



M O D E L S
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Reuse and Migration of Legacy Systems to Interoperable Cloud Services- The REMICS project

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Project facts

- REMICS is a research project (STREP) accepted in the Objective 1.2 of FP7 Call 5 (Internet of Services, Software and virtualization).
- Aims at migration of legacy systems into Cloud services based on service-oriented architectures
- REMICS runs from September 2010 for 3 years.
- The budget is 4.5 MEuro
- Partners are:
 - SINTEF (Coordinator), DI Systemer (**Norway**)
 - Softeam, Netfective Technology (**France**)
 - Fraunhofer (**Germany**)
 - ESI, DOME Consulting and Solutions (**Spain**)

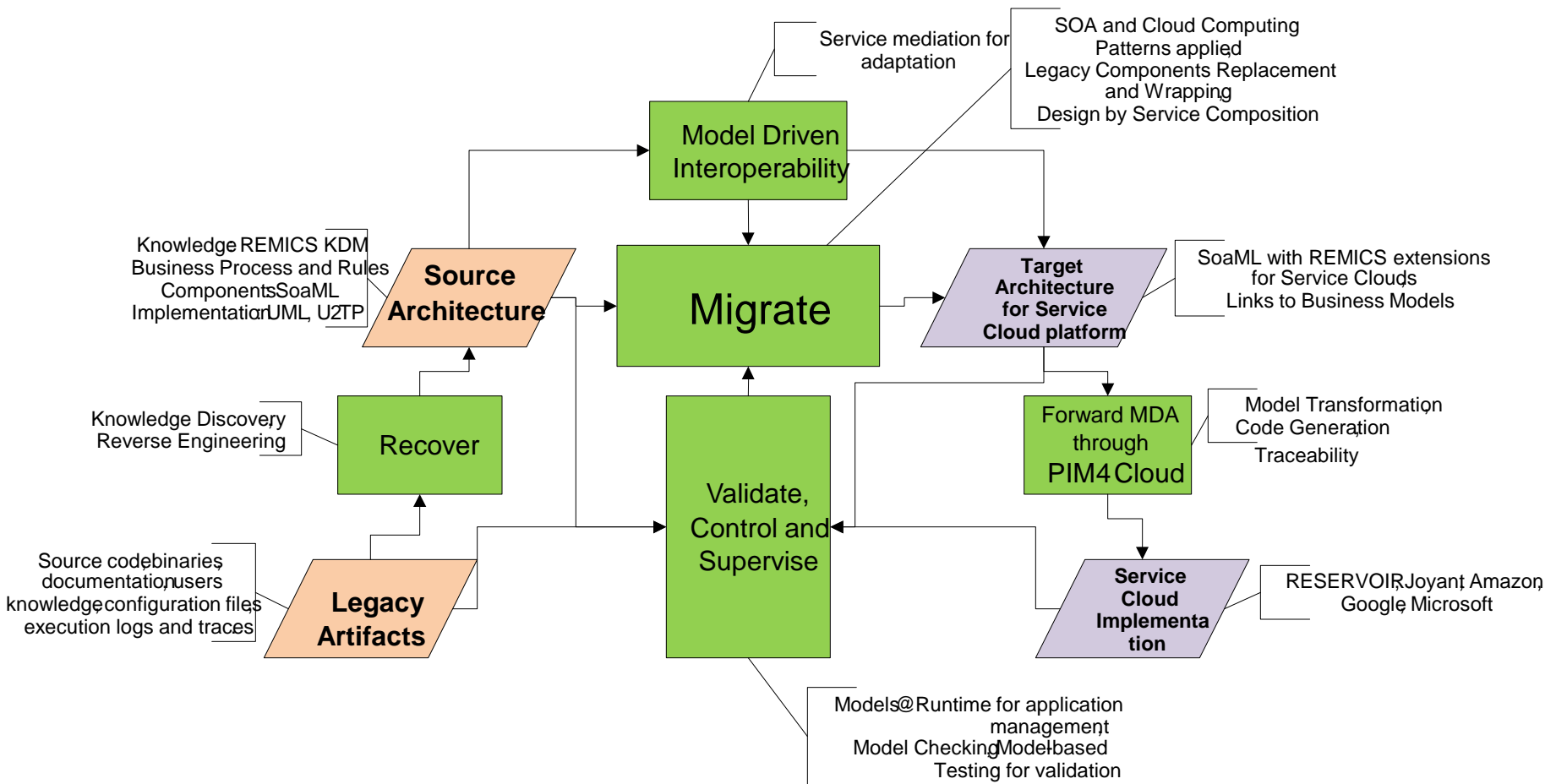
Problem to be addressed

- Legacy systems are sometimes of substantial value for companies:
 - They still function for the users' needs;
 - They capture important business logic;
 - The cost of replacing them with systems designed from scratch is often too high.
- However:
 - Legacy systems are often difficult to reuse due to platform, documentation and architecture obsolescence.
 - New technologies arrive such as Cloud Computing and Software as a Service that promise better performance or cost saving that motivate organizations to modernize their applications.

