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PROJECT MANAGEMENT INSTITUTE SOUTH AFRICA CHAPTER

Making project management indispensable for business results.®

Advanced Uses of Earned Value Management in Projects, Programmes and Portfolios

A Practical Approach based on Real-Life Experiences

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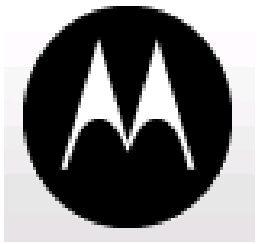
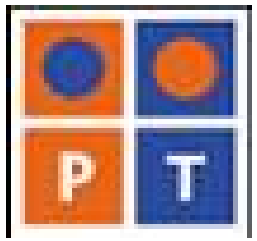
Agenda

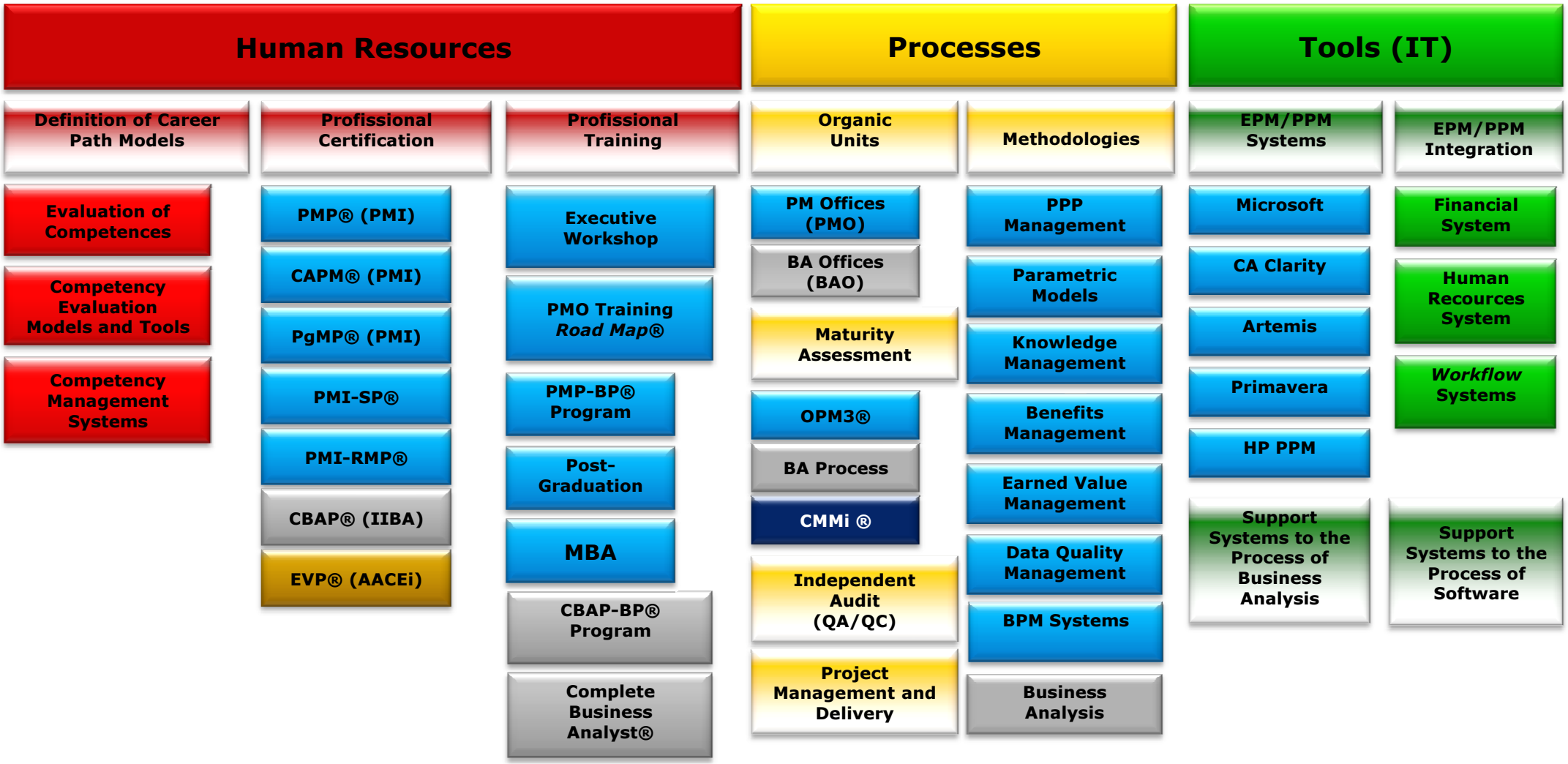
- Overview, Motivation and Key Questions
- EVM in Programmes and Portfolios
- The EVM-SM™ – a proposed integrated model
- Lessons Learned and Success Factors

+10 Years of Experience Using EVM



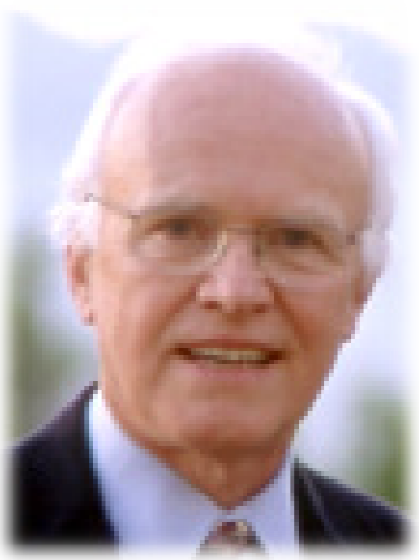


Portfolio of Services



International Outreach

Motivation: measurement is not an option



“You can't manage what you can't control, and you can't control what you don't measure”

- Tom DeMarco

Motivation: what and how to measure?

What does EVM measure?

It answers three fundamental management questions:

1) How much work should have been accomplished? (**PV**)

2) How much work was actually accomplished? (**EV**)

3) How much did it cost the work accomplished? (**AC**)

Is it too complex? Can you afford to have no answer?

