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DIGITAL CULTURAL DESIGNER – DCD

DIGITAL CULTURAL HANDBOOK

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PREFACE

Digital technologies are an integral part of a person's life. After Covid-19, digital transformation has brought new years of change in the economy, business and many more sectors. The majority of the companies and organisations implemented remote work as an alternative to continue work during the pandemic. Culture and Arts are some of the most affected sectors. Museums, libraries, theatres and art started to transfer most of their work online. Employees and employers are invited now to create new or develop their digital skills.

Digital Culture is mainly focusing on how we communicate and interact within the society. It is also how people approach and use technologies. Linked Open Data is an approach that facilitates the connection of databases by both human beings and machines. It's an innovative alternative for digital cultural technologies.

Nowadays, many young people are more likely to work in technology-based jobs than in the previous decades. Even though youth unemployment reached 16.2% in the EU, this July of 2021, it has decreased significantly since 2013 where the rate was up to 25%. During 2020-2030 ICT services occupations seem to employ a great majority of people, including youth, classified in the 3rd place after Health care and accommodation and food jobs.

This Cultural Digital Handbook aims to help you understand and learn the concepts of digital culture, linked open data, how they have changed during the decades, how young people are affected and what are the most requisite jobs nowadays and in the feature. You will be also able to learn examples of existing organisations and institutions implementing digital culture among European countries. Psychology also plays an important role in your professional life, so you can learn what the passive and negative effects of art and technology-based jobs are and which ways can be effective in order to enhance your digital awareness. Last but not least, a list of tools and resources are provided to facilitate this process, along with country-based research of these concepts in the UK, Cyprus, Italy, Slovenia, Lithuania and Iceland.

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1. Introduction to Digital Culture and Linked Open Data

Digital Culture

A digital culture is a perception that defines how technology and the internet are determining the approach that we interact as humans. It has to do with our behaviour, thoughts and communication inside society. A digital culture is the produce of the endless persuasive technology around us and the result of disruptive technological innovation. It is applicable to numerous areas but it comes down to one principal subject; the interaction between humans and technology.

Digitalisation has become a particularly general influence on culture due to the emergence of the internet as a mass form of communication and the widespread use of personal computers and other devices such as smartphones. Digital technologies are so universal around the world that the study of digital culture potentially includes all aspects of everyday life and is not limited to the internet or modern communication technologies.

Even though it would be artificial to differentiate clear-cut eras distinct from each other, culture shaped by digitalisation varies from its predecessors, i.e., what have been called print culture and broadcast culture, in a number of dissimilar ways. For example, digital technologies have enabled more networked, cooperative and participatory forms of culture. **As Miller (2011) underlined**, "*the specific characteristics of digital culture can be explained with the kinds of technical processes involved, the types of cultural form emerging and the kinds of experiences digital culture entails.*"

Digital Culture and Technical Processes

In digital technologies, information is signified in numerical code. In practice, this indicates that digital material is easily modifiable and can be easily compressed (Miller 2011, 15). Practical examples from every day of this, include the use of Photoshop for easy reform of images and the storing of large amounts of information in e.g. smartphones. Unlike in broadcast culture, media are also networked and interactive and so-called user-generated content has emerged as a

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cultural phenomenon to blur the boundaries between senders and receivers or broadcasters and audiences of media content. For example, social media platforms such as Facebook, twitter, Instagram, blogs and online forums host huge amounts of user-generated content.

The technical infrastructure also enables the hypertextual nature of digital media, as links can be produced between different nodes of content. Hyperlinking is one of the primary ways of organising content online. However, further central features of digital material enabled by the technical processed involved are its automated and databased nature. Digital databases, like any database, have their own exact ways of storing, retrieving and filtering data and turning that data into meaningful information. Digital databases are much more flexible than pre-digital ones and an important component of many everyday activities such as using an online search engine or a social media platform.

This also relates to the process of automation mentioned above. Many digital objects are created out of databases through automated processes. This also allows for personalisation of content. In practice, for instance social media feeds, recommendation systems and personalised advertising online are the result of such automated, algorithmic processes. (Miller 2011, 14-21) Due to the ubiquitous presence and immense influence of such processes, some have characterised present-day culture as 'algorithmic culture.

"*Digital technologies have also influenced the links between objects, space and time*". **(Miller 2011, 22-24)** Objects can be simply not only modified, but also recontextualised and objects from different historical and spatial contexts can be brought together to articulate something new or to create an ensemble of objects. For instance, music or film and TV streaming services – often also in a personalised way enabled by databased automation – are popular realisations of this. The decrease of distance between audiences and art objects is another typical example: not only is cultural participation more democratic due to the instant availability of works of art, but also the means of producing e.g. moving image and visual cultural products and making them available to broader audiences have become more accessible forms of cultural participation. Virtual reality technologies can be expected to further transform cultural forms and participation.

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Why is embracing a digital culture so essential?

There are numerous explanations why a digital culture should matter to an organisation to support digital transformation. It influences corporate culture just as much as business models. The reasons for those statements are listed below:

1. ***Breaks hierarchy and speeds up work*** **–** It is crucial to let employees make their own judgements and breaking down the hierarchies empowers people to make faster decisions.
2. ***Inspires innovation*** **–** Digital culture allows organisations to foster a workplace that inspires employees to try new things whilst enhancing the learning of their workforce.
3. ***Attracts new age talent and retains current workforce*** **–** Employees want to be part of a digital culture that allows a collaborative and autonomous workplace. This fact can also increase employee engagement, allowing them to bring their voice of opinions and create an impact.

Benefits

1. Social connectivity

Digital technology has simplified the procedure of socialisation by enabling us all to communicate with family, friends and team-workers even if we work remotely. With the increase of social networking apps and websites, digital technology has made it possible to communicate through words (text messages), video (video calls, virtual conferences, virtual events) and exchange media (pictures, videos).

2. Communication speed

Since it was first designed, the internet speed is continually improving, consequently, enabling us to transfer tons of information instantly and access data virtually anywhere in the world.

3. Learning opportunities

The quick access to Internet allows us to have access on different information quickly, just by searching online. Long-gone are the days where we had to spend

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huge amount of time searching for specific information within books or go to a physical library to have access and find specific information for different subjects.

Now, digital technology has made it possible for everyone to have access to essential information and sources like online courses, training, books, journals, publications.

4. Automation

In addition to the above, digital technology is contributing to the automated procedures and technologies in different industries. This not only offers us more time to emphasise on other areas but also provides us better standards of safety, saving us from heavy and risky tasks (e.g. Construction, mining or other physical work).

Furthermore, it has limited the costs of different tasks by enabling us all to save money and not paying mediators but having direct access to the final product or service (booking holidays, hotels, plane tickets or buying online).

Linked Open data

Linked Data is one of the core pillars of the Semantic Web, also recognized as the Web of Data. The Semantic Web is about creating links between datasets that are understandable not only to humans, but also to machines. Linked Data offers the best practices for making these links possible. In other words, Linked Data is a set of design principles for sharing machine-readable interlinked data on the Web.

Linked Open Data is a way of publishing structured data that allows metadata to be connected and enhanced, so that different representations of the same content can be found and links made between related resources.

Linked Open Data is becoming increasingly essential in the area of state-of-the-art information and data management. It is already being used by many well-known organizations, products and services to create portals, platforms, internet-based services and applications.

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Linked Open Data is domain-independent and infiltrates various areas and domains, therefore proving its advantage over traditional data management.

In 2010 Berners-Lee extended the note referenced above to suggest a system for rating datasets, based on the five-star rating system used for hotels. Closely related to the principles just listed, the system is as follows:

One-star (*): The data is available on the web with an open license.

Two-star (**): The data is structured and machine-readable.

Three-star (***): The data does not use a proprietary format.

Four-star (****): The data uses only open standards from W3C (RDF, SPARQL).

Five-star (*****): The data is linked to that of other data providers.

The following paragraphs describes the advantages of Linked Open Data, as well as basic Linked Open Data consuming and publishing principles for creating powerful and innovative services for knowledge management, decision making and general data management.

Actually, the web is like a giant global database. If someone wishes to build a new application that indicates the correspondence among economic growth, renewable energy consumption, mortality rates and public spending for education. If someone wants also to improve user experience with

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mechanisms like faceted browsing. Today's measures for integrating information from different sources, otherwise known as mashing data, are often too time-consuming and too costly.

First of all, databases are still seen as "silos" and people often do not want others to touch the database for which they are responsible. This way of thinking is based on some assumptions from the 1970s: that only a minority of experts are able to contract with databases and the IT department's inner circle is able to comprehend the diagramme and the meaning of the data. This is obsolete. In today's internet age, millions of developers are able to build valuable applications whenever they get interesting data. Furthermore, data is still locked up in certain applications. The technical problem with today's most common information architecture is that metadata and schema information are not detached well from application logics. Data cannot be re-used as easily as it should be. If someone designs a database, he or she often knows the certain application to be built on top. If we stop emphasising which applications will use our data and focus instead on a meaningful description of the data itself, we will gain more momentum in the long run. At its core, Open Data means that the data is open to any kind of application and this can be achieved if we use open standards like RDF2 to describe metadata.

Currently, the idea of linking web pages by using hyperlinks is obvious, but this was a ground breaking concept 20 years ago. We are in a similar situation today since many organisations do not recognise the idea of publishing data on the web, let alone why data on the web should be linked. The evolution of the web can be understood as follows:

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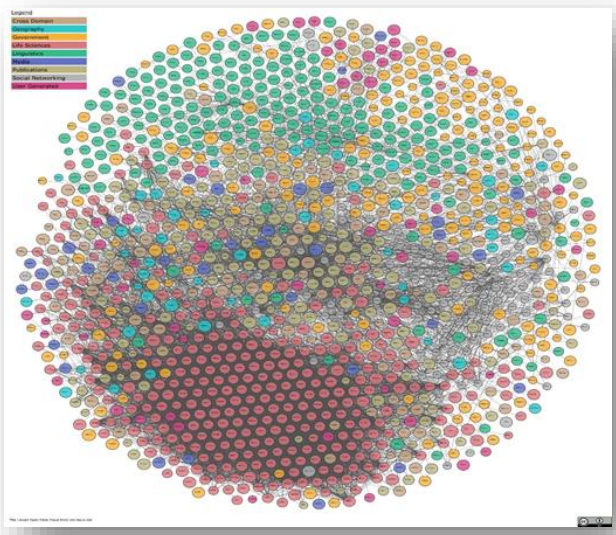

All of the different ways to publish information on the web are based on the idea that there is an audience out there that will make use of the published information, even if we are not sure what exactly it is and how they will use it. Below there are listed some examples:

• **Think of a twitter message:** the user does not only knows all of his/her followers, but he/she often doesn't even know why they follow him/her and what they will do with the tweets.

• **Think of a blog:** it´s like an email to someone the user doesn't know yet.

• **Think of a user's website:** new people can contact the user and offer new surprising kind of information.

• **Think of the user's email-address:** the user has shared it on the web and received lots of spam since then.

The Power of Linked Open Data

In different ways, we are all open to the web, but not all of us know how to contract with this rather new method of thinking. Most often, the "digital natives" and "digital immigrants" who have learned to work and live with the social web

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have developed the best strategies and approaches to make use of this kind of "openness". Whereas the idea of Open Data is built on the concept of a social web, the idea of Linked Data is a descendant of the semantic web.

The crucial idea of a semantic web is to provide cost-efficient ways to publish information in distributed environments. To reduce costs when it comes to transferring information among systems, standards play the most important role. Either the transmitter or the receiver has to convert or map its data into a structure so it can be "understood" by the receiver. This adaptation or mapping must be done on at least three different levels: used syntax, schemas and vocabularies used to deliver meaningful information; it becomes even more time-consuming when information is provided by multiple systems. An ideal scenario would be a fully-harmonised internet where all of those layers are based on exactly one single standard, but the fact is that we face too many standards or de-facto standards today.

2. Evolution of Digital Culture and Linked Open Data (past to future)

Evolution of Digital Culture and Linked Open Data

Communication design encompasses how information is structured behind the scenes, as much as how the information is disseminated across networks (Potts & Albers). Information architecture can profoundly alter our perceptions of society and culture (Swarts). Today cultural heritage institutions like libraries, archives and museums (LAMs) are searching for new ways to engage and educate patrons. Research examined how linked open data (LOD) can resolve the communication design problems that the institutions face and help LAM patrons find new meaning in cultural heritage artifacts.

Even though nascent in practice, many LAMs are beginning to adopt linked open data as a way to organize and disseminate their catalogs of holdings. Linked open data organizes information using four basic rules:

1. Use URIs as names for things.
2. Use HTTP URIs so that people can look up those names.
3. When someone looks up a URI, provide useful information, using the standards (RDF, SPARQL).

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4. Include links to other URIs, so that they can discover more things.

Digital Culture Evolution

Digital media are media encoded in digital format, typically to be transmitted and consumed on electronic devices, such as computers and smartphones. Digital media of wide diffusion includes emails, digital audio and video recordings, ebooks, blogs, instant messaging and more recently social media. Although, digital media started to be developed with the creation of digital computers in the 1940s, their wide cultural impact can be traced back only to two or three decades, with the widespread diffusion of personal computers and especially the internet (Briggs and Burke, 2009).

Social media and ubiquitous connectivity (e.g., allowed by portable digital devices) are even more recent developments. Facebook, in its early stage limited to university or high-school students and employees of a handful of companies, was open to the public 10 years ago, in September 2006 (Boyd and Ellison, 2007). The first version of the iPhone, which gave the initial momentum to the worldwide diffusion of smartphones, was launched shortly after, at the beginning of 2007 (West and Mace, 2010).

Despite that, digital media and social media in particular, have today an enormous reach. Facebook for example counts, as of June 2016, more than 1.7 billion monthly active users1. The influence of digital media on the behaviour of a vast part of the human population is unanimously recognised. As a consequence, academic interest for digital media has grown rapidly in different disciplines. Here, I will not attempt a review of the existing literature, but I will propose that a specific scientific field, cultural evolution, could provide a suitable framework to analyse how the massive diffusion of digital media influences human cultural behaviour.

Linked Open Data (LOD) projects are happening all around the world, expanding the way that we access cultural heritage. Libraries, museums and archives are figuring out new ways to export their data in triples, integrate external linked datasets into their collections and develop new interfaces for users to experience cultural heritage. What is Linked Open Data?

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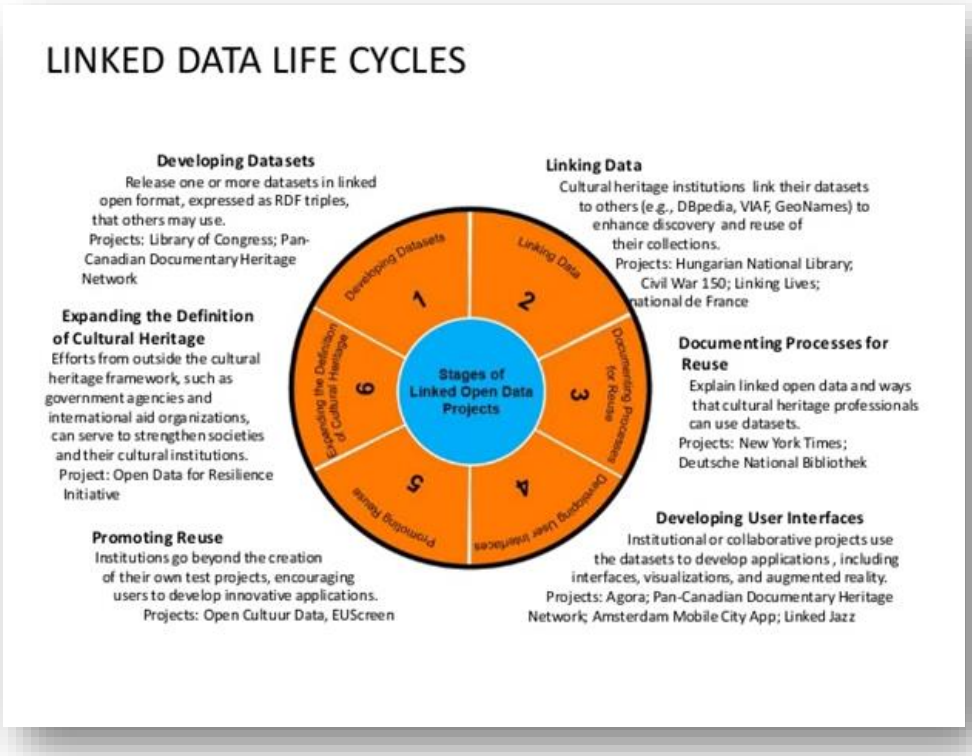

Methodology

Based on a recent research each project was initially evaluated on the following criteria:

- Affiliation/Mission/Intended Audience
- Knowledge Org/Data Models & Vocab and/or Technology Platform
- Usability/Interface Design
- Discovery (search &nav)
- Data Shareability (ie. availability of an API)
- Sustainability (i.e., digital preservation, documentation or available code)
- Project Leaders
- Funding Sources
- Level of Collaboration
- Analysis
- Star-Rating (i.e., Tim Berners-Lee's coffee cup)

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Stage 1: Developing Datasets

The first stage to a successful linked open data project is releasing a dataset that is usable for other projects. Ideally datasets are converted into RDF triples and shared via an open API or SPARQL query endpoint. Here are a few examples of cultural heritage institutes that developed data well. First, we look at an organisation that saw releasing their catalog in linked open data as a way to maintain and grow its influence in the world of cataloging.

Example of stage 1: As part of an initiative to drive American libraries and scholarly institutions toward sharing data more openly, the Library of Congress has embarked on a Bibliographic Framework Plan. This plan will encourage libraries as well as the Library of Congress itself to slowly transition from MARC records toward RDA and linked open data. Since 2009, the Library of Congress has been exposing its famous vocabulary and its Authority Names into linked open data through the Library of Congress Linked Open Data Service portal. The goals of the Library of Congress Linked Open Data Service are twofold, benefiting both the Library of Congress and human and machine users.

Stage 2: Linking Data

Once linked open datasets are available, it is up to cultural heritage institutions to determine how to use them to enrich their own collections. Libraries, museums and archives can offer their patrons additional context for understanding their collections by integrating other linked open datasets into their websites and apps and encouraging patrons to make new connections. We begin this section with an institute that was an early forerunner in LOD, which released its dataset early on. Rather than augment its own collections with other linked open datasets, it chose to integrate its catalog with the rapidly growing European Open Access Library (http://www.oapen.org).

