



Cultural, Artistic and Scientific knowledge
for Preservation, Access and Retrieval



CASPAR Preservable Architecture

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International Conference on
Digital Preservation at the occasion of the retirement of J. Steenbakkers
Koninklijke Bibliotheek November 1-2 2007, The Hague



Information Society
and Media





Presentation Planning

- CASPAR Scope
- User Needs
- CASPAR Objectives and Guidelines
- Preservation Infrastructure
- CASPAR Architecture Process
- Preservable Architecture and Components
- Conclusions





Cultural, Artistic and Scientific knowledge for Preservation, Access and Retrieval

“ *How can digitally encoded information still be understood and used in the future when the software, systems and everyday knowledge will have changed?* ”





USER NEEDS

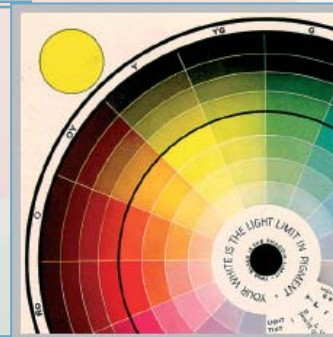


Cultural Testbed

- Conservation experts use a large and various amount of data necessary to document, visualise and model **heritage sites**
- Cultural Heritage Site Data Preservation Environment

Artistic Testbed

- Contemporary and **performing arts** are created by using evolving software and instruments
- Performing Work Preservation Environment and Authenticity



Scientific Testbed

- Each **Earth Observation** mission adopts different satellite, technology, sensor, data processing, software, format data.
- Earth Observation science Data Preservation Environment





CASPAR Objectives & Guidelines

- The motivation of the CASPAR project is to define the **Methodology and Infrastructure** for digital preservation in Europe.
- This objective will be pursued by following 4 guidelines:
 - **Building a preservation environment based on the OAIS reference model;**
 - **Demonstrating its ability to handle the preservation of the digital resources of diverse user communities;**
 - **Adapting and integrating current state of the art technology in digital preservation;**
 - **Developing technological solutions aimed at sustaining expansion.**





Preservation Infrastructure

- OAIS Reference Model
- OAIS Functional Model
- Strawman Architecture
- CASPAR Key Components





http://sun-pasig.org

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Preservation Archiving Special Interest Group

PASIC FORUM »

Home

Nov. 2007 Meeting & Registration

June 2007 Meeting

Press & Articles

Email Archive

StorageTek 5800

OAIS

The Sun Preservation and Archiving Special Interest Group (Sun PASIG) is a Sun Microsystems Inc.-sponsored community.

There are no fees. Semi-annual meetings are planned. There is a November 14-16, 2007 meeting in Paris. It is open to institutions and commercial organizations interested in working with Sun Microsystems, Inc. in learning and sharing practical experiences in the following:

- Comparison of high-level OAIS architectures services-oriented architecture work, and use cases
- Sharing of best practices and software code
- Cooperation on standard, open, 'in-a-box' solutions around repository technologies
- Review of storage architectures and trends and their relation to preservation and archiving architectures and eResearch data set management
- Discussion of the uses of commercial third party and community-developed solutions

The organization is focused on sharing open computing solutions and best practices. But while sharing information about the state-of-the-art developments in standards and open source is important, this is not a standards-setting organization. It is a place to share practical experiences, successes, pain points, and potential topics for more collaboration. Sun does reserve the right to exclude direct competitors from the conference proceedings.

Any questions can be sent to Art Pasquinelli, Education Market Strategist Sun Global Education and Research; art.pasquinelli@sun.com.

Sun PASIG Press Release

Sun Microsystems and Leading Global Library Organizations Form Group to Address Digital Archiving

Members to share best practices on commercial and community-developed preservation and repository solutions

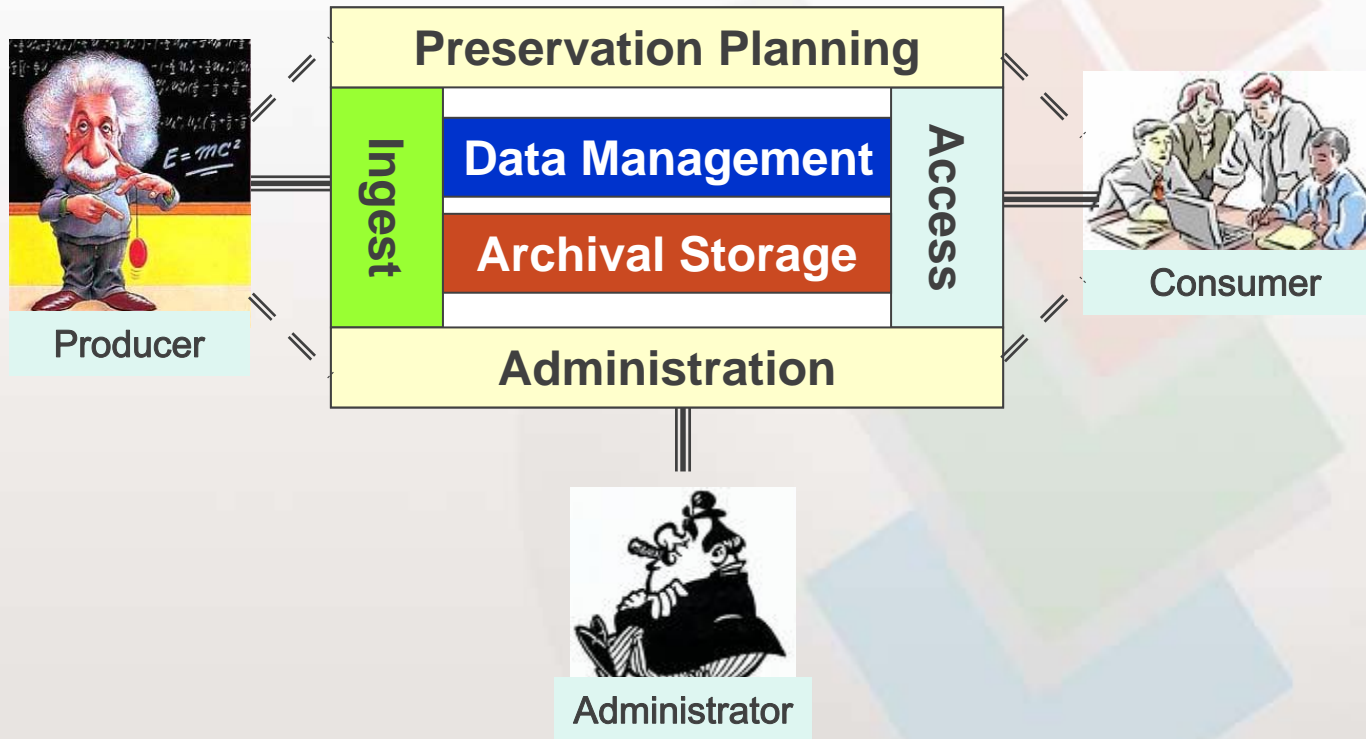
SANTA CLARA, Calif. October 8, 2007 Sun Microsystems, Inc. (NASDAQ:JAVA) today announced the formation of the Sun Preservation and Archiving Special Interest Group, Sun PASIG, to bring together global leaders in government, broadcasting, education, and library services to share best practices for digital archiving.

Addressing the need for better collaboration on best practices around global standards in large data set and metadata preservation,



