

Lean Thinking with CMMI®

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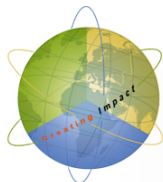
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CRM

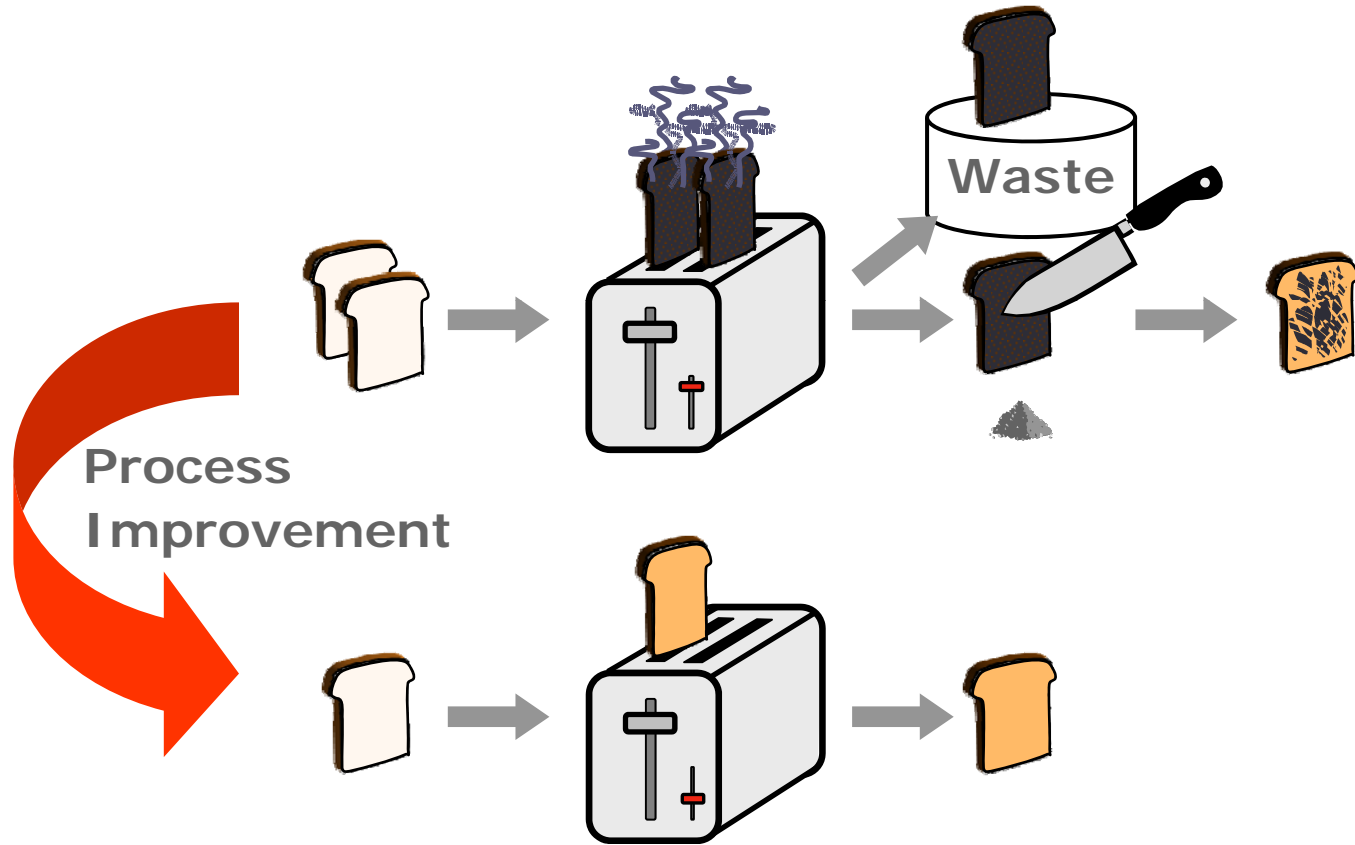
People

Process

+

- » Process Orientation
- » CMMI
- » LEAN
- » Synergy between CMMI and LEAN Thinking
- » Summary
- » Pitfalls in Process Orientation





"Waste" in the context of development typically means:

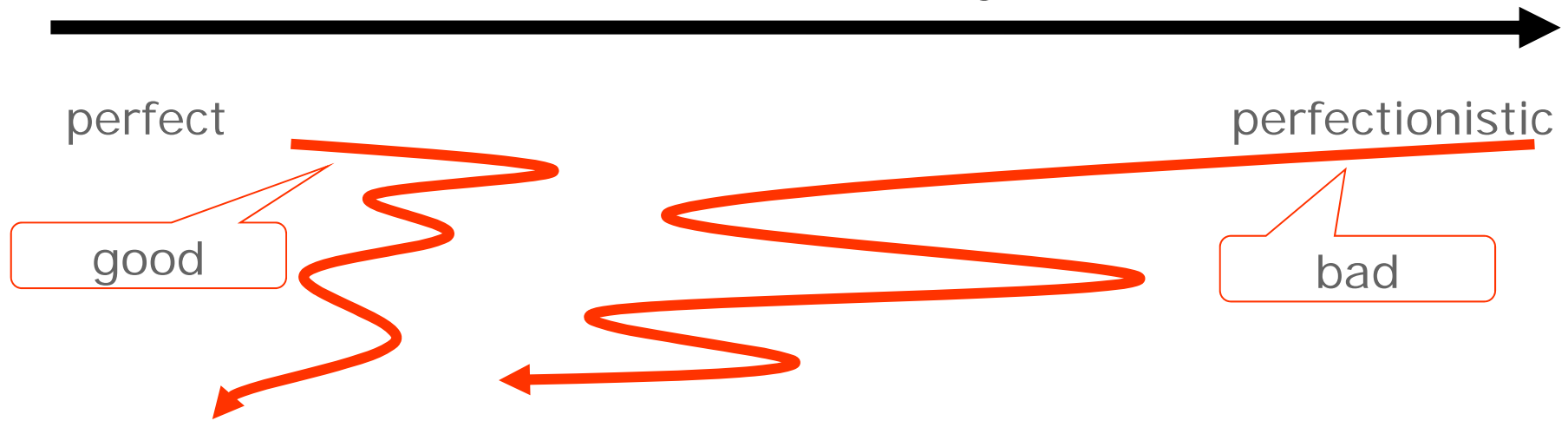
- » late identification and management of risks/issues
- » Testing quality into the product, instead of developing with quality from the start
- » Re-inventing the wheel in every project
- » Misinterpreting customer/market needs...

THE WIZARD OF ID



Process orientation focusses always on „perfect/lean“ processes... but where are those for your organization?

“Administrative overhead/bureaurocracy/details”

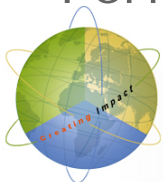


Perfect =

you can not leave anything out any more to be successful („Adequacy“)

Perfectionistic=

you can not add anything more



Where are you loosing your money?

Category	Benchmark
Costs of bad quality and rework	Reduced from 33-45% to below 10%
Defect removal efficiency	70-90% of all defects removed before testing
Shipped defects	Less than 0.01 defects per KLOC
Productivity	Doubled (within 3-5 years)
ROI	5:1 up to 15:1
Cycle time	Yearly reduction by 10-25%

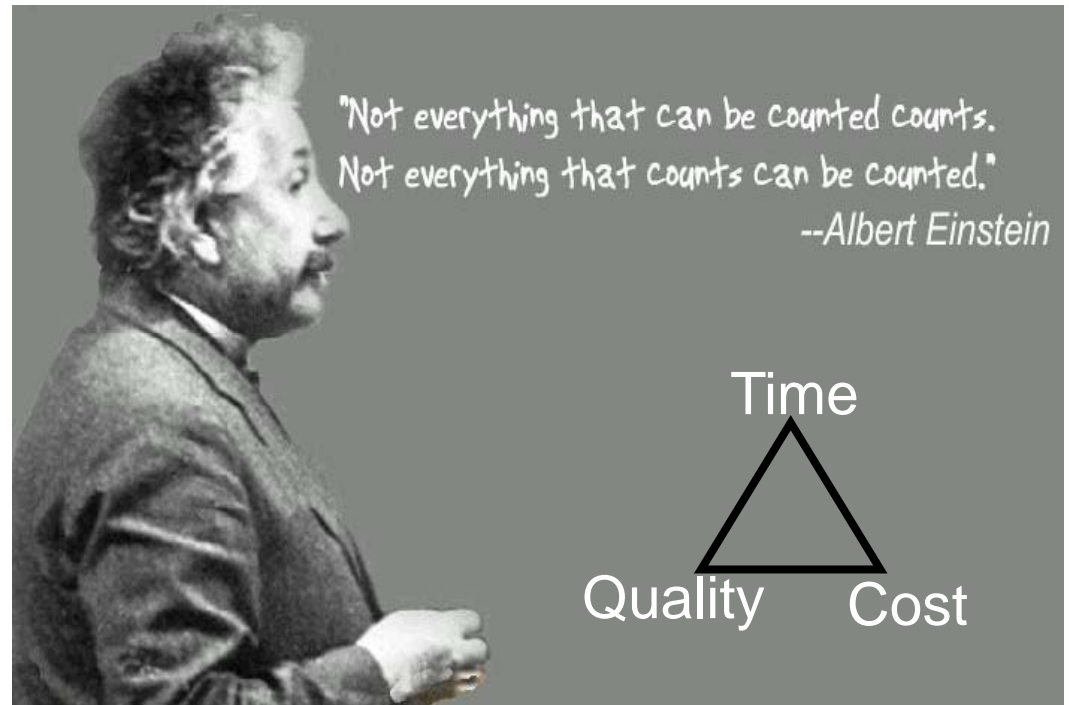


Improvement means different things to different organizations

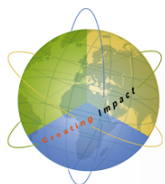
- » What are your business goals?
- » How do you measure progress

Improvement is a long-term, strategic effort.

