Commerciality of Performance Contracting

A Market Survey Conducted by the Corporate Contracting Working Group

October 11, 2005

AEROSPACE INDUSTRIES ASSOCIATION

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Forward

Background:

The 2001 Quadrennial Defense Review (QDR) endorsed Total Life Cycle System Management (TLCSM) and Performance-Based Logistics (PBL) as the Department of Defense (DoD) strategy to improve material readiness. This endorsement, and subsequent direction to implement via the Defense Planning Guidance (DPG) and Strategic Planning Guidance (SPG), was based on a few relatively simple observations:

- To focus on end-item readiness, the DoD needed to establish single point accountability across the life cycle – This was accomplished by recognizing the Program Manager as the Life Cycle Manager.
- Traditional weapon system support was functionally optimized within supply, maintenance, and transportation – DoD needed to turn to industry as partners to integrate those functions and deliver **outcomes** – readiness.
- Equipment reliability was degrading rapidly (and costs were rising) due to deferred modernization and aging equipment – DoD needed to implement business strategies that inherently incentivize reliability growth.
- Commercial industry demonstrated unprecedented gains in customer service and cost performance through logistics chain integration – DoD needed to draw upon that experience rapidly.

The QDR and SPG guidance were quickly followed by leading implementations across the Services. For these initial programs, the Services were afforded latitude in implementing practices, contract structure, and metrics.

In 2003, the Defense Business Board Supply Chain Task Force conducted an independent review of DoD progress and concluded the following:

- PBL was the right strategy – more rapid implementation was both warranted and needed.
- DoD should document and promulgate PBL best practices to drive to more consistent methods and metrics.
- Financial process adjustments were necessary and appropriate to foster greater PBL implementation.

Although much outstanding success has been demonstrated by programs utilizing PBL, the time to establish a PBL contract is long and the rate of PBL implementation has been less than desirable. In the fall of 2003 under the sponsorship of the ADUSD Logistics, Plans and Programs, a series of working groups ("PBL Tiger Teams") consisting of experts from industry and Government were convened to make recommendations to facilitate the implementation of PBL. These teams addressed issues in the areas of Business Case Analysis, Appropriations and Budgeting ("Color of

Money"), PBL Metrics, Training and Best Practices, Public-Private Partnerships (PPP), and Time-to-Contract.

Based on these findings, the Deputy Secretary of Defense directed the Under Secretary of Defense (Acquisition, Technology, and Logistics) (USD(AT&L) and the Under Secretary of Defense (Comptroller) (USD(C)) to accelerate implementation by:

- Promulgating consistent guidelines on buying performance
- Defining consistent PBL metrics
- Testing enabling financial accounting procedures via Management Initiative Directive 917 (MID-917).

Building upon Joint Chiefs review of Focused Logistics Functional Capabilities and unprecedented partnerships with the Services and industry (via the Aerospace Industries Association Product Support Committee), USD(AT&L) issued clear guidance on purchasing performance – outcomes – using multiyear contracts, consistent metrics, and appropriate incentive structures. This guidance is being implemented as new PBL contracts are awarded and existing contracts are renewed. Performance was defined by five specific metrics:

- Operational Availability
- Mission Reliability
- Cost-Per-Unit of Usage
- Logistics Response Time
- Logistics Footprint

In the fall of 2004 as a result of the "Time-to-Contract" Tiger Team recommendations, a team of experts from industry and Government was asked by the ADUSD(LPP) to investigate and make recommendations for accelerating the implementation of PBL through Corporate Contracts. In its simplest context, a Corporate Contract is the notion of a single vehicle for contracting for PBL between all the DoD Services and Agencies and a corporation (all sectors or segments or divisions, etc.). This idea builds upon precedents already developed by DLA and some of the Services to improve the efficiency of spares purchasing. By establishing such a vehicle, the time to add additional PBL programs to the contract would be greatly reduced.

A white paper "Corporate Contracting: Accelerating the Implementation of PBL" presents the recommendations of the "PBL Corporate Contract Working Group." The issues associated with the implementation of PBL are complex and inter-related and contribute significantly to "Time-to-Contract." One of these issues is the utilization of FAR Part 12 to facilitate the utilization of best commercial practices in Performance-based Logistics contracts. Therefore as a part of the overall effort, a survey was conducted to examine this issue.

The FAR Part 12 Study Team and Process:

The FAR 12 Study Team members were selected for their particular industry's experience with both commercial and military hardware and services or (for the DoD members) their experience with implementing FAR 12 in PBL contracts. Industry representatives from Parker Hannifin, BAE Systems, Boeing, Rolls Royce, Raytheon and Honeywell and Government representatives from NAVAIR, NAVICP and OSD participated.

Industry members polled their organizations for lessons learned and examples or comparisons of commercial to military contracting practices, particularly those that could lead to greater efficiency and lower total ownership cost for DoD. Additionally, all industry findings and relevant FAR Part 12 contracting experience was examined and analyzed by the collective government/industry team. Data was also collected and analyzed from the "pure" commercial (non-aerospace) marketplace. This document is a compilation of the market survey data examined by the Working Group that precipitated the recommendations put forth in the white paper.

Attachment 1

Commercial Antecedent To PBL; Product Services

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Commercial Antecedent To PBL; Product-Services

- Product-Services have been in use by Commercial Industry for decades, are emerging as an “industry best practice” and the driver of a new business model that has the same goals as that of the PBL initiative
- The Aircraft Industry has led the way with concepts such as “power-by-the-hour”...but other sectors are also involved in a business model in which the customer is assured to be delivered fixed effectiveness and efficiency performances for managing product lifecycle activities
  - Aircraft
    - GE/Pratt & Whitney/Rolls Royce-Jet Engines (40-60% of engines under programs)
    - Honeywell/Rockwell Collins-Avionics
    - Lucas Aerospace-Landing Gears
    - Honeywell-Auxiliary Power Units
  - Others (selected examples)
    - Embrex-Poultry Egg Inoculation
    - HP-Large Format Printing
    - FMC Tech-Juice Extraction
    - Hanover Compressor-Natural Gas Pipeline Compressors

20% of all new capital goods are acquired by operating lease companies and they are aggressively contracting for product-services

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Attachment 2

What Are OEM Product Services?

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What Are OEM Product-Services?

OPI Focus
To provide education, market research and management consulting services that assist capital goods OEMs to evolve into suppliers of Product-Services

"Product-Services fuel powerful growth in your company and transforms its culture and its soul"
-Jack Welch

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"Capital good OEM crafted services that supply solutions to operators for managing the productivity of a product "

OPI Definition of Product-Services

The objective of this white paper is to deliver a body of knowledge that enables capital goods OEM executives to understand the concept of Product-Services.

OEMs currently focus on marketing a single Product-Services offering (average 85% of revenues); New-condition product sale.

The OPI believes that when OEMs strategically focus their business model on supplying a large variety of Product-Services, they will experience:

- **Faster organic revenue growth**
- **Higher profit margins**
- **Greater customer loyalty**

"The task is, not so much to see what no one has seen, but to think what nobody has yet thought, about which everybody sees."
-Eric Schrodinger

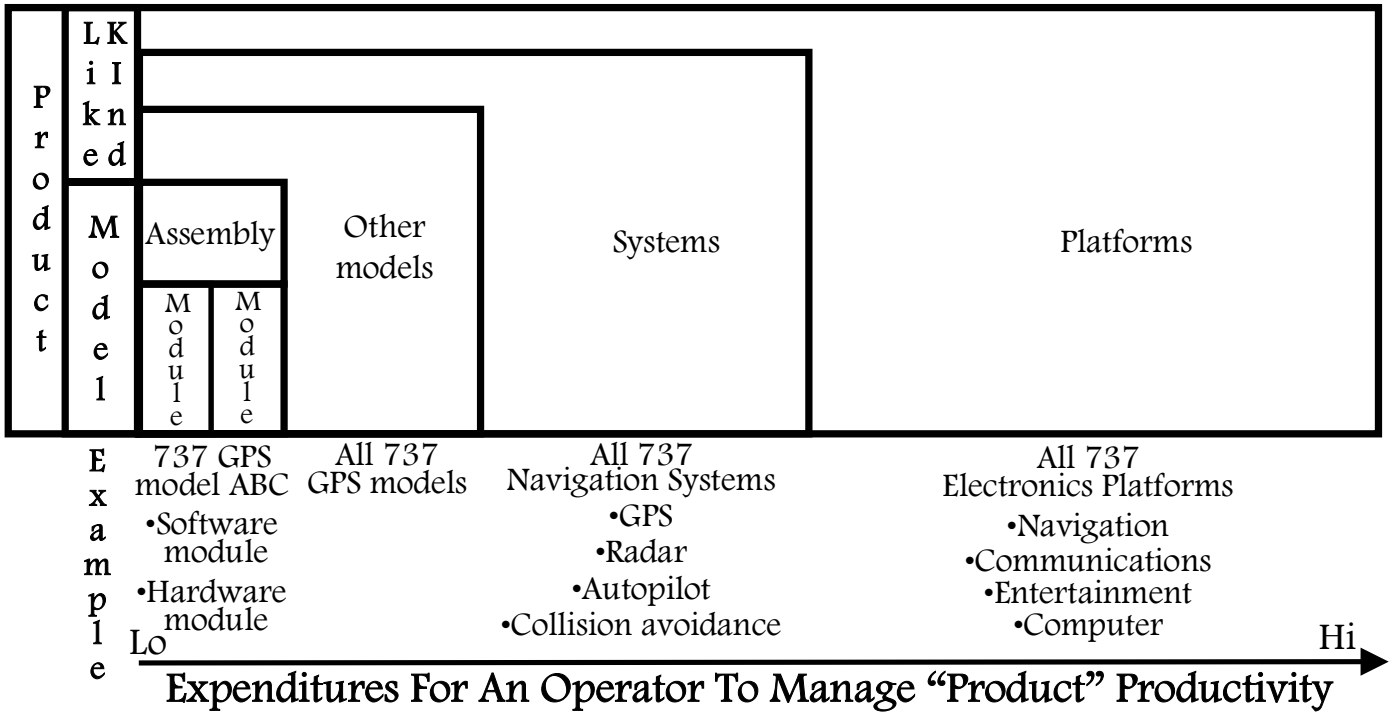
Who Are Capital Good OEMs (Original Equipment Manufacturers)?

Sector	Major US OEM	Sector	Major US OEM
Construction	Caterpillar, Terex	Multi-sector Components	ITT Industries, Flowserve
DataVoiceNetworks	Cisco, Lucent	Multi-sector Instruments	Agilent, Perkin Elmers
Diversified	GE, Honeywell	Office	Xerox, HP
Entertainment	Int. Gaming, GTech	OilGas	Halliburton, BakerHughes
Farm	Deere, AGCO	Specialty	Lincoln Electric, Diebold
Healthcare	Waters, Variance Medical	Transaction Capture	Symbol, Zebra
Mfg. Automation	Rockwell, Nordson	Transportation Aerospace	Boeing, Goodrich
Mfg. Design	Intergraph, Silicon Graphics	Transportation Railroad	Greenbrier, Wabtec
Mfg. Material Shaping	Milicron, Unova	Transportation Trucks	Navistar, Paccar
Mfg. Semiconductor	Applied Materials, Novellus	Others	Others

Capital Goods

Economic lifetime of at least 3 years	**Focused upon favorably impacting enterprise productivity**	**Goods used in the creation of other goods and services (B2B)**	**Reflected upon a balance sheet as a fixed asset**

What Is A Product?



There are many ways a product can be defined, resulting in many different paths in crafting offerings …and the "product" may not even be one produced by the OEM!

Who Is A Product Operator?

Product	Operator	Product	Operator
Bulldozer	Construction contractor	Barcode readers	Public warehouse
Router	Data network provider	Aircraft	Cargo airline
Slot machine	Casino	Truck cab	Trucker
Combine	Farmer	Locomotive	Railroad
MRI	Hospital	Compressor	Gas extractor
Laser metal cutter	Manufacturer	Instrument	Laboratory
Refridgerator	Food wholeseller	Drill	Oil platform operator
Printer	IT department	Turbine	Electric utility
ATM	Bank	Computer	Design Engineer
Projector	Movie theatre	Others	Others

What Is The Productivity Of A Product?

Product Productivity Metric
Output:
Units-of-Value Delivered
By A Product
Input:
Net Resources Expended
By Product Management Processes

Legend				
⇑	↑	↔	↓	⇓
hi increase	increase	no change	decrease	hi decrease

Output:	Input:	Productivity
⇑	↑	↑
↑	↓	
↑	↔	
↔	↓	
↓	⇓	
↑	↑	↔
↔	↔	
↓	↓	
↓	↑	↓
⇓	↓	
↔	↑	
↑	⇑	
↓	↔	

What Are The Units-of-Value Delivered By A Product?

Product	Unit-of-Value Delivered
Bulldozer	# of Tons Excavated Per Shift
Router	# of Messages Transmitted Per Minute
Slot machine	# of Plays Per Hour
Combine	# of Acres Harvested Per Hour
MRI	# of Scans Performed Per Hour
Laser metal cutter	# of Pieces Produced Per Shift
Refridgeration	# of Tons of Frozen Food Weekly Stored
Printer	# of Color Pages Printed At Desired Quality
Barcode readers	# of Error-Free Scans Per Shift
Aircraft	# of Express Packages Moved Per Trip
Truck cab	# of Ton Miles Per Trip
Others	Others

Product operators in the same industry can have different Units-Of-Values …the difference is often driven by their business model

What Are The Resources Expended By Product Management Processes?

Product Management Processes

- Acquire product
- Control product
- Prepare product for use
- Run product
- Monitor product during use
- Maintain product configuration
- Modify product configuration
- Remove product

Resources Expended to Manage Processes

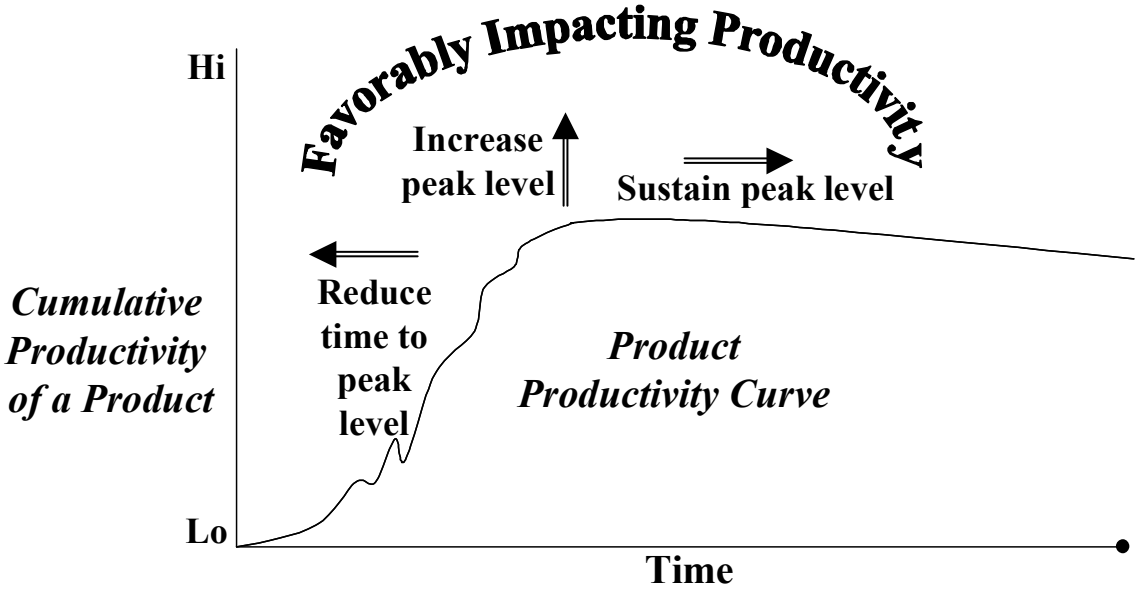
Capital Investment
- Goods
- Software
- Facilities

Current Assets
- Cash
- Inventory

Current Expenditures
- Labor
- Materials
- Energy
- Insurance
- Transport
- Others

Information

How Is The Productivity Of A Product Favorably Impacted?



There are many opportunities to favorably impact product productivity and the product lifetime ROI of an OEM, but beware of the ***Product Productivity Paradox (P^3)***

"If productivity rises too steeply, you can find that OEM profits are falling because there is too much capacity. Productivity can ruin you, which is what is happening in certain sectors."

Jeremy Grantham, CMO Institutional Investors

What Actions Can Be Taken To Favorably Impact Product Productivity?

Favorable impact upon product productivity	**Solution Required (service examples)**		
Reduce time to peak productivity	Reduce expenditures that are out-of-period with output (i.e. product rental pay-per-period)	Achieve peak output earlier by improving installation and run processes (i.e. on-site consulting)	Reduce net expenditures to acquire product by providing residual value for like-kind product (i.e. trade-in)
Increase peak productivity	Decrease unplanned downtime duration (i.e. provide 24/7 service parts availability)	Increase output capacity by modifying product configuration (i.e. off-site remanufacturing)	Increase output thru operator effectiveness (i.e. simulator training classes)
Sustain peak productivity	Ensure continuity from "Acts of God" (i.e. disaster recovery program)	Guarantee output alignment with input (i.e. pay-per-unit-of-value delivered thru long-term contract)	Assure duration of planned maintenance downtime (i.e.provide like-kind service parts exchange programs)

How Can Net Resource Expenditures Be Impacted?