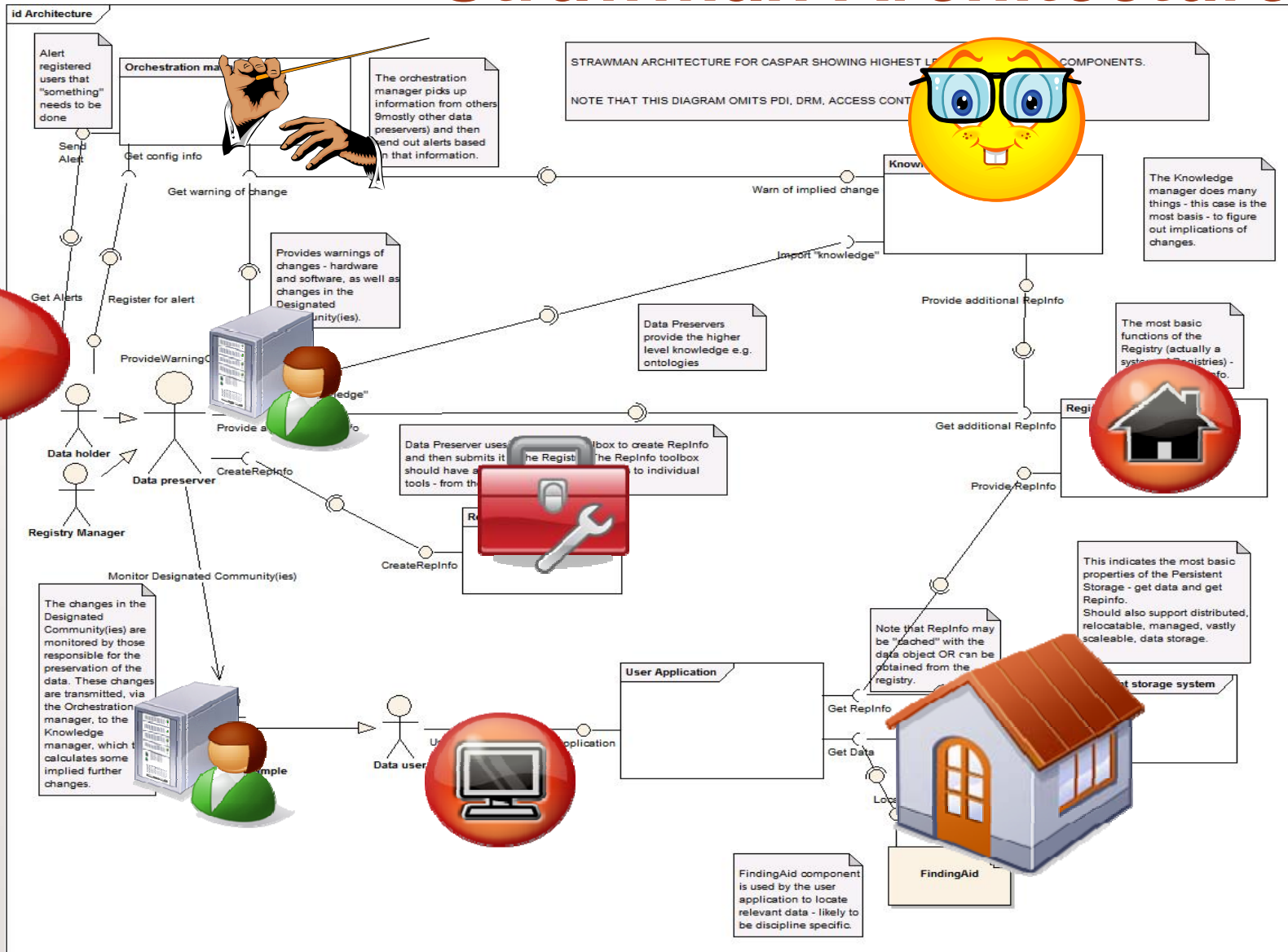


OAIS





Strawman Architecture





CASPAR Key Components

- Main focus is on **Representation Information**
 - **RepInfoToolbox and Registry allow to create and store it**
- Main OAIS concept of **Information Package**
 - **Packaging and Preservation DataStore allow to manage and store it**
- **Changes** impact on preservation
 - **Preservation Orchestration Manager and KnowledgeManager allow to notify them**
- **Access** to Information Packages
 - **FindingManager guarantees it**





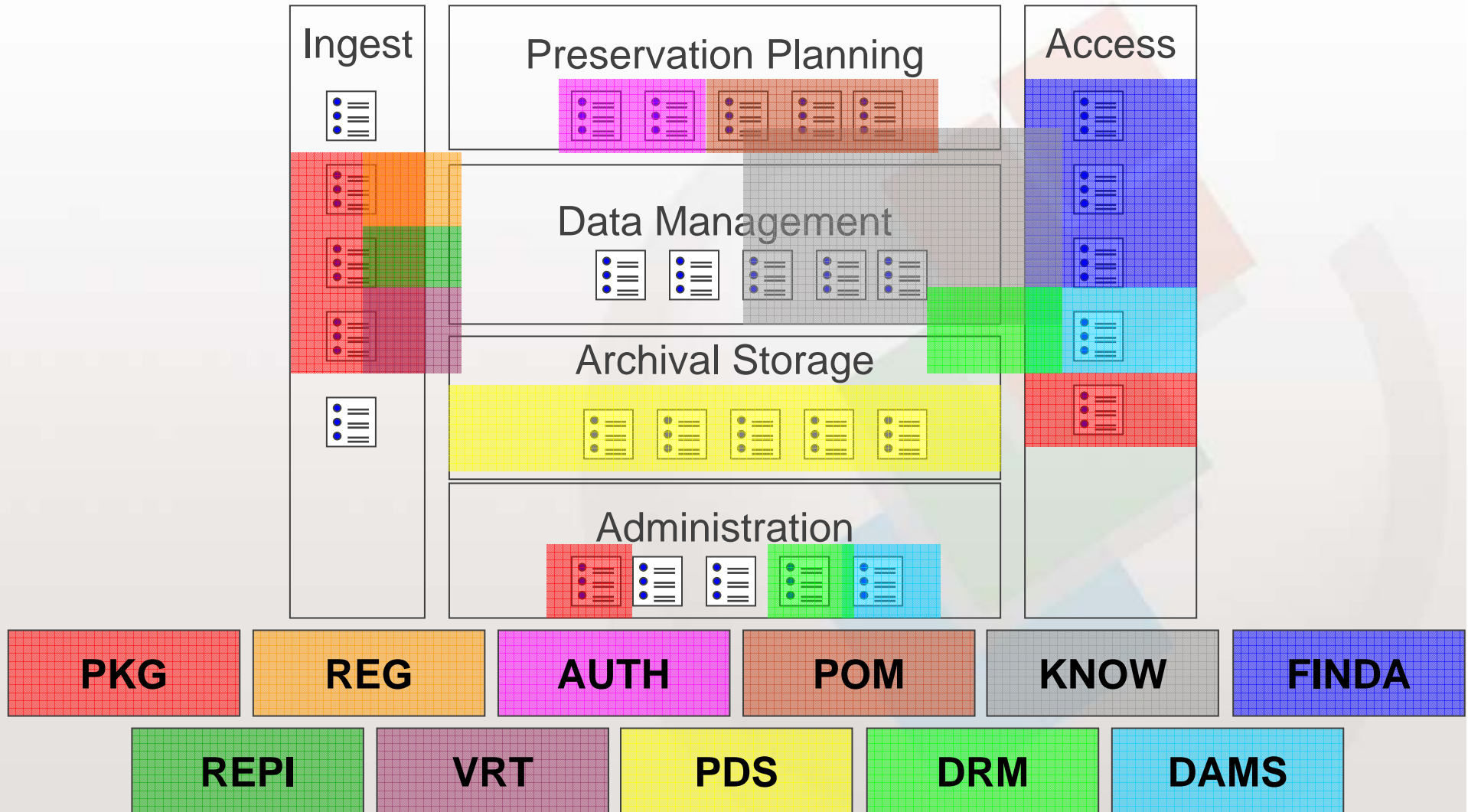
CASPAR Key Components

- More...
 - **Data Access and Security Manager**
 - **Digital Rights Manager**
 - **Authenticity Manager**
 - **Virtualisation Manager**



