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Innovation and consolidation for large scale digitisation of natural heritage

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Call: H2020-INFRADEV-2017-1 / Type of Action: RIA

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Work package **WP9** / Lead: **CETAF**

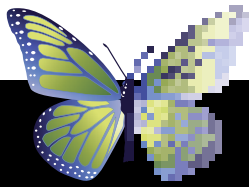
Delivery date: **M3**

COMMUNICATION AND DISSEMINATION PLAN



Funded by the Horizon 2020 Framework of the European Union
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COMMUNICATION AND DISSEMINATION PLAN

ICEDIG WP 9 - Deliverable 9.1

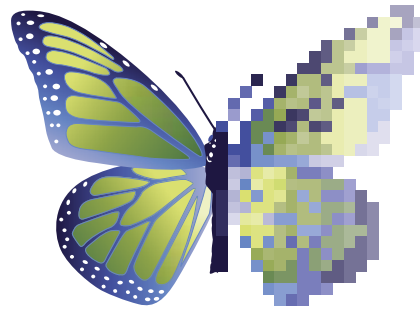


LEADER

CETAF - Consortium of European
Taxonomic Facilities



Funded by the Horizon 2020
Framework Programme
of the European Union



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ICEDIG Communication and Dissemination Plan

Deliverable Number: D9.1

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Disclaimer:

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01 INTRODUCTION

Digitalisation of society affects all areas of human activity, and science is at the forefront of this development.

“Digital science means a radical transformation of the nature of science and innovation due to the integration of ICT in the research process and the internet culture of openness and sharing”.¹

Natural science collections are an integral part of the global natural and cultural capital. They are one of the oldest Research Infrastructures (RI) and form the hard core of biodiversity science that studies the existence of life on earth, hosting about 1.5 billion specimens. These specimens have been gathered over more than 250 years, but only about 10% has been digitally catalogued. Digitising natural science collections needs to be tackled, and to that end the research community has jointly identified a shared initiative named **DiSSCo, Distributed System of Scientific Collections**, to provide the necessary data, in the form, precision and scale that natural sciences and scientists need to facilitate scientific discoveries.



Natural science collections of the world, include 2-3 billions of animal, plant, fossil, rock, mineral, and meteorite specimens. The European collections alone account for 55% of the natural sciences collections globally, and represent 80% of the world's bio- and geo-diversity. Data derived from these collections underpin **countless innovations**, including tens of thousands of scholarly publications and official reports annually (used to support legislative and regulatory processes relating to health, food, security, sustainability and environmental change); inventions and products critical to our bio-economy; databases, maps and descriptions of scientific observations; instructional material for students, as well as educational material for the public (*DiSSCo Research Infrastructure Outline*, February 2017).

EUROPEAN COLLECTIONS:

- ▶ 1.5 billion specimens
- ▶ 80% described diversity
- ▶ 55% NSCs globally

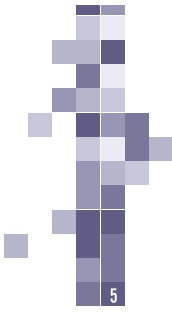
ONLY 10% DIGITIZED

The project named “**Innovation and consolidation for large scale digitisation of natural heritage**” (“**ICEDIG**”) (EU funded Project no. 777483) will produce **conceptual and technical design reports** for such a distributed digitisation infrastructure for the European natural science collections. The reports will be based on the testing of key technologies and alternative approaches, and prototyping innovative approaches where technology is not yet in place. An important part of the project will be the blueprints for implementation and suggestions for new kinds of collaboration between the organisations involved, i.e., consolidation of the activities. The ultimate goal is to rethink the current way of working so that the current rate of digitisation of the collections can be increased exponentially, and achieve the goal that all major scientific collections in Europe have been digitised, and made freely and openly accessible, for all, in a foreseeable time such as 25 years.

To achieve this goal requires considerable innovation to advance the current technological approaches, and consolidation of the current ways of working. This is the ICEDIG challenge.

¹ European Commission, 2013, Digital Science in Horizon 2020. Concept paper of the Digital Science vision, and its integration in the Horizon 2020 programme, http://ec.europa.eu/newsroom/dae/document.cfm?doc_id=2124

02 OBJECTIVES OF THE COMMUNICATION AND DISSEMINATION PLAN



The present COMMUNICATION AND DISSEMINATION PLAN (the “C&D Plan” hereafter) is a key mechanism to ensure the adequate progress of the project, to produce the envisaged results, and to successfully achieve the fundamental goals of ICEDIG. It falls under the scope and activities of **Work Package² 9 – “Communication and Dissemination”**, that is led by the Consortium of European Taxonomic Facilities (“CETAF”), and stands as its first **Deliverable D9.1** of this WP9.

COMMUNICATION AND DISSEMINATION PLAN (C&D Plan)

WP9 – Leader: CETAF

Deliverable D9.1

The C&D Plan basically seeks:

- to **identify procedures**,
- to **develop impact-effective activities** and
- to **use the most adequate means**

for communicating ICEDIG key features and disseminating ICEDIG outcomes. Specifically, the plan looks for the involvement and participation of all direct partners, external stakeholders and related third parties as to ensure their commitment towards ICEDIG results, and consequently to the development of DiSSCo, and the expansion of its global perception as the **valuable and necessary infrastructure that meets what natural sciences research currently needs**.

² Hereinafter, Work Packages, in general, are referred to as “WP”



03 RATIONALE

Through the period January 2018-March 2020, this C&D Plan will be the referential framework on which all regular communications of the ICEDIG Project are based and will guide the dissemination efforts planned to best spread its outcomes. The implementation of this Plan will be led by CETAF, with major contributions from the University of Helsinki (“UH”), and the Natural History Museum, London (“NHM”), with the additional support of all the other partners.

The C&D Plan stands on FOUR PILLARS:

external communication scheme

engagement strategy

internal communication means

dissemination actions

The Plan will look at the development of an **external communication scheme** that is both effective and operates together with internal communication means created and maintained by UH (Task T1.2) throughout the duration of the project.

Since it is of crucial importance that the intended users and stakeholders welcome and accept the new DiSSCo Research Infrastructure (RI), **networking will be instrumental** in understanding current practices amongst collection holders and the cultural differences between various organisations and countries. The implementation of DiSSCo will necessitate some changes in these practices. It is a challenge for ICEDIG to introduce some of these, such as new workflows required for efficient mass-digitisation of scientific collections.

Moreover, establishing a strong **engagement approach** and describing its implementation mechanisms will also be a central part in this networking endeavour. A wide range of **stakeholders** and potential users of the DiSSCo RI need to be involved as differentiated sets of targeted audiences in two complementary directions: i) sharing a vision and ideas of concrete products and services to come; and, at the same time, ii) open a debate with the users in the research community in order to know their best practices in depth, and to see how any new approaches would fit in their situation. In the light of such a two-way view, the C&D Plan pursues to build and maintain adequate feedback loops so that ICEDIG can provide DiSSCo with the required bottom-up enriched approach (from the research community), but also with the most updated technological approach coming from the other end of the value chain (i.e. from industrial actors, governmental representatives and funding agencies).

The **dissemination activities** of the project results will be the culmination of all previous actions and will contribute to expand the project’s achievements beyond its lifetime in a sustainable manner over time. In that respect, the C&D Plan will also help broaden the scope of the DiSSCo network and involve the research community, industry, decision makers, and the public at large by spreading the message of ICEDIG’s breakthroughs, innovation potential and societal progress in a way that is both efficient and effective.



Ensuring successful information flows among the partnership

Rolling out a scheme to communicate about ICEDIG to targeted audiences

Engaging users and stakeholders in implementing ICEDIG

Spreading the project outcomes to ensure continuity for the design study



Pandinus imperator Koch, 1841,
3D Photogrammetry model by A. Mathys
©RMCA 2016



Galena with sphalerite,
© NHMC @ Trichas, A.



04 SPREADING THE ICEDIG VISION

4.1 KEY MESSAGES TO COMMUNICATE

ICEDIG, as a Research and Innovation Action (RIA) and a Design Study for DiSSCo, will focus on innovation of the new methods, procedures and tools that will be needed to achieve significant progress in digitisation, and consolidating the current organisations so that these new ways of working can be adopted. The results will be compiled in the reports, which will form the blueprints that will be followed in the construction phase of the DiSSCo RI. As part of this mission, ICEDIG will draft the concepts, develop prototypes and test them to enable DiSSCo to cover the entire life cycle of digitisation of scientific collections.

In short, the **vision of ICEDIG**, as design study of DiSSCo, is to **come up with the necessary innovations and changes in current organisation of work** so that a majority of the scientific collections can be made digitally available for all users in a foreseeable time. In Europe, this will necessitate digitisation of 30-50 million objects / year, which is about 10 times the current rate.

Such a vast pool of data will require new ways of conducting research. It is also ICEDIG's aim to investigate and introduce such changes.

Under this broad mission statement, a varied realm of activities will take place. To convey the purposes and objectives of ICEDIG to the external audiences, the C&D Plan encompasses a set of basic key messages that showcases the ICEDIG concept and that will serve everybody for communicating the ultimate vision of the project.

Those messages, and their derivatives, are essential foundations for success of the C&D Plan. They will be repeated constantly in all fora where ICEDIG will be present and will be launched repeatedly from the different platforms including social media used by the ICEDIG project and specifically on the ICEDIG website and Twitter account. Such a recurrence will ensure the correct understanding of the project aims and will contribute to the sustained attachment of related actors to it. Partnership will be encouraged to contribute by spreading those same words permanently.



HASHTAGS

#ICEDIG
#digitisation
#digitalassets
#digitalscience
#openscience
#naturalsciencecollections
#virtualaccess
#innovation
#researchinfrastructure
#datasharing
#collectionsmatter
#opendata

TWEETABLE KEY MESSAGES

ICEDIG contributes to access to **digital data supporting scientific research** and supports the transformation of the nature of science and innovation by valorising open access and data sharing.

ICEDIG supports the **innovation design of DiSSCo** for bio and geo-diversity data, in line with the demands of the information age.


ICEDIG places a foundation to **gather data from tens of millions of physical objects** every year across Europe.

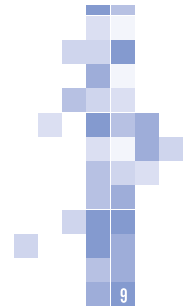
ICEDIG ensures that **essential data** from each object will be delivered in the form, precision and scale as needed by their potential users at a unique access point, the DiSSCo RI, where national and regional endeavours will be embedded and optimized.

ICEDIG supports an **efficiently coordinated pool for linked mass collection data** at European level and beyond.

ICEDIG involves **researchers, citizen scientists, industry, decision makers and the society in general** in this large-scale digitisation effort.

