



EMEA

Biennial Workshop

10-11 October 2019

Utrecht, The Netherlands

PM-SE Integration Session

Jean-Claude Roussel (Co-chair of INCOSE PM-SE WG)

John Lomax (Co-chair of INCOSE PM-SE WG)



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Workshop Agenda

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| 10:00 | Welcome / Introduction | (JC/John/Michiel) |
| 10:15 | PM-SE Integration WG Overview | (JC) |
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| | - Strategic Technical Planning | (John) |
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Introduction: Jean-Claude Roussel

- Co-Chair of PM-SE Integration Working Group
- Served on the Board of Directors of INCOSE (Technical Director and EMEA Sector Director)
- Systems Engineering Senior Expert with 37 years of experience in different Aeronautic and Space Programs within Airbus
- Location: France
- Email address: jc.roussel6231@gmail.com
- INCOSE ESEP



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Introduction: John Lomax

- Co-Chair of PM-SE Integration Working Group
- Systems Engineer with over 30 years of experience at Airbus, BAE Systems
- Location: U.K.
- Email address: john.lomax@airbus.com
- INCOSE CSEP and INCOSE CAR



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Workshop Outcomes

Identify and encourage contributions from the EMEA Sector
for the PM-SE Integration WG

New initiatives from EMEA Sector to the PM-SE Integration WG

New members from EMEA Sector to the PM-SE Integration WG



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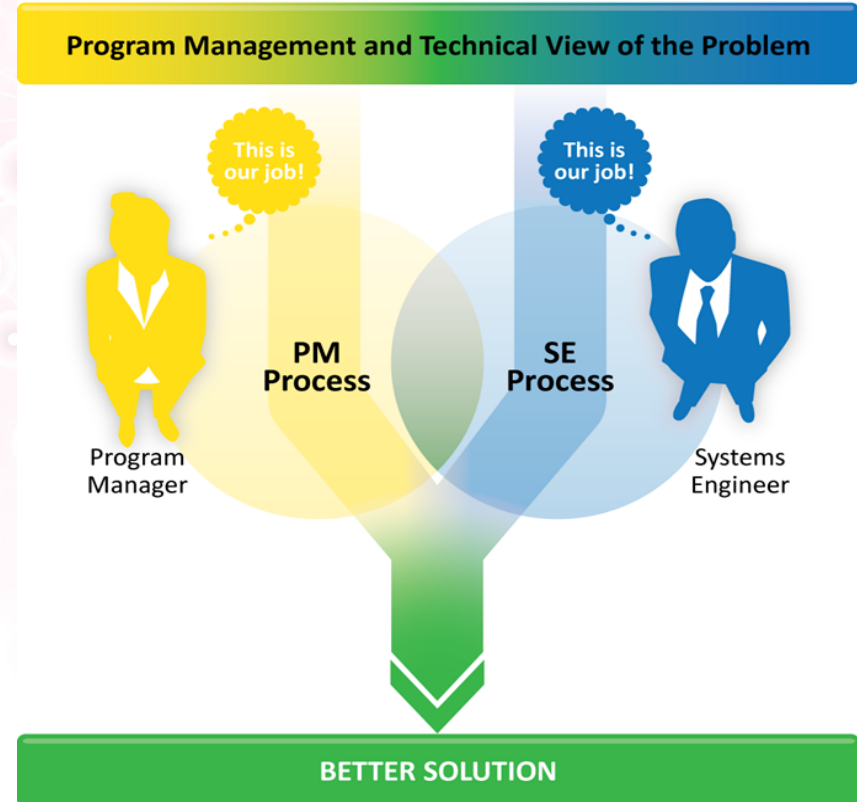
MIT Consortium for
ENGINEERING
PROGRAM
EXCELLENCE