- » What is the expected impact on the bottom line?
- » How will impact be measured?



Process Management	<ul style="list-style-type: none"> Organizational Process Focus Organizational Process Definition + IPPD Organizational Training Organizational Process Performance Organizational Innovation and Deployment
Project Management	<ul style="list-style-type: none"> Project Planning Project Monitoring and Control Supplier Agreement Management Integrated Project Management + IPPD Risk Management Quantitative Project Management
Engineering	<ul style="list-style-type: none"> Requirements Management Requirements Development Technical Solution Product Integration Verification Validation
Support	<ul style="list-style-type: none"> Configuration Management Process and Product Quality Assurance Measurement and Analysis Decision Analysis and Resolution Causal Analysis and Resolution
Acquisition	... acquisition related Process Areas (CMMI-ACQ)
Service Est. and Delivery	... service related Process Areas (CMMI-SVC)

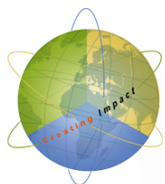
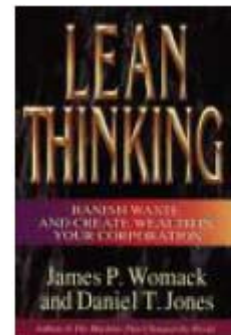
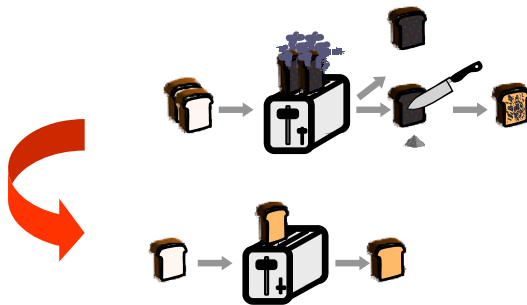


Maturity Levels (Equivalent Staging)

Organizational Innovation and Deployment Causal Analysis and Resolution	Maturity Level 5			Subprocesses	Subprocesses
Organizational Process Performance Quantitative Project Management	Maturity Level 4				
Requirements Development Technical Solution Product Integration Verification Validation Organizational Process Focus Organizational Process Definition + IPPD Organizational Training Integrated Project Management + IPPD Risk Management Decision Analysis and Resolution	Maturity Level 3			Plus Critical	Plus Critical
Requirements Management Project Planning Project Monitoring and Control Supplier Agreement Management Measurement and Analysis Process and Product Quality Assurance Configuration Management	Maturity Level 2				
	Capability Level			4	5
	1	2	3		



- » LEAN thinking, culture and behaviour:
„A mindset of waste aversion,
and a perspective that allows you to see it“



- » „specify value“:
 - » Before you start to think about Value and Non Value, establish who is the Customer and what do they need?
 - » Value adding, non-value adding (to product), waste
- » „identify and create value streams“:
 - » All of the actions are required to bring a product from concept to launch and from order to delivery
- » „make the value flow“
 - » Consistent and friction-less implementation across the whole value stream
- » „pull processes not push“
 - » production is driven by need
- » „striving for perfection“
 - » avoidance of defects and rework



It is not about light weight processes

- » „Lean“ refers to
 - » stock keeping
 - » work to be done

- » „lean“ is achieved by „robust“ processes:
 - » simple
 - » reliable
 - » standardized
 - » enforced



- » „Six Sigma“ in manufacturing
- » CMMI, ISO15504, ITIL... as „good practice“ models for development, acquisition, and service management.
- » ...



**“All models
are wrong,
but some are
useful.”**

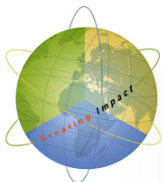
[George Box - Quality and Statistics
Engineer]



- » Processes are ad hoc and improvised by practitioners and their management.
- » Process descriptions do not match practice.
- » Performance is highly dependent on heroes.
- » Understanding of the current status of a project is limited.
- » Immature processes result in fighting fires:
 - » no time to improve
 - constantly reacting
 - » Firefighters get burned
 - » Embers may rekindle later



- » Processes are supported visibly by management and others.
- » Allow insight into status of projects and organizations processes.
- » Culture of trust
- » There is constructive use of product and process measurement.
- » Process descriptions are consistent with the way work actually gets done. They are defined, documented, and continuously improved.