Example of stage 2:

Officially announced in April 2010, the Hungarian National Library's shared catalog was one of the first successful LOD projects. Using practices previously set forth by the Swedish LIBRIS and the tutorial "How to Publish Linked Open Data on the Web", National Sz´ech´enyi Library released their OPAC, Digital Library

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and authority data as LOD. Led by Ad´amHorv´ath NSZL worked to configure their catalogue in a web context with tenets set down by Anders S¨oderb¨ack of the National Library of Sweden

Stage 3: Documenting Processes for Reuse

Some cultural heritage organizations may not finish a project, but leave behind excellent documentation for how to convert their catalog into linked open datasets and develop tools to encourage their use. One organization doing just that is the New York Times. The foundation of the New York Times dataset is the New York Times Index, which was published quarterly beginning in 1913 and continues to be published today, although with less frequency. These red-covered volumes contain a cross-referenced index of all of the names, articles and items that appear in the newspaper. Along with creating an authoritative controlled vocabulary, the New York Times Index also helped to establish the New York Times as a trusted research resource for students, scholars and librarians throughout the United States. As the New York Times continues to promote and develop its LOD assets it continues its legacy as information innovators. The New York Times began publishing its vocabulary as linked open data in 2009; by 2010 the vocabulary had grown to include 10,000 subject headings. Currently (as of March 2013) the dataset includes the names of 4,978 people, 1,489 organizations, 1,910 locations and 498 descriptors or 10,467 tags in total. These tags are available as RDF documents and as HTML. Individual data records can be browsed alphabetically, downloaded in packages of SKOS files, or queried using APIs.

Example of stage 3:

Continuing the legacy of the New York Times', which stretches back nearly to the founding of the newspaper, the New York Times and The New York Times Company Research & Development Lab have adopted linked open data to maintain and share the newspapers extensive holdings. The New York Times suite of LOD datasets, tools and APIs are based in large part on the newspapers 150-year-old controlled vocabulary, which was released as 10,000 SKOS subject headings in January 2010.

The New York Times publicises its projects through its blog, Open: All the News That's Fit to print and through social media. In addition to creating prototype tools

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such as Who Went Where, The New York Times also promotes the use of its APIs and source code of its tools. Open has been a regularly updated blog since the New York Times Company began its foray into the use and promotion of open source software in 2007.

Stage 4: Developing User Interfaces

Several organizations and informal groups have made headway in developing new user interfaces that allow those interested in culture heritage to experience open and linked collections in new ways. Many of these projects are still at a proposal stage, but highlight the work that has yet to be done and the challenges that will have to be met in order to integrate linked open data into every cultural heritage user experience.

Example of stage 4:

The Pan-Canadian Documentary Heritage Networks Out of the Trenches LOD project created and published datasets expressed in RDF/XML format that integrated information provided by its collaborating institutions. The partners then decided to create a visualisation rather than implementing a search application. Models included projects by Australian Tim Wray, including The Real Face of White Australia (http://invisibleaustralians.org/faces/).

Stage 5: Promoting a Culture of Reuse

Part of Tim Berners-Lee's original vision was that organizations that embraced linked open data would also embrace a culture of sharing and reuse. While one of these projects does not meet the technical requirements for an LOD project, both exemplify the spirit of collaboration and sharing essential to a successful endeavour.

Example of stage 5:

In September 2011, the Dutch Heritage Innovators Network (INE; see Grob et al., 2011) began the Open Cultuur Data (http://www.opencultuurdata.nl) initiative to encourage cultural institutions to release their data under open standards and encourage users to develop new uses for this data. They facilitated the creation of

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datasets from eight organizations: the Rijksmuseum, Amsterdam Museum, EYE Film Institute Netherlands, National Archives, the Netherlands Institute for Sound and Vision and National Heritage Sites of the Netherlands (Oomen, Baltussen, & van Erp, 2012). The datasets were made public in time to be relevant to developers entering the Apps for the Netherland contest—a nationwide contest encouraging developers to create smartphone apps that would engage users with the rich heritage of the Netherlands. INE hosted several hackathons before the contest deadline, creating a supportive environment for developers to use the new open cultural heritage datasets in the creation of cultural heritage apps with a strong user interface. Thirteen apps were created during the initial contest, including three award-winners

Stage 6: Expanding the Definition of Cultural Heritage

It can be argued that technological advances themselves are what shape our definition of cultural heritage. For example, the advent of the digital library in the late 1990s gave shape to collections that focused on hyperlocal moments in history (Dalbello, 2004). Linked open datasets have the potential to do just the opposite and expand the very nature of what cultural heritage can be, bridging the gap between online and offline collections.

Example of stage 6:

The Open Data for Resilience Initiative (OpenDRI) is an initiative by the Global Partnership Facility for Disaster Reduction (GFDRR) that seeks to build an open data-sharing programme. OpenDRI aims to reduce the impact of disasters by empowering decision makers with quality information and the tools to support their decisions. It is currently working on implementation in 25 countries worldwide to improve disaster and climate change resilience and is an excellent resource for geospatial information, data and knowledge sources. The data can be used for many purposes: establishing baseline data, conducting risk assessments, planning, project monitoring and tracking progress. The website is intended to facilitate more effective support to a country's rehabilitation, recovery and longer-term sustainable development.

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Conclusions

Although the number of LOD datasets continues to increase, the actual use of LOD by cultural heritage institutions seems to continue limited at this time. The nature of LOD pilot projects at cultural heritage institutions, while occasionally collaborative, seems to be highly curated and experimental. Many remain at the proof-of-concept stage, that is, an attempt by the institutions to see what is possible. Often, users cannot actually access the datasets or interfaces and documentation is limited, but the potential is there. Trust remains an obstacle to the larger adoption of LOD. Computers cannot tell, for instance, that the statement "a pony is a kind of fish" is untrue. It is likely that confirming the source of a statement when gaining or presenting results will become a best practice. Published datasets hold great potential for making the content of an archive's collections known. Without linked data, essential information might not have been easily discovered. Of course, this may require drilling down to item-level description, which is no longer typical in archival processing, so a challenge may be requiring a return to item-level description as a rule. So far, no one project has embodied both the philosophical aims of LOD with the technological expertise. However, more and more cultural heritage institutions are positive to the use of open data, even if they have not fully comprised the linking schemas. If the impact of the linked open data movement ends up being philosophical is that still a success for the movement? Research suggests that even with the limitations of linked open data projects — trustworthy metadata, limited funds, overloaded technical staff, and more proofs of concept than complete projects — each linked open data initiative pushes the potential of what cultural heritage can mean for users around the world. Each new interface and dataset make it more possible for library, archive and museum visitors to gain a richer experience and understanding of their surroundings.

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It is true that we see companies like Google adopting linked data to provide users with a better-off and richer experience. Research suggests that the technical metadata and the philosophy of openness will continue to pervade the cultural heritage field and offer more opportunities for users to access cultural heritage objects outside the silos of museums, archives and libraries.

3. Good Practices on Digital Culture and Open Data initiatives

This chapter explores the real and existing practices on Digital Culture and Open Data initiatives running and implementing in the UK, Cyprus, Italy, Slovenia, Lithuania, Iceland, Ireland and Croatia. Its aim is to inspire, motivate and broaden the horizons of the reader. Within this chapter, a remarkable range of initiatives and practices on developing youth digital skills will be presented to improve the cultural education through innovative tools and methods.

A "**good practice**" can be defined as follows[1]:

A good practice is not only a practice that is good, but a practice that has been proven to work well and produce good results, and is therefore recommended as a model. It is a successful experience, which has been tested and validated, in the broad sense, which has been repeated and deserves to be shared so that a greater number of people can adopt it.

The following sets of criteria were considered to determine whether a practice is a "**good practice**":

- **Environmentally, economically and socially sustainable:**

A "good practice" meets current needs, in particular the essential needs of the world's poorest, without compromising the ability to address future needs.

- **Gender sensitive:**

[1]*FAO. 2015. "Good practices template". Italy, Rome. Retrieved from "http://www.fao.org/publications/card/en/c/54bceab2-3250-51b3-96c3-01980c3b6a0a/"*

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A description of the practice must show how actors, men and women, involved in the process, were able to improve their livelihoods.

- **Technically feasible:**

Technical feasibility is the basis of a "good practice". It is easy to learn and to implement.

- **Inherently participatory:**

Participatory approaches are essential as they support a joint sense of ownership of decisions and actions.

- **Replicable and adaptable:**

A "good practice" should have the potential for replication and should therefore be adaptable to similar objectives in varying situations.

- **Reducing disaster/crisis risks, if applicable:**

A "good practice" contributes to disaster/crisis risks reduction for resilience.

The **topics covered** while collecting the good practices from the EU countries include among others:

- Cultural business developed by youth
- Cultural business who supports/employee youth
- Digital businesses linked to culture who implement digital transformation
- Practices that cultural organizations contribute to empower digital skills and competences of youth
- Practices that organizations are providing cultural services/products that facilitate cultural digital education, and who work with youth.
- Initiatives that empower youth digital designer activities
- Initiatives that empower culture education and develop youth digital skills etc.

And the **main categories** include:

- Museums, libraries and archives
- Cultural institutions

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- Digital culture providers
- Culture agencies etc.

Last but not least, the good practices seek to analyse experiences taking place around Europe and world, for youth to use them in terms of:

- Exchange of real practices and lessons learned
- Up-skilling
- Sustainability

UK (incl. Ireland)

PlaycraftMinecraft	
Country	Ireland/UK
City	Derry
Logo	N/A
Website	https://www.thespace.org/artwork/real-and-virtual-worlds-meet-minecraft-play
Social Media	@PlaycraftLive
Year of establishment/implementation	October 2017
Level of implementation	National
Category	Theatre
Target groups	Youth, especially 9-12 yrs
Description	In 2017, The Space commissioned Derry Playhouse to produce Playcraft, the world's first play designed, developed and performed in Minecraft.
Elements of interest	This is an attempt to engage youth with culture by taking advantage of a technology that young people are already using- Minecraft- and use it to produce the cultural event of a theatre play. The

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	idea of using digital platforms that youth already use and infiltrate them with cultural events could be useful for this project.

A Hollow Body	
City	London
Logo	N/A
Website	http://www.ahollowbody.com/
Social Media	#ahollowbody
Year of establishment/implementation	6
level of implementation	Local
Category	Museum
Target groups	14+
Description	Hollow Body is a cinematic experience, a soundtrack for the city. An interactive mobile app with specially composed music score and narration guides you and a companion on a journey through the City of London. Commissioned by the Museum of London as part of their Sherlock Holmes exhibition programme, this is not a typical history walk or tourist guide. Imagine walking through a film where you are the main characters; the streets and narrow alleys of London acting as your cinematic backdrop.

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Elements of interest	Most youth have smart mobile phones. Apps are a good way to engage them with cultural experiences.

Cyprus

Imaging Centre for Archaeology and Cultural Heritage	
City	Nicosia
Logo	
Website	https://www.cyi.ac.cy/index.php/education/phd-programs/digital-cultural-heritage.html
Social Media	
Year of establishment/implementation	2012
Level of implementation	National and Regional research
Category	Libraries, Museums
Target groups	Research in works of art and archaeological objects in Cyprus and the region
Description	Cultural heritage research and practice is increasingly aided by, and dependent on, digital media. In the last decade, digital media technologies have begun to improve the documentation, management, understanding and communication of cultural heritage. The Cyprus Institute is spearheading,

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	through its two centres CaSToRC and STARC, developments in digital imaging applications for national and regional research in Archaeology and Cultural Heritage. These efforts invest on the rich cultural landscape of the Eastern Mediterranean and the research initiatives of the European Union that have recognized the need for the development of digital libraries that will function as a user-friendly access points for cultural heritage.
Elements of Interest	In only a few months, the centre has accomplished a series of important synergies that demonstrate its timely importance for research in works of art and archaeological objects in Cyprus and the region. These include: a. Application of RTI photography on El-Greco paintings in the context of its close institutional collaboration with the Leventis Municipal Museum, STARC was invited to document with RTI technology three celebrated paintings of El Greco exhibited in Nicosia (December 2012). The project was in collaboration with the owning institutions of the three works of art: The Benaki Museum in Athens, the Historical Museum of Crete and the Syros Metropolis. b. Major exhibition on the application of RTI photography on objects and works of art from the collections of

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	Cypriot Museums. The six-month duration show will be organized in collaboration with the Bank of Cyprus Cultural Foundation at the BOCCF exhibition hall in the old city of Nicosia and is scheduled to open in December 2013. c. RTI documentation project at the UNESCO World Heritage Site of St. John Lambadistis monastery on the Troodos mountains in Cyprus. In the framework of STARC's formal collaboration with the Cyprus Department of Antiquities for the study and protection of UNESCO sites, CyI researchers documented (may 2012) the world famous wall paintings of the monastic church in collaboration with the University of Southern California and the Courtauld Institute for Art. d. Demonstration and application of RTI photography in the Bibliotheca Alexandrina in Alexandria, Egypt (September 2012). A larger project in the world-class museum of the Library is scheduled for 2013.

DHR Lab	
City	Limassol

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Logo	Digital Heritage Research Laboratory United Nations Educational, Scientific and Cultural Organization UNESCO Chair on Digital Cultural Heritage at the Cyprus University of Technology
Website	https://digitalheritagelab.eu/
Social Media	https://www.facebook.com/EU.Mnemosyne
Year of establishment/implementation	2013
Level of implementation	National and International
Category	Museums, Libraries, Monasteries
Target groups	Research Scientists and Doctoral Students
Description	The Digital Heritage Research Lab (DHRLab) was established in 2013 at the Department of Electrical Engineering and Information Technology of the Cyprus University of Technology. The lab is devoted to research on the digitization, documentation, archiving, preservation, protection and promotion of the tangible and intangible Cultural Heritage remains of our past. The research scientists and doctoral students employed at the lab engage in collaborative research with national and international institutions to explore the latest technological advances in the field, their efficacy, and usefulness to bring cultural heritage information to end-users, obstacles, and prospects for further development. At a European level, the lab collaborates with a network of over 150 key partners from the academic, research and industrial sectors working towards the development of new

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	tools and applications. DHRLab is hosting the unique UNESCO and European Research Area (ERA) Chairs on Digital Cultural Heritage. It has rapidly achieved world-spectrum of collaborative research projects and has created a remarkable wide research network and an agenda with great potential for future activities (such as the H2020ViMM Manifesto, Roadmap and Action Plan). A few of our latest achievements in the Lab are significant with unique international awards like the EU Best Innovation Award at the Fair of European Innovators in Cultural Heritage, European Commission Research Executive Agency REA: 10 years supporting excellence in science/REA's life-changing projects and Innovation Radar Capturing and Digitization technologies in Cultural Heritage.
Elements of interest	• Research collaborations on the use and impact of digitization in the field of preservation of cultural heritage and the memory of the past. • Methods for the digitization of cultural heritage such as system development, large-scale databases, virtual representations, 3D visualizations, etc. • Digitization of audio-visual records. • Semantic enrichment of artefacts, metadata encoding, reasoning, and inference.

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	• Operation of interactive technologies that allow user interaction with the content. • Development of new applications and mash-ups over existing knowledge and data sets. • Hosting of new research projects. • Organizing activities, events, seminars, and conferences to discuss new fundamental research capabilities. Use and reuse of digitized collections.

Italy

Lucca Beni Culturali – Cantiere cultura	
City	Lucca
Logo	Lucca Beni Culturali® CANTIERE CULTURA
Website	https://www.lubec.it/lubec.html
Social Media	https://it-it.facebook.com/lubec.beniculturali
Year of establishment/implementation	2005

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Level of implementation	National and International
Category	Summit on Culture and Technology
Target groups	Youth, IT experts, Cultural organization Directors, Cultural experts -officials, Open Data experts
Description	Organized by Promo PA Foundation, LuBeC Lucca Cultural Heritage is the international meeting dedicated to the development and knowledge of the **cultural heritage - technology - tourism chain** that takes place every year in Lucca in October. Participated by a qualified audience of administrators, managers and public and private officials, professionals and operators in the sector, LuBeC is a pivotal moment in the debate between public administration and business, a place of aggregation and cultural accumulation, a generator of concrete development and verification actions. LuBeC has a duration of two days in which plenary sessions, debates, training seminars, presentations and previews alternate to propose and activate through the analysis of data, research, business models and realized cases, intervention strategies and axes of collaboration, aimed at stimulating the circularity of discussion and ideas. This year it proposes a specific session on Open data and a training and experiential path to get to know and experience the world of augmented reality. Conferences, seminars and matching between institutions,

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	companies and artists to tell established models, outline roles, share languages, skills and perspectives on today's and future immersion. Then four rooms will be set up to have a direct experience of the applications that can help amplify and modulate the cultural message of museums, art galleries, archaeological parks, libraries and territories. They are unique insight into the possibilities that immersion offers today to communicate and transmit culture, to imagine and develop it again, to reach more and more audiences of different ages, abilities, nationalities and cultures.
Elements of Interest	-Successful cultural business who support employee in the cultural sectors including youth -It promotes the share of successful digital businesses experiences linked to culture who implement digital transformation -It supports young professionals to empower digital skills and competences also by matching cultural and digital organisations working in the field -It promotes youth digital designer to share ideas with their peers and cultural and digital organization

Uffizi Galleries	
City	Florence

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Logo	LE GALLERIE DEGLI UFFIZI Gli Uffizi | Palazzo Pitti | Giardino di Boboli
Website	https://www.uffizi.it/mostre-virtuali (Virtual Tour) https://www.uffizi.it/mostre-virtuali/fabbrichedistorie (podcast - storytelling of art) https://www.uffizi.it/visite-speciali/aspettando-primavera (Families support) https://www.uffizi.it/visite-speciali/dad-uffizi-primavera (Online Google meet sessions for schools)
Social Media	https://www.tiktok.com/ https://www.facebook.com/uffizigalleries/ https://twitter.com/uffizigalleries https://www.instagram.com/uffizigalleries/ https://www.youtube.com/channel/UC9iTjM1LI5k60EhfTwNPO5w/videos
Year of establishment/implementation	1581
Level of implementation	International
Category	Museum
Target groups	Youth, Families, Teachers, Digital Designer
Description	The Uffizi Galleries, the most famous museum in Italy and in the world

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	includes the Uffizi Gallery, the Vasari Corridor, the collections of Palazzo Pitti and the Boboli Gardens. There are the most conspicuous existing collection of Raphael and Botticelli, as well as main groups of works by Giotto, Tiziano, Pontormo, Bronzino, Andrea del Sarto, Caravaggio, Dürer, Rubens, Leonardo da Vinci and others. While the pictorial works of the sixteenth and baroque (ranging from Giorgione to Titian, from Ribera to Van Dyck), but also of the nineteenth and twentieth centuries in Italy are concentrated in Palazzo Pitti, the Vasari corridor until 2018 housed part of the Collection of Self-portraits (over 1,700), which will soon be hosted in the Gallery of Statues and Paintings. The museum houses a collection of priceless works of art, as a fundamental nucleus, from the Medici collections, enriched over the centuries by bequests, exchanges and donations, among which a fundamental group of religious works deriving from the suppression of monasteries and convents between the XVIII and XIX century. Divided into various rooms set up for schools and styles in chronological order, the exhibition shows works from the 12th to the 18th century, with the best collection in the world of works from the Florentine Renaissance. Of great value are also the collection of ancient statuary and above all that of drawings and prints which, kept in the Cabinet of the same name, is one of the most

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	conspicuous and important in the world. In 2019 it recorded 4,391,861 visitors (Mibact data). The Uffizi have embarked on a real **multi-channel digitization path** and to date, they are one of the most avant-garde Italian cultural institutions, starting with **social media.** They landed on TikTok at the beginning of 2020, opening up to a new target composed mainly of Z Generation. In addition to this, the Uffizi have also developed the Ipervisioni project which allows you to **take virtual tours and visit digital exhibitions** related to their collections. Through very high definition images, captions and 360 ° tours made with Matterport, all the Uffizi are practically usable also in digital, remotely and for free. To complement this immense work, there are also **digital archives** where you can find catalogs and publications. A very interesting project of 2021 is also "Come on schools - the Uffizi is coming" with which the Galleries make the immense heritage of the Uffizi at the disposal of **schools in distance learning**. Each school can take advantage of art and history lessons with 45 Google Meet sessions by Uffizi experts.
Elements of interest	-Successful cultural business that

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	implement digital transformation through the use of social network, the virtual technology and digitalisation of archives -It supports families in empowering youth with digital skills and competences applied in the cultural sector -It supports schools with cultural services/products that facilitate cultural digital education with online meetings (through google meet sessions with experts), providing opportunities to understand the concept of digitalisation of the cultural sector.

