5a. ESA & WP9: scale up study

1. Welcome and introduction (15m)
2. WP9 – Earth Observation Applications (50m)
3. ESA and WP9: infrastr, appl, TB 0/1 (50m)
4. Demonstration of EO applications (45m)
5. ESA and WP9: scale up, effort, recovery plan (50m)
6. Side ESA actions related to GRID (30m)
7. Reviewer separate meeting (60m)
8. Conclusions (30m)

ESA DataGrid Review
Frascati, 10 June 2002

Summary

- ESA and WP9 part 2 (45m)
  - DataGrid EO Scaling up vision (MM, 10m)
  - DataGrid ESA initial committed effort, present situation and revised plan, reporting and cost statement issues (LF, 20m)

Task 9.5 Scaling Study

- Outcome is the D9.6 Deliverable (Report)
  - Due by end of June
- Main Topics:
  - Assesment of Testbed1
  - Assessment of EO Requirements – Integration of SpaceGrid results
  - Recommendations for Scaling
    - General recommendations
    - Specific EO recommendations
    - EO Applications and Technology Survey
  - Application frameworks for GRID
    - Study on a EO Repository and Workflow Framework

DataGrid EO Scaling up vision

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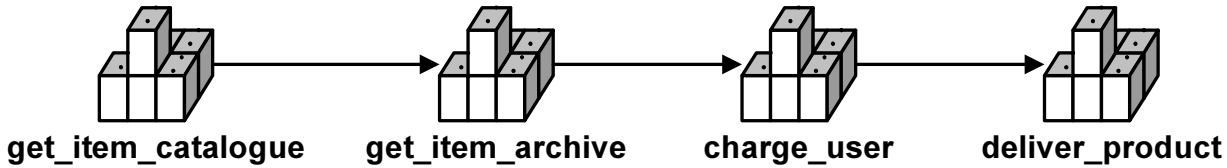
Introduction

- **Earth Observation (EO) Services typically represent a sequence of EO Application Functions**

Expl:



- **EO Application Functions are geographically distributed, and exchange large EO data products**
- **Functions are part of large-scale, logically self-contained EO Application Systems, which are independently maintained by EO actors**

→ B2B EAI Framework

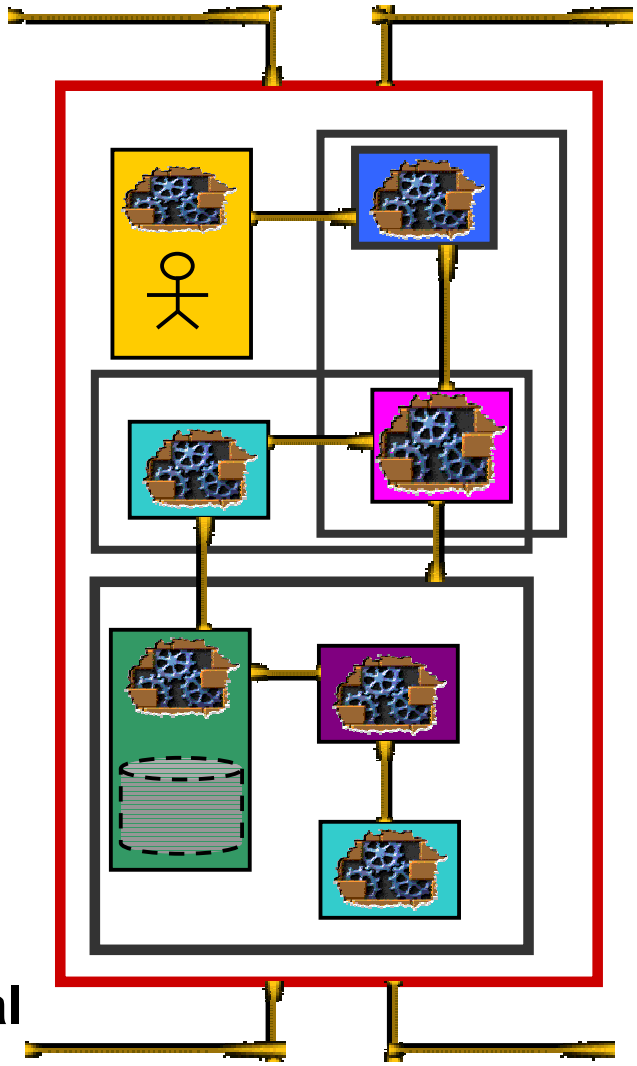
ARSENAL Project

- **Study on a large-scale B2B EAI**
- **EO Application Framework based on**
  - ***Workflow*** **(control flow)**
  - ***Repository*** **(meta data management)**
  - ***Web Service*** **and (unified access)**
  - ***Grid*** **technology (high-performance processing)**

