Digital Preservation of Business Processes and Services

April 2011 – December 2014

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Overview

TIMELESS BUSINESS

- Project
- Goals
- Approach and methodology

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TIMELESS BUSINESS

Digital preservation for timeless business processes and services

- timbusproject.net/
- http://opensourceprojects.eu
- info@timbusproject.net
- https://twitter.com/timbus_project

- April 2011 – December 2014

- co-funded by the European Union FP7/2007-2013 under grant agreement no. 269940

The TIMBUS Consortium

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SAP – Lead partner	(NI, CH)	Industry
Intel	(Ireland)	
Software Quality Systems	(Germany)	
Digital Preservation Coalition	(UK)	Research
INESC – ID	(Portugal)	
Karlsruhe Institute for Technology	(Germany)	
Laboratório Nacional de Engenharia Civil	(Portugal)	
Münster University	(Germany)	
Caixa Magica Software	(Portugal)	SMEs
Secure Business Austria	(Austria)	

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A Preservation Continuum

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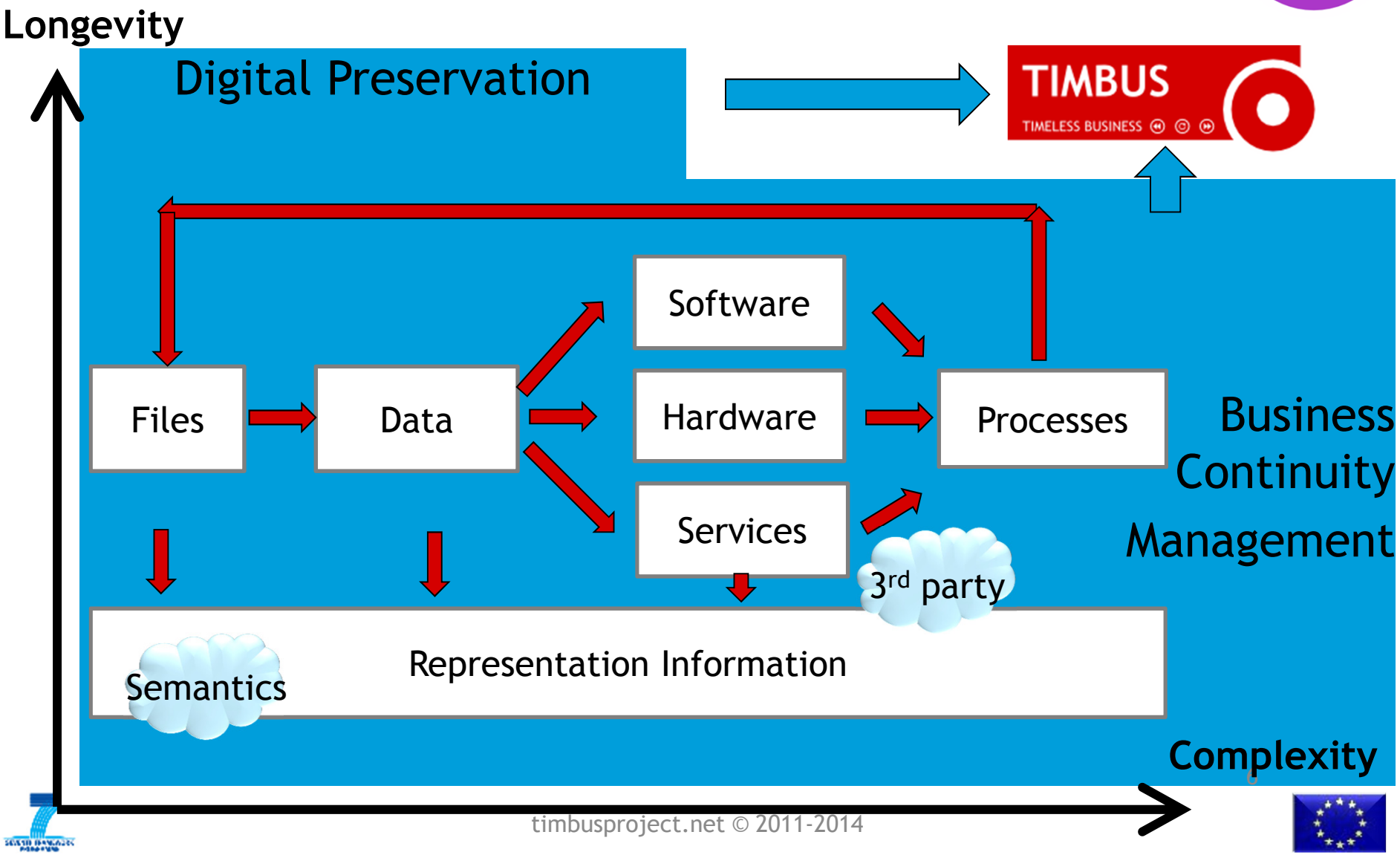