Slovenia (incl. Croatia)

CulTour - BE 'COOL'. FOR EVERYONE!	
Country	Slovenia, Croatia
City	Jastrebarsko Črnomelj
Logo	

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Website	https://kul-tura.hr/
Social Media	kulturair@gmail.com
Year of establishment/implementation	2020
Level of implementation	International (Slovenia and Croatia)
Category	Museums, historic attractions
Target groups	Tourists, visitors, travellers (People who are not familiar with what smaller towns have to offer)
Description	The city of Jastrebarsko and the Municipality of Črnomelj along the Slovenian-Croatian border have developed a joint product called culTour – a specially designed tourist tour with the support of a mobile application and a benefits card. The goal was to present the cultural heritage through an organized tour of attractive historic buildings and learning about customs and cuisine, which will ensure greater recognition and an increasing number of tourists. With a mobile application a visitor is able to discover the most fascinating points of interest the town has to offer. Upon reaching the point of interest he/she is able to solve location-specific challenges and mini games. When in range, he/she is able to trigger the challenge by clicking on its

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	corresponding marker on the map. Visiting points of interest and solving challenges rewards user with points that can be redeemed as gifts and discounts with local vendors. The project involves students from Slovenia and Croatia, as well as organizations in the cultural sectors and municipalities: - local tourist community from Jastrerbarsko - BelaKrajina Development Information Center - Faculty of electrical engineering (Ljubljana) - Libertas university (Zagreb) - others The main goals of the project: - preserving the cultural heritage of two small towns - interpretation and presentation of the heritage of small towns - to develop and grow tourism and increase the visibility of cultural sites. - making tours adapted to people with disabilities
Elements of interest	With the use of mobile technology people can learn about rich cultural heritage in a new and fun way. Animated characters, story driven challenges and puzzles are especially

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	appealing to children. While young people are not always interested in a lecture, they are curious about a particular subject due to an app. Additionally, they can go at their own pace. Having the opportunity to learn without a direct influence encourages young people to value independent study. The platform also helps to strengthen personal Interaction between the information providers and recipients (users). We are also able to attract more people in order to further develop the local offer of smaller providers in the field of culture other services.

Nexto Platform	
City	Multiple cities
Logo	PROXIMA
Website	https://nexto.io/
Social Media	https://www.facebook.com/nexto.io/ https://twitter.com/nexto_io https://www.instagram.com/nexto.io/
Year of establishment/implementation	2016

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Level of implementation	National and (since recently) international
Category	Museums, galleries
Target groups	Platform main target audience: • Destination managers, curators, tour guides, storytellers App main target audience: • Tourists, visitors, travellers
Description	The project involves organizations, museums and galleries from all over Slovenia (and across Europe). Amongst others: • City of Ljubljana & Ljubljana Castle • National Gallery • Natural History Museum, National Museum, • Museum of Modern History, • Modern Art Gallery & Museum, • Visit Ljubljana, • Noordung Centre • Gutenberg museum in Mainz Nexto is a cultural engagement platform – a mobile application - that enables creation and delivery of interactive location-based narratives. People can experience and learn stories about places, people and artifacts.

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	The platform covers all major museums, galleries, and other cultural and natural heritage destinations in Slovenia The app is not a typical audio guide - it combines traditional audio guides with additional features, such as puzzles, riddles and the collection of items by scanning objects with visitor's smart phone. It creates game-like learning experiences with the help of virtual reality. It contains interactive maps that help visitors discover city's hidden gems and uses location-aware technology that activates the audio guide whenever the user is near a point of interest. The app can also be used offline as the content can be downloaded beforehand. There's an unique combination of a streamlined conversational interface (chat-bot like), location based game mechanics (similar to Pokemon Go!), gamification techniques (points, rewards, badges) and latest advances in AR (Vuforia AR, marker less tracking, support for Facebook AR effects and Snapchat Lenses). Visitors can also get notified of your healthy distancing guidelines if they stay too close to other visitors for extended

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	periods.
Elements of interest	- The platform improves visitors cultural experience of cities. It adds value to the sightseeing experience of tourists by engaging them. User have greatest interest and enjoys learning content. - it brings the importance of heritage closer to the younger generations and present rich stories from history in a unique way (using AR, games, puzzles, videos, virtual souvenirs, animated historical figures). - Games encourages good observation of artworks. - It transforms the sightseeing experience of cities and make it accessible to a wider range of audiences.

Lithuania

Project "Rokiškis Region Museum Digital Library"	
City	Rokiškis

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Logo	ROKIŠKIO KRAŠTO MUZIEJUS
Website	https://www.muziejusrokiskyje.lt/skaitmenine-biblioteka
Social Media	
Year of establishment/implementation	2010
Level of implementation	Regional, national
Category	Museums, libraries
Target groups	Academic community and general public
Description	The museum has more than 100 thousand exhibits. Today, one of the main tasks is not only to collect, preserve, research and restore exhibits, but also to acquaint the public with extremely valuable documents, photographs, book collection and other cultural heritage values that would be accessible through a virtual library - by digitizing exhibits. The project "Digital Library of the Rokiškis Region Museum" is a response to the growing need to transfer to the virtual space those museum values that are stored in the museum repositories and are not accessible to the general public.

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	By digitizing the exhibits, the Lithuanian cultural heritage will be preserved, museum values will become more accessible, which will attract the academic community interested in the research of this heritage and other visitors interested in the preservation of cultural heritage. Documents, books, photographs and other exhibits that are being digitized have a great historical significance.
Elements of Interest	-Digitization of handwritten documents, photographs, books. -The system of user-friendly data classification.

Vilnius University Virtual Library	
City	Vilnius
Logo	Vilniaus universiteto biblioteka
Website	https://biblioteka.vu.lt/
Social Media	
Year of establishment/implementation	2009
Level of Implementation	Local, national, international.
Category	Libraries

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Target groups	Academic community
Description	In 2009 The World Digital Library was launched (initiated by the U.S. Library of Congress in 2005). With the support of UNESCO, a working group was set up to which five institutions were invited: The Library of Alexandria (Bibliotheca Alexandrina), the National Library of Brazil, the National Library and Archives of Egypt, and the National Library of Russia. The partners of the World Digital Library are the world's libraries and archives, including the Vilnius University Library. In addition, the VU Library, while protecting many unique monuments of Lithuanian writing, joined the UNESCO Memory of the World program in 2006 and has already submitted several dozen of the most valuable objects of national and regional significance to the register.
Elements of interest	- Methods for the digitization of elements (books, documents, research analysis, etc.), system development, large-scale databases (VU library currently holds over 5 million documents). -Methods of element classification for users. -Virtual exhibitions of books, documents, photographs.

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iBiblioteka	
City	Vilnius
Logo	
Website	https://ibiblioteka.lt
Social Media	
Year of establishment/implementation	
Level of implementation	Local, national
Category	Libraries
Target groups	General public
Description	On the website ibiblioteka.lt you can find and read electronic books by Lithuanian authors and books translated into Lithuanian. Currently you can choose from over 2,000 eBooks. All those who have a "LIBIS" (Lithuanian Integral Library System) reader's certificate do not need to register additionally - all they need to do is log in to use all the portal's services. If you do not have a "LIBIS" reader's certificate, you can register on the portal ibiblioteka.lt in two ways: either just register on the portal, or order a reader's ticket and register together. All portal services are also adapted for mobile devices. An internet connection is required to read the books.

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	Borrowed ebooks can be read for 14 calendar days (there is a possibility to extend this period twice) anywhere you are comfortable. You can read up to 2 ebooks at a time.
Elements of interest	-Digitization of books. -Methods of lending books using the Internet.

Iceland

StofnunÁrnaMagnússonar (ÁrniMagnússon Institute)	
City	Reykjavík
Logo	STOFNUN ÁRNA MAGNÚSSONAR í íslenskum fræðum
Website	http://www.arnastofnun.is
Social Media	https://www.facebook.com/arnastofnun
Year of establishment/implementation	2006
Level of implementation	National and international
Category	Libraries and cultural institutions
Target groups	Doctoral students and researchers
Description	The role of the ÁrniMagnússon institute is to conduct research in the field of Icelandic studies and related scholarly

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	disciplines. It focuses in particular on Icelandic language as well as literature and culture. The institute collaborates with other institutions and academic projects in relation to the study of old manuscripts and other documents like e.g. private letters from the 19th century. Many projects supervised by the institute involved digitalization of documents and data.
Elements of interest	• Collaboration in cultural and linguistic projects to preserve the knowledge on the history of Iceland as well as its literature and language • Methods of digitalization of documents and data so that researchers can look easily into what researchers and doctoral students are looking for their research • Creation of interactive technologies that allow the user to interact with the content • Hosting of new research projects

Opingögn (by Ísland.is)	
City	Reykjavík
Logo	OPIN GÖGN island.is

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Website	https://opingogn.is/
Social Media	https://www.facebook.com/islandid
Year of establishment/implementation	2020
Level of implementation	National and possibly international as well
Category	Digital archive
Target groups	Citizens as well as researchers
Description	Ísland.is offers a digital archive called opingogn.is where official institutions like the National Registry of Iceland, the Meteorological Institute or the Education Institute share their open data. They can be looked for and are accessible by all users everywhere in the world.
Elements of interest	• Open data shared by official institutions and accessible from one website only • New technologies that allow the user to interact with the open data • Hosting of more and more data from public institutions • Possibility for researchers to observe the data provided

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4. Youth employment, usual youth occupations and the role of digital culture

4.1 Youth employment and unemployment rates in each participating country

Youth Unemployment

The unemployment rate is an important indicator with both social and economic dimensions. In July 2021, 2.854 million young people (under 25) were unemployed in EU-27[1][2], of whom 2.339 million were in the euro area (EA-19)[2][3]. In July 2021, the youth unemployment rate was 16.2 % in the EU and 16.5 % in the euro area, down from 16.9 % and 17.2 % respectively in the previous month. Compared with June 2021, youth unemployment decreased by 151 000 in the EU and by 140 000 in the euro area. Compared with July 2020, youth unemployment decreased by 420 000 in the EU and by 360 000 in the euro area.

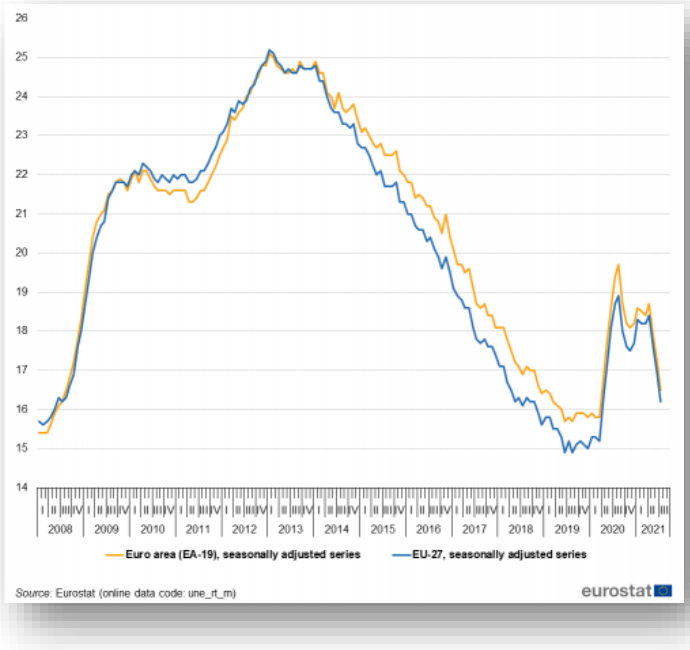

Figure 1: Youth unemployment rates, EU-27 and EA-19, seasonally adjusted,

2It refers to the official composition of the EU in the most recent month for which data are available; from February 2020 onwards this is the EU with 27 Member States, EU-27.
3 It refers to the official composition of the euro area in the most recent month for which data are available; from the reference month of January 2015 onwards this will be the euro area with 19 Member States, EA-19.

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January 2008 - July 2021 (%)
Source: Eurostat

The Europe 2020 strategy put forward by the European Commission sets out a vision of Europe's social market economy for the 21st century. As part of the flagship initiatives, *'An agenda for new skills and jobs' and 'Youth on the move',* (youth) unemployment rates will be targeted via by a range of policies, including proposals aimed at education and training institutions, or measures for the creation of a (work) environment conducive to higher activity rates and higher labour productivity. There are also initiatives aimed at improving the entry rate of young people into the labour market.

Youth Unemployment rate by Education level

Level of educational attainment is an important factor in young people's future working lives. Figure 2 illustrates that the higher the educational attainment, the lower the youth unemployment rate recorded. The unemployment level of young people with a low level of education (26.5%) is twice as high as those with a tertiary education (13.8%). A similar difference (10 p.p.) can also be identified for young people with an upper secondary level of education.

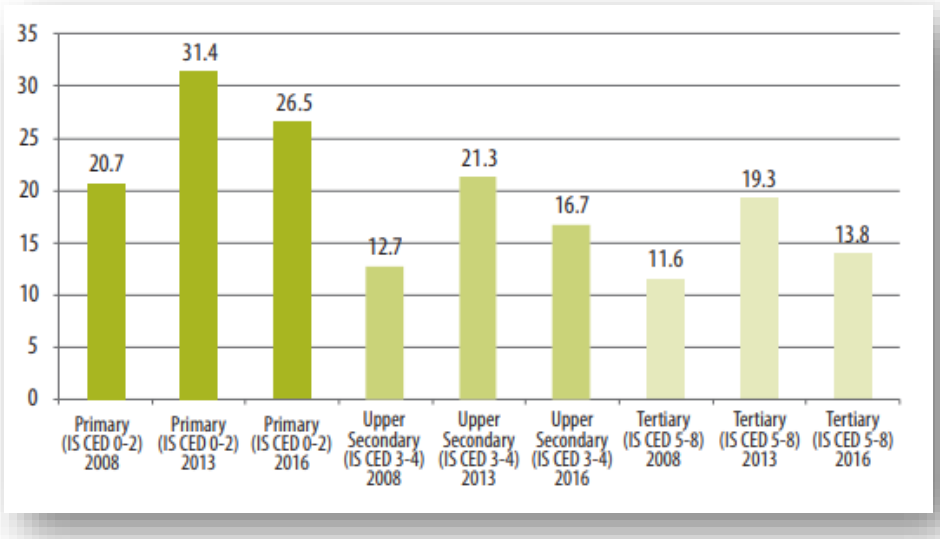

Figure 2: EU28 Youth Unemployment by Educational level, 2008-2016
Source: Eurostat, yth_empl_090

Long-Term Youth unemployment

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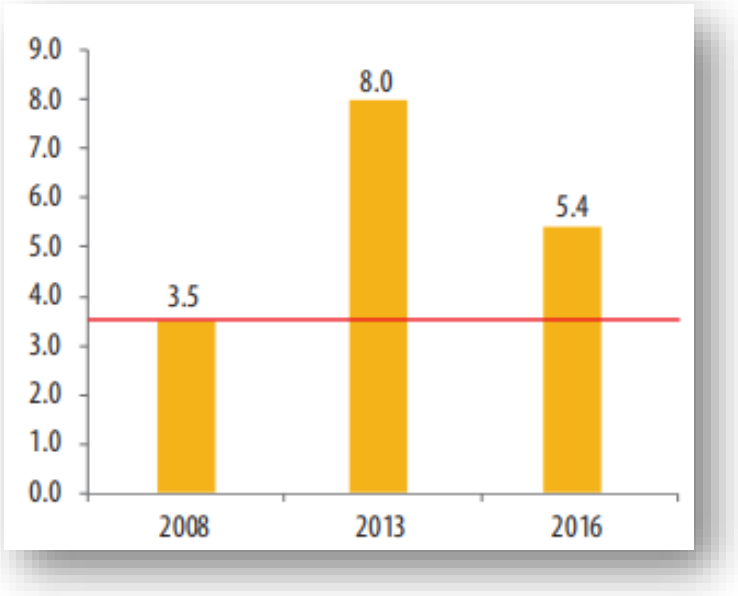

Figure 3: EU28 Long-term Youth unemployment rate, 2008-2016
Source Eurostat, yth_empl_120

The situation of unemployed young people is further complicated if they spend a long time without being able to find a job. Long-term unemployment periods[4] have significant consequences for the working future of young people: the longer a young person remains unemployed, the more difficult entry into the labour market becomes. Since the start of the financial and economic crisis in 2008, the long-term youth unemployment rate (12 months or longer) in the EU28 has increased by 1.9 p.p. (from 3.5% in 2008 to 5.4% in 2016). The highest value was recorded in 2013 (8%). Since then, a positive trend has emerged (-2.6 p.p.), but the long-term youth unemployment rate is still far higher than the pre-crisis level (Figure 3).