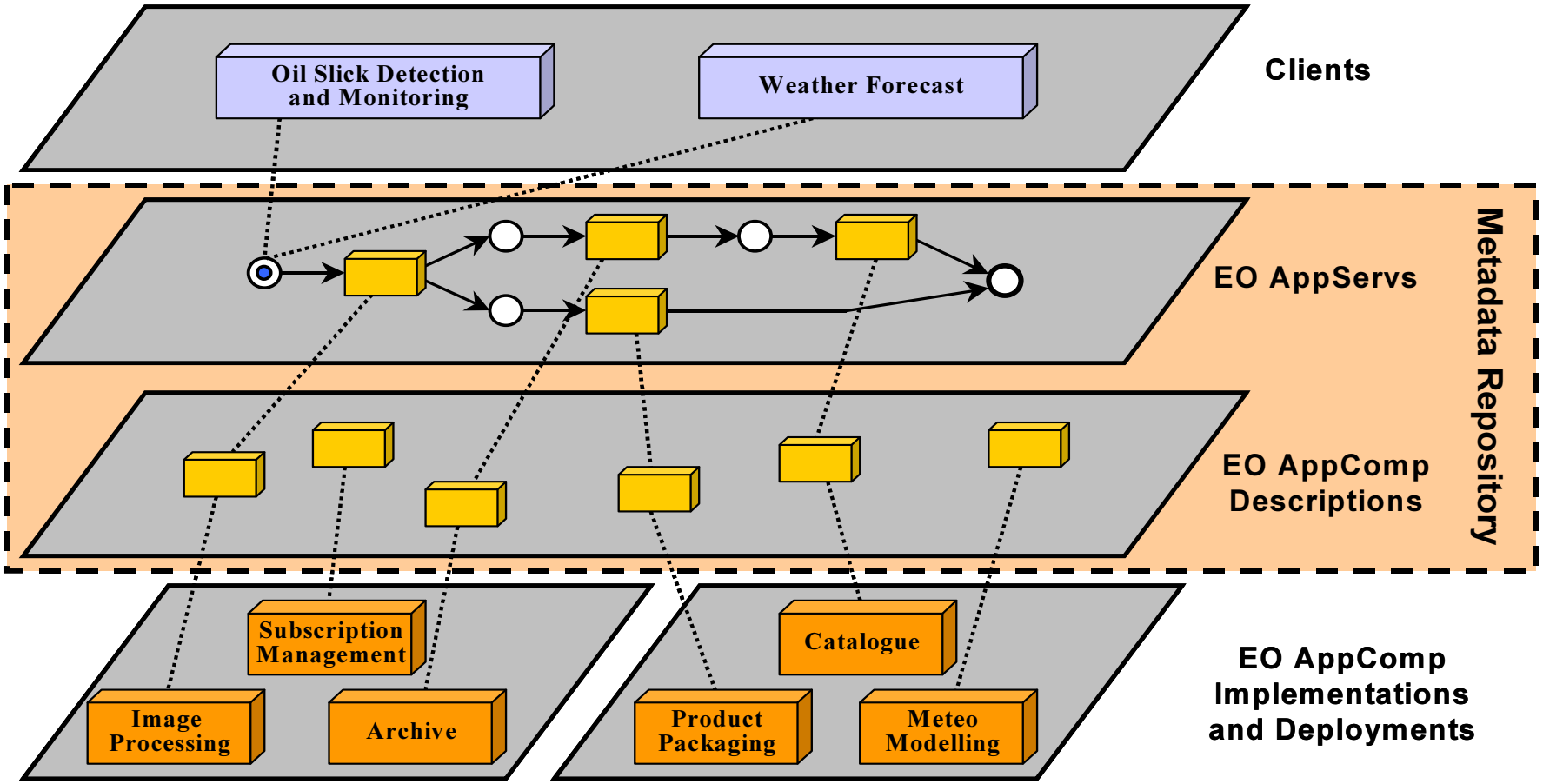
For Details see:
[M.Mariucci, B.Mitschang: On Making RAMSES and EO Application Framework. To be published in: *The 2002 International Symposium on Information Systems and Engineering*, ISE2002, July 2002, San Diego]

