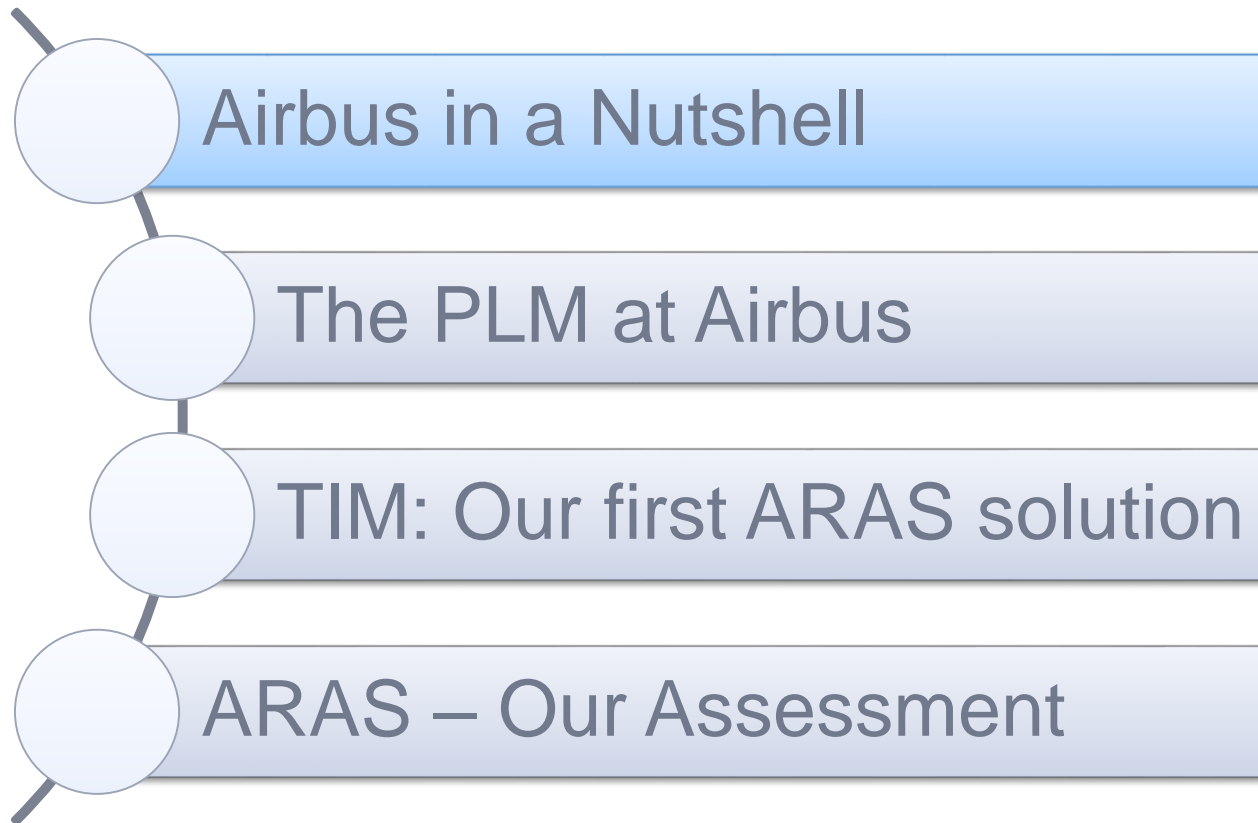




**ACE Europe**  
Henrik Weimer

**TIM:**  
**The first Aras use case**  
**in Airbus**





# Air Transport

## **A major contributor to global social & economic prosperity**

- › Over 2.6 billion passengers & 48 million tonnes of freight per year, worldwide
- › Support nearly 8% of the world's economy
- › 19<sup>th</sup> rank in size by GDP\* if aviation were a country (similar to Switzerland)
- › Global economic impact: \$ 2.2 trillion (direct, indirect, induced & tourism catalytic)  
3.5% of world GDP
- › 1,500 airlines
- › 23,800 commercial aircraft in service
- › 3,850 commercial airports

## **A major global employer**

- › 8.4 million direct jobs
- › 56.6 million jobs globally



\*GDP: Gross Domestic Product  
Abstract from ATAG report – March 2012

# Airbus: a global company

- > Part of Airbus Group
- > The world's leading aircraft manufacturer
- > One integrated company
- > More than 7 600 aircraft in operation
- > 59,000 Employees -more than 100 nationalities