At Member State level, Greece (25.1%) and Italy (19.4%) are the two Member States with the highest long-term youth unemployment rate in 2016. They are also the ones that have recorded the biggest increases since 2008, standing at 17.3 p.p. for Greece and 11.3 p.p. for Italy in 2013. The other three countries with a long-term youth unemployment rate of over 20% in 2013 (Spain, Croatia, and Slovakia), demonstrated remarkable improvements in 2016.

[4] *The long-term unemployment rate is the proportion of people who have been unemployed for 12 months or more, in relation to the total number of unemployed people in the labour market.*

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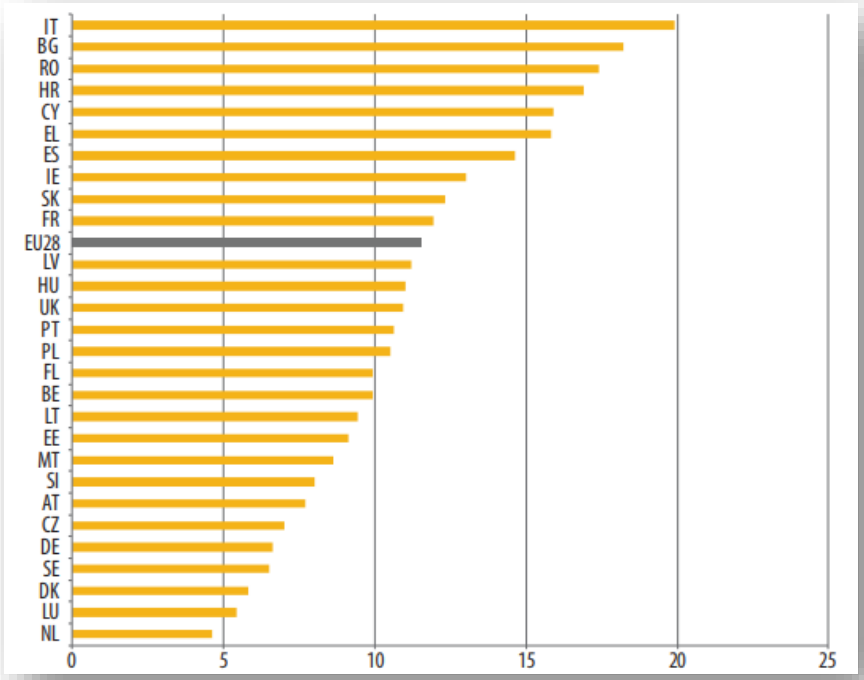

Figure 4: NEET Rate at Member State level, 2016
Source: Eurostat, yth_empl_150

Future employment growth (% change) across occupations in EU27 in 2020-2030

Future employment growth average in EU27 over the period 2020-2030 is estimated at 2.2. The minimum is -26.6 for Agriculture, forestry, and fishing, while the maximum is 11.2 for Accommodation and food. Together with Agriculture, forestry, and fishing, well below the average is Mining and quarrying. The Arts and recreation field is estimated at 3.8 while the ICT services at 8.9. 5

[5] *https://skillspanorama.cedefop.europa.eu/en/dashboard/future-jobs?year=2020-2030&country=EU27_2020#1*

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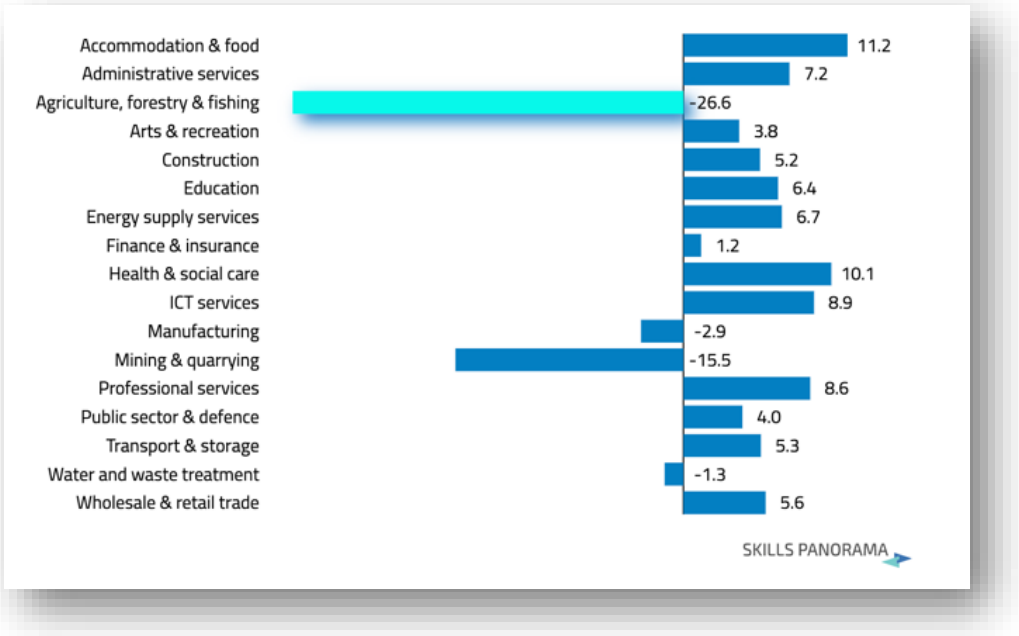

Figure 5: Dataset Cedefop Skills Forecast -Future employment growth

The role of Digital culture in the employment

Young people face the emerging trend of new technologies disrupting the labour markets across the EU and posing new challenges in accessing their social and economic rights. Advancements in digitalisation, robotisation, and automation are taking place at an unprecedented rate, leading to a "Fourth Industrial Revolution". As technology begins to replace humans in performing certain tasks, millions of jobs risk disappearing. It is estimated that 20-40% of jobs, specifically undertaken by young people, will no longer be performed by humans in the future. Therefore, job scarcity and worker displacement are likely to grow, while competition over a limited set of jobs and poorer working conditions both increase. On the other hand, the digital revolution creates **new job opportunities** for young people, especially in some emerging sectors where new skills are required, and young people should be proactively supported to be able to access those opportunities. The digitalisation of the workplace is already having significant impacts on youth. The emergence of platform work, primarily taken on by young people, has led to the growth of new non-standard forms of work that often include precarious working conditions such as low wages, no basic rights like paid sick leave, and lack of access to social protection.

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Employment in high-tech economy across countries in 2020 (% of total employment)

Comparing Employment in high-tech economies in 2020. The maximum is for Czechia in High-technology manufacturing, while the minimum is for Cyprus in High-technology manufacturing.

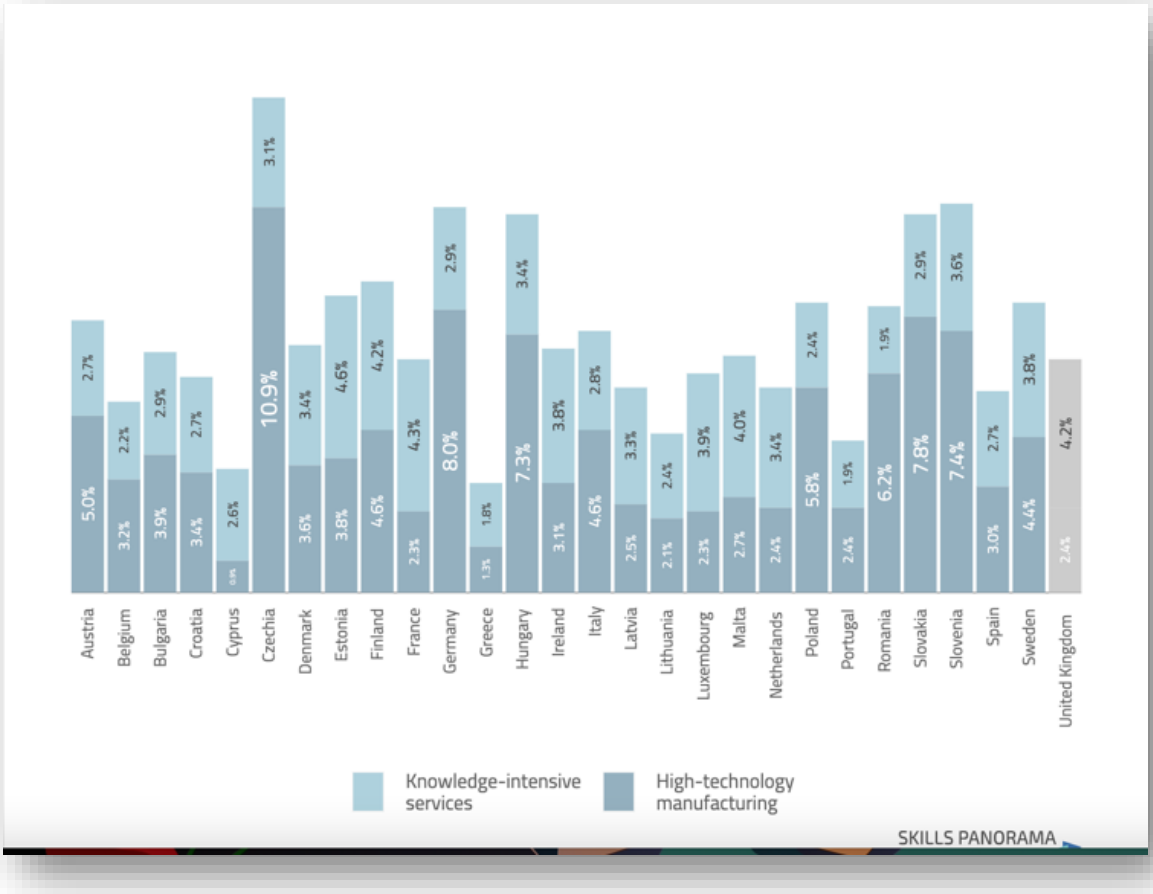

Figure 6: Employment in high-tech economy across countries in 2020 (% of total employment)

The share of people employed in science, engineering, and ICT occupations either as professionals or associate professionals. These occupations correspond to following ISCO occupations: 21 (Science and engineering professionals), 31 (Science and engineering associate professionals), 25 (Information and communication technology professionals), 35 (Information and communication technicians). The share of these so-called "high-tech occupations" in total employment indicates the technology intensity of a Sector or of a whole country. The indicator makes use of Cedefop's Skill Projections database to show

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how the share of people employed in these occupations has changed over the recent past and how it is expected to change over the years leading to 2030. Employment in high-tech occupations in 2030 is estimated at 9.3%. The minimum is 5.3% for Greece, while the maximum is 14.1% for Finland.

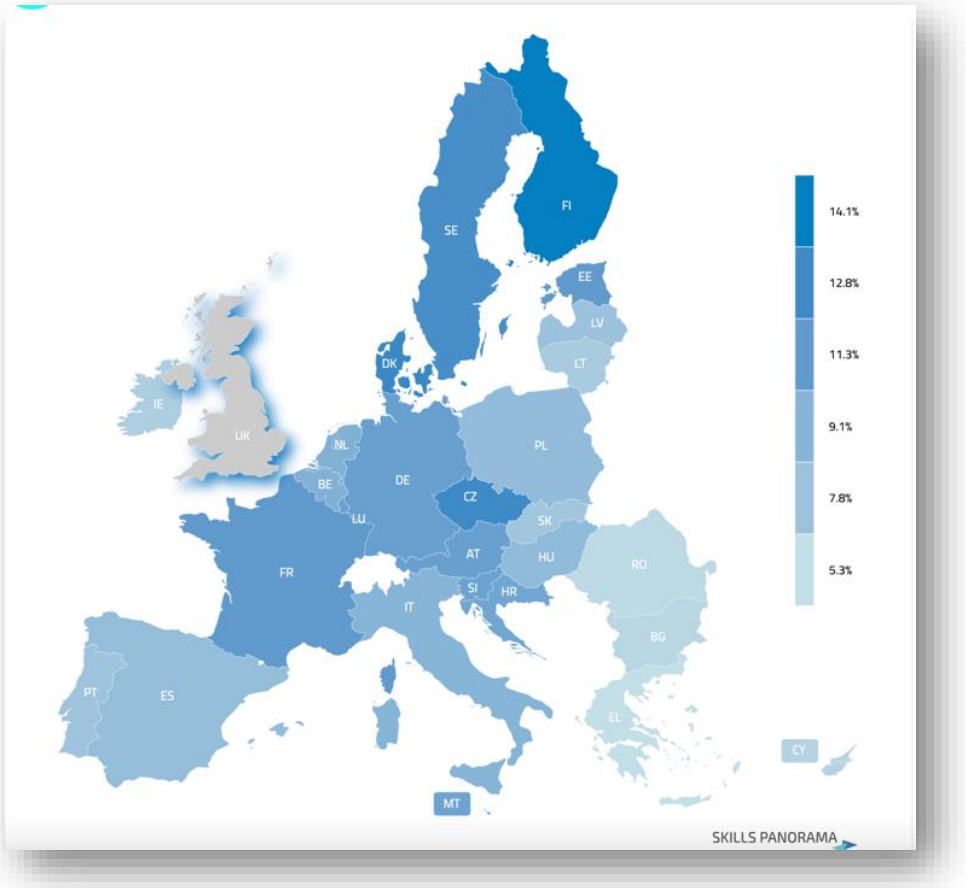

Figure 7: Cedefop Skills Forecast- Employment share of high-tech occupations across countries in 2030 (in %)

Employment in high-tech occupations in EU27 in 2030 is estimated at 13.3%. The minimum is 0.9% for Accommodation and food, while the maximum is 50.1% for ICT services. ICT services' index is considerable above the other sectors.

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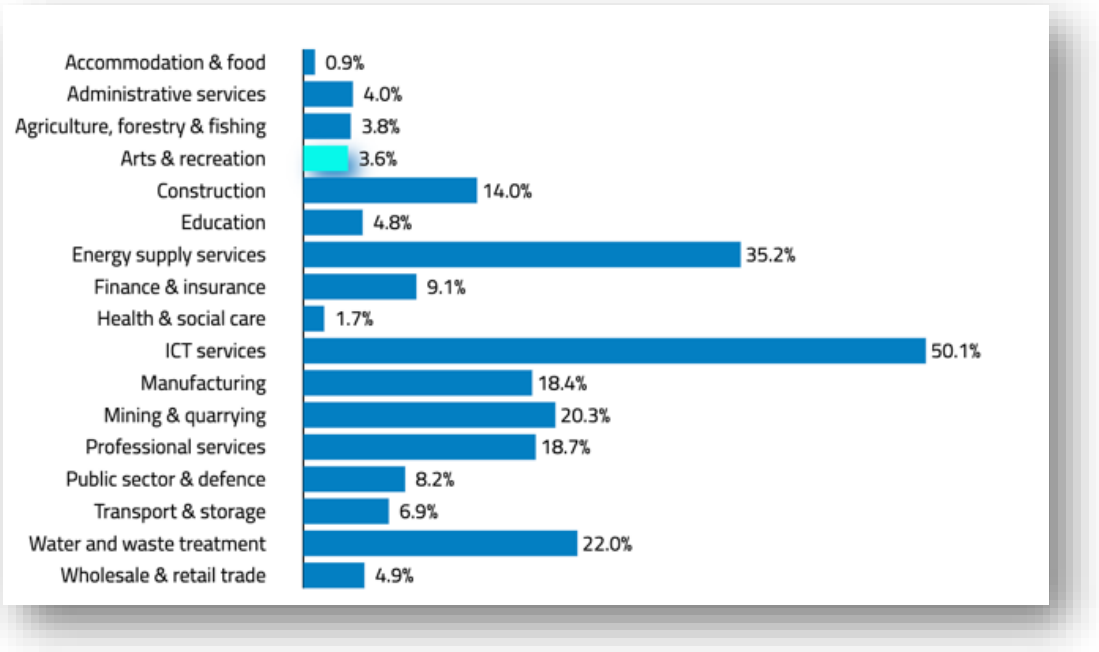

Figure 8: Cedefop Skills Forecast Indicator Employment in high-tech occupations

4.2 The most usual youth occupations nowadays

The following infographics, presented by Cedefop 2018 **#SkillsForecast**, summarises future labour market and Skill trends for each partner country, looking at the period going up to 2030, answering questions such as "*what would future employment in my country look like*?", "*which* Sector *will grow the fastest*?", "*which occupations will have the highest demand*?", "*what skill level will new job openings require*?"[6] The figure 6 provides an overview of the EU expected trends in the upcoming years.

