



"When performance matters"



CMMI® Institute Partner

The CMMI as an Integrating Framework

Public Seminar

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Who am I?

- Started Breakpoint Consulting in 2010 (customers in Huntsville, Montgomery, and Ozark Alabama, Boston, Colorado Springs, Petersburg (VA), San Antonio, San Diego, and St. Louis)
- V2.0 Certified Lead Appraiser
- Part of original CMMI model team
- Founding member of NDIA CMMI Working Group
- Technical Chair of CMMI Technology Conference and User Group (2001 - 2009)
- Presented CMMI Technical Papers in Alabama, Amsterdam, Atlanta, Cadarache', Pittsburgh, Salt Lake City, Seattle, and Washington D.C.
- B.S. in Aerospace Engineering and M.S. in Operations Research
- Led 4th V2.0 Benchmark Appraisal in the world, and 3rd Multi-Model Benchmark Appraisal



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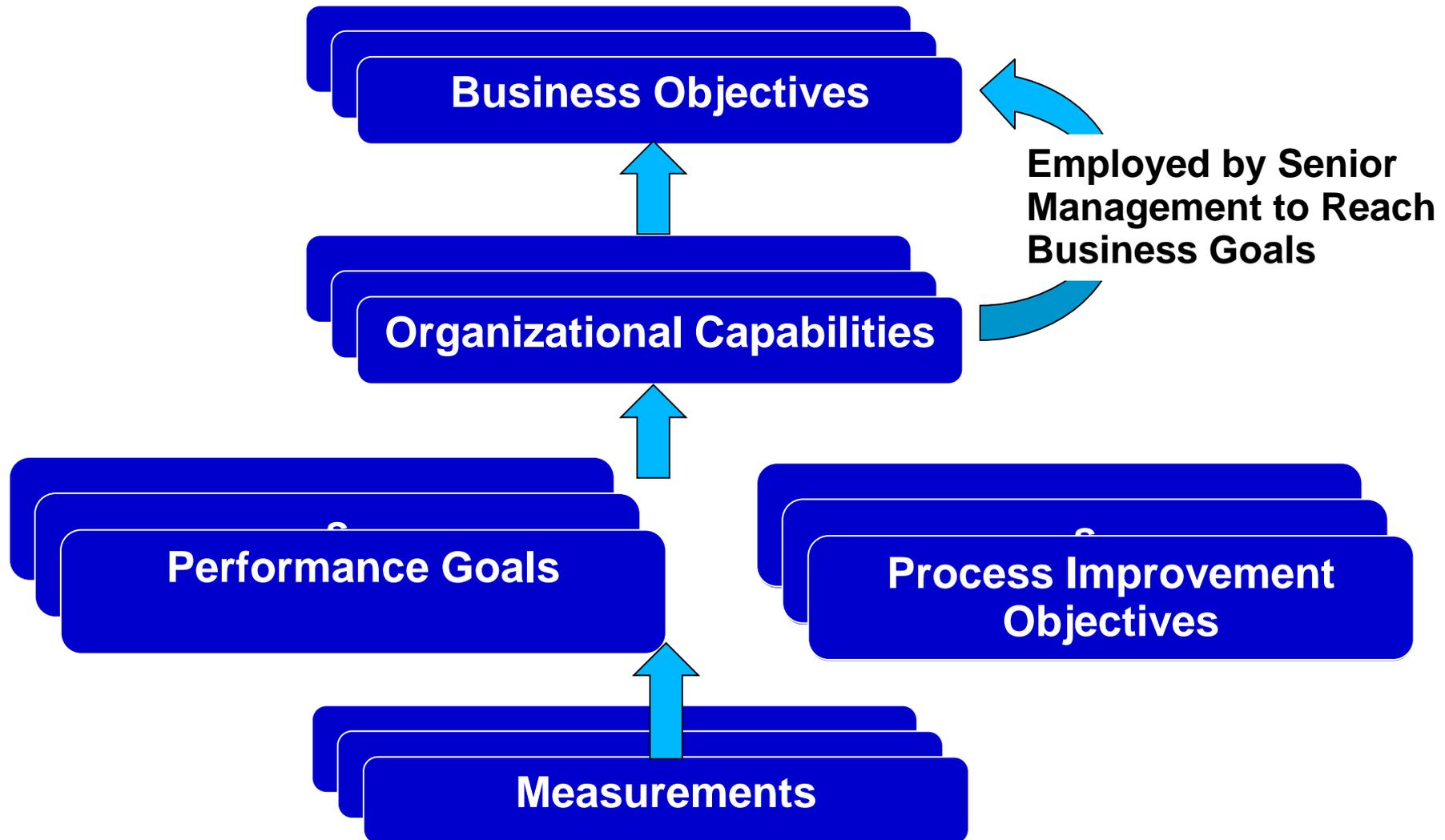
What we will discuss

