



Metrics Development: Lessons From Work With the Defense E-Business Program Office

Presented to the
Integrated Acquisition Environment
June 12, 2002

by
Jonathan A. Morell, Ph.D.
Altarum – Enterprise Solutions Division
jonny.morell@altarum.org 734 302-4668

Original version presented at the DoD Email Williamsburg Off-Site Meeting
planning meeting, May 23rd, 2002



Purpose of This Session

- Present our approach to metrics and impact evaluation
- Get feedback and suggestions, with a particular emphasis on in-process work with DoD Email
- Provide the IAE with some useful insight about metrics and evaluation for E-business systems

History

➤ Project

- Client is Defense E-Business Program Office
- Object is metrics and evaluation for E-business systems
- Focus on achieved impact in real world settings
- EDA and CCR
 - collect and analyze data
 - projects completed
- Email
 - feasibility assessment of metrics and methodologies
 - work ongoing

➤ Jonny Morell

- Senior Policy Analyst, Altarum – Enterprise Solutions Division
- Ph.D. Organizational Psychology
- Expertise: impact of IT in organizational settings

Overview of Our Approach

- Work is based on lessons learned:
 - Data and Methodology
 - Program logic
 - Adaptive systems
 - Realistic expectations

Data and Methodology

- General metrics obvious: cost, quality, time, readiness
- Metrics not obvious as data one can find, trust, analyze
- Problems:
 - Outcome data usually owned by users, not developers
 - Users lack incentive, resources, technical ability to provide information
 - Very specific information needed. Ex:
 - Easy: track overall EFT usage at DFAS
 - Hard: specifics to isolate CCR's or EDA's contribution EFT at DFAS
- Process requires cycles of searching, negotiating and evaluation redesign

Program Logic

- “If the system works as planned, what will be different?”
- Answer is not always obvious
 - Impact can be broader than indicated by meeting well defined requirements for specific user groups
 - Immediate impact induces secondary change
 - Time frames for impacts may vary. Some benefits immediately apparent. Some develop over time
 - Not obvious what change to attribute to a discrete effort
- Program logic points to
 - Metrics
 - Data collection opportunities
 - Sampling frames
 - Timelines for data collection

Example #1 One of the Early Logic Models Developed for EDA

Other WAWF impact, not part of this system, not included in this evaluation

- Invoice and RA processing efficiency**
- # actions delayed for lack of contract availability to responsible official
 - # manual business processes eliminated or streamlined
 - # FTEs required for invoice approval
 - # FTEs required for RA approval
 - # unmatched disbursements

- Invoice and RA cycle time**
- Time, RA receipt --> approval
 - Time delay due to lack of contract availability when needed by responsible official
 - Access time for contracts
 - Access time for invoicing and receipt data
 - Time, detection of a problem --> resolution
 - Time, invoice approval --> arrival at DFAS for payment

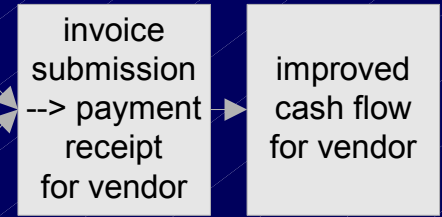
- DFAS Cycle Time**
- Notification to DFAS --> payment approval
 - Delay due to lack of contract availability when needed by responsible official
 - Access time for contracts
 - Payment approval --> release of funds to vendor

- DFAS Efficiency**
- # FTEs required for payment approval
 - # backlog above acceptable level
 - \$ in interest payments for late payment
 - \$ discounts lost for lack of timely payment

TBD for each system

Transaction processing
WAWF

- EDA**
- DFAS
EDA/EDM
 - DCAA
EDA/?
 - DCMA
EDA/EDW
 - Others?**



Boundary of assessment
IF
analysis confined to EDA.

Why Does CCR Support Integration and Data Access? Program Logic Example #2

Pre-CCR

System 1

Referent	Information
A	1, 2, 3
B	1, 2, 3
C	1, 2, 3

System 2

Referent	Information
α	4, 5
β	4, 5
Γ	4, 5

System 3

Referent	Information
A	6, 7, 8
B	6, 7, 8
C	6, 7, 8

Even if systems have information on the same entities, there is no way to cross reference

