

## About The Speaker...

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- ⇒ **SPICE Project Manager**

**IVF Centre for Software Engineering**  
“Assisting the Swedish software industry  
to raise its standards of quality and productivity  
and to be globally competitive”

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# Aims

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The PULSE project aims to combine two approaches for assisting organisations to improve their procurement processes:

Defining and verifying a formal methodology for identifying and assessing the processes used by an organisation for ICT procurement.

- PULSE subproject

Identifying a set of organisational actions that improve the way in which procurements are managed and the success of ICT procurement teams.

- TEAM subproject



## ***PULSE sub project***

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- ⇒ **Develop acquisition process reference model**
- ⇒ **Develop acquisition assessment model**
- ⇒ **Develop assessment method**
- ⇒ **Develop software-based assessment tool**
- ⇒ **Trial the assessment method with user partners**
- ⇒ **Define a training syllabus and certification scheme for assessors**
- ⇒ **Develop methodology licensing scheme**
- ⇒ **Present the PULSE reference model to ISO as a plug-in extension to ISO/IEC 15504**



# ***PULSE subproject Partners and Users***

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## ⇒ **Partners**

- IVF (sub project manager)
- CR2A-DI
- ATB

## ⇒ **Users**

- FMV
- Volvo Car Corporation
- Mercedes
- Celsius Tech
- Snecma Elecma
- Informatique CDC
- SAI Automotive
- Feuerwehr Hamburg

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# Agenda

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- 
- ⇒ **Standardization Links**
  - ⇒ **Process model**
  - ⇒ **Context and approach to assessments**
  - ⇒ **Assessment tool demonstration**
  - ⇒ **PULSE trial application**
  - ⇒

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# SPRITE



## Objective and Scope

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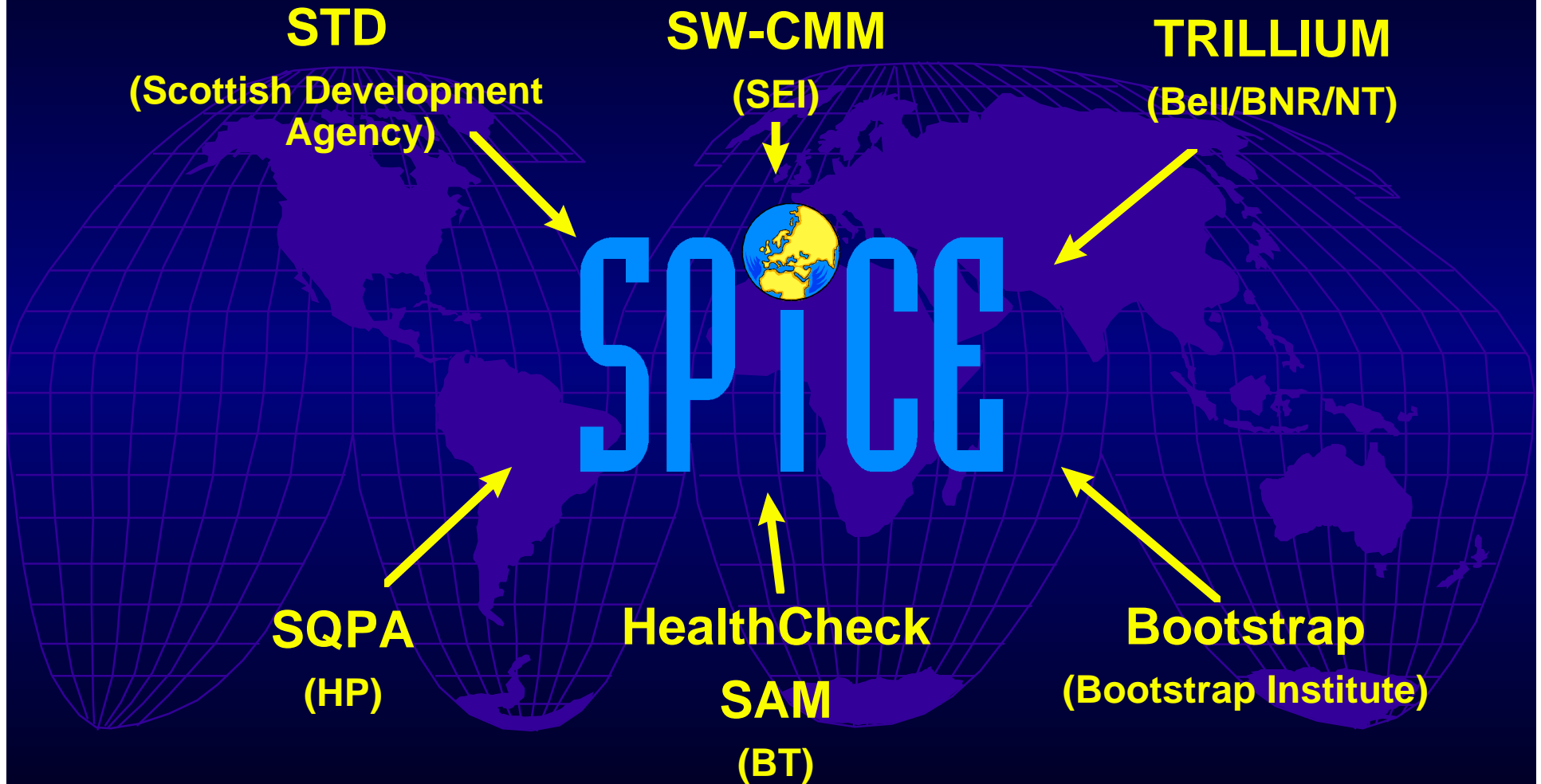
⇒ **ISO/IEC 15504: A software process assessment standard for:**

