# GALAXI

FrameWork

Generic And Lightweight Approach for a fleXible Infrastructure

STRENGTH at sea

DCNS

## 1 GALAXI reference architecture

Define Reference Architecture to use the brick library in a CMS

## 2 Brick library

Provide a library of software reuse components called "Brick"

## 3 RDA Reuse Driven Approach

modeling process and tool to control the systems architecture and the bricks reuse level

## 4 NG Workshop

Provide a panel of tools along the V-cycle to improve productivity and quality on Galaxi based systems (Galaxi SDK)

## *The confirmation*

### JANUARY 2009

With its 4.5 millions lines of code, the first CMS AQUARIUS, based on GALAXI, is installed on a ship.

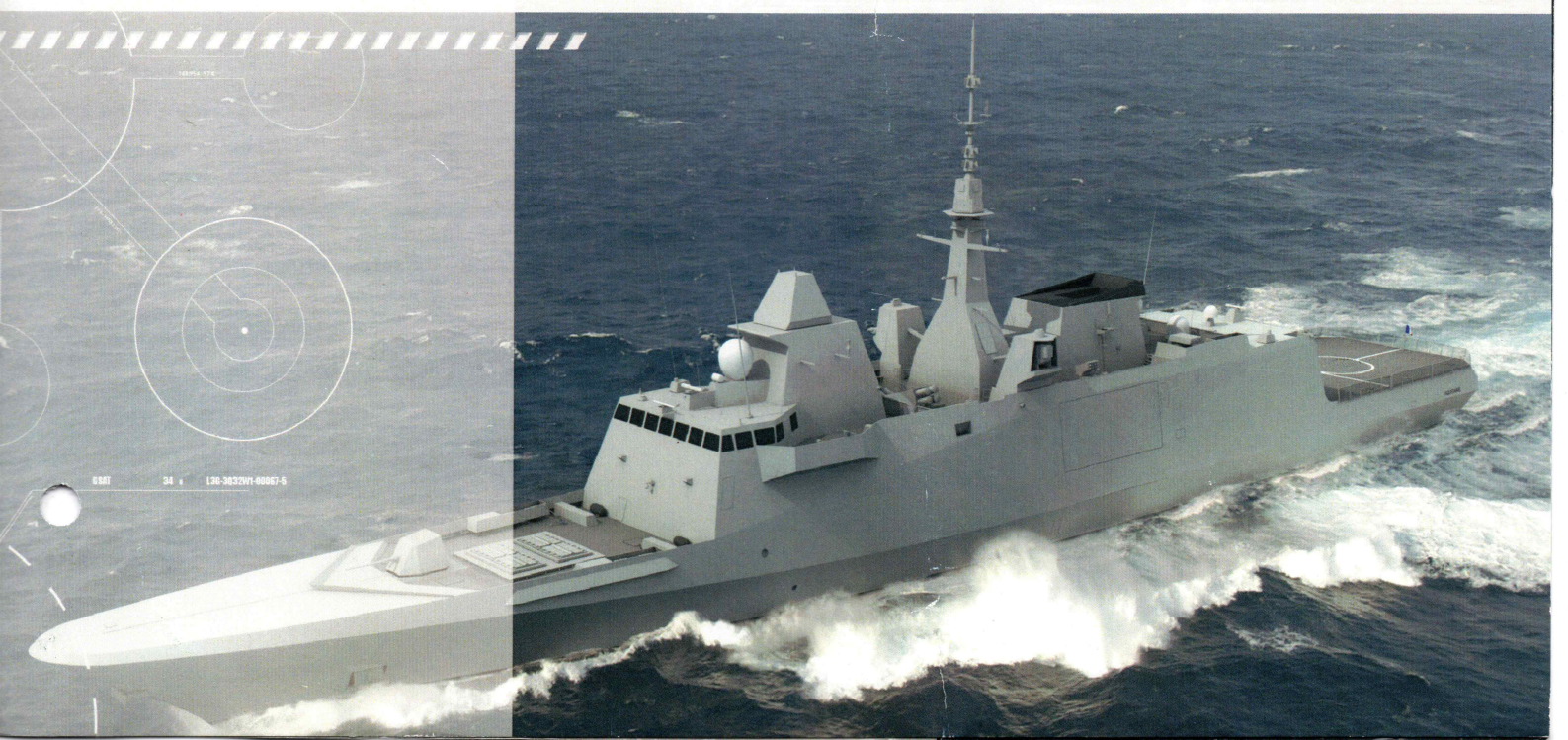
**RESEARCH** 2003 → **DEVELOPMENT** 2004-2005 → **INDUSTRIALIZATION & DEPLOYMENT** 2006-2011

## *A Strategy to face the ever-increasing number of projects*

The ever-increasing customer's needs and number of new projects combined with the fierce competition show us today that tailored products are no longer appropriate.

### DCNS SIS SOFTWARE STRATEGY

- Generate efficiency gains by capitalization and the large reuse of sea-proven components originating from former CMS projects.
- Defining an off-the-shelf range of products which will be competitive, attractive and tailored to meet the CMS market requirements.



