

The ARTIST project

Advanced software-based seRvice provisioning
and migraTion of legacy SofTware



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Presentation Outline



- Vision and Objectives
- Approach
- Methodology
- CloudML in ARTIST
- Expected results
- Use Cases
- Current Status
- Impact
- Partners
- Contact Info



Mission



ARTIST aims at **facilitating the transformation and modernization of legacy software assets and businesses to the cloud.**



ARTIST at a glance



- **Vision**
 - ARTIST helps in the process to **modernise and transform legacy software** to run in the **Cloud/SaaS**, **and be offered through a new business model**
- **Goal**
 - **Adapting legacy software to run on the cloud** through the creation of a set of **methods, tools and techniques** based on **Model Driven Engineering**, **accompanying this technical modernization with business model aspects and considering the impact in the organizational processes**
- **Offering**
 - Help organisations to evaluate if their applications are able (and if its worth it) to run these on the cloud and perform the entire process to migrate the applications: **assess, plan, design, implement and validate the migration process**



Objectives



- ARTIST creates **methods, techniques, and tools** to migrate the **software** in three phases :
 - ✓ **Pre-migration phase**
 - Evaluate if migration is possible (technical and business aspects)
 - ✓ **Migration Phase**
 - Create a “to do” list for migration steps
 - Analyse and model the legacy software
 - Transform the legacy models to modernized models, **intertwining the business model aspects within the architecture**
 - Ensure the migrated code fulfils the cloud requirements
 - **(Re)define the new business processes to support the new delivery of the asset as a service**
 - ✓ **Post migration (provisioning) phase**
 - Validate and certify that migrated software fulfils the migration goals
 - Facilitate the future migrations by reusability of artefacts and evolution of the migrated code



Approach (I)



Provisioning



Migration



Pre-Migration



Approach (I)



Companies that sell their application as a product

PRE MIGRATION



Tools to support the decision of migrating or not and to which cloud provider

- Maturity Assessment of the application to be migrated. Current vs. ideal maturity
- Technical Feasibility: High Level Reverse Engineering + other metrics such as code reusability
- Business Feasibility: Impact in the business processes, Risks, ROI + other metrics

Companies that are migrating

MIGRATION



Tools to support the migration to SaaS

Technical Transformation

- Low-level reverse engineering (KDM, UML2)
- IaaS / PaaS and 3rd party components modelling (PDM)
- Forward Engineering, M2M / M2T transformations (PIM to PSM to code using PDM) (ATL)
- Migration Methodology + Supporting guiding tools / templates (EPF, SPEM)
- V&V (behavioural and end users)
- methods and tools