Net Expenditure Scenario			
Product Management Process/Activity: Maintain Product Configuration/Replace Current Parts With Like-Kind Parts to Prevent Unplanned Product Downtime			
Activity Task Requiring Resource: Plan & Acquire Service Parts			
Resource Required: Advanced Planning & Scheduling (APS) Software			
Resources Expended			
Resource Type		**Description of resource**	**Impact upon expenditures**
capital investment	software	invest in license for software	↑
current assets	inventory	reduce turnover as a result of better planning	↓
current expenditures	labor	reduce labor for acquisition and storage	↓
	transport	reduce inbound freight expenses	⇓
information		increase data collection for software	↑
Net Impact			↓

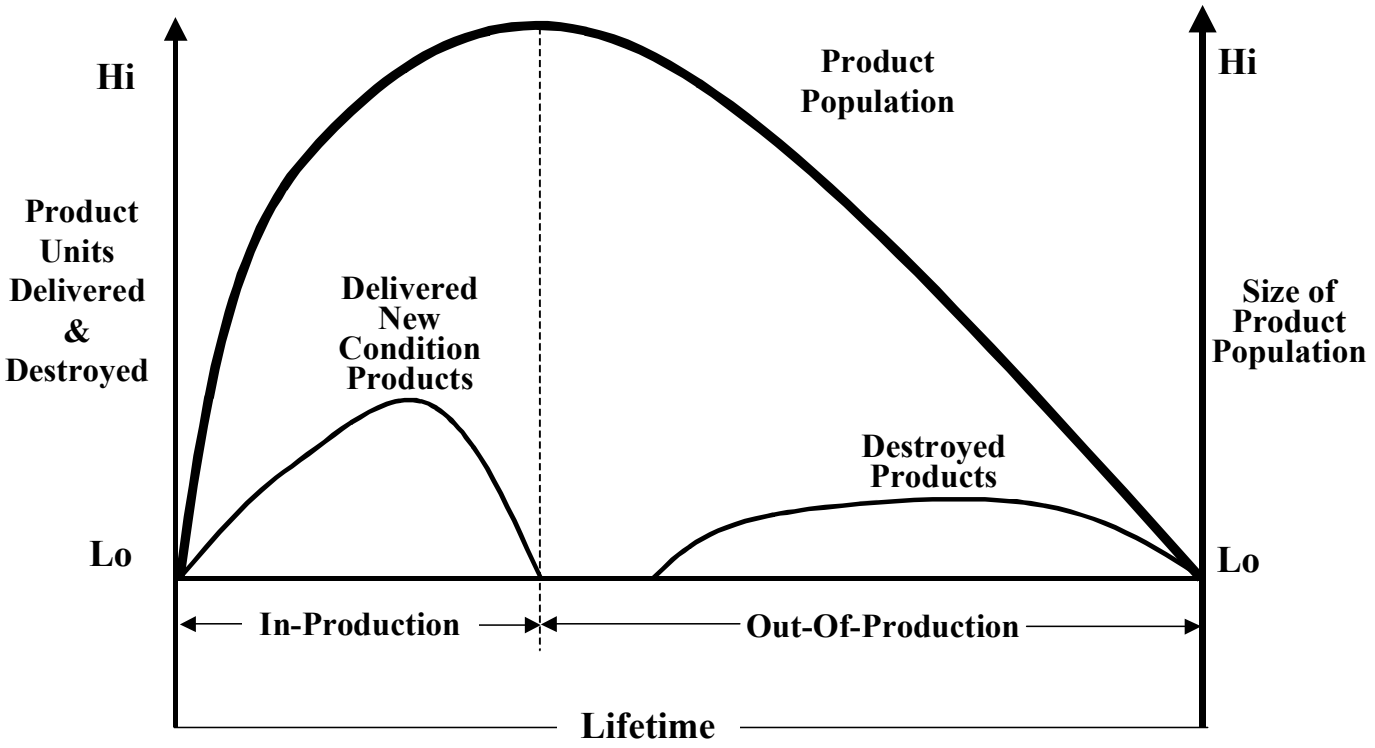
How Do OEMs Measure Financial Performance? Through The Product Lifetime ROI Metric

Product Lifetime ROI Metric
Returns From Services Crafted By An OEM Over The Lifetime Of A Product
OEM Design + Manufacturing Investment In Resource Expenditures For All New Product Units Produced

Returns (Revenues x Profit Margin)	Investment In Designing + Manufacturing	OEM Product ROI
⇑	↑	↑
↑	↓	
↑	↔	
↔	↓	
↓	⇓	

"There are three kinds of expenditures--the costs of capital, the risk premium of economic activity and the capital needs of the future—and they overlap to a considerable extent. But any company should be expected to cover adequately these expenditures. Otherwise it operates at a genuine, certain and provable loss."
-Peter Drucker

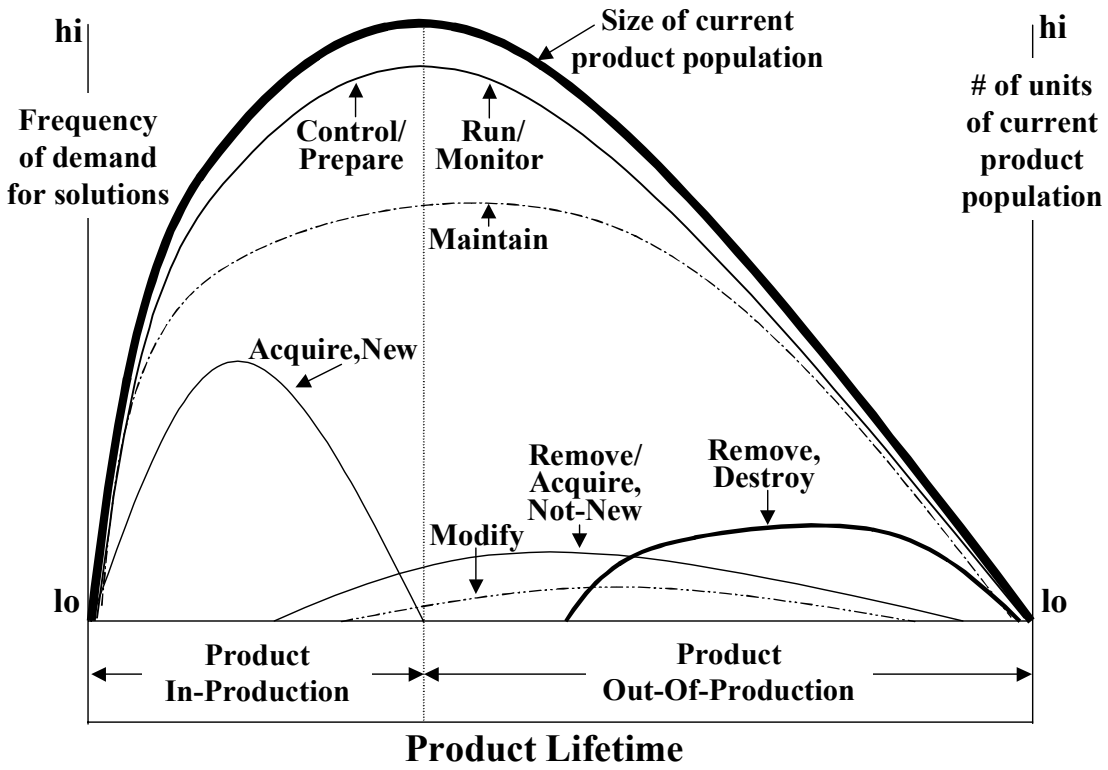
What Is A Product Lifetime?



How Can OEMs Impact The Revenues Of Their Product Lifetime Returns?

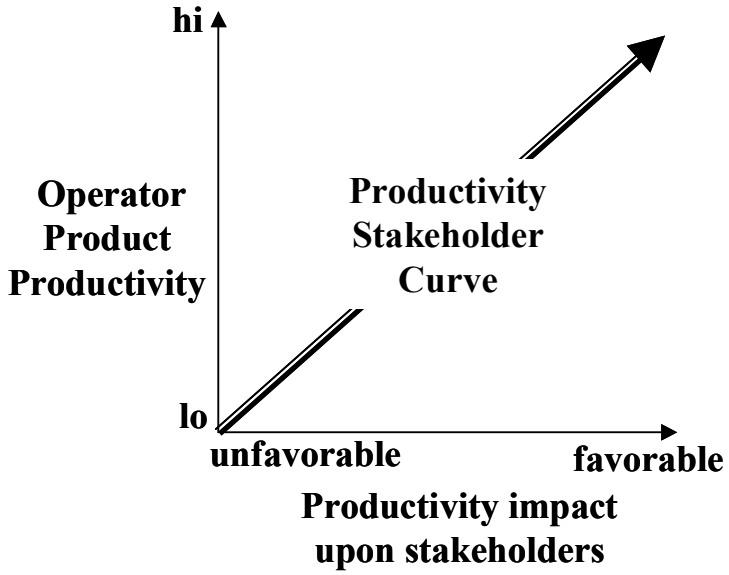
Marketing Strategy Revenue Driver	Revenue Market Size (example)	
	Larger	Smaller
Product Range	All 737 Electronic Platforms	737 GPS Model ABC Hardware Module
Operator Geographical Location	World	US East Coast
Operator Application	All Commercial Passenger, Cargo and Corporate Aircraft	Cargo Aircraft Supporting Auto Industry
Product Lifetime Duration	Modify Product Configuration To Extend Planned Lifetime By 10 Years From Original 15 Years	Do Not Modify Product Configuration To Extend Original Planned Lifetime Of 10 Years
% Of Product Duration Lifetime To Provide Services	Will Supply Services Until Less Than 1% Of Products Manufactured Are Still In Use	Will No Longer Supply Services 3 Years After The Last Product Has Been Manufactured

What Is The Frequency Of Demand For Solutions That Impact Product Lifetime Returns?



The range of services crafted to supply solutions demanded by operators can have a material impact upon not only revenues but contact with operators

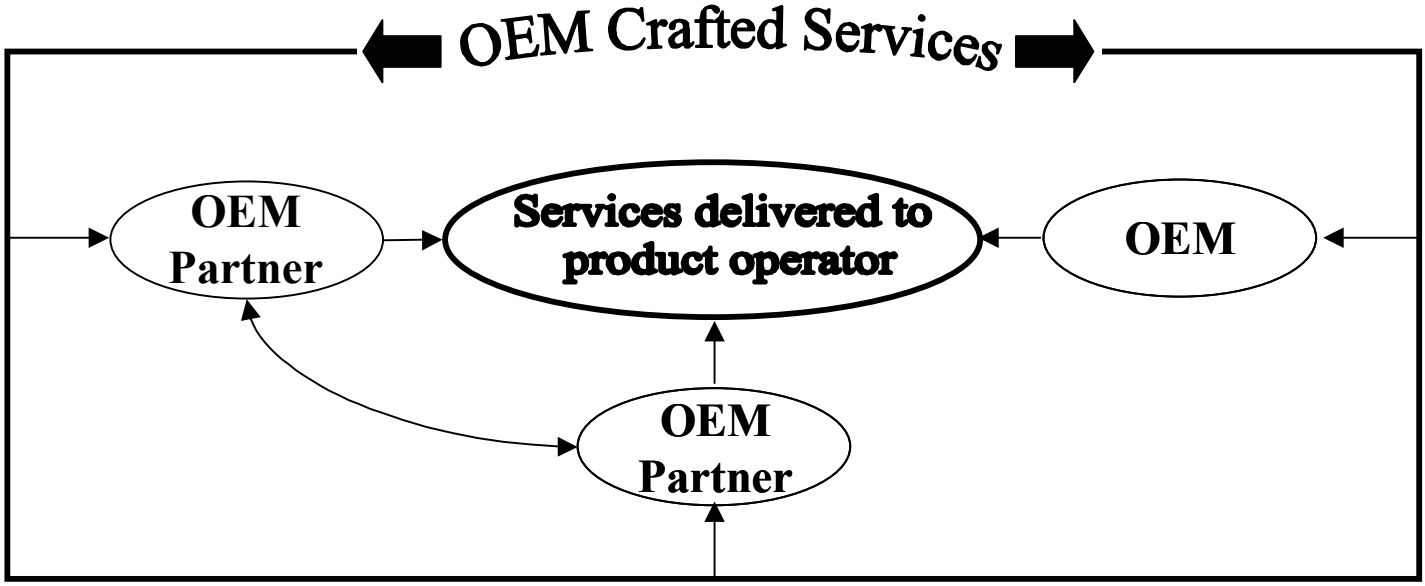
How Can OEMs Impact The Profit Margins Of Their Product Lifetime Returns?



Stakeholders In A Product Operator's Performance	Productivity Impact Upon Stakeholders
Investors In Product Operator Enterprise	Earnings
Product Operator Employees	Wages
OEM as Supplier To Product Operator ↔	Profit Margins
Others	Others

One of the tenets of capitalism is that stakeholders share in the benefits, or the pain, of productivity performance.

How Does An OEM Supply A Service That It Has Crafted?



The OEM does not have to deliver a service that it has crafted ..but it must ensure that it retains the largest share of the profits by working closely with its partners and product operators

Who Are The Enterprises That Supply OEM Crafted Services To Product Operators?

Enterprises Supplied Services To Product Operators	Legacy Solutions Supplied For Managing A Product		
	Acquire, Control, Remove	Prepare, Run, Monitor	Maintain, Modify
OEM direct	✓	✓	✓
OEM partners			
New product distributor	✓		✓
Leasor	✓		✓
Integrator	✓		
OEM subsidiaries	✓	✓	
Maintainer			✓
Trainer		✓	✓
OEM mfg. process supplier		✓	✓
Service parts distributor			✓
Software supplier		✓	✓
Others	✓	✓	✓

What Services Are Supplied To Operators For Managing The Productivity Of A Product?

Service Delivered	Solution Demanded By Operator							
	Acquire	Control	Remove	Prepare	Run	Monitor	Maintain	Modify
Product Sale	✓						✓	
Product like-kind exchange	✓		✓					
Product short-term rental	✓		✓				✓	✓
Product operating lease, long-term	✓		✓				✓	✓
Product multi-operator pooling	✓	✓	✓				✓	✓
Product capital lease	✓							
Product disaster recovery program	✓	✓	✓	✓	✓	✓	✓	✓
Product installation/acceptance				✓				
Product asset tracking software		✓						
Product de-installation			✓					
Product sale/lease-back	✓		✓					
Product buyback/trade-in			✓					
Consumable sale				✓			✓	✓
Technician training				✓	✓	✓	✓	✓
Technical documentation distribution			✓	✓	✓	✓	✓	✓
On-site calibration & testing				✓		✓	✓	✓
Regulatory compliance reporting				✓	✓	✓	✓	✓
Tooling/instrument sale				✓			✓	✓
Operator labor					✓			
Operator scheduling software				✓	✓			
Energy consumption monitoring						✓		
Remote quality of output monitoring						✓		
Hazardous waste disposal			✓		✓		✓	✓
Vendor managed consumables				✓			✓	✓
New service parts sale							✓	✓
Technical consulting			✓	✓	✓	✓	✓	✓
Regulatory requirement change kit sale								✓

What Services Are Supplied To Operators For Managing The Productivity Of A Product?

Service Delivered	Solution Demanded By Operator							
	Acquire	Control	Remove	Prepare	Run	Monitor	Maintain	Modify
Product configuration records mgt.							✓	✓
Maintainer scheduling software							✓	
Life-extension exchange program								✓
Off-site remanufacturing/rebuild/overhaul							✓	✓
On-site maintenance labor							✓	
Reliability records management						✓		
Like-kind component exchange program							✓	✓
Service parts planning software							✓	✓
Remote reliability monitoring						✓		
Pay-per-units-of value delivered							✓	✓
	✓	✓	✓	✓	✓	✓	✓	✓
	✓		✓					
Others	✓	✓	✓	✓	✓	✓	✓	✓

Innovative OEM Product-Services Programs

Description	Program
OEM: Sector	Caterpillar: Construction
Program name: Offering	Cat Rental: Short-term rentals
Who has contact with operator	OEM partners: OEM created new partnership relationship, to differentiate from new product distributors (note that most Cat Rental enterprises are owned by Cat new product distributors)
Operator solution demanded	Acquire/remove product and maintain product configuration
How did solution favorably impact operator productivity	Reduced time to peak performance by reducing capital good investment expenditures and assured the sustainment of peak performance by providing on-site product maintenance or product replacement
Resources supplied	• Capital investment of new or not-new products capable to deliver units-of-value required by operator (Product delivered is not required to be manufactured by Caterpillar) • All expenditures for product removal • All resources for product configuration maintenance and product configuration modification

Innovative OEM
Product-Services Programs

Description	Program
OEM: Sector	Hanover Compressor: OilGas
Program name: Offering	Service Rental Fleet: Buyback and manage former operator's gas extraction compressor. Charge customer on a pay-per-cubic foot of uplifted natural gas basis
Who has contact with operator	OEM
Operator solution demanded	Reacquire, control, prepare, run, monitor, maintain and modify product (complete product management outsourcing)
How did solution favorably impact operator productivity	Increase productivity by extracting residual value thru buyback by OEM and assuring the sustainment of productivity thru guaranteed performance by OEM
Resources supplied	All capital investment, current assets, current expenditures and information

Description	Program
OEM: Sector	Embrex: Healthcare
Program name: Offering	Inovoject: Pay-per-egg inoculated
Who has contact with operator	OEM
Operator solution demanded	Acquire, remove, prepare, maintain and modify
How did solution favorably impact operator productivity	Reduced time to peak productivity, increased peak productivity and assured the sustainment of peak productivity
Resources supplied	Capital investment, current assets for consumables and current expenditures for maintenance

Innovative OEM Product-Services Programs

Description	Program
OEM: Sector	Honeywell Aerospace: Transportation Aerospace
Program name: Offering	MSP: Pay for engine operation on a fixed price per hour of flight (program begun in 1976 for corporate jet market)
Who has contact with operator	OEM authorized repair stations
Operator solution demanded	Maintain and modify engine configuration
How did solution favorably impact operator productivity	Assured sustainment of operator productivity level; guaranteed by OEM. Program also has resulted in higher residual value of engines due to documented maintenance program
Resources supplied	Capital investment (tooling and facilities) Current assets (service parts inventory), current expenditures (labor and consumables) and information