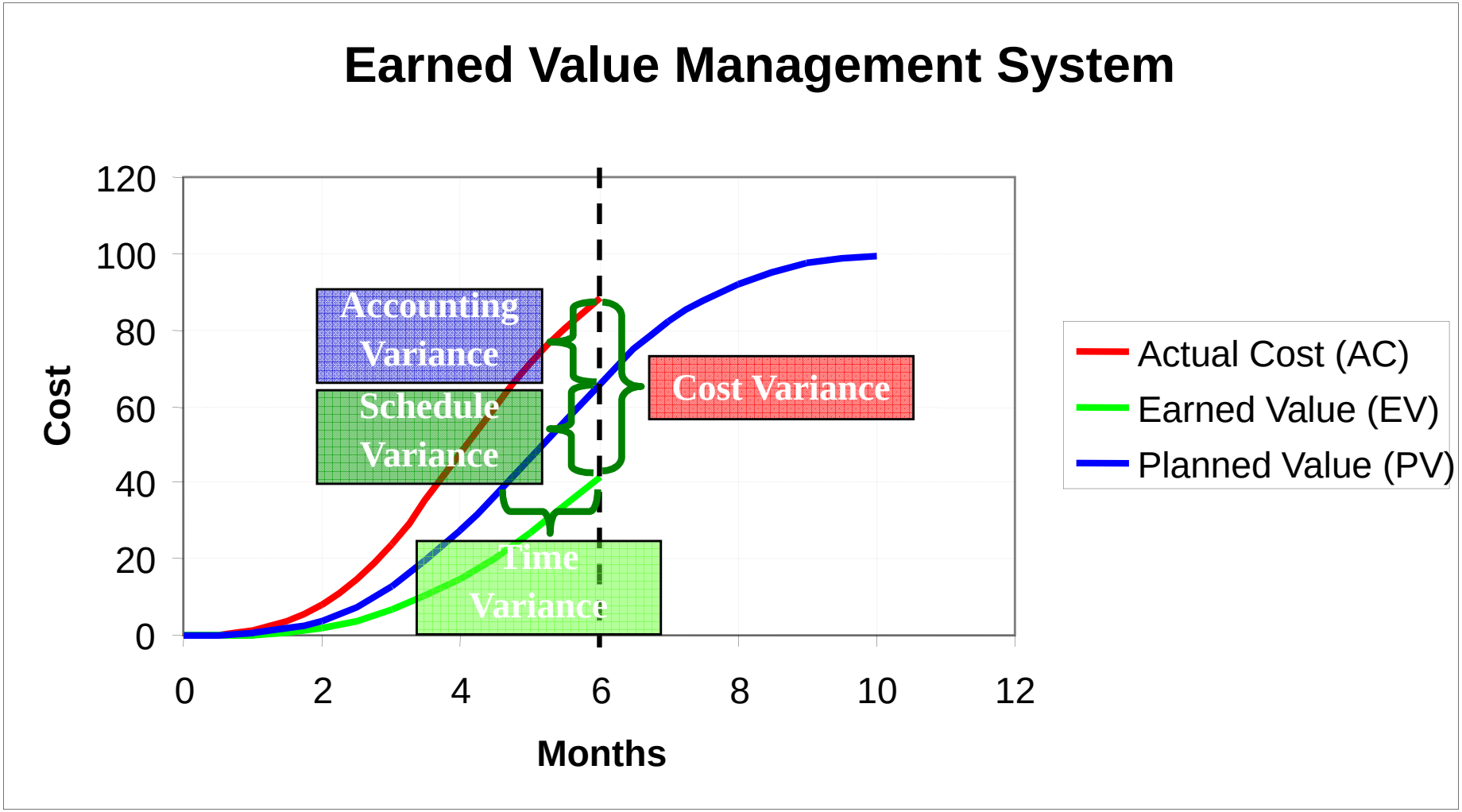
Motivation: what and how to measure?

How does EVM measure Work ?

1 Unit of Work = 1 $ of Budget

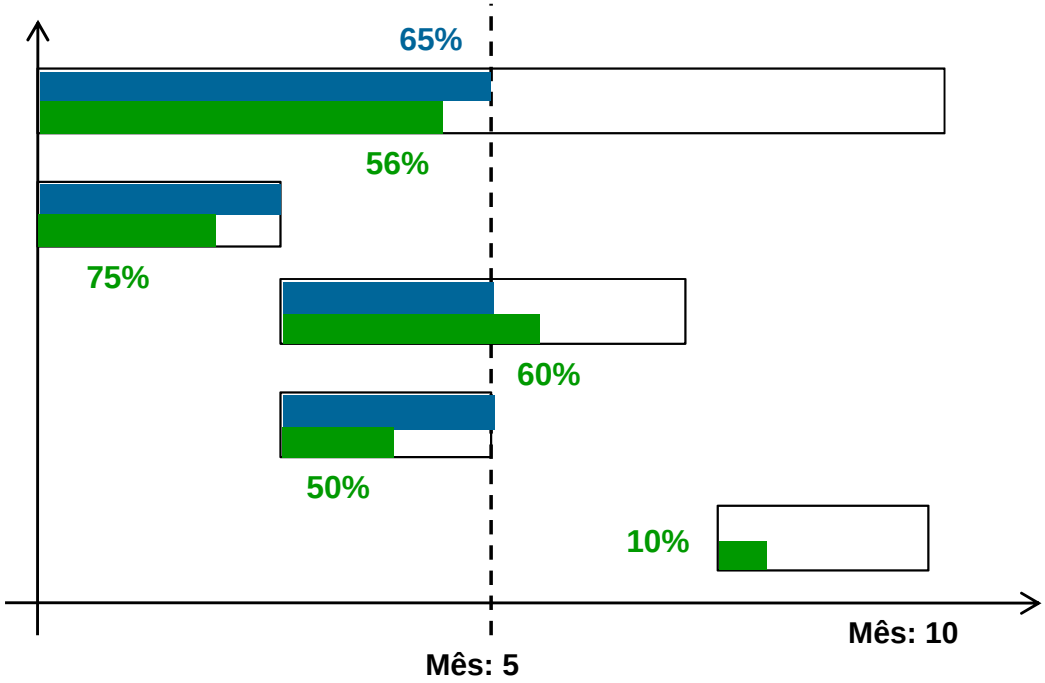
Earned Value for Performance Measurement

Basic Metrics and Variances



Earned Value for Performance Measurement

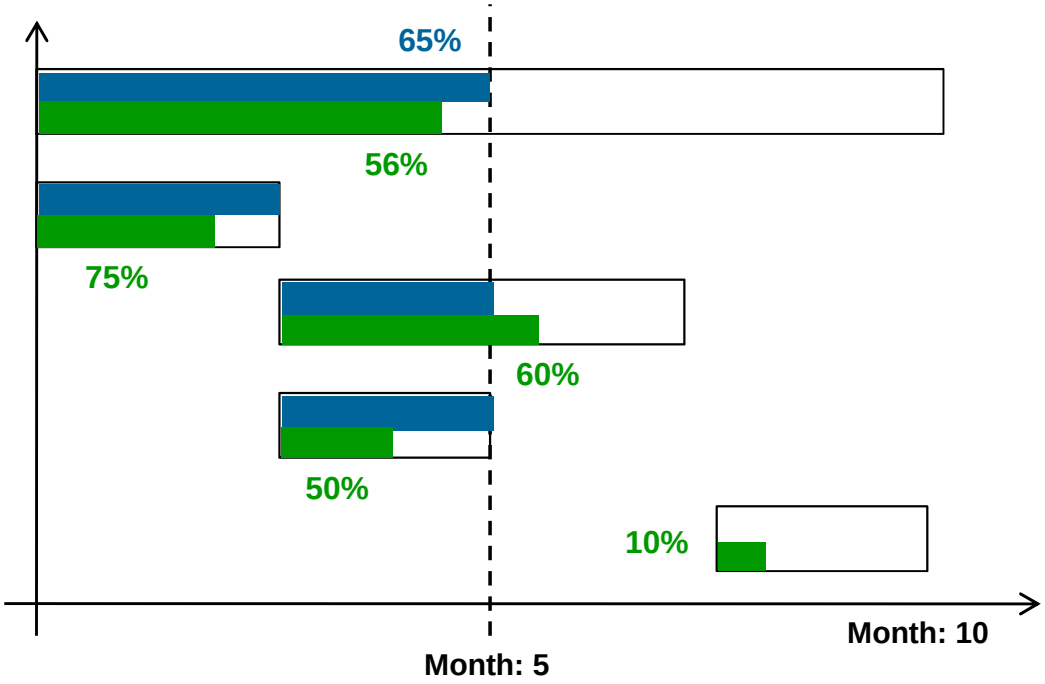
Model: Basic Metrics



Orçamento	Planeado	Realizado	Custo
1000 $	650 $	560 $	700 $
200 $	200 $	150 $	200 $
500 $	250 $	300 $	400 $
200 $	200 $	100 $	80 $
100 $	0 $	10 $	20 $

Earned Value for Performance Measurement

Model: Progress, Variance and Performance Metrics



Baseline	Planned	Accomplished	Cost
1000 $	650 $	560 $	700 $

Performance Analysis:

The planned progress was:**65%**

The actual progress is: **56%**

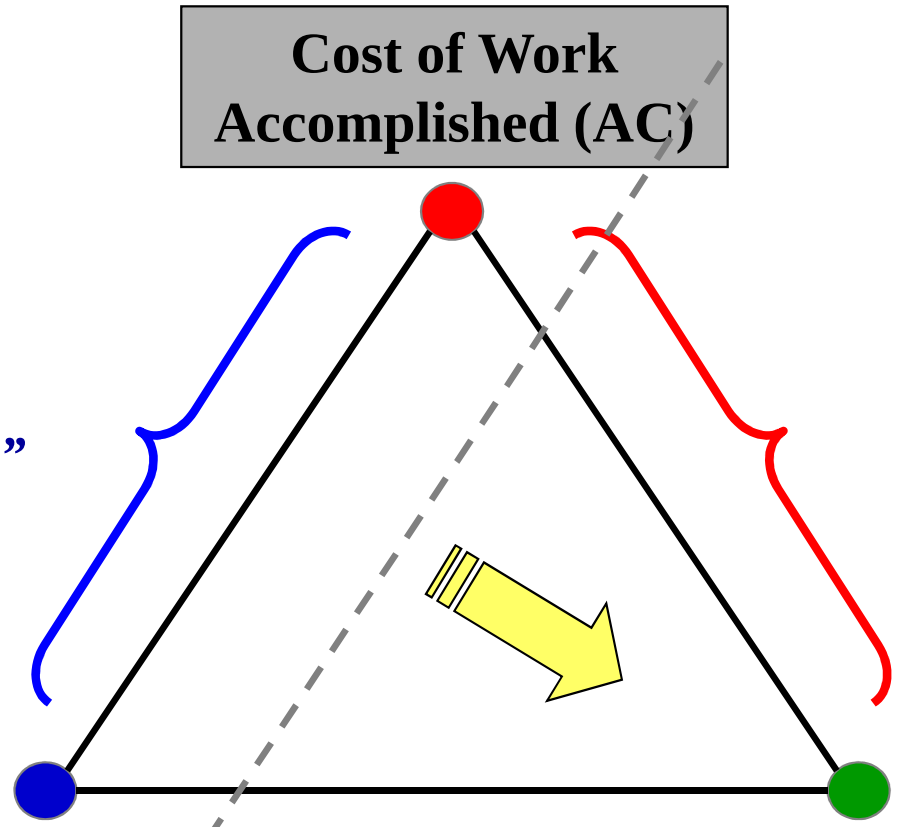
There was a **70%** budget consumption

In each month, the project accomplished on average **86%** (SPI=560$/650$) of the planned work

For each **1$** consumed, the project produced **0,80$** (CPI = 560$/700$)

