

New Rules, Old Game

...The 20 year evolution of Quality and Six Sigma

Engineering Executive Forum
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Opening Discussion



- Learning Objectives - *(What do you hope to learn?)*
- Your Quality Journey - *(Where have you been?)*
- Performance Outcomes – *(What was the change?)*

Quality Evolution & Application



	<u>1970's</u>	<u>1980's</u>	<u>1990's</u>	<u>2000's</u>	<u>2010's</u>
<u>APPLICATION DOMAINS</u>					
Manufacturing	X	X	X	X	X
Services		X	X	X	X
Fulfillment			X	X	X
Design			X	X	X
Software / IT				X	X
Systems				X	X
SaaS					X
<u>COMPETENCIES APPLIED</u>					
Inspection	X	X	X	X	X
Basic Quality Control	X	X	X	X	X
Audit and Compliance (ISO, BSI, IEEE)		X	X	X	X
Basic Quality Assurance		X	X	X	X
Reliability Engineering		X	X	X	X
Statistical Process Control (SPC)		X	X	X	X
Six Sigma (Advanced Statistics)			X	X	X
Lean				X	X
Robust Design (DfSS)				X	X
Software Quality Assurance				X	X
Innovation....Others?					X

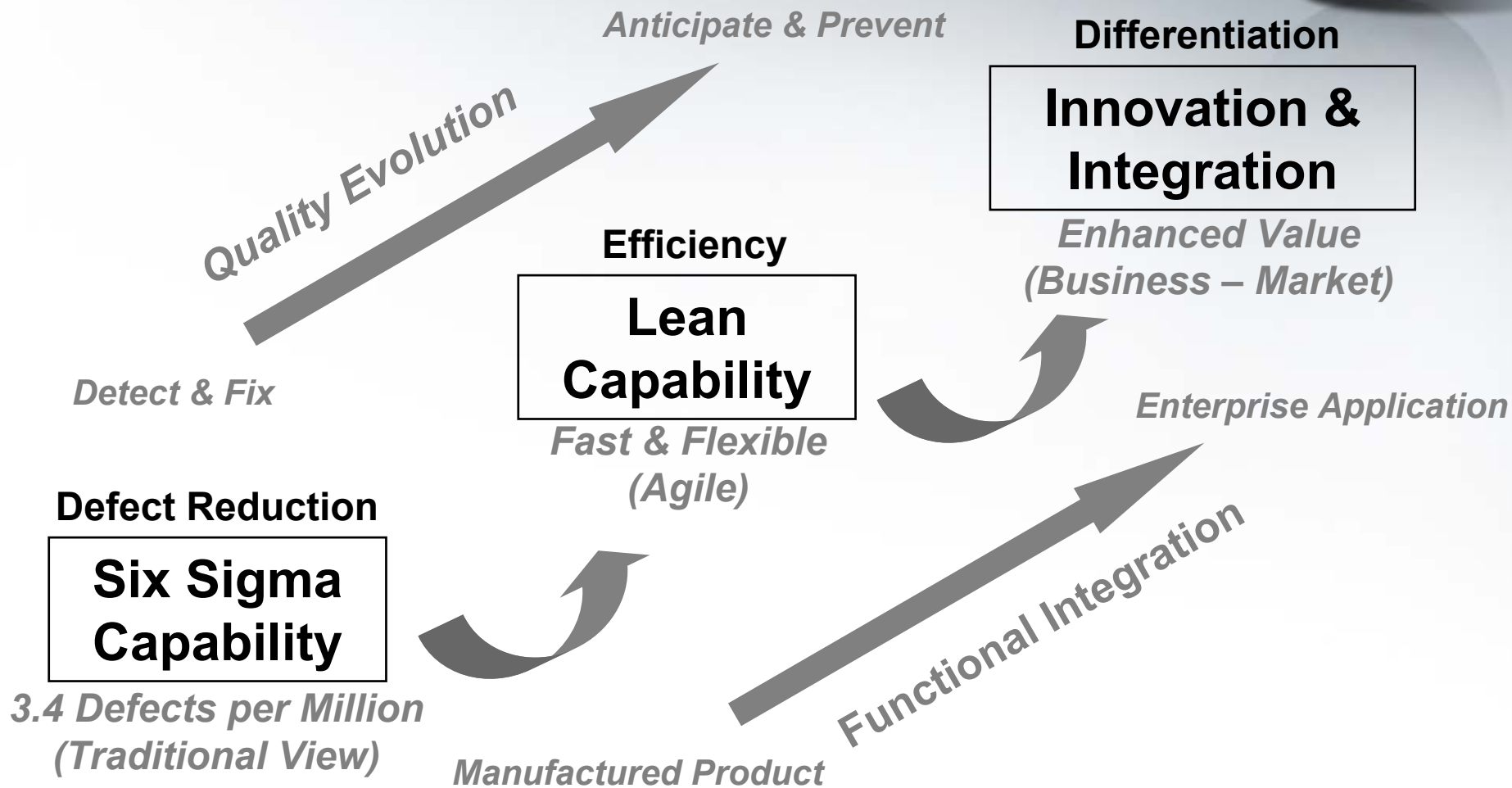
Detection Control Assurance Statistics Integration