- What we've learned using and appraising V2.0
- Integration of Operational Mechanisms
 - Lean Operations
 - Corporate or Development Agility
 - DevOps
- Integration of Improvement Mechanisms
 - Value Stream Mapping
 - Agile Process Development
 - Advanced Improvement Mechanisms

What we've learned using and appraising V2.0

- A Maturity Level 3 framework is a basis for:
 - Rationally employing and controlling the business processes you have
 - Making information-based decisions on what to improve and the strategy for improvement
 - Much more structured basis for Levels 4 and 5
- The Institute is serious about linking improvements to the fulfillment of business goals
- Much sharper focus on Business Processes
- Performance Report for Benchmark Appraisals
- Relevant terms
 - Business Goals
 - (Business) Capabilities
 - Performance Objectives and Process Improvement Objectives

One clear way of looking at this



Some opinions

Model/version attribute	V1.3	V2.0
Business value to the organization	☆☆☆	☆☆☆☆☆
Potential as discriminator during Source Selection	☆☆	☆☆☆☆
Cost of Adoption	☆☆☆	☆☆☆
Flexibility/responsiveness to business needs	☆☆☆	☆☆☆☆☆
Involvement of Senior Leadership	☆☆☆	☆☆☆☆

In preparation for adoption of V2.0...

- Think objectively through where the company/ organization is going
- Socialize the idea that the achievement of business goals is significantly dependent on improvement in the performance of business capabilities
- Think about the performance of critical operational capabilities and the potential for new operational capabilities as they might provide the means of achieving business objectives

Integration of Operational Mechanisms

- Lean Enterprise
- Corporate and team Agility
- Development Agility
- DevOps

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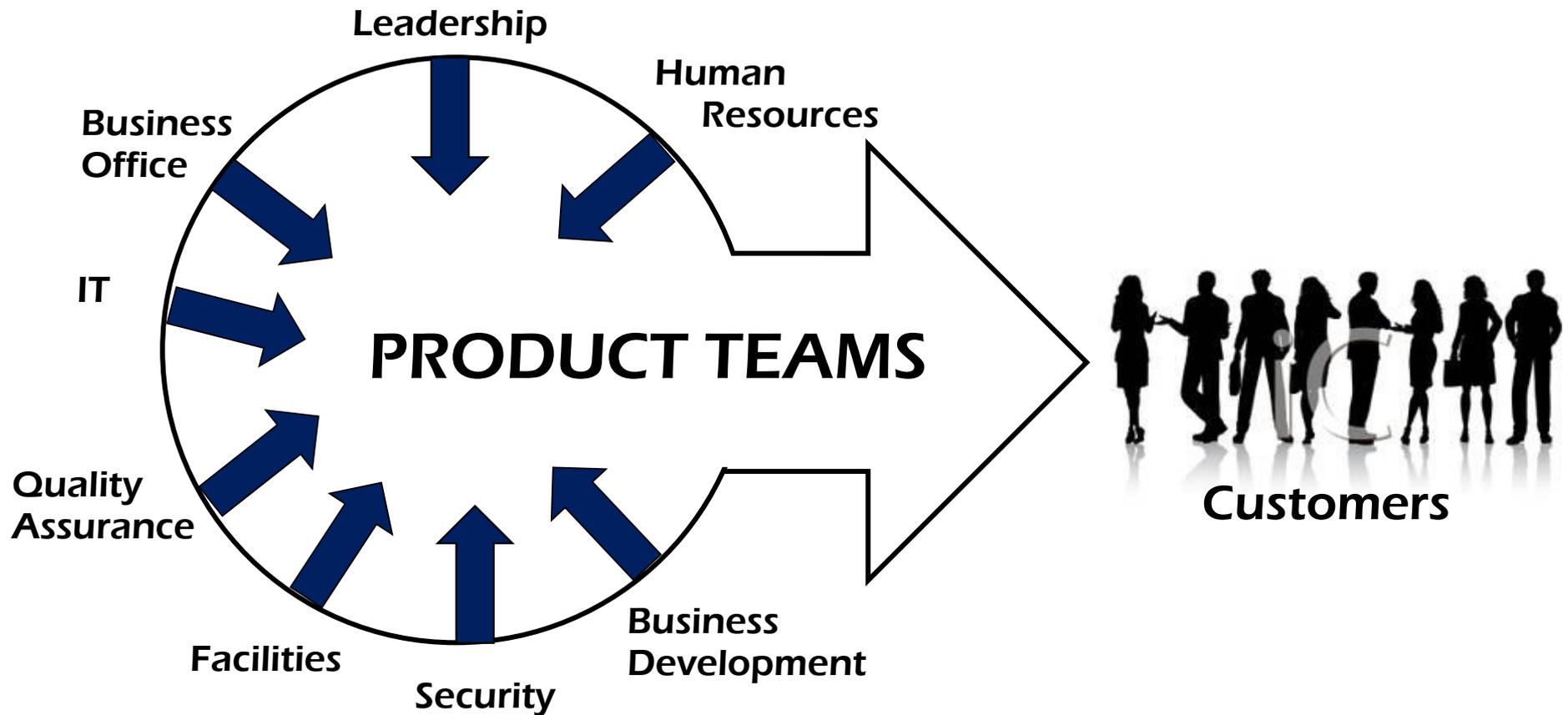
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Integrative Support of CMMI V2.0

