Volume 2, Issue 1

28 June 2013

TIMBUS

TIMELESS BUSINESS PROCESSES AND SERVICES

TIMBUS TIMES

Letter of the Project Coordinator

Dr Wasif Gilani, SAP

The TIMBUS project is now entering its 3rd year. At this point, the definition of use cases from the domains of eHealth and civil infrastructure are completed along with their risk analysis. These use case scenarios have provided interesting and challenging requirements for digital preservation from two completely different business perspectives. The third use case, establishing and analysing the digital preservability of open source systems and processes, is in the definition phase.

With the concrete definition of the TIMBUS industrial use case scenarios in place, the definition of models and processes to support digital process preservation is nearing completion. The Context Model has been refined to better align with the use cases' requirements and best practice. This has resulted in a comprehensive and extensible Context Model. At this point we have developed domain specific extensions to deal with patents, software licences, and sensors. The Context Model has already been applied and instantiated for the two industrial use cases. The intelligent Enterprise Risk Management (iERM) design has been extended and interfaces specified to integrate iERM with other TIMBUS digital preservation processes. A holistic software escrow process has been specified to address third party dependencies with focus on the technical and legal aspects of the contract. A TIMBUS cost model has been defined that identifies major cost elements to be considered when preserving business processes. A TIMBUS process framework has been specified for the digital preservation of business processes from different domains.

The architectures for iERM and preservation have been further refined according to the concrete requirements from the industrial use cases, and the specification documents have been finalised. Furthermore, the architecture and infrastructure for virtualization,

Inside this issue:

storage, rerun and integration of the redeployed business process into the future business process environment have been defined.

Significant progress has also been made in the implementation of tools and technologies. The iERM solution has been extended to allow users to assign risks to a category. The tool is now able to import risk data from log files (risk registers) and create risk events automatically based on the captured data. The tool is further extended to enable exchange of risk data with the digital preservation server in the form of XML files in order to obtain the preservation recommendation and cost. A first context extractor has also been implemented that consumes business process execution information (process logs) as input and extracts the process behavioural information (BPMN model) and the related performance data needed for executing simulations for risk analyses in the iERM tool.

The Legalities Life Cycle Management (LLM) tool has been implemented and consists of two core components: a web-based decision support tool to assess legal and regulatory digital preservation issues for given preservation situations; and a legal change monitor to notify about changes in the relevant legal environment of an organization. The LLM tool is currently being deployed in the context of the project use cases to provide coherent, comprehensible decision support for legalities management.

We have further developed a proof-of-concept for a preservation system concerning a Linux environment preservation and subsequent redeployment. A dependencies monitoring and reasoning system for software licences, system information, CMDB/ITIL information and CUDF information is being designed and developed. The requirements and the specification for the preservation manager is completed. A prototype test bed, for deploying tools developed within the TIMBUS project so that they work in an integrated fashion, has been set up. Additionally, a proof of concept is being developed for the preservation of an open source system.

Looking at the progress made so far in the project, in spite of the challenges we have encountered, we are very pleased with our impressive progress and are very optimistic that we will deliver even more remarkable results in the coming months. ⁞

Please see
Page 13 for an introduction to the TIMBUS Approach to Business Process Preservation

Use Case: eHealth Business Process Preservation

Dr Mykola Galushka, SAP

A large body of secondary legislation exists at the European level to govern and control medical products for human and veterinarian use. Each prescription drug package sold in Europe must contain information, such as the brand and generic name, clinical pharmacology, indications and usage, contraindications, warnings, precautions, adverse reactions, as well as any information about drug abuse and dependence, overdosage, dosage and administration. Often prescription drugs may cause an Adverse Drug Reaction (ADR). An ADR describes harm caused by drug intake at a recommended dosage for the intended use. The term "Adverse Drug Event (ADE)" refers to any injury caused by drugs, regardless of whether these drugs were used at normal dosage or whether the injury is due to an overdose, and any harm associated with such a case. ADE is recognised as a serious problem in the health do-

