



# How healthy is your project?

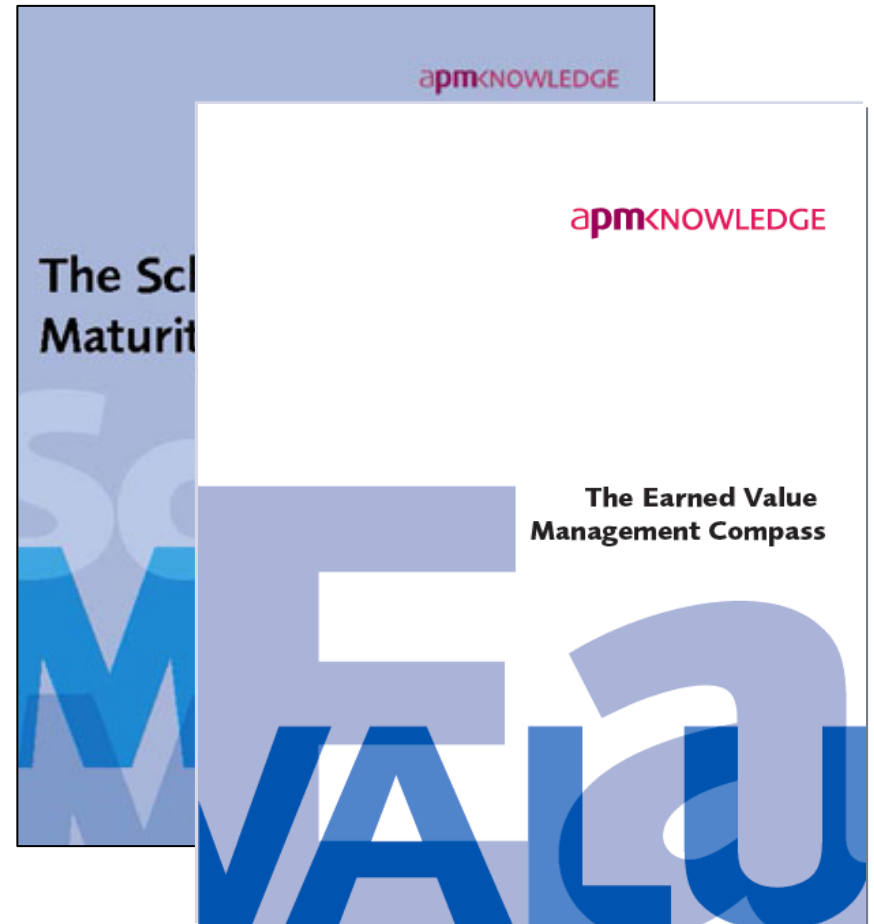
**Alex Davis**

**Planning, Monitoring &  
Control Specific Interest  
Group (SIG)**

**14<sup>th</sup> November 2012**

# Introduction

- The need to measure project health
- Summary of Benefits
- The Earned Value Compass
- ...and the Scheduling Maturity Model
- Who's been involved
- Fundamental Concepts
- Components
- The physical products
- How it is used
- Experiences of using them...
- How to obtain a copy...
- Future Developments



# Thank You

**Ewan Glen**



**Mike Burke**

**BAE SYSTEMS**

**...the PMC SIG members**

**...and APM Knowledgeshare**

# Why measure project health?

- **Lord Kelvin**

- If you cannot measure something, your understanding of it is meagre

- You cannot answer two important questions:

- How do you know where you are?

...and

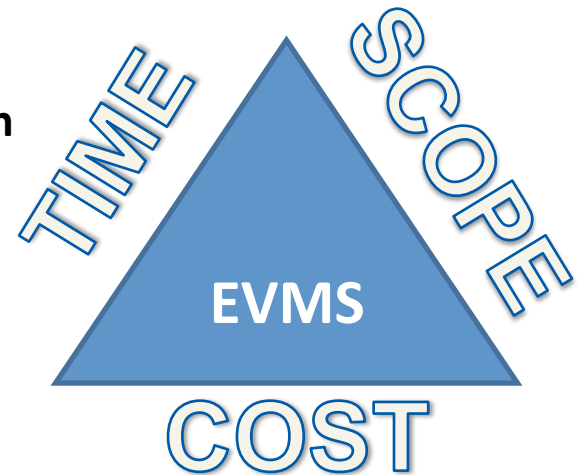
- How do we improve?

# Why measure project health?

- **David Birch, Head of Programme Controls, ODA Delivery Partner CLM**
- On the use of planning and scheduling...
  - ‘... led to **growing trust** in status updates and an **honesty in forecasting** which allowed effective (and sometimes necessarily rapid) decisions to be made.’
- On the use of the Scheduling Maturity Model...
  - ‘...a scalable ‘off the shelf’ maturity matrix that could be adapted to every project **would have been a valuable addition** to the programme toolbox and may have enabled **earlier identification of maturity status issues** and for an even better result.’

# What is EVM?

- EVM is a system of project control, based on a structured approach to planning, cost control and performance measurement.
- EVM integrates project **scope**, **time** and **cost** objectives.
- EVM facilitates the establishment of a 'baseline' plan, against which performance can be measured.
- EVM is structured around 32 criteria as outlined in ANSI/EIA-748
  - These criteria define what the system must be able to do but they don't define how to do it - each company's system should further define how they are going to achieve compliance to the criteria



# Why do we need project health checks?

- Use of Project Control is on the increase due to the benefits it provides:
  - It establishes a more structured approach to project delivery
  - It generates meaningful performance data to enable informed management decision-making and delivery confidence
- BUT, implementing an effective EVM System often proves more difficult than first anticipated
  - Which areas to focus upon first (there are 32 criteria...)?
  - How do you know when the EVMS is “good enough”?
- And as a result...
  - System may become burdensome to maintain
  - Plans (and schedules) do not reflect actual project progress or status
  - It fails to generate timely data that management use to take corrective action



# Why Do We Need an EVM Compass or a scheduling maturity model?





# A solution – the maturity model

- A maturity model provides a mechanism to
  - Assess your current level of operational maturity across one or more project control functions
    - Using a structured approach that is applicable across projects
    - Provides a reference point for future improvement
  - Establish a target performance level
    - allowing the prioritisation of improvement actions to areas that will provide the greatest short term return
  
- The main objective of using a maturity model is to measure ‘as is’ performance and to help **Improve Performance** and increase the **degree of transparency in Project Control**

## **Maturity Models – what are the main benefits?**

- Using the EVM Compass and Scheduling Maturity Model enables the delivery a range of benefits, including:**
  - Identify and allow the sharing of good practice across projects within an organisation.**
  - Use it to assess and present the findings from a variety of EVM reviews in a format that is easy to understand.**
  - Facilitate comparisons with other projects.**
  - Support the development of your business plan and strategy.**
  - It can be used to supplement(though not replace) other EVM reviews such as the Integrated Baseline Review**

# EVM Compass Development

- EVM Compass developed by the UK Association for Project Management EVM Specific Interest Group (now part of the PMC SIG)
  - Sub-group formed to develop model, consisting of individuals from BAE Systems, BMT Hi-Q Sigma, UK Ministry of Defence, OTC Optima, Rolls Royce, Thales and Taylor Woodrow (was VINCI Construction, now BAMVinciNuttall)



# Fundamental Principles

- ❑ The EV Compass and SMM should
  - ❑ Provide a comprehensive and systematic review of a **Projects** EVM and scheduling maturity
  - ❑ Use a **common framework** that supports either the assessment of a single project or allows organisations to benchmark and compare the relative strengths of their various projects
  - ❑ Provide a defined means to support projects in **establishing and improving project control capability**
  - ❑ Allow projects to **reference the 'as is' EVM and scheduling condition with the 'to be' condition**
  - ❑ Give EVM System reviewers a **consistent** method of assessing Projects
  - ❑ Allow organisations to **establish their own target performance level** (rather than define it for them)

# EV Compass Components

## Maturity Stages (from LFE)

- Introduced based upon experience during trials

- 4 Stages to achieving a mature EVM system

- Establish EVM Foundations

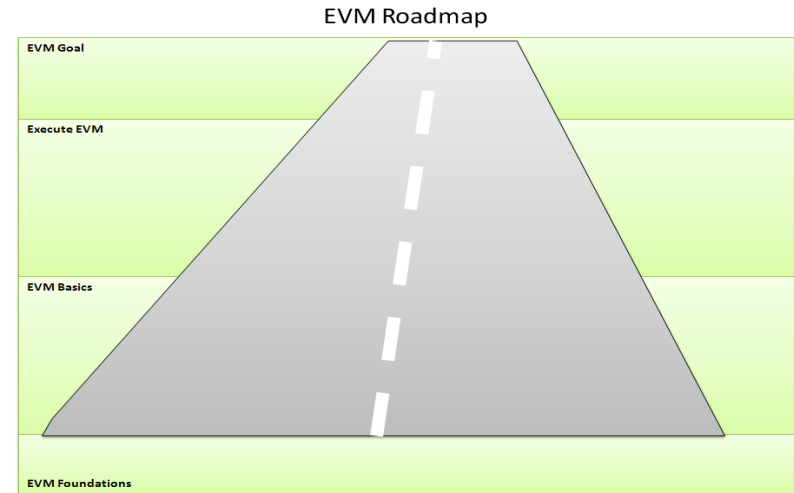
- Establish EVM Basics

- Execute EVM

- Achieve the EVM Goal

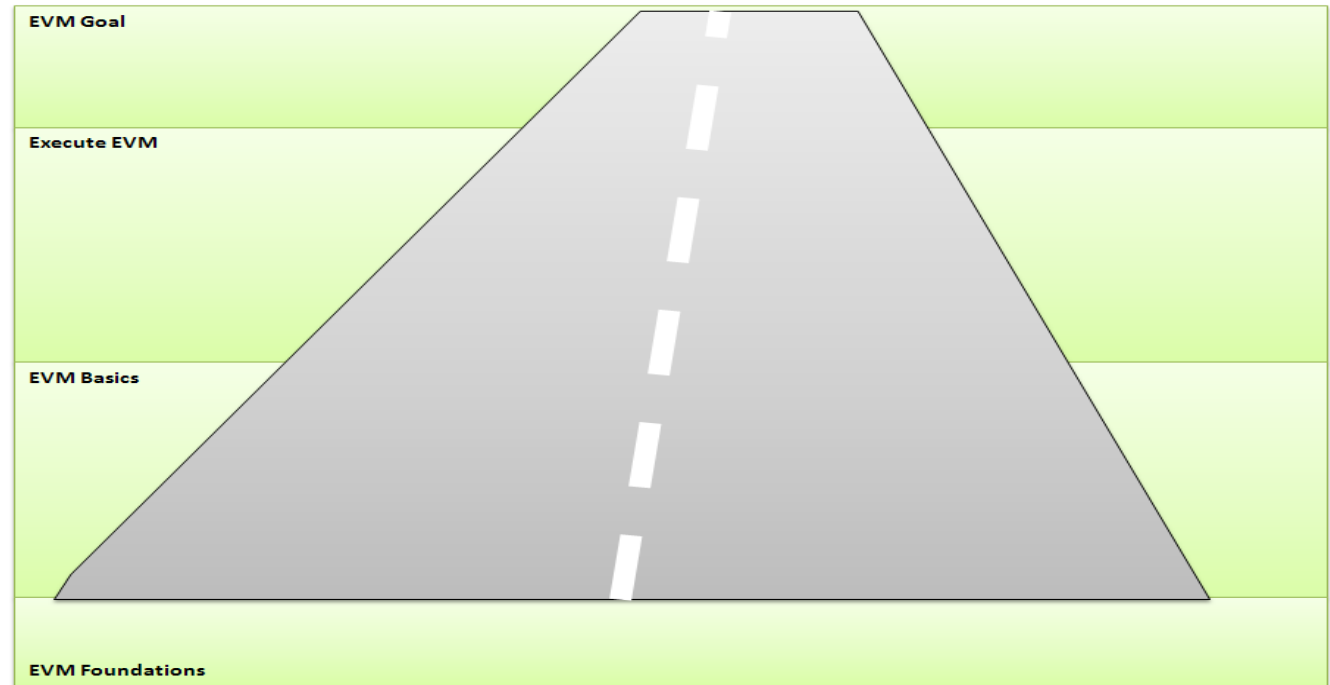
- Help provide a roadmap to EVM implementation and help ensure maturity assessment takes into account the stage of the implementation