- Ensures each operational mechanism is
 - Brought into the business in a manner that is at least qualitatively controlled
 - Is supported by senior management
 - Operates with assured quality
 - Transitioned into the operational environment in a careful and thoughtful manner
 - Mechanisms are unlikely to exhibit anti-patterns to desired Business Objective, process performance, and process improvement objectives

The Lean Enterprise

Integration of Operational Mechanisms



Corporate and Team Agility

Integration of Operational Mechanisms

- Organizational agility: The ability to respond to new business needs quickly, efficiently, as a normal part of doing business
- Characteristics:
 - Processes (including technologies) that may be quickly modified to respond to new business needs
 - Data/information and tacit knowledge is shared across the agile space
 - Real-time access to and understanding of new/ changes to customer needs
 - Strong leadership for change – esp. rapid change (hours to days)

Development Agility

Integration of Operational Mechanisms

- Applied to the creation or development of anything
- Agile life cycle is fanatic about:
 - Time boxed sprints
 - Mgt of requirements backlog by Sprints (& Releases)
 - Highly communicative, trusted teams
 - “Small chunk waterfall”
 - Ability to deliver after every sprint
 - Tight coupling to customer (e.g. owner of Product Backlog)
 - Technology driven, integrated work environments

Dev/Ops

- “Agile on steroids”:
 - Larger team span (Development, Operations, IT Dept, Information Security- even the user)
 - Loosely coupled architectures – allows independent changes by multiple small teams
 - Development and employment environment supports rapid (e.g. 25 per day) deployment of solutions
 - Testing is automatic
 - Continuous feedback used to upgrade process in “real time” (minutes or hours)

Integration of Improvement Mechanisms

- Lean Kaizen Events
- Agile Process Development
- Advanced Improvement Mechanisms
 - Process Simulation
 - Statistical Process Control
 - Optimization
 - Brightline Performance Improvement Framework (SM)

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Integrative Support of CMMI V2.0

- Ensures each improvement mechanism is
 - Brought into the business in a manner that is at least qualitatively controlled
 - Operates with assured quality and is properly trained
 - Transitioned into the operational environment in a careful and thoughtful manner
 - Mechanisms are unlikely to exhibit anti-patterns to desired Business Objective, process performance, and process improvement objectives
- Model enables and amplifies opportunities for synergistic or even symbiotic improvement mechanisms

Lean Kaizen Events

- Rapid, focused, events use to gain wanted process knowledge or to support a decision
- Causal analysis
- Identify potential improvements (future states)
- Value Stream Mapping