Business Transformation

- Redefinition of business processes
- Definition of the business model

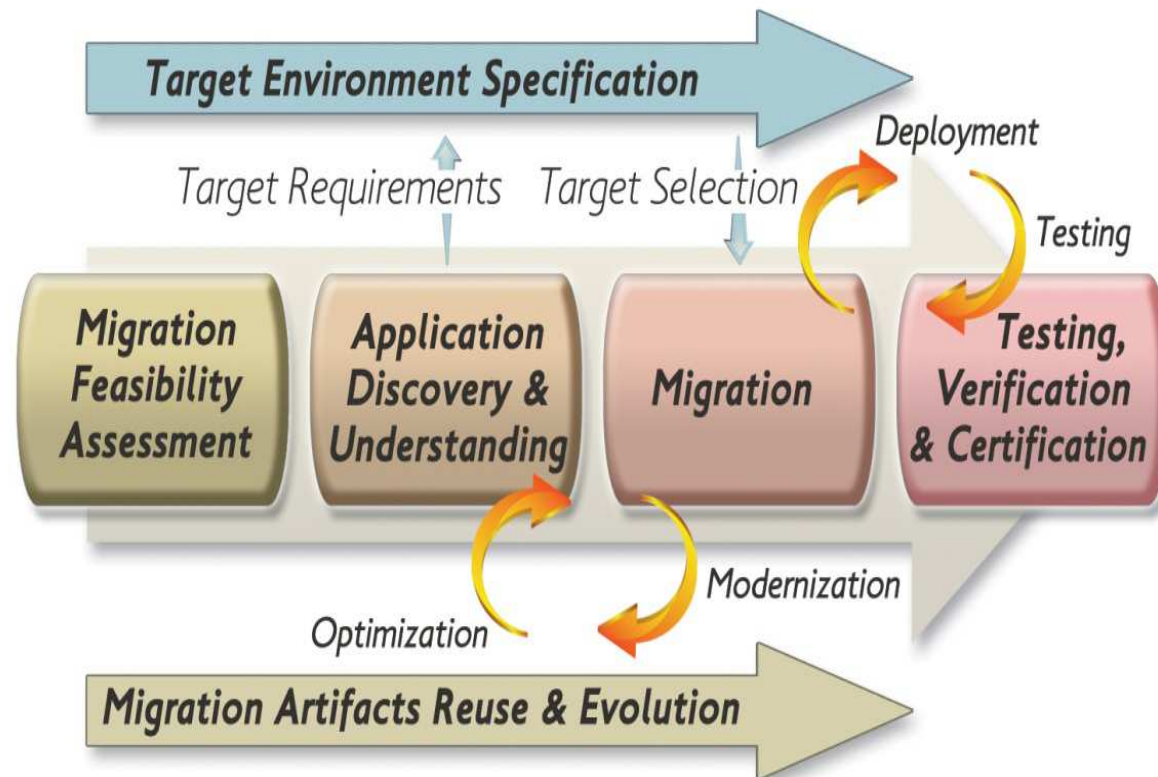
Companies that provide SaaS

PROVISIONING

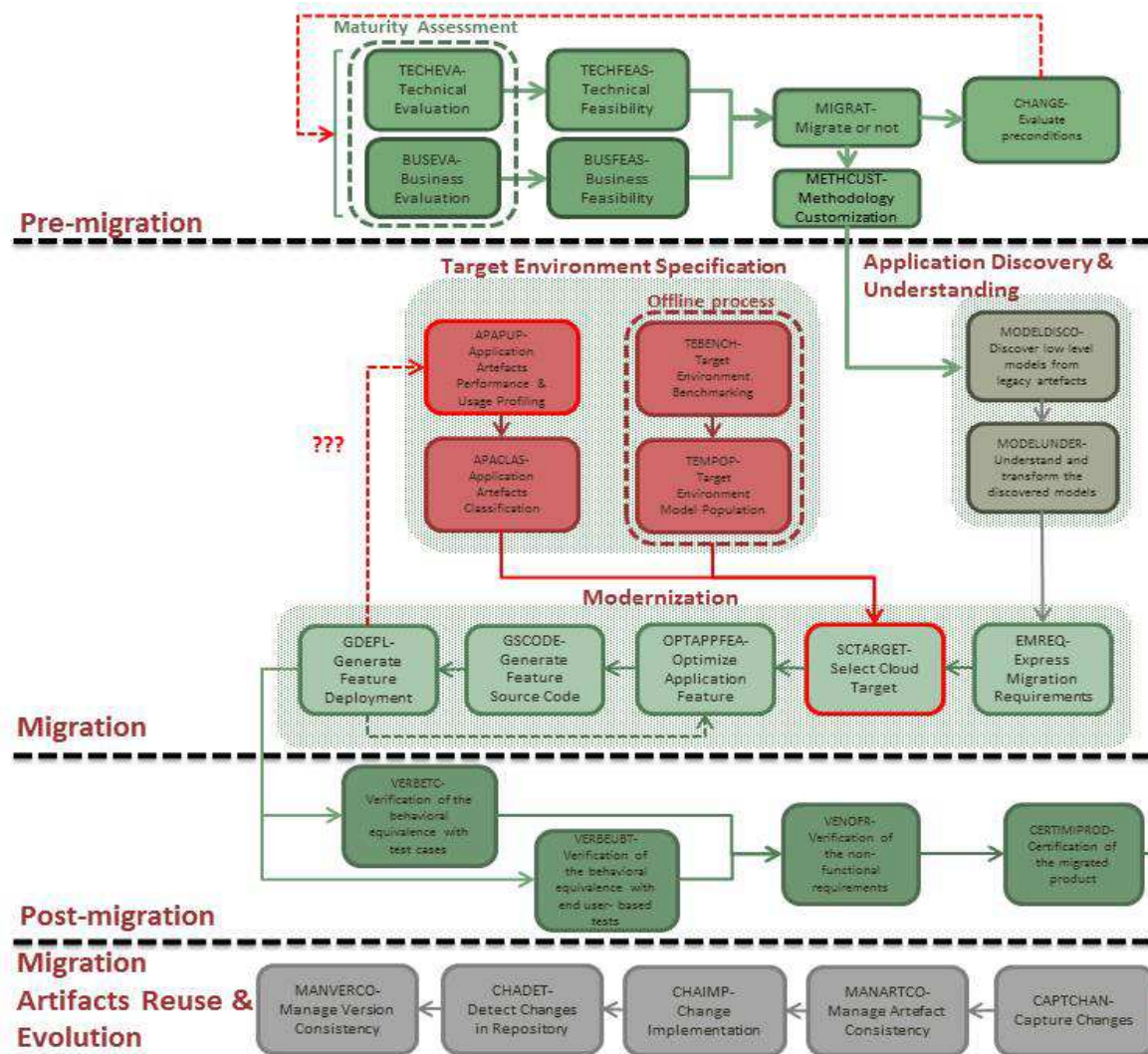
Tools to support the SaaS provisioning

- V&V (behavioural and end users) methods and tools
- Certification model for SaaS application providers
- Repository of artefacts, tools, etc. for easing the evolution

Workflow



Methodology Phases (April 2013)



Slide 9

OAL3

Do you think that presenting this picture would be too complex? I think it shows fairly well the technical tasks of ARTIST (in this version the business tasks are still not included)

Orue-Echevarria Arrieta, Leire; 28/6/2013

CloudML@ARTIST



- CloudML@ARTIST will be used to **model the target cloud platform** where the application will be developed
 - This will allow the user select which cloud provider is the most adequate for that application in terms of i.e. performance, pricing, 3rd party offerings, etc.
 - this data is input to the feasibility analysis and also to migration activities
 - The metamodel will be instanced taking into account metrics / values corresponding to the selected cloud provider so that the application can be deployed there
 - input to the migration activities (forward engineering) and to the V&V to know when the application responsibility starts and when it ends and it is the provider's



- **CloudML@ARTIST defines a cloud platform metamodel as a UML profile.**
 - It reflects generalities, common structure of IaaS and PaaS offerings
- Why it was chosen:
 - Allows common understanding among different technical profiles
 - Identifies architectural constraints
 - Allows an automatic definition of resources
 - Threshold values are always visible
 - Easier deployment of a software application on a cloud provider



