5° Convegno Nazionale IPMA Italy

"PROJECT MANAGEMENT:DAL CONTROLLO DI PROGETTO ALLE PERFORMANCE AZIENDALI"

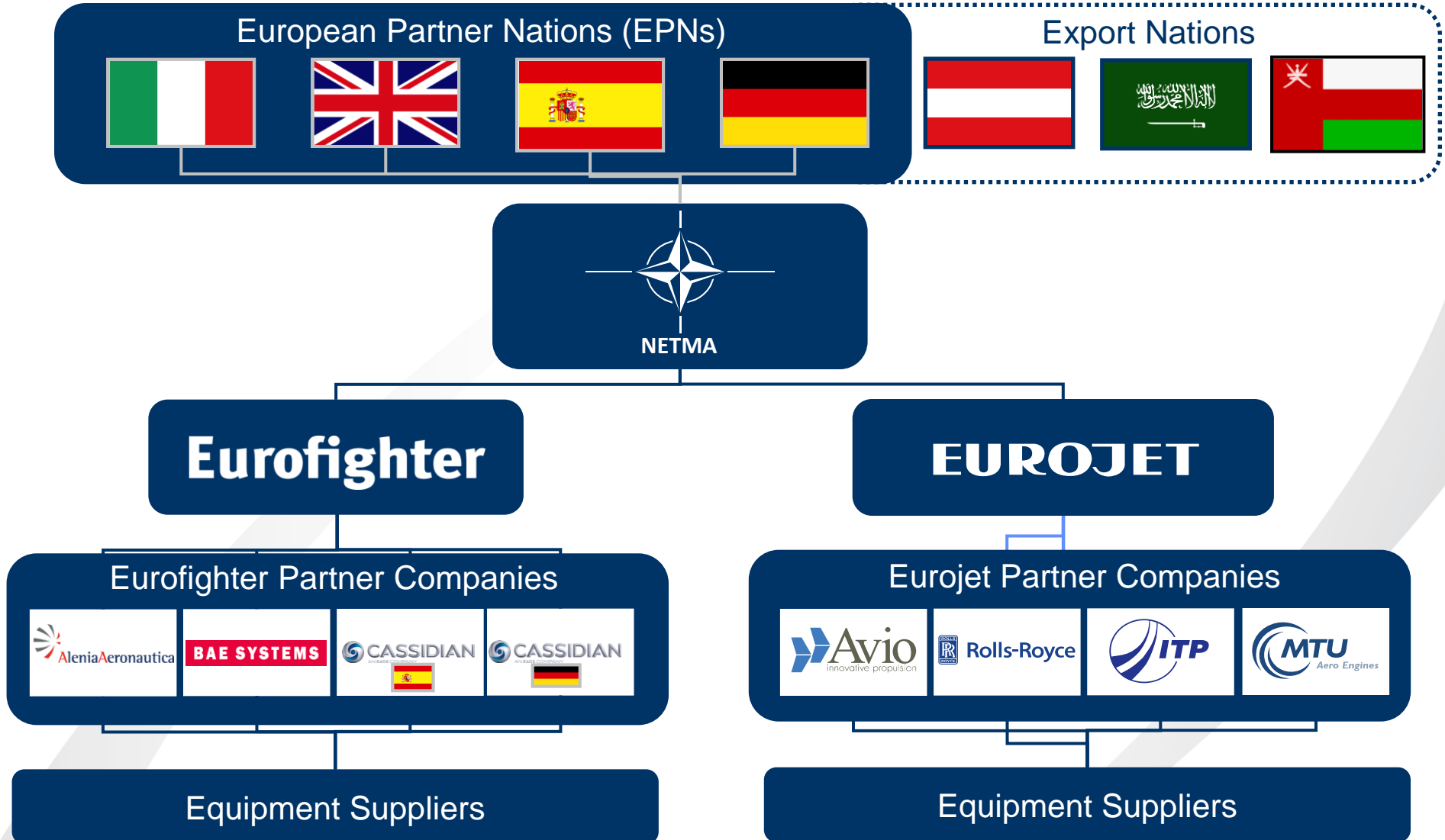**Milano 27 Giugno 2013**

Speaker: Miguel Carruozzo

Il Project Management nel Programma „Aircrew Synthetic Training Aids" (EF Training Simulator)

Contents

- Multi National Programme Organization
- A/C programme main Deliverables
- Mission Support Items
- Aircrew Synthetic Training Aids (ASTA)
- Structure and Organization
- Route to Contract
- Programme & Project Management Process
- Product End to End process
- Continuing Integration and Qualification
- Customer Acceptance and Deliveries
- Monitoring and control

Eurofighter Typhoon

European Partner Nations (EPNs) — Italy, United Kingdom, Spain, Germany

Export Nations — Austria, Saudi Arabia, Oman

NETMA

Eurofighter

Eurofighter Partner Companies — Alenia Aeronautica, BAE SYSTEMS, CASSIDIAN (Spain), CASSIDIAN (Germany)

Equipment Suppliers

EUROJET

Eurojet Partner Companies — Avio innovative propulsion, Rolls-Royce, ITP, MTU Aero Engines

