PERICLES - Promoting and Enhancing Reuse of Information throughout the Content Lifecycle taking account of Evolving Semantics

[Digital Preservation]

DELIVERABLE 8.3

Report on Dissemination Activities

pericles

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CO	CONFIDENTIAL only for members of the consortium (including the Commission Services)	

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Authors and Contributors

Contributors at this WP are the end user partners. WP1 provides feedback to technical partners.

Authors

Partner	Name
TATE	John McNeil

Contributors

Partner	Name
KCL	Linda Ligios, Christine Sauter
SpaceApps	Rani Pinchuk
SpaceApps	David De Weerdt (Reviewer)

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Glossary

Abbreviation / Acronym	Meaning
CoP	Communities of Practice
WP	Work package

1 Executive Summary

In this document a final review of the dissemination activity of the PERICLES project is presented. The format followed is not a list of achievements and actions but is instead a narrative discussing the lessons learned during the course of the project, what worked and what was less successful. Our hope is that this reflective approach will provide useful insight to our project mechanics but also serve as a valuable resource for future projects. A list of publications, blogs, events and other dissemination activity from the final year of the project is reported in the project annual report.

Dissemination and communication are very closely related. In a project presenting complex ideas such as those in PERICLES there was a necessity to balance simply raising awareness with trying to promote deeper understanding. This was aided greatly by the whole consortium working hard to come to a shared understanding about the research and the generation of a 'big picture' through which the complex research concepts could be communicated to real world situations. This process was vital to our ability to speak to a range of audiences yet it took time to get to that point. This 'bigger picture' is something that in hindsight should have been started sooner in the project. A common understanding had initially been unquestioned, but it slowly emerged that there was a range of diverging interpretations within the consortium about the exact nature of the final outcome.

We take a number of examples from our dissemination activity to highlight the different approaches we used to speak to various types of audiences and to achieve distinct aims. Not all of these approaches were as successful as we intended but nonetheless showcased the need for flexibility in planning. We note the value of the Communities of Practice groups for understanding broader domain challenges and for extracting analogies and contexts for similar needs or approaches which helped to avoid the project being labelled as niche. Also we highlight the challenges in disseminating material into a 'gap' where it is necessary to bring people from disparate domains together to learn from each other. Our social media approach is discussed and the power of newsletters and social networking sites highlighted where it was successful for us. Also the disadvantages of relying heavily on such promotional tools are described.

The thinking behind our organisation and approach to the final PERICLES event, 'Acting on Change' is given some detail. Project partners leading the dissemination work package spent a significant amount of time understanding who the correct audience was to invite for a subject such as digital preservation which 'speaks' to many very broad communities. We ultimately focussed on a balance between inviting an audience of key influencers from their respective fields with presenting not just PERICLES research but also presentations on domain challenges from external academics, commerce and community initiatives. This resulted in a very dynamic and successful three days with the audience being enthusiastic and engaged. However, there is no doubt this was tempered by the difficult challenge of presenting some technical results that were understood by some but not appropriate for other members of the audience.

Dissemination of project results was delivered through a multitude of communication pathways from the website to peer reviewed publications, blogs, videos, workshops and the final conference. The project was successful in raising awareness of PERICLES and supported the sustainability of the results as driven forward by work packages on training and technology transfer. It takes time to gain acceptance in a domain as the legitimacy of the results and initiating dissemination activity cannot happen too early in a project. The key recommendation from our lessons learned are presented in the conclusions of the report but foremost among these are a need to know your project offering and know your target audience (not just your whole audience). Also, you are not alone. Your research may be innovative but engaging and working with external groups as early in the project as possible will benefit the direction of the research and the ability to effectively raise awareness about the project. Finally, in disseminating research we advise that you are flexible. You must have a plan but must also recognise when to change your strategy as results become available and opportunities arise.

2 Introduction & Rationale

2.1 Context of this Deliverable Production

This document is the final work package 8 'Dissemination' deliverable and presents a summative report on dissemination activity within the PERICLES project.

The concept of this report deviates from the usual and more formulaic record of actions completed that is typical of such end of project reports. The context for this final deliverable is somewhat different, ultimately addressing a reflection on our approach, challenges and learning outcomes.

2.2 What to expect from this Document

The purpose of this report is therefore to serve as a discussion on the nature of dissemination activity within an international, multi-year, multi-beneficiary, research and innovation project and to act also as an introspective and thus a guide both for the digital preservation community and more broadly for grant-funded research projects. The rationale behind this approach comes from the value we believe there is in sharing the lessons we learned from the challenges we faced. These challenges in dissemination emerged in essence from:

[1] the highly complex and technical nature of the research being undertaken (and message being communicated),
[2] the limited professional experience of project partners in promoting and communicating on in-development conceptual research outcomes across disciplines,
[3] the wide variety of the potential audience for the results, which can range from individuals up to global networks and which can represent almost any part of any sector,
[4] the need to balance our activity with, as well as collaborate between, other project work packages covering the training of targeted audience groups and promotion and sustainable transfer of our developed technology and other research results.

Ultimately we wanted to make available the results from the project research which can contribute to and support preservation activity. However, as the preservation for re-use and accessibility of digital material represents a field of activity so large and ever evolving, and with an assemblage of observers interested in research results that matches this for scale, any strategy for contact with this audience runs the risk of either being too dilute and generic or too targeted and opaque. Additionally, research results which were generated over the full duration of the project were often interim outputs representing a part of a complete picture that would not fully emerge until later in the project. This presented an obstacle in the project's ability to disseminate early results. Also, the multi-disciplinary background of the core partners within the dissemination work package, balanced against the specialist framework within which some outputs were delivered, required the need for particularly carefully considered and edited narratives with a clear understanding of the selected target audience. We found that these challenges could be efficiently addressed with the synergetic integration of the dissemination activity with that of the work packages on training and technology transfer, and also the evaluation aspects of work package 2. The separation of these three tasks into individual work packages presented at times occasions of missed opportunities and junctures where contrasting strategies needed realignment.

These challenges are all part of the expected course of a research project and were ultimately overcome. This led to an understanding about the nature of our dissemination activity that may not have been fully appreciated at the start of the project. We found that the activities undertaken to distribute results and to communicate them is not necessarily served best with a rigid and predetermined path and instead it is better to adapt to the circumstances.

2.3 Document Structure

In Chapter 3 we discuss our general approach and how dissemination opportunities and constraints are defined by both the level of engagement with an audience and the nature of the research results.

Chapter 4 presents specific case studies from the project that highlight how we attempted to engage with audiences and influence relevant communities.

Finally in Chapter 4 a summative evaluation of our efforts and achievements is concluded with some recommendations for effective dissemination of results from a multi-faceted research project such as PERICLES.

3 Opportunities and constraints in the dissemination of research

The primary concern for our dissemination activity has been to ensure raising awareness around PERICLES and to contribute to the transfer of research-based knowledge into relevant communities. In turn, the information evidencing the validity of our results would support and encourage engagement amongst stakeholders.

The main ambition of this awareness raising is to entice from the audience an interest in the research and a curiosity to learn more about the approach of PERICLES. The resulting contact between project and audience can then open doors between the research and the broader community. The long-term vision would be that dissemination would therefore contribute to the ability of the research results to impact practice within preservation, be it driven by the problem-owner, the solution provider or another entity setting policy, such as a national legislating body. If widespread awareness is the first objective, then determining the most effective communication channels is the first step in this activity.