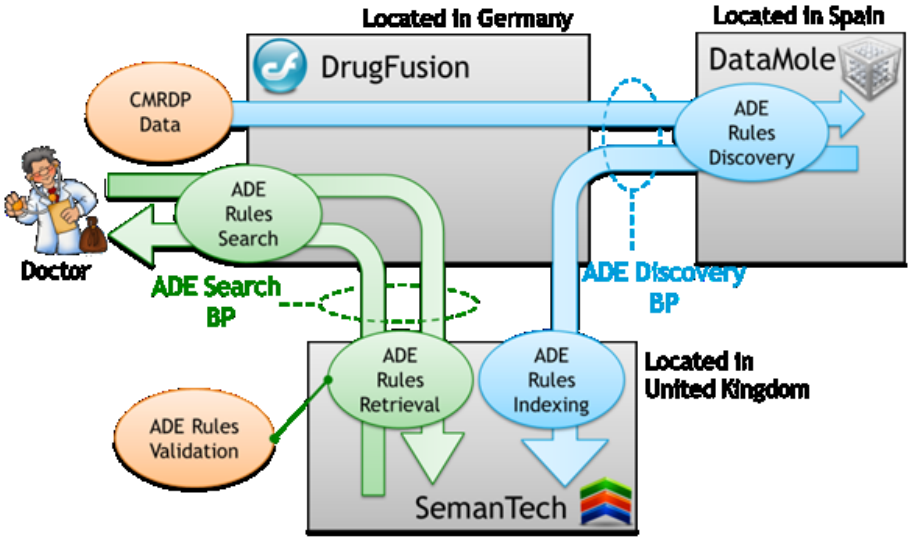

Figure 1: Overview of the use-case SOA

main. The business process (BP) from the eHealth domain, defined in this use case, addresses this problem by providing the complete solution for Discovery and Search of ADE rules. It is based on service oriented architecture (SOA) which includes three different European companies: DrugFusion, DataMole and SemanTech. It also utilises two external web-services exposed by the Central Medical Repository for Drug Prescriptions and a Pharmaceutical Company for drug validation. Figure 1 shows interactions between three companies involved in this business process. DrugFusion provides the on-line subscription service for doctors and pharmacists requesting the potential ADEs during the drugs prescription process. It is also responsible for intelligent pre-processing of the source drug usage data and verification of search results. DataMole performs discovery of ADE rules by analysing data received from the DrugFusion site. SemanTech performs indexing of ADE rules discovered by DataMole and handling of search queries obtained from DrugFusion.

ADE rules are used by doctors and pharmacists for assisting in the drug prescription process. In our use case the search for ADE rules is performed via the web-service provided by DrugFusion. If the service fails to deliver correct recommendations, doctors or pharmacists can make an incorrect decision in prescribing a new combination of drugs. As a result of such mistakes there can be serious complications to a patient's health, which may also lead to complex and expensive lawsuits.

An investigation may be required to pinpoint incorrect predictions of ADE rules. The investigation includes a complete reconstruction and rerun of the Discovery business process carried out in the past. The Discovery business process must be rerun on the same hardware/software stack and use the same input data as the original business process. This requires constant monitoring of the rules' discovery infrastructure and long-term preservation of the Discovery business process, which makes it an interesting use case for the TIMBUS project. This use case shows how long-term digital preservation helps companies to fulfil legal obligations and ensure the overall reliability of the drug prescription process within the European market. Many lessons learnt for this use case will equally apply to other health related areas and help to raise awareness about the importance of the long-term digital preservation of business processes.

Populating and Accessing the Context Model Using Extractors and Reasoners

Dr Carlos. Coutinho, CMS;
Dr Hossein. Miri, KIT;
Ricardo Teixeira, CMS

Digital systems are subject to ever-increasing levels of complexity, dependencies and contextual information inter-relationships. Digital preservation systems need sophisticated extractors and reasoners to perform successful planning, preparation, and preservation of these systems. The context-capturing and dependency-extracting tools developed in the TIMBUS project constitute a key element of enabling these processes. This set of tools operates in conjunction with the reasoning, monitoring and solving systems that are being developed in parallel. Their aims include identifying, capturing, and extracting relevant contextual information about the process under consideration, and then subsequently reasoning over them to determine a plausible and suitable preservation path. In the scope of the TIMBUS research project, these tools and technologies are part of the Context Acquisition and Reasoning modules. These modules form core components of the TIMBUS framework, and can be described as being capable of extracting, acquiring, monitoring, solving, and making logical inferences over a set of asserted facts, axioms, and inputs. This information, combined with the results acquired from intelligent Risk Management tools, and with the Business Continuity Management module, will be useful for further processing and facilitating decision-making over which components to preserve and why, as well as for finding optimal solutions for this preservation.

TIMBUS endeavours to preserve both the functional and non-functional specifications of services and software, along with their contexts and dependencies. This type of digital preservation is considerably more complex than only preserving static digital objects and media. It not only requires dealing with the structural properties of digital information and objects, but also with the dynamic behaviour of processes and their supporting services and software over time.

Context Model

To address and resolve these challenges, a Context Model was designed and developed to systematically capture relevant aspects and elements of business processes that are essential for the processes' preservation and verification upon later re-execution and re-deployment. The Context Model ontology is authored in the Web Ontology Language (OWL 2) and employs the Enterprise Architecture Modelling Language (ArchiMate) for modelling specific use-case scenarios. The Context Model is, then, instantiated into process-specific sub-models to provide a fine-grained set of dimensions that surround a particular use-case scenario. These relevant dimensions that surround a business process are called context parameters. The specific scenarios chosen for TIMBUS serve as clear illustrations that the Context Model is capable of supporting a vast realm of context parameters, as well as being applied to these use-cases for further digital preservation actions.

