



## DELIVERABLE

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### D4.1 Initial curriculum for digital curators

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### Statement of originality:

This deliverable contains original unpublished work except where clearly indicated otherwise. Acknowledgement of previously published material and of the work of others has been made through appropriate citation, quotation or both.

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## 1. Executive Summary

Digital curation is a multifaceted evolving endeavour requiring regular and strategic engagement. Individuals and organisations are producing information objects that need to be managed as assets if their value is to be retained into perpetuity. Delivering this outcome requires professionals engaged at different stages with the necessary digital curation skills. These professionals must remain conversant with emerging developments in both their own domain and that of digital curation more widely. To guide efforts in addressing this need, the DigCurV project has constructed a Framework to support the development of curricula for the vocational training of digital curators working in cultural heritage.

### 1.1 Overview

The DigCurV Curriculum Framework, a major output of the DigCurV project, defines training needs, supports the evaluation of existing training opportunities and identifies key requirements for digital curation vocational training in the cultural heritage sector. This Framework informs curriculum creation for courses at all levels and of varying durations. While providing explicit guidance, the Framework is designed to be used even by those without specialised domain knowledge.

DigCurV has developed three distinct lenses or views on the Framework to enhance usability. Each of these lenses corresponds to a different group of staff in curation activities: practitioner, manager, and executive. Each of the three lenses reflects the unique perspective of the particular staff group, and presents in a cogent manner the skills, knowledge, and competences that enable professional success. By linking attributes to one of three broad staff groups, the Framework allows for the development of curricula targeted for each audience. The three lenses are supplemented and supported by a concept model and a defined terminology; details of the model and controlled vocabulary are included in the full report on the Curriculum Framework available from the project website [1].

### 1.2 Background and context

The DigCurV project, funded through the European Commission's Leonardo da Vinci Lifelong Learning Programme, has produced this curriculum development tool after conducting background research, carrying out surveys, and running focus groups. Participants from across Europe, as well as Canada and the United States, have been involved. A full list of contributors is available from the project website [2].

In developing the curriculum Framework, DigCurV drew from previous work in a number of other projects related to vocational training, information literacy and digital curation. Identification of the need for ongoing vocational training in digital curation has been articulated by, for instance, the 2010 Training Needs Assessment Survey, conducted by Library of Congress' Digital Preservation Outreach & Education (DPOE) initiative [3]. This survey also recognized the benefit of categorising the audience for this class of training into three general groups: executive, managerial, and practical. Prior work in the DigCurV project identified and defined the skills required by each of these groups. The project also produced an evaluation Framework that provided core concepts and, through a process of recursive evaluation, continues to inform development of the Curriculum Framework.

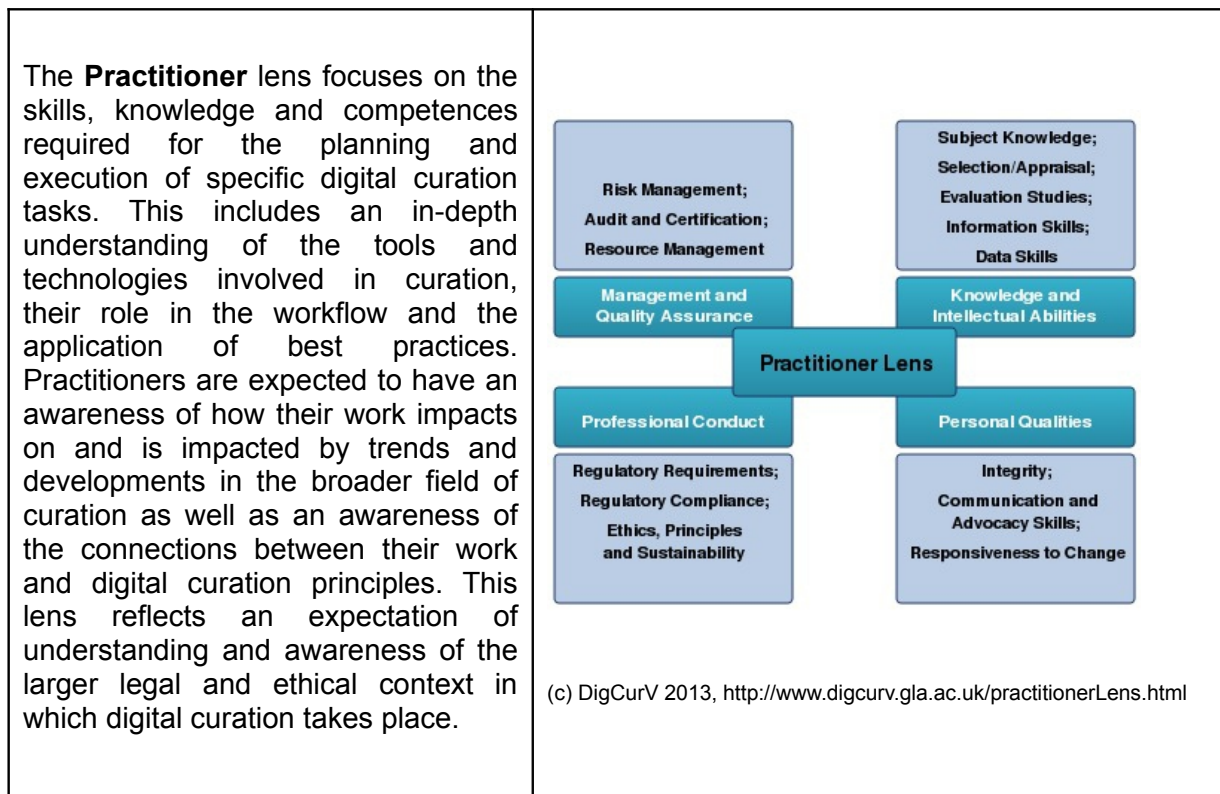
The internal structure of the Curriculum Framework, and particularly the structure and presentation of the three lenses, builds on the Vitae Researcher Development Framework [4]. This tool provided terminology that allowed individual skills, abilities and knowledge points to be articulated as succinct *descriptors*. The Vitae RDF was used in conjunction with an information literacy taxonomy developed by the Research Information Network (RIN) [5].

This taxonomy corresponds closely to the Vitae RDF and expresses the key descriptors related to information-handling and data management which emerge as a result of mapping the Vitae RDF and the Society of College, National and University Libraries (SCONUL) Seven Pillars of Information Literacy model.

Among other internationally-renowned research initiatives in the development of training requirements for digital curators, DigCCurr (Carolina Digital Curation Curriculum Project) [6] has made a particularly strong contribution to the definition of the DigCurV Curriculum Framework. DigCCurr, based in the United States, focuses on the development of digital curation curriculum for graduate and doctoral-level education.

### 1.3 Curriculum Framework: Practitioner, Manager, Executive Lenses

The role of the practitioner, manager and executive lenses is to provide a concise visualisation of the areas of domain knowledge required within each role. The Curriculum Framework is designed to be aspirational, providing a range of knowledge and skills that can act as a pathway to professional excellence. These are expressed as descriptors within conceptual structures based on Vitae RDF and the RIN Taxonomy as described above. These lenses place the individual professional at the centre and divide the surrounding space into four quadrants, each containing three to five subcategories. These subcategories contain the individual descriptors, which are expressed as knowledge, skills, and competences relevant to each subcategory. The lenses also delineate personal attributes to help identify responsibilities associated with each role and to define or tailor specific curricula.



The **Manager** lens shifts the focus from an in-depth knowledge of specific tools and their immediate context, to a higher-level understanding of the procedures and components of curation programmes. The primary concern of this category of professional is at the project level; carrying out such roles as planning, executing and monitoring digital curation projects. This lens reflects an inclusive and holistic perspective of digital curation that places the emphasis on links between programmes and organisational goals. Attention is also given to connections with internal stakeholders and external communities as well as the relationship between the data being curated and the specifics of the domain.