- Continuous improvement
- Capability determination

⇒ **Scope: plan, manage, execute, control, improve:**

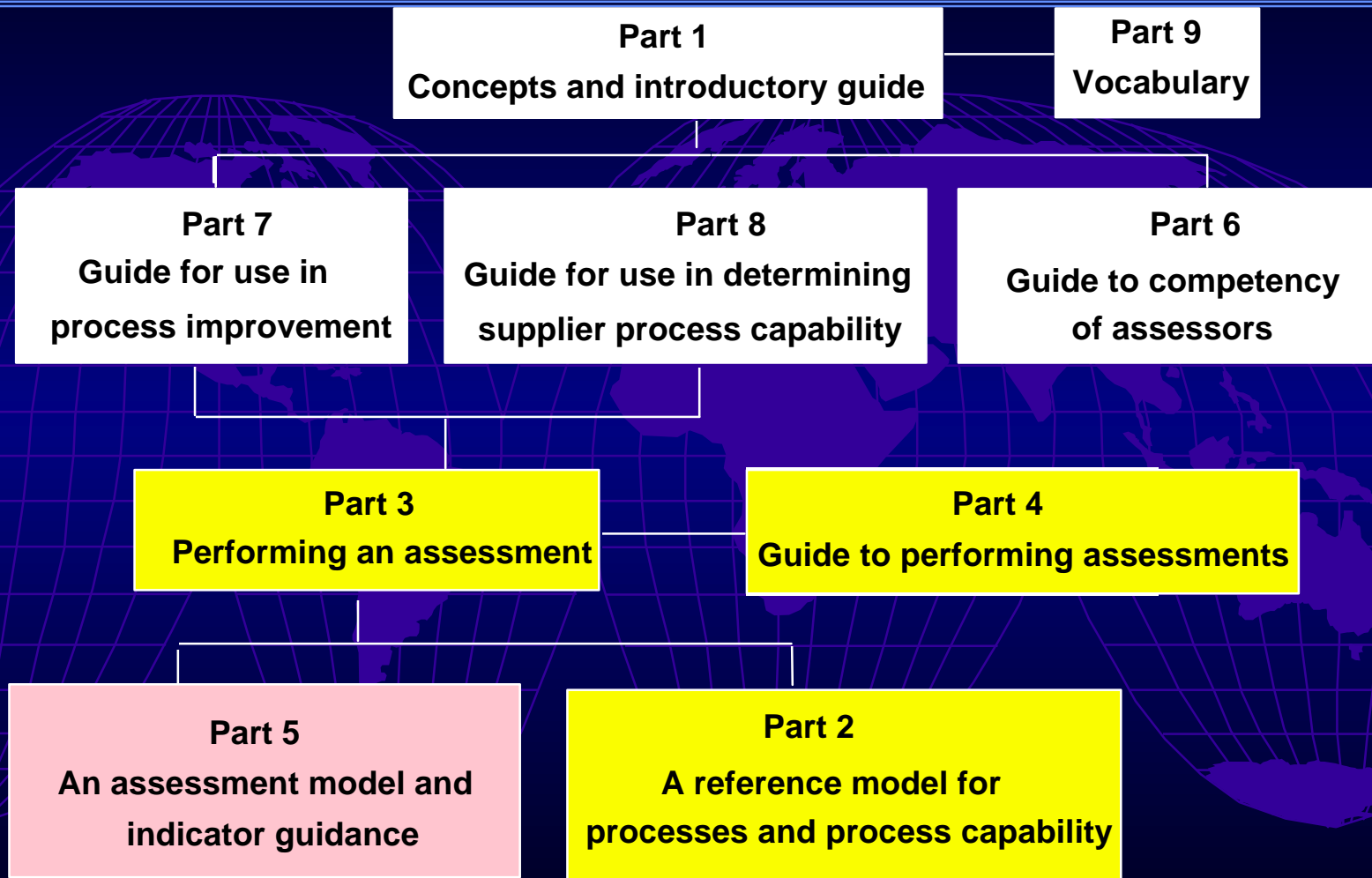
- Acquisition
- Supply
- Development
- Operation
- Maintenance
- Support

## Origins of SPICE





# ISO/IEC 15504 Software Process Assessment



# The 15504 Framework

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- ⇒ **A model for software activities covering both processes and process capability**
- ⇒ **A framework for applying this model to conduct consistent assessments of process capability**
- ⇒ **Guidance for applying assessment results in two contexts:**
  - **Process Improvement**
  - **Process Capability Determination**

## ***But what about ACQUISITION?***

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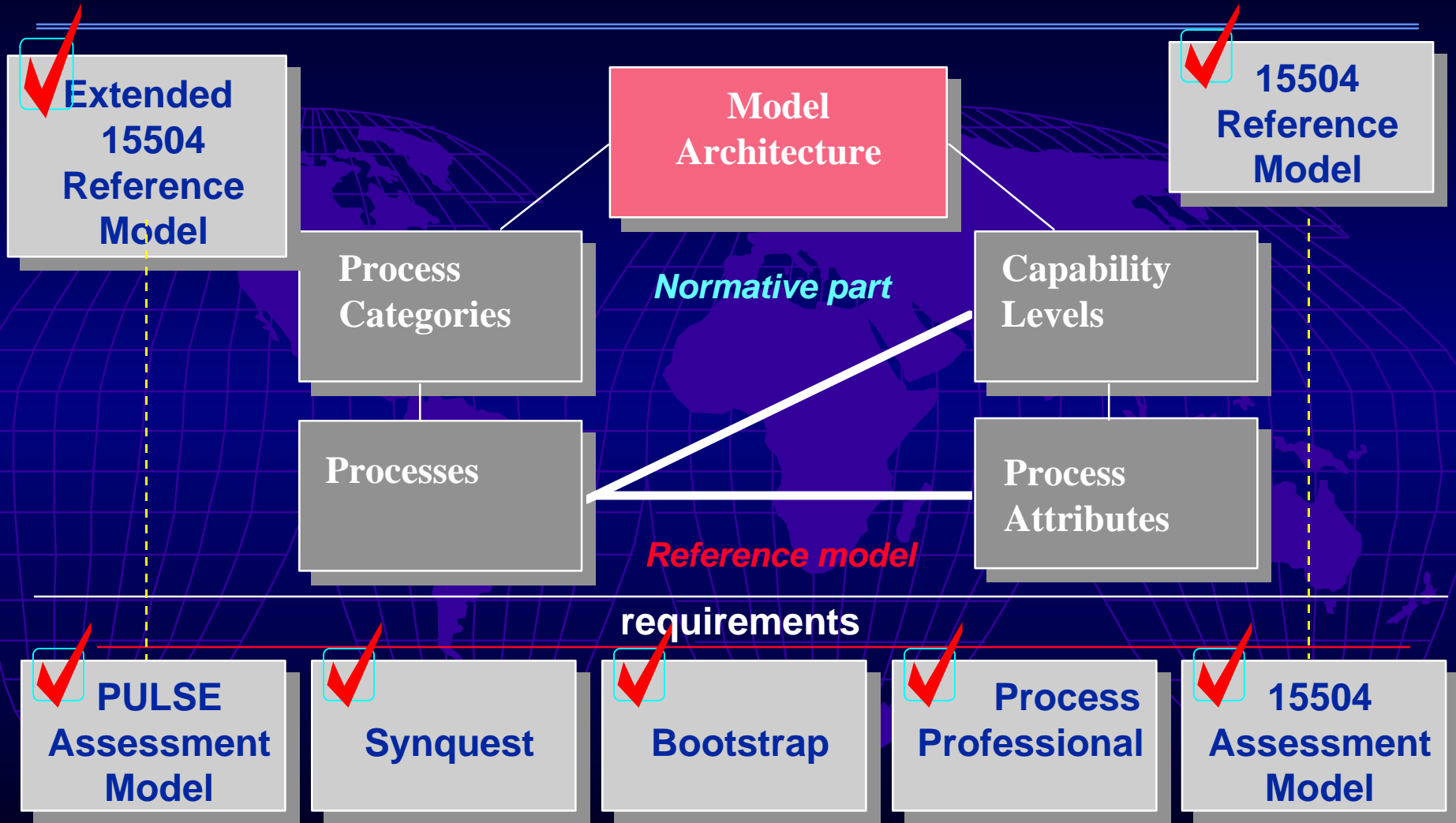
- ⇒ **Intent to cover acquirer and supplier processes as project SUCCESS depends on both parties**
- ⇒ **Most of experts contributing to ISO work were from world software experts**
- ⇒ **ISO/IEC 15504 concentrates to large extent on Supplier processes**
- ⇒ **PULSE fills existing gap on Acquirer processes**
- ⇒ **Proposed amendment to ISO/IEC 15504**