2013 Aircraft orders (net) valued at:  
**US\$225 billion**

2013 deliveries valued at:  
**US\$81.2 billion**

More than  
**13 815 orders**

Over  
**380 operators**

More than  
**8 256 deliveries**

 Airbus presence

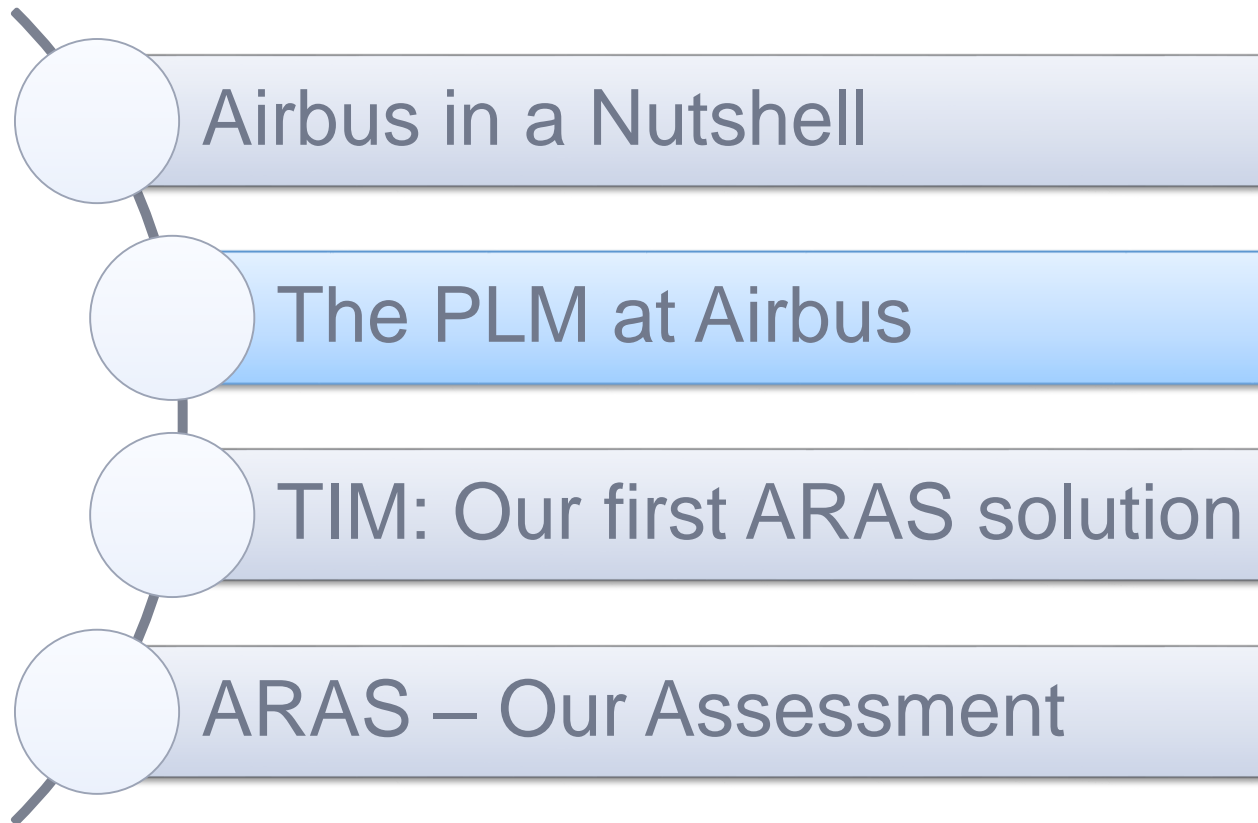
# Airbus Family

## A full range of market leading civil airliners

- › **A320 family:**  
A take-off or landing every 2.5 seconds,  
7 billion passengers carried since EIS in 1988
- › **A330 family:**  
A take-off or landing every 25 seconds,  
More than 800 A330s sold since 787 launch
- › **A350 XWB:**  
EIS Q4 2014  
812 orders from 39 customers
- › **A380:**  
Takes-off or lands approx. every 6 minutes  
125 flights per day and 1 million pax per month



**2013 orders: 1619 – 2013 deliveries: 626**



# Supply-chain & delivery model is evolving



- ➔ High degree of vertical integration.
- ➔ Development responsibility mainly on Airbus.
- ➔ Local sourcing of BtP packages in an “extended workbench” approach.

- ➔ Acting as an A/C integrator.
- ➔ Focus on overall A/C architecture and requirements for structure, systems & cabin.
- ➔ Sourcing of major components from a network of D&B risk sharing partners (“extended enterprise”)

An efficient collaborative environment is required !

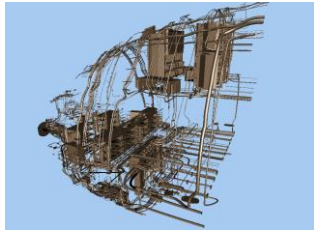


# The PLM as our Main Success Factor

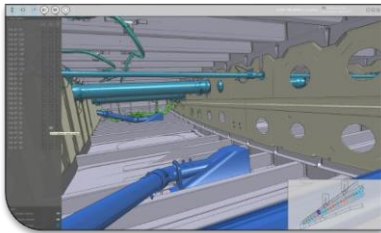


The PLM and Digital Mock-Up serve as the enterprise backbone federating all product related disciplines

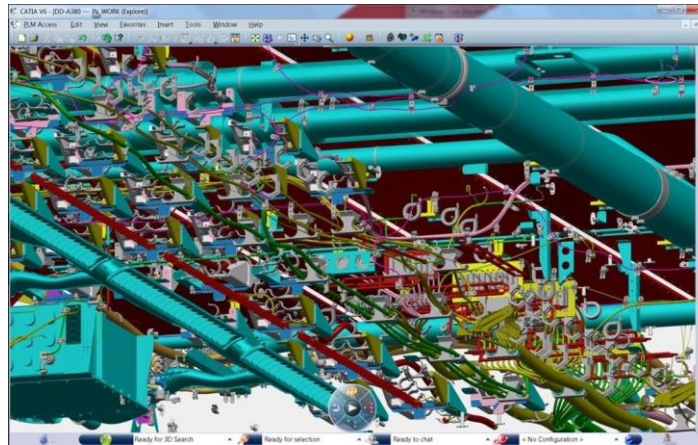
# OEM as Integrator - Challenges



Most of the design is done outside the OEM

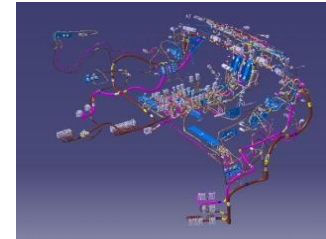


Complex product : ~3 000 000 components represented

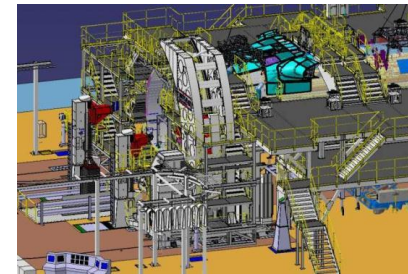
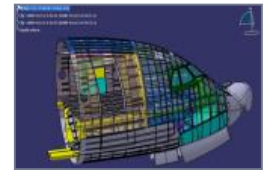


