FINAL ISSUE

TIMBUS

TIMELESS BUSINESS PROCESSES AND SERVICES

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Editorial to the Final Issue:
More than Data

This is the final issue of the TIMBUS newsletter so it's a good time to reflect on how TIMBUS has offered new insights and capabilities for digital preservation and business continuity. These can be summed up in a single slogan: more than data!

TIMBUS can't claim to be the author of that idea. It's long been recognised that digital preservation is about more than just data: in earlier days this would have been phrased as a distinction (at times a schism) between emulation and migration: the former acting at a software or operating system level; the latter intervening at a data level. Migration has made much of the running in the last decade. But, as data has become more complicated and interdependent, so the apparent simplicity of migration seems increasingly illusory. The file is not really the atomic unit of preservation actions, nor for that matter is it easy to disentangle data from the numerous libraries, applications, codecs and services which give it coherence. Similarly as system architectures have become more sophisticated, so the prospect of emulating a desktop environment seems both less relevant and less useful. The point is that, with rapidly changing technology, even digital preservation techniques are subject to obsolescence.

TIMBUS finds itself at the cutting edge of this challenge, responding to emerging issues and pointing to the sorts of solutions that will be needed when everything is 'a service'. 'Everything as a service' means that tools and applications are managed and maintained flexibly, remotely and continuously. Change happens with minimal disruption to users who simply pick up and drop services as and when they need them. Everything is available to everyone everywhere. So far so good. It also means that services can be consumers of services. So dependencies are created that users don't need to know about or understand. Data and services - upon which our economy increasingly rely - are composites of numerous, distributed tools and, furthermore, are meshed in an ongoing process of evolution and enhancement. That's fine if you need the most up to date tool or data. The move from 'computing as product' to 'computing as a service' is arguably the most important engineering achievement of a generation. But it's an altogether bigger challenge when you need to roll back to a previous state (as in business continuity management) or you need to recover an authentic original from a point in the past. Currently digital preservation and business continuity management have precious few solutions for this coming complexity.

TIMBUS has gone some way to providing those solutions. These will be illustrated in this newsletter, demonstrating how digital preservation and business continuity can begin to preserve business processes. Our White Papers reflect on the mature outputs of the project and a new legacy web portal will shortly be launched to provide long term access to tools, code, and use cases. A new partnership with the Open Preservation Foundation will help sustain the code and the community around those tools.

It's also time to thank those many partners and colleagues who have contributed to and commented on our work. We have been impressed and encouraged by the open-handed, clear-minded support of the wider digital preservation and business continuity communities. We know that our work has benefited from contributions and debate with SCAPE, APARSEN, EUDAT, 4C, IMPACT, Workflow4Ever and others: we are grateful to these and others and we hope that the benefits have been mutual. We are grateful to the members of the DPC who have commented on our work and the organisers of the iPres conference who have recognised our work with several awards and prizes.

So the internet of things will turn out to be an internet of dependencies. If we're serious about data as infrastructure we're going to need to understand those dependencies a whole lot better. TIMBUS has shown the way. Digital preservation is for more than just data.

Letter from the Project Coordinator: Looking Back on 4 Years of TIMBUS

By Wasif Gilani, SAP

The TIMBUS project, Timeless Business Processes and Services, concludes this month after four years of research and development partially funded by the European Commission. At this stage, all tools developed during the project have been made available to be deployed in a number of industrial use cases coming from the diverse domains of Open Source, Civil Engineering, and Health. The focus of the project in the final months has been directed at fine-tuning the TIMBUS tools being deployed in the respective use cases in order to enable digital preservation and redeployment of business processes. The evaluation results of the TIMBUS tools for each use case will be documented and made available in project deliverables, many of them open to the public and available through the TIMBUS Portal [1].

In the fourth year of TIMBUS, project partners have devoted particular attention to finalising the TIMBUS tools necessary to support the final phases of business process preservation and redeployment of use cases.

Additional Context Extractors have also been developed to capture use case specific context, including the Taverna Extractor, RCAAP Network Topology Extractor, DSpace Metadata Extractor, Sensors Extractor, TACET, and others. All Context Extractors developed in the project have been integrated within a Context Extraction Framework to offer a single platform for capturing business process context. We have further implemented transformations for various Context Extractors in order to map contextual information captured by these extractors into the Context Model. This enables a unified merged Context Model which acts as a single data source for carrying out digital preservation and redeployment. The Context Extraction Framework has already been made available to the public via the Caixa Magica Repository.

The intelligent risk management tool, or iERM, has also undergone further enhancements in terms of automation. It has been directly integrated with the static and dynamic Process Extractors in order to automatically import business process models into the iERM workbench from the process logs, eliminating the need to manually model business processes within iERM. This integration further provides resource and performance information, captured by the extractors from the process logs, which is needed by iERM for running simulations. The integration of iERM with DPES has also been completed, enabling risk data to be sent to the preservation suite (DPES) to trigger preservation and to retrieve the preservation progress report within iERM. DPES can now also utilise the Context Model to execute the preservation and redeployment of business processes. The Verification and Validation Framework has been implemented to capture, store, and verify the business process metric on the redeployed system

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remotely through the DPES GUI. The local repository has been deployed to store the acquired business process artefacts rather than pushing to the Amazon S3 storage. In addition TIMBUS now integrates a Preservability Assessment tool, which can analyse the target business to provide a measurement of preservability, that gathers input data from the Context Model.

These enhancements to the integrated operation of the Context Model with the other TIMBUS tools, such as the extractors and the Preservability Assessment Tool, have laid the groundwork for progress in the industrial use cases. In the various use cases, Open Source, Civil Engineering, and Health, we have focused on making Converged Context Models available. These Converged Context Models are needed in order for DPES to carry out preservation and redeployment. Some of the use cases have already successfully implemented digital preservation through manual operations. However, as previously emphasized, TIMBUS has strived to produce automated digital preservation methods through a merged Context Model that provides all information necessary to eliminate any need for manual preservation or redeployment. The use cases have been further devoted to the development and execution of pilot studies for automated digital preservation.

