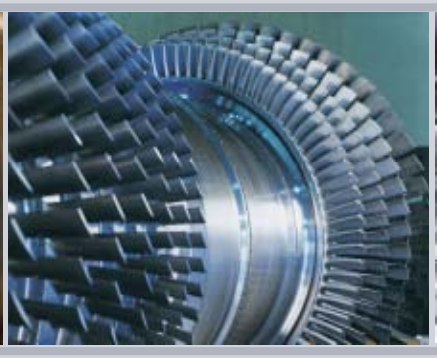
Siemens Energy

“The Value Balance”

Perception or Performance


SGT6 2000E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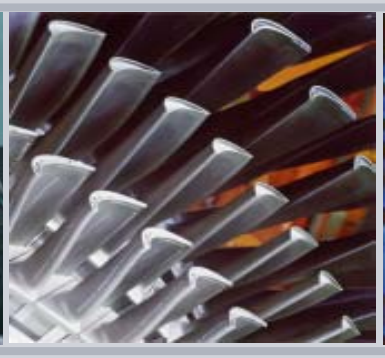
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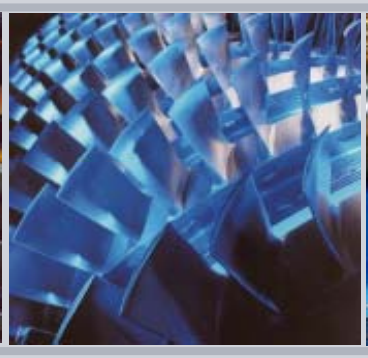
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Today's Presentation Outline

- Who we are?
- The "Value Balance"
- Performance Metric Hierarchy
- Data Challenges
- Maturity of Metrics - Our history with metrics
- Scorecards
- Summary

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Landmark in the Hamilton Community for More Than 100 Years

- George Westinghouse opened a branch plant of his U.S.-based Westinghouse Air Brake Company in Hamilton in **1896.**
- The Canadian Westinghouse Company, Limited was chartered and began manufacturing electrical apparatus in **1903.**
- Purchased by Siemens AG in **1998.**

Wide Range of Products Produced in the Hamilton Plant Over the Past Century

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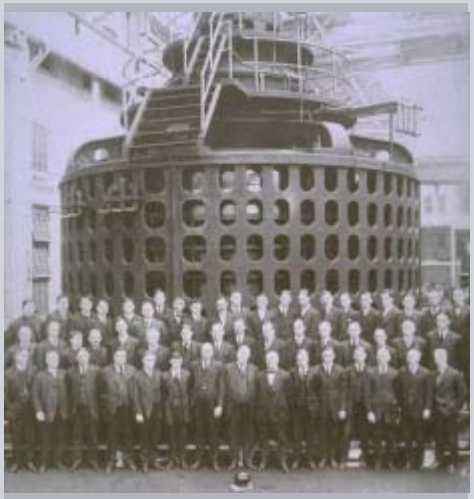
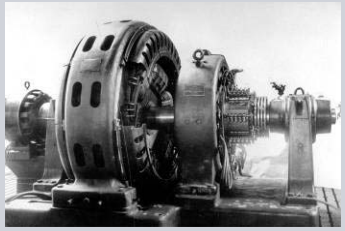


Huge waterwheel generators destined for Niagara Falls and other hydro generating stations were manufactured in the building where gas turbines are assembled today.

Over the years, Hamilton Plant employees have manufactured and serviced a variety of products including:

Air brakes, switchgear, meters, motors, transformers, domestic appliances, radios and televisions, lamps and lighting, waterwheel generators, gas and steam turbines