ARSENAL Concepts

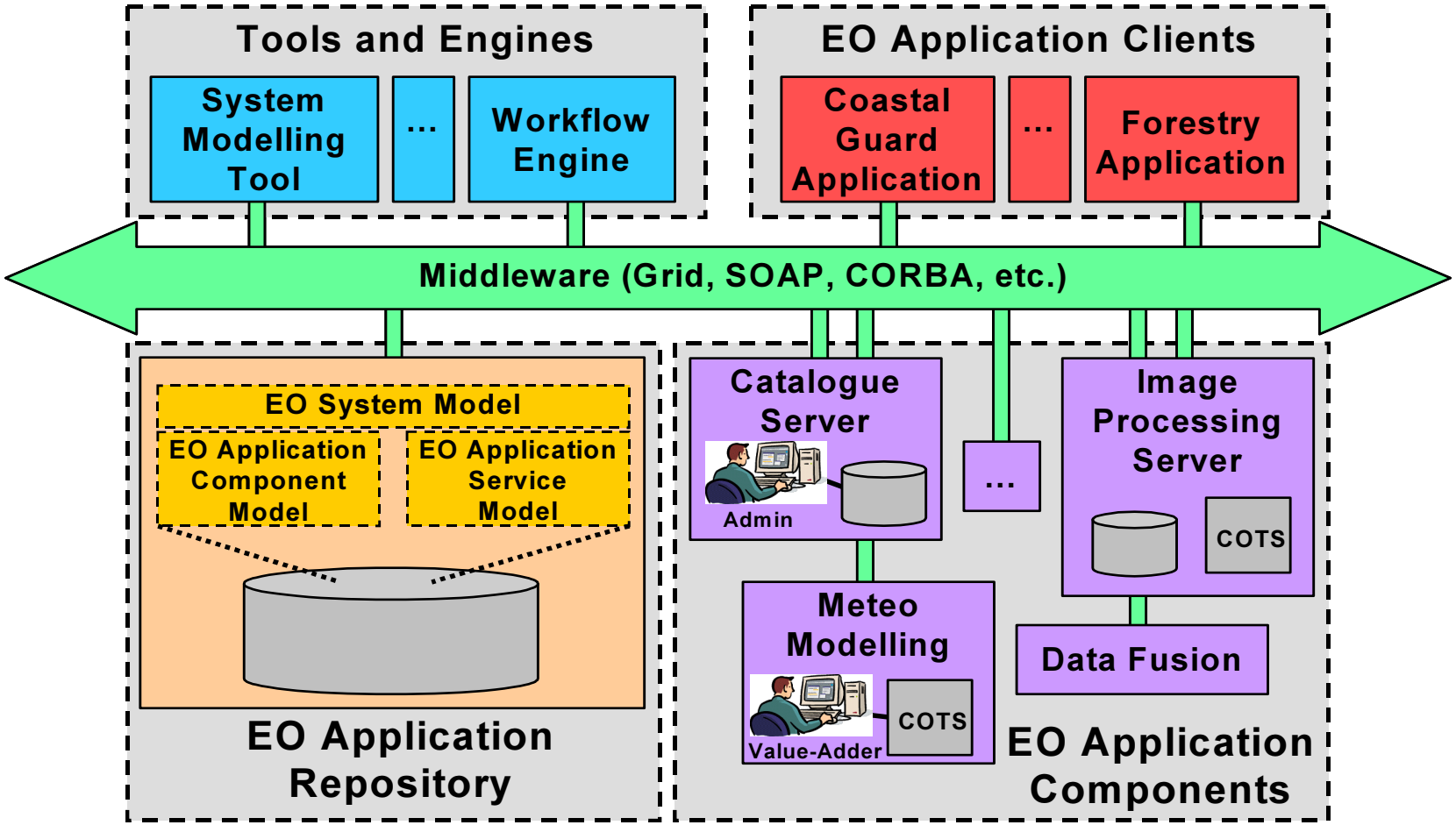
- **Functional composition:**
  Gathering EO Application Functions to EO Application Components
- **Service assembly:**
  Specification of EO application function relationships and workflows
- **Automation and consistent processing:**
  Execution of EO application services by means of a workflow management system
- **Information Base:**
  Constitution of a domain-specific, distributed database of the EO application's structural and semantic information



