

# OpenCCM: The Open CORBA Components Platform

**3rd ObjectWeb Conference**  
**20th November 2003, INRIA Rocquencourt, France**

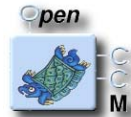
**Philippe Merle**  
**INRIA Futurs – Lille – Jacquard Project**  
**OpenCCM Project Leader**



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## Outline



- ➔ **CORBA Components specification**
- ➔ **OpenCCM goals**
- ➔ **OpenCCM main features**
  - The open production tool chain
  - The open packaging and assembling tool chain
  - The open distributed deployment infrastructure
  - The open container runtime framework
  - The open management framework
- ➔ **OpenCCM supported environments**
- ➔ **OpenCCM perspectives**

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➔ **Defined by the Object Management Group (OMG)**

➔ **A set of concepts, notations, and APIs to**

- Design
- Implement
- Package
- Assemble
- Deploy
- Execute

**distributed, heterogeneous, secure, transactional,  
server-side scalable, CORBA component-based  
applications**

➔ **Federate a world-wide community around CORBA  
component-based middleware and applications**

- Users, developers, and contributors
- Industrial and academic R&D
  - THALES, Cadena from Kansas University, ...

➔ **Provide the Open CORBA Components platform**

- Reference implementation
- ORB product independent
- Modular, extensible and adaptable for building CCM++

➔ **See at <http://openccm.objectweb.org>**

- Open source licensed under LGPL
- Hosted by the ObjectWeb consortium

### → The open production tool chain

- Design, define, implement, and compile CORBA components

### → The open packaging and assembling tool chain

- Package and assemble CORBA components

### → The open distributed deployment infrastructure

- Deploy, install, instantiate, and configure CORBA components

### → The open container runtime framework

- Host and execute CORBA components

### → The open management framework

- Discover, introspect, manage, monitor and reconfigure CORBA components

### → Front-end compilers for

- OMG Interface Definition Language 3.0 (OMG IDL)
- OMG Persistent State Definition Language (OMG PSS)
- OMG Component Implementation Definition Language (OMG CIDL)
- ◆ UML Profile for CORBA Components