There are many conduits through which our audience can be reached and these pathways were defined in the early groundwork completed in the initial dissemination activity, as reported in D8.2.1 & D8.2.2. The strategy behind our effort however, was directed at first by an understanding of the nature of *dissemination*, its balance with *communication* and its relation to the activity of *training*, *exploitation and sustainability*, and *legacy*. Secondly, the scope and scale of the audience, in its global coverage and sectoral variety necessitated a challenging targeted approach. Thirdly, also derived from the audience base, the range in stakeholder knowledge required flexible strategies based on not only the level of engagement but also the technical language used in communication.

This chapter is divided into sections outlining our approach and the challenges we faced. The aim of this chapter is to provide a reflective dialogue on our experience from the project.

In section 3.1 we discuss our role as disseminators of information and how this was balanced against other communication strands in the project.

Section 3.2 presents our experience on the drafting of a dissemination plan and its value in relation to the real-time communication of conceptual mid-development or promised results from an on-going, evolving and highly complex programme of research.

In section 3.3 we provide our insights into the engagement activity on different levels, having to navigate through an existing densely structured and often opaque network of communication pathways.

3.1 Dissemination and beyond

The role of project partners in dissemination activity was recognised early on as two-fold. Our activity needed to not only serve as a process for disclosing and making available research findings to the public but also to act as a conduit for feedback used to shape the direction of the on-going research.

In fact, because we wanted to generate some understanding as well as just an awareness of the results the first activity needed to go further than simply making information available and required the use of communication for the promotion of the results. The European Commission, within the Horizon 2020 scheme, indicates that dissemination activity,

> "*...should address the full range of potential users... including research, commercial, investment, social, environmental, policy making, setting standards, skills and educational training*".

Such a gamut of sectors with which to communicate provides significant challenges around finding a common language, common platforms and forums, and in tailoring workshops, conferences and training material to meet the needs of the expected audience.

As disseminators we needed various levels of engagement, having identified the broad field within which our main target audiences resided. This was one of the greatest challenges we faced, balancing the need to raise awareness of our research with everyone against spreading our activity with enough substance while also maintaining direct pathways through our partners into some domains but not others. Our compromise was to split our audience into categories of interest level. The diagram below has been shown before in D8.2.2 and was used as a guide throughout our activity and was a very useful first step in understanding how we would engage with the public. In section 3.3 of this chapter we will elaborate on the tools and approaches used to address each type of audience. Having recognised early that balancing raising awareness broadly with the desire to influence practice on a user level would be challenging, we were much better placed to generate dissemination material that could penetrate into the dense space of digital preservation research and also bring a fresh perspective or new insights to fields where it was lacking.

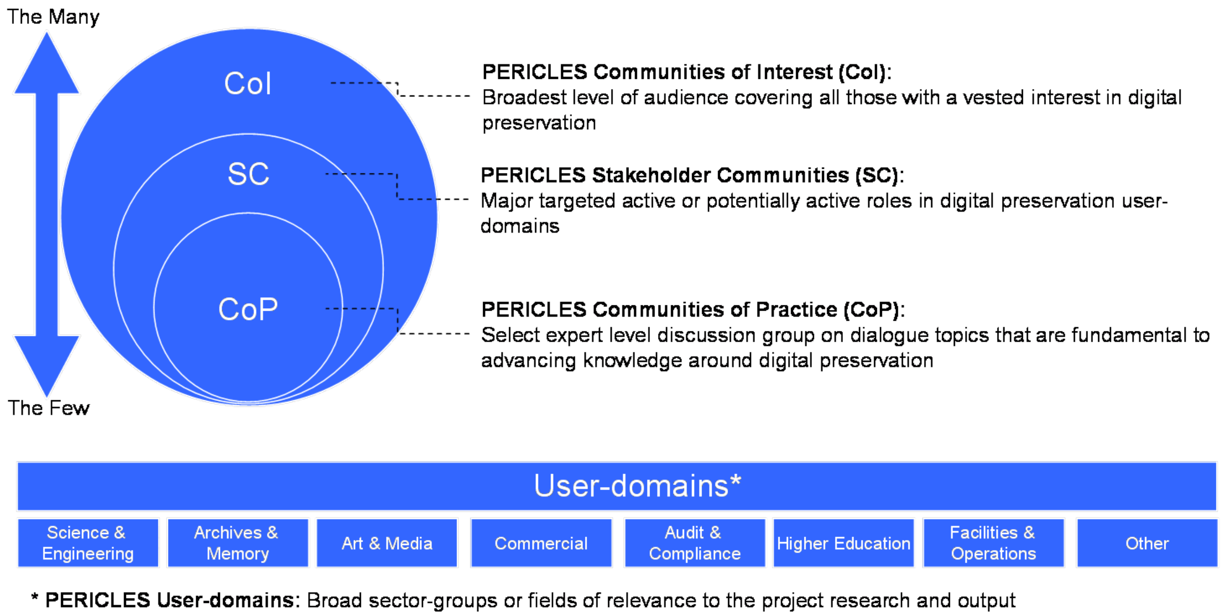

Figure 1: Initial definition of target groups for dissemination

The structure of the PERICLES work package relationships meant that dissemination activity was led by a different team compared to those of training and of exploitation, later termed more appropriately '*technology transfer*'. While of course these teams consisted of many of the same partners it was very clear nonetheless from an early stage of the project that it was challenging to not only align the activity between work packages but also to designate an activity such as a communication campaign as 'belonging' to any one singular package. Therefore, ultimately there was an element of dissemination activity within both the training and technology transfer work packages and aspects of training and knowledge transfer within the dissemination remit. A typical example of the dilemma was running a workshop, which focussed on raising awareness but to a level where the audience felt they understood the results and could bring knowledge back to their community and ideally embed that knowledge into their thinking about workflows. While at all times the PERICLES team worked well together and collaborated effectively on our outreach, the work package structure made communication less straightforward than it could have been and as a result there was some duplication of effort. However, this was kept to a minimum through careful planning and monitoring from the management partners and a conscientiousness of those partners working across the work packages.

The role of disseminators is therefore complex and not always straightforward, yet the project fails without diligent effort as results would go unnoticed. We found that communicating the results of PERICLES was best served by setting realistic plans, targeting specific groups, playing to the strengths and expertises of the partners in the project and by balancing carefully the need to communicate to seemingly everyone and consolidating efforts to focus on clearly conveying complex ideas.

3.2 Communicating evolving concepts

In a project lasting over several years, with ideas evolving from early inceptions to more concrete concepts, the task of disseminating information from day one requires careful consideration and was certainly challenging for all partners in PERICLES. The difficulty lies in the fact that having concrete descriptions of the results requires that the investigations and research needs to be able to follow its course. As PERICLES is a research and innovation project without a remit to exploit results at a high technology readiness level, the course of the research sometimes meant taking two steps forward and one step back. Forecast results may not materialise as over time early assumptions are revisited and modified, tested hypotheses might not bear fruit, and new advances in other research fields leads project research down a different path. The factors affecting the course of evolving research can be many and with each adjustment in scope for the results there needs to be a realignment of dependant tasks in the project and in turn this can have other knock-on impacts. For dissemination activity in its broadest sense as alluded to in section 1.1 of this chapter, this challenge meant balancing the need to progress and raise awareness of the project with our audience with the somewhat preliminary nature of the first available results. Naturally during the first year of the project our primary focus was in establishing communication pathways and understanding who our audiences were, but through to the second year, when many of the project's results were still in a development stage, it became challenging to move beyond dissemination through the publication of technical academic research papers and sometimes dense official project deliverable reports. Disseminating first results can also be difficult as in themselves they might look mediocre, their importance being in their role as building blocks of a larger picture and outcome, often with the aim reviewing the research undertaken in that particular area, and establishing the start of the art.