Necessity to manage concurrently different skills like:

- Structure
- Mechanical systems
- Electrical systems



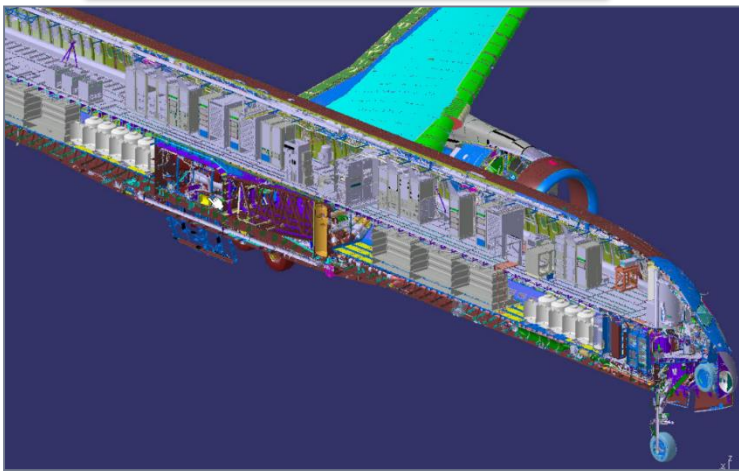
Configuration managed by more than 30 000 configuration items



# A350 Digital Mock-Up Key Figures

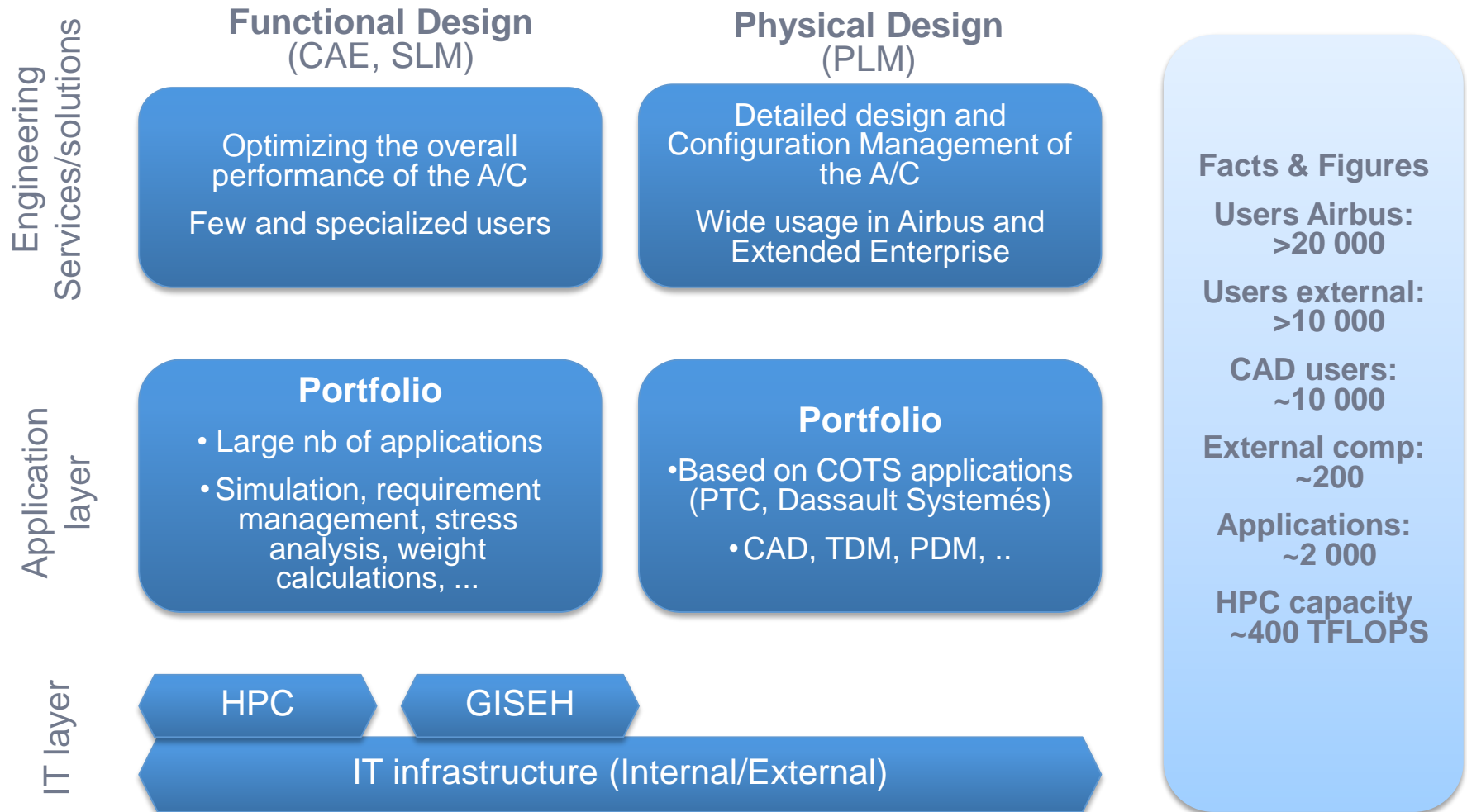
## A complex product:

- More than **3 million** part instances.
- **17 million** links.
- More than **30,000** Configuration Items.



|         |  | cDMU review dataset |         |
|---------|--|---------------------|---------|
|         |  | Part Instances      | Parts   |
| A/C     |  | 1,498,600           | 162,854 |
| MC      |  | 999,066             | 108,569 |
| Section |  | 175,544             | 29,111  |
| WP      |  | 360                 | 180     |
| DS      |  | 100                 | 30      |