Value Stream Mapping

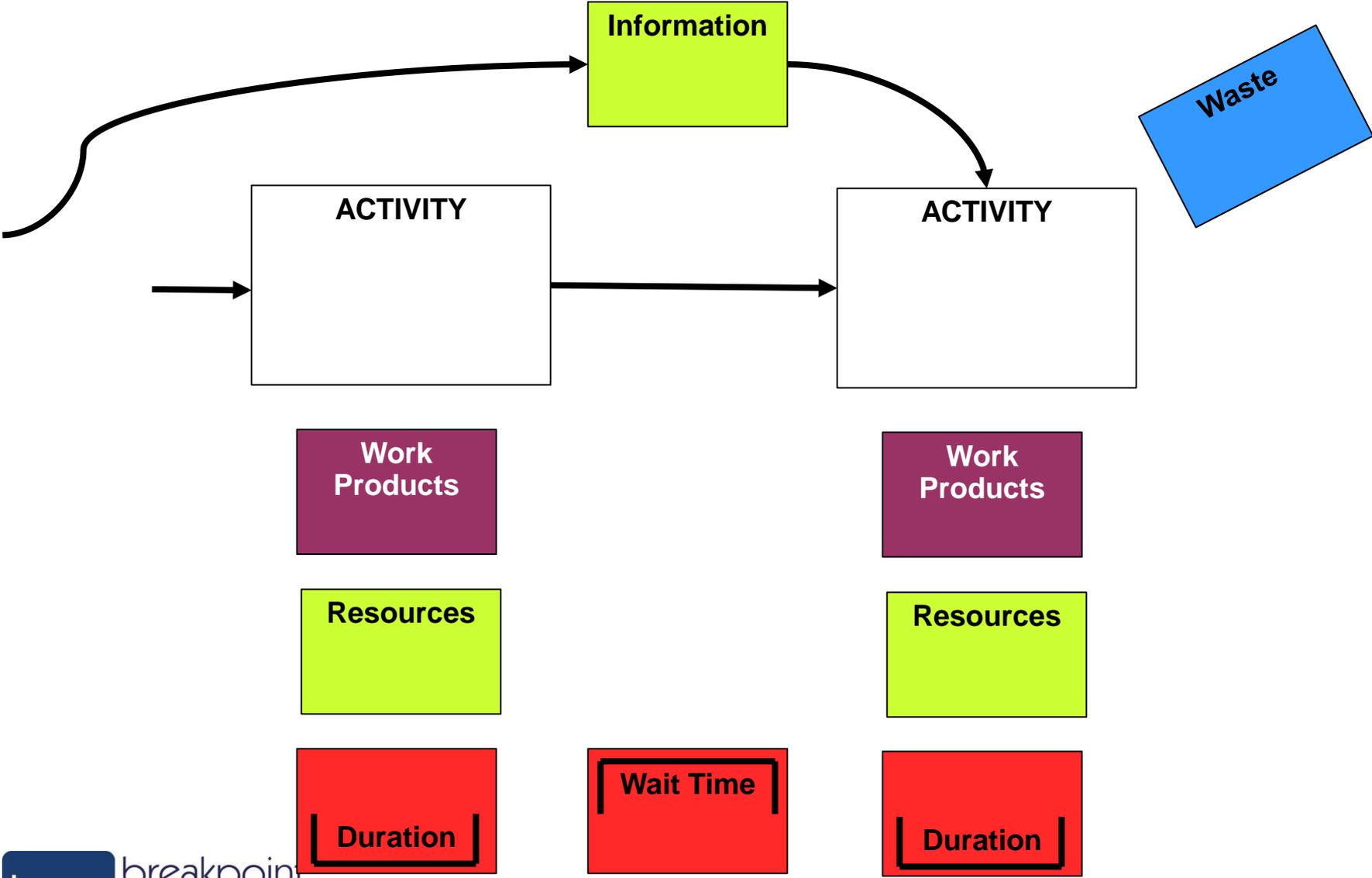
- Reveals management and team truths
- Identifies and eliminates waste
- Clarifies “takt time”
- Maps technological support to actions and generates information flow
- Reveals potential data quality issues

Workflow Elements

- Information
- Activity
- Work products
- Resources
- Duration
- Waste



Sample Activities



Agile Process Development

Integration of Improvement Mechanisms

- Achieve process improvement goals in << time
- Highly responsive to needs of customers, organizational stakeholders, and process “doers”
- Involves exactly the right people to do exactly the right thing at exactly the right time
- Each increment of process capability can be deployed if desired
- Direct experience: one week process sprints for a CMMI-SVC ML3 effort

Advanced Improvement Mechanisms

- Process simulation
- Statistical Process Control
- Brightline Performance Framework
- Optimization