# 1 Galaxi Reference architecture

## Open architecture based on Java platform

- Object-oriented development
- Millions of users
- Hardware/OS independency

## Capitalization of the DCNS know-how

- A 40-years experience in CMS
- Many operational systems

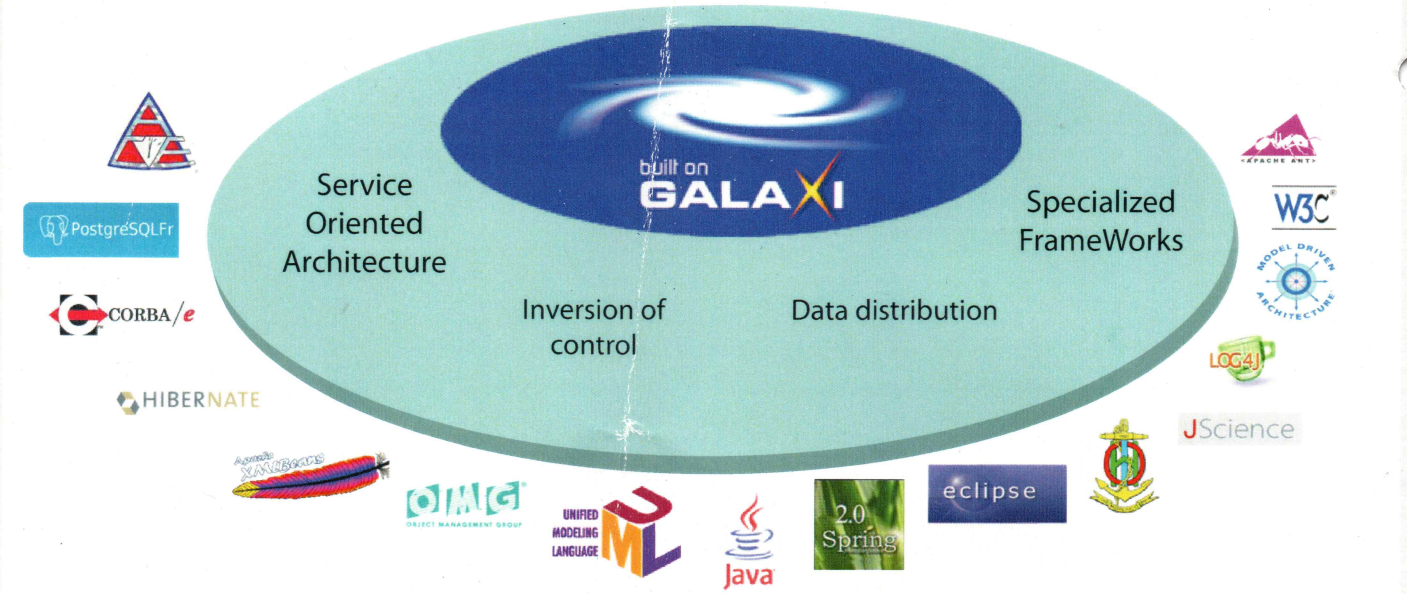
## Reliability based on software industry standards

- Standard of internationally recognized bodies (OMG, W3C, etc.)

- Interoperability
- Independency from suppliers

- Standard due to Open Source

- Independency from software publishers, no license
- Community of users
- Stability




# 2 Brick Library

The brick wall represents the panel of reusable bricks from infrastructure to domain. Each brick has been evaluated to estimate its potential of reusability with an instrument developed by NASA called Reuse Readiness Level (RRL).

## An overview of few bricks

### DLRL (Data Local Reconstruction Layer)

- DLRL is a layer for "real time" objects distribution from an OMG Standard called DDS (Data Distribution Services for Real Time System)

### Control Command

- Control Command is a Service Oriented Architecture implementation based on CORBA. It provides an assembly of services distributed in different servers.
- Service clients use those services on behalf of a white-pages service, so they are independent from services location.

### Fault Tolerance

- Fault-tolerance describes a computer system or component designed so that, in the event that a component fails, a backup component or procedure can immediately take its place with no loss of service.
- FT Brick is a DCNS own development derived from CORBA standard.
- FT can handle Nodes (GPU, DPU), processes (JVM) and Galaxi Components.
- FT can detect a fail component and switch to back-up in less than 250ms.