### → Middle-end repository

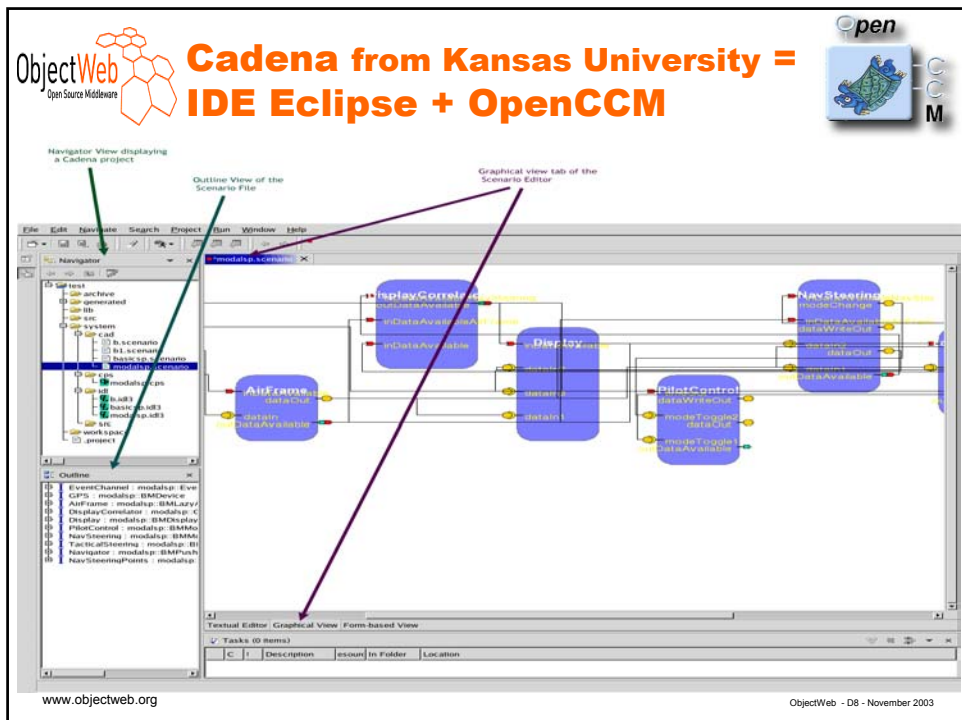
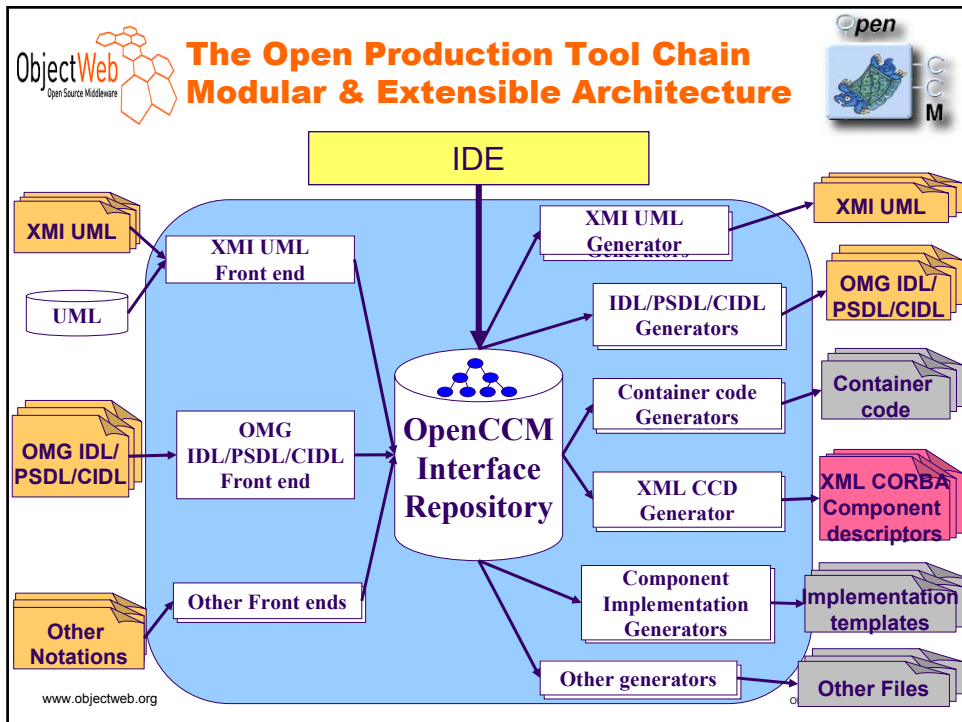
- Abstract Syntax Tree (AST)
- CORBA 3.0.x Interface Repository

### → Back-end generators for

- Client and server equivalent OMG IDL 2.x mapping
- CIDL related Java container code
- PSDL related Java interfaces and implementations
- Java templates for implementing components
- OMG IDL 3.0, PSDL, CIDL, and UML pretty-printers

### → To do

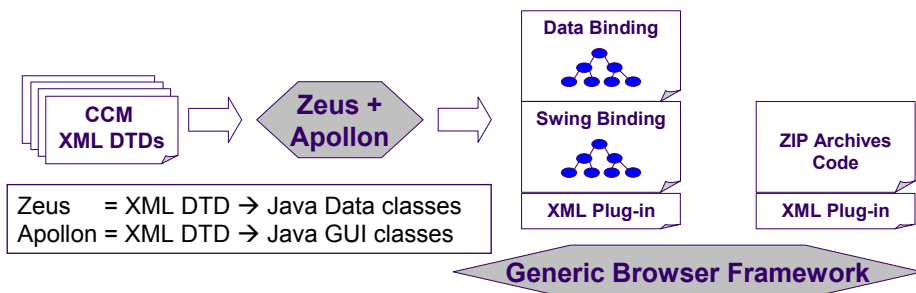
- ◆ Generation of XML CCD, CSD, and CPF from OMG CIDL



- ➔ A stand-one packaging and assembling tool
  - All CCM XML descriptors and ZIP archives supported



