www.thalesgroup.com

ARCADIA

Capella

A field-proven modeling solution for system and software architecture engineering

EclipseCon 2014 - Polarsys Day
San Francisco, March 20th, 2014

Daniel Exertier, Stéphane Bonnet (Thales Corporate Engineering)

eclipse CON 2014

THALES

Thales : Company Profile

Collective intelligence for a safer world

Whenever critical decisions need to be made, Thales has a role to play.
In all its markets — aerospace, space, ground transportation, defence and security — **Thales solutions help customers to make the right decisions at the right time and act accordingly**.

World-class technology, the combined expertise of **65,000 employees** and operations in **56 countries** have made **Thales a key player in keeping the public safe and secure**, guarding vital infrastructure and protecting the national security interests of countries around the globe.

Employees

65,000 (workforce under management at 31 Dec. 2012)

Global presence

56 countries

Research and development

2.5 billion euros (approx. 20% of revenues)

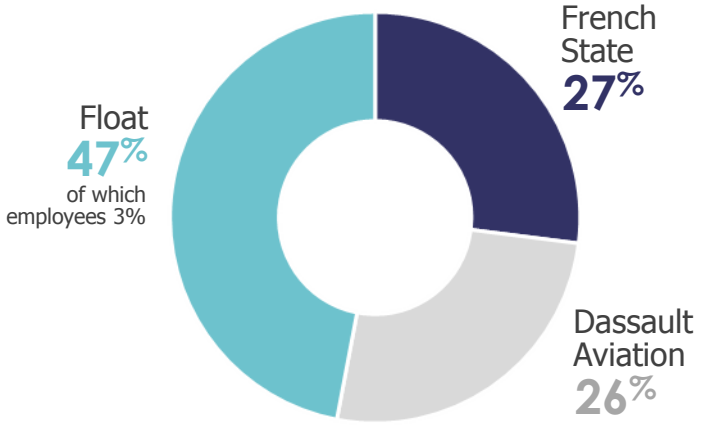
A balanced revenue structure

Revenues in 2012

€ **14.2** billion euros

Shareholders

(at 31 May 2013)



Thales : Markets we serve

Dual markets
Military & Civil

AEROSPACE | SPACE | GROUND TRANSPORTATION | DEFENCE | SECURITY





TRUSTED PARTNER FOR A SAFER WORLD

Thales : Global leadership

N 1 worldwide

Payloads
for telecom satellites

Air Traffic Management

Sonars

Security for interbank transactions

N 2 worldwide

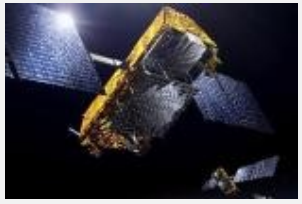
Rail signalling systems

In-flight entertainment
and connectivity

Military tactical
radiocommunications

N 3 worldwide

Avionics



Civil satellites

Surface radars

€14 billion
in revenues

Needs for an Engineering Transformation

Facts

- Model Driven Engineering, BUT…
- … Slow & painful modeling deployment
- … COTS are not well adapted to industrial needs
- … Tool vendor dependencies are too constraining

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- Define a method & provide dedicated tooling
  - Specified, designed & developed from operational needs
- With the following capabilities
  - Better quality of the systems
  - Better productivity of engineering activities
  - Ease of Use
  - Early validation
  - Integration, seamlessness, coherency, traceability
  - Best practice & know-how capitalization
  - Performance & scalability
  - Configuration management
  - Collaborative engineering