# Agenda

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  - ⇒
  - ⇒

# Compatible Models

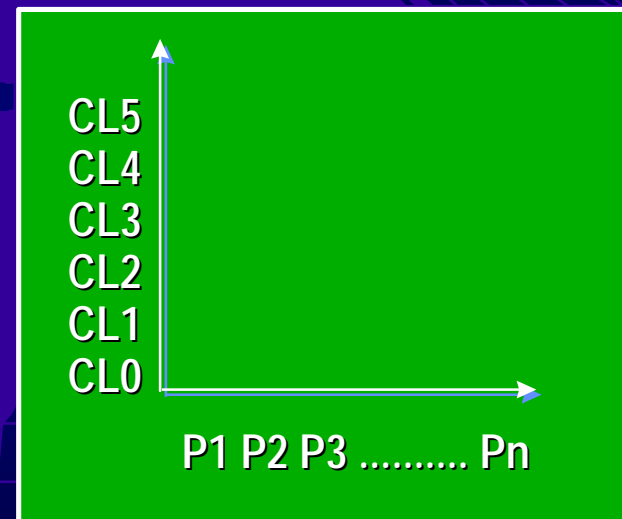


# The Reference Model

⇒ PULSE uses a PLUG-In concept to the 15504/SPICE reference model framework for assessing Software processes to further extend the focus to Acquisition related processes

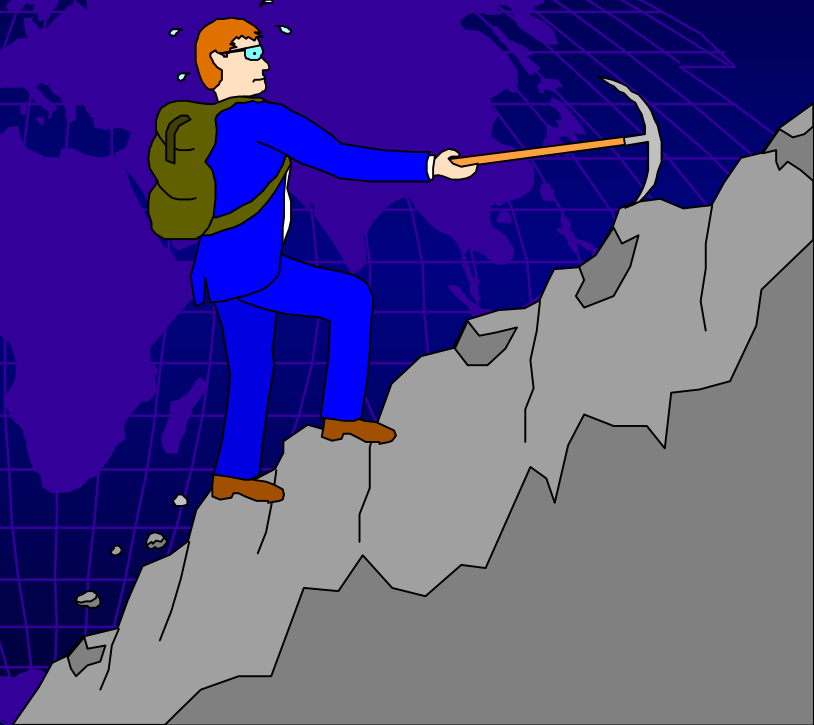
⇒ Two-dimensional model for processes and process capability

- Process Categories
  - Processes
- Capability Levels
  - Process Attributes



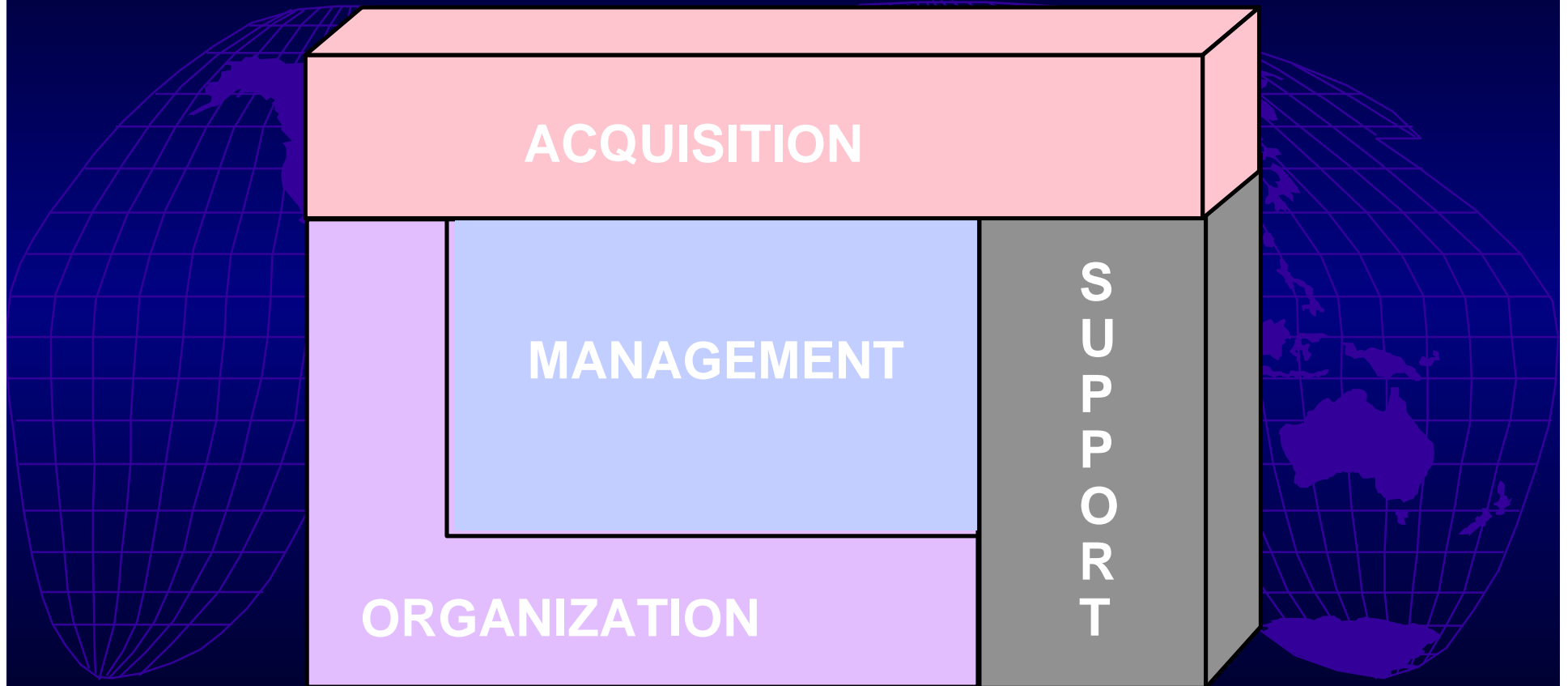
# Process Capability Levels

- ⇒ **Level 0: Incomplete Process**
- ⇒ **Level 1: Performed Process**
- ⇒ **Level 2: Managed Process**
- ⇒ **Level 3: Defined Process**
- ⇒ **Level 4: Established Process**
- ⇒ **Level 5: Optimizing Process**



# ***PULSE Process Categories***

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*Compared to SPICE*



# Acquisition

## ⇒ ACQ1 Acquisition Needs

- ACQ1.1 Acquisition Policy
- ACQ1.2 Acquisition Strategy
- ACQ1.3 Benefits Analysis