# IS/IT landscape for Engineering



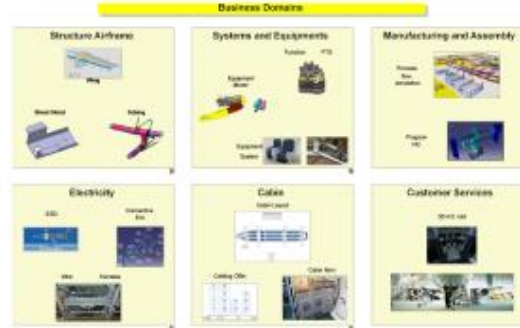
# Introduction: PLM @Airbus

## PLM @Airbus

- PLM Layers @ Airbus: Processes / Functional



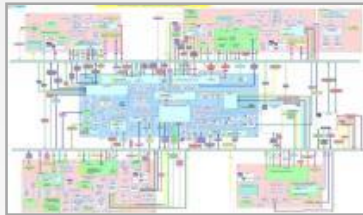
### Business Domains



### IT Applications



with one PLM per aircraft programme, e.g.:



A380 PLM – 4 PLM + integration



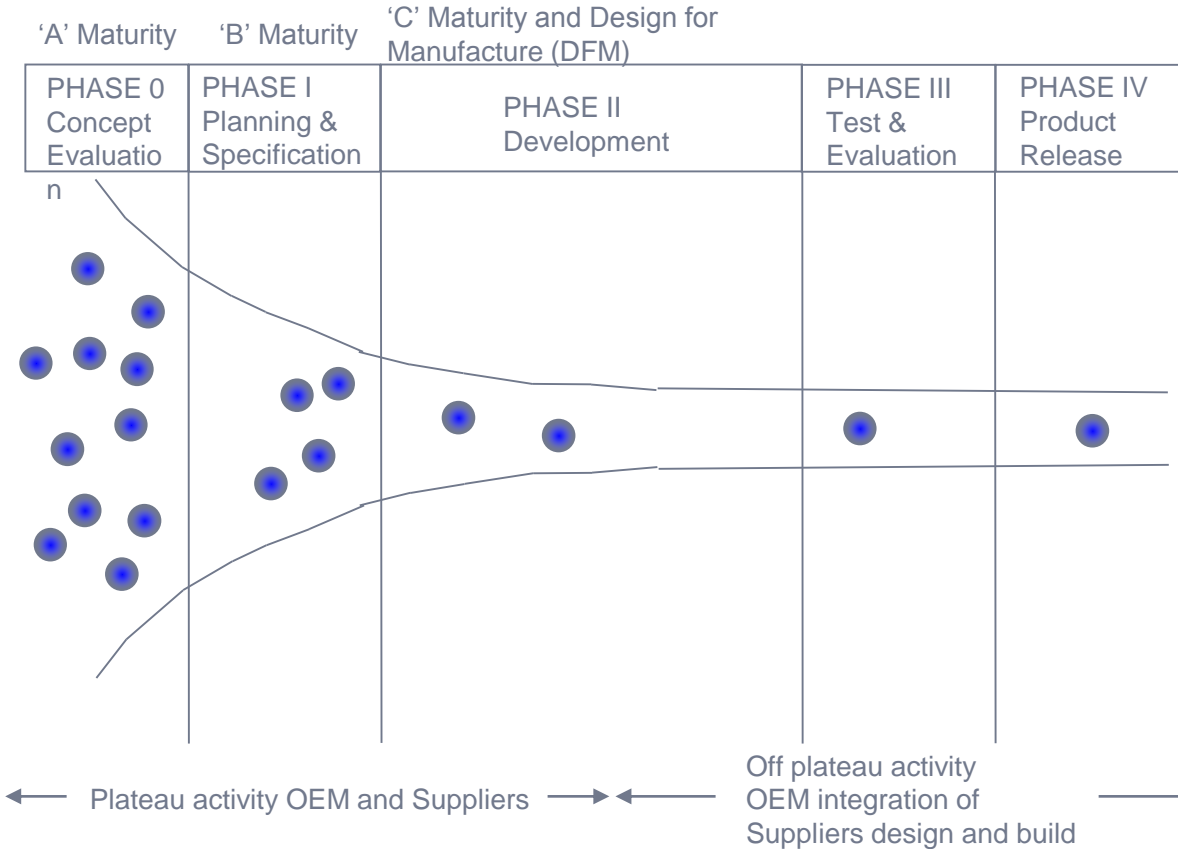
A400M PLM – Same PLM x 4



A350 PLM – Single PLM

The PLM processes are enabled and operated in the information system: one PLM platform per programme

