



PROJECT MANAGEMENT CENTER FOR EXCELLENCE

A.J. CLARK SCHOOL OF ENGINEERING
Civil & Environmental Engineering Department



EARNED CAPABILITIES MANAGEMENT (ECM)

John Johnson

Robin Pulverenti

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SOFTEK
BUILD - TEST - MANAGE



CLEARPLAN
Program Control & Earned Value Management

— Earned Capabilities Management (ECM) —

A new approach to Agile Governance,
building on EVM best practices

Earned Capabilities Management: Bottom Line Up Front (BLUF)

Summary of the Agile Governance Challenge:

- Agile is a better way to deliver software projects with high uncertainty (15% more likely to succeed)
- Agile currently offers no meaningful way to track efficiency or effectiveness
- Traditional project management estimates project efficiency with EVM, leveraging team projections
- Traditional project management fails to validate if scope delivered is valuable to end users

Earned Capabilities Management (ECM) offers a new approach to Agile Governance

- Baseline business process throughput and cost; and set objectives in fungible terms (\$ or units)
- Replace earned value management (EVM) with return on investment (ROI) for *Delivered Capabilities*

$$\text{Capability ROI} = \frac{(\text{New Throughput} - \text{Initial Throughput}) + (\text{Initial Cost} - \text{New Cost})}{\text{Amortized Capability Investment}}$$

Enterprise ECM defends budgets and maximizes ROI from investments to achieve the mission

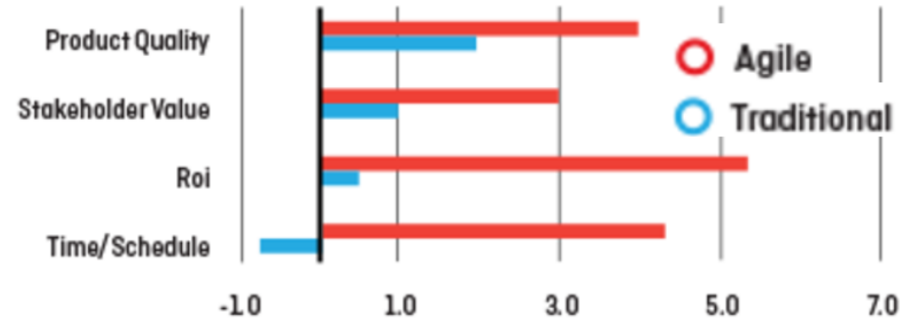
- ECM at the enterprise level is a lean PPBE process, decomposes strategic objectives into capability needs
- Capabilities are programmed and defined in project charters, and ROI is verified through IV&V
- Complex projects use the V-Model to track capability development and update expected ROI

Earned Capabilities Management:

Agile Governance Challenge

Agile project management is better for delivery than Traditional Project Management

- Projects are more successful (64% vs. 49%)
- Beyond success rates, Agile delivers more *value*, meaning it better fits customer needs
- Agile also improves perceived product quality, and
- Iteratively tests product with users to know it will be useful



Ambyssoft's 2013 survey, 173 respondents across industries, ranking Agile and Traditional methods from -10 to 10
(source: <http://clearcode.cc/2014/12/agile-vs-waterfall-method/>).

Agile introduces new problems for coordination, oversight, and planning

- No absolute measurements of efficiency (story points are relative)
- No way to know what the final product will be (scope updates based on user feedback and testing)

Traditional project management uses EVM to address these challenges, but fails to validate delivery

- EVM baselines tasks and tracks completion (measures cost and schedule variance)
- However, EVM measures use self-reporting (effectively comparing estimates)
- EVM itself doesn't require testing solutions (does not validate value if project adds value)

No popular methods exist to effectively track projects in terms of the return on investment (dollars earned per dollar spent) for projects with high levels of uncertainty.

Earned Capabilities Management:

A Simple Solution for Controlling Value

Projects should be connected to the purpose of a project: **to benefit the organization**

- The project goal is not completing scope, but improving the organization
- Delivering an outdated or useless software is not valuable, even delivered on-time and under budget
- Value of a project deliverables change over time, as business needs and technology advances

Projects should therefore focus on adding new capabilities, and the ROI of those capabilities

- **Capability** – an ability to perform work of a certain quality, capacity, and efficiency
- **ROI** – the “return on invest” measured as gains in capability normalized by costs

General Process to evaluate Capability ROI

1. *Set Objectives* – Establish value in fungible terms (e.g. money or units) for business processes
2. *Baseline Original Performance* – Measure initial business process costs and throughputs
3. *Measure Performance with Capability* – Determine new business process costs and throughputs

$$\text{Capability ROI} = \frac{(\text{New Throughput} - \text{Initial Throuhput}) + (\text{Initial Cost} - \text{New Cost})}{\text{Amortized Capability Investment}}$$

“New Cost” includes the Amortized Capability Investment (planning, development, O&M) and resources needed to operate the business with mew capability. This ensures the topline is net profit, or gains (higher throughputs and lower costs) minus the investment. All values are amortized to normalize economic life and rates of return.

