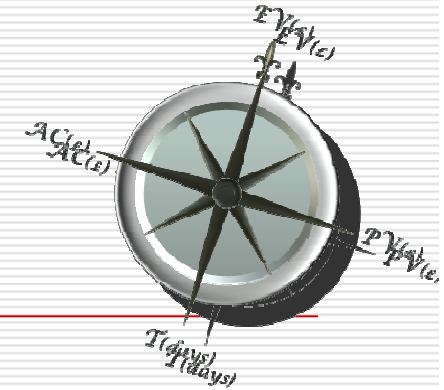




Project Controls
EXPO



Project Controls Expo

09/10 Nov London 2011

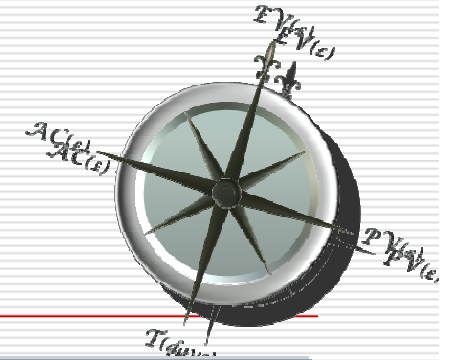
The Earned Value Compass
and Project Performance Analysis

Alex Davis

APM Earned Value

Specific Interest Group (SIG)

Introduction



Introduction

The Need for the APM EVM Compass

Summary of Benefits

Who's been involved

Fundamental Concepts

Components

The physical products

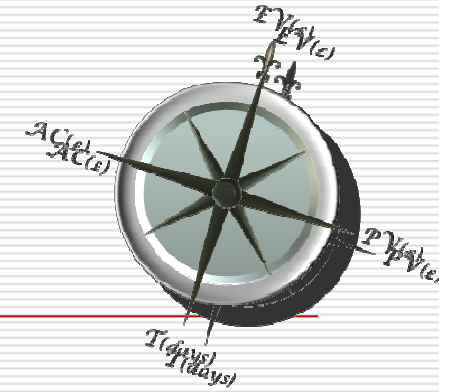
How it is used

Experience of measuring EVM System Maturity

How to obtain a copy...

Future Developments

Thank You



Ewan Glen



Mike Burke

BAE SYSTEMS

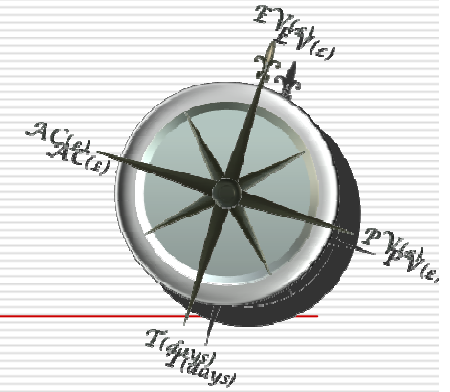
...the EV SIG
members
...and APM
Knowledgeshare



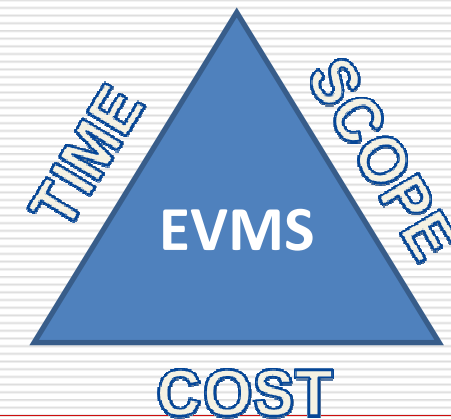
Copyright @ 2011. All rights reserved



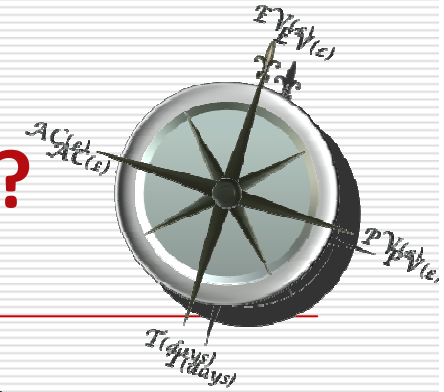
What is EVM?



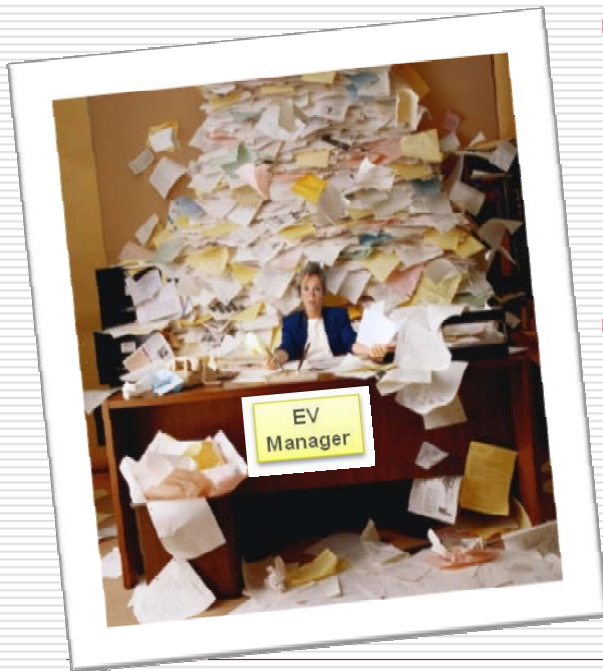
- EVM is a system of project control, based on a structured approach to planning, cost control and performance measurement.
- EVM integrates project **scope**, **time** and **cost** objectives.
- EVM facilitates the establishment of a 'baseline' plan, against which performance can be measured.
- EVM 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



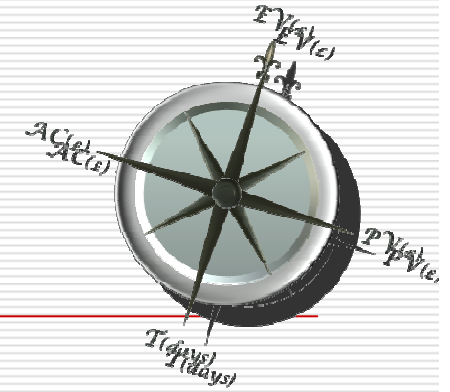
Why Do We Need an EVM Compass?



- Use of EVM 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 do not reflect actual project progress or status
 - It fails to generate timely data that management use to take corrective action



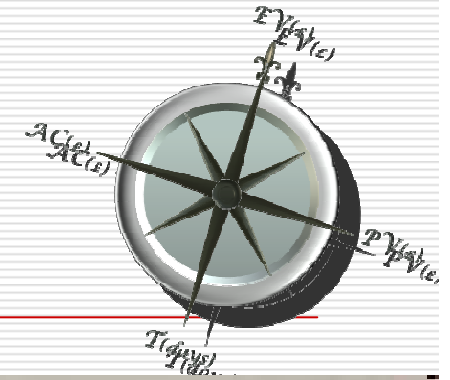
Why Do We Need an EVM Compass?



- The EVM Compass provides a mechanism to
 - Assess your current level of operational maturity
 - 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

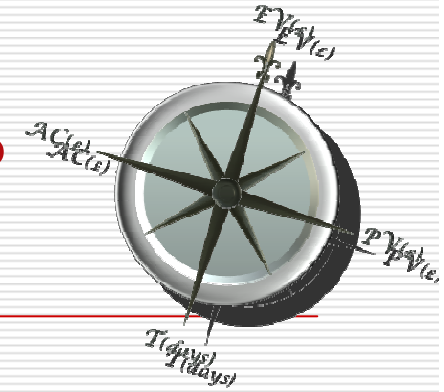
- The main objective of using the EVM Compass is to measure 'as is' performance and to help **Improve Performance**

Why Do We Need an EVM Compass?



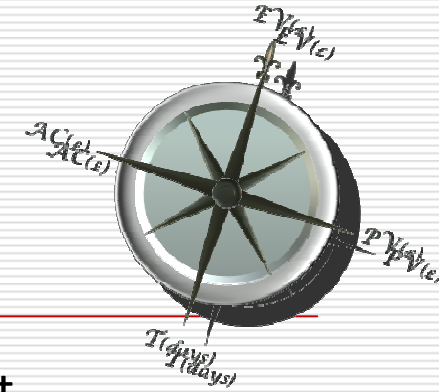
We all use Earned Value

EVM Compass – what are the main benefits?

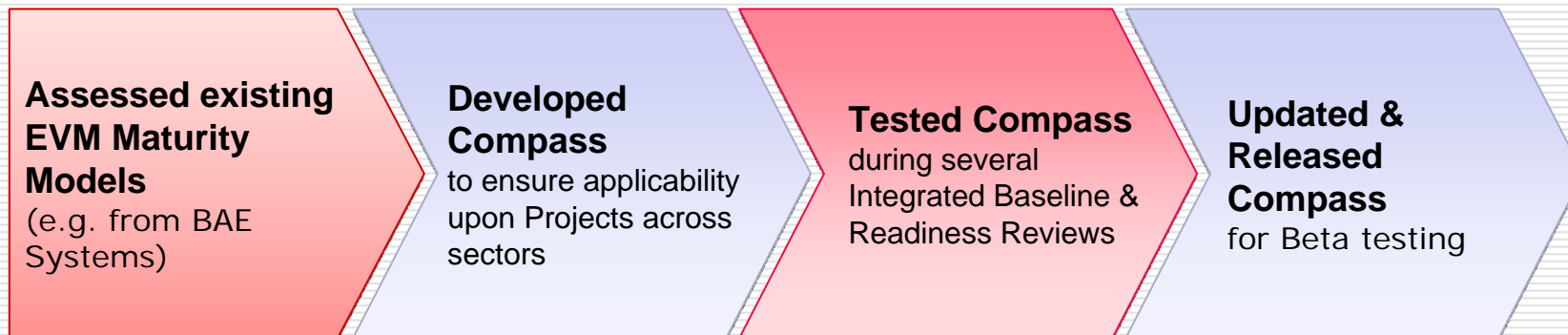


- ❑ Using the EVM Compass Maturity Framework for assessment should deliver a range of benefits, including:
 - Identify and allow the **sharing of best practice** across projects within an organisation.
 - Use it to assess and present the findings from a variety of EVM reviews in a format that is **easy 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**

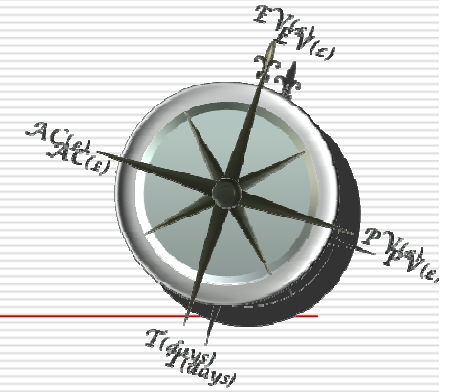
EVM Compass Development



- EVM Compass developed by the UK Association for Project Management EVM Specific Interest Group
 - 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)

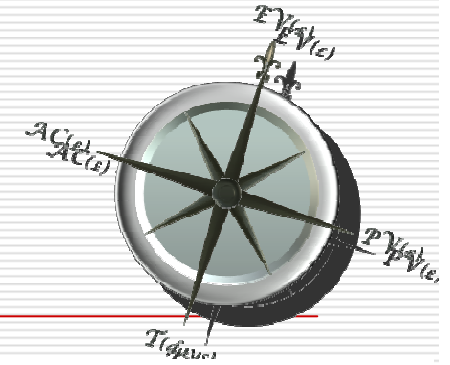


Fundamental Concepts

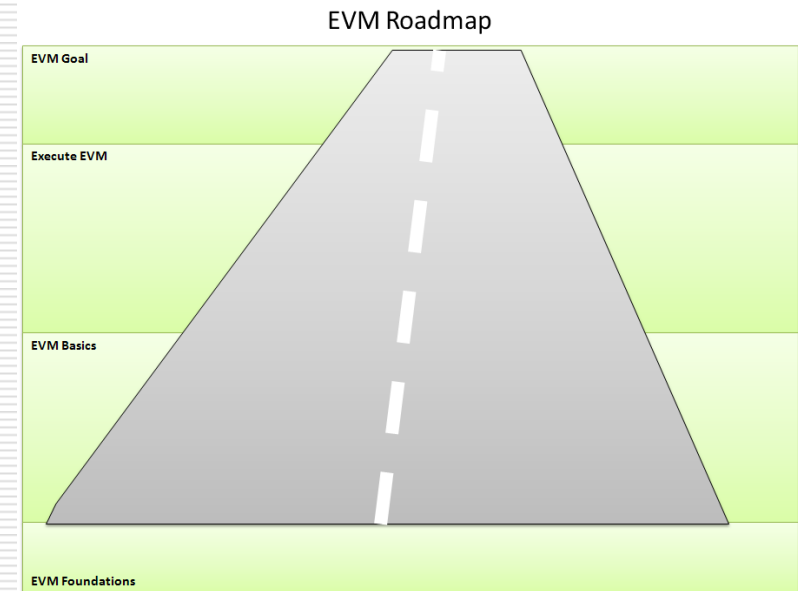


- ❑ The EVM Compass should
 - ❑ Provide a comprehensive and systematic review of a **Projects** EVM maturity
 - ❑ Use a **common framework** that supports either the assessment of a single project or allows organisations to benchmark and compare the relative strengths of their various projects
 - ❑ Provide a defined means to support projects in **establishing and improving project control capability**
 - ❑ Allow projects to **reference the 'as is' EVM 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

