Beschreibungen sind direkt an IKT-verwandte/-bezogene Fertigkeiten angepasst. Um die e-Kulturrollenprofile zu erstellen, haben wir das e-Kompetenz Rahmenwerk dem spezifischen e-Kultur Feld angepasst. Der e-CF hat fünf Levels, die direkt mit den acht Levels des EQF verbunden sind. Die Level 1 und 2 des EQF sind nicht für das IKT-Feld geeignet, da sie sehr grundlegende Fertigkeiten und Kompetenzen präsentieren, und auch die EQF Level 4 und 5 sind im eCF Level 2 umgesetzt.[9]

e-Kompetenz Level	EQF Level
5	8
4	7

[7] Für weitere Informationen bezüglich des EQF siehe Anhang 8.3.
[8] Comité Européen de Normalisation CEN (frz.). Zur Website des CEN : http://www.cen.eu/Pages/default.aspx
[9] Für weitere Informationen zum E-Kompetenz-Rahmenwerk siehe Anhang 8.4.

3	6
2	5 und 4
1	3

Figur 1. Die 5 e-CF Level sind mit den 8 Levels des EQF verbunden

Im Folgenden finden Sie eine kurze Beschreibung der hier verwendeten Werkzeuge des EQF und e-CF.

3.2.1 Das Europäische Qualifikations-Rahmenwerk (EQF)

Das Europäische Qualifikationsrahmenwerk wurde Anfang dieses Jahrhunderts geschaffen um die Vergleichbarkeit von Qualifikationen auf europäischem Niveau zu fördern. Die traditionelle Trainingsart basiert auf Inhalten und am Ende jeder Trainingseinheit wird das Kenntnisniveau evaluiert. Die Arbeitsfähigkeit und die Bestimmung von Trainingsbedarfen werden in den Unternehmen bestimmt; eine Mischung aus Kenntnissen, Fertigkeiten und Kompetenzen.

Der EQF besteht aus acht Levels, die dazu verwendet werden können, die Fertigkeiten, Kenntnisse und Kompetenzen zu evaluieren. Die Deskriptoren für diese Levels sind sehr einfach und ermöglichen es, die Selbstständigkeit und alle Aufgaben der Organisation sowie langfristige Ziele zu verfolgen und zu beurteilen. Der EQF ist nicht spezifisch für jegliche Aktivität am Arbeitsmarkt, sondern für alle Bereiche anpassbar.

3.2.2 Das e-Kompetenz Rahmenwerk (e-CF)

Dieses Europäische Rahmenwerk wurde als eine Anwendung des EQF erstellt, das sich auf den IT-Bereich spezialisiert. Mehrere essentielle Fähigkeiten und Lernergebnisse wurden vom CEN/ISSS (Europäisches Normungs-Komitee für die Erstellung eines Informations-Gesellschafts Standardisierungs-Systems) identifiziert und mit Hinblick auf IT und IKT Jobs und Trainings näher spezifiziert.

Das Europäische e-Kompetenz Rahmenwerk (e-CF) bietet eine Referenz für 40 Kompetenzen, die an Arbeitsplätzen für Informations-und Kommunikationstechnologie (IKT) benötigt und eingesetzt werden und verwendet hierbei eine gemeinsame Sprache für Kompetenzen, Fertigkeiten und Leistungsniveaus, die in ganz Europa verstanden werden.

Die Definitionen der Kompetenzen und Level sind hauptsächlich allgemein gehalten und beschäftigen sich beispielsweise nicht mit technischen Werkzeugen, sondern der Fähigkeit die Arbeitsaufgaben zu erfüllen. Es ist egal, welche Software benutzt wird. Die Passform ist wichtig für einen Grafiker, um ein Ergebnis zu entwerfen, z.B. um ein Bild der Organisation zu schaffen, welches die Verkäufe ankurbelt, Unternehmensreputation steigert, etc.

Im e-CF werden die Begriffe sehr allgemein beschrieben, um sie auf alle Berufe anwenden zu können.
Das Ziel des eCult Skills Projekts besteht darin, die Beschreibungen der Ergebnisse und Niveaus an die spezifischeren Rollenfunktionen des Kulturfeldes anzupassen. Natürlich müssen die Ergebnisse des

eCult Skills Projekts mit dem EQF und e-CF übereinstimmen. Sie müssen allgemein für alle benötigten Funktionen im Kulturbereich sein.

Die Rollenprofile werden mit mehreren Unterpunkten in 4 Dimensionen präsentiert. Dies entspricht der Struktur des e-Kompetenz Rahmenwerks.

- Dimension 1: umfasst die Kompetenzbereiche, Planen, Erstellen, Betreiben, Ermöglichen, Managen.
- Dimension 2: ist eine allgemeine Beschreibung der Kompetenz
- Dimension 3: erklärt das Leistungsniveau durch einen Deskriptor
- Dimension 4: enthält einige Beispiele um das Rollenprofil besser zu verstehen.

4. Trainingsmethodologie

Die Bedarfsanalyse am Job Markt ergab spezifische e-Kompetenzen und e-Fertigkeiten für jedes Rollenprofil, die benötigt werden, um die geforderten Aufgaben zu erfüllen und auf europäischem Level wettbewerbsfähig zu sein.

Diese Ausbildungsrichtlinien zeigen, wie man die Europäischen Rahmenwerke und die verschiedenen Trainingslevel an zukünftigen Kulturberufen ausrichtet.

Das Handbuch ist essentiell für das Erreichen der Charakteristik dieser fünf Rollenprofile und den damit verbundenen Fertigkeiten und Kompetenzen.

Hierin wird die Methodologie beschrieben, die verwendet wurde, um Trainingsprogramme für die Rollenprofile zu planen und zu managen.

Um die Trainingseinheiten vorzubereiten, müssen wir zunächst die **Lernergebnisse** des Trainings und die passenden **Beurteilungsmethoden** festlegen. In anderen Worten: wir müssen bestimmen, was der Trainee für jede Rolle lernen soll um die Qualifikationen (Kenntnisse, Fertigkeiten, Kompetenzen) zu erreichen und wie man dieses Trainingsverfahren evaluiert.

Jeder Trainingskurs ist spezifisch auf ein Jobrollenprofil ausgerichtet und soll es dem Trainee ermöglichen, die Kenntnisse und Fertigkeiten dieser Rolle zu erwerben[10].

Die Methodologie für die Vorbereitung einer Trainingseinheit für eine Jobrolle umfasst die folgenden Punkte:

1. Erstellen einer Tabelle für die einzelnen Kompetenzen der Jobrollen
2. Bestimmung der Lerneinheiten/Ergebnisse für jede Kompetenz der Jobrolle
3. Verfassen der Ausbildungsrichtlinien (durch das Zusammenfügen der Definitionen der Lerneinheiten)
4. Anpassung der resultierenden Richtlinien an die Jobrolle

[10] Jobrollen-Beschreibungen basieren auf dem Konzept von e-Kompetenzen und dem zugehörigen Level (die höheren Level 4 und 5 sind für Experten gedacht/ für stark spezialisiertes Fachpersonal).

5. Evaluierung des gesamten Trainingsverfahrens

Die empfohlene Methodologie basiert auf den folgenden konsekutiven Annahmen:

1. Die Lerneinheiten sind modular;
2. Die Trainingsmodule (inputorientiert – berücksichtigen Trainingsmaterial, Methoden, Ansätze, Werkzeuge) können auf einer oder mehreren Lerneinheiten basieren (Output orientiert – beschreiben die Kernkompetenzen, die während des Trainings erreicht werden sollen)
3. Für jede Kompetenz wird eine separate Lerneinheit beschrieben, die Teil der Definition der angestrebten Jobrolle ist
4. Die Lerneinheiten berücksichtigen alle wesentlichen Lernergebnisse im entsprechenden Kompetenzbereich, da diese in jeder Jobrolle auftauchen, die mit dieser Kompetenz in Verbindung steht.
5. Für jeden Kompetenzbereich (und somit auch für jede Lerneinheit) sollten die Beurteilungstechniken festgelegt werden
6. Der Trainingsprozess kann zusammengestellt werden, indem Lerneinheiten für die Kompetenzbereiche ausgewählt werden. Er enthält die zugehörigen Beurteilungstechniken, die an den Umfang der Jobrolle angepasst sind.