Looking back, we can say that one of the most important and valuable tasks driven forward by the dissemination team was to engage the consortium itself in a series of discussions to ultimately lead the project to establish a shared understanding and definition of the '*bigger picture*'. Typically, project work is structured in work packages, and it is tempting to focus on individual modules and avoid confronting the question of the true potential of the connected research and its place in the wider context. While perhaps often considered an issue for the management team to simply have the overall objective in mind when monitoring progress, resolving the issue and defining the '*bigger picture*' is in fact highly beneficial to the project and additionally in communicating value to our audiences. The value of the most refined and innovative piece of technology that solves a tiny problem for a small community of users will be completely lost if not placed in context and in relation to its potential to be transferred to other sectors or developed into something more powerful. Having this shared understanding added the golden thread to our communication but it took time and effort to bring a consortium of technical and result-focussed practitioners to a table and to a consensus of a common vision.

Beyond this active approach for generating material to support dissemination, it is standard practice in EU-funded programmes to require the annual production and updates of an official dissemination plan. While the purpose of these deliverables is clear, it was felt that in PERICLES they could serve partially as a rigid plan to follow with dates and timings but also more as a forum to put forward ideas and strategies for dissemination activity. As discussed in deliverable D8.2.2, the second iteration of the dissemination plan, the rationale for this revolves around the need for dissemination to be opportunistic and to be improvised when circumstances of which to take advantage arise. The 'plan' therefore outlines various possible strategies. A disadvantage is that there is a risk of overpromising what can realistically be delivered. In sectors where fewer communities are involved, and when results are more defined from an early stage, and research is more applied and less conceptual, a less flexible plan for activity may work. The context within which PERICLES sat necessitated an ambitious approach that followed a course with some structure, but that could ultimately adapt to appropriate opportunities. That meant the need for several dissemination pathways, engaging with our audience at several levels, and a continuous effort to communicate with our technical partners about the nature of the results and how they could best be disseminated during the course of the project.

3.3 Being heard in a storm: engagement activity

Research and grant-funded projects in the context of long-term digital preservation is not an emerging field. Though there are new technologies, new concepts and new challenges being generated or faced on a continual basis it felt at times that the preservation field was so heavily overpopulated with solutions and initiatives that there was a risk to the legacy of any PERICLES research simply being swallowed into the abyss despite significant effort. To mitigate against this risk we recognised that we must reach our audiences on different levels, if there was any hope to generate impact and ultimately embed our components and approach in new knowledge and practice. Details on our various communication pathways are provided in previous work package deliverables and selected studies are presented in chapter 2 of this document, however the principle behind our approach is worth noting here. Dissemination can be a one-way activity, simply putting the word out there and making information about the project and our official results available to the public. This is valuable but typically creates little noise in the community. Instead, our efforts were continually a balance between blanket coverage to reach large audiences with teasers about the project and more direct engagement including soliciting feedback, running workshops, holding interviews, penetrating existing stakeholder communities and engaging in bringing together, into focus groups, leading players from expert communities of practice, i.e. two-way communication. To make real noise it is the latter activities that ensure you will be heard.

Although PERICLES is a four-year project its results have been back-loaded. At least, the results, in such as state of completion that full demonstrations and proof of concept presentations can be conveyed, have really only been generated in the last full year of the project. That is not to say hugely valuable foundational research was not done prior to this, as demonstrated by the volume of publications in years 1 to 3 of the project which highlight how important that early work was. However, to be heard above the noise, it was the more fully fleshed project outcomes that have allowed much more fruitful dissemination activity to take place. With more concrete results, or results delivered to an audience in the clear context of the 'bigger picture', alluded to in the previous section, we have seen from our audience feedback that our results are valuable, interesting, will be considered for workflows going forward, and already in one case being considered for integration in a current development project with an industry partner.

Therefore, addressing audiences though impersonal channels such as websites, distributed newsletters and through social media, as well as more directly through feedback, surveys, webinars, workshops and invitations to share insights, we have over time generated some momentum and made an impact in the community. The final year annual report to be delivered in M50 will highlight in much more detail our achievements, volume of publications, social media following and delivered workshops. It is difficult to determine what avenue for communication was most effective, as numbers reached are not necessarily a good measure of success. We distributed newsletters to several thousand readers but is not clear how much was read. However, instances where people referred to the newsletter or other sources of information when we were directly contacted were very rewarding. We used multiple pathways, all successful in their purpose and a number of these cases are selected and discussed in chapter 4 of this report.

4 Case examples of dissemination activity

Though we will discuss the idea of success in the following chapter, the motive behind our dissemination of results has been driven by the intent to sow a seed for those results to ultimately be implemented in or at least influence practice and supporting technology. This intent can be effected through our results having community impact and their being used as a contribution to a growing open base of development that is embedded in new knowledge.

This chapter uses a number of illustrative case studies from our efforts to engage with audiences in ways that are valuable and provided an opportunity for a sustainable legacy for the project's results. The purpose of this narrative description is to review our engagement strategy and reflect on the lessons learned.

In section 2.1 we discuss the established Communities of Practice groups, their value to the project both directly and indirectly, and the legacy those networks created.

Section 2.2 presents a small selection of the research results or other outputs produced by partners that have had a positive impact in their targeted audience community though have been a challenge to disseminate.

Section 2.3 comments on our approach regarding the final conference and extracts the key salient details that either contributed to a successful event or created obstacles.

Section 2.4 comments on website strategies and its evolution over the course of the project.

Finally, in section 2.5 we reflect briefly on the potential power of social media versus the realistic ambitions around its use as an audience-funnelling mechanism on one hand and a way to generate interest in complex research ideas on the other.

4.1 Expert engagement: Communities of Practice

Initiating and engaging with the Communities of Practice concept in PERICLES was very valuable. As detailed in deliverable D8.2.2, the second iteration of our dissemination plan, a 'community of practice' (CoP) as defined for PERICLES is,

> *'A group of selected individuals having various professional roles who are expert practitioners representative of a given industrial, cultural or academic field who are periodically gathered together to discuss a fundamental question or set of issues relevant to the preservation of digital objects.'*

The ideas to be discussed during these sessions were not planned to be feeding an "audience" with information on PERICLES. Instead the intent was to discuss, with people engaged in related challenges at the forefront of their field, different points of view, and different approaches and practices to inform our own method as much as to inspire their reflections through our approach. This reciprocal approach would thus serve to help PERICLES in shaping our communication on the '*bigger picture*' as well as provide valuable insight to the project partners on the true nature of real-world problems beyond their own immediate experience.

This concept promised much and was successfully managed and executed. The discussions were very valuable for the project and allowed partners to bring in the concepts behind which PERICLES was producing tools as well as a broader framework for preservation thinking. The concepts around ontologies, dependencies and linked resource modelling are ones that have the potential to advance many of the workflows in emerging sectors for digital preservation. These concepts and tools such as the PERICLES Extraction Tool or the Appraisal Tool were recognised as contributing to what is a paradigm shifting approach that the project has presented. A significant legacy of PERICLES acknowledged by participants in these groups was highlighting the need for a collective and collaborative approach to dealing with complex digital preservation challenges going forward. The challenges faced are complex and becoming evermore so in an age when the connectivity of digital things is expanding the scope for innovation. Having software developers speak to artwork conservators, or archivists in the heritage sector speak to data managers in the field of healthcare, are relationships that are rare but our work in PERICLES constantly highlighted to us the value in collaboration and in sharing such inter-community experiences. We found that although the communities of practice groups that were set up corralled people of similar background into their discussions that some of the challenges these communities face are, at a fundamental level the same. Most sectors face the need for risk management, policy management, change management, documentation protocols, etc. and bringing about a shared terminology and a shared approach is one way to thread a common link between all this disparate groups.