Challenges

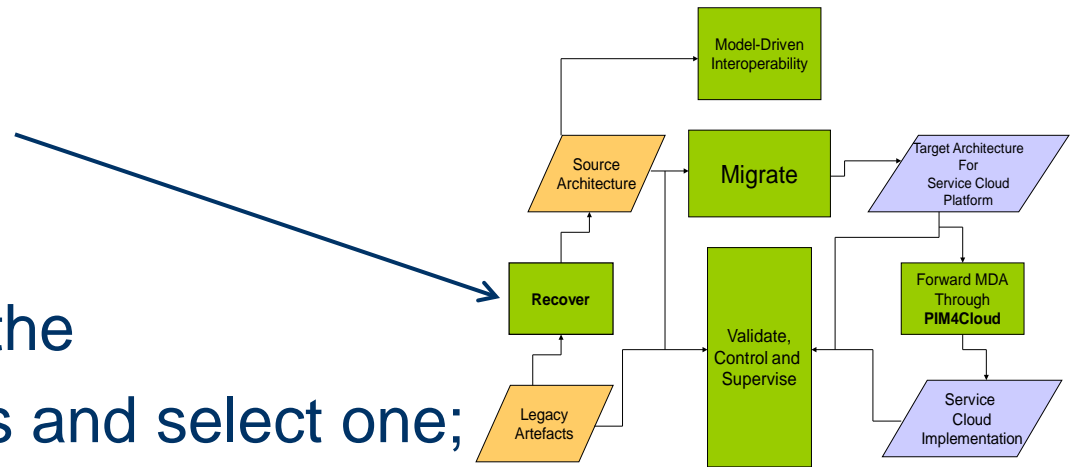
- The oldness degree of technologies to be reversed;
 - How to adapt them to the SaaS and cloud paradigms?
 - How to handle interoperability?
- The absence of knowledge;
 - How to extract business value information?
- QoS should be preserved;
 - How to reuse legacy systems in automated testing of the new SaaS?
- Cost of the migration process;
 - How to plan a progressive migration process?
 - How to train people in new technologies such as MDE?

Steps in the REMICS approach



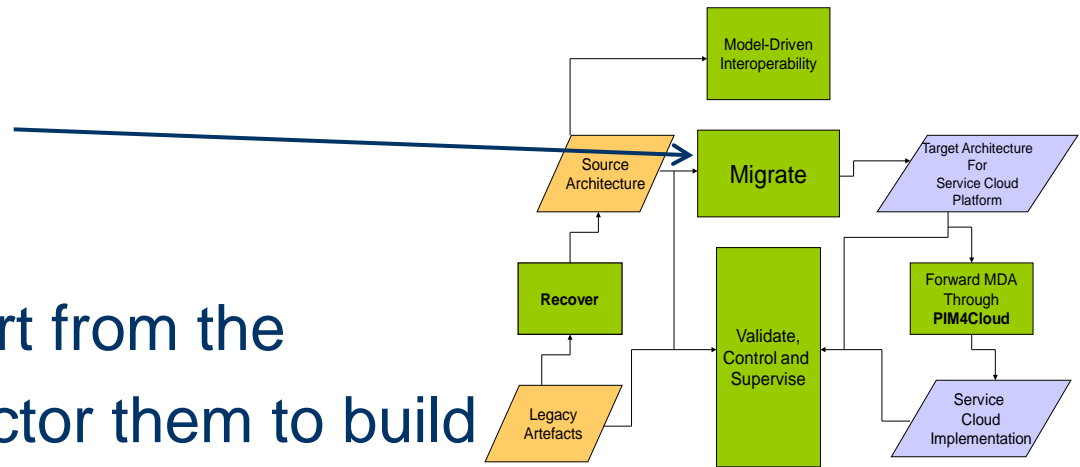
Recover

- Analyse feasibility of the modernization strategies and select one;
- We plan to use the OMG KDM standard and extend it when necessary.
- Recover business value information: requirements, processes, rules, non-functional properties etc.
- Use automated reverse engineering methods as much as possible;
- Develop models (business, components, test specifications etc.) that will be used further.