ICEDIG addresses the **needs and expectations of the natural science collections community** in the light of mass digitisation so that DiSSCo will be firmly rooted in that community.





4.2 EXTERNAL ACTORS TO ENGAGE

The ICEDIG C&D Plan intends to support all activities that maximize ICEDIG’s impact of the preliminary and final products (reports, demonstrations, datasets). They are to be developed tailored to the users they are intended for and the users of the DiSSCo RI at large. In this respect, all ICEDIG partners need to be involved to a certain extent in communicating, engaging and disseminating what they are doing and what they intend to achieve.

4.2.1 TARGETED AUDIENCES

In order to maximise the impact and thus the success of the ICEDIG project, envisaged communication and dissemination activities need to be tailored to specific target audiences as to accommodate them to different contexts. Facing the broad landscape of natural sciences collections, the related external actors are classified in two large groups, as direct or indirect contributors, depending on the closeness of their connection to ICEDIG. Under each of those categories, several sub-categories are identified.

For **Direct contributors**, the criteria used are the characteristics of the actor (either individual or collective) and their legal status (private or public institutions, affiliated communities).

Under **Indirect contributors** to ICEDIG, the domain of the corresponding agent is the relevant criterion used to differentiate between industrial actors, governmental agents, societal bodies, and other related groups. These go beyond the European scale, and may reach out to other connected domains outside environment and natural sciences.

The resulting matrix identifies four major sub-categories under each type of contributors, adding up to eight audiences categories to target (Table 1). Tools will be tailored accordingly as to ensure reach and effectiveness of the devoted communications and dissemination efforts.

Table 1 – Landscape of Collection Holders

1. DIRECT CONTRIBUTORS

1.1 Public scientific institutions	- Natural history museums - Botanic gardens - Universities - Biodiversity research centres
1.2 Private institutions	- Private collections
1.3 Individuals	- Collection workforces (curators, technicians, etc.) - Citizen scientists - Crowd-sourcing initiatives
1.4 Affiliated communities	- CETAF - DiSSCo - GBIF - GEOSS / GEO BON - Thematic networks

2. INDIRECT CONTRIBUTORS

2.1	Industry	- Companies in the fields of digitisation, data capture and storage, data interoperability, etc.
2.2	Governmental agents	- ESFRI delegates - National Contact Points - Funding agencies - European Union institutions and agencies - UN bodies
2.3	Societal bodies	- Media - NGOs - General public
2.4a	Other related groups at a different scale	- International continental groups and organisations (i.e. iDigBio, CRIA, Atlas of Living Australia, Flora of China – Chinese Academy of Sciences, Russian Academy of Sciences, etc.) - Other Research Infrastructures dealing with large-scale digitisation
2.4b	Other related groups in different domains	- Relevant agents in the cultural heritage sector

4.2.2 MEANS

To that end, the C&D Plan will provide the partners with the most adequate environment to address those targeted audiences. Therefore, it will

- develop engagement **tools** to promote project activities towards stakeholders and potential users of the new DiSSCo RI,
- **create a space** for stakeholders to be engaged and to network, where learning processes take place and best practices are exchanged,
- generate and maintain a fluid **exchange** and a permanent feedback of information between the ICEDIG partnership and its related external actors,
- **disseminate** the main outcomes of the project to all its relevant agents, and
- set up the mechanisms beyond the project lifetime as to ensure the **access and re-use of its outcomes** for the benefit of science and society.

ENGAGEMENT BY MEANS OF:

Creating a collaborative environment

Disseminating results widely

05 MANAGEMENT OF THE COMMUNICATION AND DISSEMINATION PLAN



The C&D Plan falls under the responsibility of the WP9 Leader. The first draft was presented at ICEDIG Kick-Off Meeting (held 15-16 January 2018 in Montpellier, France). It was then reasserted with the comments and contributions of all the partners.

Despite the overall responsibility of the WP9 Leader, the Internal Communication builds on top of certain tasks and is supported by several platforms and means that are to be carried out under Task T1.2 Internal Communication, led by WP1 Leader, the University of Helsinki (“UH”, Coordinator and Leader of WP1), namely, the Working platform (Teamwork.com) to facilitate the uninhibited flows of information among partners, the design of visual identity of the project (including the ICEDIG logo) and setting up of the project website. More detailed description of those means is provided in Section 7.1 below.

All those previous means will have to be in place and operational by Month three of the project (M3)³ as per the agreed Gantt Chart of the Project.

Once presented and discussed at the ICEDIG Kick-Off Meeting, the WP9 Leader has revised the C&D Plan and formalised it as final, concluded its layout and circulated it for quality control, for submission as the DELIVERABLE D9.1 by the end of March 2018 (M3), as the planned deadline for this action.

During any all-hands meetings the C&D Plan (including the internal communication channels and procedures) will be reasserted with the aim of adjusting and enhancing it according to the evolvement of the project itself.

Progress indicators will be presented in detail in Section 11 below.

5.1 PRESENTATION

5.2 REVISION AND UPDATE

³ Hereinafter, Months of the project are referred to as “M”.

06 OPERATIONAL SPECIFICATIONS OF THE PLAN

The ICEDIG C&D Plan clearly distinguishes between **Communication** and **Dissemination**.

Communication refers to actions towards targeted audiences (either **internal**, the project partners, or **external**, such as project stakeholders) by using all available and feasible means that may lead to a better understanding, a clear perception and an effective transmission of the project content and objectives. Communication thus includes **networking activities** in a two-way approach, intended at encouraging feedback from external actors.

Dissemination incorporates all actions intended to disclose the results of ICEDIG to the broadest possible audience and the general public at large, when possible and relevant, with the aim of raising awareness on the importance of the outcomes and promote those. This will build (and secure) attachment to the project outcomes via an active and long-lasting engagement beyond the project's lifetime.

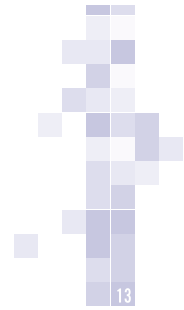
While both angles of activities dealing with the transmission of ideas are closely interrelated they need to be tackled and analysed separately.

Conveyor belt for digitisation of herbarium sheets setup by Picturae at the Botanic Garden Meise; Botanic Garden Meise, CC-BY-NC 4.0



ICEDIG Communication entails creating a better understanding and exchange to targeted audiences

ICEDIG dissemination unveils project results with the aim of maximising impact and reach



Institut National pour l'Etude Agronomique du Congo Belge
HERBIER DE JEAN LOUIS
 N° 16100.

Date: Février 1939.
 Localité: Matila (Bambole) vallée de la Lobaga
 Altitude: ± 470 m.
 Formation: Sous-bois forêt primitive hétérogène.

Noms vernaculaires: "L'AMARA".
 (dia. Tumbou).

Observations:
 Limbe de la corolle en poche, formant
 de nombreux creux. Fleurs blanches odorantes.

Famille: RUBIACEAE.
 Nom botanique:
 Déterminavit:

Horti Bot. Nat. Belg.

 BR000014978346

Agelaea paradoxa Gilg
 var *microcarpa* Jonglund
 par C. Jonglund 1938
 Herbarium Vadenae (WAG)

HERBARIUM HORTI BOTANICI BRUXELLENSIS
 (BELGIUM)

Castanopsis paradoxa (Gilg) Schott
 Déterminavit: L. Rousselot
 Loui 16100
 1939

Vid. Rousselot 1939

Herbarium sheet,
 Botanic Garden Meise,
 CC-BY-NC 4.0



07 COMMUNICATION IN ICEDIG

Starting with **Communication**, this C&D Plan differentiates between various kinds of communicating and networking actions depending on the nature of the content to transmit, which audiences are being addressed and what kind of interaction is deemed necessary to ensure the impact of the project.

In that respect, there are **three communication pillars** that ICEDIG C&D Plan focuses on:

- internal communication,
- external communication, and
- stakeholder engagement and networking.

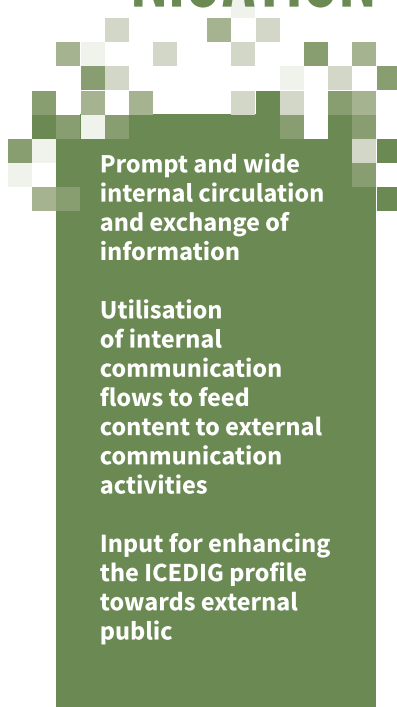
Internal communication applies to the exchange of information and communication within the project and between project participants, while **external communication** refers to reaching out to the various targeted audiences that the project is addressing. Furthermore, **stakeholder engagement** and networking is about including a targeted community into a reciprocal discussion about a) the role of ICEDIG, its concept, purposes and achievement processes and b) about the capacities, future enhancements and possible drivers that may lead the innovation phase of DiSSCo. This includes events, where exchange of positions, views and information can be facilitated, and consultation processes intended at obtaining targeted feedback. All of them contain some overlap to a certain degree. That is why it is important to describe the domains of activity separately, each with their own proper tools, as to ensure that the final communication objectives are met with respect to the overall project framework.

The significance of internal communication for the ICEDIG C&D Plan lies in its relation to the other pillars. In order for the external communication channels to report on project developments, progress of achievements, and/or accomplishment of objectives, internal exchanges need to be transmitted diligently to the operators of the ICEDIG news outlets. In other words, activities within **internal project communications serve as a tool for external communication** and will support efficient delivery of messages to the audiences. Internal communication tasks (T1.2) and thus the development of the internal communication tools is led by the University of Helsinki (“UH”, Coordinator and Leader of WP1).

7.1 INTERNAL COMMUNICATION

7.1.1 ACTIVITIES

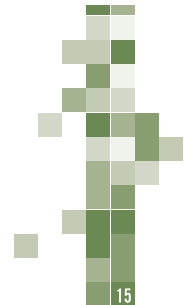
- ▶ ICEDIG partners will be engaged with each other by **instantaneous circulation and exchange of information** on the collaborative platform set up for this purpose, through online messaging across the partnership and, when necessary, through targeted messaging to subgroups within the partnership. To facilitate this exchange of information each partner will designate, apart from its legal and project representatives, a contact person for each task it is involved with. Additional steps will be taken (see 7.1.2).
- ▶ Internal communication, when referring to messages and news (whatever nature they have; announcements, presentations, etc.) that are to be published for informing the general public (including targeted audiences), serves to **facilitate efficient and effective external communication**. To that end, the ICEDIG Executive Board, which consists of WP Leaders and Stream Coordinators, will be tasked with regularly compiling and identifying the relevant information that WP9 Leader (i.e. CETAF) needs to transmit and communicate externally.