Progress in technical development has honed TIMBUS methods and tools to maturity, enabling a greater level of utilisation in stakeholder communities, including the industries supporting the use cases. Internally, each project partner has been able to exploit the outputs of research and development within their own organisations. Further afield, relevant digital preservation communities have demonstrated a growing interest in new research in process preservation. With this proven success, TIMBUS has turned its attention to the promotion of TIMBUS approach by encouraging its adoption by a wider audience and exploring its potential use and further development. To support this promotion, an updated market assessment has been carried out to capture the trends and developments in the digital preservation landscape to determine the relevance of the research and to align with emerging technology.

The headway TIMBUS has achieved in encouraging the adoption of its methods and tools is mirrored in the successful initiatives of the project partners to further integrate TIMBUS. The industrial partners have transferred internal technology projects with the relevant internal product and development groups. The academic partners have introduced the TIMBUS approach into the research landscape by showcasing TIMBUS results to a range of research communities via training events and conferences. The partners have also collaborated to establish a relationship with the Open Preservation Foundation (OPF), in order to give the TIMBUS results a home once the project ends. By the end of the project, OPF will host and maintain the Context Extraction Framework and a number of key Extractors.

To support project initiatives to increase adoption of the TIMBUS methods and tools, the project has engaged with a number of communities who stand to benefit from the developments and products of TIMBUS. These community building activities include establishing a web presence as well as training events and conferences.

TIMBUS Accolades

For the second year in a row, TIMBUS partners SBA were awarded with the Best Paper award, presented to Tomasz Miksa and his co-authors for, 'VPlan – Ontology for Collection of Process Verification Data'.

Tomasz Miksa and Andreas Rauber from SBA accept award for Best Paper at iPres2014

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Ricardo Vieira presenting the TIMBUS Risk Assessment tool in 'Applying the TIMBUS Approach' at the 4C Conference 'Investing in Opportunity' in London 18 November 2014.

Through the website, the project has published blog posts about on-going achievements in order to provide insight into new breakthroughs and lessons learned. The posts have shown behind-the-scenes work done to solve a number of key challenges in TIMBUS, including the verification and validation of future redeployed processes and the integration of TIMBUS results in unexpected ways by some of the partners. The blog posts provide micro-insights into the project, but we have also published four White Papers that provide a high-level overview of major threads of the project: Verification and Validation, Risk Assessment, Context Model, and the TIMBUS Process. The methods and tools featured in these blog posts and White Papers have also been presented to the community at training events, including the APARSEN 2nd Digital Preservation Advanced Practitioner's Training in Vienna in July, and conferences, including iPres2014 and the Business Continuity Institute's World Conference and Exhibition last month. Through these community building activities, the project has been able to share the accomplishments made in business process preservation as well as receive useful feedback. After the project ends this year, the resources and tool information, including the blog posts and White Papers will continue to be available from the project website through the TIMBUS Portal at http://timbusproject.net.

Overall, TIMBUS has succeeded in making significant headway in the digital preservation of business processes. In four years, the project has generated useful methods and tools to support organisations interested in improving the continuity of their business processes and in increasing their capability for preserving valuable digital information for the long term. TIMBUS offers a number of tools and solutions to further enable planning, preservation, and redeployment of business processes. Organisations in need of this support can find the tools and other resources for adopting TIMBUS through the web Portal on the project website or through http://opensourcereposity.eu for source code. As further discussed in 'Sustaining TIMBUS through Community Building Select TIMBUS' in this newsletter, solutions have been adopted by the OPF for further development and maintenance and other solutions have been chosen for further development as proprietary software. Through these sustainable outlets, the community will be able to access TIMBUS and use the methods and tools that have matured through the lifespan of the project.

[1] The public deliverables be found here: http://timbusproject.net/resources/publications/ public-project-deliverables (last accessed 8 December 2014)

Wasif Gilani, Project Coordinator

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Context Extraction: a Recursive Journey

By Carlos Coutinho, CMS

TIMBUS comprises a complex network of tools and methods in order to carry out the capture and preservation of business processes. One integral to this network is Context Extraction. The first and main interaction between TIMBUS and the target business environment is the Business Context Extraction. The extraction is designed to create and fill an instance of the TIMBUS Context Model schema, or in other words, to capture knowledge about the target business in a particular moment in time.

This task is actually recursive, as the business itself evolves with time, so must knowledge about the business. A recurring extraction and reasoning system must, therefore, detect if major changes have occurred that could mandate a new risk analysis or require an initiation of new preservation/redeployment actions.

This business knowledge capture must accommodate the heterogeneity within the multiple environments assessed e.g., platforms, operating systems, sources of information, and legacy systems. Despite being able to provide a solution to fit all these requirements, the Extraction Framework platform was also able to provide multiple versions of extraction tools, each with its own strategy, methodology, depth, and detail. On the other hand, this Framework also needs to output its information in the form of OWL schemas defined as DIO and DSOs, ontologies that are modelled for each specific business. The constant updates and changes required must also be complied by the extraction tools.

The Business Context Extraction Framework developed for TIMBUS comprises tools that were run in multiple environments – Windows, Linux Debian, and Linux CentOS – to access the business environments using remote access via SSH, Web Services access, and local access for the use-cases that would not allow the former. They integrate code in various programming languages, including Java, Perl, BASH scripting or C#, and encompass multiple disciplines including hardware and architectural analysis, software packages and their respective open-source licences, Perl modules, database and network monitors, modified code and several others. This Java OSGi set of profilers is then TIMBUS's response to the diversity of information.

