PRES 15053 The Effects of Software Process Maturity on Software Development Effort



80

60

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0

40

Historical Data Bar

Management Tool

120

200

140

100

50% LONGEST CHAIN

0



Leading

Lagging

Quality

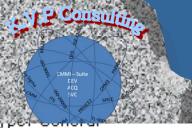
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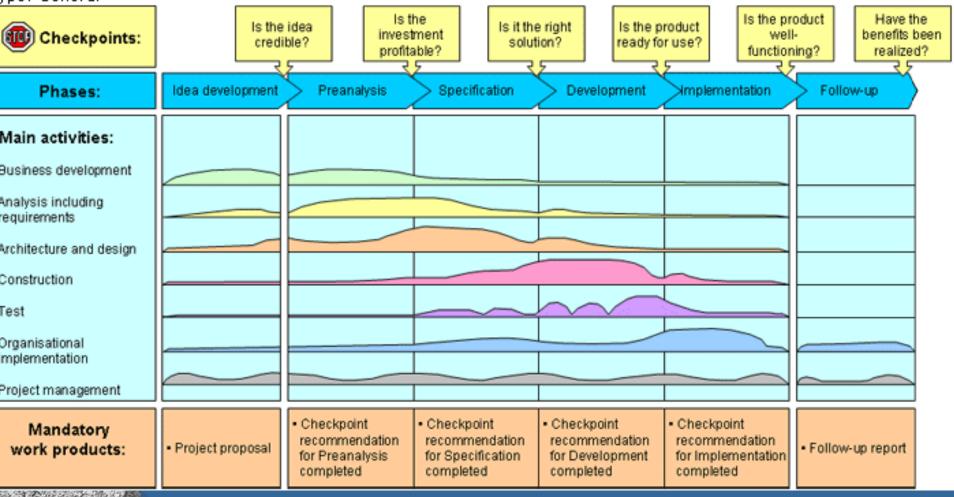
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Pass Rate

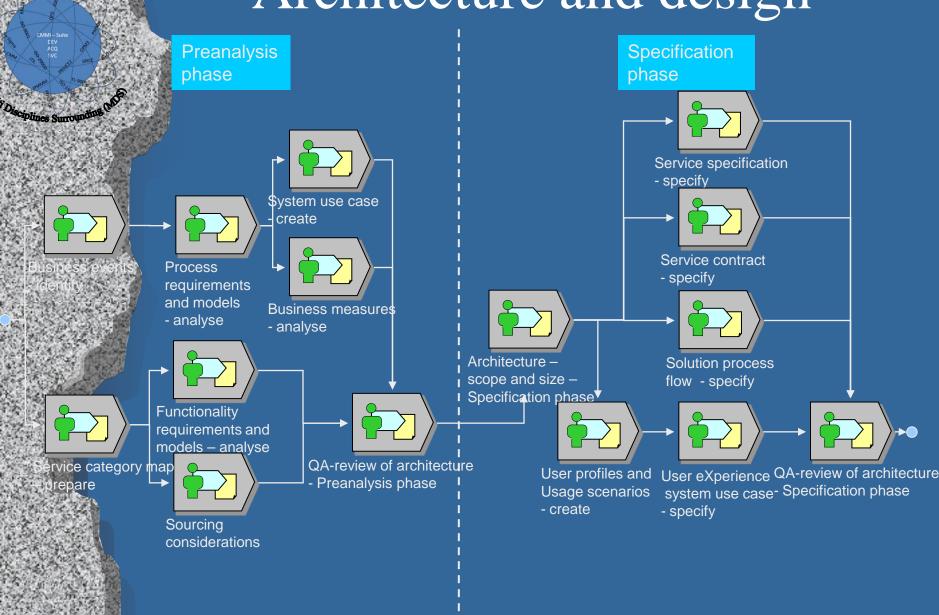
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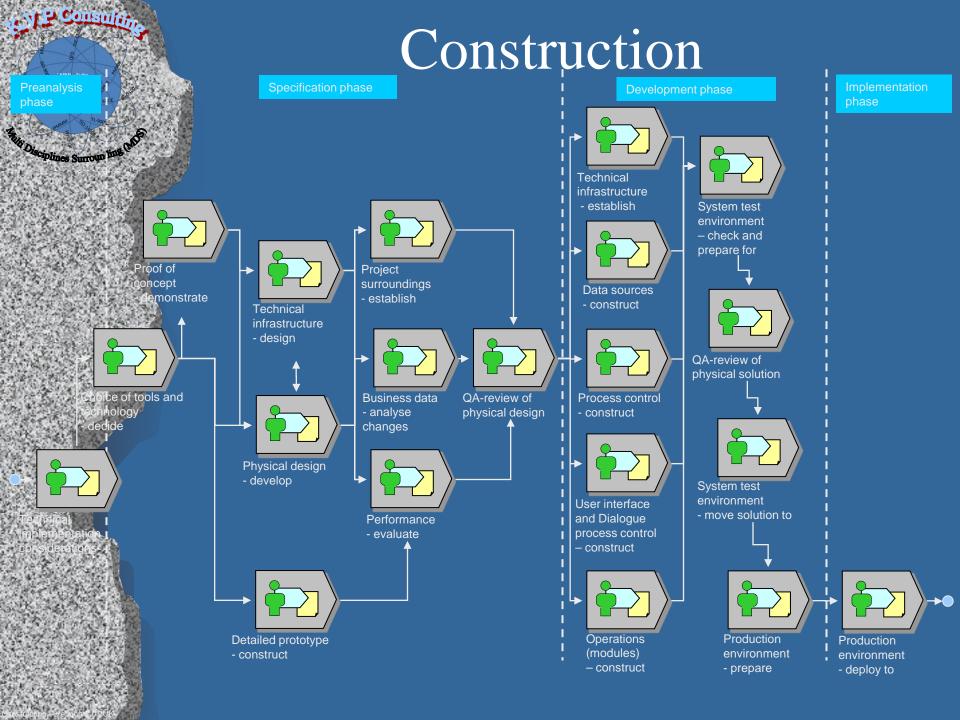