- E.g. Don't expect to be managing using EVM when foundations are not established

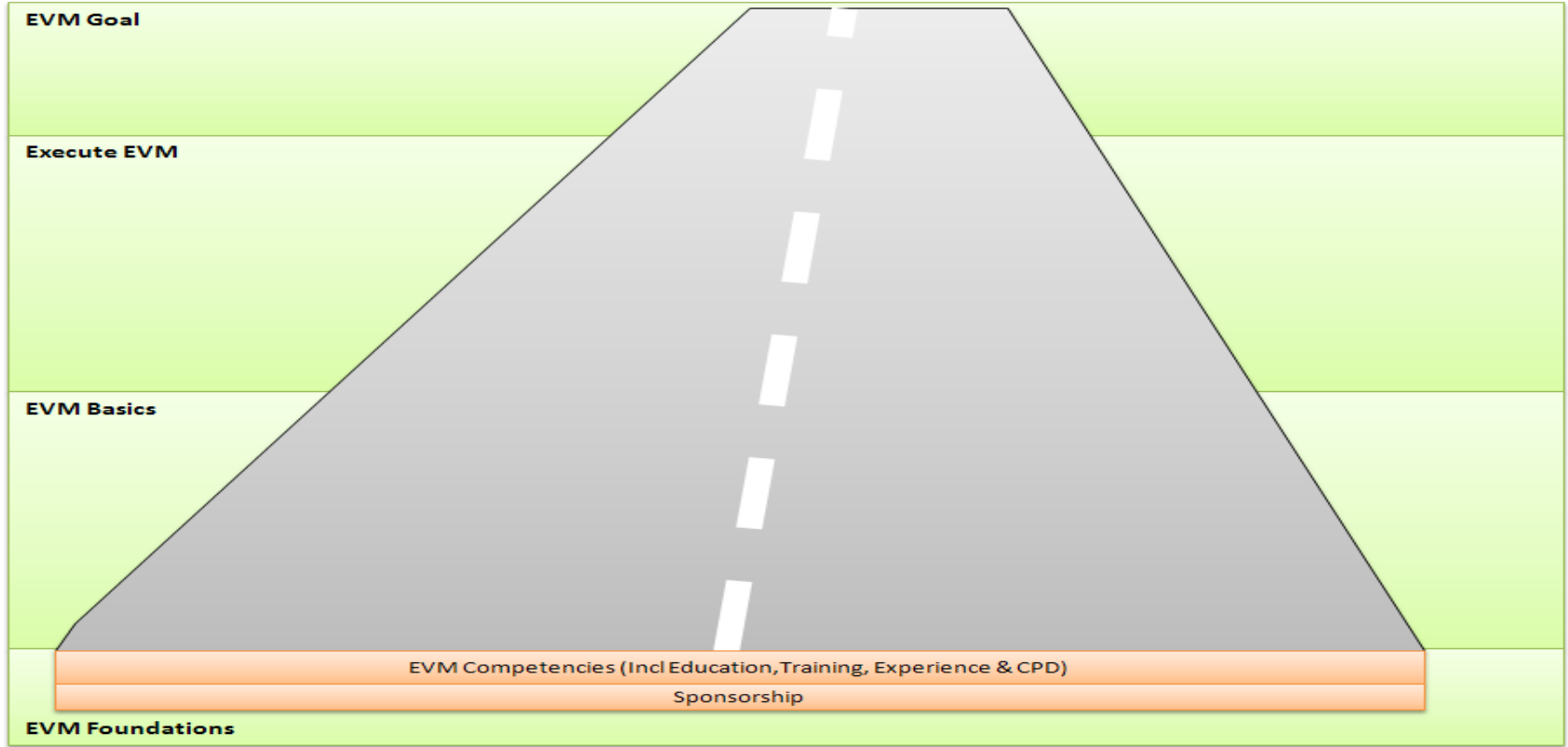


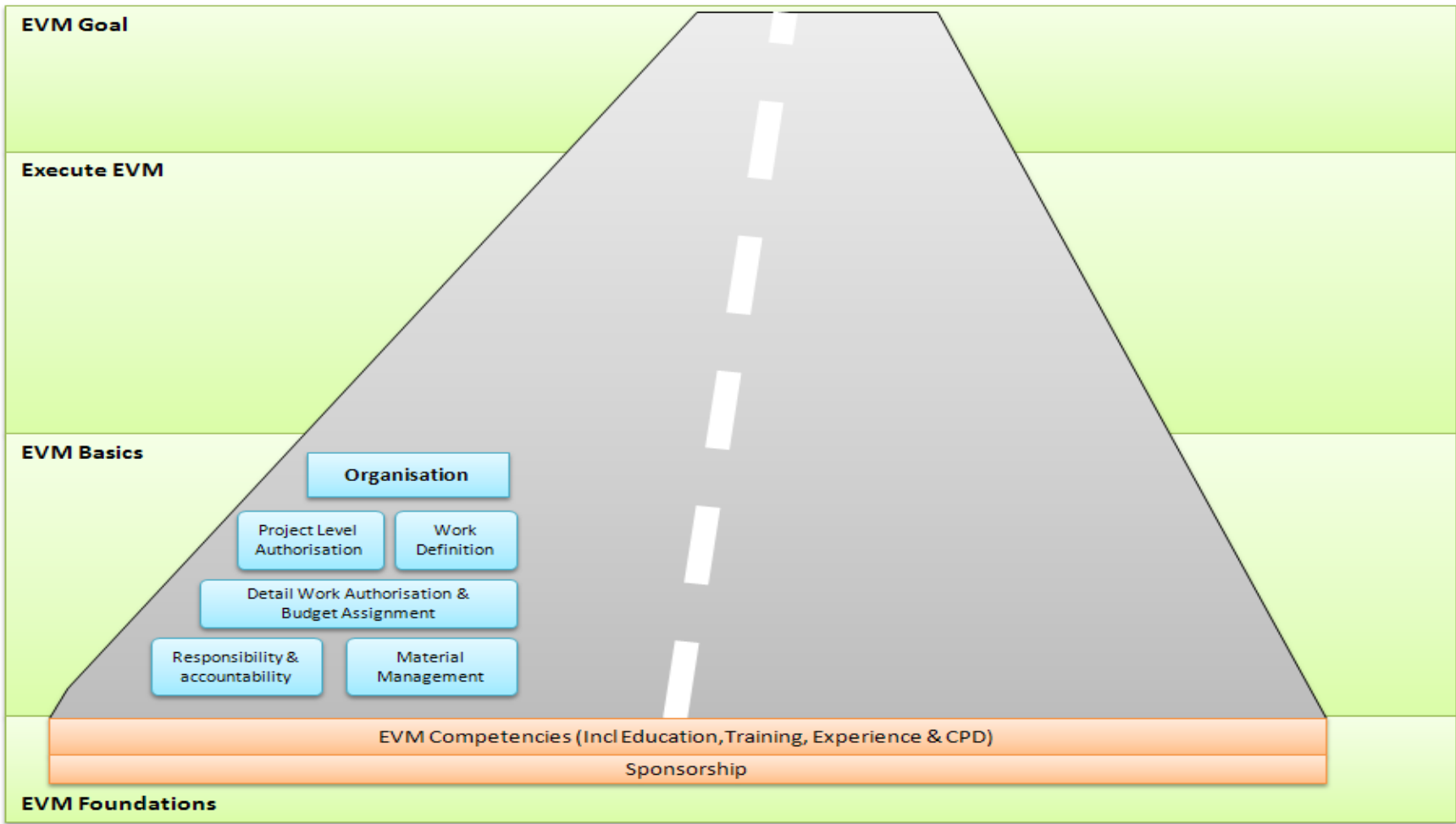
# EV Compass Components

- 25 “Attributes” are split across the 4 Maturity Stages
  - Each attribute is scored on a maturity level of 1-5