Earned Value for Performance Measurement

Performance Indices



AC/PV

*Relative **"burn rate"***

CPI = EV / AC

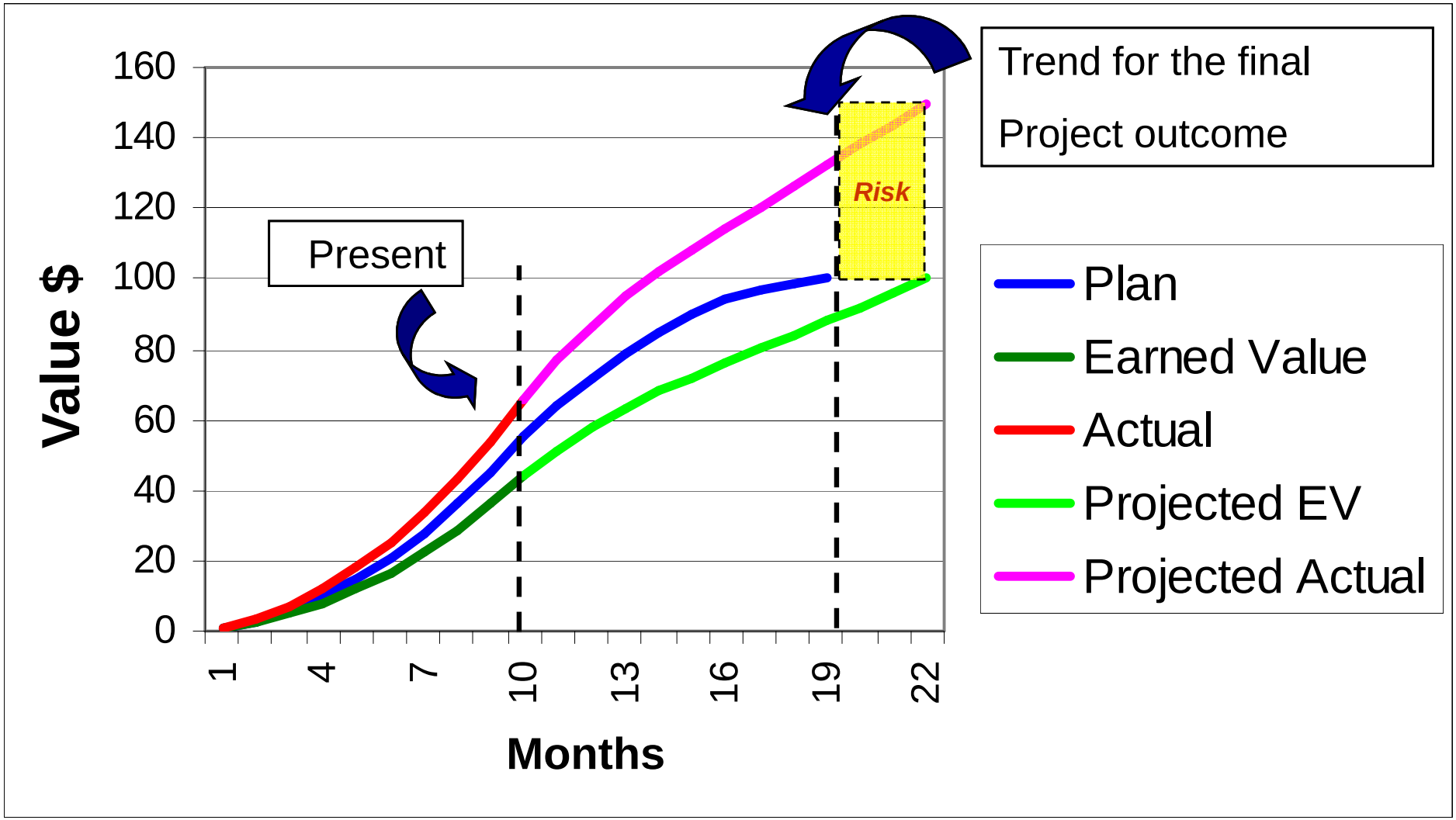
*Relative **productivity***

SPI = EV / PV

*Relative rate at which work is being accomplished (**speed**)*

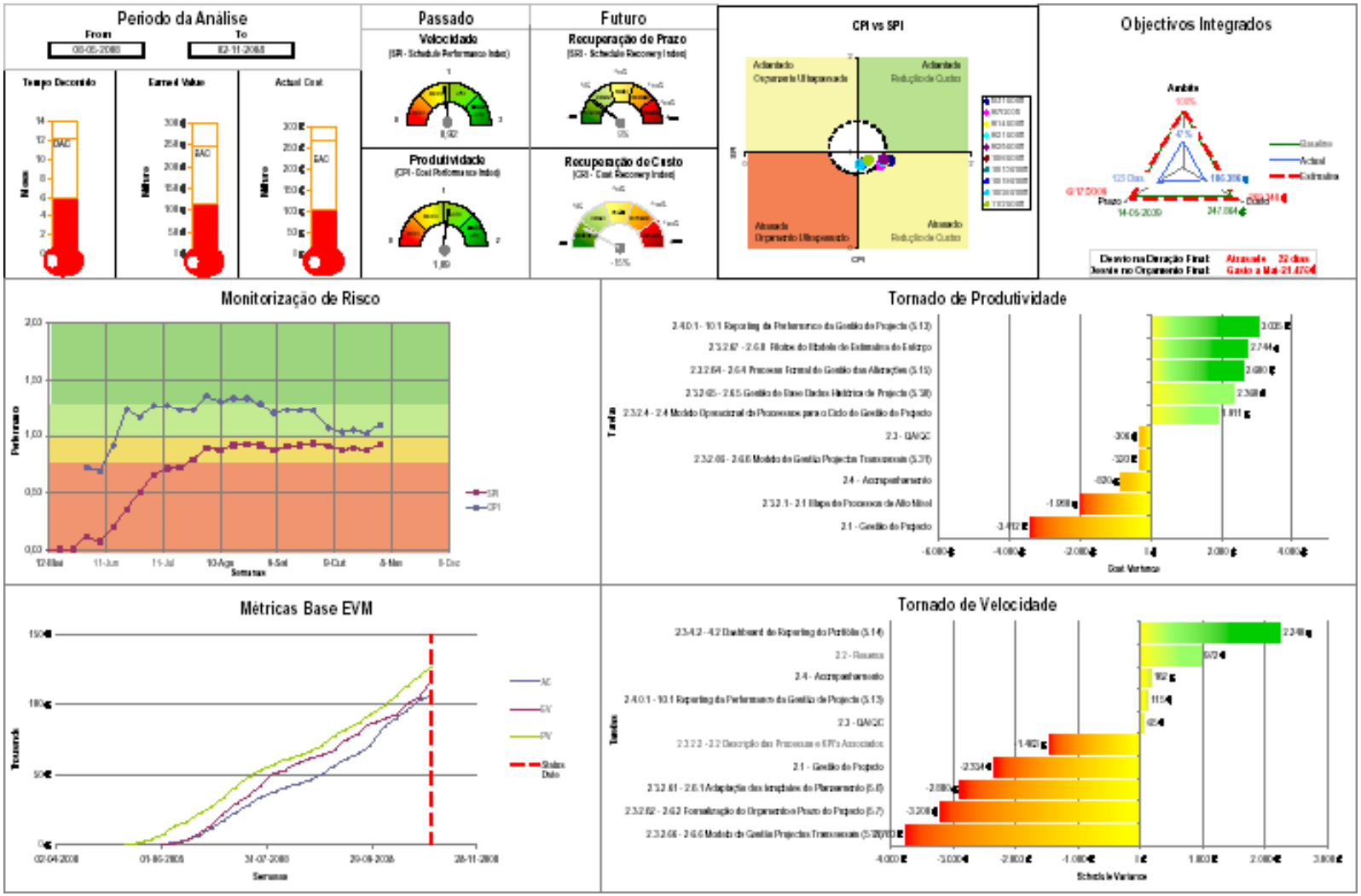
Earned Value for Performance Measurement

Trend Analysis



Earned Value for Performance Measurement

Communications: objective, intuitive, real-time, suggestive

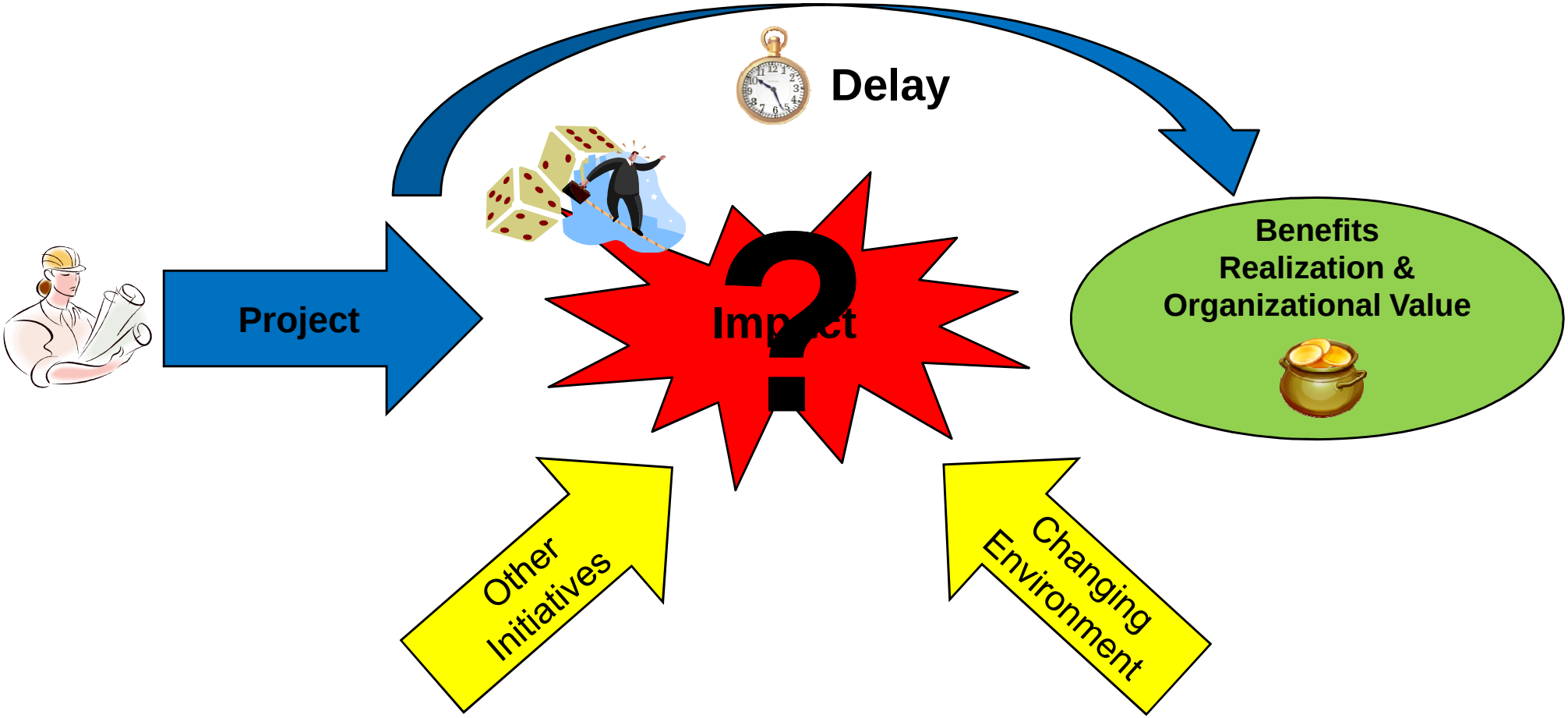


Motivation: what are the barriers?