The extractors and reasoners are subsequently applied to the Context Model (or to an instance of it) for extracting, monitoring and reasoning for digital preservation purposes. The technical dependencies on software and services can be captured and described via CUDF (Common Upgradeability Description Format), a format for describing upgrade scenarios in package-based Free and Open Source Software distributions. Such an approach enables TIMBUS to capture the complete setup and dependencies of a specific configuration for long-term preservation, which can be re-created, re-executed and re-deployed at a later time on modern hardware within a different business scenario.

Tools

The extraction/reasoning tool was initially designed to be multi-platform (running over Java), but to be applied on a single machine at a time. This design has evolved to consider that a business may comprise multiple access points and machines, each with its own specificities (e.g., platform, information to be retrieved, ways to access that data). The current architecture is distributed, allowing a single control point to access multiple machines and extracting agents, which perform the extraction of the information to the central node, which then inserts it into the TIMBUS

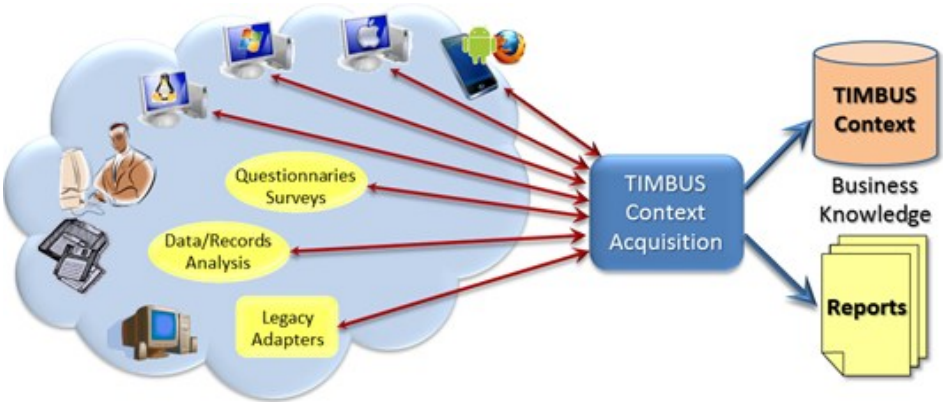

Figure 2: TIMBUS Extraction and Reasoning mechanism

model instance (see Figure 2).

The current and on-going implementation of TIMBUS comprises the following set of extractors and reasoners:

- CUDF: This extractor has the purpose of gathering the list of installed packages available on a GNU/Linux system and their corresponding metadata (package name, version, dependencies, conflicts and recommendations). To achieve this purpose this extractor uses a set of system based scripts.
- Software Configuration Files: This extractor captures the default set of configuration files provided by a specific package and stores them in the context instance.
- Software Licences: This extractor analyses open-source software licences and their types, storing the retrieved information in the context instance, which can afterwards be processed by the TIMBUS legalities life cycle module.
- Hardware Information: This extractor gathers information about the hardware environment, e.g., CPU, RAM, GPU, Network Information, and stores it in the context model instance. This information is crucial for determining how the future redeployed system will be implemented, its features and attributes, whether it is re-implemented as a physical or virtual environment.
- CMDB iTop: This extractor captures information about the enterprise and business on Linux systems, storing this information in the context instance.
- WSDL: This extractor is designed to obtain information on web-services descriptors and on access point information. It captures these important external dependencies and stores them in the context model instance. This may then be analysed by the preservation module to determine whether to include them in the preservation and to consider whether to contract a Software Escrow agent.
- Microsoft Windows® dynamic-link libraries (DLLs): This extractor captures the list of dependencies of a Microsoft Windows-based business environment, determining the DLLs that are needed, and storing this information in the context model instance.

TIMBUS Training Days: Summer and Autumn 2013

Dr Angela Dappert,
Digital Preservation Coalition

The TIMBUS Project is organising a number of exciting tutorials this summer and autumn. Some of them are described in the following.

Digital Preservation Advanced Practitioner Training

15 – 19 July 2013;

Gilbert Scott Conference Suite, University of Glasgow;

http://timbusproject.net/events/events/203-digital-preservation-advanced-practitioner-training

This advanced one-week event is targeted at participants who have previous practical experience in digital preservation tools, technologies or standards as well as an understanding of how issues of preservation apply to their own institution, especially:

- Records managers and information officers in organisations that rely on long-lived data;
- Collections managers, librarians, curators and archivists in all institutions;
- Innovators and researchers in information technology and computing science.

It will bring together representatives from projects and organisations at the leading edge of digital preservation research, providing attendees with training at an advanced level. Using a mix of presentations, practical exercises, case studies, group discussion and tool demonstrations, the training will aim to cover issues across the complete digital preservation life-cycle by addressing topics within the main themes: Governance and Management, Workflows, Digital Object/Data Creation, Preservation Planning, and Infrastructure.