ARSENAL Layers

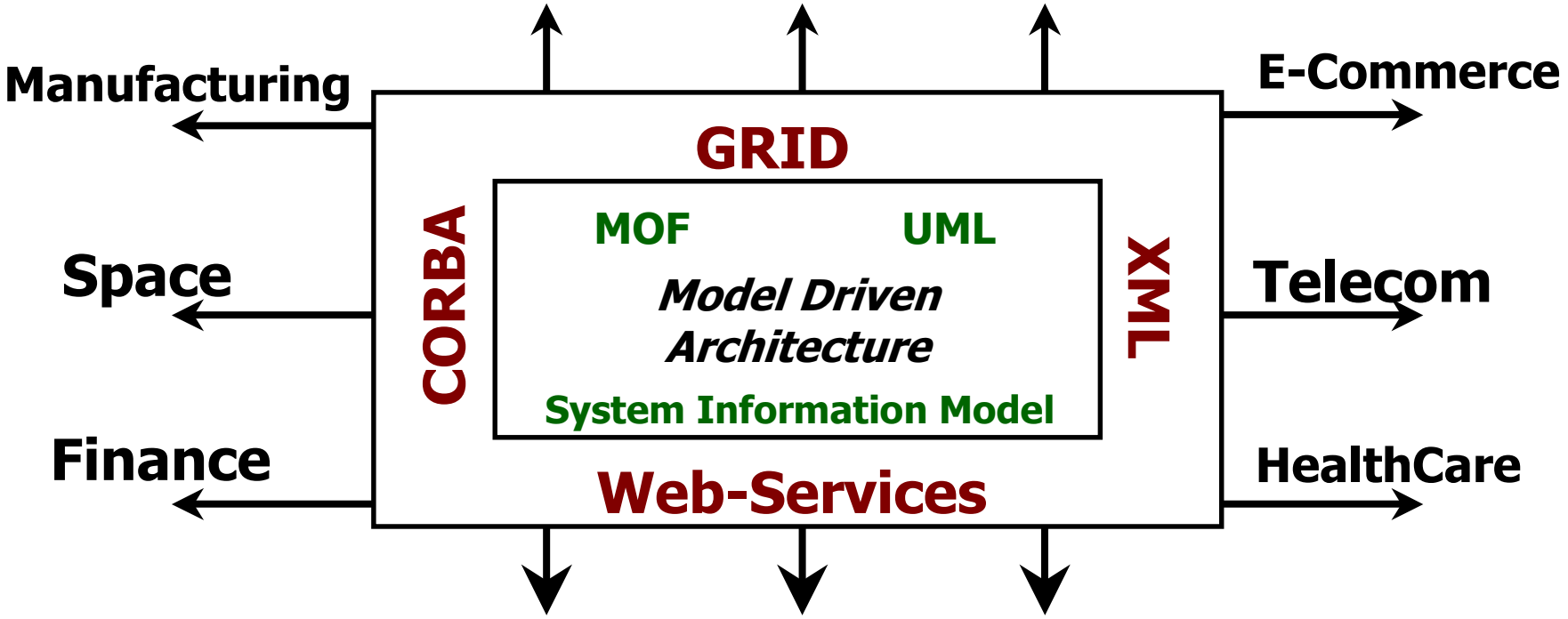


ARSENAL Architecture



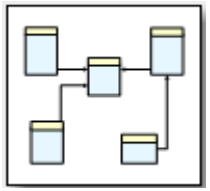
OMG Model Driven Architecture

- **ARSENAL is based on a Model Driven Architecture (OMG Standard, 2001)**



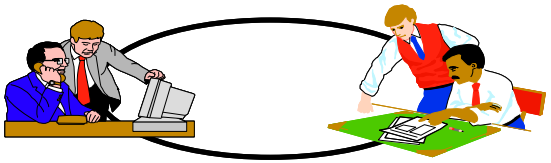
ARSENAL Development Process

Design-Time



- **Creation of the Information Model (Application Repository)**