The ability of the Context Extraction Framework to capture knowledge from such highly heterogeneous business environments allows TIMBUS to adapt to any organisation or set of activities. The development of Context Extraction in TIMBUS has allowed us to meet the needs of organisations looking to preserve more than just data, regardless of the context of their business.

Carlos Coutinho, TIMBUS Tools Development Lead

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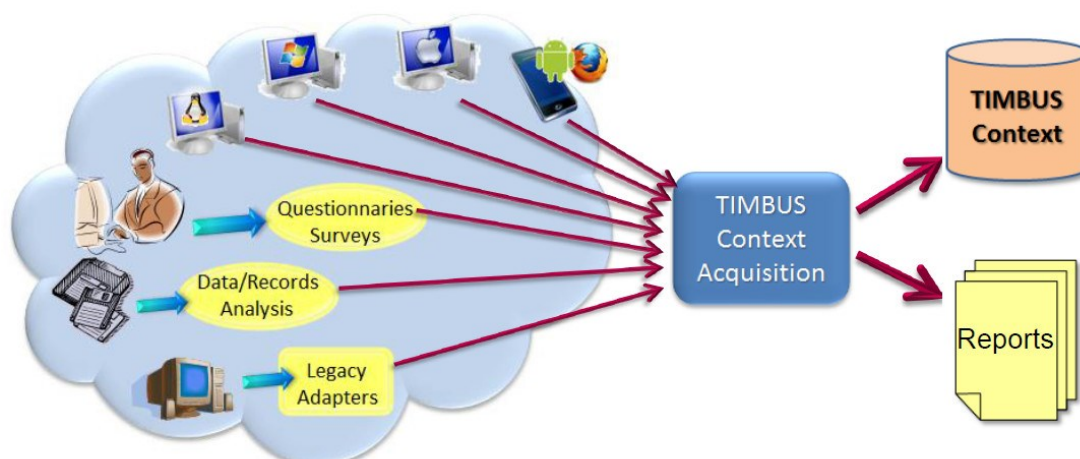
Ensuring Reproducibility of Modern Science

By Tomasz Miksa, SBA

In the era of Research Infrastructures and Big Data, sophisticated data management practices are becoming essential building blocks of successful science. Most practices follow a data-centric approach that does not take into account the processes that created, analysed and presented the data. This data-centric approah limits the ability to generate reliable verification of results. Further, it does not guarantee the reuse of research, which is one of the key aspects of credible data-driven science.

For that reason, we introduced Process Management Plans to focus on the identification, description, sharing and preservation of the entire scientific processes. Process Management Plans (PMPs) enable verification and later reuse of result data and processes of scientific experiments.

During the International Digital Curation Conference (IDCC14) in February 2014 in San Francisco, we had the opportunity to describe the structure and explain the novelty of PMPs by showing how they complement existing Data Management Plans. We also highlighted key differences, major advantages, as well as references to tools and solutions that will facilitate the introduction of PMPs.

We believe that successful implementation of PMPs can be achieved by application of concepts and tools devised by TIMBUS. For example, the automatically generated Context Model can be used to describe the scientific experiment by providing information about its software and hardware dependencies. The process of verification and validation can be performed using the VFramework. The verification data can be stored using the VPlan, one of the ontologies developed during the course of project. Furthermore, the PMP lifecycle can be mapped into the three phases of the TIMBUS lifecycle: plan, preserve and redeploy.

Ensuring reproducibility of modern science is a complex task and requires joint efforts by stakeholders from multiple communities. Positive reviews and feedback received during the IDCC14 conference encourage us to believe that Process Management Plans are the right step towards achieving this aim.

Tomasz Miksa, Tool Developer

DPES Goes to America: the INTEL Open Day in Santa Clara

By Didier da Costa, Intel

Software Engineer at Intel Labs Europe and TIMBUS team member Perumal Kuppuudaiyar introduced the TIMBUS approach to researchers and developers in the US in August of this year. His presentations garnered keen interest, gaining wider international attention for the TIMBUS project.

At the Open Day, Intel Labs opened its doors in both Santa Clara and Portland, featuring around 100 projects from their research labs, university collaborations, and summer Interns. Overall, projects showed how to make future technologies more efficient, connected, secure, and personal. Some of the key themes included Data Economy Infrastructure (including SDI), the Internet of Things, and Wearables.

Perumal travelled to Santa Clara to attend the Intel Labs Open House to raise awareness about the TIMBUS project and about the importance of digital preservation. Have a look at their presentation poster on the TIMBUS website [1]. Though the audience showed a lack of previous awareness about process preservation, many, including Intel Vice-President and Managing
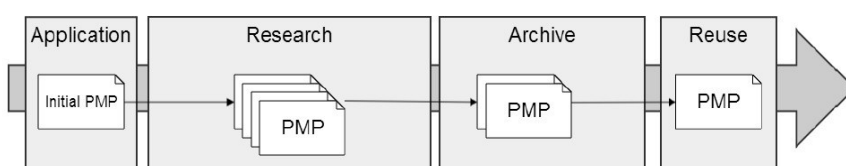

Figure 1. Research process lifecycle and stages when PMP is created or modified.

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Perumal (far right) and Phil Mondor (far left) from Intel Labs Europe travelled to Santa Clara to attend the Intel Labs Open House to raise awareness about the TIMBUS project on 5 August 2014

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an entire environment instead of just data.

As the TIMBUS project enters its final months, tools and outputs will become increasingly valuable and primed for adoption by new sectors and industries. Keen interest shown by the audiences at the Intel Labs Open House in Santa Clara reflects the innovative and beneficial possibilities of TIMBUS.