PM-SE Integration WG *Background*

Addressing the Stakeholder Problem

A Team View





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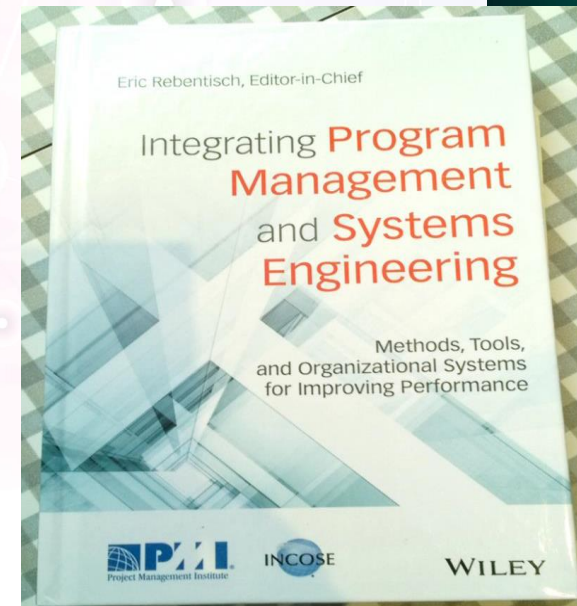
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PM-SE Integration WG

History overview

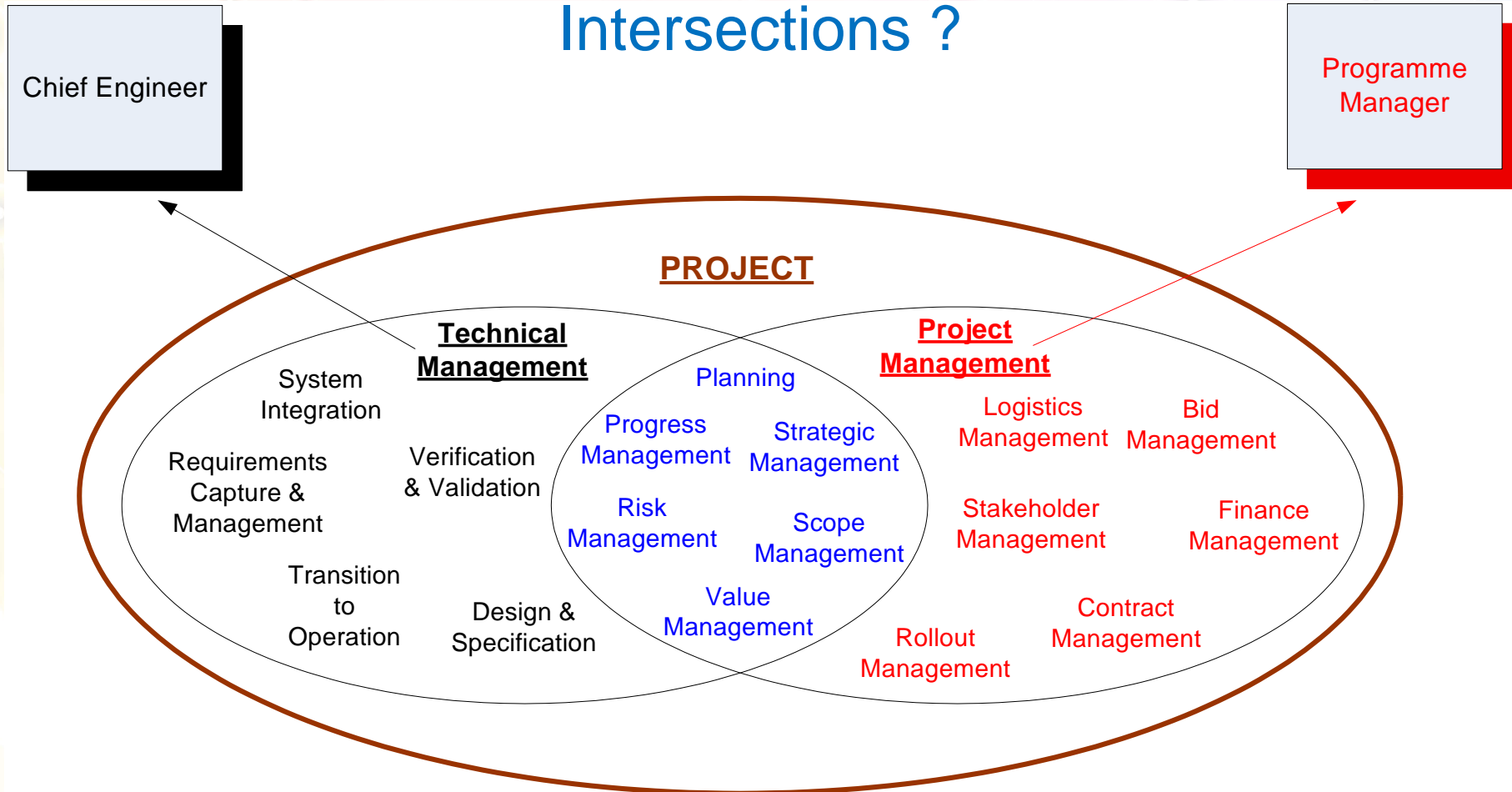
- **2011**
 - Strategic Alliance Agreement signed by INCOSE/PMI
 - Joint white paper, “Toward a New Mindset: Bridging the Gap between Program Management and Systems Engineering” published in *INSIGHT* and *PM Network*
 - MIT Lean Advancement Initiative collaboration on “lean program management” study
- **2012**
 - Formation of alliance long-term collaboration plan
 - The Guide to Lean Enablers for Managing Engineering Programs published
- **2013**
 - The Guide to Lean Enablers wins Shingo Research Prize
 - First phase of PM/SE Integration study released at INCOSE IS
- **2014**
 - Second and third phases of PM/SE Integration study complete
 - PM/SE Integration LinkedIn Community launched
- **2015**
 - PM/SE Integration book project initiated.
- **2016**
 - PM/SE Integration WG created at INCOSE IS 2016