Im nächsten Kapitel[11] des Handbuchs wird die Methodologie analytischer beschrieben und sogar in präzisen Schritten erklärt. Als Fallstudie für die Anwendung der Methodologie wurde die Rolle des Managers digitaler Kulturgüter gewählt.

[11] Siehe Kapitel 6.

5. Beurteilung der Ausbildung

Die im e-Cult Skills Projekt erstellten Rollenprofile wurden ausgehend von einer Jobmarktanalyse und entsprechender Unternehmensbedarfe weiter ausgearbeitet. Dennoch könnten die Rollenprofile aufgrund des Markts, der Geschichte und der Kultur von Organisation zu Organisation abweichen.

Es ist von zentraler Bedeutung eine Beurteilungsmethode festzulegen, die für alle Organisationen und verschiedene Rollenprofile anwendbar ist.
Die empfohlene Methode bietet einen globalen Ansatz für die Beurteilung.
Er kann an andere Rollenprofile und andere Lernergebnisse angepasst werden, die die Organisation für essentiell hält.

5.1 Ziele der Beurteilung

Die Beurteilung ist der entscheidende Teil des Lernprozesses. Hier wird das vom Lernenden erreichte Level am Ende der Lerneinheit bewertet. Der Beurteilungsprozess ist aus folgenden Gründen wichtig:

- ✓ Man erfährt, ob die in den Lernsitzungen gelehrten Kenntnisse, Fertigkeiten und Kompetenzen von den Lernenden gut übernommen wurden und ob die Lernenden in der Lage sind, diese in ihrem Arbeitsalltag zu nutzen und anzuwenden. Dies hilft dem Trainingsteam dabei zu identifizieren, was beim Entwurf des Trainingsprozesses verbessert werden sollte.
- ✓ Er stimmt mit den EQAVET Empfehlungen überein.
- ✓ Im Falle einer Zertifizierung, eines Diploms oder einer erfolgreichen Evaluierung am Ende der Trainingseinheit durch die Trainingsorganisation sollte der Erwerb der Kompetenz klar verständlich sein und mit den Anforderungen der Anwerber übereinstimmen.
- ✓ Personalvermittler können nicht alle Trainingsorganisationen kennen, die Trainingsprogramme anbieten.
- ✓ Die Evaluierung ist glaubhaft für die Anwerber.
- ✓ Der Lernende weiß, welche Punkte er auf welchem Level verbessern muss, um am Arbeitsmarkt erfolgreich zu sein.
- ✓ Für das Personalmanagement ist die Beurteilung der Angestellten wichtig um Unternehmen zu managen und effiziente Teams zusammenzustellen.

Regelmäßige Beurteilungen und Trainingsaktualisierungen sind notwendig, um bestimmte Kenntnisse, Fertigkeiten und Kompetenzen langfristig innerhalb des Unternehmens zu erhalten.

5.2 Grundlage der Beurteilung

Ziel ist es das Level zu bestimmen, das der Lernende am Ende der Trainingseinheit erreicht hat und inwieweit er in der Lage ist, das neue Wissen im Arbeitsalltag einer Kulturorganisation in Einklang mit den Zielen der Organisation umzusetzen.

Das Level des Lernenden wird durch die Bewertung ermittelt, ob der Auszubildende in der Lage ist, die Aufgaben aus Dimension 2 des Rollenprofils und auf dem Level, das durch den Deskriptor in Dimension 3 beschrieben wird, auszuführen[12].

Das Ziel des EQF ist zu bestimmen, wie der Lernende seine Kenntnisse, Fertigkeiten und Kompetenzen im Arbeitsalltag einsetzt, unabhängig von der Lernumgebung (formal, informal/ durch Erfahrung) in der sie erworben wurden. Es ist notwendig zu bestimmen, ob der Auszubildende das Level 2, 3, 4 oder 5 beherrscht, oder ob er über oder unter den Deskriptoren liegt.

Idealerweise können sich der Trainer und der Auszubildende auf ein erreichtes Level einigen.
Kommen sie zu keiner Einigung, so wird dem Lernenden das niedrigere der beiden Level anerkannt, denn diese Fertigkeiten kann der Auszubildende definitiv in seinem Arbeitsalltag umsetzen.
Die Beurteilung basiert hauptsächlich auf der 3. Dimension[13]. Der Dimension 3 Deskriptor beschreibt verschiedene Zielniveaus. Es gibt Stufen im Deskriptor, um von einem Level zum nächsten zu gelangen. Diese umfassen mehr Kenntnisse, eigenständiges Arbeiten bei den Leistungsaufgaben, mehr Flexibilität und mehr Führungspotenzial für andere Teammitglieder. Diese Faktoren müssen während des Lernprozesses beurteilt werden.

5.3 Wie misst man das Niveau?

Die Befolgung spezifischer Techniken ist der effizienteste Weg um zu einer Einigung zwischen Trainer/Ausbilder und Auszubildendem bezüglich des Levels zu gelangen.
Da wir mit Kompetenzen im Arbeitskontext arbeiten, müssen wir auch die Beurteilung in ein Arbeitsumfeld setzen.

Es gibt verschiedene Techniken, so wie:

1. <u>Die Fallstudie</u>

Erschaffen Sie eine Fallstudie im Kontext einer Kulturorganisation. Definieren Sie den Organisationsstil, den Markt, das Team, die Beschränkungen, die Wettbewerbsvorteile und die Hindernisse.

Wenn der gesamte Kontext gut beschrieben ist, muss der Lernende erklären, was er/sie tun würde, wie und mit welchen internen oder externen Werkzeugen und Ressourcen er/sie das umsetzen würde . Dies kann als schriftliche Aufgabe oder als mündliche Erklärung erfolgen.
Nach der Übung wählen der Lernende und der Trainer jeweils ein Level und erklären die Wahl. Sie können nun für einige Minuten über die Evaluierung diskutieren. Kommen sie zu einer Einigung, wir dieses Level zertifiziert. Können sie sich nicht festlegen, wird das niedrigere Level als gemeinsamer Nenner gewählt.

[12] Berücksichtigt wird das höchste Level, das der Lernende effektiv ausführen kann. Dimension 4 besteht aus nicht erschöpfenden Beispielen von Wissen und Fertigkeiten dieser e-Kompetenz (Dimension 2).
[13] Man beachte, dass Dimension 3 das Fähigkeitslevel mittels eines Deskriptors erklärt, der bei jedem erreichten Level des Berufstätigen anders ist.

(Eine dritte Partei, ein anderer Trainer, oder ein erfahrener Experte könnten an der Bestimmung des Niveaus beteiligt sein. Dies muss aber klar definiert werden, bevor das Training beginnt.)

2. Die kontinuierliche Evaluierung

Während der Trainingseinheit werden schwierige Situationen als Übungsaufgaben benutzt. Es gibt ebenfalls Gruppensitzungen und gemeinsame Reflexionen etc. Wir können diese Beispiele auch als Fallstudien betrachten.
Für die Evaluierung ist das Verfahren dasselbe wie für die oben genannten Fallstudien. Trainer und Lernende entscheiden sich für ein Level und besprechen, wieso dieses Level gewählt wurde.

3. Multiple-choice-Evaluierung

Unter Berücksichtigung des Kontexts werden dem Lernenden verschiedene Handlungsmöglichkeiten vorgeschlagen und der Lernende wählt die passenden. Danach evaluieren der Auszubildende und der Trainer die guten und schlechten Entscheidungen und bestimmen das Niveau.

4. Fragen/ Antworten

Es ist auch möglich einige Fragen zu erstellen und den Trainee darum zu bitten diese schriftlich oder mündlich zu beantworten. Dann werden die Antworten evaluiert und zwischen Trainer und Lernendem diskutiert. Auch hier wird wieder ein Niveau bestimmt, oder bei Uneinigkeit das niedrigere gewählt.

5.4 Zusammenfassung

Die Methodologie ist dafür geeignet alle Lernergebnisse zu evaluieren, unabhängig davon, ob diese Teil der gewählten Lernergebnisse sind oder nicht. Alle Lernergebnisse, die wichtig für den Anwerber sind, können angepasst werden.