Integration of Improvement Mechanisms

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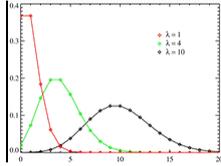
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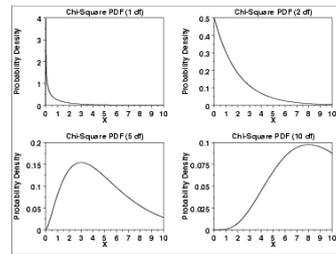
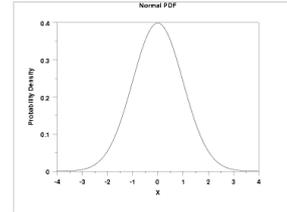
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Process Simulation



Event arrival
(simulated event
or external input with
Poisson inter-arrival time)



Cumulative Density Functions
are results of data collection
and analysis, from large sets
of data (accurate), down to
only a few or no data
(estimate)

EVENT ARRIVAL

Event is defined
with unique attributes

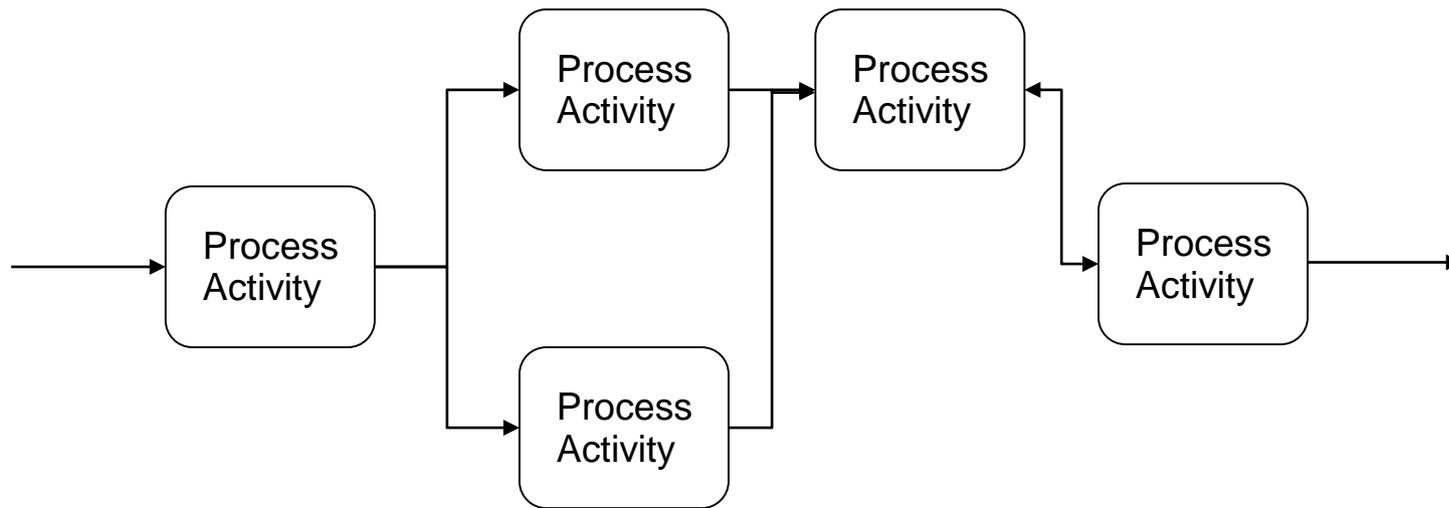


EVENT DEPARTURE

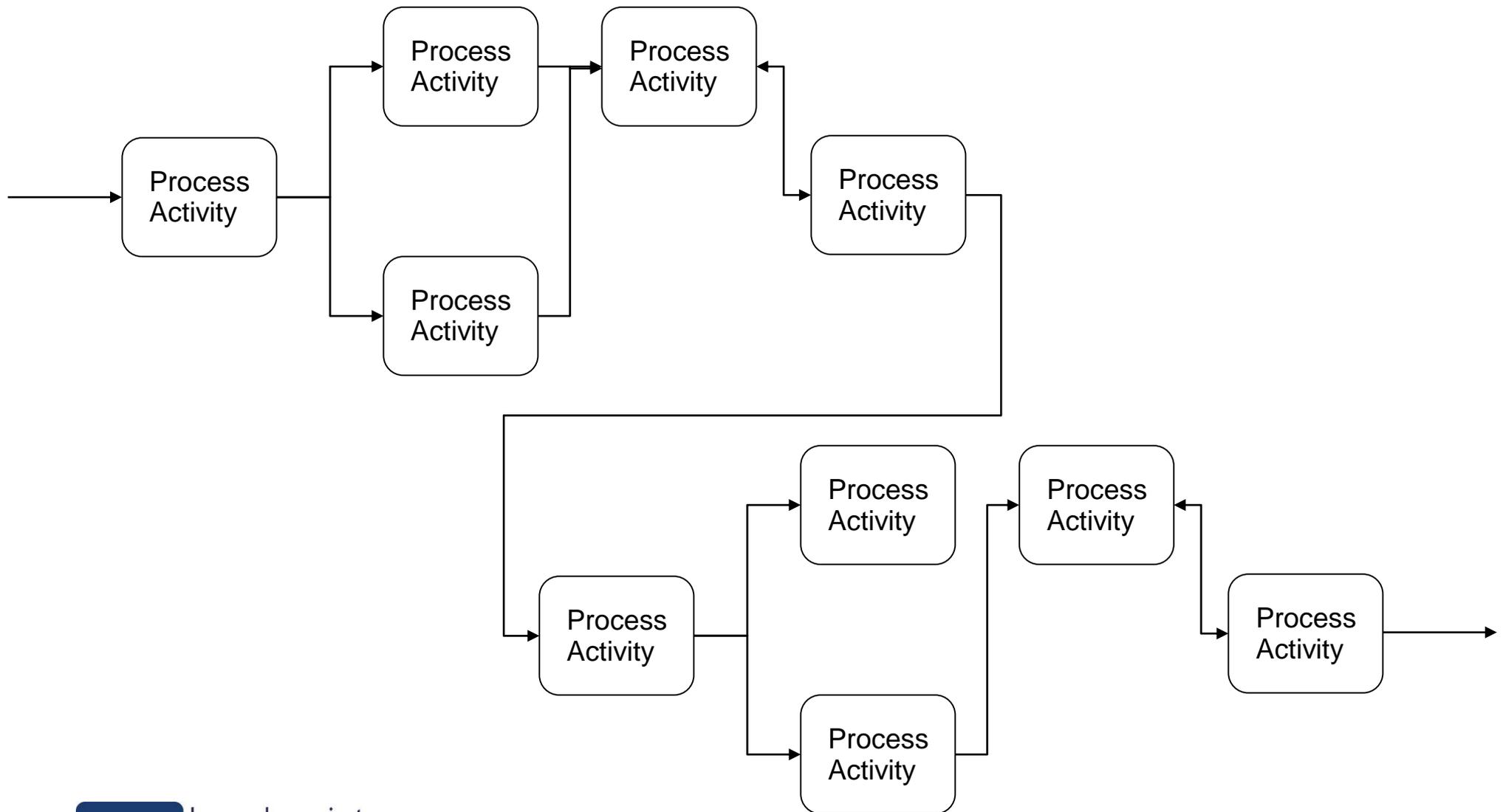
Event attributes MAY
be changed

- Human activity
- Machine or automated activity
- Combination of activities

Typical Process or Sub-process



Typical Process or Sub-process

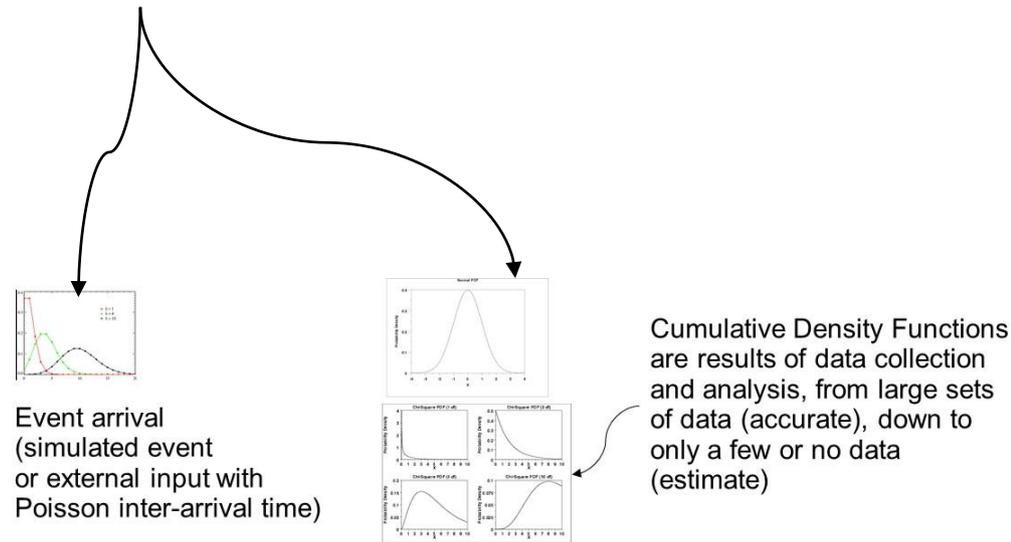


Process Simulation Scope and Use

- The whole business process