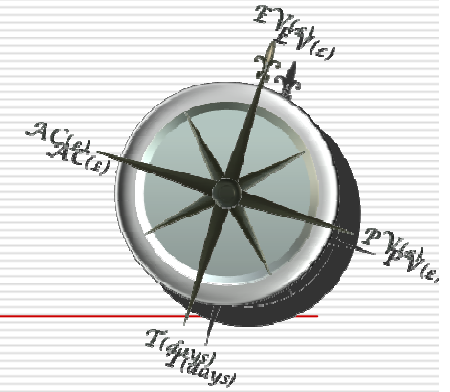


- Maturity Stages (from LFE)
 - Introduced based upon experience during trials
 - 4 Stages to achieving a mature EVM system
 - Establish EVM Foundations
 - Establish EVM Basics
 - Execute EVM
 - Achieve the EVM Goal

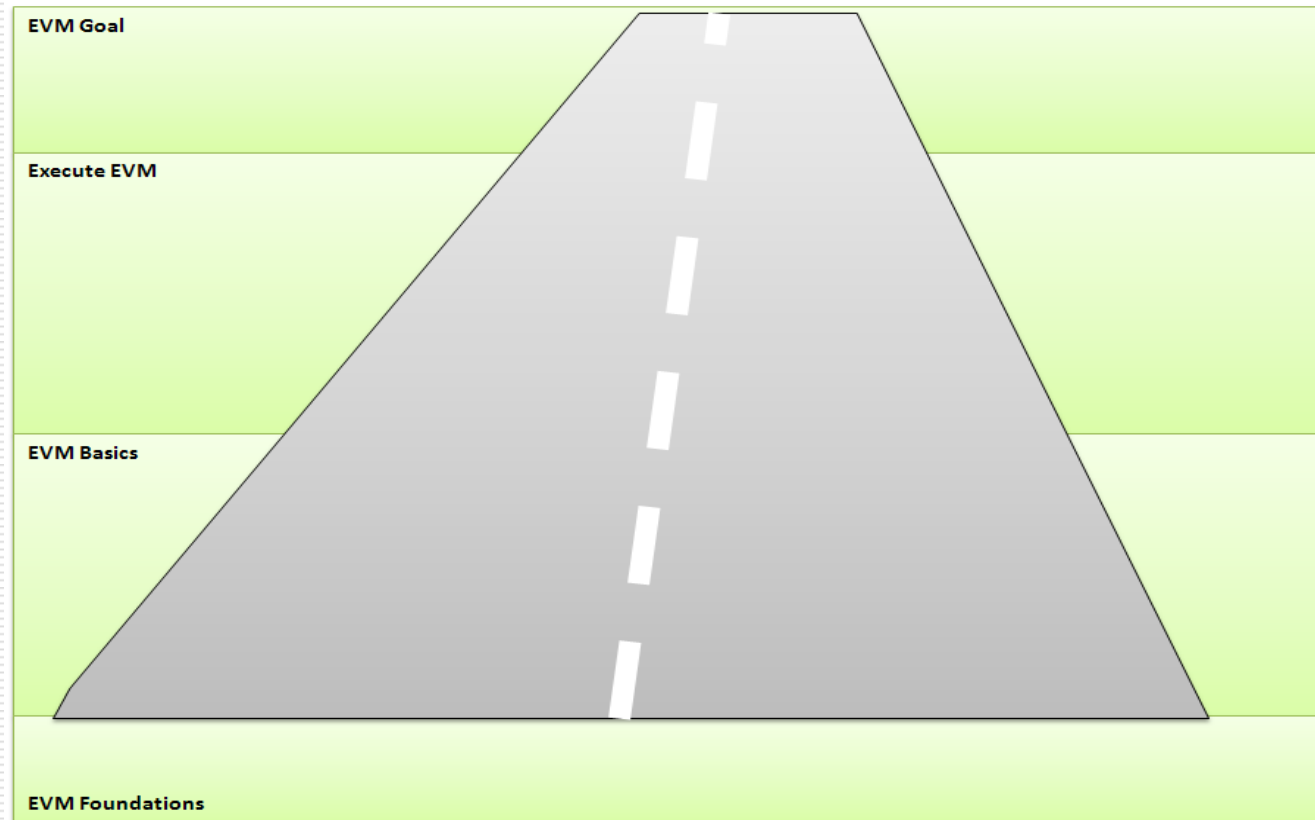


- Help provide a roadmap to EVM implementation and help ensure maturity assessment takes into account the stage of the implementation
 - E.g. Don't expect to be managing using EVM when foundations are not established

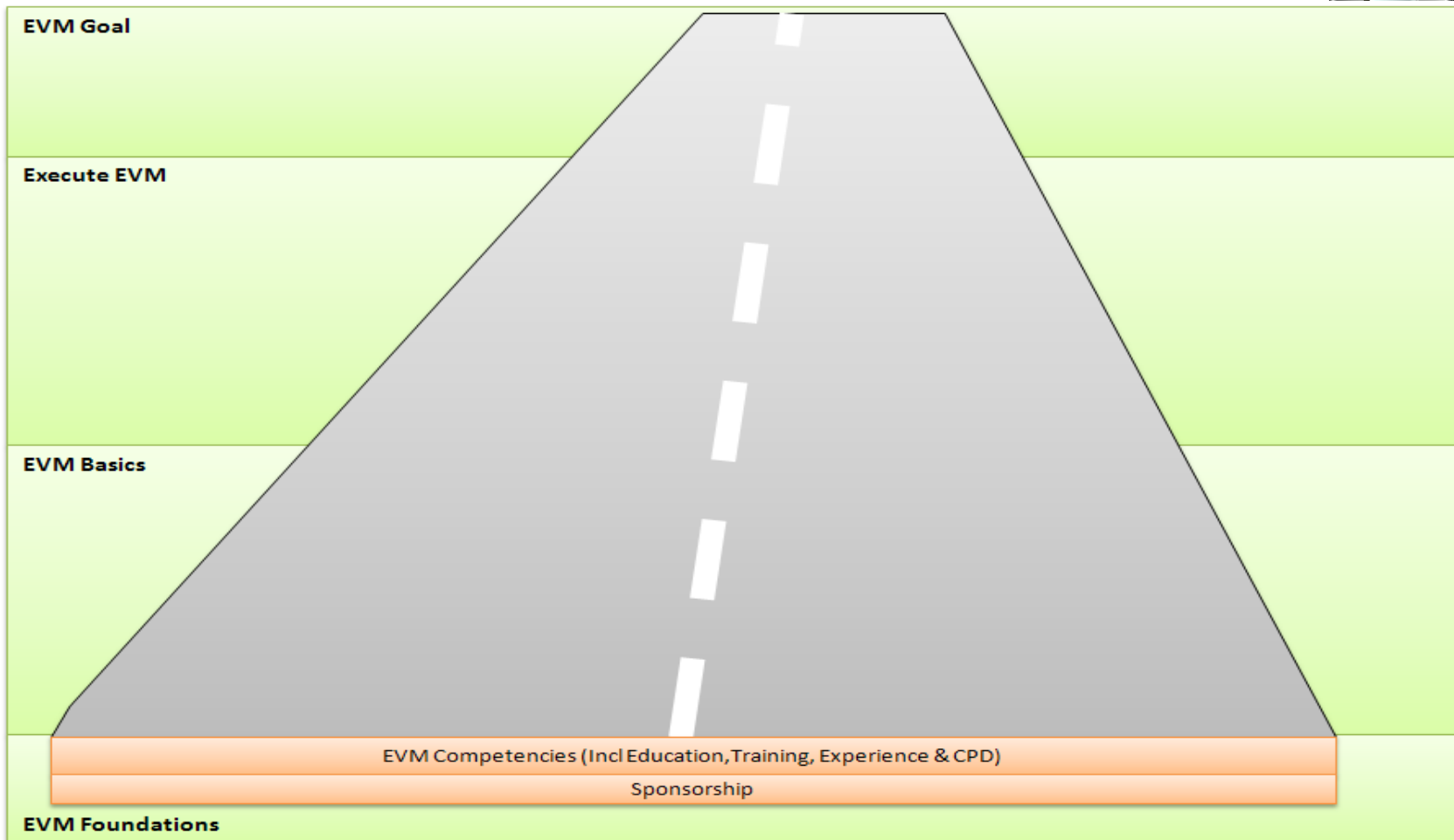
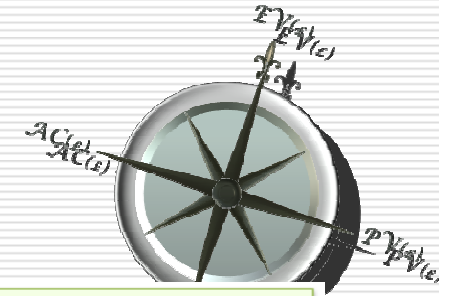
EV Compass Components