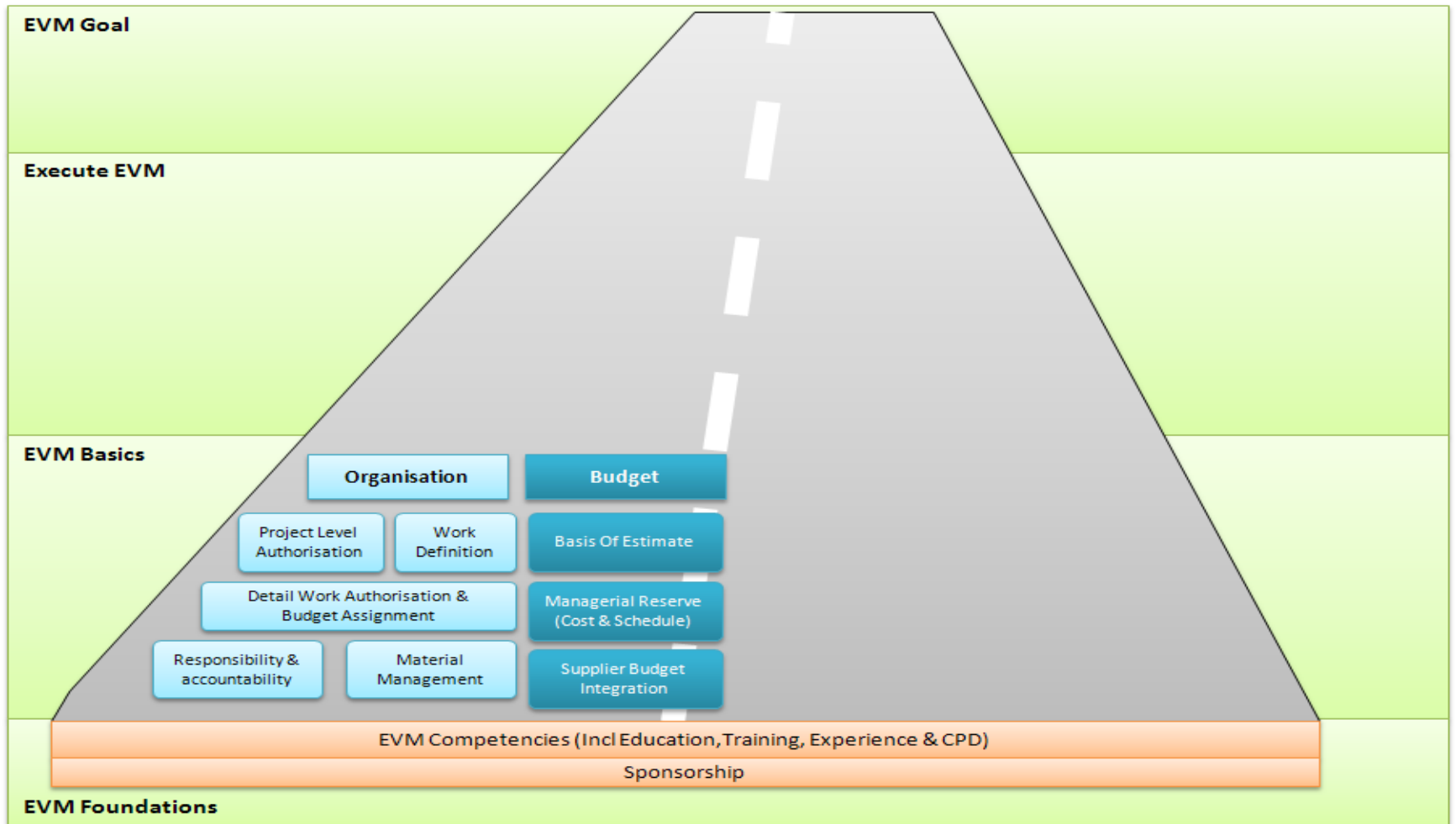


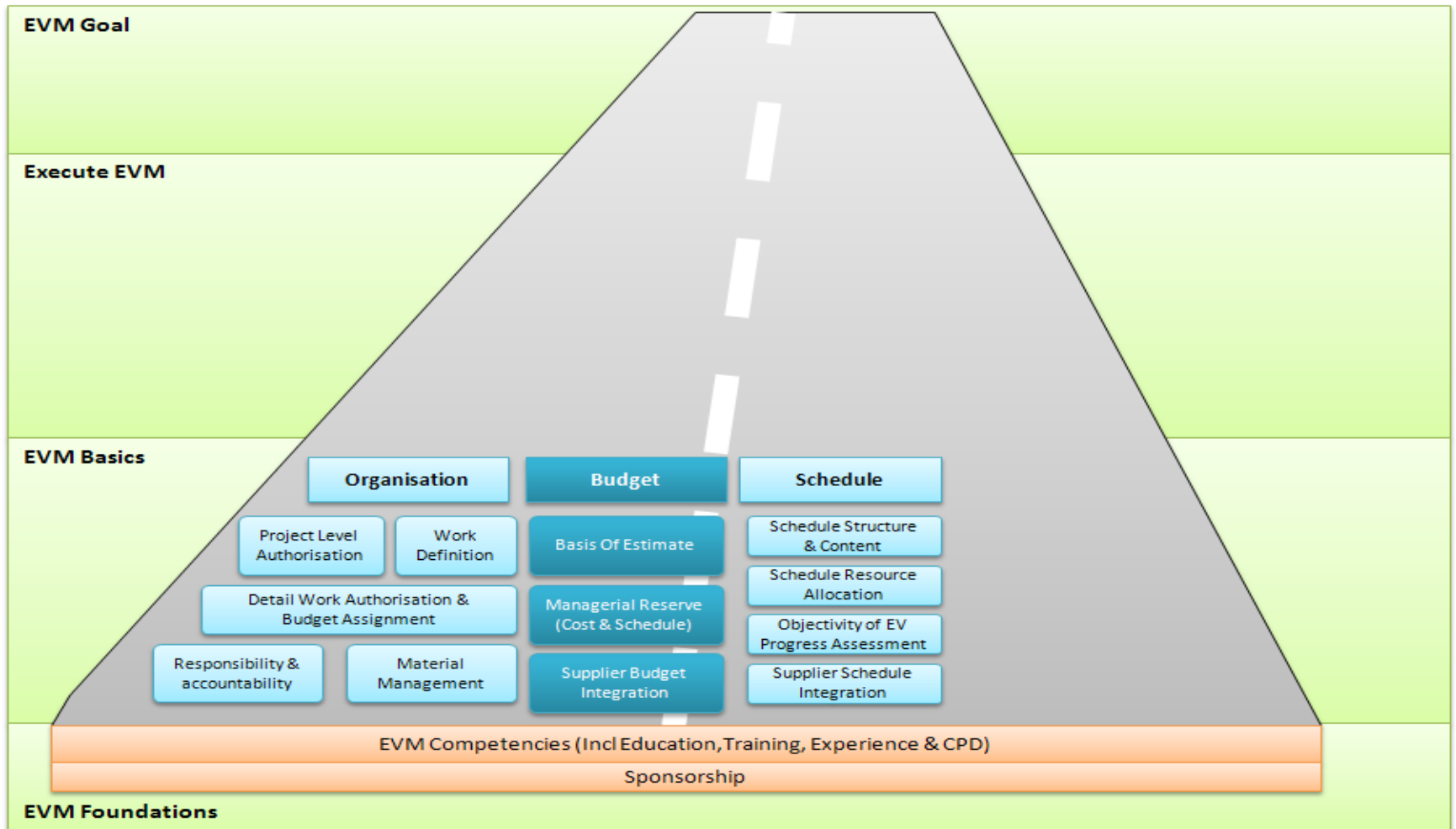
# EV Compass Components

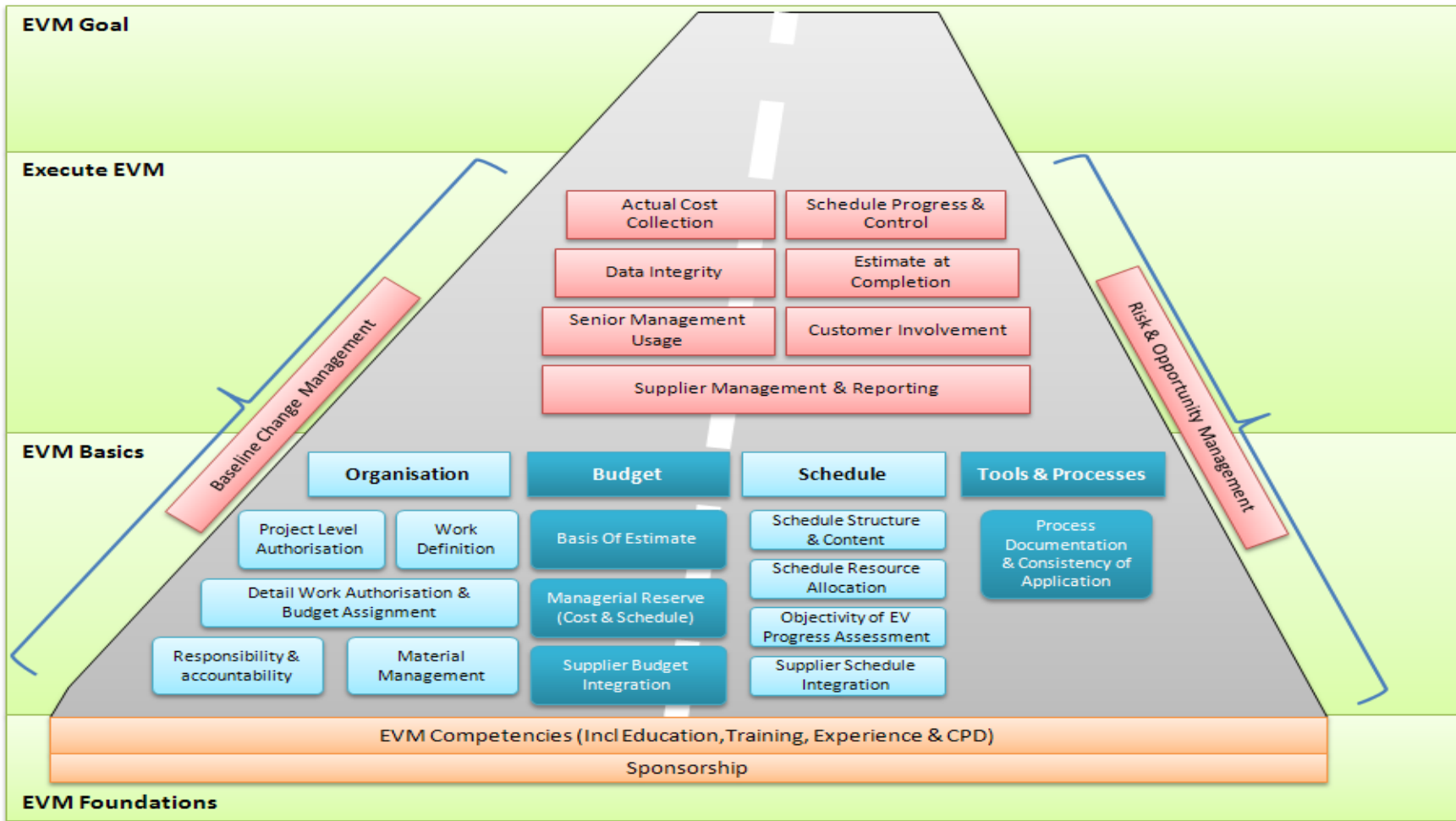


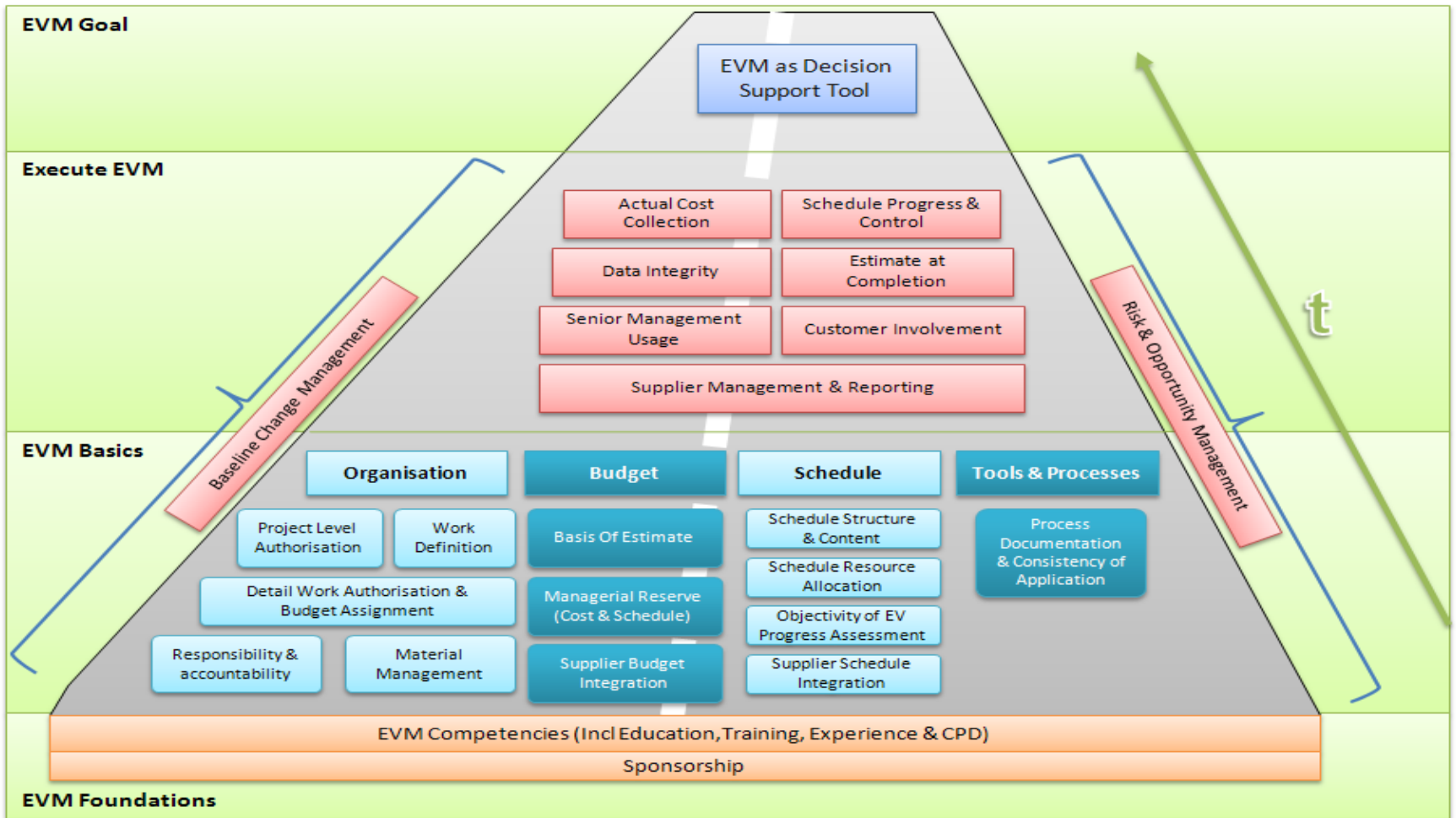












# Physical Outputs – Maturity Grid

- **Maturity Model**
- **EVM Compass has 25 Attributes; SMM has 28. Each may be individually assessed.**
- **5 levels of performance against each of the Attributes**
- **Score both the current performance level (“as is”) and target performance level (“to be”)**