Having received positive feedback, we are confident that beyond the inherent value of the project that we have also been able to act in some small way as a catalyst, as a reason for revisiting the concepts and assumptions on which the CoP participants base their practice and to consider an ontology-based approach as a promising avenue. To change workflows in institutionalised or mainstream approaches takes time. It was important therefore that the dialogue these groups had was not lost and was instead turned into some form of legacy. In deliverable D8.2.2 we envisaged supporting the groups to produce several outputs in the form of a report and/or blog, co-authored publication, a public workshop and open discussion. Given the time constraints of those participants outside the project, it made more sense to prioritise work for which we would like their contribution. However, a highly valuable body of material was still generated as these Communities of Practice groups wrapped up their discussion, each producing a publicly available outcome. Amongst these one freely available publication from the group looking at issues around software-based art and emulation, and one successful workshop led by the group focussed on semantic change. Details on the outputs from these groups are presented in the final annual report.

Several of these groups have agreed to continue their discussion beyond the end of the project given the level of interest in the narratives and other experiences being shared and the value given to understanding each other’s challenges and preservation approaches.

Overall, our recommendation from this activity lies in engaging a diverse array of external key players in their fields. From these stakeholders the project can extract analogies and contexts for similar needs or approaches and can avoid the project being labelled as niche. For example, regarding the reuse of research data, or records keeping, those practitioners might not be attracted by “preservation results” because their challenges seem to be in the here and now and they think of preservation as being the realm of cultural heritage. The CoP groups allowed us to discuss angles, aspects, assumptions that ultimately informed PERICLES notions without having to promote the full weight of PERICLES, and thus get a type of engagement that allowed for equal input from all, thus establishing ideas from PERICLES in a discourse rather than in an awareness. This ‘box-breaking’ and open approach may stand a greater chance of establishing relationships (as seen with our conference) and will ensure a longer lasting impact compared to the anonymous general audience.

4.2 Dissemination challenges inherent to RTD results

In RTD you have a mix of result types: ideas, notions, re-definitions, theories, backend, middleware, frontend tools, services, architectures etc. In the previous section we explained our experience with CoP, which was one of the avenues chosen to communicate these hypotheses, theories, notions, approaches on a high-level, encouraging discussion and critical views rather than claiming completeness with a promotional type of communication.

In this section we look at tangible results, each different in nature and in terms of direct or indirect usability and target groups, and how we chose to disseminate them. The intention for this section is not to list all the project results of tangible outcomes that have had any impact as most of the research has provided real value to advancing the field of digital preservation and digital asset management. However to showcase just a few examples demonstrates the nature of the work that has been covered in PERICLES and the challenges around generating impact at an appropriate level for the project, not just the target community.

4.2.1 Software components: when is enough enough?

Among the tangible results, in particular where they could act as “stand alone” tools outside the bigger vision, even supporting other fields than preservation, we had those that were for direct use by the practitioners in the field, from creator to curator of data and digital objects. The PERICLES Extraction Tool (PET) was one of the early results delivered by the project. This tool was disseminated through various channels including social media, a blog, an e-magazine article, a screencast tutorial, an IDCC workshop, a peer reviewed publication, and presented at numerous international conferences. The tool was made freely available on github for download.

From feedback it was felt that this straightforward tool had the immediate ability and future potential to support practitioners in their workflows in new ways. Evaluated in the two use-cases of the art and media domain and the space science case, a couple of key points were noted. Firstly, the novel function of the PET to work outside the established metadata perspectives by monitoring and collecting information from the whole system environment was valuable. Secondly, by data being presented it in a standardised format that was valuable for object description. Thirdly, the introduction of the concept of significant properties which thus influenced how objects for preservation need to be viewed. Additionally the PET, with a little community development, can be easily integrated with other open source software and components such as those from Artefactual Systems, including Archivematica. Certainly for the archives, data management and arts and media domains this was noted as particularly powerful. Therefore, while not a game-changer in itself, the tool supports a greater goal and can be easily implemented into practice and can have almost immediate positive impacts.

Therefore in the spirit of lessons learned, the PET is also a valuable example in terms of having to manage the delivery and dissemination of a ‘typical’ research output. On one side, standing as an advantage for dissemination activity, the tool was developed early in the project, was demonstrable and usable by ‘end-users’, is standalone requiring no other results from the project, is innovative and easy to install, and of course is open source with an Apache licence meaning it can be further developed by anyone. Hampering the full dissemination potential was that the tool was designed to provide proof of concept and to fit into the PERICLES conceptual approach to preservation i.e. the tool has no market maturity and is only a small building block in the full PERICLES framework.

This provides a challenge for effective dissemination and communication. We are convinced from initial feedback that the target communities would see the benefit of the tool but not in its current maturity. The industry is unlikely to immediately take it up, because it is “too small” compared to the effort needed to market it. The development is not the issue as with moderate improvements the tool could be at a sufficient technology readiness level. However “selling it” is what will take a lot of effort, which means: user testing, dissemination, evaluation, as well as aftercare of first implementation and product support. This all equates to a significant investment of time and staff effort. From a project point of view, the question would be: either put a lot of effort into exploitation activities and hope that one succeeds in bringing the tool to market, and hope that this would then satisfy the funder in terms of "return on investment", or spend your efforts on the real big outcome of the project. One should not underestimate what it would have cost to make PET marketable, to give it a real chance of being actually implemented. This kind of "neat and practical" tool would only be taken on by companies, if they had a customer wanting it. Unfortunately the customers in the field of preservation are on very limited resources and currently dealing with much more salient issues. They would invest their limited resources into implementing something that might prove valuable tomorrow and not in a year from now.

The takeaway from this is about realistic ambition and 'seeing the bigger picture'. On one hand the PET looks like a quick win for a project engaged in the promotion of a digital preservation approach. We worked hard to promote the tool and to raise awareness of it within an interested community and in this we were successful. The flip side is that we could have gone further. Developing the tool to a point where it could be implemented easily into existing practitioner workflows may have resulted in those target communities feeling that PERICLES had results that had more direct and immediate impact on their workflows. However this would have detracted from the other work in the project, to its detriment. Grant-funded research projects, operating over a limited timeframe, must always balance these issues on a case by case basis to understand what to prioritise. In our case, it obviously was not ensuring that PET is implemented somewhere in a real system but to ensure the tool was disseminated to the community with enough interest, documentation, and excitement to encourage take up.

4.2.2 Bridging the gap: ontology patterns and linked data

Other challenging tools and concepts to disseminate results about are those that are not end-user oriented as is the tool addressed in the previous section, but that nonetheless require the 'knowledge and experience' of the end-user as inputs and drivers for the tools creation and calibration and integration. Specifically, I will use here the ontological concepts and patterns approached in PERICLES as well as the Linked Resource Model (LRM). The purpose of this section is not to justify the value of the tools, this is manifest in feedback received about these tools and their potential. Rather, it is simply to make the case that in order to raise awareness of the potential of these tools, the project had to view the dissemination strategy more holistically in this case. The tools, while concrete, and created by the solution-provider, are not independent of the problem owner, and actually the relationship is more reciprocal. The concept of ontologies and the LRM provided a language for the description of objects and environments and their dependencies. However, the language could not be shaped into something useful for the community without the community influencing the designers. This presented a dissemination challenge whereby the concept needed to be disclosed to the 'end-users' but the 'end-users' are ultimately needed to produce a relatable and relevant final result. Thus again the project was faced with the dissemination of what could be considered an interim result, an approach rather than the end product ready for use. It is fair to say that those partners in the project responsible for dissemination activity, neither experts in ontology patterns nor practitioners/end-user experts from a given community, felt that without careful consideration, dissemination could be 'into a gap' occupied by neither stakeholder. Dissemination activities therefore should here address different groups: those working in disciplines that apply and create ontologies and semantic models, those researchers in preservation that understand the principle of models and might have worked with modelling in their own projects, and the practitioners on decision-making levels who ultimately would inform user requirements and the respective industry, to sanction the model-driven approach as a valuable way to deal with change in digital repositories and support LTDP.