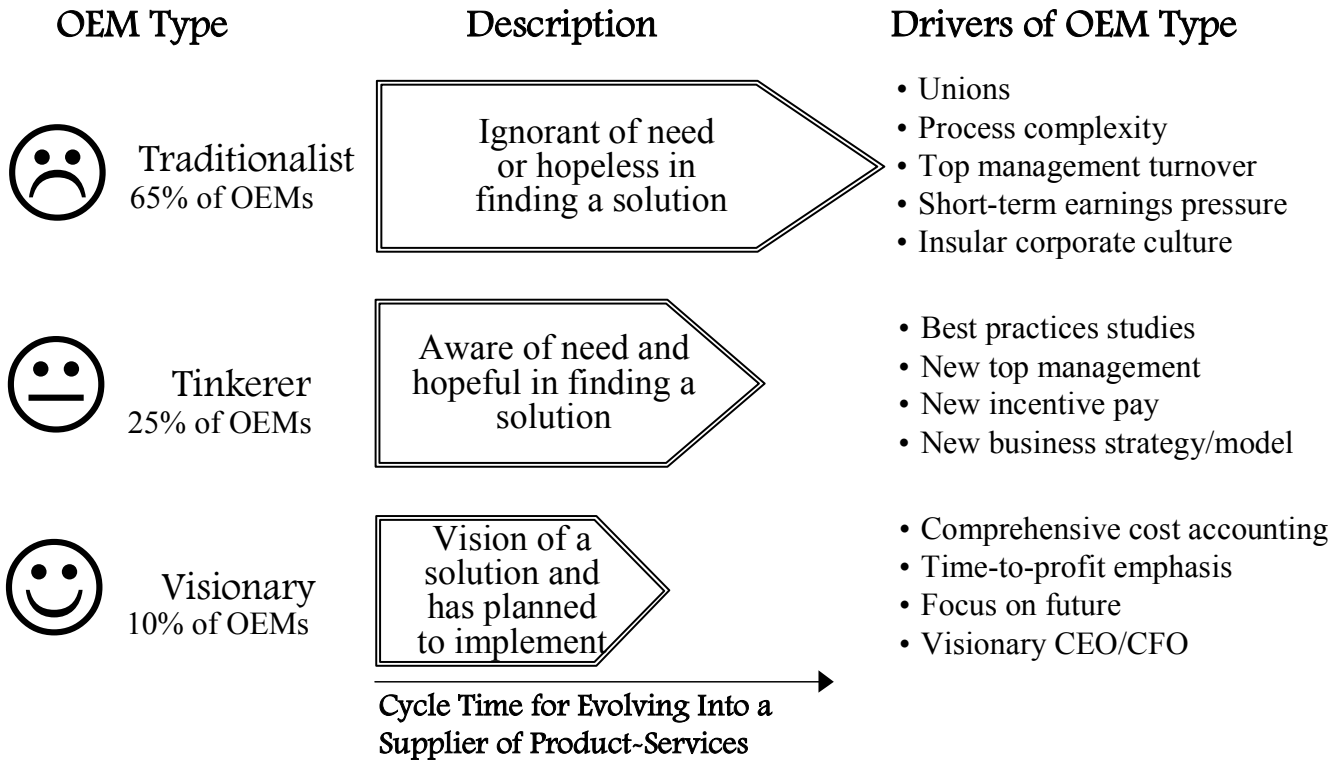
OEMs Have 25 Stakeholders In Their Evolving Into Suppliers Of Product-Services

1. ***OEM executives;*** improve financial performance resulting in an increase incentive compensation, such as stock option value
2. ***OEM new product manufacturing suppliers;*** higher profit margins and more stable demand throughout product lifetime
3. ***OEM service delivery partners;*** closer relationship with OEM, resulting in greater profit opportunities
4. ***Product operators;*** lower lifetime expenditures per output unit-of-value
5. ***Financial services;*** fees for creation of Special Purpose Entities (SPE), managing captive financial enterprises, issuing asset-backed securities and others
6. ***Enterprise application software providers;*** new processes will require new software codification either through modifications to current code or the issue of new modules
7. ***OEM investors;*** higher market capitalization due to higher profit margins, faster profit growth and more stable earnings
8. ***Accountants;*** more complex balance sheets and income statements will require higher diligence resulting in higher auditing fees

OEMs Have 25 Stakeholders In Their Evolving Into Suppliers Of Product-Services

9. ***Lawyers;*** more fees due to: more complex contracts between OEM suppliers, channel partners and customers, more legal entities for managing risk (such as LLCs, JVs partnerships), anti-trust due diligence
10. ***Management consultants;*** new processes will require the re-engineering of the business model, resulting in higher revenue
11. ***Educators;*** will provide seminars and workshops for stakeholders, resulting in higher revenue
12. ***Stock analysts;*** changing balance sheet and income statement configuration will require astute financial analysis leading to either higher fees for independent analysts or the attractiveness of recommendations for captive analysts to their brokerage customers
13. ***EPA;*** will see the benefits of material productivity and its resulting reduction in waste and pollution
14. ***Trade groups;*** ensures the long-term financial health of their members
15. ***Magazines and newspaper press;*** driver for "cutting edge" articles
16. ***Politicians;*** ensures continuity of jobs at OEMs in territories they represent
17. ***DOD;*** ensures continuity of the capital goods manufacturing industrial base for maintaining future military equipment
18. ***Market researchers;*** redefinition of the OEM's market will require studies on market size and share, resulting in fees
19. ***Information providers;*** accurate information becomes critical in the new OEM business model, such as reliability data, resulting in payments to information gatherers
20. ***Product design software providers;*** new software will be licensed and maintained for such product design characteristics as design-for-maintainability, design-for-reuse and design-for-disassembly
21. ***Professional societies;*** create demand for special interest groups that add greater value for members
22. ***Logistics services providers;*** significantly higher levels of reverse supply chain management will require more transactional activity resulting in more fees
23. ***Unions;*** will embrace for ensure stable levels of employment by reducing impact of imports
24. ***Product operator's customers;*** ensures cutting edge performance from their suppliers
25. ***Book publishers;*** many opportunities for distributing the Body Of Knowledge (BOK) resulting in additional revenues

Which OEMs Will Successfully Evolve Into Suppliers Of Product-Services?



Final Thought

"In our study of what it takes to turn good companies into great ones, we found that it took on average of four years to crystallize a coherent strategic concept and seven years of intense effort below the radar screen before a company would show a significant and sustained leap to great results. It took Jack Welch over eight years in office before GE's stock began to significantly and consistently outperform the stock market."

James Collins, "Good to Great: Why Some Companies Make the Leap...and Others Don't"

Attachment 3

Pricing of OEM Product Services

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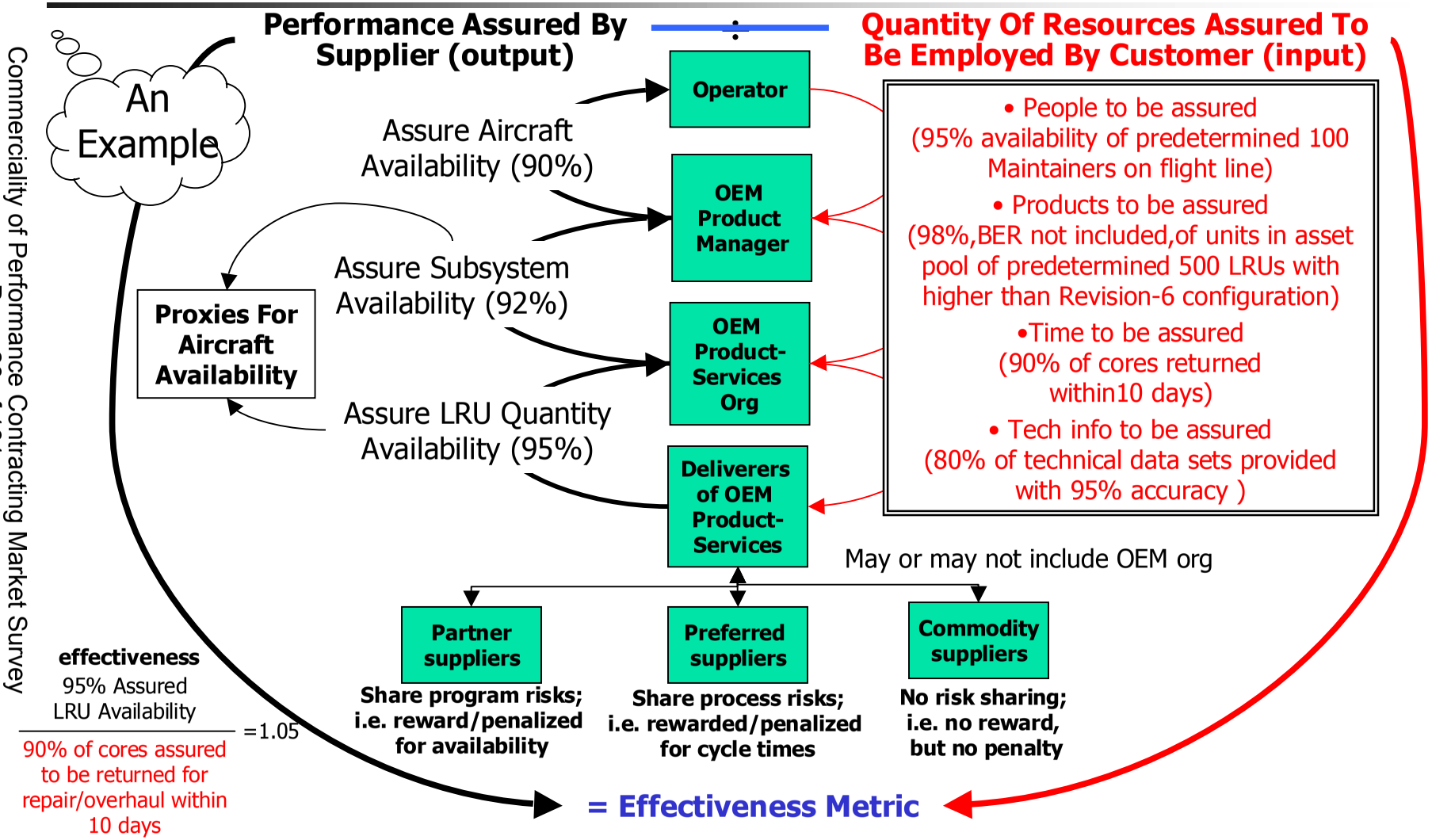
An Overview

Pricing
Of
OEM Product-Services

What Are OEM Product-Services:
Services, supplied by a capital good OEM to the operators of its product, that assure to deliver fixed effectiveness and efficiency performance, for managing product lifecycle activities

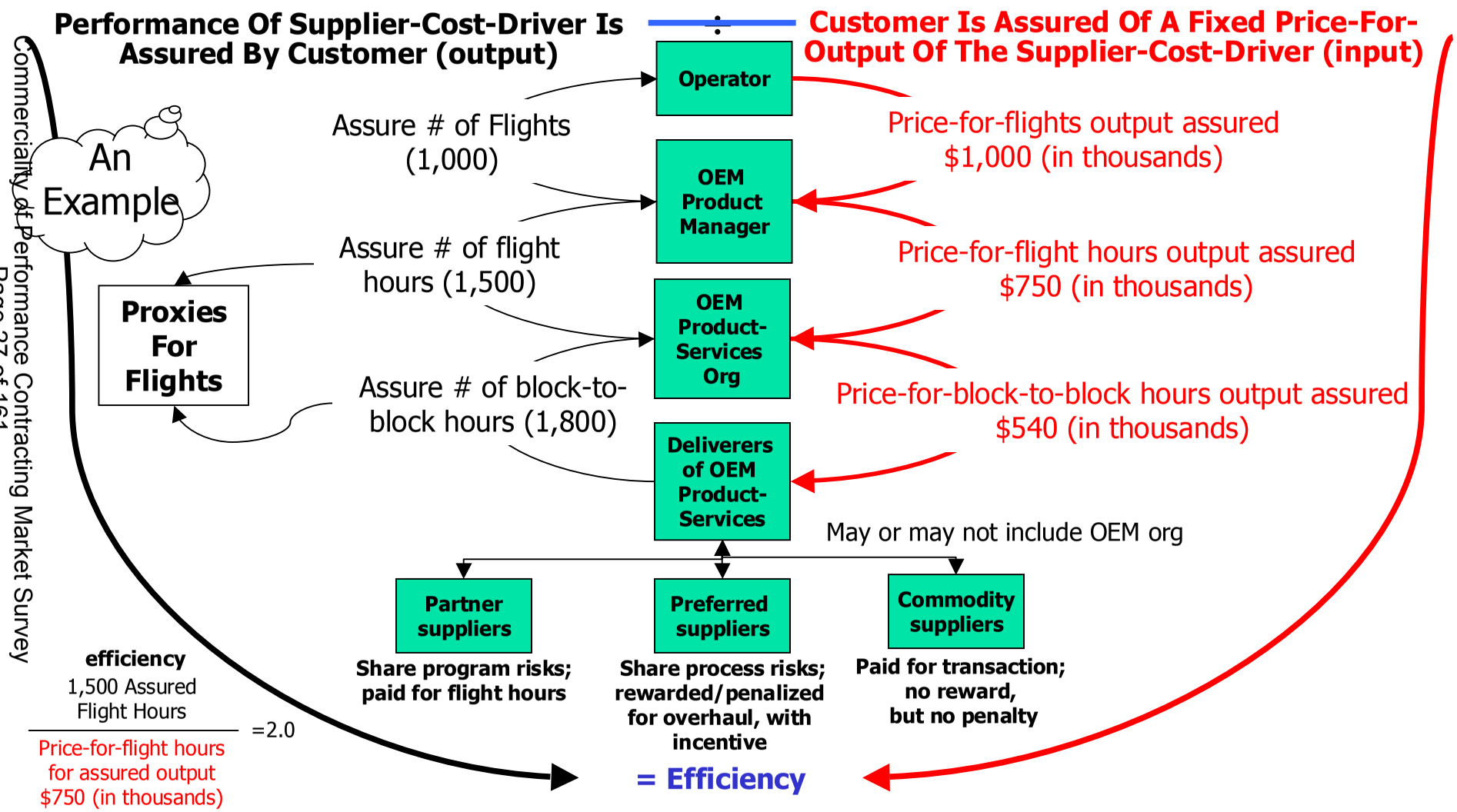
…the commercial version of PBL

OEM Product-Services Are Supported By 2 Webs Of Agreements: #1 Is Effectiveness-Driven



"A Web Of Relationships Of Self-Interests Provides Vigilance Against Complacency," by OPI

OEM Product-Services Are Supported By 2 Webs Of Agreements: #2 Is Efficiency-Driven



Craft Product-Services Value Propositions To Operators In The Form Of Metrics

Assure to deliver fixed effectiveness and efficiency performances for managing product lifecycle activities:

- Product Possession
- Product Configuration & Condition Maintenance
- Product Utilization
- Product Removal

…and there will be many segmentations of the metrics

Once effectiveness performance is agreed upon, then efficiency metric can be crafted

Effectiveness Metric

Effectiveness Availability Metric Example For Product Condition Maintenance			
	Description	Assured	Actual
Output (supplier performance)	% of LRU supplier-forward, like-kind exchange transactions that are shipped within 24 hours from order receipt placed by airline maintainers: (# of LRUs shipped on time)/ (# of total LRUs ordered)	92%	91%
Input (customer performance)	% of cycle days that impaired LRUs returned by airline < 6 days: (# of impaired LRUs received in < 6 days)/ (# of impaired LRUs received)	95%	90%
Output/Input metric supplier performance: actual > assured		.97	1.01
Analysis: LRU supply availability remained the same, but airline was holding impaired LRUs longer, causing LRU pool size disruptions.			

Effectiveness Metric

Effectiveness Reliability Metric Example For Product Condition Maintenance			
	Description	Assured	Actual
Output (supplier performance)	% of installed LRUs for fielded systems which did not experience unplanned removals: (# of LRUs not removed on all systems)/ (# of LRUs on all systems)	95%	89%
Input (customer performance)	% of airline maintainers with > 6 months of system experience: (# of maintainers with > 6 months system experience)/(# of airline maintainers)	85%	82%
Output/Input metric supplier performance: actual < assured		1.18	1.09
Analysis: LRU reliability decreased and airline had additional experienced maintainers who would be less abusive to system.			

Effectiveness Metric

Effectiveness Footprint Metric Example For Product Condition Maintenance			
	Description	Assured	Actual
Output (supplier performance)	Average daily % during period that non-impaired LRU pool quantity< 400 pieces (average daily # of non-impaired pieces)/ (400 pieces)	96%	92%
Input (customer performance)	Average daily % during period that total fielded units engine hours < 200 (# engine hours)/(200)	80%	76%
Output/Input metric supplier performance: actual = assured		1.20	1.20
Analysis: Though the footprint increased, customer was using system more, which required more LRUs to support availability performance.			