	1	2	3	4	5
<b>EVM Foundations</b>					
<b>1. Earned Value Management Competencies</b>					
	Little or no training in the concepts of EVM is available and take-up is inconsistent.	Formal training and a budget to support its roll-out exists in the concepts of EVM for all key roles within the project organisation but take-up is inconsistent. There is little or no previous experience of EVM system implementation within the team.	Coordinated, funded training provides consistency in EVM approach and all team members have been sufficiently trained in EVM to fulfil their roles. Refresher and more advanced EVM training is provided to those that require it. The team is able to draw upon previous implementation experience of either team members or support personnel.	Training is linked into personnel development processes. Training and competency records are maintained. Previous experience of EVM system implementation is considered a crucial element when constructing project teams. Project teams are supported by staff with the knowledge to implement an appropriately scaled EVMS for the project and then support its use through initial months or data churn and noise.	Training courses are tailored to meet specific project needs and the course material is periodically updated to reflect lessons learned from projects. These lessons are then directly fed into new projects when forming the teams.
<b>2. Sponsorship</b>					
	The EVM system is established without the support or commitment of a Senior Manager.	The EVM system is established with the passive support of a Senior Manager.	The EVM Sponsor provides proactive and visible support providing clear tactical direction.	The EVM Sponsor provides strategic direction on the use of EVM across the business and into the Customer and Supplier chains.	EVM sponsorship and adoption is actively supported by all appropriate senior management team members.
<b>EVM Basics</b>					
<b>3. Project Level Authorisation</b>					
	The project has commenced with no formal authorisation documentation from the Approval Authority.	The Approval Authority have sanctioned the project using a formal process. Responsibility, accountability, and authority for delivering the project work scope are held by an authorised individual.	The project organisational structure is defined and documented, including the major subcontractors responsible for accomplishing the authorised work. Responsibility, accountability, and authority for project work scope are held by the Senior project Manager and delegated appropriately. Organisational responsibility is defined for all elements of work using an OBS. All activities are assigned to an element of the OBS. A documented correlation exists between the WBS and OBS, utilising the Responsibility Assignment Matrix (RAM).	Responsible Managers (RM) have fully documented scope, deliverables, budget, assumptions, and exclusions for their elements of work. The OBS is subject to formal change control. OBS and RAM are maintained.	This level considered and left blank.
<b>4. Work Definition</b>					
	There is no formal WBS or only an outline WBS exists.	Scope is documented and decomposed into meaningful, manageable elements. A recognised Work Breakdown Structure and/or other appropriate structure eg. Product Breakdown Structure (PBS) is established.	All authorised work elements are defined for the project. A Work Breakdown Structure (WBS) is used in this process. WBS elements are appropriately documented. The project objectives are clearly defined and documented and related to the WBS. The scope of work is under configuration control. The scope is documented in an auditable and traceable way (eg. WBS Dictionary) .	A systematic process, such as using standard WBS structures to enable standardised reporting, decomposes project requirements and identifies the scope of work necessary to deliver these requirements. The link between customer requirements and WBS elements is clearly defined. The impact of changes to scope, technical specification or requirement are assessed for their impact on the WBS structure and its documentation.	The structure of the WBS is reviewed to ensure that future projects benefit from any lessons learned, particularly relating to how far it facilitated good dissemination of work products, collection of performance data and resulting ability to control the project.
<b>5. Detail Work Authorisation &amp; Budget Assignment</b>					
	There is no mechanism for formal authorisation of work and budgets.	There is a formal mechanism for work authorisation but it is inconsistently applied and budget is not always associated with work scope.	The Budget/Work/Schedule is formally authorised prior to work commencing. Task owners have formally agreed to complete the work as defined. Budgets are established by Control Account or other authorised low-level account) for authorised work. Budgets are consistent with resources applied to schedules. Budget is distributed for duration of Control Accounts. Formal management procedures exist to open/close/suspend work but there is inconsistent application.	CAMs manage a total budget (E,S) and are responsible for material purchases as well as manhours. Formal closure processes and mechanisms exist once the work scope has been completed and are consistently applied.	Budgets and actual cost are used to inform future estimating.
<b>6. Responsibility &amp; Accountability</b>					
	There are no personal Terms of Reference (TORs) issued that are appropriate to the Project.	The Senior Project Management Team have been issued with appropriate TORs that have been communicated to all management staff within the organisation.	The Project Management Team (inclusive of CAMs) have been issued with appropriate TORs that have been communicated to all management staff within the organisation. There are clear reporting lines to both the Project Management Team and functional management where appropriate.	There is a change process / feedback in TORs and for the hand over of scope and budget between CAMs, which are maintained over the project life to provide consistency.	The individuals TORs are integrated with their respective HR Personal Development Plans for personal objectives.
<b>7. Material Management</b>					
	Materials are excluded from the Earned Value Management System.	Material / consumables budgets are included in the EVMS and are separated into appropriate work and planning packages.	Material / consumables budgets are included in the EVMS with appropriate measures of progress and appropriate actual cost collection mechanisms are employed.	Materials / consumables can be traced from the Purchase Order requirement data through to the need date. Material costs within the EVMS can be traced to the purchase order.	Material / consumables budgets and actual cost are used to inform future estimating. Residual inventory has appropriate disposal controls within the EVMS.

Organisation

# Physical Outputs – Explanatory Text

## Explanatory Text

- Guidance on the use of the Maturity Grid

- Overview of the Maturity Stages

- Explanations for each of the Articles

- The Aim – the objective of the attribute

- The Reason – why the attribute is important

- Guidance Information – additional information to assist users who are less familiar with the implementation and utilisation of Earned Value Management Systems

# How to use the EV Compass and SMM

- ❑ Process is 'simples'
- ❑ The Compass supports three levels of assessment
  - Self-assessment by Project Team
  - Peer Assessment (workshop)
  - Independent Review / Facilitated Workshop



Method	Effort	Reliability	Cost
Self-Assessment	Low	Low	Low
Peer Assessment (Workshop)	High	Medium	Medium
Facilitated Workshop	Medium	High	High

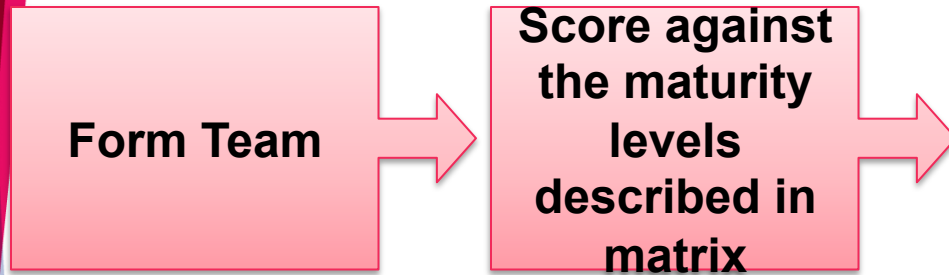
# How to use the EV Compass and SMM

**Form Team** 

- 1. Make sure it is a team – assessments by one individual tend to be biased**
- 2. Make sure it involves at least one person with experience of implementing EVM**
- 3. Involve staff who know how the project operates in addition to how the organisation the project sits within operates**



# How to use the EV Compass and SMM



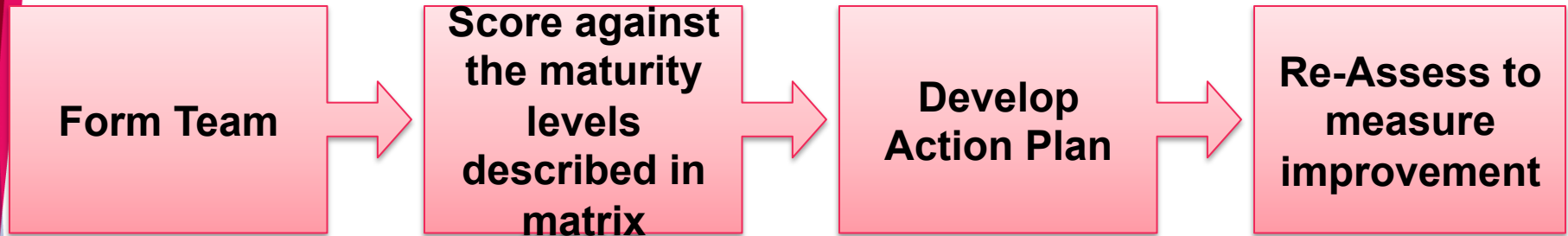
1. **Assess current performance (ranging from 1-5 for each of the attributes)**
2. **Be honest with yourself, be pragmatic**
3. **Propose target performance levels (remembering that EVM is a tool to support delivery and not an end in itself)**

# How to use the EV Compass and SMM



- 1. Prioritise actions (bear in mind the maturity stages)**
- 2. Agree action owners and target delivery dates**
- 3. Consider a phased improvement, with intermediate reviews to check achievements**

# How to use the EV Compass and SMM



## 1. Repeat process, either to

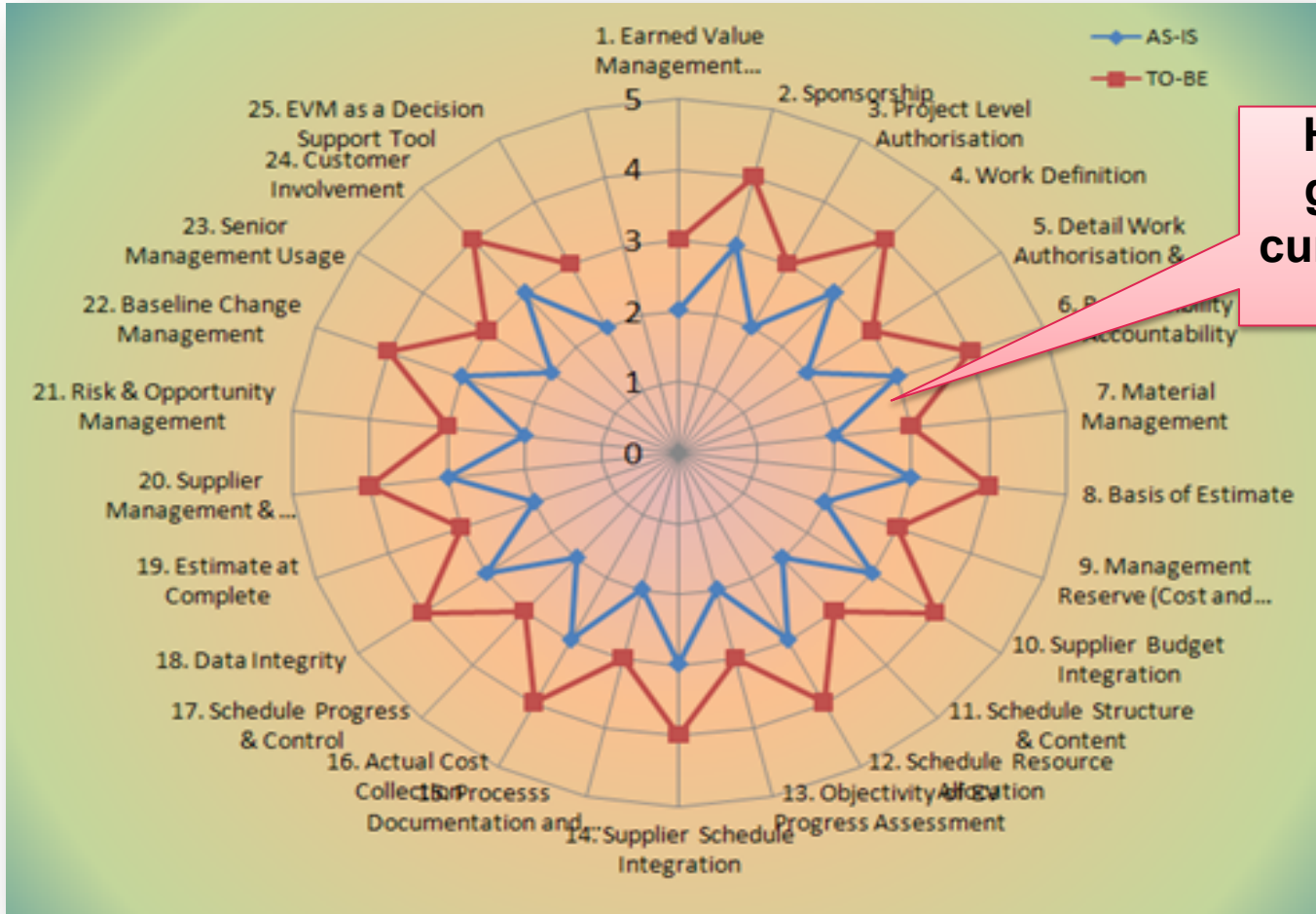
- identify if “to be” maturity has been achieved or
- ensure that target performance level is being maintained

# Output format

- Raw data may be formatted to meet your specific needs**
  - **Two sets of data for each of the Attributes**
    - Lends itself to detailed reporting to Project Control team members
  - **Grouping of attributes within each section**
    - Lends itself to summarised reporting to Management
- Customisation or tailoring is recommended to make sure it fits within your organisation**



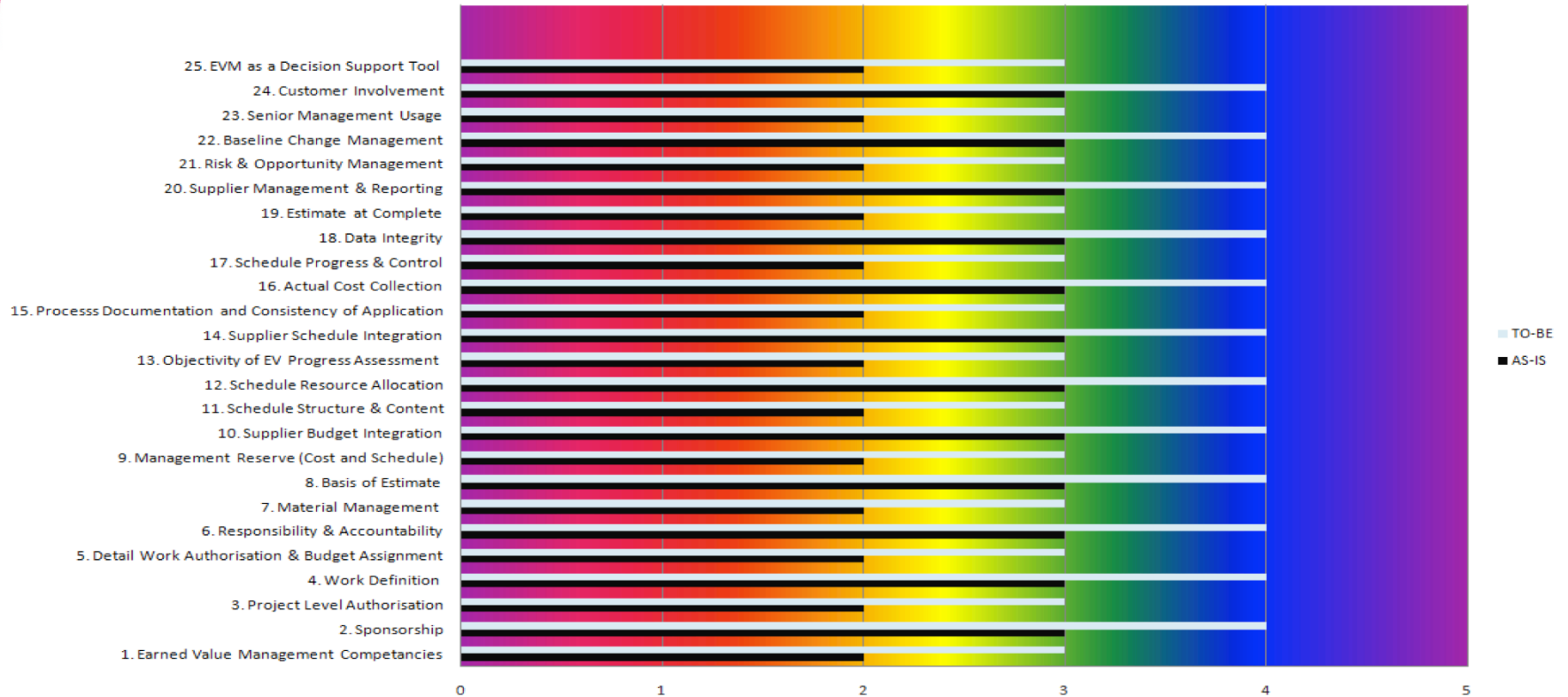
# EV Compass output – Radar Plot



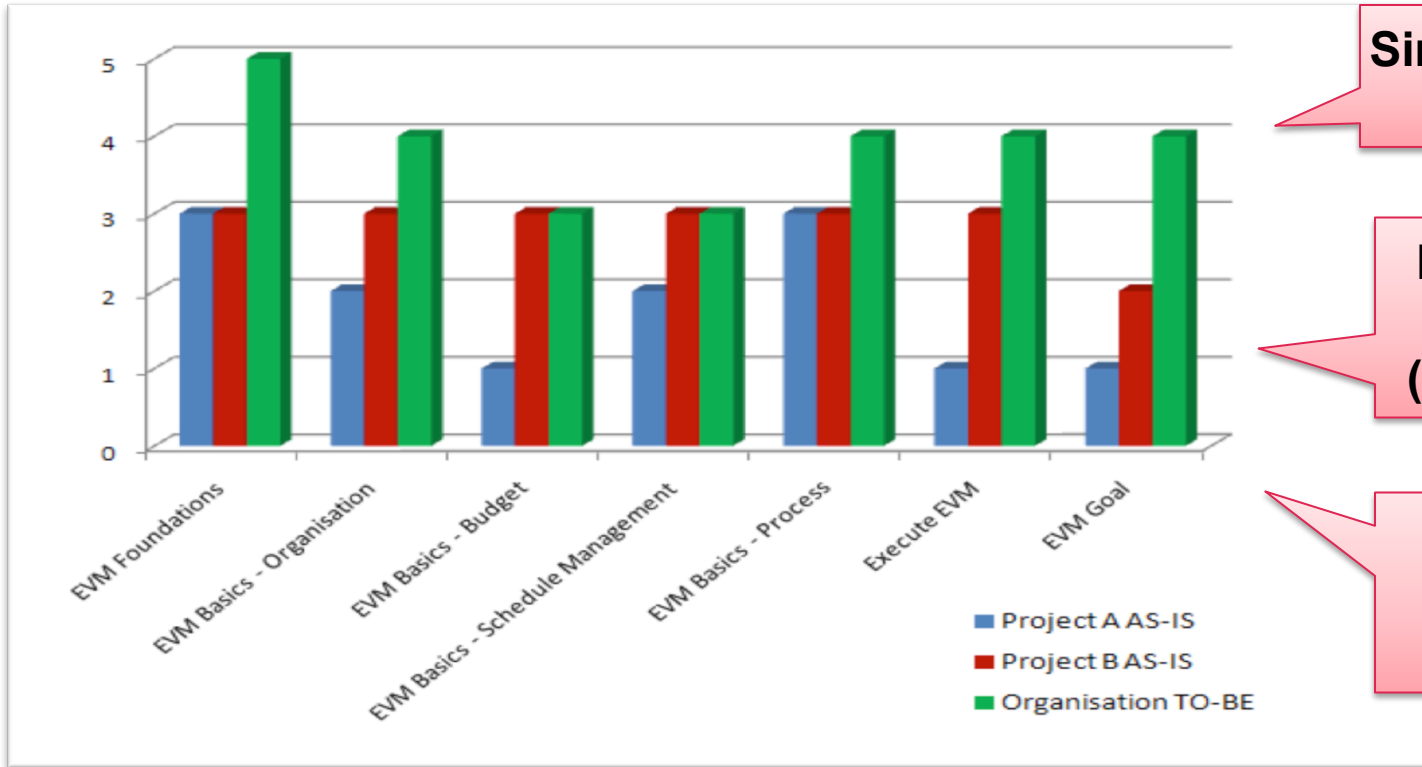
Highlights the gaps between current and target performance

# EV Compass output – Bar Chart (detailed)

EVM Maturity Assessment



# EV Compass output – Bar Chart (summary)



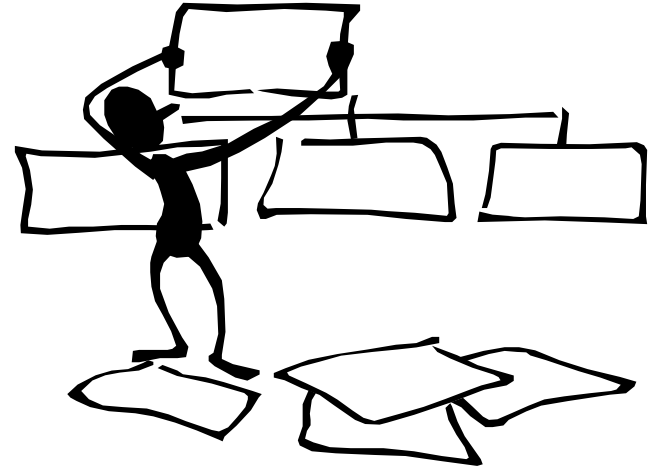
**Simplifies the message**

**Easier to show more data (e.g. 2 Projects)**

**Enables comparisons**

# What next?

- **Points to consider after the assessment**
  - **What identified strengths...**
    - **must we maintain to maximum effect?**
    - **do we develop and exploit even further?**
  - **What identified areas for improvement...**
    - **do we acknowledge, but will not pursue because they are not key to our business?**
    - **do we acknowledge and see as most important for us to address?**
- **Set a target level – a customer who requires full ANSI 748 compliance are unlikely to be satisfied with maturity below level 3**
- **How are we going to monitor progress against the agreed improvement actions?**





# Background – BAE SYSTEMS EVM Maturity Model



# History of BAE SYSTEMS EVM Maturity Model

- Initial work commenced in 2000 in Military Air Solutions (MAS)
- Maturity Model created 2003
- Deployed in 2004 covering
  - Hawk
  - Typhoon
  - F-35 Joint Strike Fighter
  - Nimrod
  - New Business
  - Engineering
- Annual assessment performed since 2004 within MAS
- EV Maturity Model is also used in other BAE Systems Business Units