Den Kontext realitätsgetreu aufzusetzen ist wichtig, damit der Lernende die richtigen Entscheidungen treffen kann. Dem Trainee zu erklären, wieso ein spezifisches Level für ihn gewählt wurde hilft ihm/ihr dabei, seine/ihre Kenntnisse effizient in seiner/ihrer Arbeitsumgebung einzusetzen.

In einem gut definierten Kontext und Prozess ist es möglich verschiedene Lernergebnisse zur selben Zeit zu evaluieren. Das ist der Grund, warum wir keine abweichende Beurteilungsmethode für jede Lerneinheit oder jedes Rollenprofil empfehlen.

Diese Methodologie ist für alle Lernergebnisse in jedem Rollenprofil geeignet. Sogar zusätzliche wichtige Lerneinheiten, die noch nicht in den wesentlichen Lernergebnissen gelistet sind, können mit dieser Methodologie evaluiert werden.

5.5 Beispiel für die Evaluierung

Um das Verständnis dieses Dokuments zu erleichtern, haben wir eine Fallstudie erstellt und werden anhand dieses Rollenprofils zeigen, wie man die Lernergebnisse und die Ziele der Trainingseinheiten analysiert und evaluiert.

Der Trainee sowie der Trainer müssen in jeder Trainingseinheit die folgende Frage beantworten: ist der Lernende in der Lage…(unter Verwendung der Lernergebnis Deskriptoren)?

Wenn der Auszubildende sich in einer ungewohnten Situation befindet, versuchen wir ihn/sie in einen Kontext zu setzen, in dem er/sie genug Referenzen hat (lokales Museum, ein Museum das er/sie besser kennt). Wir wählen das Beispiel eines Museums in der Region oder Stadt die er/sie gut kennt. Wir bestimmten ein vertrautes Umfeld und geben ihm/ihr nützliche Daten wie:

- Die Größe und Geschichte des Museums, der Organisation, die Zahl der Angestellten, der Subunternehmer, der Partner, der Art und Weise wie die Dienstleistungen organisiert werden und die Angestellten mit denen er/sie in Kontakt steht.
- Die Ziele des Museums, die langfristigen Zielsetzungen des Direktors, Management Boards, Förderorganisationen (Stadt, Region)
- Die Besucher, Struktur des Besucher, jegliche Probleme oder Schwächen des Museums, Wettbewerbsvorteile
- Die Mission des Museums, Strategien, die vom Direktor unterstützt werden und die Werkzeuge, Budget, Spenden/Förderung

Wir bitten den Auszubildenden einen Managementplan für das Museum unter Berücksichtigung der gegebenen Informationen zu erstellen und eigene Empfehlungen basierend auf einer SWOT Analyse und dem Gelernten zu geben. Danach analysieren wir die Vorschläge und evaluieren, ob sie mit den Lernergebnissen des Rollenprofils übereinstimmen.

Es ist wichtig nicht nur das trainierte Wissen, sondern auch (vorherige) Erfahrungen des Trainees zu beurteilen. Auch nicht-formales Lernen oder Arbeitserfahrungen müssen berücksichtigt werden.
Ausschlaggebend ist das Level der Lernergebnisse, das vom Trainee am Ende des Trainings erreicht wurde. Für ein besseres Verständnis der hier beschriebenen Methodologie wählten wir ein Profil aus den fünf e-Kulturjobs aus, das in dem eCult Skills Projekt entwickelt wurde.

6. Fallstudie: Manager Digitaler Kulturgüter: der Pilot Trainings-Kurs

Für dieses Handbuch wurde das Profil des Managers Digitaler Kulturgüter als Fallstudie gewählt. Bei der Fallstudie handelt es sich um eine Analyse des Profils und der erforderlichen Qualifikationen, die darauf fokussiert, wie man die beschriebene Methodologie während des Trainings umsetzen kann und wie der Trainingskurs vom Entwurf bis zur Durchführung umgesetzt wird.

6.1. Kursinformationen (Ziele, Kurstyp, Zielgruppen, Inhaltszusammenfassung)

- Ziele

Das Ziel des Pilot Trainingskurses des Managers digitaler Kulturgüter oder digitalen Kurators ist eine Einführung darüber zu geben, wie man ein DAM Ökosystem im Kultursektor plant, erstellt, betreibt, verwaltet und ermöglicht.

- Kurstyp

Dieser Pilot-Trainingskurs ist ein Online-Selbsttrainingskurs, der das Mentoring durch einen Tutor beinhaltet. Die Materialien und Ressourcen wurden von führenden Forschungszentren und Anbietern industrieller Werkzeuge bereitgestellt.

- Zielgruppe

Die an diesem Kurs interessierten Auszubildenden sollten einige Erfahrung im Umgang mit Sammlungen kultureller Institutionen wie Museen, Archiven oder Bibliotheken haben. Sie sollten eine Managementpolitik der Sammlung einfach erkennen und interpretieren können und die grundlegenden Verfahren über das physische Management der Sammlungen und die Dokumentation haben. Auch von Bedeutung ist es, die essentiellen Dokumentationsstandards zu kennen, die von der ICOM, ICA und IFLA erlassen wurden.

Sie sollten zudem Vorkenntnisse im Umgang mit Technologie wie Dateiformaten oder digitaler Erhaltung und mit Werkzeugen wie Metadaten-Editing-Applikationen oder der Digitalisierung der Hardware und Software haben.

- Inhaltszusammenfassung

Dieser Pilot Trainings-Kurs wurde an den Spezifikationen des Profils des Managers digitaler Kulturgüter ausgerichtet. Dieses Profil wurde im Rahmen des eCult Skills Projekts entwickelt (http://ecultskills.eu), und ist unter http://www.e-jobs-observatory.eu/role-profiles/digital-cultural-asset-manager verfügbar. Er wird sich auf die verschiedenen e-Kompetenzbereiche spezialisieren, die in den detaillierten Profilspezifikationen beschrieben sind. Diese Kompetenzbereiche umfassen:

1. Planen;
2. Erstellen;
3. Ermöglichen;
4. Betreiben;
5. Managen.

Im Kurs werden wir diese Bereiche zuerst vorstellen und anschließend jede Kompetenz und den zugehörigen Bereich identifizieren (in Klammern nach dem Titel). Die Kompetenzen, mit denen wir uns in diesem Kurs auseinandersetzen, sind:

- Entwicklung von Plänen für digitale Güter (PLANEN)
- Produkt/Service-Planung (PLANEN)
- Trendschau Technologie und Innovation (PLANEN)
- Neuerungen einführen (PLANEN)
- Erstellung von Dokumentationen (ERSTELLEN)
- Beschaffung (ERMÖGLICHEN)
- Informations-und Wissensmanagement (ERMÖGLICHEN)
- Bedarfserkennung (ERMÖGLICHEN)
- Dienstleistungsbereitstellung (BETREIBEN)
- Problem-Management (BETREIBEN)
- Prognoseerstellung (MANAGEN)
- Risiko-Management (MANAGEN)
- Management von Beziehungen (MANAGEN)
- Qualitätsmanagement des Managements digitaler Güter (MANAGEN)

Für jede Kompetenz erhält der Lernende eine Einführung über ihre Anforderungen. Anschließend werden die wesentlichen Themen der Kompetenz in Form eines Lern-Leitfadens angesprochen. Für jede Kompetenz haben wir spezifische Lernergebnisse und Beurteilungsmethoden und eine Liste mit hilfreichen Ressourcen zum Thema zusammengestellt.

Jede Kompetenz bietet auch eine Liste mit Stichwörtern, so dass der Lernende seinen Kurs gemäß seiner Erwartungen, Präferenzen und Bedarfe wählen und organisieren kann.

6.2. Einführung

Digitales Gütermanagement ist, wie im DAM Glossar definiert[14], "ein kollektiver Begriff, der für den Prozess der Lagerung, Katalogisierung, Suche und Lieferung von Computerdaten (oder digitalen Gütern) verwendet wird."

Diese Gütern können in verschiedenen Formen vorliegen, so wie als Audio, Text, Bilder, Schriftarten, 3D Modelle, Software, Code, etc. und repräsentieren einen großen Teil der Informationsgesellschaft, in der wir leben.