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

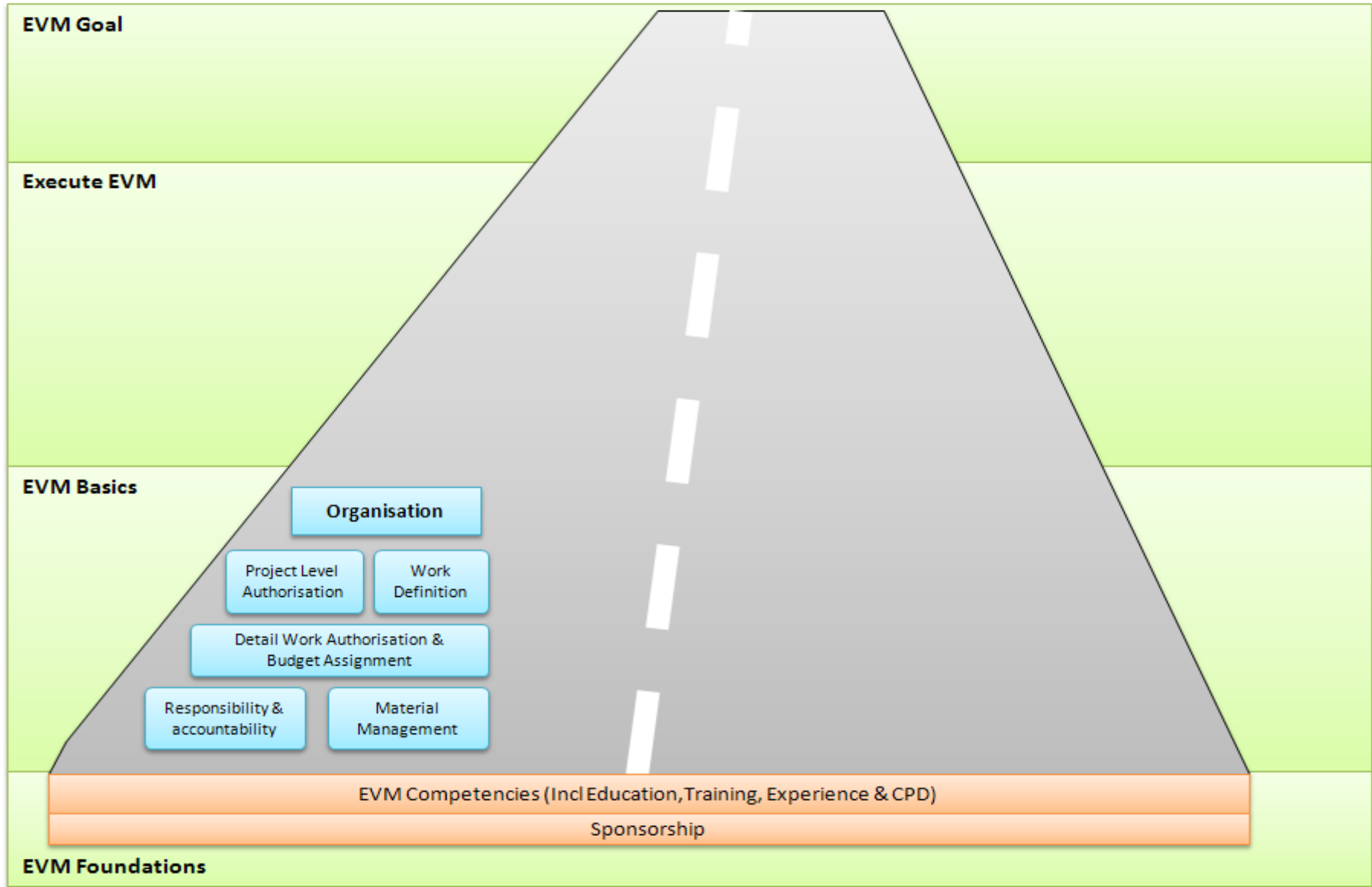


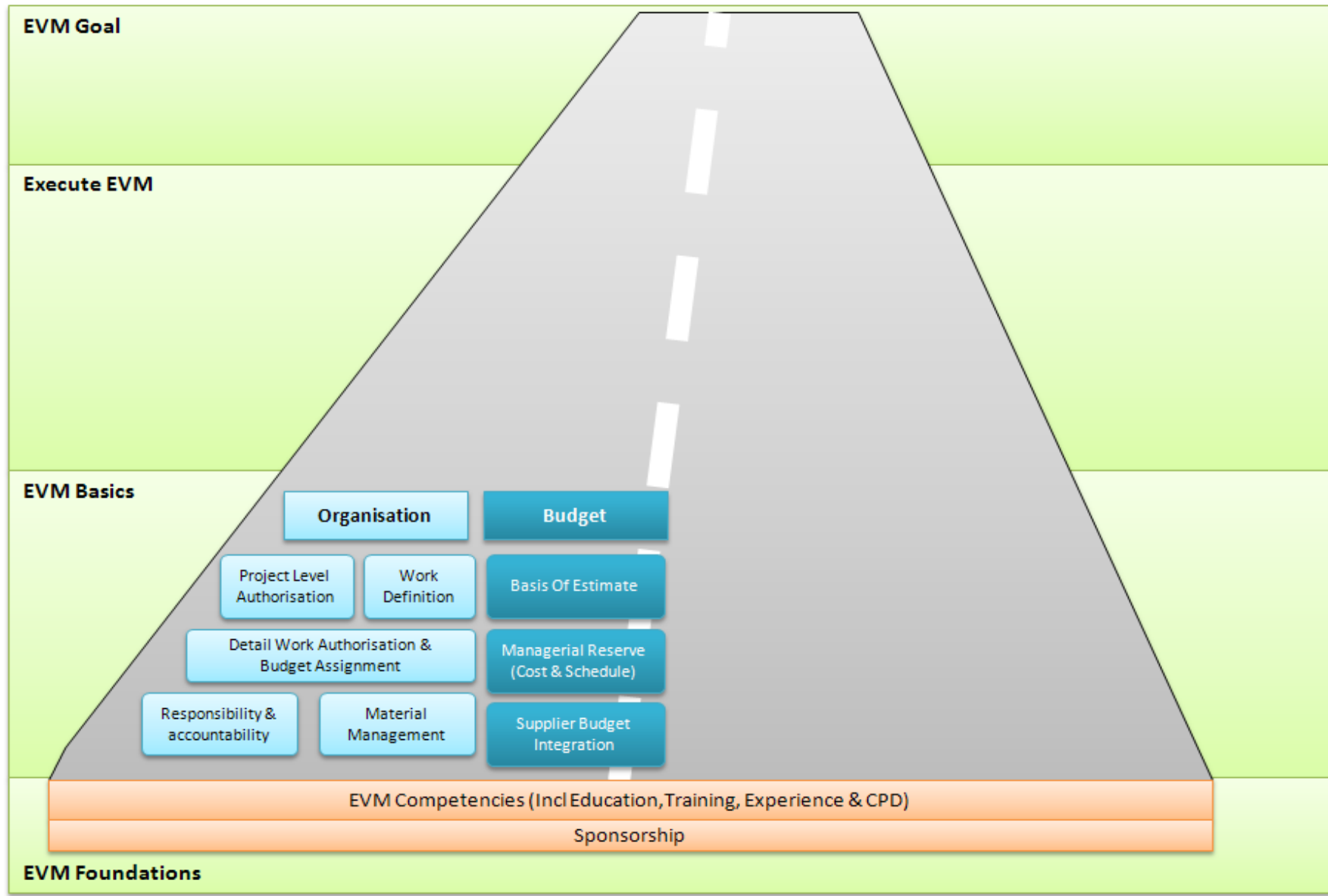
EV Compass Components



EVM
EV
EV

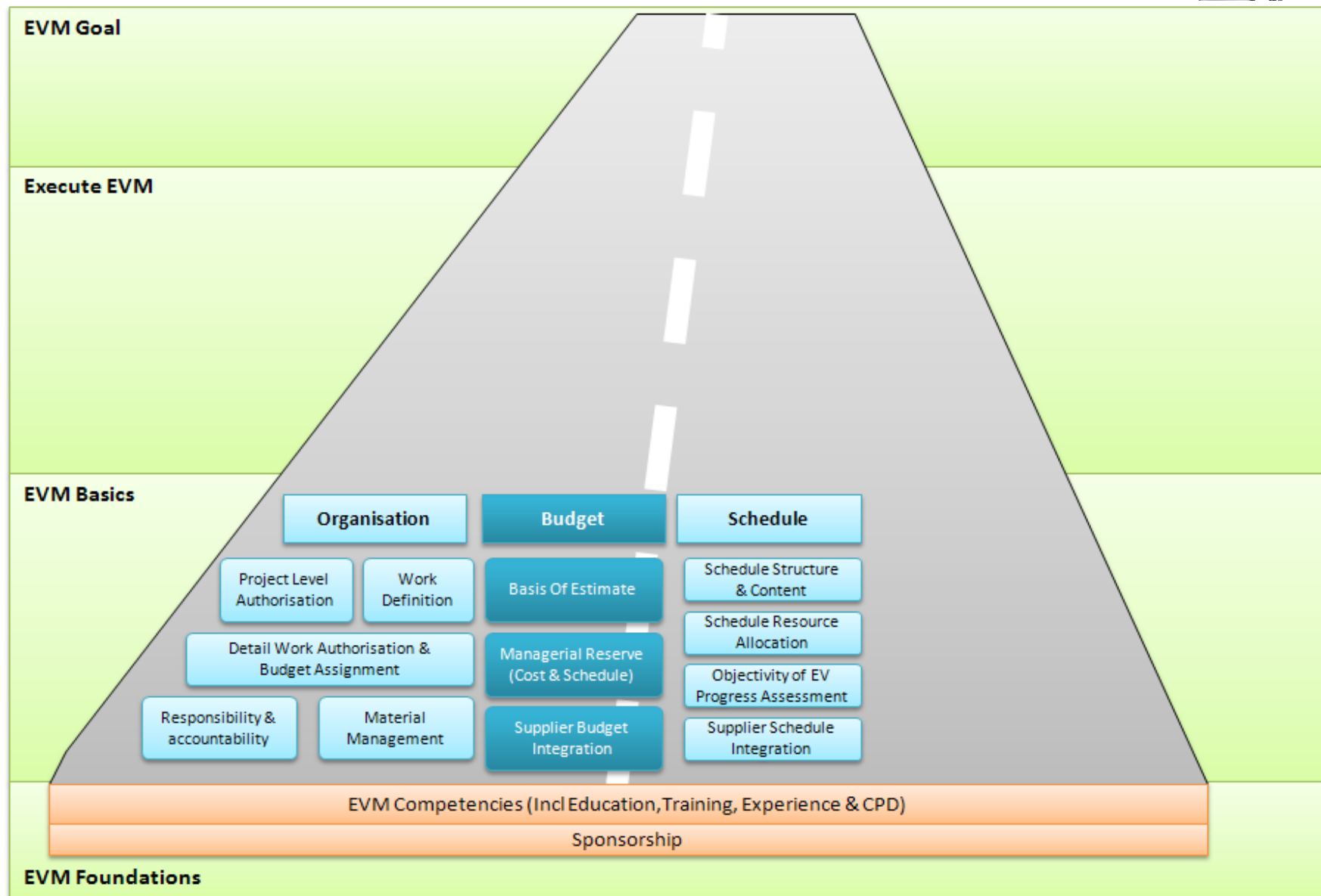
EV

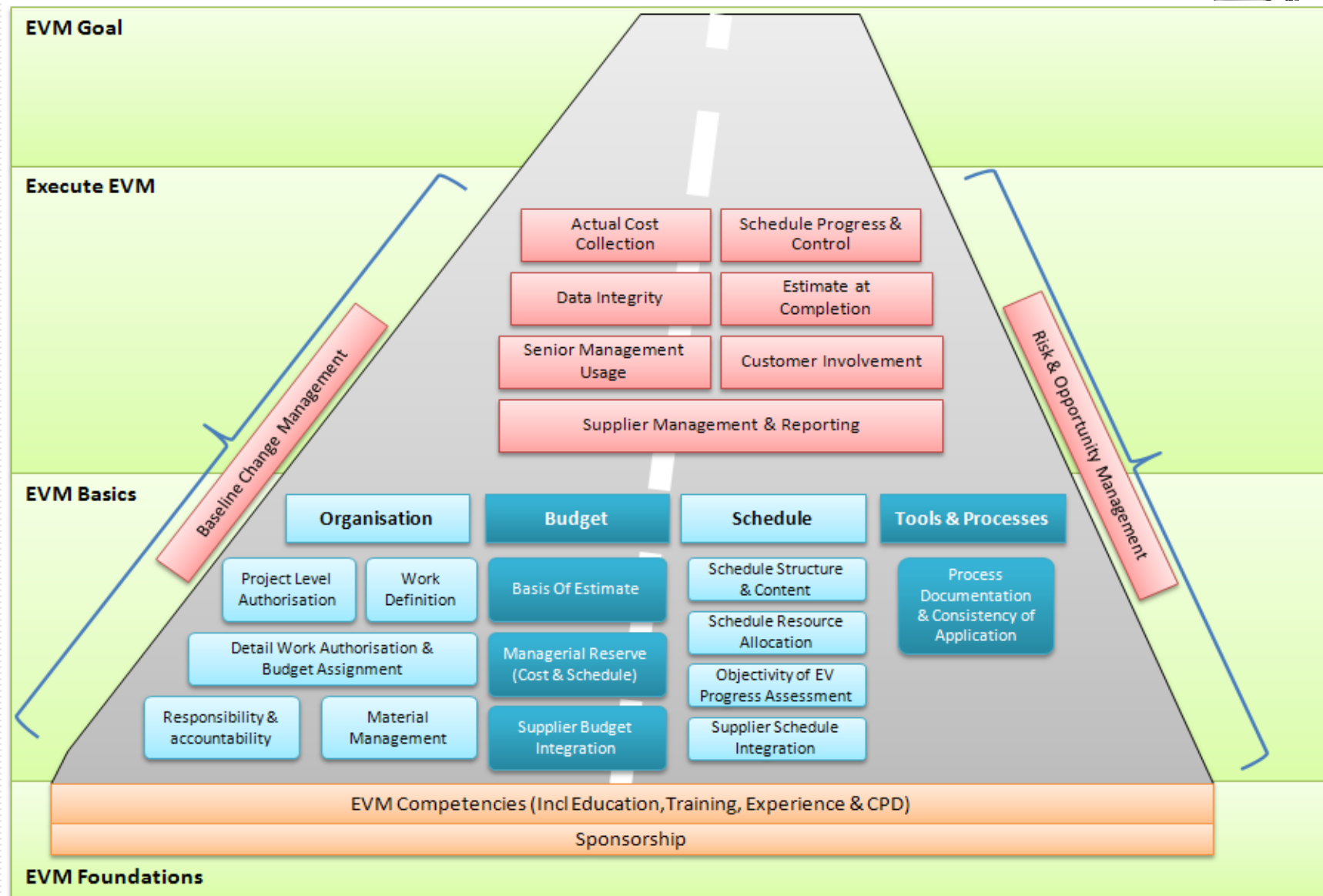


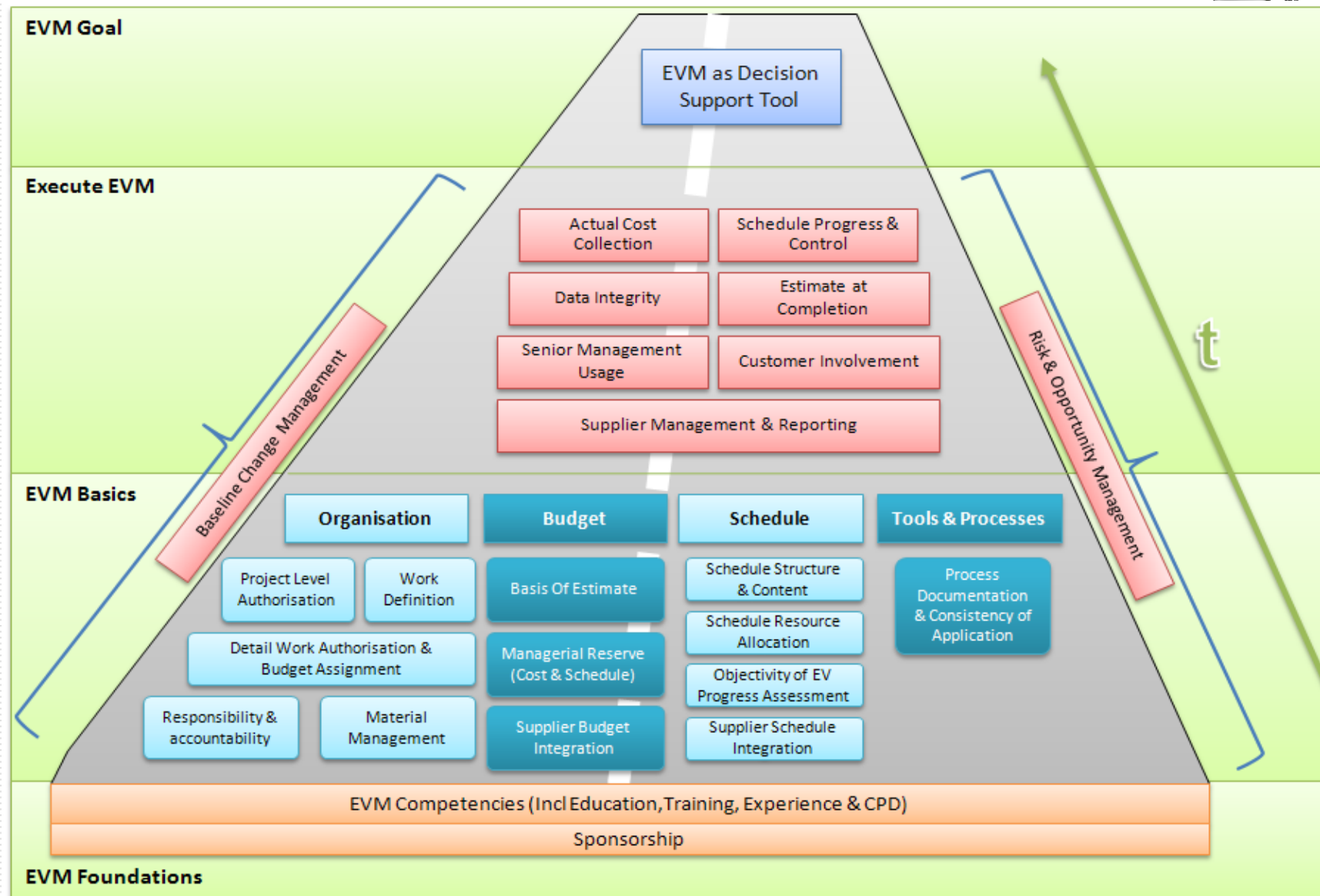


EVM
7.1

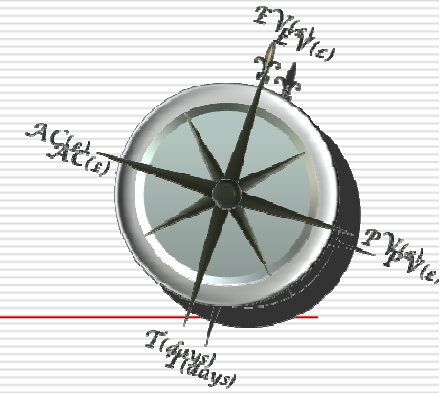
EVM







Physical Outputs – Maturity Grid

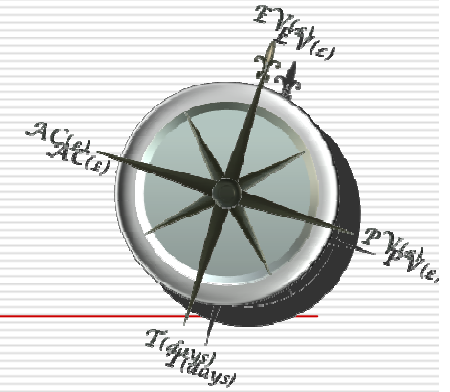


□ Maturity Model

- 25 Attributes, each of which is 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”)

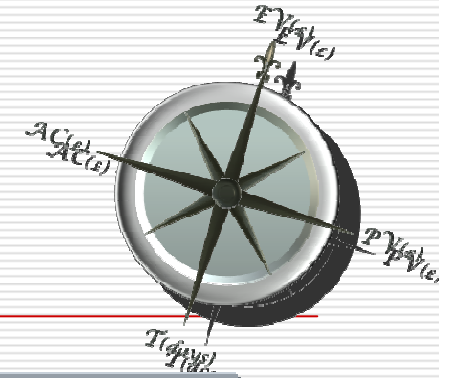
	1	2	3	4	5
EVM Foundations					
1. Earned Value Management Competencies					
	Little or no training in the concepts of EVM is available and take-up is inconsistent.	Formal training and a budget to support its roll-out exists in the concepts of EVM for all key roles within the project organisation but 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 also able to draw upon the 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 review.	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.
2. Sponsorship					
	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.
EVM Basics					
3. Project Level Authorisation					
	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 (RAM) 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.
4. Work Definition					
	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.
5. Detail Work Authorisation & Budget Assignment					
	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 (CS) 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.
6. Responsibility & Accountability					
	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 handover of scope and budget between CAMs, which are maintained over the project life to provide consistency.	The individual TORs are integrated with their respective HR Personal Development Plans for personal objectives.