Theme

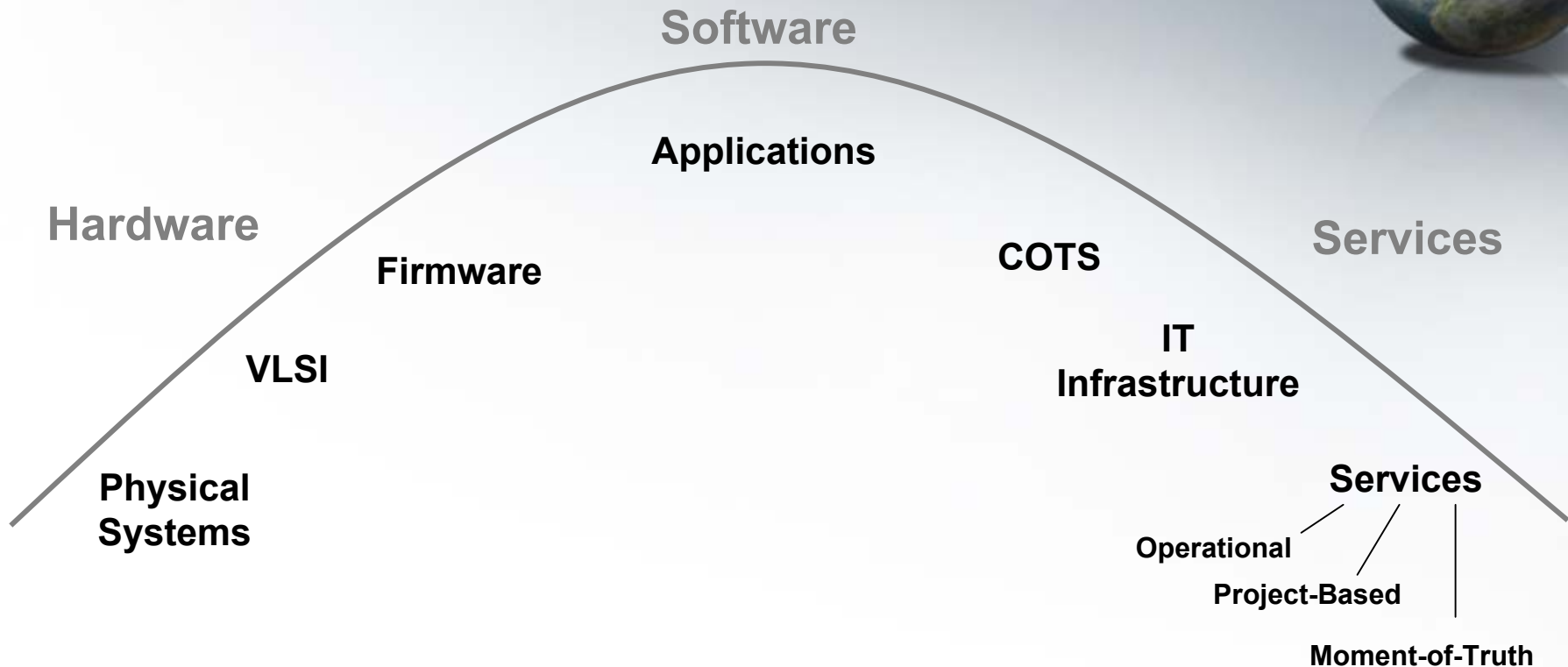
Do we need it all?