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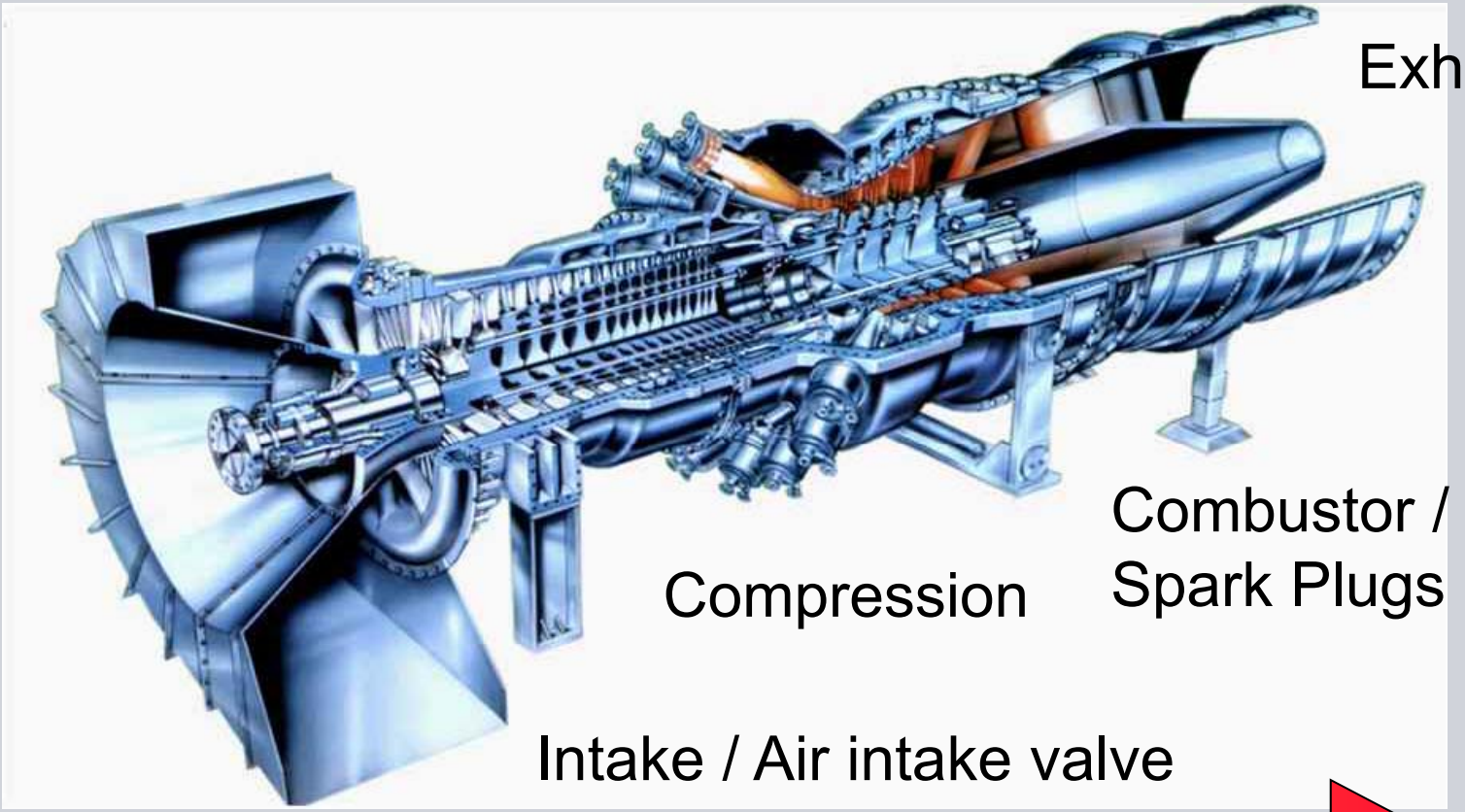
Cross-Section of a Turbine



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Facilities

- 20-acre (8 hectare) site
- 550,000 square feet (46,000 square metres) of manufacturing space
- Registered to ISO 9001 (Quality) standards since 1992; ISO 14001 (Environmental) & OHSAS 18001 (Health & Safety) since 2008

Part of the Siemens Global Manufacturing Network

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Core Manufacturing Competencies

- *Manufacturing and service of advanced frame gas turbines for the 60 Hertz market*
- *Manufacture of turbine components:*
  - Rotors
  - Diaphragms
  - Transitions
  - Engine Assembly

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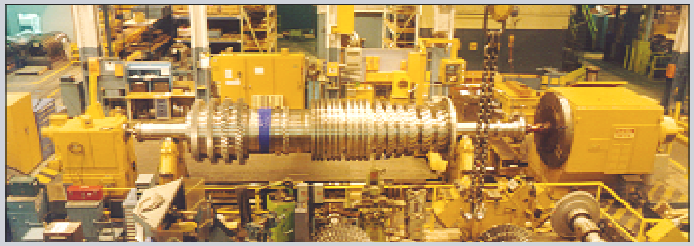
Rotor Manufacturing & Assembly

- **Precision Machining**
- **Assembly**
- **Rotor Balancing**





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Diaphragm Manufacturing

Laser Cutting, Welding and Fabrication

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Transition Manufacturing

- TBC Coating
- Robotic Welding
- Laser Drilling

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Engine Assembly

Hamilton's Engine Assembly area was renovated in 2006. The cleaner, safer, more flexible design is ready to accommodate a variety of turbines, including V84.2 and Next Generation Family (NGF) models.

Advanced Frame
Gas Turbine Manufacturing

Peak volume = 65 engines / year
Current volume = 5 -10 engines / year

Convenient access over land, sea and air transportation routes to serve customers all over the world.

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Employees

- 305 unionized hourly employees - CAW
- 182 salaried employees
- 900 retirees

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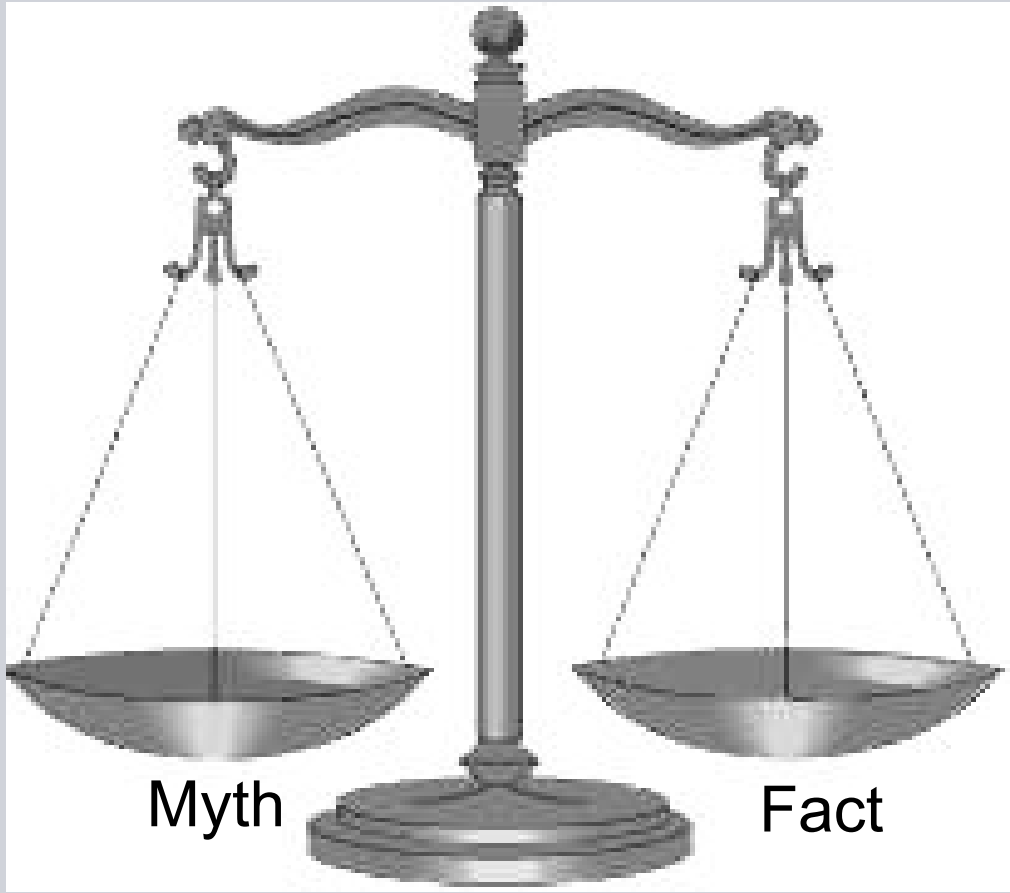
“The Value Balance”