1. Requires good integrated planning and (often rare) scheduling skills
2. Difficulties in fully understanding and mastering the EVM mathematics
3. Not trusting the numbers (data quality problems)
4. Lack of perspective in using EVM for decision-making
5. Failing to simplify the language and to use graphical representations
6. Integrating EVM with "Rolling-wave Planning" (progressive detailing)
7. Handling project changes: incorporating changes into the baseline
8. Mistaking Actual Cost (resource consumption) with accounting figures
9. Difficulties in Estimating % Work Completion
10. Monitoring "external work" executed by subcontractors

Motivation: EVM beyond Projects

The key challenge…

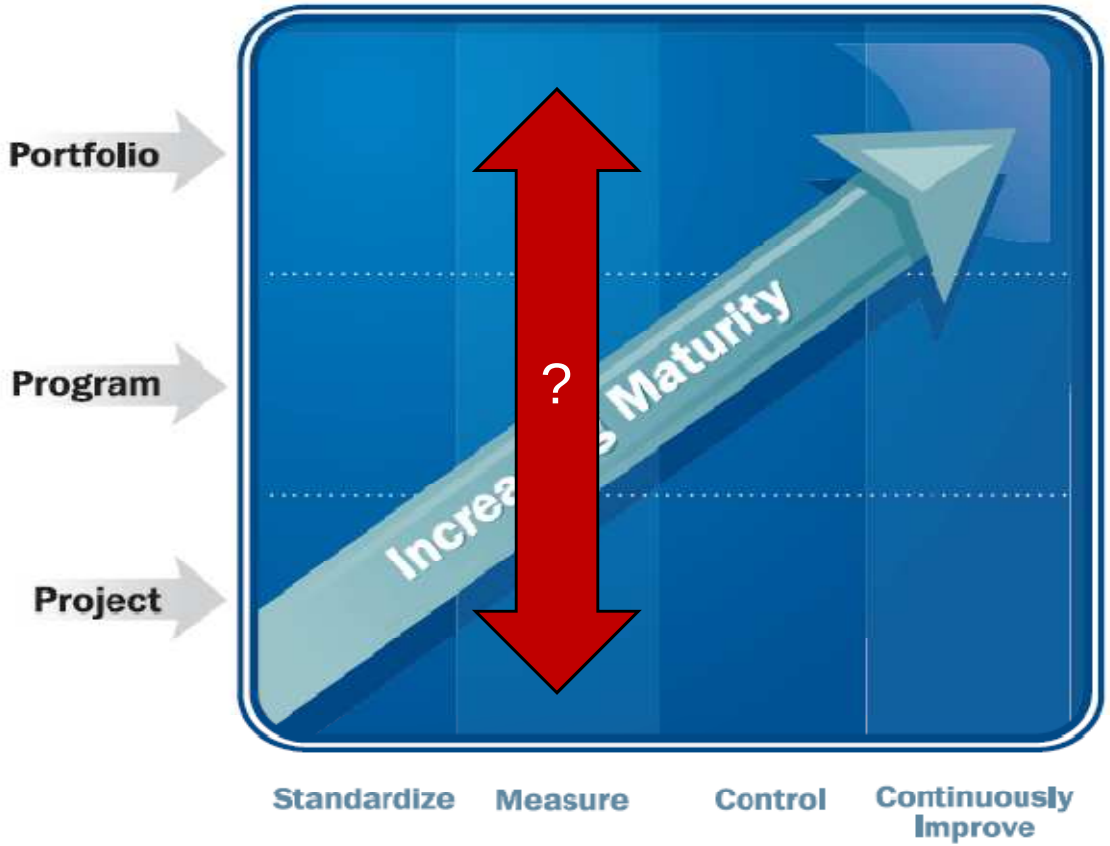


Motivation

- Linking project performance to benefits realization
- Linking benefits realization to organizational value
- **Earned Value** measures **scope realization** in **budget value**, as well as the associated time and cost performance
- *How to translate EVM measures of scope realization, time and cost performance, into benefits realization performance and organizational value?*

Motivation

- How to integrate project performance with programme and portfolio performance?
- What metrics can be used to measure programme and portfolio performance?
- Can EVM be also applied to programme management and portfolio management, and deliver this integration in an effective manner?



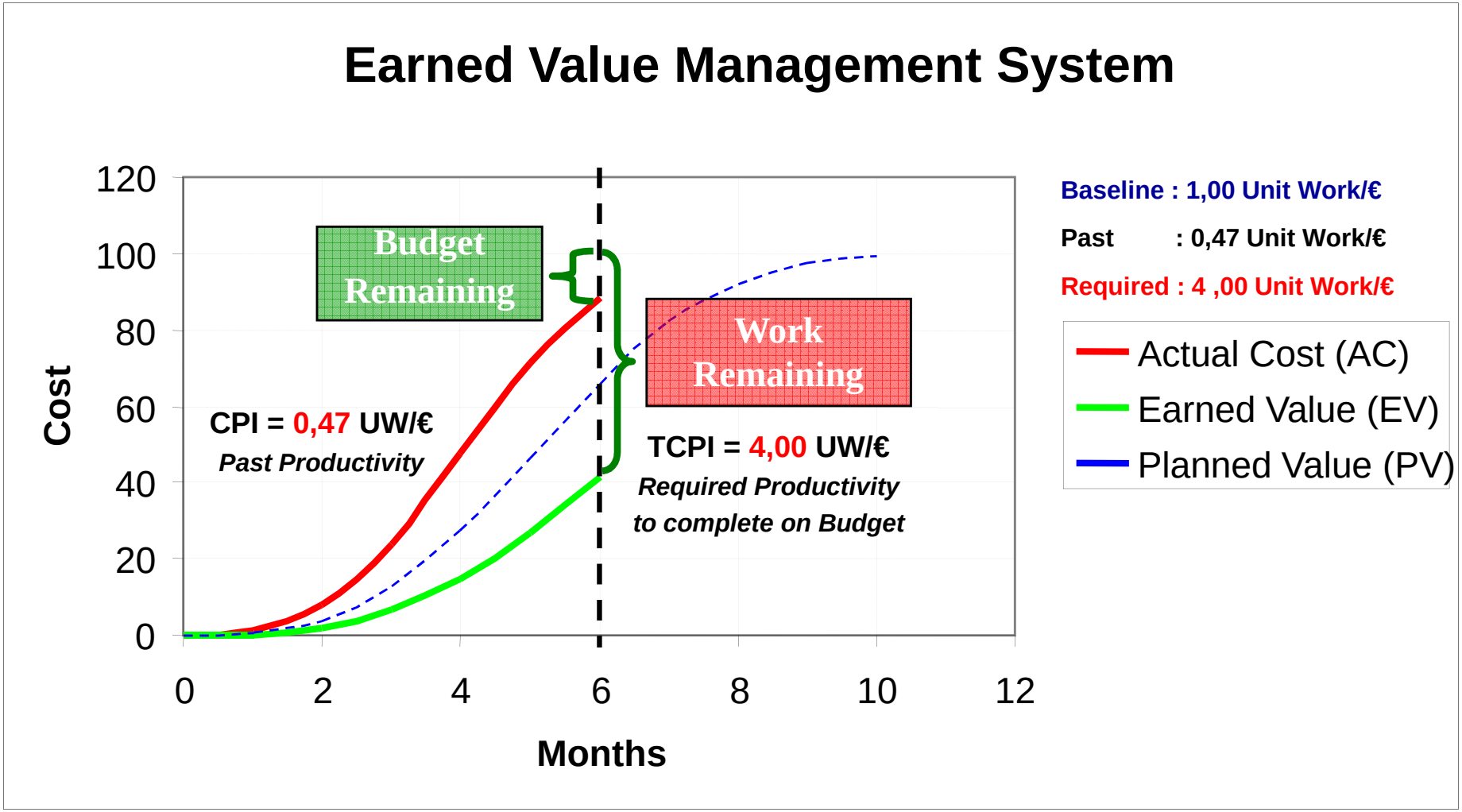
Motivation: extending the boundaries

- Can the boundaries of EVM performance based measurement also be extended to other areas?