Prompt and wide internal circulation and exchange of information

Utilisation of internal communication flows to feed content to external communication activities

Input for enhancing the ICEDIG profile towards external public



- ▶ Moreover, the other 8 WP Leaders (WP1-WP8) will be engaged in informing CETAF on the progress made in their respective work packages at any time when this is considered relevant for **enhancing the external profile of ICEDIG** so that all outputs and newsworthy events can be communicated promptly and regularly. If necessary, WP Leaders, other than of WP9, will designate a contact person to act as liaison and rapporteur towards the WP9 Leader in regards to communication activities.

7.1.2 TOOLS

Several mechanisms and means are to be implemented (under the responsibility of WP1 Leader) to enable an effective use of internal communication channels.

a) Working platform

Teamwork.com has been selected as the supporting **project management platform**. This choice was made because the same platform is also being used for the DiSSCo initiative, which will facilitate sharing of the ICEDIG outputs to DiSSCo, also beyond the ICEDIG project. Corresponding user privileges and online profiles will be given to all partners. This platform will gather the internal communication processes, including message exchanges, upload of documentation, deadlines establishment, milestones fixing, and internal assignment of tasks and duties. By integrating ICEDIG as a project under this management platform, the project is directly linked to the DiSSCo RI that encompasses all its related initiatives and also uses Teamwork.com to communicate internally. Establishing this Internal Communication Platform is due at M1, and responsibility of the Partner UH.

- ▶ Adequate **online messaging** services (on individual or group basis) included in the Teamwork.com platform will be used by involved participants. Those lists will be updated regularly. The lists differentiate between project members and their roles, so that messages can be sent automatically to groups, such as Work Package Leaders, Task Leaders, and Finance Administrators, Legal Administrators, etc.
- ▶ The lists will be created as early as possible in the beginning of the project, and will be either i) of general purpose, or ii) at group level (Work Package and/or coordination stream and/or others as agreed during the project). The first one, namely the general ICEDIG mailing list, will be in place by the starting of the project (M1).

b) ICEDIG project design

The logo for ICEDIG and the full graphic identity linked to the project (a graphic charter including different formats, colour scheme, typography etc.) will be developed in wide consultation across the project. The design narrative of the logo will allow the partners to use it in each and every communication activity, both internal and external. A set of templates for general documentation, such as letters, drafts, reports, surveys and deliverables, will be developed as well and provided to partners.

c) ICEDIG website

The progress of the project will be visualized on the ICEDIG website whose basic parameters are to be built on platforms and CMS systems (such as Drupal, WordPress or Joomla). The final decision on this will be taken by WP1 Leader and subsequently communicated to WP9 Leader



who will organise day-to-day updates. All Partners will be responsible for providing content. Different profiles with their corresponding privileges will be set up and assigned to different people involved in ICEDIG, as to facilitate the permanent upload of ICEDIG relevant information in the website and ensure its up-to-date content.

d) Partner progress meetings

Regarding more direct exchanges, to facilitate inter-project communications and encourage the exchange of information relevant for the communication project leader, UH as WP1 Leader, set up the ICEDIG Kick-off meeting (15-16 January 2018, in Montpellier, France).

It has been agreed to organise teleconferences of the Project Streams every fortnight. The use of a teleconference platform is being planned for this.

e) All-hands meetings

The ICEDIG project will hold All-Hands meetings every six months. These are working meetings for all project staff and selected external visitors that typically last whole week. Besides being occasions where project outputs are prepared in intense collaboration and open discussion, these meetings will be instrumental in intensifying internal communication also beyond the All-Hands event.

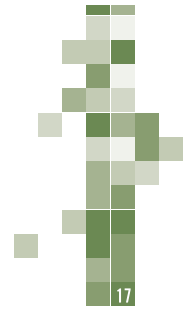
7.2 EXTERNAL COMMUNIC- ATION

One of the primary objectives of ICEDIG focuses on building up (and sustain in the longer term) a close relationship with targeted audiences and stakeholders to the project. They need to be involved in its development and further engaged in its evolution, to ensure that all relevant actors participate in the co-creation of a bottom-up mechanism that facilitates the innovation process in any topics related to the new RI DiSSCo. Technological innovation, efficient deployment and harmonized and collaborative infrastructure development shall be critical for the success of DiSSCo as a distributed system of collection data in the natural science domain. Therefore, potential innovators working in closely related fields such as optics, robotics, artificial intelligence, geo-localisation, imaging, lab instruments, data storage and many others are to be closely engaged in ICEDIG and thus constitute the primary **targeted external audiences of ICEDIG**.

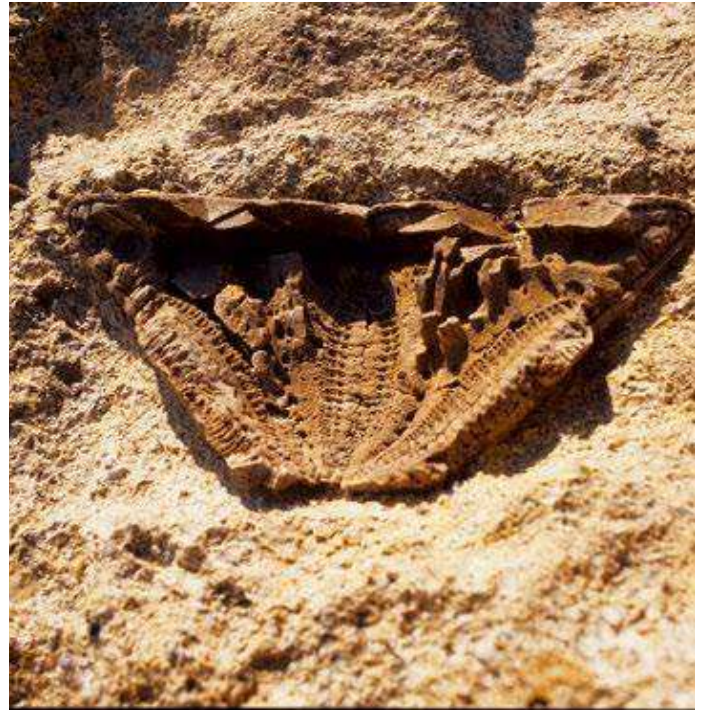
External Communication activities will be then specifically devoted to achieve several final objectives:

- To attract relevant stakeholders to participate in ICEDIG as external sources of information and discussion actors
- To further engage them in development tasks
- To obtain their commitment, when feasible, to contribute (in any manner or extent) to the implementation phase of DiSSCo

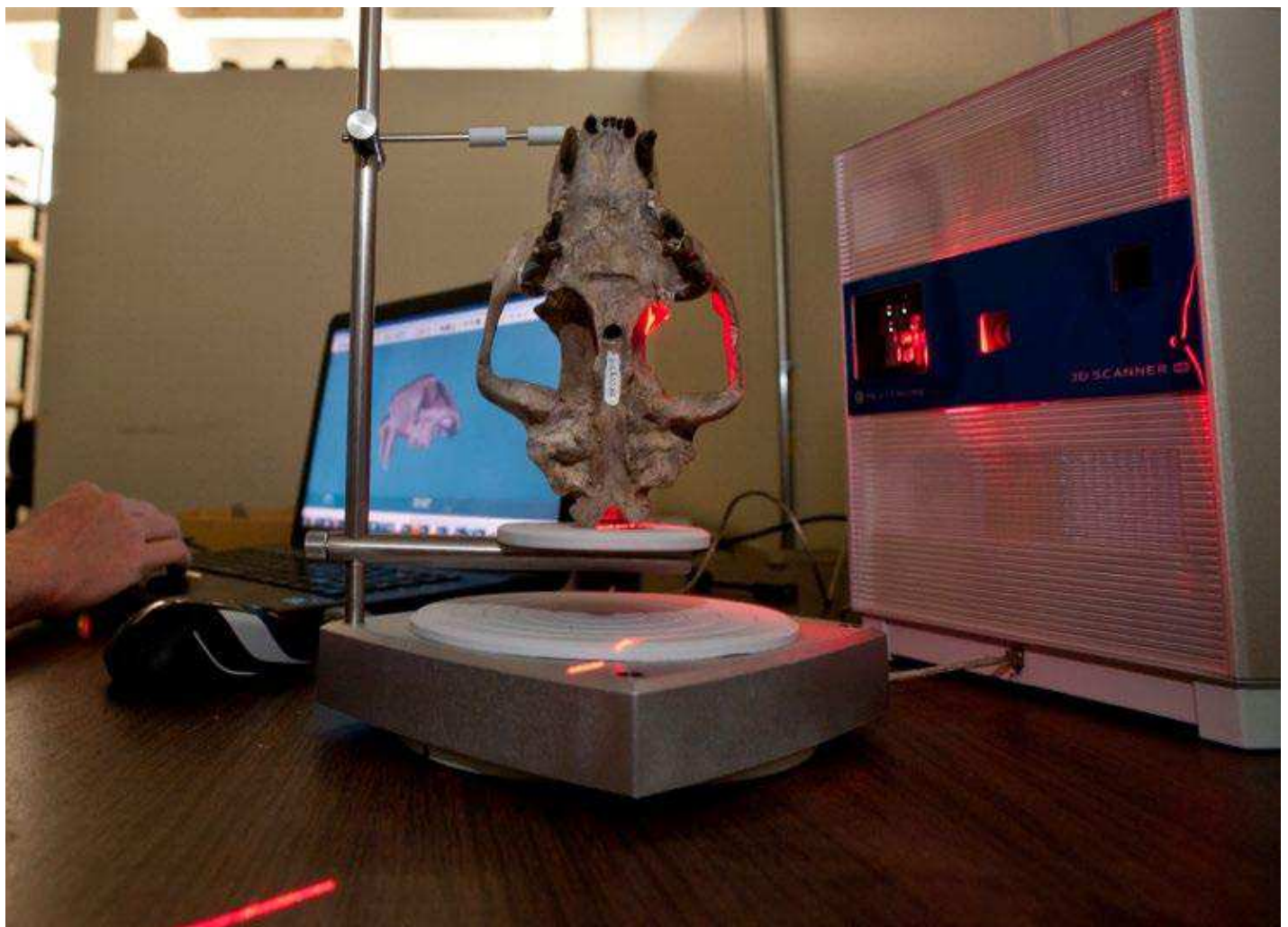
Within the external communication endeavour, several tasks and activities have been identified as indicated below.