The Guide to
LEAN ENABLERS
for **MANAGING**
ENGINEERING
PROGRAMS



PM-SE Integration WG *Findings*

Where are the PM and SE Intersections ?





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PM-SE Integration WG *Findings*

Program Manager and System Engineer are distinct roles – with some important overlap

Program Managers (PM)
view their responsibilities
as:

- Overall Results
- Goals & Objectives
- Program & Project Risk
- External Supplier Relations
- Lifecycle Planning

Chief Systems Engineers (CSE)
view their
responsibilities as:

- Technical Requirements
- Systems Definition
- Systems Requirements
- Configuration Management

Both roles are responsible
for:

- Program/Project Risk
- External Supplier Relations
- Quality Management
- Lifecycle Planning

The integration must clarify how

- **Responsibility can be effectively shared** for risk management, external suppliers, quality management and lifecycle planning; and
- **Communication optimized** for the other domains of responsibility.



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PM-SE Integration WG

Purpose

Identify and promote opportunities associated with the effective integration of the Systems Engineering and Project/Program Management disciplines.

- Explore the linkages necessary to create effective integration and collaboration between systems engineers and program managers.
- Be the intersection point where systems engineers, program/project managers collaborate and integrate their efforts.



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PM-SE Integration WG *Goals*

- Facilitate collaboration between systems engineering and program management communities.
- Demonstrate the value of integrating systems engineering and program management to develop better solutions that drive strategic business results and outcomes.
- Produce useful deliverables that support effective integration and practice of collaborative systems engineering and program management.
- Provide thought leadership on open integration challenges between program management and systems engineering.
- Bring external thinking into the systems engineering and program management communities to facilitate thinking outside of the box.
- Represent a think tank for free thinking and engagement around critical issues associated with program management and systems engineering.
- Draft guidelines and/or influence existing ones (e.g. PMBok, SEBoK, etc.) based on experience and exchanges on PM/SE integration and collaboration.



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PM-SE Integration WG *Scope*

Our scope encompasses activities relating to defining, capturing, evolving, and communicating PM/SE integration best practices. This may include training material, guideline material, recommendations for industry best practices and standards, and shared output with industry working groups from other organizations.

Additionally, also in scope is joining efforts with other INCOSE working groups such as Requirements, Risks, Leans SE, Agile SE, etc... where appropriate, to ensure subject matter expertise is seamlessly integrated into various aspects of the systems engineering process. Exploration of common problems and/or practices also falls within scope.



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PM-SE Integration WG

Composition and Identification

- Co-Chairs : Tina Srivastava / Jean-Claude Roussel / John Lomax
- Webmaster/IT Director (email list, create our INCOSE website) : Gretchen Peacock / Rachel White

**Number of
Members**

90

**INCOSE
Connect
Address**

<https://connect.incose.org/WorkingGroups/pm-se%20integration/SitePages/Home.aspx>