Motivation: Continuity

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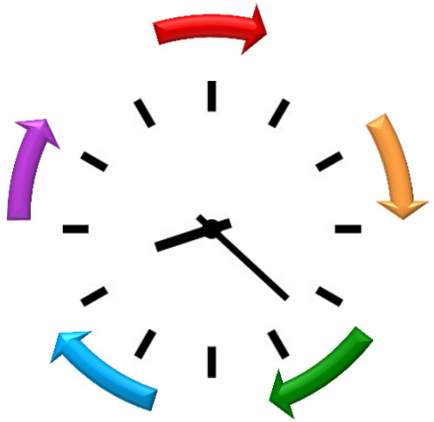
- Reusability of any part of the process:
  - Redeployment of the process
- Curation and continuous improvement
  - By explicitly exposing the methods used in the process
- Changes in technical environments
  - Manage transitions across platforms
- Staff changes
  - Knowledge retention and continuity
- Third-party services
  - Protect data and functionality



Motivation: Provenance

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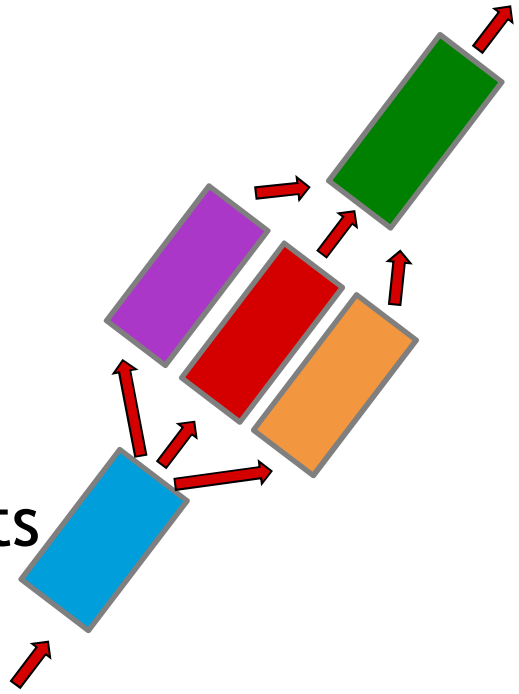
- Improve understandability
  Explicit links between data, processes, platforms, results
- Attribution and referencing
  Cite data, publications and processes using URIs/DOIs
  Refer to registries
- Prove of authenticity
- Repeatability /Reproducibility
- Traceability, error detection, diagnosis and prove of quality of process products
  Assess validity of data, processes, derived outputs
- Regulated areas
  Audit, compliance, reproduce, diagnose, evidence for litigation



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Use Cases

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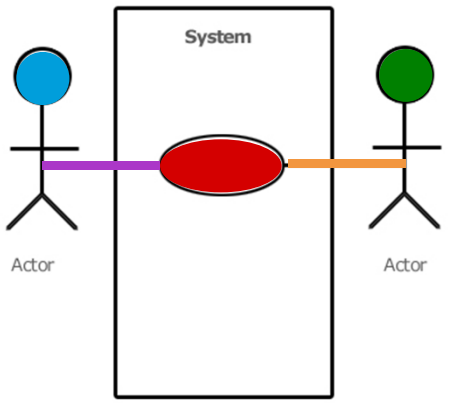
Preservation of

- Open source workflows
- Open source systems
- Civil engineering: Dams
- E-Health



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Context Description

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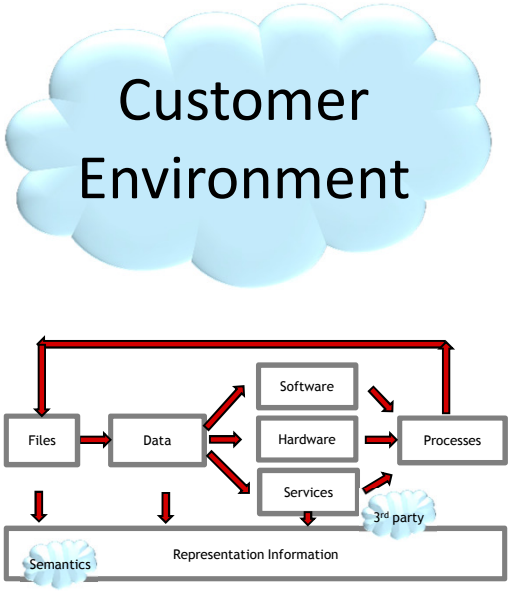