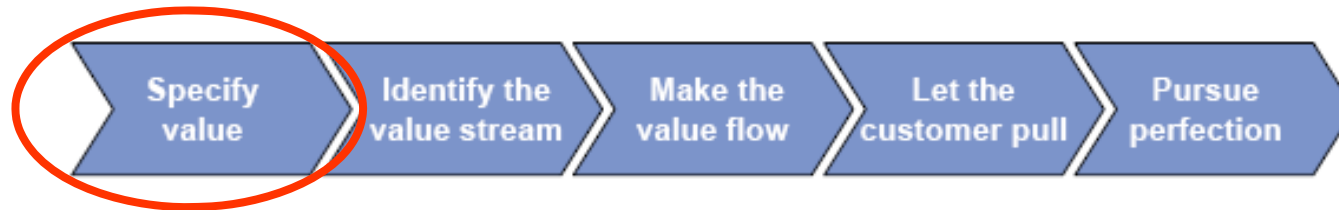


CRM

People

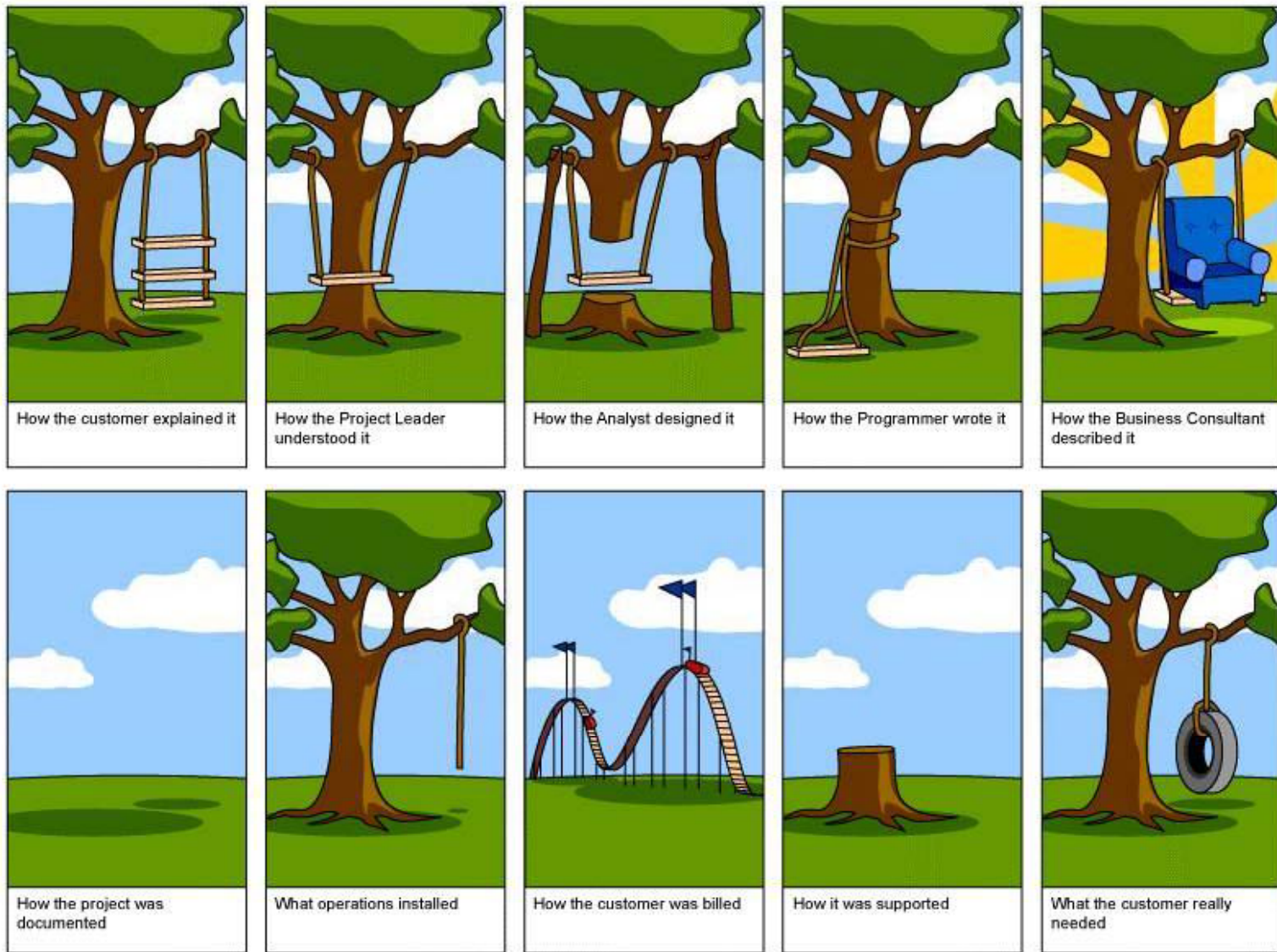
Process

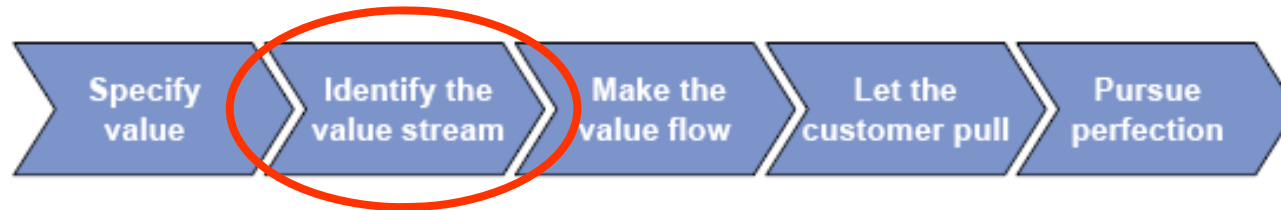
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- » with methodical requirements analysis and development
- » with early methods for verification (Peer Reviews)
- » via continuous customer involvement (Validation)
- » with traceable requirements throughout development and test (Traceability)
- » with clearly defined change management mechanisms
- » via clear criteria and coverage considerations to verify requirements
- » ...