Equipment Suppliers

Main Deliverables

Aircraft Ground Equipment

Weapon System

Aircraft Programme

Major Support Items

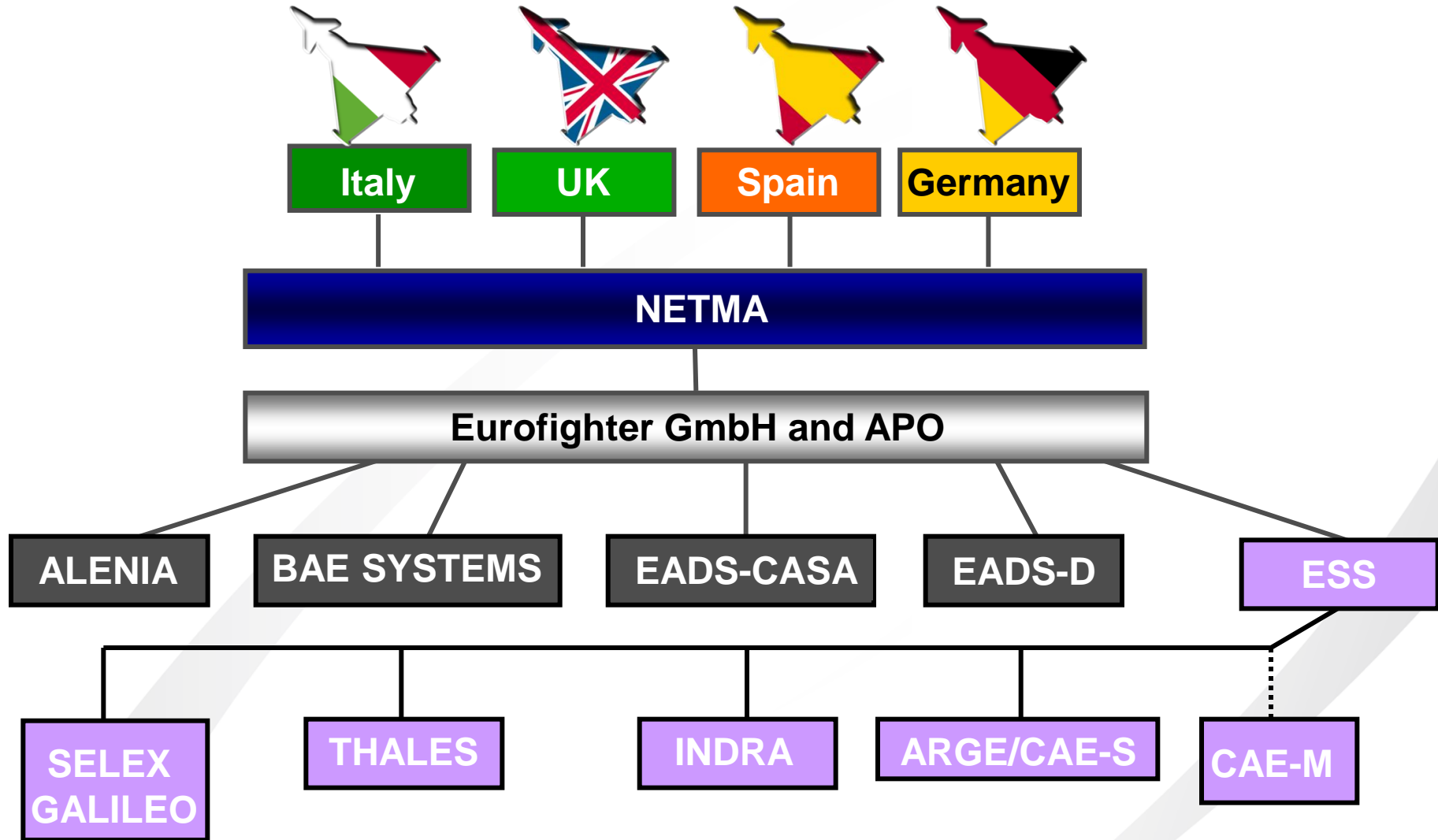Maintenance

Major Support Items

- Aircrew Syntetic Trainig Aids (ASTA) – Cassidian GE

- Ground Support System (GSS) – Cassidian SP

- Ground Training Aids (GTA) – Alenia Aermacchi

- International Weapon System Support System (IWSSS) - BAES

Aircrew Synthetic Training Aids
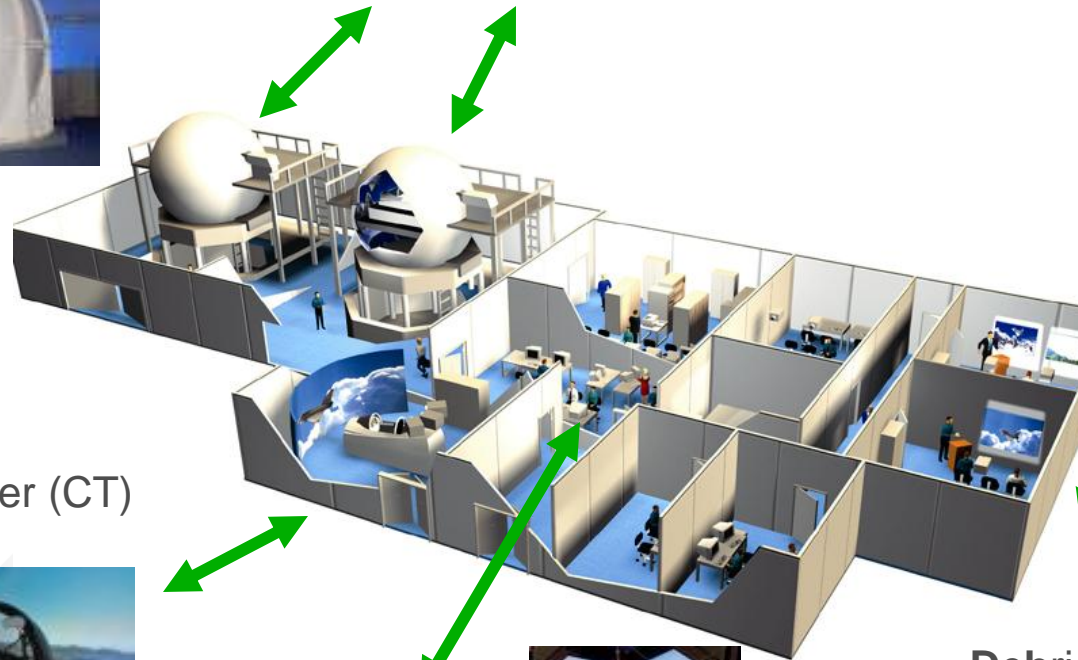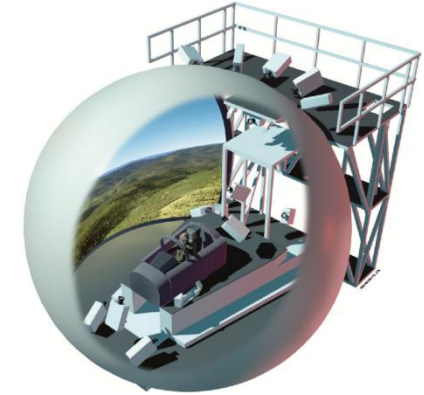
ASTA Structure – Core Programme

Italy — **UK** — **Spain** — **Germany**

NETMA

Eurofighter GmbH and APO

ALENIA — **BAE SYSTEMS** — **EADS-CASA** — **EADS-D** — **ESS**

SELEX GALILEO — **THALES** — **INDRA** — **ARGE/CAE-S** — **CAE-M**

ASTA Training System and Solutions

ASTA Top Level Overview

Full **M**ission **S**imulators (FMS)

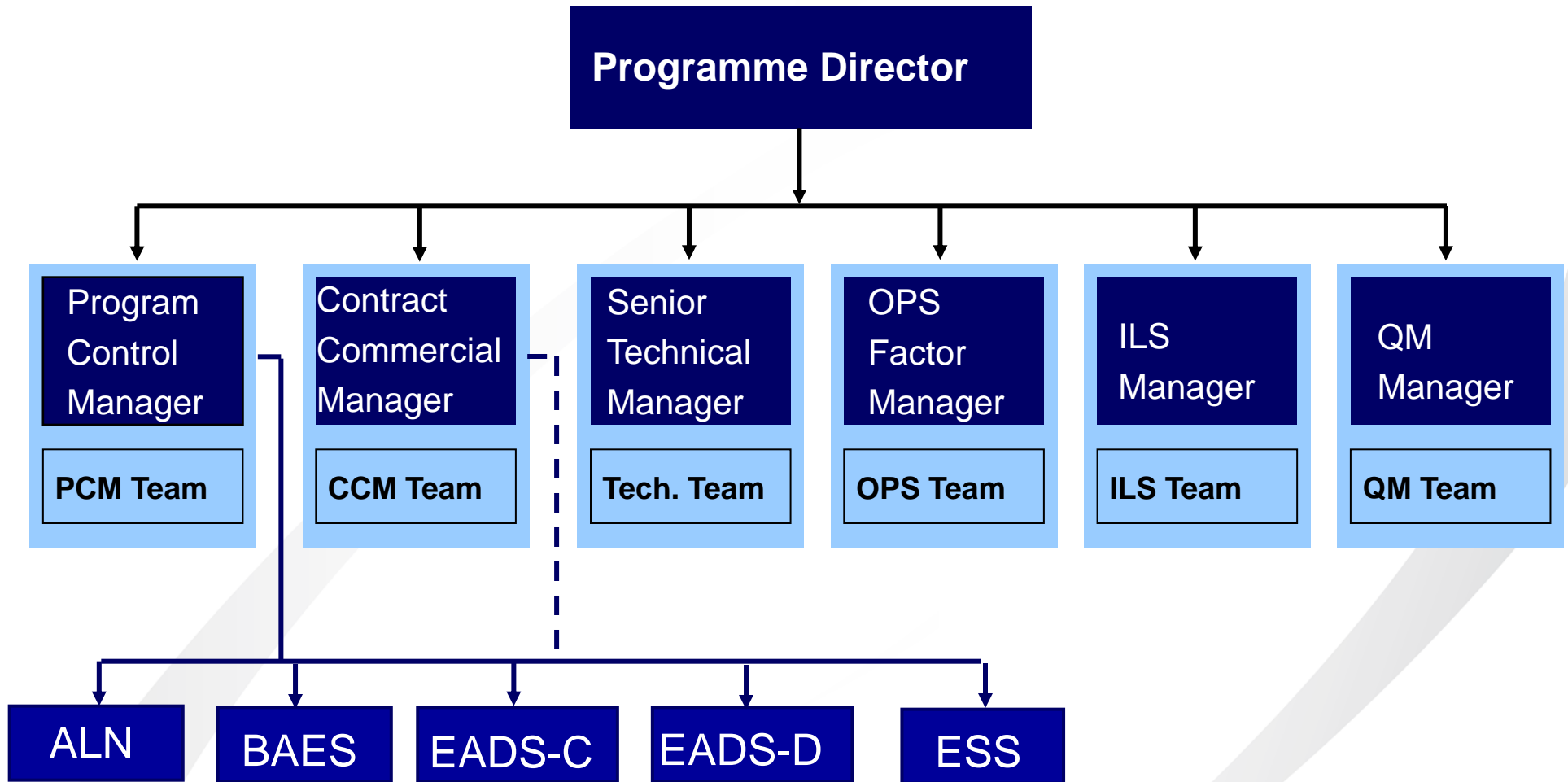**C**ockpit **T**rainer (CT)

De**b**riefing **F**acility (DBF)

Instructor **O**perating **S**tation (IOS)

ASTA – Pilot training, mission rehearsal, tactical doctrine

ASTA Programme Management Organization


```
                        ┌─────────────────────┐
                        │  Programme Director │
                        └─────────────────────┘
```

Program Control Manager	Contract Commercial Manager	Senior Technical Manager	OPS Factor Manager	ILS Manager	QM Manager
PCM Team	CCM Team	Tech. Team	OPS Team	ILS Team	QM Team

ALN   BAES   EADS-C   EADS-D   ESS

Intercultural team constitute of 55 peoples

Australia

Rumania

Argentina

USA

Germany

Italian

United Kingdom

Spain

Sri Lanka

EF ASTA Programme Organisation (APO) Mission

- The APO is the System Design Authority for the complete ASTA System:
  - Customer Requirements Capture.
  - Contract Doc. Preparation and negotiation
  - Programme Management
  - System Definition and Design.
  - System Integration, Test and Qualification.
  - Customer Acceptance Test
  - Software Production and Delivery
  - Integrated Logistic Support