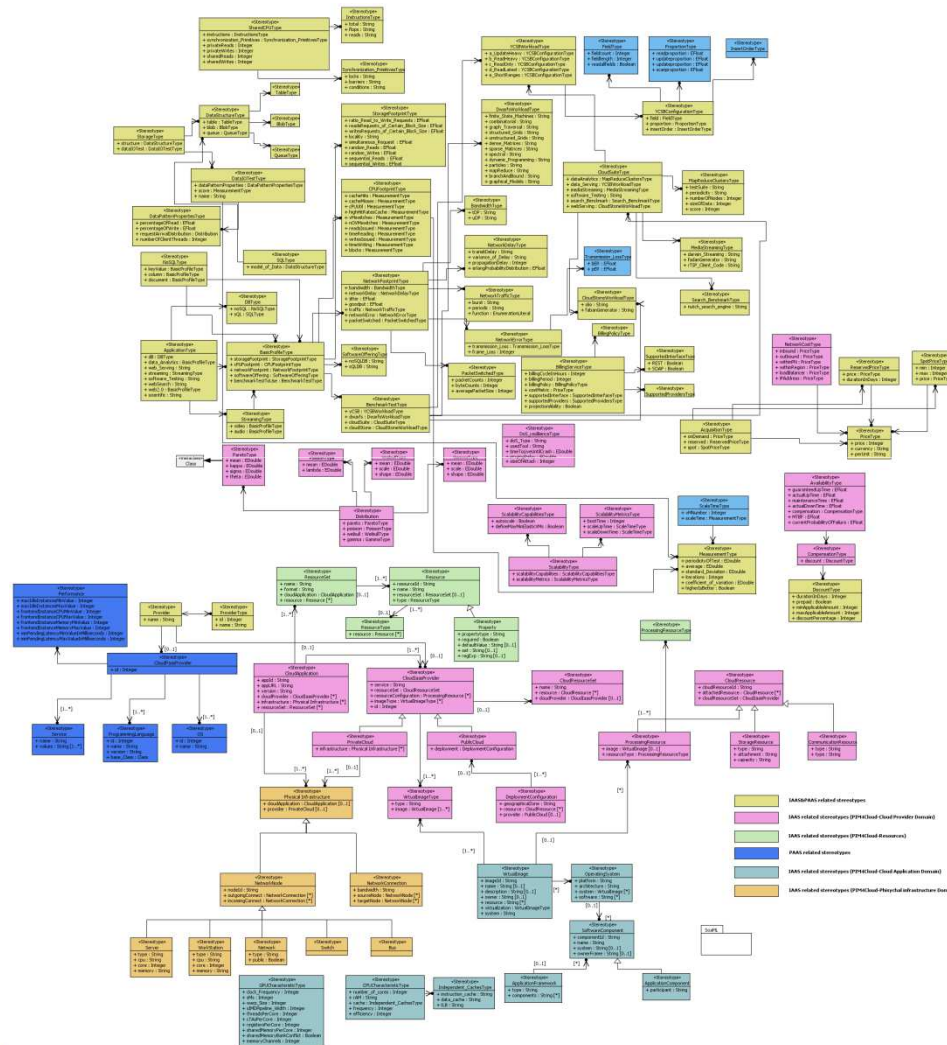
CloudML@ARTIST



- CloudML@ARTIST **extends** REMICS PIM4Cloud with the inclusion of:
 - PaaS Related aspects
 - IaaS + PaaS scalability issues
 - 3rd party offerings (especial focus on security, billing and monitoring)
 - More stereotypes concerning the Application domain
- ARTIST Consortium willing to participate in the standardization process of a common CloudML along with other projects (ModaCloud, PaSaage)



CloudML@ARTIST – current status



- The resulting model with all the extensions included is too complex
- In the process of restructuring to make it easier