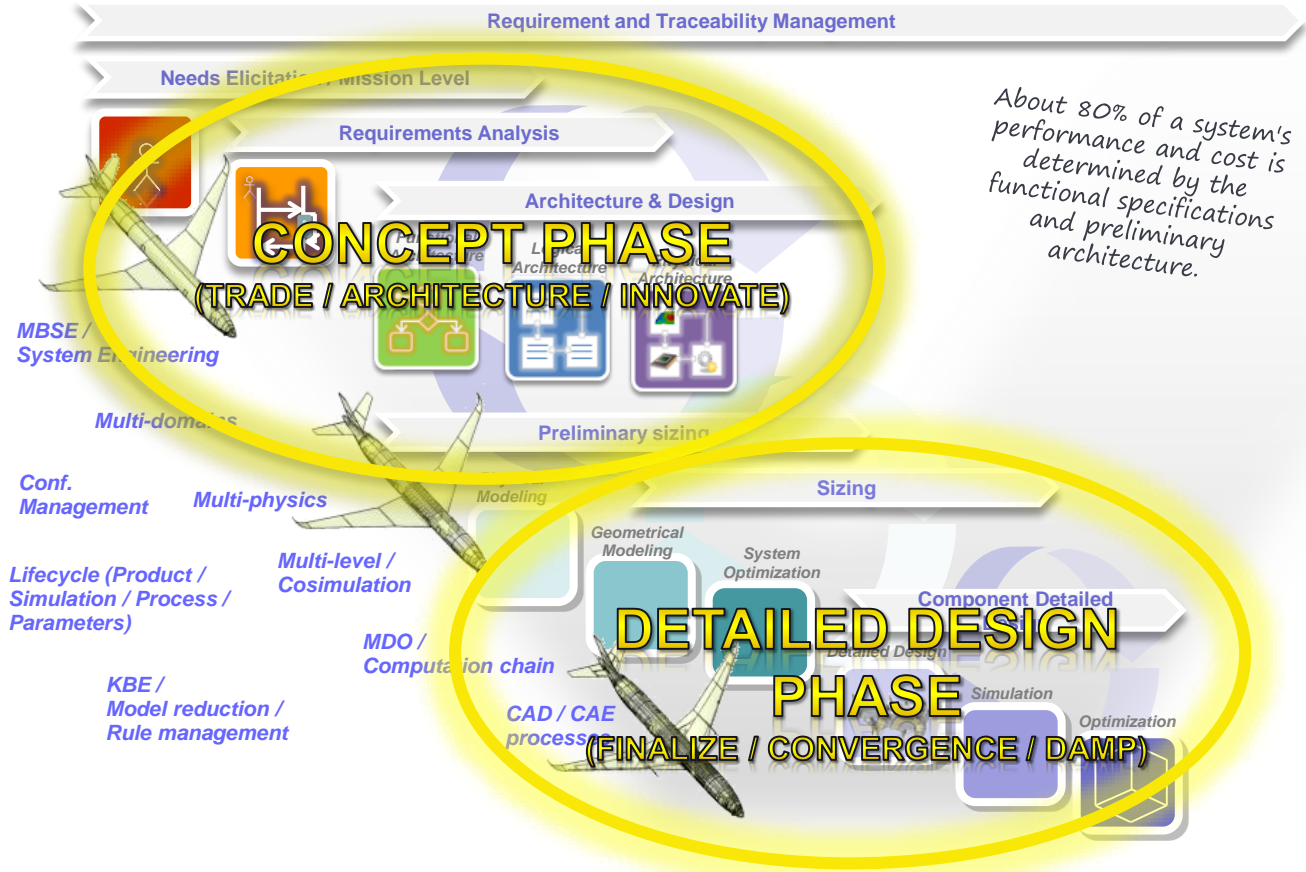
# Product Development Phases



Adapted from Wheelwright and Clark (1992)

# Integration of System Engineering

## Concept phase vs Detailed Design phase



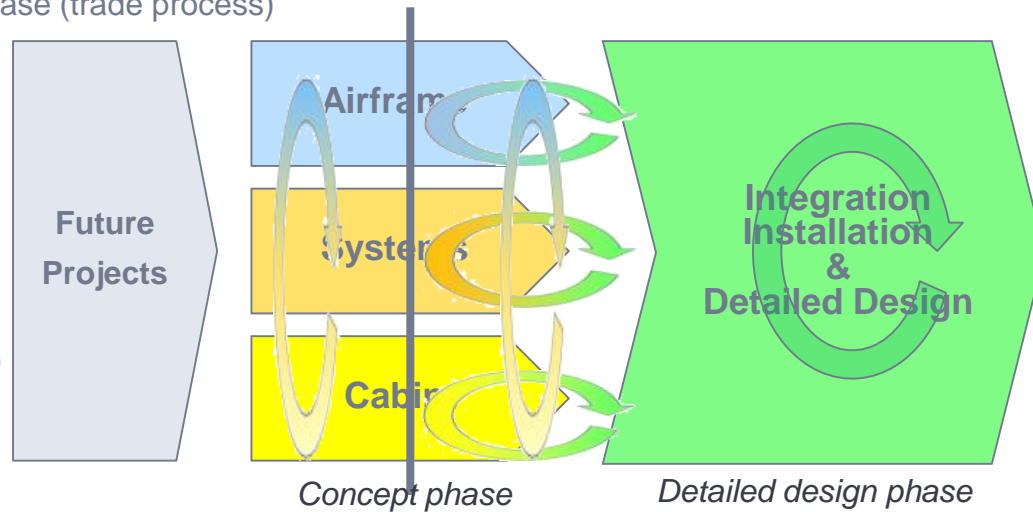
About 80% of a system's performance and cost is determined by the functional specifications and preliminary architecture.

# Integration of System Engineering

Enable earlier global integration loops & smooth transition to detailed design

1. Enable flexible but clear conf management during concept phase (trade process)

2. Enable early axis reconciliation (keep global view)

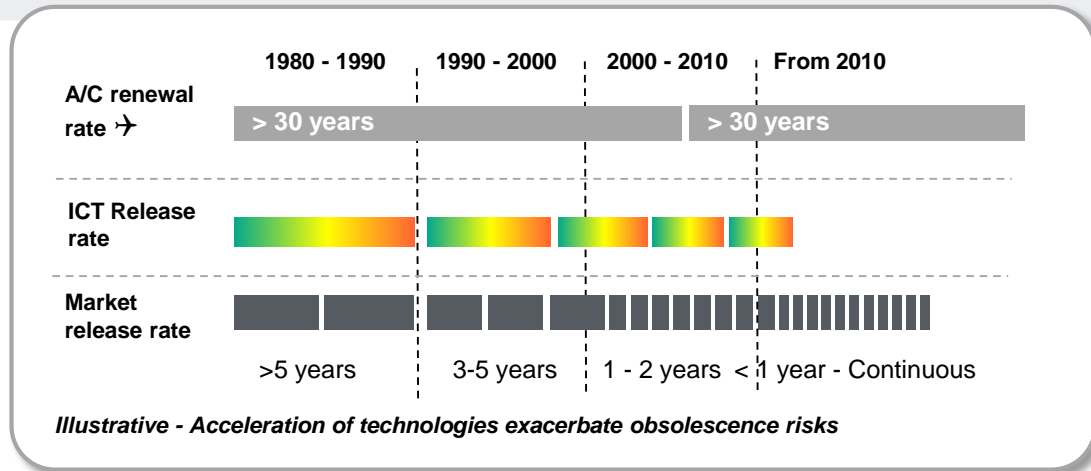


3. Enable global / local back & forth analysis (foresee details from global choice, check details are aligned with global decision)