Initialization Phase

Tools

- Requirements analysis – DOORS

- Engineering Management – JIRA

- Integration Management – TARANTULA

- Query Management – Own Developed

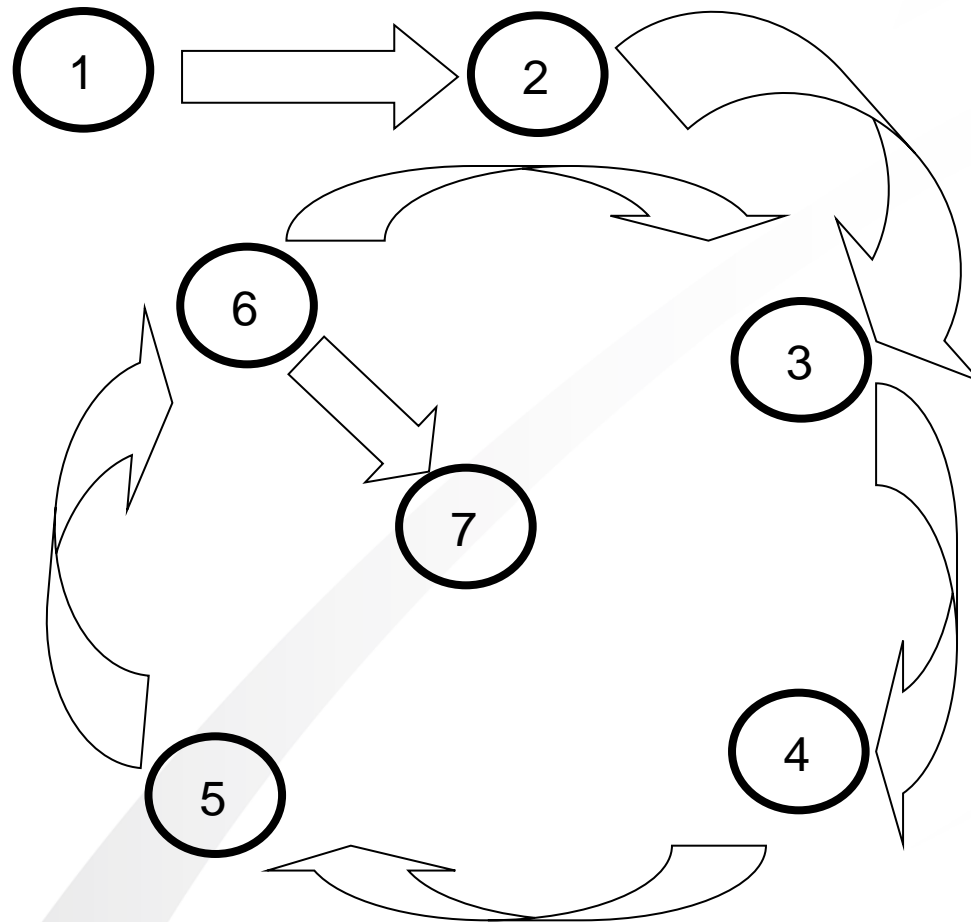- Configuration Management – PVCS

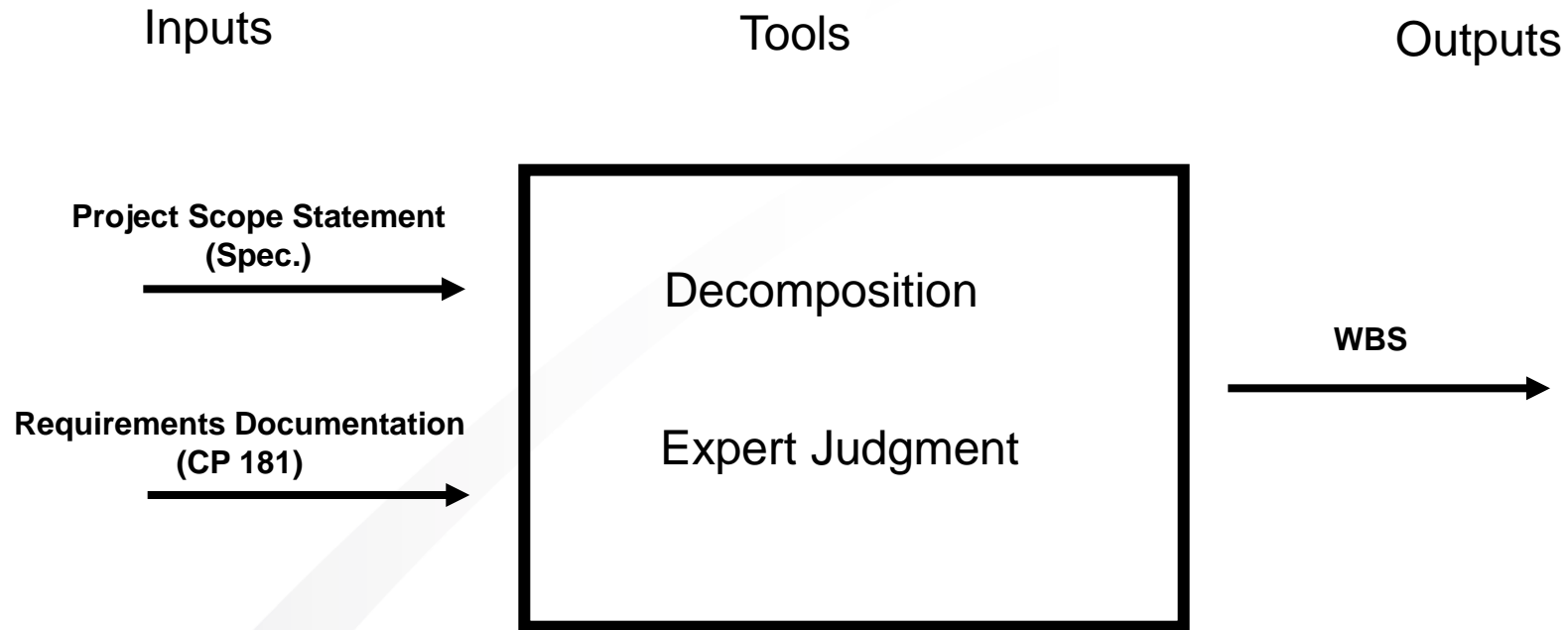- MS Project and Excel

Customer Requirements Capture & Contract

EF Responses

Candidates

GE → NE ⇒ PBC ⇒ FBC ⇒ RFP ⇒ EF ⇒ RFQ
A1
B
C
.
.
E
F

IT

SP

UK

TDD

CP181

SLTA

System Engineering Process

Spec. (A1)

Proposal + attachments

NE

CP	Change Proposal
FBC	Final Business Case
PBC	Preliminary Business Case
RFP	Request For Proposal
RFQ	Request For Quotation
TDD	Technical Design Description
SLTA	System Level Technical Assessment
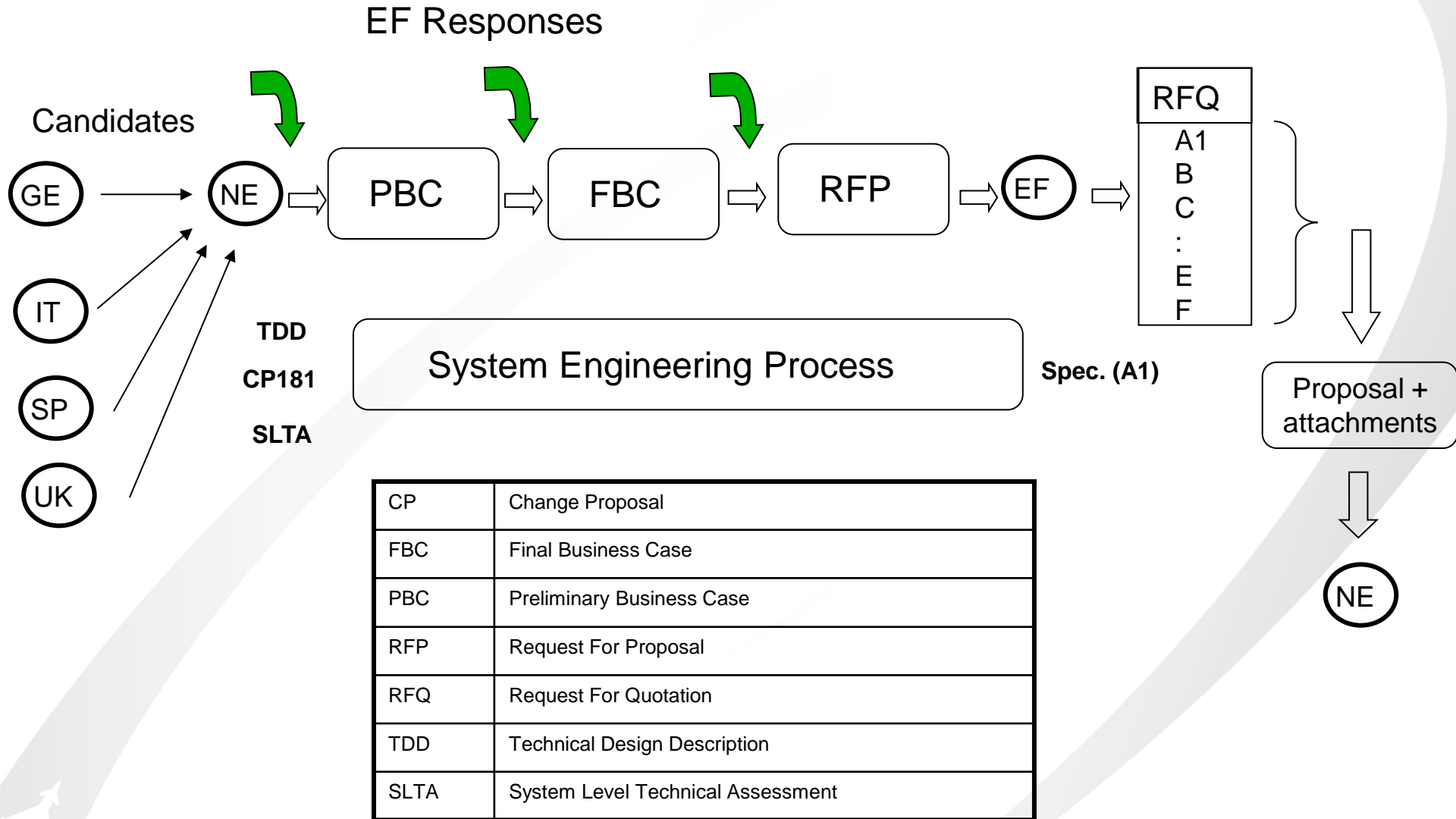
Planning Phase