**IW 2019
Participants**

37

**INCOSE
Web Page**

<http://www.incose.org/ChaptersGroups/WorkingGroups/process/pm-se-integration>



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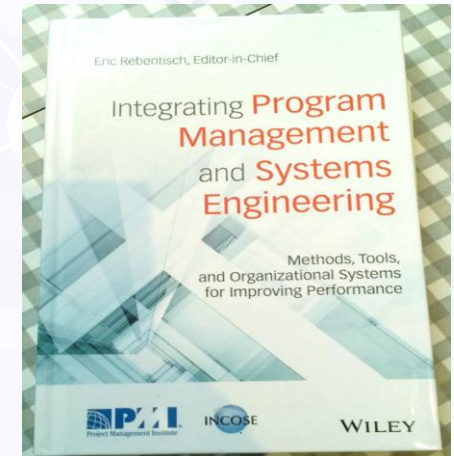
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PM-SE Integration WG *Outcomes*

- Book Published: *Integrating Program Management and Systems Engineering: Methods, Tools, and Organizational Systems for Improving Performance*
 - Collaboration of PMI/MIT/INCOSE
- Planned
 - PMBoK update
 - SEBoK update
 - SE Handbook update
 - PM/SE Integration Best Practices Guidelines
 - Recommendations for ISO Standards on PM/SE Integration





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PM-SE Integration WG *Initiatives*

- MOU PMI-INCOSE update – *Tina Srivastava*
- Comparison of PM BoK and SEBoK - *TBD*
- Project Breakdown Structures – *Jean-Claude Roussel*
- Strategic Technical Planning – *John Lomax*
- Education – *Theodore J. Ferrell*



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PM-SE Integration WG *MOU PMI-INCOSE Update*



INCOSE IW 2019 Activity

- *Review proposed updates to MOU*
- *Establish plans for joint activity in 2019 / 2020*
 1. Concentrate on reaching key influencers- those who can actually drive change in the way PM and SE effort is integrated within their organizations or throughout their sphere of influence.
 2. Establish the means by which the two organizations will reach this intended audience, defining required actions / events / responsibilities.
 3. Leverage the INCOSE PM-SE Integration Working Group to identify projects of mutual interest, identify and connect like-minded parties within the PMI community.



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PM-SE Integration WG

Compare PMBoK and SEBoK

Scope: Compare global SE bodies of knowledge (BoKs e.g. SE Hbk, SEBoK) with global BoKs - PMA PMBoK, APMA, PMA

Who is leading : TBD

Who is contributing : TBD,...

Why is it important : Aids SE and PM interaction

Key elements: Identification of Gaps and Commonalities between PM and SE
Extensions / additions opportunities based on "new ideas" from the other sources, resulting in efficient and effective collaboration environments

Timeframe: **Volunteers needed!**

Outcomes: A useful INCOSE product guidebook

Resources and References: <https://connect.incose.org/WorkingGroups/pm-se%20integration/SitePages/Home.aspx>