4. Enable multi-disciplinary assessment in extended enterprise context (leveraging new off-the-shelve simulation capabilities)



# IS Obsolescence Challenges



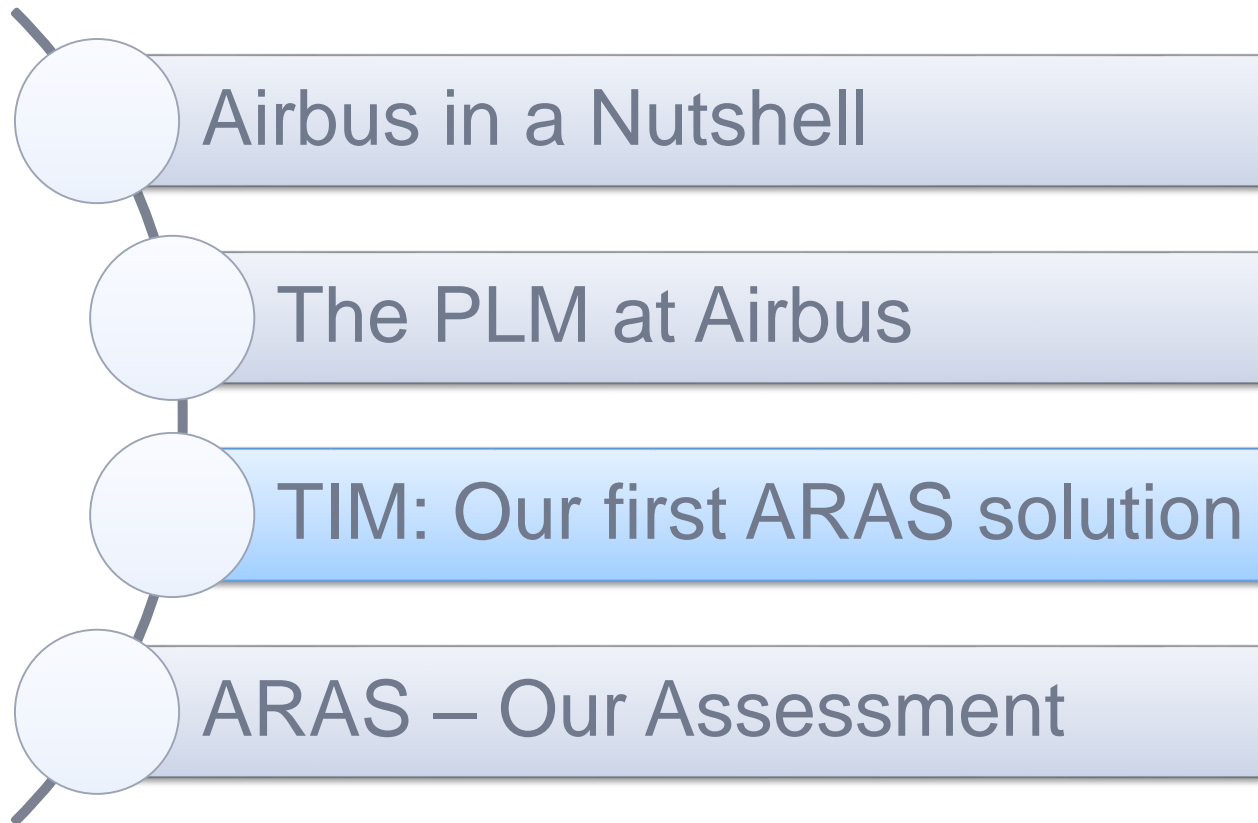
## AS IS:

- Outdated technology kept in place many years: Unix WS, VMS, Catia v4, CADD5, Optegra, Windchill 5 & 6, ...
- Disruptive change on the market: eg. Catia v5/PC, replacing legacy CAD/Unix, Computervision & DEC dissolve
- Component Life cycles are shorter and shorter while our applications are needed for 20 to 50 years
- New business rules (standardized components, security,...) are also applicable to the legacy tools
  - ➔ Obsolescence costs related to Engineering IS/IT services strongly increased during the last years

# PLM Strategy and Roadmap

## Key drivers





# Structure Test



Material and Component Tests



Large Assembly Test



Full Scale Test

## Input

- Certification Plan
- Test Needs
- Product Design

## Activity:

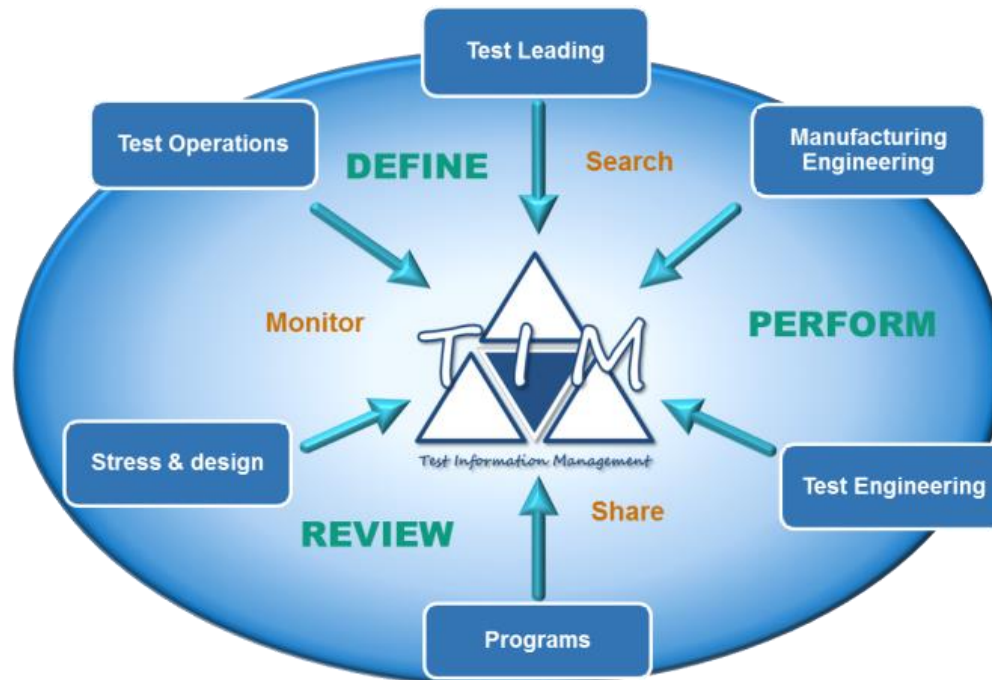
- Define the Pyramid of Tests
- Specify the Tests
- Test concept & detailed definition
- Test specimen and test bench
- Set-up and perform test

## Output:

- Structure Test Report

# TIM Project : Test Information Management

- Manage test projects End to End across Structure Test Pyramid
- Support daily business data management for Test teams
- Provide visibility on test activity progress to stakeholders
- Data consistency & robustness, control & secure access to data
- Support the entire Process « Define and Perform Structure Test »
- Multi-site operation incl. our extended enterprise



# TIM Features

## DEFINE

Declare new Test Needs

Set-Up Test Project data vs Program Needs

Generate & Allocate Test Reference Number

Declare Test Actors

Allocate test Facilities & Means

## PERFORM

Perform Advanced Search on tests / identify Similarities

Manage test authorization via workflows

Record, assign and follow-up actions

Build, review & validate Test Quotations via workflows

Update Test Key Milestones dates & status

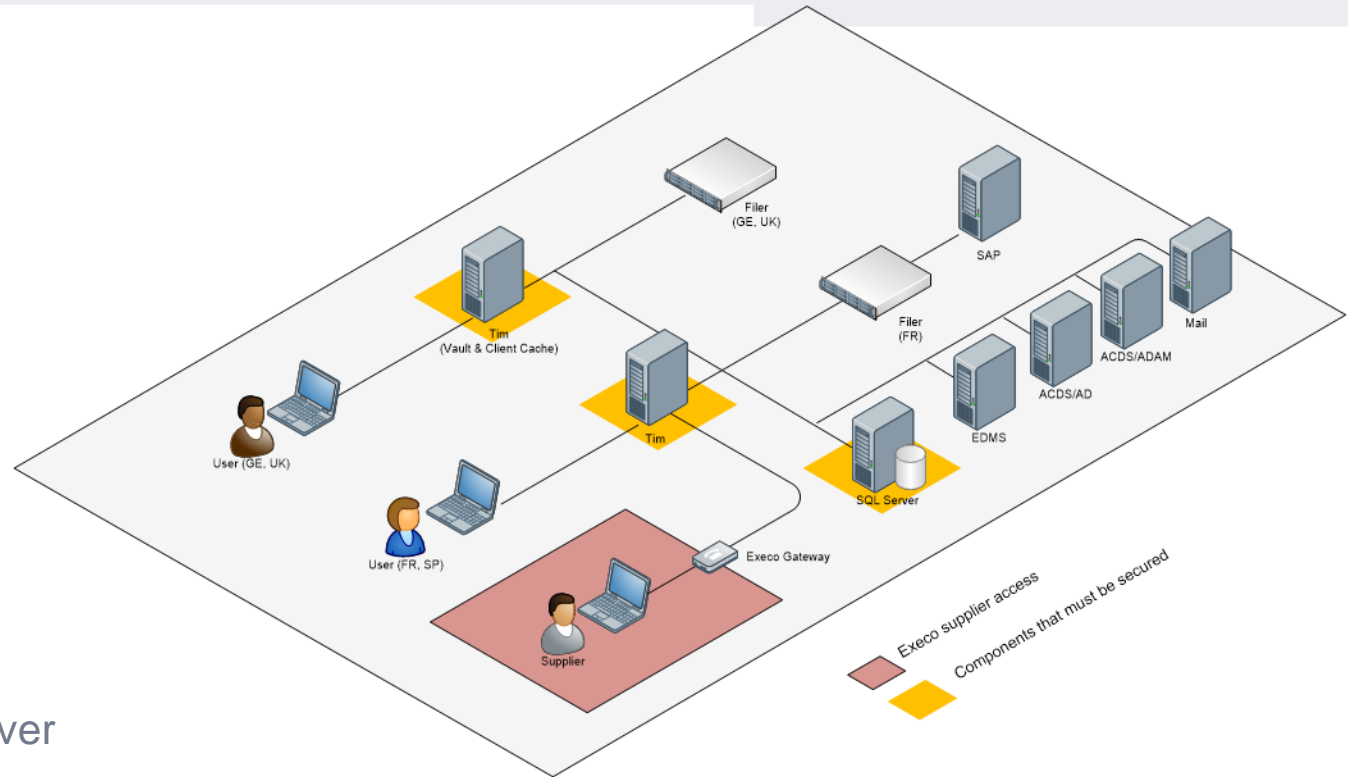
## REVIEW

Use Dashboards to perform Technical & Progress reviews

Review and Update Test Campaign information and Reporting

Export TIM data into for further analysis

# TIM Architecture



One Aras Innovator Server  
Two Aras Vault Servers  
Access from our extended enterprise (pending ARAS 10 upgrade)

3000 test campaigns imported for day 1  
200 active users  
Designed for 500 test campaigns per year