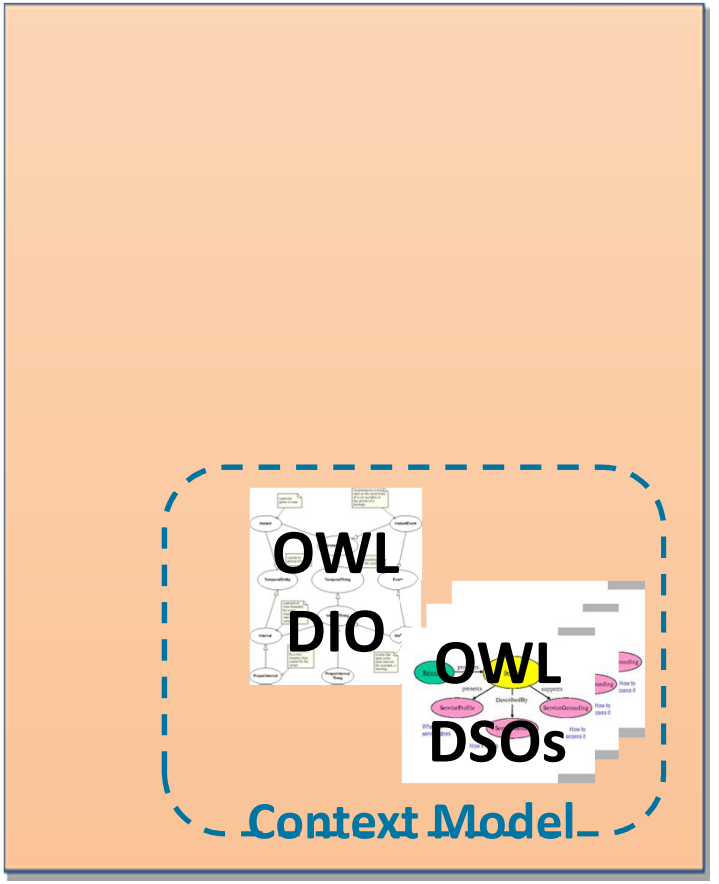

Context Acquisition

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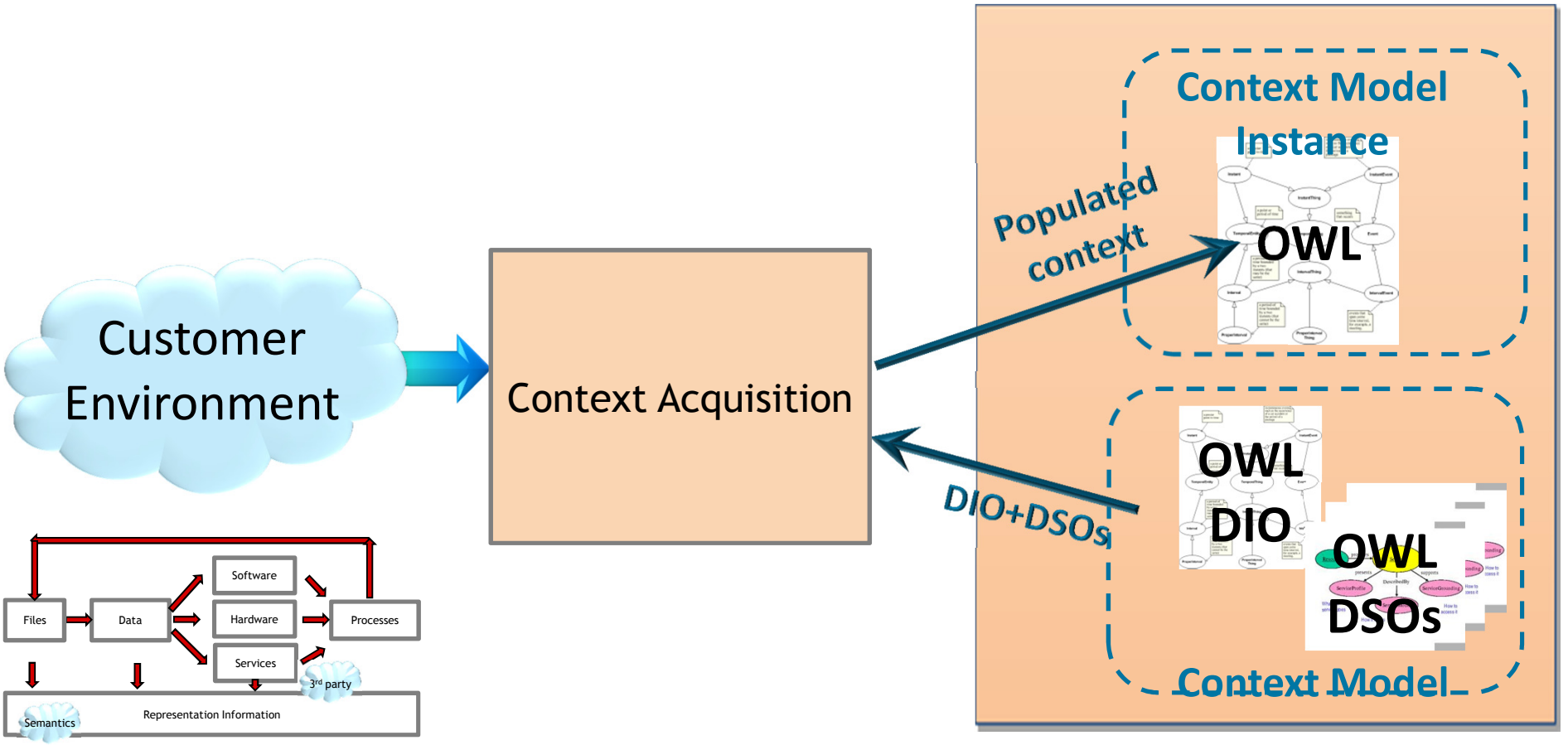