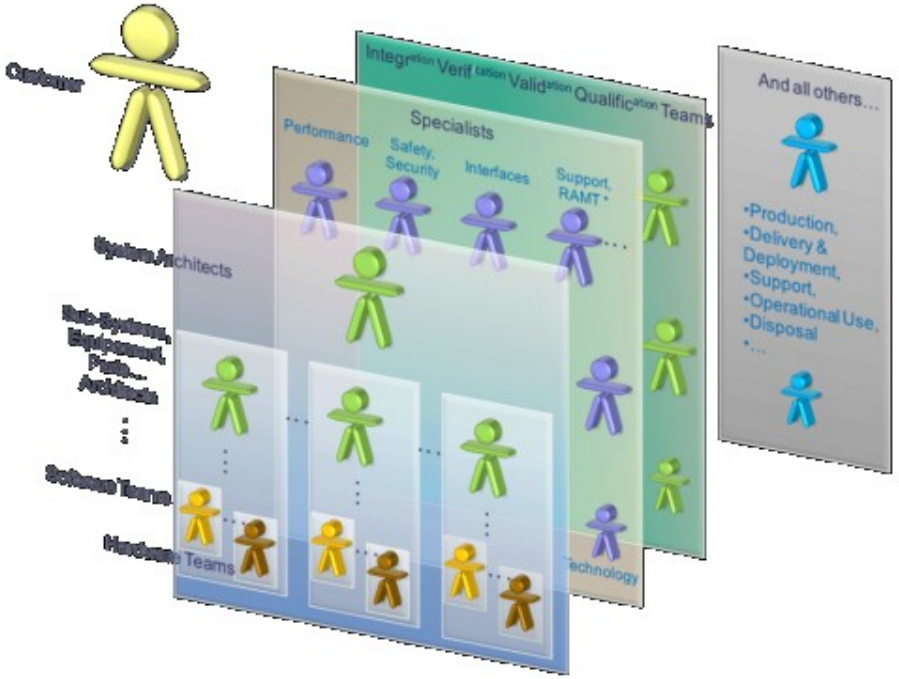
Arcadia : a MDE Scalable and Adaptable Method

How to improve quality, productivity, agility and flexibility of overall engineering?

Arcadia : a MDE Scalable and Adaptable Method

How to improve quality, productivity, agility and flexibility of overall engineering?

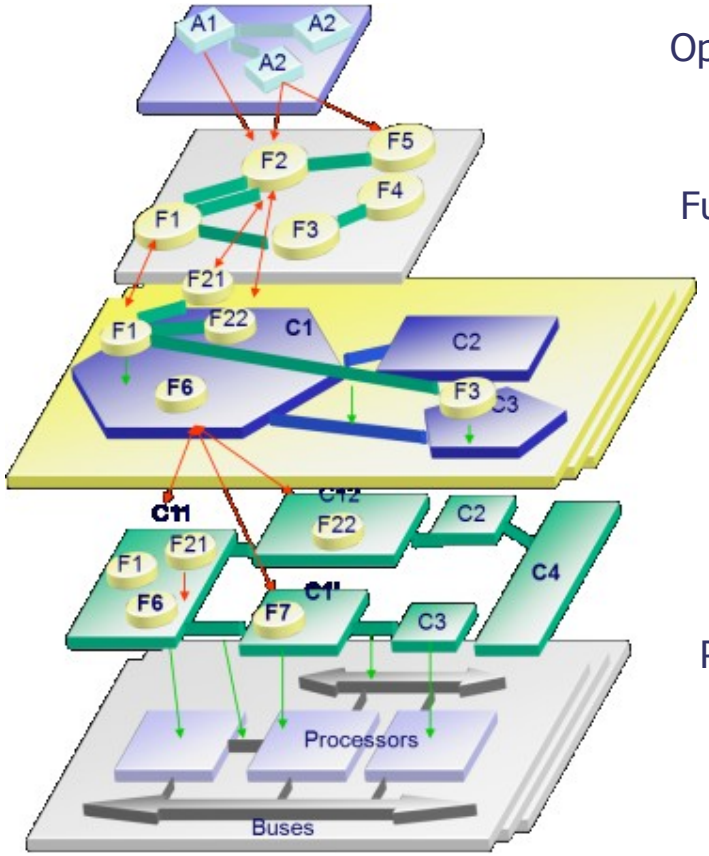
- Eco-system wide collaboration
  - A single architecture reference



Arcadia : a MDE Scalable and Adaptable Method

How to improve quality, productivity, agility and flexibility of overall engineering?