Vertically sectioned capsule
of an irregular fossil
of Echinoid, *Clypeaster* sp.,
© NHMC @ Trichas, A.



3D-Scan of a 34-million-year-old extinct
species from Nebraska closely related to
cats, Photo courtesy of the Florida Museum



7.2.1 ACTIVITIES

At a primary level, external communication efforts for public outreach occur through the **operation of online communication platforms**.

- ▶ For the duration of the project, the designated CETAF online content manager for ICEDIG will be **operating the ICEDIG website** with essential information containing project description, vision, mission, principles, objectives and up-to-date news and events. This will be executed on a regular basis in accordance with events occurring throughout the project period and relating to the progress of any of the WPs. Moreover, a number of dissemination output documents will also be uploaded on the designated dissemination sections of the website (cf. 7.2.2b).
- ▶ The CETAF online content manager will be in charge of **managing all social media channels** by keeping it alive and updated with the latest developments and news coming out of and/or related to the project. Moreover, the manager shall encourage the rest of partners to share as many communication inputs as relevant and to spread the initial messages through their own institutional/private accounts, as to exponentially increase the impact of each single publishing action.
- ▶ Much of the news will be provided by the different WP leaders to CETAF as the online content manager as they possess the most up-to-date information and are themselves the closest to any developments that occur within their own work package. This kind of internal-to-external communication mechanism of project developments will remain a task of great significance for the WP Leaders as they are the gatekeepers of news between on-the-ground activities and CETAF as WP9 Leader. This also implies that the leaders (and if such were the case, the stream coordinators as well) shall transmit accurately and promptly to CETAF any detailed information coming out from ICEDIG bodies where they may participate, in order that news can be generated and published in a timely manner.
- ▶ In connection to the demands for ICEDIG events and other outreach efforts, promotional material and press releases will be produced to support the key messages of the project. All these material will form a “communication toolkit” including ICEDIG presentation, flyer, concept note, press releases (for general release) and/or posters, that each partner may use when attending any related event and/or acting as representative on behalf of ICEDIG. Said toolkit will be uploaded at the ICEDIG website and updated when necessary. However, to avoid any delayed or missing information, the designated people (as identified in Section 7.1.1 above) from each WP will be entitled to upload news and events as soon as they are known.
 - Information update on the ICEDIG website will be made regularly when news need to be made public and at least once a month.
 - When necessary, for crucial and engaging activities, the publishing of news on the website will be also reinforced with specific topic-related e-mails addressed to targeted audiences and involved parties.
- ▶ External communication will also entail the **organising of events for engagement purposes**. This activity is explained in more detail in Section 7.2.2c and 7.3 below when referring to stakeholder engagement and networking.

Channelling
information from
internal fora to
external outlets

Managing
the online
communication
platforms of
ICEDIG: project
website and social
media channels

Providing a
communication
toolkit to
accentuate the
profile of ICEDIG

Organising events
for engagement
purposes

7.2.2 TOOLS

Some of the tools to be used have already been mentioned in Section 7.1.2. Here, they will be explained in detail.

a) ICEDIG visual identity

The visual identity of the project remains the responsibility of the WP1 Leader, as ICEDIG Coordinator and Task T1.2 Leader, and includes the design of the logo of the project and the rationale behind its design, as well as the visual identity via a graphic charter, which will be developed by the UH. As per the Gantt Chart, this task shall be concluded by M2, when the ICEDIG website will go online (Milestone 58 of the project, MS58)⁴.

b) Communication platforms

ICEDIG WEBSITE

Though already indicated as a tool for internal communication, the ICEDIG website is primarily understood as the **key and essential means on which to build the communication** of the project to external parties. The ICEDIG project website will be created at the start of the project (available online at M2).

- ▶ The technical set-up, maintenance and support will be organised by the UH as the Leader of WP1 and technically provided by the Partner NHM on the same server and Drupal content management platform which is also being used by the DiSSCo initiative. The website will be designed in an **attractive and user-friendly** way and will need to serve the needs of all partners.
- ▶ The main part of this website will feature **essential project information** illustrating the description of the project, with emphasis on its purpose as the design study for the DiSSCo innovation phase. Moreover, sections on the website will be dedicated to the organisational structure of the partnership as well as the objectives and activities. As outcomes become available, same as for articles and other reports, they may be published to highlight the project's progress as all WPs will create web documents illustrating the proposed technical designs (WP3 - WP6) and policy issues (WP2, WP7). As one of the main and crucial outcomes of the project, one section will be dedicated specifically to policy-related outputs (WP7 Policy and legal aspects, led by NHM) for the development of the common research agenda of the community engaged in DiSSCo.
- ▶ News, events and updated information will be provided by the partners (under WP1 to 8) to nourish this online platform, and collated, filtered and published by the WP9 Leader, as to maintain the usability and relevance of the website at a high standard. A prompt and continuous flow of information and exchange between the participants of the project to supply the CETAF website content manager with material for the website is essential for the functioning of the external and internal communication activities.
- ▶ All materials will be published in a **timely manner** and updates will be made on a **regular basis**.

Impactful visual identity

Lively project website and social media platforms

Instrumental conferences, workshops and Roundtables

Active participation at external events

Appealing promotional material

⁴ Hereinafter, milestones of the project are referred to as "MS".

SOCIAL MEDIA ACCOUNTS

Specific channels as social media outlets can operate to engage a broader public. Accounts will be opened for the ICEDIG project on **Twitter and Facebook** and messages will be regularly placed on both although Twitter is considered to be more effective.

- ▶ The existing audiences of the partners' social media channels (e.g. CETAF, DiSSCo, partner institutions etc.) will be called upon to view and share the content produced by the ICEDIG social media and thus contribute to its greater impact.

c) Events

Under events, different actions will be considered, either as directly organized and sponsored by ICEDIG or organized externally to the project but still closely linked to its objectives. Among the first category, ICEDIG will **organize Conferences and organize Roundtables:**

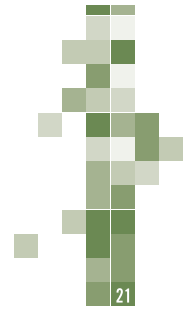
CONFERENCES

Two (2) conferences will be organised as a nexus for the communication and engagement activities within the ICEDIG project:

An **Opening Conference** in Helsinki, Finland (scheduled for 5-6 March 2018 – M3) will serve as an important communication and engagement tool for the ICEDIG project.

- ▶ Its main objective will be to obtain the necessary commitment of the attendees to feed into the project, and to gain general recognition for the project purpose from European and international stakeholders.
- ▶ Therefore, targeted audiences, apart from project participants and experts on the matter, will be invited to join and discuss the project and its implications as well as its capacities to support the DiSSCo innovation phase. Moreover, the potential to add the necessary technological and methodological advances to the design in order to provide the required digitisation services to the research community, will also be part of that discussion, alongside conversations regarding the broadening of the digitisation endeavour with the help of a multidisciplinary approach.
- ▶ For this conference, international engagement will be pursued with global actors as well, in line with Task T7.3 International Convergence. A connection will also be established with the Digital Humanities in the Nordic Countries (Task T9.4: Link with Cultural Heritage) considering that their 3rd Conference on Digital Humanities in the Nordic Countries will take place in Helsinki, Finland, right after the ICEDIG Opening Conference on 7-9 March 2018, organized by the Helsinki Centre for Digital Humanities focusing on Open Science and extending the scope of digital humanities research. An abstract for presenting ICEDIG at the Conference through a series of talks in a dedicated symposium has already been submitted under the title "Linking digitisation efforts of humanities and natural sciences".

A **Closing Conference** (scheduled for February 2020 - M26) at the final stage of the project will also be held so that complementary dissemination information about the project's achievements will be communicated to the community of audiences.



- ▶ This last conference will focus on the longer-term sustainability of the project and the further development of the products and results produced by the project. The expected undertaking by CETAF to give due coverage and continuity to the project will also be stressed.
- ▶ Potentially linked initiatives will be analysed as to check if ICEDIG follow-up projects would be feasible under new EU funding calls in the upcoming European Commission Framework Programme- FP9 (following H2020).
- ▶ All the participants who were involved in the project will be invited to join this conference. This will not only ensure a fruitful conference but will also offer the opportunity to strengthen relationships and as such securing longer-term involvement of stakeholders in the utilisation of the ICEDIG results via DiSSCo.

ROUNDTABLES

In addition to the Conferences addressing a more general public in raising awareness on the relevance of ICEDIG developments and to ensure the commitment and engagement of external stakeholders to the project results, the C&D Plan of ICEDIG considers the organisation of **seven (7) Roundtables (“RTs”)** throughout the duration of the project.

In fact, those RTs are considered an important cornerstone of the external communication tools. Apart from engaging stakeholders directly to obtain their valuable input due to their valued expertise (see Section 7.3 on stakeholder engagement and networking), they will offer the opportunity to project participants to receive advice from and inform the external related audience about several thematic aspects of ICEDIG. It is a face-to-face event where direct interaction between audience and project organisers will be central as to allow external communication of the project to receive immediate feedback. A Roundtable event would gather 4-6 external experts of selected topics and a number of ICEDIG staff into a workshop of 1-3 days to explore the state-of-art and perspectives for possible future developments of subjects such as 3D imaging, robotics, citizens' role in digitisation, etc.

- ▶ These discussion fora will be held, in different scenarios, **every three months** (beginning in M5), around specific topics of crucial weight in the project development.
- ▶ Each **topic** shall be agreed upon at the ICEDIG governing body and shall be communicated to the WP9 contact person as soon as possible but at least six months in advance (with the exception of RT1 in M5) before it takes place.

EXTERNAL EVENTS

In regard to other external events, ICEDIG may either attend them directly through its partnership or by means of designated representatives (virtual or physical), or participate with presentations, posters, joint booths, etc. if deemed beneficial for the project's success.

They offer ICEDIG a platform to promote the project to third parties. See Sections 7.2.2c and 7.3 on activities in stakeholder engagement and networking for more details about external events.

d) Promotional material

In support of the abovementioned events, promotional material such as flyers and posters will be produced by ICEDIG. A set of “press releases” will also be prepared ready to use by ICEDIG partners.

- 1) **Flyer:** to present the ICEDIG project at a glance, in a very simplified and visual manner. It will be distributed among the partners for internal use, and will be handed over to external participants at any event where ICEDIG will be present.
- 2) **Poster:** as an alternative layout of the flyer, with a more detailed explanation of certain features of the project, the poster will be distributed among the Partners to make internal publicity (at their own institutions) and used at any event where ICEDIG might be present.
- 3) **Press release:** a set of press releases, basically reflecting the concept, objectives, progress and impact of the project, will be prepared by WP9 and sent to partners for internal promotion, and to media for external communication. Regarding the latter, project partners will be asked to exploit their special relationship with local, regional and national media to increase impact. In practice this will mean that they will be sent out to those media contacts by the partners themselves, rather than by WP9 Leader.