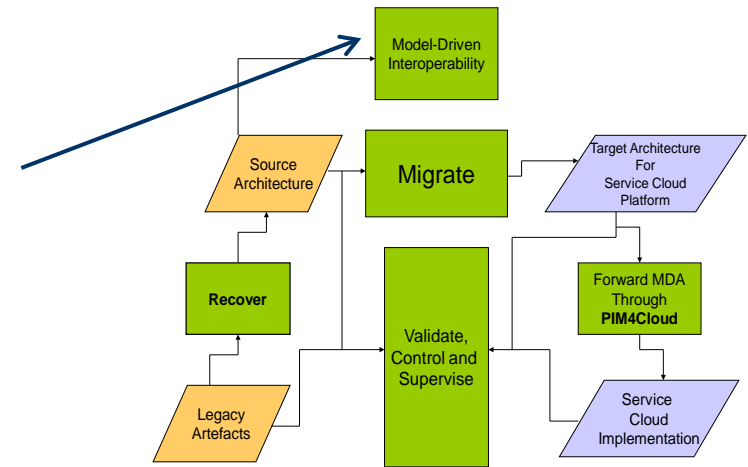
Migrate

- The purpose is to start from the legacy models and refactor them to build a new SOA by applying methods such as decomposition, component wrapping and replacements.
- Some components or services may be replaced by newly discovered ones.



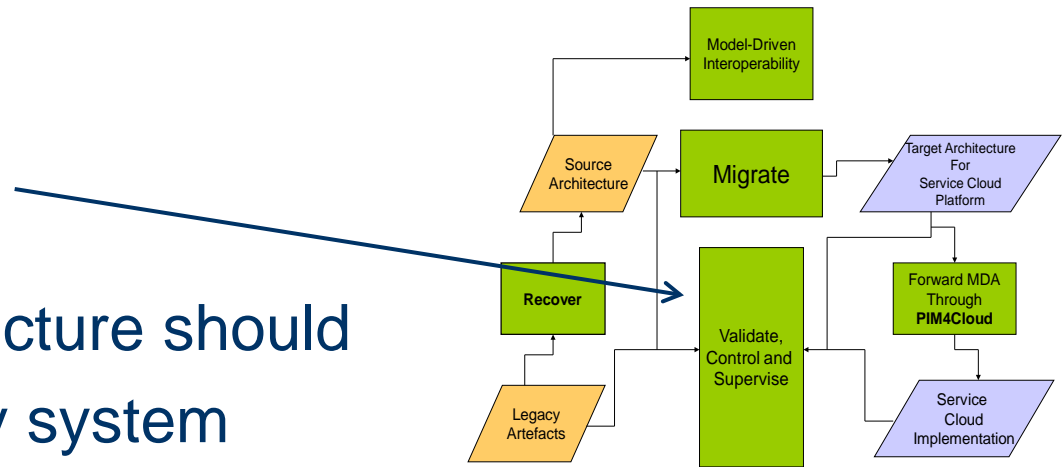
Compose and develop new services

- The legacy system may be enhanced by adding new services or services may be composed in new ways.
- Model-driven interoperability helps in adapting services using **mediators**. (Ref. Paper on Flora-2 interoperability mappings at MDI on Tuesday)
- Mediators or mediation services take input data in one format and provide it in another format.
- We plan to extend SoaML with data format models and behavioral model for mediation. (Ref. Talk on SoaML in Industry track on Tuesday)



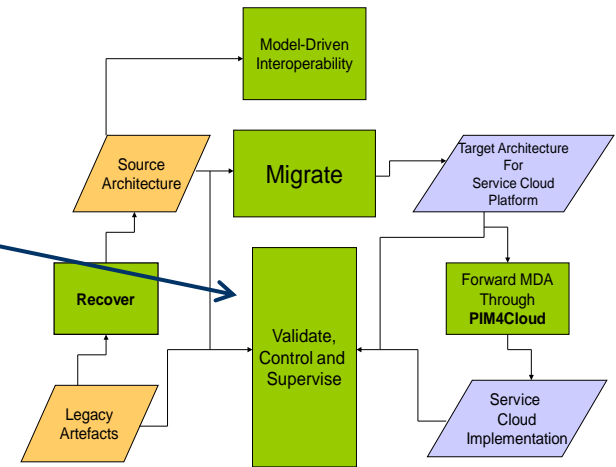
Validate

- The recovered architecture should correspond to the legacy system and provide the same or better QoS, business goals, coverage, etc.
- Recovered models should be used in the validation process based on model-based testing techniques.
- The original system can act as a test oracle since requirements may not be well captured.