Evolution of Six Sigma



Spectrum of Application

A Systems View



Traditional Six Sigma *does not apply universally...*

Six Sigma 'context' is applicable, but takes on unique attributes when distributed across this spectrum

So...What is “Quality”

...in your current environment



Traditional

- Product
- Process
- Field
- Supplier
- Design
- Standards

Non Traditional

- Software
- Systems
- Services
- Internal Services
- Outsourcing
- Customer Satisfaction
- IT Systems

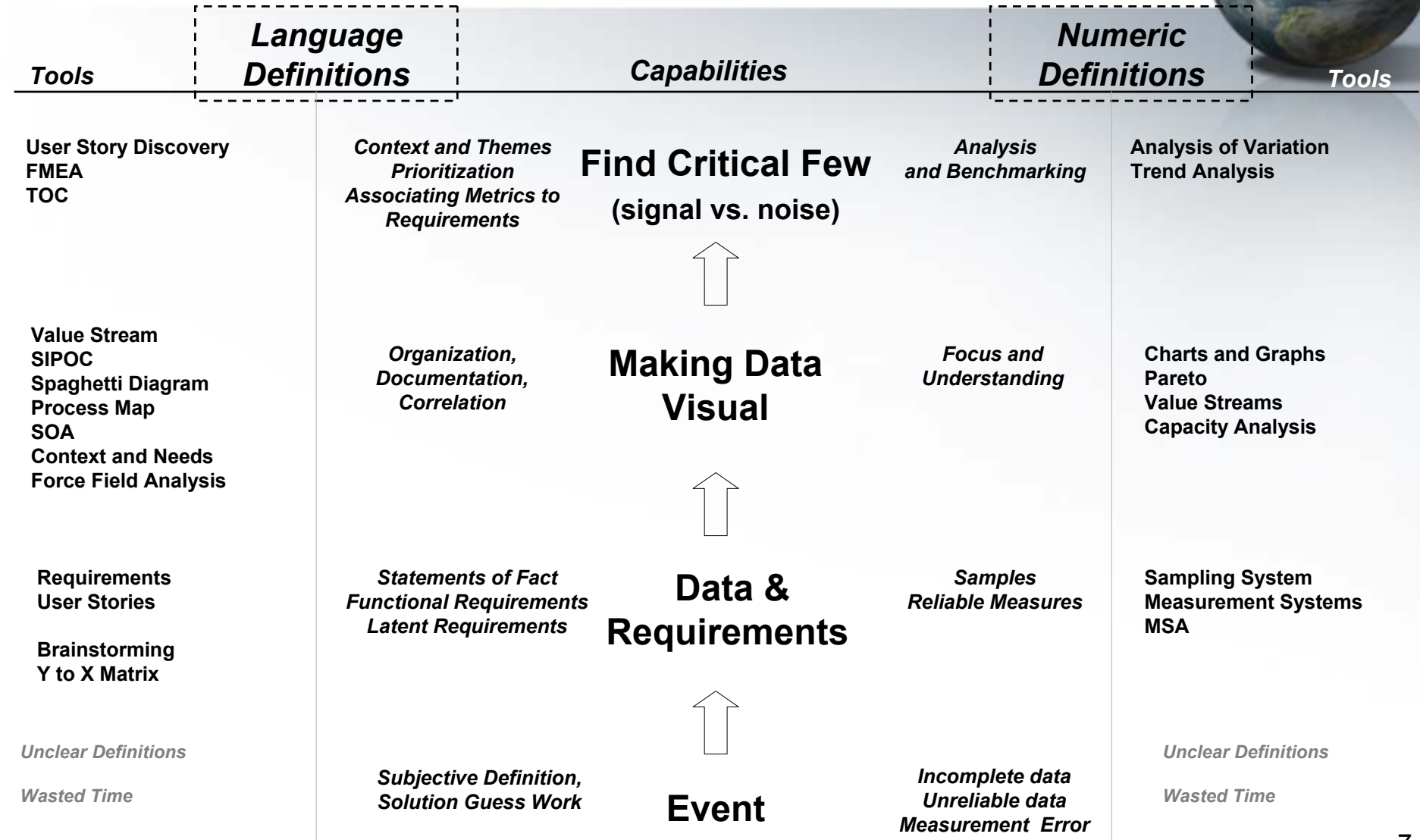
What drives Business Value?