Efficiency Metric Input Table

Efficiency Metric Example; Price Per Unit Fielded For Product Condition Maintenance					
Segment	**Price Operational Drivers**	**Effectiveness Weight On Price**			**Segment Weight**
		Hi	**Med**	**Lo**	
Product Location	Level #1: US/EU/Japan/CA/AUS	1.5	1.0 baseline	.7	.4
	Level #2: Other Asia, SA/Mexico	2.5	2.0	1.5	
	Level #3: China, South Vietnam, others	3.0	2.0	1.5	
	Level #4: Africa, others	4.0	3.0	2.0	
Product Age In Months	<24 months	1.0	.8	.5	.2
	24-60 months	1.3	1.0 baseline	.7	
	61-100 months	1.6	1.2	.9	
	101-140 months	2.0	1.6	1.2	
Product Hours	0 hours	.6	.4	.2	.4
	1-15 hours	1.2	1.0 baseline	.7	
	16-30 hours	1.5	1.2	.8	
	31-50 hours	1.9	1.5	1.3	

Efficiency Metric Input

Price Per Product Unit Fielded Per Scenario							
Scenario #	**Segment**	**Price Operational Drivers**	**Effectiveness**		**Segment Weight [B]**	**Baseline Price Per Fielded Unit Per Month [C]**	**Price For Fielded Unit For Month [A]*[B]*[C] =[D]**
			Level	**Weight [A]**			
1	Product Location	Level #1: US/EU/Japan/ CA/AUS	Hi	1.5	.4	$1,000	$600
	Product age in months	61-100 months		1.6	.2		$320
	Product Hours	31-50 hours		1.9	.4		$760
						Price Per Unit Fielded	$1,680

Commerciality of Performance Contracting Market Survey
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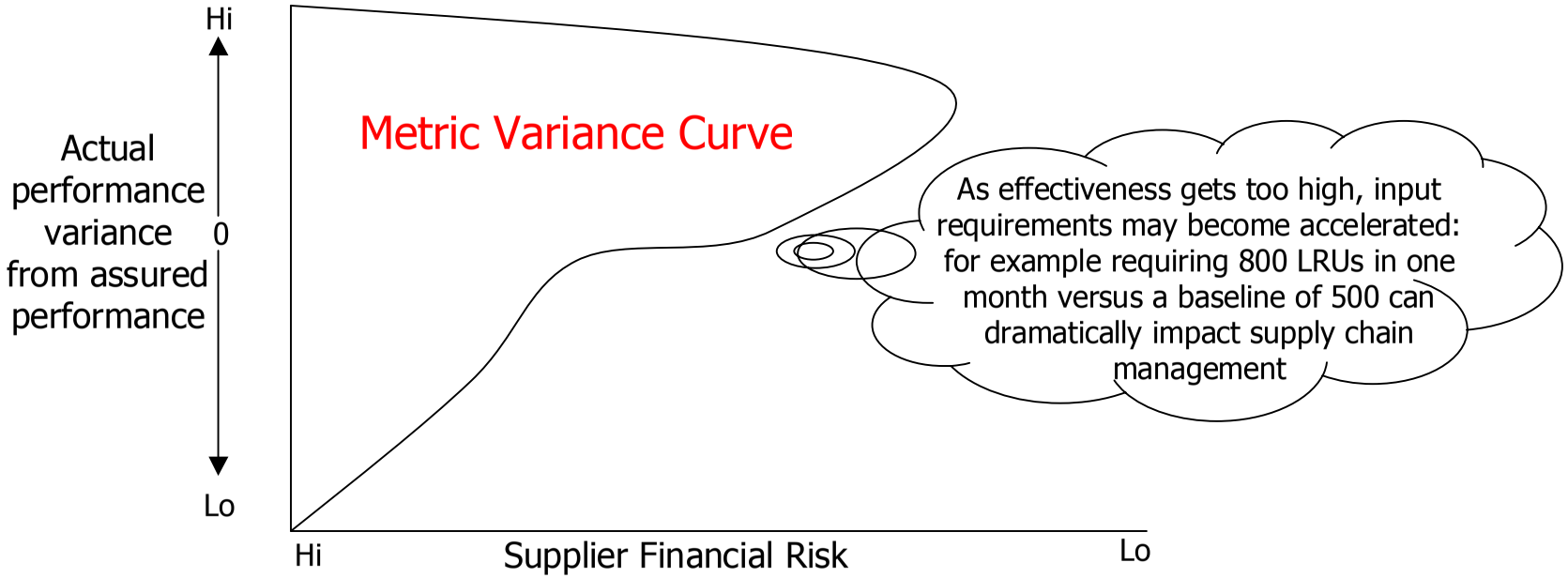
Efficiency Metric Performance

Efficiency Metric Performance Example For Scenario #1			
Description		Assured	Actual
Output (customer performance)	# of fielded units with scenario #1	10	11
Input (contractor performance)	Price for fielded units @ $1,680/unit per scenario #1	$16.8 (thousand)	$18.5 (thousand)
Output/Input metric performance: actual = assured		.6	.6
Analysis: metric performance always the same; unit price is fixed			

Customer Payment For Period

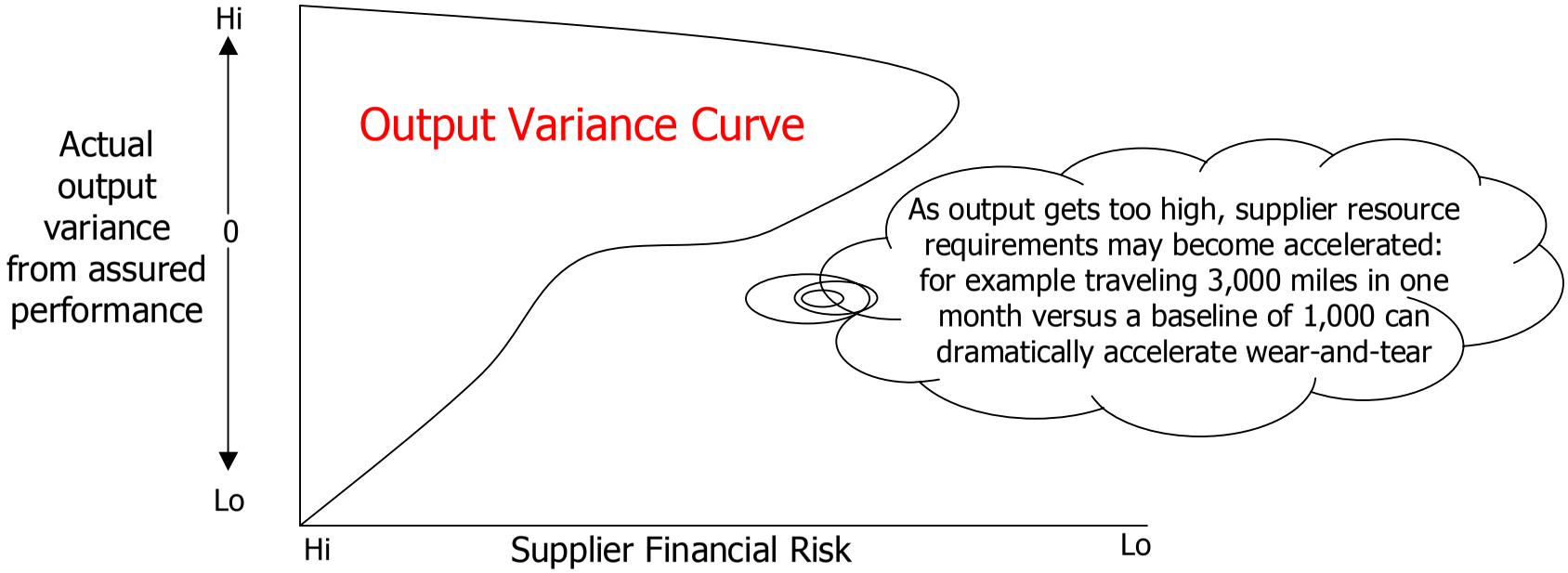
Customer Payment For Product-Services For Month; An Example	
Actual Efficiency Metric Scenario #	Payment Required
1	$18,500
2	$11,600
3	$25,200
Total	$55,300

Mitigating Risks Of Actual Effectiveness Variance From Assured Performance By Using Collars



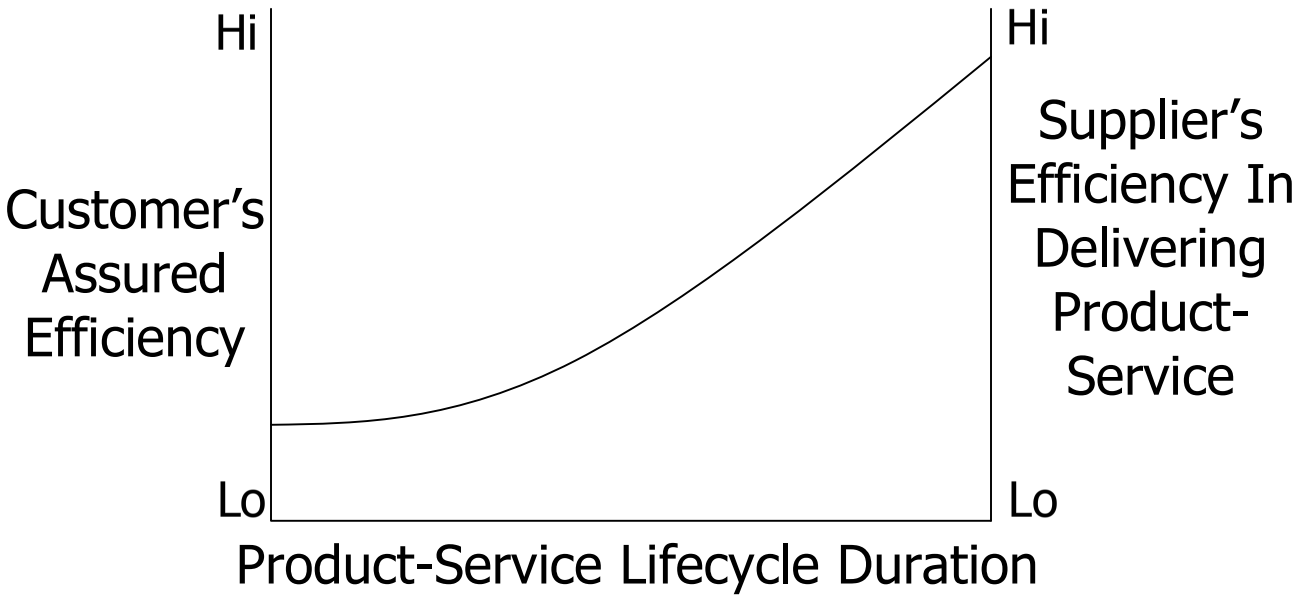
Customer Actual Metric Performance Variance Range & Supplier Actions (with examples)				
Default	**Low Variance Range From Assurance**	**Output Acceptable Variance From Assured Metric Performance**	**High Variance Range From Assurance**	**Default**
>-20%	-20% ⟷ -11%	-10% ⟷ +10%	+11% ⟷ +20%	>+20%
Exit strategy is required by Supplier	Supplier changes efficiency assurance; +.1% for each -1% in performance (lower price/output)	Supplier has met assured metric performance	Supplier changes efficiency assurance; -.1% for each +1% in performance (higher price/output)	Exit strategy is required by Supplier

Mitigating Risks Of Actual Efficiency Variance From Assured Performance By Using Collars



Customer Actual Metric Performance Variance Range & Supplier Actions (with examples)				
Default	**Low Variance Range From Assurance**	**Output Acceptable Variance From Assured Metric Performance**	**High Variance Range From Assurance**	**Default**
> -25%	-25% ◄——► -15%	-14% ◄——► +14%	+15% ◄——► +50%	>+50%
Exit strategy is required by Supplier	Supplier changes efficiency assurance; -1% for each -5% in output (higher price/output)	Supplier has met assured metric performance	Supplier changes efficiency assurance; +1% for each +5% in output (lower price/output)	Exit strategy is required by Supplier

Define A Product-Service Lifecycle Pricing Strategy



Concept

As supplier improves its efficiency in delivering its offering to its customer, it will share its "savings" with the customer; this is a basic tenet of capitalism

Attachment 4

OEM Product-Services Review
(Issue 4, 2004)

(Reprinted with permission from OPI)

OPI
OEM Product-Services Institute

OEM PRODUCT-SERVICES REVIEW

Marketing Strategies and Tactics For Capital Goods OEMs

"Product-Services fuel powerful growth in your company and transforms its culture and its soul"-Jack Welch

Who Is OPI?

OPI is an education, market research and management consulting organization that assists capital goods OEMs and their partners to evolve into suppliers of product-services

What Are Product-Services?

A capital good OEM crafted offering that services the requirement of an operator to manage the productivity of the lifecycle event of a product

Product-Services Segmented By Operator Lifecycle Event:

- **Product Capacity Management**
  - **New condition sale**
  - **Not-new condition sale**
  - **Rental**
  - **Capital lease**
  - **Degrade**
  - **Upgrade**
  - **Sale/leaseback**
  - **Pooling**
  - **Others**
- **Product Condition Management**
  - **Component remanufacturing**
  - **New service parts sale**
  - **Not-new service parts sale**
  - **Part like-kind exchange**
  - **On/off-site product repair**
  - **Maintainer training**
  - **Technical documentation sale**
  - **Maintenance tooling rental**
  - **Others**
- **Product Location Management**
  - **Asset tracking software**
  - **Site preparation**
  - **De-installation**
  - **Long term storage**
  - **Theft prevention monitoring**
  - **Transport**
  - **Permit processing**
  - **Disposal verification**
  - **Others**
- **Product Use Management**
  - **Consumable sale**
  - **Energy monitoring**
  - **Regulatory record keeping**
  - **Operator training**
  - **Operator scheduling software**
  - **Calibration tool sale**
  - **By-product disposal**
  - **Quality monitoring**
  - **Consumable planning software**
  - **Others**

Evolving Into A Supplier Of Product-Services: The Crafting of A Deal

Applied Materials (AMAT) agreed to pay $84.6 million in cash for the $240M revenue/yr San Jose, Calif. based **Metron** (MTCH); a 119% premium to its' closing price. Also included are net loss carry-forward tax reductions.

"We think the price is cheap," says Sid Parakh, an analyst at Robins Group, a small-cap research house in Portland, Ore. "AMAT is getting a huge infrastructure and experienced people."

With 30 offices in the U.S., Europe, Asia and Israel, Metron caught AMAT's eye because of its global reach and its focus on providing product-services, and not just new products, to semiconductor manufacturers. In addition to supplying service parts and specialty materials to chip makers, Metron provides the highly specialized cleaning services required to keep production lines dust-free.

"AMAT is buying Metron to expand its presence in the service business," says Timothy Summers, an analyst at Stanford Group, a brokerage firm in Boca Raton, Fla. "It wants to do this because service and customer support are not nearly as cyclical as its traditional equipment business."

According to Summers, AMAT Chief Executive Mike Splinter, who took the helm last year, after leaving Intel as its Chief Marketing Executive, has made it a priority to increase the company's presence in the product-services sector. While chip makers may curtail capital expenditures during downturns, they're more likely to continue spending on cleaning and maintenance product-services that ensure quality and extend the life of existing products. Recent alliances with Brooks Automation, Praxair Electronics and Phoenix Silicon International were made to boost AMAT's product-service offerings. But rather than piecemeal partner-by-partner contracts, AMAT needed to take a bigger bite and infuse itself with a product-services focus; an acquisition was the easiest and fastest route to that.

AMAT's gross profit margins, as a % of revenue, for new product sales, inclusive of R&D costs, is 31%. It is estimated that AMAT can obtain gross profit margins of 40-60% higher for its other-than-new-product offerings. Note that AMAT does not segment its product-services revenue on its 10K, but it appears that other-than-new-product revenue is currently material to its bottom line. AMAT currently has an estimated $500M of service parts inventory, and if it turns 1.5 times per year and if margins are 40%, then AMAT generates $1.3B in sales/yr in service parts or 20% of total AMAT revenue, but 30% of its profits.

"The industry is very fragmented," says Parakh of Robins Group. "Other companies do some services, but not all the services that Metron does. Metron is the only company we know of that has a global presence and offers one-stop shopping."

Though little-known outside the chip-equipment arena, the Amsterdam-based Metron, formed via the 1995 merger of chip equipment distribution companies Metron Semiconductor and Transpacific Technology succeeded in restructuring its business from a low-margin equipment distributor to a high-margin product-services provider.

"Applied has tried to develop a product-services focus internally and quite frankly they have not been too successful. They are a technology company, having been driven by their technology focused, recently retired CEO, Jim Morgan. That's their culture. With their new CEO Mike Splinter, AMAT is now being run more like a business," said Doug McCutcheon, CFO of Metron.

But if purchasing an organization is faster than through organic growth, the acquisition route is not necessarily a simple one. Because Metron's purchase was subject to highly complex Dutch acquisition laws, AMAT, to get the deal done, opted to buy the company's 30 subsidiaries, which operate in 20 countries. AMAT had to hire counsel in each of the countries to ensure compliance with local securities laws. "It was complex and expensive for such a relatively small deal," said Richard Millard, a partner in Weil, Gotshal & Manges, who represented AMAT in the acquisition.

Without a CEO who is focused on evolving their organization into a supplier of product-services and willing to walk the talk through the entire acquisition process, that at times may be painful, an OEM will forever languish as a build-and-sell enterprise. With profit margins that are not commensurate with their financial risks of ineffective R&D, plant and equipment impairment, product liability, environmental liabilities and others, OEMs who "don't get it" will perish.

> *"The difficult is that which can be done immediately, the impossible, that which takes a little longer."*- George Santayana

Lessons Learned

The Imaging Services operation of **Xerox** Corporation's Global Services Division, at its 162,000 square foot Hot Springs, Ark location, has the capacity to handle more than 1 billion color, black-and-white and gray-scale images per year to support the records retention, document processes and disaster recovery planning of its customers.

For more than 17 years, Xerox has helped clients around the world digitize and manage information from hardcopy documents. In addition to creating hosted repository Web sites to provide access to electronic information, the Xerox Imaging Services Center now offers high-volume color scanning technology and advanced image compression software allowing clients to store, back-up and access business-critical documents. Market research firm IDC projects spending on imaging and document management outsourcing will increase more than 20 percent annually through 2007.

Various industries are using Xerox's Imagining Services:

- Healthcare organizations are transitioning hardcopy documents, including patient admittance forms, insurance claims, Medicaid case files to Web-based archives, allowing staff 24/7 accessibility to critical information
- Manufacturing and energy companies are capturing documents from pre-CAD blueprints to faded legacy research notes
- Banking and insurance firms are meeting government regulations for the archiving of records
- Online retailers are providing site visitors higher-quality images that open quickly with either dial-up or broadband Internet connections

Lesson Learned: In certain applications an OEM can also be the owner and user of its products. Many of Imaging Services customers are also the owners of Xerox products, but they prefer to outsource back to the OEM those jobs that disrupt the normal flow of work. Many OEMs could provide additional capacity for their customers, where applicable, with similar product-services.