7. Material Management					
	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 date 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.

Physical Outputs – Explanatory Text

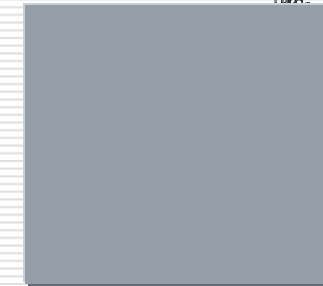


- Explanatory Text
 - Guidance on the use of the Maturity Grid
 - Overview of the Maturity Stages
 - Explanations for each of the 25 Articles
 - **The Aim** – the objective of the attribute
 - **The Reason** – why the attribute is important
 - **Guidance Information** – additional information to assist users who are less familiar with the implementation and utilisation of Earned Value Management Systems

How to use the Compass

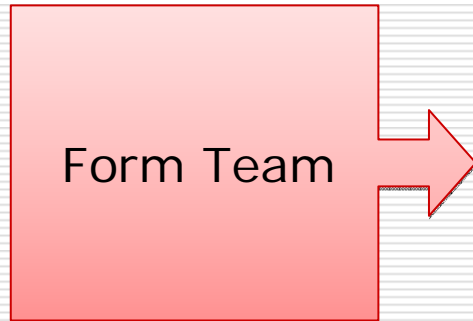


- Process is 'simple'
- The Compass supports three levels of assessment
 - Self-assessment by Project Team
 - Peer Assessment (workshop)
 - Independent Review / Facilitated Workshop



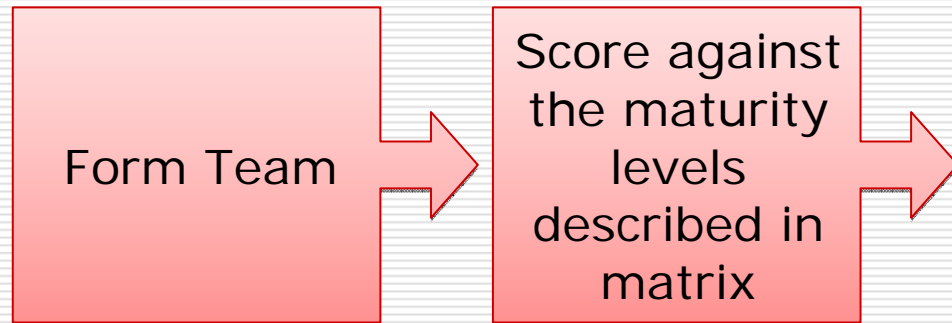
Method	Effort	Reliability	Cost
Self-Assessment	Low	Low	Low
Peer Assessment (Workshop)	High	Medium	Medium
Facilitated Workshop	Medium	High	High

How to use the Compass



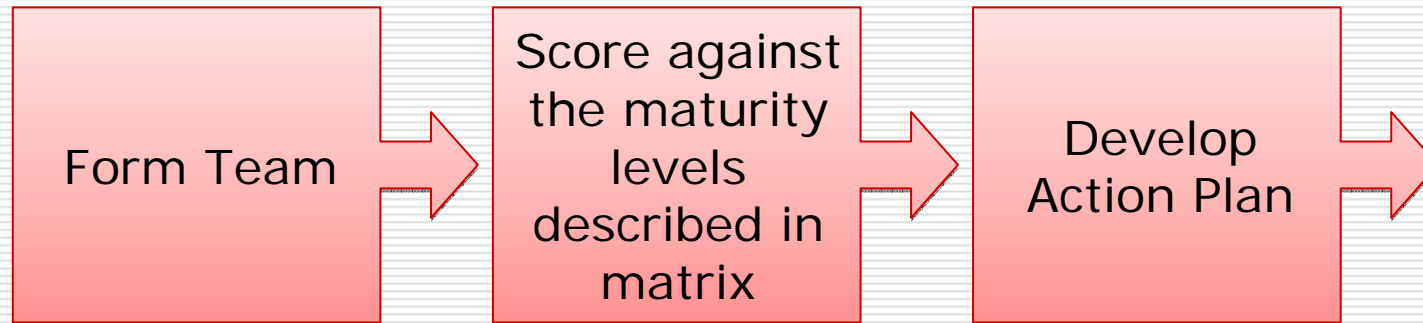
1. Make sure it is a team – assessments by one individual tend to be biased
2. Make sure it involves at least one person with experience of implementing EVM
3. Involve staff who know how the project operates in addition to how the organisation the project sits within operates

How to use the Compass



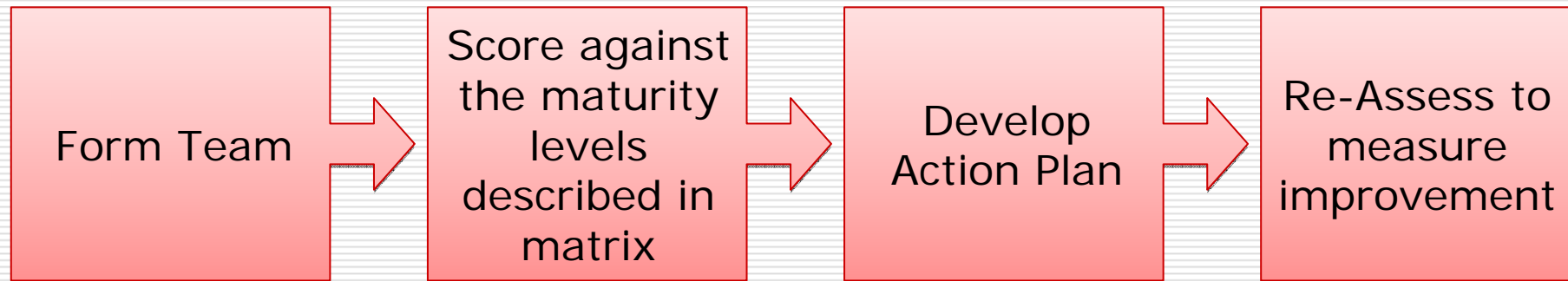
1. Assess current performance (ranging from 1-5 for each of the 25 attributes)
2. Be honest with yourself, be pragmatic
3. Propose target performance levels (remembering that EVM is a tool to support delivery and not an end in itself)