## ⇒ ACQ2 Requirements Definition

- ACQ2.1 Technical Requirements
- ACQ2.2 Contract Requirements
- ACQ2.3 Financial Requirements
- ACQ2.4 Project Requirements

## ⇒ ACQ3 Contract Award

- ACQ3.1 Invitation to Tender
- ACQ3.2 Tender Evaluation
- ACQ3.3 Contract Negotiation

## ⇒ ACQ4 Contract Performance

- ACQ4.1 Supplier Monitoring
- ACQ4.2 Customer Acceptance
- ACQ4.3 Contract Closure



## 15504 COMPARISON



## CUS1 Acquisition

- CUS1.1 Acquisition Preparation
- CUS1.2 Supplier Selection
- CUS1.3 Supplier Monitoring
- CUS1.4 Customer Acceptance

# Support / Management

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## ⇒ SUPPORT

⇒ SUP1 Documentation

⇒ SUP2 Configuration Management

⇒ SUP3 Quality Assurance

⇒ SUP4 Verification

⇒ SUP5 Validation

⇒ SUP6 Joint Review

⇒ SUP7 Audit

⇒ SUP8 Problem Resolution

## ⇒ MANAGEMENT

⇒ MAN1 Management

⇒ MAN2 Project Management

⇒ MAN3 Quality Management

⇒ MAN4 Risk Management



# Organisation

⇒ **ORG1 Organisational Alignment**

⇒ **ORG2 Improvement**

- **ORG2.1 Process establishment**
- **ORG2.2 Process Assessment**
- **ORG2.2 Process Improvement**

⇒ **ORG3 Human resource Management**

⇒ **ORG4 Infrastructure**

⇒ **ORG5 Measurement**

⇒ **ORG6 Reuse**

⇒ **ORG7 Financial Management**

⇒ **ORG8 Manage Supplier Relationships**

⇒ **ORG9 Manage User Relationships**

**15504 COMPARISON**

**NEW**

**ORG7, 8 and 9**



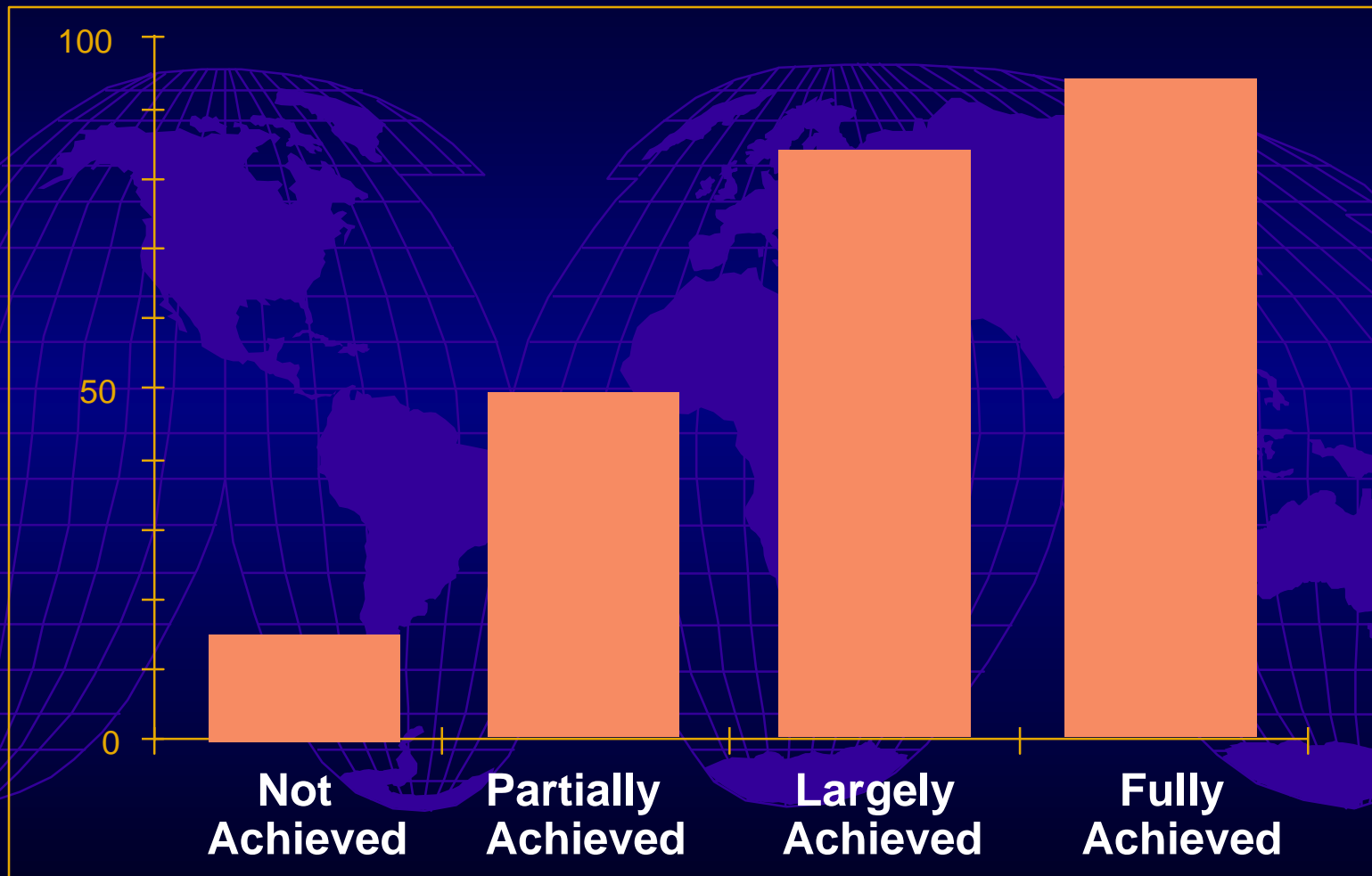
# Process Attributes

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<b>Level 5</b>	<b>5.2</b>	<b>Efficiency and effectiveness</b>
	<b>5.1</b>	<b>Technical infrastructure</b>
<b>Level 4</b>	<b>4.2</b>	<b>Skills, competencies and training</b>
	<b>4.1</b>	<b>Stability</b>
<b>Level 3</b>	<b>3.2</b>	<b>Quality achievement</b>
	<b>3.1</b>	<b>Process definition</b>
<b>Level 2</b>	<b>2.2</b>	<b>Document, configuration &amp; change control</b>
	<b>2.1</b>	<b>Planned and tracked</b>
<b>Level 1</b>	<b>1.1</b>	<b>Performed</b>