Project Management – Process Definition

1 WBS Preparation

2 Schedule Preparation

3 Rolling-wave planning concept

4 L3 & Planners level with Jira

5 Reporting to PCM – EV analysis

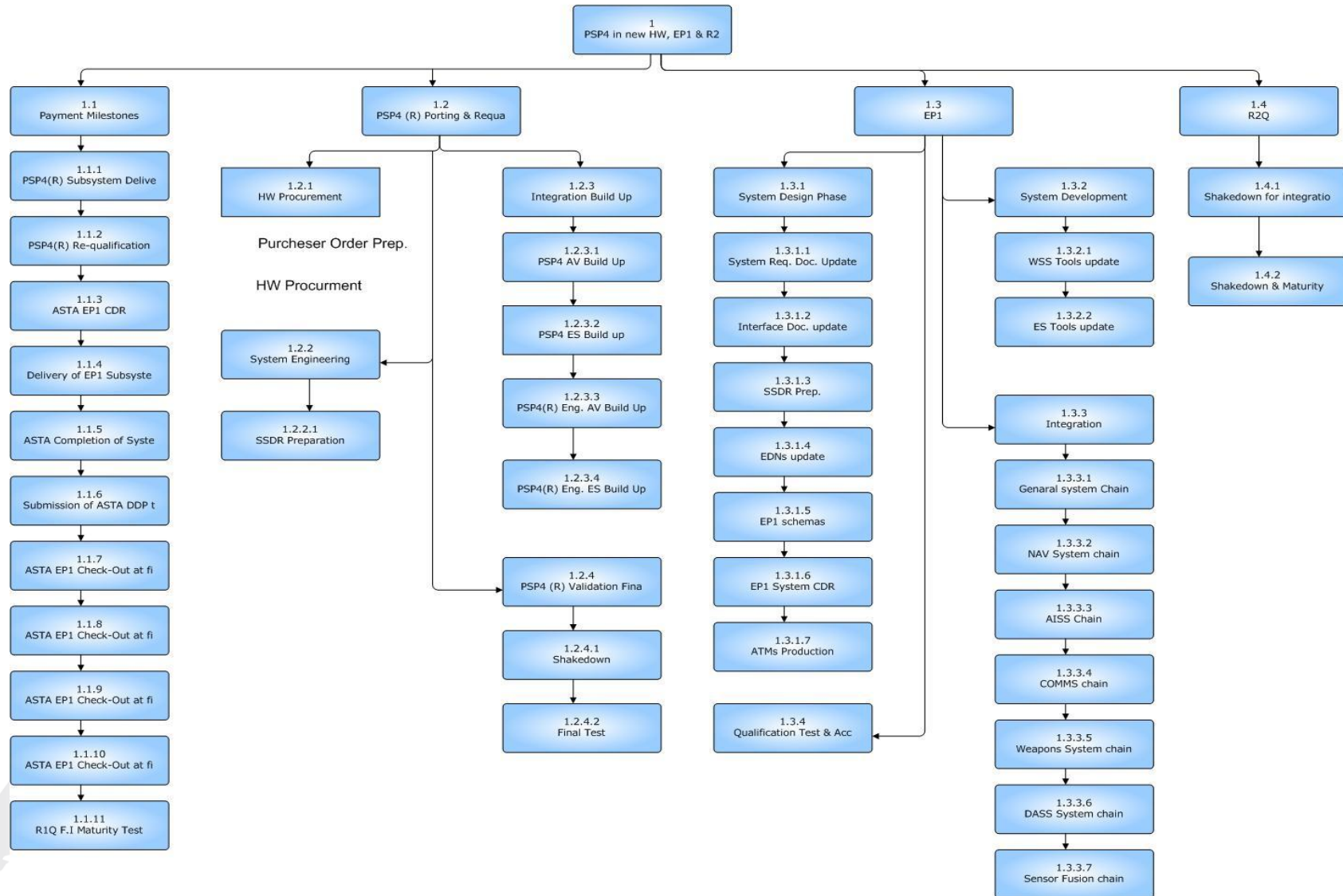6 Programme / Projects Review Meetings

7 Visibility monthly report from PCM

Project Management – Process – WBS Prep.

Inputs

Tools

Outputs

Project Scope Statement (Spec.)

→

Decomposition

Expert Judgment

WBS

→

Requirements Documentation (CP 181)

→

WBS Creation Process

Project Management – Process – WBS (1)

C#4 TASK WBS
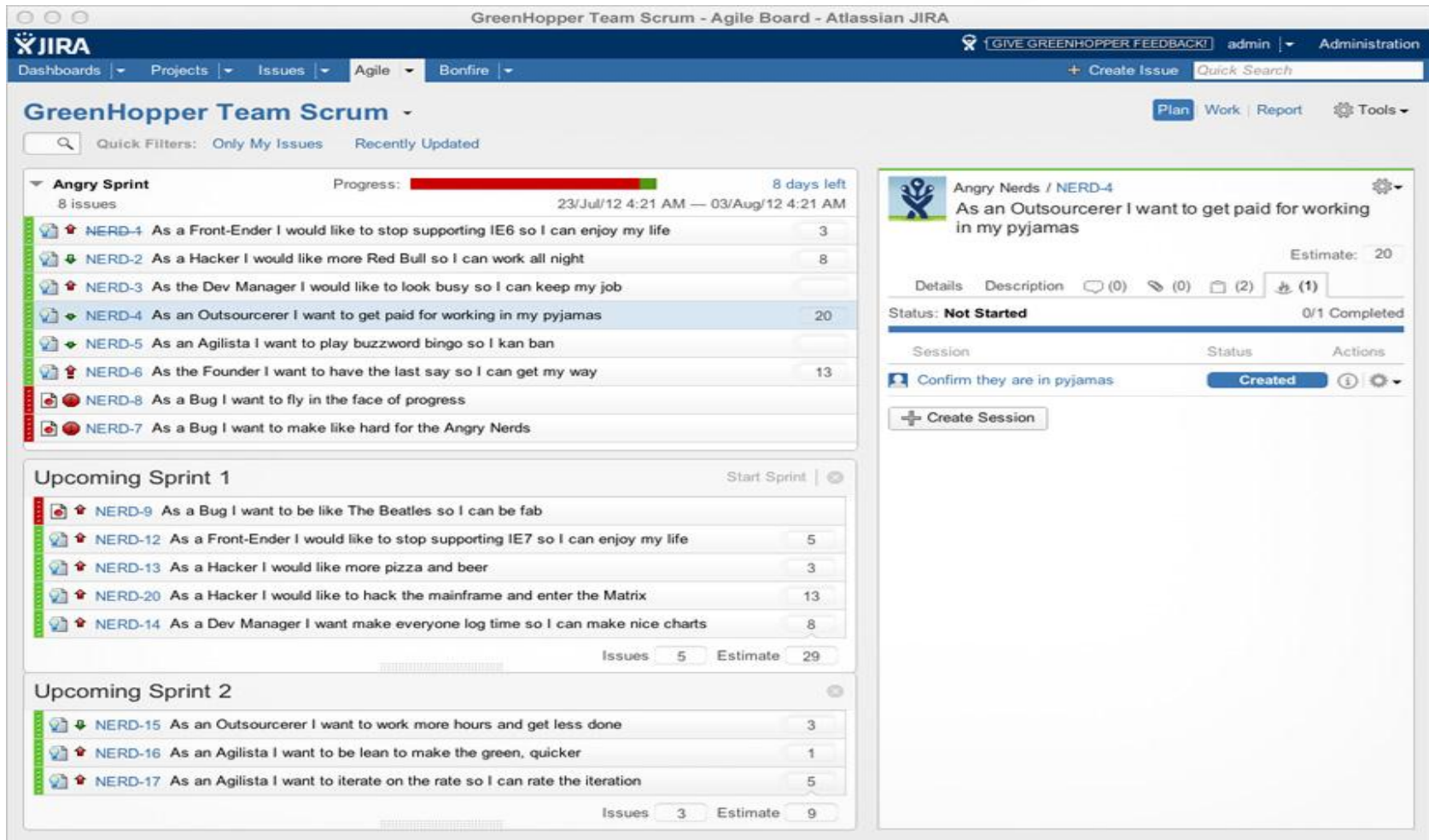
Project Management – Process – Schedule Prep.