The EU's regulatory environment remains unfriendly to business, especially if the company in question flies an American flag. The Commission routinely prohibits mergers on the hypothetical grounds, that as a stronger entity, the merged firm might ultimately drive rivals from the marketplace. The picture Alan Greenspan painted of EU attitudes toward competition back in a 1962 essay rings as true today: "It is a world in which competition is lauded as the basic axiom and guiding principle, yet 'too much' competition is condemned as 'cutthroat'." Among commission decisions that consistently favored less competitive market rivals was the blocked 2001 wedding of **General Electric and Honeywell**. This merger got the green light from U.S. regulators. But the Commission said no, using theories of competitive harm that were based on the hypothesis that competitors will be forced to exit the market in the face of a stronger GE/Honeywell. For the Commission, it is clear, the degree of competition in a market is attested to by the number of competitors. This approach may be consistent with neo-classical economic theory, but it is not sound public policy. A free market is such if no barriers to entry forbid new firms to enter; but the number of the competitors per se is not a relevant variable. The Commission, however, seems to believe that competition is proven by having a number of businesses producing the same kind of goods.

If antitrust authorities focus on "enforcing competition" above consumers' best interest, they will end up propping up inefficient business rivals. This turns the rules of the game into a weapon for companies who can't flourish in the market place and turn to regulators to survive.
From a Wall Street article by Alberto Mingardi.

Lessons Learned: With 25% of the global demand for capital goods originating from the EU, US-based OEMs must be very cautious as to how they roll-out their product-services strategy in the EU. If the approach is to acquire independent suppliers of product-services, they will be able to do so by making small acquisitions, country by country within the EU. Within a few years the OEM will not only be able to provide product-services for the products it manufactures, but also for its new-product rivals. This will eventually gut the profit margins of the OEMs "who don't get it" regarding product-services, because the product-services focused OEM will be able to amortize their R&D over a larger revenue base...and they will cause their new-product competitors to die. At this point the EU Commission will become involved to "protect" the failing OEM and its workers, but it will be too late. Also note that if OEMs define themselves as suppliers of product-services, their market share is often at most 10%, when you consider the market encompassing independent service providers, product re-marketers and the operators of their products.

Terex has announced an understanding with **Caterpillar** that will allow Terex the opportunity to distribute and support the Terex O&K line of hydraulic excavators through Cat's independent dealer network. Terex will continue to operate its branch locations and support its existing dealer agreements while focusing on utilizing the strength of the Caterpillar dealer network. In those areas where Terex has existing distribution, various forms of local collaboration will be explored with the Caterpillar dealers.

"We believe that this arrangement will allow Terex the opportunity to reach new customers in areas where we have historically not participated in a meaningful way due to limited capacity to service and support our machines," commented Rick Nichols, president-Terex Mining. "By seeking to distribute our mining shovel through Caterpillar dealers in geographies where we have no current representation and utilizing their capabilities to supplement other regions, we have instantly created the potential to establish a global network that will greatly expand our prospects for selling new equipment and providing service to our customers."

Lessons Learned: An OEM's value is driven by its relationship with its customer base; an operator prefers one contact point for product-services that impact like-kind products. For those OEMs who continue to focus their enterprise on a build-and-sell business model, they will evolve into enterprises that provide a contracted manufacturing service to those OEMs who have evolved into suppliers of product-services. This is already happening in the high-tech area and will impact other sectors in the not too distant future.

Operators Obtain Value By Working With OEMs

Rockwell Automation and Penton Media sponsored a study, based on interviews with 582 OEMs and operators. Two results are of primary importance to OEMs (note that the percentages are for those organizations that answered "always", usually" or "sometimes" to the question):

- 85% of operators and 86% of OEMs believe that OEMs are a primary source of good technical advice.
  A conclusion of this finding is that operators would trust OEMs in providing expanded product-services that require technical prowess, such as upgrade installations, predictive maintenance, remote product monitoring and others
- 95% of OEM respondents believe that operators tend to choose machines and components based on lowest procurement cost, while only 78% of operators agreed with this statement.
  A conclusion of this finding is that OEMs should not focus upon new product pricing as the only way to gain market share. Warranties, product resale value, product reliability, product support and other factors also drive the OEM-operator relationship.

The Product Productivity Paradox

A new economic study concludes that an OEM's insertion of technology, such as software, electronics, and sensors, into its new products actually shrinks demand for these goods; at least in the year or so following the technology's arrival. The conventional economic view is that operator productivity gains from technology insertion would quickly yield higher sales and employment for OEMs. This is from a working paper by two University of Michigan economists, Susanto Basu and Miles Kimball, along with an economist from the Federal Reserve Bank of Chicago, John Fernald.

Why does technology insertion hurt? Basu and his colleagues say that when businesses adopt technology to improve efficiency, they don't immediately share the benefit with customers in the form of lower prices. Lower prices would presumably result in greater demand for its products or services. Instead, businesses use the gain in productivity to reduce payrolls and capital goods spending. Business activity contracts. Don't make these economists out to be Luddites. Their concern is that policy makers, as well as OEMs, will misread these short-term shocks. That's because the researchers find that the productivity (efficiency and effectiveness are subsets of productivity) benefits of a new technology do start to show up after several years. Prices are lowered, demand increases and businesses invest in capital goods.

Are OEM Products Evolving Into Becoming Simply A Platform For The Suppliers Of Upgrades And Accessories?

Independent suppliers, such as DPAC Technologies, have let it be known that "The goal of our product strategy is to simplify the process of adding wireless connectivity to OEM devices and equipment." If OEMs do not take seriously the threat of independent suppliers or other OEMs creating increased efficiency or
effectiveness from their products, OEMs will find themselves in the untenable financial position of being simply a commodity platform for "the guys who are really making money."

IBM's Infoprint Manager software automates printer control to manage multi-vendor printers simultaneously. Overall, the enhanced solution presents a more effective printer output management system. "Print management solutions are a key component in our strategy of being an on-demand business supplier," said Bruce Otte, worldwide manager of production strategy for IBM Printing Systems. "By offering our customers enhanced capabilities for printing virtually any datastream anywhere across the enterprise, they can leverage the assets they currently own to improve asset and operational productivity." Note that IBM's strategy of being an on-demand supplier, a term currently used by the office equipment technology sector for pay-upon-use product-services, drives them to create offerings that often reduce the demand for additional new products by an operator….so office equipment OEMs, as a result of IBM's offering, have less new product demand, with a relatively fixed cost of R&D...not great for the bottom line... but IBM's stockholders enjoy healthy profits and a higher market cap from the OEM's product.

Another office equipment powerhouse who is "getting it" regarding product-services is **Cisco**. Though today Cisco generates only a little over 15% of its revenues and profits from other-than-new-product sales, it is positioning itself to materially grow this segment. "The market for services surrounding on-demand offerings is starting from zero, and the fact that Cisco is there tells you that it is going to be a sizeable one," Silicon Valley Special Magazine's David & Goliath column

The beauty of pricing based on enhancing the productivity of an operator is that pricing is based not on "this is my cost, this is the profit I want to make, so this is my price," but on "this is how much I save the customer, this is how much of that savings I want to keep, so this will be my price."

Product-Services Is Important For Some OEMs
Based upon last 4 quarters.
Note: new product Cost Of Sale include R&D costs

OEM	Description
United Technologies	Obtains 29% of revenues from other-than-new-products, but 45% of its gross margin profits
Caterpillar	Obtains 7% of revenue from its financing subsidiary, but it generates 24% of its gross margin profits. Coupled with its service parts sales, which it does not segment in its 10K, it is estimated that Cat derives well over 50% of its gross margin profits from other-than-new-product sales
Xerox	Obtains 55% of revenue from other-than-new-product sales, but 70% of its gross margin profits

OPI Research	
15 Sectors Of Capital Good OEMs Were Reviewed For The Last 4 Quarters Comparing Median Gross Profit Margin ([Revenue-COS]/Revenue) Of New Products Versus All Other Revenues	
New Product Offerings	All Other Offerings (Service parts, financing, field service, etc)
25% Gross Margin As A % Of Revenue (Inclusive of R&D/product development)	39% Gross Margin As A % Of Revenue (R&D/product development not included due to immaterial costs)
77% Of Total OEM Revenue	23% Of Total OEM Revenue
68% Of Total OEM Gross Margins	32% Of Total OEM Gross Margins
Note: a small minority of OEMs segment their new product sales from all other revenues. The results of this research should not be viewed as being comprehensive, but given our past work with OEMs, the findings appear to be reasonably accurate. OEMs who do not segment their sales, usually have a higher % of their revenues derived from new product sales. Our estimate is that the "average" OEM generates closer to 85% of its revenues from new product sales, but less than 70% of their profits.	
Conclusion: When OEMs evolve their business focus from that of build-and-sell to product-services, gross profit margins are materially improved.	

Contact OPI to help you:

- Develop a detailed study of the actual and potential market size of Product-Services
- Assist in crafting highly profitable new Product-Services offerings
- Assist in organizing for the delivery of Product-Services
- Re-initialize the service parts distribution planning system
- Assess the operational efficiency and effectiveness of the Product-Services enterprise
- Assist in financial modeling a Product-Services enterprise
- Educate your enterprise through 2- day in-house workshops:
- Solution selling of Product-Services
- Crafting of pay-per-output-of-value programs

For further info go to: www.oemservices.org/services.htm

OPI Events

October 28 & 29, 2004
Seminar: How To Market Not-New Service Parts To Maintainers Of Capital Goods
Las Vegas, Nevada

October 30 & 31, 2004
Event Sponsor: Marketing Remanufactured Aftermarket Products
BigR Show Education Symposium
Las Vegas, Nevada

November 1 & 2, 2004
Seminar: How To Craft Performance Based OEM Product-Services
Las Vegas, Nevada

For further info go to:
www.oemservices.org/educational_programs.htm

Whitepapers (Free PDF downloads)

What Are OEM Product-Services?
www.oemservices.org/pdf_files/WhatAreOEMproductservices.pdf

OEM Use of Channel Partners to Deliver Product-Services: Current Status and Market Trends
www.oemservices.org/pdf_files/channels1.pdf

Remanufacturing: The Next Great Opportunity for Boosting U.S. Productivity
www.oemservices.org/pdf_files/IUbusinessHorizonsRemanufacturing.pdf

Why Classify Service Parts by Condition & Configuration?
www.oemservices.org/pdf_files/ccc.pdf

Business Strategies for Capital Goods OEMs to Support the Service Parts Requirements of an Out-of-Production Product Line
www.oemservices.org/pdf_files/OOP.pdf

This newsletter is available as a PDF file www.oemservices.org/newsletters.htm

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Attachment 5

Commerciality Study
Otis Elevator

AIA PSC PPP Tiger Team
FAR Part 12 Commerciality Study
8/1/2005 Teleconference with Otis Elevator

Participants: Mary Nadalny (Otis), Ed Will (Boeing), Bob Dickie (Parker), Ron Hayward (BAE)

Mary shared details of the commercial business model employed by Otis for the support and service of their elevators. Counters are installed on all Otis-maintained elevators that record significant events. "Start" cycles are primary life recording/usage events, *analogous to DoD onboard PDHM and engine life recorders*. Recurring site visit/elevator inspection schedules for Otis maintenance personnel are tailored to the number of "starts" recorded by the counters on the elevators.

Elevator sensors on the elevator controller unit are tied in to building phone lines and enable Otis personnel to query the elevator's sensor records remotely. These sensors are fairly sophisticated and can detect and record over 300 different fault codes in their memory that can be accessed via phone line modem.

This Otis system is called REM (Remote Elevator Monitoring), and REM conducts continuous fault monitoring, recording and notification. In the event of a major system failure (e.g., passenger stranded between floors, etc.), the REM will automatically dial into the Otis 1-800 line for immediate service center dispatch of the nearest available technician. Otis technicians also use the remote access capability to inspect REM data and troubleshoot systems. *Otis's sensors and REM systems are a commercial application of DoD's Sense and Respond Logistics concept.*

Otis also employs a system called OMMS (Otis Maintenance Management System) in the execution of their condition-based maintenance system. The OMMS counts significant events like starts, and also employs intelligence in determining pro-active maintenance activities and life-limiting some components (removal before failure) to ensure optimal elevator reliability and availability, (and Otis customer satisfaction and revenue). OMMS examines numerous external factors to optimize their maintenance investment decision, e.g., if the elevator is the only elevator in the building or daily usage is predictably more or less than average (for example, a hospital operating on a 24/7 schedule vs. an office building operating on a 5 day 9 to 5 schedule) the OMMS will modify the condition-based maintenance schedule for the system. *The OMMS system is completely analogous to the DoD's RCM (Reliability-Centered Maintenance) program.*

Elevator maintenance is a competitive business, and Otis offers flexible and extensible O&M (Operations & Maintenance) contracts, but a fact of interest to this group is that Otis always seeks at least a 5 year term for their O&M agreements- interesting to this group because *this position is consistent with our Defense Industry position that longer-term contracts are needed to induce the contractor to invest* with a contract timeline sufficient to realize an acceptable ROI (Return On Investment).

Terms and conditions on Otis O&M contracts are *similar to defense PBL contracts*, with unscheduled maintenance and their condition-based maintenance always covered, and general maintenance service (e.g., lubrication) available. Everything but intentional misuse and abuse is covered under Otis' O&M agreements.

Otis' pricing for their O&M contracts can be provided under FFP (Firm Fixed Price) conditions or under a "number of cycles" construct that is *completely analogous to one of OSD's Top 5 PBL metrics - a Cost Per Unit Of Usage arrangement* - although within DoD the usage more likely be "time on wing", "tread miles", "engine starts", etc.

In constructing their O&M agreements Otis demonstrates an impressive command of the factors that can adversely or positively affect the profitably and competitiveness of their offerings, and they analyze the equipment, the application, the number of stops (floors), the anticipated usage, and even the distance of the system from their nearest technician's locale. *The OSD analogy is the BCA (Business Case Analysis) that the services conduct in determining the true lifecycle cost of maintaining their equipment.*

Conclusions:

- Otis is an industry leader in a very competitive commoditized service business environment.
- Otis is successful because;
    - they are committed to continuous improvement,
    - they invest in innovation,
    - they partner with their customers to develop win/win commercial O&M contracts that employ incentives that encourage Otis to maximize "system up" time by investing,
    - they leverage catalogue pricing to make themselves easy to do business with,
    - and they employ contracting periods of performance sufficient for Otis to realize the ROI from their investments.

Attachment 6

Comparison of DOD PBL to Commercial Aviation MRO

By Edward L. Will
Boeing Integrated Defense Systems

Comparison of DOD PBL to Commercial Aviation MRO

By Edward L. Will
Director of Acquisition Policy & e-Business
Boeing Integrated Defense Systems

Dec 2004

DOD PBL – Commercial MRO

- The Department of Defense has launched an aggressive program to revamp its logistics enterprise
  - One key facet is Performance Based Logistics
  - DOD policy encourages use of FAR Part 12, Commercial contracting, as a PBL acquisition strategy
- This summary will assess Commercial Aviation Maintenance, Repair and Overhaul
  - Analogies to DOD PBL objectives
  - Lessons learned, benchmarks & best business practices

Commercial Aviation MRO

- Scheduled checks of the airframe, engines, landing gears, components and cabin interiors, ranging from a brief preflight check to a D-check – an overhaul lasting up to six weeks for the complete aircraft;
- Repair & modification programs including engineering services;
- Cabin completion and life-cycle aircraft services for the fast-growing VIP aircraft market; and
- Combinations of these different MRO Services, which add up to total care packages like United Services' Total Support, SR Technics' Total Care or the Lufthansa Technik Total Technical Service TTS ®

  – Source: Business Briefing: Global Purchasing & Supply Chain Stragies, 2004, NEW DEVELOPMENTS IN PURCHASING AND SUPPLY CHAIN STRATEGIES FOR THE AVIATION INDUSTRY by Dr. Jorg Rissiek & Joachim Kressel

Commercial MRO Contracting Examples

- TBD – *need BCA CAS input*
  - Spares ordering
  - Short term repairs, modifications and support
  - Total life cycle support contracts
    - Length of contract
    - Payment terms (e.g., “$ per operating hour”)
    - Scope
    - Other unique provisions …

Military Aircraft MRO

Wake-up call to a silent revolution?

By Manuel Magalhaes, EADS Programme Manager

"Two central concepts are emerging. First, adopting separate procurement approaches for large and smaller MRO programmes and for commodity and other low risk service provision. Second, MoDs want to adopt a through-life approach to programmes covering both aircraft acquisition and in-service support cost reductions.

"The global trend is fueled also in part by the need for MoDs cost reductions, lack of funding, political pressures to create more public private partnerships (PPP) between governmental and private companies as well as the increasing mobility of deployed forces all over the world."

"Outsourced maintenance … seems to be changing from isolated Time & Material contracts to more integrated MRO services and solutions. In this respect the military client is becoming more inclined to follow the same path as many airlines have done and still do … Assured Availability and Power by the Hour (PBTH).