This challenge is a good example of the need to not only communicate through different pathways to the different members of your stakeholder group but also to communicate through the bringing together of these disparate groups. We learned the lesson in this project that there is huge value in listening to and learning from the language of communities and fields of study that are not commonplace in your own field of expertise. PERICLES addressed these two approaches by generating publically available training material, multiple peer reviewed publications on the concepts behind the tools but by also working with the preservation researchers and decision-making practitioners through workshops during the project and also at the final project conference. Bringing together these groups achieved the most beneficial dissemination outcome in terms of raising awareness, generating understanding, and facilitating the development of mutually beneficial relationships between all these stakeholders.

4.3 The end of project conference: seeing the bigger picture

At the outset of the project it was envisaged that towards the end of the project period we would organise a 'major' event to in some way publicise and demonstrate the project outputs and to discuss relevant issues with the target audience.

This event was facilitated by a collaborative effort between the dissemination, training and technology transfer work packages, and as such the starting point for this activity used the question of 'who is the target audience?' as its main focus. However this point of origin demonstrates in our case all the misconceptions and shortcomings that one often encounters in research and/or funded projects. In these early stages we simply assumed that because PERICLES is a project dealing with the challenges of digital preservation that any and all practitioners involved with preserving digital material would be our main target audience, i.e. the frontline of hands-on practical work. Thus the major event was envisaged potentially as a summer school to provide that audience with the knowledge necessary to utilise PERICLES concepts in immediate practice.

As has been indicated in Chapter 1, the thinking around dissemination activity, our target audiences, the nature of the research results etc. changed with the maturing of the project. Consequently, 2 years into the project, after reaching the halfway mark, we began to realise that this assumption was not accurate and in fact if we did solely target this audience then it would be a disservice to the project's intentions and to the sustainability of its results. It became obvious to us that this first concept of our target audience represented a group of stakeholders that was too deeply involved in the everyday challenges of digital asset management such as a lack of resourcing, file migration, metadata schemas and many other 'basic' preservation tasks. Topics such as emulation, dependencies models, ontologies and semantic drift were beyond the remit of these practitioners immediate needs regardless of their potential value and concepts to be implemented into practice. Therefore the concept of a functional model-driven approach addressing the gamut of preservation challenges one may face is one perhaps considered too 'blue skies' research (though we should be clear that PERICLES research is not blue skies in that sense that we have clear applications for the results, some are just at a low technology readiness level). In hindsight it seems obvious that practitioners addressing day-to-day challenges may feel overwhelmed or bombarded when confronted with approaches that are in their infancy, that look to the future, and that need continued effort to be near any kind of realistic implementation status. Therefore with an understanding that librarians, archivists, collection carers, conservation experts and so on were the wrong audience at this early stage of introducing what could be a game-changer or an indicator of a paradigm shift, this meant also that the idea of "training" them to use the PERICLES approach was not really appropriate. This meant that the summer school idea was now replaced with the concept of a conference. As will be outlined below this did not mean we were to no longer 'target' practitioners, simply that we needed to address this audience in a different way and to understand that the sustainability of our results and their potential use in practice is reliant on the take-up development of these results by others.

The next stage for us was then to talk to our engaged communities of practice and domain experts within the project, and reflect about the challenges they face, the ideas concerning potential future needs and practices. All this with the understanding that necessary change often comes from above, from a change in the framework of practice and not just from fire-fighting on the frontline. Solutions to challenges can come from 'big leaps' often to be found through research projects, and through incremental collaborations. This understanding aligned with the partners' discussion on how to formulate a shared understanding of the 'big picture' or 'vision' of the PERICLES research.

The best opportunity for us to then engage meaningfully with practitioners and managerial decision makers, and developers, was at a time when our results had a more concrete base, i.e. when they were matured to a point where they could be used and their theoretical aspects became understood. A time close to the end of project was always going to provide this opportunity. However this would leave little time within the project duration to complete any further dissemination campaign and so it was clear that we needed to make a big impact with the "right audience", and that audience was to be the one most apt to take up our approach and ideas into their own thinking, research, experimentation and development.

The focus was therefore to attract 'influencers' in the field of digital preservation. On the one hand, we wanted to talk to the industry They are most likely to include our approach into their development of preservation-relevant systems. However, industries need to be pushed by client demands. Therefore we also needed to bring in entities with a preservation remit such as representatives of the OAIS model, the Digital Preservation Coalition, other research projects, and other professional 'think-tanks' involved in practical preservation. Were we to make this conference simply a show and tell of PERICLES project results we believed it would have been difficult to secure the attendance of the key figures from those influencing roles. Thus we were faced with a need to compromise in order to benefit. We decided to go for a real exchange of peer research, rather than solely a celebration of PERICLES results. We invited key actors to work with us on topics to which PERICLES had "something to say", but to which also other projects and organisations had something to contribute. Through this we effected an equality of interests and a real peer-to-peer exchange. The key actors worked intensively with us on preparing the final event, and through this we could communicate the PERICLES approach without sounding like a PR campaign.

In turn, those established key actors attracted exactly the type of audience we wanted: other key actors in the field of preservation with a strong involvement in research and with relationships with industry partners. We combined this strategy of an exchange of peers with PERICLES being one amongst others, with a series of PERICLES events, akin to 'training workshops' for tools, and a technical workshop dedicated to demonstrating and 're-enacting' the PERICLES integrated workflow. This is not to say PERICLES was side-lined at all. There were 'PERICLES in practice' sessions every day demonstrating our tools, and presentations throughout the afternoon sessions that spoke directly about PERICLES results.

There were three main observations from the conference.

[1] We attracted the exact audience we intended to. We perhaps underestimated how diverse a range of skills that group would have. The feedback we received from attendees was positive, however it is worth noting how difficult it can be to develop and deliver a programme that pleases everyone. Participants did share some comments that express well the dilemma inherent to our approach i.e. addressing project results versus domain challenges and technical software development versus conceptual approaches. Attendees valued the discussions they had during the conference and recognised the value of the

PERICLES approach but often found it challenging to get to grips with such technical work in a short period of time.

[2] The discussions during the conference were candid and provided a means to introduce our approach in a way that made it more acceptable than a "promotion"-type of approach would have done.

[3] It reinforced our view of the preservation world, and the constraints and preconceptions that make it difficult to introduce such a visionary or game-changing approach as PERICLES.

A particularly valuable lesson is to understand (now in hindsight) that one would actually need at least 6 months or a year after the final results to fully disseminate in a way that allows for a sustainable implementation of research in the minds and practice of current and future researchers and developers. This is of course difficult to overcome in a fixed-term project with back-loaded results but should nonetheless be given due consideration during the project planning.

4.4 The PERICLES website

The PERICLES project website was a communication platform that evolved over the course of the project from a tool used initially as a placeholder for 'About Us' information and our publications and PowerPoint presentations, to something much more valuable and interesting to a visitor. It hosts a training sub-site, screencasts of project tools, video interviews, recorded seminars and a number of insightful and informal bogs about project results. We also used the website as a portal through which to register for and keep up to date with out final project conference details and programme. As a means to disclose information to the public, the website was a success. However there were a number of lessons learned along the way that are useful to highlight here and also a number of ways in which we may have made more of the website in hindsight.