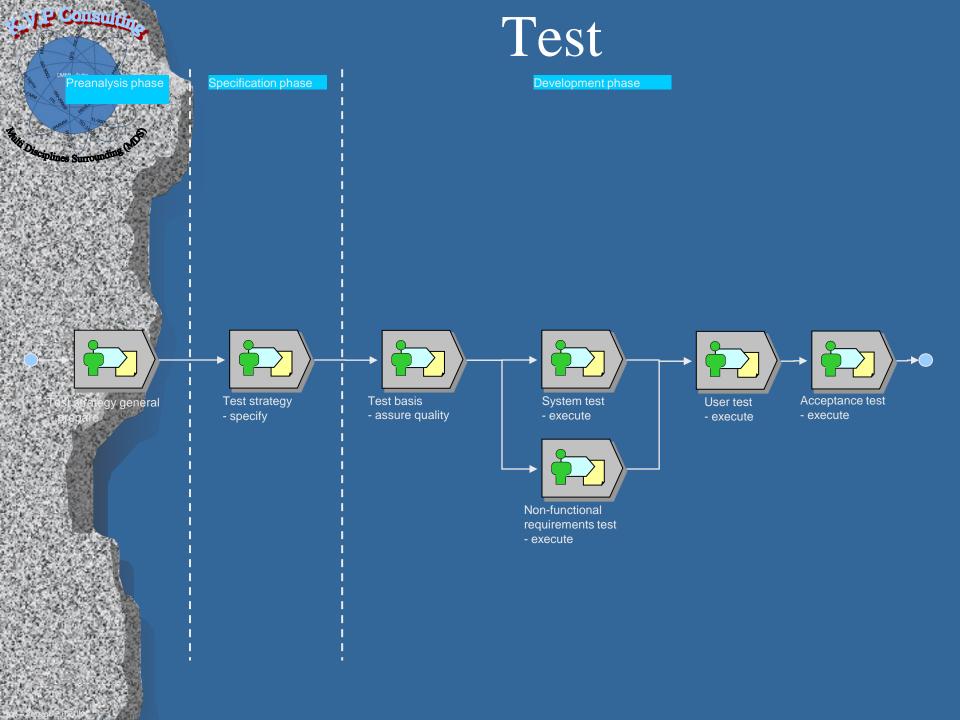




Architecture and design







Why to Monitor Processes

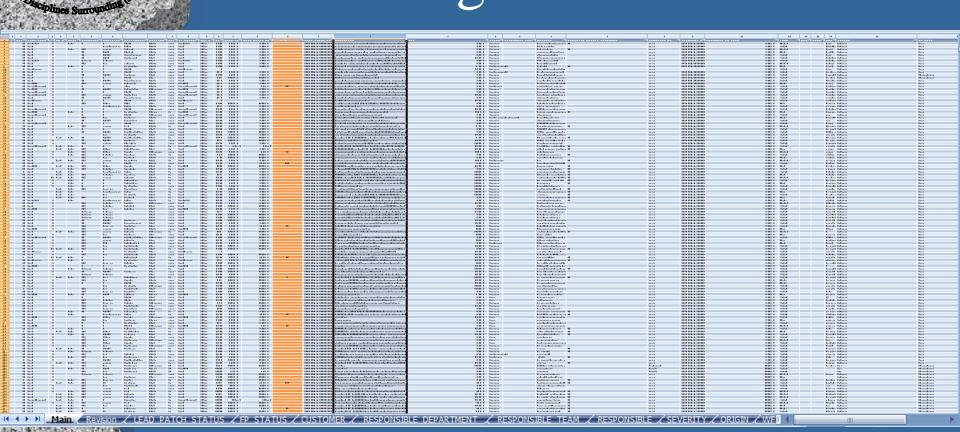
'Cheshire Puss,' she began, ... `Would you tell me, please, which way I ought to go from here?' 'That depends a good deal on where you want to get to,' said the Cat.

'I don't much care where –' said Alice. 'Then it doesn't matter which way you go,' said the Cat. '- so long as I get *somewhere*,' Alice added as an explanation. 'Oh, you're sure to do that,' said the Cat, 'if you only walk long enough.'