# Process Attribute Rating Scale



# PROFILE

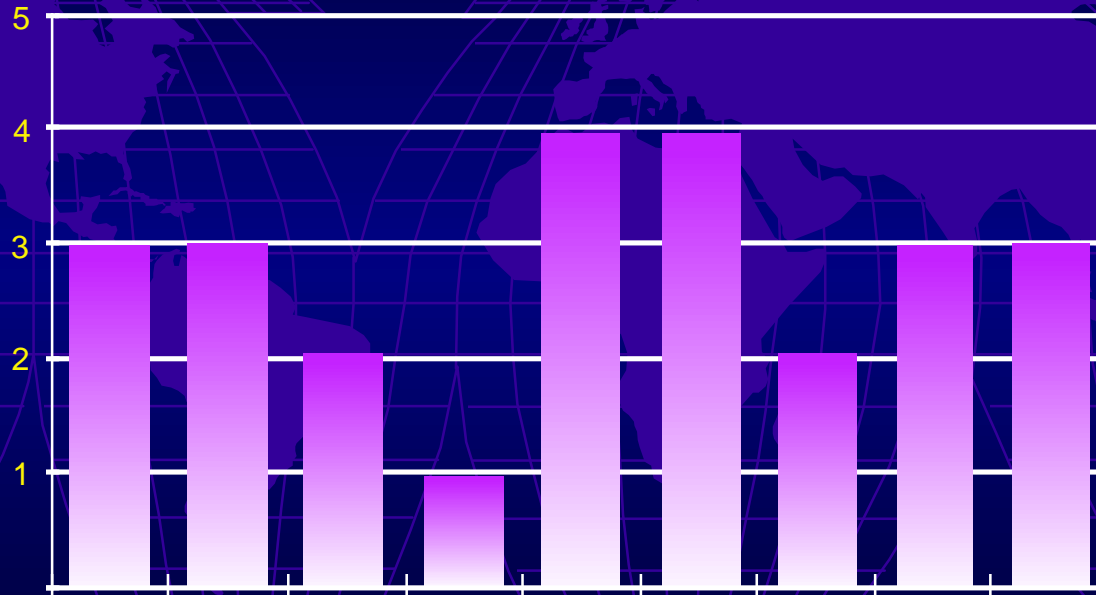
CL5	P	N	N	N	N	N	N	N	N	N	F	F
	L	N	P	N	N	N	N	N	N	N	F	F
CL4	L	P	L	P	P	P	P	P	P	P	F	F
	L	L	L	P	P	P	P	P	P	P	F	F
CL3	F	L	F	L	L	L	P	P	F	F	F	F
	F	L	F	L	F	L	P	P	L	F	F	F
CL2	F	F	F	L	F	L	P	L	F	F	F	F
	F	F	F	F	F	F	P	F	F	F	F	F
CL1	F	F	F	F	F	F	L	F	F	F	F	F
	P1	P2	..	..	..	..	Pn					