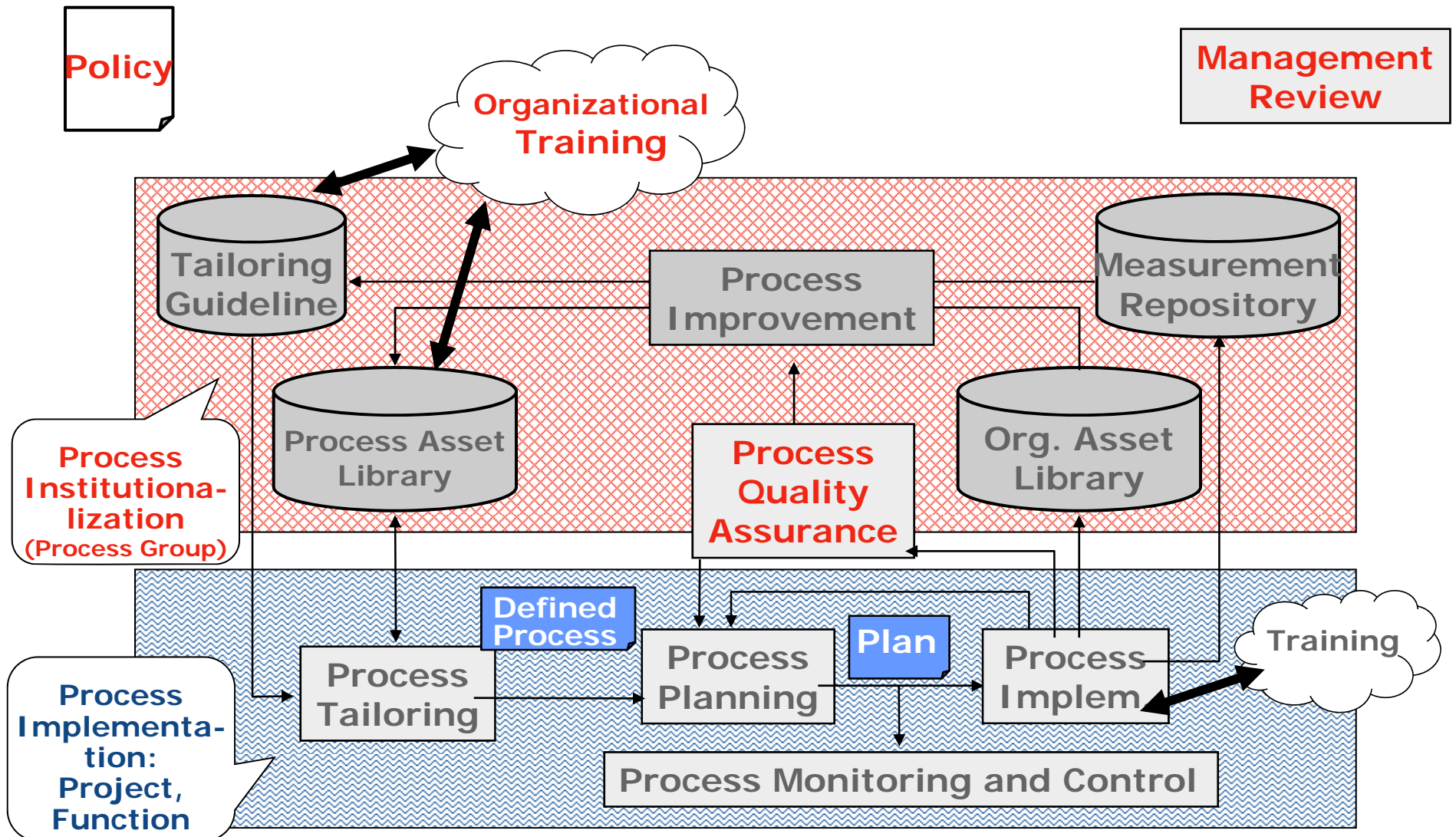






- » with repeatable and transparent project management
- » by aligned lifecycles and synchronization points
- » with planned and systematic stakeholder involvement
- » via integrated / multi-disciplinary teams
- » via configuration management
- » with good practices for supplier management (CMMI for Acquisition in more detail)