Inputs

Tools

Outputs

Activity List →

Activity Duration →

Project Scope Statement →

Dependencies →

Expert Judgment

Apply Lead & Lags

Scheduling Tool

Project Schedule →

Milestones →

Schedule Creation Process

Project Management – Process – L3 Level

L3 Tasks get allocated to build cycles or sprints

Execution Phase

Product End To End Process
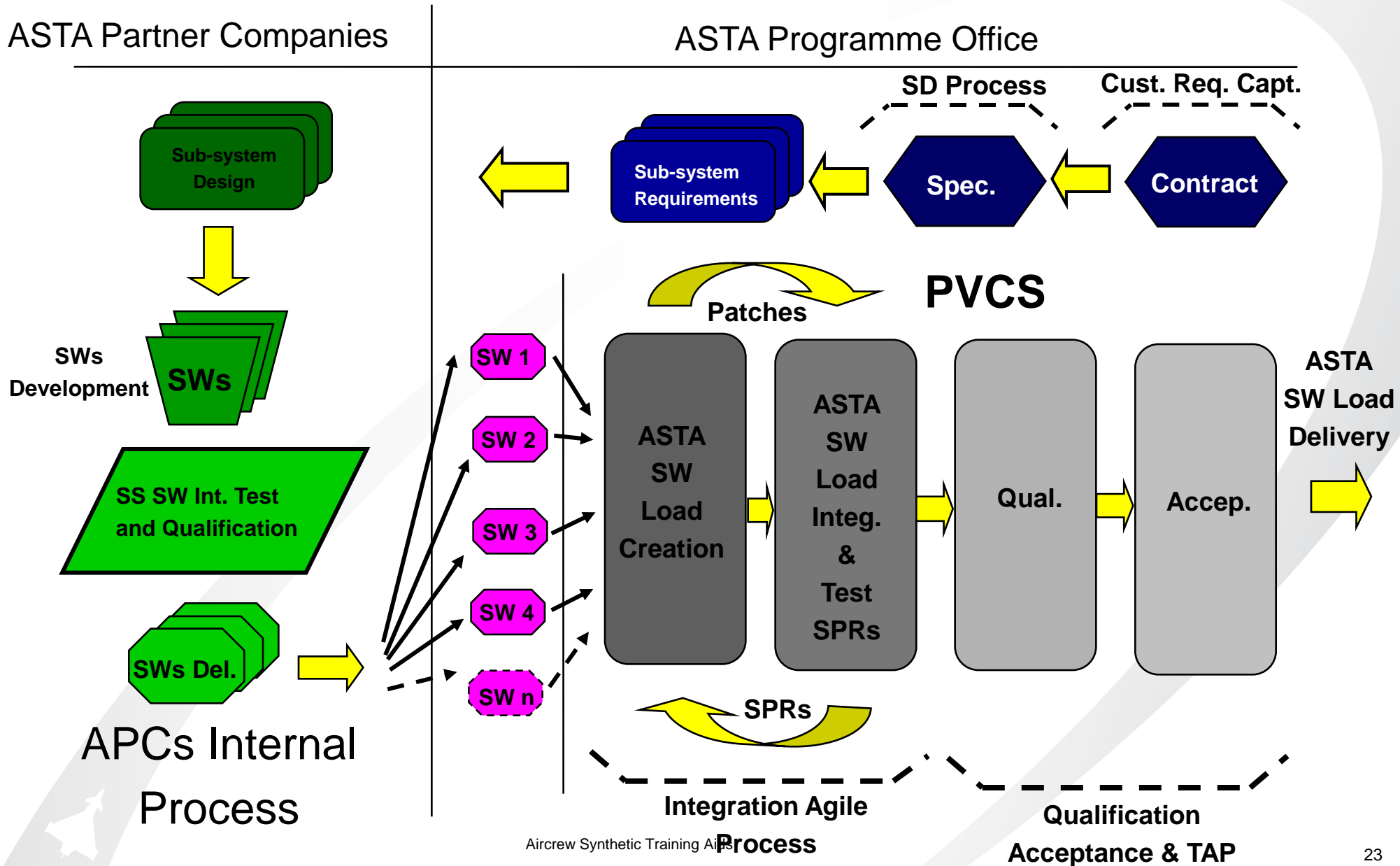
Integration at Joint Integration Facility (JIF)

AGILE Principles

- **Working software** is delivered frequently (weeks rather than months)

- **Working software** is the principal measure of progress

- Welcome changing requirements, even late in development

- Close, daily co-operation between business people and developers

- Face-to-face conversation is the best form of communication (co-location)

- Simplicity

- Self-organizing teams

Scrum Diagram

Product backlog

Daily Scrum Meeting 24 hours

Sprint 2-4 weeks

Sprint backlog

Potentially shippable product increment
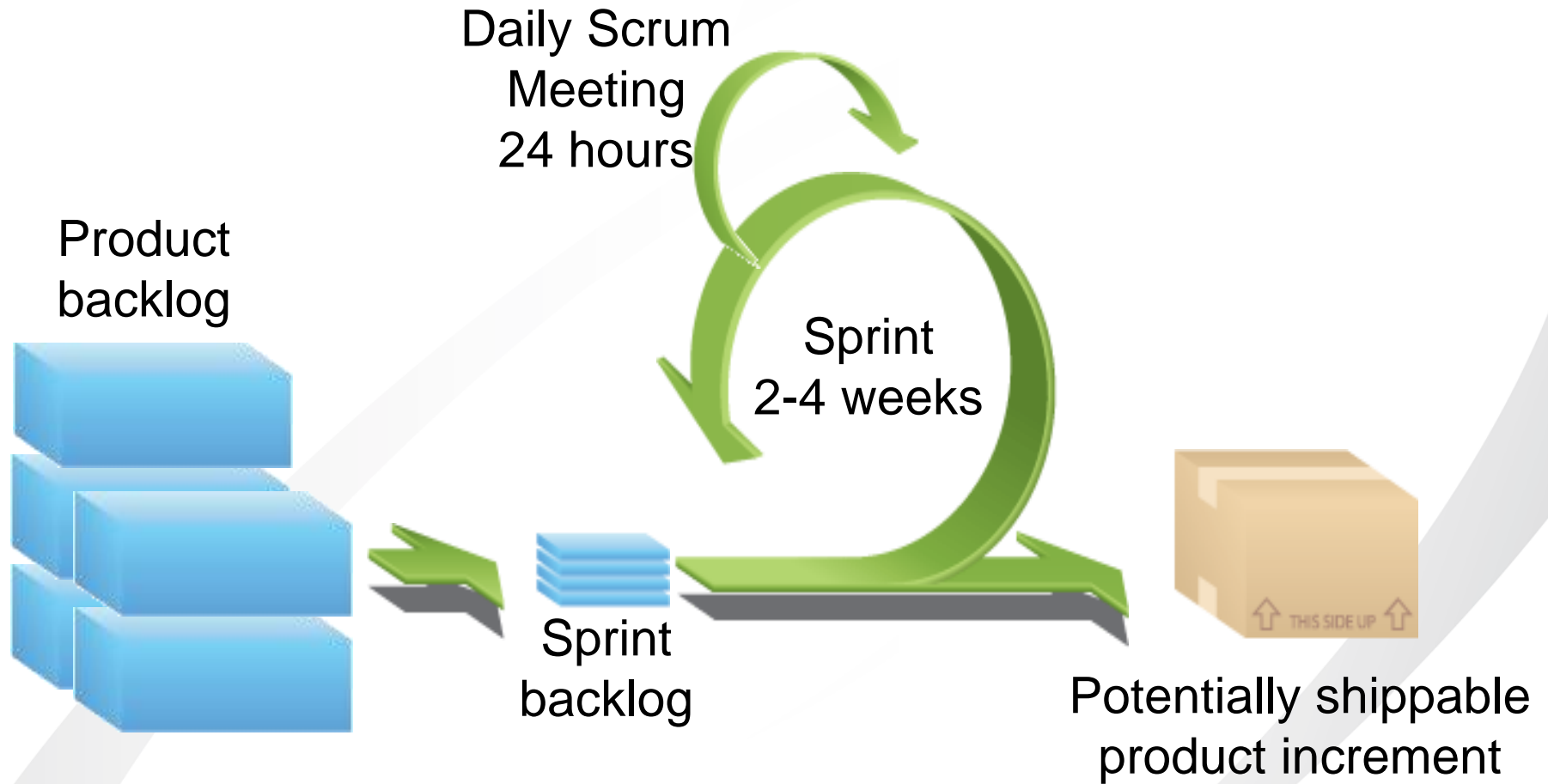
Test and Integration Level
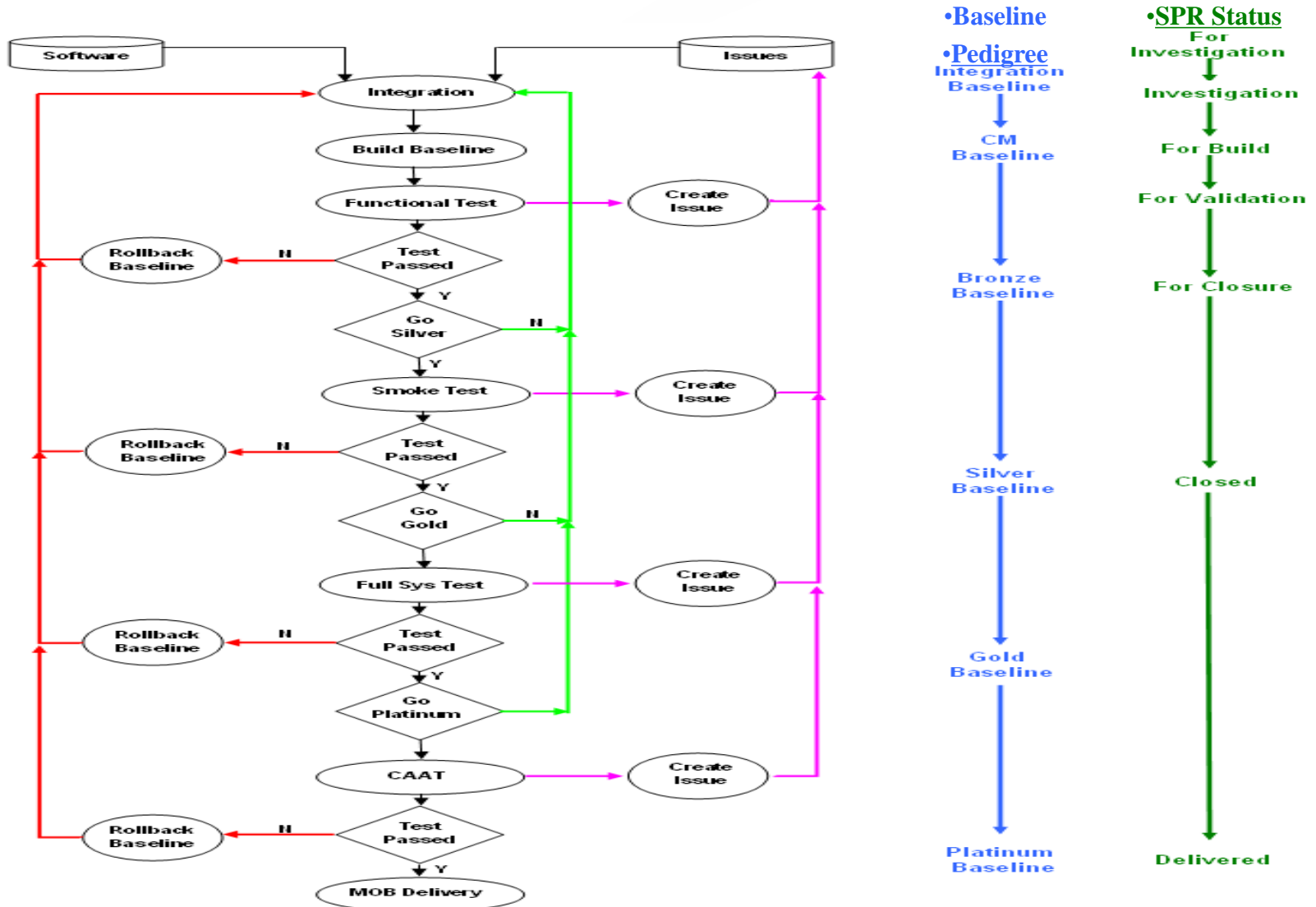
Test and Integration Level