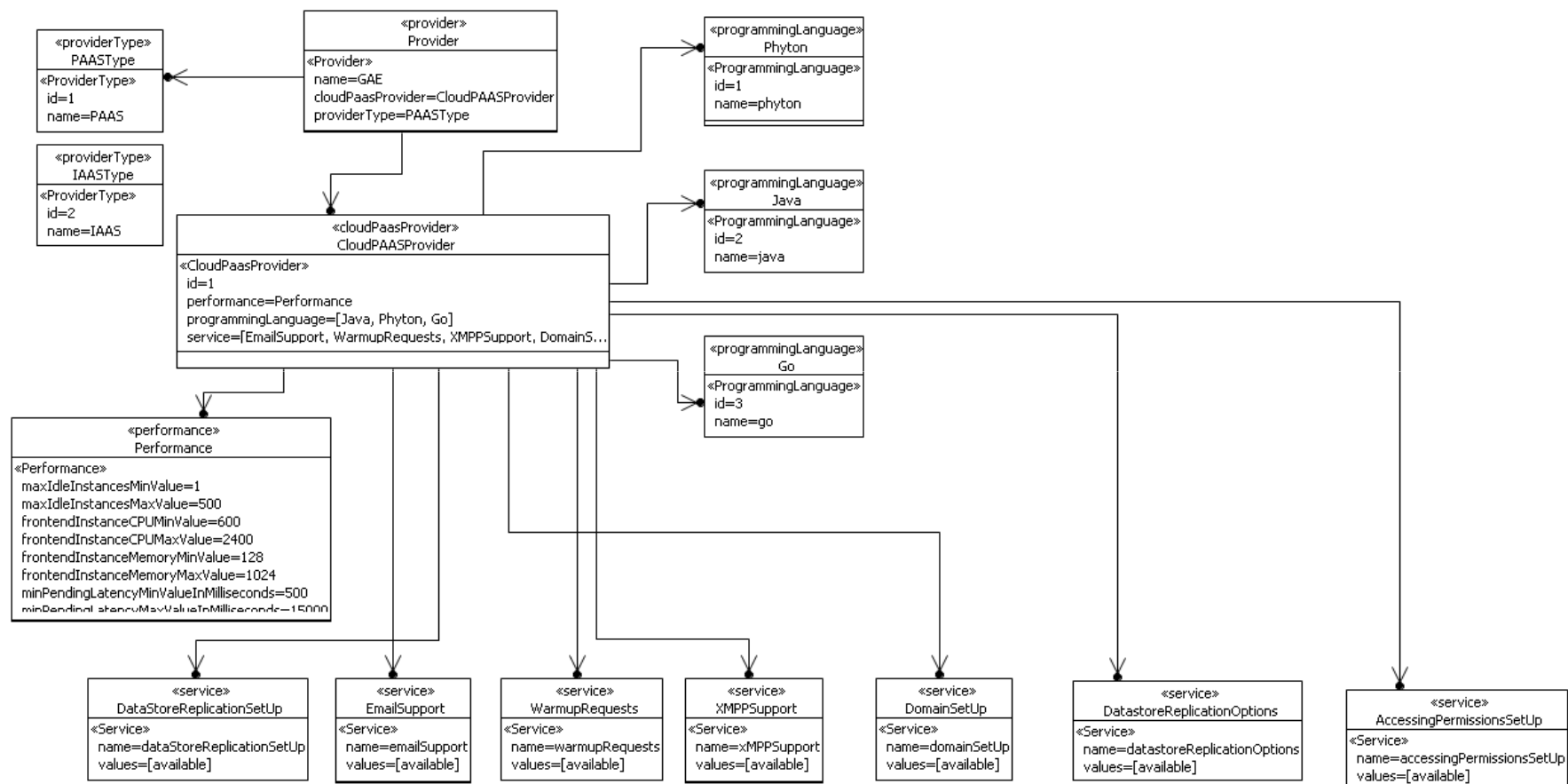
Slide 13

OAL4

This is an example of our version of CloudML right now. I would hide this slide and if someone asks you something concerning it you can show him/her how it is looking like.

Orue-Echevarria Arrieta, Leire; 28/6/2013

Example: Google App Engine with CloudML@ARTIST



Slide 14

OAL5

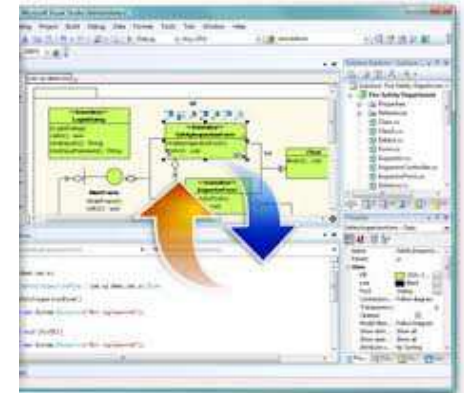
this is the CloudML model for the Google App Engine so people can see how n CloudML instance would look like.