On a basic operational note the strength of a project website is a direct result of the quality of its content and the clear organisational structure of that content. This results in information that is valuable to the visitor and easily found. In the early stages of the PERICLES project this was challenging as we were balancing the need to communicate clearly on the project background and expected results with the fact that only immature results were available and much of the research had yet to be consolidated into a clear contextual story. This meant it was difficult for the visitor to easily understand the goals of the project and to envisage what the tangible, usable outcomes might be. The project partners recognised this and worked hard to revise the text on the project website and to introduce the concepts of the research and the deliverables in a more transparent manner. However, this is something that in hindsight we should have started sooner, recognizing that especially for a project of complex ideas, clarity for a website visitor is key to them staying on the website, looking at other pages, posting comments, and even attending project events.

Even in the early stages of a multi-year project, it is important to start communicating and raising awareness as soon as possible. In the event that results will not be ready for release until mid-project the dissemination team can still take advantage of that time to create content on the website that sets the scene for the results and thus prepares the audience for their arrival. In this way complex ideas can be conveyed to an audience who is already relatively well versed on the concepts being used in the project research fields or has at least been introduced to the new terminologies and approaches. Most importantly, with a website that has real clarity on the outcomes of the research, the audience will all the better be able to envisage the results in practice and see how they might be implemented to the benefit of their own workflows.

The second part of this operational context is content organisation. On the PERICLES website we have kept information on the homepage uncluttered, so that the visitor can easily understand what is available. While all of the information about the project and its deliverables can be found by exploring the site, our primary goal was to direct a visitor to the most current information. Hence the homepage acts as a snapshot, extracting information on events, blogs, publications and social media for which more detailed information can be found through the tabs at the top of the homepage. For this to work effectively and to look professional and interesting to a visitor, the website and content must be updated very frequently. Publications or blogs or listed events that are either over or published several months ago is much less likely to elicit the confidence in a visitor that this is a dynamic and community-engaged project.

Another aspect of providing a professional appearance is in editorial consistency across the website. This can be particularly challenging in a project that consists of partners across multiple language barriers, multidisciplinary fields of expertise and in topics of high complexity. The staff time required in PERICLES to editorial drafting of material for dissemination purposes was not insignificant. The challenge was less about ensuring quality for journal style publication but in translating complex topics to informal and 'inviting' communication. In such a large project it is not always possible to have the native English speakers write all the dissemination text. Technical partners often need to write the informal text such as blogs or tweets or annotate a screencast or other presentation. Editing beyond grammar and sentence coherency must be treated with caution so as not to change the meaning or intent of the non-native English author. There is no silver bullet here and this is something that the PERICLES project found to be an inefficient but very necessary task upon which to spend time. The advice from this experience would be to carefully consider how to effectively implement an editorial and publication procedure within the project and more importantly how to enforce it across partners. PERICLES at times succeeded in this and at times found it more challenging as deadlines for publication often leave little time for review and edit. The best way to mitigate against this is to track events, keep internal awareness of the procedures and to try to frequently share methods on clear communication for dissemination. This was managed in our project by close collaboration between the procedure-setting governance and management work package and the dissemination work package.

One aspect of the website development during the project that may have been managed differently was 'impracticable initiatives'. In PERICLES these were few and far between but they are worth mentioning. These are potentially great ideas that fizzled out or turned out to be unnecessary or superfluous. To take the public wiki as an example; the technical partners responsible for creating the main test bed were using a wiki-style platform for managing their work and sharing their ideas. This seemed like a great opportunity to allow the interested public to access the wiki and to track the development of the user scenarios, tests and requirements that were being examined in the project. This would give a view into how the project is progressing, what issues are being examined and a reference-able source of project working information. However, while the potential was there, there was little need to reference it as a source. The primary function of the wiki was to serve the project partners in completing their work. Therefore while there may have been areas of interest for public visitors the wiki was not managed in this way and audiences were rarely directed to the site. While there was little investment in the development of the wiki for a public audience it nonetheless may dilute the strength of our communication pathways by cluttering the website with unnecessary 'rabbit holes'.

Another example would be the 'landing pages' for our communities of practice. These landing pages on the website were useful introductions to the concept of a CoP but they were envisaged also as a place where audiences from those broader communities could find up to date information on the discussions being held by the CoP participants and perhaps even engage with the groups. As the CoP groups and their discussion evolved somewhat organically, this adding of value to the landing pages became of lower priority. The result is a space on the website that seems unnecessary. The CoP groups were established with a purpose which they served very well in the project but the interaction of those groups beyond the project with the public did not take place and instead the reports from those CoP discussions were released as a summary.

The takeaways from this section focus on the need for the website to be a calling card as well as a place to generate enthusiasm and instil confidence. Visuals such as theme colours and logos should be used consistently, information should be very clear and content well organised. All text should be painstakingly edited. Complex content should be presented as to avoid confusion and in context. Finally websites should be clutter free and easy to navigate in order to ensure a visitor feels they can find what they need and stay on the site.

4.5 Social media

In seeking out more interactive communication, not from just our ‘known’ target community but also from an as broad as possible range of interested and relevant stakeholders then social media is a great way to add scalability to any dissemination activity. Without the use of social media our main two-way interaction with target communities would be at conferences, workshops, training events, and in other public forums. The number of ‘heads’ accessible via these traditional message delivery pathways is in the hundreds. By addressing our message to international email distribution lists and through Twitter we were able to access several thousands and in theory could have reached several magnitudes more. This is where we need to be realistic. As will be discussed in Chapter 3, there is a difference between people ‘seeing’ a message about PERICLES and actually clicking on the link or absorbing the information therein. Primarily these social media tools really serve as an aid to direct individuals to where information resides.

However the use of Twitter in live settings such as conferences and workshops has a much more powerful function and can bring a small contained event to a mass audience. During the final PERICLES conference held in the Wellcome Conference Centre in London at the start of December 2016 we provided participants with the metadata tag #PERIconf2016 to use with their tweets. Over 3 days of conference presentations and workshops the thread had received many hundreds of posts from a significant portion of the audience. Given the network of indirect views for these posts from the participant’s followers and from followers of PERICLES who were not able to attend, it is easy to see how instantly far reaching the posted highlights from the conference can be. Viewers of the Twitter feed can follow the discussion easily, especially when good Twitter practice is implemented by participants (clear messages, no abbreviations, use of images or photographs) and there is a designated moderator from the project to ‘fill some gaps’ and post messages when new speakers start and when salient takeaway statements are made. The flip side of this is that publicly posted messages are usually unstructured and unordered. They can be responses to ‘unposted’ questions asked in the conference and due to character limits per post there are often abbreviations, colloquialisms and incomplete sentences. To ensure these messages are not lost and that there is a legacy for those unable to follow the proceedings of the conference, the messages should be reviewed once the event has finished. These comments can then be placed in a context and supported with other material gathered during the conference such as PowerPoint presentations, photographs, diagrams and even audio. This type of narrative can be created using a number of freely available online tools. For the PERICLES conference we used Storify to distil the myriad of comments and images posted by participants on social media and supported that material with links to the conference programmes, linking text, explanations, images and hyperlinks to video recordings of the key note talks and panel sessions. This material was then disseminated to the public.