Heutzutage ist die Informationsproduktion massiv. Wie Eric Schmidt (ehemaliger Google-CEO) auf der Techonomy Konferenz 2010 sagte: "Mittlerweile erschaffen wir alle zwei Jahre so viel Information wie in der Zeitspanne von Beginn der Zivilisation bis 2003. Das sind etwa fünf Exabytes Daten. Obwohl diese beeindruckende Zahl durch unnütze oder gelöschte Informationen minimiert werden kann (und sollte), müssen wir uns und die Institutionen, für die wir arbeiten, auf dieses neue Szenario vorbereiten.

[14] Weitere Informationen finden Sie unter http://damglossary.org

Dafür müssen wir digitale Strategien planen und erschaffen, die mit der Menge an Informationen zurechtkommen und uns Werkzeuge liefern, welche die Bemühungen und Investments kapitalisieren.

Im Kultursektor sind diese digitalen Güter oft digitale Repräsentanten der physischen Sammlung, aber in vielen Fällen handelt es sich um digital erzeugten Inhalt wie Computerprogramme, digitale Kunst, interaktive Medien und viele andere Arten digitaler Informationen, die von Museen, Archiven und Bibliotheken für deren Besucher zur Verfügung stehen. Diese digitalen Sammlungen haben ihre eigenen Regeln, Organisation, legale Kontexte und Spezifikationen, die auf eine besondere Weise durch den Manager digitaler Kulturgüter oder den digitalen Kurator angesprochen werden müssen.

Am Ende dieses Kurses sollten Sie in der Lage sein eine digitale Gütersammlung einer kulturellen Institution zu planen, zu erstellen, zu betreiben, zu ermöglichen und zu managen und dabei die passenden Werkzeuge zu nutzen, welche die Besucher mit den gewünschten Ergebnissen versorgen (extern und intern).

Um dieses Ziel zu erreichen, wird der Kurs Sie durch die grundlegenden Themen des Kultur-Sektors bezüglich des Managements digitaler Güter führen. Zusammen mit vielen anderen Themen werden wir uns mit der Bestimmung und Entwicklung einer digitalen Strategie, Standards, DAM Systems Spezifikationen, Informationswiederverwertung (erfahren Sie mehr über COPE – Create Once, Publish Everywhere NPR concept unter:http://www.programmableweb.com/news/cope-create-once-publisheverywhere/2009/10/13) oder den legalen Kontexten in Europa beschäftigen.

Was ist ein Manager digitaler Kulturgüter gemäß des im eCult Skills Projekts entwickelten Profils?

Auch bekannt als Manager digitaler Güter oder digitaler Kurator befasst er sich mit “der Erhaltung, dem Management und der Ausschöpfung (einschließlich Monetisierung) der digitalisierten kulturellen Inhalte in einem Museum oder einer anderen kulturellen Institution (im Nachfolgenden nur als Museen bezeichnet), ob in einer physischen oder virtuellen Umgebung”. Seine Mission ist gemäß des Rollenprofils der Entwurf, die Verwaltung und die Ausschöpfung der digitalen Museumssammlung, so wie sie in der Museumsmission und dem strategischen Plan definiert ist.

Obwohl diese spezifische Funktion bisher noch nicht in der Mehrzahl der europäischen Museen existiert, denken wir, dass die technologische Entwicklung und die Massifizierung der neuen Technologien sowie das öffentliche Bewusstsein für unser Kulturerbe zur Entstehung dieses Jobprofils in kleinen und mittelständischen Organisationen führen werden.

Dennoch haben viele Museen und Kulturinstitutionen, die dem Bedarf der aktuellen Informationsgesellschaft gegenüberstehen, schon neue Strategien und Ansätze zu diesem Thema mit Experten entwickelt, welche die im Profil beschriebenen Kompetenzen aufweisen. Zum Beispiel können Sie die Arbeit des Amsterdam Rijskmuseum hinsichtlich der Onlinesammlung des Museums betrachten (https://www.rijksmuseum.nl/en) und mehr über die Arbeit des Museums in einem Artikel mit dem Titel “Democratising the Rijksmuseum” von Joris Pekel für die Europeana Foundation unter http://pro.europeana.eu/files/Europeana_Professional/Publications/Democratising%20the%20Rijksmuseum.pdf lesen.

Was wird vom Manager digitaler Kulturgüter gemäß des im eCult Skills Projekt entwickelten Profils erwartet?

Die schnellen und kontinuierlichen technologischen Fortschritte, die seit dem letzten Jahrhundert stattfinden, haben die Art und Weise, wie Museen mit digitalen Informationen ihrer Institutionen umgehen, radikal verändert (z.B. die digitalen Güter, die nun als Museumssammlung betrachtet werden können).

Eine digitale Sammlung benötigt genau wie eine physische Sammlung eine strukturierte und detaillierte Sammlungspolitik, die vom Museum für seine Zwecke verwendet werden kann.

Somit bilden die beschriebenen Kompetenzen für einen digitalen Kurator die Werkzeuge, die es ihm ermöglichen die folgenden Aufgaben durchzuführen:

1. Nach der Auswahl und Klassifizierung organisiert er/sie die Sammlung digitaler Kulturgüter um den Zugang und die Nutzung der Sammlung zu erleichtern:
2. Er/Sie erhält die digitalen Kulturgüter gemäß der internationalen Standards (Formatänderungen, Hardware/Software Nachbildung/Emulation);
3. Er/sie erforscht, nutzt (einschl. Monetisierung) und ermöglicht den Zugang zu digitalen Inhalten/Objekten hinsichtlich Funktionalität, technischer Umsetzbarkeit und Verlässlichkeit (Zugangsmethoden, Authentifizierung, Kompatibilität) und Monetisierung;
4. Er/Sie schützt die digitalen Museumssammlungen (Copyright, mit Wasserzeichen versehener Inhalt, Kryptographie).

Er/sie ist auch verantwortlich für:

1. die Nachhaltigkeit und Funktionsfähigkeit der digitalen Produktgüter – operationelle Wartung der digitalen Güter;
2. das Museumsmanagement bezüglich Verbesserungen in allen Aspekten der digitalen Gütersammlung.

Er sollte aktiv zu Folgendem beitragen:

1. Nutzbarkeitsanalyse (DAM System, Website, Soziale Netzwerke, etc.)
2. Suchmaschinenoptimierung;
3. Wettbewerbs-Benchmarking.

Der Kurs wird Sie durch Dokumente, Handbücher und online verfügbare Quellen (andere Kurse, Webseminare, etc.) führen, welche die Fundamente der beschriebenen Kompetenzen erklären.

6.3. Fünf Schritte zur Vorbereitung eines DAM Ökosystems (Planen – Erstellen – Ermöglichen– Betreiben – Managen)

Dieser Trainingskurs ist an den Profilspezifikationen des Managers digitaler Kulturgüter, so wie es vom eCult Skills Projekt entwickelt wurde, ausgerichtet.

In diesem Profil gibt es 5 verschiedene e-Kompetenzbereiche, die die spezifischen Kompetenzen abdecken.

Diese Bereiche repräsentieren die fünf essentiellen Schritte, um ihr Museum darauf vorzubereiten ein DAM System als hilfreiches Werkzeug für das Management der digitalen Sammlung anzupassen, um die Mission der Institution zu erfüllen.

Diese fünf Schritte können global als Startpunkt genutzt werden, um über das DAM zu lernen, oder nacheinander betrachtet werden (wenn der Lernende an einem spezifischen Thema interessiert ist, wie z.B. der Beschaffung eines DAM Systems).
In jedem Fall bilden diese Schritte in diesem Kurs die Referenz für jede Kompetenz und eine Anleitung für die Organisation des DAM Ökosystems.

Planen
Will die Organisation die Sammlung digitaler Güter managen, muss sie sich zunächst auf die Bedarfe und Spezifikationen der neuen Aufgabe vorbereiten.
Jeder Sektor hat seine speziellen Anforderungen, wobei der Kultursektor keine Ausnahme darstellt.
Unterstützung hierbei bietet das Dokument "Digital Asset Management Systems for the Cultural and Scientific Heritage Sector", das vom DigiCULT Konsortium veröffentlich wurde. Verfügbar ist es unter:
http://www.digicult.info/downloads/thematic_issue_2_021204_low_resolution.pdf(PDF)
Es wird Sie mit den Basics der Bedeutung des Managements digitaler Güter in diesem Sektor vertraut machen. Die Artikel mit den Titeln "**How Do Cultural Artefacts Become Digital Assets?**" von Michael Moon und **"DAMS versus CMS"** von Norbert Kanter sind wichtig für die Arbeit, die sie durchführen müssen.