[6]https://skillspanorama.cedefop.europa.eu/en/useful_resources/cedefop-2018-infographics-collection-future-labour-market-and-skills-trends

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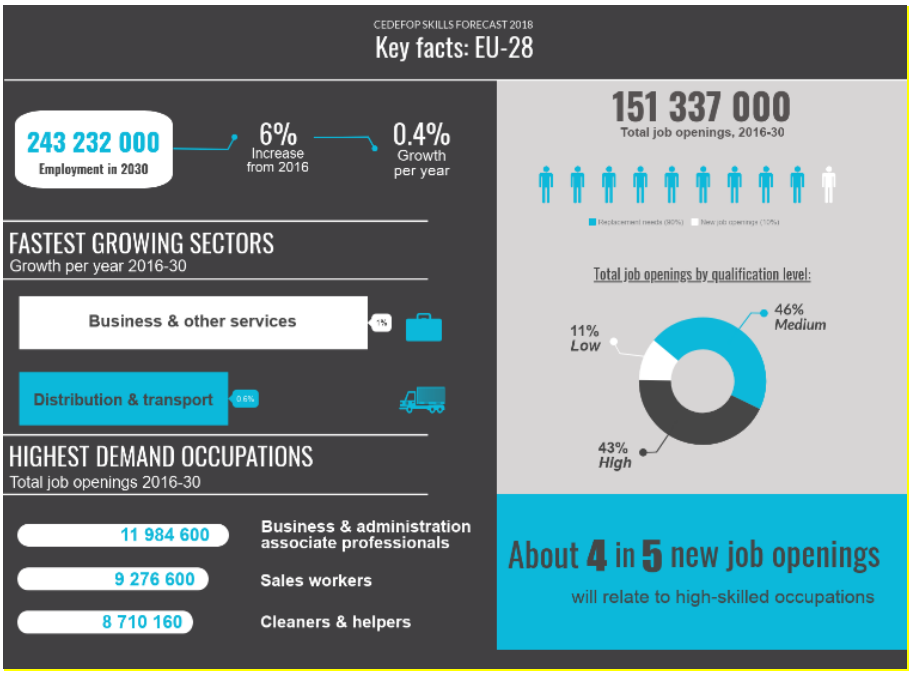

Figure 9: Cedefop 2018 infographics collection on future labour market and skills trends in EU

United Kingdom

The analysis conducted before the United Kingdom's exit from the European Union on 31 January 2020, show the financial services, pharmaceuticals, petroleum, automotive, aerospace, telecommunications and other technological industries playing all an important role in the UK economy. Nonetheless, skill shortages currently exist in sectors such as medicine, health, social work, science, secondary education teaching, IT/computing, engineering, and certain other specialist such as technical and arts occupations. The number of job roles requiring intermediate and higher skills and education is rising in the UK, and it is expected that it will become even more important to possess these specialist skills in the coming years to qualify for a more technologically advanced labour market. Employment levels passed their pre-2008 financial crisis levels already in 2013/14 and are expected to continue to rise. Most employment growth over the period to 2030 is projected to be in arts & recreation, administrative and professional services. The occupations with most new job openings will be legal & social associate professionals, technical labourers, and health associate professionals. Almost all of total job openings (including replacements for vacated jobs) until 2030 will need high or medium qualification levels. Job opportunities for people with low qualifications are expected to decline significantly.

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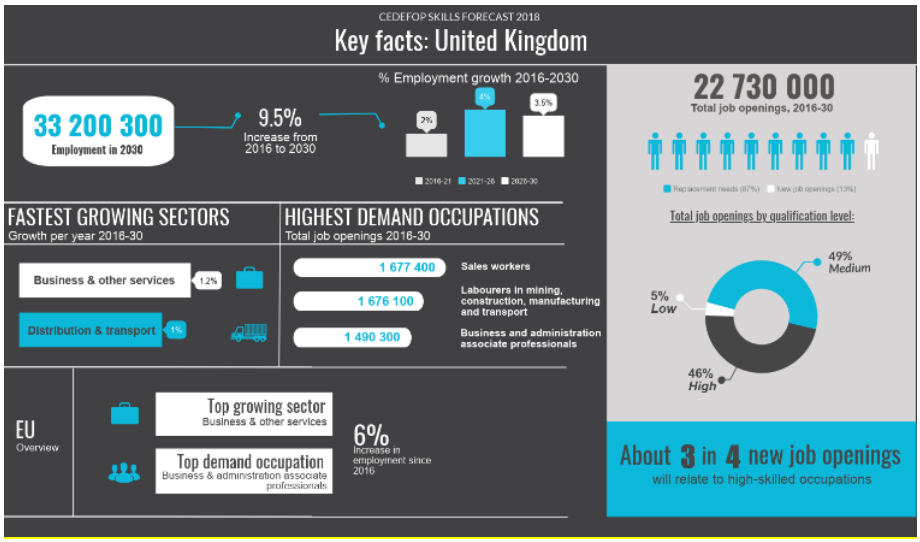

Figure 10: Cedefop 2018 infographics collection on future labour market and skills trends in UK

Cyprus

Cyprus has a small, predominantly service-based economy, with tourism, financial services and shipping being the important sectors. The country has one of the highest shares of people with tertiary education in Europe. Cyprus initially withstood the economic crisis that began in 2008 relatively well but experienced a major economic downturn in 2012. Employment has dropped significantly, and the unemployment rate remains well above the EU average. Looking to the future, employment is projected to continue to grow strongly over the period leading to 2030, as well as the working age population. Most employment growth will be in professional services, transport and storage, and education. Fastest growing occupations will be those requiring medium-level qualifications: office associate professionals and sales workers.

For more information, please read the National Report of the UK here: https://dcd-erasmus.site/national-reports/

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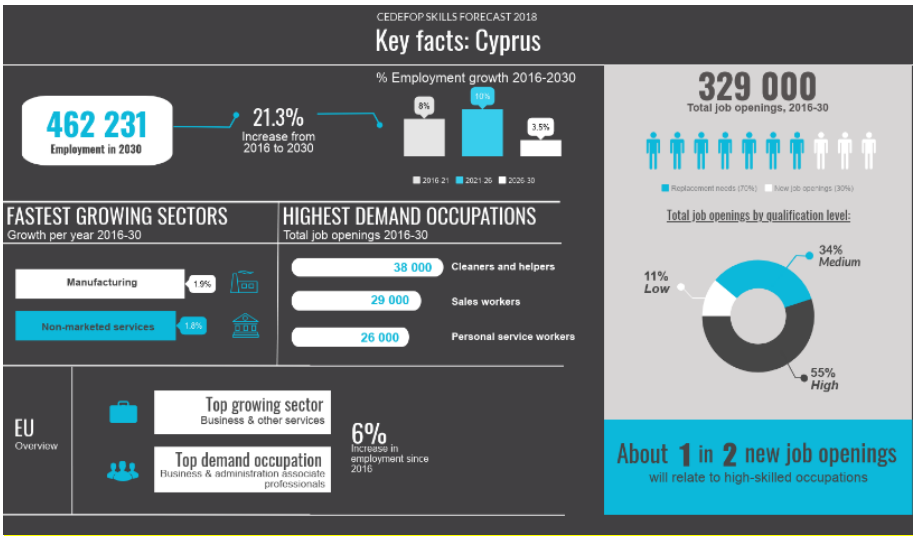

Figure 11: Cedefop 2018 infographics collection on future labour market and skills trends in Cyprus

Italy

Italy is among those Member States in which the manufacturing sector - associated with the production of niche and luxury products - still makes up a considerable share of its economy, particularly in the north and centre of the country. The economy is characterised by a marked north-south divide, with GDP per head being much higher in the northern regions. Italy has mostly recovered from economic recession. Unemployment rate is decreasing, but manufacturing is still expected to lose jobs in the period of 2020-2030. The employment growth will be driven by administrative services, accommodation and food, and wholesale and retail trade, with hospitality and retail managers, construction workers, and office associate professionals being the fastest growing occupations. More than half of total job openings (including replacements for vacated jobs) till 2030 will require high-level qualifications but job opportunities for people with medium qualifications will still be ample.

For more information, please read the National Report of Italy here: https://dcd-erasmus.site/national-reports/

For more information, please read the National Report of Cyprus here: https://dcd-erasmus.site/national-reports/

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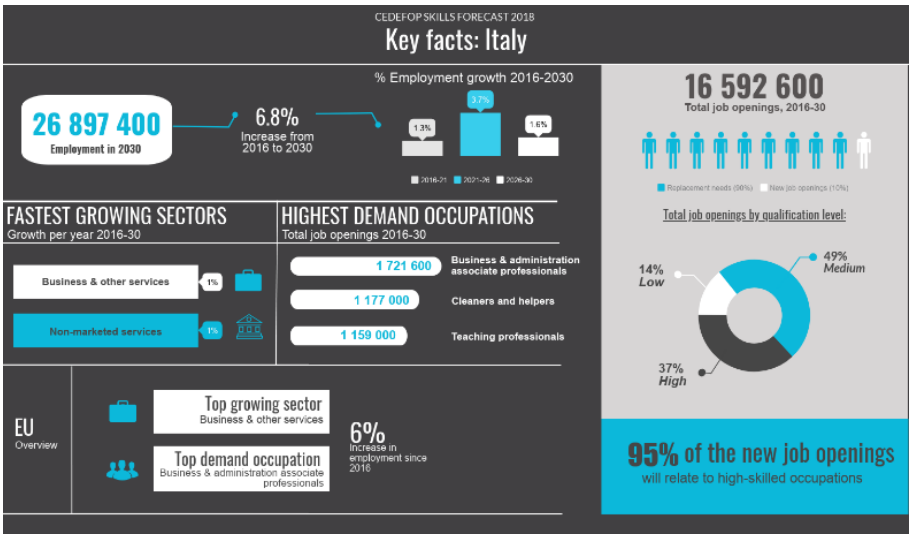

Figure 12: Cedefop 2018 infographics collection on future labour market and skills trends in Italy

Slovenia

Since the financial crisis in 2008, Slovenian economy has experienced periods of growth and decline. During the last five years the country's economic growth surpassed that of the EU and Slovenia' unemployment fell to just 5%. Further improvement is expected over the period to 2030. Employment shall increase, driven by ICT and professional services, but also by health care and construction. The occupations expected to have most new job openings are researchers & engineers, technical labourers, and office associate professionals. Overall, almost 9 out of 10 job openings will require medium or high-level qualifications.

For more information, please read the National Report of Iceland here: https://dcd-erasmus.site/national-reports/

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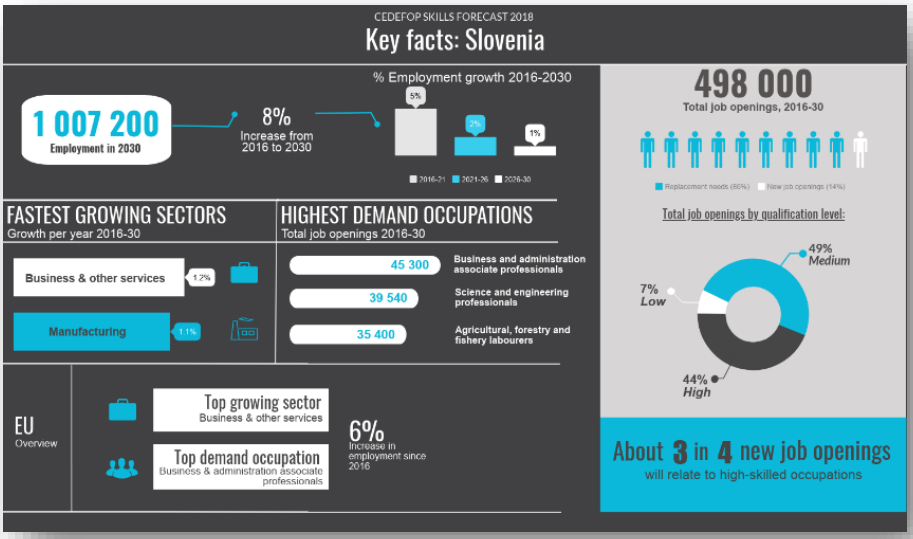

Figure 13: Cedefop 2018 infographics collection on future labour market and skills trends in Slovenia

Lithuania

Lithuania's economy and employment has been growing steadily in past years. The country has increasingly shifted towards becoming a knowledge-based economy, with the biotechnology sector offering a prominent example of substantial high-tech jobs creation. The government has implemented policies designed to improve the quality and accessibility of vocational guidance services, both in order to ensure that people in the labour force acquire the skills needed to support the economy, and to assist young people in making a fast and sustainable transition from the education system into the labour market. As well as other Baltic countries, Lithuania faces an ageing challenge and both employment and working age population (15-64) are forecasted to decline over the period to 2030. Sectors offering most new job opportunities in the future will be financial services, ICT services, and accommodation and food. The occupations with most new job openings will be legal and social associate professionals, office professionals, and construction workers. More than two thirds of all job openings (including replacements for vacated jobs) until 2030 will be for high-level qualifications. Like other former Eastern bloc countries with strong secondary education, Lithuania offers relatively little opportunities for people with low qualifications.

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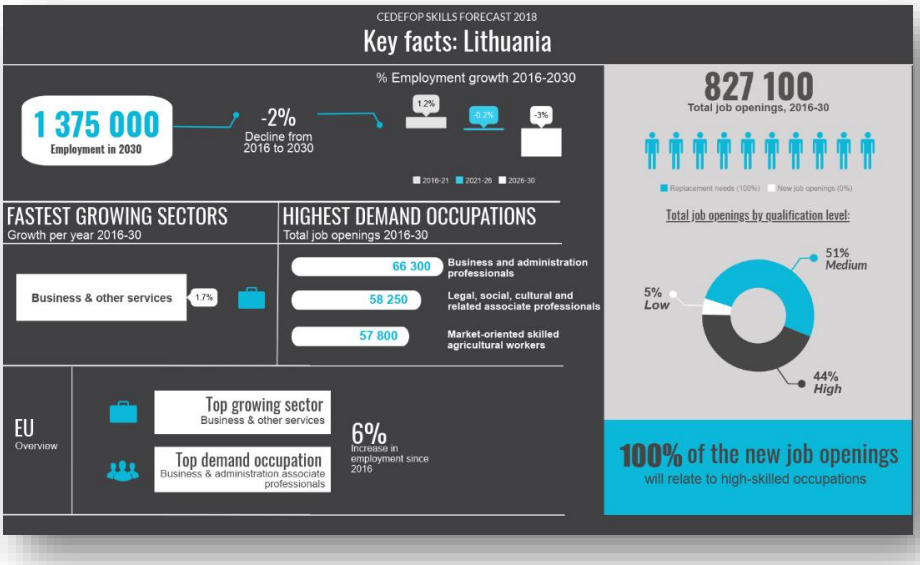

Figure 14: Cedefop 2018 infographics collection on future labour market and skills trends in Lithuania

Iceland

In Iceland the research estimates the highest demand occupation in business and administration services, followed by production and specialised services managers, requiring medium- and high-level of qualification.

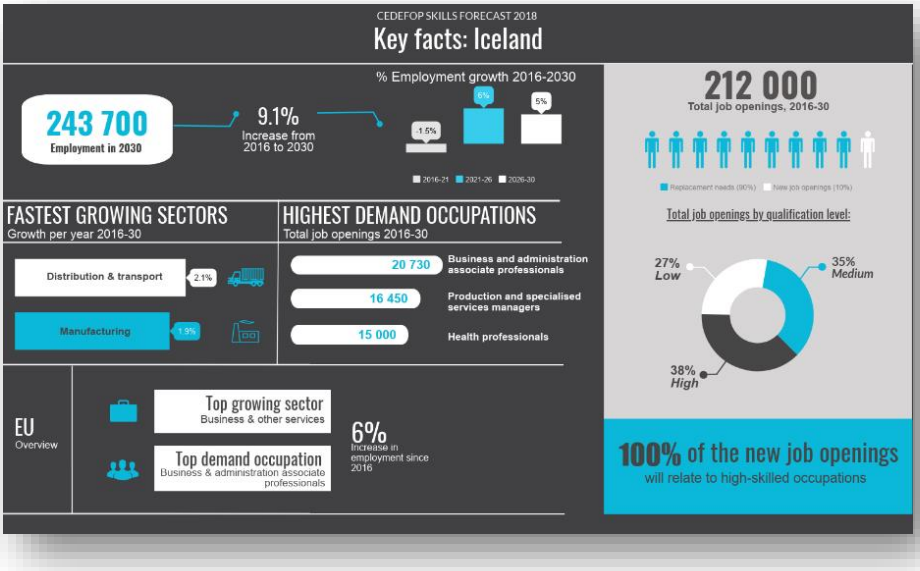

Figure 15: Cedefop 2018 infographics collection on future labour market and skills trends in Island

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4.3 Do youth work on digital culture occupations? What are the most usual ones?

According to the European Commission statistical office, Eurostat, cultural and creative industry (CCI) activities accounted for nearly 3.7 % of EU employment in 2015 (8.4 million), more than the automotive industry for example, and 29.5 million worldwide (1 % of the active population). Such activities contribute 4.2 % to EU GDP. Contrary to purely manufacturing sectors, CCI go beyond the production and dissemination stages of industrial and manufacturing operations, they are also based on cultural values, or artistic and other individual or collective creative expressions and include various sectors. The recent 'digital shift', the 'digital revolution', considered at least as disruptive as the industrial revolution, affected the very definition of culture to cover digital technology as a support for cultural content, and as a means of production, distribution, promotion, and monetisation. As digital technology is used to reach audiences, auditions, and cast artists, it also impacts the labour market and GDP in the EU and worldwide. This list is not exhaustive, but it provides a solid idea on the occupations in the digital culture, engages contemporary digital culture from both the art and the science perspectives, offering studies which encompass technology, media art, culture and communications:

- Animator
- Artist
- Cartoonist
- Computer Games Developer
- Computer Programmer
- Creative Consultant
- Digital Media Specialist
- Entrepreneur
- Exhibit Designer
- Film Effects Developer
- Graphic Designer
- Illustrator
- Installation Artist
- Interior Designer
- IT Specialist
- Landscape Designer
- Medical Illustrator
- Multimedia Consultant
- Music Industry Consultant
- Photographer
- Product Designer
- Set Designer
- Software Designer
- Special Effects Director
- Systems Analyst
- Teacher
- Technical Support Specialist
- Technology Journalist
- Visual Arts Consultant
- Website Designer

Digitisation is shaping the 21st century, not only in terms of new technology, but also in terms of our information environment's culture. Ultimately, it has a

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significant impact on our societies. Trends – and related challenges – have been identified which can influence the job occupations for youth.

Trend 1: widening audiences through new media/tools

Many arts and cultural institutions try to embrace the opportunities provided by the digital shift in order to widen their audiences and to reach out to segments of the population which do not normally attend cultural activities. However, it still seems as if the vast majority of these institutions find it more than difficult to break the code. Surveys on how they make use of digital solutions in everyday professional practice clearly show that the cultural sector struggles to significantly improve its digital services. Surveys in Denmark, Sweden, Norway, and the UK show that it is surprisingly difficult to meaningfully integrate digital tactics into a cultural organisation's overall strategic mission.

Challenges: digital technologies change the nature of user behaviour and require a change of institutional behaviour and practice (mission). For many cultural organisations the online world and digital tools are still somewhat unfamiliar and unknown. The leaders and management are aware of the knowledge gap between themselves and the often-younger individuals who navigate fluently in this new language. But what is more important is that they seem to try to create strategies that include digital tools in the already existing modus operandi rather than try to change attitudes and/or structural components. Although digital technologies should be understood as tools that need to be used and shaped to a purpose, they also completely change the nature of user behaviour since digital tools offer a multitude of opportunities for sharing and participation. In fact, many cultural leaders seem to underestimate the time, space and commitment needed in order to really benefit from the progress offered by the digital innovations and fail to understand how the integration of digital tactics into their organisation's overall strategic mission requires a significant shift in internal thinking, at all levels . Instead, they meet and treat new online developments expecting that they will significantly improve their audience reach, provide access to new and especially younger audiences, help the institutions earn more money and immediately increase participation as well, without any need for the institution to change its behaviour and practice. Over the last five to six years' attempts have been made to use new digital platforms and tools within a traditional communication/mediation framework and understanding.