- Eco-system wide collaboration
  - A single architecture reference
- Complexity mastering
  - Multi-level engineering
  - Separation of concerns



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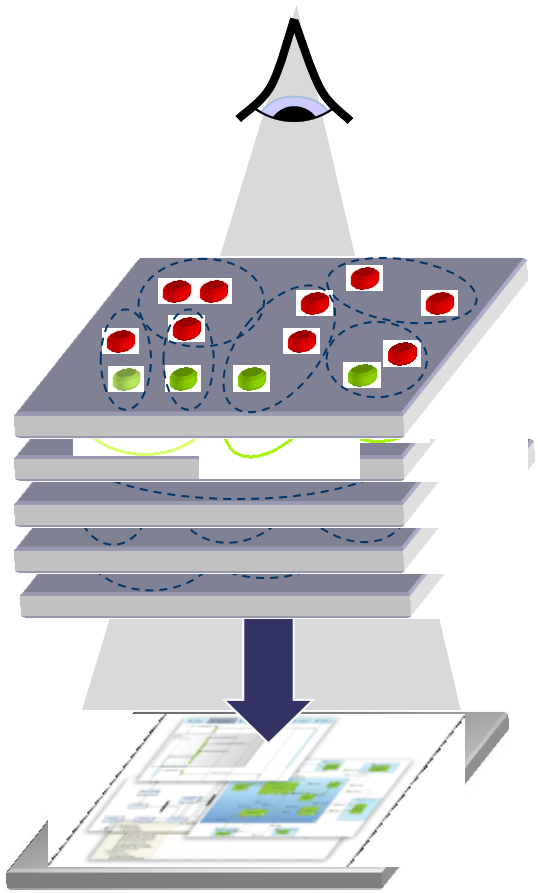
- Early validation
  - Integrated specialty engineering
  - Trade-off analysis
  - Short decision loop



ViewPoints

etc.

Product Line

Human Factors

Performance

Security

Safety

Evaluation Rules

Solution Architecture

Arcadia : a MDE Scalable and Adaptable Method

How to improve quality, productivity, agility and flexibility of overall engineering?

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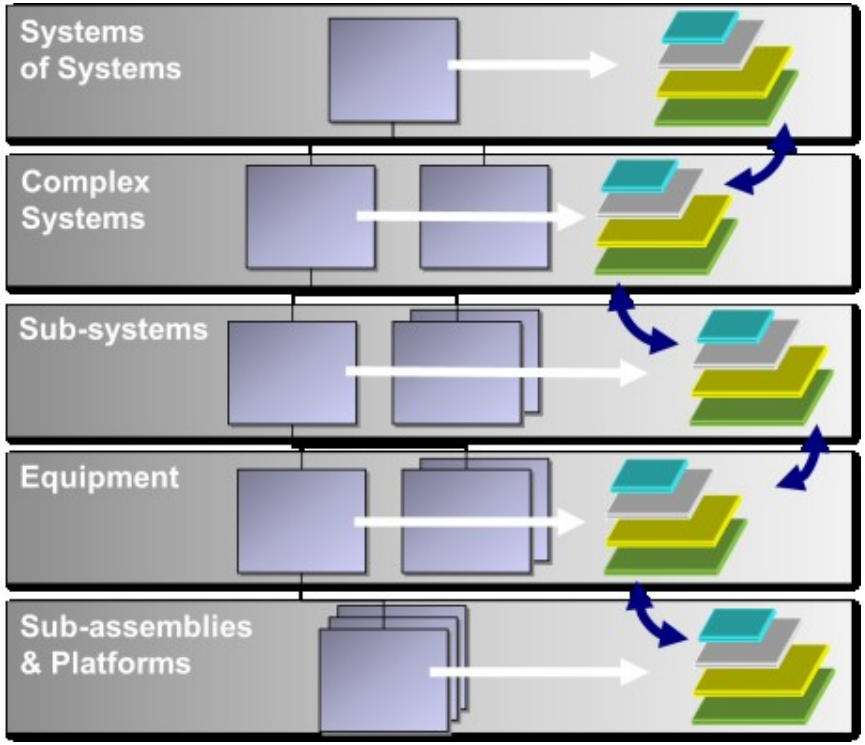
  - Separation of concerns
- Early validation
  - Integrated specialty engineering
  - Trade-off analysis
  - Short decision loop
- Mastering transition
  - Information refinement
  - Coherency maintenance
  - Multi-level impact analysis