An optional half-day digital preservation 'bootcamp' will be held prior to the commencement of the main course for those wishing a refresher on key concepts.

The event is presented in collaboration with TIMBUS, SCAPE, EUDAT and the IMPACT Centre, organised and subsidised by APARSEN and sponsored by the European Commission under the 7th Framework Programme for Research and Development FP7/2007-2013 – ICT-2009.4.1: (grant agreement No 269977).

The course is a distinctive addition to digital preservation training activities in Europe and is the first iteration of what is to become a yearly training event, bringing together those

Themes	Topics
Governance and Management	Business cases; Cost modelling; Audit and certification; Legalities life-cycle management; Software escrow; Risk management
Workflows	Digital Preservation in digitisation workflows; Taverna; Hadoop.
Digital Object/ Data Creation	Metadata exercise; Persistent identifiers; Documenting Authenticity & Provenance of digital data; Process preservation; Context and dependency description; Reasoning and context extraction.
Preservation Planning	Scalable, policy-aware decision making and control: preservation watch; Preservation watch: What to monitor and how SCOUT can help; Understand what you have: Content profiling with c3po; Practical exercise with c3po; Where is the bottleneck? Scalable decision making and control with PLATO; Live demonstration: SCAPE planning and watch in action.
Infrastructure	Data replication: Automated move and copy of data; Data staging: Moving large amounts of data around, and moving it close to compute resources; Authorisation an authentication infrastructure; Data-intensive computation.

at the forefront of digital preservation research and training.

All the places at this training event are now booked. Training materials will be made available soon after the event. Topics to be covered are shown on the left.

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Legal Challenges in the Preservation Lifecycle – How to Address and how to Solve them

2 September 2013;

Lisbon, Portugal;

In conjunction with the 10th International Conference on Preservation of Digital Objects (iPres) 2013;
http://ipres2013.ist.utl.pt/index.html

http://timbusproject.net/events/events/210-legal-challenges-in-the-preservation-lifecycle-how-to-address-and-how-to-solve-them-

The TIMBUS project is offering an introductory half-day tutorial that addresses legal aspects of digital preservation activities and the legal risks that provide a motivation for preserving digital artefacts. The legal research questions for business process preservation that are addressed in TIMBUS apply to digital preservation in general. In this tutorial we want to raise awareness of legal aspects and want to discuss and illustrate different challenges and potential solutions.

Topics to be covered are as follows:

Themes	Topics
Intellectual Property (IP) Rights related to databases, computer programs, documents	European copyright regulations; Information Society Directive; Computer Program Directive; Objects of protection; Exclusive rights of reproduction and alteration; Authorship of computer programs; Exploitation rights; Exceptions and limitations to the exclusive rights.
IT contracting issues	Licensing; Clauses of a license contract; Open Source licenses; Outsourcing of preservation to external providers and framework contracts; ITIL, ISO/IEC 20000, change request clauses and Service Level Agreements.
Holistic Software Escrow	Escrow as mitigation strategy against loss of third-party services Triggering events Legal and technical criteria for success Escrow phases (planning, executing and redeploying)
Legalities Lifecycle Management	Demonstration of the open source prototype decision support tool Fact gathering Guidelines Interdependencies Recommendations Watch of changes in the legal landscape

From Preserving Data to Preserving Research: Curation of Process and Context

2 September 2013;
Lisbon, Portugal;
In conjunction with the 10th International Conference on Preservation of Digital Objects (iPres) 2013;
http://ipres2013.ist.utl.pt/index.html

and

22 September 2013;
Valletta, Malta;
In conjunction with the International Conference on Theory and Practice of Digital Libraries (TPDL) 2013;
http://tpdl2013.upatras.gr/tut-pdpr.php

http://timbusproject.net/events

This introductory half-day tutorial is offered in connection with two separate conferences: iPres and TPDL.

In the domain of eScience, investigations are increasingly collaborative. Most scientific and engineering domains benefit from building on 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 for preserving and sharing entire eScience workflows and processes for later reuse. We need to define which information is to be collected, create means to preserve it and approaches to enable and validate the re-execution of a preserved process. This includes and goes beyond preserving the data used in the experiments, as the process underlying its creation and use is essential.

The TIMBUS project and Wf4Ever project team up for this half-day tutorial to provide an introduction to the problem domain and discuss solutions for the curation of eScience processes.

The tutorial is targeted at researchers, publishers and curators in eScience disciplines who want to learn about methods of ensuring the long-term availability of experiments forming the basis of scientific research.