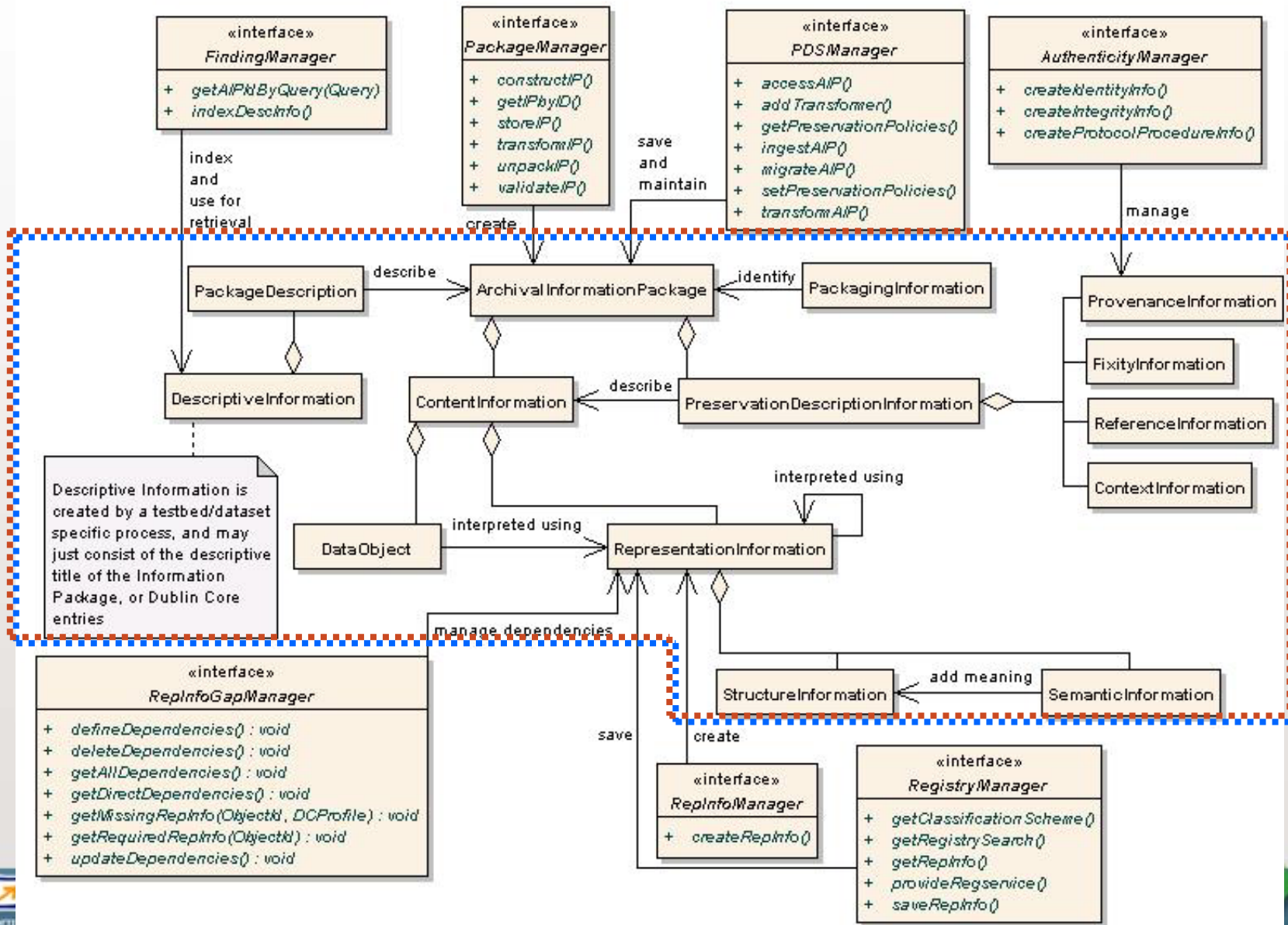


OAIS Functional Model & CASPAR Key Components

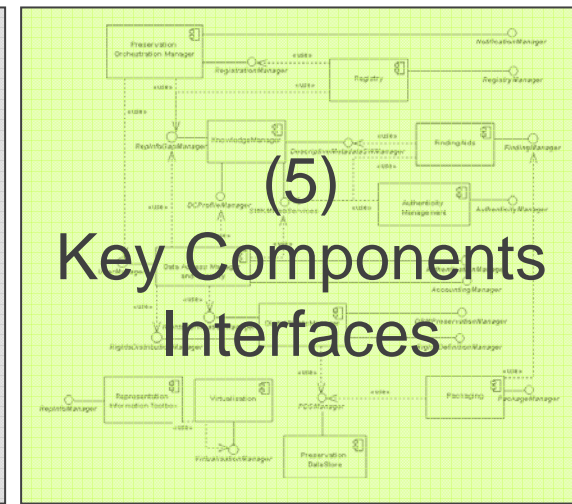
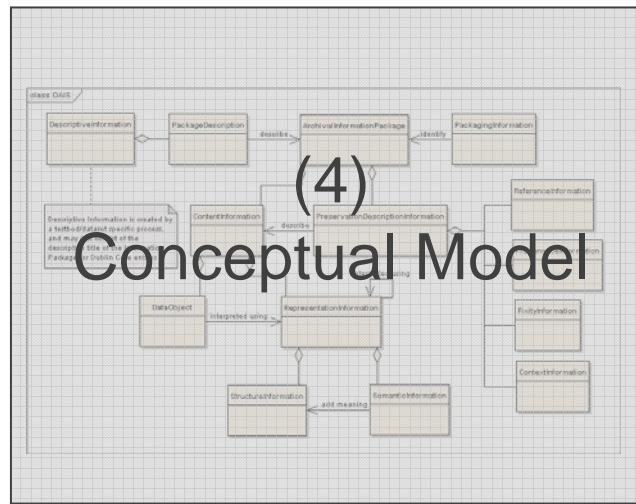
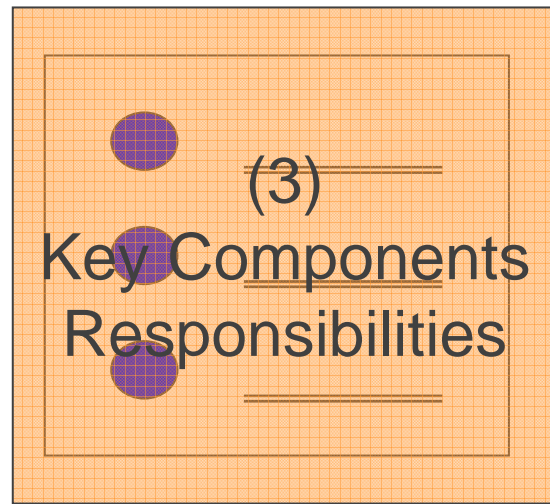
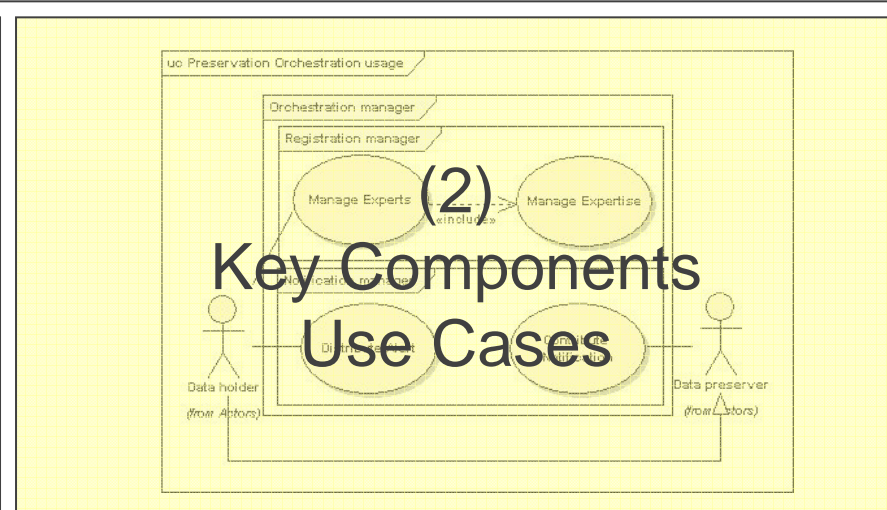
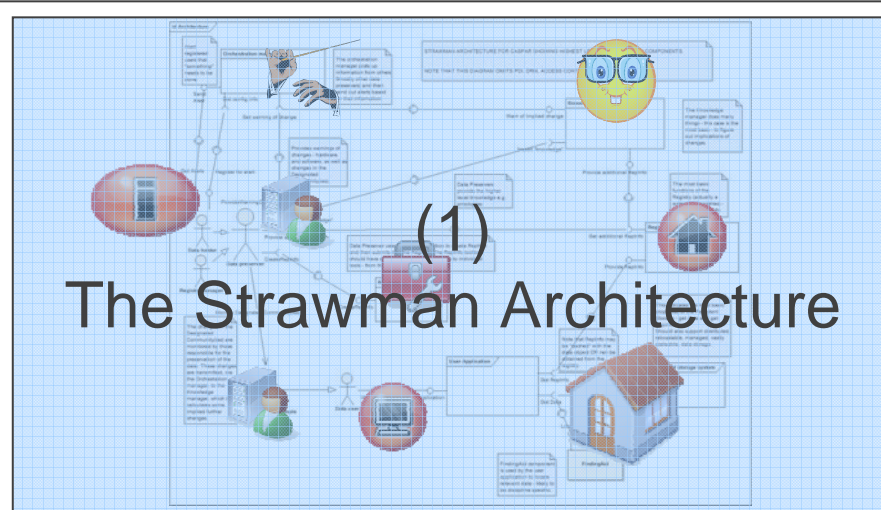