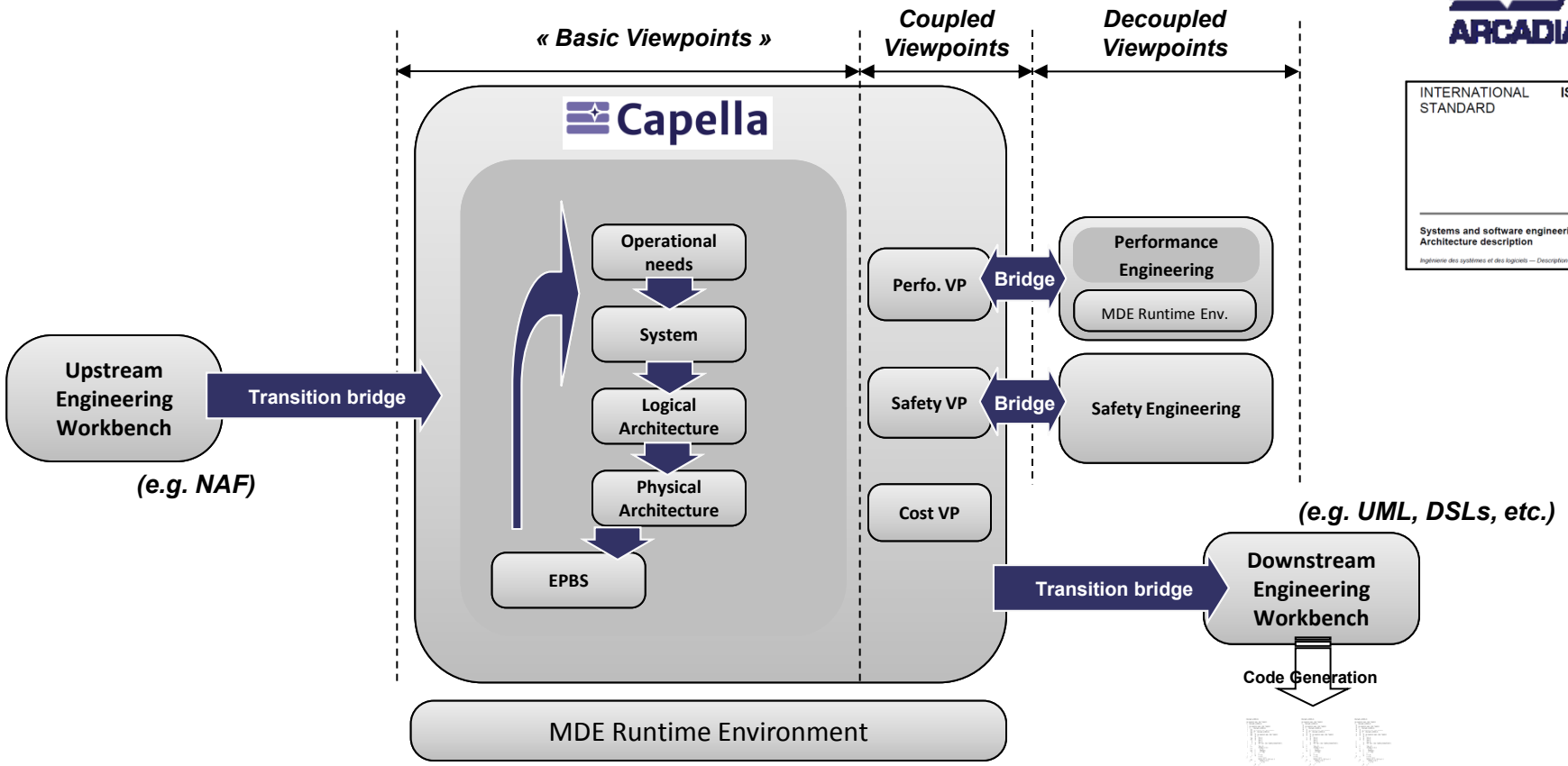


Arcadia : a MDE Scalable and Adaptable Method

How to improve quality, productivity, agility and flexibility of overall engineering?