Topics to be covered are as follows:

Themes	Topics
Introduction to process and context preservation	Motivation for process and context preservation; Issues in an evolving domain Use case example;
TIMBUS context model and tools	Context : technology, application and business context, aligned with enterprise architecture The context meta-model, with domain independent and domain specific aspects Demonstration of a context model instance of example processes (in the eScience domain) Tools to capture some parts of the context (software dependencies, data formats, licenses, process modellers, converters, visualizer) Outlook on reasoning and preservation planning, based on the context model
Wf4Ever Research Object approach	Ontologies needed to capture research objects: Core Ontology of the RO family of vocabularies, workflow centric ROs, provenance traces, life cycle of research objects; Wf4Ever Toolkit / technological infrastructure for the preservation and workflows: software architecture, functionalities, software interfaces to functionalities, reference implementation as services and clients.
Data citation	Overview, motivations, stakeholders and challenges; Issues for dynamic data sets; How data is cited today; Available technologies for identifiers; Approaches and initiatives for citing data.

Introducing TIMBUS Partners: Caixa Mágica Software

Dr Carlos Coutinho,
Caixa Mágica Software (CMS)

TIMBUS CMS is one of the industrial partners involved in the TIMBUS project. CMS is an SME (Small/Medium Enterprise), leader in the open-source market segment in Portugal, promoting its activities in three main areas:

- **Development**: Its main product is the Linux Caixa Mágica (LCM) distribution, but it also develops other open-source software and applications. CMS has also developed and exploits an Android AppStore – Aptoide – with the goal to be the best AppStore worldwide; the closest competitor to Google Play;
- **Training and Consultancy**: CMS provides services for major sectors in Portugal: the enterprise area, public administration, defence and military and, particularly, education. CMS is the master affiliate of the Linux Professional Institute in Portugal for training and certification;
- **Research**: CMS has close connections with the academic world which makes it very active in the research area, promoting conferences and other research gatherings and participating in several European-wide projects.

In addition to its main focus of contributing to the development of competence and excellence in products and service provision in Portugal, CMS is gradually expanding into other countries, particularly other Portuguese-speaking countries, as well as Latin America.

Participation in TIMBUS

Within the TIMBUS project CMS participates in the research and development activities that relate to risk management and digital preservation. Its major role however, is to lead the implementation work-package of the project. This means CMS closely monitors and actively implements the artefacts and tools that will prove the TIMBUS concepts. By increasing its knowledge in these areas, CMS is gaining strength in several areas:

- Capturing expertise in the risk management and digital preservation areas is allowing CMS to provide its existing customers and the market with an improved portfolio of services for consultancy and advice.
- CMS is developing several modules of TIMBUS and is involved in almost all of them; informing CMS's effort of developing digital preservation support for the Linux Caixa Mágica (LCM) distribution, server edition.
- Linux Caixa Mágica was also selected as base platform for deploying the TIMBUS modules, and is subsequently able to disseminate this distribution to a European-wide community. It also provides an excellent opportunity for CMS to disseminate and promote open-source principles and practices within the consortium and on its activities.
- The participation in the TIMBUS project allows CMS to interact closely with the other partners, gathering experience and expertise. This will be useful in the intended development of open-source components and services for Linux and Android that are currently missing in the open-source market, such as Enterprise Resource Planning (ERP) and Customer Relationship Management (CRM) systems, and integrating them with digital preservation services.
- CMS is continuously seeking innovation for its products and services; the participation in TIMBUS is allowing CMS to promote the establishment of standards such as the Common Upgradeability Description Format (CUDF) and others.

The participation in TIMBUS, therefore, supports CMS working towards establishing a rich and stable internal development platform and portfolio. It is also an outstanding opportunity to disseminate CMS technology and expertise, as well as the open-source principles and practices. This is already providing good results in the short-term, and, in the future, will allow CMS and its surrounding community to grow and reinforce its position as leader in the open-source area.

Caixa Mágica software

Featured Book: Legal Aspects Of Digital Preservation

Thomas Hoeren, Barbara Kolany, Silviya Yankova, Martin Hecheltjen, Konstantin Hobel,

http://bit.ly/19CcVw2

August 2013; c 224 pp ; Hardback ;
ISBN 978 1 78254 665 8
ebook ISBN 978 1 78254 666 5

Contents

Description

Digital preservation has become culturally, as well as economically, indispensable. Preserving digital assets is an emerging challenge for each company, regardless of industry sector and size. This book focuses on the legal aspects of digital preservation and offers legal guidance in that area.

This important book illustrates the implications of preservation actions on intellectual property rights and data protection. These can include: Potential violation of data protection laws through the storage of personal data, and potential infringement of a copyright-holder's exclusive right to reproduce and store their copyright protected data. The book considers the scope of protection under both IP and data protection rights, and offers strategies on avoiding potential infringement. Further IT contracting issues and selected existing legal obligations to preserve data are described with a particular emphasis on digital preservation.