OAIS Information Model & CASPAR API

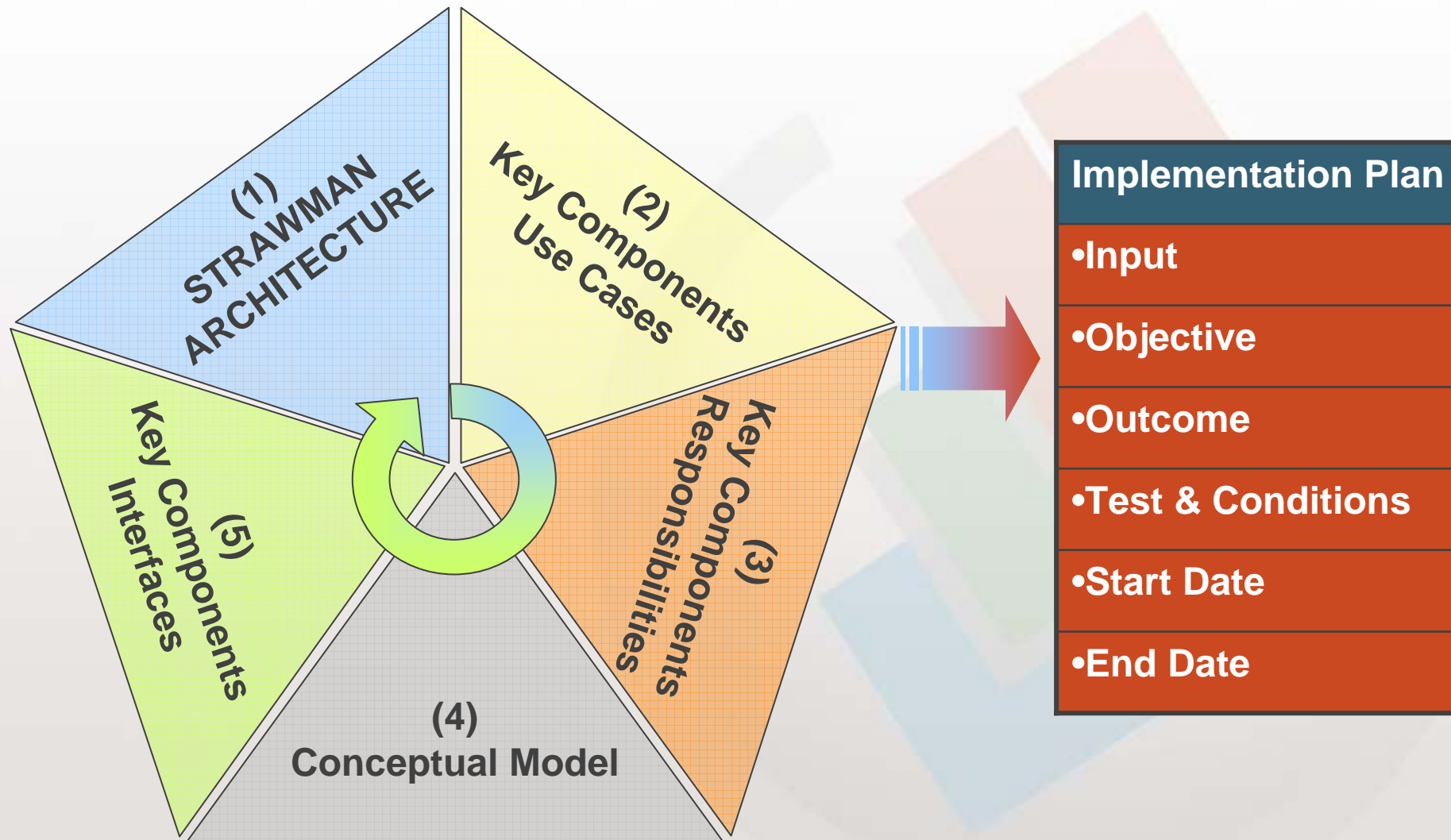


From Strawman to Interfaces



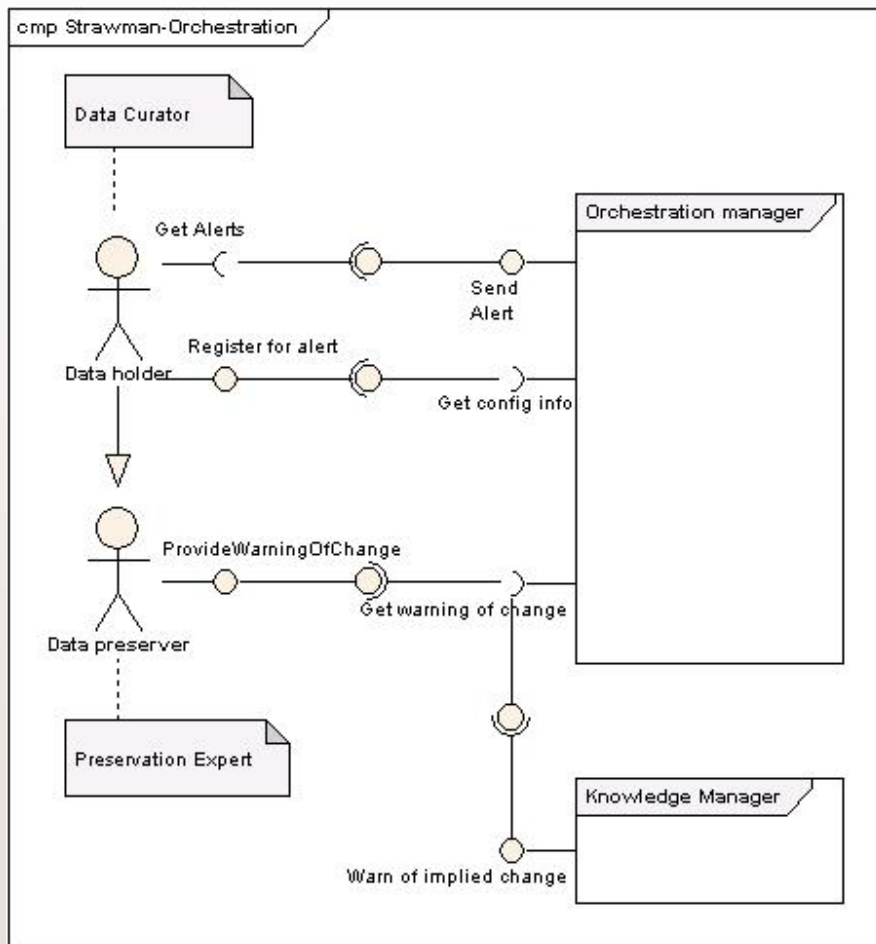


From Strawman to Plan





Strawman Architecture

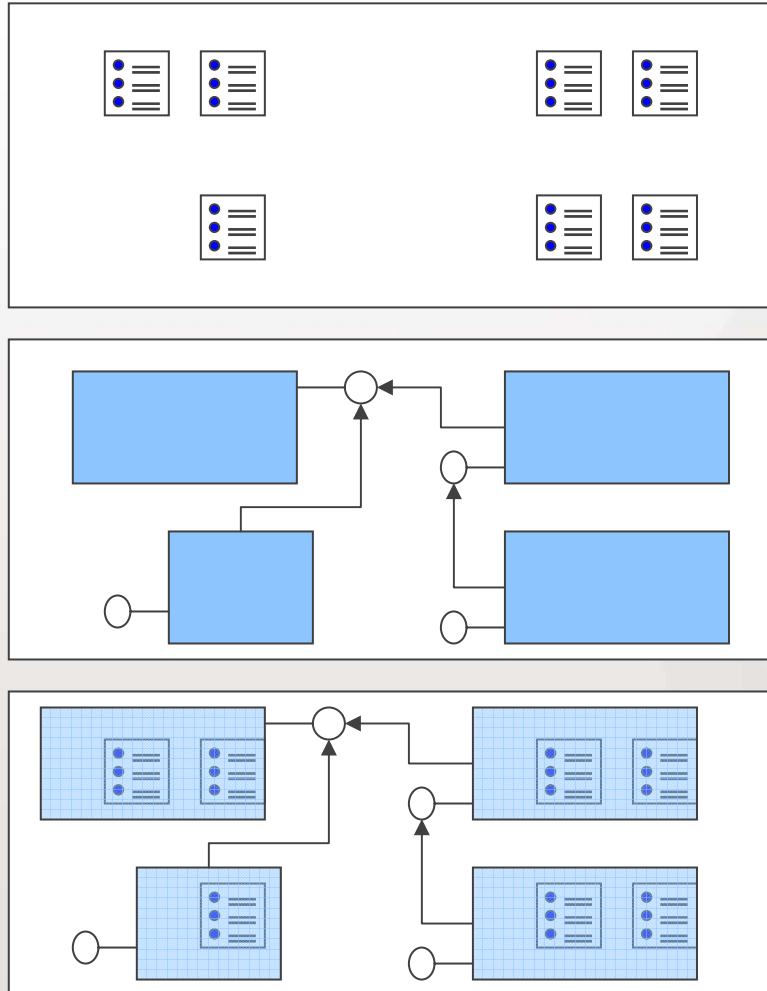


- POM receives **notifications** (warning of change) from a **Data Preserver**.
- POM asks for “**warn of implied change**” to the **Knowledge Manager**.
- A **Data Holder** is registered to the POM in order to receive **alerts** for a specific “change”.