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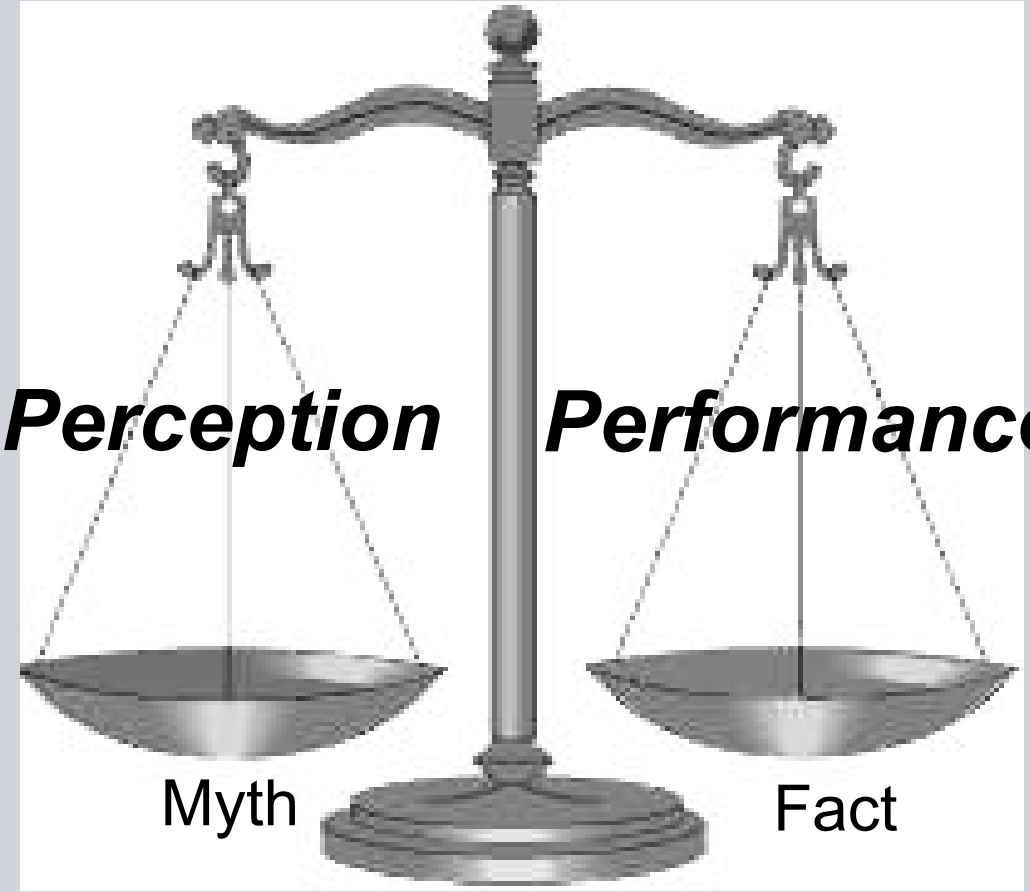
"The Value Balance"



"The Value Balance"

You didn't fix it!

Did you fix what I told you to!