How to use the Compass



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

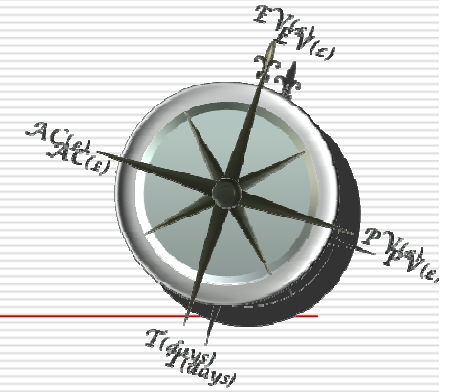
How to use the Compass



1. Repeat process, either to

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

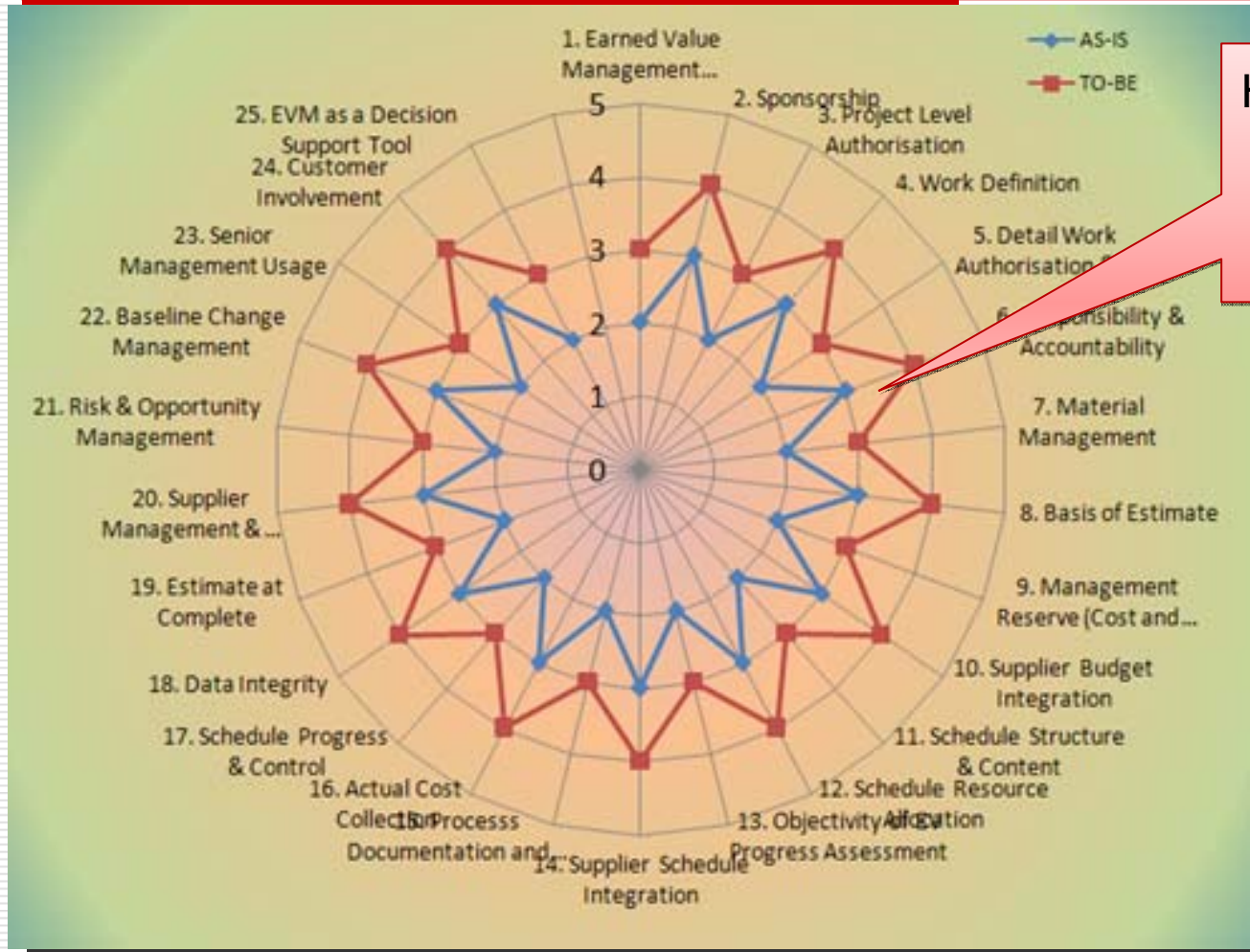
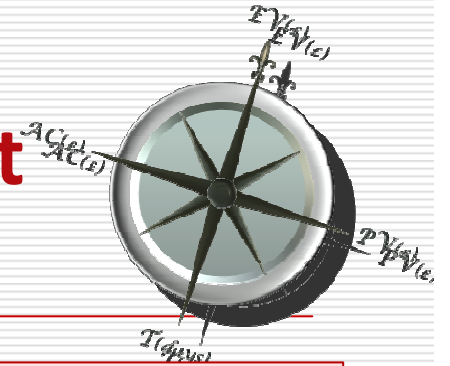
Format of EV Compass output



- Raw data may be formatted to meet your specific needs
 - Two sets of data for each of 25 Attributes
 - Lends itself to detailed reporting to Project Control staff
 - Grouping of attributes within the EVM Basics, 4 maturity stages
 - Lends itself to summarised reporting to Management staff
 - Customisation is recommended to make sure it fits within your organisation



EV Compass output – Radar Plot

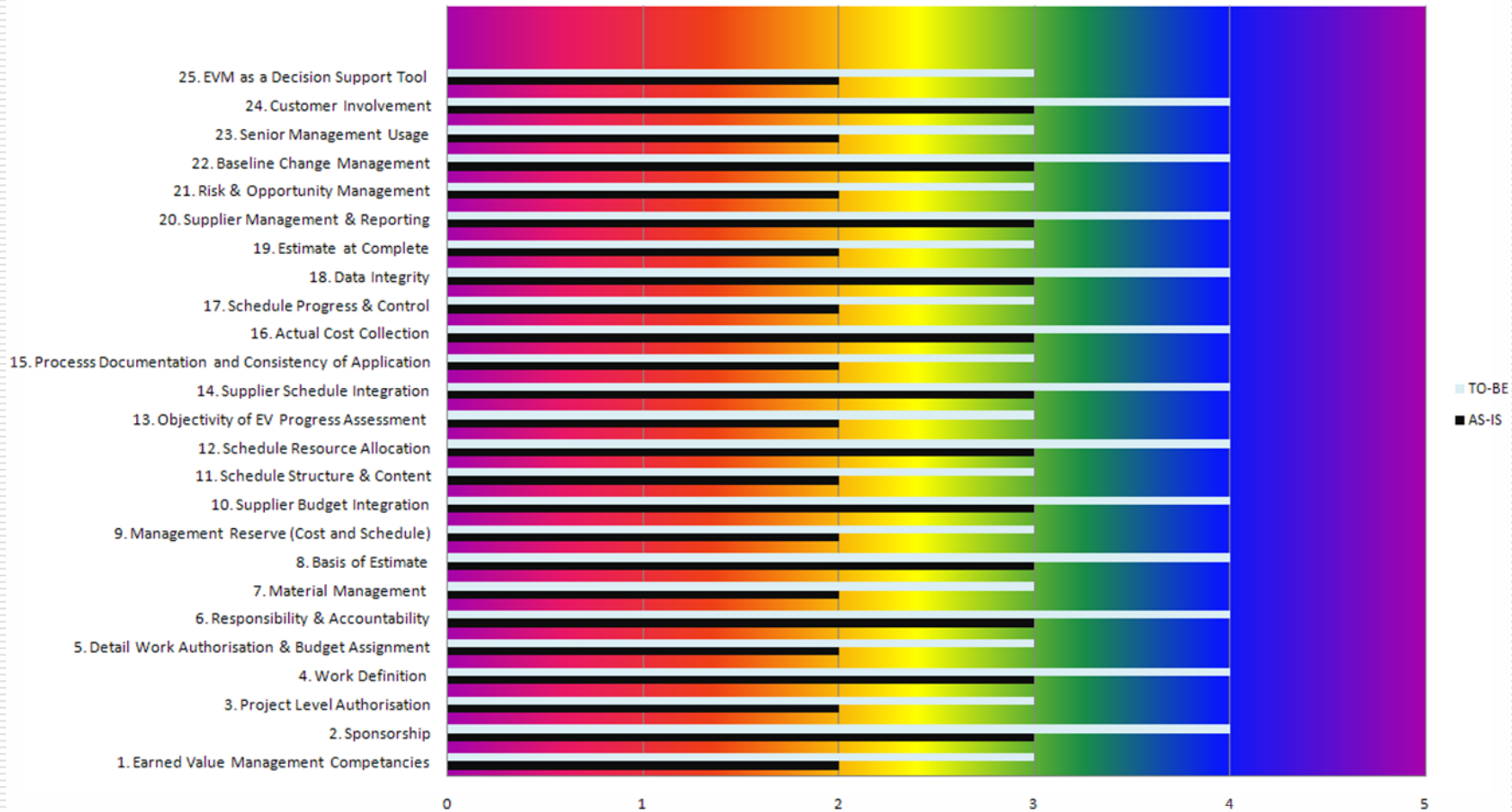


Highlights the gaps between current and target performance

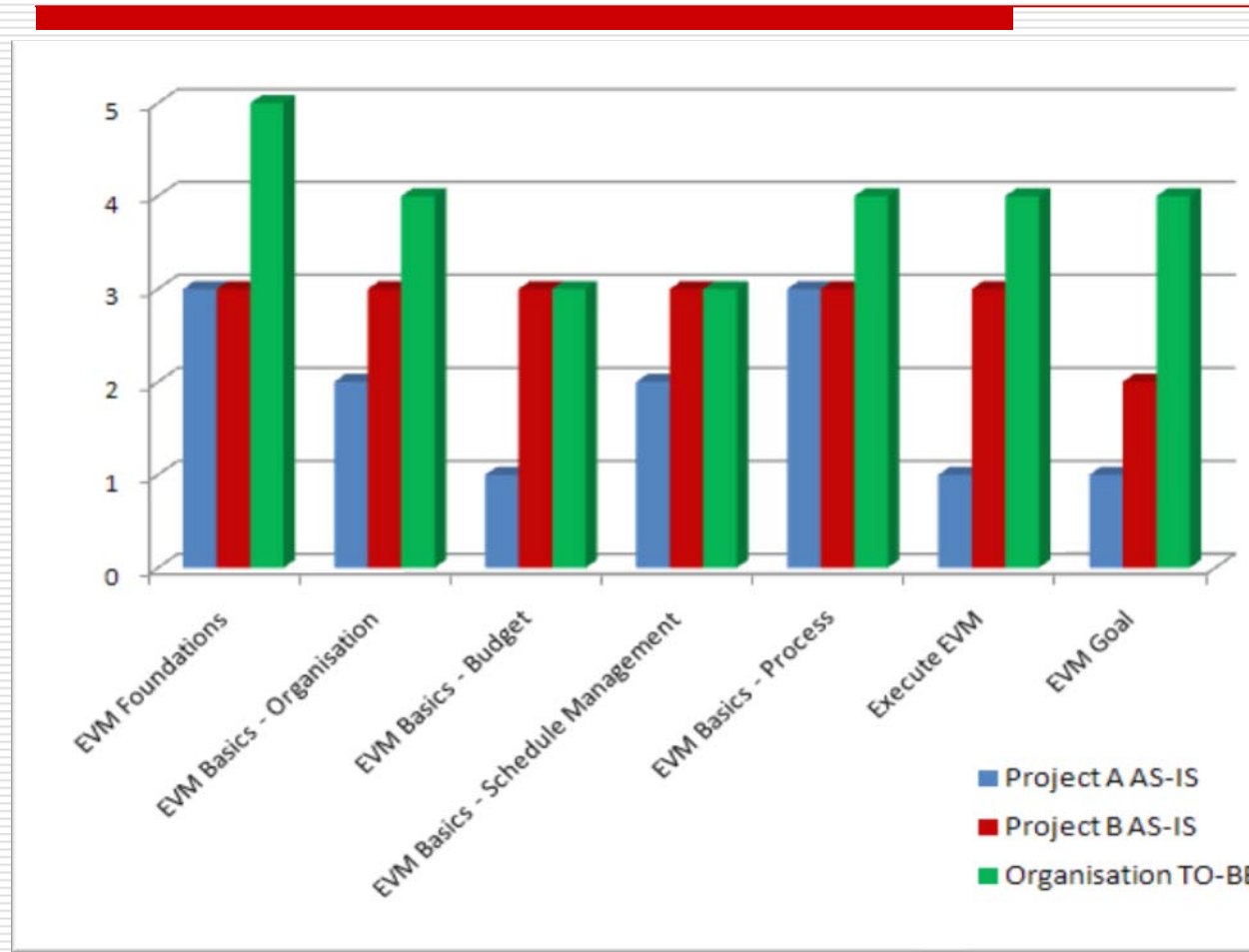
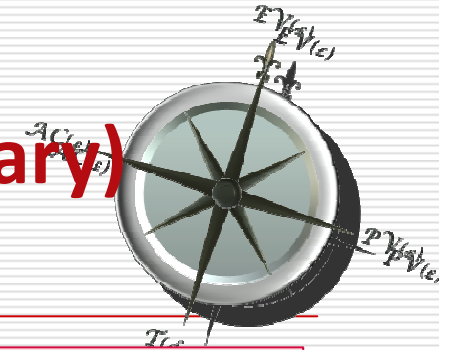
EV Compass output – Bar Chart (detailed)