Responsibilities

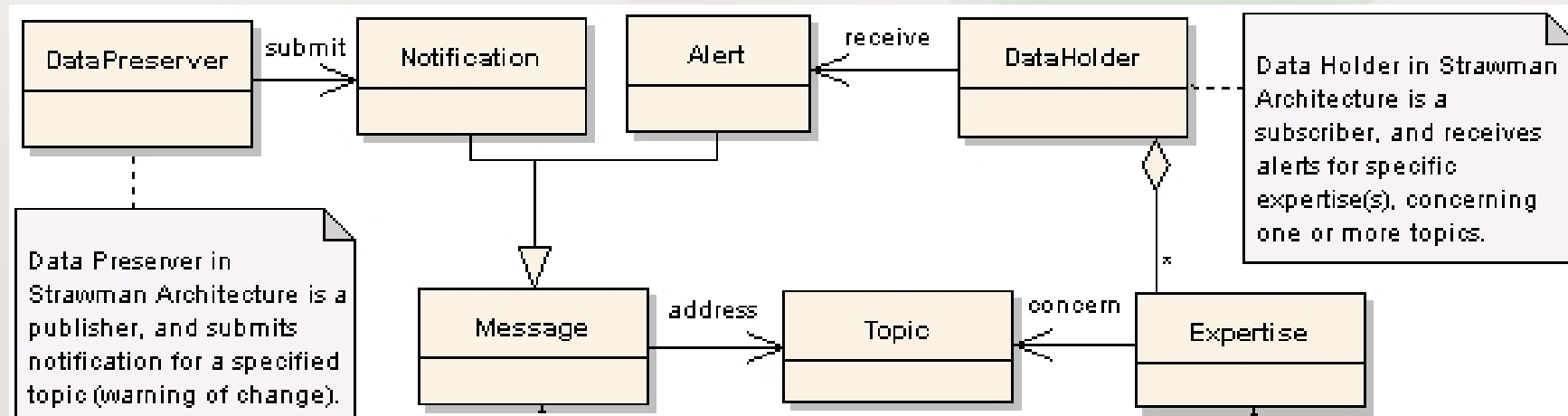
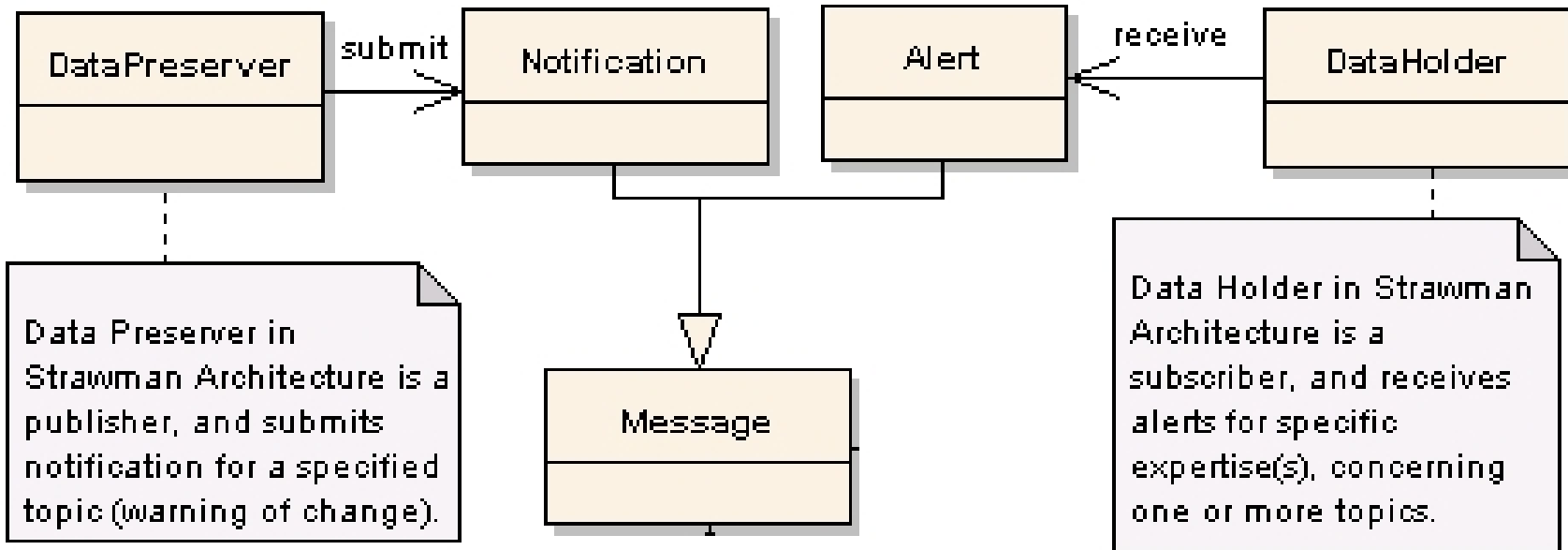


- Architecture
 - Identifies Responsibilities of the System (from OAIS Functional Model)
 - Identifies Key Components
 - Assigns Responsibilities to each Key Component