- ➔ A software framework for building customized packaging and assembling tools



- ➔ Users can build their own P&A tool

## → Main supported features

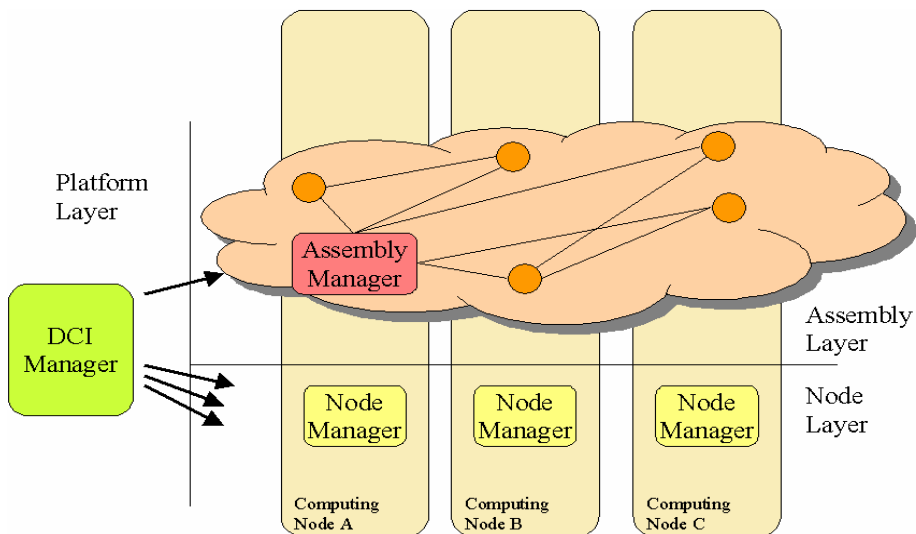
- All CCM XML descriptors and ZIP archives
- CosNaming, CosTrading, and HomeFinder services
- All Components::Deployment API

## → Component-based deployment infrastructure

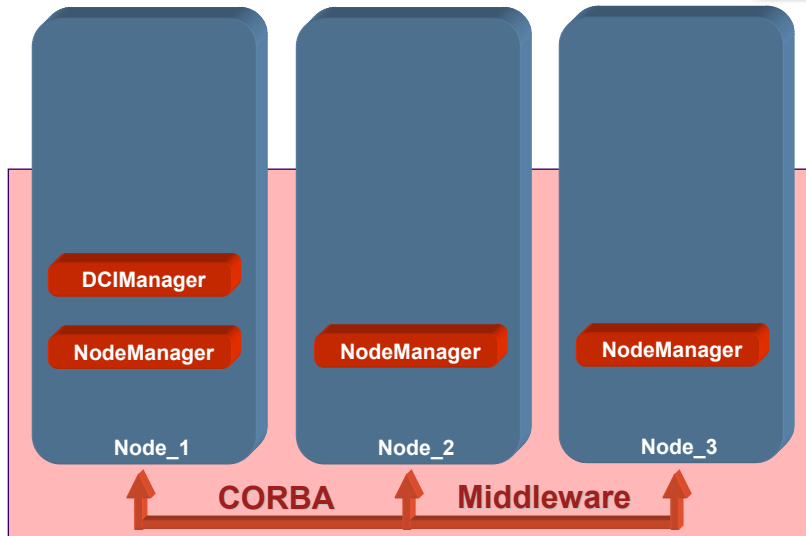
- IST COACH Distributed Computing Infrastructure (DCI)
- Possible injection of non functional properties as persistency, transactions, security, etc. via containers