Tell me where you want to be and I will show (measure) you the way





601611

~33000 Records With 36 Attributes

"which way I ought to go from here" $Call \ Center - Calls \ Database$

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~45000 Records With 22 Attributes "That depends a good deal on where you want to get to,' said the Cat."

plines Surround

'Immediate' Level Analysis

2	Version View vs Other	Internal Status View vs Other	Company View vs Other	1	Call View vs Other	Priority View vs Other		View Cross vs. LC Record	ſ	Count of Call per View
2	Version vs OnAir	Internal Status vs OnAir	Company vs Status	1	Call vs Status	Priority vs Environment	_	Company & LC		Priority
6	VEISION VS ONAIT	Internal status vs OnAll	company vs status	-	Call vs Status	 Priority vs Environment	_	company & LC	-	PHOINY
9-	Version vs Sub Module	Internal Status vs TargetMil	Company vs Internal	-	Call vs Internal Status	 Priority vs Status	-	Priority & LC		Company
8	version vs sub module	Internal status vs largeturn	company vs internal		convisintendrototas	 inone is seens	-			company
8	Version vs Status	Internal Status vs Sub	Company vs OnAir		Call vs Company	Priority vs Internal Status		Type of Call & LC		Type of Call
8										
	Version vs Internal		Company vs TargetMil		Call vs OnAir Module	Priority vs Company		Closed on Initial Call & LC		Closed on Initial Call
ë		Status View vs Other								
5	Version vs Call	Status vs OnAir	Company vs Sub Module		Call vs Target Mileston	Priority vs OnAir Module		Status & LC		Environment
2										
8	Version vs Company	Status vs TargetMil			Call vs Environment	Priority vs Target Milestone		Internal Status & LC		Status
1			Environment View vs Other							
ũ.		Status vs Sub Module	Environment vs Status	T	Call vs Sub Module	Priority vs Sub Module		Environment & LC		Internal Status
8										
6	Sub vs TargetMi		Environment vs Internal			Priority vs Call		Version & LC		Version
9										
8			Environment vs Company					GoLive Target & LC		GoLive Target
	OnAir Module View vs Other									
	OnAir vs TargetMi		Environment vs OnAir					Target Milestone & LC		OnAir Module
ē	OnAir vs Sub		Environment vs TargetMil					Sub Module & LC	_	Target Milestone
5									_	
9			Environment vs Sub Module					OnAir Module & LC	_	Sub Module
88										

Process Maturity

Process – A set of interrelated activities, which transform inputs into outputs, to achieve a given purpose **Institutionalization -** The ingrained way of doing business that an organization follows routinely as part of its corporate culture. • Maturity level - Degree of process improvement across a predefined set of process areas

Utilizing Project Current Data for Better Management Decisions

Increasing Project Data Usability Real Life Case Study

Disclaimer

We have based the presentation content on the current program raw data, therefore presentation accuracy or level details presented may impacted by it
In some cases we guesstemate on data or some of its segments

Unit Improvement Objectives

• Improve communication among the different stakeholders

• Increase system interfaces management and control efficiency

• To increase insight to effort deviation for better planning

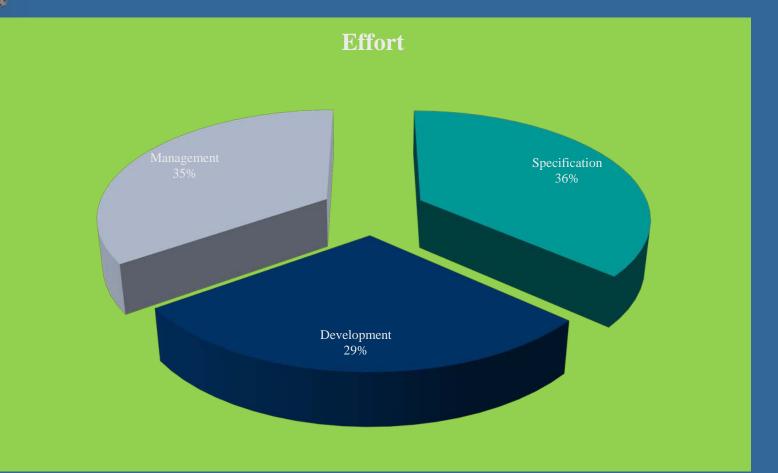
'Quality' Objectives

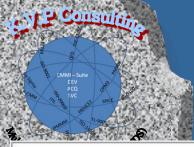
To give the program and the division ideas, how to:

- Increase product / deliverable quality
- Reduce project lifecycle duration
- Reduce project cost
- Increase resource (human) utilization
- Increase processes efficiency
- Have better control on effort distribution