ARCADIA

Capella : The big picture



ARCADIA

INTERNATIONAL STANDARD ISO/IEC/IEEE 42010

First edition 2011-09-15

Systems and software engineering — Architecture description

Ingénierie des systèmes et des logiciels — Description de l'architecture

Demonstration…

Demonstration Focuses

Guidance [*Embedded methodological browser*]

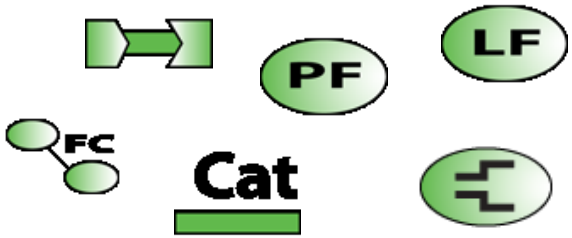
Complexity management [*Abstraction via computed information*]

Productivity tools [*Automated transitions and diagram creation accelerators*]

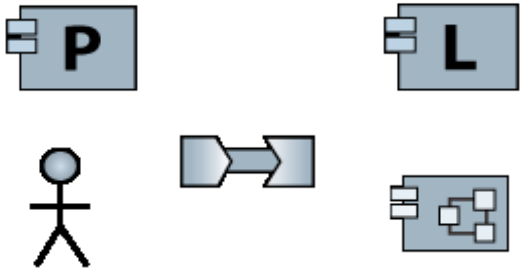
Model Analysis & Navigation [*Model validation, semantic browser*]

Multi-criteria analysis [*Viewpoints and management framework*]

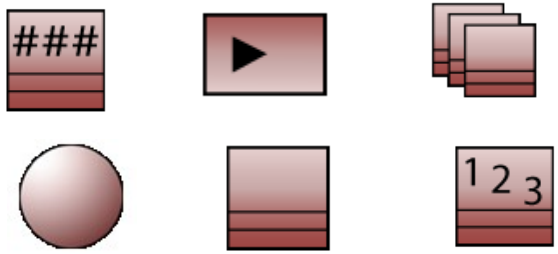
Capella Golden Axioms



Functions = Green



Components = Blue



Interfaces = Pink

Capella Demonstration

Brush diagram layouts	**Transition System Subsystem**	**Live collaboration**
Replicable elements	**Progress monitoring & model review**	**IVV and Product Line viewpoints**
Automated contextual diagrams	~~One more thing~~ **100 more things**	**HTML output**
Unsynchronized diagrams		**Batch quickfixes**
Fast Linker	**Validation profiles**	**IncQuery & Acceleo requests**
Model Patterns	**Semantic delete with preview**	■ ■ ■

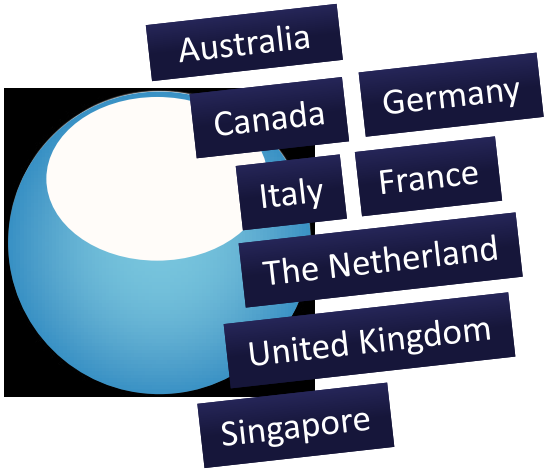
Capella Operational Deployment within Thales