[1] Find presentation materials from TIMBUS presentation at the Intel Open Day at http://timbusproject.net/news-63400/news/298-intel-open-house (last accessed 8 December 2014)

Didier da Costa, Lead for Project Exploitation

Timbus Project
@timbus_project

Software Researcher Perumal @IntelLabsEurope gets a great response to the #timbus approach at an Open House in the US bit.ly/1oHS6Ev

11:39 AM - 5 Sep 2014

Reply to @IntelLabsEurope

TIMBUS White Paper Series

The TIMBUS Process - A Risk Assessment Approach - Verification & Validation - The Context Model

As the TIMBUS Project comes to a close at the end of this year, we want to share our experiences and achievements and to consider the impact our tools and solutions can have on digital preservation and business continuity management. In a series of four White Papers that each focus on a major theme within the project, TIMBUS authors have presented challenges and strategies that have culminated in the mature TIMBUS tools and solutions to business process preservation. These White Papers – The TIMBUS Process, Risk Assessment, Verification and Validation, and The TIMBUS Context Model – elucidate the obstacles to process preservation and the ultimate benefits and long term value of preserving more than just data.

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Where in the World is TIMBUS?
A Summary of TIMBUS Tutorials and Workshops

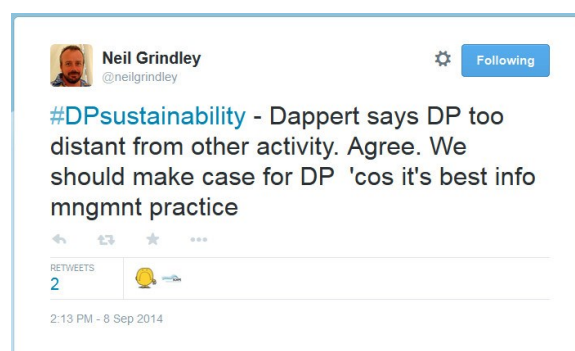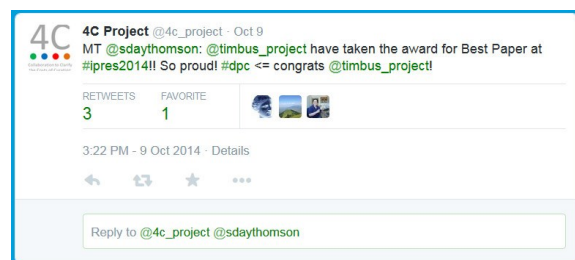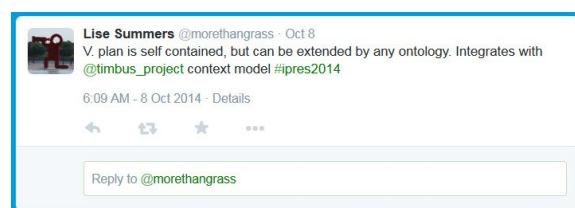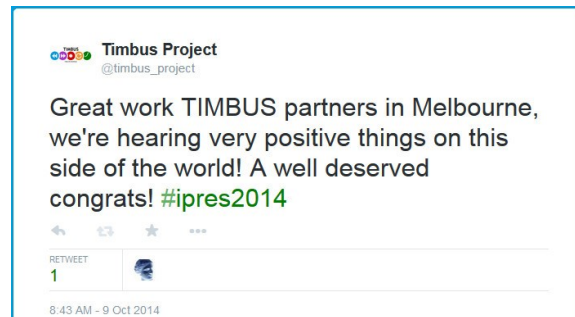## Applying the TIMBUS Approach at iPres 2014, Melbourne, Australia

By Carlos Coutinho, CMS

The beautiful city of Melbourne hosted this year's iPres 2014 conference. One of the challenges accepted by the TIMBUS team was to develop a workshop that disseminates the set of tools that were developed in the project scope. The resulting 3-hour workshop was attended by more than 20 people. The scope of the workshop encompassed the application of the TIMBUS methodology and tools to digital libraries, so we recorded a very complete set of videos (as the live remote access to the servers in Dublin could be a risk) showing the application of TIMBUS to the project's main digital library use-cases: Phaidra and RCAAP. The workshop was nearly too intense for the 3 hours available, but we managed time for answering several questions and clarification requests from the audience. We left Melbourne with a sense of accomplishment, as digital libraries, from the entire world, including many from Europe were widely represented at this conference and this is a natural target to the scope of TIMBUS's dissemination.

Digital Preservation at the EU-Policy Level at Digital Libraries 2014, London

By Sara Day Thomson, DPC

Adjacent to the main conference – the Joint Conference on Digital Libraries 2014 hosted by City University London – the SCAPE Project ran a workshop on Digital Preservation Sustainability at the EU-Policy Level. At this well-attended worshop TIMBUS presented a 1-minute pitch and exhibited a poster and project materials at a stand where visitors could view tool demos and ask questions about the project. The SCAPE workshop aimed to provide a forum where key players in major European research projects in digital preservation could
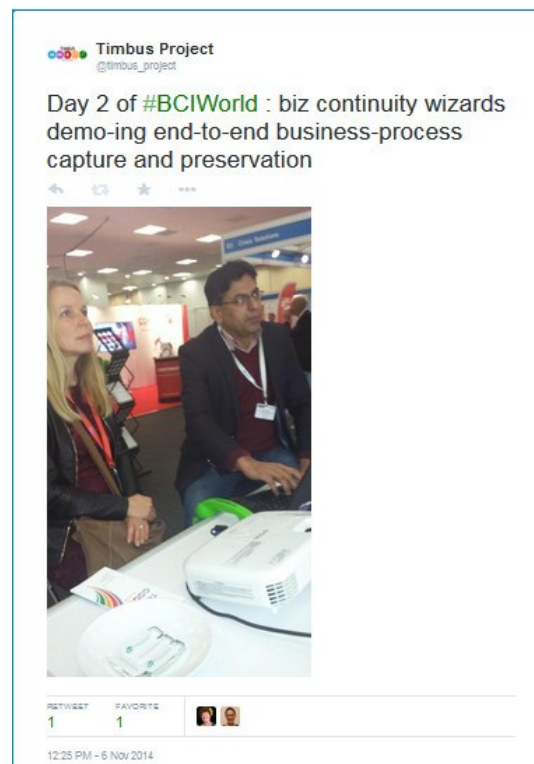