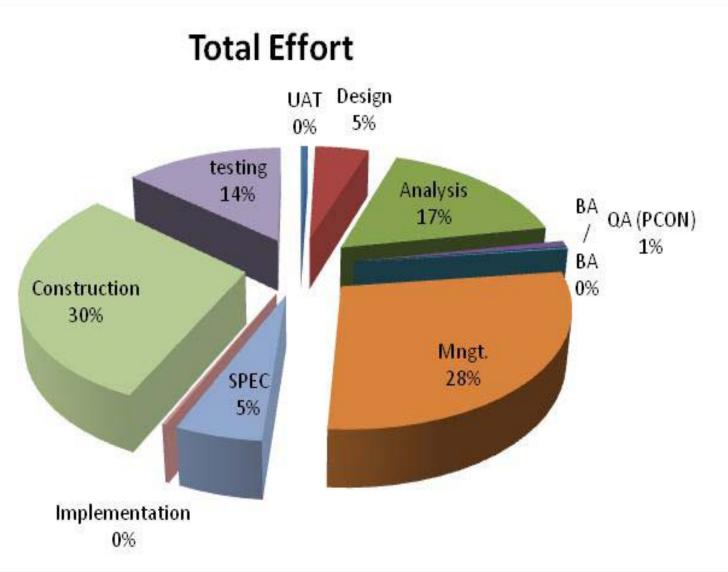
Initial Effort Planning

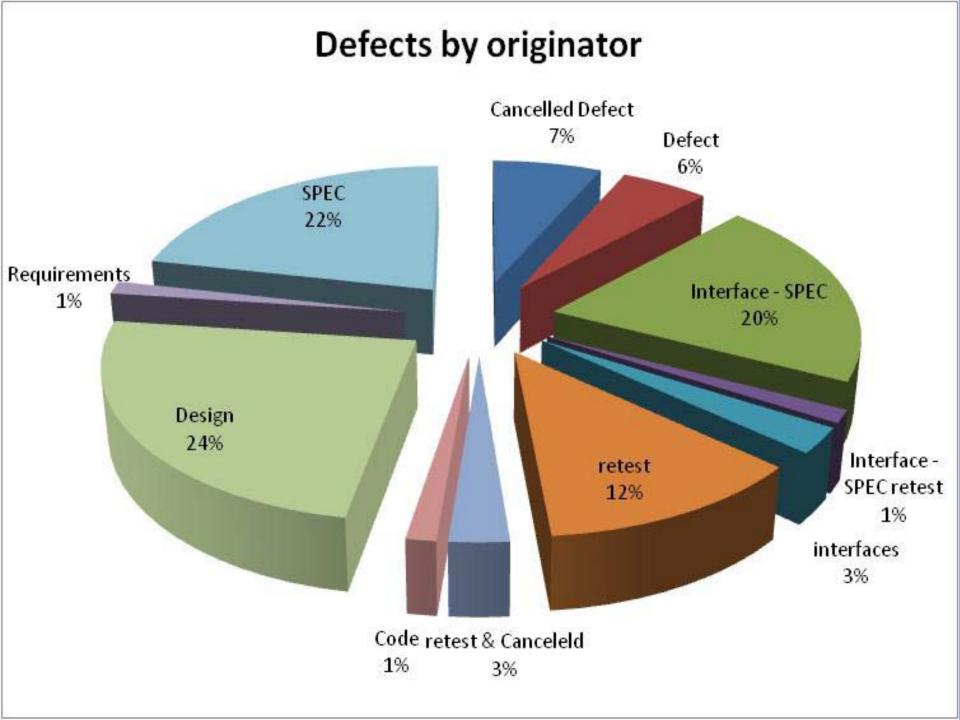
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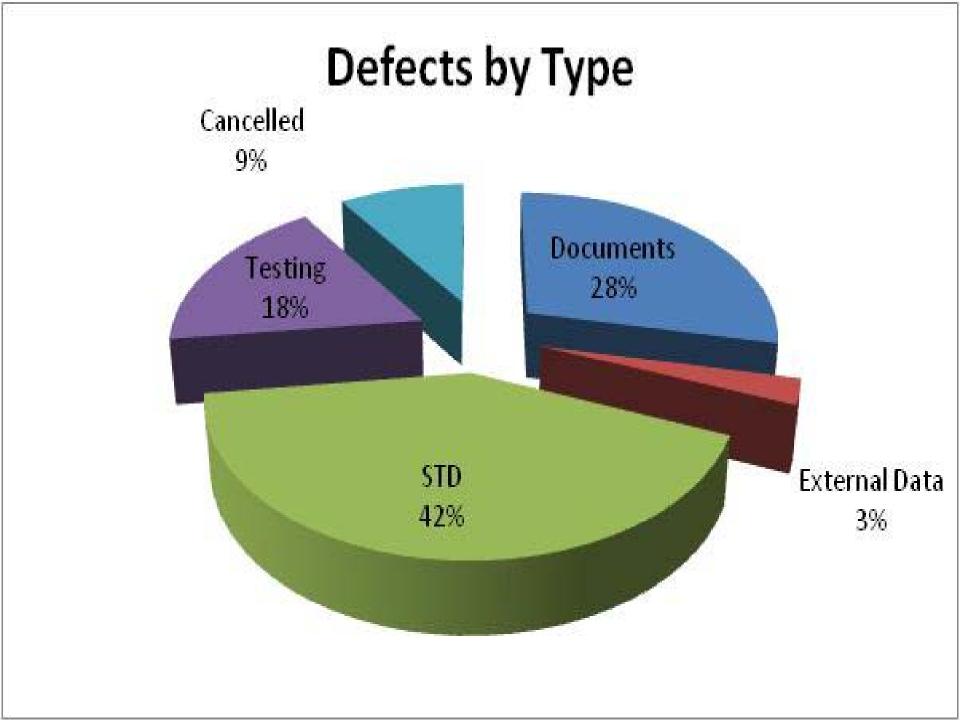




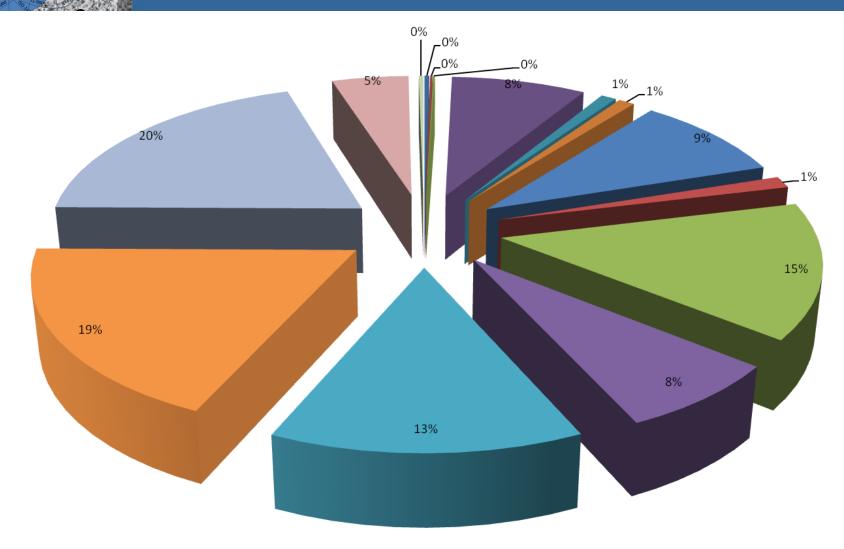
Current Effort Distribution For all Project Phases