Source: Frost & Sullivan Aug 2002

Examples

- FAR Part 12 has already been used extensively for military MRO related contracts, ranging from components and subsystems, up to full depot maintenance and logistics support
  - APU’s
  - Engines
  - C –32 and C-40
  - KC-135 PDM
  - KC-10 CLS

DOD Policy

- FAR Part 12 is the preferred PBL contract acquisition method
- Commercial derivative aircraft, engines and COTS subsystems and components are clear areas of application
- PBL scope parallels commercial aviation MRO marketplace
  - Service … of a type … that is commercially based
- Issues:
  - FAA certified repair facilities?
  - Commercial vs. military specifications and standards?
  - Determining price reasonableness through either competition or market survey & analysis

Recommendation: Have DPAP issue a policy determination that recognizes the inherent commerciality of MRO-type efforts, making military aircraft and systems candidates for FAR Part 12

MRO Market

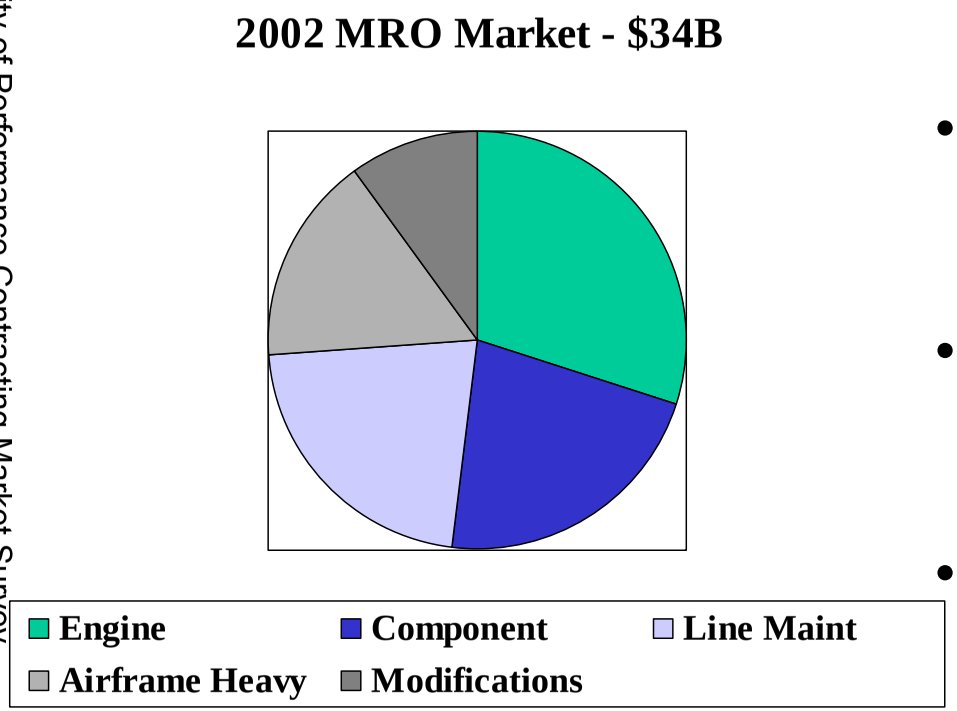
- 2002 Market Study and Forecast
- 2003 Update
- 2004 Forecasts for World, North America and Europe

Commercial MRO Market Size

- A 2002 MRO market totaling $37.8 billion
- A $4.4 billion decline driven by 9/11/01
- Recovery to 2000-2001 levels by 2004
- 3 to 6% annual growth varying by region
- 2007 market of $44.8 to $50.8 billion, depending on economic scenarios
- Above average growth in Asia-Pacific region

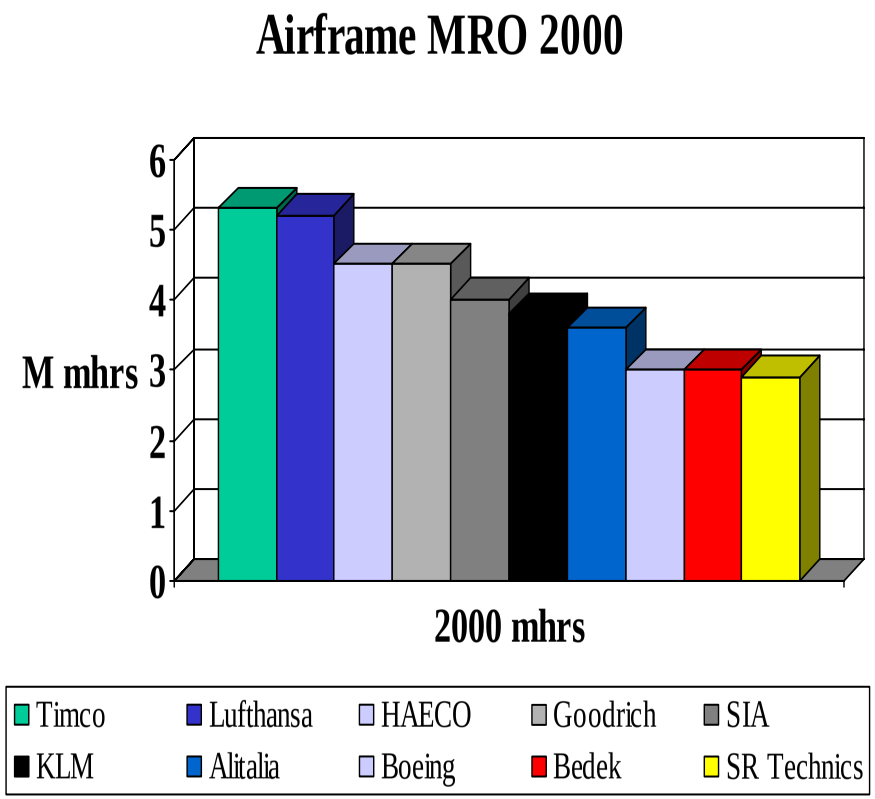
  – Source: Strand Associates, Inc. issued Apr 10, 2002

Other MRO Market Forecast



- $34B in 2002 is a decline of $2.0-2.5B since 2000
- Expect 5.3% compounded average growth rate (CAGR) from 2002 to 2012
- The active air transport fleet will expand from 15,200 today to 23,785 by 2012
- Commercial MRO will grow to $56.9 billion by 2012
  - Aero Strategy Management Consulting, July 2002

MRO Market Characteristics



- In North America, about 75% of the MRO services are performed by the airlines
  - American, Delta, United & Northwest
  - Independent maintenance companies hold about 15% of the market and OEM's hold 10%
- The leading global supplier of MRO service, including both airframe & engines, is Lufthansa with $1.6B, followed by Air France with $1.3B in 2000.

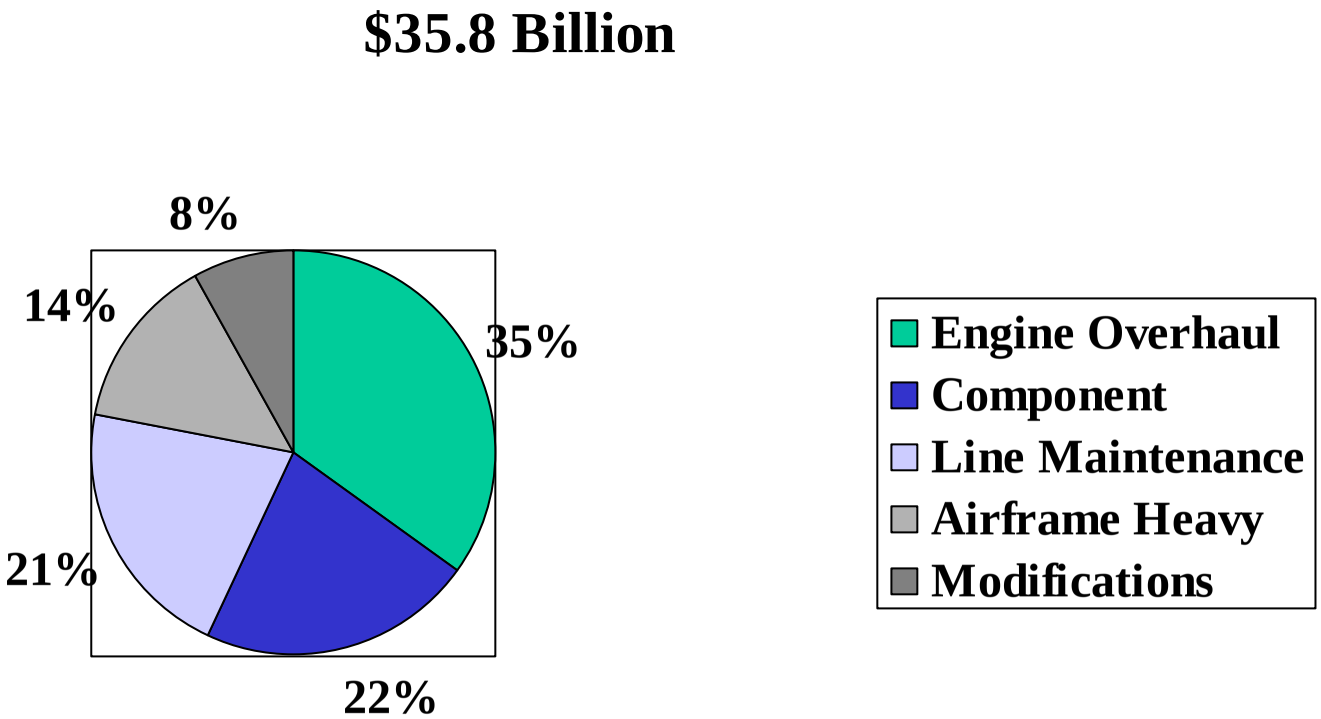
Source: Frost & Sullivan Aug 2002

2003 World Market Forecast

- The 2002 MRO market of $37.8B declined 11.6% from 2001
  - Significant increase in grounded aircraft. Between Sep 2001 and Jan 2002, parked aircraft increased from 649 to 1,310 (102%)
  - Reduced aircraft utilization and elimination of most discretionary maintenance spending
- There were 15,583 active jet aircraft in Jan 2003

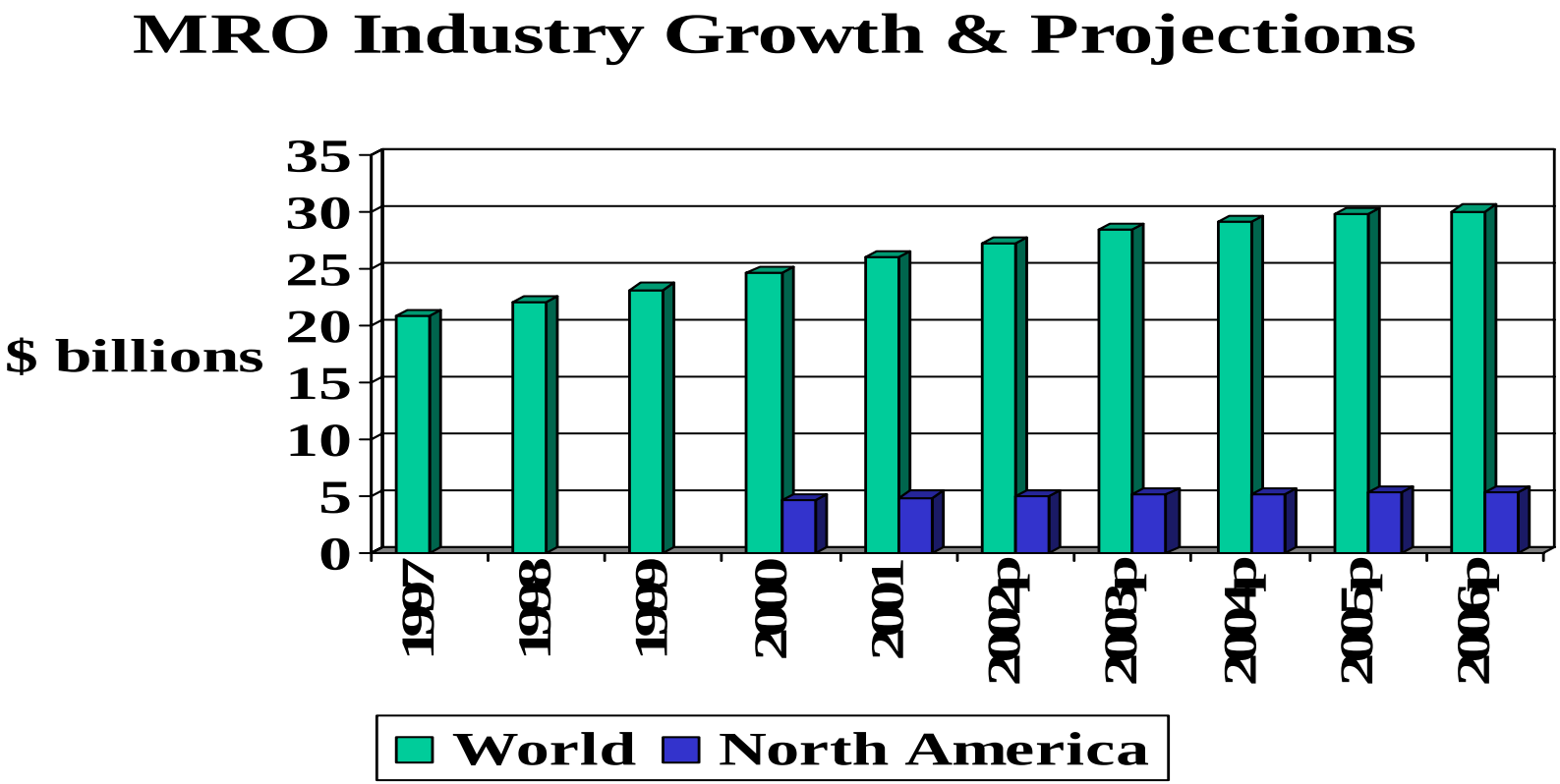
  - Source: BACK Aviation Solutions and Strand Assoc. Inc. 2003

2003 Commercial MRO Market



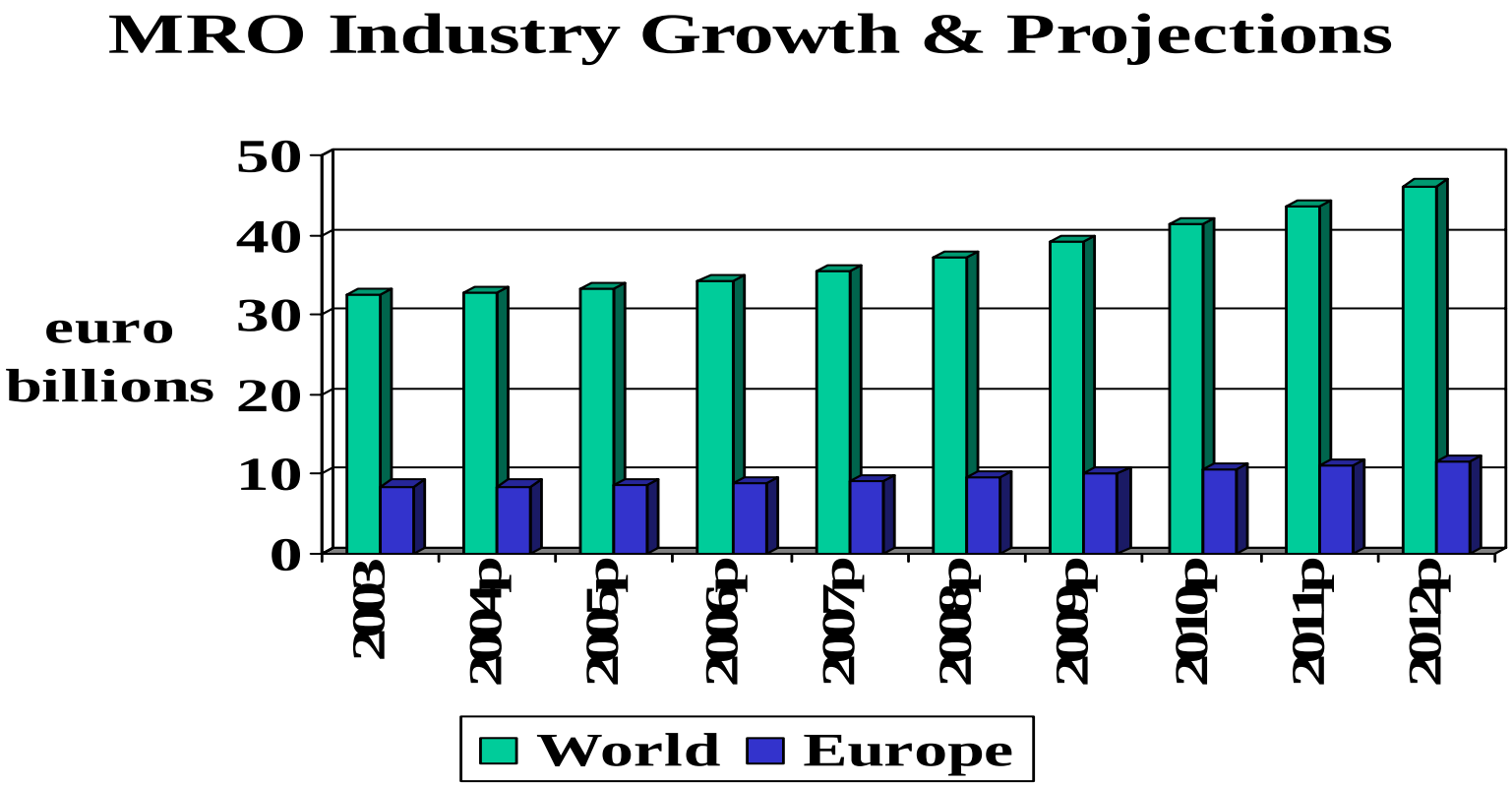
Source: COMMERCIAL AERO-ENGINE MRO OUTLOOK - A NEW DAWN? Engine Yearbook 2005

World MRO Market



Source: Frost & Sullivan Aug 2002

Updated World MRO Market



Source: Frost & Sullivan March 2004

European Market

- European commercial MRO Market is EUR 8.5 billion, forecast to grow to EUR 11.5 billion by 2012
- Shift toward IT-based integrated information, process management and logistics systems is also anticipated to boost the overall capability and general reliability of MRO services.
- "Maintenance providers are being challenged to fulfill flexible short-term contracts and long-term service packages to gasp the benefit of the general tendency towards outsourcing. In particular, MRO providers who are able to provide total service packages … should be able to gain maintenance contracts from the booming low-cost carrier sector. MRO business models of diversification include increasing horizontal integration through globalization and greater vertical integration through adding services at all levels of the supply chain." – Manuel Magalhaes, Frost & Sullivan
- High performance in crucial areas such as turn-around time and quality, flexibility and technical capability in offered total service solutions as well as reduced costs.
    - Source: OUTSOURCING AND CONSOLIDATING TRENDS COMPEL COMMERCIAL MRO PROVIDERS TO RETHINK STRATEGIC PROCESS, London, Business Wire, 29 Jan 2004

Market Observations and Emerging Best Practices

Boeing Commercial Aviation Services

- **Global Customer Support**: Boeing has developed a worldwide infrastructure to support airline schedules, resolve technical difficulties, provide quick access to technical information and deliver vital products and services when and where they're needed.
- **Spares and Logistics Support**: Boeing operates the aviation industry's most comprehensive spare-parts sales and distribution network, maintaining inventory for about 500,000 different types of parts to support the worldwide fleet.
- **Maintenance and Engineering Services**: Commercial Aviation Services develops, manages and delivers the vast amount of technical information needed for fleet maintenance and engineering support.
- **Fleet Enhancements and Modifications**: Commercial Aviation Services can help airlines modify aircraft configurations, enhance fleet performance and improve cabin amenities.
- **Flight Operations Support**: Commercial Aviation Services provides full support for airline flight operations, including innovative information-management solutions and a global training network.