Orue-Echevarria Arrieta, Leire; 28/6/2013

Expected results



- A **set of tools** to analyse and classify legacy SW and business and to evaluate feasibility, cost, implications and benefits of migration
- **Methodology** (tool-supported) to guide companies in the entire migration process (technical, business, process)
- **Model-based approach** for source/target applications and infrastructures/platforms
- **Reusable set of artefacts** (models and transformations) provided through an enhanced repository
- A **validation framework** for migrated applications
- A **certification model** for warranty the compliance of migrated application with cloud
- **Four validation scenarios** (Java and .NET) to demonstrate the feasibility of ARTIST results



Use cases (I)



- ✓ Tsunamis early detection system
- ✓ ARTIST will allow the migration of the operators desktop (SWT/Jface) to a webtop (GWT/GXT)
- ✓ User interface and data schema will be migrated



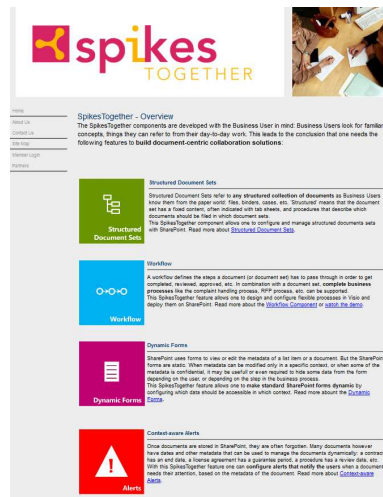
- ✓ eGov application for the integration of processes and data from different public administrations
- ✓ ARTIST will allow the easy deployment of a PaaS in a cloud



Use cases (II)



- ✓ Media application for News Agencies
- ✓ ARTIST will allow to create a “light” NewsAsset version
 - ✓ with the basic functionalities
 - ✓ hosted in a cloud environment
 - ✓ configured to address the needs of existing customers



- ✓ Social networking solutions for the enterprise
- ✓ ARTIST will allow to extend a legacy app to integrate it with SaaS apps
- ✓ No migration of legacy code, but generation of facades to connect legacy code with services in the cloud (Ubison)

Current status



- First software prototypes of:
 - Feasibility Tools (maturity assessment, technical feasibility assessment and business feasibility assessment)
 - Extensions of MoDisco for Model understanding and model discovery with the inclusion of new views and a taxonomy
 - Transformations and optimization patterns to deploy applications on a cloud provider
- First version of CloudML@ARTIST
- In the process of benchmarking cloud providers (IaaS / PaaS) to gather metrics so that they can be compared against each other
- First version of the methodology including technical-related tasks, business-related tasks and process-related tasks
- First version of the certification model
- Full definition and architecture of the 4 use cases



Impact



- Up to 90% of software cost relates to its maintenance following implementation...
- ...yet once implemented it is never again cutting edge

ARTIST impact goal:

- To slash by 50% the migration cost relative to manual migration
- Permitting **more frequent** migration **to more suitable platforms**
- Mainly addressed to ISPs, software owners, cloud providers, etc.

“Balancing software continuity with optimal performance and cost”



Slide 19

IS2

have a look at the respective del to update this slide

Ilias Spais; 27/6/2013

The consortium



Atos

tecnalia  Inspiring Business

Inria
INVENTORS FOR THE DIGITAL WORLD

 **Fraunhofer**
IAO



 **ENGINEERING**



SPARX
SYSTEMS

 **spikes**
Research



Contact information



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THANKS FOR YOUR ATTENTION