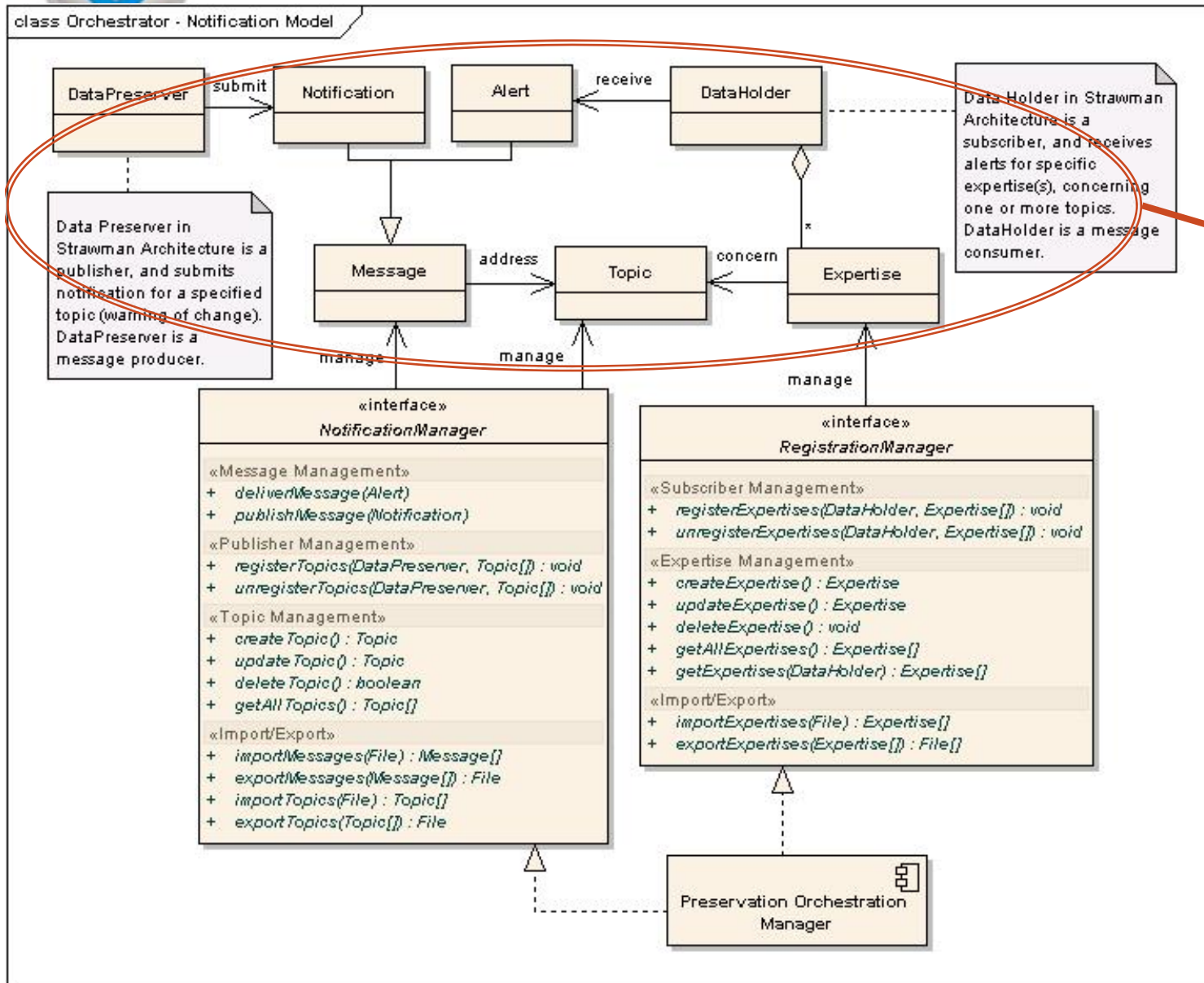




Conceptual Model

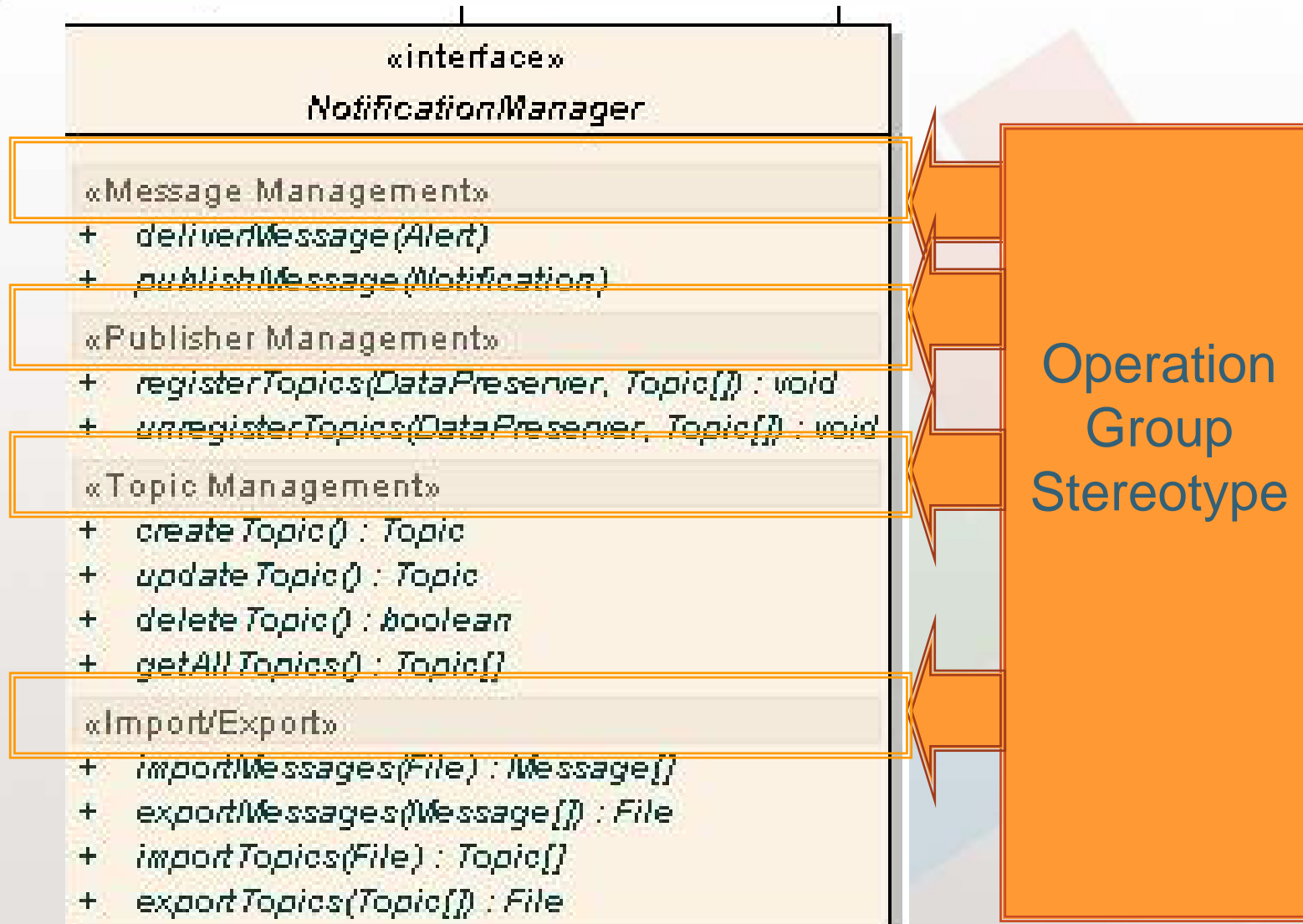


Conceptual Model





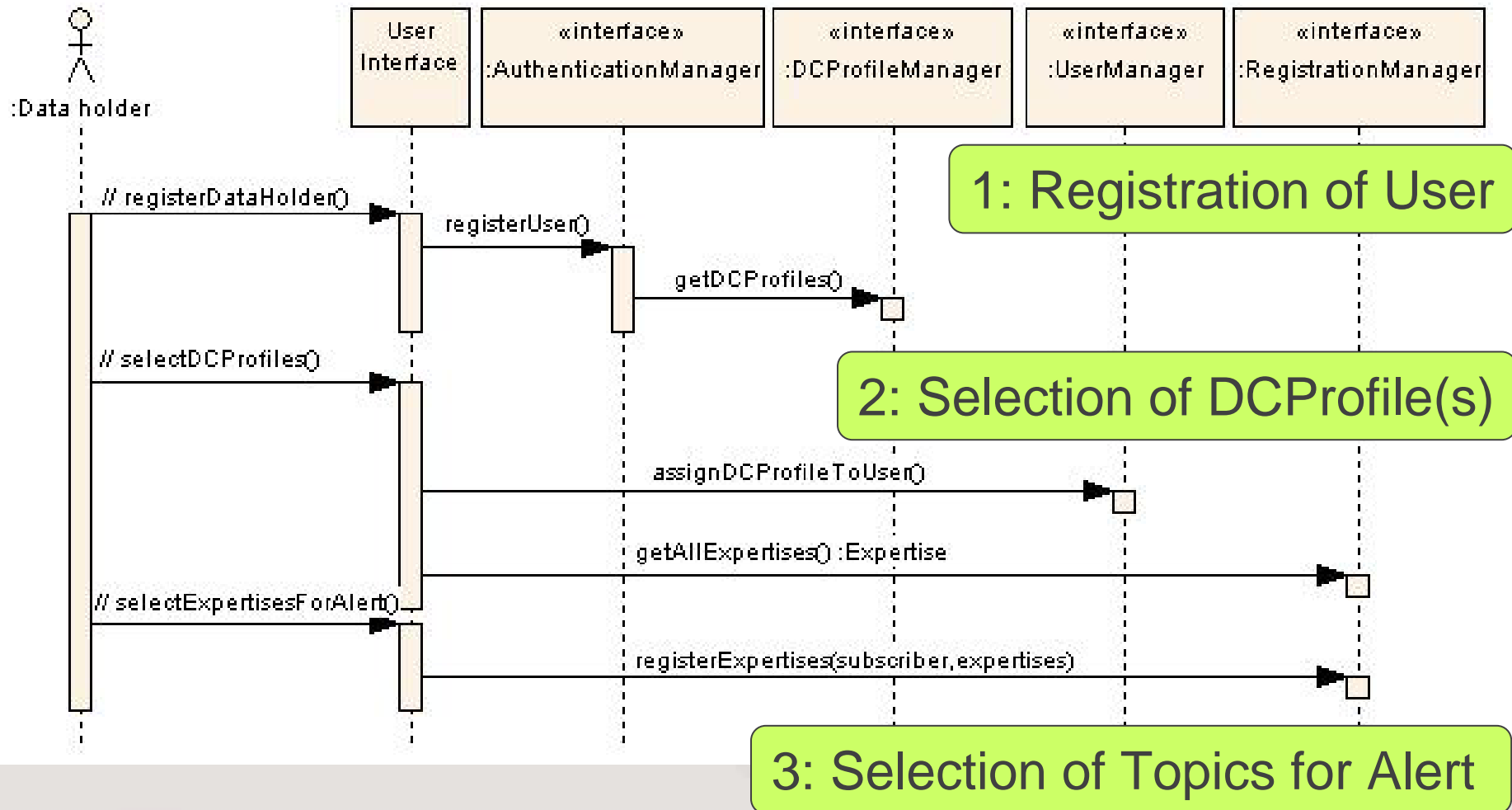
Interfaces





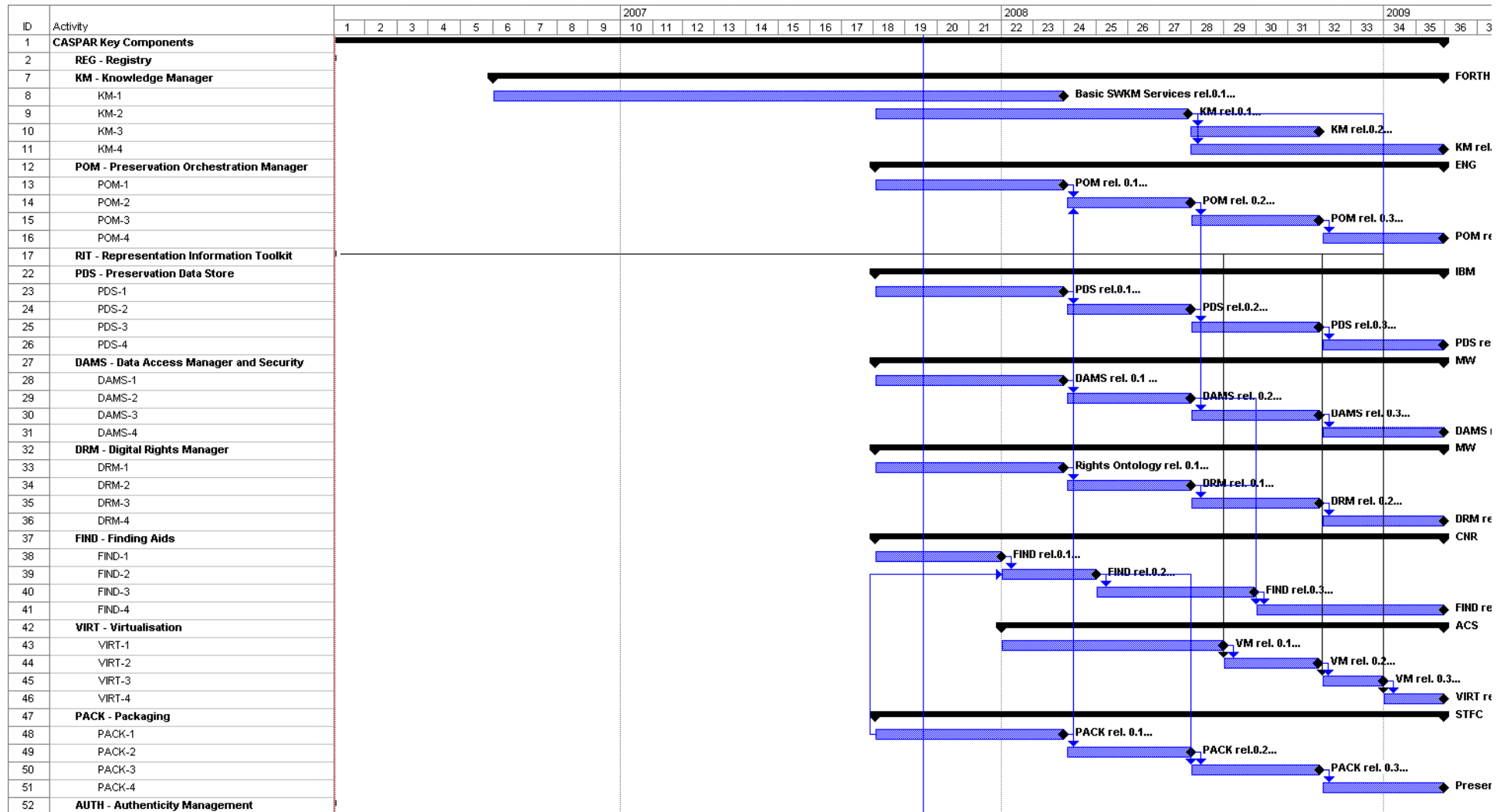
Sequence Diagrams

REGISTRATION: USER - DCPROFILE - ALERT_SUBSCRIBE





Implementation Plan





CASPAR Models

<http://models.casparpreserves.eu/model>



Model

- Model
 - Views
 - Views
 - Component View
 - Custom
 - Deployment View
 - Dynamic View
 - Logical View
 - Use Case View
 - Requirements Model
 - Class Model
- System
 - Project Glossary

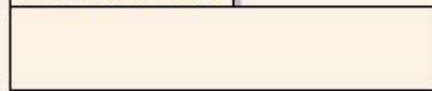
CASPAR MODELS

CASPAR Models are organised in three main parts: Views, Requirements Model, Class Model.

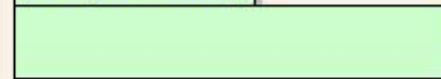
- * Views: this part contains many important views such as:
 - Use Cases: Use cases diagrams for CASPAR Key Components,
 - Components: CASPAR Key Components Interfaces diagrams
 - Logical: CASPAR Conceptual Models (Information and CASPAR Key Components Models)
 - Deployment: CASPAR Key Components Deployment diagrams.
- * Requirements: Functional, Non-Functional and User Requirements are specified here.