Timbus Project
@timbus_project

Great work TIMBUS partners in Melbourne, we're hearing very positive things on this side of the world! A well deserved congrats! #ipres2014

RETWEET
1

8:43 AM - 9 Oct 2014

Lise Summers @morethangrass · Oct 8
V. plan is self contained, but can be extended by any ontology. Integrates with @timbus_project context model #ipres2014

6:09 AM - 8 Oct 2014 · Details

Reply to @morethangrass

4C Project @4c_project · Oct 9
MT @sdaythomson: @timbus_project have taken the award for Best Paper at #ipres2014!! So proud! #dpc <= congrats @timbus_project!

RETWEETS FAVORITE
3   1

3:22 PM - 9 Oct 2014 · Details

Reply to @4c_project @sdaythomson

William Kilbride @WilliamKilbride · Oct 9
RT @sdaythomson: a wee celebration for my @timbus_project colleagues who have taken the award for Best Paper at #ipres2014!! So proud! #dpc

FAVORITE
1

3:20 PM - 9 Oct 2014 · Details

Reply to @WilliamKilbride @sdaythomson

Neil Grindley
@neilgrindley

Following

#DPsustainability - Dappert says DP too distant from other activity. Agree. We should make case for DP 'cos it's best info mngmnt practice

RETWEETS
2

2:13 PM - 8 Sep 2014

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Live Tweets from TIMBUS tutorials and workshops by @timbus_project and friends

discuss the future of the domain and possible directions for sustainable research.

Representatives of the EU projects, including TIMBUS, were encouraged to share their solutions and approaches to sustaining the outputs of their projects during the 3-hour event. TIMBUS's presence at the workshop provided excellent engagement with the wider field of digital preservation through interaction with practitioners and researchers. It also provided valuable perspective on the possibilities for TIMBUS past the end of the project.

The workshop posed the challenging task of finding sustainable solutions to digital preservation as well as strategies for maintaining outputs of research that has already been done so that future researchers can build on tested methods. With these challenges in mind, TIMBUS has focused on sharing and promoting its high-level solutions to preserving more than just data and reaching across disciplines to meet domain-specific needs.

Timbus Project
@timbus_project

Day 2 of #BCIWorld : biz continuity wizards demo-ing end-to-end business-process capture and preservation

RETWEET 1   FAVORITE 1

12:25 PM - 6 Nov 2014

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Angela Dappert sits at the 'Clinic' discussing preservation metadata with attendees of the SCAPE Workshop 'Digital Preservation Sustainability at the EU-Policy Level'

From Preserving Data to Preserving Research at Digital Libraries 2014, London and iPres2014, Melbourne

By Rudolf Mayer, SBA

The TIMBUS and Wf4Ever projects teamed up to deliver a tutorial at Digital Libraries 2014 (DL2014) in Lon-don and again at the International Conference on Digital Preservation 2014 (iPres2014) in Melbourne, Australia to address the challenges of curating research processes in the humanities and sciences. The tutorial titled 'From Preserving Data to Preserving Research: Curation of Process and Context' attracted an intimate audience of researchers and practitioners at DL2014 and larger audience of more than 30 participants in Australia.

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-tion solutions is increasing in scientific research communities. In many of these settings we are, however, faced with preserving more than just data. Investigations are increasingly collaborative, and most scientific and engineering domains benefit from building on top of the outputs of other research by sharing information to reason over and data to incorporate in the modelling task at hand. This raises the need to provide means for preserving and sharing entire eScience workflows and processes for later reuse.

In the tutorial, participants at both events learned several approaches to address this need. These approaches include methods on how to document and describe the research processes in order to, on one hand, allow for a better documentation, and on the other hand, to provide a formal description from which several tools for monitoring and preservation can be deployed.

The tutorial finished with a talk on data citation, which addresses the issue of uniquely identifying and referring to a specific set of data used in a research investigation. A special focus was devoted to data that is dynamic in nature, e.g. growing databases that potentially contain data that changes, requiring more advanced methods.

Overall, these events allowed TIMBUS, in collaboration with Wf4Ever to engage with the digital preservation and scientific research communities to propose new solutions and gain valuable feedback. Presentation materials for the event can be found on the TIMBUS Portal at http://timbusproject.net.

Communicating TIMBUS at the Preservation and Archiving Special Interest Group (PASIG) Annual Meeting 2014, Karlsruhe

By Sara Day Thomson and Angela Dappert, DPC

PASIG provides a space for diverse stakeholders to collaborate and share solutions and approaches to digital preservation. The group caters to system integrators, companies, consultants, solution vendors, research institutions, and public sector and higher education organisations, covering a broad spectrum of interests and specialties within digital preservation and archiving. At the 2014 Annual Meeting in Karlsruhe 16-19 September, TIMBUS presented 'Business Process Preservation (TIMBUS)'. This presentation provided a summary of the TIMBUS methodology and tools followed by a panel on the preservation of complex digital objects, in particular databases and processes. The event provided an opportunity for TIMBUS to communicate solutions that the project can offer for preservation and archiving. The project's focus on business process preservation makes it particularly relevant to a rising interest in new and innovative approaches to preserving more than just data.