Processes 



# CAPABILITY PROFILE

CAPABILITY LEVEL



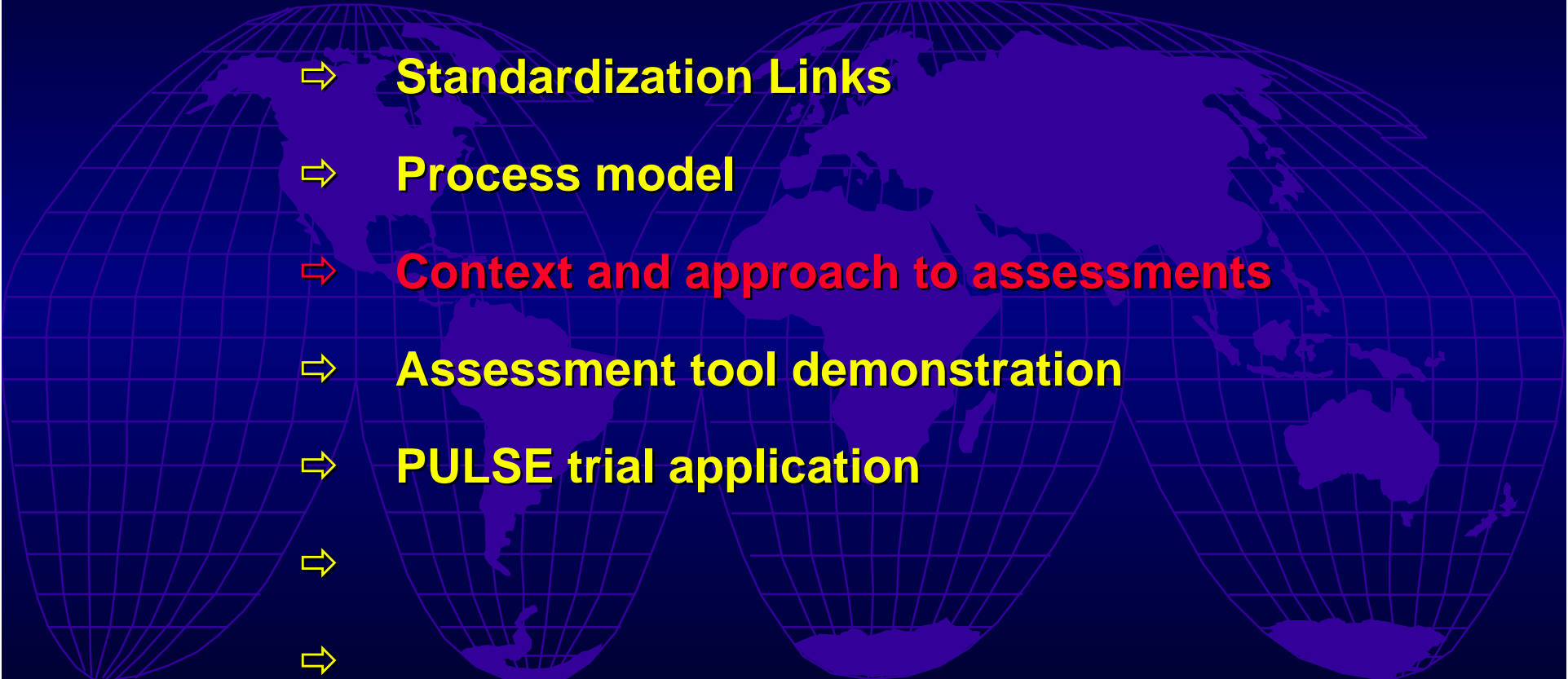
PROCESSES



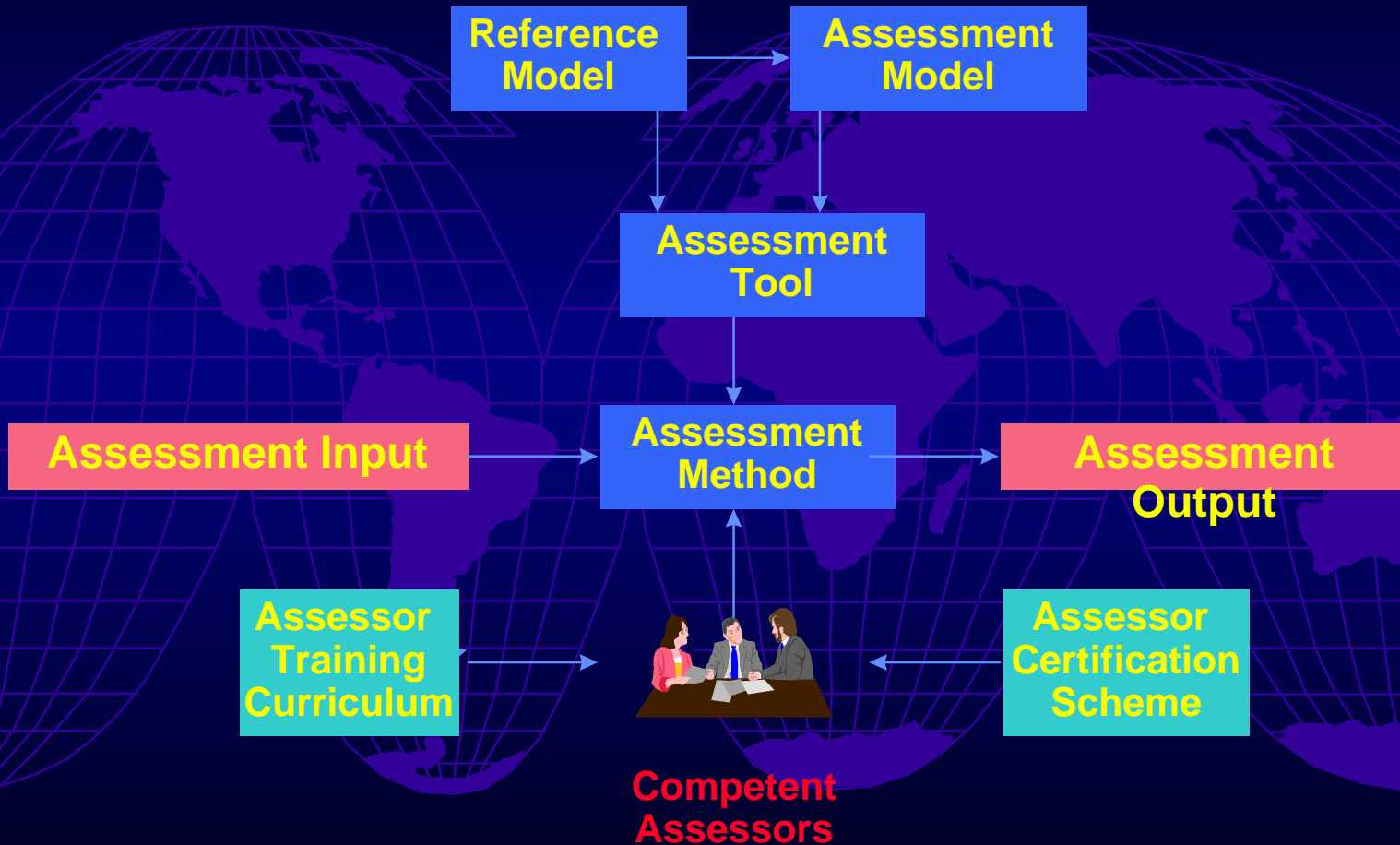


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- ⇒ **Standardization Links**
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  - ⇒
  - ⇒

# Context of PULSE Assessment



# Assessment Approach

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- ⇒ **PULSE assessment supported by a software tool and a set of templates**
- ⇒ **Overall assessment performance mentored by a competent assessor**
- ⇒ **Assessment carefully prepared**
- ⇒ **Concerned organisational unit briefed**
- ⇒ **Round-table and meeting between assessors and assessees to rate process capabilities**
- ⇒ **Assessment Report integrates data recorded by the PULSE tool and information collected in templates**

# Assessment Phases and Processes

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## ⇒ Assessment input

- Assessment input definition

## ⇒ Assessment


- Assessment preparation
- Data collection, validation and rating
- Derive ratings and capability profiles
- Strengths and weaknesses analysis
- Improvement opportunities analysis

## ⇒ Assessment output

- Assessment report

# Assessment Input Definition

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- 
- ⇒ **Assessment purpose**
    - initiative, motivation, expectation and aims
  - ⇒ **Assessment scope**
    - projects/processes to be assessed
    - assessment constraints
    - roles and responsibilities
  - ⇒ **Sponsor approval**

# ***Assessment Preparation***

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- 
- ⇒ **Appoint assessment team**
  - ⇒ **Prepare and sign confidentiality agreement**
  - ⇒ **Plan schedule and resources**
  - ⇒ **Map existing processes**
  - ⇒ **Define processes to be assessed and target levels**
  - ⇒ **Brief organisational unit**

# *From Data Collection to Capability Profile*

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## ⇒ **Data collection, validation and rating**

- Rate process attributes
- Rating based on indicators
- Record “evidence” and “notes”
- Validate ratings via round-table, discussion and negotiation
- Mentored by competent assessor

## ⇒ **Derive rating and capability profile**

- Performed automatically by the tool
- Select suitable charts for reporting
- Feedback summary of findings before producing the assessment report

# Results Analysis

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## ⇒ Strengths and weaknesses analysis

- Identify and measure gaps between target and assessed levels
- Analyse impact and risks

## ⇒ Improvement opportunities

- Select candidate improvement opportunities based on risks to the business
- Prioritise improvement opportunities
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# Assessment Report

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## 1. Introduction

## 2. References

## 3. Executive summary of assessment results

## 4. Input of the assessment

- 4.1 Sponsor
- 4.2 Purpose
- 4.3 Scope of assessment
- 4.4 Assessment team and responsibilities
- 4.5 Assessment schedule and resources
- 4.6 Processes assessed

## 5. Output of the assessment

Process profiles and other charts

## 6. Analysis of assessment results

- 6.1 Process strengths and weaknesses
- 6.2 Candidate process improvement opportunities

## 7. Recommendations



# Support for the Method

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⇒ **Is in the form of**

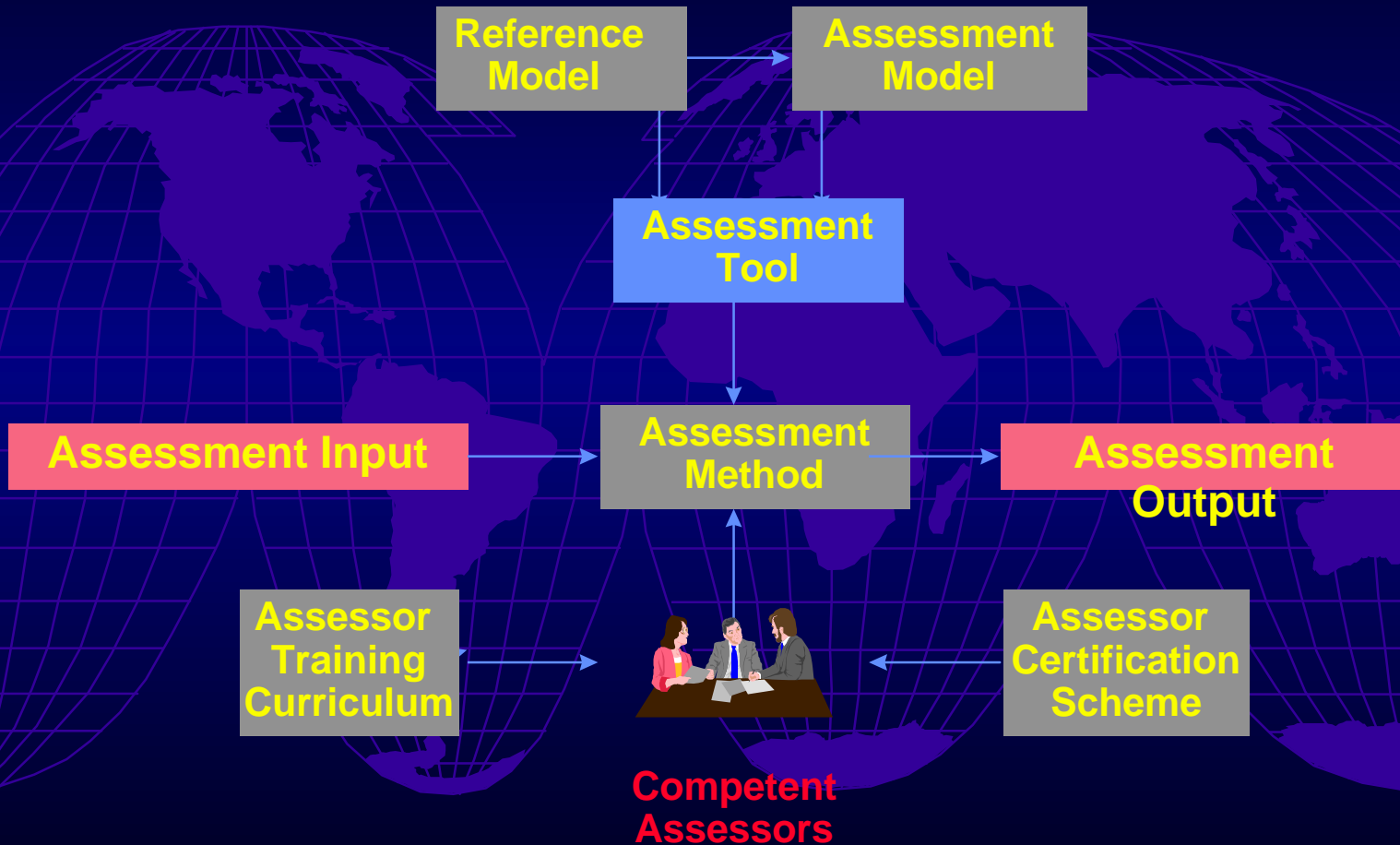
- A set of templates
- A set of presentational materials
- A software assessment tool