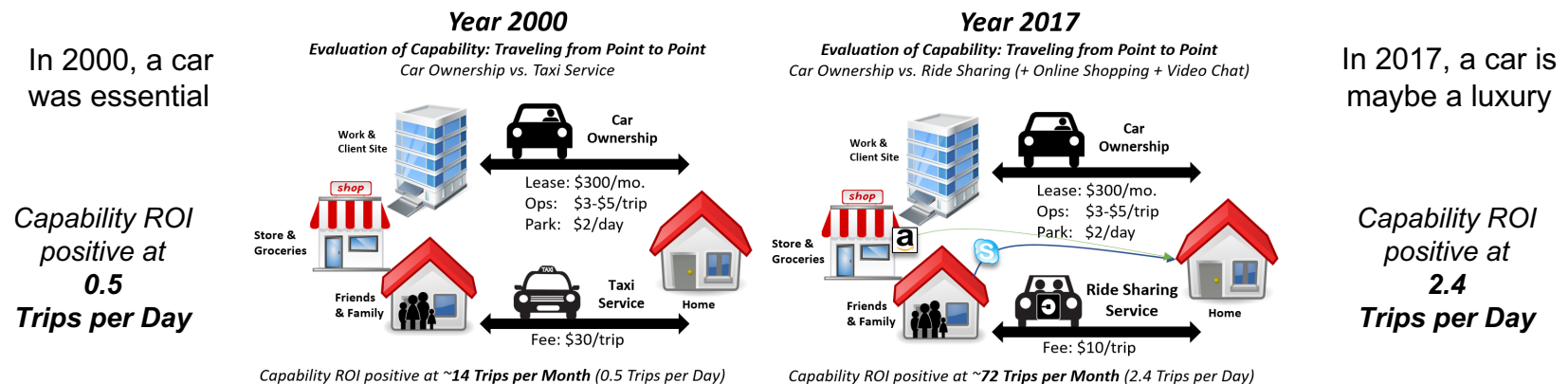
Earned Capabilities Management: *Benefits of using Agile and ECM*

ECM enables leadership to validate and verify Capability ROI during execution.

Delivering early versions of working software, leadership can continuously test and learn:

- **Business Needs** - Is this software useful? If not, will it be? Why?
- **Efficiency Impacts** - Will this lower our costs? If not, can we afford it?
- **Capacity Impacts** - Will this increase our throughput (or at least capacity for now)? What are the constraints?
- **Timing Impacts** - Does this new system have a positive ROI now? Will it in the future?
- **Dependencies** - What are the barriers to success on this project? Can they be removed?

Example of *Timing Impacts* on Capabilities: Buying a Car in the age of *Uber*, *Amazon*, and *Skype*

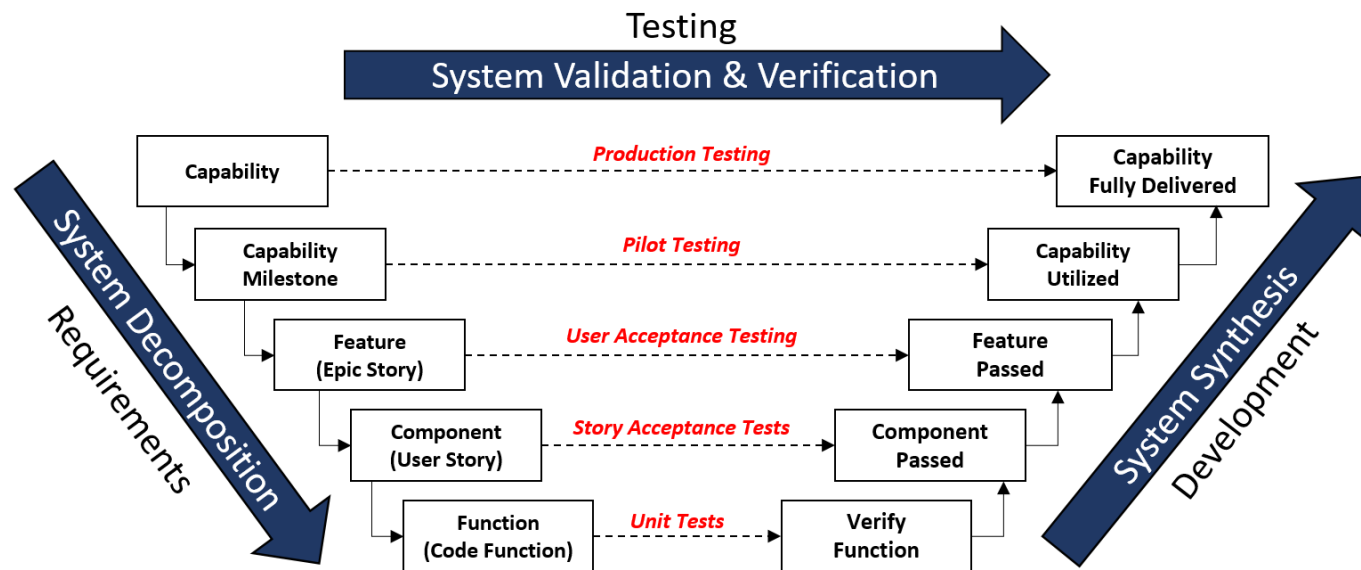


Earned Capabilities Management emphasizes fast delivery of capabilities while they are still useful to the enterprise to ensure positive Capability ROI