WG Involvement: Collaborate with Life Cycle Mgt WG, Competency WG eventually



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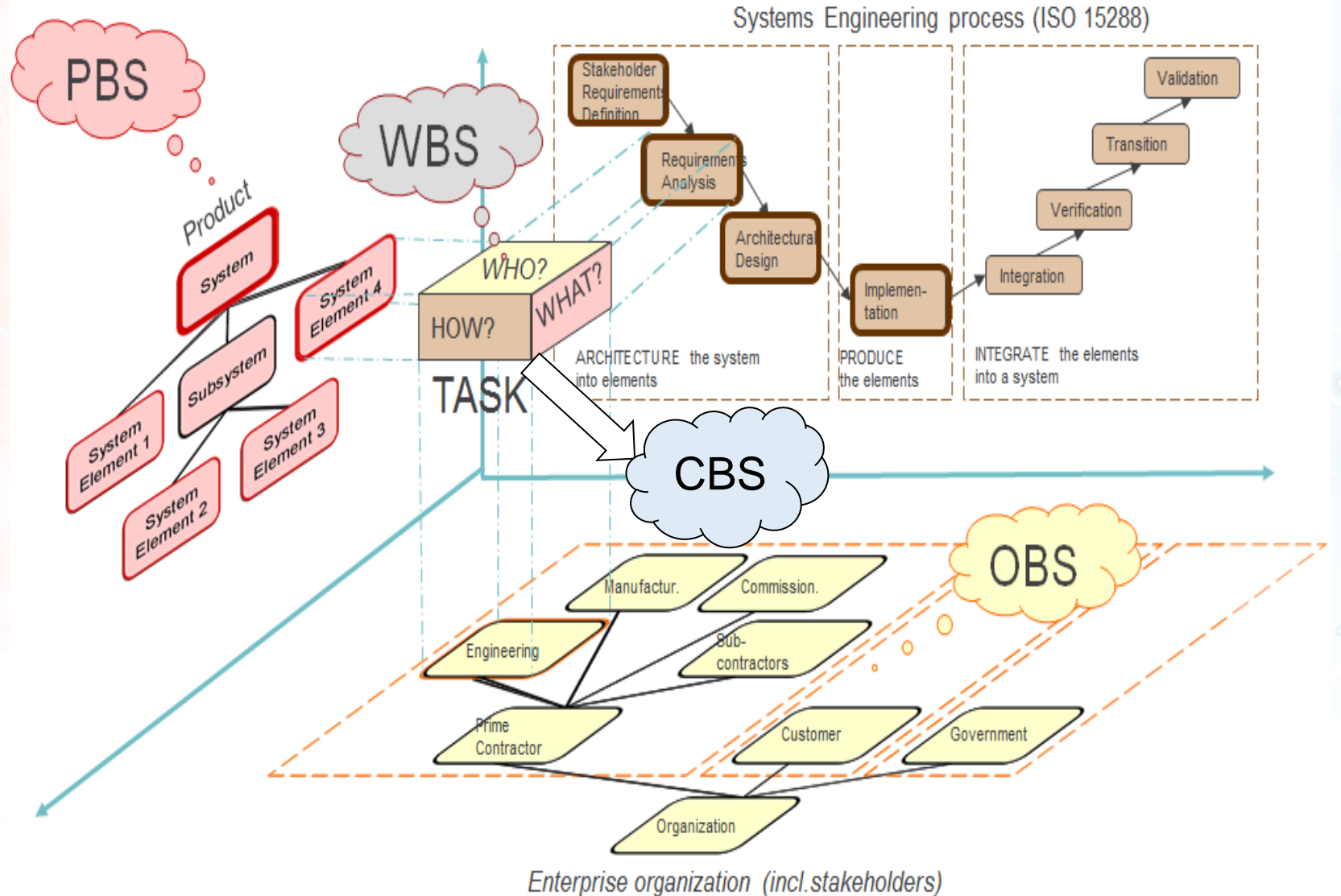


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Project Breakdown Structures

PM-SE Integration WG Initiative

Conceptually the relationship between breakdowns is like this





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The PBS flows from the FBS and feeds the WBS/OBS/CBS

The FBS is a hierarchy of
Capabilities for Mission Performance
Business Functions
Organisational/Stakeholder Functions
System Functions
Element Functions
Item Functions

These all have to be attributed to the corresponding level in the PBS

WHY : The Functions
Function Breakdown Structure

WHAT : The Product
Product Breakdown Structure

HOW : The Works
Work Breakdown Structure

WHO : The Organisation
Organisation Breakdown Structure

HOW MUCH : The Costs
Cost Breakdown Structure



A hierarchy that Identifies the entities and their decomposition that 'shall' achieve the required functions in the hierarchy of the FBS. (This is why it is sometimes referred to as the requirements hierarchy)

Identifies the work to be performed in the development of the entities (this would map to the Develop processes)

Identifies who will be doing work

Structures the development work packages

FBS

PBS

WBS

OBS

CBS



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Project Breakdown Structures