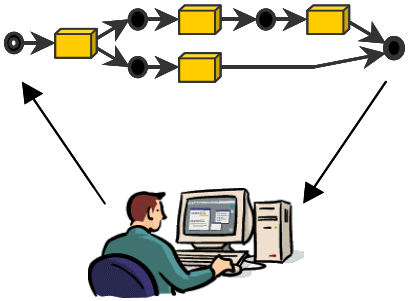
Development-Time



Asynchronous Collaborative Work

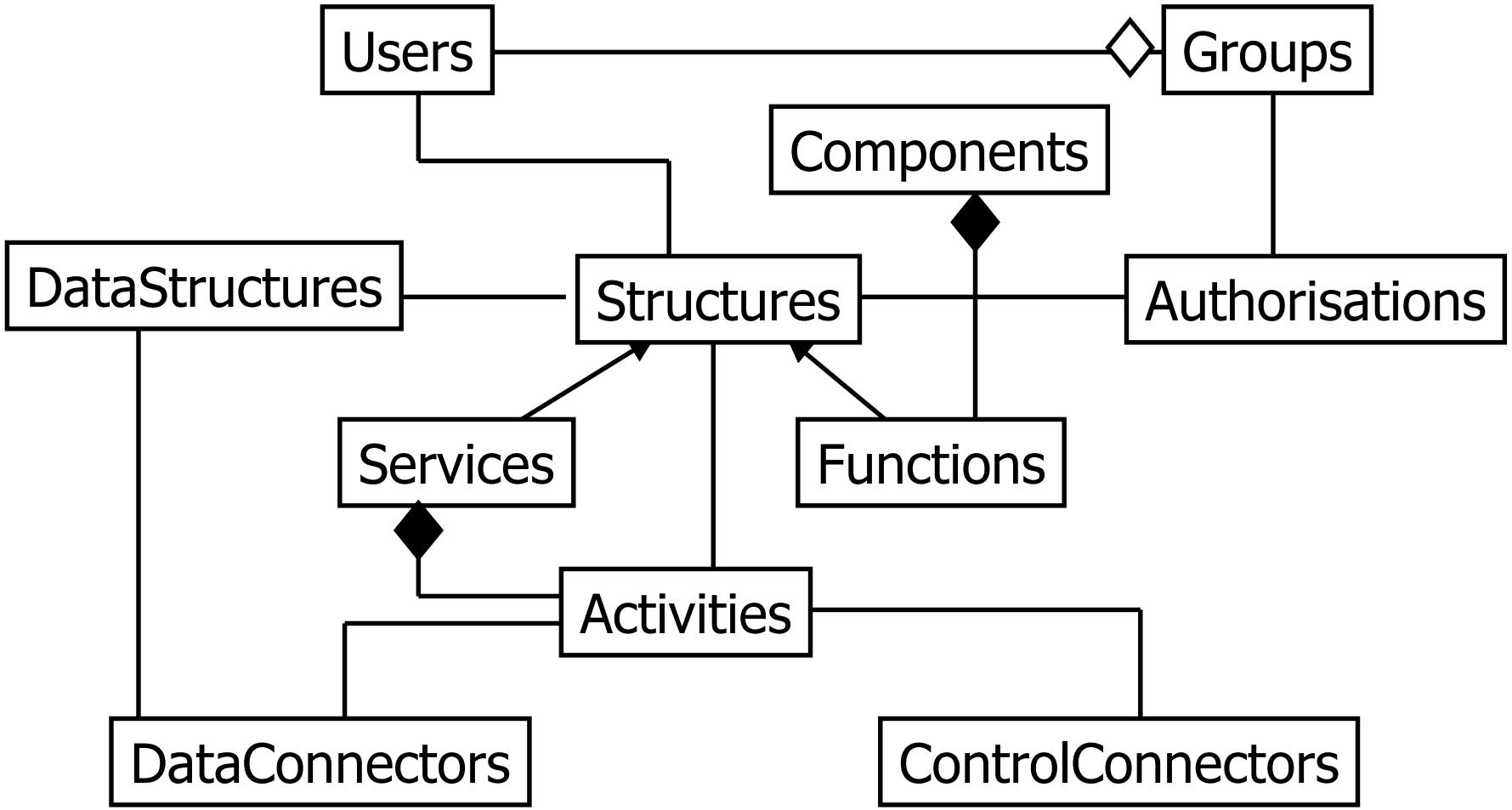
- **Instantiation of the Information Model**
- **Provision of EO AppComps and collaborative development of flexible EO AppServs**
- **Support during the complete development life cycle**