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Trend 2: new technologies provide access to information and allow visitors/participants to shape not only their visit/participation but also the cultural contents

New technologies provide access to information on the move; people can therefore constantly prepare the visit, communicate, or change their mind. Furthermore, new technology allows people to be creators of culture, blurring the traditional boundaries between producers and consumers of culture. This creates a tension between the traditional gatekeepers and those who master the new opportunities offered by the new technology.

Challenges: cultural institutions no longer have the monopole of their own story. Many gatekeepers (curators, directors, museum directors, programmers etc.) are still anchored in a modernistic understanding of the cultural institution and its role in society. In some artistic fields there are very visible reproductive power patterns and there is certain reluctance towards opening up for the organizational change needed in order for a given organisation to feel confident in understanding how the changes in user behaviour influence all aspects of the relationship between the institution itself and its users.

Trend 3: from audience development to audience engagement

Over the last decades "audience development", and lately the more precise term "audience engagement", has entered the vocabulary of policies and public funding of the arts and has assumed a greater strategic priority within cultural-sector management and policy development throughout the Western world.

Indeed, there has been a movement from "audience development" - understood as a process of widening access to arts and culture, deepening and enriching the experience of audiences and participants and fostering a more open, receptive attitude to what might be deemed challenging or new work - to "audience engagement" reflecting the aspect of perception and the still more articulated demand for relevance, new narratives to reach out to a broader potential audience, co-creation and participatory experiences. The digital shift clearly underlines this movement.

Challenges: democratic implications of cultural participation and co-creation through new technologies. The digital shift has widened the field of cultural participation and co-creation dramatically, and its democratic implications are all to be examined and decided on . New technologies can eliminate barriers

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(geographical barriers and inter-cultural ones, for example) but can also create gaps: inter-generational gaps; geographical gaps due to the uneven state of the infrastructures; technical gaps due to poor metadata, lack of interoperability, persistent digital identifiers, agreed standards; social gaps in terms of access to education fostering new media and information literacy and costs (according to recent studies), the Internet has not changed.

Trend 4: new technologies are used to disseminate cultural content and information

New technology can contribute not just to the content of the artistic works but also facilitate wider dissemination of arts, news, and products. For example, "open access collections" have many advantages for cultural institutions: currently, whereas it is considered that cultural institutions should be mediators that facilitate the relationship between the community and its cultural heritage, open access and social web tools can play a major role in meeting this goal. Open digital collections can help maintain traditional cultural institutions relevant in the digital realm and the participatory/remix culture, rendering heritage more tangible to the user by facilitating the exploration of objects (it allows going beyond mere viewing) and the construction of different narratives and experiences. Cultural heritage collections and related metadata in the public domain have a great potential to enable creativity and economic growth: the reuse of the cultural contents in the public domain by cultural and creative industries to create new products, like innovative apps, games for tablets and smartphones, and new web services and mash-up portals, has a positive impact in innovation, employment, and economic growth.

Challenges: open access, reuse, and management of rights in the digital cultural heritage realm are complexes issues, with no "one size fits all" solution: the right approach is usually dependent on a given institution's goals and types of material to be made available. Furthermore, there is a high cost to provide free open access to the common user: mass digitisation procedures are expensive processes that most cultural institution cannot support on their budget alone.

Trend 5: in Europe there is a growing tendency towards the birth of creative and strategic partnerships between the cultural sector and the IT sector

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Challenges: although many creative partnerships have been already set up, there are still many obstacles and barriers which prevent their number to grow: it is therefore essential to create an environment facilitating the birth and the survival of these partnerships and to have access to funds in order to implement them.

Trend 6: New technologies and their dynamics

New technologies, with their transnational dynamics, multiply young people's cultural communication spaces and possibilities for young cultural creation, demanding an update of skills by the older generation and blurring, contemporarily, traditional generational roles of socialization and learning. The growth in new technologies has created a world market for cultural products and services that operates independently from national political boundaries.

Challenges: the shift from a production-based economy to a service- and information-based economy needs people with holistic skills than those provided by the formal educational environments.

Trends 7: Young people's engagement with popular culture, media and new technologies

Studies provide evidence of the extensive nature of young people's engagement with popular culture, media and new technologies and suggest that they are competent and confident navigators of digital worlds. There is no doubt that new technologies can help in making culture more accessible for them.

Challenges: to bring service to where the young people are (nor to safeguard youth from the risks which life on the Internet involves). The virtual world is a non-formal learning context with which the formal education sector has difficulties relating to.

4.4 The most requisite digital and cultural skills/competences nowadays

Digital skills, it can be assumed, will become more and more important, and countries where young people have the highest level of digital skills will be the best prepared for the digital age. This premise is confirmed when analysing the relationship between levels of basic digital skills and Opportunity in the Youth Progress Index. There is a strong relationship between these two variables, which points to a continued global digital divide caused by varying access to digital

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infrastructure and skills to use it among youth, where young people in countries with higher levels of youth progress will continue to be in a better position to fully embrace the opportunities provided by new technologies. If the trend is not reversed with targeted policy measures, there will be a widening digital divide that increases inequalities even further.

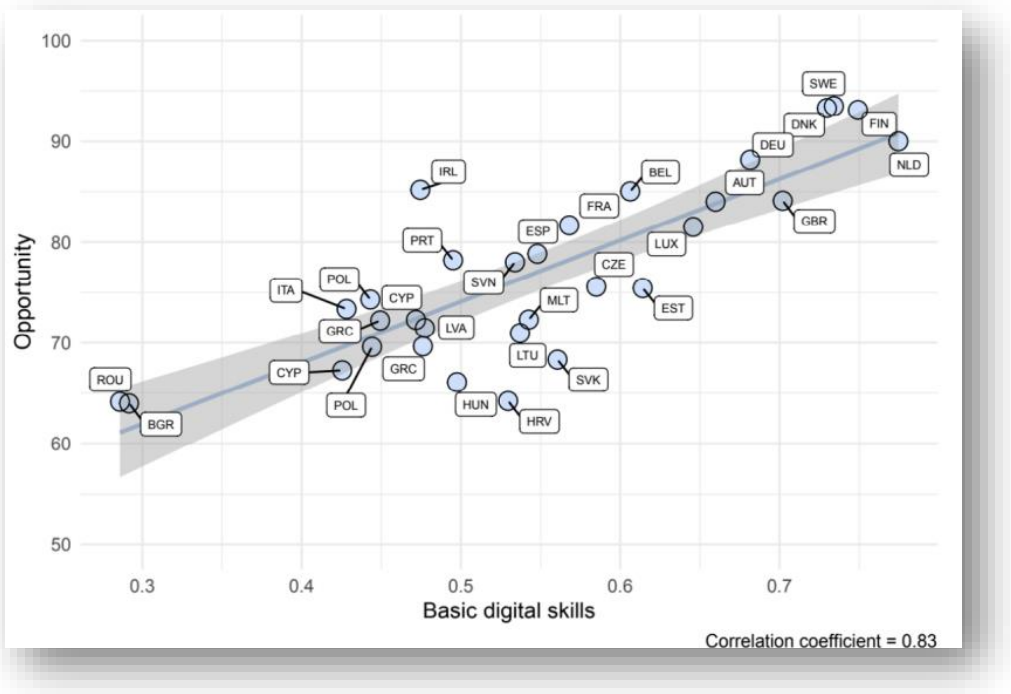

Figure 16: shows the relationship between levels of basic digital skills in a population (on the X axis) as measured in the European Commission's Digital Economy and Society Index (DESI) , and their corresponding performance on the Opportunity dimension of the Youth Progress Index (Y axis)

Following digital skills classification and definition**, The Digital Competence Framework for Citizens with eight proficiency levels and examples of use**, 5 digital competences dimensions, as follows:

I. Information and data literacy.
II. Communication and collaboration.
III. Digital content creation.
IV. Safety.
V. Problem solving.

Explore and learn more about the 5 Digital Competences by visiting this link!

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5. Tools and digital resources

Heritage institutions– libraries, archives, and museums– traditionally bear the responsibility of preserving cultural and archaeological resources produced by all of society. Digital technology has generated exponential growth in the production of digital information.

Withthedevelopmentofinformationtechnologyandthegrowinguserexpectationoffast and better access across archives and museum collections, most art institutions today see digital media as a tool for discovering and developing new approaches in the mediation of art as well as for preserving time-sensitive objects. Museums around the world are embracing the new possibilities and taking advantage of the new developments. Over the last few years an increasing number of cultural hubs including museums, archaeological sites, and historic cities have adopted a wide range of interactive technologies to enhance their user experience.

5.1 Digitisation and Digital Tools

Digitisation is the process of making digital copies of cultural heritage units. Museums with well-developed collections of physical material generally invest time and effort in digitisation and documentation for the permanent preservation of heritage artefacts such as archaeological sites, historic habitats, human-made constructions and art and traditional practices. Digital heritage can bee it her "digitised" information about the collection or digital representations of physical artefacts in the collection (digital images or 3D scans, for example).

The digital innovation of cultural heritage can be understood as a user-oriented development of new products and services that use the potentials of new technologies (augmented reality, 3D scanning, web platforms, etc.) while respecting the cultural heritage and its protection regimes to develop new knowledge and skills (art & design n thinking, business modelling, user experience, and digital marketing, for example). Interactive applications in cultural heritage include mobile applications and games, location- aware audio guides, VR/AR/MR (virtual / augmented / mixed reality) enabled technologies, online virtual worlds, multi-touch displays, and various types of interfaces that transfer cultural heritage content to users.

Virtual and Augmented reality

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Virtual reality (VR) is a three-dimensional, interactive computer-generated environment that allows the user to experience both real and unreal events. The components include the 3D vision as well as the ability to look around a particular point, all of which is achievable by using a virtual reality head set.

Augmented reality (AR) is a visualization technique that superimposes computer-generated data (video, graphics, text, and other multimedia formats) on real-world images that are captured by the camera. In this way the AR can provide an augmentation of a person's view of reality by enhancing the perception of the surroundings with the help of a computer or a mobile device.

Figure 17: TECHCOOLTOUR app - When viewed through smart phone, the boards trigger virtual presentations and offer additional info to visitors, thus transforming the routes into virtual open-air museum

Digital capture

The purpose of digital capture is to create a digital copy of a cultural object. In the process of digital capture, the object is captured in three dimensions; the key digital capture technologies are photogrammetry, laser scanning and sonar scanning. The choice of technology depends on the size of the object and the desired accuracy.

360° photos and 360° videos can also be upgraded by 2D and 3D graphic elements, which enables there creation of an existing or a virtual space– it is then

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possible to recon structa former state and showcase development through time or simulate are storation step by step.

Individual360°photo or video shots as well as 3D models can be joined in to virtual tours that enhance the experience and enable users to freely (virtually) explore the location.

Figure 18: 3D scanned St. Andrew's Church at VrhovljepriKožbani

Chat bot and Guided tours

Some apps use location-aware technology that activates the audio guide whenever a user approach points of interest. Some developers have also implemented chat as a central component for their guides that help visitors to learn the stories and history of places as they travel. This gives users full control over the pace of their explorations and creates a very personal feeling, as if you're talking to an actual person-either a local guide or an historic person.

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Figure 19: Urban – virtual guide talks to the visitors through the chat interface and audio. At certain points of the story, Urban also appears in an augmented reality scene.

Maps

Within guided tours visitors can navigate through the designed paths on a map more smoothly and easily. A visitor is then able to discover the most fascinating points of interest that the town has to offer for and create routes of their destination.

Digital libraries

Through libraries users can access text materials (manuscripts, books, old magazines, and newspapers, etc.) and various visual materials (photos, maps, artworks, postcards, posters, music prints, and other two-dimensional works of art). Users can also listen to music and sound recordings from the past. The contents of the portal can be used for study, research, teaching, demonstration activities, art, and entertainment.

Maintaining a digital library of museum artefacts enables:

- Aggregation of data of collections, objects, documentation, and other heritage content.
- Safe and secure storing as well as remote access (anytime and anywhere).
- Advanced searching among all items.
- Easy to use upload function of diverse materials.

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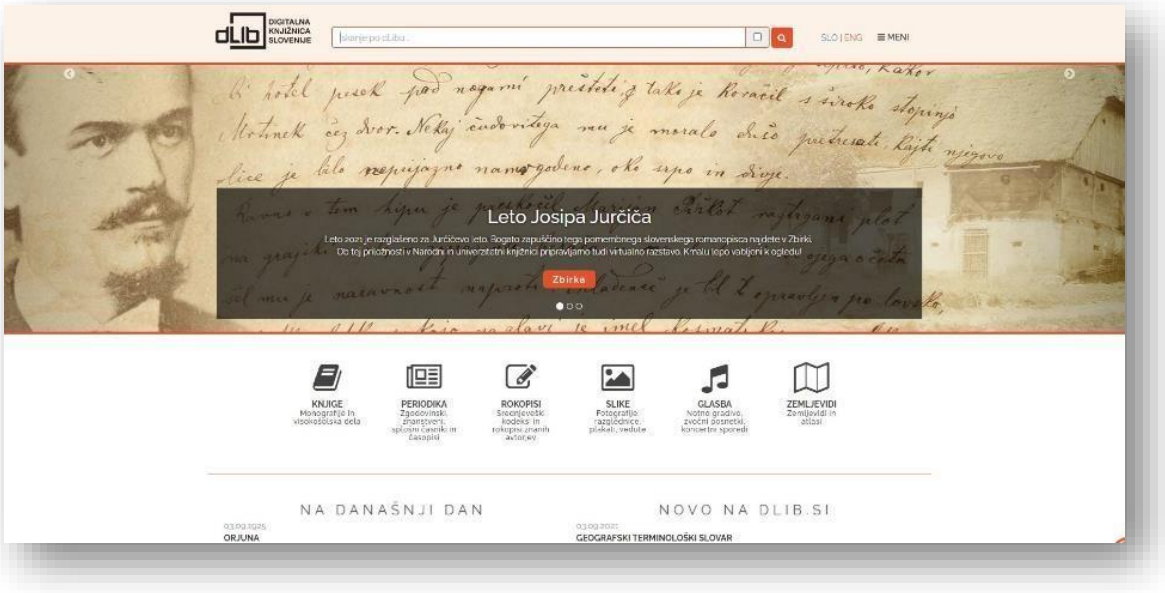

Figure20: dL lib web portal developed by the National and University Library (NUK) that provides access to a wide range of digital contents in fields of science, art and culture. Photo: d Lib / screen capture

Gamification

Gamification brings the importance of heritage closer to the younger generations and presents rich stories from history in a unique way. It aims to give added value to the sightseeing experience of tourists by engaging them. Games also encourage observation. Animated historic characters, story driven challenges, and puzzles all create game-like learning experiences.

Upon reaching a point of interest a visitor can solve location-specific challenges and mini games. By solving puzzles, riddles and mini-games the user can collect points and other rewards that drive engagement and interest in the location.

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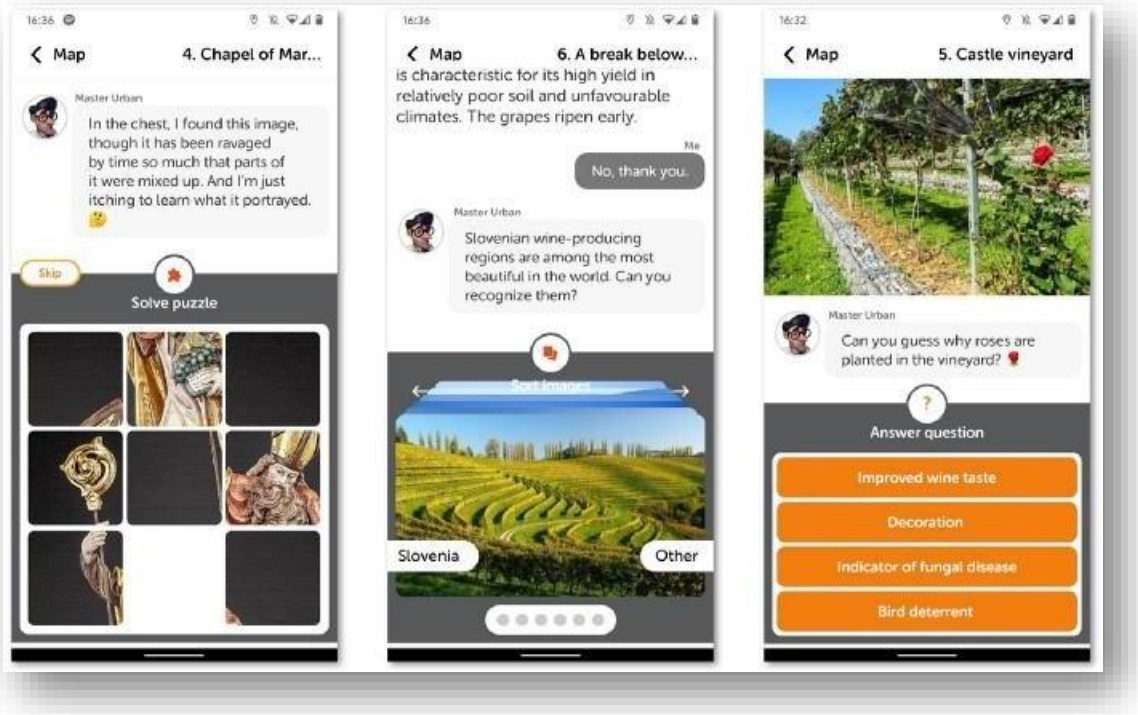

Figure 21: Gamification: puzzles, riddles, quizzes (The Wisdom of Castle Wine — an interactive walk)

5.2 Human-centered Design Approaches

Although the digital innovation of cultural her it age involves the use of advanced technologies, the user should be placed first. A good understanding of who we are creating a solution for is the foundation of a successful application or digital adaptation. Such technological developments can function as stand-alone experiences, or they can be incorporated in websites and exhibitions or other interactive contexts.

The design process demands the engagement of diverse and interdisciplinary groups of pedagogues, and rologies, marketing departments, programmers, UXers, and designers, as well as business expertise.

Modern trends must be considered, as well as the visitor's needs. The aim should always be to improve and increase visitor engagement with heritage content. When planning, developers must keep in mind various user groups and ensure that whatever experience they create is inclusive and accessible to all, including people with disabilities.