Rock-dwelling Tulip,
Tulipa saxatilis,
© NHMC @ Trichas, A.

The ICEDIG project foresees a number of **engagement activities** that are related to different work packages, i.e. WPs 2, 5, 8 and 9). They will determine the social feasibility of the new proposed RI DiSSCo and involve related agents in the design of an effective and efficient technical platform that may serve the goals of DiSSCo in relation to i) digitisation efforts, prioritization, innovative solutions, mass digitisation processes, and application to new technologies to speed up, enlarge and enrich the digitisation process as well as ii) better storage of the resulting data and facilitation of its access and use. The activities in this regard cannot be limited to simply communicating the findings, as **extensive networking actions, outreach and engagement** of the community, and **dialogue among all stakeholders** will be necessary to inform and therefore improve said findings.

The reasoning behind this alludes to ensuring that the design produced by ICEDIG shall render **maximum acceptance from users** and needs to be **widely perceived as valuable by stakeholders**. A lack in this regard would be harmful to the design and construction of the DiSSCo and will impede the successful achievement of ICEDIG's objectives. By maintaining a transversal approach to engagement, the whole value chain of the DiSSCo RI will be targeted, ranging from the custodians of the objects, to the facilitators of the research system on different levels (funding agencies, technology suppliers, industry, policy makers) and the people to deploy the work wherever they are allocated (museums, NGOs, citizen scientists, scientific organisations etc.). All of these stakeholders will have a voice in a feedback loop which, in turn, will nourish an iterative process containing their approaches and contributions to sustain the feasibility of the project, technically and conceptually.

7.3.1 GUIDING PRINCIPLES

The following guidelines will underpin the engagement activities to be undertaken:

a) Acknowledgement of current landscape to identify driving forces

Engagement will be based on strong foundations by identifying and categorizing all potential actors that may play a role in establishing the **state-of-the-art of the stakeholder landscape** relevant for ICEDIG. This implies that

- ▶ WP9 Leader, CETAF, will request a list of stakeholders to be compiled – by May 2018 (M5) – from the partners that includes the most **important related organisations** and related international networks with the names of representatives, the legal status of the organisation, its contact information, their point of connection to ICEDIG matters, and other information necessary to complete the mapping exercise.
- ▶ Once identified, they will be subsequently categorised according to their position in the stakeholder landscape in reference to ICEDIG. Characteristics such as their domain of activity and legal status will thus be relevant to this exercise. Their level of potential engagement in ICEDIG in relation to their level of expertise beneficial to ICEDIG will also be analysed. The result of this effort will generate a strategic map of this landscape, an **engagement matrix**. This will inform methods and efforts towards each category represented in the matrix.

7.3 STAKEHOLDER ENGAGEMENT AND NETWORKING

Interactive participation to co-create solid foundations

Attaining wide acceptance of the value of the RI among the community of users

Identification of players and interphases

Cross-pollination between the project and related actors

Building on endorsed frameworks

Mutually beneficial interaction scenarios

From linear information flows to circular feedback loops

b) Co-creation

By **promoting the discussion from the start**, the innovation process that is characteristic for ICEDIG will be able to benefit from input and ideas that can be implemented as the project progresses, and not at the final stages of the whole endeavour. From very early on during the project, stakeholders, including those that operate beyond the scope of the project but that could still contribute for a broader and more multidisciplinary approach, will be invited to join the conversation. The end-users and stakeholders of DiSSCo at large, and specifically, of the digitisation of natural science collections, will be inquired about their existing and potentially developed solutions to present concerns and needs as they experience them first hand. The intention will be to provide a wide range of practical use cases to nourish the innovation process that ICEDIG may provide to DiSSCo. The co-creation process becomes crucial to foresee potential problems, obstacles and opportunities that may occur during the project and not in hindsight.

c) Reference to existing frameworks for action, harmonised policies and collective endorsement of protocols

In its efforts to deploy the ICEDIG approach to stakeholder engagement, several European frameworks that underpin societal challenges will be always present. The **Responsible Research and Innovation (RRI)**, as stipulated by the European Commission, the **FAIR principles** for findable, accessible, interoperable and reusable data, among others, will be at the core of all discussions held with stakeholders and will be raised as drivers of the innovation process. Furthermore, the vision of the **European Open Science Cloud (EOSC)** will be also a compelling scenario that ICEDIG will be working towards. All those frameworks have already be endorsed by the community via CETAF and DiSSCo.

d) Efficient interaction

Given that targeted audiences are diverse and might be placed outside the domain of natural sciences, a strong effort will have to be devoted to engaging the stakeholders and, specifically, the private domain that could push innovation on digitisation. To respect their position, level of involvement and potential time constraints, ICEDIG seeks to implement two principles when engaging stakeholders. First, the aim of ICEDIG is to **maximise the opportunity out of a single interaction**. Questionnaires and interviews will be clustered to avoid multiple and consecutive survey participation and therefore increase response rates. Secondly, CETAF as WP9 Leader will **ensure that stakeholders will benefit equally from their participation** in roundtable events and surveys. In order for both parties to benefit from engagement encounters, a two-way flow of useful information will be deployed (see Guiding Principle (e) below). It provides a win-win scenario for both project community and stakeholders.

e) Steady exchange of information

The importance of engaging with stakeholders is to **induce stable information flows** from which the project partners can draw the necessary knowledge and information. These could emerge as iterative processes evolving to feedback loops via a mutual exchange of information that feed into the building and planning ventures that ICEDIG aims to install. This guarantees that the stakeholders, and major industrial partners in particular, will have actual influence on the outcome of the project by providing input through consultations, the roundtable events and via the organised conferences.

7.3.2 ACTIVITIES

The pursuit for the comprehensive engagement of ICEDIG stakeholders will be sought on two fronts. On the one hand, the project participants will be connecting to the community of stakeholders by being present on platforms for interaction and dialogue (section A). On the other hand, in-depth insight into the needs and demands of the ICEDIG practitioner community will be obtained through thorough inquiry (see (b) below) into the domains that the ICEDIG design study seeks to tackle. The general aim of this stakeholder engagement will engender greater acceptance by the end-user community of DiSSCo RI and a direct engagement of stakeholders in its support and development.

a) Dialogue with the community

Engaging in a constructive conversation with the stakeholders will primarily occur through the following:

- ▶ **Organisation of the opening and closing conferences.** Both internal and external stakeholders to the project will be invited to join the event so that a variety of visions and perspectives are heard in regards to the variety of topics covered by ICEDIG. See Section 7.2.2c above for detailed description of those two events.
- ▶ **Participation of partners at events of external stakeholders** (see **Annex 1 - Preliminary list of relevant events**) as a form of being entrenched in a broader set of activities outside the project. Such participation will also be a channel to acquire input to help envision and work on ICEDIG itself.
 - **Permanent updates to the event agenda** at the ICEDIG website will be made throughout the project period.
 - Project participants will be encouraged **periodically to channel knowledge** about events to WP9 Leader, CETAF, as to be published in this agenda.
- ▶ **Maintenance of a permanent flow of information.** ICEDIG partners are committed to always share news and new developments from their engagement with stakeholders as to ensure that all work packages are well aware of any new elements and progress in the various operations of the different work packages.
- ▶ **Contribution to capacity building.** Input from stakeholders about new developments can feed into capacity building by acquiring and channelling the information that will contribute to innovations. Furthermore, targeted (partner) organisations will have to ensure that surveys are made widely available internally and policies are further developed as to provide adequate skills and abilities to successfully address the digitisation processes and data accessibility envisioned in DiSSCo.
- ▶ **Interrelation with global organizations for expanding level of scope.** ICEDIG and DiSSCo need to position their role among other related European and global research infrastructures (such as LifeWatch, GBIF, GEO BON, CoL, EoL, BHL, etc.), build on the services of already existing and planned infrastructures (such as EUDAT, EGI, Zenodo, etc.), and closely follow the ESFRI process. This requires intensive liaising in many directions. Needs for innovation and consolidation determined in this liaising process will be channelled to ICEDIG work mainly by the Stream Coordinators and under the Task T9.5 – Liaising with the Research Infrastructure Landscape

Foster dialogue and interaction

Create long-lasting connections

Integrate design features into a global structure

b) Open consultations with related actors

Acquiring insight into the various aspects of the ICEDIG design study will require **consulting with the end-user community of DiSSCo and other related actors** to the ICEDIG initiative. The end-user community primarily refers to the set of direct contributors in the broader network of collection holders as described in Section 2 above. It also refers to the associations and industrial players who will play a role in the digitisation process of natural science collections for a broad range of purposes, either as service providers, innovators or infrastructure supporters. To operate such consultation the following aspects will be tackled:

A number of **thematic questionnaires** (see **Annex 2 - List of project tasks involving consultation through questionnaires**) are required to cover various aspects of the project. Following the identified guiding principle (b) on co-creation, it is of great significance that the end-users are involved from early on in the process since they have hands-on experience and on-the-ground knowledge. They are in a good position to gauge what effect changes to the underlying principles of collection work might have on their life, working profile, etc. Exploitation of this knowledge will contribute to the final “blueprint” survey (Deliverable D8.1).

7.3.3 TOOLS

a) Surveys

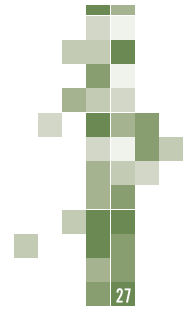
The consultations will be done through surveys. During the ICEDIG kick-off meeting it was decided that questionnaires should be avoided as much as possible since experience shows that response rates and motivation to participate in those are relatively low. They will be replaced where possible by exploiting previous surveys or more targeted measures, such as **interviews**. Where still necessary, questionnaires should be clustered which will enable efficient coordination of timing and quantity of questionnaires to be sent out to respondents. All questionnaires will also be subjected to the General Data Protection Regulation (GDPR) (Regulation (EU) 2016/679), which will ensure that all data gathered from ICEDIG respondents will comply with personal data protection regulations.

- ▶ Prior to sending out the **questionnaires**, information will be gathered by the various task leaders, as listed in **Annex 2**, to set up the consultation in the light of reducing the number of interactions and improve the effectiveness of this effort.
- ▶ An **online survey platform** (e.g. SurveyMonkey) will be used to distribute, gather responses and process those responses.
- ▶ Every Task Leader will be responsible for creating **mailing lists** and transmitting them to CETAF for inclusion in the survey respondents’ pool.