# Agenda

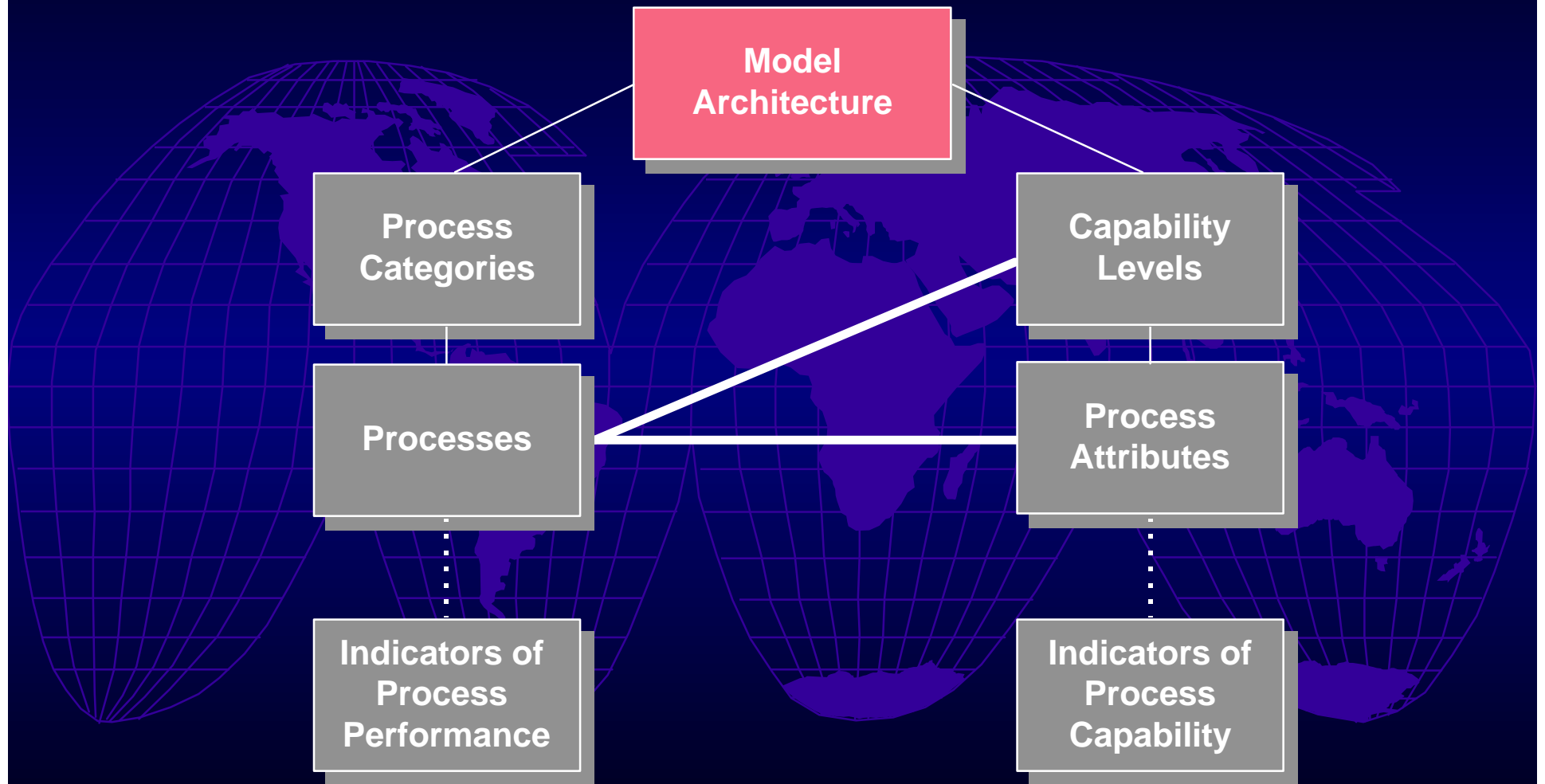
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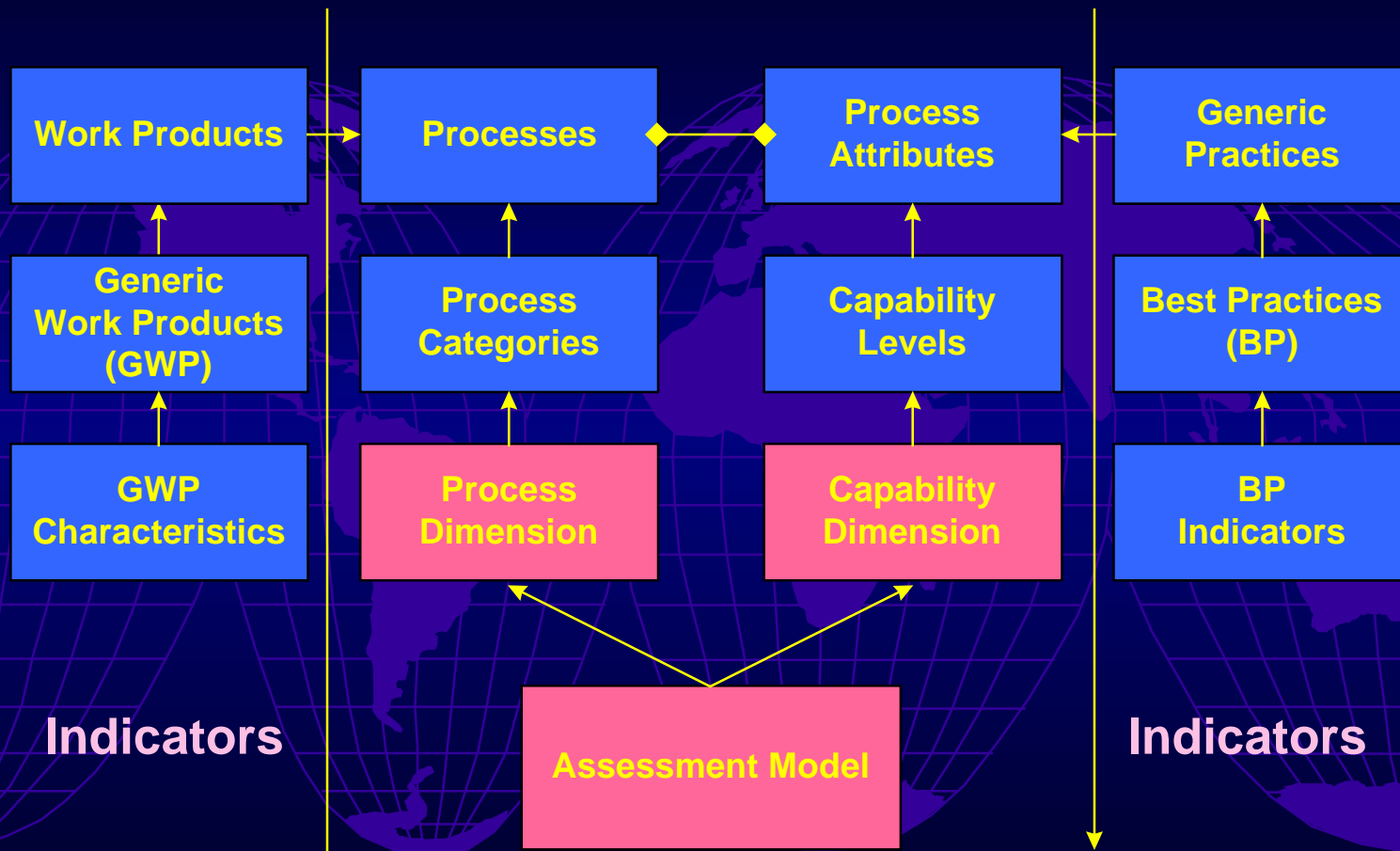
# The Assessment Tool