# History of BAE SYSTEMS EVM Maturity Model

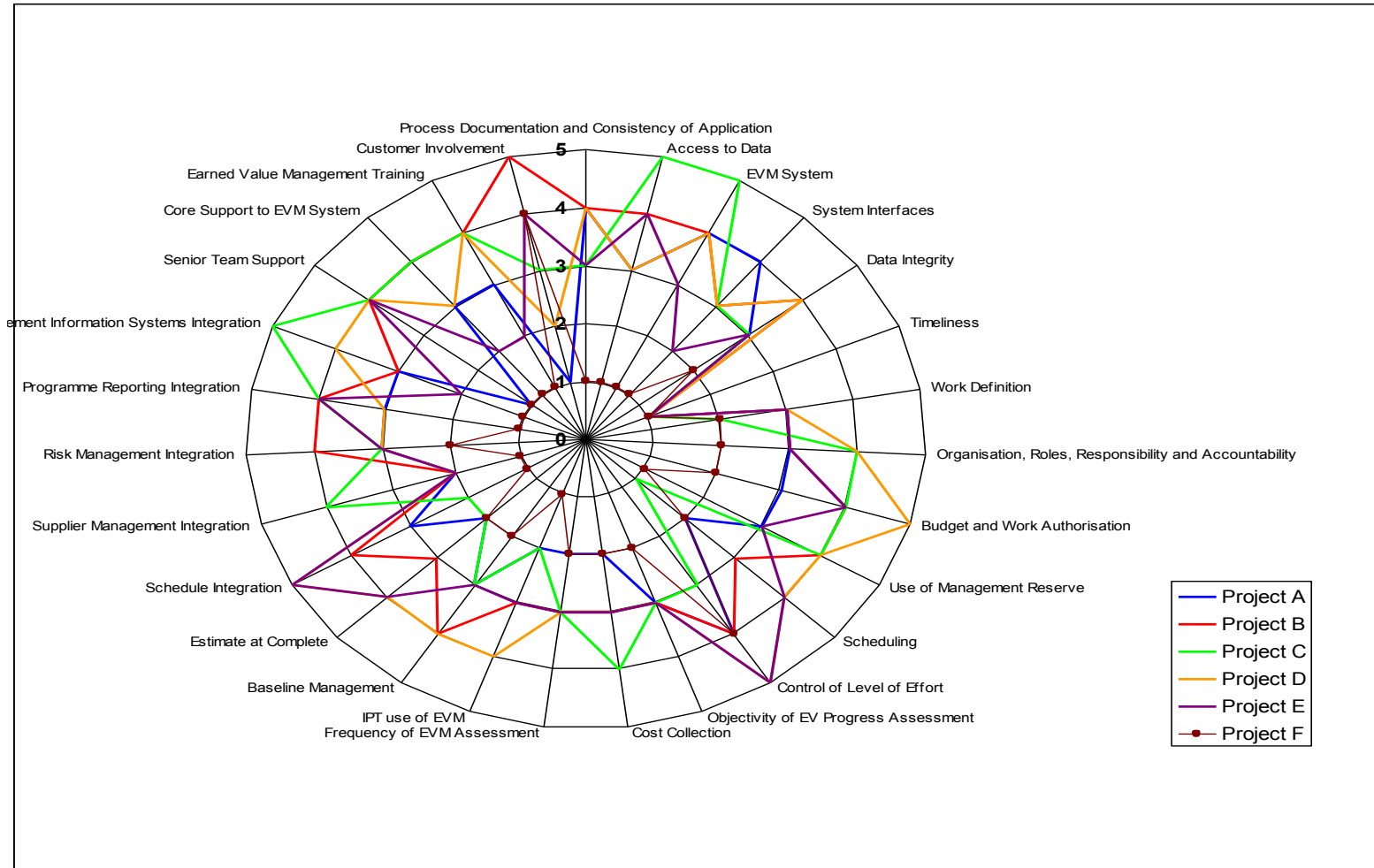
- ❑ **27 Criteria on BAE Systems model vs 25 on EVM Compass**
  
- ❑ **Principle differences are:**
  - **1 Criteria for Supplier Management & Integration not 4**
  - **Why? –Supply Chain Management Organisation CAM responsibility**
  - **Additional criteria cover Toolset Integration, Speed, Accuracy and Availability of data**
  - **Why? –Strong emphasis on the timely availability of quality data on large complex programmes for management**

# History of BAE SYSTEMS EVM Maturity Model

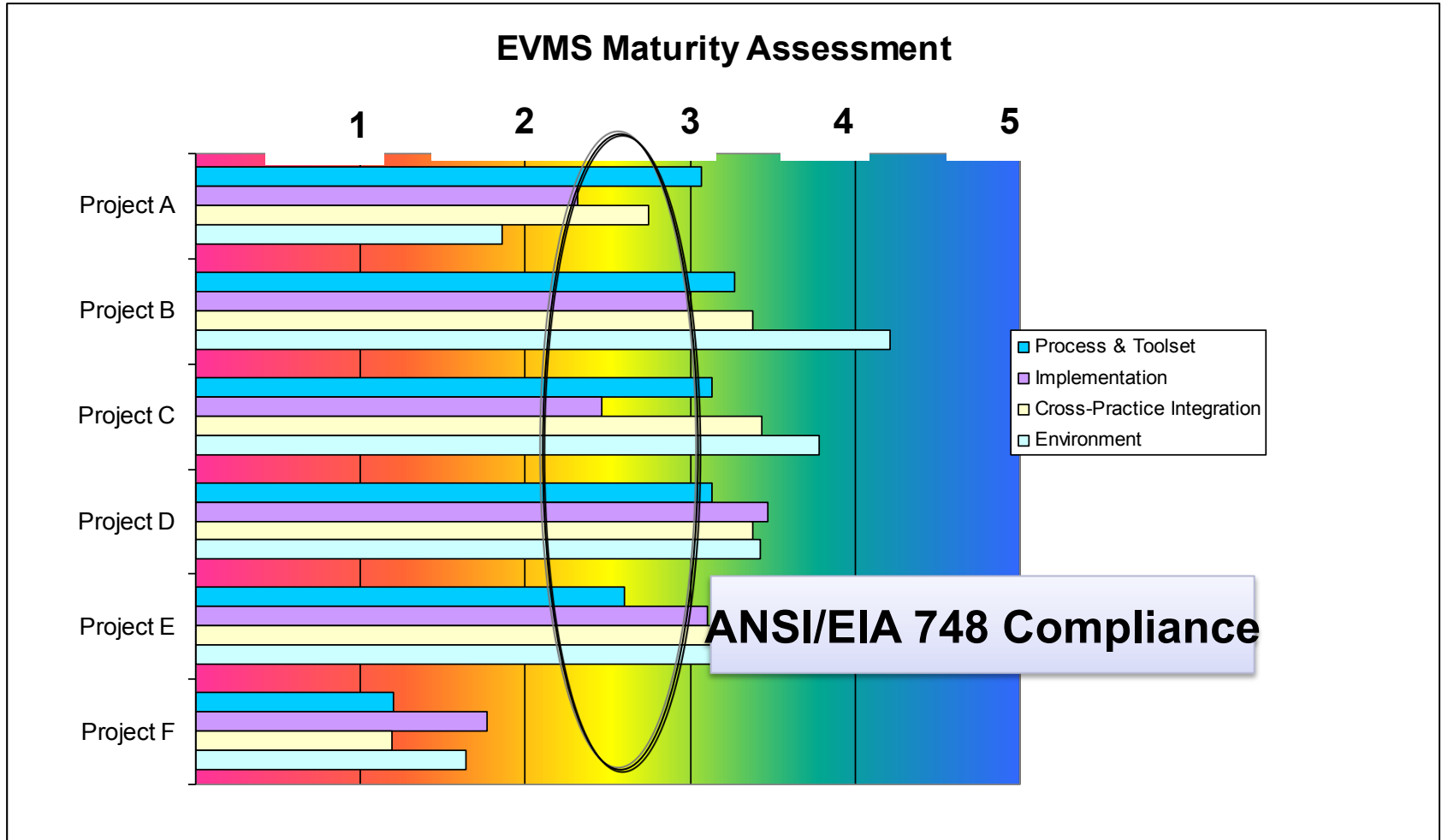
- ❑ 27 Criteria Packaged into 4 Key Sections –Process & Toolset, Implementation, Cross-Practice Integration and Environment
- ❑ Scoring and Weighting applied to each criteria to allow comparison of Projects within a business
- ❑ Process & Toolset –maximum score 20%
- ❑ Implementation –maximum score 60%
- ❑ Cross –Practice Integration –maximum score 16%
- ❑ Environment –maximum score 14%