Run-Time

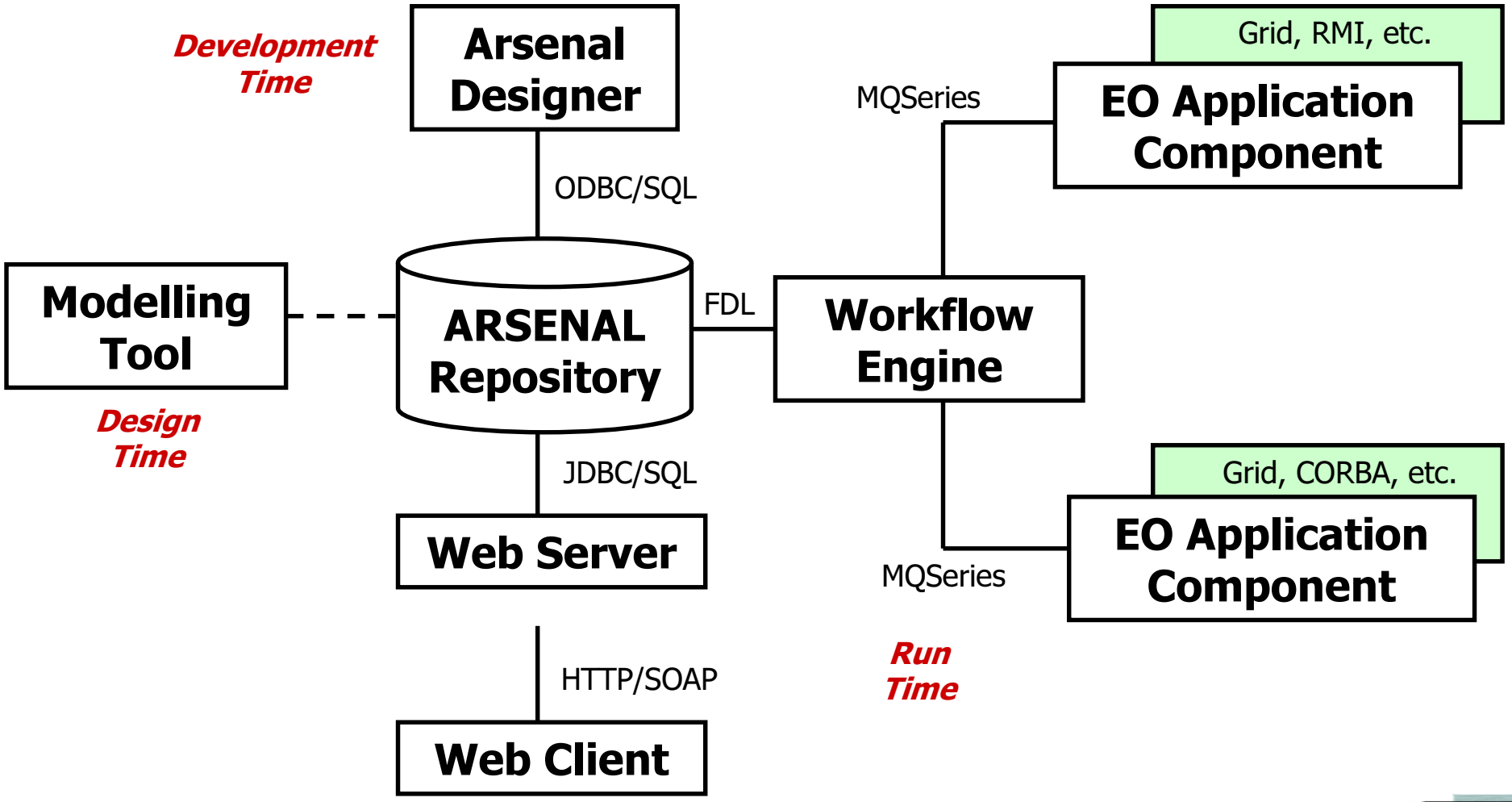


- **Discovery and location of EO AppServs**
- **Execution of EO AppServs**

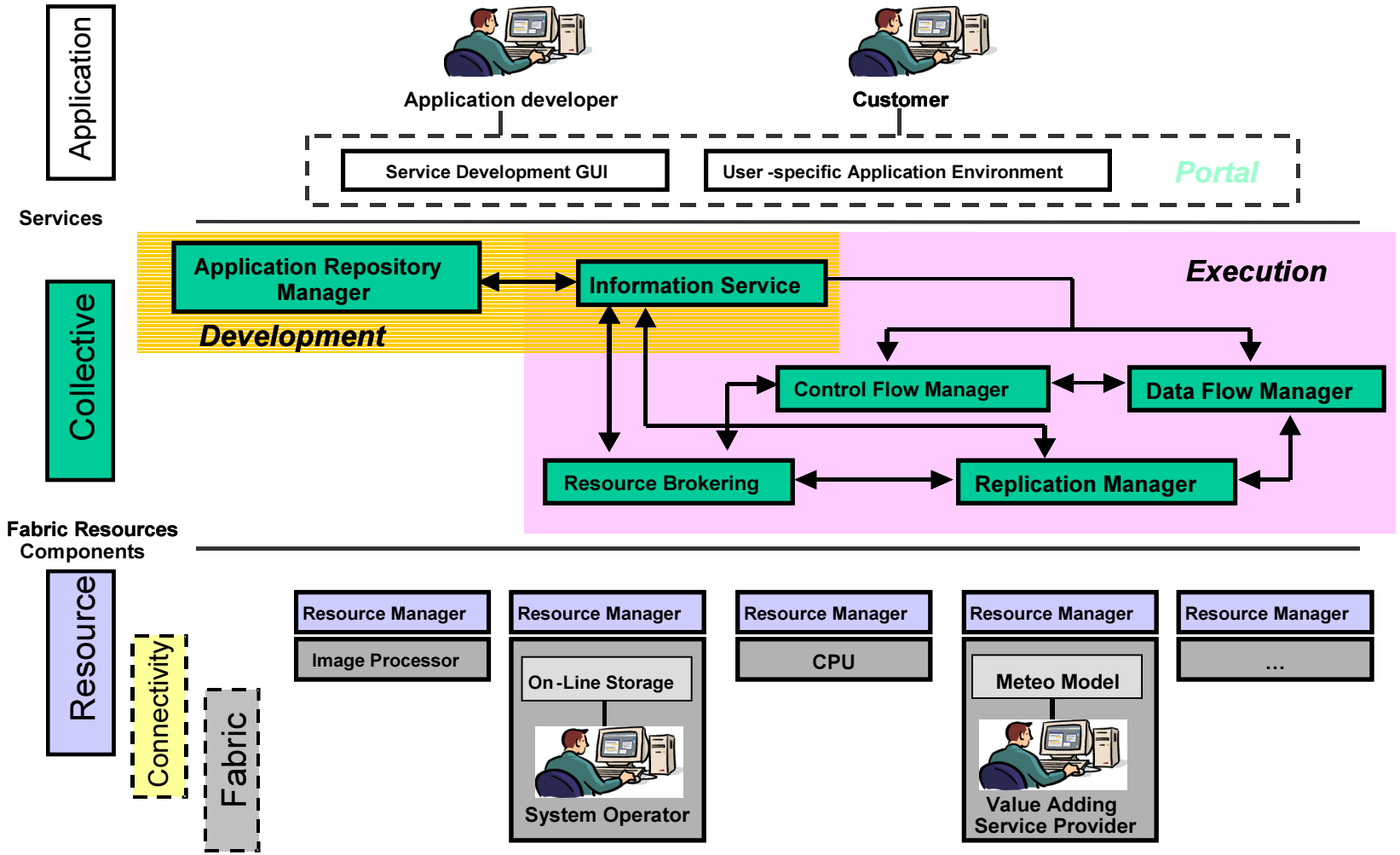
ARSENAL Information Model (simplified)



ARSENAL Prototype



Outlook


Application
Application developer
Customer
Service Development GUI
User -specific Application Environment
Portal
Services
Application Repository Manager
Information Service
Development
Execution
Collective
Control Flow Manager
Data Flow Manager
Resource Brokering
Replication Manager
Fabric Resources Components
Resource
Connectivity
Fabric
Resource Manager
Image Processor
Resource Manager
On-Line Storage
System Operator
Resource Manager
CPU
Resource Manager
Meteo Model
Value Adding Service Provider
Resource Manager
...