

# aerodays2015

Aviation in Europe – Innovating for Growth



The 7<sup>th</sup> European Aeronautics Days

L O N D O N



20 - 23 OCTOBER 2015

# AERODAYS 2015

October 20<sup>th</sup>, 2015

London, United Kingdom



*Avionics Systems Hosted on a distributed modular electronics Large scale dEmonstrator for multiple tYpe of aircraft*

Presented by

**Thierry MARET (THALES Avionics)**

Prepared by

**Thierry MARET (THALES Avionics)**

## ASHLEY at a glance



**ASHLEY-WP73-THA-DISM-PRES-0462 Issue 1**

This document is produced under the Grant Agreement 605442.

It is the property of the ASHLEY consortium and shall not be distributed or reproduced without the formal approval of the ASHLEY Steering Committee.

**“Unrestricted PUBLIC Access”**

# Preface



This publication only reflects the view of the ASHLEY Consortium or selected participants thereof. Whilst the ASHLEY Consortium has taken steps to ensure that this information is accurate, it may be out of date or incomplete, therefore, neither the ASHLEY Consortium participants nor the European Community are liable for any use that may be made of the information contained herein.

This document is published in the interest of the exchange of information and it may be copied in whole or in part providing that this disclaimer is included in every reproduction or part thereof as some of the technologies and concepts predicted in this document may be subject to protection by patent, design right or other application for protection, and all the rights of the owners are reserved.

The information contained in this document may not be modified or used for any commercial purpose without prior written permission of the owners and any request for such additional permissions should be addressed to the ASHLEY co-ordinator (Thales Avionics S.A., 105 Av. du General Eisenhower, BP 63647, 31036 Toulouse, FRANCE, for the attention of the ASHLEY Project Manager) in the first instance.

This document is produced under the Grant Agreement 605442.

It is the property of the ASHLEY consortium and shall not be distributed or reproduced without the formal approval of the ASHLEY Steering Committee.

**“Unrestricted PUBLIC Access”**

# ASHLEY Project Information



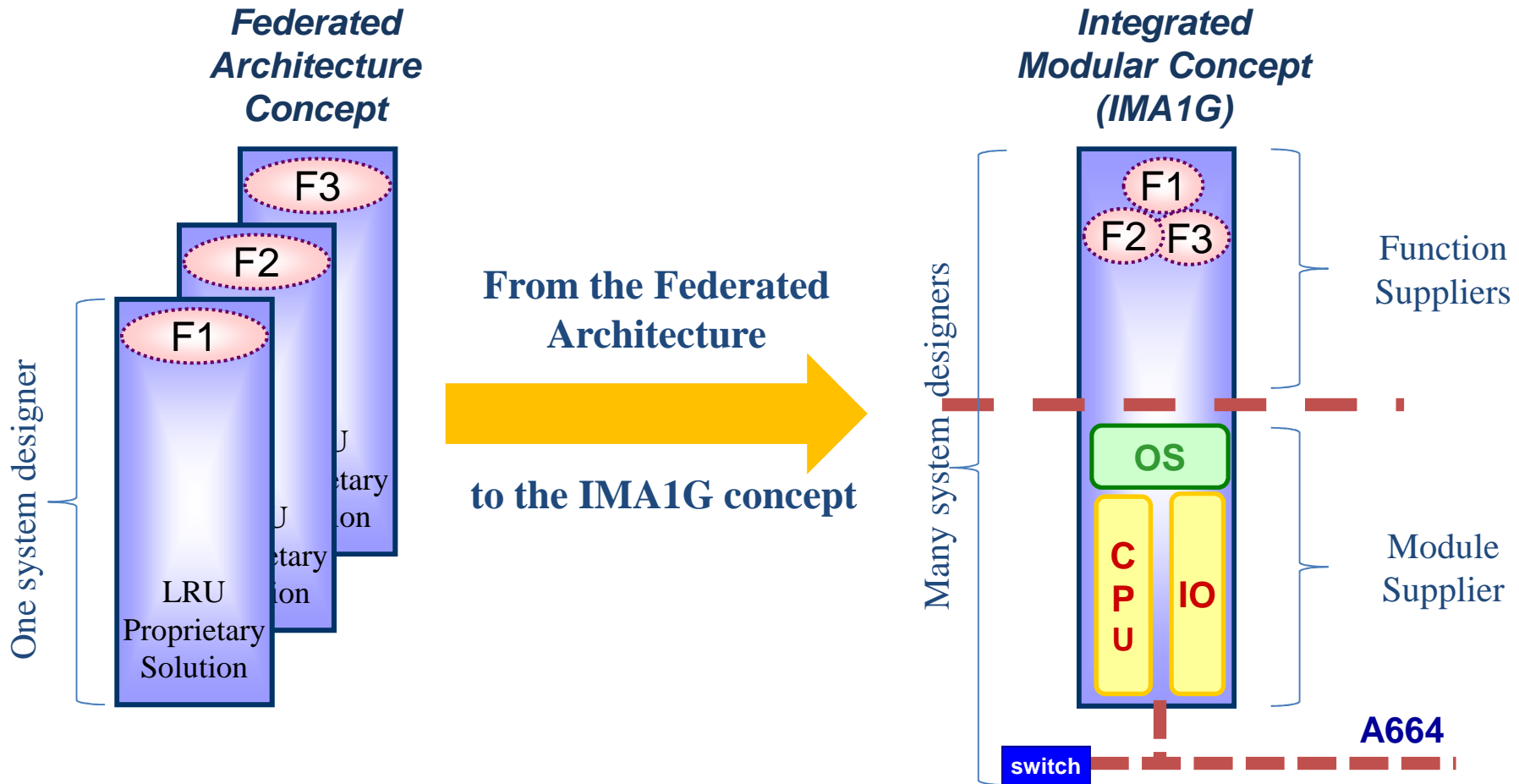
## Name of the project:

Avionics Systems Hosted on a distributed modular electronics Large scale dEmonstrator for multiple tYpe of aircraft

<b>Acronym:</b>	<b>ASHLEY</b>
<b>Starting Date:</b>	October 1 <sup>st</sup> , 2013
<b>Ending Date:</b>	March 31 <sup>st</sup> , 2017
<b>Duration:</b>	42 months
<b>Total Cost:</b>	39,8 M€



# From the Federated Architecture Concept to the IMA1G concept



## Relies on **Line Replaceable Unit (LRU) Solution**

- ➔ The system designer is the module and function supplier
- ➔ One single system per LRU

## Relies on **Line Replaceable Module (LRM) Solution**

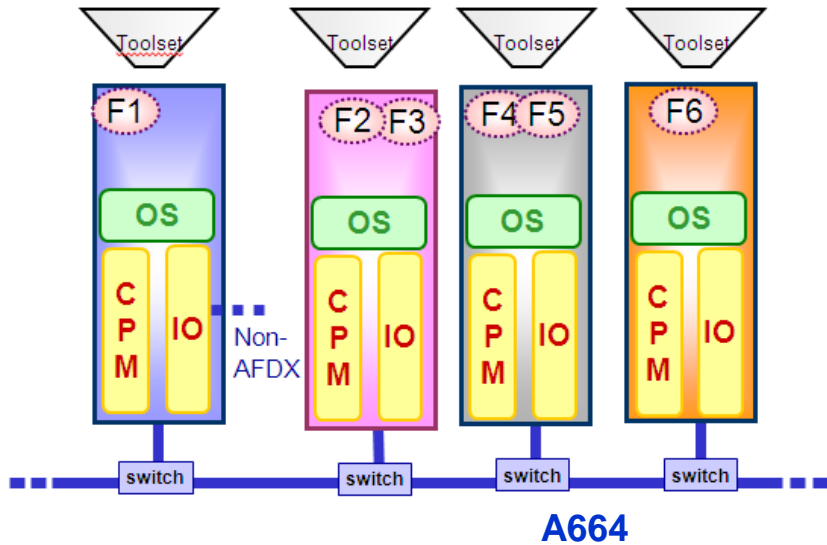
- ➔ Clear separation between LRM suppliers and system designers
- ➔ LRM resources are shared between LRM hosted Functions

This document is produced under the grant agreement no ACP2-GA-2013-605442.

It is the property of the ASHLEY consortium and shall not be distributed or reproduced without the formal approval of the ASHLEY Steering Committee.

“Unrestricted PUBLIC Access”

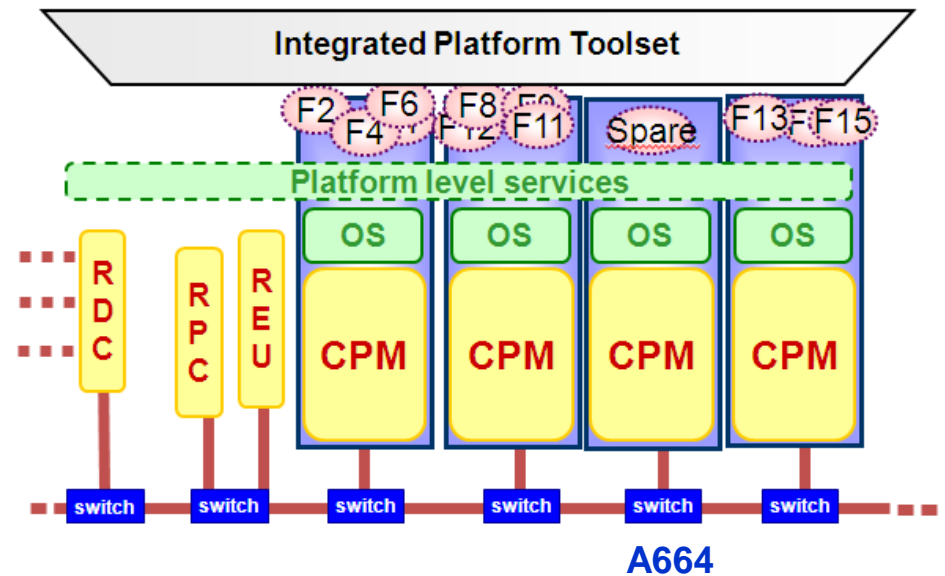
# Innovation beyond IMA 1G



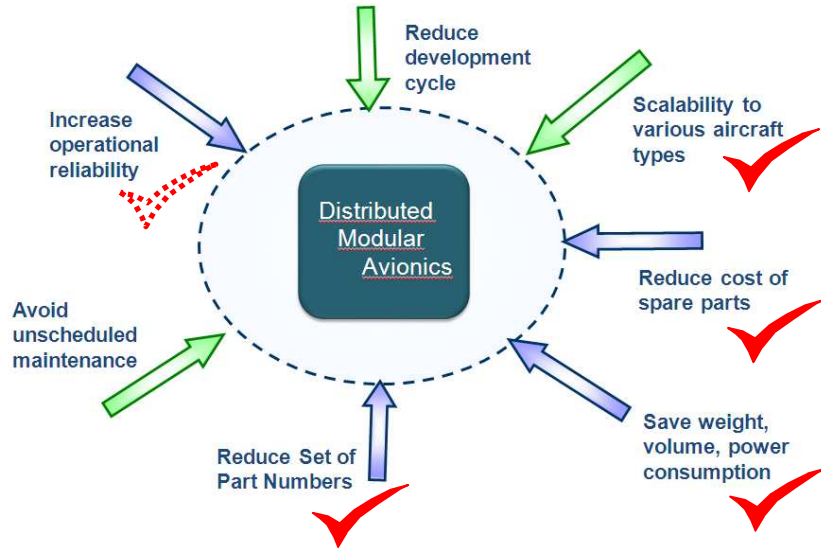
From IMA 1G...

... to IMA 2G

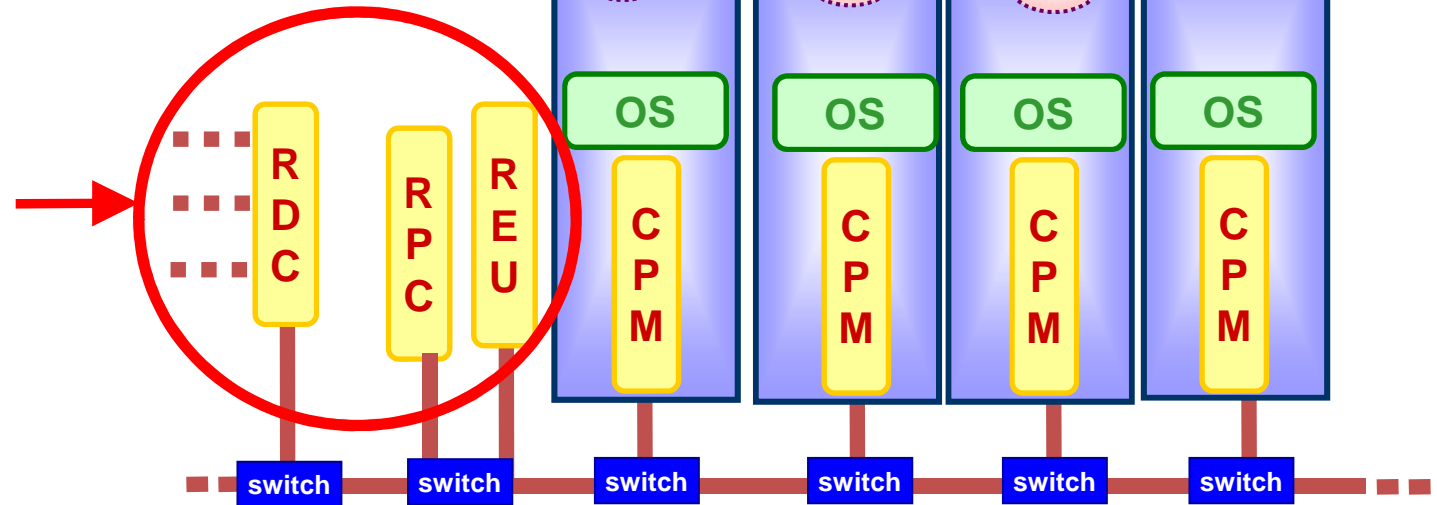
## Distributed Modular Avionics



# Innovation beyond IMA 1G



**Separate I/O from computing modules**



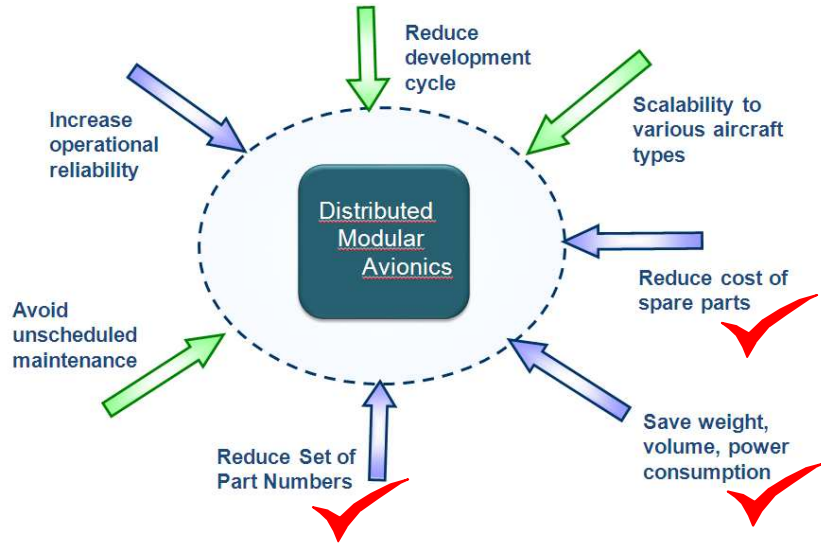
**A664**

This document is produced under the grant agreement no ACP2-GA-2013-605442.

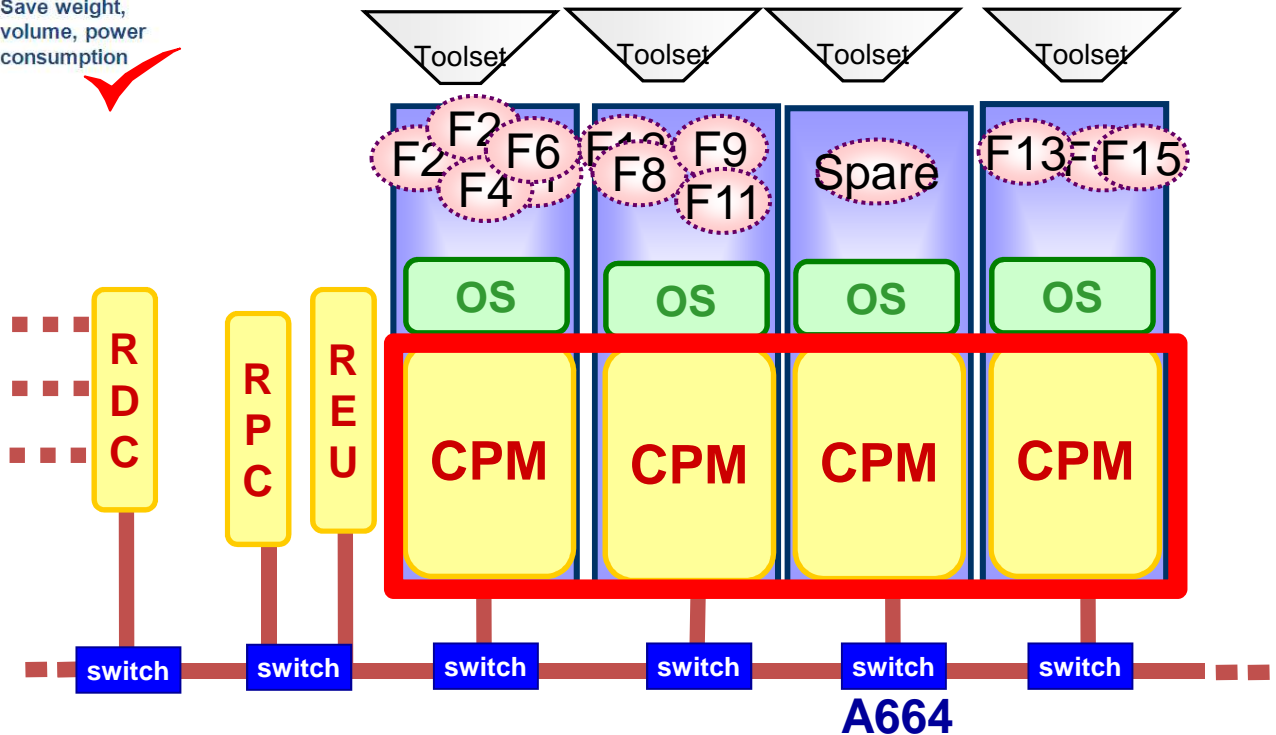
It is the property of the ASHLEY consortium and shall not be distributed or reproduced without the formal approval of the ASHLEY Steering Committee.

“Unrestricted PUBLIC Access”

# Innovation beyond IMA 1G



**Increased computing module performance**



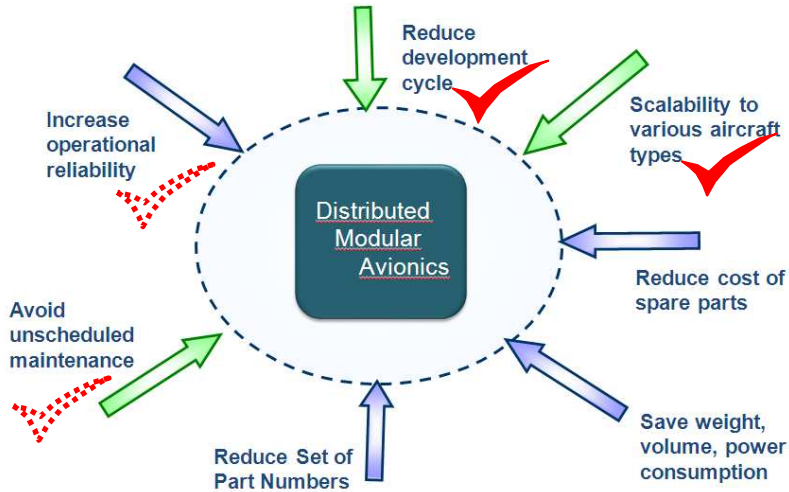
This document is produced under the grant agreement no ACP2-GA-2013-605442.

It is the property of the ASHLEY consortium and shall not be distributed or reproduced without the formal approval of the ASHLEY Steering Committee.

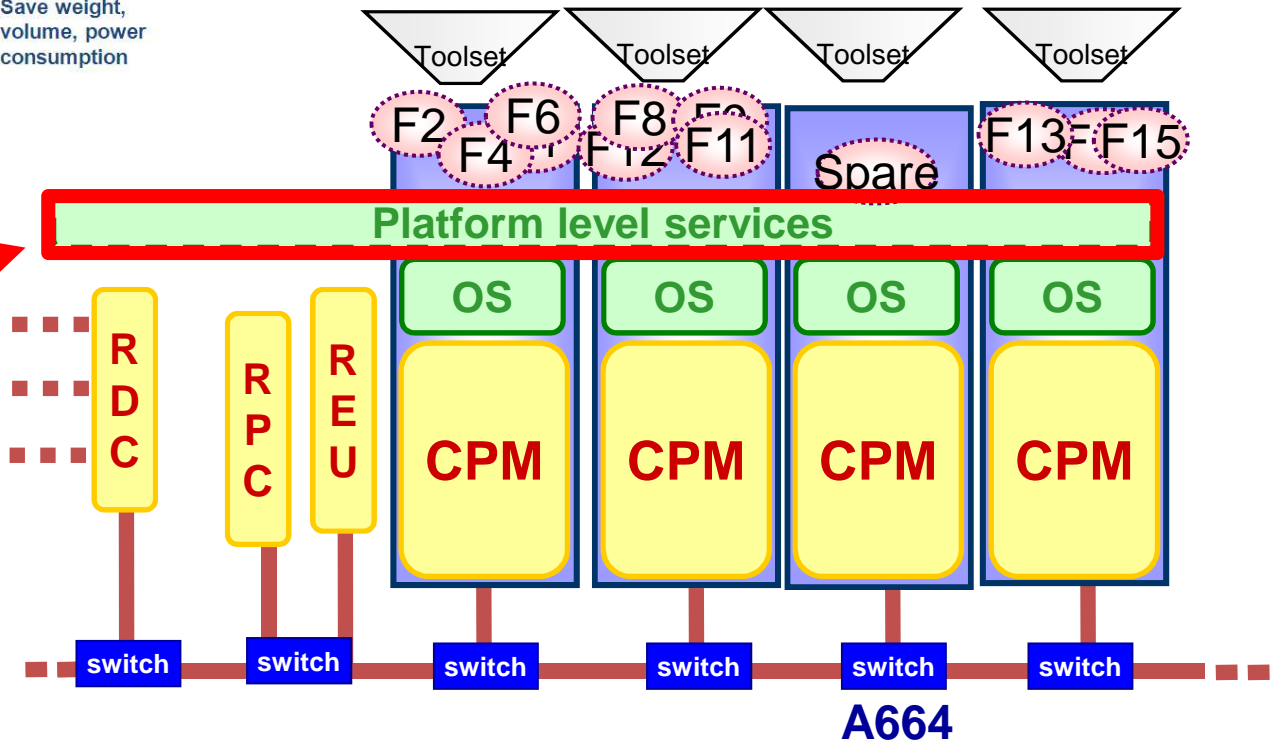
“Unrestricted PUBLIC Access”



# Innovation beyond IMA 1G



**Middleware providing platform level services (e.g. DB service)**

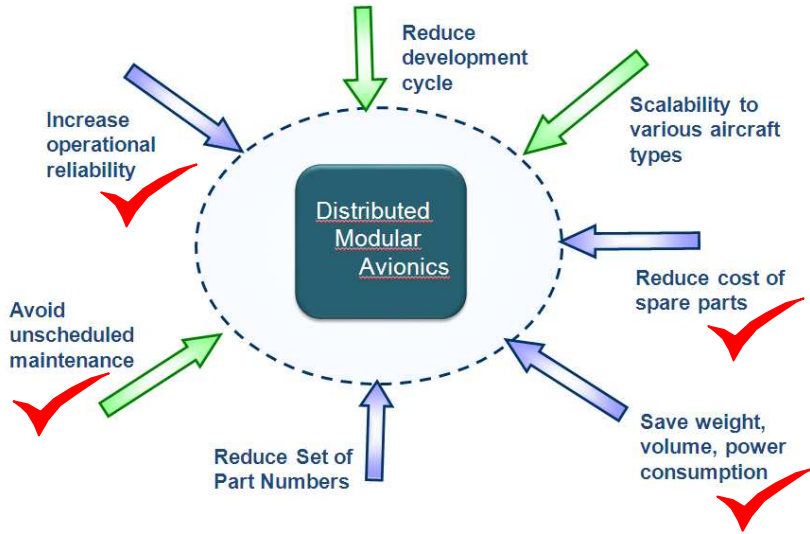


This document is produced under the grant agreement no ACP2-GA-2013-605442.

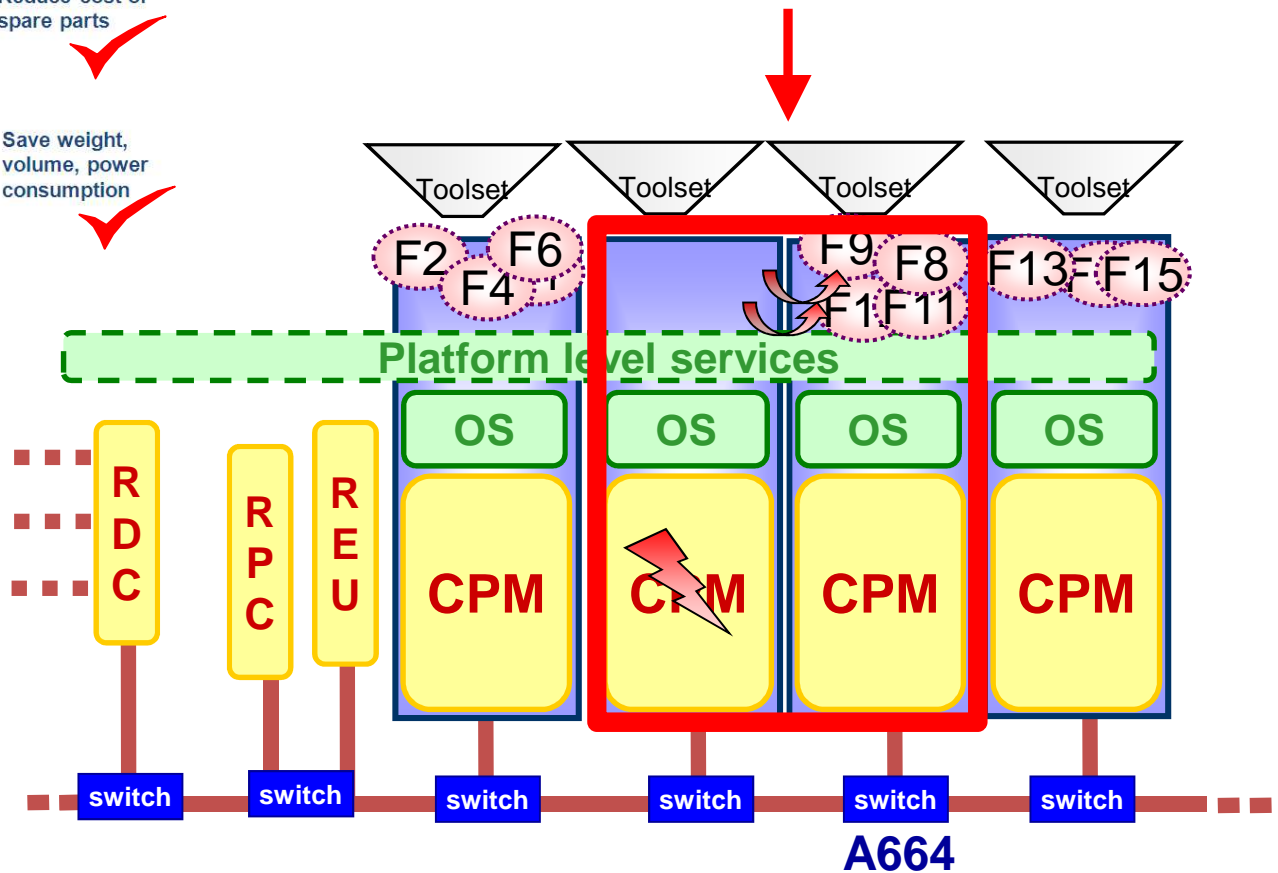
It is the property of the ASHLEY consortium and shall not be distributed or reproduced without the formal approval of the ASHLEY Steering Committee.

“Unrestricted PUBLIC Access”

# Innovation beyond IMA 1G



## Reconfiguration mechanisms

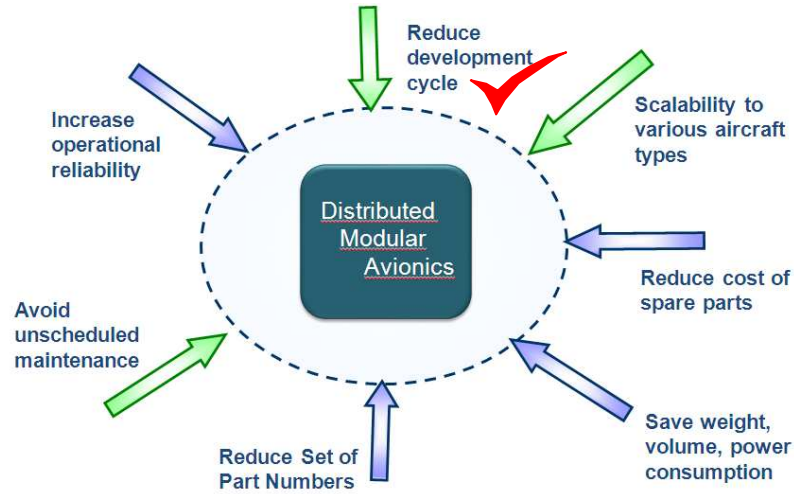


This document is produced under the grant agreement no ACP2-GA-2013-605442.

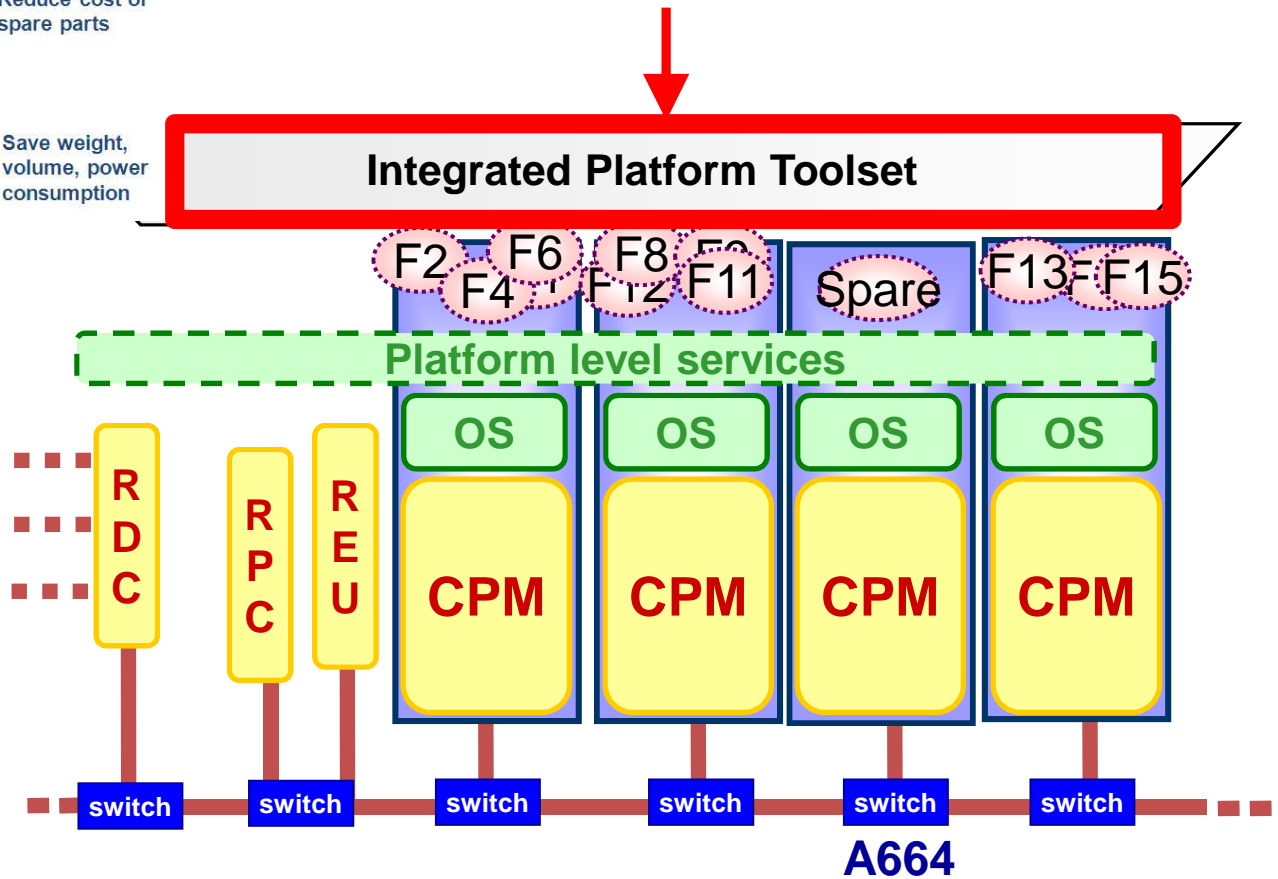
It is the property of the ASHLEY consortium and shall not be distributed or reproduced without the formal approval of the ASHLEY Steering Committee.

“Unrestricted PUBLIC Access”

# Innovation beyond IMA 1G



## Integrated processes and toolset



This document is produced under the grant agreement no ACP2-GA-2013-605442.

It is the property of the ASHLEY consortium and shall not be distributed or reproduced without the formal approval of the ASHLEY Steering Committee.

“Unrestricted PUBLIC Access”

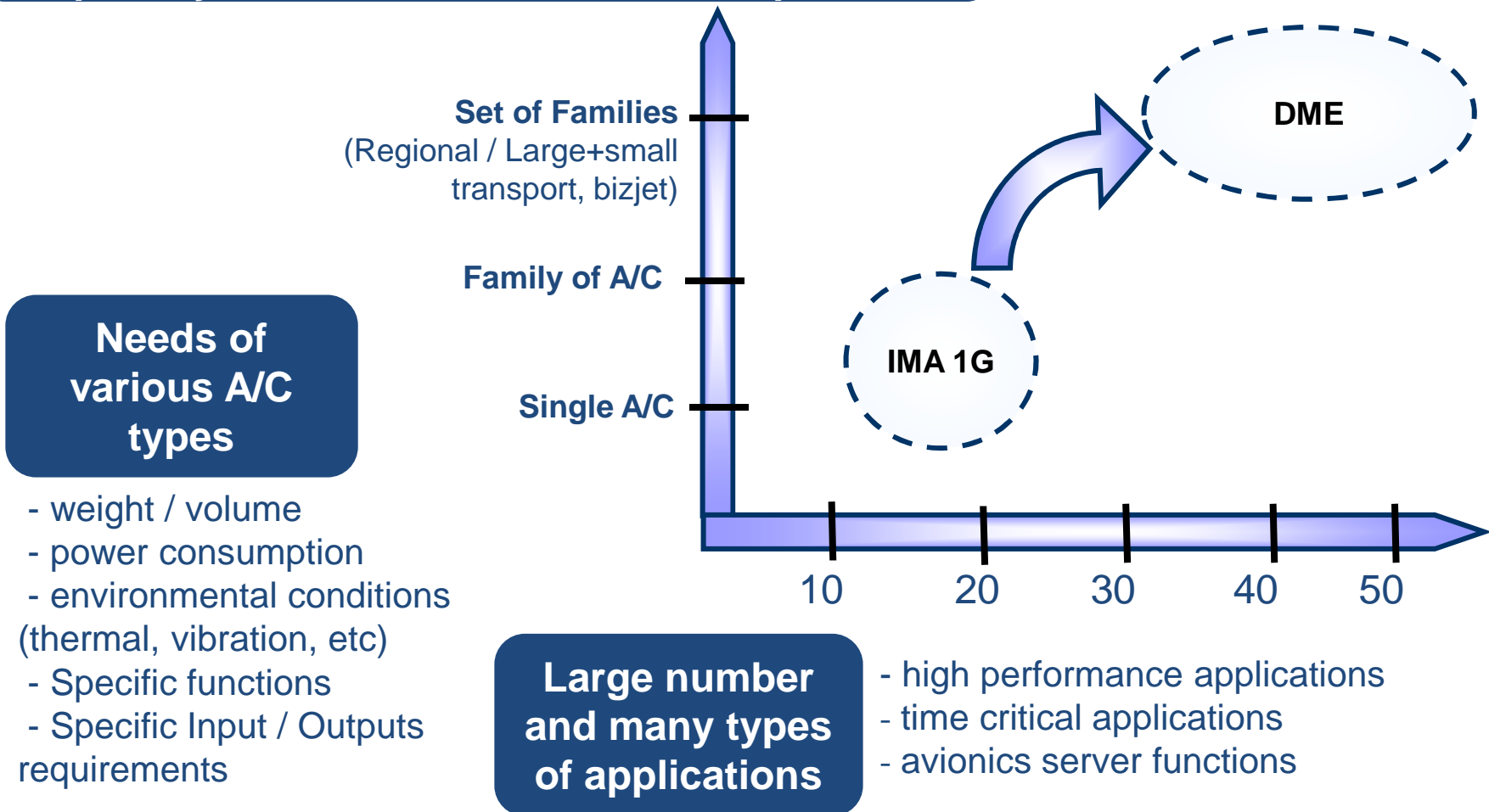
# Innovation beyond IMA 1G



## SCALABILITY

=

Capability of the architecture to be adapted to...



This document is produced under the grant agreement no ACP2-GA-2013-605442.

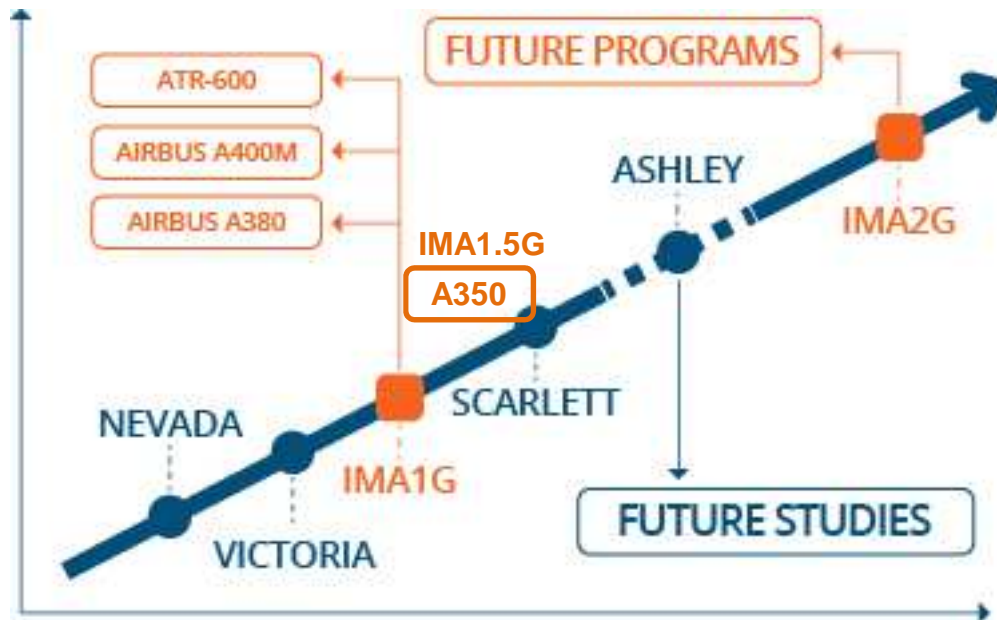
It is the property of the ASHLEY consortium and shall not be distributed or reproduced without the formal approval of the ASHLEY Steering Committee.

“Unrestricted PUBLIC Access”

# Innovative Solutions for Future Programs



Application of IMA in aircraft



ASHLEY makes the step from single building blocks towards the integrative **IMA platform solution**

Key challenges are:

- Industrialization
- Modularization
- Integration
- Services
- Certification

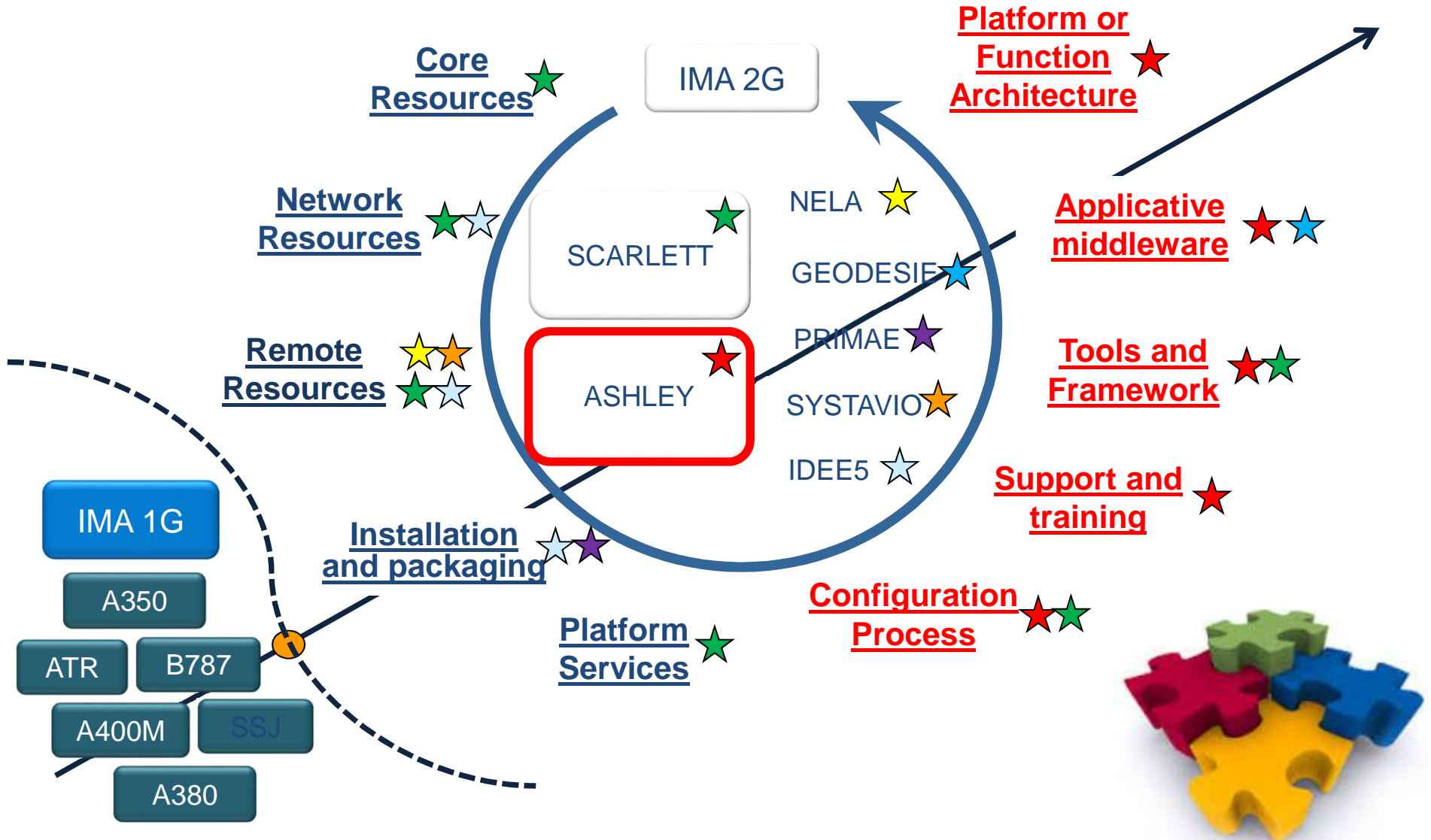
**ASHLEY is on the path of future IMA2G-based aircraft programs**

This document is produced under the grant agreement no ACP2-GA-2013-605442.

It is the property of the ASHLEY consortium and shall not be distributed or reproduced without the formal approval of the ASHLEY Steering Committee.

“Unrestricted PUBLIC Access”

# IMA 2G studies: Overview



This document is produced under the grant agreement no ACP2-GA-2013-605442.

It is the property of the ASHLEY consortium and shall not be distributed or reproduced without the formal approval of the ASHLEY Steering Committee.

“Unrestricted PUBLIC Access”

# ASHLEY Objectives



ASHLEY has the main objective of consolidating and extending the efforts of several independent projects by improving the current IMA2G Distributed Platform Solution.



\* *DME Distributed Modular Electronics*

## **ASHLEY Objectives**

To extend the **DME\*** concept and set of components over the **Open World and Cabin aircraft domains** for large aircraft, regional aircraft and business jets.

To evaluate the benefits of **photonics and smart interfaces to sensors and actuators** to increase performances of some avionics systems.

To propose **DME\* remote resources solutions** for **Secondary Power Distribution and Time Critical aircraft systems**.

To **decrease avionics (multi-domains) function overall design time** thanks to a more system designer oriented tool chain.

To **promote DME\* concepts and innovations** to any IMA key stakeholders (industrial, academics, certification and standardization bodies) that will influence existing academia and market and create new ones.

To validate the ASHLEY advanced state of the art by implementing a **large scale demonstrator** consisting of a set of **representative aircraft systems** onto the DME\* extended set of components.

To provide **Database Services** covering both the **avionics world and open world** to allow for a higher flexibility in avionics systems design.

This document is produced under the grant agreement no ACP2-GA-2013-605442.

It is the property of the ASHLEY consortium and shall not be distributed or reproduced without the formal approval of the ASHLEY Steering Committee.

**“Unrestricted PUBLIC Access”**

## Thierry MARET

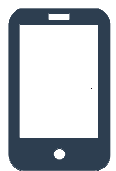
Thales Avionics  
Project Manager

[Thierry.Maret@fr.thalesgroup.com](mailto:Thierry.Maret@fr.thalesgroup.com)

## Margarida PINTO

ISQ  
Dissemination Manager

[mmpinto@isq.pt](mailto:mmpinto@isq.pt)



WEBSITE

[www.ashleyproject.eu](http://www.ashleyproject.eu)

This document is produced under the grant agreement no ACP2-GA-2013-605442.

It is the property of the ASHLEY consortium and shall not be distributed or reproduced without the formal approval of the ASHLEY Steering Committee.

**“Unrestricted PUBLIC Access”**



***Avionics Systems Hosted on  
a distributed modular electronics Large scale dEmonstrator  
for multiple tYpe of aircraft***

**Call identifier: FP7-AAT-2013-RTD-1**

**This project has received funding from the European Union's Seventh Framework Programme for research, technological development and demonstration under grant agreement no ACP2-GA-2013-605442.**