Control and supervise

- The goal is managing applications by observing them and performing corrective actions.
- Models@runtime for self-managability is one possible technique to use.



Technological approach: main points

■ Model-driven techniques

- Models everywhere,
- A large set of metamodels and several dedicated extensions.
- In particular, the PIM4 Cloud Computing, model-driven Service Interoperability and Models@Runtime extensions are intended to support the REMICS methodology for service cloud architecture modelling.

■ Open source Metamodels and Models with an emphasis on Open Models for standards.

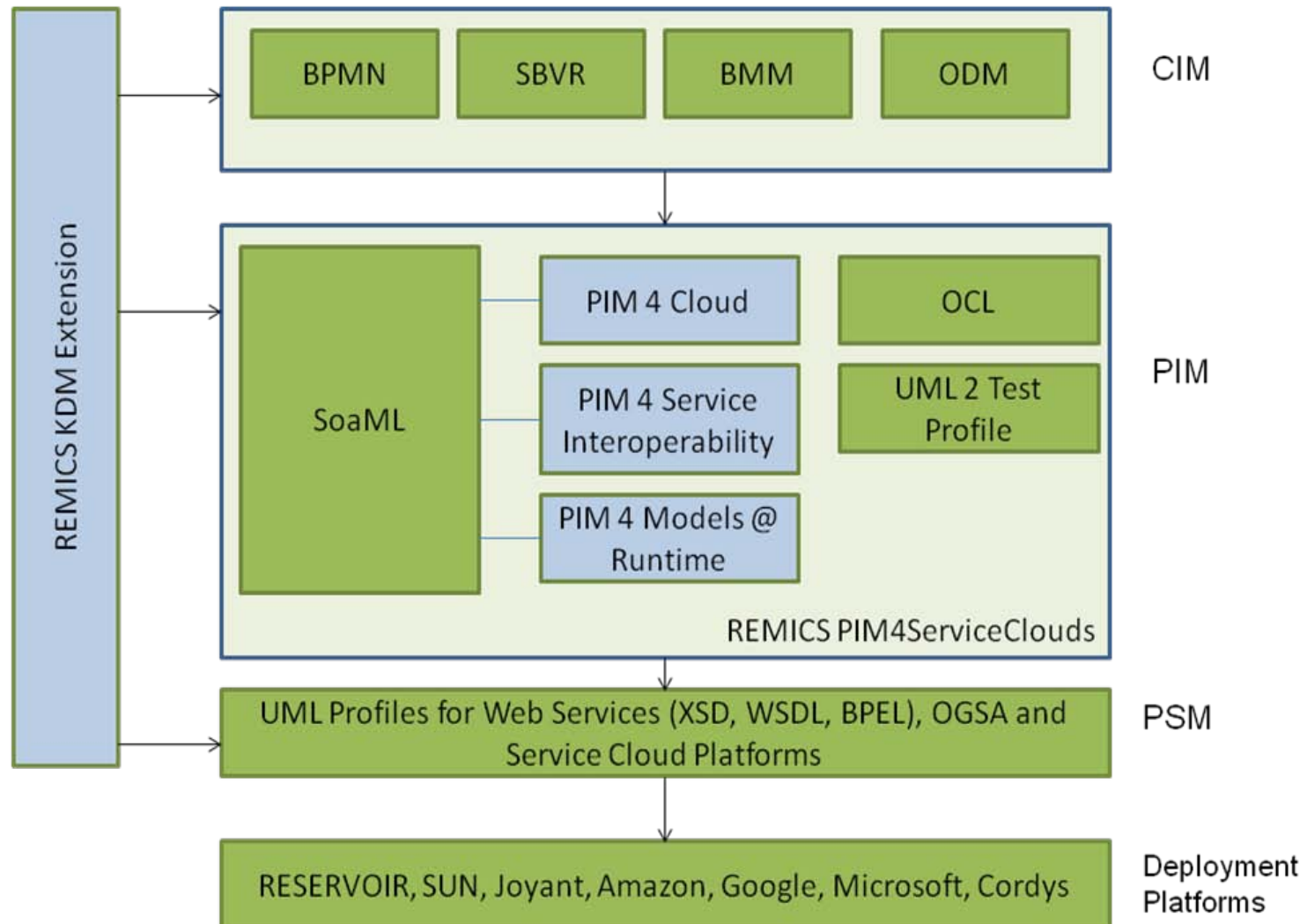
■ Two pilot cases:

- DI systems from Norway with ERP/accounting
- DOME consulting from Spain within the tourism section