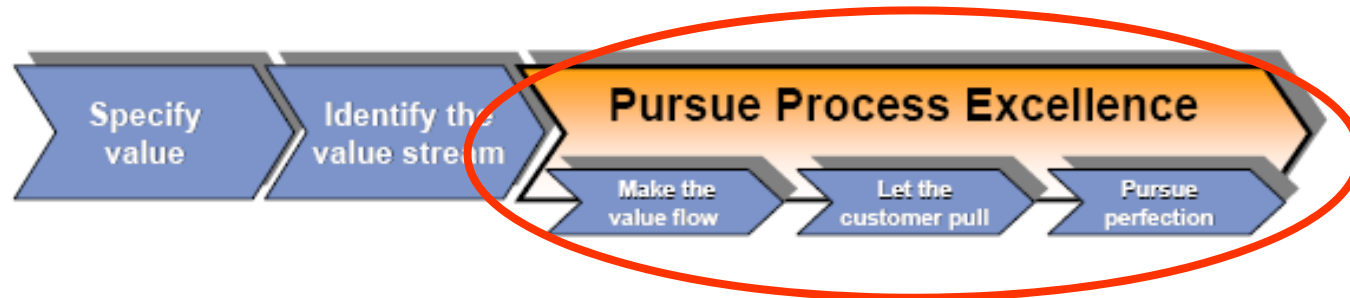




[Idea by Gerhard Fessler]

- » Flow tools
 - » 5C
 - » Quick Changeover
 - » Visual Management
 - » Standard Operations
- » Problem Solving
- » Pull
 - » Takt
 - » Line Balance
 - » KanBan





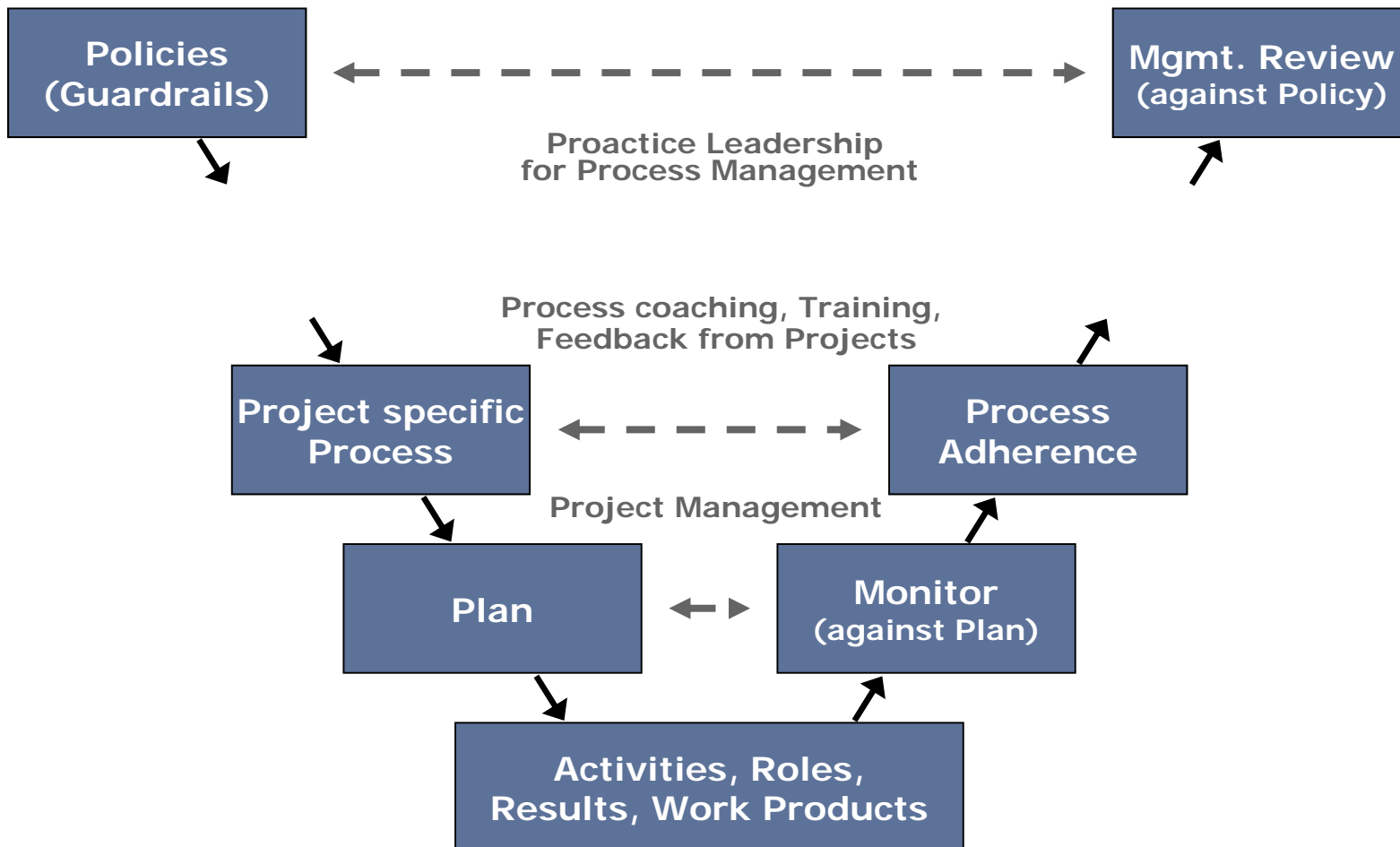
Flow, Pull and Perfection can be considered collectively as **“Pursue Process Excellence”** providing the original concepts are given due recognition as improvement phases.