MyBoeingFleet.com

Currently, ***MyBoeingFleet.com*** offers registered users access to volumes of technical data, including:

- Engineering Drawings
- Maintenance Documents
- PART Page (Spare parts online ordering system)
- Products Standards
- Flight Operations
- FLEET TEAM Digest and Resolution Process (tracking and prioritizing resolution of in-service issues)
- Spares Provisioning Services
- Data and Services Catalog
- Fleet Reliability Statistics (Fleet Inservice Reports)
- Boeing Digital Profile Drawings
- Technical Media Tracking
- Online and e-mail notices of new service bulletins by airplane model

MRO Market Segmentation

- **Airframe Heavy Maintenance** - Maintenance that is too complex or time consuming for being performed as Line Maintenance. This is basically C- and D-checks.
- **Conversion & Modification** - Airframe conversions, avionics, in-flight entertainment retrofits & interior modifications
- **Engine Overhaul** - Engine maintenance, repair, overhaul, parts & accessories
- **Component Maintenance** - Regular check, maintenance and test of component, and component logistics to airlines, hangers and shops of MRO companies
- **Line Maintenance** - Short cyclic and frequent maintenance to aircraft at airport stations – pre-flight and daily checks, including A, B and overnight checks.

Source: Frost & Sullivan March 2004

MRO Market Factors

Market Drivers

- Economic growth & air traffic
- Airline restructure
- Low cost carriers
- Info technology application
- Cargo business
- Enlargement of EU

Market Restraints

- Reliable aircraft & engines
- Labor Rate
- Personnel shortages
- Component modularity
- Equipment cost

Source: Frost & Sullivan March 2004

MRO Spare Parts Inventory

- "…the top priority in the MRO industry is to provide both safe and reliable aircraft in order to fulfill the airlines' preconditions. Therefore, all spare parts have to be available immediately whenever and wherever they are needed to make the aircraft fly. In the past, this has often led to excessive safety stocks no matter what costs were implied."
- "High stock values are not only the result of limited cost awareness, but also a consequence of a significant portion of non-routine work included within major MRO tasks, with only limited predictability of parts needed to be replaced during a specific event."
- "In combination with partly excessive lead times for aircraft parts ranging up to one year, MRO shops have a wide range of parts available, many of them being slow movers. For example, Lufthansa Technik AG keeps detailed information on 775,000 parts within its ERP."

  – Source: Business Briefing: Global Purchasing & Supply Chain Stragies, 2004, NEW DEVELOPMENTS IN PURCHASING AND SUPPLY CHAIN STRATEGIES FOR THE AVIATION INDUSTRY by Dr. Jorg Rissiek & Joachim Kressel

MRO Supply Chain Management

- "…Lufthansa Technik AG began to exchange forecasting information with selected key suppliers to allow production planning according to the expected demand in the long run and to place orders corresponding to the actual just-in-time demand from production. Consequently, making use of online, on-time availability of information has lowered stock levels drastically."
- "… the lean spares programme of General Electric Engine Services offers lead times for most high-usage parts of just one day."

  – Source: Business Briefing: Global Purchasing & Supply Chain Stragies, 2004, NEW DEVELOPMENTS IN PURCHASING AND SUPPLY CHAIN STRATEGIES FOR THE AVIATION INDUSTRY by Dr. Jorg Rissiek & Joachim Kressel

Optimizing Maintenance

- Preventative activities are conducted at prescribed intervals of calendar time, operating hours or some other usage parameter
- On-condition maintenance is conducted based on the results of regularly scheduled inspections and tests
- Corrective activities are conducted in response to in-service discrepancies or failures
- Redesign activities take the form of engineering modifications that are meant to address unanticipated safety or reliability problems

Source: Predictive MRO by accenture 2001

Maintenance Scheduling

- Standard maintenance execution time
- Asset availability (aircraft ground time, part repair/refurbishment time)
- Location capability and capacity (hanger, line, shops)
- Skilled mechanic labor requirements
- Parts lead time, two-way interchangeability, repair versus buy analysis and network inventory availability
- Tools and ground support equipment availability

Source: Predictive MRO by accenture 2001

Supply Chain Synchronization

- Spare parts demand forecasting – e.g., core availability, return, repair and rework of rotables is forecast to generate a repair vs. buy (RVB) plan. The RVB plan achieves a balance of inventory by considering two-way interchangeability substitution logic. It also uses advanced statistical and probabilistic forecasting techniques.
- Chaining and superceding parts – in planning the purchase of component parts, variables such as parts improvements and mandated safety changes must be forecast. The ability to recognize parts chains reduces excess inventory & scrap.
- Network inventory distribution planning – develops time-phased, network-wide inventory plans that allow dynamic redeployment of parts based on predicted maintenance requirements and failures rates. This minimizes necessary inventory.

Source: Predictive MRO by accenture 2001

Synchronization (cont'd)

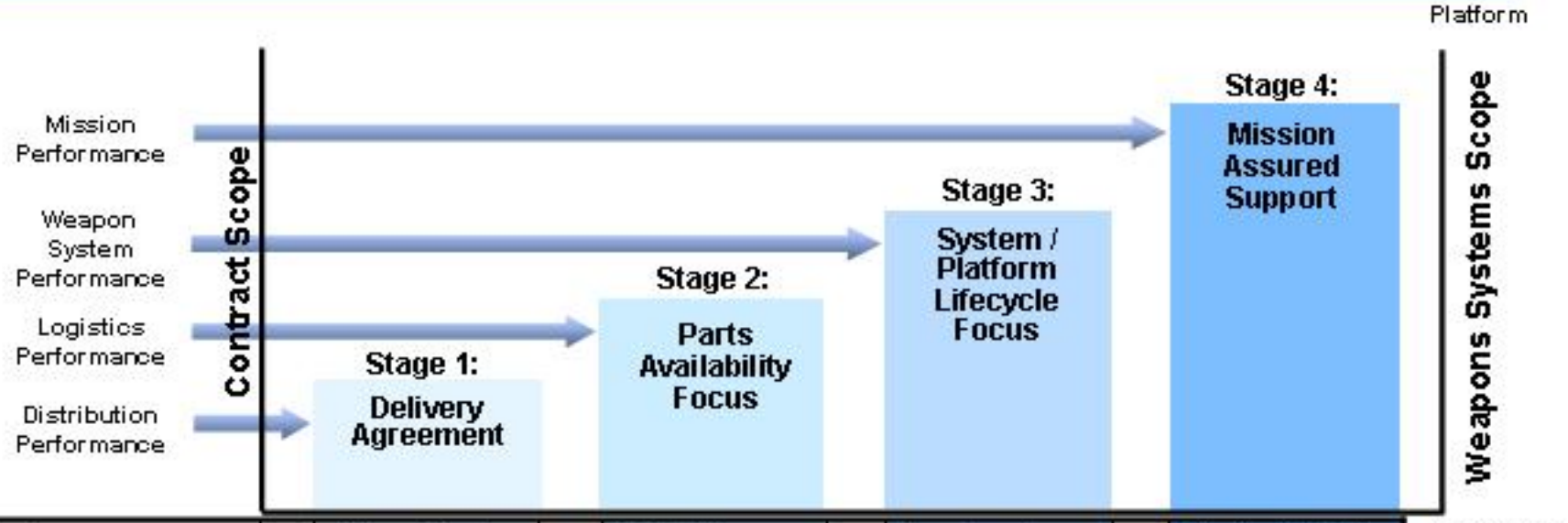
- Supply chain event management and visibility – time-phased event management and critical-path resolution to potential supply problems, before the problem occurs. Maintenance personnel are alerted to capacity, parts, tools and materials demand and supply imbalances while also being provided with options for resolving the problem.
- Business-to-business (B2B) marketplace integration – the leveraging of the transactional efficiencies and supply chain information resident in the electronic marketplaces (eMarketplaces) of the future.

Source: Predictive MRO by accenture 2001

Attachment 7

OSD PBL Maturity Framework

OSD PBL Maturity Framework



Performance Objective	Delivery Speed	Availability	Operational Availability	Mission Reliability
Functional Scope **(responsibility of the provider)**	▪ Planning ▪ Logistics	▪ Planning ▪ Logistics ▪ Value Engineering	▪ Planning ▪ Logistics ▪ Value Engineering ▪ Config. Mgmt. ▪ Maintenance	▪ Planning ▪ Logistics ▪ Value Engineering ▪ Config. Mgmt. ▪ Maintenance ▪ Operations
Typical Weapon System Scope	▪ Parts ▪ Components	▪ Components ▪ Assemblies	▪ Systems ▪ Platforms	▪ Platforms
Examples	Will work with Services to identify examples of each stage			

Attachment 8

Commercial Item Determination - GE F404 PBL

(Reprinted with permission GE Corporation)

GE Aircraft Engines

Laurence M. Trowel, Manager
Aircraft Engines Government Contracts

General Electric Company
One Neumann Way, Cincinnati, Oh 45215-1988

Mail Drop: H350
Local Phone: (513) 243-9317
Dial Comm 8*332-9317
Fax: (513) 243-5291

October 30, 2002

CAPTAIN David Graff
Director of Contracts
700 Robbins Avenue
Philadelphia, PA 19111-5098

Dear CAPTAIN Graff:

Several weeks ago, we discussed the proposed F404 PBL acquisition and the many opportunities it offers for innovation in both the support of the F404 engine and the business practices used to award and administer this unique long term partnership. One of the opportunities that we believe still remains unexplored is the use of the commercial item policies contained in FAR Part 12.

The attached paper is intended to provide information to support NAVICP's market research related to the Navy's requirement for performance based logistics support services for the F404 engine. As outlined in the paper, GE provides the same type of logistics support in the commercial market place with its Customized Support Agreements (CSA) that share many common characteristics and processes with the F404 PBL requirement. In addition, worldwide support of LM1600 marine and industrial engines, a derivative of the F404, further substantiates the commerciality of the Navy's PBL requirements. With over $28 billion of CSAs in place in the commercial marketplace today, I think you'll agree GE's performance based logistics support services of aircraft, marine and industrial engines are widely accepted with the marketplace today.

Contracting for the F404 PBL requirement on a Part 12 basis also offers both the Navy and GE significant opportunities for streamlining both the contract award and contract administration processes. We believe such an approach can be easily and quickly implemented and result in a shortened contract award cycle time and more responsive contract administration.

We look forward to the opportunity to discuss with you this opportunity for innovation in the F404 PBL business arrangement. Please feel free to contact me at your earliest convenience.

Sincerely,

Laurence M. Trowel

Laurence M. Trowel

Attachment (1)

Support for Commercial Item Determination
Naval Inventory Control Point Philadelphia

F404 Engine Performance Based Logistics (PBL)

Prepared by GE Aircraft Engines
October 30, 2002

This document contains trade secrets and confidential commercial or financial information exempt from disclosure under the FREEDOM OF INFORMATION ACT (FOIA) 5 USC § 552(b)(4). It is submitted voluntarily for the sole purpose of allowing evaluation by the U.S. Government.

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SUPPORT FOR COMMERCIAL ITEM DETERMINATION
F404 PERFORMANCE BASED LOGISTICS

Purpose of this paper. The Government is required by FAR 10.001(a) to conduct market research in support of acquisitions in excess of the Simplified Acquisition Threshold. The key purposes of this market research are to determine (i) if sources capable of satisfying the agency's requirement exist; and (ii) if commercial items are available that meet the agency's requirement, or could be modified to meet the agency's requirement. The purpose of this paper is to provide information to NAVICP to support its market research for the F404 Performance Based Logistics (PBL) requirement.

Definition of "commercial item" includes services. FAR 2.101 defines a "commercial item" to include both supplies and services. Paragraphs (1) – (4) of the definition describes the types of supplies that are considered "commercial." Paragraphs (5) and (6) of the definition describes the two types of services that are considered to be "commercial" – services in support of a commercial item of supply (e.g., installation, maintenance, repair, training, etc.), and stand-alone services that are themselves commercial. This paper focuses on the stand-alone services as defined in paragraph (6) of the definition of a "commercial item."

Paragraph (6) of the FAR 2.101 definition of a commercial items describes a service that should be considered "commercial" as follows:

> *"(6) Services of a type offered and sold competitively in substantial quantities in the commercial marketplace based on established catalog or market prices for specific tasks to be performed under standard commercial terms and conditions..."*

This definition of a commercial service is very broad in its scope and is intended to allow the US Government to take full advantage of the huge services component of the US economy. The definition allows the US Government to procure services to meet its needs on a commercial basis if -

- The Government's requirement is for a service that is the same "type" of service that is offered and sold competitively in the commercial marketplace under standard commercial terms;
- The service that is offered and sold commercially is also sold in substantial quantities in the commercial marketplace; and
- The service that is offered and sold commercially is priced based on established catalog and market prices for a specific task to be performed (not a cost type pricing arrangement).

Buying activities throughout the Government have used this very broad definition to acquire a wide variety of services from the commercial marketplace to meet US

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Government needs without regard for where the service will be performed (e.g., performance on a military installation, etc.) or the item on which the service is to be performed (e.g., military aircraft, engine, ship, etc.).[1] The criteria for determining commerciality under paragraph (6) of the commercial item definition is whether or not the service to be acquired is the same "type" of service that is offered and sold in the commercial market place.

The scope of the commercial item definition of services is explained in the DOD Commercial Item Handbook issued by the Under Secretary of Defense (Acquisition, Technology and Logistics).[2] In Chapter 3, the Handbook reinforces the intent of the commercial item definition and dispels misperceptions regarding the scope of the definition by stating -

> *"Other misperceptions about commercial items include the inaccurate belief that the exact part number must be sold in the commercial market, a commercial service cannot be performed on a military items, and a commercial item cannot be incorporated into a military item."*

Appendix C of the Handbook provides additional insight into the intent of the definition with the following statement –

> *"The latter, stand-alone definition [of services] does not preclude the inclusion of Government-unique requirements or terms and conditions, as long as there are sufficient "common characteristics" between the commercially available service and the service being acquired."*

The GAO has supported this implementation of the commercial item definition and has clearly held that a service can be determined to be commercial even if it is not precisely the same service that is offered and sold in the commercial marketplace, and some Government-unique specifications do not reflect the broader commercial practice. GAO has also clearly held that the agencies have significant discretion in determining whether a supply or service satisfies the definition of "commercial items."[3]

Acquisition of performance based services. The US Government has recognized the importance of services, and particularly performance based services to its support of the war fighter. In a memorandum dated February 13, 2002, the Under Secretary of Defense directed that performance based service contracts be applied to all new weapon systems and all Acquisition Category I and II fielded systems to better support the systems over their life cycle and provide the proper balance between performance incentives and risk.[4]

---

[1] DOD Commercial Designation Integrated Process Team Final Report, dated March 3, 2000.
[2] Under Secretary of Defense (Acquisition, Technology and Logistics) Memorandum dated 10 January 2002. Attachment to Memorandum: Commercial Item Handbook, Office of the Under Secretary of Defense (Acquisition, Technology and Logistics), November 2001
[3] Aalco Forwarding, Inc., B277241.8/B277241.9, October 21, 1997.
[4] Under Secretary of Defense memorandum, Subject: Performance Based Logistics, dated February 13, 2002

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The move to performance based services contracts is growing across the US Government. OMB reports that in 2001, US Government agencies reported using performance based contracting methods on about $28.6 billion, or 21% of the $135.8 billion incurred for services. OMB has established greater use of performance based contracts as one of several government-wide reforms to be highlighted by the President for FY 2002 budget.[5]

In a report dated September 23, 2002[6], the General Accounting Office (GAO) evaluated DOD's use of performance based service contracts. The GAO report clearly supports the use of performance based service contracts and the benefits the Government can derive from this contracting approach. According to the GAO report, Office of Federal Procurement Policy (OFPP) guidance identifies four key attributes of performance based contracts –

- Describes the requirement in terms of results required rather than the methods of performance of the work;
- Sets measurable performance standards;
- Describes how the contractor's performance will be evaluated in a quality assurance plan; and
- Identifies positive and negative incentives, when appropriate.

The GAO concluded that performance based contracting offers a viable way toward achieving savings and getting better results from contractors, even for "...complex, risky, unique endeavors..." GAO recommended that, because of the growing importance of performance based contracting to the Executive Branch, OFPP further clarify existing performance based contracting guidance.

DOD acquisition of commercial services in support of weapon systems. DOD has been very innovative in its use of the FAR commercial item definition to acquire services in support of a wide variety of weapon systems. Below is a very brief listing of aircraft and aircraft engine-related examples of DOD acquisitions of services that were determined to be commercial:

- USAF contract for Propulsion Business Area workload at San Antonio Air Logistics Center. Under this Part 12 contract, the US Air Force awarded a contract for the complete maintenance, overhaul and support of the F100, TF39 and T56 engines to a team consisting of the Oklahoma City Air Logistics Center and Lockheed Martin Corp.
- US Army contract for support of Corpus Christi Army Depot T700 Depot repair line. Under this Part 12 contract, GE Aircraft Engines is responsible for providing all materials to enable the Depot to meet its planned annual workload. Additionally, GE provides technical and logistic support and recommendations to improve Depot repair turn times and engine time on wing.

