

April 2010

Aviation MRO Supply Chain Benchmark

KICK-OFF FOR PARTICIPANTS

PRTM

*Management
Consultants*

Where Innovation Operates

Contents

Introduction

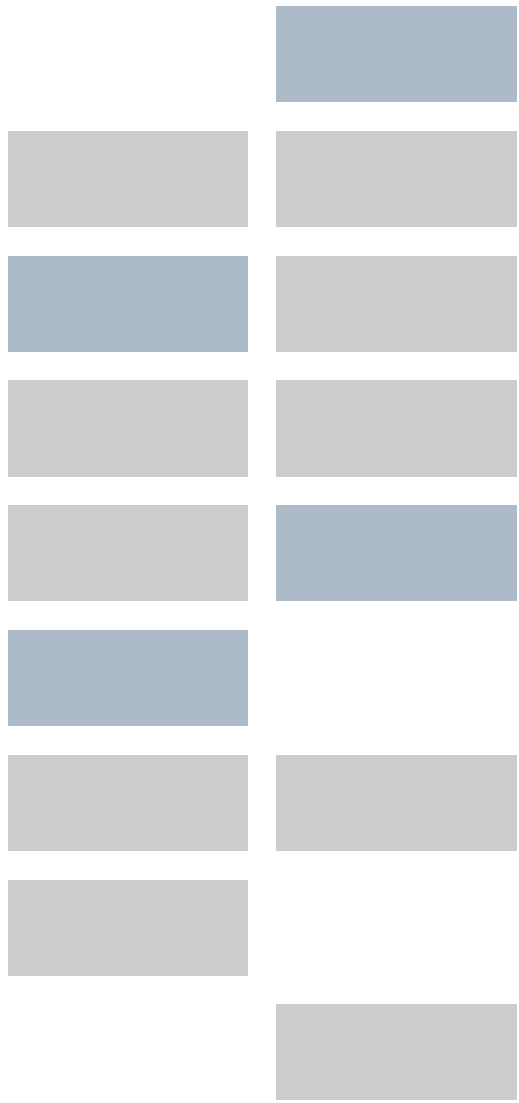
Getting Started

- Overview of the Benchmarking process
- Data Collection Process
- Frequently Asked Questions

Completing the Survey

Appendix

- Schedule



Introduction

Background

Supply chain performance has a large influence on the effectiveness of maintenance operations, and with it, airline dependability

Airline management is increasing its focus on supply chain to lower maintenance costs while delivering higher service levels

Airlines need to be able to compare their supply chain performance and practices against their peers to understand gaps to best in class performance

While supply chain performance in other industries have had considerable focus, benchmarks for aviation service organizations are less well developed because of their unique characteristics:

- Airline assets are moving, creating a unique service supply chain environment
- Large portion of the inventory is rotatable parts
- Very large number of unique part numbers, most of which have little to no usage