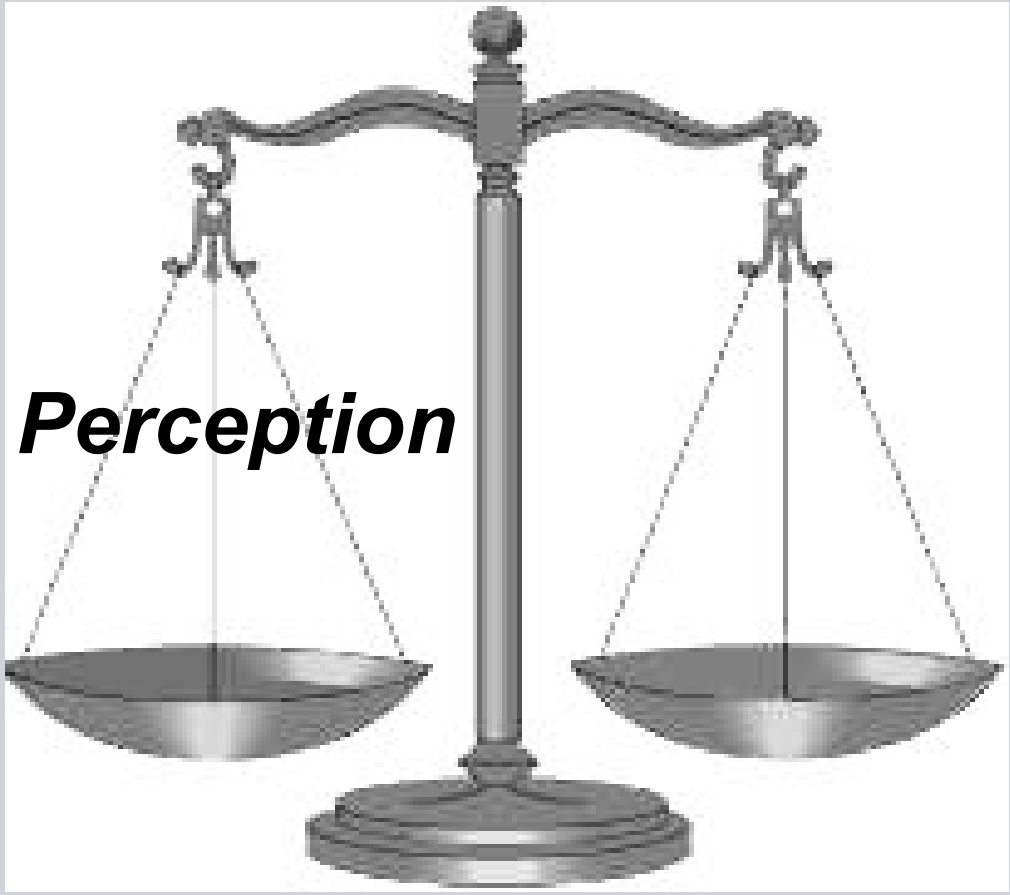
What did you do anyway?

I didn't see you fix it?

It is always down?

The reliability of this machine is …

It is not available when I need it!



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"The Value Balance"

Availability

No. of Work Orders

MTBF

MTTR

Cost of Maintenance

% Proactive Work Orders

% Reactive Work Orders

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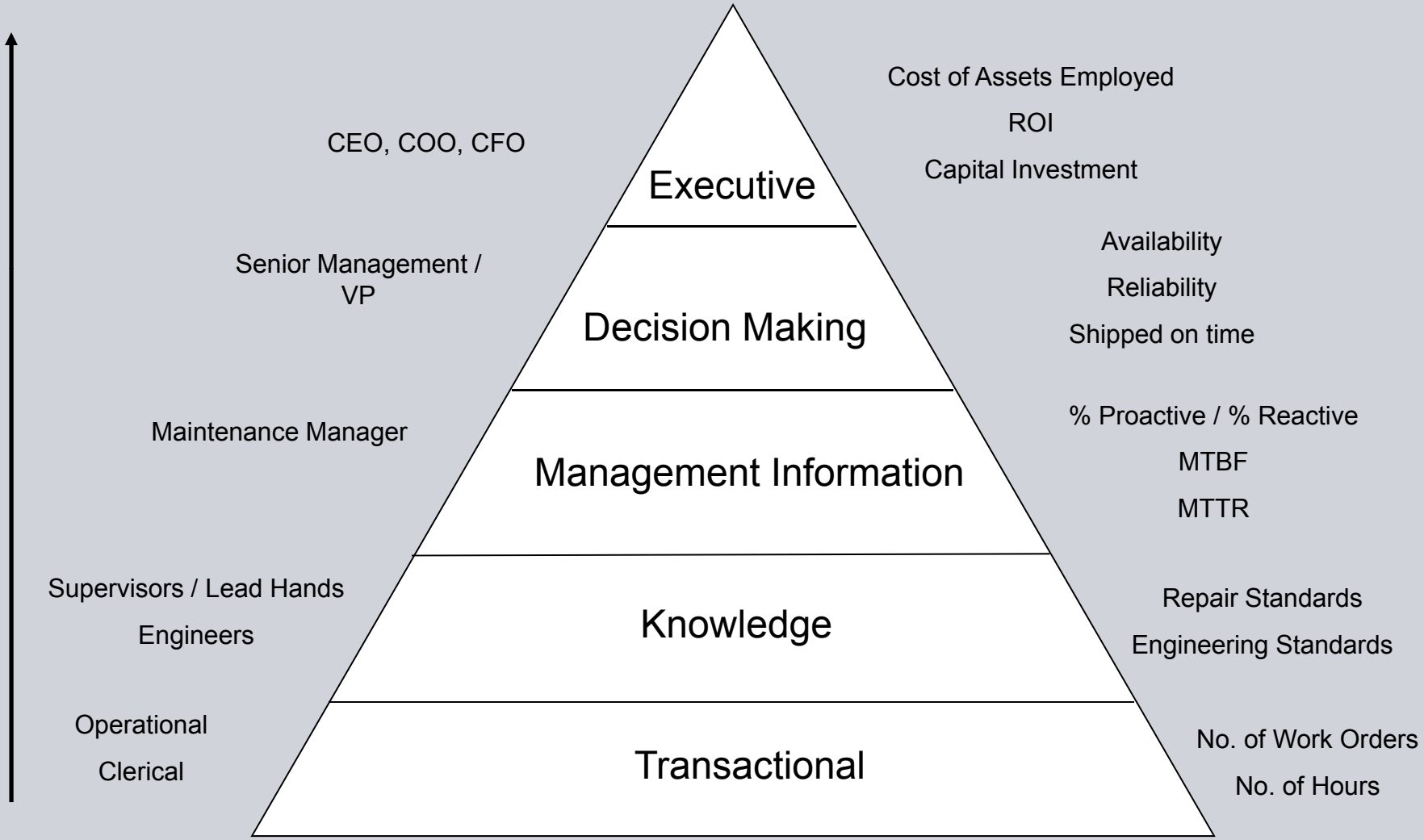
Performance Metric Hierarchy