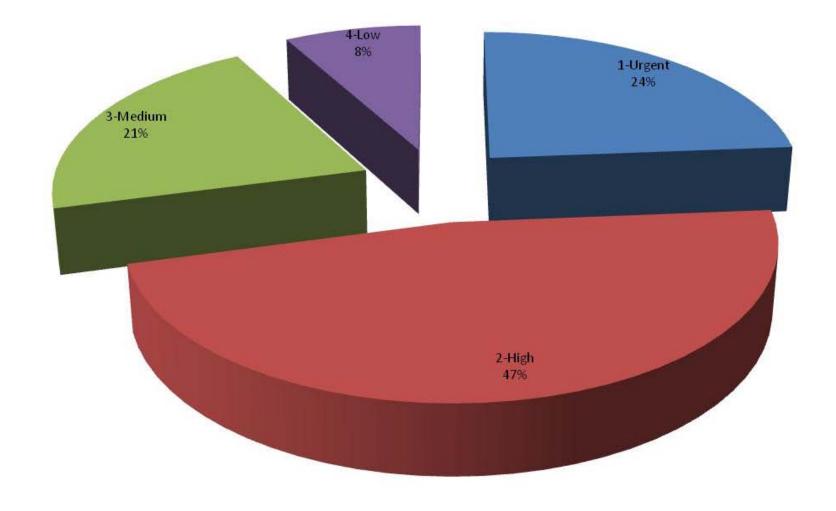






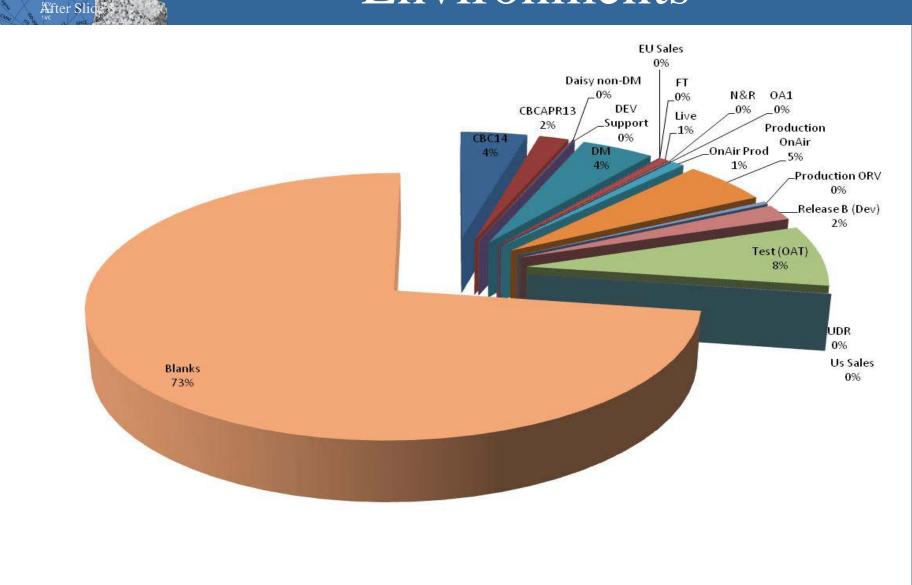


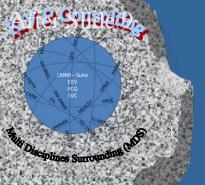




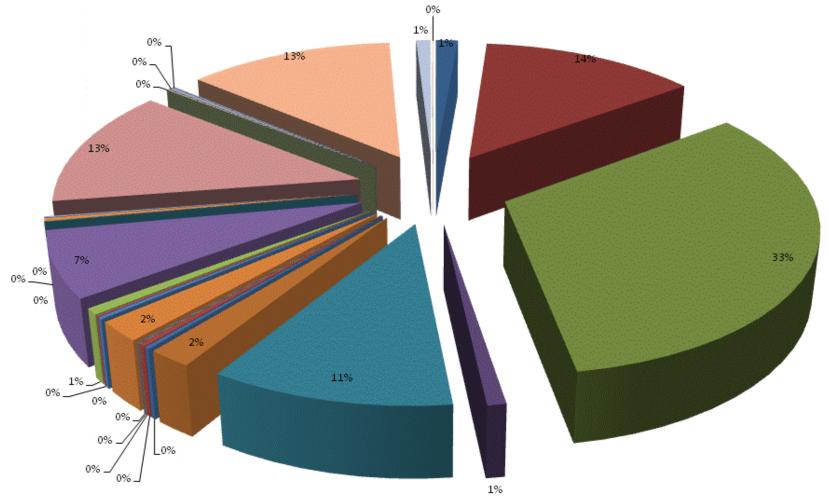


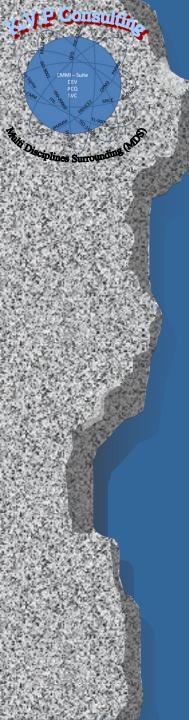
Environments



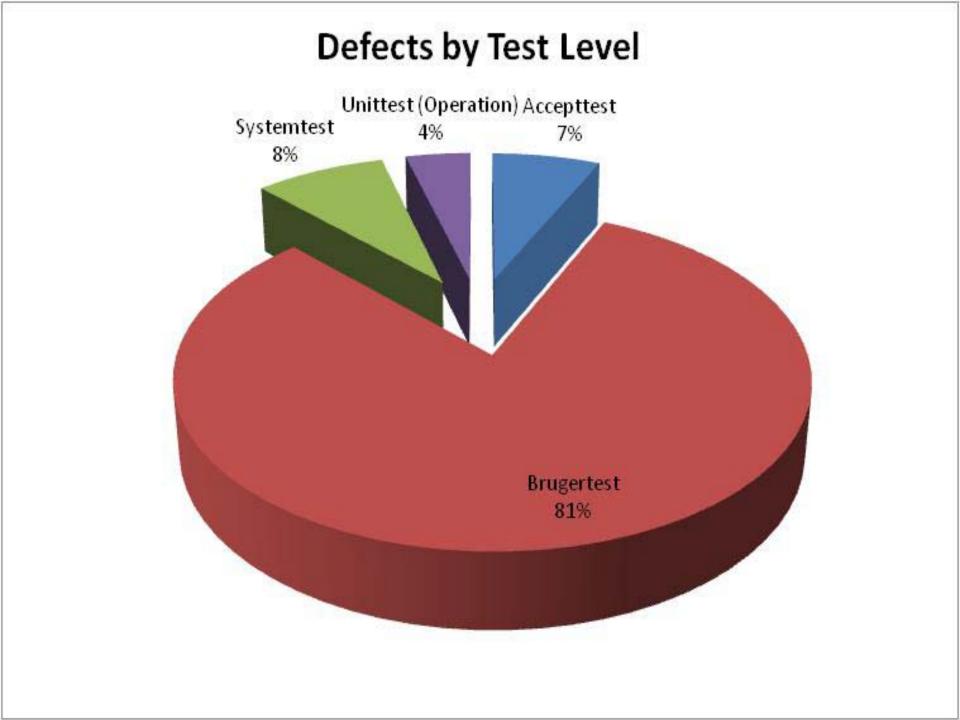


Clients