Enquiring stakeholders through surveys

Discussing project themes face-to-face

Holding joint workshops with practitioners



b) Roundtables

The aim of the Roundtables (RTs) is primarily to **exchange insights and address concerns** that are related to the design of a digitising facility between different stakeholders. Another reason is that they **facilitate and identify feedback** with regard to the intermediate products obtained from the other work packages.

Adhering to the guiding principles (b) and (d) identified in Section 7.3.1, the RTs are an opportunity of in-depth face-to-face exchanges with stakeholders, therefore guaranteeing a very efficient interaction. Furthermore, the Roundtables induce the development of an adequate channel for the exchange of information (guiding principle (5)), be it virtual, such as social media, blogs or forums, or physical presence by means of open consultations, interviews or questionnaires on specific topics.

- ▶ For the **organisation of each of the seven Roundtables planned**, several steps shall be taken and certain formalities shall be fulfilled:
 - WP Leaders under whose WP one or more RTs will be conducted will communicate the general outline of their Roundtable proposal well in advance, and before a set deadline to WP9, including the time and place of the event. The proposal form is included in annex to the Communication and Dissemination Plan (see **Annex 3 – Roundtable Proposal Form**)
 - The Roundtables will all be co-organised by WP9 Leader CETAF along with the host and Roundtable proposer as well as any other related WP Leader, forming the so called Roundtables organisation team (RTO team) who will be responsible of the content, the speakers' selection and the drafting of the agenda.
- ▶ The **RT host** is responsible for providing meeting space and catering and informing on relevant logistics, so WP9 Leader may start communicating and organizing the RT.
- ▶ The participants will be **selected by the RTO Team** comprising the WP Leaders involved (or their designated representatives), the host Institution representative (if different from the previous) and CETAF, acting as co-organizer. Participating parties involve stakeholders, e.g. key technology holders as well as providers and users of the data for the DiSSCo RI on the one hand and relevant ICEDIG work package partners on the other to determine details of the design.
- ▶ Every Roundtable will appoint a **note taker** to produce minutes of the discussion being held and a **rappporteur** to voice conclusions and produce a report based on these minutes. Those two roles are to be designated by the organising team.
- ▶ The **resulting report** will then be sent to CETAF no later than four weeks after the RT and will form part of **Deliverable D9.3 – Stakeholder Roundtables**, the report on the Roundtable results.

Engagement with the involved agents through the organisation of Roundtable events can render an enduring, lively and fluent contact which will involve a discussion on the various key aspects of the ICEDIG project WPs (see **Annex 4 – Preliminary list of potential topics**).

c) Workshops

Some tasks will require **additional workshops** to meet certain ends. These are foreseen under Task T7.2 Development of a Common Digital Research Agenda to establish a consensus on the **digital research agenda** across the institutions of ICEDIG, CETAF and DiSSCo (lead by Plazi), and under Task T6.2 Requirement Analysis for DiSSCo Data infrastructure regarding the data management plan (NHM leads and is responsible) to discuss the outcome of the survey on the technical requirements of scientists and other users to digital specimen data.

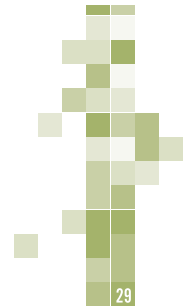
- ▶ There is a series of Workshops planned :
 - To ensure broadest participation and involve both members of CETAF and DiSSCo, to leverage on CETAF promotional efforts and to save traveling time and costs, these workshops will be held in connection with the CETAF General Assemblies (CETAF44 in Bratislava, Slovakia in M10, and CETAF45 in Tartu, Estonia in M17).
 - The WP Leader driving each workshop will request the CETAF Executive Committee to include the workshop in the agenda of the General Assembly meeting.
- ▶ The sessions will be either held at the CETAF General Meeting itself or as a side event to it, depending on the topic and the level of discussions necessary.

Comparison of specimens in vouchers to an index of Lepidoptera species, Photo courtesy of the Florida Museum



Camilla flavicauda,
© Royal Belgian Institute
of Natural Sciences

08 DISSEMINATING ICEDIG OUTCOMES



The impact of ICEDIG will be delivered through the **dissemination of project results**. These will serve the DiSSCo RI innovation and construction phases and help the whole community in the domain of natural science collections to identify potential solutions in mass digitisation and data storage. For that purpose, it will be essential that these results reach their intended audiences. All thirty nine (39) ICEDIG deliverables are jointly intended to advance the state-of-the-art of digitisation of natural science collections. Furthermore, the ICEDIG outcomes should equally be instrumental for policy makers and governmental representatives, at national, European and international level, facilitating tackling these endeavours, integrating them into national research agendas and so considering the drafting of policies and strategies that ensure the feasibility of those initiatives.

Given the variety of potential beneficiaries and users of ICEDIG outcomes, circulating them shall be done:


- efficiently,
- widely promoted,
- easily-accessible, and well allocated/linked to in the right platforms, and
- presented under a ready-to-use approach and on friendly formats.

► Disseminating activities anchor in the **easy and open accessibility to results**. At the end of the project, ICEDIG will ultimately provide an overall **digitisation infrastructure “blueprint”** that will include a comprehensive conceptual design, as well as an organisational and business model proposal for the new RI DiSSCo (WP8 – Design Alternatives and Economics). Said “blueprint” will gather results from all WPs and will cover impacts of the design project itself in the innovation and construction phases of the DiSSCo RI and long term impacts when massive digitised data will become available, e.g. on the organisations hosting collections and on the practices of collections-related staff. Additionally, as an ancillary project deliverable, the **common digital research agenda** (Task T7.2) will also be made available.

► Disseminating the project outcomes also implies a **proactive distribution of its results** which will be broadly spread through the research institutions and industrial stakeholders at practical level (conceptual design, implementation process and means) as well as through other agents involved in science and society, in terms of the strategic approach envisioned by DiSSCo. It will suggest technological innovations, organisational consolidation, partnership, governance and business models needed for achieving the most efficient and effective infrastructure operation.

- The standard dissemination procedure will be by **publishing through open access articles and other published materials (e.g. news, etc.)** in order to maximise the outreach and impact of the project. CETAF is tasked with gathering news and publishing content though the ICEDIG community will play a crucial role as experts in writing articles, producing surveys and reports, channelling information themselves.
- The **dissemination of research data produced during the project will be open and publicly available**, and formalised following guidelines of the ICEDIG Data Management Plan (Deliverable D6.1 – Data Management Plan of the ICEDIG Project), publicly available at M3 of the project and led by UH, WP1 Leader. Many of these practices are in fact already customary in the biodiversity community, which has

8.1 ACTIVITIES



Proactive and broad distribution of results

Open Access publishing

Continuity of outcomes is ensured

long experience in implementing open access to electronic data since 2001 when global initiatives as GBIF became operational. Besides that, with many of its member institutions acting as signatory parties, CETAF has endorsed the Bouchout Declaration for Open Biodiversity Knowledge Management from 2014, thereby further underpinning the need to make biodiversity data openly available.

- ▶ Lastly, towards the culmination of ICEDIG, making the project outcomes accessible in the long run to **ensure both longer-term dissemination and continuity**, will be crucial. When the upcoming collections-based Research Infrastructure DiSSCo will be deployed, whichever form it may take, it will be able to build on top of the ICEDIG design study. The natural science institutions that are part of this project already have well-established experience in serving as host institutions for biodiversity and digitisation initiatives. They are therefore capable of ensuring continuity for the ICEDIG website (and long-lasting and stable access to its results) after the project has concluded. Moreover, ICEDIG can rely on the extensive networks of CETAF and DiSSCo to carry on disseminating the results beyond ICEDIG's lifetime.

8.2 TOOLS

Several tools and mechanisms will be used to disseminate and better expand the outcomes of ICEDIG:

- ▶ Maintenance, upgrading, enhancement of a lively **ICEDIG website** (as described before) where all Deliverables will be uploaded and made publicly accessible. Different webpages will be opened to cover the complete range of planned outcomes.
 - Leaders of Work Packages and Tasks are committed to provide WP9 Leader with the relevant documents.
- ▶ The **Strategic Alignment of Projects group of DiSSCo**, SAP, consists of leaders of ongoing and upcoming projects relevant to DiSSCo, such as ICEDIG, MOBILISE, SYNTHESYS, CoL+ and NaturalHeritage.be, along with other organisations such as BHL, GBIF, CETAF, and DiSSCo, together with Research Infrastructures in the environmental (as e-LTER, LIFEWATCH and others) and other domains (such as e-RIHS in social sciences, or ELIXIR in health). The coordinators of these initiatives within SAP will be able to provide updates and see how developments are progressing on each front. By being part of this group, it is ensured that ICEDIG contributes to and benefits from a maximal exchange of information at a transversal level and a correct alignment among all of them towards DiSSCo, as to promote and maximize complementarities and avoid duplicating efforts.
- ▶ Connection to the landscape of **National Contact Points** (“NCPs”) in the domain of RIs (also through the RICH project) and **DiSSCo National Task Forces** (“NTFs”) that will be managed in two separate directions:
 - Contacts of the network of NCPs and the DiSSCo NTFs will be included in the dissemination of results.
 - Attendance to meetings under the RICH project and active presence in DiSSCo NTFs meetings will allow spreading the ICEDIG results. To that end, ICEDIG will provide a **‘dissemination kiosk’** where these NCPs and NTFs can acquire the necessary news from ICEDIG project and afterwards, keep updated through the CETAF and DiSSCo platforms.