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Performance Data Challenges

- Time to Collect
- Time to Review and Understand
- Interpretation of data
- Prejudices of previous performance
- Politics of metrics
  - establishing the metric for performance or perception

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What Does It Mean?

- Availability
- Forced Outage Rate
- % Proactive
- % Reactive
- Planned Outage
- % Compliance

Trial and Error Approach

Need to understand what the metric means and how does it measure performance?

Does it add value to the operation?

Is the metric needed to suit a particular level of decision making?

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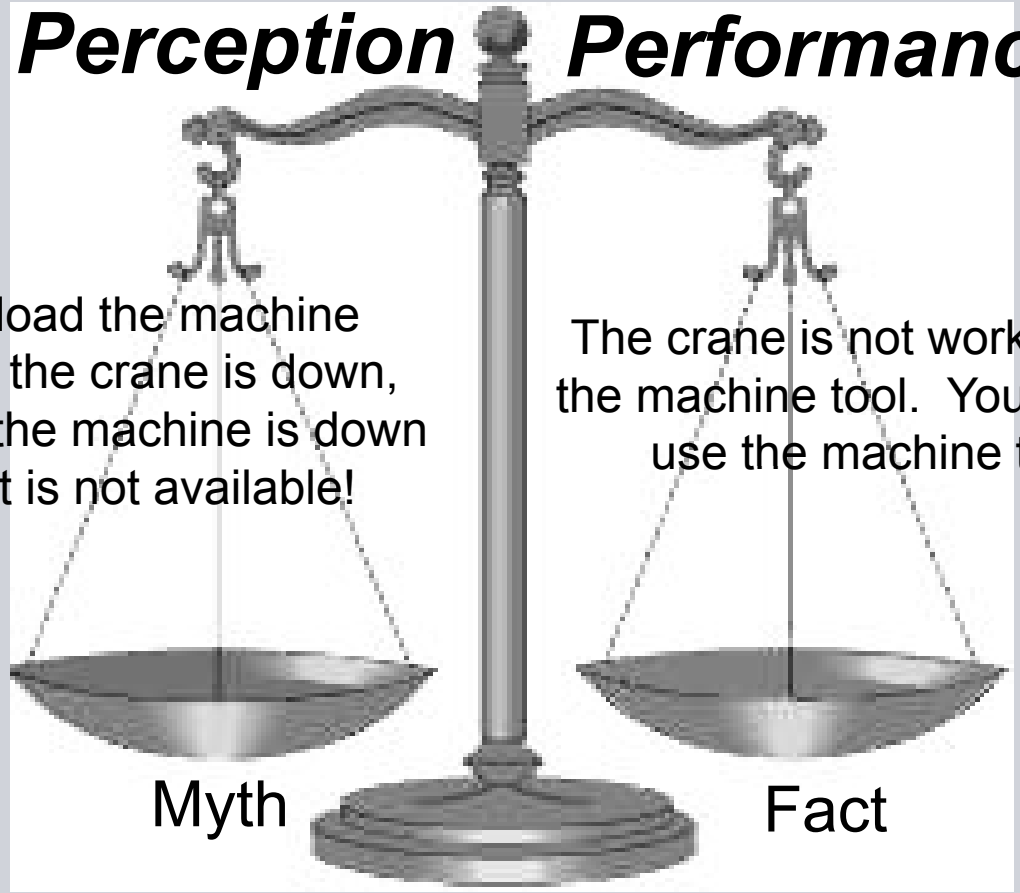
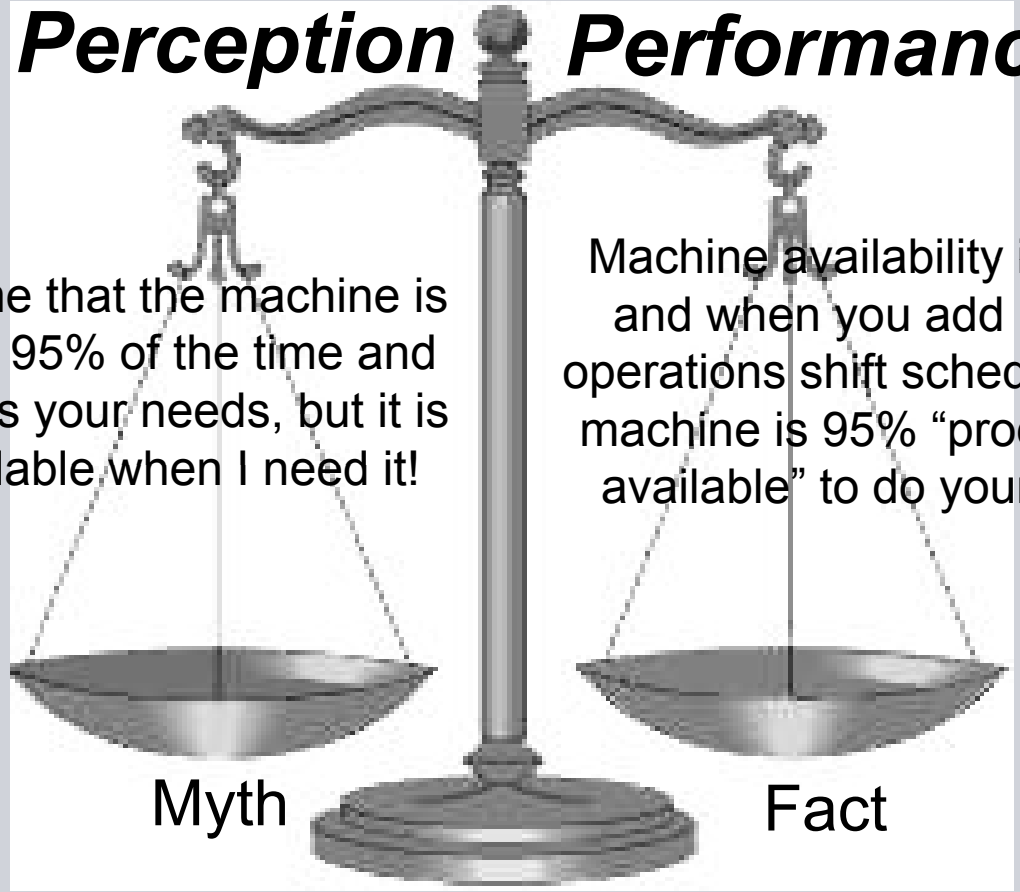
"The Value Balance" – Availability Example