How is it measured?

How do you define?

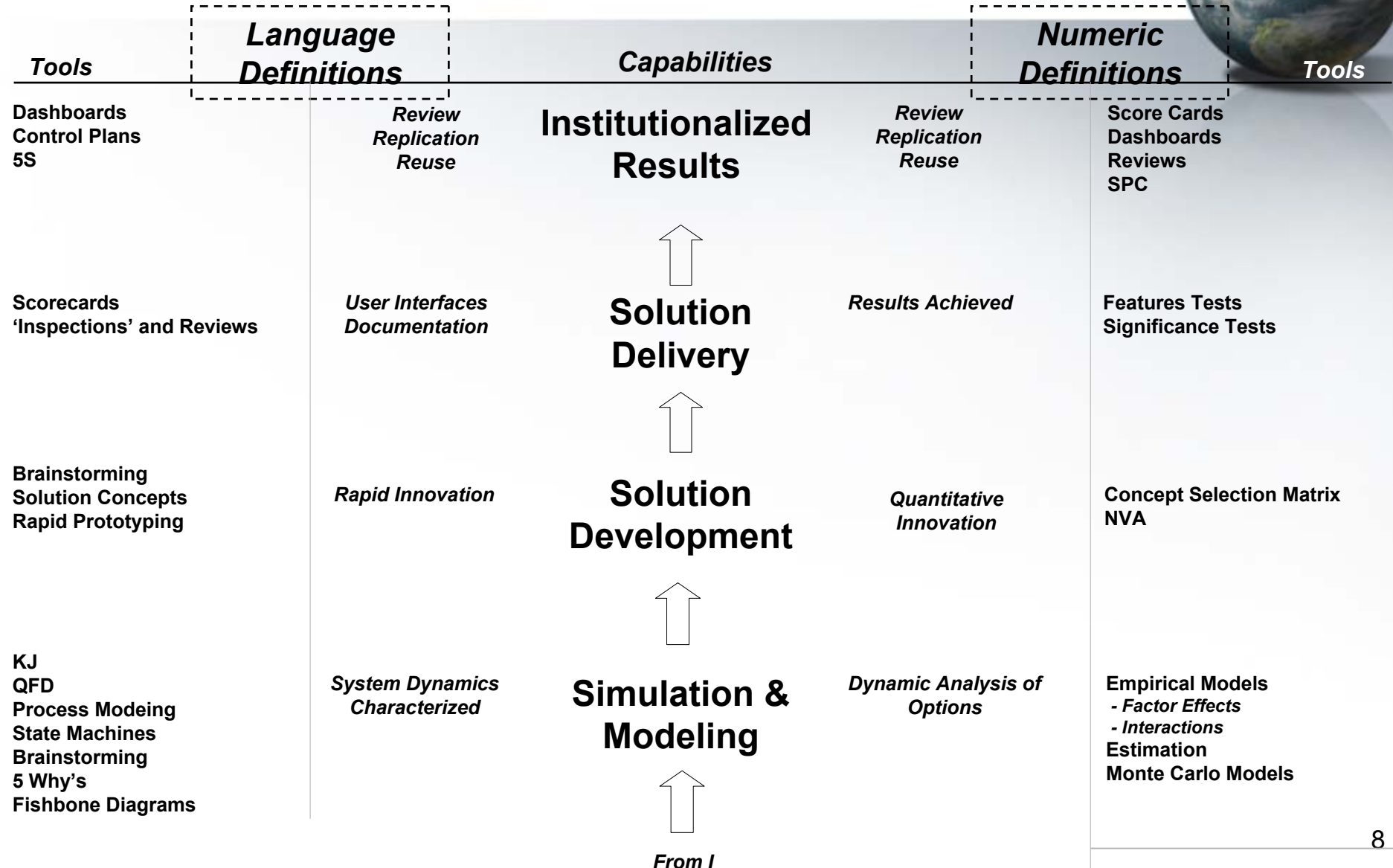
Capabilities and Tools

A Common Sense Flow



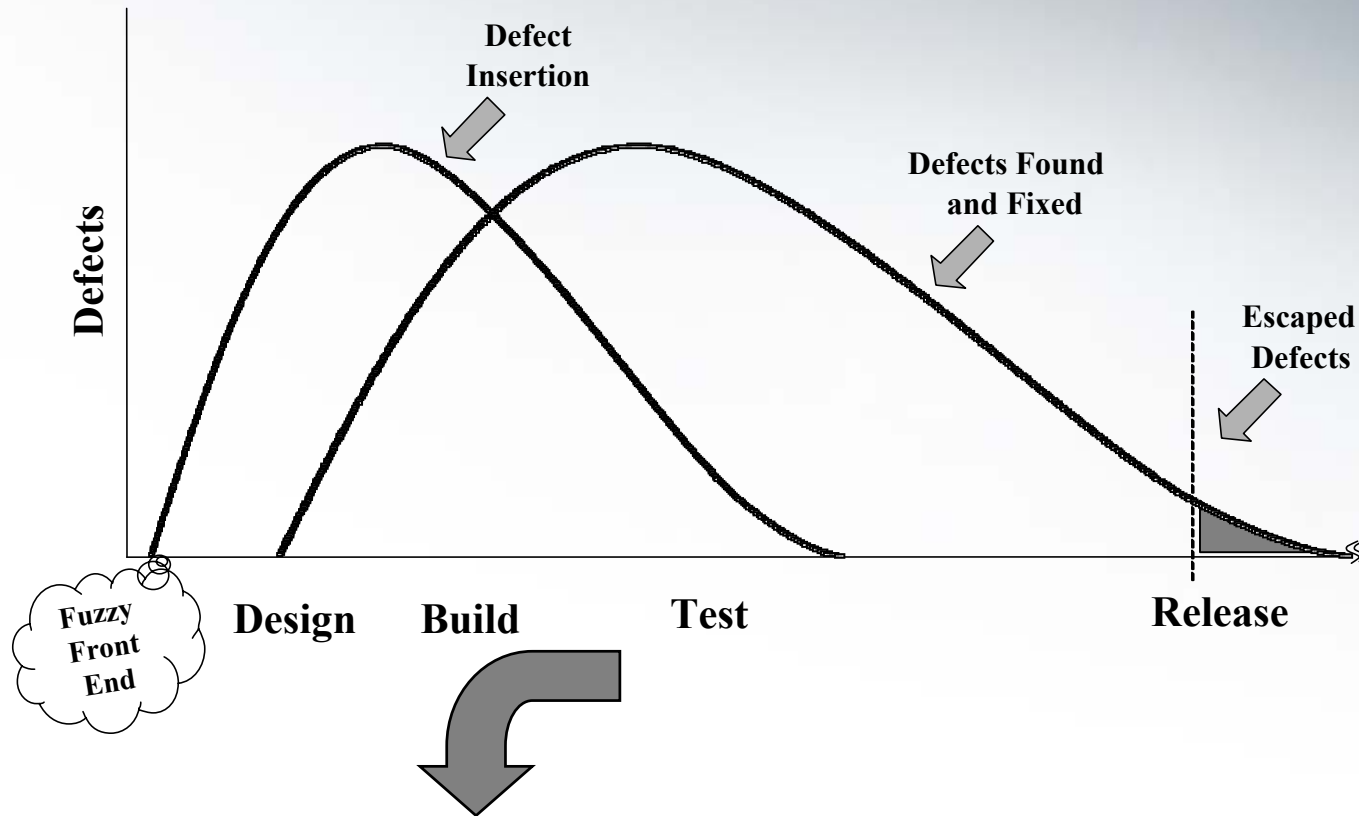
Capabilities and Tools

A Common Sense Flow



Verify Incremental Performance

Move testing and test thinking upstream...



- Unit test in step with changes
- Incremental Auto-build
- “Code” Analyzers

Other approaches that help?