(c) DigCurV 2013, <http://www.digcurv.gla.ac.uk/managerLens.html>

The **Executive** lens focuses on high-level strategy and places emphasis on digital curation in the context of the parent organisation's business model and mandate. This perspective orients towards planning, funding and structuring digital curation activity. The knowledge and awareness requirements of this role emphasise the larger legal and regulatory Frameworks, developments and emerging issues in the field of digital curation, and the need for a sound basis for resource allocation decisions. The ability to communicate the significance and effectiveness of digital curation to a wide range of audiences is seen as fundamental to this role.



(c) DigCurV 2013, <http://www.digcurv.gla.ac.uk/executiveLens.html>

The Curriculum Framework is not intended to be static or rigidly prescriptive. Its creators intend it to develop iteratively through ongoing input from domain experts to reflect the evolving understanding in the digital curation community of the knowledge and skills required by each category of curation professional. The door remains open for future research to modify the Framework to maintain its relevance and for variations in implementation to be created to suit individual circumstances.

## 1.4 Implementation and use

In keeping with the strategy of continuous development, the DigCurV Curriculum Framework has been designed to enable it to be used flexibly. DigCurV anticipates that the Framework will be used to guide the development and evaluation of training programmes, to support the benchmarking of existing courses, and in planning ongoing professional development. Other potential uses for the tool include identifying qualified applicants in the hiring process or building an internal business case for digital curation activities. As the tool becomes widely adopted new uses will emerge. The full report on the Curriculum Framework available from the project website [1] contains fuller information about current use and future implementation.

## References

- [1] Molloy, L., Konstantelos, L., Gow, A., Wilson, D., Ross, S. and Moles, N. (2013). 'Report on Initial curriculum for digital Curators'. DigCurV D4.1. Available from: <http://www.digcur-education.org/eng/Resources>
- [2] DigCurV, 2013, 'About'. Available from: <http://www.digcur-education.org/eng/About>
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- [5] Research Information Network, 2013, Available from: <http://www.researchinfonet.org>
- [6] DigCCur, 2013 Carolina Digital Curation Curriculum Project, Available from: <http://www.ils.unc.edu/digccurr/>
- [7] DigCurV, 2013, 'A curriculum Framework for digital curation'. Available from: <http://www.digcurv.gla.ac.uk/index.html>

## Acknowledgements

For this deliverable, we would like to acknowledge the research and products of a number of international models and frameworks on which our Curriculum Framework has been firmly based including the work of CETIS; Vitae; the Research Information Network and the Research Information and Digital Literacies Coalition; the DigCCur initiative; the DPOE initiative and SCONUL. We are also grateful to the highly skilled digital curation professionals from across Europe and beyond, who willingly shared their knowledge and expertise in our focus groups and events which helped shape the final Curriculum Framework.

## 2. Introduction

DigCurV is a collaborative initiative funded by the EC Leonardo Da Vinci Lifelong Learning programme to establish a Curriculum Framework for vocational training in digital curation skills for the cultural heritage sector [1, 2]. The geographical focus for this work is primarily the European area informed by perspectives from further afield, namely the USA and Canada. In this document, we describe this Framework. The fundamental role of the Framework is to provide a range of audiences with a means to inform curriculum creation and evaluation for continuous professional development in digital curation.

The DigCurV Curriculum Framework draws on knowledge, expertise and research developed within DigCurV and related initiatives in order to synthesise a matrix of core digital curation skills and competences and, where appropriate, pathways of skills progression between one type of professional role and another [3, 4, 5, 6]. To this end, the Framework [7] comprises three interrelated parts:

- a core Curriculum Framework model, which provides in a cogent, relevant and approachable manner the constituents and interactions of different layers involved in digital curation training;
- three 'lenses', or views, one each for three broad types of professional role: Practitioner; Manager and Executive;
- a technical specification in the form of the current report, which outlines the groundwork for the Framework, defines the Framework's terminology and identifies the interactions between the Framework and lenses.

An additional purpose of this report is to describe the approach to testing and evaluating the DigCurV Curriculum Framework: in the first place, through a series of workshops organised in several locations across Europe; then through a panel of experts in vocational training at a multi-stakeholder workshop. The content of the Framework has been elicited from the professions it describes. In this way, the Framework in its current form provides a robust description of the digital curation professions at the time of publication; in common with all such studies it will probably benefit from revisions in the future. We envisage that the Framework will inform future work on curriculum development at institutional, national and international levels.

This report describes how the project team conducted the research necessary to develop the Framework, presents the Framework, outlines the processes used to validate the Framework, and presents three lenses on the Framework. This report also provides suggestions as to how the Framework might be used, including a description of potential audiences and purposes.



### **3. Background**

#### **3.1 DigCurV Reports**

The Curriculum Framework is the result of research and outputs from a number of DigCurV-generated materials which are themselves the products of extensive survey and desk research in the sector. At an early stage in the process the project generated an Evaluation Framework, which is described in 'Report on Baseline Survey and Evaluation Framework; Section 2: Evaluation Framework' [8]. This study contributed to the development of the Curriculum Framework in a recursive way, in that it both provided the core concepts to build the Curriculum Framework and continues to be of value as a means of gauging and evaluating the suitability of the Curriculum Framework for designing and creating digital curation curricula.

Other significant reports generated by DigCurV which contributed understanding to the Framework include 'Survey of Existing Training Opportunities', project deliverable 2.1 [9], and 'Report and Analysis of the Survey of Training Needs' [10], an outcome of project work-package 3.

#### **3.2 Vitae Researcher Development Framework and the RIN Researcher Development Framework Information Literacy Taxonomy**

In embarking on the development of the DigCurV Curriculum Framework, the project team reviewed available models for Framework definition and taxonomies used to describe information literacies. Following this review DigCurV adopted two existing Frameworks to provide a structure for its own process of Framework development.

The Vitae<sup>1</sup> Researcher Development Framework ('Vitae RDF') is a comprehensive tool for enhancing and developing career paths through training and continuing education. As such, it was one of several models which provided a proven approach to legible and accessible representation of skills and competences. DigCurV has followed the terminology of the Vitae RDF in articulating each skill, ability or piece of knowledge as a 'descriptor'. The mass of descriptors is divided into four quadrants, and each quadrant has between three and five subsections. DigCurV has also followed Vitae's approach to content development by attempting to capture and order content generated by the community the model aims to serve: digital curators in the library, archive, museum and cultural heritage sectors and those who employ and / or train them, as well as students aiming to enter digital curation professions in the cultural heritage sector and their educators.

One of the activities of the Research Information Network<sup>2</sup> is the Research Information and Digital Literacies Coalition<sup>3</sup> (formerly the Information-Handling Working Group) on which there is representation from DigCurV researchers as well as from many other UK partners with an interest in various aspects of digital curation and information literacy skills development. One of the main outputs of this group is an information literacy taxonomy which encompasses a summarised view of the Vitae RDF [4, 13]. This taxonomy was produced to promote interoperability between the Vitae RDF and the SCONUL Seven Pillars model [12], two information literacy models widely used in the UK, and provides a mapping of key information skills which are common to these two models. The RIN Taxonomy outlines

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<sup>1</sup> Vitae is "a network based organisation, consisting of a central team based in Cambridge and a series of eight regional Hubs throughout the UK and international networks [which] champions the professional and career development of postgraduate researchers and research staff in higher education institutions and research institutes." <http://www.vitae.ac.uk/policy-practice/1397/About-Vitae.html>

<sup>2</sup> The Research Information Network is a UK-based "community interest company ... which provides rigorous research and analysis to enhance understanding of the rapidly-changing scholarly communications landscape. It also acts as a facilitator to develop shared approaches to the often complex challenges in this area." <http://www.researchinfonet.org/>

<sup>3</sup> More information about the membership and activity of the Coalition is available at <http://www.researchinfonet.org/infolit/ridls/>

the domains, sub-domains and descriptors that relate to those Vitae RDF descriptors most closely associated with information-handling and data management. The Taxonomy was originally created for an audience distinct from that of DigCurV, albeit closely related. However, when the RIN Taxonomy was used in tandem with the Vitae RDF, it demonstrated a useful approach to the production of a lens onto a larger Framework as well as illustrating the advantages of undertaking such work.