The clear exposition of the legal framework, and the detailed analysis of Legal Aspects of Digital Preservation will be of great utility to practitioner advising companies who are digitally preserving digital assets, as well as those companies themselves, developers of preservation systems, and researchers in the field of digital archiving.

Featured Article: Ensuring Sustainability of Processes Dependent on Web Services

Rudolf Mayer, SBA

Information systems and applications are increasingly leveraging Service Oriented Architecture and often use Web Services for their implementation. Web services are well suited for outsourcing and thus often delivered by third parties. This situation is of concern to businesses as well as scientific research, especially in E-Science domains, which need continued support for their processes. While there are advantages to using externally provided services, processes deployed in highly distributed systems are exposed to higher risk regarding business continuity. External services can change rapidly without the consumers of the service being notified or being aware of it.

In the recent journal publication "Ensuring Sustainability of Web Services Dependent Processes" the authors discuss how to alleviate business continuity concerns in such distributed settings, and provide a categorisation of possible types of changes that can occur in the provisioning of Web Services. These include unavailability of the service, changes in the communication interface, and changes in the functionality and behaviour of the Web Service. The latter are the most difficult to detect as they might not halt the execution of the process, but lead to unexpected results. The TIMBUS project devised prototype software that is capable of monitoring communication to external Web Services and, based on this, identifies whether these services are deterministic and have potentially changed. Actions which can mitigate threats to the continuity of processes are discussed. Such actions include contractual approaches and using mock-ups that replace an unavailable or changed service.

The article finally introduces the concept of Resilient Web Services as a way of ensuring sustainability of processes. It provides a set of recommendations and guidelines that would allow notification of changes in Web Services without the need of active monitoring. Resilient Web Services

should extend the current specification with information that would ease their long-term sustainability and usage. Thus, Resilient Web Service definitions should also provide information about the quality of the services offered, comprising aspects of continuity and non-modifiability. For example, one of the additional qualities could be the 'minimum specified availability date', which would guarantee for how long the execution of the service is guaranteed if there are no changes to the service . Additional methods provided by Resilient Web Services should provide a way to query on changes that have occurred in the implementation and the software and hardware environment supporting the Web Service since a given date.

Tomasz Miksa and Rudolf Mayer and Andreas Rauber, "*Ensuring sustainability of web services dependent processes*," International Journal of Computational Science and Engineering (IJCSE), Inderscience Publishers, Geneva, Switzerland, 2013.

Addressing Third Party Dependencies with Software Escrow

Elisabeth Weigl, SBA

When businesses buy customized software from a third party they depend on the third party's maintenance and support regarding changes or bug fixes. These dependencies pose problems, however, if the developer files for bankruptcy or ceases to maintain the program. The customer usually buys a license that gives no access right to the artefacts necessary for continuing to develop the software. They will not be able to change the program or adapt it to their needs.

Software Escrow offers mitigation for this risk as it places a trustable third party between the software producer and the customer. All artefacts relevant to the software development are deposited with the escrow agent, who is obliged to hand over the material to the software customer when a stipulated trigger event, such as declared bankruptcy, occurs. To be able to maintain the software after such an event, it is important that a complete set of artefacts is deposited and that all of them provide a defined level of quality.

Thus, for successful escrow, several issues need to be considered. Legally it has to be ensured that all rights necessary for future development are transferred and that the procedures to deposit and release the material are specified. From a technical point of view, the escrow agent must verify the completeness and quality of the material. Software development projects consist not only of source code, but of documentation, test scripts, or compilers needed to build and understand the software.

A manual analysis is needed to provide a thorough examination of the material. However, as this might take a long time and is a costly task, TIMBUS proposes a technical framework that supports the manual verification. The framework prototype implementation provides checks for all materials, e.g., it finds the licenses used for the software or highlights Web service calls which can be problematic if the Web service is not deposited in escrow as well. These findings are reported back to the reviewer so that potential problems are pinpointed. With the TIMBUS approach, we extend Software Escrow with Digital Preservation concerns to preserve external dependencies, such as Web services dependencies.

The Software Escrow Framework is illustrated in Figure 3. ⁞

Resources for Software Escrow

[1] Hoeren, Thomas, Barbara Kolany, Silviya Yankova, Martin Hecheltjen, and Konstantin Hobel. Legal Aspects Of Digital Preservation. Edward Elgar Publishing Ltd, 2013

[2] Draws, Daniel, Sven Euteneuer, Daniel Simon, and Frank Simon. "Short Term Preservation for Software Industry." In Proceedings of the 8th International Conference on Preservation of Digital Objects (iPres 2011), 130–139, 2011.