Best Practices

“Quality” Activities



- Fact and data orientation to goals, planning, review
- Rationale and prioritization (based on data)
- Complete and accurate requirements solicitation / processing
- Associating of metrics to requirements
- Accuracy in measurement systems (validation)
- Consistent and effective problem solving methods
- Linking improvement projects to business objectives
- Utilizing the “right” tools for the “right” problem
- “Right sizing” development projects and features
- Intelligent modeling and simulation (not just QA)

Performance Dynamics



For most organizations...Processes + Behaviors = Outcomes

Enablers & Requirements

- Customers
- Markets
- Standards
- Technology
- Regulations
- Employees
- Suppliers
- Stake Holders



Processes

- Tools
- Technology
- Documentation
- Measurement
- Skills / Competencies
- Capacity
- Control

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Behaviors

- Motivation
- Reinforcement
- Compensation
- Attitudes
- Preferences
- Management
- Environment
- Career

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Business Results

- Customer Satisfaction
- Quality
- Profitability
- Compliance
- Innovation
- Growth
- Cycle time

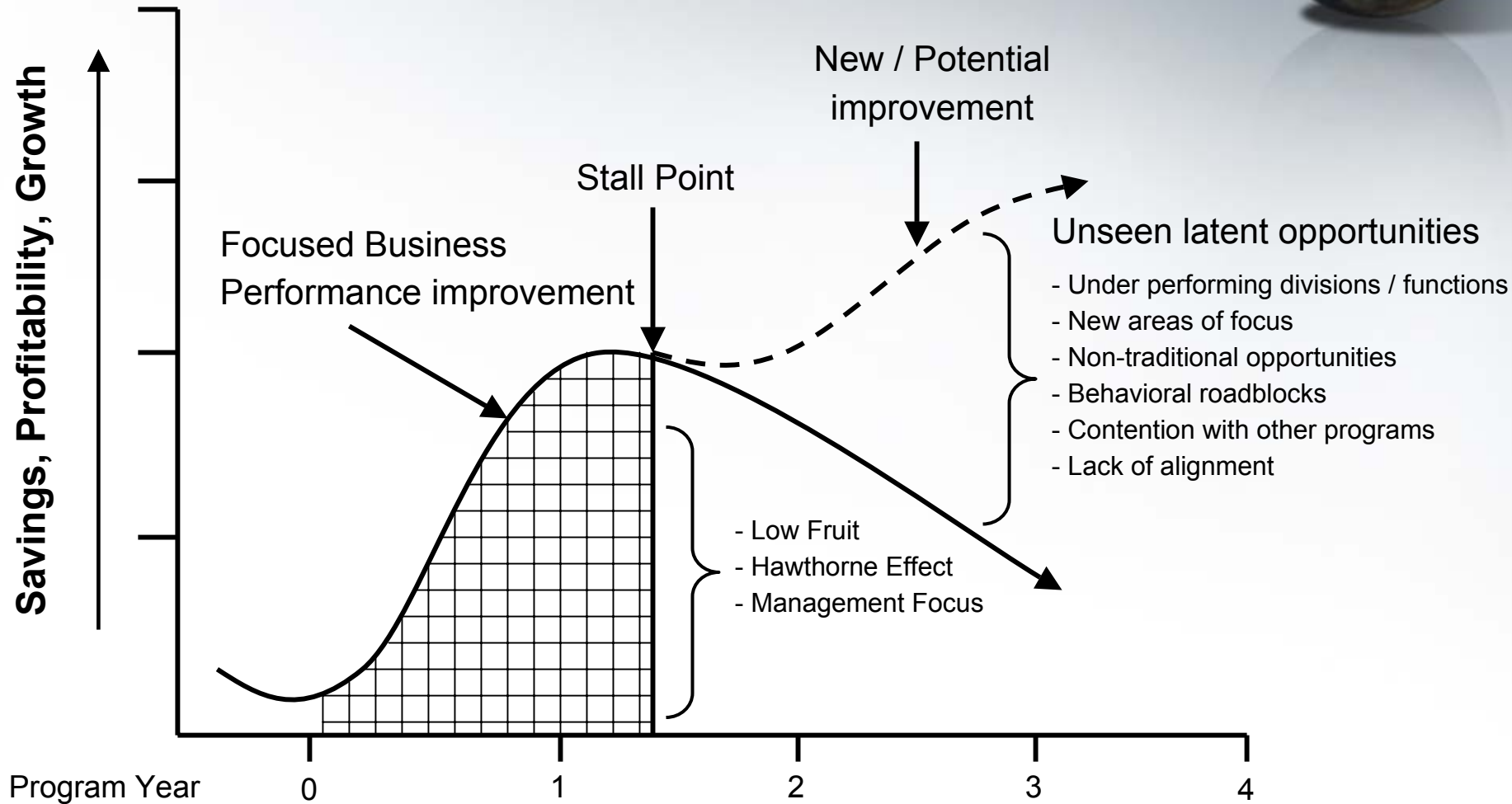
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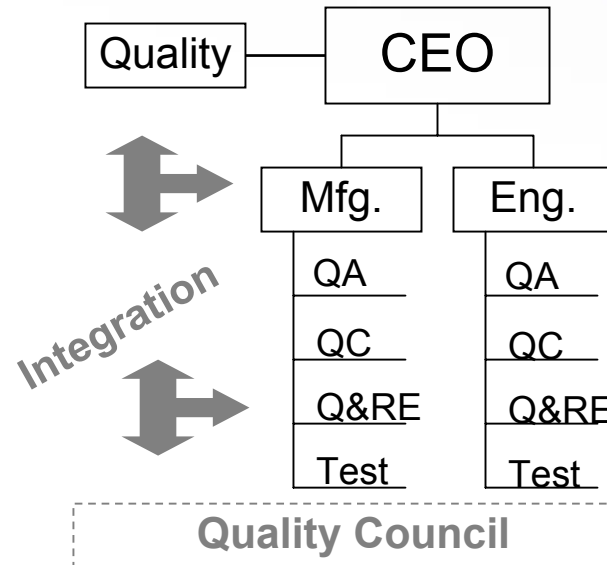
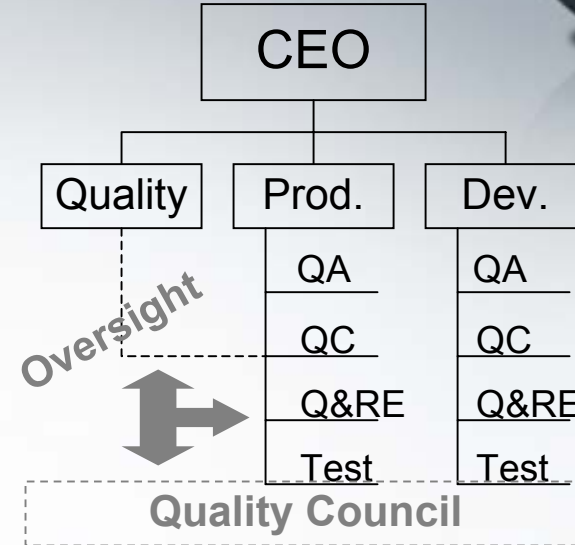
EFFECTS