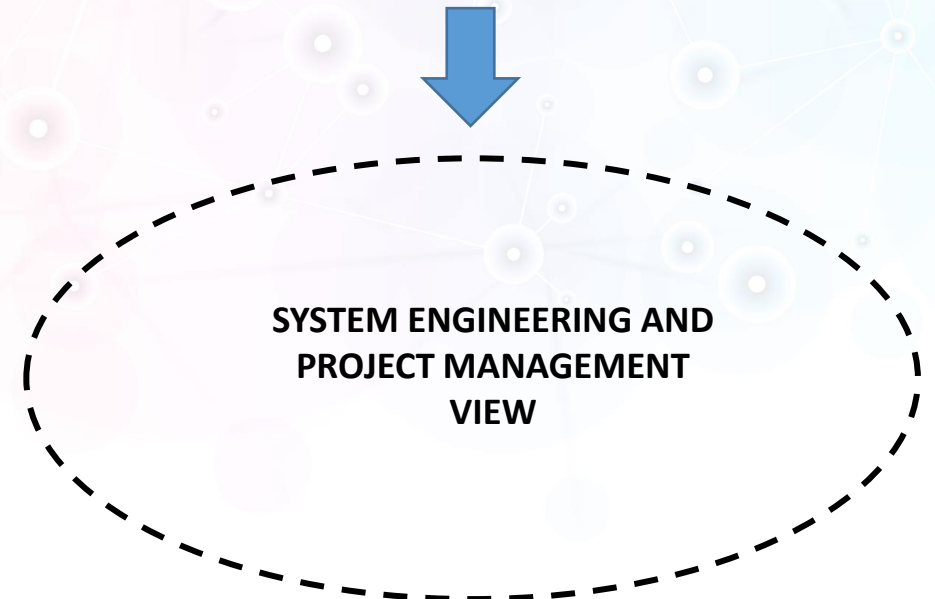
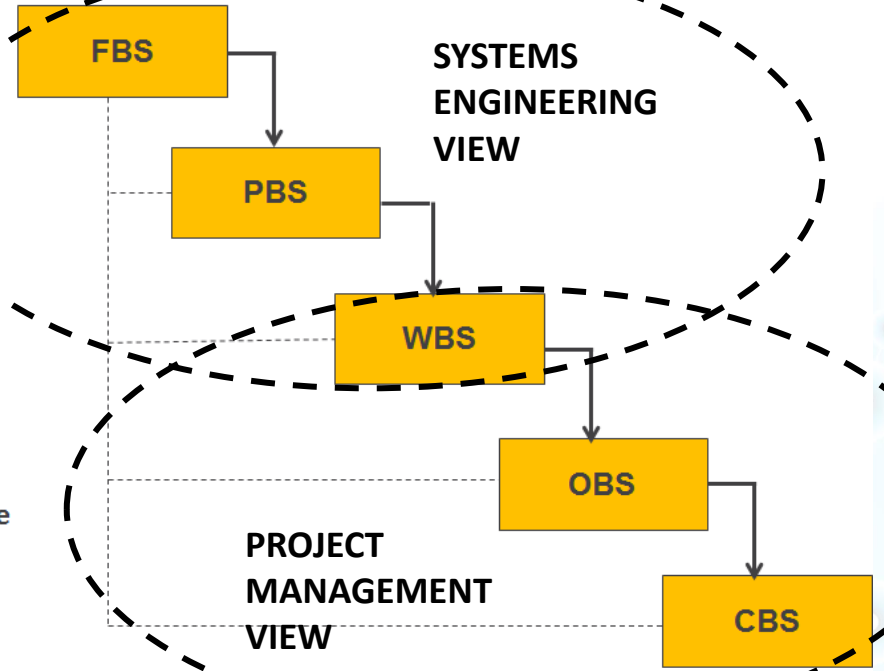
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Project Breakdown Structures

Initiative details

Scope: Establish consistencies between different breakdown structures (PBS,WBS,..) all along the life cycle

Who is leading : Jean-Claude Roussel

Who is contributing : Gary Smith (Airbus UK),
AFIS WG (CT MIS) PjBS initiative
Severin Drogoul (ISO TC 20) - Author of ISO 21511 (WBS)

Why is it important : Foundation and pre-requisite for PM-SE integration.
Basis for Project Planning

Key elements: Present description of Breakdown Structures in PMBoK and SE Handbook

Update proposal for coordination between PM and SE ref

Addition of missing structures description (FBS,..)

Timeframe: **Volunteers needed!**

Outcomes: Inputs for SE Handbook and PMBoK update

Resources and References: ISO 21511 (WBS), ISO 27026 (Breakdown of Project Management Structures)

WG Involvement: AFIS WG (CT MIS), INCOSE Life Cycle Mgt WG



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Project Breakdown Structures

Initiative details

Potential Volunteers to contribute :

- Gary Smith (Airbus, UK)
- John Lomax (Airbus, UK)
- Rob Vingerhoeds (ISAE, France)
- Samuel Boutin (Knowledge Inside, France)
- Gilles Beuzelin (AREVA, France)
- Gilles Roudie (CS, France)
- Severin Drogoul (ISO TC 20, France)
- Susan Ronning (EBE Consukting, USA) – *Contact at IW 2019*
- Tim Wiseley (Sandia Nat Lab, USA) – *Contact at IS 2019*
- Rachel White (CENTAURI, USA) – *Contact at IS 2019*
- Francesco Dazzi (CTAO, Italy) – *Contact at IS 2019*
- ...



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Strategic Technical Planning

PM-SE Integration WG Initiative



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