- Model/Simulate the portion of interest, and estimate the inputs (with varying degrees of accuracy)
- Simulation can be used to:
 - Gauge effect of changes to process or technologies
 - Identify unsuspected aggregation of volatility
 - Help decide whether a process change is likely to yield the desired performance improvement

Statistical Process Control

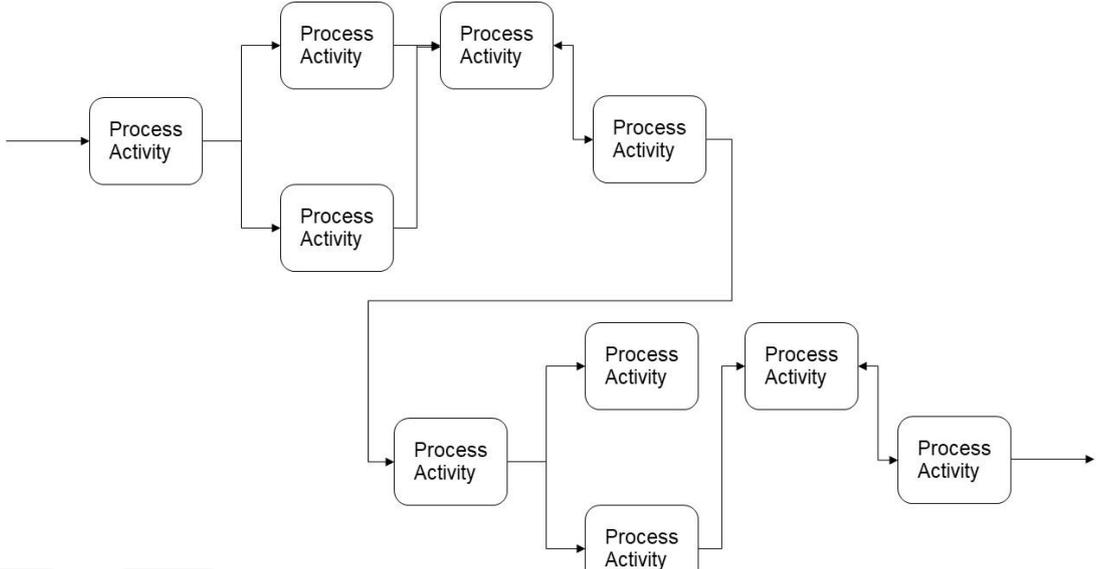
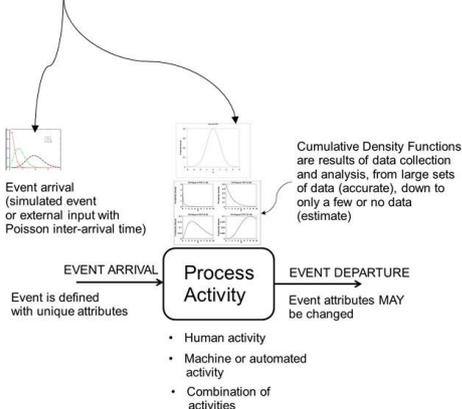
Each distribution exists with an underlying central tendency and volatility (standard deviations)