### **3.3 DigCCurr**

There is international recognition that a richer understanding of the training and educational requirements in the areas of digital curation and preservation is essential. DigCurV conducted its research into training needs in the context. The US-based Carolina Digital Curation Curriculum Project (DigCCurr) which focuses on defining graduate and doctoral educational needs, provided valuable contextual material.

DigCCurr is a collaborative programme of activity overseen by an advisory board of partners from the USA, Canada, the UK, the Netherlands, Italy and New Zealand. DigCCurr “seeks to develop an international, doctoral-level curriculum and educational network in the management and preservation of digital materials across their life cycle” by “[creating and maintaining] a curriculum, field experience exemplars, and enriching activities that will provide state-of-the-art preparation for students in the areas of digital curation”<sup>4</sup>. Although DigCCurr focuses primarily on a graduate / doctoral-level curricular Framework, there is a high degree of correlation between its objectives and those of the DigCurV Curriculum Framework. The DigCCurr Matrix of Digital Curation Knowledge and Competences [15] and the High-Level Categories of Digital Curation Functions [16] are foundational tools. The matrix and categories collate different types of material to be covered in a digital curation curriculum, organised in six dimensions that can be viewed independently or in intersection with each other.

### **3.4 DPOE Audience Pyramid**

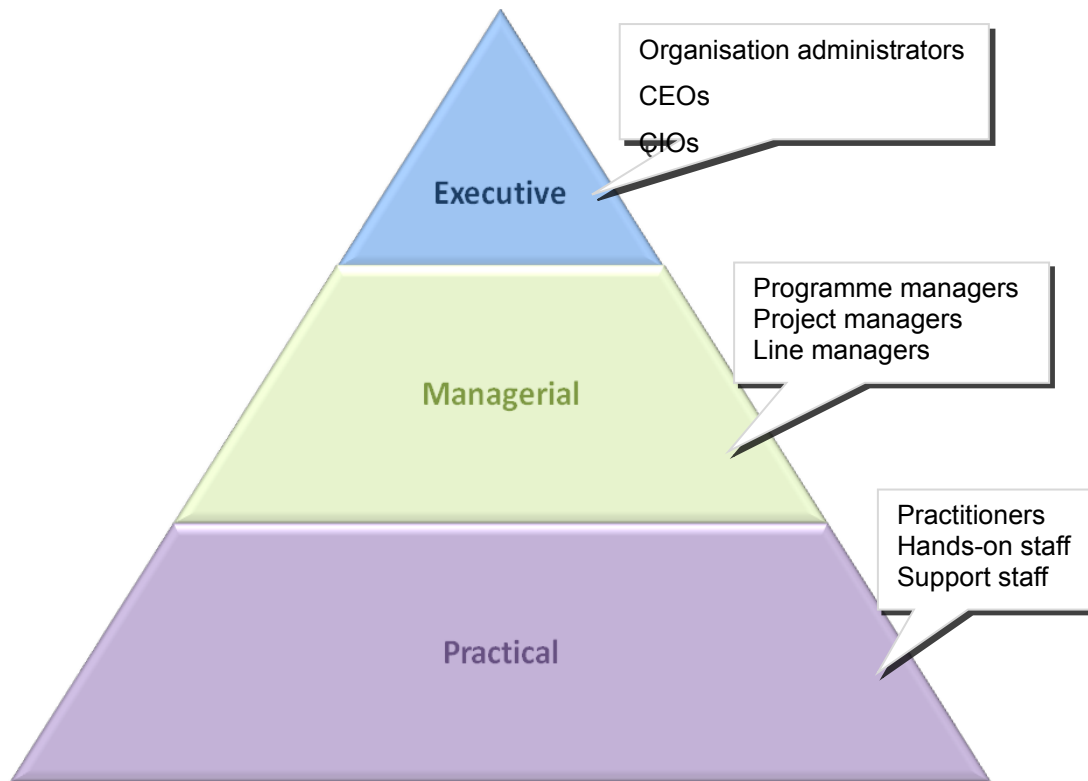
Another valuable point of departure in the DigCurV work was the Digital Preservation Outreach & Education (DPOE) initiative at the Library of Congress [3], which concluded in its 2010 Training Needs Assessment Survey that “there were very few professional development opportunities” in digital curation and preservation, identifying the “need for practical hands-on information and training to conduct and manage” related tasks [15]. The survey informed the definition of a pyramid of target audiences, which defines the audience types whose involvement is necessary for creating successful digital curation and preservation programmes. These include ‘Executive’, ‘Managerial’ and ‘Practitioner’ staff groups. Figure 1 provides a schematic representation of the DPOE audience pyramid, based on elements of work by the DPOE initiative.

Further DPOE work identified that each of these three groups benefit from tailored approaches and formats, namely webinars and corporate briefings for executives, workshops and webinars for managerial staff and hands-on workshops and online courses for practical staff.<sup>5</sup>

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<sup>4</sup> <http://www.ils.unc.edu/digccurr/about.html>, [6]

<sup>5</sup> <http://www.digitalpreservation.gov/education/educationneeds.html> [3]



**Figure 1: Three audiences for effective digital preservation training, based on material developed by the Digital Preservation Outreach and Education initiative at the Library of Congress [7]**

#### 4. Methodology

The design of the DigCurV Curriculum Framework builds on the resources described in section 3; it brings together related, but otherwise disparate areas of knowledge and research in the domain of digital curation. Most pertinent to the methodological approach are:

- the six areas of assessment specified in the DigCurV Evaluation Framework [8], which contextualise a structure for mapping curricula to six corresponding ways of viewing digital curation training. In particular, Area 1: 'Knowledge and principles'; Area 2: 'Skills and competences'; and Area 3: 'Audience types' have been instrumental in identifying the constituents of the Curriculum Framework model in terms of audience roles and their interactions, and have also provided the groundwork for defining characteristics (both descriptors and subcategories) in each Curriculum Framework lens.
- the audience types in the DPOE pyramid, which have been reflected in the three lenses of the DigCurV Curriculum Framework. The suitability of these audience types for the lenses has been further corroborated through the results of the DigCurV 'Report on Baseline Survey and Evaluation Framework'; Section 1: Training opportunities survey [9], which focused on identifying, analysing and profiling training opportunities in digital curation within the cultural heritage sector in 2011.
- the DigCurV survey on sector training needs [10], which informed the definition of key knowledge areas for each lens – as these derive from survey results on training needs for digital curation tasks, skills and staff responsibilities, also gathered in 2011.
- the findings of nine focus groups undertaken by the project, These were undertaken in the countries represented on the DigCurV project team (namely Germany, Ireland, Italy, Lithuania and the UK) during late 2011. There were three focus groups conducted in Ireland, two each in the UK and Italy and one each in Lithuania and Germany. The number of attendees ranged from three to eleven. These focus groups attracted digital curation practitioners, managers and executives who participated in a

structured discussion about the skills currently necessary in their role and, in the case of managers and executives, in the digital curation roles to which they recruit. These events are described in detail in DigCurV deliverable 3.2, 'Report on focus group meetings', summarised in the DigCurV Survey on Training Needs [10].

