Digitizing Test Operations to Reduce Complexity & Cost

For ITEA 2016 Symposium

Enhancing Our Competitive Edge:
T&E to Meet the Pace of Need

October 5, 2016
Digitization

The intelligent connection of people, processes, data and equipment
Typical Complex Environment

Utilization Costs & Obsolescence
Schedule Risk
Labor Inefficiencies

Complexity Drives Inefficiencies & Costs

50% Location Agreement
No Linkage / Integration

Voicemail Network

TRM Practitioners
Lab Users
Lab Managers
Test Leads

3rd Party Services Vendor
Internal Support Groups

Calibration System 62% Accurate
Property Mgt System 67% Accurate

Other SW tools
ERP
Maintenance
Calibration
Work Request
Service Expediting
Lab Supplies
Financial Systems
Sharepoint
Manpower Forecasting
OEM Websites

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Context

• We live in the largest, most complex and competitive marketplace in human history

• The way we live and work will continue to change in very profound ways

• Demographic challenges in the years ahead

• Maintaining and increasing competitiveness, individual and organizationally, will require new ways of thinking
How do you become the UBER of Test?

And avoid becoming taxi services of test.
Consequences of failure to change

You can refuse to change, but you can’t refuse the consequences
If you could...

• Drive cost improvements enabling invest in growth
  – Increase Utilization of costly infrastructure by 4X
  – Reduce assets by 50% - 75%
  – Reduce support costs 50%
  – Reduce capital expenditures by 25% - 75%
  – Reduce facility space requirements

• Drive schedule improvements
  – Reduce human capital waste by 25%
  – Reduce cycle times by 25%
  – Reduce obsolescence risk by 50%

• Enable a more agile & responsive test organization

...You would...

...Produce a competitive advantage for your organization

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Large Test Organizations…

Can not be treated as if they were a machine made of components that work mechanistically

• Can’t be “controlled”, must be governed
• Are sets of people / selves, practices and tools (embodied practices, habits and ways of thinking)
• Multiple levels of organization / network → individual, team, department etc.
• Recieve perturbations that lead to emergent behaviors that mostly can’t be anticipated but can be explained and solved with the right expertise
Today’s Complex Test Environment…

…Increases costs, slows processes and stifles innovation

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The challenge...

...See the organization systemically

...Design solutions that work
Chartering

- **What:** Nest with enterprise missions and strategies
  - **Cost:** Time, Energy, Money, Lost Opportunity
  - **Innovation:** Improvements to products or services
- **Where:** Which locations, functions
- **Who:** Essential team members and skills

Add team members new knowledge gaps emerge
Knowledge Requirements

• **Business Disciplines**
  – Core Competency, Capital Structures, Strategy, Sales, Marketing, Operations, Finance
  – Development of new services and technology

• **Function specific knowledge**
  – Engineering
  – Operations
  – Test and Test Equipment
  – Finance
  – Quality

• **Human Dynamics / Biology / Language**
  – Habits / Underlying mechanisms / Culture
  – Narratives / Communications

• **Economic Principles:**
  – People respond to incentives
  – The cost of something is what you give up to get it

• **Systems thinking / Mechanics**
  – Practices need to have strategic integrity (meaning they have to work)
  – Must understand systemic influences and drivers

**Knowledge of Human Dynamics & Business is Essential**
Baselining – Start counting

- Number of database systems
- Cost of maintaining systems
- Cost of systems not connected
- Number of spreadsheets
- Number of users in process

- Interview for costs:
  - Time
  - Energy
  - Money
  - Lost Opportunity

- Pro-forma cost model

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Strategy Development

1. Be clear on the mission and charter
2. Agree on ways to measure value (financial pro-formas)
3. Focus on highest return activities (and build off of them)
4. Establish ethics with customers
5. Develop solutions with customers and pilot
6. Develop compelling narratives for communications
7. Sell and drive adoption
Change Management Strategy

Detailed Communications Plan

Narratives Targeted at Roles

Continual and Targeted Communication & Refinement

Supporting Metrics / Incentives

Real Time Metrics for Process Health

Inventory Drift

Requests Kept

Planned Requests

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Example

• Scheduling test capabilities (spreadsheets & whiteboards)
  – Automated communication of status updates (Manual emails, phone calls)
  – See people capacity (manpower planning tools)
  – See equipment capacity (spreadsheets)
    • Check equipment availability (asset system, spreadsheets, spec sheets, phone calls, emails etc.)
      – Check calibration status during duration of test (calibration system)
        » Start testing and logging test failures (spreadsheets, lab log books, word documents)
          » Assemble data package for analysis
            » Tests performed and results (lab books or spreadsheets)
            » Assets used for test (put manually in spreadsheet)