Results available
on the website

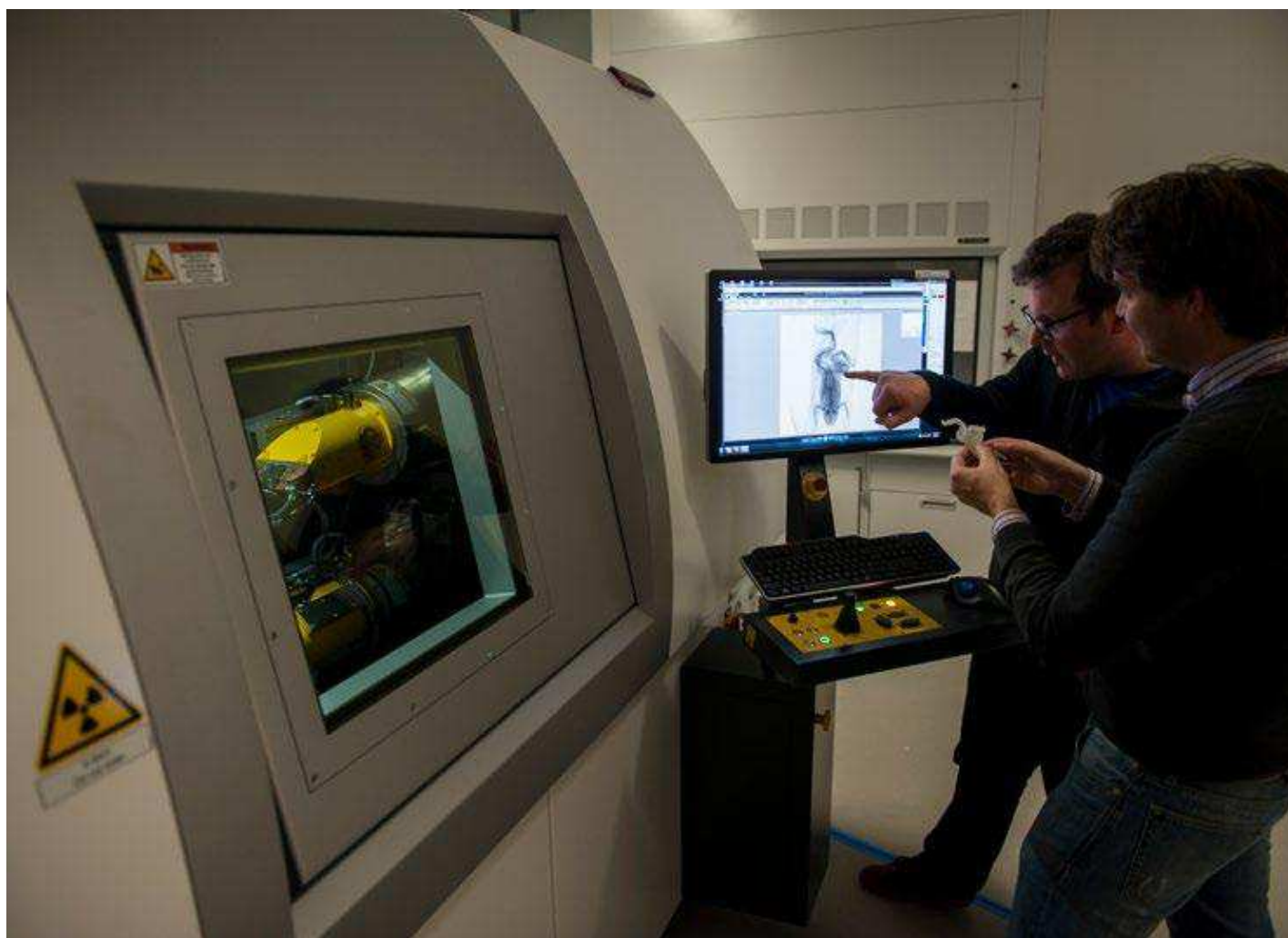
Set up of a
strategic group
for alignment of
projects

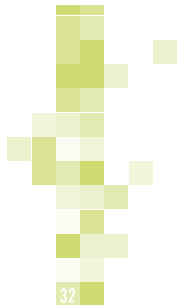
Connection to
extensive networks
within the
European research
landscape

European tree frog,
Hyla arborea,
© NHMC@Trichas, A.



Comparison of a CT scan of a frog
with a 3-D printed replica, Photo
courtesy of the Florida Museum





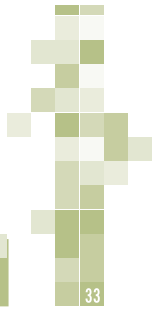
09 TIMELINE OF THE C&D PLAN

The ICEDIG C&D Plan will follow a timeline as described in Table 2 below.

Table 2 – Calendar of the ICEDIG C&D Plan

Project month	Activity
M2 February 2018	ICEDIG Website online (MS58)
M3 March 2018	5-6 March : Opening Conference (MS59), Helsinki Communication plan (D9.1)
M4 April 2018	Invitations to first Roundtable sent (MS60)
M6 June 2018	Roundtable 1: WP2 - Collection Digitisation Dashboard
M8 August 2018	Roundtable 2: WP4 - “Analogue to digital: faster better cheaper” in relation to capturing and linking data, at SPNHC/ TDWG Conference 2018 in Dunedin, New Zealand
M11 November 2018	Roundtable 3: WP3 - 3D, Robotics (tentatively)
M14 February 2019	Roundtable 4: WP6 (tentatively)
M17 May 2019	Roundtable 5: WP9 - Connection to Cultural Heritage (tentatively)
M19 July 2019	Roundtable 6: WP3 - Robotics, Warehousing (tentatively)
M23 November 2019	Roundtable 7: WP5 (tentatively)
M25 January 2019	Report on the Roundtables (D9.3)
M26 February 2020	Final Conference (MS61)

10 RESOURCES COMMITTED TO THE COMMUNICATION & DISSEMINATION PLAN



The resources devoted to implement the Communication and Dissemination Plan are listed in Table 3 below, with a distribution of Person Months (PMs) allocated by each Project Partner to each Task where it is involved.

Table 3 – Resources committed to the ICEDIG C&D Plan

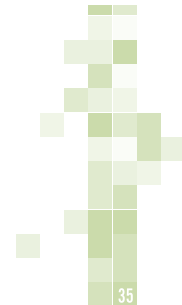
a) Direct Commitments

Task	Concept	Participants	PMs
1.2	Internal Communication	UH	4
		Naturalis	0.5
		MNHN	0.5
		APM	0.5
		UTARTU	0.5
		CINES	0.5
		NHM	0.5
		CU	0.5
		CETAF	0.5
		PIC	0.5
		RBGK	0.5
9.1	Communication and Dissemination Plan	PLAZI	0.5
		CETAF	2
		UH	1
9.2	Operate the information platform (Website, Social Media)	NHM	1
		CETAF	4
9.3	Networking Actions (e.g. roundtables, conferences, workshops - organisation and participation)	UH	1
		CETAF	3
		UH	4
		Naturalis	1
		MNHN	1
		APM	1
		UTARTU	1
		CINES	1
		NHM	1
		CU	1
		PIC	1
RBGK	1		
PLAZI	1		
		Total	35.5

b) Indirect Commitments to the Project communication and Dissemination Plan

Task	Concept	Content	Leader
1.2	Website	Create Group collaboration website	UH
1.2	Website	ICEDIG communication platform (website)	UH
1.2	Visual Identity	Create Logo and Visual Identity for ICEDIG	UH
2.1	Survey	Inventory of current criteria for prioritization of digitisation	Naturalis
2.2	Survey	Inventory of content and incentives for digitisation of small and private collections	Naturalis
2.3	Survey	Survey on Collection Design of a Digitisation Dashboard	Naturalis
5.2	Website	Citizen transcription dashboard	MNHN
6.2	Survey	Requirement analysis for DiSSCo data infrastructure	Naturalis
7.1	Survey	Identifying national and European policies relevant to collection digitisation activities	Plazi
7.2	Website	Policy section of the ICEDIG website	NHM
8.1	Survey	Social effects and capacity building	CETAF
8.2	Survey	Examining organisational and partnering choices	NHM
9.2/9.3	Promotional Material	Develop promotional material to be used on website and at events	CETAF
All	Deliverables	Provide public deliverables for upload on the project website	All
All	ICEDIG Executive Board	Keep WP9 leader informed on all developments relevant for communication activities	All
All	Internal Communication	Teleconferences, All-hands meetings, Teamwork platform	All

11 PROGRESS OF THE C&D PLAN: PERFORMANCE INDICATORS



The various aspects of communication and dissemination will be monitored in terms of their performance and progress. For each activity several indicators, listed in Table 4 below, will be used for monitoring. Results will be presented regularly to the ICEDIG Governing Board.

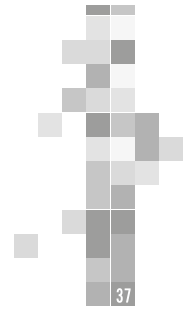
Table 4 – Progress indicators

Activity	Monitoring progress
ICEDIG project website	Visitors, returning visitors, geographic distribution, etc. Prominence in Google searches SOURCE: Google Analytics FREQUENCY: every 6 months
Social media (i.e. Twitter)	Number of online interactions on the ICEDIG social media channels SOURCE: Analytics of Facebook/Twitter FREQUENCY: every 6 months
Roundtable events Opening and closing conferences	Attendance numbers from public and project audiences and distribution of the participating public Relations being established with stakeholders Legal status of stakeholder attendees SOURCE: data collated in each RT report
External event participation	Attendance to the events, Format of attendance (level of participation) SOURCE: Registration and Attendance forms filled in by participants
Surveys	Response rates by pool of respondents Percentage of questionnaires completed Congruence with stakeholder matrix SOURCE: Internal exploitation of consultation pools

1	Title	EUDAT Conference - Putting the EOSC vision into practice
	Date	22-25 January 2018
	Location	Porto, PT
	Topic	Sharing & preserving research data across disciplines and borders. Bringing together data infrastructure users and providers and policy makers from across Europe.
2	Title	RDA EU Data Innovation Forum
	Date	30 January 2018
	Location	Brussels, BE
	Topic	Discussing the role of research data in the Data Economy context and the RDA contribution to the different Data Economy building blocks.

ANNEX 1 PRELIMINARY LIST OF RELEVANT EVENTS OF EXTERNAL STAKEHOLDERS (BY 15 MARCH 2018)

3	Title	TNC18 - Intelligent networks, cool edges?
	Date	30 January 2018
	Location	Trondheim, NO
	Topic	European research networking conference, bringing together decision makers, managers, networking and collaboration specialists, and identity and access management experts. The conference presents participants with a unique overview of the latest developments in research networking, both in the technical field and in the area of application and management.
4	Title	Safeguarding Biodiversity Data for the Future
	Date	27-28 February 2018
	Location	Brussels, BE
	Topic	During this conference, the organisers specifically aim to share the lessons learned from the project “Saving Freshwater Biodiversity Research Data” and put their work in a broader perspective. Keynote speakers will provide their view on working with large datasets, the need for Open Data and Open Science.
5	Title	Digital Humanities in the Nordic Countries
	Date	7-9 March 2018
	Location	Helsinki, FI
	Topic	The overarching theme this year is Open Science. This pragmatic concept emphasises the role of transparent and reproducible research practices, open dissemination of results, and new forms of collaboration, all greatly facilitated by digitalisation.
6	Title	Innovation and Cultural Heritage - High-level Horizon 2020 conference of The European Year of Cultural Heritage
	Date	20 March 2018
	Location	Brussels, BE
	Topic	The conference will showcase the dialogue between contemporary European society and the most promising innovations in the field of cultural heritage that European policies and funds have supported. The conference sessions will highlight policy, social, technological, methodological innovations and new, promising alliances around cultural heritage.
7	Title	European Geosciences Union General Assembly 2018
	Date	8-13 April 2018
	Location	Vienna, AT
	Topic	The EGU General Assembly 2018 will bring together geoscientists from all over the world to one meeting covering all disciplines of the Earth, planetary and space sciences.
8	Title	DARIAH-EU Annual Event
	Date	24-25 May 2018
	Location	Paris, FR
	Topic	The theme for this year’s event is Open Science. It will be discussed how to deal with issues of Open Science in the DARIAH research infrastructure, and how the humanities can promote new methodologies for open collaboration.