EVM Maturity Assessment



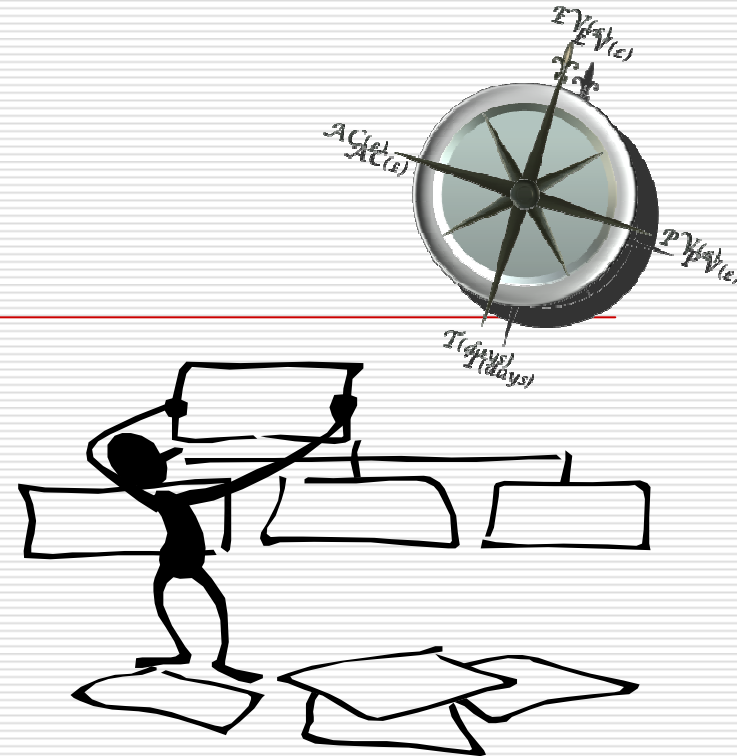
EV Compass output – Bar Chart (summary)



- Simplifies the message
- Easier to show more data (e.g. 2 Projects)
- Enables comparisons

What next?

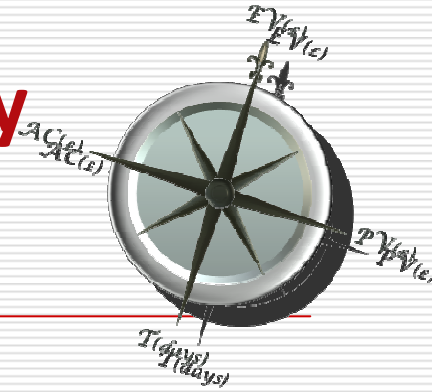
- Points to consider after the assessment
 - What identified strengths...
 - must we maintain to maximum effect?
 - do we develop and exploit even further?
 - What identified areas for improvement...
 - do we acknowledge, but will not pursue because they are not key to our business?
 - do we acknowledge 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

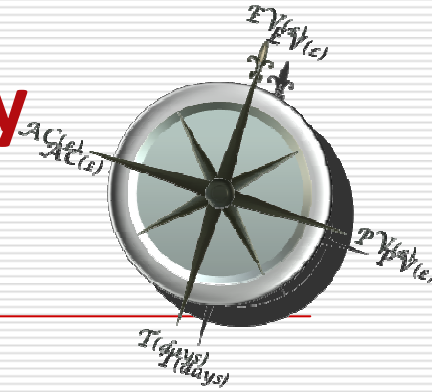


History of BAE SYSTEMS EVM Maturity Model



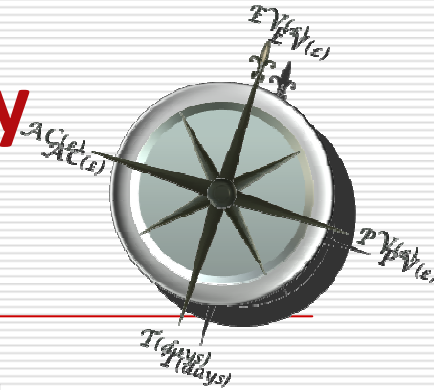
- Initial work commenced in 2000 in Military Air Solutions (MAS)
- Maturity Model created 2003
- Deployed in 2004 covering
 - Hawk
 - Typhoon
 - F-35 Joint Strike Fighter
 - Nimrod
 - New Business
 - Engineering
- Annual assessment performed since 2004 within MAS
- EV Maturity Model is also used in other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

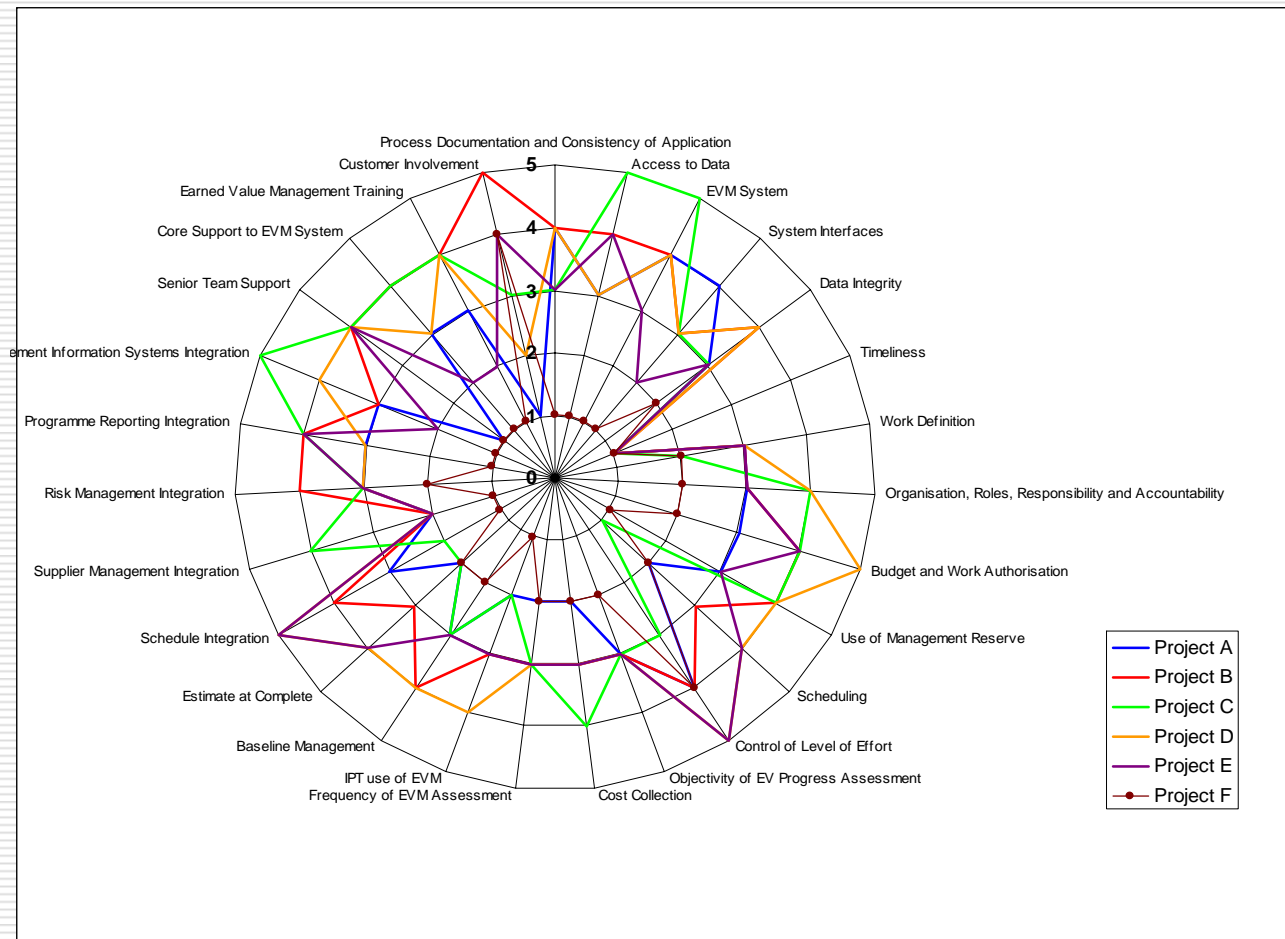
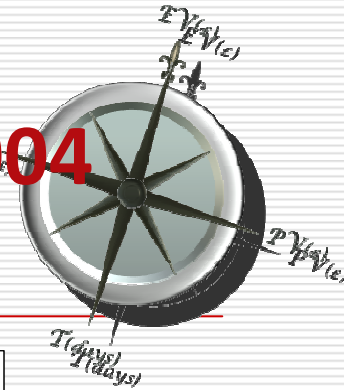
History of BAE SYSTEMS EVM Maturity Model



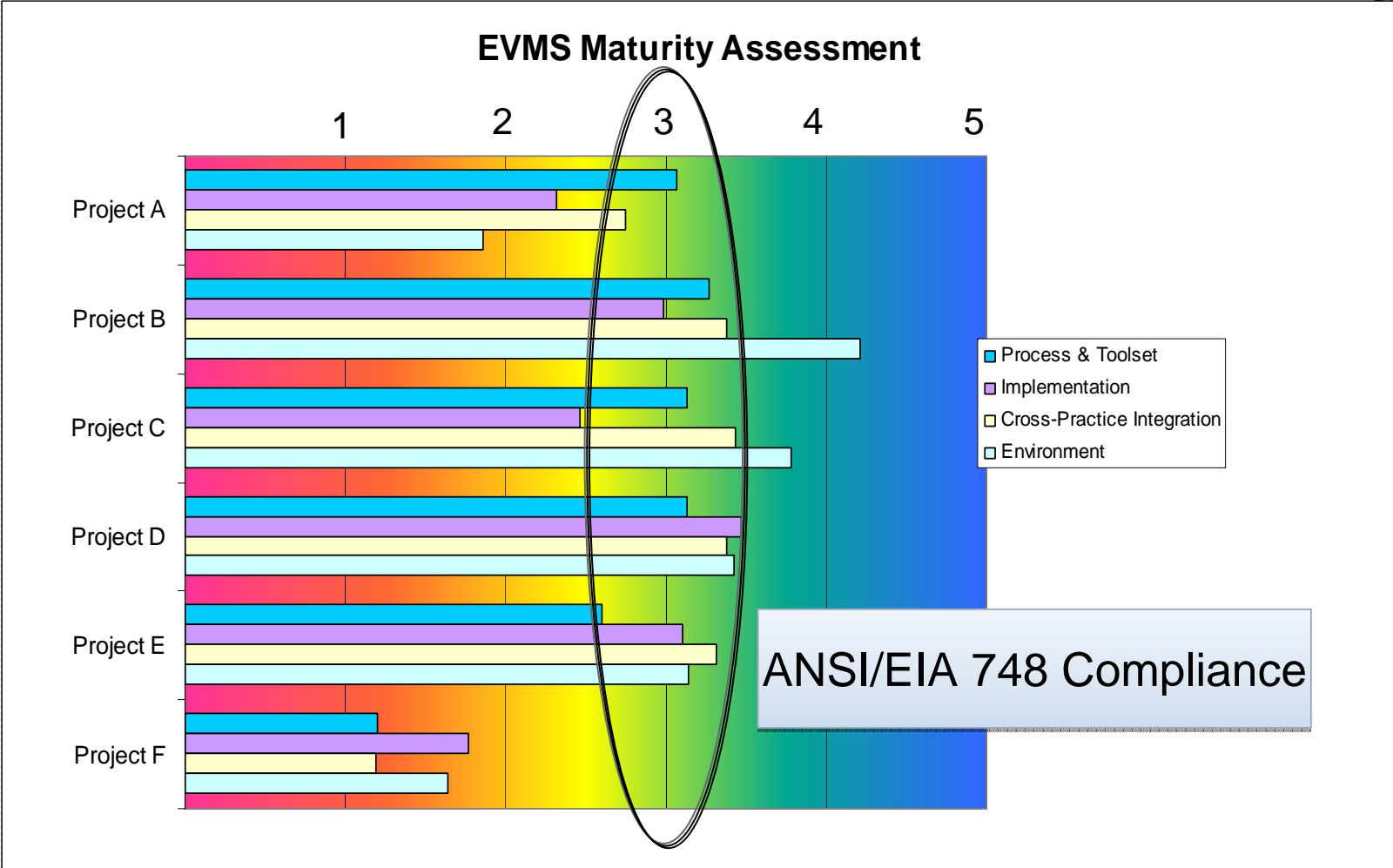
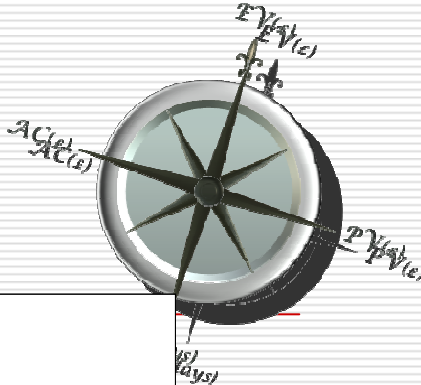
- ❑ 27 Criteria Packaged into 4 Key Sections –Process & Toolset, Implementation, Cross-Practice Integration and Environment
- ❑ Scoring and Weighting applied to each criteria to allow comparison of Projects within a business
- ❑ Process & Toolset –maximum score 20%
- ❑ Implementation –maximum score 60%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