Sie werden in diesem Handbuch eine hilfreiche Bibliographie (siehe **"Ausgewählte Literatur"** auf S. 38) finden. Wir empfehlen als weiterführende Literatur das Buch **"Defining the DAM Thing: How Digital Asset Management Works"** von David Doering.

Auch auf der Website des DigiCULT Konsortiums stehen einige hilfreiche Quellen zur Verfügung (http://www.digicult.info)

Eine weitere wichtige Quelle ist der Text **"Digital Asset Management and Museums - An Introduction",** erhältlich im Canadian Heritage Information Network (CHIN) Quellenarchiv:
(http://www.rcip-chin.gc.ca/contenu_numeriquedigital_content/fiches_techniques-tip_sheets/gestion_contenus_numeriques-digital_assets_management-eng.jsp).
In diesem kurzen Artikel finden Sie eine kurze Einführung zum DAM im Museumssektor und Referenzen zu anderen Dokumenten.

Das Wissen um die spezifischen Details und Anforderungen des Kultursektors ist das vorrangige Thema dieses Kurses. Dennoch müssen Sie einige wichtige Grundkenntnisse über das Museumsmanagement erlernen.

Obwohl dieser Kurs nicht beabsichtigt Managementfragen von Museen oder Kulturinstitutionen zu klären, sind wir der Ansicht, dass es für Manager digitaler Güter wichtig ist zu wissen, wie DAM in diesen Organisationstyp integriert werden kann.

Der Kultursektor verfolgt eine signifikante und alte Tradition bezüglich der Dokumentation und dem Management der Sammlungen. Diese Tradition impliziert mit der Einführung neuer Technologien große und kontinuierliche Bemühungen in die Forschung und Entwicklung neuer Werkzeuge, Standards und Verfahren. Eine englische Institution, die Museum Documentation Association (MDA), heute bekannt als Collections Trust (CT), investierte große Mühen in die Entwicklung von SPECTRUM, einem englischen Sammlungs-Management Standards der heute von mehr als 20.000 Institutionen in über 40 Ländern verwendet wird.

Mit dem Standard hat CT ein Rahmenwerk geschaffen, in dem Museumsmission und Sammlungs-Management Politik integriert werden. Er gewährleistet:

1. Die Entwicklung der Sammlung;
2. Informationen über die Sammlung;
3. Die Erhaltung der Sammlung (physisch und digital);
4. Den Zugang zur Sammlung

Der SPECTRUM Standard ist auf der Collections Trust Website zum Download verfügbar. Der direkte Link :
http://www.collectionstrust.org.uk/collections-link/collections-management/spectrum.
Neben diesem Standard hat CT aktuell das SPECTRUM DAM veröffentlicht. Es ist ein begleitendes Dokument, das als Anleitung für beste Praktiken zur Integration von digitalem Gütermanagement in bestehende Sammlungs-Management-Praktiken fungiert und auf dem Standard basiert. Dieses Dokument ist ebenfalls online erhältlich unter:
http://www.collectionstrust.org.uk/collections-link/collections-management/spectrum/item/1688-spectrum-digital-asset-management.

Ein Plan zur Einführung eines DAM Systems in Ihrer Institution sollte unter Berücksichtigung der spezifischen Anforderungen des Kultursektors entwickelt werden.

Spezifische Kompetenzen dieses Bereichs finden Sie unter:
Entwicklung von Plänen für das Management digitaler Güter
Produkt/Service Planung
Trendschau Technologie und Innovation
Neuerungen einführen

Erstellen
Obwohl jede einzelne Institution bei der Einführung eines DAM Prozesses denselben Regeln, Standards und Gesetzen folgen muss, gibt es spezifische Themen und Bedarfe, die verschieden angesprochen werden müssen.

Daher sollte der Manager digitaler Güter unterstützende Dokumentationen erstellen, die die Planung eines Ökosystems mit den vorher festgelegten Funktionen und Besonderheiten ermöglichen. Er sollte spezifische Handbücher vorbereiten und aktualisieren, die es dem Museumspersonal ermöglichen mit den Werkzeugen umzugehen.

Diese Dokumente sind nützlich für das Museumspersonal und normalerweise Voraussetzung für Akkreditierungsschmemata von Museen, wie etwa dem in England eingesetzten.
(Cf. Weitere Informationen über das englische Museum Accreditation Scheme managed by Arts Council unter: http://www.artscouncil.org.uk/what-we-do/supporting-museums/accreditation-scheme/).

Spezifische Kompetenzen dieses Bereichs finden Sie unter:
Dokumentationserstellung

Ermöglichen
Nach all der Vorbereitung in den vorherigen Schritten dieses Kurses werden wir in dieser Phase durchgehen, was erforderlich ist, um ein DAM System in einem Museum zu ermöglichen.
Eine gute Herangehensweise für Sie als Manager digitaler Güter zur Vorbereitung auf Ihr Leben als DAM-Held im Implementationsprozess Ihrer Institution ist in einem interessanten Artikel von James Rourke beschrieben, der bei der DAM-Foundation erschienen ist und den Titel **"The Role of the DAM manager pre and post implementation" trägt.** Er ist erhältlich unter http://damfoundation.org/?p=31235.

Sie können ihn lesen und bei diesem und den folgenden Schritten berücksichtigen (Betreiben und Managen). Einige der hier behandelten Themen sind ebenfalls bedeutend und sollten bei der Dokumentation der digitalen Kuratoren in der vorherigen Phase (Errichten) implizit sein.
Trotzdem werden wir alle notwendigen administrativen Aufgaben des Beschaffungsprozesses gemäß der angewandten legalen Kontexte und Regeln des Museums durchgehen.
Wie bereits gesagt besteht das Management digitaler Güter aus Managementaufgaben und Entscheidungen, die Einnahme, Notierung, Katalogisierung, Verwahrung, Rückgewinnung und Verteilung digitaler Güter (siehe Wikipedia: https://en.wikipedia.org/wiki/Digital_asset_management) betreffen.

Diese Aufgaben und Entscheidungen werden gemäß Standards, Prozessen und Verfahren gemeistert, die Rohdaten in Wissen und somit zugängliche kulturelle Information umwandeln. In diesem Bereich beschreiben wir genauer, wie die **"Needs identification"-Kompetenz erlangt wird. Obwohl Aufgaben des Managements digitaler Güter auf Standards und Spezifikationen basieren, die jeder Institution oder digitalen Sammlung gemein sind, gibt es auch immer spezifische (Nutzer, Sammlung oder Museum) Bedarfe, die in einem DAM-Implementationssystem anerkannt und angesprochen werden müssen.**

Für diesen Trainingskurs ist es von wesentlicher Bedeutung die Kerncharakteristika des DAM-Systems zu begreifen. Sie werden die Richtlinie durch jeglichen Erwerbs- und Implementationsprozess sein. Um eine Liste von Kerncharakteristika als einen Bezug zu erstellen lesen Sie die von der DAM-Foundation bereitgestellte Liste: **Ten Core Characteristics of a DAM** –

http://damfoundation.org/?page_id=31752.

Diese 10 Kernmerkmale sollten als Basis für die Auswahl und Beurteilung der verschiedenen auf dem Markt erhältlichen Systeme verwendet werden.

Spezifische Kompetenzen dieses Bereichs finden Sie unter:

Beschaffung
Informations-und Wissensmanagement
Bedarfserkennung

Betreiben:
Nun, da wir die ersten Schritte für den Einsatz eines DAM Systems in einer kulturellen Institution betrachtet haben, ist es an der Zeit zu gewährleisten, dass das System gut läuft und wir es mit minimalem Wartungsaufwand erhalten können.
Die Inbetriebnahme eines DAM Systems nach der Planung und Ermöglichung ist eine Art Test der vorherigen Phasen des Projekts. Ob etwas schlecht geplant wurde oder ihre Anforderungsbestimmung nicht präzise genug war, werden Sie herausfinden, wenn Ihr System mit der Verwaltung der digitalen Sammlung beginnt.

