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Estimator Development and Process Automation

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Things Change….

- Automation creates velocity and capacity by:
  - Permitting seasoned professionals to do more enterprise/global problem solving and consulting
  - Enabling emerging professionals and junior analysts to work more complex efforts
  - Provide general capacity by reducing time required for routine transactions/calculations
- Challenge of Automation:
  - Analysts' progress through levels of complexity accelerated
  - Knowledge depth and seasoned professional population may erode

Let's Explore is this is an issue or an opportunity…

Estimating is a Timeless Profession

Through All of History there has been a need to understand the time and resources related to

- Building infrastructure
- Providing support and logistics
- Developing and delivering assets and equipment

….and much more

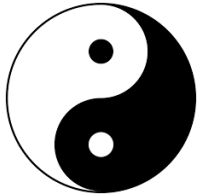
While titles, approaches, accolades, and accountability have evolved – the "estimator" has been an integral part of human progress

What Estimators Do is Timeless – How We Do It Is Always Evolving

Definition of an Estimator

An Estimator is …

… a Financial Analyst who Understands Technical Requirements



…a Technical Expert who Understands Financial Analysis

Common Attributes of Estimating Professionals…

Experience

- **Industry Knowledge**
- **Finance Familiarity**

Education

- **Finance or Technical Degree**
- **Project Management**
- **Advanced Mathematical Concepts**

Interest

- **Technical Acumen**
- **Natural Curiosity**
- **Product Enthusiasm**

Personality

- **Outgoing**
- **Confident**
- **Self-motivated**

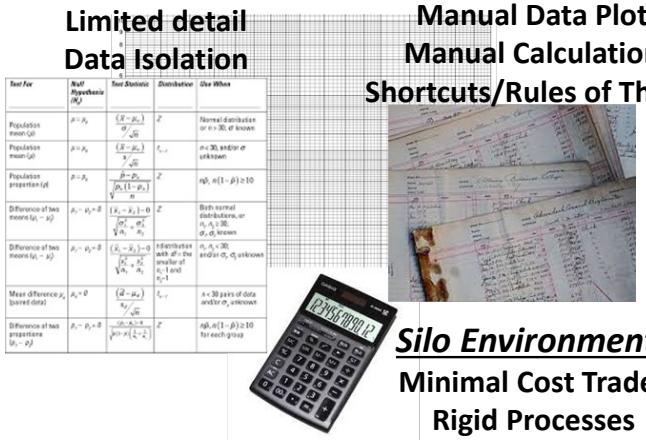
It’s All About Aptitude

Estimating – How We Do It is Always Evolving

1930s – 1970s

Data Management
Manual Collection
Limited detail
Data Isolation

Paper-centric
Cost Ledgers
Manual Data Plots
Manual Calculations
Shortcuts/Rules of Thumb