Your Level	Weight	Your Score
4	3	12

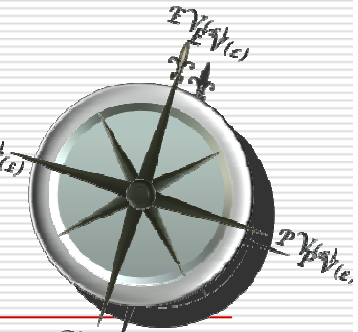
BAE SYSTEMS Maturity Assessment 2004



BAE SYSTEMS Maturity Assessment 2004



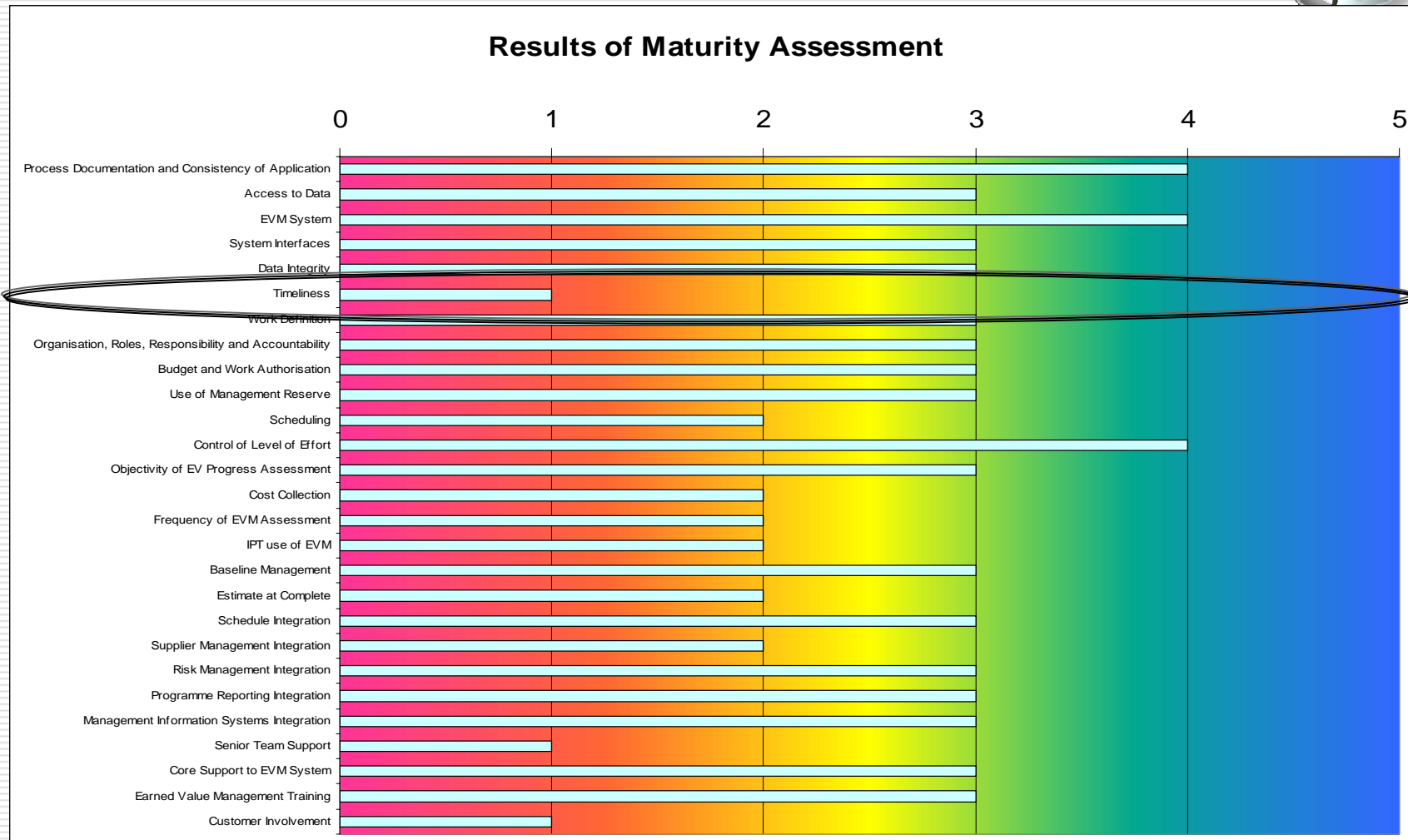
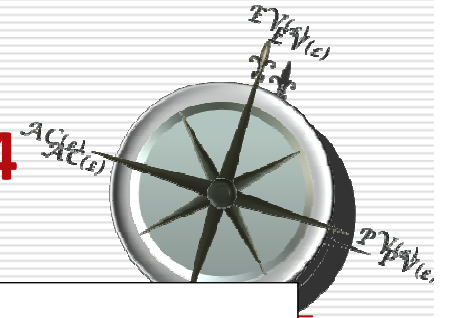
BAE SYSTEMS Maturity Assessment 2004



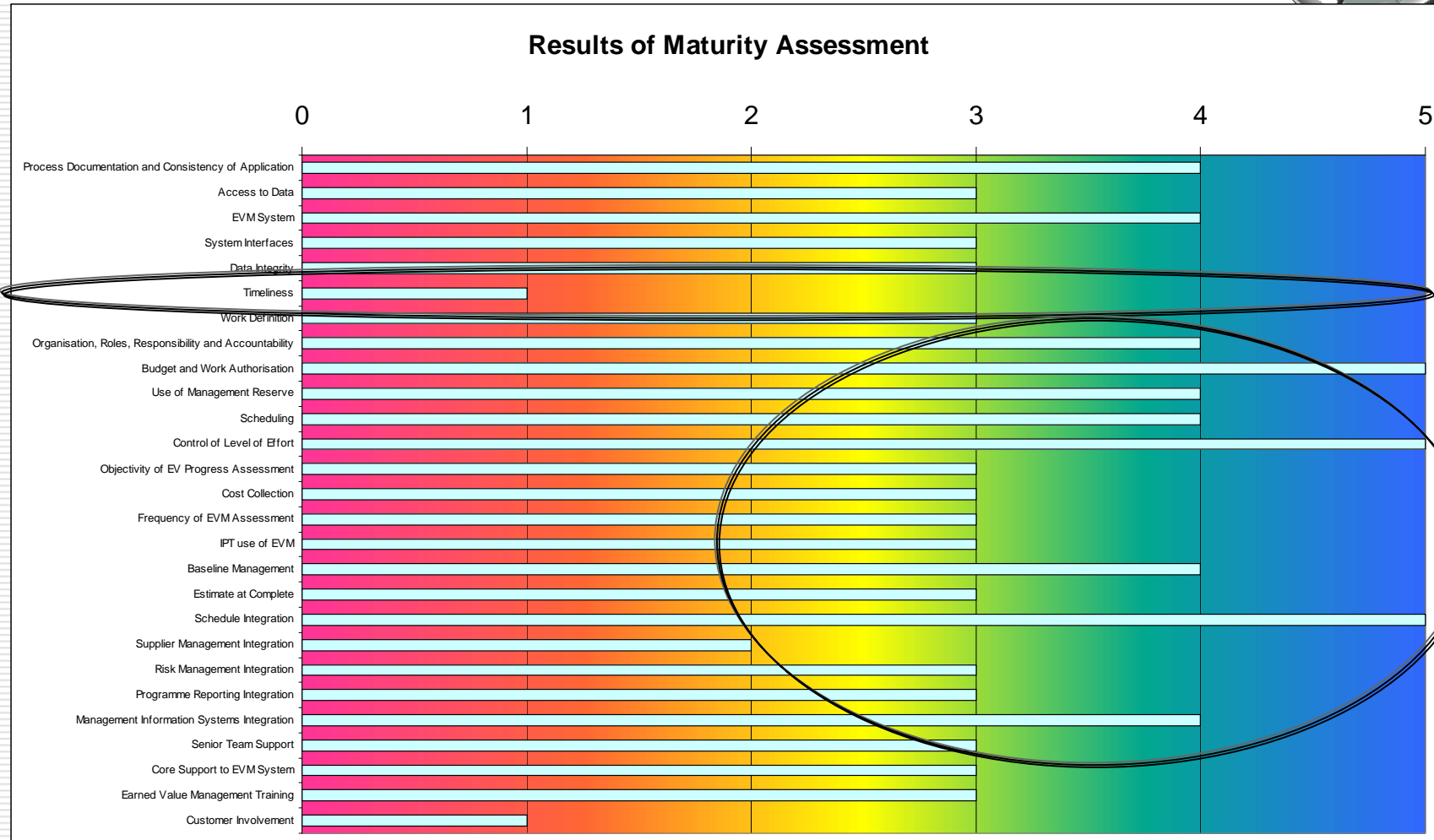
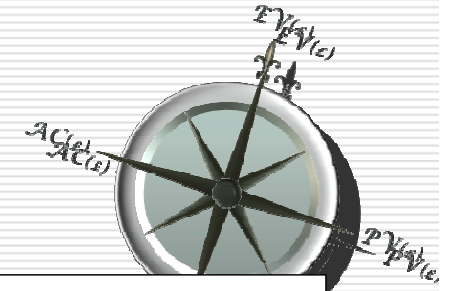
EVMS Maturity Assessment	Project A	Project B	Project C	Project D	Project E	Project F
Process Documentation and Consistency of Application	4	4	3	4	3	1
Access to Data	3	4	5	3	4	1
EVM System	4	4	5	4	3	1
System Interfaces	4	3	3	3	2	1
Data Integrity	3	4	3	4	3	2
Timeliness	1	1	1	1	1	1
Work Definition	3	3	2	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		
Objectivity of EV Progress Assessment	3	3	3	3		
Cost Collection	2	3	4	3		
Frequency of EVM Assessment	2	3	3	3		
IPT use of EVM	2	3	2	4	3	1
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

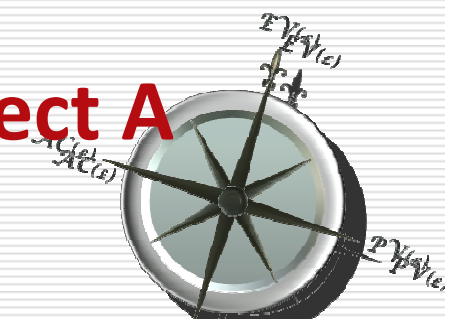
BAE SYSTEMS Maturity Model Project A 2004