- * Class: this part contains class diagrams in order to specify system components and their interfaces.

Views

Use Case View



Component View



Logical Model



Deployment Model

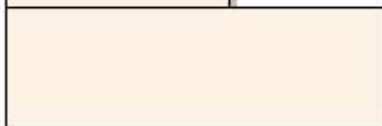


Requirements Model

Requirements Model

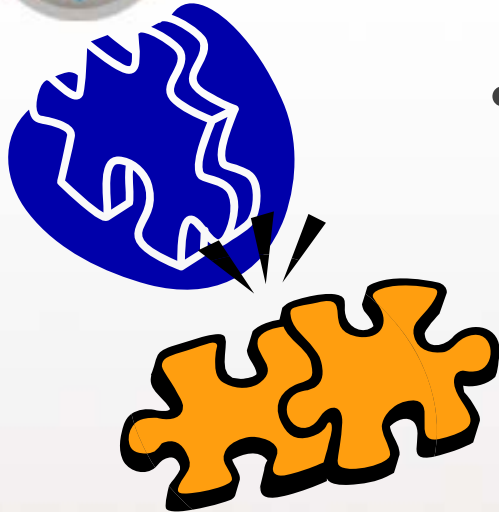


Class Model



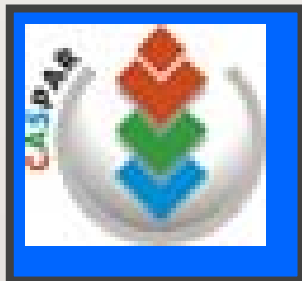
-- click on the folder icons to browse CASPAR Models --





Preservable Architecture

- Usually “**Traditional framework**” has something called component/service which provides functionality, if and only if component is composed with other ones (**required components/dependencies**)



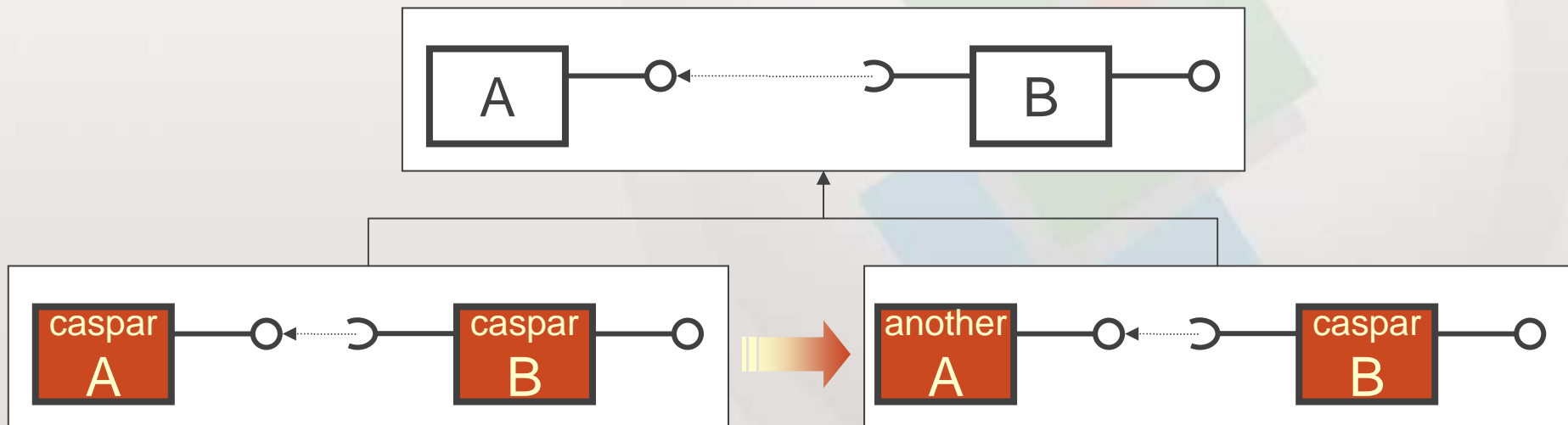
- Each “**CASPAR Key Component**” has to provide always at least a minimal set of functionality independently from the **environment conditions**.





Preservable Architecture

- An *Architecture* defines and describes *Components* working together through *Interfaces* in order to provide set of *functionalities*
- An *Interface* is a contract
- Any *Interface-compliant* (and behaviour too) component may be replaced in the Architecture