***Quality efforts must be synthesized around business results
...Agree?***

Beware of Performance Stalls



Organizational Considerations



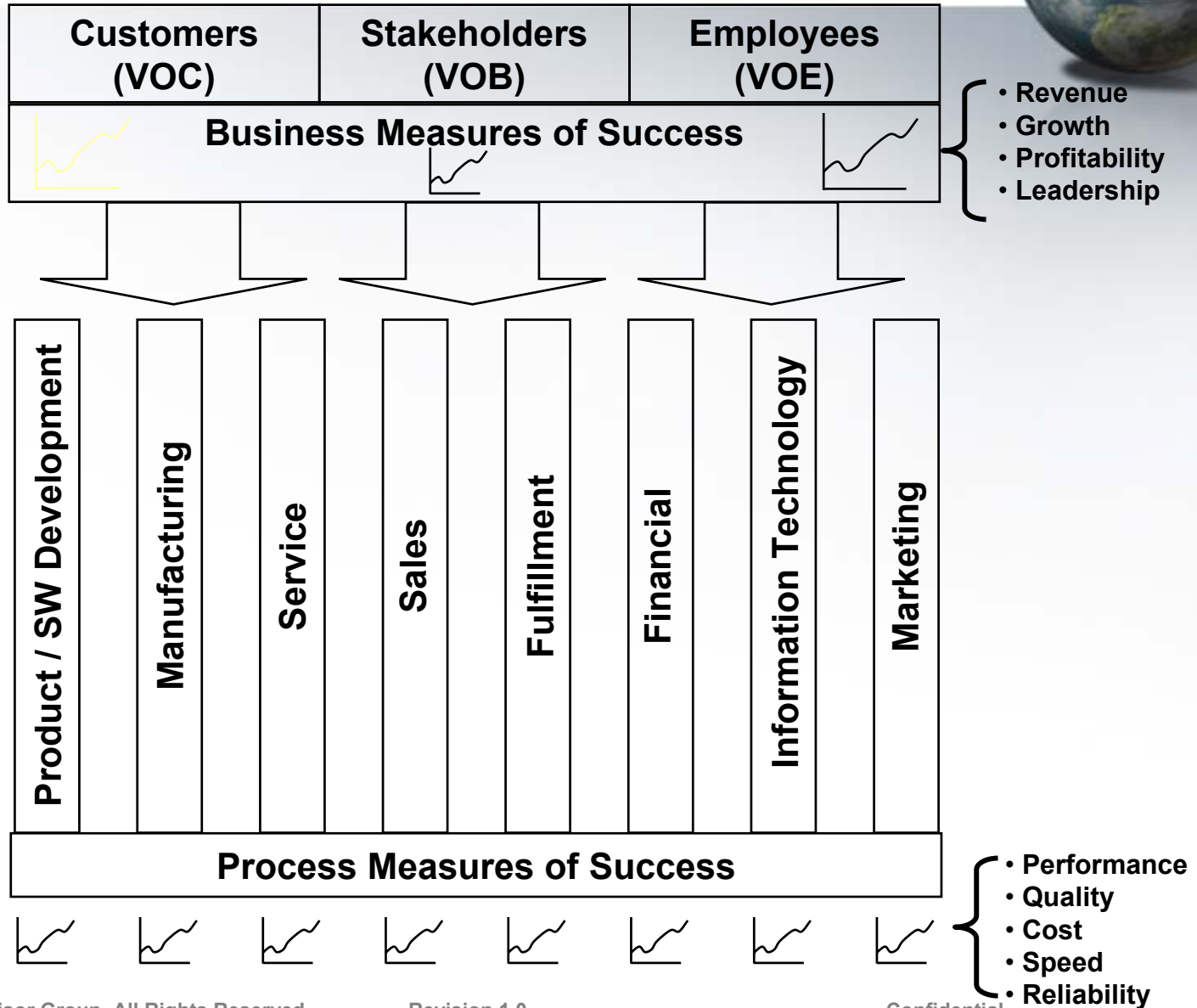
Pros and Cons?

Metric Planning & Alignment



Corporate Philosophy

- Innovation
- Speed
- Leadership
- Integrity
- Community
- Environmental



Best Practices

Organizations



- Empowered teams with clear goals and frequent reviews (alignment & prioritization a must)
- Reward and recognition linked to short and long term results (not completion of activities)
- Emphasis & goals on prevention / anticipation / replication / reuse / accuracy (migrate away from firefighting)
- Make quality everyone's job, not a specialization
- Institutionalize best practice processes & tools

The Quality “function” must evolve from test and Inspection to facilitator and best practice leader

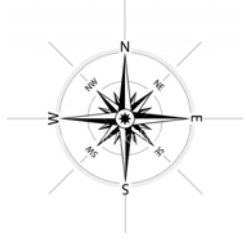
Change is Difficult



Organizations may struggle with change and prioritization...

- Fear of the unknown and untried
- Budget restrictions
- Organizations are fundamentally reactive
- **Behavior drivers** are not “really” (or quantitatively) understood
- Enabling processes are ad-hoc or non existent
- Priorities are conflicting (based on opinions, not information)
- Reviews and status are limited to detailed tactical measurements
- Communication is sketchy and surface level
- Training is an “activity” not a “result” (training alone does not fix anything)

***Start with an assessment and characterization of current state
to develop needs, goals, priorities and alignment***



Executive Advisor Group

For more information

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