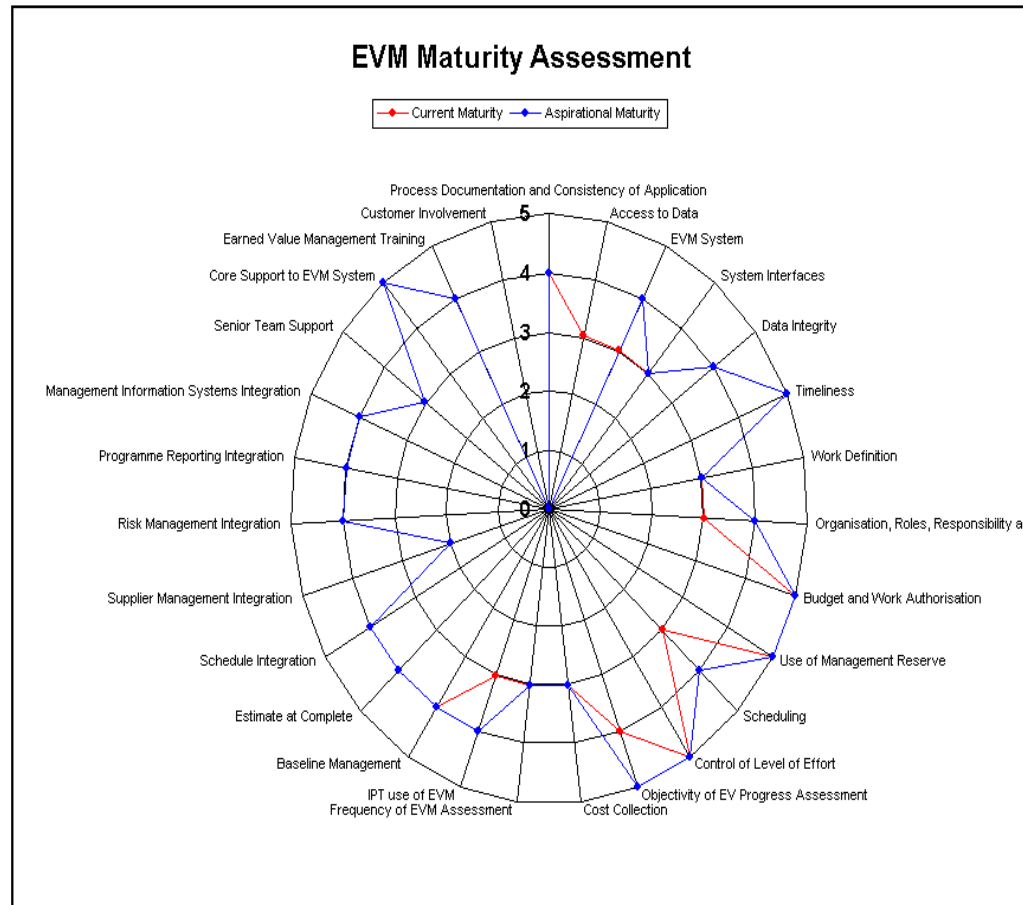
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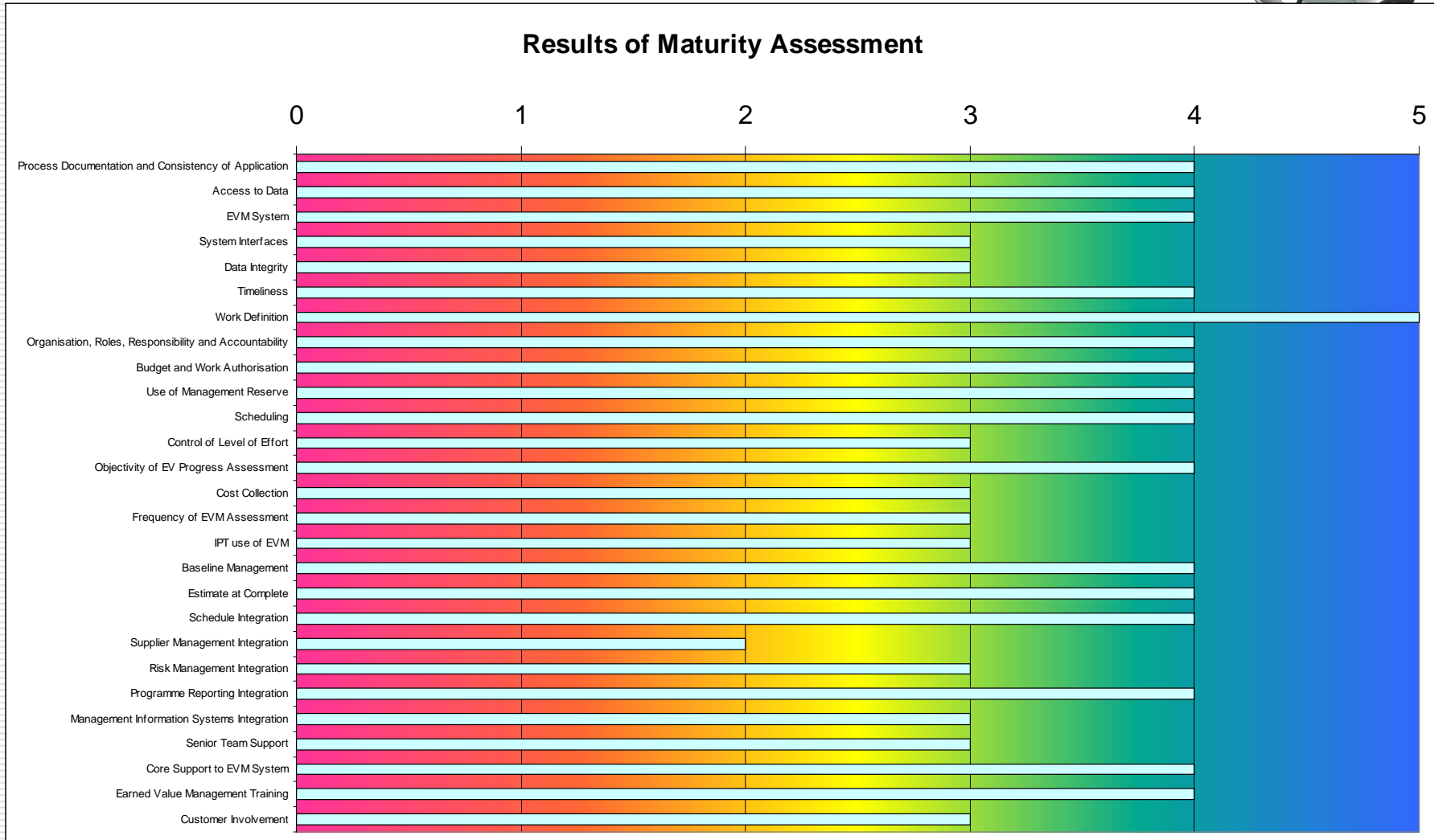
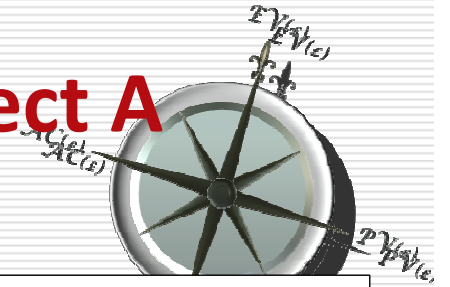
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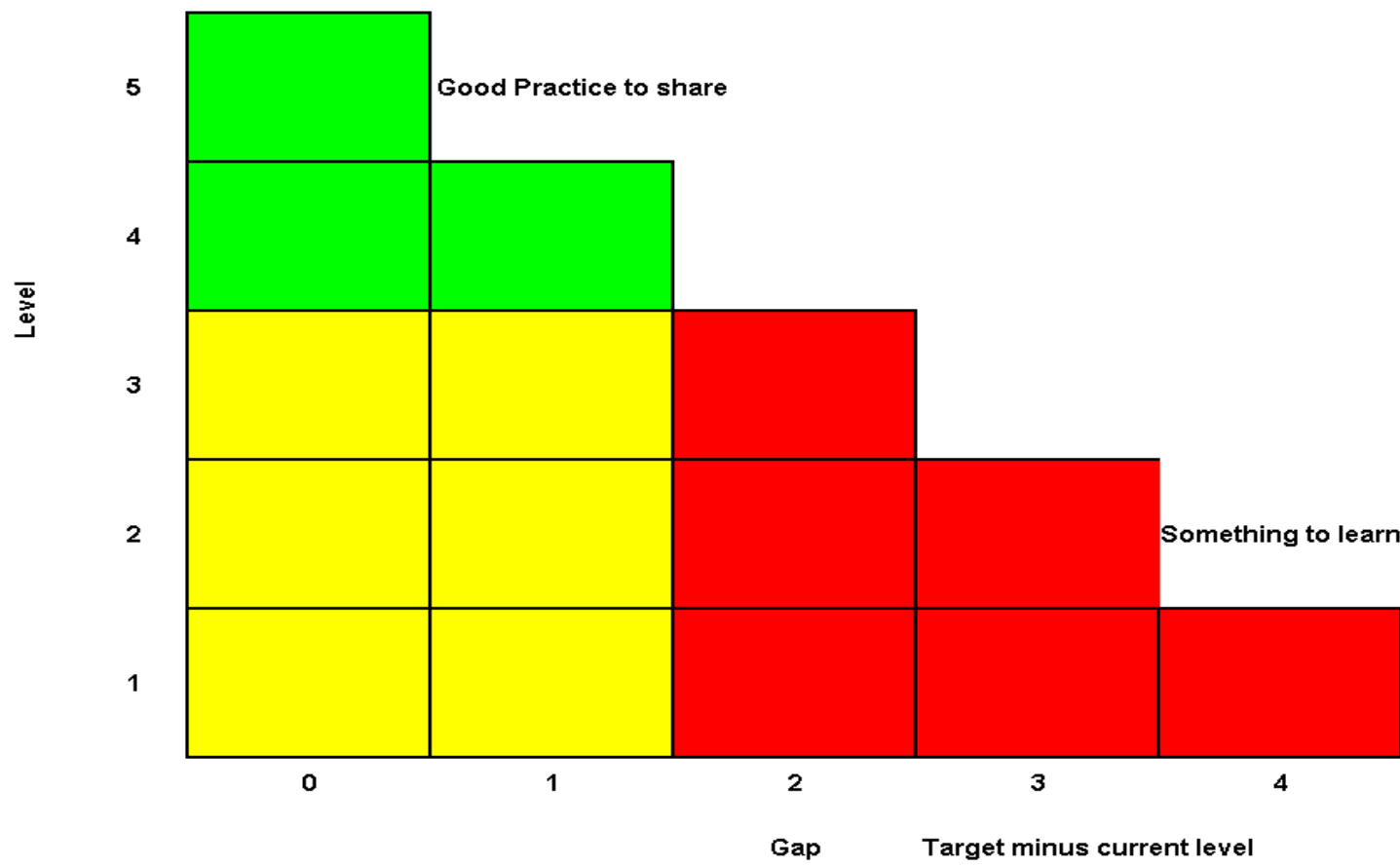
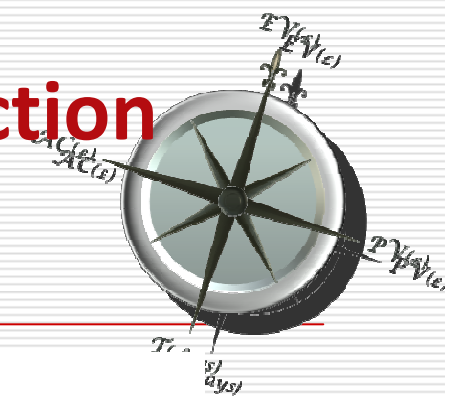
EVMS Maturity Assessment	As-Is	To-Be
Process Documentation and Consistency of Application	4	4
Access to Data	3	0
EVM System	3	4
System Interfaces	3	3
Data Integrity	4	4
Timeliness	5	5
Work Definition	3	3
Organisation, Roles, Responsibility and Accountability	3	4
Budget and Work Authorisation	5	5
Use 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



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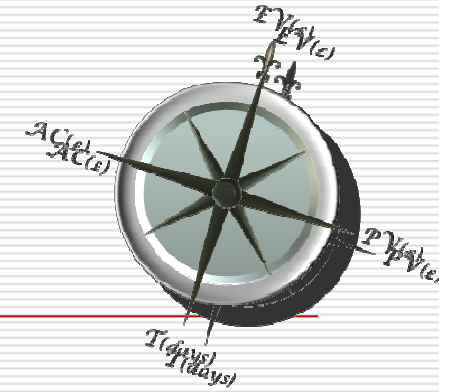


BAE SYSTEMS Maturity Model – Action Planning



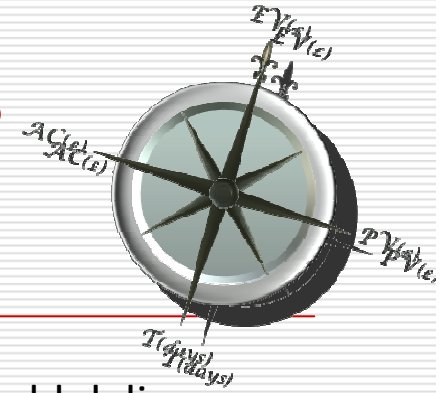
BAE SYSTEMS Maturity Model

- lessons learned



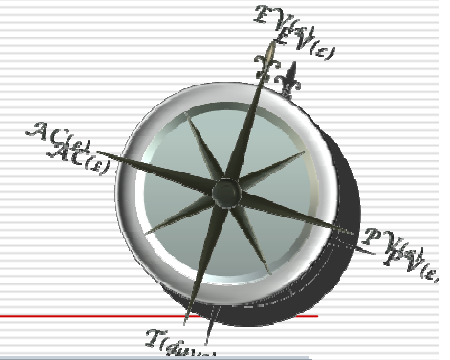
- Annual assessment is maximum frequency
- It is not necessary to score 5 in every category
- Target areas for improvement that benefit the Project
- Do compare Projects to determine Systemic issues
- Use as part of an Integrated Baseline Review –helps Project Team with action planning for improvements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



Future Developments...

- Future Development
 - Web enabled version
 - Compass is now part of the Earned Value Body of Knowledge (BoK)
 - And the associated EV Practitioner Exam – soon to be launched
 - Compass also forms part of the Scheduling Maturity Model...
 - ...and the Planning Guide and Foundation Exam



...any questions?



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