- » via continuous process improvement on organization level (process management)
- » by useable process architectures and definitions
- » via goal driven metrics on project and organization level, up to a quantitative/statistical understanding
- » via systematic defect prevention and root cause analyses
- » with organizational training



1. Step of Institutionalization

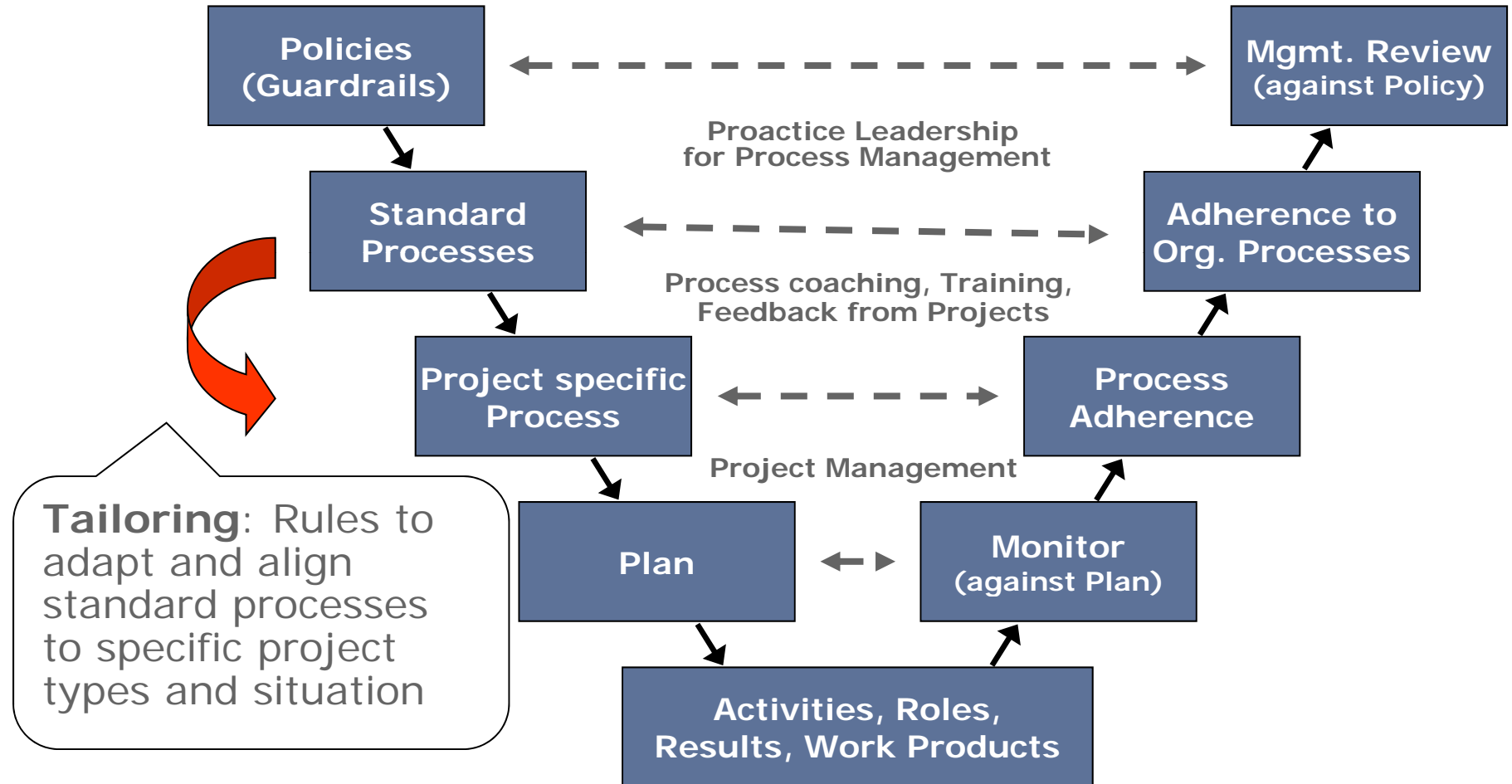
A structured environment, created and role modelled by the 'Leaders' that expects this behaviour of every employee.



2. Step of Institutionalization

LEAN operations, processes and products

Every process understood, standardised and continually evaluated for performance optimisation



- » break down into small packages
- » continuous work on small work packages
- » even distribution of work
- » reduced variation in the implementation
- » reduced “hand over” between processes
- » insight into what the successor requires/needs
- » reduce waiting time
- » reuse of processes within the process architecture
- » avoid redundant activities
- » removal of all “that could also happen” activities
- » understand and control limits to process performance
- » ...



» Why?

- » to focus on efficient and effective processes from the start, instead of just compliance to standards
- » use of simple/clear process architectures
- » based on performance and effectiveness of processes

» How?