Timbus Project
@timbus_project

Notes on the #PASIG2014 conference and our @TimbusProject presentation can be found in the #DPC members area
dpconline.org/component/docm … …

RETWEET
1

6:08 PM - 8 Oct 2014

Reply to @TimbusProject

TIMBUS Exhibited:
Business Continuity Institute's World Conference & Exhibition 2014

By Sara Day Thomson, DPC

November 5—6, TIMBUS exhibited at the Business Continuity Institute's annual World Conference and Exhibition. Over 300 delegates attended the Exhibition where TIMBUS shared the project's approach and promoted the tools and resources that will become available as the project comes to completion at the end of this year. By emphasizing the benefits TIMBUS offers to business continuity managers—and more generally to businesses keen to improve their business processes analysis and preservation—TIMBUS was able to reach new audiences beyond the digital preservation community. Visitors to Stand 32 seemed keen to hear more about the TIMBUS approach and the open source alternatives to other software packages available at the Exhibition. In particular, Context Extraction and Risk Assessment elements of

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of the business continuity community. Presented by TIMBUS Partners SAP and DPC, the BCI Exhibition brought TIMBUS and digital preservation to the attention of the business community.

Sara Day Thomson (left) and Sarah Middleton (right) from DPC at Stand 32 at BCI World 2014

Applying the TIMBUS Approach at 4C 'Investing in Opportunity', London

By Carlos Coutinho, CMS

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   One of TIMBUS's partners, DPC, co-hosted the 4C Conference in London in November. Presented by Carlos Coutinho, Ricardo Vieira and Sara Day Thomson, the workshop explored the application of TIMBUS to digital preservation as a method to preserve more than simply data. We focused instead on how TIMBUS supports the preservation of processes and the surrounding environment of a business encompassed in a risk-driven process. In this workshop, rather than showing videos of a superficial application of the tools and methodology, we focused especially on performing live demos, exploring particularly in-depth and in-detail the context capturing and risk management steps of the TIMBUS process, within the extended storyboard of the project. The workshop was very well received by the attending community, which provided a lot of feedback in the form of comments and questions about the application of TIMBUS to cost-effective digital preservation, the topic of the conference.

Carlos Coutinho demonstrates the TIMBUS tools at the 4C / DPC Conference 'Investing in Opportunity' on 18 November 2014

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Coming Together: the Role and Achievements of the Technical Coordination Committee (TCC)

By Mykola Galushka, SAP

The Technical Coordination Committee (TCC) was created by the TIMBUS consortium in March 2012 to address some of technical challenges facing the project. The committee consists of one representative from each TIMBUS partner and is open to all project members who would like to participate in its regular meetings and to take part in discussions. TCC mainly performs the following roles:

- Support TIMBUS partners in making technical decisions. If a technical decision cannot be made by TCC, it will be discussed and prepared for approval by the Project Coordination Committee (PCC).
- Track technical issues and decisions made by TIMBUS partners within work-packages.
- Distribute technical decisions among all TIMBUS members to increase overall awareness.
- Advise on how to overcome some technical challenges.

TCC coordination has been successful as all TIMBUS members have regularly reported all technical activities within their workload to TCC. Thanks to this cohesive coordination, TCC meetings have been very effective, creating a space where the majority of outstanding technical issues can be discussed and resolved in a collaborative fashion.

During the entirety of the project, TCC has been actively involved in the coordination of a development process for the TIMBUS architecture and tools. It has also been involved in advising the dissemination strategy for shaping the TIMBUS legacy. During this process of advising on the dissemination of the final TIMBUS tools, TCC has prepared a layout for the website where tools information will be hosted and has also provided guidance on the structure of the TIMBUS GIT Repository. TCC, in addition, has coordinated with

different teams within TIMBUS to provide tools source code and supporting documentation. TCC has facilitated crucial coordination of both technical progress and effective dissemination that will ensure a cohesive legacy for TIMBUS.

Mykola Galushka, Head of TCC

Collaborating to Sustain TIMBUS Outputs: the Open Foundation Adopts the TIMBUS Context Framework and Select Extractors

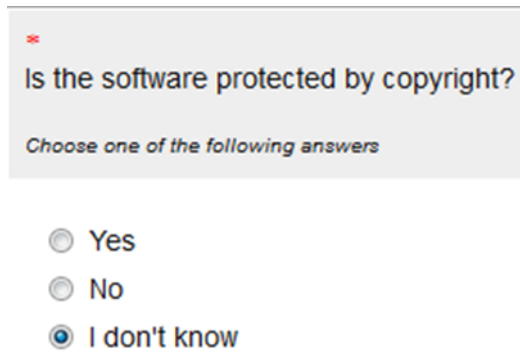### 1. Overview of the Collaboration for Further Development of a TIMBUS Tool
By Didier da Costa, Intel

Last March, the TIMBUS consortium approached the Open Preservation Foundation (OPF) to discuss the possibility of the OPF acquiring one or more of the TIMBUS tools to maintain and sustain. The OPF addresses core digital preservation challenges by engaging with its members and the community to develop practical and sustainable tools and services to ensure long-term access to digital content.

Within TIMBUS, the following tools were identified as the most mature and reusable and therefore good candidates for sustainability:

- LLM tool: A legalities life-cycle management tool that provides decision support for legal aspects that affect the digital preservation or the redeployment of digital objects.
- Extractor Platform: A tool set to extract information on a variety of technical dependencies from the overall system (software, hardware, network, workflows), such as libraries, packages, Perl modules, network nodes, log files, documentation, business process workflows, etc.
- Digital Preservation Expert Suite (DPES): A set of tools comprising identification of preservation alternatives, managing preservation actions and redeploying actions

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Is the software protected by copyright?