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Different target groups demand different approaches. The goal is to stimulate engagement and to foster participation. We must find the right way to interact with the audience by asking questions, for example: what is the tone of the narration? Do we have a linear path or are we allowing the visitor to make their own? Are we trying to astonish the viewer or build on their curiosity? From this perspective we can unpack the content to reveal how it unfolds in space and time.

Empathy mapping

One fundamental tool for understanding users and their needs is empathy mapping, which is a technique used to articulate what we know about the internal and external experience of a particular type of user. With this method we can describe the user through four activities: what they say, think, do, and feel.

Customer journey

We can describe the typical user experience and the relationship between the use of digital technologies and the user's engagement with cultural heritage. Mapping the customer journey allows us to identify all the steps, problems, ambiguities, and surprises.

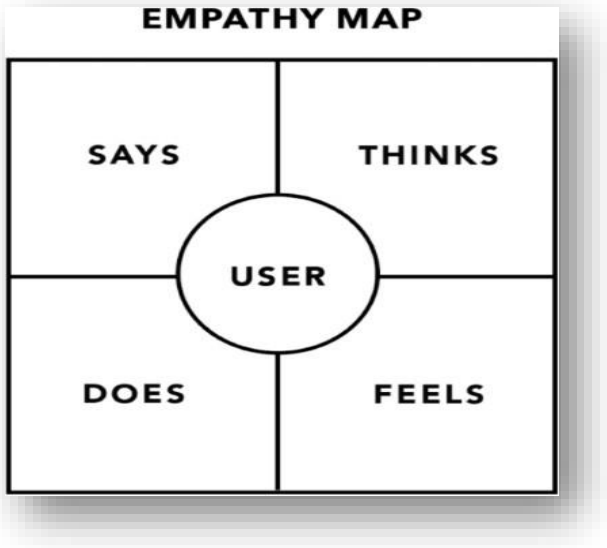

Figure 22: Traditional empathy maps are split into 4 quadrants (Says, Thinks, Does, and Feels), with the user or persona in the middle.

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Remarks

Museums continue to explore new ways to present element of cultural heritage in the form of new experiences (augmented reality, holograms), new educational content (mobile or online applications), research materials, and even games. Digital stories use a familiar conversational interface to tell the story of a site or artefact gradually, at a pace that feels right to the user. With the use of audio, visual and augmented reality elements they can bring historic characters to life and offer a unique glimpse to the past. The design process demands the engagement of diverse and interdisciplinary professional group of pedagogues, andrologies, marketing departments, programmers, UXers, designers, as well as a broad level of business expertise.

Communication with a narrative usually requires user activity. The activity that the user will undertake can be either more active more passive. Different devices and interfaces change the way we experience the content. It is essential that the user takes control of their experience, and that the interface does not distract from the narrative.

Some interactive experiences can control then a narrative directly with the use of an input device, and therefore do not need complex interfaces.

The got a list to improve user engagement. Only well-presented stories are truly relatable, memorable and leave a lasting impact.

6. Factors effecting positively and/or negatively in art-based jobs

Digital culture is having a notable impact on our society. Not only does it affect cultural institutions as well as youngsters, but it also involves various professionals who contribute to develop digital resources and tools, both in terms of software and graphics. In this section of the handbook, we are going to focus more on a subgroup of these professionals, whose jobs are classified as art-based jobs. An example of such jobs are illustrators, graphic designers, art gallery curators as well as photographers and video creators. Specifically, we are going to discuss in the light of the data gathered from the questionnaires the positive and negative effects of digital culture on art-based jobs. Moreover, we are also going to focus on what motivates youth to explore digital culture and how to enhance youth digital awareness, in the light of our discussion on art-based jobs.

This chapter will be divided into five subsections. In the first one, we will present some data from the questionnaires relevant to the purpose of this chapter. In the

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second, we will discuss the positive and negative effects of digital resources on art-based jobs. In the third, we will reflect upon what motivates youth to explore digital culture. In the fourth, we will present those ways that are effective to enhance youth digital awareness. In the fifth, we will summarize the main findings of this chapter.

6.1 Positive and negative effects

Based on the data we have seen so far; digital culture definitely has an impact on art-based jobs. Visual digital resources require the support of illustrators, graphic designers, video content creators and so forth, who can create various types of content and express their creativity. In other words, digital culture can have a highly positive impact on art-based jobs as it can stimulate artists and create new job opportunities for those who work in theart sector. This is also corroborated by the fact that, according to cultural institutions staff, there is a need for innovative ways to let audiences engage with digital content.

On the other hand, though we have discovered that youngsters are more attracted to video devices than, for example, immersive devices like VR or projection devices. In terms of usefulness, it seems that video devices are also considered the most useful visual resources by youngsters. In other words, even though VR is a more innovative way of engaging with content, it is still not interesting for audiences in general, as this appears to affect adults as well considering the answers from museums, archives and libraries. It is evident that being innovative does not necessarily entail attraction of audience. Therefore, this can be somehow problematic for art professionals, as it is up to them, on one hand, to understand what resources are already considered more appealing and useful by the audiences so that they can develop more content in more innovative ways, and, on the other hand, to understand how to make other newer technologies like immersive devices more appealing and interesting for audiences.

6.2 What motivates youth to learn about Digital culture?

As the world progresses, we see more and more resources and tools to gather information and learn which are being digitalized and are accessible through websites, portals, videos, wikis, and other resources. This does not only relate to cultural institutions but also to many other fields of society. The more digitalized

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the world is, the more youngsters who belong, for the most part, to the generation of native digitals, will be motivated to resort to digital resources to be informed and learn.

However, of course, such resources need to have certain characteristics which can push young people to learn more through Digital culture. They must be useful, have to have interesting content to learn from, and have to be easily accessible and user-friendly. Video devices, as we have seen from the questionnaires, are appealing because they fit these characteristics. It is easy for young audiences to engage with them. They are interesting because youngsters watch pictures and scenes and can learn in a simple way and because they are very easy to use. In fact, in one of the questions for youngsters, in particular question 6 (see Appendix), almost half of the 96 participants agree that digital resources should be more user-friendly, which means that there are various tools provided that are somehow more difficult to use for them.

6.3 Effective ways that enhance youth digital awareness

Over the last decade, major transformations have occurred in the digital world in terms of technologies and resources. Youth need to be guided so that they can use the digital resources available in an efficient way to learn, to be informed and to interact with data. All digital tools can be useful to gather information, so it is important that youngsters discover the potential of every single resource available and use it to the best of their abilities. In the context of visual resources, we have seen that youngsters do not attribute so much usefulness to immersive devices. Considering that it is a new technology that differs to some extent from general vide o devices for a variety of reasons (more methods of interaction,360° view, etc.), it is possible that youngsters have some difficulty in understanding the specific potential of this digital tool or, perhaps, that its true potential is not well distinct yet. Therefore, it is important to guide youngsters to interact with all sorts of digital resources so that they can understand their usefulness and gather information in the best way possible. On one hand, it is important for professionals who take care of digital tools as well as art professionals to maximize the potential of digital tools in order to interact with data in an easy and efficient way. On the other hand, it is necessary to promote the use of digital resources through cultural institutions and also universities to let youngsters fully discover the digital world that surrounds them.

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7. Researching Digital Cultures around European Countries

Executive Summary

This chapter is based on the national reports of the partner countries of the DCD project, namely the UK, Iceland, Italy, Cyprus, Slovenia and Lithuania. The results gathered in various surveys addressed to the partner countries in the context of the Digital Cultural Designer project. These surveys aimed at evaluating the level of digital culture in the partner countries.

The 6 partners (Eurospeak, Cascade, Tatics, Enoros, ZavodBoter and Tavo) managed to carry out in their countries a context survey, with desk research and interviews with the project target groups. For the survey activities, data and information were collected through questionnaires and interviews. Five different types of questionnaires have been shared per partner organisation in order to cover a larger crowd and guaranteeing the validation of results in a bigger extent. The structure of these surveys went as follows:

1) Survey for cultural institutions staff, LOD experts and Institution Staff
2) Survey for digital cultural providers and IT professionals
3) Survey for ICT& LOD experts
4) Survey for Museums, Archives Libraries Directors
5) Survey for Youngsters

The most important key findings and the concluding remarks from each partner country are presented in the following sections.

7.1 United Kingdom

The UK national report states that half of the young people involved in research (50%) were, to some extent, familiar with the concept of Linked Open Data, while 7.1% were indeed familiar and 42.9% were not at all familiar with it. 11 out of the 14 responses agree with the statement that digital resources in general are changing the way we interact with each other. As far as museums, archives and libraries directors or representatives are concerned; the majority of them (60%) said that they first introduced these digital resources in their museum/library and cultural institution about 5 years ago. They highlighted that the challenges they faced when they introduced them were equally distributed among Lack of resources,

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Educated/Experienced personnel and IT equipment/infrastructure. According to cultural institution staff, the data that can help the audiences of museums or libraries engage with content at the first place are Live videos and at the second place come innovative ways of displaying content with poll or quizzes. ICT and LOD experts underlined that LOD should be mainly used for culture education, social creativity and accessibility and led for collection of management of cultural materials. Moreover, internet, data protection and license, and digital communication are the most useful tools for cultural institutes and they usually provide internet, online and mobile digital media tools and digital audience and digital analytics. Digital cultural providers and IT professionals pointed out that there is a need to extend the use of digital tools in tourism industry and cultural heritage. Encouraging collaboration and providing digital training of all levels are recommended as habits and methodologies that can boost and accelerate the development and implementation process of digital tools.

The outcome of the Digital Cultural Designer research in the UK has proved that the topic of digital culture is an extremely important topic. We have seen that the results of the research that Eurospeak Language Schools undertook proved that experts in the field are somehow satisfied with the overall development of digital culture but there is still space for improvement. This can be achieved through online training and vocational and educational training.

Regarding the young people involved in the survey, it can be stated that in general they have the basic knowledge of digital culture literacy. Findings confirm that they are partially aware of the importance of getting more involved with libraries, museums or other centres and institutions but still need more guidance. What should be taken into consideration is that the cultural Institutions could digitalize even more of the data, information and documents they keep. All in all, the majority of youngsters believe that digital resources in general are changing the way we interact with each other. As far as the outcomes of the research conducted for interviewing British museums, archives and libraries representatives and directors is concerned, the main challenges that responders had were closely connected to the Lack of resources, the Educated and Experienced personnel and the IT equipment and infrastructure. Experts believe that the digital resources or services that are planned to be used in the upcoming period are the Audio and Video Streaming and the Augmented and Virtual Reality. The survey conducted addressed to cultural institutions staff, involved in Research on Digital Culture developed in the UK has shown that the data that can help the audiences of

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museums and/or libraries engage with content are linked mostly with the use of Live videos and then with Innovative ways of displaying content and Poll or Quizzes. The most significant impact for them is to create new value and to upgrade professional skills. Almost all of them agree that these data connections across institutions have attracted new audiences. From ICT and LOD experts' point of view, non-formal education and vocational and educational training, and e-learning/online courses are the most effective ways for someone who is willing to learn and gain knowledge on Linked Open Data, thus a valuable effort must be carried out relevant to these activities. Cultural Institutes use and provide tools such as internet, online and mobile digital tools, and digital analytics, although, data protection and license must be taken into consideration of usage. In order to do so, and in order for LOD to be promoted properly training of cultural institutes along with expanding the data protection between institutes at a globe level are required. From IT professional point of view, digital tools have been used mainly in universities, books & publishing and less in theatre, however there is a need for boosting digital tools promotion in tourism industry and cultural heritage.

For more information, please read the National Report of UK here: https://dcd-erasmus.site/national-reports/

7.2. Iceland

The national report of Iceland notes that youngsters more frequently use video devices and sometimes also wikis and internal databases. These are also the most useful tools, according to the participants involved. Youngsters also believe data is still not quite open and connected across institutions, but at least they are accessible from home or through their mobile devices. Very few museums, archives and libraries directors have participated in the survey, due to the fact that cultural institutions in Iceland generally provide internal databases only. However, few more services might be provided in certain museums. The institutions involved in the survey are planning to implement audio, video and VR resources in the future. Cultural institution staff members might not be trained enough in order to work with digital data and also LOD. They suggest that social media and videos are the best way for audiences to be engaged with data. LOD experts emphasised that LOD should be taught more in vocational and online courses. According to them, the purpose of LOD is more related to development, creation and preservation of content audiences can interact with. Digital cultural providers and IT experts underline those digital resources can help all users, also adults, to learn faster and develop new skills. That is why they insist that it is important to offer

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digital training and encourage collaboration in order to promote the development and implementation of digital resources.

The outcome of the Digital Cultural Designer research in Iceland has shown that the topic of digital culture is extremely important and needs to be thoroughly investigated and promoted, considering the fact that despite the presence of digital tools and resources in institutions, there is still the need to make staff members of museums, archives and libraries aware of the importance and potentials of digital culture and LOD. The same applies to directors of these institutions. It is also important that youngsters adopt the basic knowledge of digital culture literacy and the ability to find sources through libraries, museums or other centres/institutions, also by interacting more with LOD.

Digital culture is moving forwards and providing access to even more data, information and documents. Therefore, newer generations should interact with this great quantity of information in a more efficient way as soon as possible. Iceland could be the ideal place to expand the research, with the availability of electricity and clean energy, the potential with the opportunity and with good universities. However, there is a need to raise more awareness of digital culture of LOD, both among institutions and newer generations.

For more information, please read the National Report of Iceland here: https://dcd-erasmus.site/national-reports/

7.3. Italy

The Italian national report found out that the youngsters have a wide perception of the term Digital Culture (from the use of technology and of Internet). Most youngsters are not familiar with the term LOD. For them, a Handbook on Digital Culture should include examples, simple instructions, case studies, easy- user-friendly information. For museums, archives and libraries directors the most used digital resources are Newsletter and video- documentaries followed by audio guides which were introduced at least 5 years ago. The main challenges they consider are the following: Lack of resources, educated/experienced personnel and ICT problems. According to cultural institution staff, LODs are believed to create an added value and to improve the connection among the internal staff/teams. All ICT and LOD experts agree that the most useful tools in cultural institutions are digital curation, data protection and open licenses. They are also of the opinion

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that LOD serves to develop the Digital Culture first and after for the public involvement, collection management and protection of cultural material.IT specialists declared that Digital resources and tools help adults to learn quicker and to develop new skills and new knowledge. However, for them it is not easy to teach on digital tools and for adults to adapt to them. They also believe that digital resources and tools have been implemented in Tourism sector, University, Books and publishing.

The result of the Digital Cultural Designer research in Italy shows that the topic of digital culture covers a wide range of fields of application and expectations for the different target groups that have been interviewed. The results obtained by TATICS proved that the youngsters, as digital native, confirm to use the Digital Culture daily, even if they aren't able to define clearly what Digital Culture is. They admit to haven't participated to specific training courses on Digital Culture which could be useful to improve their competence in a very digitalised world.

They expect the course to have basic information on Digital Culture, best practices, practical information and easy and user-friendly instructions. The main challenges Italian museums, archives and libraries representatives and directors, have to deal with are closely connected to the lack of skills, lack of educated/experienced personnel then ICT problems. However, the digital resources or services that are planned to be used in the upcoming period are augmented reality and virtual reality that could attract more visitors. The Cultural institutions staff then admitted the necessity of being trained on this kind of data. Digital Cultural Providers and IT Professionals agreed that digital resources and tools could help them develop new skills and new knowledge but it is important to offer digital training at all levels, even though making adults adapt to them won't be an easy task. Based on the outcomes of the survey, ICT Experts and LOD Experts, involved in Research on Digital Culture strongly agree that getting information on Linked Open Data can occur mainly through attending vocational and educational training and online training.

For more information, please read the National Report of Italy here: https://dcd-erasmus.site/national-reports/

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7.4. Cyprus

The national report of Cyprus about youngsters showed that digital resources are extremely important due to the connection of society with technology and a new culture is been slowly developed inside the digital world. Largest percentage in preferences of youngsters goes to video devices and immersive devices (90% respectively, while also 80% goes to projection devices as well. Following are the guidance devices with 50%.). Museums, archives and libraries directors had to overcome challenges that were linked to IT equipment and infrastructure, educating the personnel or finding experienced personnel who is already familiar with these issues as well as lack of resources and technical issues. Cultural institution staff is of the opinion that the data that can help the audiences of museums or libraries engage with content are linked with social media accounts, innovative and fascinating display content as well as using live videos. According to ICT and LOD experts the upcoming step in LOD is expanding the data connection between institutions at a global level, 90% and then Informing cultural institutions more about the usefulness of LOD and Creating more awareness in the public about LOD respectively with 70%. Digital cultural providers and IT experts disagree with the statement that digital tools and resources cannot help adult learners to learn faster.

The results of the research that Enoros Consulting undertook proved that experts in the field are somehow satisfied with the overall development of digital culture but there is still a lot of ground for improvement. This can be achieved through online e-learning methods and promotion of digital culture in universities. The youngsters have the basic knowledge of digital culture literacy. Based on the outcomes of the research conducted for interviewing Cypriot museums archives and libraries representatives and directors, the main challenges that responders had to get over with were closely connected to IT equipment and infrastructure and educating the personnel or finding experienced personnel who is already familiar and the lack of resources and technical issues.

Experts believe that the digital resources or services that are planned to be used in the upcoming period is the tool of digital storytelling and audio and video streaming. On the other hand, the survey conducted addressed to cultural Institution Staff, involved in Research on Digital Culture developed in Cyprus has shown that the data that can help the audiences of museums or libraries engage

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with content are: linked with social media accounts, innovative and fascinating display content as well as using live videos. To continue with ICT Experts and LOD Experts involved in Research on Digital Culture strongly support that getting information on Linked Open Data can occur mainly through E-learning/ webinars/ online courses as well as Self-learning based on the outcomes of the survey. It is equally important to highlight that the upcoming step in LOD is expanding the data connection between institutions at a global level. Based on the beliefs of Digital Cultural Providers and IT Professionals in Cyprus offer digital training is needed at all levels.