[3] Deliverable 4.6: Use Case Specific DP & Holistic Escrow http://timbusproject.net/component/docman/doc_download/143-d46m24use-case-specific-dp-a-holistic-escrowpdf

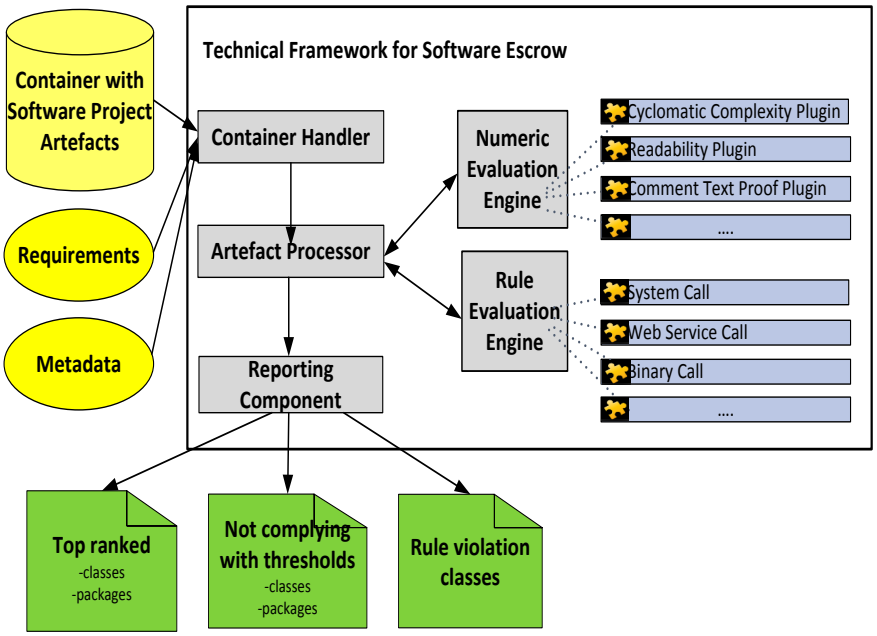

Figure 3: The Software Escrow Framework illustrated consists of input formats, processor subroutines, and various output formats. A container with all relevant software artefacts, with supporting information (metadata), such as the programming language used, as well as requirements that need to be considered constitute the input to the framework. In the container handler the data is analysed and the artefacts needed for evaluation are identified. Different plugins are triggered by the artefact processor, which sends their results to a reporting tool where they are formatted into human readable ranking lists used to support the reviewer in deciding which artefacts need to be inspected more rigorously.

TIMBUS TIMES

European Partnerships

TIMBUS is working closely with other European projects. For example, the training for advanced practitioners is organised by TIMBUS, APARSEN, SCAPE, EUDAT and the IMPACT Centre, and the training days on research process preservation are conducted by TIMBUS and Wf4Ever. We have even agreed on a common use case that lets us directly compare our tools, approaches and demos. Here are some news from some partners.

In the first week of July the **4C Project** Team (Collaboration to Clarify the Costs of Curation) convenes in Frankfurt for their second quarterly meeting. Items on the agenda include a review of the information collected through the recent consultation and the cost models evaluation, as well as planning the next big steps – the workshop at iPRES2013, the Curation Costs Exchange and the Roadmap. Keep up to date with 4C's progress by following the team's blog: http://4cproject.net/news-and-comment/

The TIMBUS Approach to Business Process Preservation

Dr Wasif Gilani, SAP

TIMBUS focuses on time-resilient business processes and services. The major objective of the TIMBUS project is to enable digital preservation for business processes and services. TIMBUS aims to enable an organisation to take a snapshot of and preserve its complete business process, or a critical part of it, and restore and replay the complete environment at a later point - 1, 5 or 100 years from now.

One motivation for this aim is found in Internet of Services (IoS). The service sector is growing at a tremendous pace, fuelled by advances in information and computer technologies. The era of centralised in-house business processes maintained and owned by single entities is almost coming to an end. In the current Internet of Services, business processes are more and more supported by service oriented systems based on the Future Internet. Here, a plethora of services from different providers, located in different geographical locations are linked up and composed to form value-added service compositions and business processes which continue to change and evolve. Third-party services can become unavailable for many reasons, for example, through bankruptcy. A fundamental requirement posed by the IoS setup is, therefore, to preserve functional and non-functional specifications of services along with their dependencies. This is far more challenging than the plain preservation of data, as elements including the versioning, licensing, cryptographic schemes, known data formats, host-system environments, architectures and hardware requirements continue to change over time. In the TIMBUS project, digital preservation is taken as a means to mitigate risks threatening the long-term availability of digital information. This enlarged understanding embeds Digital Preservation within the Business Continuity Management domain and therefore exposes it to the mainstream business world.

—- **Continued on the next page** —-

The **SCAPE project** has just published the fifth edition of its newsletter! In this issue you can find the results of the second year EC review, news on upcoming training events, a tool highlight with video of the Matchbox tool, an interview with Krešimir Đuretec of TU Vienna, more information on the 4C project and an overview of SCAPE's presence at OR2013, JCDL2013 and, of course, iPres 2013.
http://eepurl.com/BqMv1

The **SCAPE project** is researching the planning and execution of computing-intensive digital preservation processes. You can now find all the tools that are being developed in SCAPE on a new page on the website: www.scape-project.eu/tools. If you want to know more about SCAPE, please join our upcoming training event, 16-17 September in London: registration will be announced on the website soon.