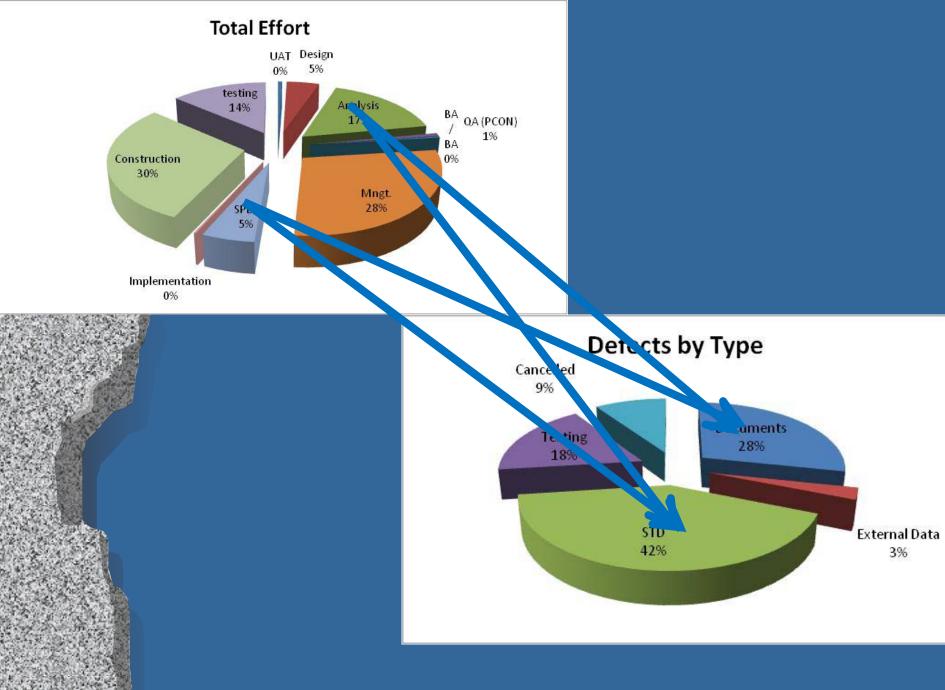
All	LC	%
71	40	56%
693	575	83%
1670	1572	94%
43	24	56%
547	455	83%
102	44	43%
12	1	8%
15	7	47%
1	0	0%
4	1	25%
1	1	100%
112	81	72%
13	6	46%
6	0	0%
36	20	56%
373	231	62%
2	0	0%
15	9	60%
7	4	57%
676	418	62%
5	5	100%
15	7	47%
5	4	80%
661	569	86%
46	34	74%
2	0	0%