Mit erneuter Bezugnahme auf den Artikel von James Rourke (Verfügbar unter http://damfoundation.org/?p=31235, als Referenz) können wir nun sagen, dass nach der Beschaffung und der Einführung der Manager digitaler Güter nun auch zuständig für "einige zusätzliche Rollen ist, […] die sich hauptsächlich um Wartung und Führung drehen werden."

Diese Rollenimplizieren zusammen mit den vorherigen, dass der Manager digitaler Güter alle internen und externen Beziehungen des Systems warten und die Nutzung der Standards zertifizieren, die Arbeitsabläufe mit den finalen Ergebnissen verifizieren, die Infrastruktur am Laufen halten, das Personal managen und unter anderem als zentraler Kontaktmann zwischen allen Interessengruppen (Institutionen, Abteilungen, Personal, Verkäufer/Lieferanten, etc.) agieren muss.

An diesem Punkt muss der Manager digitaler Güter als Vorbild für alle Beteiligten fungieren. Er muss die festgelegte Strategie verteidigen und sicherstellen, dass die definierten Ziele erreicht wurden. Um diese Aufgabe zu erfüllen muss er jeden Aspekt des DAM-Ökosystem überwachen (Infrastruktur, Software, Standards, Arbeitsabläufe, Suchsysteme und Ergebnisse) und jegliche auftauchende Probleme abwickeln.

Eine sehr gute Quelle für die Themen dieser Einheit ist der zweite Teil des DAM Beste Praktiken-Führers mit dem Titel **"Making the most of your DAM"**, verfügbar unter:
http://doc.extensis.com/DAM-Best-PracticesGuide-EN.pdf.

Spezifische Kompetenzen dieses Bereiches finden Sie unter:
Dienstleistungserbringung
Problem Management

Managen
Dieser finale Schritt wird die Aufgaben durchleuchten, die nötig sind, um das DAM Ökosystem am Laufen zu halten, und die bezweckten Ziele der Strategie zu erreichen, aber auch um den zukünftigen Manager digitaler Güter im Museum vorzubereiten.

Eines der größten Probleme, dem Museen (und andere Institutionen) in dieser Zeit des konstanten Wandels gegenüber stehen, sind veraltete Systeme. Vor allem in kleinen und mittelständischen Museen ist es die Regel aufgrund der niedrigen Budgets und der unsicheren finanziellen Unterstützung oder kleiner nicht-permanenter Teams verschiedene Systemarten einzuführen und die wichtigsten zu erhalten. Doch nach einigen Jahren sind diese veraltet und benötigen eine Aktualisierung.

In manchen Fällen muss das gesamte System durch ein neues, aktuelleres und fortschrittlicheres ersetzt werden.

Diese Situationen können Verluste oder Schaden auslösen, der größte Mühen erfordert und finanzielle Ressourcen minimiert.

Um dies zu verhindern sollte der Manager digitaler Güter oder digitale Kurator als Person agieren, welche die Zukunft aufgrund der Fakten und Informationen über die verschiedenen Aspekte des DAM-Ökosystems voraussehen kann. Er muss gute Forschung, Organisation und analytische Fertigkeiten aufweisen um potenzielle Probleme, Bedürfnisse, Vorteile oder Trends aufzudecken, die dabei helfen können das System zu erhalten und zu verbessern.

Im Kultursektor bedeutet das, dass ein digitaler Kurator sich auf die Bedürfnisse der internen Interessengruppen fokussieren muss und sie mit den richtigen Produkten oder Dienstleistungen versorgen muss.

So wurden die Medien, nachdem die Mikrofilm Technologie teuer und veraltet war, digitalisiert und online bereitgestellt. Ein weiteres Beispiel sind Audio-Führer-Systeme in Museen und Galerien, die durch kostengünstige und wertvolle interaktive Medien-Apps ersetzt wurden (als Smartphones und Apps in Mode kamen).

Heute können einige Museen die Zukunft « vorhersagen », wie es das Cooper Hewitt- Smithsonian Design Museum mit **"The New Cooper Hewitt Experience"** getan hat. Sie finden Informationen über dieses interessante Projekt unter: http://www.cooperhewitt.org/new-experience/.

Wie dies möglich war, erfahren Sie in diesem Artikel:
http://www.cooperhewitt.org/new-experience/designing-pen/.

Für spezifische Kompetenzen dieses Bereichs schauen Sie bitte nach unter:
Prognosen-Entwicklung
Risiko Management
Beziehungs-Management
Qualitätsmanagement digitaler Güter

6.4. Trainingseinheiten

Manager digitaler Kulturgüter ist eine sehr spezifische und wichtige neue Jobrolle, die durch den massiven Gebrauch von Technologie und aufgrund des Kontexts des Informationsalters, in dem wir leben, entstanden ist. Tatsächlich fordern die Besucher im Kultursektor verschiedene Interpretationen und die Möglichkeit sich Wissen außerhalb der gewöhnlichen Autoritäten Institutionen wie Museen, Bibliotheken und Archiven anzueignen.

Diese Situation ist neu für Museen und Kulturinstitutionen. Noch vor wenigen Jahren kommunizierten sie die Ergebnisse ihrer Forschungen an die Besucher und heute wollen die Besucher einen Dialog aufbauen, in der eigene Meinung und Beiträge willkommen sind.
Die digitale Sammlung (das Ergebnis des Digitalisierungs-Prozesses oder der Zusammensetzung von digitalisierten Materialien) stellt einen sehr wichtigen Teil der Museumsmission dar und ist essentiell für die grundlegende Museumsfunktion: die Kommunikation.

Um für diese Verantwortung vorbreitet zu sein, sollte der digitale Kurator einige Kompetenzen und Fertigkeiten erwerben, die notwendig sind, um ein DAM-Ökosystem unter Berücksichtigung der spezifischen Anforderungen eines Museums oder einer Kulturinstitution zu planen, einzusetzen und zu verwalten.

In diesem Bereich des Kurses werden wir die Kompetenzen des Jobprofils durchgehen. Der Lernende kann die verschiedenen Kompetenzen nutzen um eine Lernstruktur gemäß seiner/ihrer Bedürfnisse aufzubauen oder den empfohlenen fünf Schritten folgen, die im letzten Kapitel beschrieben wurden.
Für jede Kompetenz ist eine Einführung über den Inhalt und die geforderten Fertigkeiten beigefügt. In diesem Text verweisen wir auf einige grundlegende Referenzen und Quellen, die gelesen/gehört/gesehen werden sollten, um über die spezifischen Kompetenzen und ihre Anwendung zu lernen.

Diese Quellen enden mit einer Liste an obligatorischen Referenzen die gelesen/gehört/angeschaut werden müssen um die Trainingseinheit abzuschließen. Jede Referenz oder Quelle sollte mit dem Tutor und den Kollegen mittels einer Lernplattform diskutiert werden.

Nach jeder Kompetenzbeschreibung werden die Lernergebnisse für jede Kompetenz oder Einheit des Kurses zusammen mit den spezifischen Beurteilungsmethoden aufgelistet, um den Erfolg der Trainingseinheit zu evaluieren.
Die vom eCult Skills Projekt vorgeschlagenen Beurteilungs-Methodologien sollten mit den Kursteilnehmern (Tutoren und Lernenden) besprochen werden um die Beurteilungslevel in jeder Trainingseinheit zu bestimmen.

Eine Stichwortliste in jeder Trainingseinheit/-kompetenz erleichtert dem Trainee die Wahl des passenden Kursmoduls für seine/ihre Bedürfnisse. Das Profil des Managers digitaler Kulturgüter umfasst 14 spezifische e-Kompetenzen, die im Anhang analysiert werden[15].

[15] Siehe Anhang 8.5 : Die 14 e-Kompetenzen des Managers digitaler Güter, entwickelt und evaluiert in den Trainingseinheiten.