Preservable Components

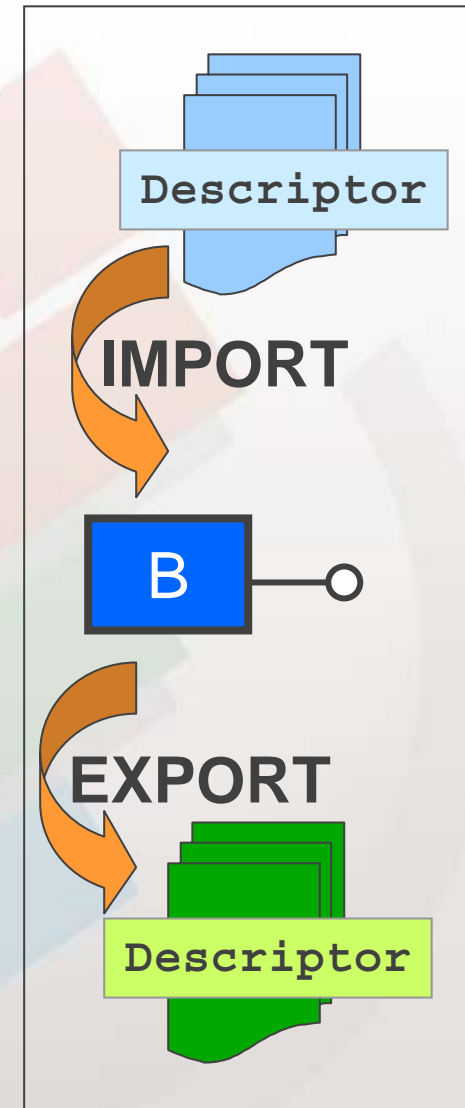
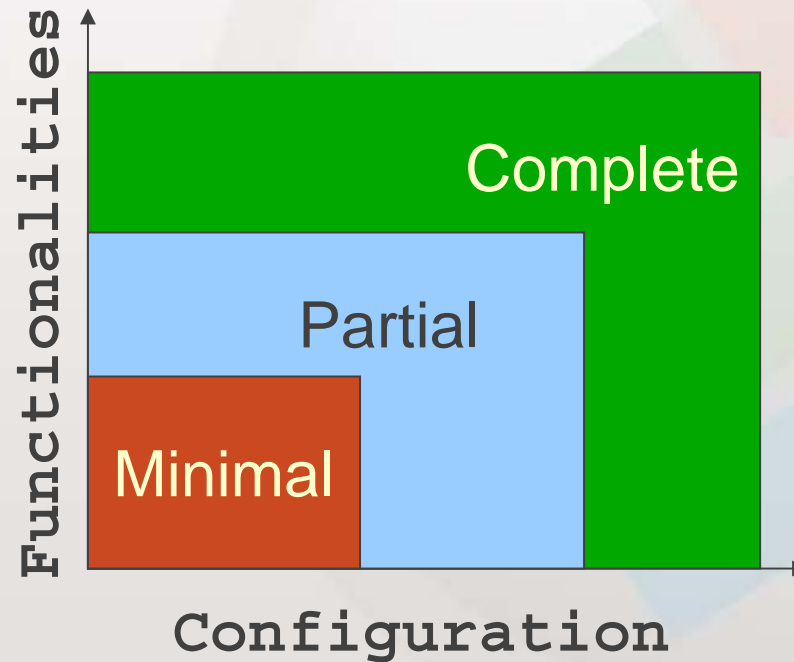
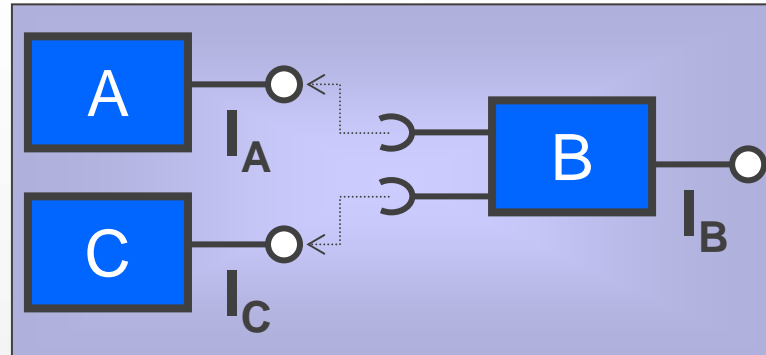
- Describing dependencies
 - **A preservable components has to provide a detailed specification of its own API, conceptual model, dependencies (in terms of API and/or inputs/outputs)**
 - e.g. DAMS for user account
 - e.g. KM for designated community profile
 - e.g. POM for alert
- A Preservable Component is a Component which may be configured to
 - **Obtain/Provide <info element> from/to CASPAR Key Component**
 - **Obtain/Provide <info> from/to an external tool according to defined API**
 - **Obtain/Provide <info> from/to external description (import/export)**





Preservable Components

- [-] e keycomponents
 - (a) host-uuid
 - [-] e keyComponentsType
 - (a) value
 - + e keyComponentsType
 - [-] e keyComponentsType
 - (a) value
 - [-] e keyComponent
 - (a) kc-name
 - [-] e keyComponentDescInfo
 - (a) kc-uuid
 - (a) kc-name
 - (a) kc-type
 - (a) kc-features
 - [-] e kcFeatures
 - (a) value
 - [-] e feature
 - (a) f-name
 - (a) f-type
 - (a) f-value
 - [-] e kcDependencies
 - [-] e dependency
 - (a) d-name
 - (a) d-component
 - (a) d-interface
 - [-] e dependency
 - (a) d-name
 - (a) d-component
 - (a) d-interface





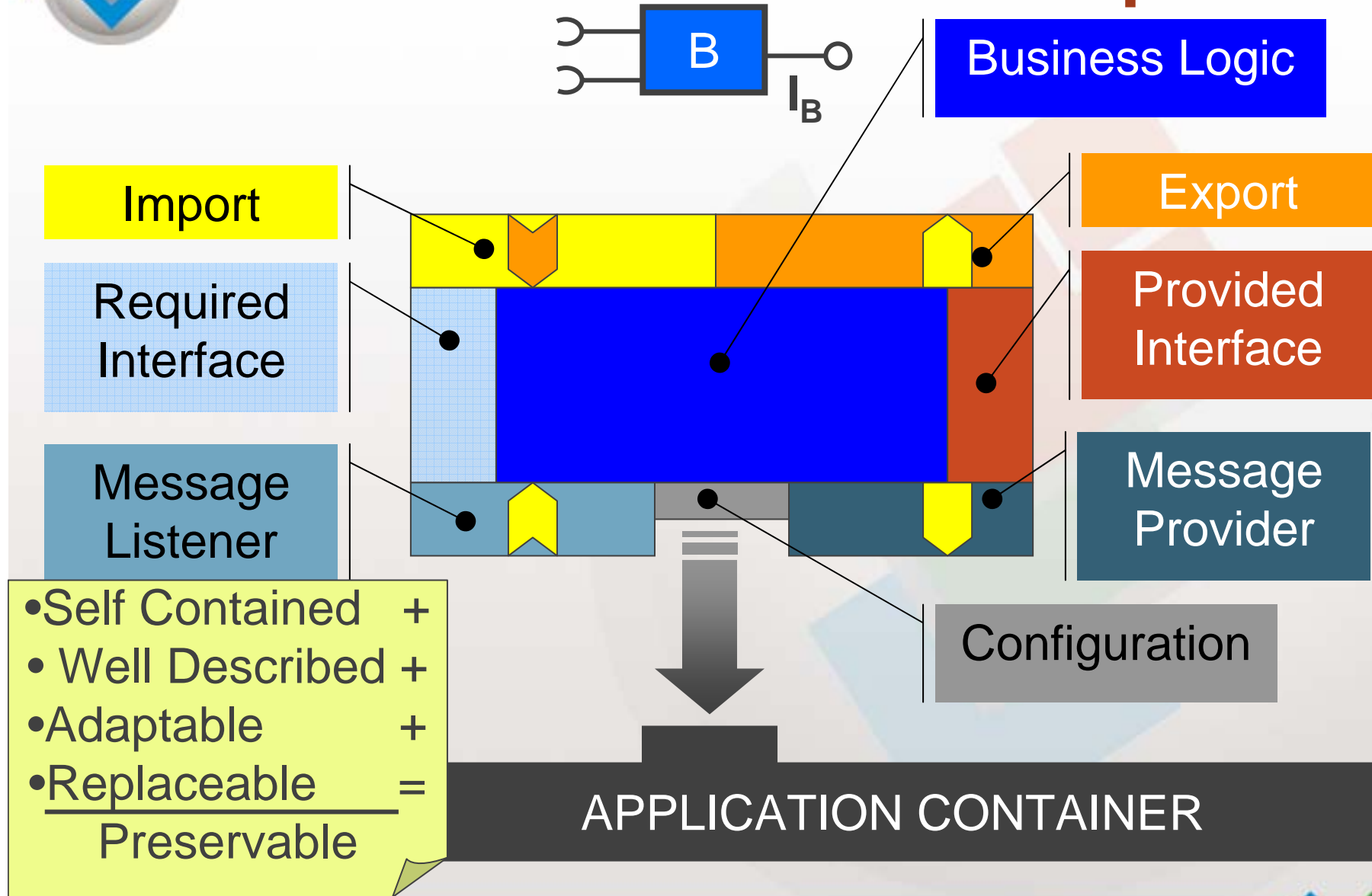
Preservable Components

- Components may interact within them in different **ways** and using different **protocols** in order to guarantee **flexibility**, **performance**, **expandibility**:
 - **Standalone Components: RPC, JMS**
 - **Web Services: SOAP**
- ...and other standard and protocols are investigated (e.g. WS-Notification)





Preservable Components





Conclusions

- We have defined CASPAR Infrastructure phase 1
- We are developing the CASPAR Key Components
- We are involved in research activities, and their results will be adopted from CASPAR Key Components
- We will be involved in training activities for sharing our CASPAR Architecture experiences





Thank You for kind attention!



www.casparpreserves.eu

Questions?



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