- the Skills Area and Descriptors of the RIN Vitae RDF taxonomy, which have been mapped to digital curation-applicable content and used to organise the skills and competences necessary for each lens.
- the DigCCurr matrix elements, which have contributed to enriching the knowledge areas for each lens and have provided a benchmark for corroboration and juxtaposition of findings.

## 5. Curriculum Framework

The online DigCurV Curriculum Framework tool is available via the project website, <http://www.digcur-education.org/eng/Resources>, or directly via <http://www.digcurv.gla.ac.uk/> [7].

### 5.1 Overview

The DigCurV Curriculum Framework reflects a detailed and coherent approach to curriculum design and evaluation, whilst remaining useable by those with or without specialist knowledge of curriculum development.

For clarity and in order to supplement understanding of the development process, a short list of definitions of terminology is provided here alongside a concept model (Figure 2) and a concept map (Figure 3). Whilst the list of definitions may be useful to users of the Curriculum Framework, the concept model and map are reproduced here to aid understanding of the development process and the relationship between concepts involved in the Framework development and need only be referred to by users where this is of value or interest.

At the core of our Framework lies the recognition that digital curation is a complex profession. For successful professional performance, staff must demonstrate domain-specific and technical competences, generic professional and project skills, and personal qualities in a blend appropriate to their particular professional context. We do not, however, expect an individual working within cultural heritage digital curation to possess every skill, ability or piece of knowledge described within the Framework. Rather, the Framework is an *aspirational* model, providing a range of competences and qualities to which individual professionals can aspire in their pursuit of professional excellence.

To address the full scope of digital curation activities, and to provide the necessary flexibility to ensure relevance across diverse professional and institutional contexts, the DigCurV Curriculum Framework encompasses a wide range of skills. These skills are expressed as descriptors and arranged into a hierarchy of quadrants and subcategories in order that users may either examine the full scope of digital curation activities, or drill down into the skills associated with specific areas of significance to them or their organisation.

To aid navigation across this range of skills, each individual descriptor in the DigCurV Curriculum Framework is assigned a unique alphanumeric identifier. These, however, are not reproduced in individual lenses. The lenses are intended to be a representation of the content of the Framework at the highest possible level meaningful for a particular audience; the skill identifier code would add visual clutter and would not add to meaning in this context. The identifiers are intended to enhance usability in the overall Framework by providing an additional means of identifying specific descriptors in the larger overall set of information.

### 5.2 Definitions

**Competence:** ‘the ability to do what is required’ [11]

**Designated community:** ‘An identified group of potential consumers who should be able to understand a particular set of information. The Designated Community may be composed of multiple user communities.’ [18]

**Domain:** in this instance the specific professional context of a cultural heritage institution or a subject area within arts and humanities disciplines.

**Domain expertise:** 'knowledge, experience and competence that have been acquired through a consistent track record of successful projects accomplished in various domain areas'.<sup>6</sup>

**Knowledge:** the body of facts, principles, theories and practices that is related to a field of work or study. This is identified in the Curriculum Framework as 'understanding'.

**Longitudinal Evaluation:** reiterative review over time, resulting in ongoing improvement.

**Skills:** 'cognitive competences (involving the use of logical, intuitive and creative thinking) or practical competences (involving manual dexterity and the use of methods, materials, tools and instruments' [12] These are identified in the Curriculum Framework as 'abilities'.

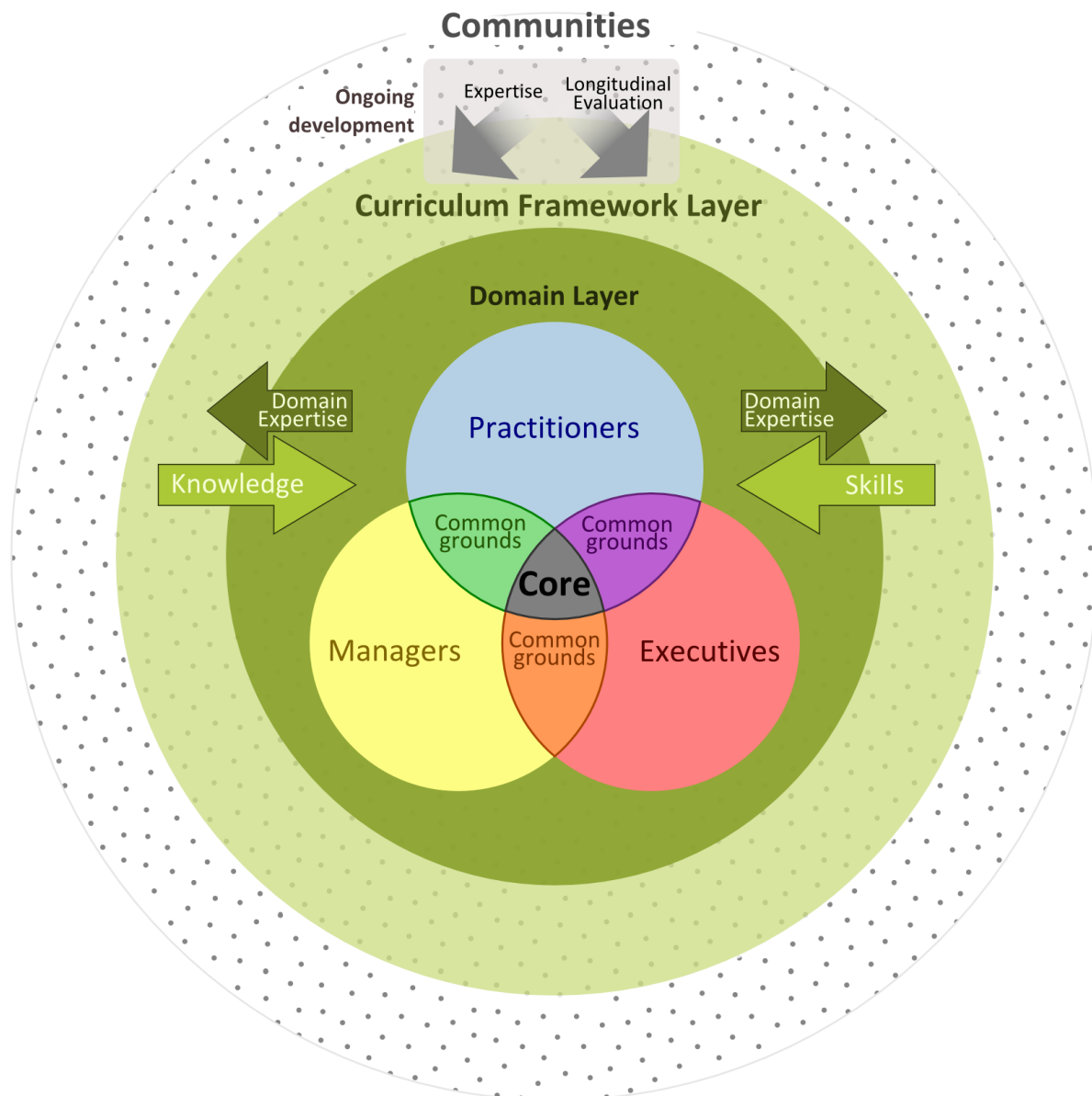
### 5.3 DigCurV Concept Model

In order to facilitate the understanding of the Framework and the relationships between layers, a generic high-level concept model has been developed (Figure 2).

Each layer of the model is described in more detail below. For definitions and disambiguation of terminology, see section 5.2, above.