Earned Capabilities Management: *Addressing Long Release Trains for Complex Projects*

Agile projects should use the V-Model for verification and validation (V&V) of large, complex capabilities

- Requires that each capability in the project is defined by what tests will be used to measure performance
- Decomposes requirements and tests and then builds up to track completion to the capability level.
- The V-Model aligns with Agile's extreme programming (XP) roots with test-driven development,
- Every function has a test defined prior to development that must be passed before it's considered "done"

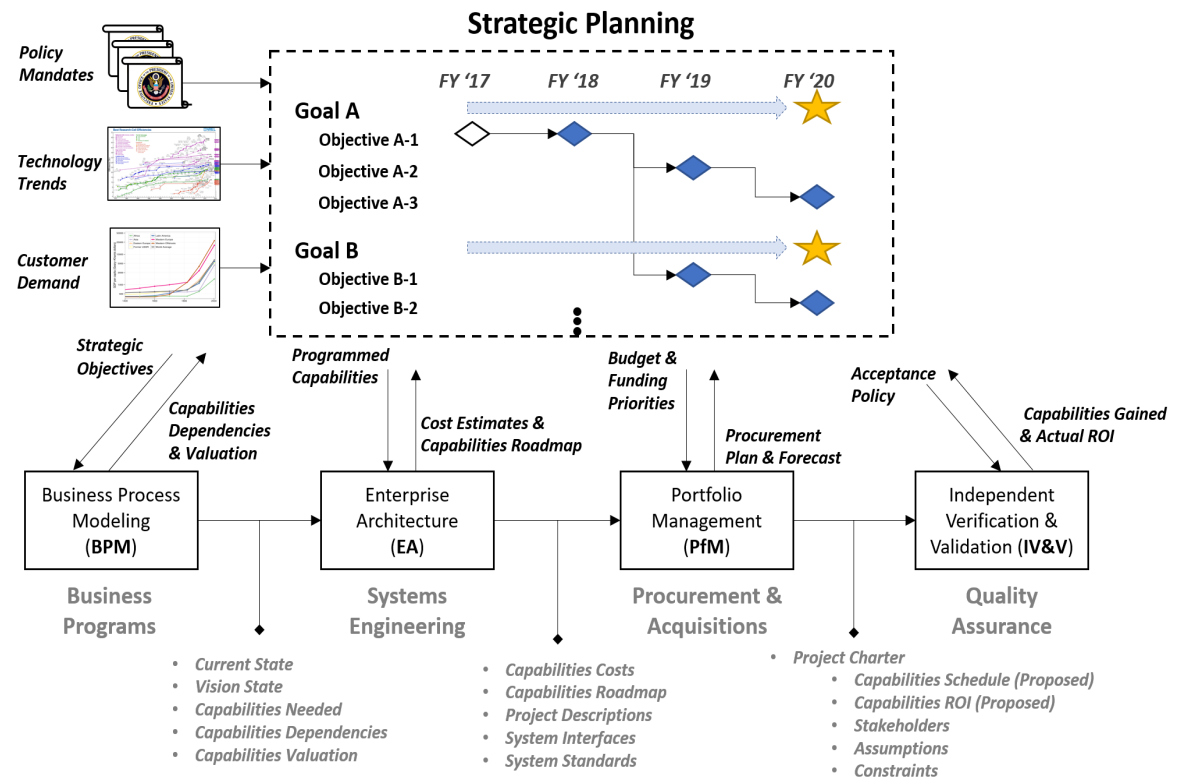


The V-Model offers an on-demand method for starting and tracking the completion of capability, while not requiring a complete and integrated master plan

Enterprise Capabilities Management: *Controlling the Capability Lifecycle*

To manage projects effectively, organizations should use *Enterprise Capabilities Management*, which consists of:

- **Strategic Planning** – elaborates mission and vision as goals with a series of strategic objectives
- **Business Process Modeling (BPM)** – identifies capabilities needed to reach strategic objectives
- **Enterprise Architecture (EA)** – estimates costs of capabilities and manages system interfaces
- **Project Portfolio Management (PPM)** – programs and controls projects to achieve objectives
- **Independent Verification & Validation (IV&V)** – provides actionable feedback to PPM processes



Earned Capabilities Management defends and maximizes the return on organization budgets, by always tying the capability lifecycle back to achieving the mission and vision

Thank You - Let's Keep In Touch!

John Johnson, PMP CSM
Chief Technology Officer
SOFTEK ENTERPRISES

john.johnson@softekenterprises.com
[412.608.2654](tel:412.608.2654) (c) | [443.741.8715](tel:443.741.8715) (o)
9250 Bendix Road N., Suite 620
Columbia, MD 21045

Robin Pulverenti
Consultant
ClearPlan

robinpulverenti@clearplanconsulting.com
[315-572-1415](tel:315-572-1415) (c)
85 Main St.
Hopkinton, MA 01748