Silo Environments
Minimal Cost Trades
Rigid Processes
Large Industry Population

Transformation Highlights

Data Mining Approach

Spreadsheets/Data Manipulation

Statistical Analysis Automation

Process Technology

Product/System Complexity

Current Environment

Software Leverage
Statistical Analysis
Data Analytics
Pricing Tools
Spreadsheets

Data Management
Automated Collection
Data detail
Data Fusion

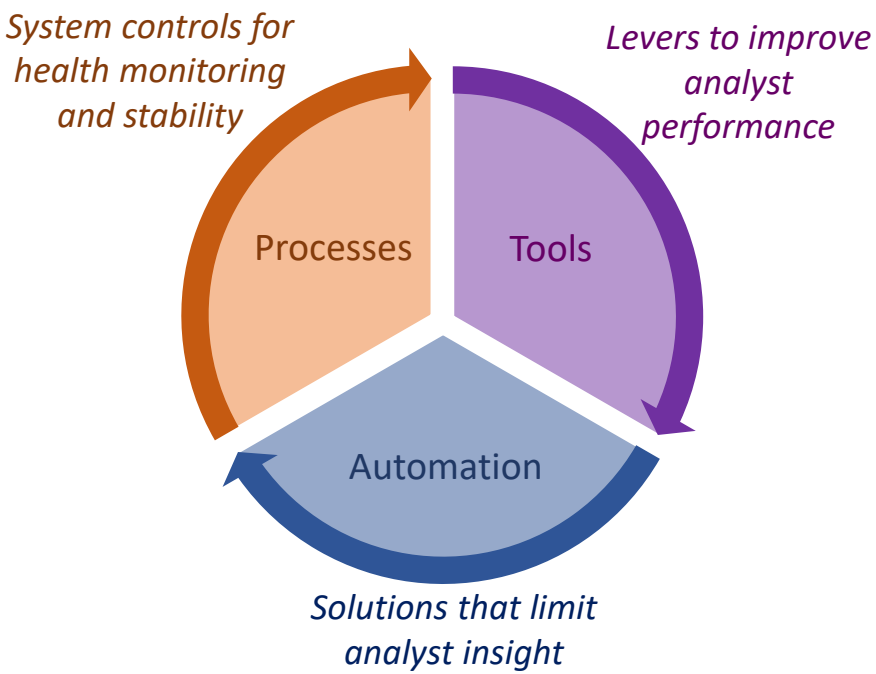
Digital Environments
Non-cost data
Process transformation
Industry consolidation

Decades of Experience and Incremental Development → **Years of Experience and Tool Training/Leverage**

Automation of Tools, Analysis, and Processes Accelerate Estimator RAA Growth

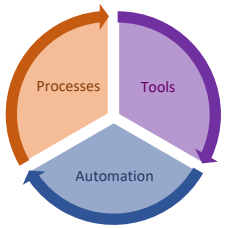
Benchmarking Some Elements…

	Definition	Purpose	Value	Risk
Processes	Defined method to execute a task or project	Produce consistent products and information	Provides consistency and repeatability	Can constrain transformation
Tools	Artifact that enables effective task completion	Leverage industry experience and knowledge	Tailored repeatability	Unintended consequences and deficiencies
Automation	Designed application that executes tasks	Knowledgebase built into the process	Increased throughput	May erode insight or knowledge



Tool and Technology Advancement Leads to Process Transformation

Putting It All Together…



	Pre-Computing (~1940-80) *Highly manual/paper-based*	Desktop Computing (~1980-2010) *Basic software/manual data fusion*	Data Analytics (2010 -) *Robust software suites/highly integrated*
Insight/Vision	Engineering/SoW-centric	Program perspective	Holistic business management
Managing the Business	Data-driven forecast limited to production cost	Evolution of forecasting with limited dependency on SoW	Product/capability aligned planning and forecasting
Shaping the Business	Limited alignment between budgeting/planning and acquisition	Evolution of data and statistical modeling as a standard practice	COTS Analysis Software Data "lakes" for rapid exploration
	Career spent mastering a specific role (many years)	*Multiple roles evolving to a focused SME role (10-20 years)*	*Broad cross-discipline experience quickly (<10 years)*

Environment & Approach Changes Growth Focus and Timeline

Path to Professional Development

- Experience
  - Education
  - Early Career Assignments
  - Functional Foundations
  - Leading and Training
- Mentoring
  - Multi-discipline & cross-functional
  - Beyond Org/Company
  - Knowledge Expansion
  - Mutually Beneficial
- Opportunities
  - Primary Assignments
  - Short-term Roles/Actions
  - Development Events
  - Economic Benefit

Find the Best Resources and Starting Right ⟷ ***People and Enterprise-focused Development*** ⟷ ***Minimize Constraints and Monitor Analytical Insight***

Achieving Career Knowledgebase & Capability in Less Than 10 Years

Summary

- Tools and Automation are enablers to focus on critical analysis
- Understanding and insight is essential for analysis credibility
- Recruitment and professional development is a high priority for leaders and subject matter experts
- Retaining people in the profession for a career is essential
- What happens after “Year 10”?

Conclusions

Issues:

- Subject Matter Expert population transforming
- Common themes and collaboration outside of work organization is limited

Opportunities:

- ICEAA provides stability and intellectual environment for growth
- Functional infrastructure in industry and government remains vulnerable to affordability reductions

Is ICEAA Prepared to Be the Professional Linkage to Ensure Sustained Expertise

DISCUSSION