## Brick Wall 10.5 released on January 2011

Brick Wall 10.5 released on January 2011 contains 83 Bricks. R10.5 contains bug correction, optimization and new functionalities as:

- JDK 1.6 updated (Update 21)
- DLRL optimization: Efficiency improved by 900% compared to V10.3. On a test platform, performance of the brick reached recently 800 updates/second with 1500-2000 tracks and cpu <15%
- Upgrade of MANAGEMENT, PARAMETERING, TIME, REPLAY, CARTO_EXT, GEOGRAPHICS

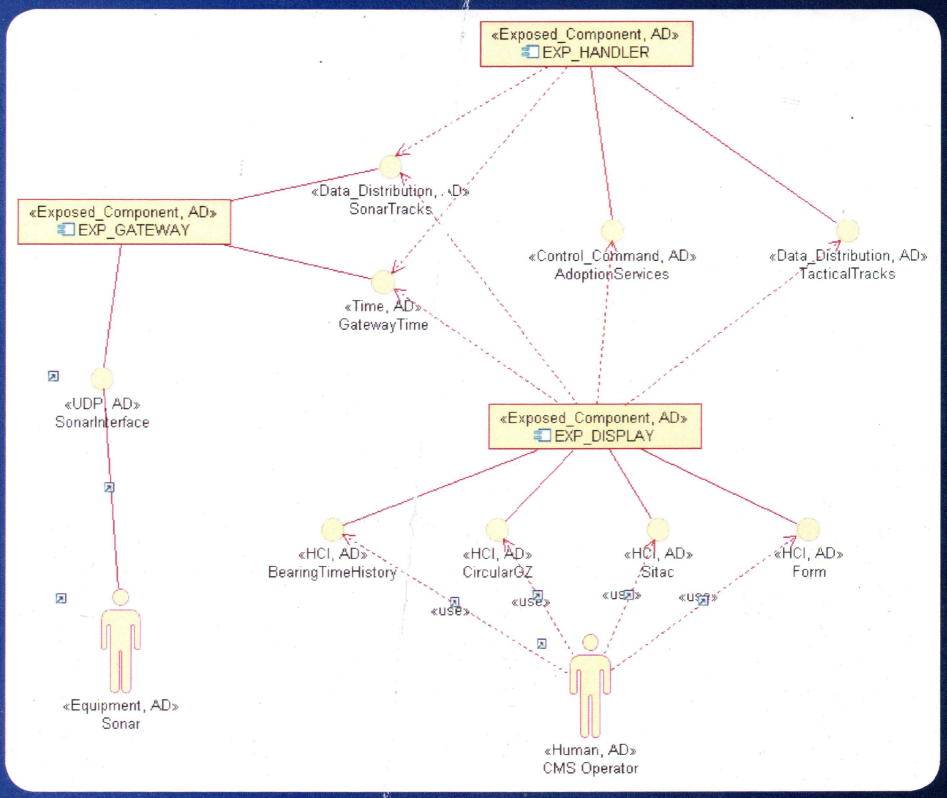
# 3 RDA Reuse Driven Approach

## A SET OF GOOD PRACTICES FOR THE DESIGN PHASES

Originated from MDA (Model Driven Architecture) and RUP (Rational Unified Process), RDA gives good practices to design software systems from functional specifications to integration.

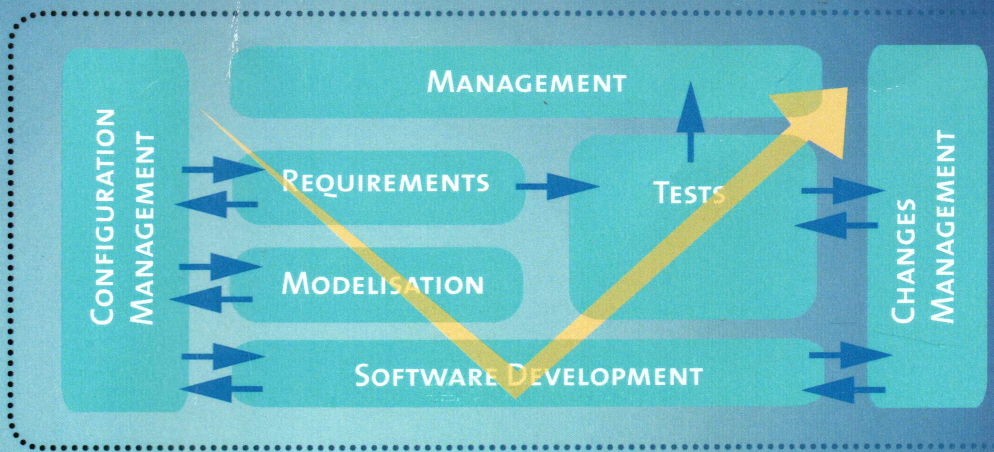
MDA is an OMG software development approach that separates functionnal and technological needs in two kinds of models: PIM (Platform Independant Model) and PSM (Platform Specific Model).

RUP is a development process elaborated by UML designers and partly standardized by OMG (Object Management Group). It defines a set of design disciplines (UML), it is iterative, incremental and generic.




# 4 NG Workshop

## CONTROL OF THE SYSTEMS DEVELOPMENT AND RELATED DEPLOYMENT THROUGH INTEGRATED TOOLS.




► Tools at any step of the development cycle:

- Control of functional evolutions by a differential approach of requirements
- Control of the architecture by an integrated, system and software modeling

► Control of the development through procedures and tools for construction and assembly

► Control of integration and qualification with test management

Réalisation : DCNS - service communication centre Le Mourillon - Impression : APF Entreprises 31 concept - Imprim'Vert