Choose one of the following answers

○ Yes

○ No

◉ I don't know

Screenshot of a question from the LLM Tool Demonstration

As part of the discussions with OPF, the TIMBUS tools owners provided demonstrations to key OPF team members, including the Executive Director, the Technical Lead, and the Community Manager. These demos were recorded and are available through the following URLs:

• Digital Preservation Expert Suite

https://www.youtube.com/watch?v=rcAZU3Hvp2w&list=UUjGEQyuK6LAmmUyT00ztDvg

• Context Model Extraction Framework

https://www.youtube.com/watch?v=Bqt81KDbUA4&list=UUjGEQyuK6LAmmUyT00ztDvg

• Legality Lifecycle Management tool

https://www.youtube.com/watch?v=M8tXR4olwuU&list=UUjGEQyuK6LAmmUyT00ztDvg

OPF expressed interest in discussing further opportunities for collaboration, with the possibility of providing a long-term home for some of the tools from the TIMBUS Project, depending on requirements and the implications for their membership. To make a decision, OPF included the three TIMBUS tools in their members' technology survey. The resulting member feedback, along with a formal maturity evaluation by OPF, have provided valuable perspective for TIMBUS on the potential of its core tools.

After some consideration, OPF agreed to host and maintain the TIMBUS Context Extraction Framework and key Extractors. In the hands of OPF, the TIMBUS tool will have a secure community and provide foundation for future development of business environment capture software. You can read more about TIMBUS Context Extraction in 'Context Extraction: a Recursive Journey' in this newsletter.

Through this collaboration, TIMBUS has forged a lasting relationship with OPF that will be continued by a number of TIMBUS partners past the end of the project, both supporting maintenance of the Context Extraction Framework and fostering future collaboration in digital preservation tool development.

2. Collaboration for Community Building

By Sara Day Thomson, DPC
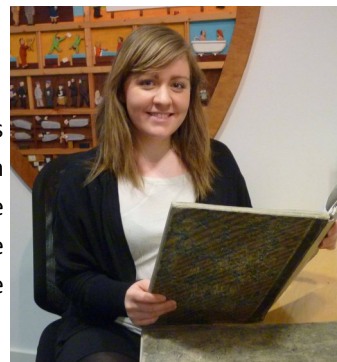
Since its inception, TIMBUS has produced highly innovative, sophisticated tools and concepts about digital preservation. Beyond the traditional aim of preserving data, TIMBUS integrates business continuity management and risk assessment to capture and preserve an entire set of activities, processes, and dependencies in order to ensure continued access to the services and software necessary to produce the context within which information can be accessed, properly rendered, validated, and transformed in the future. As such, TIMBUS methods and tools have the potential to enhance the capabilities of digital preservation service providers and to impact research in digital preservation and business continuity management. To help nurture this potential, the Open Preservation Foundation (OPF) have introduced a number of key TIMBUS outputs to their wider membership. In addition to the availability of TIMBUS tools on an open source repository opensourceprojects.eu, this engagement with the OPF community will foster the growth and continued influence of the TIMBUS model.

While the possibility of OPF further developing some choice TIMBUS tools may secure further exploitation of the TIMBUS outputs, the collaboration between TIMBUS and OPF will continue to facilitate the dissemination of TIMBUS to a wider community of stakeholders, from both memory institutions and industry. Recordings of the initial presentations of select TIMUS tools to the OPF have been circulated to the OPF members in a survey that elicited feedback, leading to the adoption of the Context Framework and Extractors. As OPF takes the Context Framework and

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Extractors into its portfolio, they will continue to provide a home for it, sustaining its presence in the stakeholder community.

Community engagement is crucial to long-term sustainability, a central priority for TIMBUS as it nears the end of the project. While the DPC will continue to host the resources and tools information on the web Portal to be launched later this month, the OPF will provide active support for one of the TIMBUS tools. This active support will ensure ongoing community engagement with TIMBUS and bring renewed interest in the complementary resources available in the web Portal. As part of the OPF portfolio, we hope to see the TIMBUS tool flourish in the hands of future developers and continue to inspire the innovation of tools beneficial to the preservation of business processes.

Didier da Costa, Lead for Project Exploitation
Sara Day Thomson, Lead for Dissemination

Legalities Lifecycle Management Tool: Teaching Future Generations

Dr. Barbara Kolany-Raiser and Franziska Leinemann, ITM

When digitally preserving business processes, many different considerations must be taken into account, not least among them the complex legal requirements that must be fulfilled. The Legalities Lifecycle Management (LLM) tool serves as a guide to minimise legal risks, especially for companies who want to digitally preserve their business processes but also for anyone interested in the field of digital preservation. The LLM tool provides guidance on legalities issues, including information about intellectual property, IT contracting, data protection and obligations to preserve data, thereby covering the four main issues relating to digital preservation.

The LLM tool guides its users by asking a logical series of questions about the above mentioned topics. The questions address national as well as EU legislation and resembles a questionnaire a lawyer would use during a legal consultation.
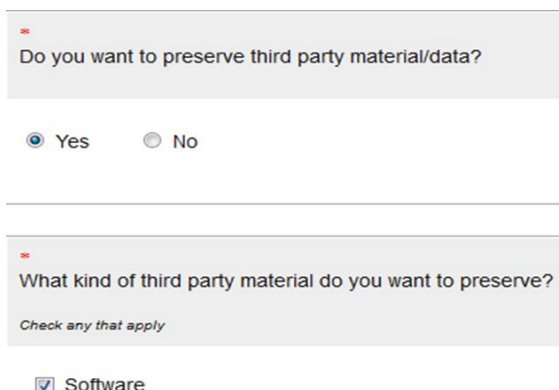
The LLM tool will be implemented and announced on the ITM website in addition to the TIMBUS website. As member of the Law Faculty of the University of Muenster, the ITM offers various teaching courses, with strong offerings in information law and data protection. This allows the ITM to connect its teaching activities with the questions the TIMBUS project has examined during the last years.

The LLM tool will be recommended to the students. Consequently, the results gained during the TIMBUS project will be exploited and used as a teaching tool and disseminated to future practitioners. Young law students especially will use the tool, thereby ensuring awareness of the issue of digital preservation and its growing importance in the succeeding generations.

Furthermore, through the tool, the students will receive a first lessons in how to implement theoretical knowledge in practice: First, as already mentioned, the questionnaire of the LLM tool is similar to the one of a lawyer would ask during the legal consultation for a digital preservation project. Second, the LLM tool will expose students to different scenarios that actually occur in the course of the digital preservation of a business process.

To further increase the impact of LLM, the online version of the tool is supplemented and completed by training modules. The online training modules provide further relevant information with regard to digital preservation, covering a range of topics from IT contracting and software escrow to protection of databases and a great overview.

Barbara Kolany-Raiser, Tool Developer

Screenshot of LLM Tool Questionnaire

TIMBUS TIMES

The Web Portal: a Gateway to TIMBUS

By Sara Day Thomson

Is there software to make it easier to archive my digital data in a way that will make sense in the future? What does the research say about the digital preservation of processes? How do I reduce the risk of data loss having an impact on my business? These are only some of the questions anticipated by the TIMBUS Web Portal, designed to intercept these kinds of queries by a wide variety of organisations and industries.

The TIMBUS Portal, launched in the final month of the project, provides a gateway to the outputs of 4 years of research on Timeless Business Practice. The Portal assembles the resources and tools generated by the TIMBUS partners on an accessible platform where the public can reach the final, crystallised concepts and supporting materials developed over the tenure of the project. Whether a visitor wants to implement Open Source software for their organisation or find academic articles about process preservation, the Portal will lead them to the resources they need.

To be hosted by the Digital Preservation Coalition following the completion of the project, the Portal will sustain the outputs of TIMBUS by facilitating adoption of the TIMBUS approach. Designed to captivate both deliberate researchers and incidental visitors, the Portal aims to arrange the various and wide-ranging methodologies, software, journal articles, and other outputs so that anyone from a wide audience can navigate the content and find meaningful information.

The Portal focuses on practical and straightforward materials in order to bridge the gap between the complex research carried out by the TIMBUS consortium and the organisations and industries looking to implement direct, usable approaches to the digital preservation of their business processes. These practical and straightforward materials include individual pages for each tool and demonstration videos, as well as white papers and blog entries.

The TIMBUS Portal looks to the future and possibilities for further use and exploitation of the TIMBUS outputs. As an easily to navigate gateway to the tools and resources of TIMBUS, the Portal will help facilitate further research and tool development and provide teaching materials for students of digital preservation and a number of other fields including law and business continuity management. As a project that has introduced new, original concepts to the field of digital preservation, the sustained publications and tool demonstrations will support the ongoing absorption of process preservation into the vocabulary of the digital preservation community and encourage the expansion of digital preservation solutions. Perhaps most importantly, the unique composition of the TIMBUS Project, integrating business continuity management and an approach to business process preservation, will bring digital preservation to new audiences and new industries who can benefit from the results and products of TIMBUS.

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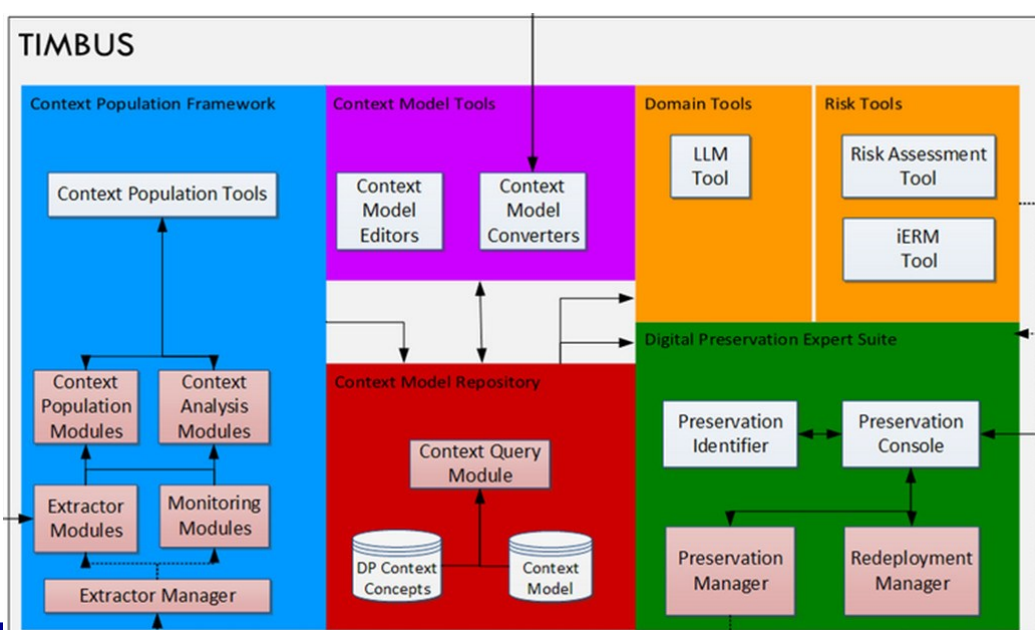
This diagram shows the TIMBUS architecture. The Portal is mapped to this structure so that navigating the Portal mirrors the TIMBUS Approach.

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TIMBUS on the web:

- Web Portal: http://timbusproject.net/

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- https://twitter.com/timbus_project

- http://www.linkedin.com/groups?gid=4728773

TIMBUS Partners

SMEs

Caixa Mágica Software	Portugal
Secure Business Austria	Austria

Industry

Intel	Ireland
SAP - Lead partner	Germany
SQS Software Quality Systems	Germany

Research

Digital Preservation Coalition (DPC)	UK
INESC-ID	Portugal
Institute of Information, Telecommunication and Media Law, WWU Münster	Germany
Karlsruhe Institute of Technology	Germany
Laboratório Nacional de Engenharia Civil (LNEC)	Portugal