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<sup>6</sup>Calsoft (2012). 'Domain expertise', webpage, available at [www.calsoftinc.com/domain-expertise.aspx](http://www.calsoftinc.com/domain-expertise.aspx)



**Figure 2: DigCurV concept model of the DigCurV Curriculum Framework**

### The Domain Layer

At the heart of the Curriculum Framework is a common set of descriptors, from which can be selected those descriptors specific to each of three distinct roles represented by the Curriculum Framework lenses: Practitioner, Manager and Executive. In this instance, these roles are viewed as comprising the cultural heritage domain identified within the remit of DigCurV, specifically as libraries, museums, galleries, archives and associated departments of higher education institutions. A domain can be an institution (e.g. the British Library) or a subject area within the Humanities and Information Sciences relevant to the cultural heritage sector. In this sense, the domain layer encapsulates an instantiation of a curriculum within the context of the specific domain.

The areas of convergence between the lenses form common grounds. Further work could usefully define a set of core knowledge and skill elements that should be shared across all three lenses. The areas of convergence are described and connected on the page of the DigCurV website entitled, 'Comparing Skill Requirements across Executives, Managers, and Practitioners', at <http://www.digcurv.gla.ac.uk/lensComparison.html>.

### The Curriculum Framework Layer

This layer represents the Curriculum Framework as presented in this document and as it might be presented in future documents if and when it is revised.

### Interactions between Domain and Curriculum Framework Layers

Each lens should portray the ability of individuals to participate in digital curation curriculum activities through knowledge and skills components. These components (presented in section 6) form the core of the Curriculum Framework and feed into the generation of a domain curriculum.

In parallel, those individuals taking on specific roles as defined within the domain lenses should possess knowledge, experience and competences that have been acquired through continuing and consistent accomplishments within a domain. This domain expertise informs the Curriculum Framework, providing input in the necessary knowledge and skills that a digital curation curriculum should include to be relevant to contemporary professional practice. This generates a corpus of knowledge within the Framework. Through the Framework's use, this knowledge is fed back into the domain through the curricula that are created.

### Communities

Communities represent the extrapolation of the Curriculum Framework from the organisational/institutional layer (domain) to the collective/social layer. A digital curation curriculum required for the purposes of one organisation/institution in a domain becomes part of a wider network that comprises curricula from a range of organisations and domains. In addition to eliciting Framework content from communities, the collective memory and derivation of expertise from multiple/different uses of the Framework informs the ongoing development of the Framework. In the long term, the Curriculum Framework may combine a variety of sub-Frameworks (hence pluralised) each satisfying the requirements of specific domains and/or uses.

### Interactions between Curriculum Framework Layer and Communities

By definition, the Curriculum Framework cannot be static, neither as a concept nor as a tool. Digital Curation is a dynamic field, its methods and techniques changing as we gather more knowledge and experience. We therefore postulate that the Framework requires on-going development in order to maintain (and gain) credibility, usability and relevance. This on-going development will be a result of a variety of methods, including – but not limited to – longitudinal evaluation and appraisal and exposure to community expertise.

## **5.4 DigCurV Concept Map**

An alternative representation of the model is provided in Figure 3 in the form of a concept map.



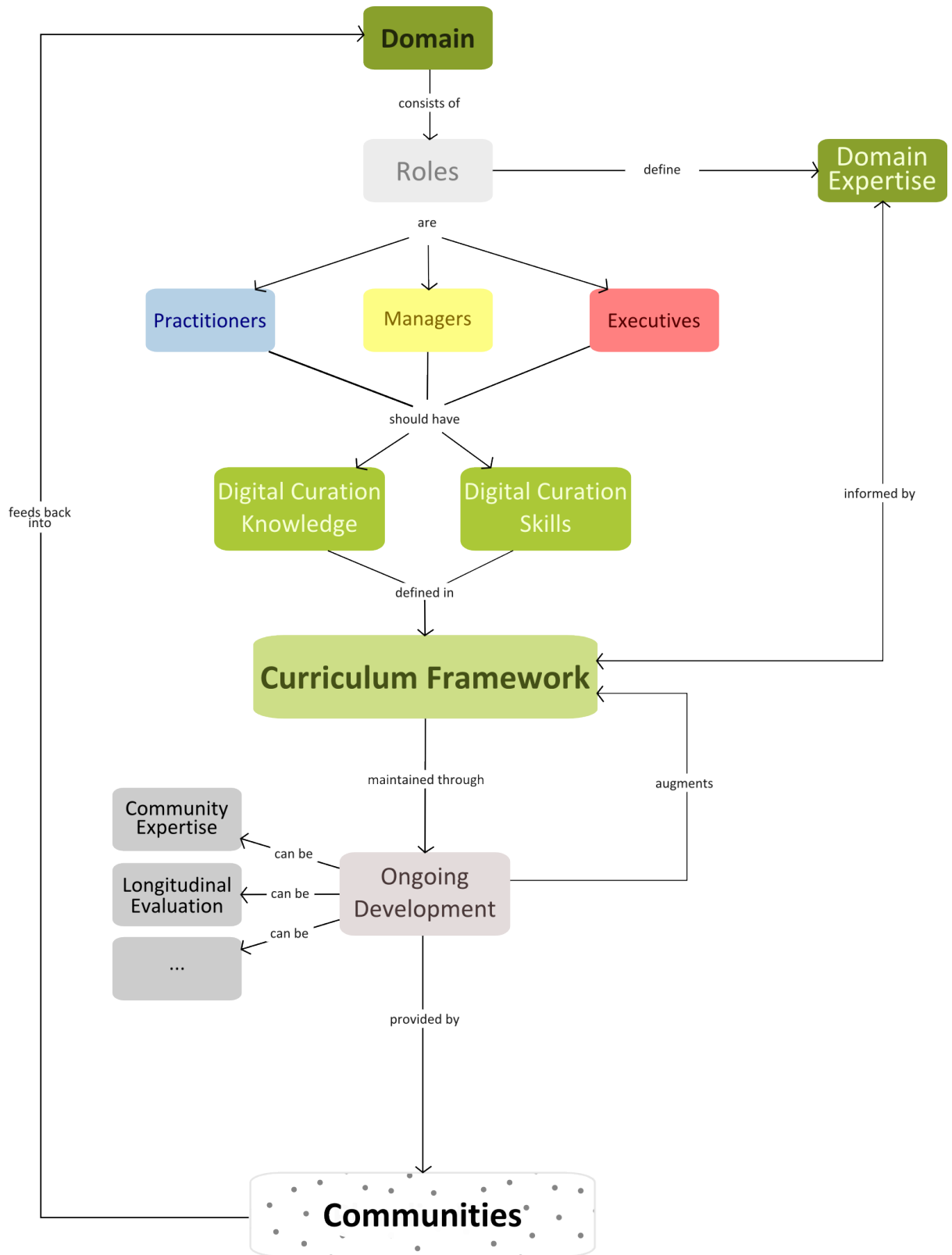


Figure 3: DigCurV concept map of the DigCurV Curriculum Framework

## 6. Curriculum Framework: Lenses

DigCurV defined three views or 'lenses' onto the overall Curriculum Framework. The skills and competences specified in each lens were initially based on the findings of the research undertaken by the project, which was then represented and structured following the lead of the RIN Information Literacy Taxonomy [13] built by RIN as an enhancement to the Vitae Researcher Development Framework (as discussed in section 3.2).

The three lenses were developed in response to the findings of the DPOE initiative's work on classification of audiences based on necessary skills and therefore required training. As discussed in section 3.4, DPOE found that if cultural heritage institution staff with digital curation responsibilities are divided, based on their role, into one of three broad staff groups, training methods which are appropriate for each group can be defined and provided. Building on this research, DigCurV developed one lens for each of these audiences to maximise the applicability of the overall Framework to each group.