## → Transactional distributed deployment

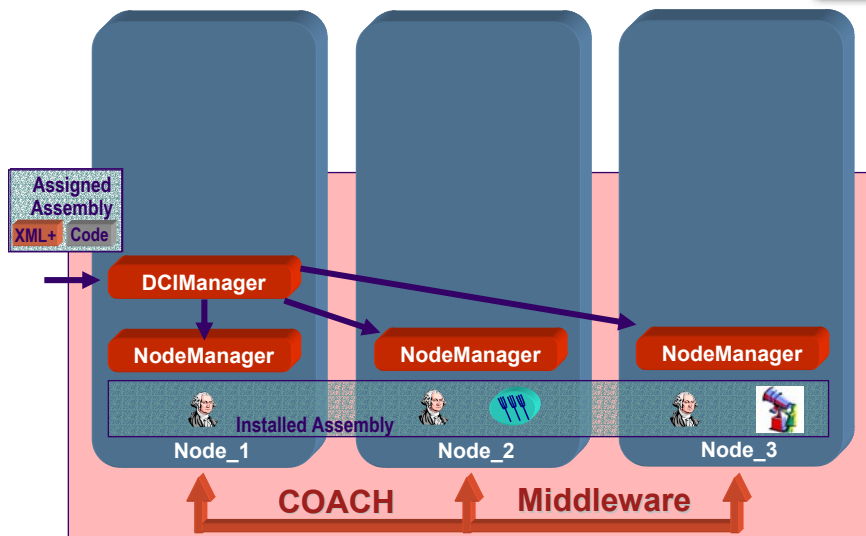
- Rollback deployment when failures



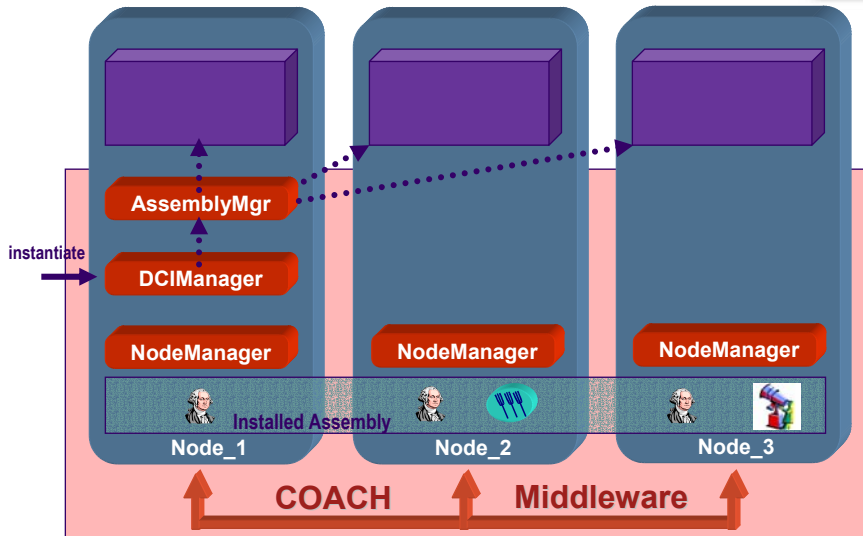
## Permanent Components



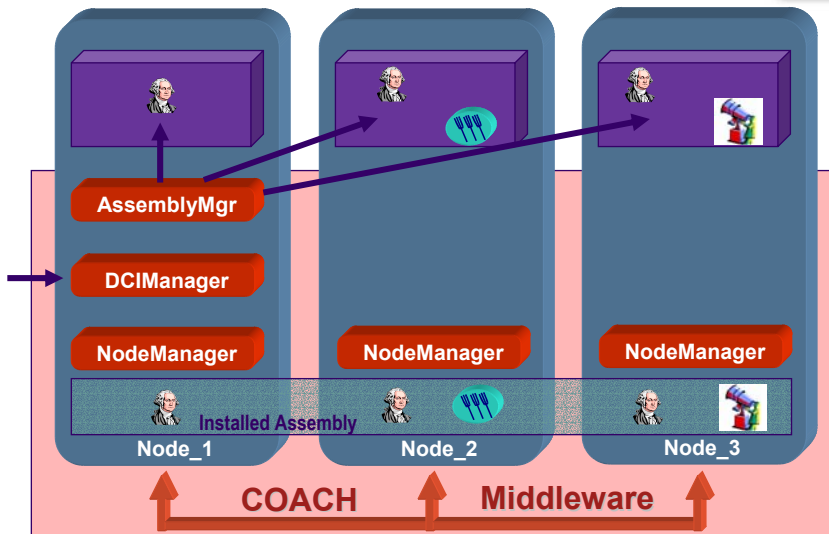
## CORBA Assembly Installation

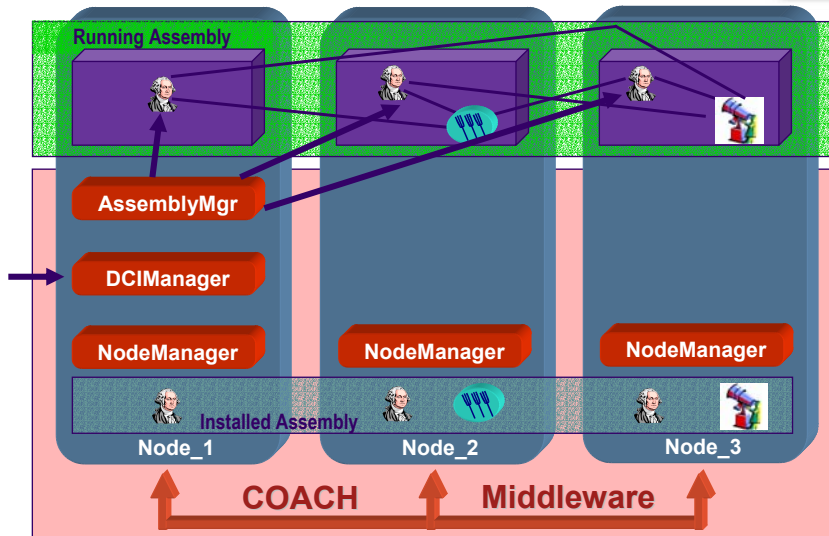


# CORBA Assembly Instantiation



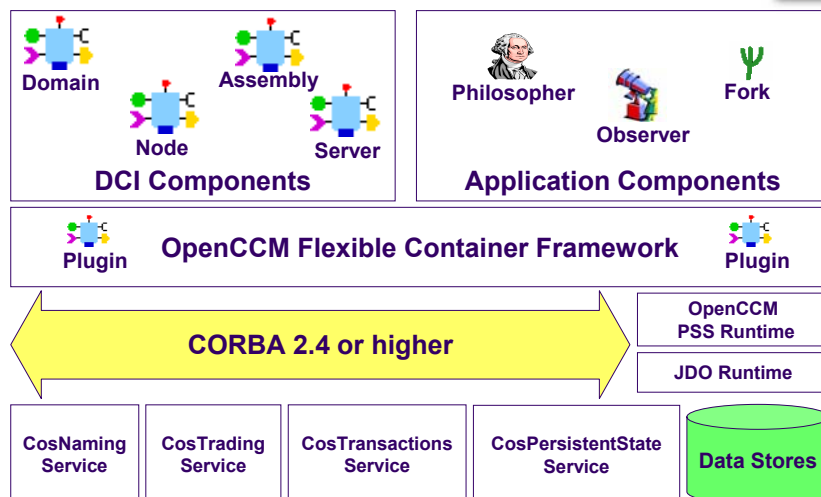
# CORBA Assembly Instantiation





- ➔ **DCIManager = a deployment domain**
  - Provides `AssemblyFactory` and `HomeFinder`
- ➔ **NodeManager = a virtual host**
  - Provides `ComponentInstallation` and `ServerActivator`
- ➔ **ComponentServerManager = a component server**
  - Provides `ComponentServer`
- ➔ **ContainerManager = a container**
  - Provides `Container`
- ➔ **AssemblyManager = an assembly deployment controller**
  - Provides `Assembly`
- ➔ **Each component provides other ports for management and supervision purposes**

- ➔ **Built on top of CORBA 2.4**
- ➔ **Scripts to start / stop CORBA services**
  - CosNaming, CosTrading, and CosTransactions
- ➔ **Runtime library for session components**
  - Set of classes inherited by generated container code
- ➔ **OMG Persistent State Service (PSS) implementation**
  - Built on top of Java Data Object (JDO)
  - Currently Kodo product
  - Soon ObjectWeb Speedo
- ➔ **Flexible Container Framework soon**
  - IST COACH Extensible Container Architecture (ECA)



## → A software framework for building graphical UI management browser

➤ Extensible by plug-ins

## → Various browser plug-ins for

- CORBA Object, Component and Home
- Interface Repository
- CosNaming
- CosTrading
- DCI

## → IST COACH monitoring and testing infrastructure

# The OpenCCM Browser

open

C  
C  
M

Admin GUI

File Tree

- NameService
  - ComponentServer0MainNode
    - Container (0)
      - IDL:ccm.objectweb.org/demo3/ClientHome:1.0 (0)
        - Mathieu (0)
        - Philippe (1)
        - Raphael (2)
  - ComponentServer2
    - ComponentServer
      - Container (0)
        - IDL:ccm.objectweb.org/demo3/ServerHome:1.0 (0)
          - Bureau 322 (0)
  - ComponentInstallation
    - Complete Configuration
    - Remove
    - Remove from home