There is three main "level" of integration at the Joint Integration Facility (JIF)

- **Functional Test**

- **Smoke Tests**

- **Full System Tests**

Scrum and SCM

Daily Scrum Meeting 24 hours

Sprint 2-4 weeks

Continuous Integration Mainline

Time

Mainline Validation

Label 09-21

SCR 1

SCR 2

SCR 3

Mainline Validation

Label 09-22

Mainline Validation

Label 09-23

Regression Test
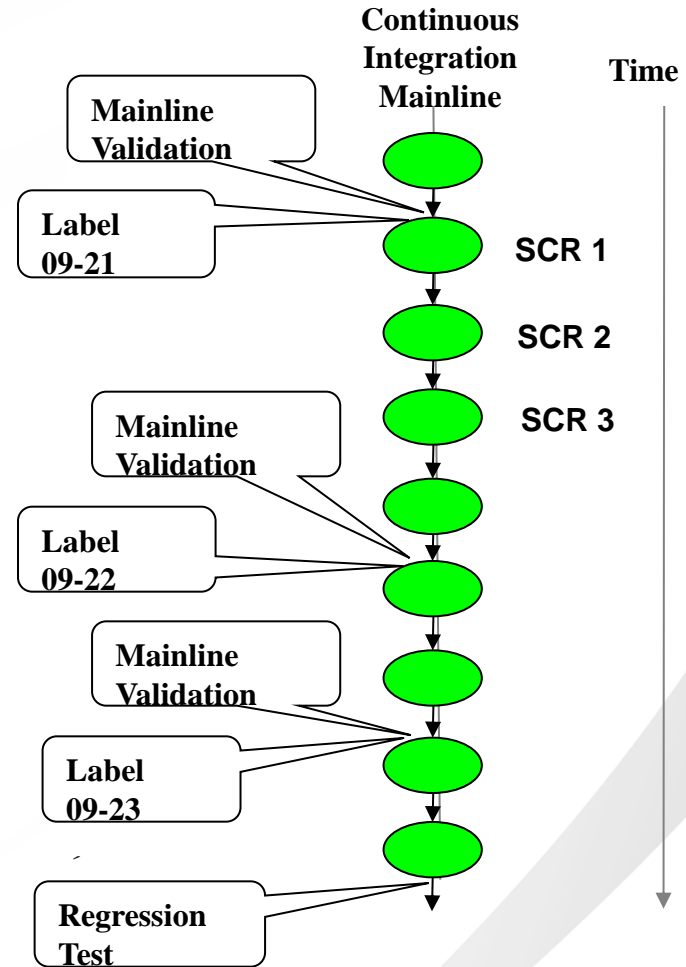
SCR = Software Change Request

Qualification & Acceptance

Qualification & Acceptance Process

```
┌─────────────────┐          ┌─────────────────┐          ┌─────────────┐          ┌─────────────┐
│  Design Baseline│   ──►    │  Qualification  │   ──►    │    Type     │   ──►    │  Checkout   │
│      / RFAs     │          │   Tests at the  │          │ Acceptance  │          │ Individual  │
│                 │          │ Joint Integration│         │             │          │ Acceptance  │
│                 │          │    Facility     │          │             │          │   at MOBs   │
└─────────────────┘          └─────────────────┘          └─────────────┘          └─────────────┘
```

Design Baseline / RFAs → **Qualification Tests at the Joint Integration Facility** → **Type Acceptance** → **Checkout Individual Acceptance at MOBs**
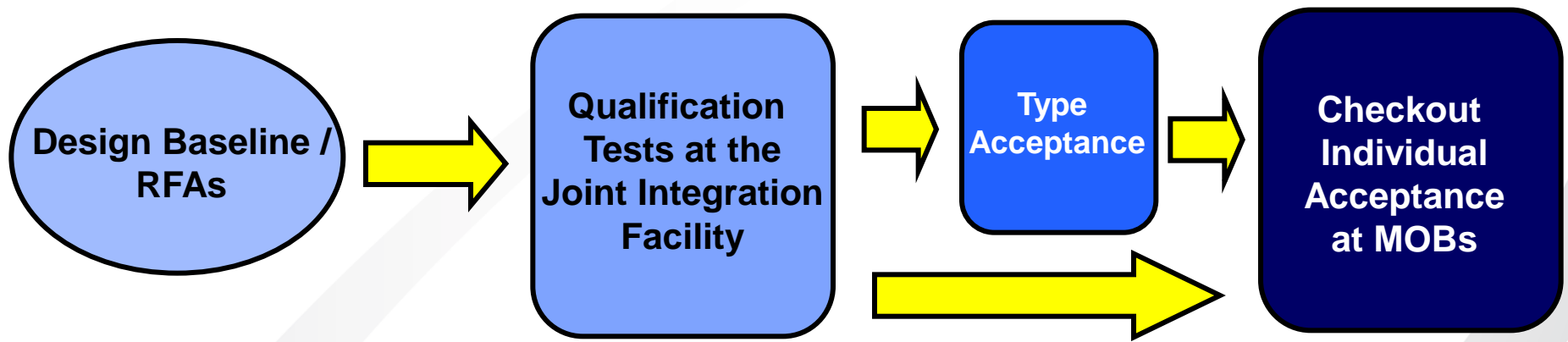
Quality Gate Concept

time →

Inputs

Device 1

Device n

SW Rel. **gold**

Test Doc.
SW Doc.

Phase 1

QG Entry

Engineering Baseline Build-up

Maturity Test

Stability / stress Test

Phase 2

ATMs Run

MOB Like Operation

QG Conclusion
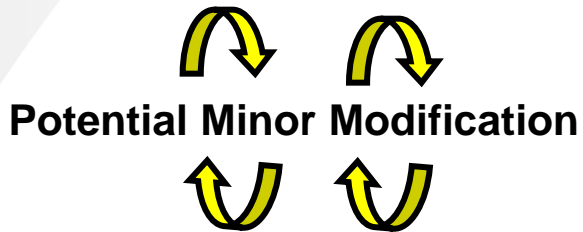
Type Acceptance

MOBs

Potential Minor Modification

Formal Configuration + Formal Doc.