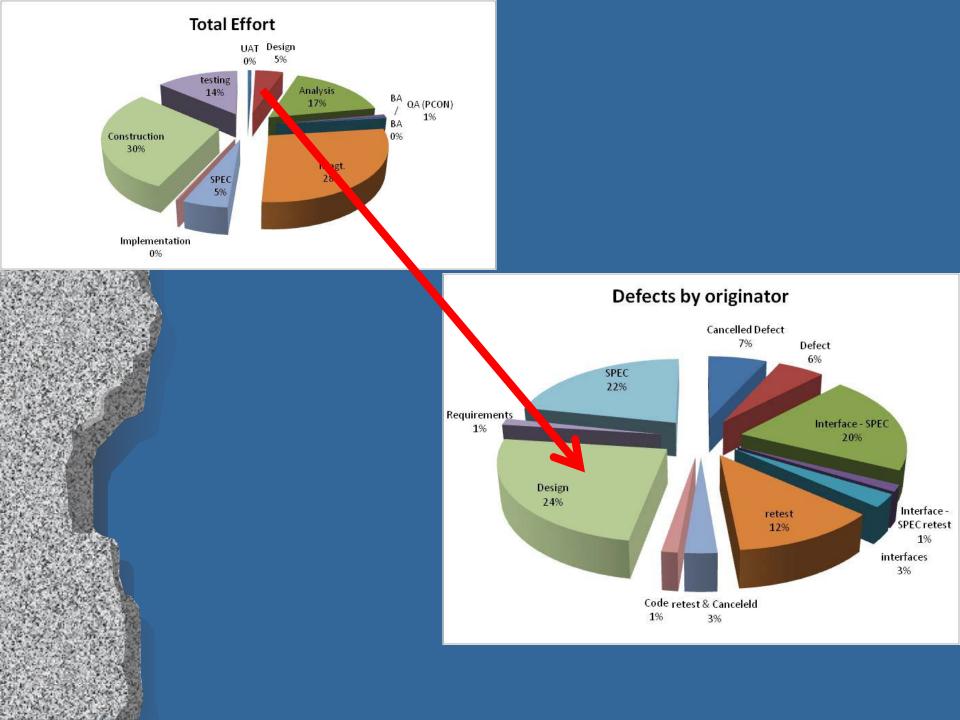


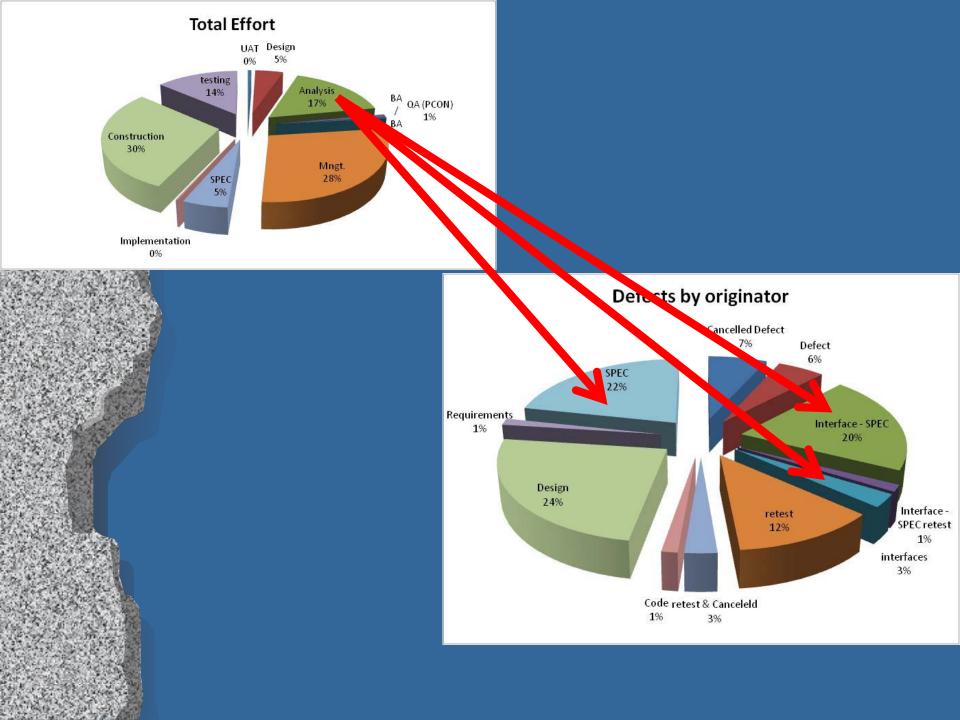
Let's Try Some Mix and Match

We Will Demonstrate How Relationships Between Measures Can Benefit the Organization for Better Planning and Management









Some guesstemations on cost effectiveness

- F If an average developer day cost is ~7000units
- The total project effort was 10022 day (100%)
- The testing phase was 1453 day (14.5%)
- ☞ Defect that are the result of documentation are 69% of all defects
- If we will assume the to correct 69% of all defects will take around 40% of the testing duration;
- \bigcirc means that:
- that will be 581 day
- With the overall cost of 4068400units
- 🖙 However
 - Adding 30 review days in the static tests
 - and another 80 days of code inspection
 - will end with the cost of 770000 units
 - And still we have saved at least 9401000 units (1343 days)
 - Means that we ware able to reduce 13.04% of the project time

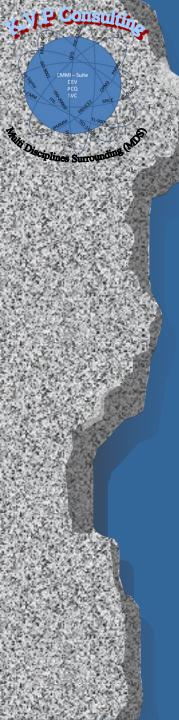
What Organizational Processes we have touch