Critical Information Systems

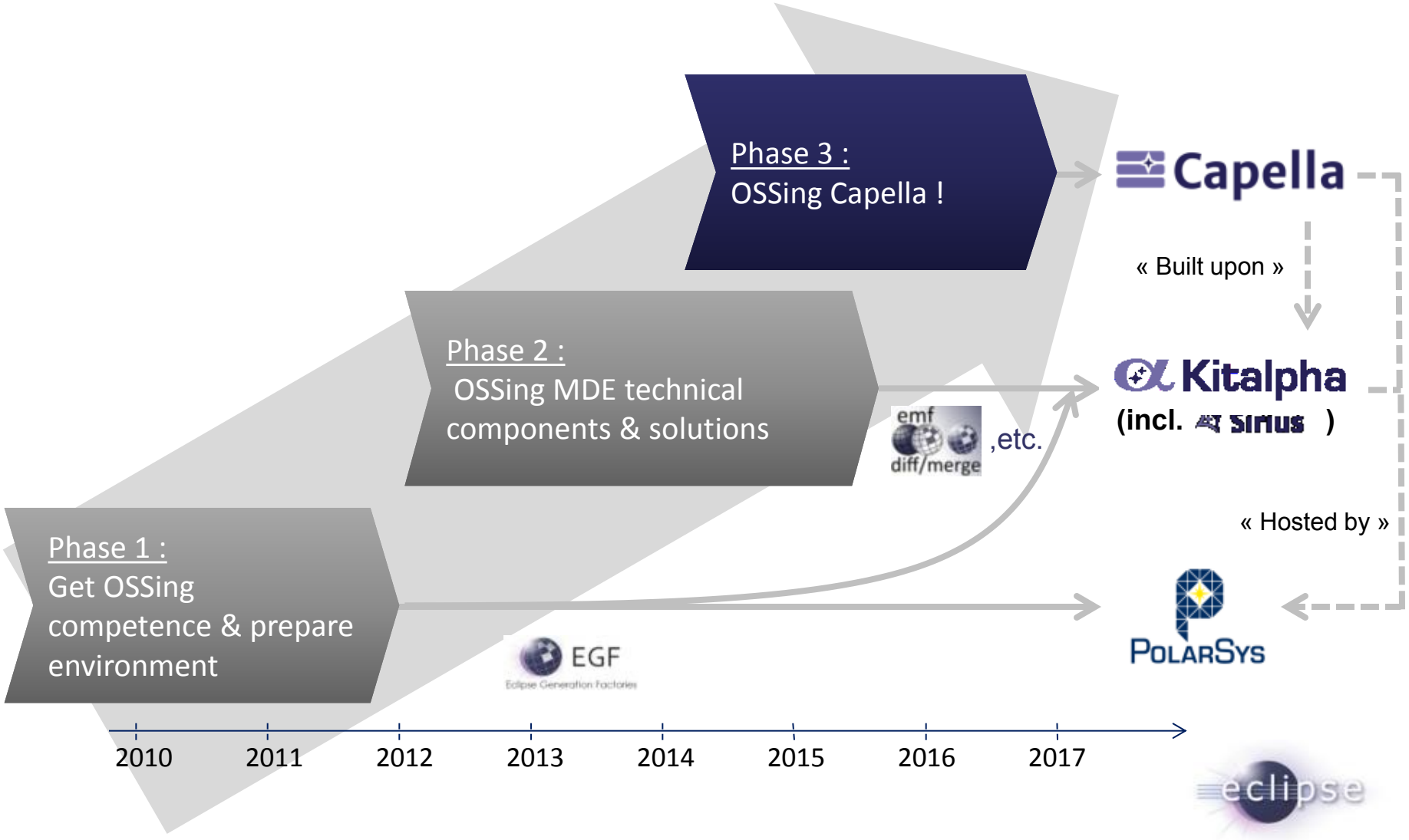
- Ground Exploitation Systems
- Command & Control (air, sea, railways…)
- Large secured Communication Networks…
- Satellite Control Networked Ground Stations

Embedded Systems

- Combat Systems (Radar, Self Protection, Optronics…)
- Mission Systems (Air, Sea, Ground)
- Satellite Constellations
- Avionics Suites
- Computing Systems
- Electrical Power Systems
- Thermal Cooling Systems
- Railways signalling Systems



Thales MDE OSSing Phases & Roadmap



Thank you for your attention !

Any questions ?

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3. Evaluate: