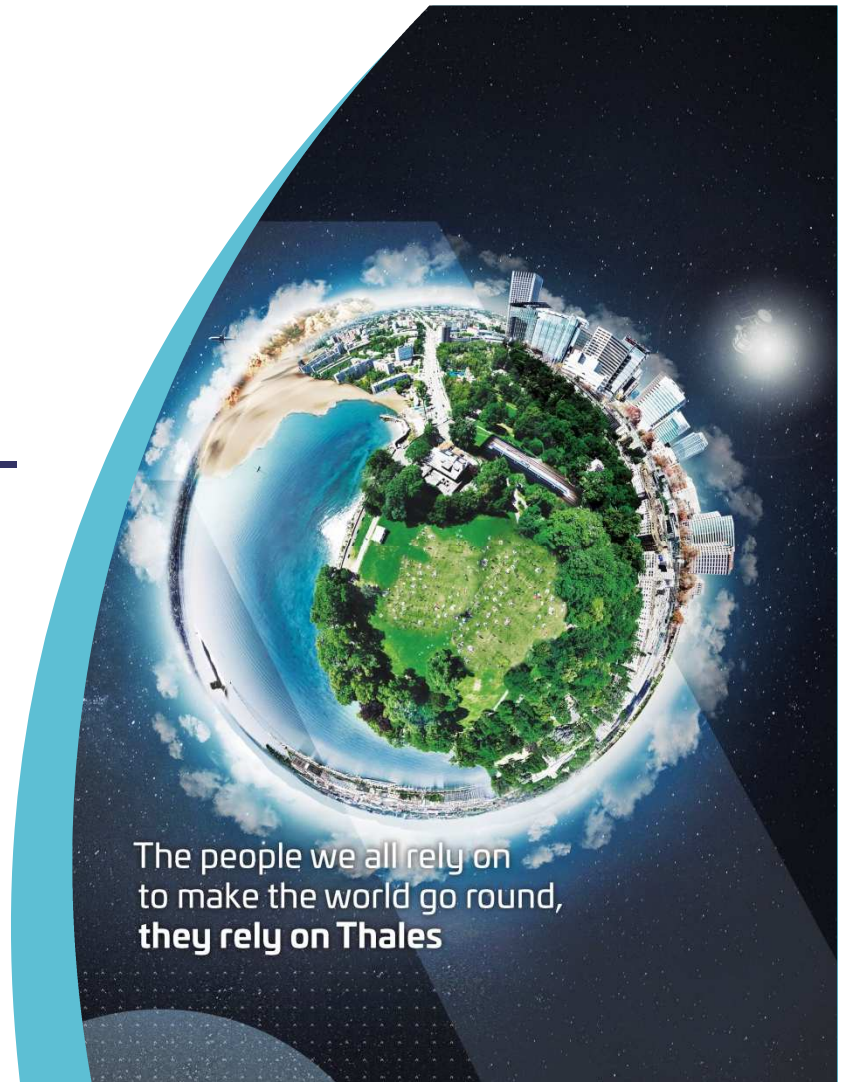# THALES

Product Line Engineering
State of the practice in industry –
Where are we? And where should we go?

INCOSE

EMEA Workshop 2019
Utrecht, the Netherlands
10-11 October 2019

Hugo Guillermo CHALÉ GÓNGORA, PhD, CPRE
Product Line Engineering Director - *THALES*
PLE International WG Co-Chair - *INCOSE*

www.thalesgroup.com

The people we all rely on
to make the world go round,
they rely on Thales

PROGRAM

09:30	**Introduction**
09:45	**Implementing PLE: strategy & organization**
10:15	**Reusing legacy assets**
10:45	**IVVQ in a PLE context: a quick win?**
11:15	**Model-Based PLE – *Do's* and *Don'ts***
11:45	**Wrap-up**

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Purpose & objectives of this panel

Help participants increase their knowledge on Product Line Engineering (PLE) and/or on how to improve their practice of PLE

> Share and learn about the smarter approaches and the pitfalls to avoid when trying to implement PLE

> Identify topics that could be covered by activities or work products of INCOSE working groups or local chapters (analysis to be done off-line)

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Some definitions

Product Line – A family of similar products with variations in their characteristics (features or functions)

Product Line Engineering – The engineering of a product line using a shared set of configurable engineering assets and efficient means of automation / production

> Taking full advantage of the **commonality** shared across the products of the family

> Managing efficiently and rigorously the **variation** among the products

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Panel format & sequences

An interactive session

> Brief descriptions of the state of the practice, current challenges and latest trends

> Followed by a collective identification of shortcomings and other needs
(via interactive Q/A sessions)

Sequence	Presenters	
Introduction	*G. Chalé (Thales)*	*15'*
Topic 1 – Implementing PLE: strategy & organization	G. Chalé (Thales)	30'
Topic 2 – Reusing legacy assets	E. Gallego (The Reuse Company)	30'
Topic 3 – IVVQ in PLE: a quick win?	J.-C. Orhant (Thales)	30'
Topic 4 – Model-Based PLE *dos & don'ts*	N. Orval (Thales Netherlands)	30'
Wrap-up	*All*	*15'*

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One Example

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Thales Group – Overview

Over **80,000** employees

68 Countries Global presence

1 bn € Self-funded R&D*
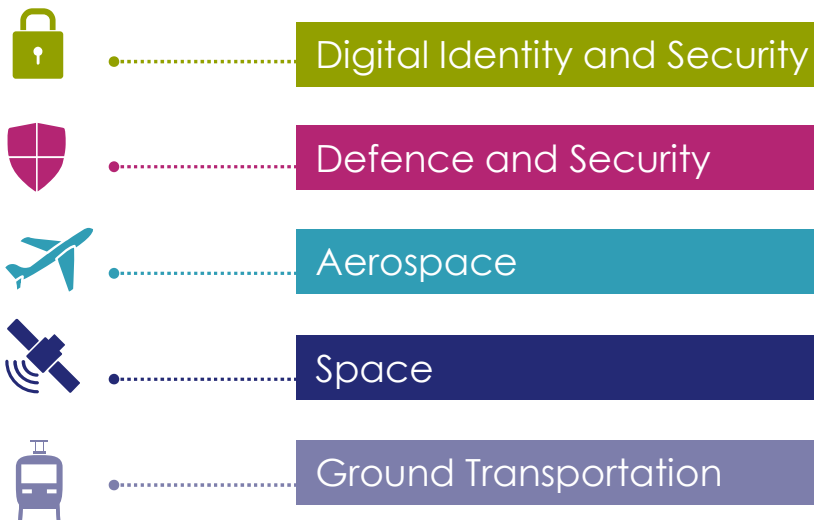
* Does not include externally financed R&D

Sales in 2018 **19** bn €

OPEN

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From the Bottom of the Oceans… to the Depths of Space & Cyberspace

Sensing & data gathering

▼

Data transmission & storage

▼

Data processing & decision making

🔒 ⋯⋯⋯⋯⋯ Digital Identity and Security

🛡 ⋯⋯⋯⋯⋯ Defence and Security

✈ ⋯⋯⋯⋯⋯ Aerospace

🛰 ⋯⋯⋯⋯⋯ Space

🚊 ⋯⋯⋯⋯⋯ Ground Transportation
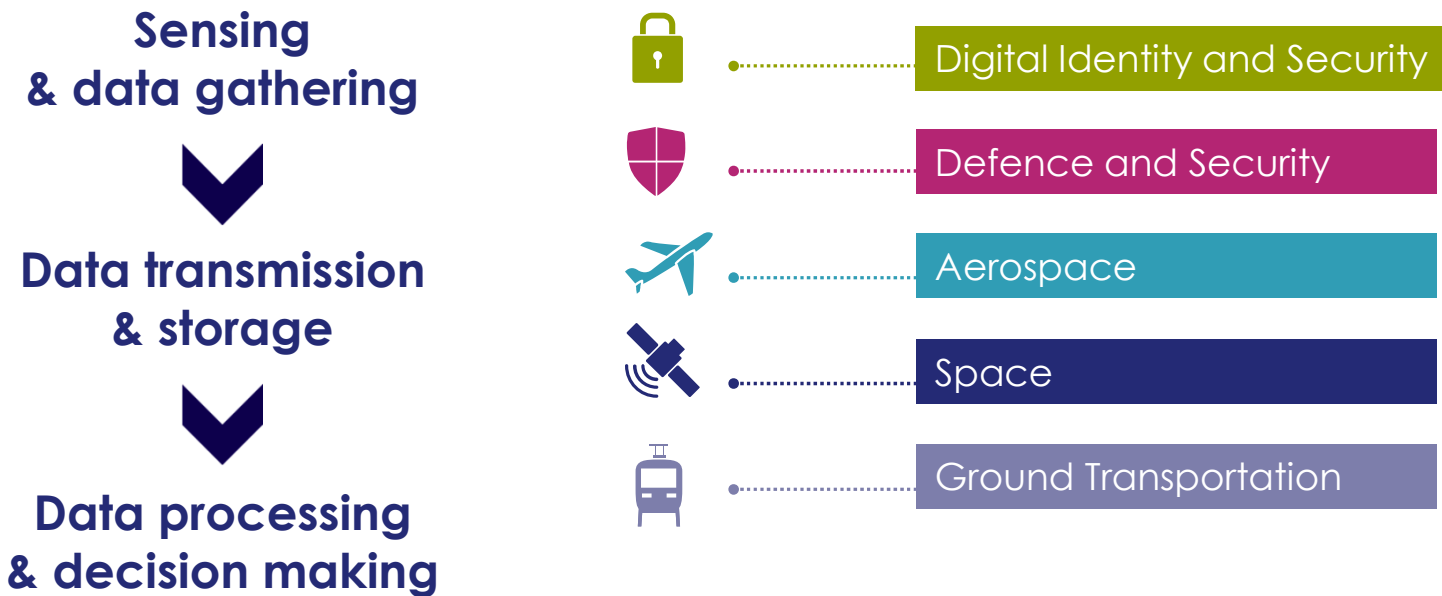
We help customers master decisive moments by providing the right information at the right moment

GOVERNMENTS
INSTITUTIONS
CITIES
COMPANIES

OPEN

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Target Product Lines to deploy PLE

- Digital Identity and Security
- Defence and Security
- Aerospace
- Space
- Ground Transportation

~360 Product Lines
~160 PL families
~24 Business Lines
7 Business Units

OPEN

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Thales Netherlands

Integrated Mast
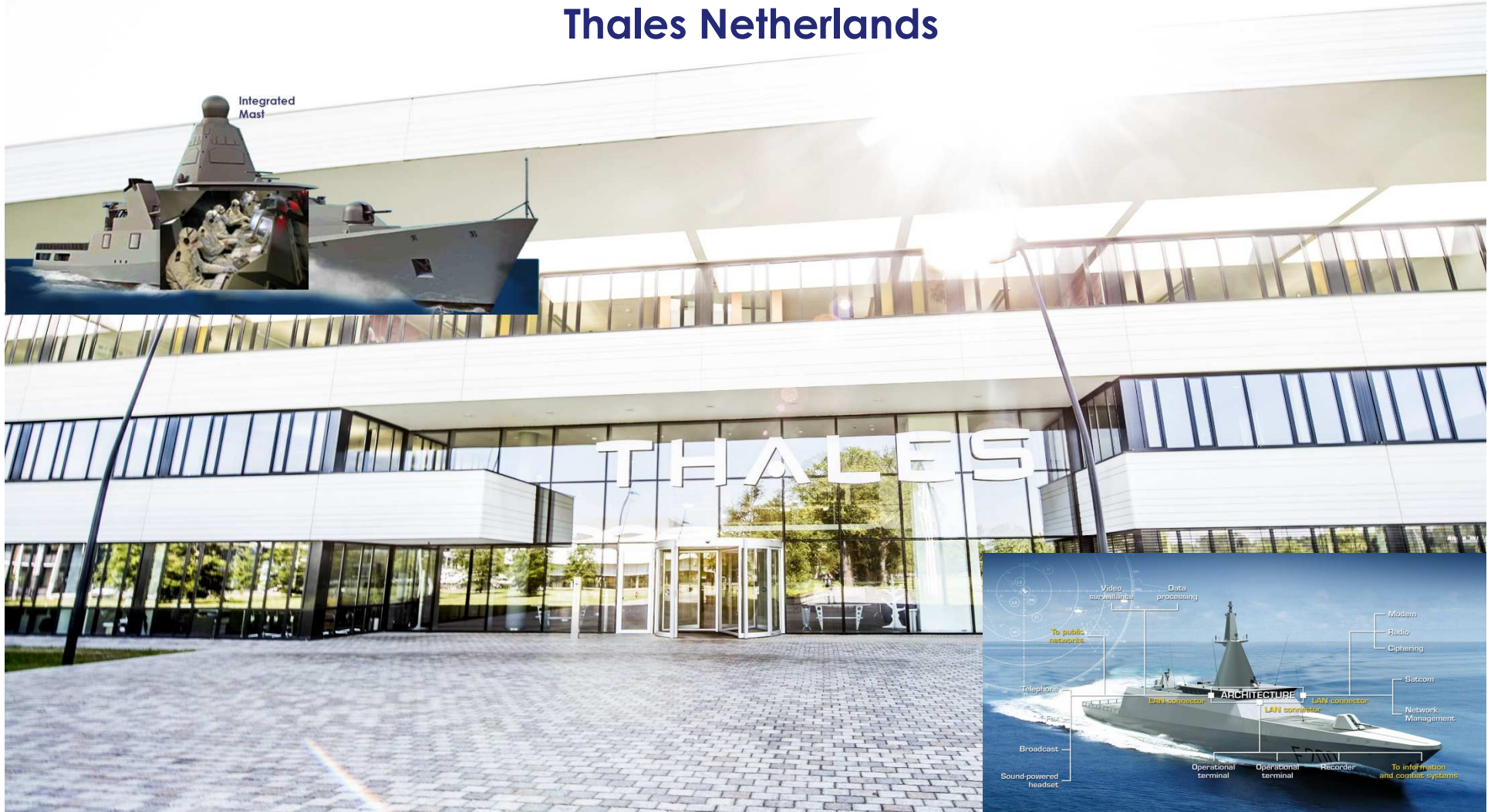
Reuse Strategies & organizational structures

Clone & own

copy
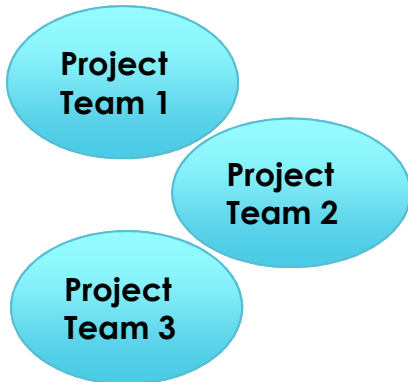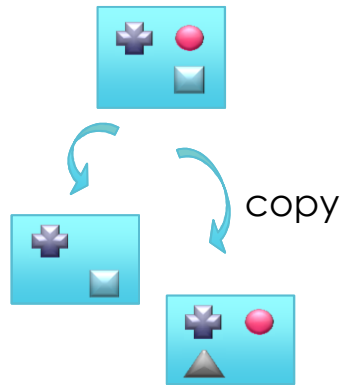
Component library

import
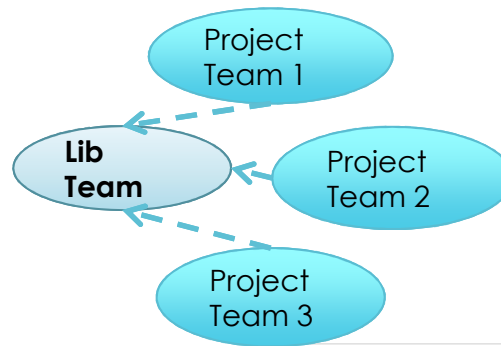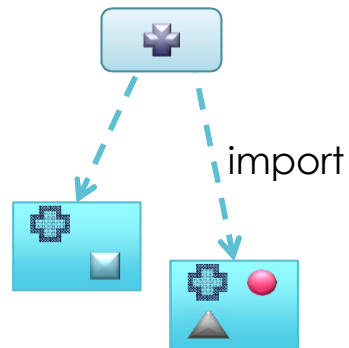
Framework

Superset Platform (150%)

config

Project Team 1

Project Team 2

Project Team 3

Project Team 1

Lib Team

Project Team 2

Project Team 3

Framework Team

Project Team 1

Project Team 2

Project Team 3

Product Team

Config. Team
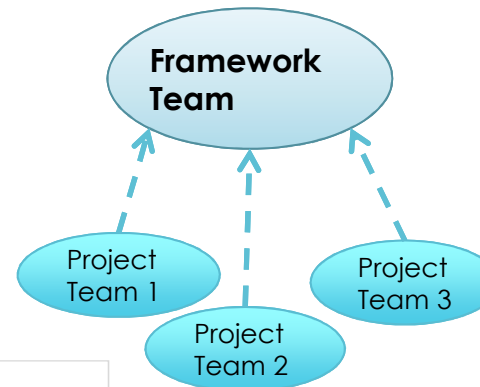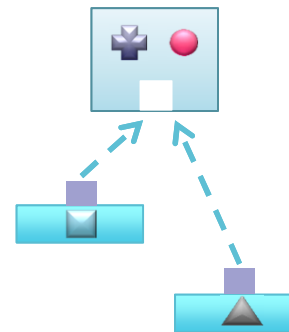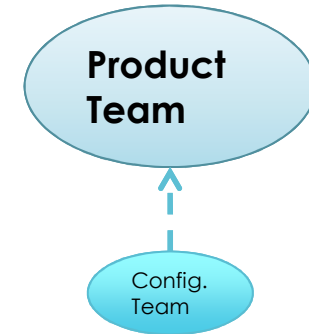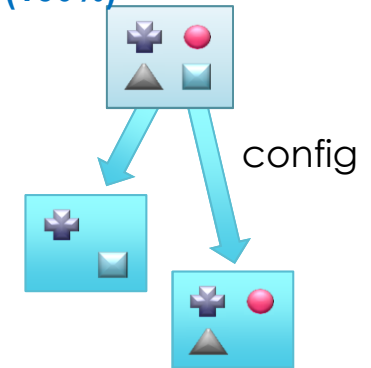
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Not "one size fits all"

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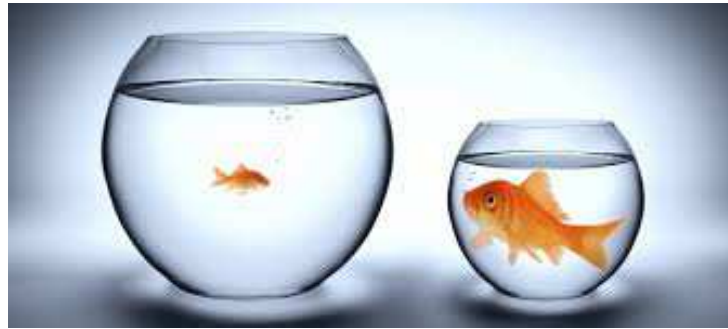
Challenges

How to choose the right implementation strategy?

> How to… build a cost model?

> … deal with uncertainty?

> … define criteria to determine the appropriate organizational structure?

How to achieve the right organizational structure?

> How to… prepare, get started?

> … sustain the right structure?

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Pain Point
#1
Tools are easy,
people are **hard**

Cultural change

Organization & Governance

Funding

Pain Points
#2 Who & how?
&
#3 With **who's money?**

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Wrap-up

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Want to learn more?

INCOSE *Product Line Engineering International WG*

196 Members

https://www.incose.org/incose-member-resources/workinggroups/analytic/product-lines

INCOSE web page

Co-Chairs

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Thank you!