APARSEN is developing a business model in order to establish a Virtual Centre of digital preservation excellence which will sustain after the end of the project.

For more information please visit the website www.aparsen.eu, Twitter: @APARSENproject, #APARSEN; LinkedIn Linkedin Group_APARSEN or Facebook Facebook/APARSEN orjoin one of the upcoming webinars at Aparsen/webinars.

In **APARSEN** a number of deliverables (http://bit.ly/IqfkzL) presenting findings of research in the different areas of digital preservation have been published: from technical dimensions over educational needs to managerial and business related aspects covering APARSEN topics: Trust, Sustainability, Access and Usability of data. They were informed by webinars and workshops held with external experts from other communities.

TIMBUS

TIMELESS BUSINESS PROCESSES AND SERVICES

TIMBUS is a three year collaborative project co-funded by the European Union under FP7 ICT-2009-6 (Grant Agreement number 269940)

TIMBUS on the web:

- http://timbusproject.net/
- info@timbusproject.net
- https://twitter.com/timbus_project
- http://www.linkedin.com/groups?gid=4728773

contd.

The TIMBUS approach establishes activities, processes and tools

- to ensure continued access to business processes and the supporting services and infrastructure;
- to align preservation with enterprise risk management and business continuity management.

TIMBUS breaks business process preservation down into the three phases of Plan, Preserve and Redeploy. In the planning phase business process context capture and service dependency analyses are carried out; risk analyses are performed to identify the risks, and the critical parts of the business process.

The preservation phase executes an effective digital preservation process. This includes establishing contractual agreement with all stakeholders, establishing the runtime digital preservation process, determining the type of storage landscape required, and performing the digital preservation of interdependent services.

The last phase of redeployment includes all actions that are needed so that the business process can be rerun at a time in the future. It determines the parts of the preserved process and its context that have become obsolete relative to the current business environment. It integrates the preserved businesses process with the current business process, and verifies the correctness of the rerun business processes. Please see the diagram in Figure 4 for an illustration.

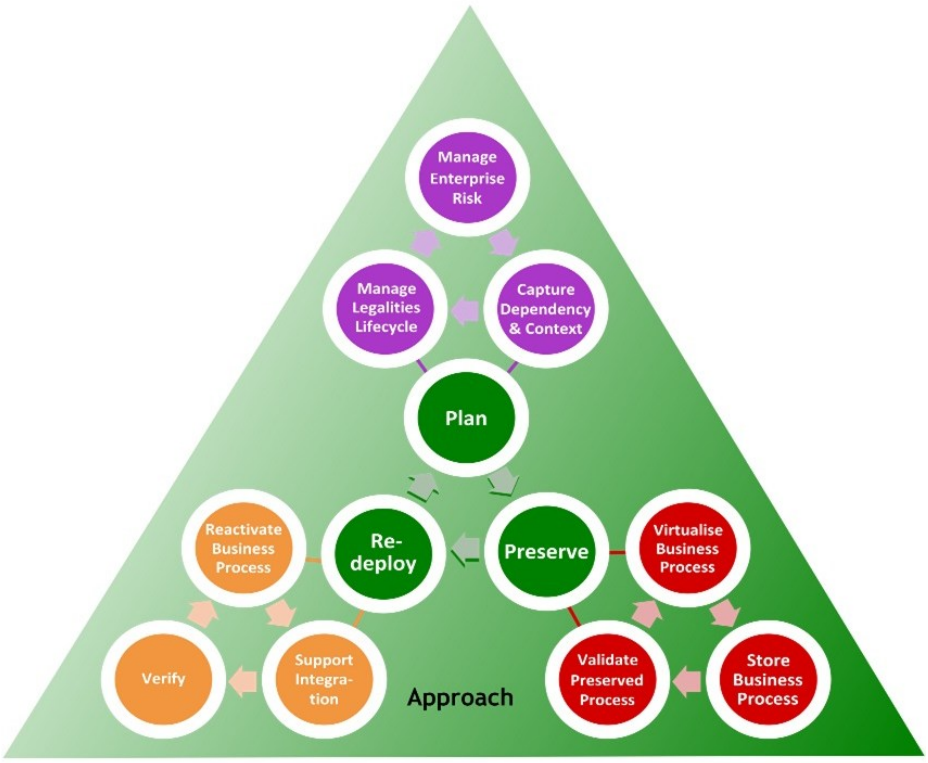

Figure 4: The 3-phased TIMBUS approach (http://bit.ly/VODhS8)

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

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