IDL:ccm.objectweb.org/demo3/Service:1.0

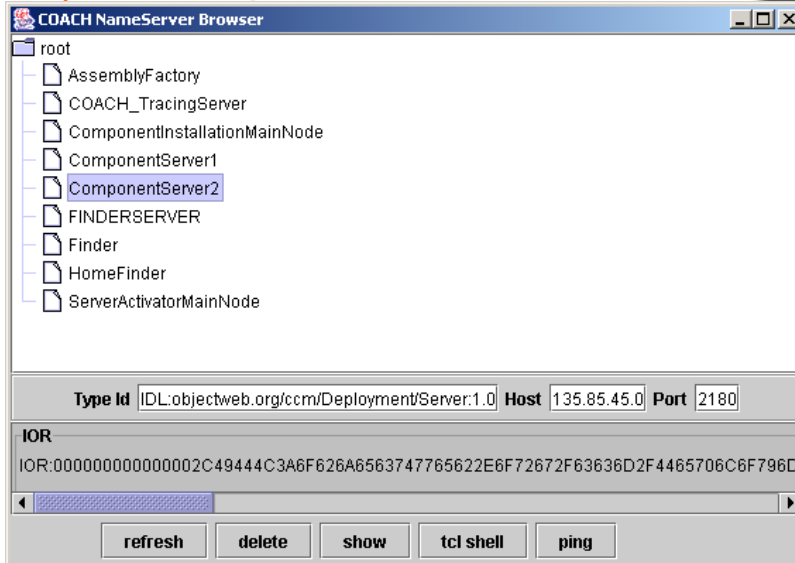
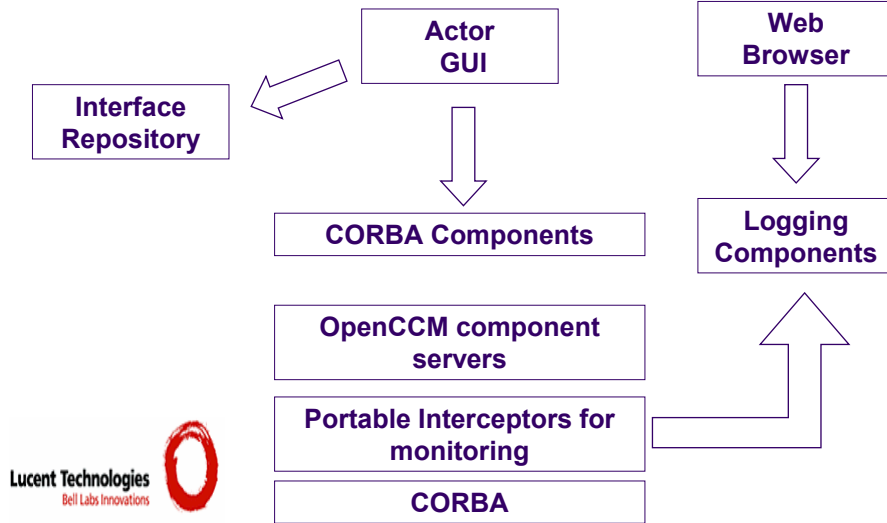
org.objectweb.ccm.Components.FacetDescriptionImpl@7599cc