The role of the lenses is to provide fine-grained information on the specific sets of key knowledge, skills and competences that are necessary for each of the target audiences to engage in, establish, conduct and/or assess successful digital curation curricula. These are presented in a clear and accessible visualisation for each lens, which is intended to serve as an effective resource for curriculum development or evaluation and can be worked with in printed or digital form. Each lens binds together elements from the previous work with the RIN taxonomy, the results of research conducted by DigCurV survey work and the influences of the other relevant models discussed above.

The lenses consider how practical, managerial and executive roles in digital curation map to each descriptor. These skills and competences encompass not just technical knowledge and duties, but widen out to encompass personal attributes and behaviours, further helping to define the approaches that a curriculum should encourage in individuals to shape them for success in digital curation professions. To ensure ease of use and to minimise barriers to comprehension, the language was refined in response to feedback from the community (as described above in section 4) and skills and competences throughout were categorised into things that the individual 'understands', 'is able to' do and 'is aware of'.

Each lens aims to specify the knowledge, abilities and awareness that should be addressed by digital curation training for a specified level of staff in a cultural heritage institution.

The particular class of professional – practitioner, manager or executive – is deliberately positioned at the centre of the lens. The skills and competences desirable for the role are laid out around the professional class descriptor and are divided into four quadrants. These in turn divide into three or four subcategories. Each subcategory has several descriptors. This structure is an attempt to provide an ontology of the skills and knowledge of each of three broad professional roles in digital curation in the cultural heritage sector, but also follows the approach of other successful skills models such as the Vitae Researcher Development Framework (which also influenced the use of term 'descriptor' in the Framework) and the UK Society of College, National and University Libraries model, 'Seven Pillars of Information Literacy' [14].

The aim is to provide a user-friendly format that showcases information in an easily accessible way.

- **Executive Lens**

The skills defined under the Executive lens are the skills that will enable a digital curation professional to maintain a strategic view of digital curation, to understand the emerging challenges in digital curation for the cultural heritage sector, to make informed decisions to meet these challenges, and to allocate resources strategically.

- **Manager Lens**

The skills defined under the Manager lens are the skills that will enable a digital curation professional to plan, position and monitor execution of digital curation projects and programmes of activity, to recruit and support project teams, and to liaise with a range of internal and external contacts within the cultural heritage sector. The Manager may have previously worked at Practitioner level but equally it is possible they may have entered the organisation at Manager level without direct Practitioner experience.

- **Practitioner Lens**

The skills defined under the Practitioner lens are those that will enable a digital curation professional to plan and execute a variety of technical tasks necessary to digital curation work, both individually and as part of a multi-disciplinary team. This includes understanding diverse issues relating to both digital curation in general, and to a specific area of cultural heritage.

Taken as a set, the lenses describe the breadth of digital curation skills and competences and reflect potential pathways of skills progression. The existence of such pathways is demonstrated by the competences – where appropriate – appearing across all three lenses, but described in a way that reflects how someone at each professional level would engage with that skill or competence.

The lenses are also available online via the DigCurV website where users may also find guidance on implementation. Examples of tools, standards and methodologies have been added to descriptors in the online Framework, where these have been suggested by consultation with the professional community. It is important to note, however, that the examples provided in the online version of the Framework are *indicative* only. The skills and competences described in the Framework are those identified by project research as described in this document and so are advanced by the project as skills and competences recommended for current professional excellence. In contrast, the examples provided to furnish further detail of each competence or skill are *not prescriptive*, and so do not suggest recognition, endorsement or accreditation of any particular tool or standard. They are provided to further understanding for users. In this way, the online version of the tool allows for richer interaction with the lenses and a more highly specified Framework where desired by the individual user.

The lenses are represented in this report on the following three pages (Figures 4, 5 and 6). Users should always refer to the online resources created by the project for the latest stable version of the lenses, available at <http://www.digcur-education.org/eng/Resources>.