Context Acquisition

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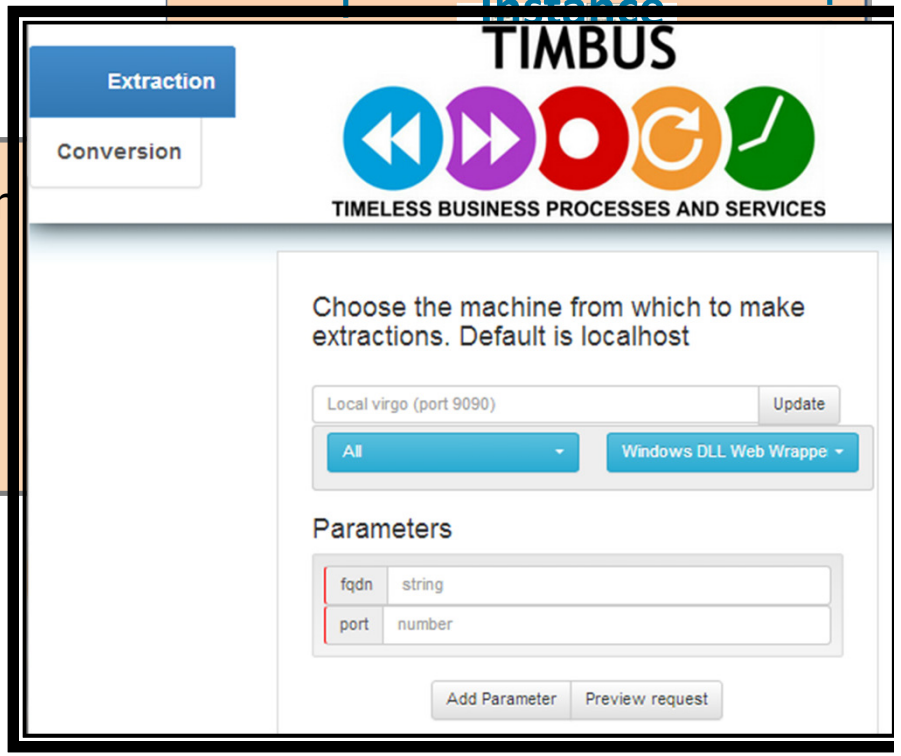
Technical Expert Console

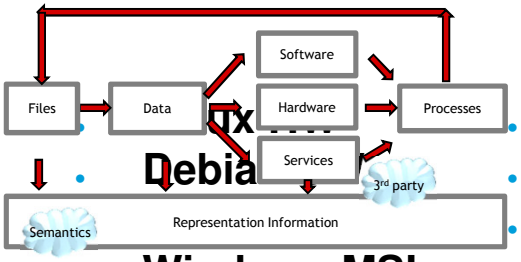
Edit Context Instance

Context Model Instance

Customer Environment

Context Acquisition
- Processes
- Properties
- Dependencies
- …





- Rx …
- Debia…
- Windows MSI
- Perl Modules
- (LLM Surveys)

- Process Extractors
- Process Monitoring
- Modified Code
- Network Information
- Network Topology
- Network Monitoring

Context Analysis

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Risks:

- Identify
- Classify

Risk Expert Console

Domain Experts:

Preservability

Context

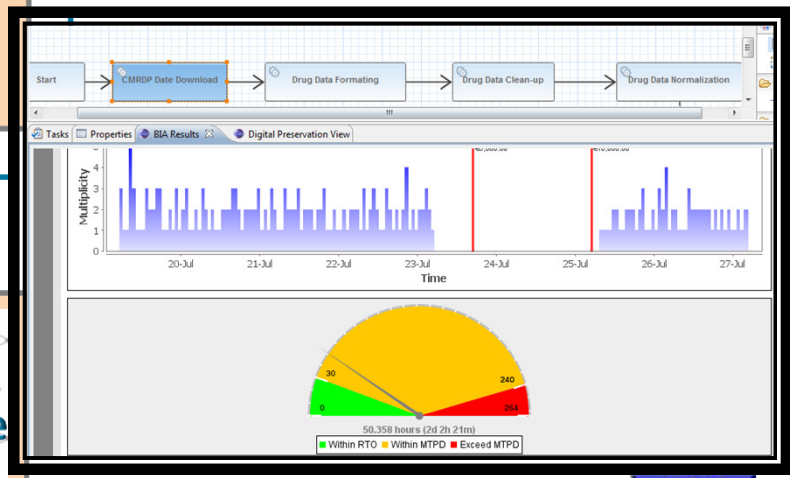
Report

Legalities Life-Cycle Management

Context

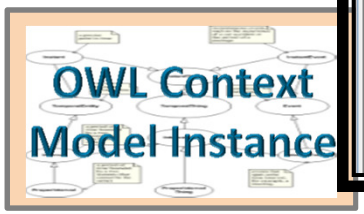
Report

Risk Evaluation & Treatment



Reports:

- Problems
- Opportunities



Context Analysis - Preservability

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Quality	No.	Characteristics	Metrics	Expected Output
Compatibility	C1	Co-Existence		-
	C2	Interoperability		
Portability	P1	Adaptability		
	P2	Installability		
	P3	Replaceability		
Maintainability	M1	Modularity		
	M2	Reusability		
	M3	Analysability		
	M4	Modifiability		
	M5	Testability		
Security	S1	Confidentiality		

Based on ISO/IEC (2010) ISO/IEC 25010

Context Analysis - Preservability

TIMELESS BUSINESS

Quality	No.	Characteristics	Metrics	Expected Output
Compatibility	C1	Co-Existence		-
	C2	Interoperability		
Portability	P1	Adaptability		
	P2	Installability		
	P3	Replaceability		
Maintainability	M1	Modularity		
	M1.1		The system's coupling is low and cohesion is high.	Coupling and cohesion metric values
	M2	Reusability		
	M2.1		The external interfaces of the system are clearly specified.	See C2.4.
	M2.2		The communication to and from the system is standardised.	See C2.2.
	M2.3		The system has a sufficient level of encapsulation.	See M1.
	M2.4		The licenses and legal regulations permit reuse.	License clauses
	M3	Analysability		
	M4	Modifiability		
	M5	Testability		
Security	S1	Confidentiality		

Context Analysis

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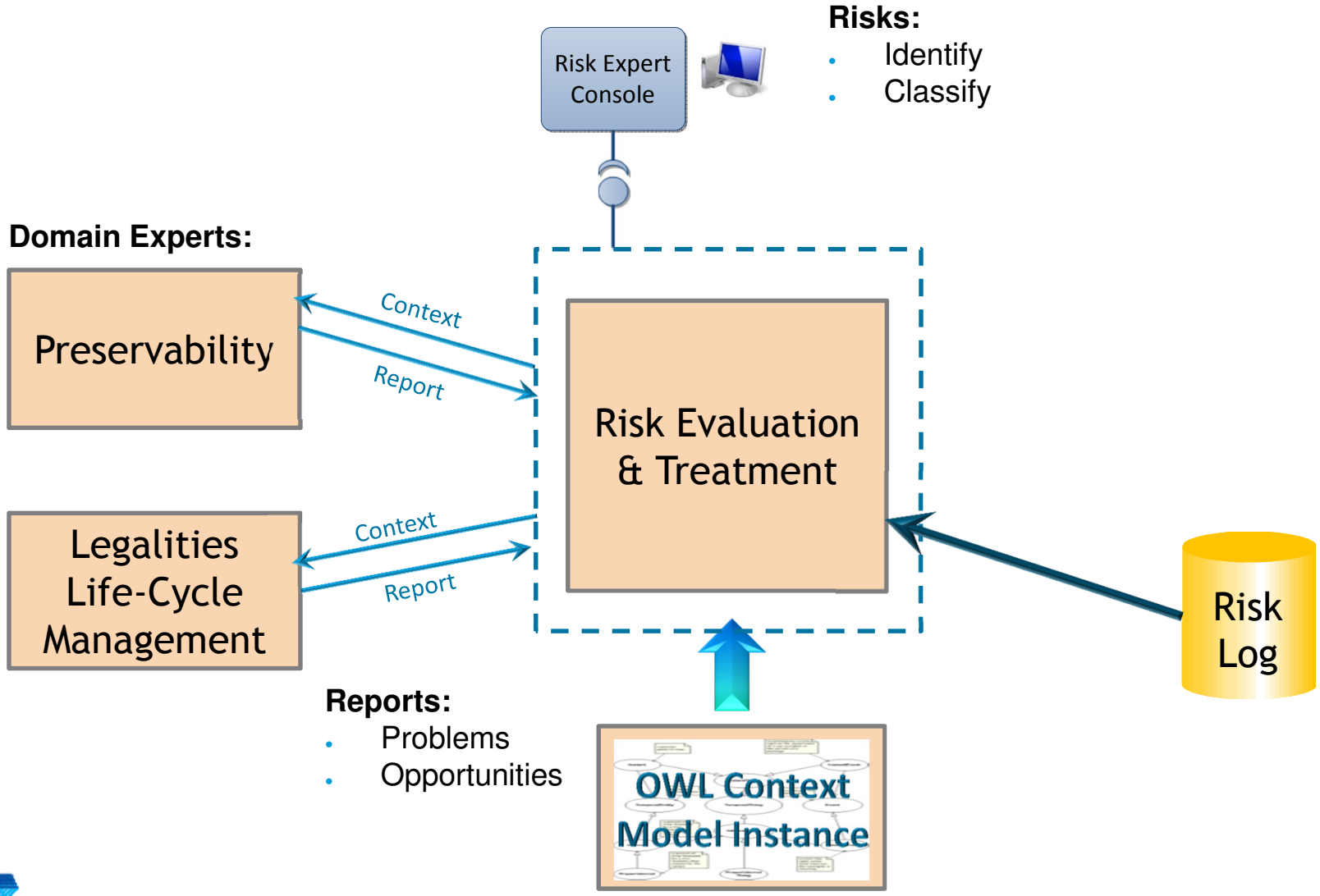

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Context Analysis

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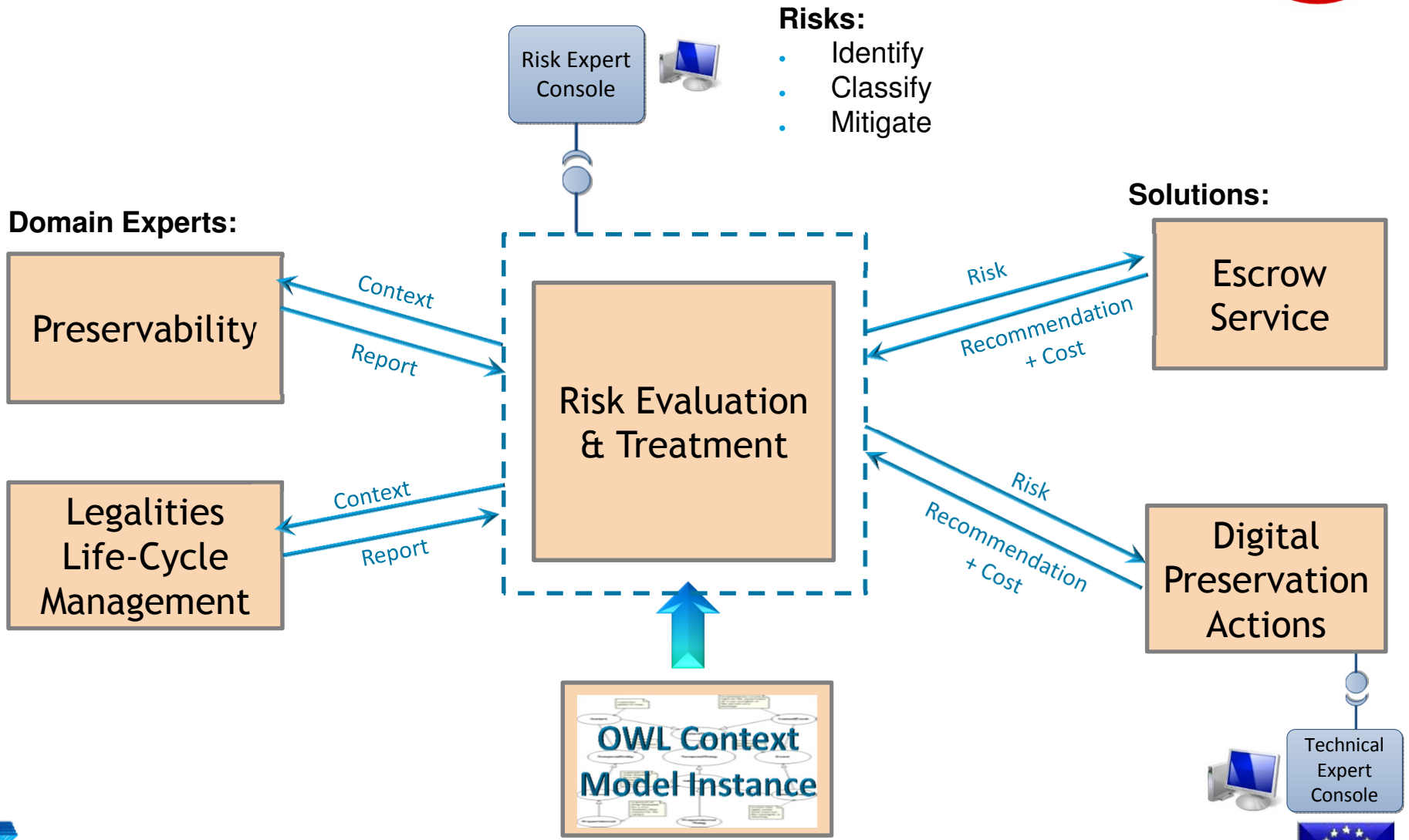