- Communications Management
- Risk Management
- Quality Management
- Human Resources Management
- Balanced Score Card

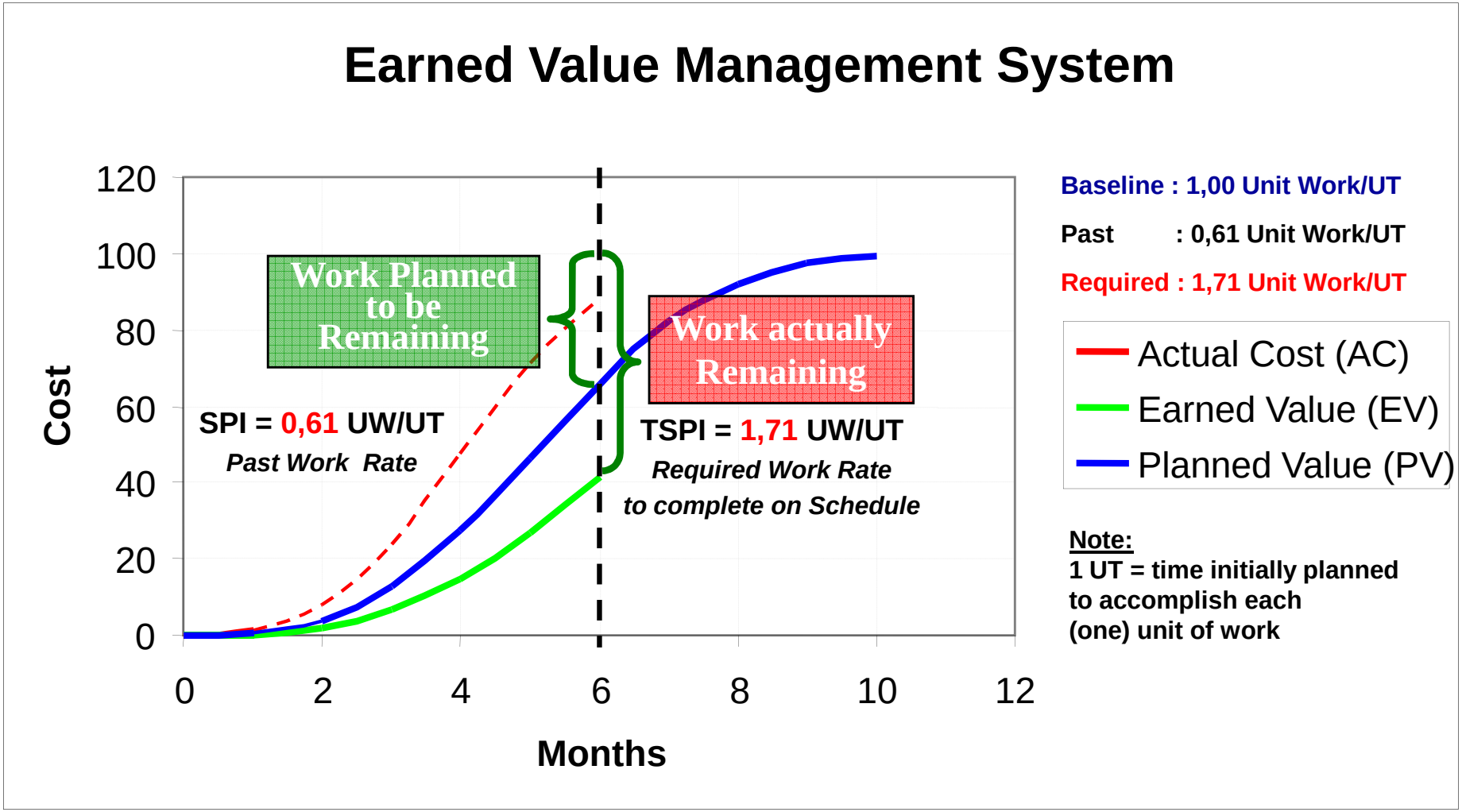
Example: Risk Management

Re-planning: feasibility of project Budget



Example: Risk Management

Re-planning: feasibility of project schedule



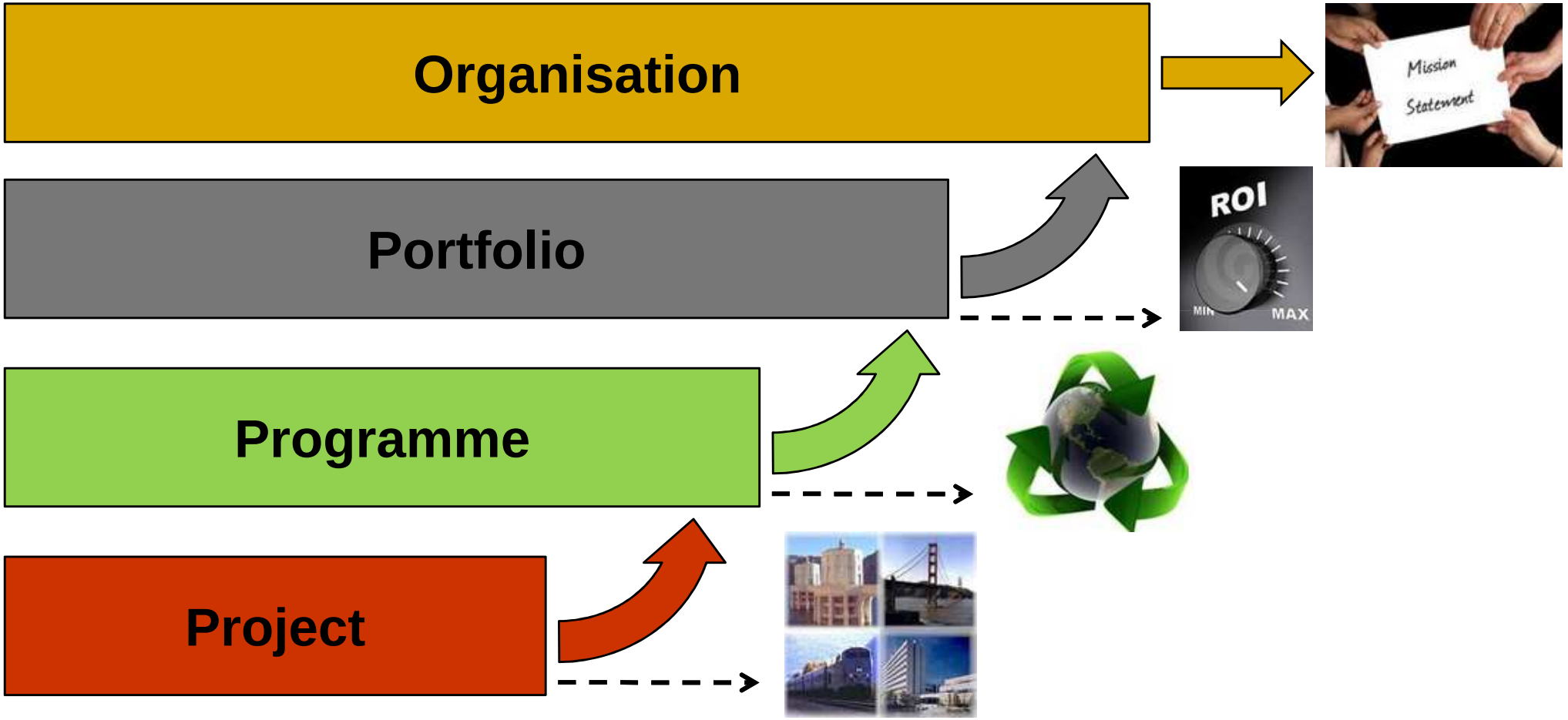
An integrated P3 framework

- **Project** – *a temporary endeavour undertaken to create a unique product, service or result*

