LIBISzine

HET LIBIS MAGAZINE ▪ JUNE 2015 ▪ NUMMER 9

IN THE SPOTLIGHT:

Services for Researchers



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FOREWORD

You might be surprised to find this journal in your hands… But did you know that LIBIS and the Digital Lab of the University Library can support you in your research activities?

We realize that the context in which you perform your research has changed drastically over the last years, and most probably also will in the next years. Two examples demonstrate this:

- Funding bodies nowadays ask for permanent storage and access to the data on which your research is based, this asks for a sustainable and affordable solution.
- Also (international) collaboration becomes more important and with this the need to exchange information in a standardized manner.

In this LIBISzine we want to show you some of the services that LIBIS and the Digital Lab can offer to you. As you will find out, both organisations – separate and together – have a lot to offer.

In the first part you can find more information on both organisations, their expertise and approach. LIBIS as well as the Digital Lab has undertaken big steps in the recent years to optimize and expand their range of services and expertise. Nowadays they are at the forefront of information and digitisation solutions.

Six testimonies from researchers working together with LIBIS and/or the Digital Lab are in the second part of this LIBISzine. These clearly demonstrate the flexible, open and pragmatic approach we use. Finally we offer you an interview with Marc Luwel, director of the Hercules Foundation, the funding agency for heavy research infrastructures in Flanders.

We hope that this LIBISzine will sparkle some new ideas, feel free to contact us for more information or to check on an idea you have.

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Prof Liliane Schoofs
Vice rector of Research
Policy KU Leuven



Jo Rademakers
Head of LIBIS

OUR SERVICES FOR RESEARCHERS

A WIDE RANGE OF SERVICES

LIBIS and the Digital Lab jointly offer a wide range of services and expertise aimed at supporting researchers in their studies and scientific assignments. Examples of these diversified services are:

- digitisation of research material using new imaging techniques revealing hidden information

  RICH project – page 17

- the development of specialised viewers to optimise the visualization of digitised research material

  Alamire project – page 25

- software for managing and sharing information such as research databases and web portals allowing interaction with the community of researchers and other interested parties.

  Lectio project – page 23

AN INNOVATIVE AND ALL-INCLUSIVE APPROACH

Besides delivering tailor-made solutions designed to fit your specific needs, we also participate in innovative projects. As a result, we are in a position to offer the latest and best practices and to share the newest groundbreaking technologies with researchers. Our partnership with researchers involves every step of a project: from the initial proposal to long term preservation and publication of research datasets.

A COMPLEMENTARY TEAM

LIBIS and the Digital Lab bring together different fields of expertise. Whereas the Digital Lab is specialised in high-end digitization and scientific imaging solutions, LIBIS offers adequate infrastructure to safely store and preserve content. At the same time LIBIS has the know-how to ensure different types of information can easily be accessed. Our joint services always put the requirements of the researcher first, whilst taking into account the available budget.

A STEP-BY-STEP APPROACH

In order to achieve solutions which optimally match the researcher's needs, we use a step-by-step approach. This approach can be broken down into three phases:

1. PROPOSAL PHASE

LIBIS and the Digital Lab have experience in in writing proposals for both internal and external calls such as Hercules, BRAIN-be and FP7/H2020. In the run up to the call, we listen closely to make sure research objectives and digital and technical requirements are clearly identified. We put you in touch with relevant stakeholders in our national and international network. You can count on us for suggestions which will potentially strengthen your case.

You can choose to use our expertise (LIBIS and/or the Digital Lab) in all phases or just one aspect. We are flexible.

2. PROJECT PHASE

Accurate planing and open communication are the key elements in each of our projects. Since the requirements and resources of each project vary, we always start by mapping your needs. This way we can evaluate whether our existing services will be sufficient or additional development is necessary.

When needed, we adapt our methodologies and develop additional tools. A good example is the Dome, a high tech imaging tool which the Digital Lab – in collaboration with Illuminare and ESAT (the department of Electrical Engineering, KU Leuven) – developed for the RICH project (see page 17 – RICH project). When it comes to high quality solutions to manage, preserve and publish your digitized content, LIBIS has what it takes to satisfy your needs.

LIBIS has also been involved in different projects that led to the design and implementation of new metadata standards for improved data description and exchange, websites, transcription tools, image viewers … (see page 20 – NaBuCco and page 25 – Alamire project).

3. OPERATIONAL PHASE

Once the content is digitized, the research database is ready for use and ready to be shared with the rest of the world; a new phase starts: the phase in which the researcher can fully use the enhanced instruments and further focus on his fact-finding. In this phase we see our role as taking care of both servers and softwares which facilitate the researcher's objectives. In light of this we offer full service support enabling researchers to focus on their scientific task rather than the related technology.

A STEP-BY-STEP APPROACH

PHASES

Proposal phase

- Consortium Brainstorm sessions
- Requirements analysis
- Proposal writing infrastructural needs
- Partnership suggestion
- ...

Project phase

- Project management
- Detailed functional requirements
- Digitisation & scientific imaging
- Configuration
- Design and development
- Training
- ...

Operational phase

- Full service offer (SLA): support, upgrades, consultancy ...
- Long-term preservation of content and research data
- Follow up of technical evolutions
- ...

OUR SERVICES IN AN OVERVIEW

OUR SERVICES

Digitisation & scientific imaging

- 2D & 3D photography
- Multispectral imaging
- Optimal Character Recognition (OCR)
- Named Entity Recognition (NER)
- Metadating
- Color corrected workflow
- ...

Data modeling and interoperability

- Research databases
- Advice and implementation of data standards
- Ontology modelling
- Collaboration workflows
- Data mapping and transformation tools
- ...

Ingest, preservation and accessibility

- Upload tools
- Conformance checkers
- Preservation actions
- Creation of digital representations
- IPR
- Access control & watermarking
- Specialized viewers
- ...

Publication and enduser engagement

- Websites
- Transcription tools
- Crowd-sourcing tools
- Data interoperability (JSON, XML, RDF, ...) and exchange (API, OAI,-PMH ...)
- Linked Data publication
- Semantic enrichment
- ...

INFRASTRUCTURE

Digitisation infrastructure

- Nikon D3x, Nikon D800, Phase One IQ180
- Microdome (RICH-project)
- Conservation Book Cradle
- Oidenus Smart Book Scan
- ...

Data management infrastructure

- Specialised software (Alma, Scope, CollectiveAccess)
- Data modeling (CIDOC-CRM, SKOS, FRBRoo, ...)
- Custom database development (Oracle)
- ...

Data preservation infrastructure

- LIAS / Rosetta
- Mirador viewer (IIIF-IIP server), Mets viewer ...
- ...

Data publication infrastructure

- Omeka
- Apps
- API's
- Data stores
- ...

LIBIS & THE DIGITAL LAB

Together the Digital Lab of the KU Leuven and LIBIS offer a wide range of services to researchers. Not only do these services involve digitization, preservation and visualization of scientific data; they also provide software information management and research database solutions. Let's take a moment and briefly introduce the two organisations.

LIBIS

WHO THEY ARE

As part of the KU Leuven, we offer and support IT solutions aimed at managing, preserving and facilitating the interoperability and smooth accessibility of all kinds of data.

WHAT THEY DO

Originally our information solutions were mainly targeted at libraries. Meanwhile our organization has evolved and our services have expanded. Today we offer a broad range of solutions for archives, museums and heritage institutions. We work for the KU Leuven and its partners but also for many other institutions requiring our expertise.



HOW THEY DO IT

We attach great importance to clear communication and interactive co-operation. We therefore listen carefully to our partners' requirements. Together we determine a realistic plan of action and ensure efficient solutions are delivered on time and within budget. We constantly keep our eyes open for new technologies and applications in order to safeguard our quality standards.

FOR WHOM THEY DO IT

We offer digital services to all sorts of organizations such as libraries, cultural heritage and scientific institutions. For researchers working with scientific datasets we have all kinds of solutions in house. Solutions enabling them to query their datasets in a highly effective manner, to collaborate with fellow researchers and to share their results in a seamless manner.

A REMARKABLE COLLABORATION

THE DIGITAL LAB

WHO THEY ARE

The digitization team are experts associated with the University Library (KU Leuven). Our expertise? Digitisation tailored to the needs of each specific project.

WHAT THEY DO

We supervise and execute all kinds of digitization projects and do so from A to Z. We are proficient in high-tech imaging, professional conservation and metadata.

HOW THEY DO IT

The Digital Lab has a professionally equipped imaging studio. Our studio is particularly suitable for the visualization and digitization of precious documentary heritage.

FOR WHOM THEY DO IT

Our team is specialized in in providing a personalized service of personalized services. Whether the nature of your project is scientific, educational or related to cultural heritage; it doesn't matter. Our group of professionals delivers custom-made digitization services.

www.libisplus.be/services-for-researchers

OUR APPROACH

Common in the approach of LIBIS and the Digital Lab is customisation. For each project the criteria are clearly defined together with the researcher. Although this results in a very diversified approach, there are some common characteristics which typify our services. Let's take a closer look.

LIBIS

A COMPLEMENTARY TEAM

The LIBIS team is a diverse group of information professionals with expertise in different areas. We possess a mix of skills required to turn your dataset requirements into pragmatic solutions. Our team has an open mind set, is ready to discuss your views and work together towards results which work for you and your organization.

MODERN INFRASTRUCTURE

LIBIS uses multiple platforms and tools. Depending on the nature of the project we select which of these instruments will work best. Partners have the option to choose whether they want to work with one component or a set of components supporting the entire dataflows. Whatever selection is made, LIBIS ensures different systems and workflows connect and integrate smoothly.