Putting it Together

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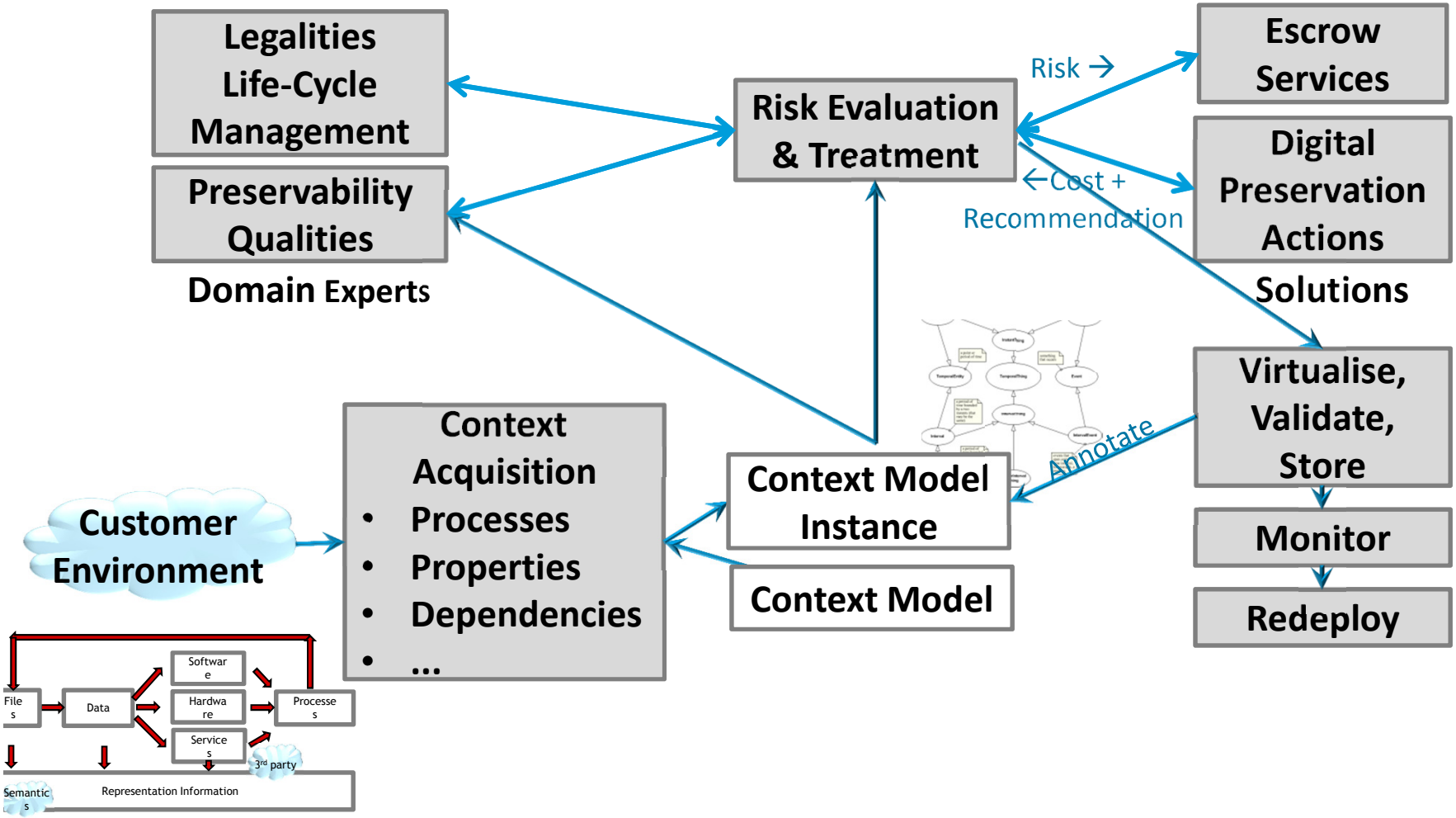