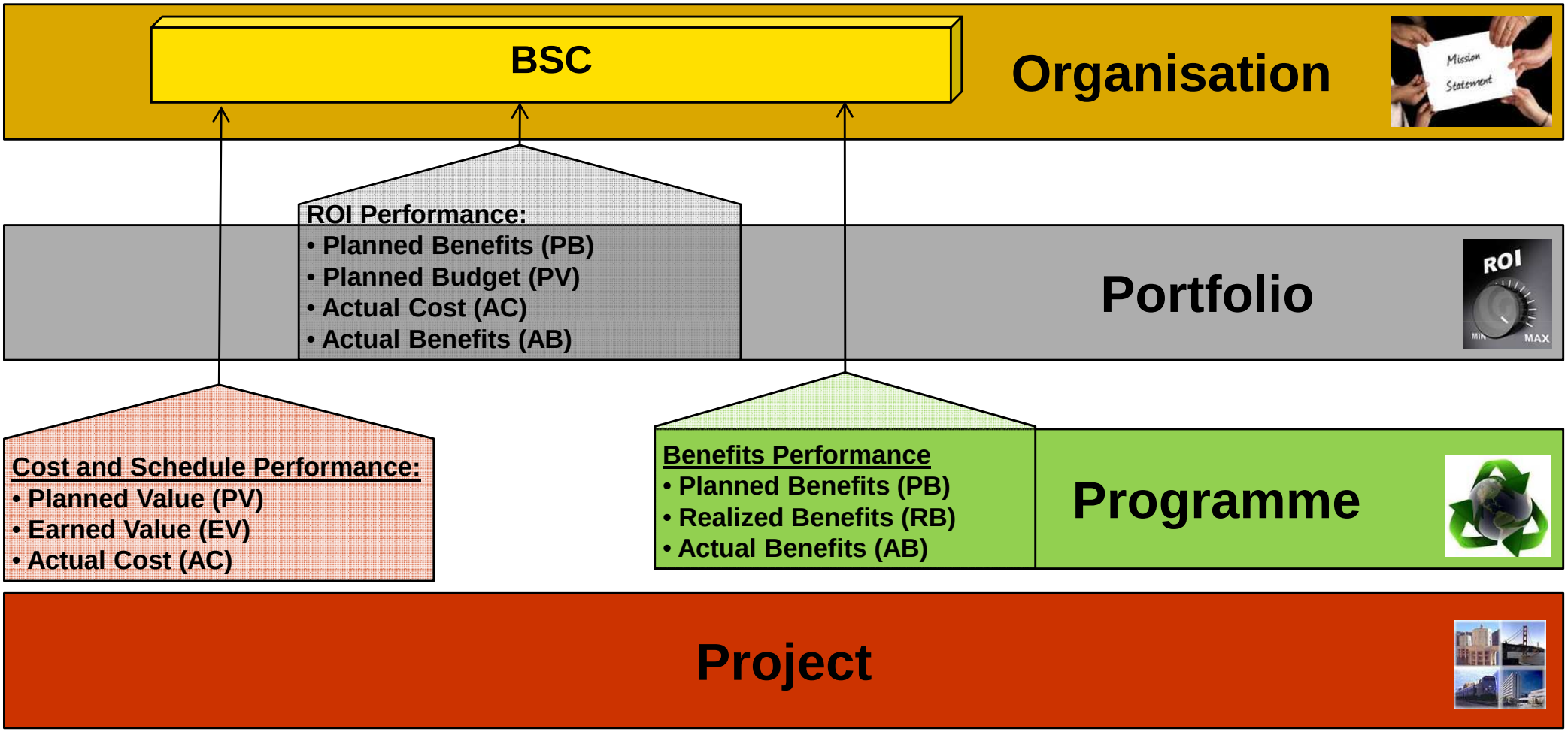
- **Program** – *group of related projects managed in a coordinated way to obtain benefits and control not available from managing them individually. […] may include elements of related work outside the scope of the discrete projects in the program*

- **Portfolio** – *collection of projects and/or programs and other work that are grouped together to facilitate effective management of that work to meet strategic objectives. The projects or programs in the portfolio may not necessarily be interdependent or directly related*

A proposed integrated model: EVM-SM™



A proposed integrated model: EVM-SM™



A proposed integrated model: EVM-SM™

Basic Metrics			Valor
Budget / Cost (Traditional EVM)			
	PV	*Amount of work planned*	£ 100
	EV	*Amount of work accomplished*	£ 80
	AC	*Cost of work accomplished*	£ 90
Benefits Realization			
	PB	*Benefits planned to have been achieved*	£ 120
	RB	*Realized benefits (nominal value)*	£ 100
	AB	*Real value of the benefits achieved*	£ 110

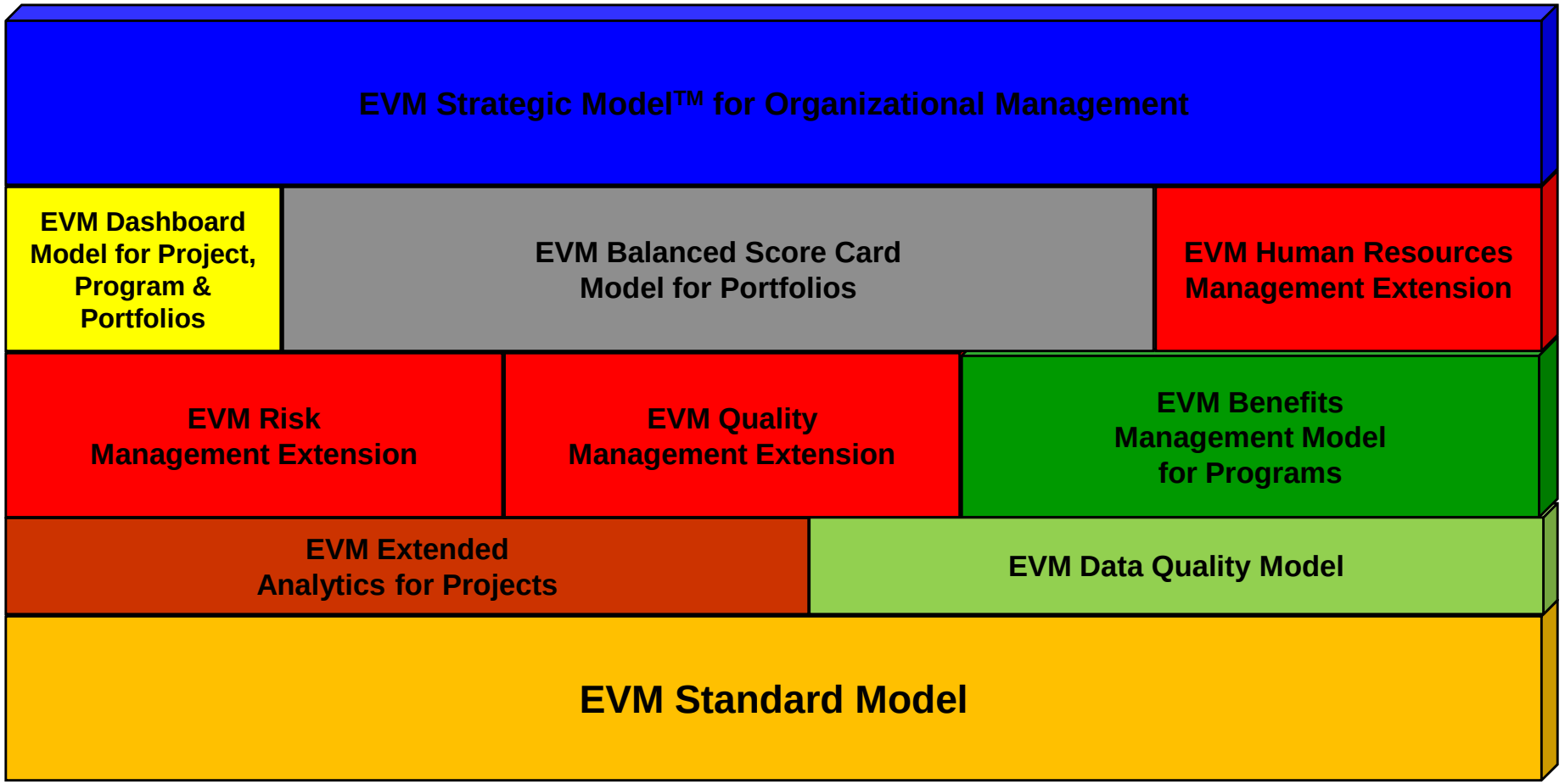
Performance Indices			
Cost and Time Performance (Traditional EVM)			
	SPI	*Rate of work accomplishment*	80%
	CPI	*Efficiency of the budget consumed*	£ 0,89
Benefits Performance (Programme Perspective)			
	BPI	*Rate at which benefits are accomplished*	83%
	VPI	*Value of realized benefits*	£ 1,10
Return on Investment (Portfolio Perspective)			
	PROI	*ROI planned to have been achieved*	£ 1,20
	AROI	*ROI actually achieved*	£ 1,22