9	Title	Second International ECSA Conference 2018
	Date	3-5 June 2018
	Location	Geneva, CH
	Topic	The Conference is aimed at scientists, practitioners, activists, funders, policy makers in the field of citizen science, non-governmental organizations, artists, and interested citizens. Following questions are going to be discussed at the conference: What role can citizen science play: For grass root organizations? For empowering individual citizens? For increasing scientific literacy? What are the reasons for the public to do citizen science? What is the role of schools? What are the impacts on social innovation?

10	Title	4 th International Conference on Research Infrastructures – ICRI 2018
	Date	12-14 September 2018
	Location	Vienna, AT
	Topic	ICRI 2018 aims at providing a forum for strategic discussion on international cooperation for research infrastructures at global level; highlighting the essential role of research infrastructures; reflecting on the needs, development, and operation of global and national research infrastructures.

11	Title	10th International Conference on Ecological Informatics
	Date	24 September 2018
	Location	Jena, DE
	Topic	Translating Ecological Data into Knowledge and Decisions in a Rapidly Changing World

12	Title	ICT 2018 (Innovate, Connect, Transform)
	Date	4-6 December 2018
	Location	Vienna, AT
	Topic	Conference on digital research and innovation policies and topics.



ANNEX 2

LIST OF TASKS INVOLVING CONSULTATION THROUGH QUESTIONNAIRES

Inventory of current criteria for prioritization of digitisation (Task T2.1)

Lead: Naturalis | M1-M6

Inventory of content and incentives for digitisation of small and private collections (Task T2.2)

Lead: Naturalis | M2-M10

Identifying national and European policies relevant to collection digitisation activities (Task T7.1)

Lead: PLAZI | M1-M10

Social effects and capacity building (Task T8.1)

Lead: CETAF | M1-M7

Since social workforces need to be able to advance and keep up with technological progress, it is imperative that collections personnel are part of the process and engaged as they also form a major part of the end-user community. The social mechanisms needs to be researched on the basis of three fronts:

1. Investigating the **social aspects** (work, skills) of digitizing biodiversity
2. Exploring how opening natural history collections will affect **scientific knowledge exchange, collaborations, and interdisciplinary research.**
3. Considering **current capacities of collections holders to perform digitisation.**

To gather these, surveys will be conducted targeted to specific audiences. The objective of these is to identify gaps in skills and/or shortfalls in human resource capacity to pursue the prioritised collective digitisation agenda. Similar to the other surveys, the task leader will take on the task of designing the survey and distributing it via SurveyMonkey, Google forms or a similar software to the respective target audiences. In this case, these are almost exclusively people working with the collections in their everyday activities (scientists, curators, technicians, digitisation agents etc.). To reach these people directly and solicit a response, the existing vast CETAF and DiSSCo networks will be utilised.

To follow up on the initial information from the survey, several in-depth interviews will be held as well that will especially handle the topics on the social and workplace acceptance of ICEDIG and DiSSCo changes to everyday research and curation work. This will provide the interviewees, i.e. collection personnel, with the opportunity to elaborate on their real needs and problems, their unique working experience and their use cases.

The results from these surveys as well as surveys from another task and further knowledge gathered by project partners from stakeholders will feed into the result of Task 8.1, the capacity building chapter of Deliverable 8.1., in line with stakeholder engagement activity to contribute to capacity building.

Design of a Collection Digitisation Dashboard (Task T2.3)

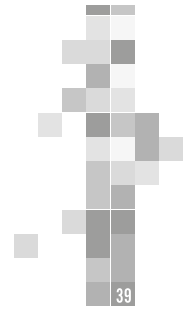
Lead: Naturalis | M6-M13

Requirement analysis for DiSSCo data infrastructure (Task T6.2)

Lead: Naturalis | M2-M22

Examining organisational and partnering choices (Task T8.2)

Lead: NHM London | M1-M27



ANNEX 3 ORGANISATION GUIDELINES FOR ICEDIG ROUNDTABLES

PROPOSAL STAGE

PROPOSAL SUBMISSION – Roundtables (RTs) are included in the activities of a WP, and are to be held every 3 months. There are in total 7 Roundtables to be organised throughout the course of the project. They need to be conceptualised by WP Leaders into a general outline in relation to specific topics of importance to the development of the project. This has to be submitted, by means of the assigned **Roundtable Proposal Form (see below)**, to the WP9 Leader CETAF.

- ▶ The slots for the different RTs have been tentatively agreed upon at the meeting in Helsinki on 5 March 2018. Changes to the structure have to be submitted to CETAF which will make the ultimate decision.
- ▶ The form with a thematic concept for the RT will be communicated to the CETAF (info@cetaf.org) at least 6 months in advance of the chosen slot that is assigned to a RT on a biannual basis. For RT1 proposal forms will be accepted up to 31 March 2018.
- ▶ Essential for the proposal is also communicating the exact date and place to the CETAF.

Roundtable Month	Proposal Submission Deadline	Assigned WP / RT title
M5 May 2018	31 March 2018	WP2: “Collection Digitisation Dashboard”
M8 August 2018	31 March 2018	WP4: “Analogue to digital: faster better cheaper” in relation to capturing and linking data, at SPNHC/TDWG Conference 2018 in Dunedin, New Zealand
M11 November 2018	31 May 2018	WP3: 3D, Robotics, Warehousing (tentatively)
M14 February 2019	31 August 2018	WP6 (tentatively)
M17 May 2019	30 November 2018	WP9: Connection to Cultural Heritage (tentatively)
M19 July 2019	31 January 2019	WP3: 3D, Robotics, Warehousing (tentatively)
M23 November 2019	31 May 2019	WP5 (tentatively)

COMMUNICATION – The designated online content manager for ICEDIG from the WP9 Leadership will produce the online promotional material to highlight the event for communication and dissemination purposes.

ORGANISING STAGE

ORGANISERS – The Roundtables will all be **co-organised by WP9 Leader** along with the host and Roundtable proposer as well as any other related WP Leaders, forming the so called Roundtables organisation team (RTO team) who will be responsible for the content, the speakers’ selection and the drafting of the agenda.

LOGISTICS – The RT host is responsible for providing meeting space and other arrangements. Relevant logistic arrangement need to be communicated one month before the RT to WP9 Leader as to enable promotional communication and other organisational aspects of the RT covered by WP9 Leader.

- ▶ The RT host informs on relevant logistics to WP9 Leader for promotional communication purposes
- ▶ To be provided by the RT host for the event:
 - Meeting space
 - Catering
 - Projector and screen for presentations
 - Accommodation options

PARTICIPATION – The participants of the roundtable will be selected by the RTO Team, that is comprised of the WP Leaders involved (or their designated representatives), the host Institution representative and CETAF, acting as co-organizer. If no previous contact to the targeted speakers exists, CETAF will take over the duty of attracting them.

- ▶ Participating parties involve 4-6 external experts as well as ICEDIG stakeholders and staff, e.g. key technology holders as well as providers and users of the data for the DiSSCo RI on the one hand and relevant ICEDIG work package partners on the other to determine details of the design with regard to 3D imaging, robotics, citizens' role in digitisation, etc.

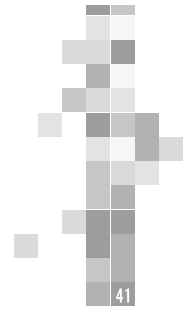
COMMUNICATION – The designated Online Content Manager for ICEDIG from the WP9 Leadership will produce the online content for social media to announce the happening of the event and in the immediate aftermath of the RT, key messages will be broadcasted to interested parties.

TIMELINE – After the RT has been accepted an initial conference call will be held with all members of the RTO team. This will take place within two weeks of the submission of the RT proposal form. At this meeting, logistics, potential attendees, and task distribution will be discussed in detail and a spelled out timeline leading up to the event will be laid out. Especially recruiting stakeholder participants should commence immediately after this meeting.

POST-ROUNDTABLE STAGE

REPORTING - Every Roundtable will appoint **a note taker** to produce minutes of the discussion being held and a **rapporteur** to voice conclusions and produce a report based on these minutes. Those two roles are to be designated by the organising team. The resulting report and minutes will then be sent to CETAF no later than four weeks after the RT.

CETAF will afterwards disseminate the results in a coherent document to participants and ICEDIG partners to also ensure that the invited stakeholders benefit from participation and to prevent stakeholder fatigue. The documents also will form the basis of **Deliverable D9.3- Stakeholder Roundtables**, the report on the Roundtable results, which will be uploaded onto the ICEDIG website by the CETAF General Secretariat.



Topic

Date

Host

Location/Venue

Relevant work package/Task

Contact details

Rapporteur

Note taker

Logistics requirements

Task distribution

Stakeholders

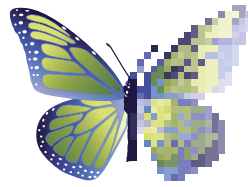
Expected results

ANNEX 4

POTENTIAL ROUNDTABLE TOPICS

Within the scope of the ICEDIG, WP Leaders can propose one or more topics of their own choosing. Corresponding to the activities of the various relevant WPs, overarching themes are already available on which the WP Leaders may base their topic selection on:

- ▶ **Harmonizing** the needs, the availability of resources and the collateral activities of support and expected collaborative work with the agents in Work Package 4 for the scientific community and nature repositories (WP2)
- ▶ Imaging facilities – object holders and service providers – to define the **trends with regard to interoperability** (WP3)
- ▶ **Data captors**, discussing **data quality, verification and cost analysis** (WP4) Stating **gaps and constraints in citizen science participation** – with citizen science representatives (WP5)
- ▶ Identifying gaps, conditions and requirements for the running of the infrastructure – with **data systems managers** (WP6)
- ▶ Debating the existing legal framework and the detected hot topics, **barriers and constraints** for successfully implementing ICEDIG – with policy makers and legal referees (WP7)
- ▶ Identifying a **governance model** for the Research Infrastructure and its financial perspectives – with community stakeholders (WP8)
- ▶ **Cultural heritage** acts as a complementary field of interest with several overlapping themes. A common approach with ICEDIG would recognize a unique and blended set of human patrimony (WP9)



ICEDIG.EU



Lesser spotted catshark, © Trustees of the Natural History Museum