Preserve -DPES

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- Determine artefacts to be preserved
  - Calculate cost of preservation based on all the required artefacts
  - Calculate projected cost for a given number of years
  - Recommend action
- Package artefacts
  - Create list of artefacts to acquire from the context model
  - Create checksums for all files
  - Extract system metadata for the files to store with the files
  - Create metadata for the overall project to store with the project
  - Annotate the context model with the newly created metadata
  - Specify significant properties, their known values, how to capture them
- Create a Virtual Machine
  - … using the hardware configuration extracted during context acquisition
  - Verify the service
  - Store VM in backend storage
  - Update risk register with residual risks

Putting it Together

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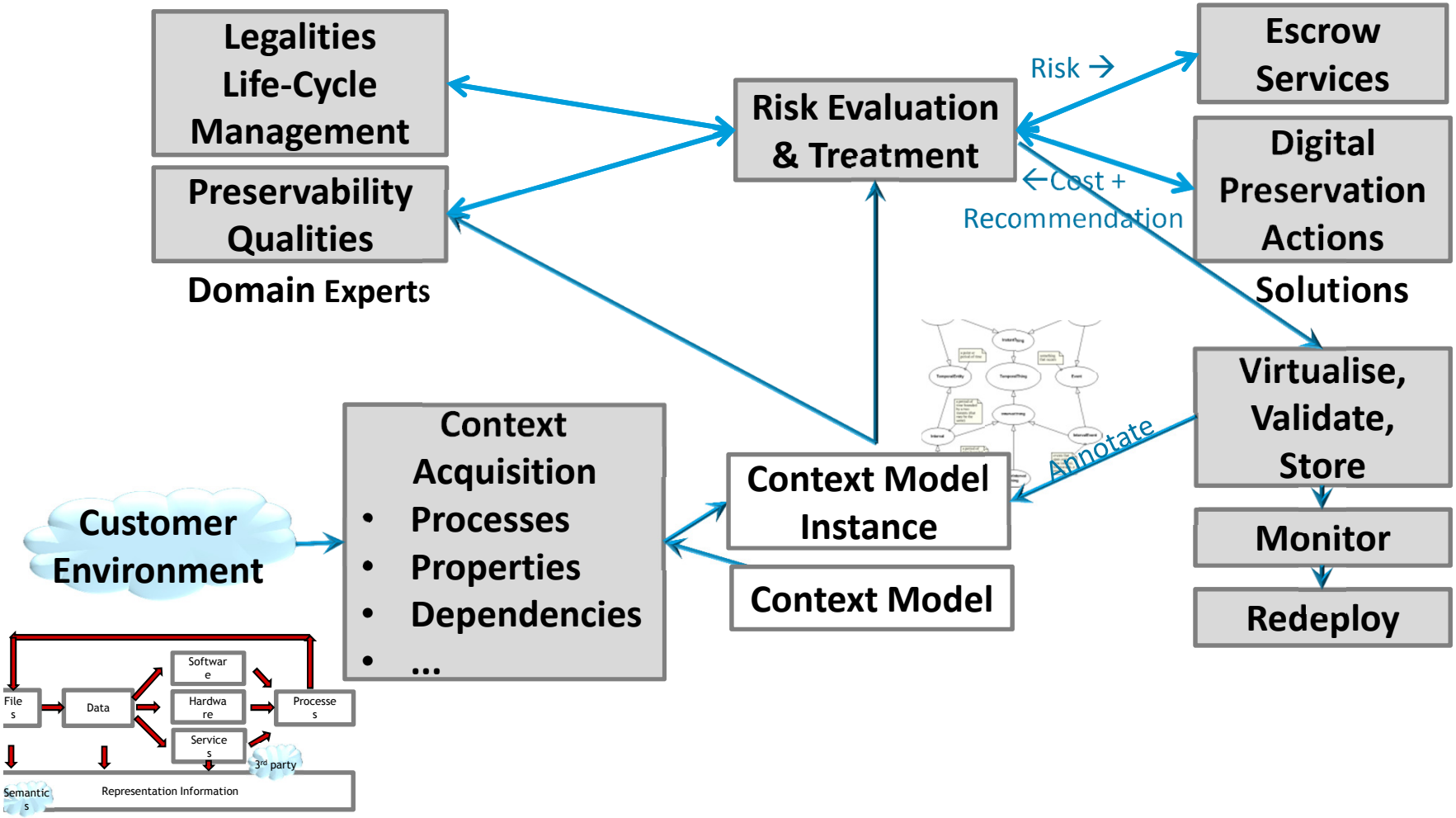

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