Calculation of the performance indicators

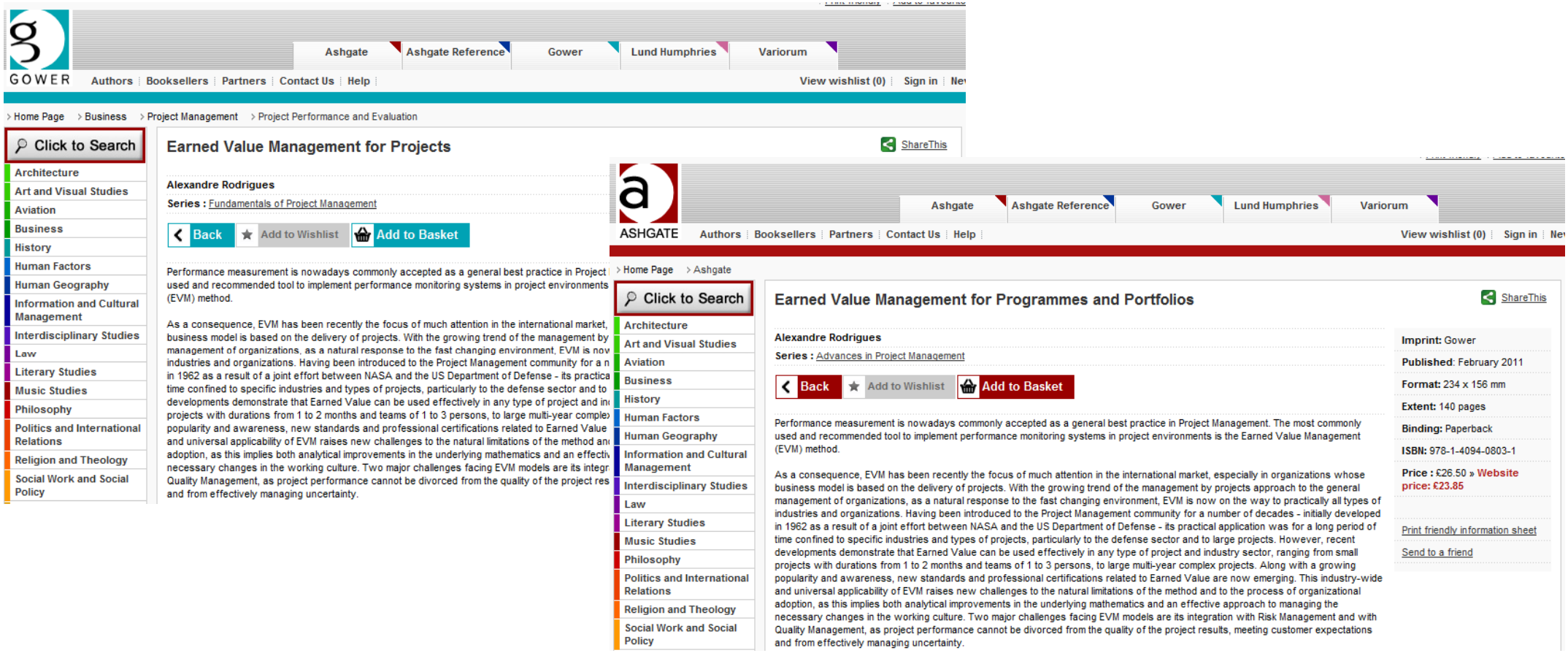
Interpretation of the Performance indicators

Model - EVM-SM™			Budget / Cost					Benefits				
			PV		EV	AC		PB		RB		AB
Budget / Cost	PV	£ 100	-	-	-	-	-	-	-	-	-	-
	EV	£ 80	SPI =	80%	-	CPI =	£ 0,89	-	-	-	-	-
	AC	£ 90	API =	90%	-	-	-	-	-	-	-	-
Benefits	PB	£ 120	PROI =	£1,20	-	-	-	-	-	-	-	-
	RB	£ 100	-	-	-	-	-	BPI =	83%	-	-	-
	AB	£ 110	-	-	-	AROI =	£ 1,22	-	-	VPI =	£ 1,10	-

The EVM-SM™ : overall structure



The EVM-SM™ : references



(*) Vol I: http://www.ashgate.com/default.aspx?page=1751&calctitle=1&pageSubject=929&sort=pubdate&forthcoming=1&title_id=10499&edition_id=13259
(*) Vol II: http://www.gowerpublishing.com/default.aspx?page=637&calcTitle=1&title_id=10483&edition_id=13261

Paper: http://www.pmforum.org//library/column/2010/PDFs/oct/Column-RODRIGUES.pdf

Lessons Learned and Success Factors

1. ***EVM is fully applicable to any project type and to any project environment***

2. The **benefits obtained** from using EVM may vary slightly depending on the project type and environment, but the key ones are common:
   - Improved awareness about the project status
   - Improved objectivity
   - Common language
   - Encourages a more proactive decision-making
   - Alternatives and options easier to evaluate and demonstrate – higher efficiency due to the aggregate nature of the analysis

3. The **effort required** to implement EVM depends considerably on the project type and environment: data collection process and information system are key factors

Lessons Learned and Success Factors

4. The **difficulties** in implementing EVM also depend considerably on the project type and environment. Key factors are:

- Larger and more "physical" projects:
  - Timeliness of data collection
  - Resistance from subcontractors
  - Maintaining proper schedules
  - Requires scheduling and Earned Value expertise and experience
  - Requires proper consideration of "Actual Cost"

- Smaller and more manpower based projects:
  - Obtaining team "buy-in"
  - Reliability of data
  - Measuring scope realization in elementary work packages
  - Less reaction time

Lessons Learned and Success Factors

5. The **key requirements** and **success factors** are:

A) Quality of Planning:

- Planning expertise
- Data quality systems

B) Quality of Earned Value model:

- Earned Value expertise
- Use of advanced Earned Value indicators

C) Organizational awareness and understanding:

- Communicate value effectively to top-management
- Training Project Managers and key stakeholders in EVM
- Use of "rich-content" graphical representations

Lessons Learned and Success Factors

5. The **key requirements** and **success factors** are:

D) Effective Information System:

- Good reporting features
- User-Friendly features
- Good performance
- Easy to customize and evolve
- Include Data Quality indicators

E) Effective Data Collection Processes:

- Effective processes for assessing % progress in work packages
- Effective process to calculate "Actual Cost"

F) Business activity "dependant" on EVM information:

- Use of EVM in key organizational processes (e.g. finance)

Questions & Answers

Thank you

Q&A

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