## 6.1 Practitioner Lens (as at 30 June 2013)

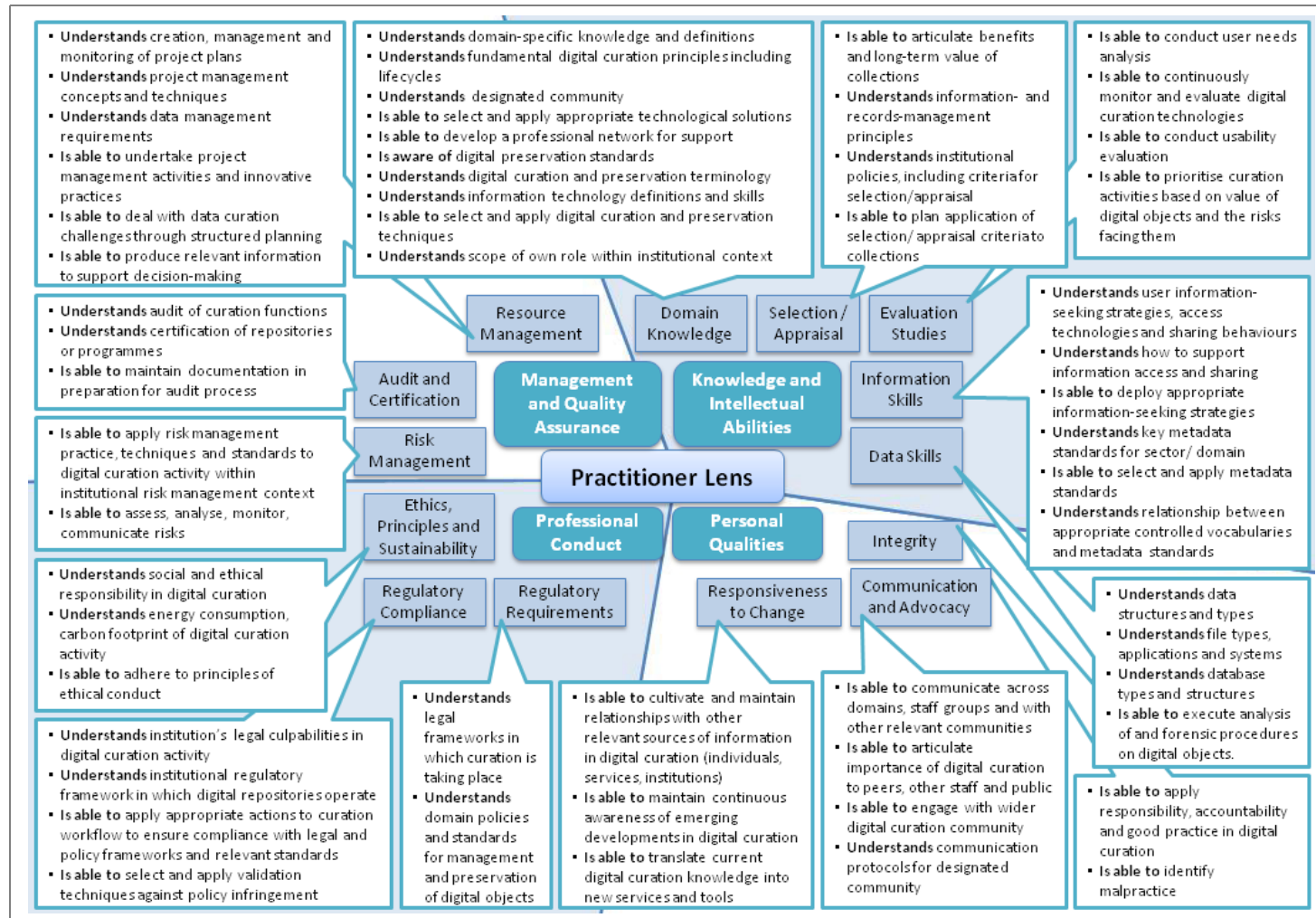
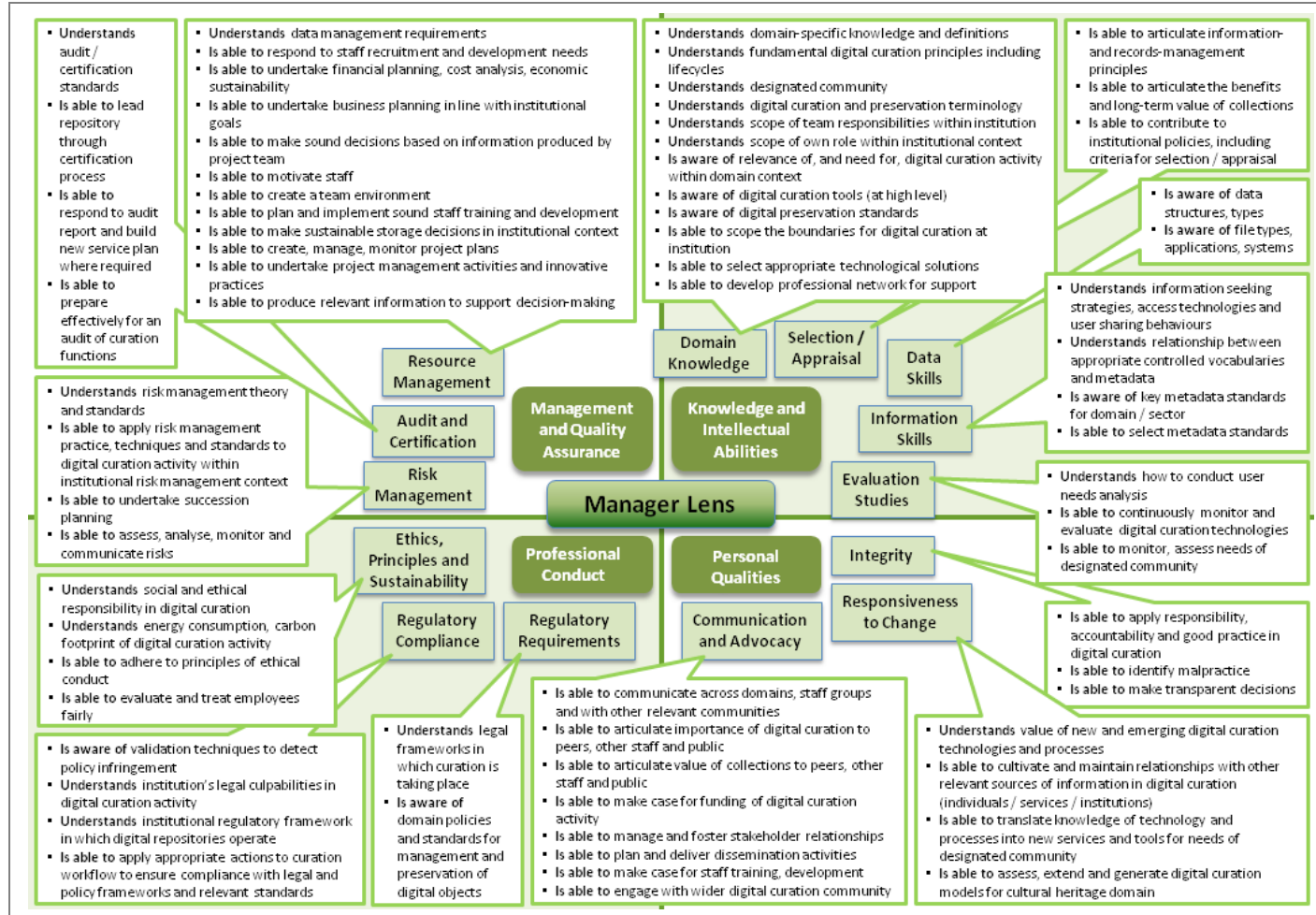


Figure 4: DigCurV Curriculum Framework: 'practitioner' lens

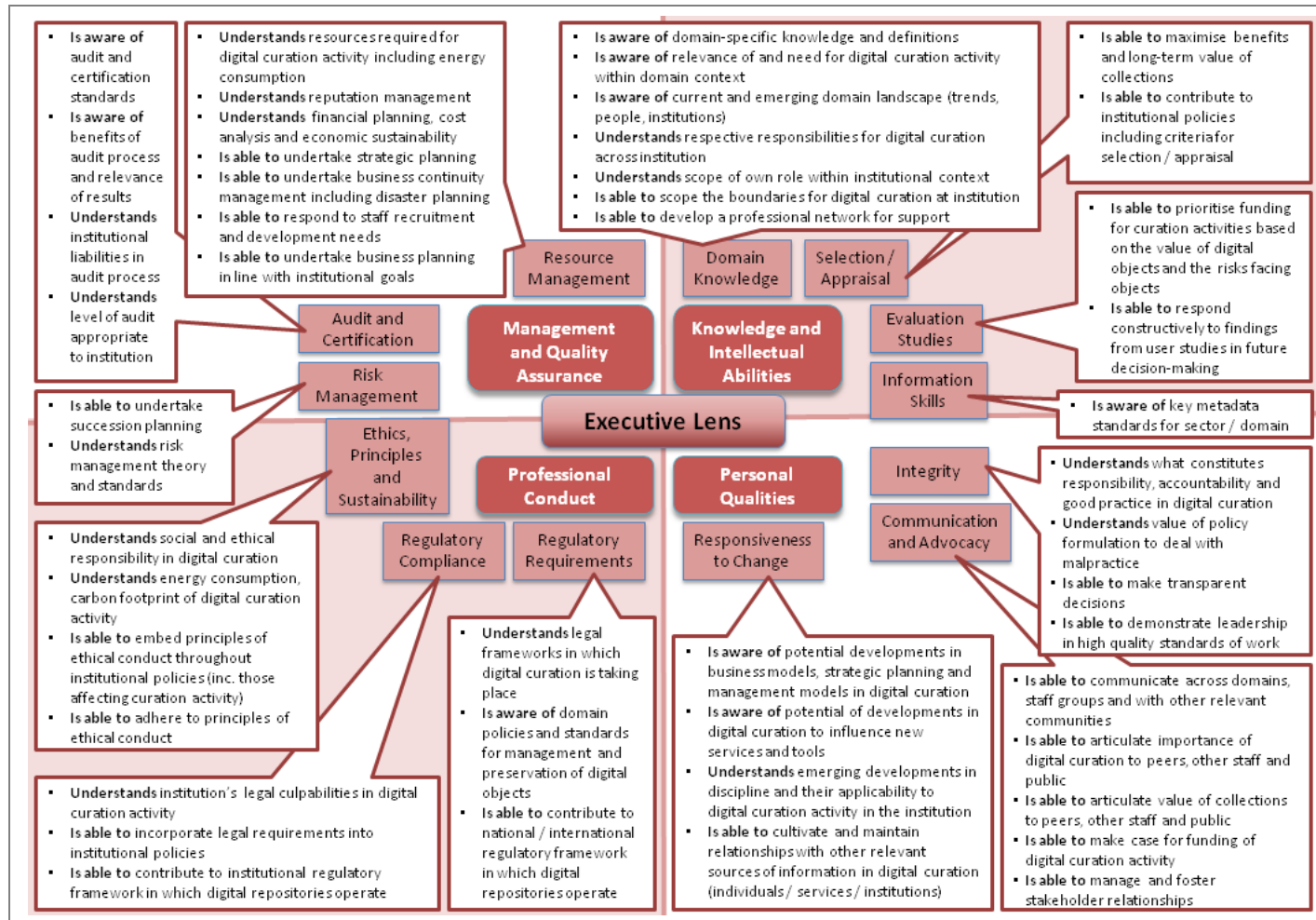
6.2 Manager lens (as at 30 June 2013)



(c) DigCurV 2013, <http://www.digcurv.gla.ac.uk/managerLens.html>

**Figure 5: DigCurV Curriculum Framework: 'Manager' lens**

### 6.3 Executive lens (as at 30 June 2013)



(c) DigCurV 2013, <http://www.digcurv.gla.ac.uk/executiveLens.html>

**Figure 6: DigCurV Curriculum Framework: 'Executive' lens**

## 7. Implementation and use of the Curriculum Framework

Care has been put into the development of the Framework to facilitate its use in flexible ways. We recognise that there will be a number of possible use cases for the Framework. Use cases here are intended to be illustrative, not prescriptive. Suggestions from users of additional ways the Curriculum Framework could be used are encouraged and can be submitted to the project website via its contact email address.