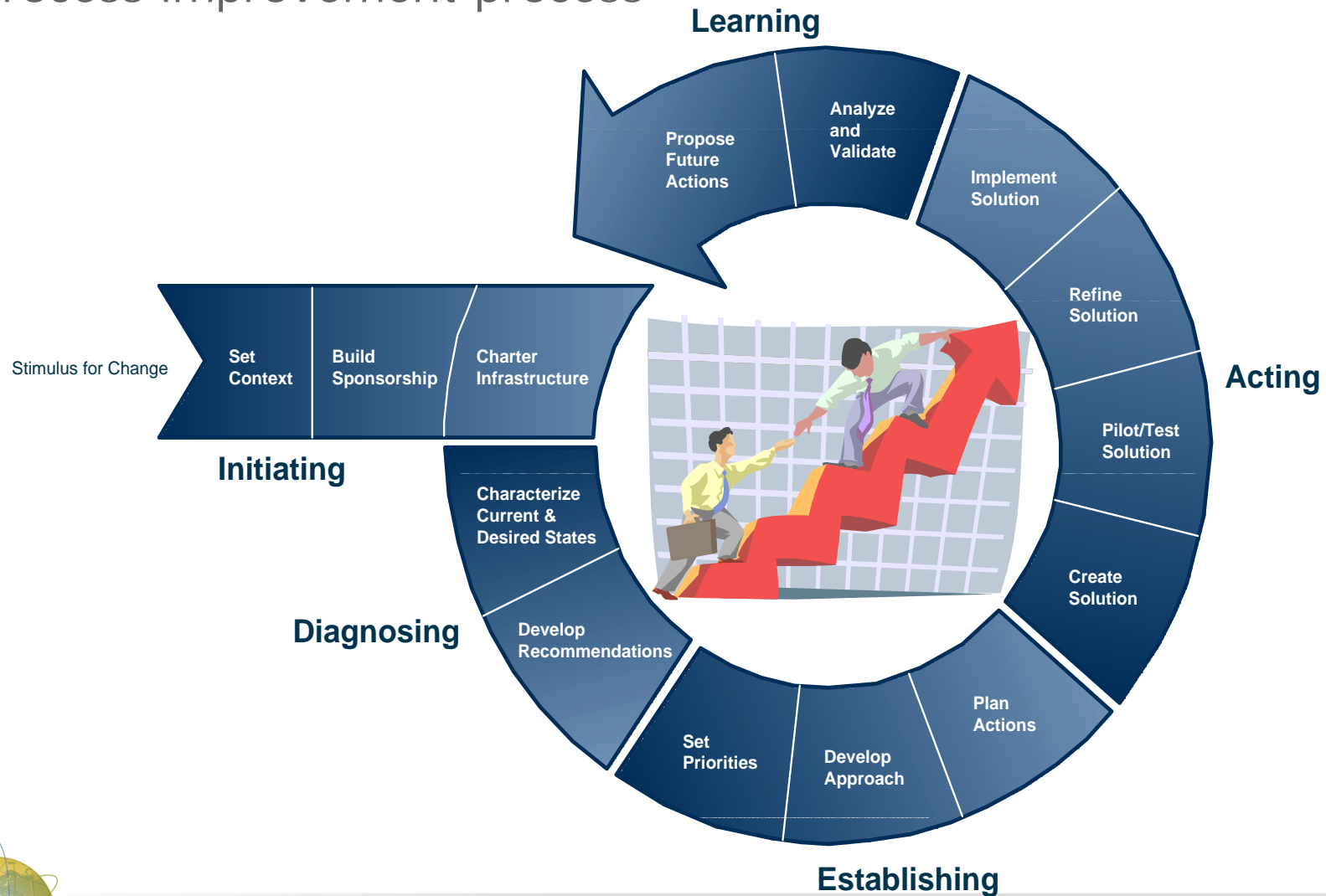
- » by using LEAN concept and principles to decide on organizational structures and processes

» When?

- » during the design of processes not afterwards/in hindsight



– a representation of a continuous process improvement process



Active and regular management activities include

- » SCOPE: What does “perfect” mean in your business context ?
- » POLICIES: Why do you expect what ?
- » REVIEW: How do you know it was worth it ?
- » ROLE: What is your defined responsibility and authority ?
- » PROCESS MGMT: Are you leading by
 - “walking the talk” ?
 - using data and processes instead of gut feeling ?



- » Both approaches motivate the thinking in “perfect/lean” processes and allow the use of common terminology.
- » LEAN allows to see “waste”
- » CMMI has built in mechanisms to avoid “waste”
- » CMMI forms an enhanced tool box to implement LEAN thinking in development/service/acquisition environments
- » CMMI provides a clear roadmap for process orientation both on project and organizational level
- » LEAN is supported by CMMI via the concept of institutionalization and organizational learning
- » Both require commitment and pro-active leadership on all management hierarchies
- » If done right, you are never done implementing either :o)



- » Write a process handbook and declare victory.
- » Buy expensive consultant services without using the inherent knowledge and expertise of the organization
- » Introducing LEAN/CMMI/... terminology and training everybody therein.
- » It happens along the way and within in 3 months
- » Believing that a maturity/capability level or that having LEAN teams alone is a guarantee for success.
- » ...



Thank you for your attention...

... good luck for your own process improvement!



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