Your Level	Weight	Your Score
4	3	12

# BAE SYSTEMS Maturity Assessment 2004



# BAE SYSTEMS Maturity Assessment 2004



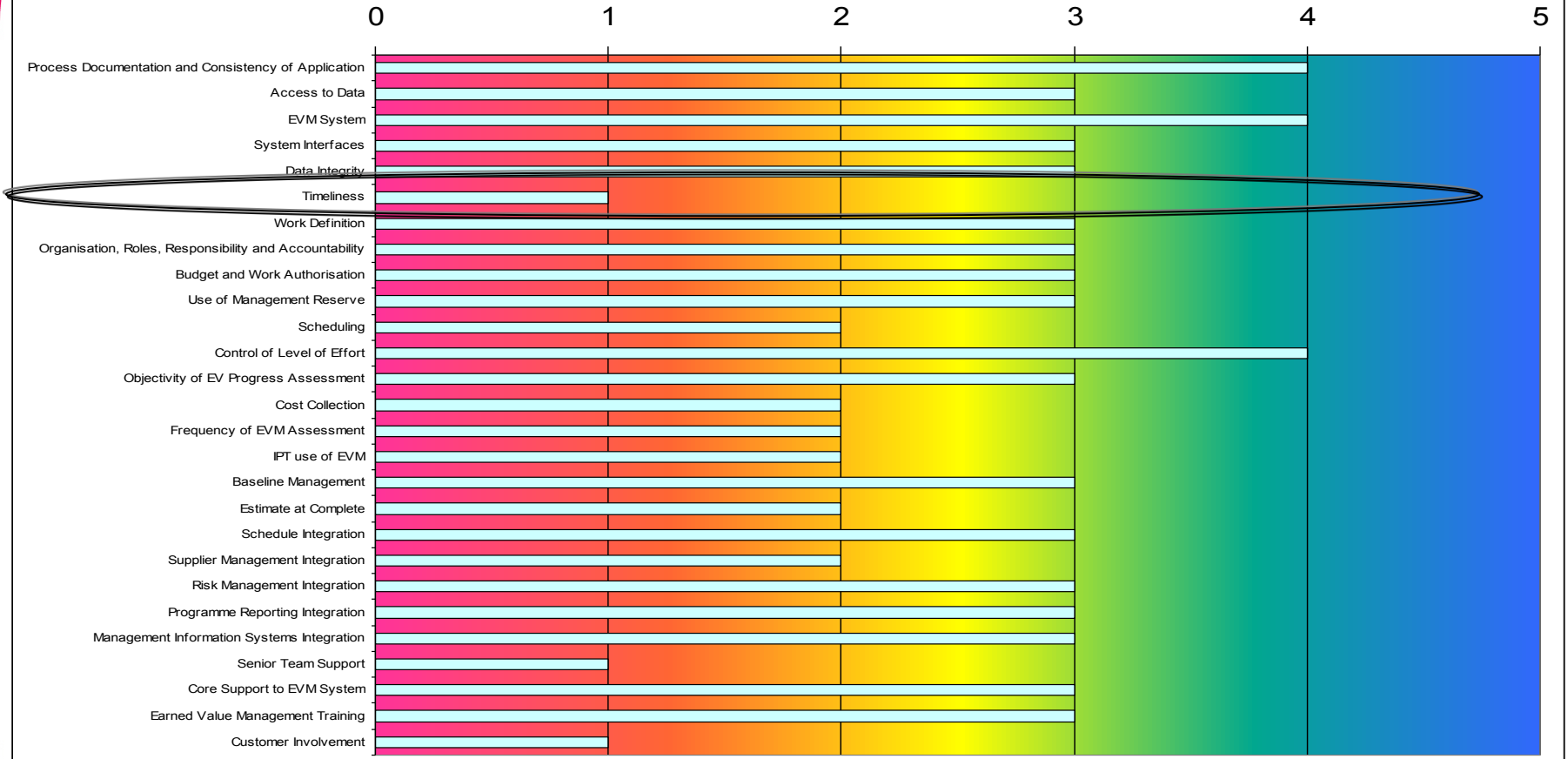
# BAE SYSTEMS Maturity Assessment 2004

EVMS Maturity Assessment	Project A	Project B	Project C	Project D	Project E	Project F
Process Documentation and Consistency of Application	4	4	3	4	3	1
Access to Data	3	4	5	3	4	1
EVM System	4	4	5	4	3	1
System Interfaces	4	3	3	3	2	1
Data Integrity	3	4	3	4	2	2
Timeliness	1	1	1	1	1	1
Work Definition	3	3	2	3	3	2
Organisation, Roles, Responsibility and Accountability	3	3	4	4	3	2
Budget and Work Authorisation	3	4	4	5	4	2
Use of Management Reserve	3	4	4	4	3	1
Scheduling	2	3	1	4	4	2
Control of Level of Effort	4	4	3	5	5	4
Objectivity of EV Progress Assessment	3	3	3	3	3	2
Cost Collection	2	3	4	3		
Frequency of EVM Assessment	2	3	3	3		
IPT use of EVM	2	3	2	4		
Baseline Management	3	4	3	4	3	2
Estimate at Complete	2	3	2	4	4	2
Schedule Integration	3	4	2	5	5	1
Supplier Management Integration	2	2	4	2	2	1
Risk Management Integration	3	4	3	3	3	2
Programme Reporting Integration	3	4	4	3	4	1
Management Information Systems Integration	3	3	5	4	2	1
Senior Team Support	1	4	4	4	4	1
Core Support to EVM System	3	4	4	3	2	1
Earned Value Management Training	3	4	4	4	2	1
Customer Involvement	1	5	3	2	4	4

**Systemic Issues**

# BAE SYSTEMS Maturity Model Project A 2004

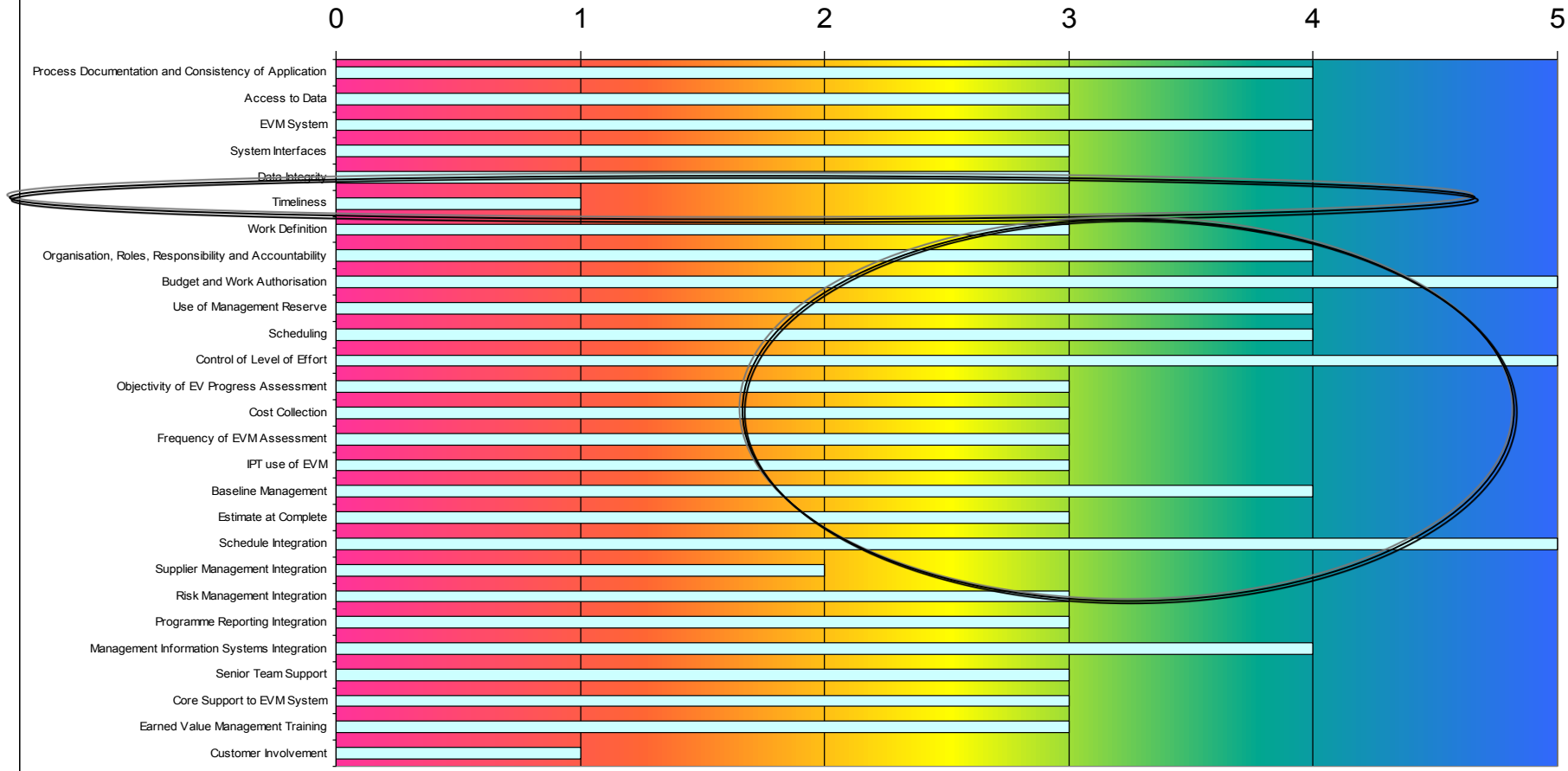
## Results of Maturity Assessment





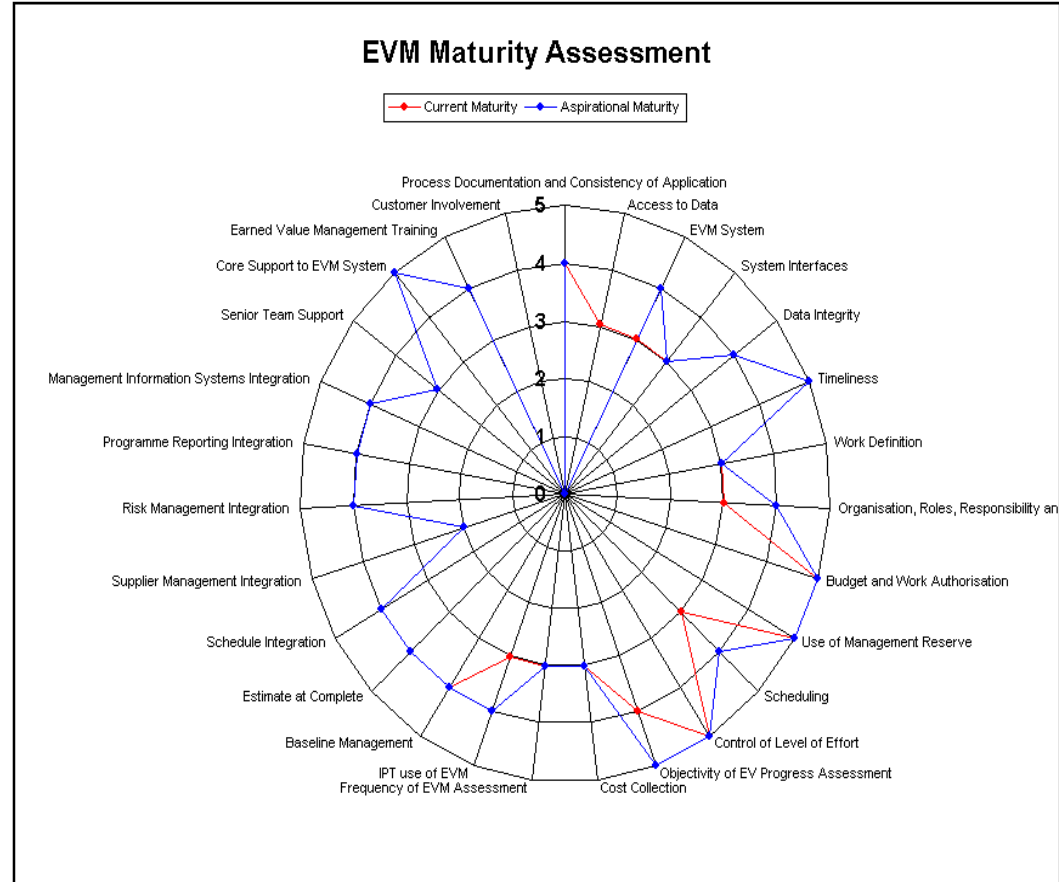
# BAE SYSTEMS Maturity Model Project A 2006

## Results of Maturity Assessment



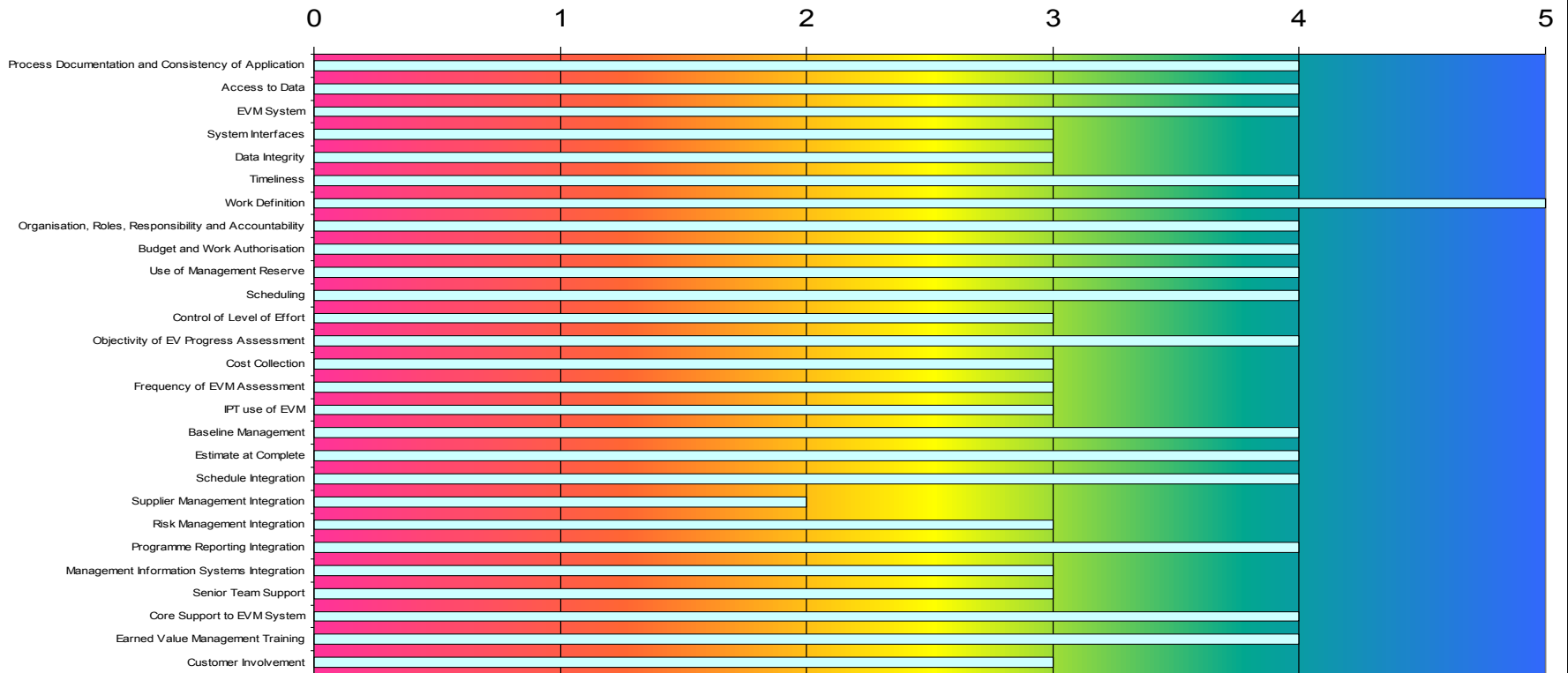
# BAE SYSTEMS Maturity Model Project A 2008