Post-CCR

System 1

Referent	Information
A	1, 2, 3
B	1, 2, 3
C	1, 2, 3

System 2

Referent	Information
A	4, 5
B	4, 5
C	4, 5

System 3

Referent	Information
A	6, 7, 8
B	6, 7, 8
C	6, 7, 8

With a single index, data can be integrated across systems

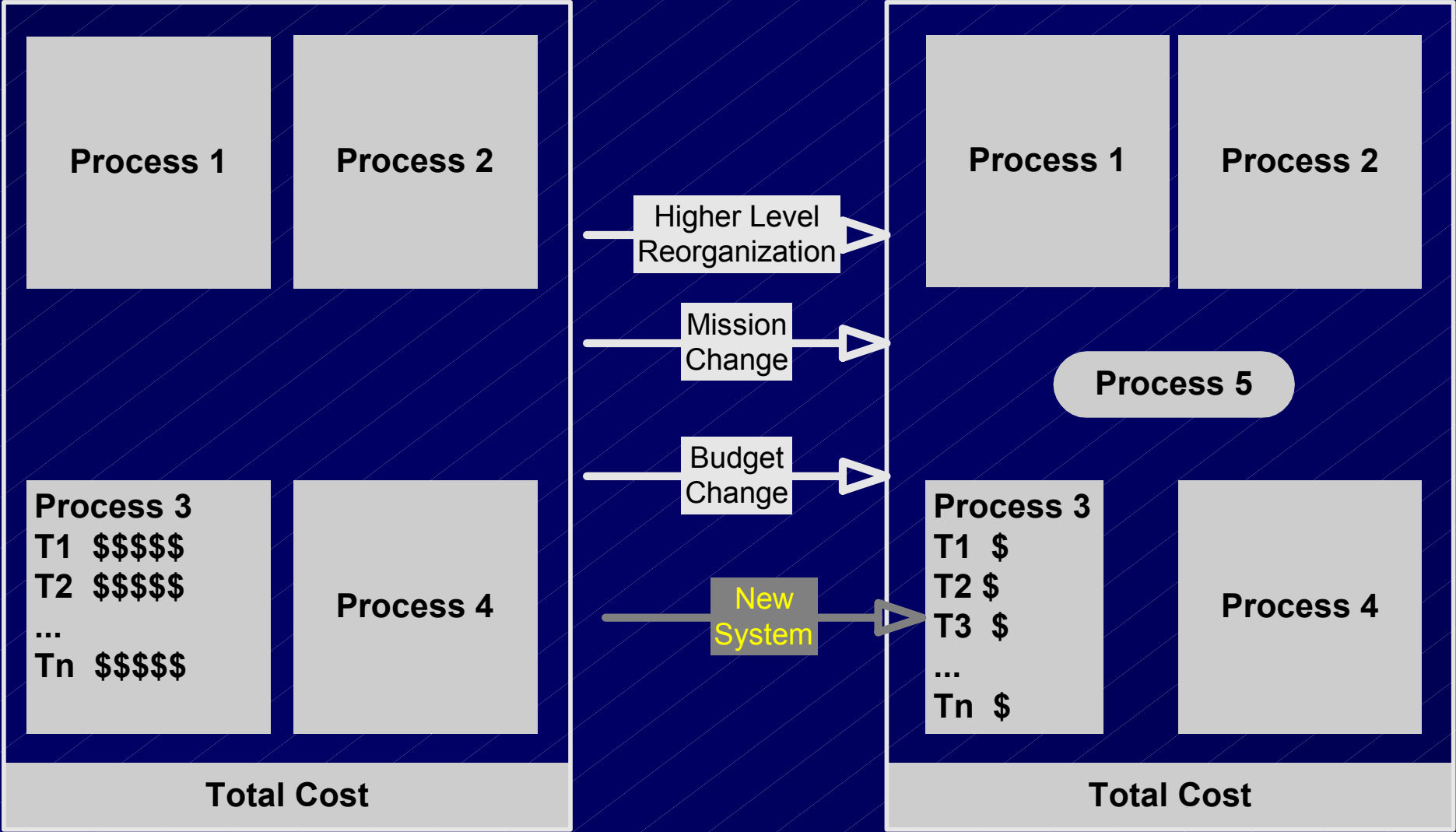
Adaptive Systems

- Organizations change in unanticipated ways as they adjust to newly available functionality
 - Reduce, phase out some processes
 - New activities, value added and/or non-value added
- Metrics and evaluation must be sensitive to these changes and quickly deploy methodologies to measure them

Realistic Expectations

- Obligation to provide honest feedback, good and bad
- Systems have “boundaries of impact”
- Evaluation must be sensitive to impact boundaries
 - Findings can provide direction for further improvement
 - Ignoring boundaries sets people up for failure and cripples evaluation

Schematic Example: Impact Boundaries and System Adjustment



Email Metrics: Two Dimensions of Impact

➤ Function:

- Help individuals make a purchase
- Platform for new business process

➤ Beneficiary:

- Individual users
- Organizational level impact

Function	Beneficiary	
	Individual	Organization
Individual purchase		
Platform for process change		

- ▶ Outcome metrics in each cell
- ▶ Organization metrics can be aggregates of individual metrics. E.g. enough time saved in enough individual purchases can result in improved up-time.
- ▶ Organizational metrics can also exist only at the organizational level. E.g. Back-office transaction costs are invisible to customers.
- ▶ “function” needed to capture difference between benefit to people making individual purchases, and ability of Email to enable business process change.

Feedback Needed

- What revisions are needed in the overall approach to:
 - Get better data
 - Make the approach more broadly applicable
- What changes are needed with specific respect to Email?