Monitoring and Control

Single Project Key Performance Indicator

Project Name	E2E Project Stage				
	Pre-concept stage	Concept stage	Development Stage	Embodiment Stage	Utilization & support stage
Schedule Variance		🟢➡	🟡➡		
Schedule Performance Index		🟢➡			
Cost Variance		🟡➡	🔴➘		
Cost Performance Index				🔴➘	
Risk Assessment indicator					
N° of issues					
Issues validation measurement					
Issues Closing Adherence					
Requirement Tech. Compliances					
ATM Testing pass rate					
Device Availability versus planned					

Project Management – Process – Reporting to PCM
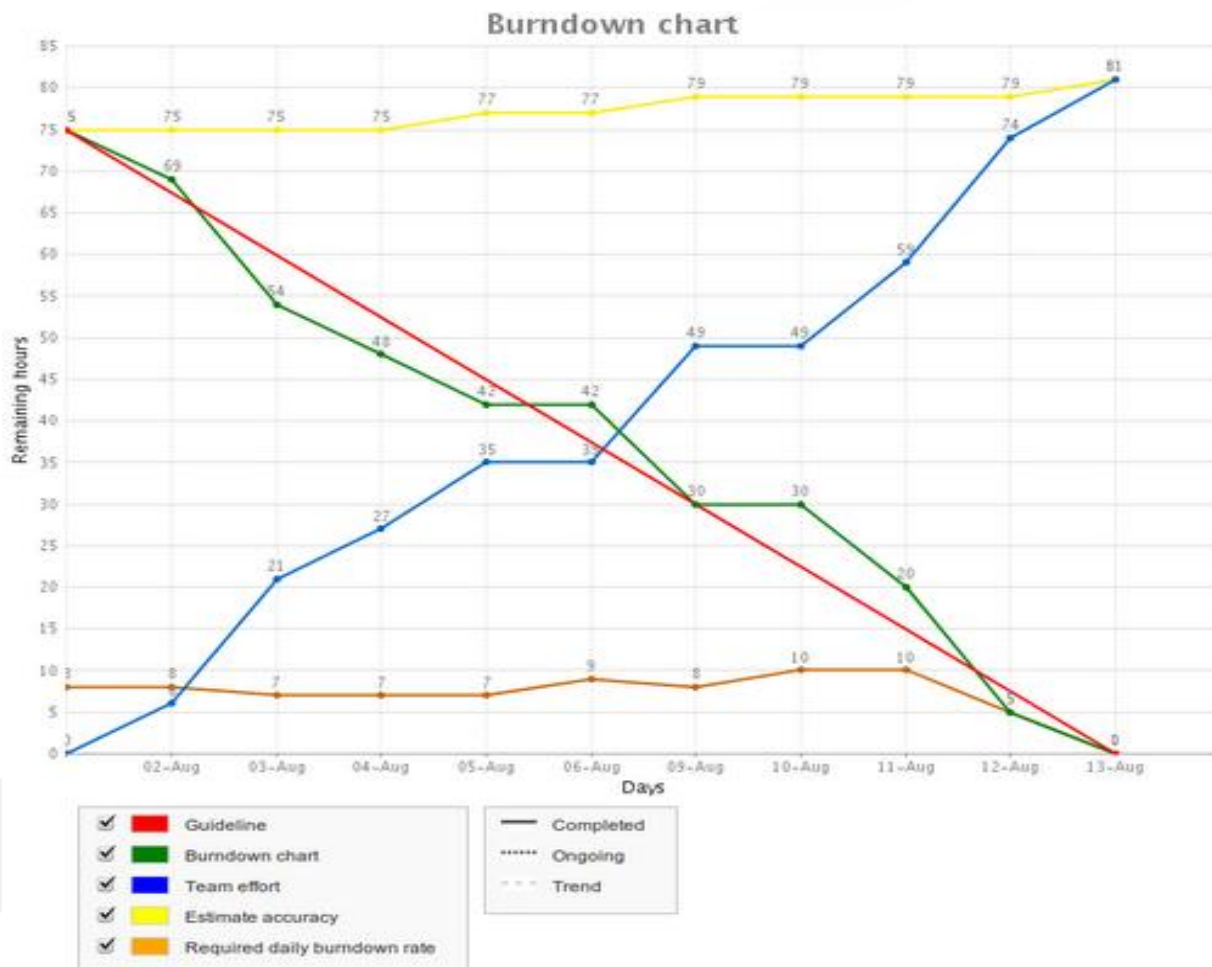
L3 Task progress is reported back to PCM via a Burndown chart of the current cycle or sprint

Single Projects S curves

S curves
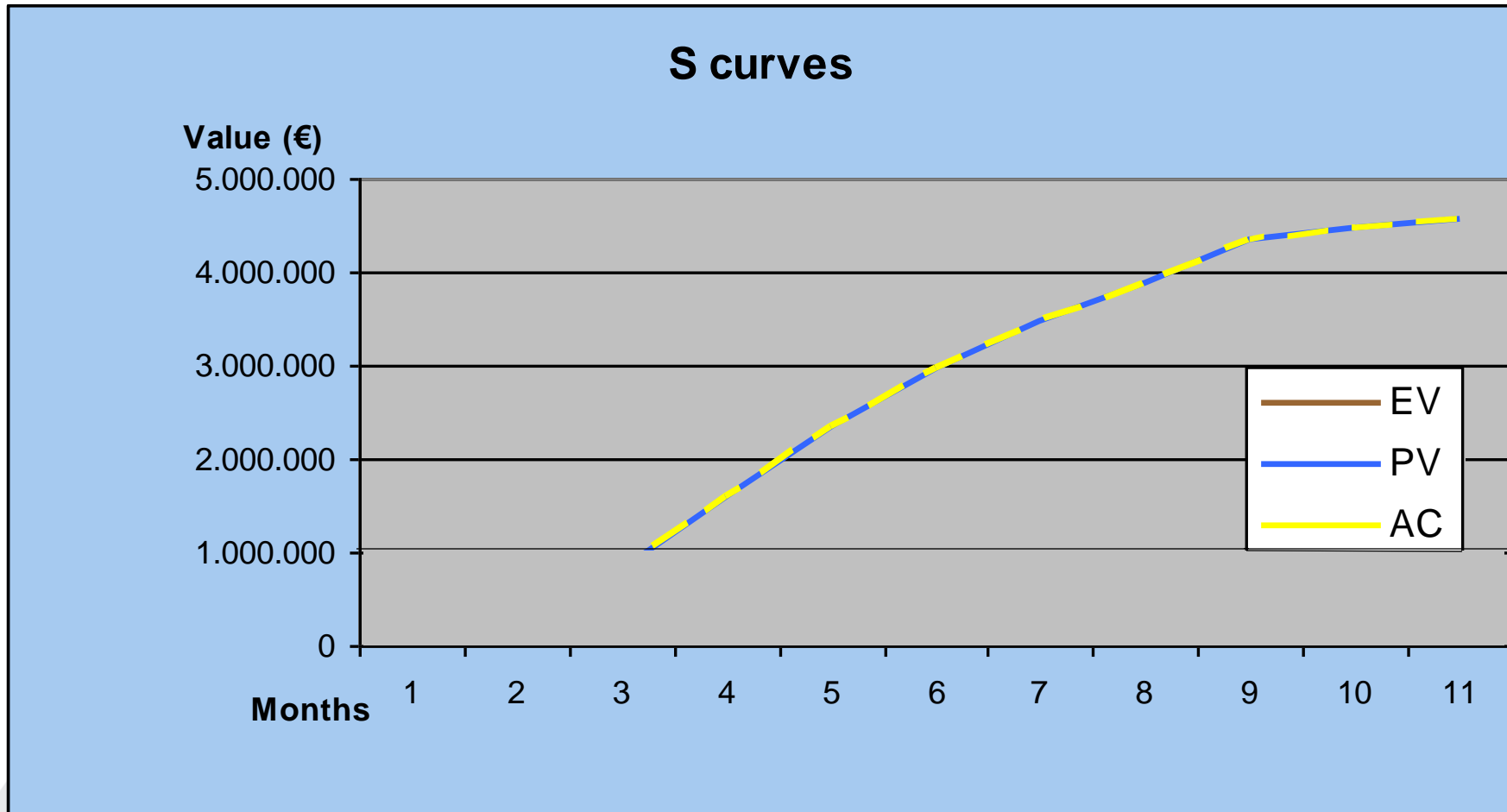
Single Project SPI / CPI Graphic

Sigle Project Dashboard (sample)

Project KPIs

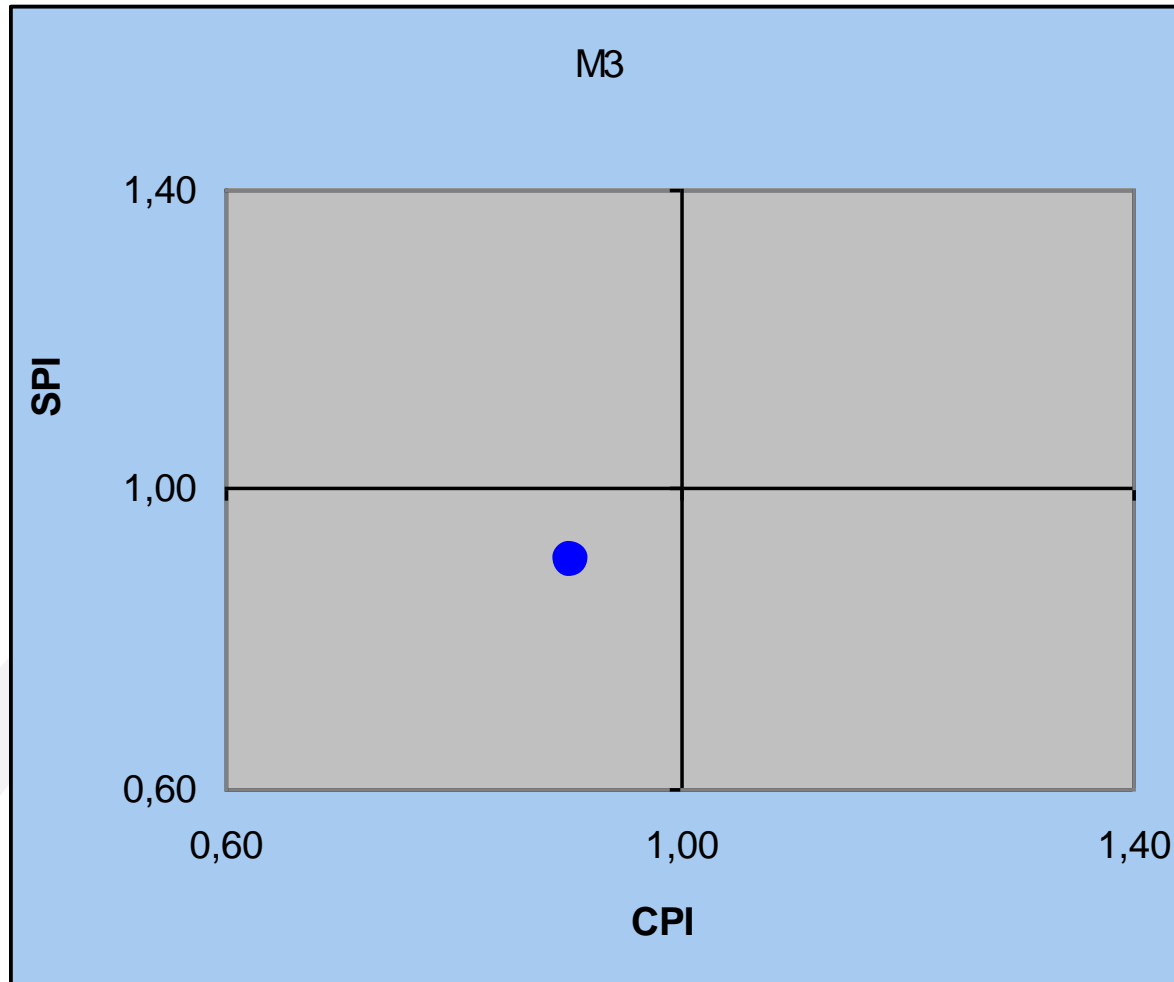| Project Name	E2E Project Stage				
	Pre-concept	Concept stage	Development Stage	Embodiment Stage	Utilization & support
Schedule Variance		→ (green)	→ (yellow)	→ (red)	
Schedule Performance Index		→ (green)	→ (red)		
Cost Variance			→ (yellow)		
Cost Performance Index					
Risk Assessment indicator					
N° of issues					
Issues validation measurement					
Issues Closing Adherence					
Requirement Tech. Compliances					
ATM Testing pass rate					
Device Availability versus planned					