"The Value Balance" – Production Availability Example



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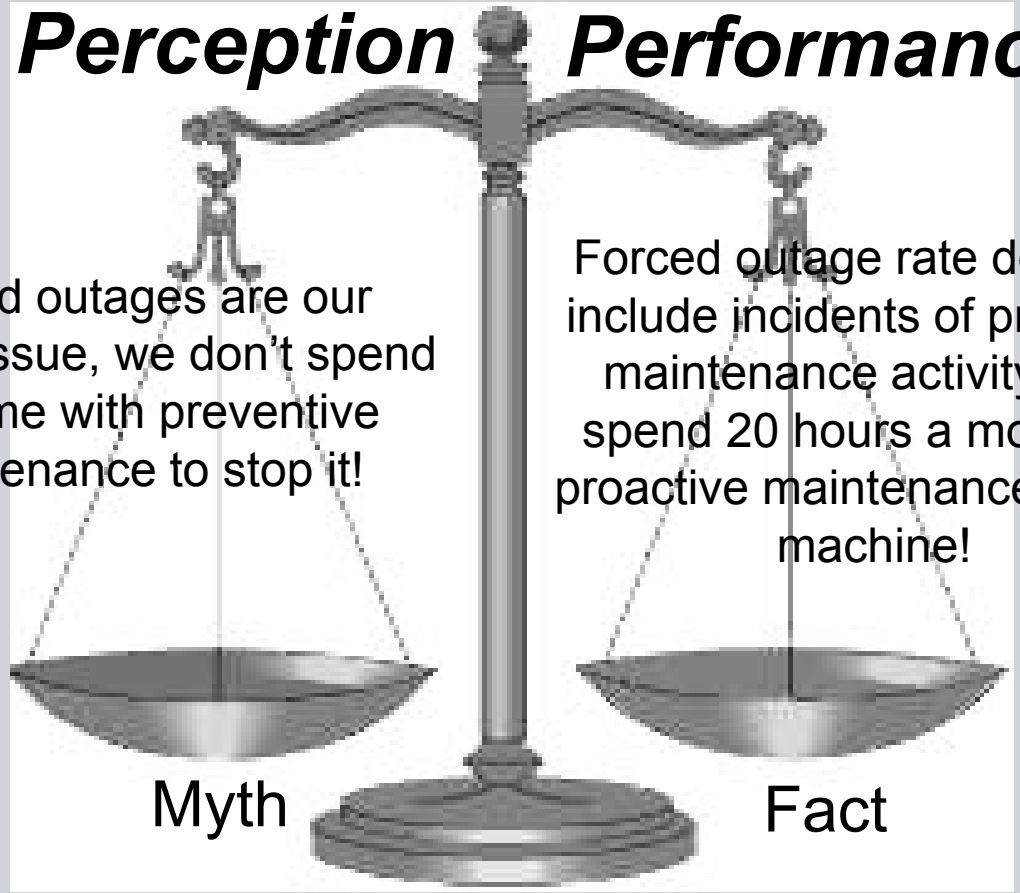
"The Value Balance" – Forced Outage Rate Example