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8. Annexes

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

	• To foresee the impact of technological solutions responding to the museums and its audiences' needs. **Related to the provision of advice on the ICT strategy and solutions:** • To advise on the elaboration of the institution's ICT strategy. • To plan time, cost and quality of the designed and specified solution including a return on investment analysis of the deployment of ICT solutions. • To raise awareness on information technology innovations and their potential value to the museum. • To engage museums in the adoption of new technologies for improved access to cultural heritage. • 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 • To provide advice on the selection of products and solutions. • To advise on the preparation and negotiation of contracts with suppliers. • To advise on compliance with standards and regulations on ICT. • To provide advice on how to optimize the use of existing tools and systems. • 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.

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

Cultural ICT Guide

Role title	**Cultural (ICT-enabled) Guide**
Also known as	ICT-enabled interdisciplinary interpreter of Cultural Heritage
Relevant professions	- Art historian * - Curator * - Cultural Heritage Interpreter * - Tour guide * - Cultural experience developer - Multimedia content developer** - Pedagogical professions related to art, culture, history and multimedia* - Museum staff (guards) that are trained by a specialist to act as intermediary between the museum collections, the technologies used and the audience. *with additional relevant knowledge of ICT ** 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 experience in understanding and learning about cultural heritage.	Effective and competent interpretation with use of technology. Comprehensive use of technology. Understandable instructions for users /audience. Correct and safe use of technology.	Proposal for upgrading technology.

Main task/s	• To promote knowledge and understanding of cultural heritage through ICT. • To promote improved understanding of cultural diversity and cross-cultural dialogue through ICT. • To define target groups (children, local visitors, tourists, educational institution representatives, Cultural Heritage professionals, VIPs, etc.) for different types of interaction. • To identify target visitors based on their knowledge level of ICT. • 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. 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). • Level of interest/excitement (qualitative measurement). • Positive impact for cultural heritage stakeholders obtained by innovative experience and/or edutainment concepts for visitors.

Digital Cultural Asset Manager

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**

	Organization of the digital cultural collections, after selection and classification, to facilitate the collections' discovery, access and use. Preservation of the digital cultural asset according to international standards (format transformation, hardware/ software emulation).	Evaluation of the final format of the digital asset. Documentation of the management of the digital asset. Form of metadata selected (descriptive, administrative, structural or technical) – semantic management of the digital assets.	Usability analysis (website, application). Search engine optimization. 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, compatibility) and	Sustainability and operability of the digital assets – operational maintenance of the digital assets Advice the museum management on improvements.	

	monetization. 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). • To develop, manage and optimize the museum's digital collection. • To be aware of the national/international conventions or/and legal frameworks for the protection of digital cultural property. • To collaborate with museum staff in facilitating their work with digital cultural assets. • To develop a robust grounding within the museum in theories, methods and concepts of digital cultural asset management. • To remain informed about new technologies and developments in ICT.		

Environment	Collaborates with technology suppliers and, within the museum, with the: • Management • Physical curation departments • Communication department

Interactive Cultural Experience Developer

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

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. • To facilitate the relation between the different museum teams: curators, ICT, education, marketing, communication. • To remain informed of new technological solutions. • 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 • Size and frequency of museum audience (traffic) • Evaluation of the museum experience (qualitative and quantitative analysis)

Online Cultural Community Manager

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

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 (website, newsletter, social media, forums, blogs, Pinterest...) of the museum. Online communication strategy and plan.	Research of the online community (background, motivation, etc.). Online interaction with all stakeholders of the museum, according to the	Organisation of events and other PR activities. (in order to create physical community); Loyalty/maintenance of user community. Overall communication strategy and plan of the museum.

	Quick and effective resolution of issues and reply to inquiries (feedback mechanism for the museum).	museum's protocol. Promotion of community engagement online activities. Analysis of user feedback.	
Main task/s	• To design guidelines for the museum's online communication strategy. • To research the characteristics of the online community. • 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. • To respond to and follow-up all online incoming inquiries. • To moderate forums. • 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. • Community engagement. • Statistics/analytics of stakeholders' online activity. • Museum's webpage ranking.		

Cultural ICT Consultant						

A1. IS and Organizational Strategy Alignment						
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						
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
	Knows the SLA documentation		Can apply the Service Level Agreements upon the museum ICT strategy			Can predict and measure the potential service disruptions
	Presents three elements forming the metrics of SLA					
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		Can operate the three ICT security standards			
	Knows three ICT quality standards		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						
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			
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 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 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

A8. Sustainable Development						
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						
Module	**Knowledge**	**Comprehension**	**Application**	**Analysis**	**Synthesis**	**Evaluation**

Thinking	Can present novel and open thinking		Applies innovative thinking Can demonstrate revolutionary concepts	Can identify four appropriate resources	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
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						
Module	**Knowledge**	**Comprehension**	**Application**	**Analysis**	**Synthesis**	**Evaluation**
Technology and market	Knows existing ICT application technical architecture Knows at least three ICT solutions	Can identify functional specifications of the information system Can identify the advantages of at least three information security management		Can analyse how business processes are integrated and their dependency upon ICT applications		

Organisation			Can transfer information to ICT team	Can connect museum needs and ICT solutions		
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						
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						
Module	**Knowledge**	**Comprehension**	**Application**	**Analysis**	**Synthesis**	**Evaluation**

Museum	Knows four museum needs Can define three museum objectives	Can decode the museum's culture			Can establish ICT quality in museum culture 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 Can identify two standards for online community applications/ tools/solutions	Uses two standards and best practices for ICT quality 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		

D3. Education and Training Provision						
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 develop alternative training programs	Can assess the ICT training programs so to address change demand 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

	Can identify three museum staff ICT education needs		museum staff ICT education needs		museum staff ICT education needs	
Audience	Knows four audience 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
	Can identify three audience ICT education needs					
Methodologies	Can record two training needs analysis methodologies					
	Can name two competence and skill analysis methodologies					

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 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						
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

					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						
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	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/application	

		forecasts in relation to current market share			s 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 Knows museum's budget dedicated to ICT development			Can identify organisational 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 analyse potential mismatches 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 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		
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			

			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 and technology		Can examine ongoing commitments to ensure fulfillment	Can propose at least three solutions to meet museums, staff and technology providers	

		providers needs Can identify at least three challenges and risks of the museum			needs	
Stakeholders /audience/users		Can identify at least three objectives of stakeholders Can identify at least three potential win-win opportunities for user/audience and museum		Can determine stakeholders' objectives as long as they are relevant to digital asset management	Can examine and arrange resources to meet stakeholder requirements 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	

		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						
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 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

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

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			

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						
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			

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						
Module	**Knowledge**	**Comprehension**	**Application**	**Analysis**	**Synthesis**	**Evaluation**

Technology	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
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

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

C3. Service Delivery						
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		

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 Can identify at least two applications and availability of diagnostic tools				
Organisation	Knows the museum's overall ICT infrastructure and key components 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		

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

	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						
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

					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		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

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

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 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		

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

		language				

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		

Interactive Cultural Experience Developer

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	Can evaluate the best digital asset management strategy

					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 define the different plans	Can describe four basic decision – making methods	Can apply four basic decision – making methods Can use optimization methods	Can produce quality plans	Can generate optimization methods in the product/ service planning Can develop and maintain plans 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 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				

A6. Application Design						
Module	**Knowledge**	**Comprehension**	**Application**	**Analysis**	**Synthesis**	**Evaluation**
ICT and Designing	Knows how to design data structures Knows the general functional specifications in design Can outline three software developments methods and their rationale 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 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 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
			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		

B1. Application Development						
Module	**Knowledge**	**Comprehension**	**Application**	**Analysis**	**Synthesis**	**Evaluation**
Applications	Can name three applications	Can develop systemically three applications	Can operate three applications	Can optimize application development, maintenance, performance		
	Can design applications					
Software	Knows the appropriate software programs		Applies software architectures			
	Knows two power consumption models		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					
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						
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			
			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)			
			Can operate implementation of solutions			
System	Can identify the components of a system		Can demonstrate accountability for solution provision			
			Can solve the interoperability of a system			
			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)			
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			
	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) Knows at least one foreign language	Recognizes the importance of clear communication in at least two incidents of mis-communication with users	Can demonstrate the application of three communication techniques 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	