Using social media successfully necessitates an appropriate social media strategy to be created for a project. This does not need to be a long document but in writing it the project partners must consider what to use social media for and when and how to use it. Without a clear plan there runs the risk of disclosing information into the ether rather than truly raising awareness of a project with an appropriate audience. PERICLES found the use of social media to have the greatest impact for dissemination when trying to alert a group of people to the publication of results or for the opening of registration to a workshop or our final event. Equally as valuable was the use of Twitter to generate interaction with the audience (both live and remote) during an event. We found that periodic newsletters distributed to email lists was the best way to raise awareness on more complex topics as the greater amount of text in a newsletter, often read on a workplace desktop computer screen, enables viewers to more easily read about the context of a result or follow links quickly to other documents which users of Twitter, likely on a mobile device, are perhaps less likely to do. The amount of two-way interaction directly through newsletters is difficult to measure as many newsletter readers also followed PERICLES on Twitter and attended our event but feedback from those audiences was positive and indicated that it was through these newsletters that first contact was made with the project which then through the generated interest led them to read more or to follow us on Twitter.

5 On measuring success and identifying key learning outcomes

In popular project management frameworks there is a Start-Up phase in which along with defining a project brief, a business case, and a project approach etc. there is a task to 'capture lessons learned'. While it is not the purpose of this report to assess the project approach as a whole, it is the purpose of the following sections to comment on our dissemination approach and, where necessary, to draw necessary instances from the project that influenced our communication and dissemination of results. This reflective approach can then hopefully provide a source of value for future projects, but can also help our project partners define their legacy planning, sustainability efforts, future development and communication.

Some of the feedback received from the long-term digital preservation community will be further discussed in the sections below. However one very clear and resonating insight shared by the audience of the project's final conference '*Acting on Change: New approaches and future practice in long-term digital preservation*', was the consensus that while research over the past 20 years and last decade especially has been well funded, innovative and relevant, the expected progress in the field had not been manifested enough. The reason for this was not abundantly clear but there are some recurring notions that were relayed:

1) the complexity of the task and thus of any solution in what was acknowledged as a constantly evolving and expanding field;
2) the difficulty around coherent communication with a vast and often disparate array of audiences, and
3) perhaps most significantly the dilemma that is the need for research outcomes to be taken up and forward by commercial entities versus the limitations of results with modest technology readiness levels and modest direct implementation potential.

There is a space here for smaller enterprises to exploit results, which of course does happen to a degree, and indeed the PERICLES project has tried to support this activity around the sustainability of the results with the creation of the www.preserveware.com portal, but in such a dynamic and ever emerging field playing catch-up is inevitable. Thus, developing an adaptive marketing strategy has been highlighted as key. These challenges cannot be completely surmounted by dissemination activity alone but in the PERICLES project we have certainly been acutely aware of the scale of the field and thus the scale of the audience to which our dissemination strategy needed to be directed.

Our intent in the sections below is to reflect on both the quantitative and non-quantitative values of our initial objectives. Apart from direct personal feedback, the success of the activities in relation to those objectives is the major factor in evaluating the soundness of our decisions and understanding our failures or misconceptions. The difficulty with dissemination activity is that measuring success can be done solely with quantitative parameters, hard facts, website visits, attendance numbers etc., however as communication involves human beings and the nature of their behaviour, there is significant value in understanding soft facts that have a strong value, such as the interpretation of responses, or the quality of the response, or the experience and influence of a key player within a community on the general behaviour of this community.

We have reflected in earlier references on the difference between the types of "dissemination" resulting from "dissemination", "training" and "exploitation". If in this context, dissemination first and foremost is meant to ensure during the project lifetime a broad awareness of the project, its goals and results, then we can say we have been successful. The hard facts, including increasing figures in social media via twitter and global email distribution lists, website clicks, mentions in the Internet, publications etc., and the soft facts such as the quality of the CoP discussions, their legacy and impact, or the strong response to our culminating event, are certainly convincing indicators of having been very successful in our endeavour, in particular in the last 2 years.

Section 5.1 will attempt to evaluate the success and understand the failures in disseminating a breadth of information about our project to a large audience.

Section 5.2 of this chapter looks back and reviews our ambitions, their intent and the feasibility of the individual actions we sought to undertake beyond creating project and results awareness[1]. We try to measure our success in some way through an assessment of key feedback received from our audience and highlight the adaptive and improvisational nature of our dissemination strategy and how this worked.

5.1 Awareness: "PERICLES, sure I have heard of them"

In this section we ask ourselves, "Was our dissemination successful?". By looking at our objectives, and our intent, we can see what was successful for us and why, and additionally where we might have done things differently in the project.

Firstly we can state the objectives of "pure" dissemination in the sense of spreading information with regards to the project research and results:

1. make sure that everyone who matters has heard of PERICLES;
2. make sure that everyone who matters knows that PERICLES is an EU funded project;
3. make sure that everyone who matters knows that PERICLES is a preservation project;
4. make sure that everyone who matters knows that PERICLES is about change affecting digital objects;
5. make sure that everyone who matters knows that PERICLES proposes a model-driven approach to preservation;
6. make sure that everyone who matters knows every time a result has been released;
7. make sure that everyone who matters knows where to find the results of PERICLES;
8. make sure that everyone who matters reads the key information on the results;
9. make sure that everyone who matters looks up the results of PERICLES.

Alone this list brings with it many questions but there is another salient point to note regarding the question of "success" in dissemination, "Has dissemination succeeded when people say, 'PERICLES, sure I have heard of them', or only if people say, 'PERICLES, sure I have heard of them. They are doing interesting research.'?" If we try to assess the value of activities planned and carried out in our dissemination work package, how strongly does one need to tie the overall success, in particular the value of the research and quality of the developed outcome, to the value of dissemination activities? Dissemination might be good, even if the product is not. So one needs to distinguish between the success of dissemination activities and the success of project outcomes while not disregarding that

[1] H2020 has introduced "communication" as work package alongside tasks of dissemination and exploitation, thus stressing the difference between pure "dissemination" of information (one-way communication) and the need to define strategies for communication activities (two-way communication). This reflects much of the rationale we have built during the project to meet both types of communication.

they are not wholly mutually exclusive. A well-known fact is that people would say "Sure, I know [project name]!", and when asked further, then all people can say is "Well, [project name] has something to do with digital preservation". This is a case of very successful dissemination and a total failure at the same time.

Hence, of all the questions listed above, the most important to solve is "Who is *everyone that matters*?". Following on from this we ask which of the above questions are key to achieving optimal impact with an audience? Generally it might be adequate for a mass product to be promoted to a very large public, and to ensure that the product name and the key nature of the product is known as much as possible. The rest follows from this. The aim being to entice as many purchases of the product as possible. Obviously, this is not quite the aim of research outcomes. Quite the opposite, an indiscriminate promotion of research objectives and outcome can backfire. Trying to convey messages that can not easily be understood creates frustration with the "wrong audience" leading to the rejection of a project and its results: "[project name], they are doing some crazy stuff, totally blue skies, totally ignoring the practice and what is already there. From what I have heard, they are only reinventing the wheel".

Regarding PERICLES we can say that our broad awareness generated with the 'audience that matters' has reached a level that we would assess as highly successful - however, under the reserve of 'given the circumstances'. We have mentioned this before, but it is possibly the most important lesson we have learned and wish to communicate: before anything else, make sure the consortium sits down and works on formulating the common vision and the big picture in simple words. No matter if the audience is later determined as only an expert audience. This is where we recommend any project starts. This is one of our 'given the circumstances' that constrained our success: had we started earlier in understanding how salient this step is, our job would have been both easier and more successful already in the first two years.