### 7.1 Three ways to use the Framework

We envisage that each lens can be used, at least, in the following three ways:

- **To build or develop training**

The Framework will be useful to those building new training courses. Depending on the user's aims, the Framework can assist in providing a structure for a generic training programme targeted at digital curators, or it can provide an indication of the subjects that could usefully be covered in shorter, more specialised courses addressing one particular area of professional digital curation practice. The common language used in the Framework may allow those building and developing training to communicate more effectively the value of their training offerings.

- **To compare existing courses**

The Framework provides a benchmark to support the comparison of existing training and also a way to map various training offerings against each other. The professional who is considering undertaking training may wish to compare available training programmes to help identify those most appropriate for their needs. The Framework can be used by training providers, both internal and external, to compare existing courses and to assess their suitability for their own institution's requirements.

- **To plan professional development**

The Framework identifies a broad range of skills and knowledge needed by professionals at various levels to deliver successfully digital curation in the cultural heritage sector. Individuals either intending to enter or already working in digital curation in the cultural heritage sector may find it useful to map their own strengths against the Framework as well as to use the Framework to identify and describe areas in which they would find further training appropriate, if not essential.

### 7.2 Example implementations

Prominent figures in digital curation skills development and training have found the DigCurV Curriculum Framework to be useful in development and comparison of digital curation training, as noted in the respective project reports on the evaluation and feedback forms from events held by the project. Some have also found the Framework useful for thinking more broadly about digital curation skills, in addition to the anticipated implementations outlined in section 7.1. Some examples are given here:

- “The Framework has done an excellent job of enumerating and expanding on actions which both impact, and are impacted by, the curriculum. For instance, addressing professional conduct can include knowing about an institution's data policies, but can also denote the need to be involved in developing and/or implementing those policies. Secondly, the lenses helped me to understand the need for multiple levels of audience. The Practical can relate to both the researcher [and] the librarian. And there is need to consider Managerial audiences who may look at our tutorial, which may include lab managers, or supervisors of subject librarians as practitioners. And I'll now be thinking about how or whether the Vice President of Research or Dean will look at this from the Executive point of view.”



D. Scott Brandt, Associate Dean for Research and Professor of Library Science at Purdue University Libraries, West Lafayette, USA. 2 June 2013.

- “I haven't used the Curriculum Framework yet (because it wasn't yet available when I started designing our preservation workshop). I did use the Evaluation Framework at that time to get a clearer understanding of what [our] course was going to do and who it was going to be addressed to. I will definitely refer to the Curriculum Framework and the lenses in the future ... I expect it will be helpful as we begin to create the actual training materials.”

Dr Astrid Recker, Coordinator, Archive and Data Management Training Centre, GESIS, Leibniz Institute for the Social Sciences, Cologne, Germany. 23 May 2013.

- “As I am only developing a single module I did not anticipate that I would be explicitly covering every single one of the skills identified. Some (particularly the softer, more generic skills) would be covered elsewhere. So I went through them all and tried to think how/if they would be covered in the module and, if they were not covered, whether they were covered elsewhere or not. This was a helpful exercise because it helped me to delineate what was important in the module itself whilst also seeing how the rest of the course around it also contributed to teaching the necessary skills. ... [M]y process in looking at these skills was only partly mapping, and more distilling into a smaller set of outcomes that I need to teach my students. As a tool to do this the Framework was very helpful as it gives you something to respond to, which makes you think about what it is you are really trying to do.”

Dr Jenny Bunn, Lecturer, Archives and Records Management, Department of Information Studies, University College London, UK. 7 June 2013.

## 8. Community feedback on the Curriculum Framework

Three testing and evaluation workshops examined the draft Curriculum Framework in the autumn of 2012, one two-hour event each in Vilnius, Lithuania<sup>7</sup>, Göttingen, Germany<sup>8</sup> and Florence, Italy.<sup>9</sup> These events solicited feedback from digital curation practitioners, managers, executives and researchers on various aspects of the draft Curriculum Framework in languages other than English, to ensure the work of the project minimised the barriers to participation for professionals whose mother tongue was not English.

Each evaluation workshop was run by a separate team, each as a result with an inevitably slightly different approach. Accordingly, the findings across the three events were not necessarily directly comparable, but taken as a whole the three events provided a comprehensive examination of the DigCurV Curriculum Framework by digital curation professionals. Feedback was collected and scrutinised for coherent messages from all evaluation event audiences and used to refine and enhance the Framework.

In addition, there was a multi-stakeholder workshop in Florence, Italy on 10 December 2012 (conducted in English) which served as a further opportunity for professionals to evaluate and provide feedback on the Framework. This event was larger than the individual evaluation workshops and involved experts in vocational training, and undergraduate, masters, and doctoral education. This offered a different perspective to the digital curation audiences of the earlier evaluation workshops. The approach to and findings of the multi-stakeholder workshop are fully described in project deliverable 4.2, 'Report on multi-stakeholder workshop' [19].

To further extend the range of input into the draft Framework from the professional community, HATII at the University of Glasgow also undertook targeted interviews with working professionals from each of the three staff groupings at digital curation-related conferences and events, specifically with network members who expressed interest in participation and also undertook a small focus group with teaching staff at HATII to further interrogate the Executive and Manager groups.

Substantial discussion within the project team was augmented and informed by the findings of these events. These events were also useful in two further ways: firstly to directly engage the views of professionals in digital curation about the usability of the Framework as a tool and the relevance of its content, and secondly to build and extend relationships with the professional digital curation community across Europe and to raise the profile of the project across national, staff group and linguistic boundaries.

Whilst some evaluation events had stressed the importance of the Practitioner lens, others including a focus group held jointly by HATII and the APARSEN project<sup>10</sup> in November 2011 and the targeted interviews mentioned above had reinforced the value of the set of three lenses in presenting digital curation as a field in which professional progression is possible and can be planned. Looking across the three lenses was also considered to extend substantially the potential relevance of the Framework as skills can be represented in this way across multiple classes of professionals and so demonstrate how the various professional roles and their concomitant responsibilities intersect.

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<sup>7</sup> 14 November 2012, eight participants.

<sup>8</sup> 24 October 2012, eight participants.

<sup>9</sup> 20 November 2012, eleven participants.

<sup>10</sup> See a description of the APARSEN project at <http://www.alliancepermanentaccess.org/index.php/aparsen/> (accessed 22 June 2013).

## 9. Opportunities for further development of the Curriculum Framework

The Curriculum Framework and its lenses would benefit from translation into additional languages. Further work could also usefully define a set of core knowledge and skill elements that should be shared across all three lenses. The Framework could also extend its impact by becoming interoperable in a meaningful way with the DigCurV registry of training opportunities [20].

Further work in the area might also focus on accreditation by standards and professional bodies of the Framework, and conversely the accreditation by the Framework of certain courses.

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