C2. Change Support						
Module	**Knowledge**	**Comprehension**	**Application**	**Analysis**	**Synthesis**	**Evaluation**
Technology and market	Knows existing ICT application technical architecture Knows at least three ICT solutions	Can identify functional specifications of the information system Can identify the advantages of at least three information security management		Can analyse how business processes are integrated and their dependency upon ICT applications		
Organisation			Can transfer information to ICT team	Can connect museum needs and ICT solutions		
Communication	Know at least three communication techniques Recognises the importance of preciseness		Can apply at least three communication techniques with ICT staff members 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						
Module	**Knowledge**	**Comprehension**	**Application**	**Analysis**	**Synthesis**	**Evaluation**
Technology and market		Can identify at least three evaluation, design and implementation methodologies Can identify at least two applications and availability of diagnostic tools				
Organisation	Knows the museum's overall ICT infrastructure and key components Knows the museum's reporting procedures 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	Can identify progress of issues throughout lifecycle		Can propose solutions to at least two critical component failure	

		elements and impact of failure on related business processes			Can manage risk management audits	
					Can propose appropriate resources to maintenance activities, balancing cost and risk	

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			

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/a	

	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	pplications developed	
				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					
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			
			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 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		

Online Cultural Community Manager

A3. Business Plan Development						
Module	**Knowledge**	**Comprehension**	**Application**	**Analysis**	**Synthesis**	**Evaluation**
ICT and management	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 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	
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 apply three risk and opportunity assessment techniques		Can manage the creation of the best suited IS strategy Can explain how the online communication plan complement the overall communication strategy	Can recommend the best online communication plan 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 define the different plans	Can describe four basic decision – making methods	Can apply four basic decision – making methods Can use optimization methods	Can produce quality plans	Can generate optimization methods in the product/ service planning Can develop and maintain plans 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 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	Can propose three latest ICT technological developments	Can recommend three latest ICT technological developments

				Can investigate three ICT technological developments in managing digital assets		
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
			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						
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 Knows two tools for multimedia presentation tools		Applies tools for production/ editing and distribution of 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 Knows at least two sources of information for identifying potential solutions Knows two techniques to structure database and to organize content Knows at least two ICT users applications	Can identify tree relevant ICT user application in museums Can deploy at least three support tools to systematically trace source of error or technical failure	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	
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			

	Knows at least three techniques to record users feedback		incidents			
Communication	Knows communication techniques (such as defend, argue, justify) Knows at least one foreign language	Recognizes the importance of clear communication in at least two incidents of mis-communication with users	Can demonstrate the application of three communication techniques 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 Can identify at least two applications and availability of diagnostic tools				
Organisation	Knows the museum's overall ICT infrastructure and key components Knows the museum's reporting procedures 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 Can manage risk management audits 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 Can define three museum objectives	Can decode the museum's culture			Can establish ICT quality in museum culture 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 Can identify two standards for online community applications/ tools/solutions	Uses two standards and best practices for ICT quality 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
						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		Can use three analytical tools			
	Can name the digital marketing areas (search/display/email/social media/ mobile marketing)					
Web technologies	Knows five social media	Can recognize four web technologies	Can assess the effectiveness of websites (technical performance/ speed)	Can inspect the web analytics	Can manage the e-reputation	
		Understands the online environment (how it works)				
User/ audience	Knows four user needs		Can assess the engagement of the user based on analytical reports			

	Knows all user target groups		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 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		
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 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
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

Dimension 1 e-Comp. area	D. ENABLE	
Dimension 2 e-Competence: Title + generic description	**D.11. Needs Identification** 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 e-Competence proficiency levels e-1 to e-5, related to EQF levels 3 to 8	**Level 1**	
	Level 2	
	Level 3	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.
	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 Knowledge examples *Knows/Aware of/Familiar with*	K1 emerging technologies and the relevant market applications K2 museum needs K3 key stakeholders needs K4 organisation processes and structures K5 customer need analysis techniques K6 communication techniques K7 "Story telling" techniques	
Skills examples *Is able to*	S1 analyse and formalise business processes S2 analyse customer requirements S3 present ICT solution cost / benefit S4 match key stakeholders needs with existing products S5 analyse the impact of functional/technical changes on key stakeholders	

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.

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 K2 business needs K3 organisation processes and structures K4 customer need analysis techniques K5 communication techniques K6 "Story telling" techniques	S1 analyse and formalise business processes S2 analyse customer requirements S3 present ICT solution cost/benefit
Cultural ICT consultant	K1 emerging technologies and the relevant market applications K2 museum needs K3 key stakeholders needs K4 organisation processes and structures K5 customer need analysis techniques K6 communication techniques K7 "Story telling" techniques	S1 analyse and formalise business processes S2 analyse customer requirements S3 present ICT solution cost / benefit S4 match key stakeholders needs with existing products S5 analyse the impact of functional/technical changes on key stakeholders
Cultural ICT guide	K1 technologies and their relevant applications K2 museum's goals K3 audience needs / expectations K4 museum processes and structures K5 audience needs' analysis techniques K6 communication techniques K7 "Story telling" techniques	S1 analyse audience requirements S2 match audience needs with existing ICT applications S3 analyse the impact of functional/technical changes on audience 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 K2 museum's needs K3 user needs K4 museum processes and structures K5 user need analysis techniques K6 communication techniques K7 "Story telling" techniques	S1 analyse and formalise digital asset management processes S2 analyse user requirements S3 present digital asset management solution cost / benefit S4 match user needs with existing products S5 analyse the impact of functional/technical changes on user
Interactive cultural experience developer	K1 emerging technologies and the relevant market applications K2 key stakeholders needs K3 museum processes and structures K4 user need analysis techniques K5 communication techniques K6 "Story telling" techniques	S1 analyse and formalise asset management processes S2 analyse audience requirements S3 evaluate interactive and multimedia installations/tools /applications cost / benefit 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 K2 museum's communication needs K3 key stakeholders needs K4 museum processes and structures K5 audience need analysis techniques K6 communication techniques K7 "Story telling" techniques	S1 analyse and formalise online communication processes S2 analyse museum and audience requirements S3 present ICT solution cost / benefit S4 match key stakeholders needs with existing products 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 Can present digital asset management solution cost / benefit	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
Organization		Can identify museum needs and goals, organizational chart, information, communication and control processes		Can analyze three digital asset management processes. Can analyze three online communication processes	Can formalize three digital asset management 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 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 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 present ICT solution cost / benefit 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 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 studentwill 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 studentwill 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 studentwill solve9 out of 10multiplication problems of the type: 5 X 4 = _____."
- "Given a map of Europe, the studentwill be able to list 8 capital citiesin 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 describefour factorsthat increase the risk of HIV transmission in women.
- After attending the lecture and studying theassignedhandouts,participants will listthreetypes 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	http://www.niso.org/publications/rp/framework3.pdf	A guideline from the National Information Standards Organization

Resource	Available at:	Description
Building Good Digital Collections		to build digital collections with quality.
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

Resource	Available at:	Description
		discussion.
Introduction to Decision Making Methods	http://academic.evergreen.edu/projects/bdei/documents/decisionmakingmethods.pdf	An article by János Fulop about decision-making methods.
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

Resource	Available at:	Description
		Nick Poole.
SPECTRUM DAM Resources	http://www.collectionstrust.org.uk/collections-link/collections-management/spectrum/spectrum-dam-resources	SPECTRUM resources about DAM.
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.

- 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;

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

Keywords

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

Resource	Available at:	Description
		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	http://archive.ifla.org/IV/ifla62/62-devf.htm	An article by Francis J. Devadason and P. Pratap

Resource	Available at:	Description
of Information Needs of Users		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-	A article by John Horodyski about the relevance of integration in DAM Systems.

	028304.php	
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 the Photographers' Gallery	http://www.furtherfield.org/features/interviews/interview-katrina-sluis-digital-curator-photographers-gallery	An inside view of one example of a digital curator work.
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	https://www.academia.edu/15681876/Reactive_Proactive_Problem_Manage	A presentation about reactive and proactive

Problem Management	ment	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 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_D

igital_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

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,

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

		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%20Rijksmuseum.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	http://www.emeraldinsight.	An article about the ways to produce

Management: An Introduction and Perspective	com/doi/abs/10.1108/13673279710800682	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