EVMS Maturity Assessment	As-Is	To-Be
Process Documentation and Consistency of Application	4	4
Access to Data	3	0
EVM System	3	4
System Interfaces	3	3
Data Integrity	4	4
Timeliness	5	5
Work Definition	3	3
Organisation, Roles, Responsibility and Accountability	3	4
Budget and Work Authorisation	5	5
Use of Management Reserve	5	5
Scheduling	3	4
Control of Level of Effort	5	5
Objectivity of EV Progress Assessment	4	5
Cost Collection	3	3
Frequency of EVM Assessment	3	3
IPT use of EVM	3	4
Baseline Management	4	4
Estimate at Complete	4	4
Schedule Integration	4	4
Supplier Management Integration	2	2
Risk Management Integration	4	4
Programme Reporting Integration	4	4
Management Information Systems Integration	4	4
Senior Team Support	3	3
Core Support to EVM System	5	5
Earned Value Management Training	4	4
Customer Involvement	0	0

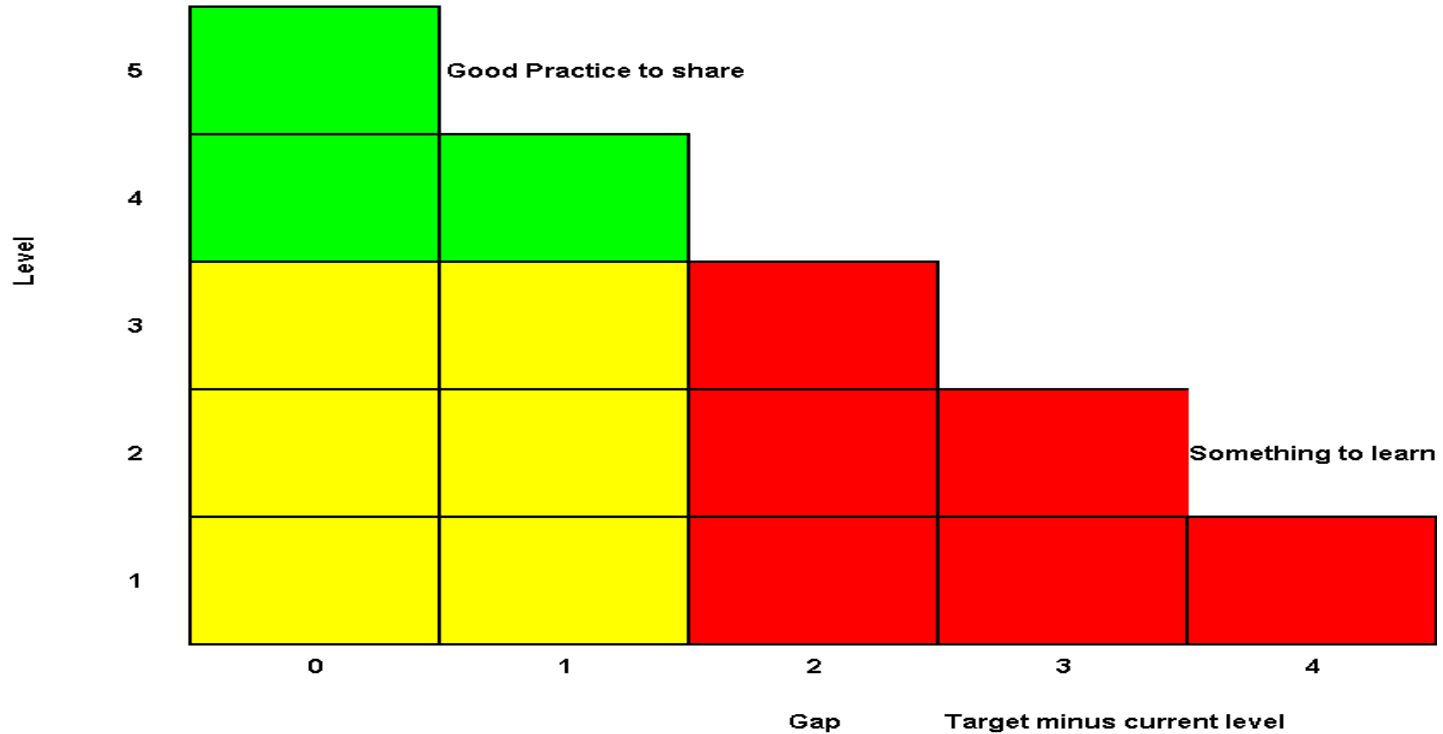


# BAE SYSTEMS Maturity Model Project A 2008

Results of Maturity Assessment



# BAE SYSTEMS Maturity Model – Action Planning



## **BAE SYSTEMS Maturity Model - lessons learned**

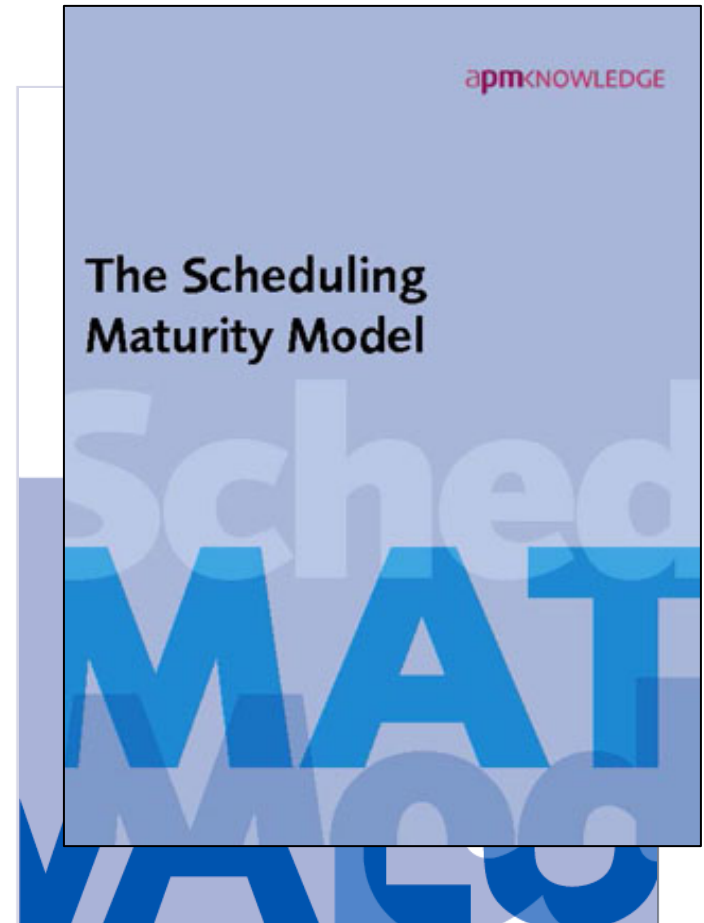
- ❑ Annual assessment is maximum frequency**
- ❑ It is not necessary to score 5 in every category**
- ❑ Target areas for improvement that benefit the Project**
- ❑ Do compare Projects to determine Systemic issues**
- ❑ Use as part of an Integrated Baseline Review –helps Project Team with action planning for improvements**
- ❑ Do re-visit Maturity Model –the World moves on**

# EVM Compass – what are the main benefits?

- Using the EVM Compass Maturity Framework for assessment should deliver a range of benefits, including:
  - Identify your organisation's **strengths and areas for improvement**.
  - Provide a **highly structured, fact-based approach** to identifying and assessing your project and measuring progress periodically.
  - Create **a common language and conceptual framework** for the way you manage and improve EVM on your project and, if applicable, projects within organisation.
  - **Educate people** in your project on the fundamental elements of EVM and how they relate to their roles and responsibilities.
  - **Involve people** at all levels in process improvement.
  - **Rank EVM project maturity** within an organisation or across the supply chain.

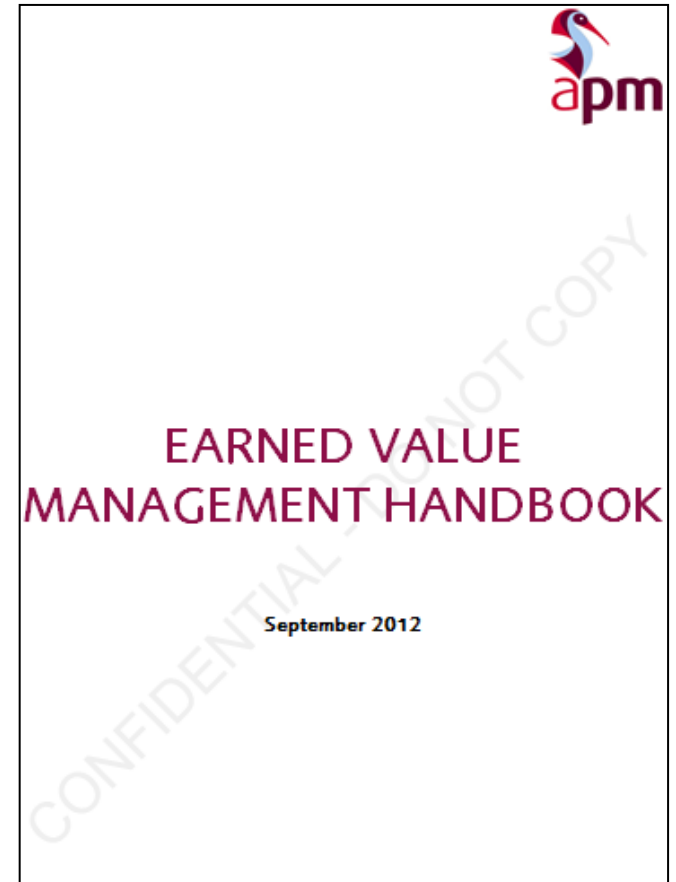
# How to obtain a copy...

- **Accessing the Compass and Maturity Model**
  - Beta trials of the compass have finished
  - EV Compass was published at the APM Conference in 2010 in hard copy
  - Also available for download from the UK Association for Project Management website
  - The Scheduling Maturity Model was published at the APM Volunteer's Forum in Sept 2012
  - We value your feedback. Use them and tell us what you think!



# Future Developments...

- Web enabled versions
- EV Compass is now part of the Earned Value Handbook
- And the associated EV Practitioner Exam – launched on 1<sup>st</sup> Nov 2012
- Relevant parts of the Scheduling Maturity Model will also feature in the PMC SIG Planning Guide
- ...and its Foundation Exam







**PMC SIG  
Workgroup**

**Willing volunteers  
always needed**

**Contact Steve Wake**  
**[swprojects@blueyonder.co.uk](mailto:swprojects@blueyonder.co.uk)**  
**0208 886 5594**

**...any questions?**