Objectives & Scope

Scope

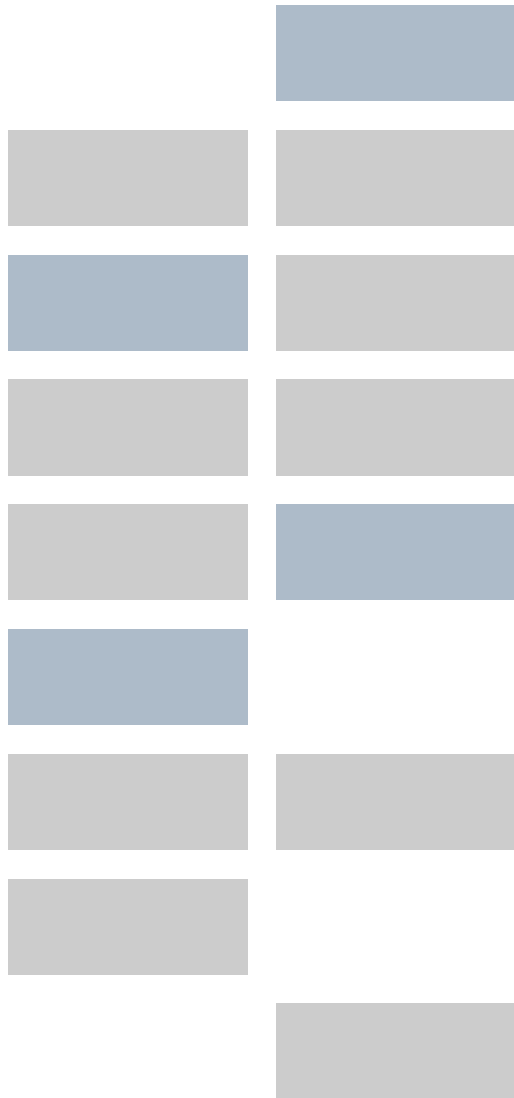
Define and Measure	Quantitative Assessment	Define performance against enterprise, functional, and process level metrics
Compare	Qualitative Assessment	Establish maturity of supply chain management practices across Plan, Source, Maintain, Deliver, and Return processes
Analyze	Executive Interviews	Review business strategy and performance goals with supply chain and business management and other key stakeholders
Report	Interpretive Readout	Identify specific improvement opportunities linked to the qualitative and quantitative findings

Objectives of the Study

- Develop a comprehensive and detailed baseline of supply chain performance within the air transport MRO industry
- Establish the dominant and emergent supply chain practices currently employed by the strongest performers in each process area

Benefits to Participants

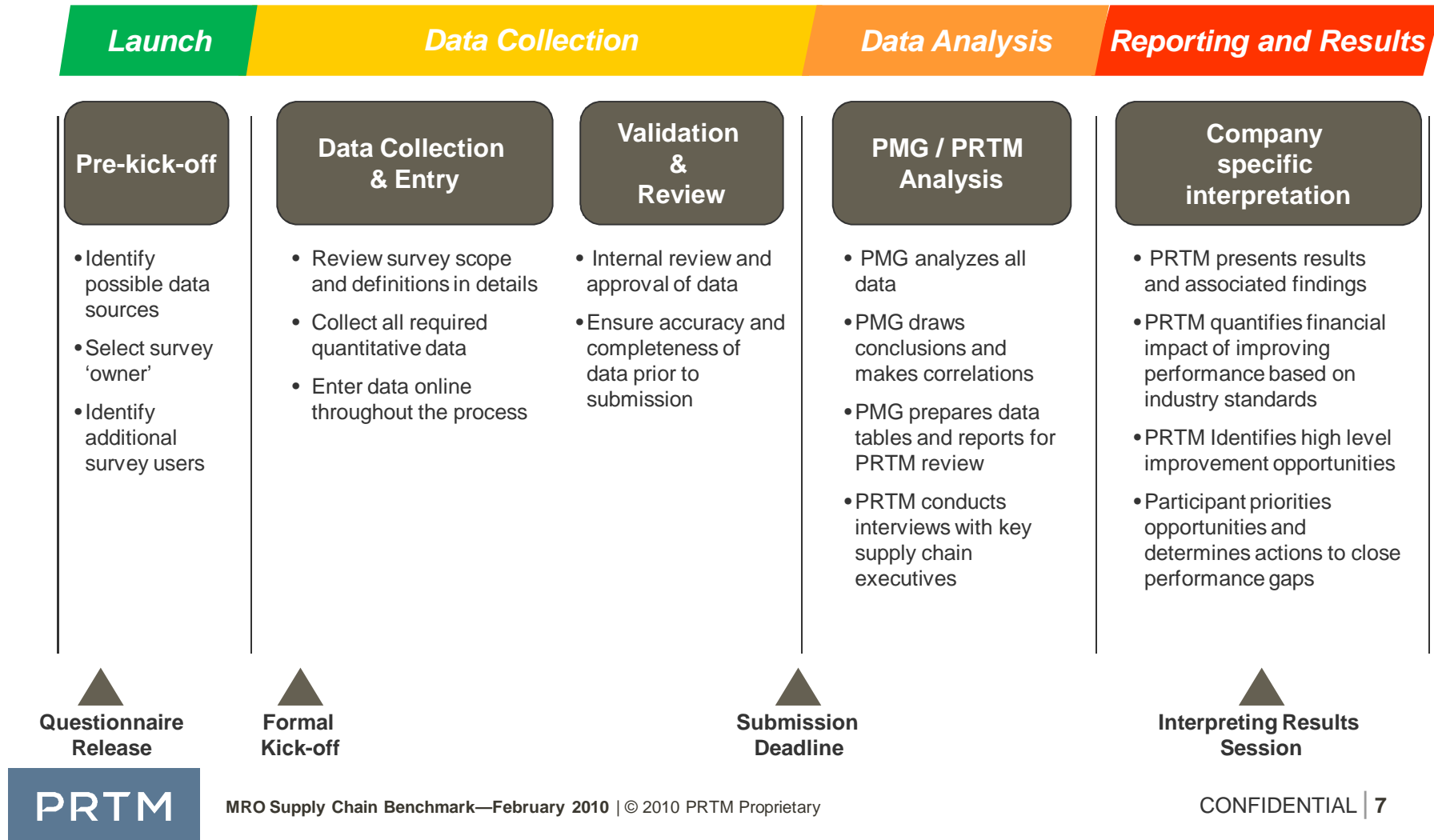
- Identify key performance gaps that should be the focus for future corrective action
- Identify recommended corrective actions to address performance gaps
- Establish an understanding of operational performance relative to cost-to-serve to help guide future maintenance strategy decisions



Getting Started

Overview of the Benchmarking Process

All submitted data is immediately secured for 100% confidentiality



Beginning the data collection process

Appoint a single survey coordinator

- Facilitate completion of the entire questionnaire
- Assure consistency across functions
- Translate any company-specific language into questionnaire language
- Provide a point of contact for data clarification

Establish internal due dates

- First pass internal validation
- Final internal validation

Assign survey sections to area/functional representatives

- Collect the data against target completion dates

Set up an interim meeting with PRTM/PMG to discuss progress

- What's done, what clarifying questions need to be answered, what remains to be done

Set up a final meeting to review data

- Ensure accuracy and completeness prior to submitting to PRTM/PMG

Assigning the Data Elements to the Correct Functional Area Will Expedite the Collection Effort

Knowing where to find the data is critical

Planning Manager

- Fill Rate
- Forecast Accuracy
- Order Fulfillment Lead times
- Planning Practices

Stores/Supply Manager

- Inventory Accuracy
- Replenishment Cycle Time
- Return Cycle Times
- Logistics/Distribution Practices

Procurement Manager

- PO Data
- Supplier Performance
- Sourcing Practices

Controller / Finance Manager

- Material Acquisition Costs
- Inventory Carrying Costs
- Finance/Planning Costs

IT Manager

- Supply Chain Related IT Costs

Shop Manager

- Shop On-time Delivery
- TAT compliance
- Rotable Repair Practices

Maintenance Manager

- D&C/OTS
- Maintenance Operations

Example

Completing the survey will require some time commitment and active leadership

Sponsor

- Provide project oversight; remove barriers as needed (2–8 hours)

Team leader

- Coordinate the collection of data; provide access to key resources (8–20 hours)

Team members (4–8 people)

- Collect and submit data; meet with leader to report progress (2–8 hours)

Data and results analyst (PMG)

- Respond to participant's questions regarding survey completion; validate submitted data; develop comparison population

Consultant (PRTM)

- Conduct executive interviews; provide local support and industry-specific translation of survey questions; interpret performance; create and deliver interpreting results session

Frequently Asked Questions

What is the best way to distribute the survey to my team?

- Electronic copy (download MS Word document from PMG website)
- Paper copy

Can I add data to the online survey a little at a time?

- The online survey does not allow for incremental input therefore you must enter all data and inputs at one time.
- You should download the word version of the benchmark and practice assessment to collect all inputs. Once all inputs have been collected, return to the website to enter and save your data

What date period should we be collecting data from for this survey?

- To remain consistent with the population we ask you to provide calendar year 2009 data

What is the due date for this survey?

- We ask you to adhere to the 6 – 8 week schedule as much as possible.

How much time will it take to collect the data needed for the benchmark?

- The entire benchmarking process from project kick-off to interpreting results readout is typically completed in 6-10 weeks. It takes about 40 “man hours” to collect data and complete the questionnaires, spread out across 4-8 functional departments. The process is minimally invasive and is not meant to take away resources that are already assigned for higher priority projects.

What resources will be available to help complete the benchmark?

- PMG and PRTM will provide benchmark participants with an assigned contact to help answer questions during the collection phase of the benchmark. These resources will be able to answer any questions related to the collection of data and completion of the questionnaires.

▪

How is this benchmark different from others?

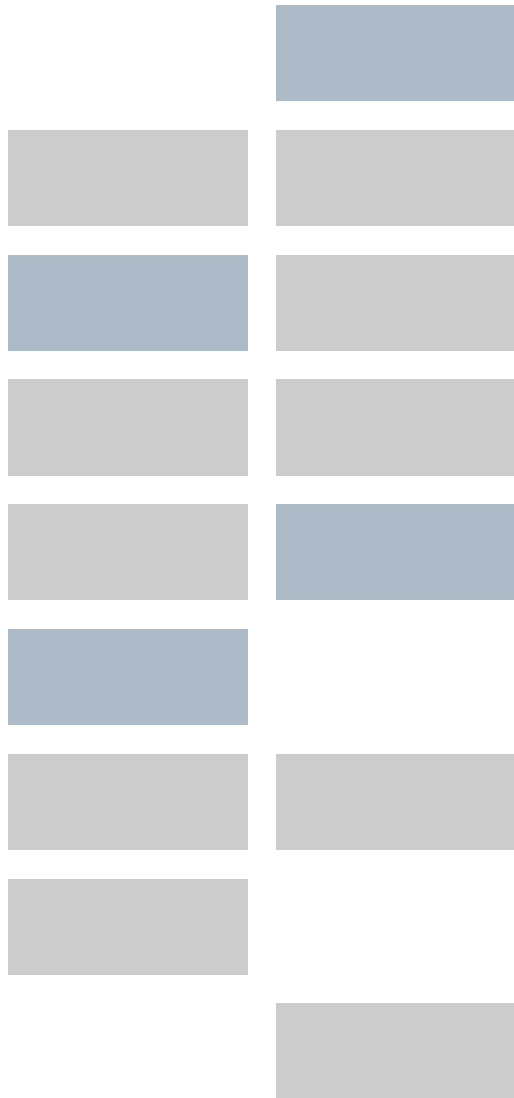
- Other supply chain benchmarks focus on supplier delivery performance and the financial elements of inventory investment. PRTM's benchmarks takes a broader view of the supply chain to understand how supply chain performance impacts departure reliability. This includes understanding what practices are being employed within the supply chain, how internal repair shop performance impacts results, and understanding the balance between supply chain performance and cost-to-serve

What can I expect to learn from participating?

- Benchmarking is an important tool in measuring and improving your company's performance. This repeatable process enables you to identify your performance gaps and target the improvement areas that will provide the most benefit and ROI.

How is data confidentiality ensured?

- The Performance Measurement Group, LLC (PMG) employs the same rigorous confidentiality standards that made PRTM the leader in benchmarking for over 10 years. No company-specific performance data will ever be divulged, and participants are only able to access aggregate data. Both the data entry and reporting sites employ password-protected registration so that only authorized users can access data.
- PMG is using the latest in encrypted Internet technology that provides additional security to ensure the highest level of protection against unauthorized access to your data exchange across the Internet. Our data entry system utilizes Windows 2003 64-bit Server security and VeriSign Extended Validation SSL custom security protocols. Security is achieved by encrypting the information being transmitted across the Internet. Encryption is a means of scrambling information for transmission between your computer and PMG. Information that is encrypted at one end is decrypted (decoded) upon receipt at the other end. The level of encryption is described by the number of bits—the greater the number, the stronger the encryption. PMG uses 128 bit encryption, the highest level of encryption publicly available. This is the same standard that web-based companies routinely use when requesting credit card numbers and other sensitive materials over the Internet.



Completing the Survey

Submitting your data

Quantitative Performance Data

- Go to the PMG website (www.prtm.com/MRO) and download the benchmark worksheet - Internet Explorer is the recommended internet browser
- Assign sections to the appropriate functional areas
- Convert all monetary values to US\$ using December 2009 conversion rates
- Download benchmark definitions file and utilize definitions provided to ensure consistency of responses

Qualitative Practice Assessment

- Go to the PMG website (www.prtm.com/MRO) and download the Practice Assessment worksheet - Internet Explorer is the recommended internet browser
- Assign sections to the appropriate functional areas – possibly have multiple resources complete each section and consolidate to a consensus response prior to entering information on the website

If needed schedule review with PRTM to help launch benchmark or review progress

Submitting your data

Establish internal due dates

- First pass internal validation
- Final internal validation

Perform internal validation to check completeness and accuracy of responses

- Review responses for completeness and accuracy
- Review with objective team members for “reality check”

Enter data on the web version of the survey

- PMG/PRTM will review and validate inputs

Suggestions

- Enter “NA” in fields where no response is available
- Do not leave any fields blank

MRO Metrics Span Three Organizational Levels

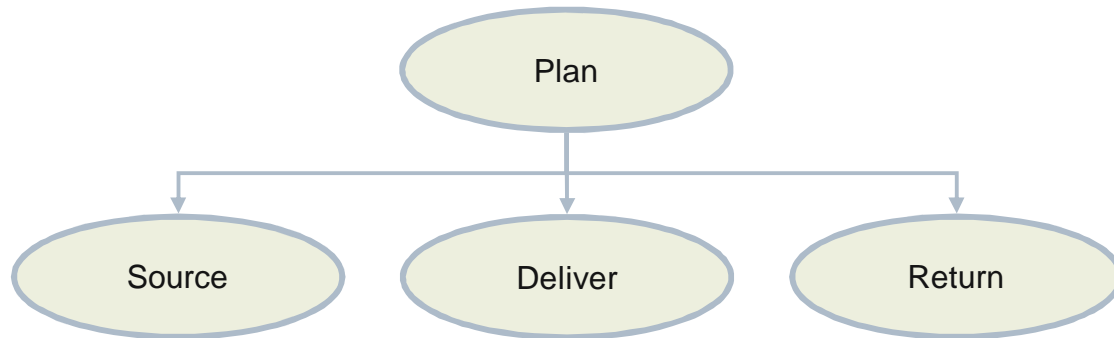
Level 0: Alliance Level



Level 1: Airline Level



Level 2: Process Level



**MRO metrics span three data groups:
Service Level, Cost-to-Serve, and Operating Environment**

Level 0 & 1 Metrics Used to Measure Performance

Level 0 – Alliance Level

Service Level

- Pooling Inventory Fill Rate

Cost-to-Serve

- Alliance Supply Chain Management Cost
- Pooling Inventory Turns

Other

- Alliance spend as percent of total alliance spend
- Pooled inventory as percent of total alliance inventory

Level 1 – Airline Level

Service Level

- Maintenance Related OTS and D&C per 100 departures
- Parts Related OTS and D&C per 100 departures
- Average Parts Related Delay Length
- Avg # of days MEL open
- % of MELs expire before closing
- Avg # of MELs per aircraft
- System and Local Rotable Fill Rate
- System and Local Expendable Fill Rate

Cost-to-Serve

- Rotable Inventory Turns
- Expendable Inventory Turns
- Serviceable/Unserviceable Ratio

Other

- Rotable Inventory \$ per aircraft
- Expendable Inventory \$ per aircraft
- Inventory break down - % obsolete, % Excess

Level 2 Metrics Used to Measure Performance

Level 2 – Plan

Service Level

- Forecast Accuracy % (\$)

Cost-to-Serve

- Obsolescence Cost as % of Total Material Cost
- Supply Chain Related Finance and Planning Costs
- Supply Chain Related IT Costs
- Repair Piece Parts Inventory Turns

- Other**
- \$ inventory per Supply Planner

Level 2 – Source

Service Level

- Supplier On Time Delivery %
- Internal Repair Shop On Time Delivery %
- % of Orders released within Lead Time
- % of Repairs completed within TAT

Cost-to-Serve

- Material Acquisition Costs

- Other**
- \$ value of purchased new product and repair services per Buyer
 - # of POs per Buyer
 - Supplier Aggregation (# of suppliers in top 80% of spend)

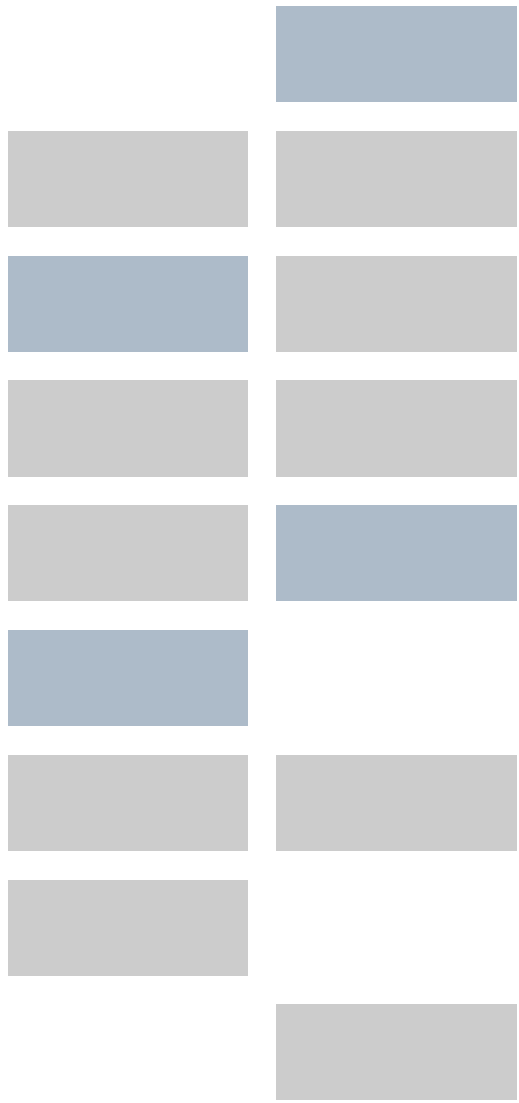
Level 2 Metrics Used to Measure Performance

Level 2 – Deliver

Service Level	Cost-to-Serve
<ul style="list-style-type: none"> Expedited Deliveries (AOG/AOM) as % of Total Internal Deliveries Average inter-site routine replenishment cycle time Average intra-site routine replenishment cycle time Average inter-site expedited replenishment cycle time Average intra-site replenishment cycle time Rotable Inventory Bin Accuracy Expendable Inventory Bin Accuracy 	<ul style="list-style-type: none"> Distribution Cost as % Total Operating Cost Inventory Carrying Costs
Other <ul style="list-style-type: none"> Average number of inventory transactions per stores headcount 	

Level 2 – Return

Service Level	Cost-to-Serve
<ul style="list-style-type: none"> Average Unserviceable return cycle time – base Average Unserviceable return cycle time – line 	Covered in Deliver Category
Other <ul style="list-style-type: none"> N/A 	



Appendix

MRO Benchmarking Timeline