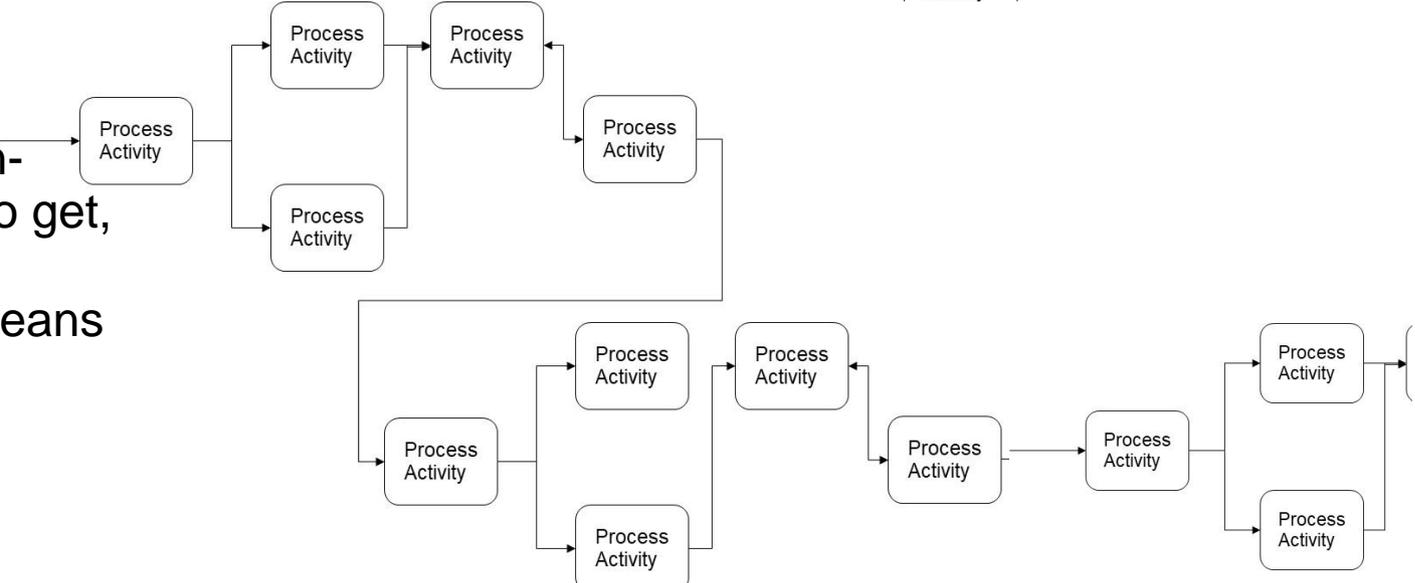
- Human activity
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Statistical Process Control

Each distribution exists with an underlying central tendency and volatility (standard deviations)



Since business process data is typically time consuming and expensive to get, use STP to gauge affect of desired changes to means or standard deviations



Optimization

- The idea of optimization should be considered early:
 - Drive in a better understanding of the relationships of Business Objectives, the long term vision of the organization, and the investments in process/ technology improvements
 - Now “officially” allowed/encouraged at ML2 (!)
- Possibilities worth noting:
 - Use the cost/impact analysis of prospective changes to process and technologies to maximize the benefit to Business Objectives over a given time horizon
 - Use process simulation to maximize value of global changes to processes or technologies (e.g. CMMI V2.0 adoption or migration to SAP)

Brightline Performance Framework (SM)

A detailed understanding of process relationships, the relationships of technologies to processes, and how both support business capabilities enables effective investment that results in the ability to achieve Business Objectives.

BUSINESS OBJECTIVE CHART					
(Business Capability Enablement of Business Objectives)					
	Business Objective 1	Business Objective 2	Business Objective 3	...	Business Objective j
Strategic Leadership to Use Improved Capabilities to Achieve Business Objectives					
Business Capability 1					
Business Capability 2					
Business Capability 3					
...					
Business Capability m					

BUSINESS CAPABILITY CHART					
(Process and Technology Support of Business Capabilities)					
	Business Capability 1	Business Capability 2	Business Capability 3	...	Business Capability m
Business Process 1					
Business Process 2					
Business Process 3					
...					
Business Process n					
Business Technology 1					
Business Technology 2					
Business Technology 3					
...					
Business Technology i					

TECHNOLOGY CHART					
(Technology-to-Process)					
	Business Process 1	Business Process 2	Business Process 3	...	Business Process n
Business Technology 1					
Business Technology 2					
Business Technology 3					
...					
Business Technology i					

PROCESS CHART					
(Process-to-Process Relationships)					
	Business Process 1	Business Process 2	Business Process 3	...	Business Process n
Business Process 1					
Business Process 2					
Business Process 3	PROCESS OUTPUTS →				PROCESS INPUTS ↑
...					
Business Process n					

Do you have suggestions?

- If you'd like to see any area(s) in this seminar extended, or would like to know more in some other area related to the adoption of CMMI V2.0, please email or call me.
- Ph. 256.257.4151
- I am evolving to:
jeff@brightlineperformance.com
- (other email will work for a while yet)