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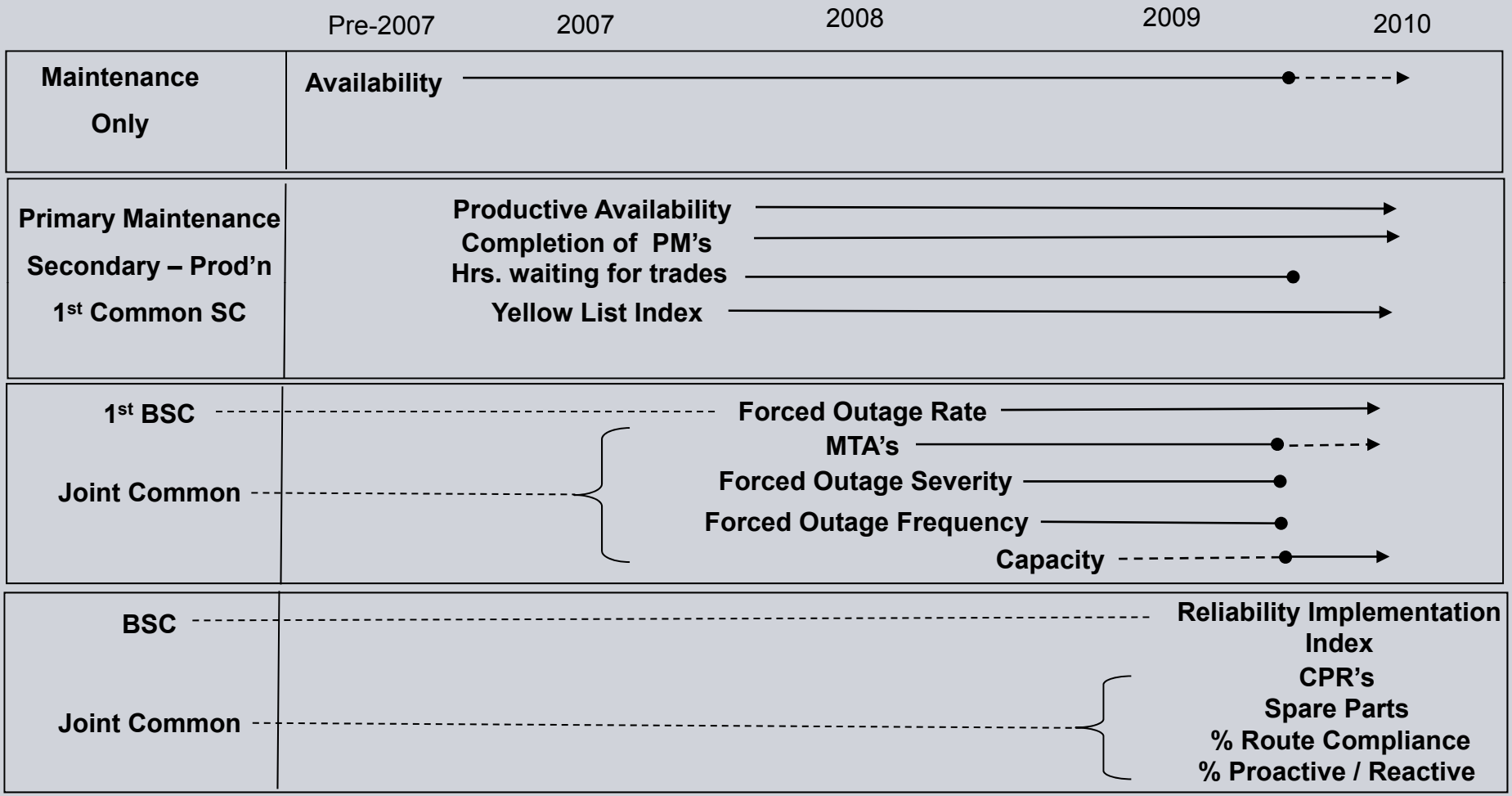
Reliability Program Metrics Maturity



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Common Scorecard

HLT Common Scorecard

Description of Objective - Customer/Market	Metric	ME Target	ME Actual	YE Target	YE Actual	Date
Forced Outage Rate - Dept 744	# of forced outages / total outages	75%		70%		30-Sep-10
Forced Outage Rate - Dept 781	# of forced outages / total outages	75%		70%		30-Sep-10
Forced Outage Rate - Dept 715	# of forced outages / total outages	75%		70%		30-Sep-10
Forced Outage Rate - Dept 101	# of forced outages / total outages	75%		70%		30-Sep-10
Productive Availability - Dept 744	% Productive Availability	95%		95%		30-Sep-10
Productive Availability - Dept 781	% Productive Availability	95%		95%		30-Sep-10
Productive Availability - Dept 715	% Productive Availability	95%		95%		30-Sep-10
Productive Availability - Dept 101	% Productive Availability	95%		95%		30-Sep-10
Planned Maintenance Schedule Compliance	% of executed PM / planned PM	100%		100%		30-Sep-10
Yellow Index	No. new tasks added / No of completed tasks	1		1		30-Sep-10
Routing Compliance	% routes completed / routes planned	100%		100%		30-Sep-10
Proactive Maintenance Work Order Index	% No of Proactive WO / Total No. WO			15%		30-Sep-10
CPR Implementation	% CPR Implemented / No of CPR's planned			15		30-Sep-10
Description of Objective - Internal Processes	**Metric**			**Target**	**Actual**	**Date**
Spare Parts	(TBD by the Joint team by 23 Nov 09)					