From formulating the big picture, the next step is to address the question of the target audience and to dare to focus mainly on specific audiences. Unless you want to mass merchandise a product, the general public might not be worth too much of your effort, as illustrated above. If time for dissemination is limited, it is important to satisfy the right objective: either make the project widely known in a superficial way, to an audience that will forget it as soon as the information flow stops, or feed information to an audience that will adopt your views, ideas and carry them on, even after the project ends.

The first question in finding the right audience will be to understand their value for different purposes. In the case of PERICLES, it seemed natural that our two audiences were:

[1] Every single person somehow involved or interested in creating, managing, collecting, storing, archiving, curating, manipulating, publishing preserving digital data or records or objects or repositories or archives or collections.

[2] Practitioners / professionals / decision-makers /influencers in the field of digital preservation

Obviously to raise awareness about the project and to disseminate results widely, it seemed natural to address the first group, which would include the second group. While one would suspect high-level information for widespread dissemination to be easier to create and plan for, it is in fact much more difficult if the subject of the message to be transferred is complex. This requires that those carrying out those types of activities for the general public need to have understood the complexities of the project. Commonly, the 'dissemination people' are non-technical people. They need to understand to be able to 'translate' for the general public. As stated before, this means sitting down with the researchers repeatedly and ensuring that those responsible for dissemination activity in the consortium understand the objectives and the results. Likewise the dissemination activity should be verified to ensure no mistakes or misinterpretations were made. From the start of the project, communication, dissemination and exploitation should be discussed to ensure a real impact. The undervaluing and disregarding of dissemination activity from the 'technical' research and development team often stems from the misconception of dissemination being a superficial promotional activity and a lip service to the funding bodies. Promoting the value of communication and dissemination is therefore the first task of the work package.

After reading this, one might think: why address audience [1] at all, and not go straight to audience [2]? The answer is simple: there is strength in numbers. And audience [2] needs to 'hear us in all the noise'. The masses will help us be loud and be heard. Also by addressing the general audience we are forced to formulate our goals in 2-3 sentences and in simple words, which is the known 'decision-maker' test for all ambitions. To entice them, the word of mouth that comes needs to have just enough interesting and attractive information to tickle their curiosity and make the audience [2] look out for our results.

5.2 In the eyes of the beholder: gaining legitimacy and acceptance

The type of dissemination activity undertaken by PERICLES partners evolved over time. In the initial stages of the project simple '*Hello World*' messages were released via social media, introductory videos were recorded and posted on YouTube and the project website was given some flesh. The stage was about building a strategy and a base from which to communicate.

As the volume of disseminated material increased during the project we began to see these efforts bear fruit. The number of followers on Twitter steadily increased, as did the number of distributed newsletter open rates (measured through mailchimp), and newsletter subscribers. Our public workshops and training events were very well attended if not fully subscribed. Our final project conference 'Acting on Change' was oversubscribed and had a waiting list for participation. This pattern was mirrored in the degree of interaction with our target audiences which developed from occasional comments received by email to the project website or directly to project partners, to the project receiving more engaged requests or notifications. This greater level of interaction included followers sharing their comments on our publications or sharing their research challenges. Once the project reached maturity we noticed that our followers were more likely to re-tweet our messages and mention us in tweets pointing out things we should be aware of, or acknowledging an interesting communication that we have made e.g. in a blog post or deliverable.

We believe this represents two occurrences:

1) an increase in interaction as a natural result of an increase in the volume of disseminated material, and
2) perhaps as important, the project gaining a level of legitimacy and seriousness in the eyes of the audience. By having a dissemination plan that focussed on continually engaging with our audience on topics that were relevant and clearly aiming to be of benefit to the community (even if in the future) then our audience recognised this and was willing to engage. This was manifest in members of the professional community being excited to accept our invites to join us at workshops and the final conference and in one case a group wanting to join the project!

The takeaway here is about continual action, not just to fulfil the role of disseminating project information, but also to ensure a level of engagement with the public. By sharing project results with a broad audience and keeping the PERICLES name in the social media domain and in the scholarly domain, the project was able to 'keep hold' of the audience and gain a level of acceptance into a heavily populated field. Assessing the right frequency level at which to communicate is difficult. Communication should be clear and relevant and timely. Bombarding the audience with similar messages frequently may be counteractive. Successful dissemination strategies should therefore aim to strike a balance between keeping the project name alive in the minds of the audience and communicating only when valuable information is available to be shared.

6 Concluding remarks and recommendations

This report has endeavoured to be an honest and at times frank reflection on the dissemination activities that took place during the 4-year project period. Any research project is likely to face challenges along the way and PERICLES has been no different. The key to what we believe has been a successful campaign of dissemination is to be flexible, adaptable and to be mindful; *flexibility* to allow the nature of the research results to dictate the dissemination method rather than be constrained by it; *adaptability* to change tact or strategy when the current method is not working as expected; and mindfulness to frequently stop what you are doing and try and see the situation for what it is, what needs to be prioritised, who should you really be targeting, what benefit are you actually offering. By keeping these factors in mind it should ensure at least that the dissemination activities in the project are relevant and that they stand a good chance of achieving their laid out objectives.

There are recommendations and lessons learned highlighted throughout this report and it is not the intention here to repeat them again. However below is a brief list of topics that we would recommend are given due consideration as early in the project as possible, application stage included!

[1] Be clear on your objectives: are you disseminating in a strict 'disclosure' sense, or disseminating in a broader 'communicating and imparting knowledge' sense? This distinction will define your strategy going forward.

[2] Know your offering and know your audience. The fundamental importance of this statement cannot be stressed enough. Spend time during project start-up really understanding what the outcomes of the research will be and who, realistically will be able to use them for benefit and thus want to hear from you.

[3] You may be competing for public attention with other similar projects: use multiple methods for dissemination, from newsletters and peer reviewed articles to conferences, workshops and social media. Make sure these 'vehicles' are tailored to your objectives.

[4] If no one can find your results how will they be aware? Make sure you have a website that has clearly structured information and results, has a tried-and-tested search function, and provides an option for feedback. This is the time to think about post-project access also. Your results may need to be transferred to an publically supported open access site.

[5] There is rarely a dissemination professional on hand within a project team. Get one if you can! Or at least seek help. This could be through engaging or enlisting key actors in the target audience community who can act as an ambassador for your project and can provide advice and feedback from the community 'whispers'.

[6] You are not doing this alone. Make use of the vehicles for dissemination that already exists in your target community be it through recurring events, journals, professional bodies or associations.

[7] Open your doors. Or at least your windows. If you disseminate without seeking advice from your target audience you should expect to miss the target occasionally. Seek feedback periodically by asking your audience for comments, and sending out questionnaires to best understand how to communicate with them.

[8] Develop a budget to support the required effort. A well run dissemination campaign takes a lot of time and effort yet is often not the focus of the project (which the research activity is) and so is not always well planned for. Costs to be covered are not just staff time but events costs, travel and publications which can all add up.

[9] Have a clear timeline for activity from the start of the project to the end. Remember that a final event that takes place at the very end of the project leaves little room for post-event dissemination and analysis of the feedback received.

[10] Periodically evaluate your activity. The nature of research projects and their results means that what you plan for does not always pan out as you had expected. Actual results can be quite different from those originally envisaged. Be flexible and adaptable to this change. Evaluate what is working, what is no longer working, and what is missing. Correct your activity plan accordingly and try to understand what success looks like and when you will know when you achieve it.

This top 10 is not a silver bullet but certainly represents a list of topics from which PERICLES has learned many lessons and that any project should consider in the Start-Up phase. The measure of what is successful dissemination will differ for any given project whose remit, outcomes and audiences are all different but regardless of the quality of the ‘product’, careful consideration and due effort in dissemination activity can raise awareness, promote understanding and contribute to the sustainable legacy of the research.