# Process Model



# Assessment Indicators



# Collecting and Rating Assessment Data

**PULSE Version 98**

Acquisition Processes      Question 1

Acquisition (ACQ)

**ACQ.1 Acquisition Needs**

Meaning not clear     
  Not applicable

	A	A	A	A	A	A	A	A	A
Performed									
	F	F	F	F	F	F	F	F	F
	L	L	L	L	L	L	L	L	L
	P	P	P	P	P	P	P	P	P
	N	N	N	N	N	N	N	N	N
	? %	? %	? %	? %	? %	? %	? %	? %	? %

**Evidence:**

Use the mouse to enter your score for the attribute 'Stability'

# Producing Charts

**PULSE Charts**

SETTINGS REPORT REPORT

Visualisation of: Standard Charts  
**All Processes and their Score**  
 Score Process Categories  
 Score Process Attributes  
 Attribute Performed: Total  
 Process Categories versus  
 Efficiency in Process Categories

Type: Circles

Meaning not clear: 0 %  
 Not applicable: 0 %  
 Not answered: 100

Show values   
 Compare with others

**All Processes and their Score**

Score	PA 1.1 perform	PA 2.1 planned	PA 2.2 acc&change	PA 3.1 defined	PA 3.2 quality	PA 4.1 stable	PA 4.2 skilled	PA 5.1 technical	PA 5.2 efficient
1. ACC 1. Acquisition Needs	*	*	*	*	*	*	*	*	*
2. ACC 1.1 Acquisition Policy	*	*	*	*	*	*	*	*	*
3. ACC 1.2 Acquisition Strategy	*	*	*	*	*	*	*	*	*
4. ACC 1.3 Benefits Analysis	*	*	*	*	*	*	*	*	*
5. ACC 2. Requirement Definition	*	*	*	*	*	*	*	*	*
6. ACC 2.1 Technical Requirements	*	*	*	*	*	*	*	*	*
7. ACC 2.2 Contract Requirements	*	*	*	*	*	*	*	*	*
8. ACC 2.3 Financial Requirements	*	*	*	*	*	*	*	*	*
9. ACC 2.4 Project Requirements	*	*	*	*	*	*	*	*	*
10. ACC 3. Contract Award	*	*	*	*	*	*	*	*	*
11. ACC 3.1 Invitation to Tender	*	*	*	*	*	*	*	*	*
12. ACC 3.2 Tender Evaluation	*	*	*	*	*	*	*	*	*
13. ACC 3.3 Contract Negotiation	*	*	*	*	*	*	*	*	*
14. ACC 4. Contract Performance	*	*	*	*	*	*	*	*	*
15. ACC 4.1 Supplier Monitoring	*	*	*	*	*	*	*	*	*
16. ACC 4.2 Acquisition Acceptance	*	*	*	*	*	*	*	*	*
17. ACC 4.3 Contract Closure	*	*	*	*	*	*	*	*	*
18. SUP 1. Documentation	*	*	*	*	*	*	*	*	*
19. SUP 2. Configuration Management	*	*	*	*	*	*	*	*	*
20. SUP 3. Quality Assurance	*	*	*	*	*	*	*	*	*
21. SUP 4. Verification	*	*	*	*	*	*	*	*	*
22. SUP 5. Validation	*	*	*	*	*	*	*	*	*
23. SUP 6. Audit Review	*	*	*	*	*	*	*	*	*
24. SUP 7. Audit	*	*	*	*	*	*	*	*	*
25. SUP 8. Problem Resolution	*	*	*	*	*	*	*	*	*
26. MAN 1. Management	*	*	*	*	*	*	*	*	*
27. MAN 2. Project Management	*	*	*	*	*	*	*	*	*
28. MAN 3. Quality Management	*	*	*	*	*	*	*	*	*
29. MAN 4. Risk Management	*	*	*	*	*	*	*	*	*
30. ORG 1. Organizational Alignment	*	*	*	*	*	*	*	*	*
31. ORG 2. Improvement	*	*	*	*	*	*	*	*	*
32. ORG 2.1 Process Establishment	*	*	*	*	*	*	*	*	*
33. ORG 2.2 Process Assessment	*	*	*	*	*	*	*	*	*
34. ORG 2.3 Process Improvement	*	*	*	*	*	*	*	*	*
35. ORG 3. Human Resource Management	*	*	*	*	*	*	*	*	*
36. ORG 4. Infrastructure	*	*	*	*	*	*	*	*	*
37. ORG 5. Measurement	*	*	*	*	*	*	*	*	*
38. ORG 6. Procure	*	*	*	*	*	*	*	*	*
39. ORG 7. Financial Management	*	*	*	*	*	*	*	*	*
40. ORG 8. Manage Supplier Relationships	*	*	*	*	*	*	*	*	*
41. ORG 9. Manage User Relationships	*	*	*	*	*	*	*	*	*