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HLT FM Scorecard

Description of Objective - Customer/Market	Metric	Status	ME Target	ME Actual	YE Target	YE Actual	Date
CPR Performance	% of planned CPR developed and implemented						
Route Compliance	% of planned routes implemented						
Business Processes	% of BP's implemented						
Spare Parts	TBD by the joint team						
Proactive Index	% Proactive Tasks / % Rective Tasks						
Manufacturing - Maintenance Review meetings	# of Scorecards prepared/reviewed		2		24		30-Sep-10
Description of Objective - Internal Processes	**Metric**				**Target**	**Actual**	**Date**
Compliance Maintenance	% compliance maintenance tasks completed		100%		100%		
Spare Parts Plan	# of parts purchased / # parts planned (MTA)				100%		
Work Order Turnover Index (Yellow)	# of new Yellow WO's / # of Completed W.O.		1		1		
Description of Objective - Innovation/Employees	**Metric**				**Target**	**Actual**	**Date**
Safety	Lost time claims		0.08		1		30-Sep-10
	Health care claims/First Aid claims		0.25/0.42		3/5		30-Sep-10
Employees Innovation: 3i Program	No. of submissions		1.25		15		30-Sep-10
Health and Safety Meetings	No. of meetings held		1		12		30-Sep-10
Workplace Inspections	No. of inspections held		1		12		30-Sep-10
Maintenance Training Index	% of mandatory trg events completed to plan		100%		100%		30-Sep-10
Description of Objective - Financial/Assets	**Metric**				**Target**		**Date**
Operational Cost - Manufacturing Maintenance - H6002	% of approved budget		8.30%		100%		30-Sep-10
Overtime Cost - Maintenance	% of approved budget		8.30%		100%		30-Sep-10
Cost of Spare Parts	% of approved budget		8.30%		100%		30-Sep-10
Maintenance Clearance Rate	%		70%		100%		30-Sep-10

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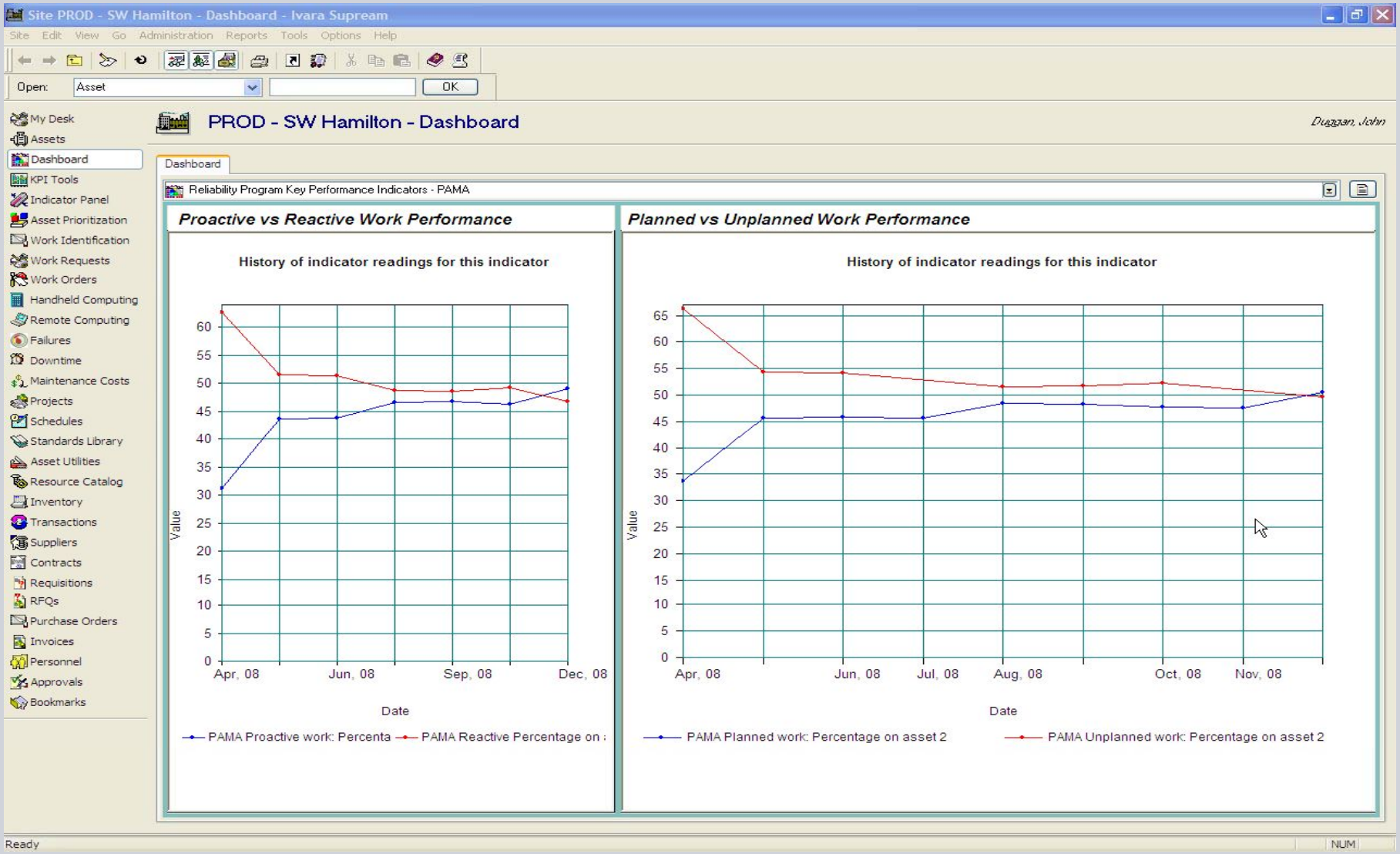
Dashboards



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What We Learned

- Seemingly good metrics initially can offer no value after a few iterations
- Need to be clear as to what you are measuring
- Need to understand why you are measuring this performance
- Common Scorecards are useful discussion tools to dis-spell performance myths
- Increased discussion of the metrics lead to joint evaluation of the usefulness of the measure in determining effectiveness of the process of Maintenance Repair Services
- Differing levels of the organization require different metrics.
- The higher the level of performance measurement the more difficult it becomes to adjust / change the metric to another, even if it is not SMART.