For more information, please read the National Report of Cyprus here: https://dcd-erasmus.site/national-reports/

7.5. Slovenia

The national report of Slovenia stated that largest percentage of youngsters' preferences goes to video devices and immersive devices (90% respectively, while also 70% goes to Wiki networks as well. Following are the Internal databases with 50%.). It's easier for the youth to learn something new by using digital resources rather than reading a book on the subject and they prefer digital databases due their accessibility from their home laptop or smartphone. According to museums, archives and libraries directors the digital resources or services that are not well covered yet are audio guides, virtual reality and projection shows. So, this could be the next step in improving their digital resources offer. For cultural institutions staff, the data that can help the audiences of museums or libraries engage with content are linked with social media accounts and innovative display content. According to the ICT and LOD experts, the next steps to take with LOD in the cultural field are creating more awareness about LOD in the public, informing cultural institutions about its usefulness and expanding the data connection between institutions at a global level. Last but not least, according to Digital Cultural Providers and IT Professionals the main obstacles in promoting digital tools and resources in the cultural field are culture and behaviours and digital skills gap.

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The outcome of the Digital Cultural Designer research in Slovenia has proved the importance of digital culture. The results of the research that DRPDNM under took, showed that youngsters agreed that visited institutions provide plenty of digital resources they can access. As possible improvements in the field, they mostly imply that data should be more connected between different institutions. The participants agree that digital resources in general are changing the way we interact with each other while they are not familiar with the concept of LOD.

Survey among museums archives and libraries representatives and directors in Slovenia tend to examine which of the digital resources do the museums or libraries prefer to work with. Video devices and internal databases seem to attract their interest as well as Newsletters. The main challenges that they had to deal with was educating the personnel or finding experienced personnel who is already familiar with these issues. Technical issues and a lack of IT equipment were also obstacles that they had to overcome. Most significant impact of these shared open data for the institutions staff is the data archiving. According to ICT and LOD experts located in Slovenia the digital tools are very useful but not so well provided in Slovenian cultural institutions. While digital content and publishing, internet, and digital curation (libraries and museums) seem to be provided to great extent, much of the suggested options are barely provided (e. g., digital storytelling, augmented and virtual reality, digital safety, and security). Getting informed about Linked Open Data can be achieved mainly through E-learning/ webinars/ online courses as well as Self-learning based on the outcomes of the survey. More effort should be put in Schools and University Education.

For more information, please read the National Report of Slovenia here: https://dcd-erasmus.site/national-reports/

7.6. Lithuania

The national report of Lithuania stated that young people strongly believe mentioned digital resources can be very helpful for other people to learn and be more informed about a certain topic. The digital resources or services that are planned to be used by museums, archives and libraries directors in the upcoming period is social media, audio and video streaming and website/portal. The majority of cultural institution staff agree that the most significant impact of shared and

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open data for their institutions staff is searching and browsing data is easier and improved analysing, finding patterns, comparing, reproducing and finding inconsistencies. According to ICT and LOD experts, the most important steps that need to be taken in terms of LOD in the cultural field are informing cultural institutions more about the usefulness of LOD and creating more awareness in the general public about Linked Open Data. The most useful tools based on ICT and LOD experts' opinion in cultural institutions are digital curation, data protection and open licenses, online and mobile digital media tools.

The outcome of the Digital Cultural Designer research in Lithuania has proved that the topic of digital culture is a topic of utmost importance. The results of the research that Asociacija "Tavo Europa" undertook proved that experts in the field are somehow satisfied with the overall development of digital culture but there is still a lot of ground for improvement. This can be achieved through vocational and educational training.

The youngsters have the basic knowledge of digital culture literacy, and the findings confirm that they are partially aware of the importance of getting more involved with libraries museums or other centres/institutions but still need more guidance. Based on the outcomes of the research conducted for interviewing Lithuanian museums, archives and libraries representatives and directors, the main challenges that responders had to get over with were closely connected to the lack of resources and skills gap. The survey conducted addressed to cultural institutions staff, involved in Research on Digital Culture developed in Lithuania has shown that the data that can help the audiences of museums and/or libraries engage with content are: innovative ways of displaying the content and linking with social media accounts. Based on the outcomes of the survey, ICT Experts and LOD Experts, involved in Research on Digital Culture strongly agree that getting information on Linked Open Data can occur mainly through attending vocational and educational training, non-formal education activities as well as Self-learning. Exploring the beliefs of Digital Cultural Providers and IT Professionals in Lithuania, it can be seen that it is mostly agreed that digital resources and tools help us to develop new skills and new knowledge. The offer of digital training is needed at all levels. Consequently, digital culture goes beyond the day-to-day acts of doing digital work since it combines the exploration and the shared enjoyment of the various digital tools, environments and artifacts which inform and facilitate today's world .

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For more information, please read the National Report of Slovenia here: https://dcd-erasmus.site/national-reports/

Important Key findings

The outcome of the Digital Cultural Designer research in all partner countries has proved that the topic of digital culture is an extremely important topic that should not be underestimated but further work must be done in order to explore the topic fully. The important thing that we have to take into consideration is that the cultural Institutions could digitalize even more of the data, information, and documents they keep, and it is even better if they could access these from their personal laptop or smartphone. The world is changing so their connection with culture has to adapt accordingly. In conclusion, national reports confirm the need of training to both youngsters and cultural institutional staff that could work together in order to improve the development of a digital culture in the cultural field. A flourishing digital culture is a tremendous asset to any library or museum and can help facilitate in various fields. Consequently, digital culture goes beyond the day-to-day acts of doing digital work since it combines the exploration and the shared enjoyment of the various digital tools, environments and artifacts which inform and facilitate today's world. Anyhow, digital culture is to some level implemented in sectors such as tourism industry, universities, sometimes archives, art sector, books and publishing. The extent of use of digital tools and resources could be achieved through universities, museums, and tourism industry. For sure, the digital training offer is needed at all levels. It is equally important to highlight that the upcoming step in LOD in all partner countries is informing cultural institutions more about the usefulness of LOD and creating more awareness in the general public about Linked Open Data. All in all, digital resources are extremely important due to the connection of society with technology.

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APPENDIX

a. Survey for youngsters

1. Please state your age:

- 15 - 18 years old
- 19 - 25 years old
- 25 - 29 years old

2. Please state your sex

- Male
- Female
- Other: _____

3. How often have you accessed or used the following digital resources provided by museums, libraries and archives?

	Never	Rarely	Sometimes	Often	Very often
Wiki networks					
Internal databases					
Newsletters					
Guidance devices (e.g. audio guide)					
Video devices (e.g. documentary videos)					
Immersive devices (e.g. virtual reality)					
Projection devices (e.g. 360° shows)					

4. Which of them have you found useful?

❑ Wiki networks

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- ❑ Internal databases
- ❑ Newsletters
- ❑ Guidance devices
- ❑ Video devices
- ❑ Immersive devices
- ❑ Projection devices

5. How much do you agree with the following statements in relations to digital resources you used provided by museums, libraries and archives?

	1 Totally disagree	2 Mostly disagree	3 Neutral	4 Mostly agree	5 Totally agree
I can access them from home with my laptop or from my smartphone					
It was easier for me to learn something new by using these resources than by reading a book on the same topic					
I did not need any help from library/museum/archive staff while accessing them					
I can access data from other institutions abroad (like others museums/archives/libraries)					
The museums/archives/libraries I visit regularly provide plenty of digital resources I can access					
I can send feedback to museums/archives/libraries through their search engines/databases					
Data and information are well presented and organized in the digital resources they provide					
I find that these data and information are accessible without restrictions					

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I think these digital resources can be very helpful for other people to learn and being more informed about a certain topic					

6. What do you think should improve in the digital resources provided by these institutions?

- ❑ The data and information they have should be more open
- ❑ Data between institutions should be more connected
- ❑ Data from these institutions should be accessible from one's laptop/smartphone
- ❑ These resources should be more user-friendly
- ❑ Data as well as the interfaces provided should be available in more languages
- ❑ Offering more possibilities to users to give feedback
- ❑ Digitalizing even more the data, information, and documents they keep
- ❑ Other:_____

7. How much do you agree with the following statements?

	1 Totally disagree	2 Mostly disagree	3 Neutral	4 Mostly agree	5 Totally agree
I think that, as a society, we are creating a new culture inside the digital world					
I think digital resources in general are changing the way we interact with each other					
We are now a more connected society with the help of					

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technology					
We can not do without digital resources. They are part of our society and culture.					

8. Are you familiar with the concept of Linked Open Data?

- Yes
- To some extent
- No

9. If you answered "Yes" to Question 8, can you briefly describe your experience with LOD?

_____

b. Survey for museum, library and archive directors

1. Which of the following digital resources do you provide in your museum/library/archive?

- ❑ Wiki networks
- ❑ Internal database
- ❑ Newsletters
- ❑ Guidance devices (e.g. audioguide)
- ❑ Video devices (e.g. documentary videos)
- ❑ Immersive devices (e.g. virtual reality)
- ❑ Projection devices (e.g. 360° shows)

2. When did you first introduce most of these digital resources in your museum/library/cultural institution?

- About 10 years ago
- About 5 years ago
- About 2 years ago
- About 1 year ago
- Other: _____

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3. What challenges did you face when you introduced them?

- ❑ Lack of resources
- ❑ Educated/Experienced personnel
- ❑ Technical Issues
- ❑ IT equipment/infrastructure
- ❑ Skills gap
- ❑ Other: _____

4. How often do you think your visitors use these resources?

	0 Not provided	1 Never	2 Rarely	3 Sometimes	4 Often	5 Always
Wiki networks						
Internal database						
Newsletters						
Guidance devices (e.g. audioguide)						
Video devices (e.g. documentary videos)						
Immersive devices (e.g. virtual reality)						
Projection devices (e.g. 360° shows)						

5. Which age groups tend to use these resources the most?

	Resource not provided	Youth	Adults	Both
Wiki networks				

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Internal database				
Newsletters				
Guidance devices (e.g. audioguide)				
Video devices (e.g. documentary videos)				
Immersive devices (e.g. virtual reality)				
Projection devices (e.g. 360° shows)				

6. How much do you agree with the following statements?

	1 Totally disagree	2 Mostly disagree	3 Neutral	4 Mostly agree	5 Totally agree
Our new digital resources attracted more visitors					
These digital services have positively impacted our museum/library/archive					
Our staff is well prepared in helping visitors to use these digital resources					
Our visitors generally do not need assistance and can use these resources easily					
We offer visitors the chance to give their feedback on the resources and services they are using					
The public can access our services from their laptop or smartphone					
Visitors can digitally access through us information from other institutions, even abroad					

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The great majority of our data is digitalized					
All of the documents/data we keep are accessible to the public					
Visitors are attracted to the digital services we provide					
The digital resources we provide are accessible in many languages					
Digital tools are shaping a new form of culture in our society					

7. Which of these data and service are openly shared by you with other institutions?

- ❑ Digital Libraries
- ❑ e-Books/ Repositories
- ❑ Blogs/ Wikis
- ❑ Virtual Exhibitions
- ❑ Online Collections Portals
- ❑ Digital Storytelling
- ❑ Augmented and Virtual Reality
- ❑ Digital Social Communication (i.e Social Media)
- ❑ Other: _____

8. What are the digital resources or services you are planning to provide in your institution?

- ❑ e-books
- ❑ Repositories/ Online Libraries
- ❑ Blogs/ Newsletters
- ❑ Social Media
- ❑ Audios
- ❑ Audio and Video Streaming
- ❑ Augmented and Virtual Reality
- ❑ Digital Storytelling

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- ❑ Website/ portal
- ❑ Other: _____

c. Survey for cultural institutions staff

1. How much do you agree with the following statements?

	1 Totally disagree	2 Mostly disagree	3 Neutral	4 Mostly agree	5 Totally agree
Our databases are shared with other institutions and are accessible from them as well					
Sharing data openly across institutions has many advantages					
Users can access information faster if all databases are shared and accessible					
Users can access our data from their laptop or smartphone					
I have been trained to work with data that have been shared between cultural institutions					

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Staff in cultural institutions should be trained to work with this kind of data					
These data connections across institutions have attracted new audiences					
A user who is not familiar with shared data across institutions can have difficulties in finding the information he is looking for					
Our cultural institution has expanded since we started sharing data openly					

2. What do you think is the most significant impact of these shared and open data for your institution's staff?

- ❑ Reusing data easier
- ❑ Searching and browsing data easier
- ❑ Data Archiving
- ❑ Facilitate collaboration among others team members
- ❑ Create new value
- ❑ Upgrade professional Skills

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- ❑ Spontaneously generate dossiers and information mash ups from distributed information sources
- ❑ Create applications based on real time data with less replication
- ❑ Create new knowledge out of this interlinked data
- ❑ Improve easily analysing
- ❑ Improve easily analysing, finding patterns, comparing, reproducing and finding inconsistencies
- ❑ Allow bringing similar resources together and distinguishing dissimilar resources
- ❑ Improve storing, preservation, and accessibility of interlinked data

3. In what ways do these shared data help audiences to engage with content?

- ❑ Innovative way display content
- ❑ Poll/Quizzes
- ❑ Live Videos
- ❑ Let Your Audience Rate Your Content
- ❑ Pique Interest with Animations
- ❑ Linked with Social Media Accounts
- ❑ Other: _____

d. Survey for Digital Cultural Providers and IT professionals

1. To what extent do you think digital resources and tools have been implemented in the following institutions/cultural fields?

	None	Some	Much	Entirely
Museums				
Tourism industry				
Cultural heritage sector				
Archives				
Libraries				
Art sector				

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Theatre				
Universities				
Books & Publishing				

2. In which institutions/cultural fields do you think one should absolutely intervene and extend the use of digital tools and resources?

- ❑ Museums
- ❑ Tourism industry
- ❑ Cultural heritage sector
- ❑ Archives
- ❑ Libraries
- ❑ Art sector
- ❑ Theatre
- ❑ Universities
- ❑ Books & Publishing

3. How much do you agree with the following statements?

	1 Totally disagree	2 Mostly disagree	3 Neutral	4 Mostly agree	5 Totally agree
Digital resources and tools are helping us to develop new skills					
Digital resources and tools are helping us to develop knowledge					
It is easy to train people to interact with digital tools					
Digital tools and					

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resources cannot help adult learners to learn faster					
It is very easy to adapt to new digital resources and interact with them					
There are many opportunities to fund the development and implementation of digital tools and resources in the cultural field					

4. What do you think are the main obstacles to promoting digital tools and resources in the cultural field?

- ❑ Digital skills gap
- ❑ Inclusion aspects
- ❑ Policy and legislations
- ❑ Lack of IT infrastructures
- ❑ Lack of senior support
- ❑ Lack of funding
- ❑ Culture and behaviours

5. Which new habits and methodologies should be promoted in order to accelerate the development and implementation of digital resources and tools?

- ❑ Embrace Transparency
- ❑ Encourage Collaboration
- ❑ Offer Digital Training (at all levels)
- ❑ Be Comfortable with Risk
- ❑ Aspire to Inspire
- ❑ Other: _____

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e. Survey for LOD experts

1. What should Linked Open Data be used for in the cultural field?

- ❑ Social connectivity
- ❑ Collaboration among stakeholders
- ❑ Online Promotion
- ❑ Accessibility
- ❑ Culture Education and Development
- ❑ Engagement of Audiences
- ❑ Interaction through digital technologies
- ❑ Develop digital content
- ❑ Collection and Management of cultural material
- ❑ Protect cultural material

2. To what extent do you think the following tools are useful in cultural Institutions?

	Not useful	Somehow useful	Useful	Quite useful	Very useful
Internet (Web and Web 2.0, digital technology, mobile web)					
Digital Content and Publishing (Wikis, Blogs, Newsletters, Media Contents, e-books, Repositories and Online Libraries)					
Data Protection and Open Licenses (IPR, Copyrights, Rights of the creators and legal exceptions, GDPR)					
Digital Curation -					

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Digital Libraries and Museums (Digitisation, Collection Management Systems, Online Collections, Portals, Virtual Exhibitions)					
Digital Safety, Security and Ethics					
Digital Storytelling					
Digital Audiences/ Digital Analytics - Google, Facebook, Twitter, SEO (Digital Analytics in Social Media Platforms, define digital Audience)					
Social Media for Culture (Social Media for museums, promotion and culture education development)					
Augmented and Virtual Reality					
Mobile Apps					
Digital Management in Culture (Digital Asset Management, website management, Customer Relations Management)					

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Digital Communication and Presentations (Digital Strategy, Marketing Strategy, Strategic Communication)					
Online and Mobile Digital Media Tools (Images, Video, Audio Editing Tools, Audio and Video Streaming)					

3. To what extent do you think these tools are provided in cultural Institutions?

	Not provided at all	Provided very little	Provided to much extent	Provided everywhere
Internet (Web and Web 2.0, digital technology, mobile web)				
Digital Content and Publishing (Wikis, Blogs, Newsletters, Media Contents, e-books, Repositories and Online Libraries)				
Data Protection and Open Licenses (IPR, Copyrights, Rights of the creators and legal exceptions, GDPR)				
Digital Curation - Digital Libraries				

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and Museums (Digitisation, Collection Management Systems, Online Collections, Portals, Virtual Exhibitions)				
Digital Safety, Security and Ethics				
Digital Storytelling				
Digital Audiences/ Digital Analytics - Google, Facebook, Twitter, SEO (Digital Analytics in Social Media Platforms, define digital Audience)				
Social Media for Culture (Social Media for museums, promotion and culture education development)				
Augmented and Virtual Reality				
Mobile Apps				
Digital Management in Culture (Digital Asset Management, website management, Customer Relations Management)				
Digital Communication and Presentations				

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(Digital Strategy, Marketing Strategy, Strategic Communication)				
Online and Mobile Digital Media Tools (Images, Video, Audio Editing Tools, Audio and Video Streaming)				

4. What do you think are the next steps to take with Linked Open Data in the cultural field?

- ❑ Expanding the data connection between institutions at a global level
- ❑ Informing cultural institutions more about the usefulness of LOD
- ❑ Training cultural institutions more in LOD
- ❑ Creating more awareness in the public about LOD
- ❑ Other: _____

5. So far, how can someone learn about Linked Open Data?

- ❑ School Education
- ❑ University Education
- ❑ Vocational and Educational Training
- ❑ Non formal education
- ❑ Self-learning
- ❑ E-learning/webinars/online courses
- ❑ Face to Face training sessions
- ❑ Informal peer to peer support
- ❑ On the job training
- ❑ Other: _____

6. Where do you think we should put more effort in promoting Linked Open Data?

- ❑ School Education
- ❑ University Education
- ❑ Vocational and Educational Training
- ❑ Non formal education
- ❑ Self-learning

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- ❑ E-learning/webinars/online courses
- ❑ Face to Face training sessions
- ❑ Informal peer to peer support
- ❑ On the job training
- ❑ Other: _____

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