# TIM Project Experience

## Strengths on TIM

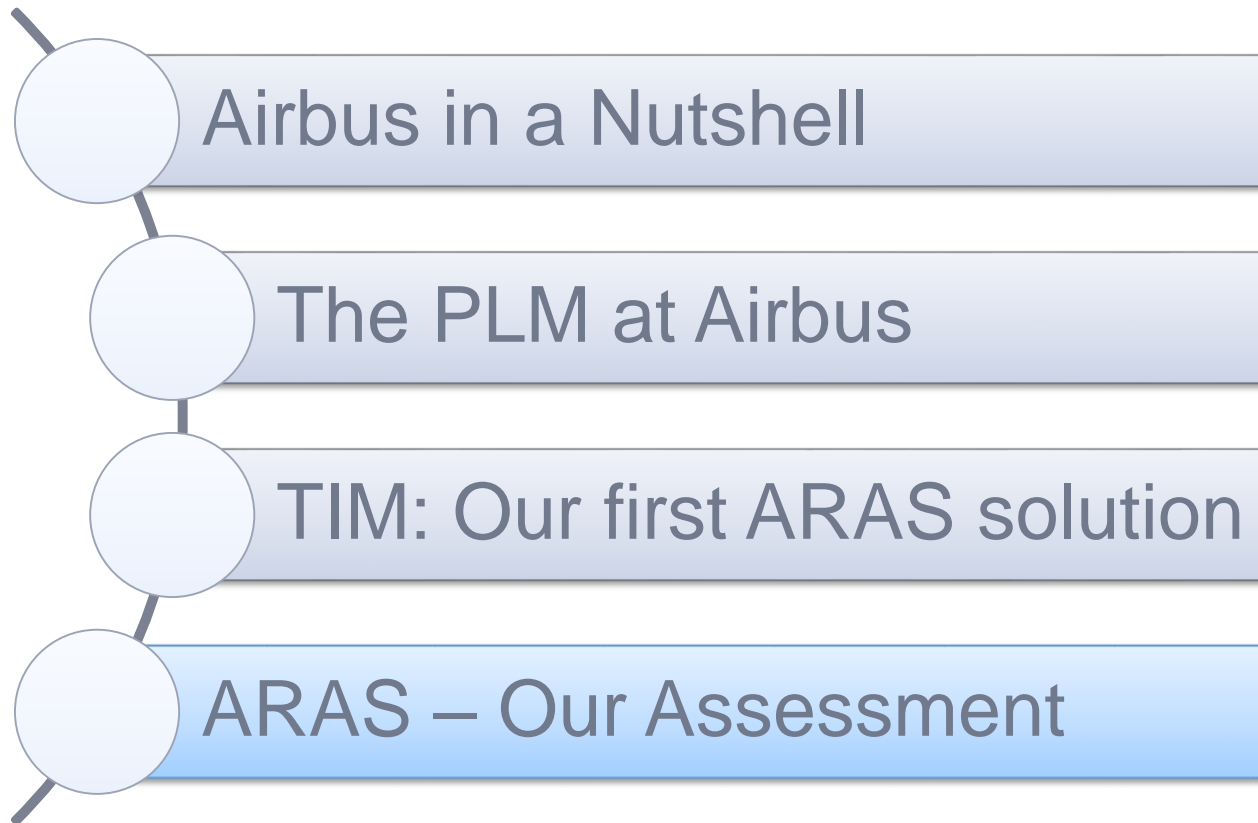
- The ARAS open architecture
- ARAS support is very strong and efficient
- A very customer oriented integrator with good reactivity
- Deployment of patches is easy in Airbus context
- Change “on the fly” to a new data model
- The product is modular: all graphical components and data objects are easily accessible through AML API
- Simple but useful operations console (eg. Who is connected, etc...)
- Our internal business is really satisfied

## Concerns on TIM

- New competence to integrate into our ICT supply chain
- Compatibility with SiteMinder with multi vaults deployments (*mitigation : ARAS patch under development for v10*)
- ARAS v9.x not fully compliant to our extended enterprise standard. ARAS 10 is HTML5

We are looking forward to our first ARAS version upgrade V9 to V10 in 2015





# Airbus “PDM Light” Selection

## Target:

- Selection of a PDM platform that enables simple, agile PDM solution delivery
- Focus on small and medium scale projects with contained functional scope
  - Product Development PLM not in the scope of ‘PDM Light’

## Expected capabilities:

### Functional Needs:

- Data Management
- Data Consultation
- Document Management
- Life-Cycle Management
- Change Management
- Project Management

### IS Architecture Needs:

- Installation
- Support
- Deployability
- Access Rights Management
- Migration & Data Loading
- Connectors

### PDM-Light Needs:

- Long-term viability
- Total cost of ownership
- Technical Adaptability
- Functional Adaptability
- Back-end capability
- Front-end capability

# Our ARAS Innovator Assessment

- Several PLM Platforms evaluated for our 'PDM Light'
- ARAS currently retained as our preferred platform for 'PDM Light' use case

Aras v10 OOTB exceeding our expectations on :

- Life-Cycle Management
- Change Management
- Project Management
- Support
- Deployability
- Access Rights Management
- Connectors
- Long-term viability
- Technical Adaptability
- Functional Adaptability
- Back-end capability
- Front-end capability

## Strong Points

- Significant coverage of expected scope
- Easy integration & handling
- Active community & well-documented
- WYSIWYG customization feature.
- High-end data modeling "on the fly"; no development involved
- Supports the migration of data when version is upgraded. Good experiences published by the community.

## Initial Concerns

- Documentation Management capability is a bit limited
- Version 10 not compatible with IE8, we will finally need an IE upgrade...
- Intrusive UI (new windows are popping up during navigation)
- Limited experience in our supply chain on ARAS, few ARAS partners in France

**ACE Europe**  
Henrik Weimer

**TIM:**  
**The first Aras use case**  
**in Airbus**

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