FOCUS ON QUALITY

Each project starts with an analysis of the major trends that exist within a specific domain, the standards that are adhered to and the most popular tools and efficient workflows being used within that domain. LIBIS strives to achieve a balance between the use of existing standards and the selection/development of new standards and software.This selection process we do in close co-operation with the partner.

LOOKING AHEAD

The LIBIS team continuously monitors the latest evolutions in the field of digital data management, sustainable preservation, innovative accessibility and end-user engagement solutions. Our team of experts actively participate in national and international innovative projects and working groups. Our objective? To develop both sustainable solutions and partnerships.

THE DIGITAL LAB

A COMPLEMENTARY TEAM

The Digital Lab is a team of specialists. What kind of expertise can you expect from us? We have a profount understanding of digital imaging and can inform you on copyright issues. At the same time we have experience in coordinating all kinds of digital projects. We cooperate with a number of specialists skilled in the art of disclosure and metadata. In short, at the Digital Lab you are in good company to realise your digitisation project from beginning to end.

A MODERN, WELL EQUIPPED STUDIO

The digitisation of imaging take place in a modern equipped studio. Here you find sophisticated and specialised tools designed to photograph fragile documents and objects under the best possible conditions. Our studio uses the latest techniques resulting in high quality images enabling to generate new scientific insights.

FOCUS ON QUALITY

Quality is key at the Digital Lab. Our services are customised to seamlessly fit the needs of your digitisation project. In order to achieve this, we take all the time necessary to identify the specific needs and to define an appropriate plan of action.

LOOKING AHEAD

Not only is the Digital Lab looking ahead, it also moves ahead in terms of digitisation techniques and creating new perspectives for scientific research. A striking example is the Optimal Character Recognition-technique (OCR). A technology through which you can make characters of an image recognisable and searchable.

www.libisplus.be/services-for-researchers.be

A COMPLEMENTARY TEAM OF EXPERTS

A complementary team of experts creating added value for researchers is the best way to characterise the joint forces of LIBIS and the Digital Lab. Let's introduce some team members.

LIBIS



ROXANNE WYNS
BUSINESS CONSULTANT

"AN OPEN DIALOGUE IS OF GREAT IMPORTANCE TO US."

"Each of the projects we undertake, starts with an in-depth analysis of the specific requirements of our partner. We begin by asking well-targeted questions and subsequently listen with great care to what you say. We consider a clear understanding of your needs as an absolute priority, which is why we devote the necessary time to do this professionally.

You can also count on us to dig into your area of expertise. It will therefore not surprise you that an open dialogue is of great importance to us. It is the best way to determine precisely what you require and to customise our solutions in line with your requirements. If that means we find your organisation requires only one aspect of our digital solutions, we will be happy to provide just that. The same applies if you wish to go for our full-service approach."



JO RADEMAKERS
HEAD OF LIBIS

"OUR SERVICES ARE DESIGNED TO MEET YOUR NEEDS AND NOT THE OTHER WAY AROUND."

"We at LIBIS believe that our solutions can create significant, added value to researchers. They can contribute in moving scientific research forward and they can also stimulate the creation of a community in which findings and results can be exhanged.

We offer you the flexibity to select the type of services your organisation is looking for. If you desire our full range of services, we will be happy to offer you our full menu. What if you prefer to order "à la carte" and only wish to fulfill a particular need? That too is perfectly possible. Our services are designed to meet your needs and not the other way around."

THE DIGITAL LAB



DIEWER VAN DER MEIJDEN
TEAMLEADER DIGITISATION

"TAILOR-MADE SERVICES ARE OUR TRADEMARK."

"We approach a digitization project in a holistic manner. We focus both on image quality, sustainable preservation and professional disclosure.

How can you be sure your expectations will be met? For each assignment we - together with the partner - determine the specifics of each digitization project. Subsequently we turn the specific requirements into practice. As you can see, we are not guided by the "one size fits all" principle. On the contrary, tailor-made services are our trademark."



BRUNO VANDERMEULEN
IMAGE SPECIALIST

"DIGITISATION IS MUCH MORE THAN JUST PRESSING A BUTTON ON A CAMERA."

"We work with professional cameras and controlled light sources in order to visualise the object in the most optimal way. The methods we use, have proven their efficiency over the years. We are able to photograph a significant volume of objects in a short period of time and in the least invasive way. But digitisation goes further than taking pictures.

Through our digitisation projects we develop new imaging methods enabling researchers to gain new insights. A perfect example is the RICH project, a project in which we developped a highly sophisticated lighting method focusing on the topography of an object and as such unveiling the smallest particles and hidden secrets of that object."

THEIR SET OF EXPERTISES

LIBIS FOR RESEARCHERS

OUR EXPERTISE

Data standards, data formats, data interoperability, data exchange protocols, data enrichment, data visualisation, data publication, data preservation ... are just a few terms indicating the diversity of data management. Over the years, we at LIBIS have gained a significant amount of expertise in all kinds of data management projects. Our consultants are skilled in both project and data management. By participating in several international working groups, they keep their skills up to date and as such they stay ahead in the ever changing domain of data handling.



FROM PROPOSAL TO FULL SERVICE PHASE

We have the expertise to support you throughout the entire project lifecycle. Ideally we get involved at the proposal phase. This way we are well-placed to give you - right from the start - advice on the type of standards and software to be used. It is also the ideal moment to call upon our experience in composing research, innovation or infrastructure proposals. But even if we get involved at a later stage, our approach remains to explore different options and to select the most suitable and maintainable solution.

AN OPEN AND INNOVATIVE INFRASTRUCTURE

We believe in an open approach. This also goes for our infrastructure. If you only require one of our components, for example web publishing, we can deliver just that. Using API's or other data exchange protocols will, as a matter of fact, allow you to connect to other systems in an automated way. We, from our side, can also help you with optimizing your workflows for managing, storing, publishing and sharing data.

THE STRENGTH OF OUR NETWORK

LIBIS has been involved in a considerable amount of academic projects where information solutions were provided to cultural heritage institutions and researchers. Over the years we have built a large international network consisting of cultural heritage institutions, universities and IT companies. We were able to expand our network thanks to our participation in working groups and European projects. We are firm believers that qualitative results in research are achieved through open dialogue and knowledge sharing.

A WALK IN THE DIGITAL LAB

A PROFESSIONAL SPACE

The Digital Lab is a large dark room where no daylight enters. In this space only professional light equipment and cameras are used. Temperature and humidity are kept at a constant level. All this combined offers the advantage that the quality of the photo shoots – however spread out in time they are – continuously remains at the same level.

HIGH-TECH EQUIPMENT

Here you will find devices – such as professional cameras and lighting equipment – enabling you to accurately visualise documents/objects and to do so with the least possible intrusion whilst maintaining accurate colors. The most appropriate light is chosen to suit each specific assignment. This can be a flash or a continuous light source.

WITH RESPECT FOR THE OBJECT

As some objects are very fragile, gentle treatment is important. Take for example, a medieval manuscript which you have to browse with the greatest care. For just this type of job the Digital Lab has a suitable device which makes it possible to manipulate the book with minimal human intervention.

DOUGH INSTEAD OF BREAD

The Digital Lab team delivers delivers high quality images, which can be seen as “raw material”. At a later stage this material can be used for different purposes. It could be compared with bread and dough. As a partner you get the dough or file which you can then use for different purposes or to bake different loaves.

NEW RECIPES FOR RESEARCH

In the Digital Lab innovative techniques are being used, allowing researchers to gain new insights. An example is the Reflectance Transformation Imaging through which objects are being illuminated from more than two hundred different angles and can be viewed interactively. A groundbreaking technology which makes the seemingly invisible suddenly visible.

- **More info ABOUT LIBIS? Visit www.libis.be**
- **More info ABOUT THE DIGITAL LAB? Visit bib.kuleuven.be/digitalisering**

A SYNERGY CONCEPT

TOTAL SOLUTIONS FROM ... TO

- high-tech photography
- sustainable digitisation
- efficient cataloging
- data modeling and interoperability
- ingest services
- professional preservation
- high accessibility
- publication and end-user engagement

TAILORED SERVICES SUITING YOUR NEEDS

- standard solutions
- à la carte

IN-DEPTH KNOW-HOW YOU CAN COUNT ON

- extensive experience
- diversified expertise
- profound insights
- a partner to bounce off ideas

HIGH-END SOFTWARE & HARDWARE

- a clear vision on digitisation
- expert advice
- modern imaging equipment
- state-of-the-art digitizing tools
- a modular approach and open evironment
- the ability to exchange data with any other systems
- usage of international standards and protocols
- continuous investments in innovation

A NETWORK OF EXPERTS AT YOUR SERVICE

- imaging specialists
- digitisation experts
- copyright connoisseurs
- (meta)data experts
- specialists in ontology and thesaurus management
- project managers
- software programmers and webdesigners

Does the synergy concept of LIBIS and the Digital Lab have the potential to deliver added value for your digitisation or research project? In response to that question we invite you listen to several partners who illustrate what the expertises of LIBIS and/or the Digital Lab brought to their organisation.



INTERVIEWS

Europeana-Photography



EuropeanaPhotography, an initiative of the European portal site Europeana, reveals much more than a treasure of unique photos. It also just shows how impressive the results of digitisation can be. How did these results materialise? With this question, together with a few others, we approached Frederik Truyen, Professor of Information Science at the KU Leuven and project manager of EuropeanaPhotography.

What are the objectives of the EuropeanaPhotography project?

It is a project that has been brought to life thanks to European funds. This project unlocks European photographic heritage by making all kinds of valuable photos from the period 1839-1939 accessible online to the general public. All is revealed through digital images which were created from these unique pictures and which you can now see on the website **www.europeana-photography.eu**.

How was the selection process of these photos organised?

The photos provided for Europeana-Photography, came from a consortium of 19 partners, including the University of Leuven. Curator Sofie Taes, together with our partners, made a selection from this rich collection of precious photographs. First and foremost, we wanted strong photos which illustrated life as it was then. Our focus was to show both "life in the city" as well as "the living city". The result is a collection of human-centered images through which you can truly feel the dynamics of the city.

What was the role of the Digital Lab in this project?

The pictures that were provided by the KU Leuven, were digitised by the Digital Lab. Their expertise in the field of digitisation was particularly valuable within the consortium. Together with some people from the Centre for Image Research and Diffusion of Girona Bruno Vandermeulen from the Digital Lab, has put together a range of technical factsheets. These documents contain guidelines for our partners. They describe how to proceed, capture and digitise precious heritage under the best of circumstances.

What is the resolution of these old photos?

The digitised images have a resolution of 40 megapixels. The quality and resolution of the pictures is exceptionally high. We were able to achieve this degree of sharpness because the process of digitisation started with the original glass negatives. Many photos from the early days of photography were captured on glass. At that time, quite large glass plates were used as negative image-



- **European photographic heritage**
- **Razor sharp images**
- **20.000 descriptions**
- **www.europeana-photography.eu**

recording material. It is the use of these large glass negatives in combination with our digitisation techniques which resulted in razor sharp images. Images which are even sharper than the original prints. Another remarkable fact is that the glass negatives are less subject to aging. You don't get yellowed photos but clear black and white photos in exactly in the same monochrome shades as the originals.

What was the role of LIBIS within EuropeanaPhotography?

The LIBIS team made a significant contribution in the field of metadata. In co-operation with the Metadata Team from University Library, they described 20.000 pictures orginating from Leuven. This was a huge task for which they enrolled the help of art historians. With their historical knowledge they ensured accurate and truthful descriptions of the photographs. In addition LIBIS - in co-operation with the other project partners - published a multilingual, online thesaurus. This is a dictionary which also can be accessed via links from other web applications. The thesaurus gives an accurate overview of the terms which are being used to describe the old photos. The aim of this tool was to obtain the most uniform possible metadata within EuropeanaPhotography.

What was done to ensure that the digitisation of the photographic material could take place under the best conditions?

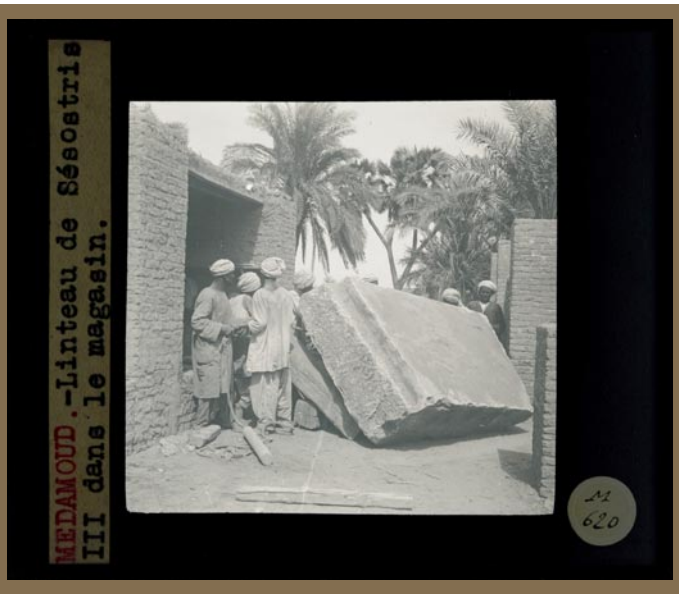
The Digital Lab organised several workshops in which valuable expertise was shared. In these workshops topics such as using the best possible lighting techniques for photographing glass plates, achieving the highest resolution in print and on a computer screen, applying techniques to further sharpen the resolution of digital images, were discussed. In short, there was a productive exchange of knowledge and this resulted in the application of high quality standards.

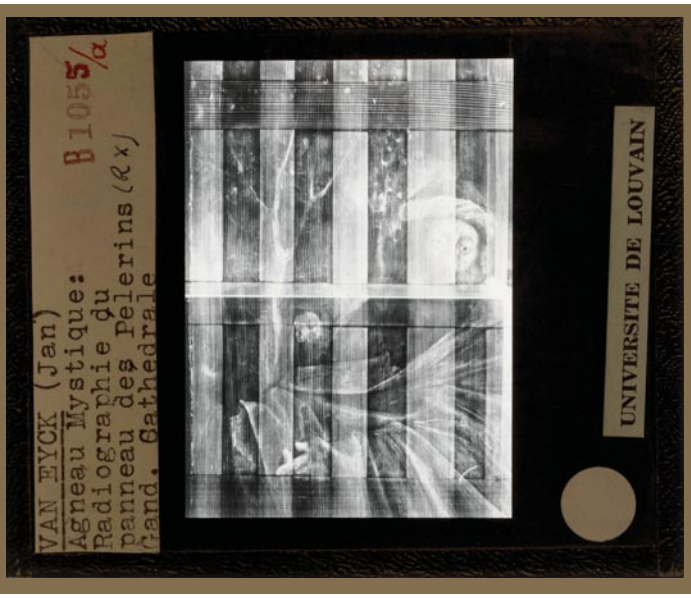
What measures were taken to ensure the preservation of old photographs could take place under the best conditions?

We were well aware that we were working with very precious heritage. The negatives and prints we took from the archives, were therefore stowed away with great care ensuring preservation in the most sustainable way for future generations. From the project Europeana another initiative, Photoconsortium, arose. Through this initiative the 16 archival institutions participating in EuropeanaPhotography succeed in sharing and combining all their knowledge on preservation of photographic heritage. Not only in the short term but also far into the future.

"There is a growing awareness that digitisation has a place within preservation of heritage"







How would you describe the co-operation with the Digital Lab and LIBIS?

Our main motivation in working with LIBIS was their expertise in infrastructure services. You can be sure that they preserve the digitised material in a sustainable way. In case of the arrival of new software or adapted versions, they will undertake the necessary action to ensure your files are stored correctly. By doing so, they relieve the workload for our services. As for the Digital Lab, we are aware that we too have top in-house expertise. We are therefore pleased to see that our university will continue to invest in their services. We are certainly advocating this. It's a partnership with a lot of potential. Not only will it make cultural heritage easily accessible but it will also enrich scientific research. Take for example the archaeological excavations at Sagalassos. By digitising the excavated objects we can provide researchers with interesting data that they can now study simultaneously through a digital platform.

What is the scientific value of a project like EuropeanaPhotography?

Europeana has great value as a research tool. It contains a wealth of information. And not to forget, it is free. In addition, you may assume that the images preserved by EuropeanaPhotography are reliable depictions of the original. There are no distortions or cut-outs. If you request the Mona Lisa, you get the digital image of the real Mona Lisa. This kind of reliability is an important asset.

What will be the role of digitisation in the future?

Digitisation will increasingly become a part of preservation. Think of ancient manuscripts. You can not deny that their condition declines with the passage of time. For such type of heritage digitisation offers a viable solution. There is a growing awareness that digitisation has a place within preservation of heritage. This also means that in the future greater demands will be placed on digitisation. Furthermore, the opportunities to finetune digital preservation and the required maintenance are out there. It is the future.

How can digitisation and culture reinforce one another?

In that context we still relate to heritage being preserved through digital media, but there is more. Today we increasingly experience culture through digital media. This brings us a new digital culture experience. For example, experiencing the past through today's media.

Through the exhibition "All our yesterdays" we want to give a foretaste of such an experience. It's a collection of the highlights of EuropeanaPhotography. Thanks to the original sharpness of these photos, the digitisation process and magnification, you get an impressive effect. The pictures are even sharper and more contrasting than they orignally were. It is without a doubt fascinating to experience how, through these realistic pictures, the past looks you straight in the eye.

CASES

ARCHAEOLOGY

HIGH RESOLUTION PHOTOGRAPHY FOR SOIL MICROMORPHOLOGY

PARTNERS

- FACULTY OF ARTS - DEPT. OF ARCHAEOLOGY (KU LEUVEN)
- DIGITAL LAB (KU LEUVEN)

DESCRIPTION

In micromorphology soil material is analysed microscopically. This was the case for the Sissi Archaeological Project, where thin sections of archaeological soil were subject to in-depth observation. This poses a few problems, such as bridging from the macroscopic to the microscopic scale. Scanning slides of this type of material delivers unsatisfactory results, as some details are lost during the scanning process. It was therefore decided to digitize the slides in high resolution using hard, polarised light.

ACHIEVEMENTS

The digitization techniques deliver high-resolution images which can be used as a reliable optical analysis tool. In addition, the images can be used as a navigation aid during the microscopic analysis. The digitized images and hard light deliver far better results than the images obtained through a flatbed scan.

CASE STATUS

Digitisation process: ongoing

INTERVIEWS

RICH



A medieval manuscript such as the Anjou Bible contains a wealth of historical information. Reason enough for Illuminare, Centre for the Study of Medieval Art (KU Leuven) to join hands with the Digital Lab and ESAT to develop a module for scientific imaging (RICH). As a result of this co-operation, this manuscript was brought to life in an unprecedented way. To find out more about this module we approached Professor Lieve Watteeuw (Faculty of Arts KU Leuven, Illuminare Study of Medieval Art).



- **Reflectance Imaging for Cultural Heritage**
- **Digital image module to visualise in minute detail art objects and manuscripts from the Middle Ages**
- **www.illuminare.be/rich_project**

What does the abbreviation RICH stand for?

RICH is the arcronym for Reflectance Imaging for Cultural Heritage. Through the RICH project we - together with the Digital Lab and ESAT – developed a unique digital image module which allows us to visualise, in minute detail, different art objects and manuscripts from the Middle Ages. Not only does this innovative visualisation technology deliver ultra-sharp digital images; it also provides new perspectives for scientific research.

How does this new imaging technique work?

We work with an image module. This is a "dome" – or a hemisphere – with a high resolution camera (28 million pixels) placed at the top. On the inside of the sphere, there are as many as 228 white LED-lights. The object being photo-graphed, is located at the bottom and is illuminated by the computer-controlled LED-lights. In total 228 images are recorded in RAW-format, each time with the light from an individual lamp. All these images are edited through specialised software and processed into one interactive file. Thanks to this process you can research the file – through the use of various filters – in the finest detail.

What makes this technique unique?

The thing about this technique is that we are able to visualise details which wouldn't be visible with conventional lighting. This is made possible thanks to all the different angles from which the light falls on the object. As a result the topography of the surface of the object (a thumbnail, a painting, a book binding) becomes visible. This allows you to take an in-depth look at the composition of manuscripts. You can, for example, measure the depth of an imprint of a stamp and use this information to determine the age of the stamp. This type of additional information ensures a better understanding of the working methods in use centuries ago.

You applied this technique to the Bible of Anjou. What scientific value did this generate?

Thanks to the ultra-high resolution images you can study certain material qualities of this royal manuscript to a fraction of a millimeter. This provides new interesting insights on how this fourteenth-century Bible was produced in medieval workshop. Details for which previously a researcher needed a micro-scope, can now be analysed from a computer screen in a more accurate way. You can zoom in on a detail like an eye of an eagle and dissect that eye into the subtleties.

You should also remember that this medieval manuscript is a unique piece which is already more than 700 years old. That makes it very valuable but also very fragile as time takes its toll. It is therefore a priority to work with micro non-invasive tools so that the manuscript is exposed to an absolute minimum of light or other external factors. The digital imaging techniques of RICH make all of this possible. Without touching the object, we can measure it from various angles, illuminate and study it.

With the dome-technique you can actually visualise the topography of the surface. To which new discoveries this technique can lead?

At first sight such a manuscript might look flat but in reality this isn't the case. As a matter of fact, it has structure. Now that we can visualise this, you are able to see, for example, fine lines which were engraved in gold leaf or in inks used many centuries ago. In addition, we can also make in-depth measurements (Z-axis) and export these data and then visualise them as a height line graph showing the topography. Thanks to the dome-technique discrepancies between the image and the original object have been reduced. This helps us in our search for clues on how these unique works of art were created.

What kind of findings did the research provide so far?

We know for instance that there were several production houses at that time. Research has also shown us that such a manuscript is the result of the craftsmanship of several workshops and specialists. You had miniaturists, copyists and people who just drew the fine lines. On the basis of the handwriting you can also deduce which calligrapher worked on it. Based on the intensity of the ink you can even see when a new sequence begins.

"Our motivation can be summarized as 'To go where nobody has gone before'"

Are the digital images developed by the RICH project, also available online?

They are indeed. These images are digitally available to our partners in the RICH project. This way we create a knowledge platform researchers can consult worldwide. Thanks to this modern technology precious manuscripts have become easily accessible. More so, researchers can - wherever they are – contribute in the analysis of this precious heritage. Hence our plans to expand this platform and to turn it into a strong research tool.

CASES

ARCHITECTURE

DIGITISATION SLIDE COLLECTIONS FACULTY OF ARCHITECTURE KU LEUVEN

PARTNERS

- LIBIS
- DIGITAL LAB
- FACULTY OF ARCHITECTURE (KU LEUVEN)

DESCRIPTION

The faculty of Architecture has an extensive slide collection. In addition, each professor has his own private collection. Some of these collections contain unique material. Unfortunately they are endangered as the slides are slowly but surely discoloring and many researchers are retiring. To ensure these collections do not disappear, the faculty of Architecture initiated a digitisation and metadata project aimed at preserving these precious slides.

ACHIEVEMENTS

An important aspect of this project is professional metadata management. Together with LIBIS, an excel template with a set of mandatory fields was developed. This user-friendly document enables researchers to follow-up the metadata requirements in a consistent and focused manner. Once this metadata management is finished, the selected slides are digitised, uploaded to LIBIS where they are linked to descriptive metadata.

CASE STATUS

Preparatory phase: project team is preparing to go ahead with this project.

www.libisplus.be/slide_collection

There are plans to take these scientific imaging techniques one step further. What do these plans entail?

Together with, the Digital Lab and ESAT, the electrical engineering department of the KU Leuven we are developing a multispectral dome. In the future this dome would work with ultra violet (UV) and infrared (IR) light. This is a new ground-breaking evolution in scientific imaging because it enables researchers to visualise retouches and signatures very precisely.

How is the co-operation with the Digital Lab?

It is an intensive co-operation. Together with the engineers of ESAT we have a think tank in which new techniques are discussed and developed. We're all fascinated by the potential of digital imaging and realise that standing still is not an option. We find ourselves on a route which is continuously evolving.

To what extent was LIBIS involved in the RICH project?

The high resolution images which RICH generate are to be saved in a sustainable way. For this we use the expertise of LIBIS. They have the capacity and expertise to preserve these images safely and under the best conditions. For us this is fundamental. Especially when you consider that these manuscripts contain a treasure of miniatures revealing a wealth of information about life in those days. This is information we absolutely want to preserve for future generations.

How would you summarise the RICH project?

RICH involves much more than the reproduction of cultural heritage. RICH provides me, as a researcher, the opportunity to see things in much more detail than is possible with the naked eye. RICH also makes it possible to share these very precise observations with researchers in art technology and library heritage from all over the world. This offers the advantage that you can include other disciplines in your research and make new discoveries together.

What drives you to preserve the past in the best possible way?

A researcher is like an explorer. Our motivation can be summarised as "To go where nobody has gone before". For me this means walking into a medieval workshop where these manuscripts were being created and witness the mastery of all these professionals. The more I learn about their creativity and mastery, the greater my respect for the artists and craftsmen of that time. Thanks to the digitization techniques, we can not only preserve these beautiful masterpieces. We can share them with others, and even more so, we can use them to find out more about their fascinating production process and - last but not least - we can better conserve and preserve them.

NaBuCCo

The Babylonian civilisation. An ancient culture which thousands of years ago was at its best and which is known to us today mainly through the Babylonian clay tablets in cuneiform language. Recently LIBIS developed Nabucco, a website and database about Babylonian clay tablets. It was at the same time the creation of a new dimension for scientific research of these valuable objects. We spoke with Kathleen Abraham, Professor of Linguistics and Area Studies (Syria-Mesopotamia) at the KU Leuven and project co-ordinator for Nabucco, about this marriage between the Babylonian clay tablets and modern technology.



What does the term "NaBuCCo" mean?

Nabucco is the name of a Verdi opera about the Babylonian king Nebuchadnezzar and the Babylonian exile which he caused. This name was chosen as the acronym for a scientific project through which 20.000 nail-scriptures from the time of Nebuchadnezzar and the periods thereafter, are made accessible to the outside world.

In short, NaBuCCo stands for Neo-Babylonian Cuneiform Corpus and refers to archive texts on clay tablets dating from the period 800 BC to the year 0, which coincides with the end of the cuneiform culture. Thanks to the Nabucco project all these texts are collected and metadated in a well-functioning database. Nabucco also ensures that the content is made accessible in a userfriendly way. The latter is done through the website: http://nabucco.arts.kuleuven.be/.

You use the term "archival texts", precisely what type of texts are they?

This term illustrates that we are not dealing with literature but with text material documenting the daily life of Babylonians. This can range from letters to legal texts, to administrative documents on all sorts of economic transactions such as leases, sales and employment. These texts were kept in the archives of both families and public institutions including temples and the palace.

"We wanted a well-organised database with a clear structure in which you can easily navigate."

This source material gives us a good idea of how people lived in the first millennium BC.

You used LIBIS's services for the development of this database. Which criteria did you set for this database?

We wanted a well-organised database with a clear structure in which you can easily navigate. To achieve this, we are currently working with four basic categories of metadata. For each clay tablet we describe the following information: "identification data", "physical characteristics", "content" and "bibliography". If you want to know the essence of a clay tablet, you will find it under "paraphrase". This is a subdivision of "content".

We are aware that a literal translation of a cuneiform is often not sufficient to fully understand the difficult content. We have taken this into account in the description

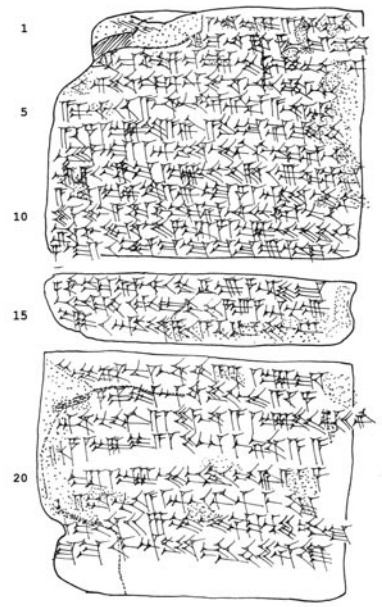


- **User-friendly website an database about Babylonian clay tablets**
- **Cross-pollination between ancient cultures and computer science**
- **nabucco.arts.kuleuven.be**

by adding additional context in the paraphrase. We decided to do this because our goal is to make the content of these tablets comprehensible to specialists and non-specialists alike.

You are working with CollectiveAccess. What are the advantages of this collection management software?

CollectiveAccess is a software which primarily specialises in managing museum collections. For us it was essential that the clay tablets could easily be identified by the names of persons or locations that appear on the clay tablet. With CollectiveAccess this is perfectly possible. Moreover, you can specify a broad set of criteria.



A software like CollectiveAccess also stimulates "information sharing". We see that this is a trend within scientific research. By sharing a maximum of information on a particular subject - in this case Babylonian clay tablets from the first millennium before Christ - with others Assyriologists and historians, research data have a much larger range. In fact, they invite you to develop innovative insights together.

What struck you about the way LIBIS works?

There is room to discuss your views and to touch base regularly to check the development of the database actually corresponds to your needs. Another remarkable fact is that there are many opportunities to interact with the projectmanager. This type of open communication makes it easy to clarify what you do and do not want. What I also appreciated, was their advice on how we should best organise our database. They have certainly made clear the advantages of an open environment. This type of learning enriches our understanding and views.

The website nabucco.arts.kuleuven.be is accessible to everyone. What is the reason behind this broad accessibility?

The clay tablets available through this site, contain a wealth of information but were, until now, not easily accessible to non-specialists. They are valuable archives giving us insights into the political and socio-economic history of Babylonia in the Neo-Babylonian, Persian, Seleucid and Parthian period. Interesting to know is that at that time the great city of Babylon, built by Nebuchadnezzar, was one of the greatest cities in the world.

They reveal how Babylonian families lived at the time, how they acquired their wealth, which strategies they used to maintain or expand their wealth and how they nurtured their relationships with the clerical and political world. They also provide insights into the structure of the state and the army and the way the temples were run. Actually these clay tablets offer the opportunity to dive thousands of years back into time and to discover that in fact our daily lives haven't changed that much.

Will it be possible to see the actual images of these tablets on the website ?

Indeed, a link will be made available directly to the images of the clay tablets. These clay tablets were visualised via a highly sophisticated method. The digitization of these clay tablets provides many advantages. Scientists wanting to study these tablets, no longer have to travel to see these tablets. And the objects themselves, which are extremely fragile and porous, no longer have to be exposed to external factors in order to perform in-depth investigation on them.

What do you consider the greatest scientific value of a project like Nabucco?

Our collective database nicely fits within the concept of Digital Humanities. It shows how, within a digitised research environment, you can link the linguistic and historical study of cuneiform texts with computer science. Not only can you collect all the information in one place, you can also compare texts, consult additional background information, share expertise with other Assyriologists and historians and as a result enrich your insights.

It is clear that this cross-pollination between ancient cultures and computer science opens new perspectives. We are therefore convinced that this is the beginning of a series of new and interesting discoveries. The first millennium BC contains fascinating material such as the existence of a multicultural Babylonian society. There are for example tablets describing the marriage contract between a Jew and a Babylonian. Other tablets disclose how immigrants in Babylonia tried to integrate by speaking the language and participating in the economic life.

The database is also a means of preserving the content of these clay tablets for future generations. What drives you to make sure this ancient past doesn't get lost?

These clay tablets give us access to ancient Babylon and as such they bring the world of the Ancient Near East back to life. The Babylonian science and culture left a deep impression on the Persian and Greek conquerors. Even in the Bible and in classical Greek texts you notice many images and themes from that world permeated our Western civilization. Think of the "Tower of Babel". A theme described by Herodotus and later portrayed by Pieter Breughel.

Another example is the painting "Belshazzar's Feast" in which Rembrandt shows a Babylonian crown prince with a background of supernatural writing in which the fall of the Babylonian kingdom is announced. Indeed, there are many more links between western and Babylonian civilisation than we might at first think. This kind of insight is what drives you as a scientist and it is the kind of insight you want to pass on.

CASES

FINGERPRINT

INNOVATIVE VISUAL DATA MANAGEMENT OF DRAWINGS AND PRINT COLLECTIONS

PARTNERS

- ESAT* (KU LEUVEN)
- DIGITAL LAB (KU LEUVEN UNIVERSITY LIBRARY)
- ROYAL LIBRARY OF BELGIUM
- ILLUMINARE**

DESCRIPTION

FINGERPRINT is an interdisciplinary project proposal on collection and data management. The disciplines involved are art history, art technical research, digital imaging, image processing and conservation science. The objective of the project is to monitor and to evaluate the different stages of printed material: from the unique preparatory drawings, proof impressions to the first printed results and later editions.

ACHIEVEMENTS

Until today, historical art research of prints and drawings largely depended on traditional methods based upon naked eye observations and the subjective memory and knowledge of connoisseurs. The objective of FINGERPRINT is to develop tools for making an objective artifact analysis possible and to create software which enables the researcher to visualize and compare large numbers of complex, material data. In order to achieve this, ESAT will in the near future develop a image processing software.

CASE STATUS

Proposal submitted

* ESAT: Department of Electrical Engineering
**Illuminare: Centre for the Study of Medieval Art (KU Leuven)

INTERVIEWS

Lecture Notes

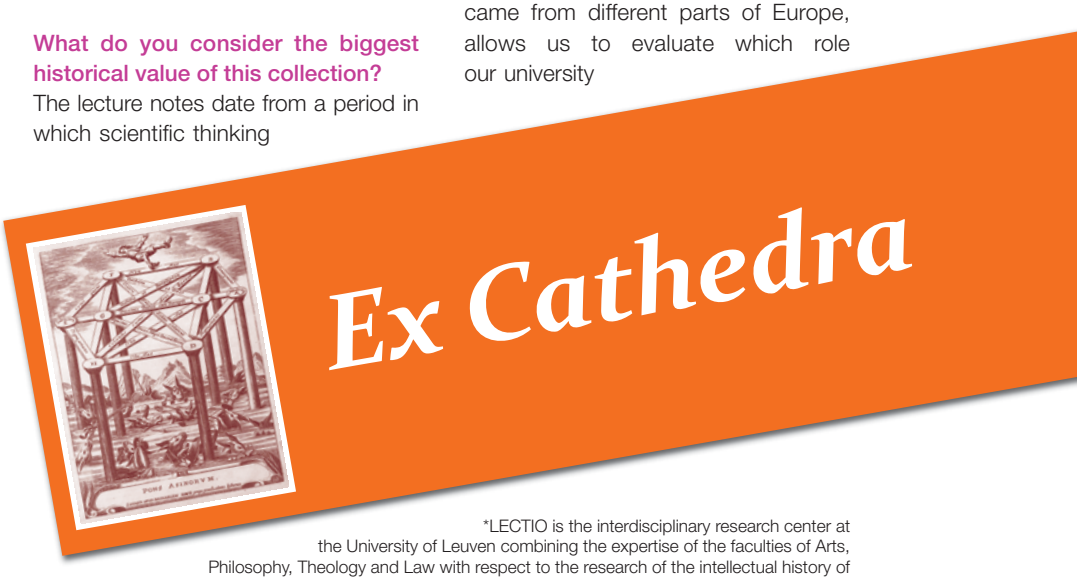


You may have already heard of the expo site "Ex cathedra" of the KU Leuven. It is a digital exhibition where you can look at a selection of lecture notes. Is it worthwhile digitising precious manuscripts like this? With this question and other related questions we approached Gerd Van Riel, Professor in Ancient Philosophy at the Higher Institute of Philosophy and director of LECTIO*.

The University of KU Leuven features a collection of lecture notes. What makes this collection unique?
Our collection holds lecture notes from 300 students dating from the period 1425-1797. They are mainly manuscripts from students of these disciplines: Logic, Physics, Metaphysics, Medicine, Theology and Law. These manuscripts reveal several things. We learn for example that there were many Dutch, French, Irish and British students at our university at that time. This is not surprising given the fact that there were then no Catholic universities in their countries. They also unveil an iconographic wealth. The numerous images contain very valuable information about life at our university and life in general in that period.

What do you consider the biggest historical value of this collection?
The lecture notes date from a period in which scientific thinking was going through a great revolution. Classical thinking was making way for a new approach in which observation and experimentation became increasingly important. On the basis of these manuscripts, it is particularly interesting to investigate how far this innovative thinking had already found its way into our lecture rooms. And what do we observe? Classical thinking often uses theology as a touchstone to validate renewal, causing an inhibitory effect. Luckily enough, this is only a temporary phenomenon. An innovative way of thinking will eventually manifest itself in our lecture rooms and ultimately in lecture notes.

Furthermore, a detailed prosopography of students and professors, who often came from different parts of Europe, allows us to evaluate which role our university



*LECTIO is the interdisciplinary research center at the University of Leuven combining the expertise of the faculties of Arts, Philosophy, Theology and Law with respect to the research of the intellectual history of the premodern era. LECTIO also acted as initiator and co-ordinator of the project "Ex cathedra".

- **Digital exhibition of lecture notes**
- **High accessibility for researchers**
- **Very high volume of photographed pages**

played in the culture of the Southern Netherlands and beyond. Furthermore, the iconographic material preserved in these lecture notes, is a particularly rich source of information, especially when it involves the history of imprints and the understanding of cultural and social profiles of students. Overall, you can say that the collection provides a unique way of gaining access to the research of a crucial period in the history of science. A period which coincides with a peak of cultural intellectual life in the Southern Netherlands.

You decided to digitize this collection of lecture notes. What was the main reason for this?

Instead of keeping these fragile and precious documents away from the world, we felt it would be a good idea to digitise these lecture notes so we could make them accessible. This way scientists can easily use them for research purposes. It is indeed much easier to work with the digital versions than with the original.

Recently professor Jan Papy, as a member of LECTIO, acquired grants to conduct research on the lecture notes of Logic. Under his leadership Christophe

"It is indeed much easier to work with the digital versions than with the original"

"Our objective is to make all these lecture notes available through Limo so the entire LIBISnet community can consult our collection"

Geudens is working on a PhD dissertation entitled "The changing face of Aristotele's logic at the Old University of Leuven (1425-1797). Continuity and innovation in the lecture notes and their European context". The digitized lecture notes provide added value to this study.

How did you manage the digitization project?

It was the Digital Lab team who photographed all our lecture notes. This was done page by page. That in itself is a labor-intensive task, especially if you know that an average dictation consists of approximately 400 pages. In the next phase, these image recordings are linked to the metadata of these manuscripts. At that point LIBIS conducts a validation process, conducting a number of checks before the material goes online.

Our objective is to make all these lecture notes available through Limo so the entire LIBISnet community can consult our collection. These lecture notes will also be available via a specially designed research environment within the website/webportal of LECTIO. We are definitively advocates of this type of open access approach. Openness stimulates scientific research but it also attracts other owners of lecture notes. By disclosing our manuscripts to the world, some of them feel encouraged to also make their digital material available through the web portal.

How is the co-operation with the Digital Lab and LIBIS?

In a digitisation project a smooth co-operation with the various partners is obviously important. In this case we, LECTIO, are the client. This means we provide the necessary funds and coordinate the project. As for photography we can rely on the expertise the Digital Lab has gained over the years. In light of this project, a new photographer has recently joined. For the metadata process of these manuscripts we can also call upon the expertise of our University Library. And - last but not least - for storing and making the digitised material available we are in the professional company of LIBIS.

What struck you in the way LIBIS works?

During our consultation sessions it became quickly clear that they are professionals when it comes to sustainable conservation and efficient disclosure of information. This type of technical topics is not our core business. Hence it makes sense for us to work with a partner like LIBIS. They see technical opportunities which at first sight don't mean a lot to us. They are currently working on developing a digital research environment for this collection of lecture notes, which will soon be operational through the website of LECTIO.

What did you learn from this digitisation project?

I now realise that there are more possibilities than I ever imagined. For example, the OCR-technology (Optical Character Recognition) is more advanced than I thought. Today, automatic word recognition from an image consisting of printed letters, is already an option. If we were also able to apply this technique to manuscripts; this would open new doors for our research. Previously, this would have been unthinkable. Today it is no longer silly to think that this could become reality.

I also learned that the resolution of these digitised images is particularly good.

If you compare the quality of microfilms we worked with in the past, you'll notice that there's a big difference. Nowadays you can magnify details to perfection on your computerscreen and see things which you can not see with the naked eye. Digitisation does much more than make reproductions which are easily accessible. Digitisation sharpens the image quality and as such enables you to optimise your scientific research.

When do you consider a digitisation project to be successful?

There are a number of criteria which must be met. In the first place you want the digitised material to be accessible and easy to handle for researchers. It is also important the digital version discloses more information than the original version. And then there is - as icing on the cake - the whirlpool effect which a digitisation project can generate. For researchers this is absolutely an asset. Because the more institutions and people are willing to make their historically

"Digitisation does much more than making reproductions"

valuable objects available online, the more interesting our research becomes.

A couple of years ago the tabularium of the central library composed a physical and virtual exhibition of these lecture notes, called "Ex Cathedra". What was it they especially wanted to exhibit?

A selection of the most interesting lecture notes was exhibited. Especially the works with an iconographic value are of interest to the general public. But student drawings also provided fascinating material. They gave a human touch to the entire collection. They show you for example how students were thinking outside the lecture rooms and how they often presented their reality with humor.

What motivates you to digitise and reveal the university's past on the basis of lecture notes?

The precious historical material scientists are using for their research, is fragile. Thanks to digitisation techniques, we now have the ability to reproduce this material endlessly without exposing it to external factors. This offers extremely interesting prospects to reconstruct the history of our thinking and to find out to what extent the new scientific thinking had or hadn't penetrated a Western European university like ours. Let's not forget that the roots of our scientific models are found in our past. It is important that we are aware of this. Not because we want to return in time but because we want to understand how the past has evolved and to realise that, as a matter of fact, our ways of thinking never stood still.

CASES

IDEM

INTEGRATED DATABASE FOR EARLY MUSIC

PARTNERS

- ALAMIRE FOUNDATION*
- LIBIS
- HERCULES FOUNDATION

DESCRIPTION

The Alamire Foundation undertakes musicological research into the musical past of the Low Countries during the Ancien Régime. They digitize music manuscripts and hereby adhere to strict guidelines and quality criteria. In order to make sure these unique digital sources are preserved and made accessible in the same qualitative manner, the Alamire Foundation - together with LIBIS - submitted a proposal to the Hercules Foundaton. It pertained to a funding request for technical infrastructure.

ACHIEVEMENTS

Progress is being made with the creation of the research database. LIBIS is responsible for the data ingestion and the long term preservation of the digitized manuscripts and related research material. In order to enable the researchers to consult the images in the highest possible resolution, a new viewer which conforms to Alamire's requirements, was implemented. A website is also in the making. This site will serve as an access portal for digital representations of these unique manuscripts.

CASE STATUS

In progress.

www.libisplus.be/idem

* (International Centre for the Study of Music in the Low Countries)

Succeed

The Institute for Dutch Lexicology is the treasure house of the Dutch language. Here you find a vast knowledge base revealing everything you want to know about Dutch words. Recently this institute, along with LIBIS, took part in the Succeed project. Katrien Depuydt, head of the language database at the Institute for Dutch Lexicology, explains the scope of the project.



How would you describe the main tasks of the Institute for Dutch Lexicology (INL)?

Our main objective is to describe the richness of the Dutch language and to further enhance it. To achieve this, we are putting together a Dutch Language Bank. This is a knowledge base where you find all kinds of information about the shape and the different meanings of Dutch words. It includes both new words and words that were used centuries ago. We see it as our core task to provide this language bank with content as rich as possible. In this way we contribute to unlocking both historical and contemporary Dutch texts.

Together with LIBIS you worked on the Succeed project. Could you outline the objective of this project?

Succeed is a project funded by the European Union to support further development of the IMPACT Centre of Competence, a knowledge center for digitisation. The goal is to diffuse knowledge on digitising textual material as widely as possible. Thus, managers of precious collections (in libraries and archival institutions) and researchers are not only made aware of the potential of digitisation, but also of the techniques enabling them to get started with it. In the context of the Succeed project, we worked together with thirteen libraries. Several tools were selected and training was provided with a clear focus in mind: ensuring that the technique learnt would later be applied in the work environment.

Actually, you can compare the IMPACT Centre of Competence with a knowledge hub, a central point where knowledge on digitising texts is being collected in an organised manner to then be distributed efficiently to various organisations. Within this Centre of Competence but also within the Succeed project we have shared our expertise in digitisation. LIBIS and the University Library (KU Leuven) have played an important role in test processing of various methods. Their feedback was particularly interesting to further fine-tune and optimise existing processes.

INL possesses extensive knowledge in OCR (Optical Character Recognition) and NER (Named Entity Recognition). What makes this knowledge valuable enough to share it with others?

With these techniques all kinds of text material become searchable. Let's take the example of ancient historical texts. Wouldn't it be nice if you could make these texts as easily searchable as Word documents? Suppose you as a researcher desire to collect as much information as possible about a historical figure such as Cleopatra. Thanks to OCR and NER techniques you are now able to screen numerous documents using that name and within no time you will receive the results of your search. As a scientist this means you don't only get access to a vast array of information, you also save lots of precious time.

How do these techniques work in practice?

A digitised text can be compared to a picture. Since the computer can not read the characters in this picture, the potential of this digitised text is limited. But thanks to the OCR software, the original text will be re-identified, encrypted and as such be made searchable for your computer. OCR software encrypts the image back to the characters and as a result the underlying text can be read by the computer. More so, OCR can also tell you exactly where the words you are looking for are located in the text.



- **Dutch Language Bank**
- **OCR: Optical Character Recognition**
- **NER: Name Entity Recognition**
- **www.succeed-project.eu**

And how does the NER technique work?

It is well known that people often search information based upon a name. They use a person's name, a location or an organisation. NER indicates how many times a particular name shows up in a document. This software succeeds in searching simultaneously a lot of files by name. If we go back to the example of Cleopatra, this means that you can immediately see how many times Cleopatra occurs in this arsenal of documents. As a result you can work much more efficiently and focus precisely on the type of study material which is most relevant to you.

In order to test the OCR-method, text material was selected from historical texts. On which criteria was this selection made?

The texts with which we worked, were selected from a collection of Dutch translations of Latin texts from the "Pretiosa collection" which is part of the "Gulden Librije" (17th, 18th, 19th century). What we especially wanted to achieve through Succeed was the transfer of our knowledge on digitisation and associated workflows. We did not just wanted to pass on this knowledge; we also wanted it to be used effectively and put to use by other institutions such as the KU Leuven.

"We did not just wanted to pass on this knowledge; we also wanted it to be used effectively and put to use"

Why is transfer of knowledge important to you?

Libraries dispose of a wealth of information. Far too often this treasure remains hidden for the outside world. Thanks to the digitisation technology, we can bring all this valuable information to live and make it accessible to a large group of people, to both scientists and non-scientists. The fact that the existing technology makes this possible; is that not reason enough to use it?

What was the main contribution of the KU Leuven and LIBIS within the Succeed project?

Thanks to their professionalism an interesting exchange of information took place. Their feedback was well-thought-out and constructive. It enabled us to fine-tune certain facets of our digitisation workflow. It was clear that they participated with a clear goal and knew where they wanted to go.

It is no coincidence that LIBIS won an award for this project. They managed to deliver an impressive performance in a very short time. They succeeded in quickly mastering the new tools we provided and used these tools as an effective means of production. As a former student of the KU Leuven, I also take pride in this achievement.

What did your learn from this Succeed project?

It is encouraging to see that the project has enabled a lot of libraries to put

“Their feedback was well-thought-out and constructive”

digitisation technology into practice. In this way, it has become easier for them to take the crucial step to digitise precious texts. Since Succeed takes place in a European context, we also learn a lot from our European colleagues. For us, as Institute for Dutch Lexicology, it is interesting to see how, for example, our Slovenian or Spanish colleagues build historical lexicons in their search engines.

What are the plans for the future?

Accessibility of our data remains a priority. Through our language database, we want people to have easy access to the treasure of the Dutch language. Although we also invest heavily in the construction of language data and lexicons of modern Dutch, historical Dutch remains an important domain. In that respect both the application of OCR as well as the compilation of accurate lexica are important.

But the fact that we - thanks to digitisation - can significantly extend our knowledge of the Dutch language and that at the same time we can give more people access to this unique treasure; surely that is a very positive perspective. It is clear that we want to continue to invest in this. And if we manage to share new insights and transfer our expertise to other research domains, they can also reap the benefits. If we can continue to do all of that then it is fair to say that we as INL are making a valuable contribution.

CASES

MOCREATION

VIRTUAL RESEARCH ENVIRONMENT
FOR MEDICAL AND HEALTH SCIENCES

PARTNERS

- DEPARTMENT OF KINESIOLOGY (KU LEUVEN)
- LIBIS
- CS DIGITAL

DESCRIPTION

The objective of MoCreation is to create a rich virtual research environment (VRE) offering resources to researchers interested in the movements of the human body. This project spreads across different disciplines and research methods. It combines traditional and disruptive technologies and as a result it creates new knowledge and innovative functionalities.

ACHIEVEMENTS

Within this project LIBIS is responsible for “metadata standardisation and enrichment for improved and secure data exploration and exploitation”. The objective of this task is to review the various in-house standards being currently used in laboratories, to assess the requirements for interchangeability, to evaluate the accessibility of data and to support the development of domain-specific metadata standards and to ultimately create a multidisciplinary research environment in which datasets are exchanged.

CASE STATUS

Proposal submitted
Currently under evaluation by the European Commission

www.libisplus.be/mocreation

INTERVIEWS

Scape



"Digital preservation" is a topic that can no longer be ignored. In fact, there is an urgent need for clear conventions. It was this need which was the driving factor behind the European SCAPE project. We interviewed Barbara Sierman about the objectives and achievements of this project. Barbara works as Digital Preservation Manager at the Royal Library in The Hague and was also speaker at the LIBIS seminar which took place at the end of 2014.

Your title is Digital Preservation Manager at the Royal Library in The Hague. What does this function entail?

My main task consists of advising our library about the most sustainable way of preserving our digital collections. It is an area which has significantly evolved in recent years. Not only are digital collections continuously getting larger, the different types of digital objects are becoming more complex. The good news is that the notion of "digital preservation" is gaining ground. We note that the subject is alive in many institutions and that the exchange of knowledge and experiences regarding digital preservation keep increasing.

What makes you so passionate about digital preservation?

Several years ago, I worked in the field of library automation. At that time, a domain in full development, just as preservation is today. It seems I am attracted to exploring uncharted territory. What certainly does play a role, is my love for the past. I studied 18th century literature and found it very interesting to dive into the past and to discover - on the basis of what was preserved - the world of yesteryear.

You were involved in the project SCAPE. What is the objective of this project?

SCAPE stands for Scalable Preservation Environments. The aim of this European project is to provide institutions with automation tools, procedures and workflows enabling them to strengthen their policies on sustainable conservation of large and complex digital data sets. SCAPE focuses on "scalability". The intention is to make configurations and processes on sustainable preservation scalable and to do so in a simple way so that they can handle the processing of the ever increasing amount of data.

Which are the most common mistakes that are being made and as a result stand in the way of digital preservation?

The biggest pitfall is that the focus on digital preservation remains at a low ebb. It is amazing to see how many people are still not keeping a backup of their data. A lack of awareness is the biggest danger. Especially when you realise that today we are able to import a thousand times more digital data through a wire and a computer than through a truck carrying thousands of books.

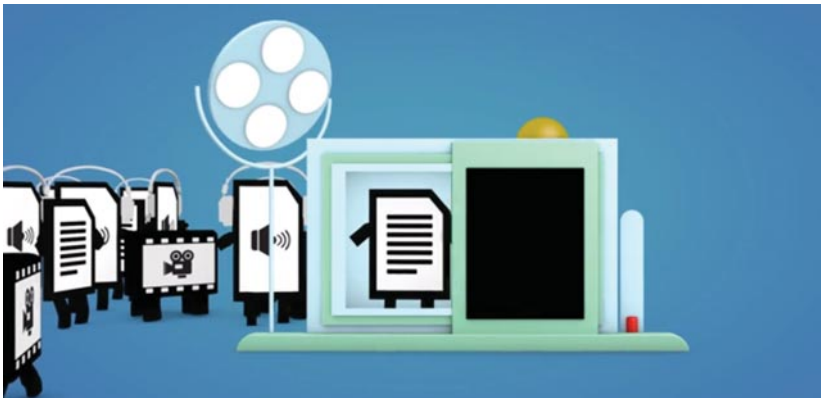
The SCAPE team has put together a catalogue on preservation policy elements. What is the function of this catalogue?

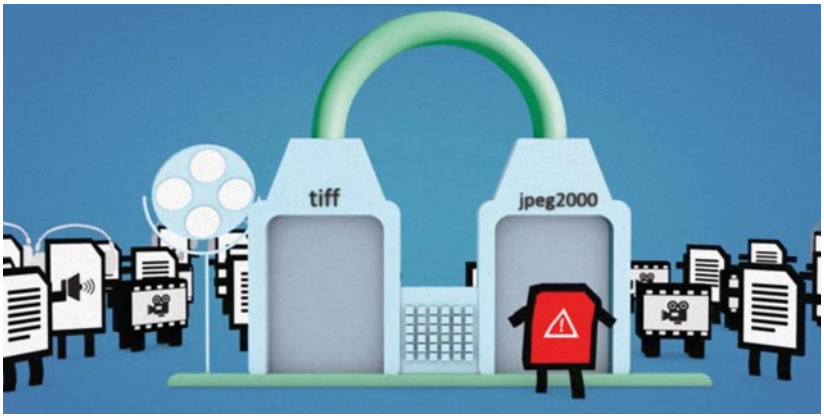
It is a policy document* we designed to help other institutions to compile a guide on sustainable digital preservation. The document illustrates how you can address this issue effectively at different levels. What we really want to achieve through this catalogue is to give directives with which you can create a manual tailored to the specific needs of your individual organisation.

Who contributed to the SCAPE project?

It was a very diverse group. There were several European national libraries involved such as the British Library, the State and University Library of Aarhus (Denmark) and our Royal Library in The Hague. But also data centers including Science & Technology Facilities Center,

- **Digital preservation**
- **Automation tools, procedures and workflows to strengthen policies on sustainable conservation**
- **www.scape-project.eu**







the Internet Memory Foundation, the universities of Vienna and Manchester, software developers of Microsoft and Ex Libris participated. This composition reflects the areas on which we want to focus with SCAPE: major library collections, web archiving and research data.

You are also part of the working group PTAB which defines ISO standards 16363 and 16919 regarding Repositories Audit & Certification. What does this working group want to achieve?

We are an international group of approximately fifteen people who define certain standards on digital preservation. There is the OAIS standard which describes the conditions your repository and the objects stored within, must comply with. Until recently there was no mechanism to check whether these standards were effectively followed. By determining guidelines for certification, we have linked criteria to these standards. Criteria indicating whether you are implementing the OAIS standard correctly or not.

A consistent approach is essential for a successful implementation of digital preservation. How do you turn this into practice?

I have no cut-and-dried answer to this question. Digital preservation is a new domain. Clear guidelines about what you can and can not do, are still in the making. We are still far from a level of 100 percent consistency. However, I do believe that consistent application - together with transparency - will gradually increase. The more clearly we communicate on digital preservation, the greater the awareness and preparedness for consistency in application.

Is it realistic to think that libraries in the future will evolve towards one shared storage system?

This is a question we are addressing together with the National Coalition for Digital Preservation. The NCDD** was founded in the Netherlands in 2008 by different public organisations with the aim of working together to create our future digital memory. We are preparing a report in which we specify the data we want to keep through a shared infrastructure and the data we want to keep on an individual basis. As you can imagine, this is an evolving process which doesn't happen overnight.

Your blog www.digitalpreservation.nl has the title "Digital Preservations Seeds". Why the visual title?

I started this blog in 2012. At that point

I did not know what the outcome of this blog would be. So I chose this name because I pictured a gardener who scatters seeds and doesn't know exactly which seeds will sprout and which won't. Meanwhile, I have noticed that this blog regularly evokes reactions from colleagues in the library world. It's quite nice to see how a blog connects people who are working on the same theme and at the same time how successfully it spreads all kinds of knowledge.

The site www.atlasofdigital-damages.info is another one of your initiatives. What do you want to achieve through this site?

Through this site I want to bring stories taken from real life and illustrate what could be the consequences when files are not preserved in a durable manner. The website holds a whole list of cases. They range from the loss of tapes regarding the expedition to Mars to the disappearance of the dates of Hyves, a Dutch social network. It's not easy to bring these stories to light. You often notice that people do not like to admit something went wrong. Yet it remains an interesting collection which makes the importance of digital preservation very tangible.

What is your biggest nightmare when it comes to digital sustainability?

The worst scenario would be that the topic "digital preservation" no longer gets any attention. It would mean that no more funds would be made available and digital preservation would die a quiet death. Digital preservation is in so many ways indubitably important. Not only for our cultural heritage but also for the preservation of crucial information about the history of, for example, a nuclear power plant or an aircraft.

And which dream would you want to achieve in this context?

I believe it's important that we make well-thought-out choices about what data we want to keep. There is a huge amount of information available today. The sheer volume makes the selection of what we want and don't want to take with us into the future, an even more important task. I dare to dream that we will become more adept at making the right choices, so that future generations get a representative picture of our time. Wouldn't it be nice if in the coming years I could be part of realising that dream?

*This document is available through http://wiki.opf-labs.org/display/SP/Catalogue+of+Preservation+Policy+Elements
** The National Coalition the Sustainability consists of the Institute for Sound and Vision, the Royal Library, the National Archive, Data Archiving and Networked Services (DANS) and a coalition of cultural institutions represented by the EYE Film Museum.

CASES

IIIF

INTERNATIONAL IMAGE • INTEROPERABILITY FRAMEWORK

PARTNERS

- FACULTY OF ARTS (KU LEUVEN)
- ILLUMINARE*
- LIBIS

DESCRIPTION

The main objective of the IIIF**-project is to open access to cherished image resources with great historical value. LIBIS was asked to develop and implement a layered image viewer in order to improve the existing IIIF-viewer. The intended result being: enhanced visualisation of layered images with changes in the image more easily detectable.

ACHIEVEMENTS

Inspired by a need to better understand how ancient manuscripts were created and physically degrade over time, LIBIS will be working on the development of a tool to better visualise layers of historical artefacts. The manuscripts are photographed through various spectra ranging from Ultraviolet (UV) to Infrared (IR) light. The visualization process is rather complex since it requires the merger and blending of several files. In order to achieve this, a high resolution, multi-layered viewer will be developed and implemented to add value to the existing IIIF-framework.

CASE STATUS
In progress

www.libisplus.be/iiif

* Centre for the Study of Medieval Art (KU Leuven)
** International Image Interoperability Framework

OPINION

The Hercules Foundation



To invigorate scientific research; that is the mission of the Hercules Foundation. A mission they execute not only with financial resources but also with a clear vision for the future. Marc Luwel, director of the Hercules Foundation, tells us more about it.

foundation of public utility
HERCULES STICHTING

How would you describe the core tasks of the Hercules Foundation?
The Hercules Foundation is an agency set up by the Flemish government to fund research infrastructure. We subsidise both medium-scale and large-scale infrastructures. We do this for all scientific disciplines, including humanities and social sciences. Since we want our financial resources to be allocated in the most efficient manner, we carefully evaluate the funding requests we receive from Flemish universities and research institutes.

We also select and finance proposals from Flemish researchers and research institutions wishing to participate in pan-European projects included in the European Strategy Forum for Research Infrastructures (ESFRI). And last but not least, we fund the Flemish supercomputer project. In addition to powerful computers owned by each university, Flanders has a supercomputer. When commissioned in 2012, this computer ranked 118th on the list of the five hundred most powerful machines in the world. This supercomputer – installed in Ghent University – is linked to large computing clusters in our other universities and together they form one large virtual computer. Researchers from Flemish universities, public research institutions, along with other interested companies all have access to it.

In which scientific fields is this supercomputer being used?
Its greatest strength lies is its simulation power. The supercomputer can simulate all kinds of scientific processes and thus greatly accelerate all kinds of scientific research. Its power is used in a variety of disciplines. It is used to calculate weather models, to depict chemical reactions at a molecular level, to simulate the effects of aerodynamics on cars, to chart solar winds ... These are just a few examples. The essence is that researchers, thanks to this supercomputer, can work much faster and at the same time more accurately. In today's scientific research it is no longer sufficient to be intelligent. If you want to make a difference, you also need an efficient infrastructure.

Disclosure of scientific data - in addition to the preservation of research data -becomes increasingly important for researchers. In that regard, which criteria should research data meet?
For research purposes, it is of course crucial that data are accessible, but it is equally important that they are reproducible. By disclosing how you arrived at certain results, you not only make your research more transparent but also more credible. As a matter of fact, more and more scientific journals publish an annex where you find the datasets used. A clear signal that transparent communication of the datasets used, is gaining importance; as well as awareness that other scientists should be able to build on the latest research findings. The fact that they do not have to go through the entire research process is a huge timesaver.

Today a huge volume of research data exists. How can you reconcile this multitude of data with preservation?
It is essential not to be influenced by buzzwords trying to convince you to digitise as much material as possible. Digitisation has a cost. It is therefore important to make an informed choice on what is worth digitising. The crucial question we need to answer is what scientific value a digitisation project generates. Since we require a well-balanced response to this question, it is absolutely necessary to involve experts. An equally important question we have to ask ourselves, is what the legacy of our digitised data will be in hundred years. Let's not forget that we have no real experience in the long term effects of digitization.

But with what we do know today, how can the digitisation help scientific research to move forward?
Undeniably, for a scientist it is a great step forward to have access to a world of information without leaving his office. Previously he had to go to a library to – in a manner of speaking – study data with a magnifying glass. Today an enormous arsenal of scientific information is only one click away from the researcher. It is clear that this enables him to work much faster and more efficiently. This is also clearly reflected in the rapid evolutions taking place in the scientific world. Think of the Higgs particle. Without the digital (r)evolution, facilitating the processing of a huge amount of measurements in a short time, this breakthrough discovery wouldn't have been possible. But also in humanities, you see that digitization accelerates research. Take the Syrian clay tablets, by digitising these precious and fragile pieces, researchers from around the world can study the contents of these tablets and share their findings.

Even within social sciences, digitisation generates a fast-moving landslide. Since it has become so much easier to survey large groups of people or to collect data on people's behaviour, we are faced with a tsunami of data. These so-called "big data" require data mining tools in order to interpret all the information and come to the right conclusions. It is a major challenge to convert these colossal mountain of data into useful information.

On March 2, Hercules launched the call 2015-2016 for new scientific infrastructure. How would you define the criteria for a successful project?
The main criterion is scientific excellence. In other words, does the project manage to push the limits of scientific knowledge? That is the fundamental question we ask ourselves with every request. Our objective is in the first place to revitalise scientific research so it can explore new horizons and deliver new insights. Another criterion we use is excellence in applications. Can we by integrating existing scientific knowledge in new applications, create value? That is another good reason to grant funding.

Thanks to the Hercules Foundation projects such as RICH and Alamire have materialised. What was the main motivation behind the funding of these projects?
As I mentioned earlier, the applications for research infrastructure funding are submitted by researchers. This is done within the framework of calls and preferably within partnerships. International experts then evaluate these applications. They primarly evaluate the extent to which the financing of infrastructure succeeds in pushing the existing boundaries of human knowledge.

One of the applications selected and funded by the Hercules Foundation, was lodged by the KU Leuven. It involved the construction of an infrastructure to digitise costly artifacts such as manuscripts. The experts were of the opinion that the tools necessary to achieve this, would help move research in several fields of humanities firmly forward.

What other projects do you consider good examples of successful financing?
There are of course many who qualify for this, but there are two examples that come to me spontaneously: the electron microscope used at the University of Antwerp (UA) to analyze materials atom by atom. At the time of commissioning this

www.hercules-stichting.be

was the most powerful instrument of its kind in the world.

Another example is a medical instrument which was built at the Vrije Universiteit Brussel (VUB). It is a combination of image processing and radiation therapy. As a result, it becomes possible to irradiate tumors in a very precise manner and without damaging the surrounding tissue.

How would you describe the biggest challenges for the future of research?
To continue to find sufficiently qualified people, will no doubt be our biggest challenge for the future. The aging population and declining interest in science among young people is creating a shortage of scientists and engineers. Already today, our universities deliver too few graduates in these disciplines. We can try to fill these shortages by recruiting researchers from outside the European Union. But the reality is that we are in competition with the United States, a country which is still more attractive to foreign students.

Besides, more and more Asian countries, along with other rapidly developing economies such as Brazil, are focusing strongly on research and innovation. As a result, the influx from these countries is under pressure. Often students from these countries do their doctoral or postdoctoral research in Europe or the United States, but they then return to their homeland to build their career. In China, they even have a name for them: sea turtles. Just as sea turtles do, they eventually find their way back to their hometown.

It indicates that the inflow of qualified scientists is clearly under pressure. And although state-of-the-art infrastructure will be crucial for scientific research in the future, highly qualified scientists will be even more so. It is an undeniable challenge that requires a thorough and thoughtful approach.

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