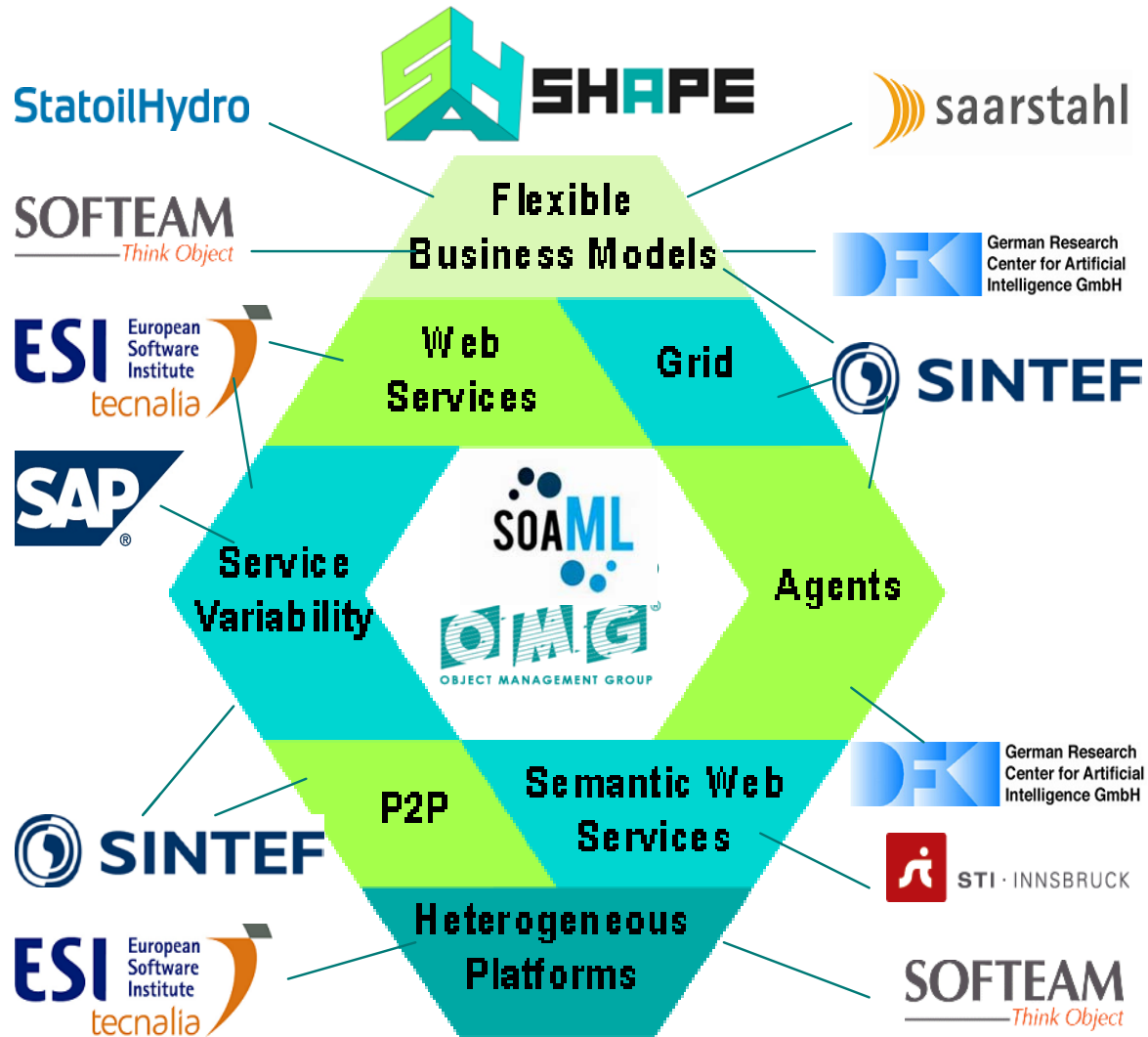
Expected impact

- REMICS will preserve and capitalize on the business value engraved in legacy systems to gain:
 - flexibility brought by Service Clouds,
 - lower the cost of service provision,
 - shorten the time-to-market.
- REMICS research will provide innovations in advanced model driven methodologies, methods and tools in Software as a Service engineering.
- REMICS will provide standards-based foundation service engineering and will provide a suite of open ready-to-use metamodels that lowers barriers for service providers.

REMICS and Standards



Extending SoaML from the SHAPE project



See SoaML
in
Industry
track on
Tuesday
from 11-12

Thank you and

Questions?