Risks

1	[Schedule Risk] Timely availability of MaTE 11 (ASTA)	🟡
2	[Tech Risk] SW deliveries from the APCs to the JIF fail to achieve the required maturity	🟢
3	Extended Acceptance Process	🟢
4	RIU PDS lead time (18 month)	🟡
5	Longer integration activities than expected	🟢
6	Drop 3 DASS Enhancement Documentation	🟡
7	A/C SW not available on time	🟢
8	[Tech Risk] Schema and interfaces updates for EP1 may not be compatible with PSP4.	🟡

**KPIs tendency RED
RADAR / DASS / LDP SSDRs preparation on hold due to not support from BAES.**

**KPIs tendency Yellow

Due to Contract Signature not happend the agreed risks register + AWMF could be rediscussed by the Customer.**

Trend analaysis

M3

(Scatter plot: SPI (y-axis, 0,60 to 1,40) vs CPI (x-axis, 0,60 to 1,40), with points CW21 (blue) and CW20 (white) near 0,90)

Milestones

1	Contract Award	Mar.13	🔴
2	Delivery of Development Hardware to JIF	May.13	🔴
3	ASTA EP1 CDR	Jul.13	🟡
4	Drop 2 minus F.I. Maturity Test	May.13	🔴
5	PSP4(R) COMMS Formal Delivery to JIF	Oct.13	🟡
6	CASSIDIAN formal PSP4R SW deliveries (AFCSS, AISS) to the JIF	Oct.13	🟡
7	ESS SW Models for T1 EP1 SW Delivery	Jan.14	🟡
8	CASSIDIAN formal EP1 SW deliveries (AISS) to the JIF	Jan.14	🟡
9	BAES formal PSP4R SW deliveries (D&C, Fuel, DASS, IMRS) to the JIF	Oct.13	🟡
10	PSP4(R) Re-Qualification	Jan.14	🟡
11	BAES formal EP1 SW deliveries (D&C & DASS) to the JIF	Jan.14	🟡

Project brief escription

T1EP1 Contract (known as well as Step 1) is a C#4 Task dealing with the following D3 Items:

Drop 2 (-) - Aug 2013

PSP4R - Feb 2014

EP1 - Jan 2015

Alternative Helmet (only for GE)

GE Requirements - Apr 2015

R2Q - November 2014

ASTA - Overall Integrated Dash-Board

Project 1	E2E Process Stage				
KPI	Pre-Concept	Concept	Development	Embodiment	Utilisation & Support
Schedule Variance		→ (green)	→ (red)		
Risk Indicators		→ (green)	→ (yellow)		
Resource Issues					
Product Content			→ (yellow)		
Concurrency Indicator					→ (yellow)

Project 2	E2E Process Stage				
KPI	Pre-Concept	Concept	Development	Embodiment	Utilisation & Support
Schedule Variance	→ (green)				
Risk Indicators	→ (green)				
Resource Issues	→ (green)				
Product Content	→ (yellow)				
Concurrency Indicator					→ (red)

Project 3	E2E Process Stage				
KPI	Pre-Concept	Concept	Development	Embodiment	Utilisation & Support
Schedule Variance	→ (green)				
Risk Indicators	→ (green)				
Resource Issues	→ (green)				
Product Content	→ (green)				
Concurrency Indicator					→ (red)

Project 4	E2E Process Stage				
KPI	Pre-Concept	Concept	Development	Embodiment	Utilisation & Support
Schedule Variance	→ (green)				
Risk Indicators	→ (green)				
Resource Issues	→ (green)				
Product Content	→ (green)				
Concurrency Indicator					→ (yellow)

Aircrew Synthetic Training Aids

Projects Monitoring and control
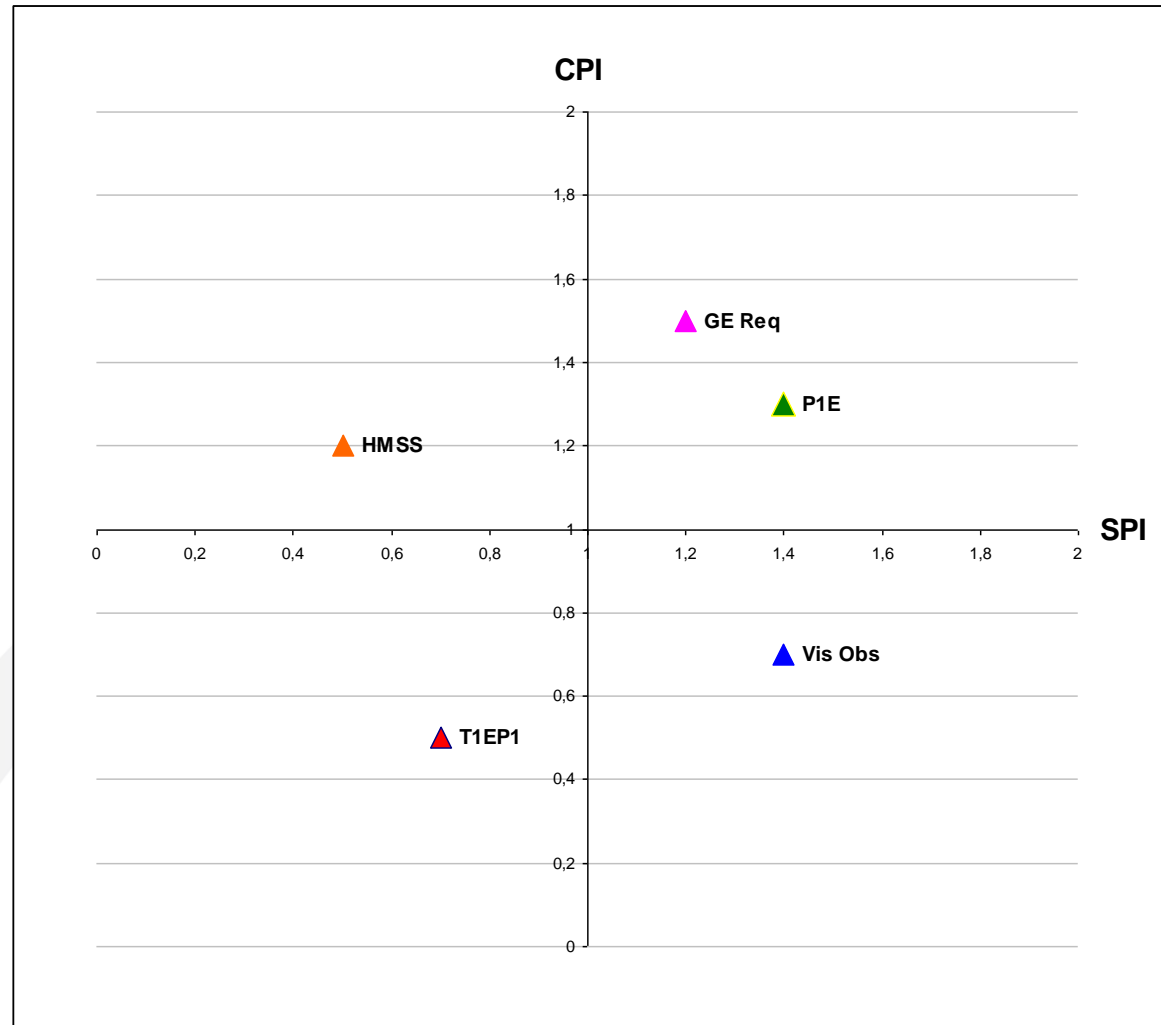
Execution Follow-up (Sample)

Executionfollowup