- Tailoring
- Scope and Size
- Status meetings
- Static Tests
- Testing (planning and execution) all phases
- Lesson learned
- Process Improvement



CMMI Effecting PA's

- Project Planning
- Project Monitor and Control
- Measurement and Analysis
- Validation
- Verification
- Requirements Development
- Technical Solution
- Product Integration
- Organizational Process Focus



Practical Improvements Suggestions

- **Requirements Development**
 - Writing
 - Verifying
 - Validating
- Effort Distribution
 - Overhead planning
 - Estimation models
 - Project control
 - Lessons learned
 - Verification
 - Planning
 - Guidelines for conducting
 - Checklist
 - Results analysis
 - Efficient communication
 - Lessons learned and root causes

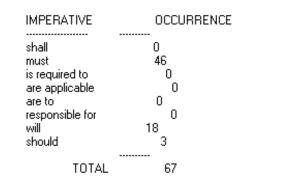
PHASE	PERCENT OF EFFORT
Requirements Evaluation Phase	8%
Project Planning Phase	3%
Analysis Phase	10%
Design Phase	20%
Construction Phase	32%
Test Phase	23%
Implementation Phase	1%
Customer Support Phase	2.5%
Completion Phase	.5%

plines Surround

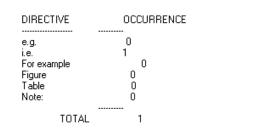
Characteristic	Level	Weightage
Product complexity	High	1.15
Main storage constraints	High	1.06
Applications experience	Low	1.13
Programmer capability	Low	1.17
All other characteristic	Nominal	1.00
Effort Adjustment Factor	1.15 * 1.0	6 * 1.13 * 1.17 * 1.00 = 1.61

Activity	Small Project	Medium Project	Large Project
User Documentation	10	05	03
Project Management	25	15	10
Quality Assurance	15	10	10
User Training	10	07	02
Acceptance Testing	10	05	05
Performance Tuning	05	08	10
Totals (%age)	75	50	40

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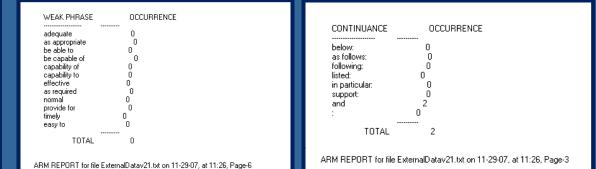


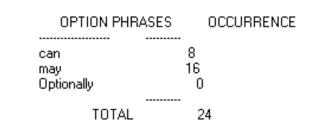
CORDER STOR



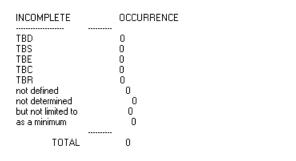
ARM REPORT for file ExternalDatav21.txt on 11-29-07, at 11:26, Page-4

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	2 3	81	2	2		
	3	55	3	14		
	4	54	4	2		
	5	0	5	0		
	6	19	6	0		
	7	0	7	0		
	8	0	8	0		
	9	Ō	9	Ō		
7	TOTAL	2410		TOTAL	67	
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ARM REPORT for file ExternalDatav21.txt on 11-29-07, at 11:26, Page-5



ARM REPORT for file ExternalDatav21.txt on 11-29-07, at 11:26, Page-7



- Validation
 - Planning
 - Guidelines for conducting
 - Checklist
 - Results analysis
 - Efficient communication
 - Lessons learned and root causes
- Measurements
 - Definition with direct line to business objectives
 - Measurements structures, content and context
 - Guidelines for collecting and 'work with''
 - Checklist
 - Results analysis
 - Efficient communication
 - Lessons learned and root causes

Control Measures

EV	Computed Metric Name	Alias 🔽	Objective of Computed Metric		
CQ VC	ACWP	Actual Cost of Work Performed	Identify the actual labor hours spent on the		
150.14	-Acm		project to date.		
$\langle \rangle$	BAC	Budget at Completion	Identify the project's budget.		
Surr	BCWP	Budgeted Cost of Work	Identify budgeted labor hours associated with		
	O DCWP	Performed	the work that has been completed.		

Performance Measures

のたいであった	Goal	Question	Metric	Definition		frequency (dev)
王をしてあるい	Improve productivity	How efficient are tests?	Testing efficiency	Defects detected through testing / hour of testing	DTS	Monthly
の言語が、日		How efficient are reviews?	Review efficiency	Defects detected through reviews / hour of review	DTS	Monthly
いいいたろれったのことにいい		What is the productivity in fixed price projects?	Productivity	(Actual size of the product delivered to the customer / Actual effort spent to complete the project) in each technology platform	PINS (add size field)	End of the project
		How effective is best practices sharing?	KR artifact usage index	KR artifacts used / project	KR	Monthly
いたんたいかった			KR artifact contribution index	KR artifact added / project	KR	Monthly

Practical Improvements Suggestions

Development & Interfaces Integration

- Improve content of guidelines in the different technical document to build more strong and clear descriptions
- Peer reviews

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- 'Internal' documentation
- Quality Assurance and Process Improvements
 - Identify process goals and targets with direct line to business objectives
 - Plan to process evaluation; including:
 - Guidelines for conducting
 - Checklist
 - Results analysis
 - Efficient communication
 - Lessons learned and root causes

Questions ?

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