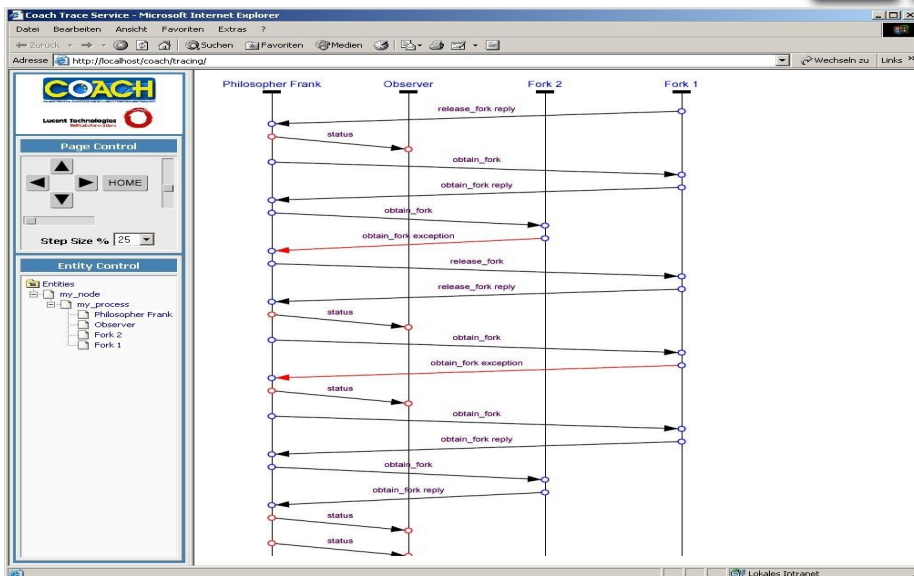
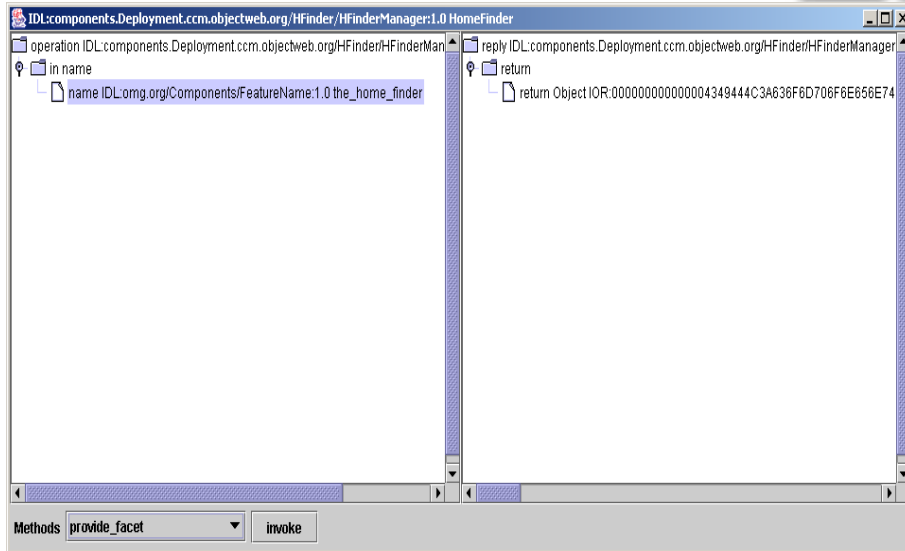
to\_consumers

org.objectweb.openccm.browser.Components.PublisherContainer

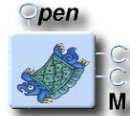
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## Supported Environments For All OpenCCM Features



→ **Java 1.2.1, 1.3.x & 1.4.x**

→ **Operating systems**

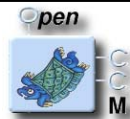
- Linux
- Solaris
- Windows
- Windows CE for PDA

→ **CORBA products**

- Borland Enterprise Server (BES) 5.0.2 & 5.2
- IONA ORBacus 4.1.x
- JacORB 2.0
- The Community OpenORB 1.2.1, 1.3.0, 1.3.1 & 1.4.0

➤ *Potentially any full CORBA 2.4 implementation*

## Perspectives for OpenCCM 1.0



→ **Improve and complete all current main features**

→ **Provide the full container support**

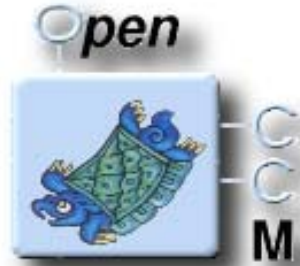
- CORBA Component Descriptor generator
- *Service*, *Process*, and *Entity* containers
- All CCM container API
- Services injected in containers
  - Persistency, transaction, security, notification
- IST COACH Extensible Container Architecture

→ **Lightweight CORBA Components in C++**

- THALES contribution in ITEA OSMOSE project

→ **Open Model-Driven CORBA Components platform**

- Design components, implementations, and assemblies with UML
- Generate all OMG IDL, CIDL, implementations, CAD files
- Ready to be deployed and managed



→ **Current release = 0.8.1**

→ **Web site**

➤ On-line information and documentation

➤ <http://openccm.objectweb.org>

→ **Forge site**

➤ Releases, CVS, bug tracking, current tasks

➤ <http://forge.objectweb.org/projects/openccm>

→ **Mailing lists**

➤ [openccm@objectweb.org](mailto:openccm@objectweb.org)

➤ [openccm-team@objectweb.org](mailto:openccm-team@objectweb.org)

➤ [openccm-commits@objectweb.org](mailto:openccm-commits@objectweb.org)