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[5] GAO Report, Title: Guidance Needed for Using Performance Based Service Contracting (GAO-02-1049), September 23, 2002

[6] GAO Report, GAO-02-1049, September 23, 2002

- Three separate US Army contracts for T700 overhaul and repair awarded on a competitive, Part 12 basis for repair of over 640 engines over a 4 year period.
- NAVAIR and US Army Reserves Part 12 BOA orders for overhaul of T700 engines and cold section modules.
- NAVICP contract for Total Logistics Support for the Auxiliary Power Unit (APU) for the P-3, F/A-18, S-3 and C-2 aircraft. This contract was awarded to Honeywell International, Inc.
- NAVICP Part 12 BOA and subsequent BOA orders for LM 2500 engine overhaul and component repairs.
- USAF Part 12 contract for F118 engine overhaul and repair in support of the B-2 and U-2 aircraft.
- USAF Part 12 contracts for TF39 module overhaul and repairs.

US Navy's F404 PBL requirement. The Government's stated need is for total logistics support (including a guarantee of availability) of selected components of the F404 engine at a fixed price for the expected number of annual flight hours .

GE commercial services offerings. To support the US Navy's market research associated with the F404 PBL requirement, and the determination under FAR 10.002(d)(1) that the requirement may be met by "...a type of item or service customarily available in the commercial marketplace that would meet the definition of a commercial item...," GE provides the following brief discussion of its commercial services product offerings.

Through GE Engine Services (GEES), GE offers a broad array of services to support airlines and air carriers around the world including a variety of Customized Services Agreements (CSAs). At Attachments 1 and 2 are pages from a GEES product brochures that briefly describe the customized solutions offered to GEES customers. As the brochure clearly states, today in the commercial aviation propulsion business, there is no "one size fits all." Every GEES commercial customer has a different need based on their business segment, the specific business model, the existence of an in-house repair facility, their financial position, and much more.

To meet this need, GEES offers a variety of basic service products, each of which is itself customizable to the individual customer's needs. Among the service products offered are the following three products that closely parallel the Navy's F404 PBL requirement -

- *Maintenance Cost Per Hour (MCPH)*^{sm} The MCPH product provides customers with a mix of services including all scheduled and unscheduled maintenance, life-limited parts coverage, FOD damage coverage, LRU maintenance and more all at a predetermined, fixed rate per engine flight hour. This product is most appropriate where the customer wants GE to perform some or all of the engine maintenance and guarantee the availability of the engine for a fixed price.

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- *Material By The Hour (MBTH)*[sm] The MBTH product provides customers with greater supply chain efficiency and material availability by leveraging the customer's maintenance and repair capability with GE's technology and materials expertise. In MBTH, GE guarantees the materials to support engines or selected components at a predetermined, fixed rate per flight hour.

- *Maintenance Cost Per Set (MCPS)*[sm] The Maintenance Cost per Set product is tailored to each customer's need and is designed at the individual part level, incorporating unique repair specifications and part replacement requirements. GE assumes the risk for scrap rate and repair mix for components like high pressure compressors, high pressure turbines, and low pressure turbine airfoils, seals and shrouds. The customer ships a complete set from engine disassembly and receives a complete set ready for installation, at a fixed price per event.

- *Line Replaceable Unit MCPH*[sm] *and Guaranteed LRU Availability (GLA)*[sm] The LRU MCPH product provides customers dedicated technical management and repair service for specified LRU maintenance between engine overhauls. Each LRU is repaired and shipped back to the customer for a fixed monthly fee. The Guaranteed LRU Availability product offers customers the opportunity to get guaranteed improved asset availability, reduced cost of ownership and maintenance cost predictability by guaranteeing the availability of identified LRUs on a fixed price per flight hour.

Today, GE has over $28 billion in CSA contracts in force with over 70 air lines and other aircraft operators covering in excess of 1900 engines. Key customers include Southwest, Continental, US Airways and Mesa Air Lines.

At Attachments 3-5 are excerpts from several standard GEES product briefing templates used to describe our products to potential customers. These briefings are used by GEES to briefly describe these three basic product offering and explore the customer's particular business situation and propulsion services needs. From that discussion, GEES and the potential customer proceed to engage in detailed discussions resulting in a customized product that meets the customers business needs.

One of the engines that GE sells and maintains in the commercial market place the LM 1600 aeroderivative engine. This engine is a derivative of the F404 engine designed for commercial marine and industrial applications. For marine applications, there are 14 LM 1600 engines installed and in use in 5 ships owned by 4 customers in Denmark, Germany, Italy and Sweden. GE is currently in the 4th year of a 10 year MCPH[sm] agreement with Stena Lines for support of both installed LM 1600 and LM 2500 engines. GE performs overhaul and component repair for other LM 1600 operators under a variety of time and material and other types of service arrangements. There are also three international depots for LM 1600 overhaul and repair including Rheden, Volvo and Standard Aero. With respect to industrial applications, there are currently 105 LM 1600

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engines deployed at 44 commercial customers. GE currently supports many of these engines under 9 customized service agreements.

Comparison of GE commercial services offerings to US Navy F404 Requirement. The Navy requirement for total logistical support for selected components of the F404 engine has distinct parallels to the commercial customized services agreements offered and sold in the commercial market place:

- Under all the customized service agreement, GE provides customers with a fixed price for maintenance costs for a given range of flying hours provided for in the customized service agreement. The US Navy seeks to establish a contract that would similarly provide, at fixed price per month, a guaranteed availability of selected F404 engine components for a specific range of flight hours.
- As with the commercial products described above, GE will be responsible for all forecasting, materials, workscoping, labor, warehousing supporting IT and project management needed to meet the guarantee for the selected components.
- The tools and processes that GE would use to manage the F404 PBL are the same as those used to manage the $28 billion of commercial customized service agreements.
- As with our commercial products and customers, the US Navy requirement will require some customization of GE's standard commercial products to meet the Navy's specific propulsion needs.

Conclusion. The US Navy need for greater certainty in the availability of key F404 engine components, greater time on wing for those components, more predictable maintenance costs and overall reduced cost of F404 depot level maintenance is one that is shared with many commercial customers around the world. GE has a broad range of products that are designed to meet these same needs in the commercial market and are completely customizable to meet both commercial and Navy customer business and technical needs. These products clearly meet the OFPP criteria for performance based services as well as the FAR 2.101 definition of a commercial services. Utilizing commercial practices for the acquisition of the F404 PBL will enable the US Navy to take full advantage of the experience and tools that have made GE the most successful provider of engine services in the world.

Attachments
1. GE Engine Services, Customized Solutions Brochure
2. GE Engine Services, Excerpt from Maintenance Brochure
3. GE Engine Services Marketing Presentation – MCPH^{sm}
4. GE Engine Services Marketing Presentation – MBTH^{sm}
5. GE Engine Services Marketing Presentation - GLA^{sm}

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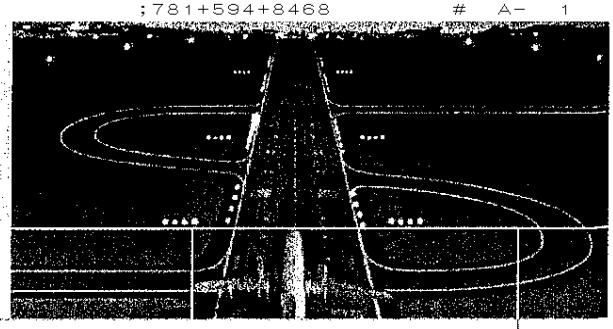
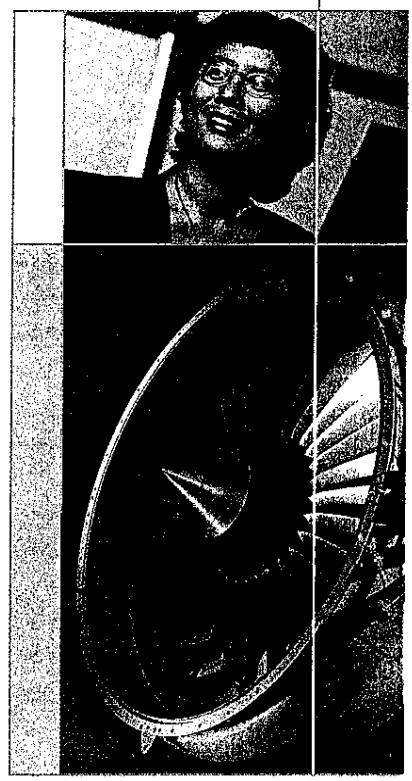


Customized Solutions

We'll do business on your terms.

There's no such thing as one size fits all. So we work with customers to create solutions that help them meet their unique requirements and goals. From complete overhaul management services to extensive materials management programs, you'll get solutions that complement your core competencies and optimize cash and asset efficiency.

Our Maintenance Cost Per Hour℠ (MCPH℠), Material By the Hour℠ (MBTH℠), Material Cost Per Set℠ (MCPS℠), and other programs help you match your expenses to your revenue stream. Each customized program opens the door to our vast technical, logistical, fleet, and business management resources.



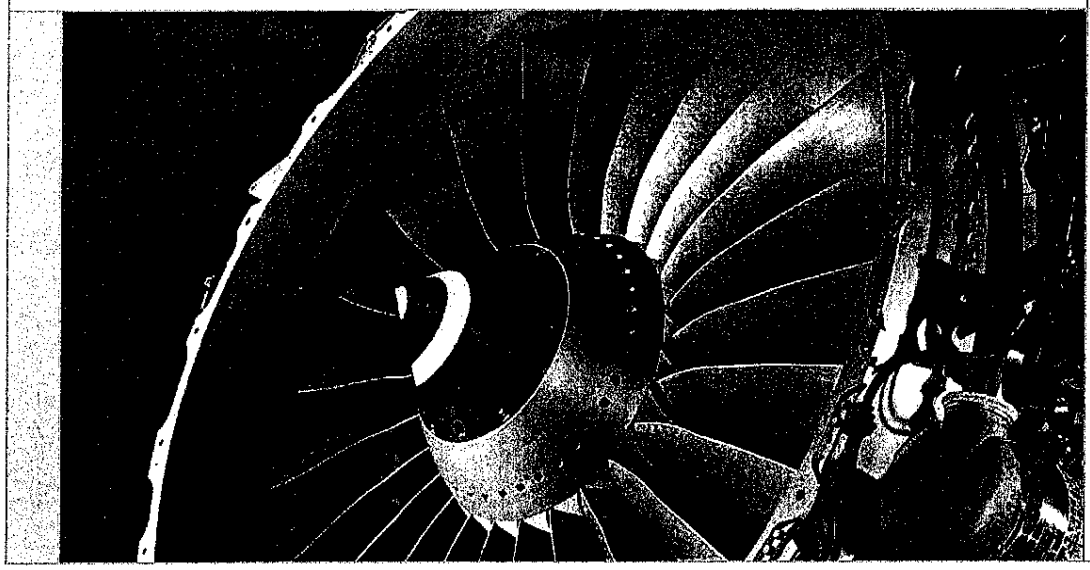
Tailored for your operation. We'll work with you to design a maintenance solution that meets your aircraft or fleet needs. By letting you pay a fixed, predictable amount, our flexible programs transfer risk from you to us. This lets you trade uncertainty for certainty during a given time period. Your choices include:

Maintenance Cost Per Hour Programs. These comprehensive services offer a predetermined price per engine flight hour and a fixed payment schedule. MCPH programs maximize engine performance and reliability, spare engine availability, and aircraft utilization, while minimizing service disruptions, administrative burden, and working capital. MCPH lets you achieve the perfect balance of risk and reward by balancing maintenance cost and time on wing. Customers can choose from a mix of services, including:

- All scheduled and unscheduled engine maintenance.
- Life-limited parts coverage.
- Technology Upgrades.
- Coverage for Service Bulletins and Airworthiness Directives.
- Foreign Object Damage (FOD) coverage.
- Line Replaceable Unit (LRU) maintenance.
- Guaranteed LRU Availability℠ (GLA℠).
- On Wing Support℠ services.
- Guaranteed Spare Engine Availability.
- Engine and rotables sale/leaseback.
- Performance trend monitoring.
- Transportation.

GE Engine Services
We bring good things to life.

Customized Solutions



Material By The Hour Programs. MBTH is a rate per engine flight hour materials program that provides similar coverage and benefits as MCPH programs, but is designed specifically for customers who overhaul their own engines. The goals are to achieve greater supply chain efficiency, material availability, and service excellence. Each program leverages the customer's MRO capability and GE's technology and materials management expertise. With MBTH, you'll be guaranteed the material you need when you need it—at predictable rates.

Maintenance Cost Per Set Programs. Structured as a fixed rate per event program, MCPS is tailored to your specific hardware needs. Each program is designed at the individual part level, incorporating your unique repair specifications and part replacement requirements. GE assumes the risk for scrap rate and repair mix for components like high pressure compressors, high pressure turbines, and low pressure turbine airfoils, seals, and shrouds. With this single-point solution, you ship a complete set from engine disassembly and receive a complete set ready for installation—all at a predictable price.

We've built considerable flexibility into our customized solution programs and are continually developing additional solutions to meet your evolving requirements. Learn more about how we can reduce your maintenance costs and risk at www.geae.com.

GE Engine Services
We bring good things to life.

GE Engine Services, Inc.
One Neumann Way F118
Cincinnati, OH 45215 U.S.A.
Phone: (513) 552-3272 (internationally)
(877) 432-3272 (within U.S.)
Fax: (513) 552-3329
www.geae.com

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Maintenance Cost Per Hour, MCPH, Material By the Hour, MBTH, Material Cost Per Set, MCPS, GLA, Guaranteed LRU Availability, and On Wing Support are service marks of General Electric Company, U.S.A.

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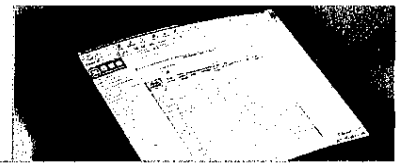
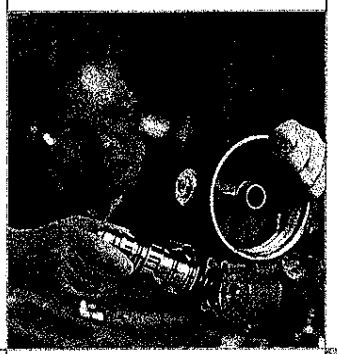


Accessories: The one source for overhaul, repair, or replacement.

With one call you can get the accessory overhaul, repair, or replacement capabilities you need, and benefit from maintenance and management efficiencies that reduce your total cost of ownership at the same time. Whether you need a single accessory repaired or replaced on a time-and-material basis, or a comprehensive Guaranteed LRU Availability℠ (GLA℠) program, we have the right service for you. Our full range of innovative, customized solutions—for GE and non-GE engine accessories, and for a broad spectrum of aircraft—can help extend on-wing life and improve your profitability. These solutions feature:

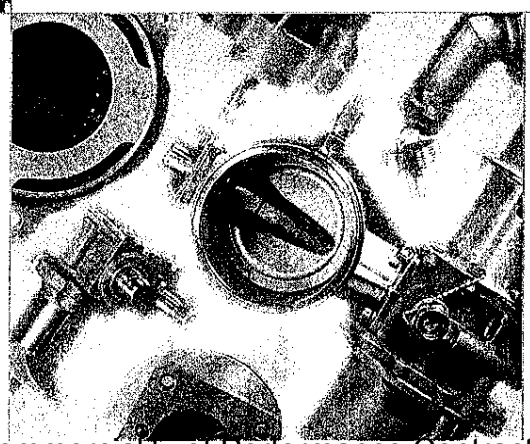
- Creative repair solutions developed and executed by our experienced engineering and technical team.
- A dedicated Customer Satisfaction Manager who is available 24x7.
- The Web-based Accessory Customer Service Information System, offering such digitized information as order status, online quote approvals, order history, image viewing of quotes, 8130 approval forms, and ship and invoice documents.



Besides case-by-case solutions, GE offers:

LRU MCPH℠ program. You pay one monthly fee and receive dedicated technical management and repair services for LRU maintenance between engine overhauls. Line Replaceable Units are any aircraft control or accessory that can be removed and replaced during normal day-to-day aircraft operations. We provide services for specified engine accessories. Each LRU is repaired and then shipped back to your location. The program offers savings in sourcing, transportation, and administrative overhead, while ensuring world-class quality, traceability, and turnaround time. Maintenance costs can be predicted, which reduces your financial risk.

Guaranteed LRU Availability (GLA) service. As the ultimate in cost-of-ownership reduction for LRUs, GLA offers guaranteed availability, maximized reliability, and reduced capital investment. It's priced on a dollar-per-hour basis. You can also get improved asset availability, reduced capital outlay and overhead, maintenance cost predictability, lower cost of ownership, and a dedicated 24x7 priority support desk. You decide whether you want GE to own the LRUs or whether you want to retain ownership.



GE Aircraft Engines

engines
maintenance
material
finance
information

GEES Maintenance Cost per Hour (MCPH)sm

www.gees.com

Maintenance Cost Per Hour (SM)

What is GEES MCPH?

- A comprehensive engine maintenance service, based on a predictable cost per engine flying hour, with a pre-determined price and a fixed payment schedule

= Monthly engine EFH X MCPH rate* ($/EFH)

GEES MCPH - Goals ...

Maximize

- Engine reliability
- Spares availability

Minimize

- Life-cycle maintenance costs
- Engine removals and service disruptions
- Customer's administrative burden

MCPH - Our Commitments . . .

- Custom-tailored program to meet your needs
- Pricing based upon your specific fleet operating parameters
- Flexible scope of services
- Performance commitments ... TAT, Spares, EGT
- Fixed pricing for covered services

GEES MCPH Provides the Maximum Customer Value and the Lowest Life Cycle Costs

MCPH Benefits vs. T&M

	MCPH	T&M
• Cash Outflow Timing	Predictable	Variable
• Customer Financial Risk	Low	High
• Customer Cost per EFH	Optimal	Unknown
• Customer TOW Risk	Low	High
• Operational Risk	Low	High
• Customer Infrastructure Demand	Low	High
• GEES Workscope Leverage	High	Low
• GEES Fleet Mgt Expertise	High	None

MCPH Provides Significant Financial & Operational Benefits over T&M

Engine Maintenance Considerations

Operational

- Scheduled removals
- Unscheduled removals
- Spare engine availability
- AOG's
- Delays and Cancellations
- Engine removal/installation
- Logistics/transportation
- Purchasing/administration

Financial

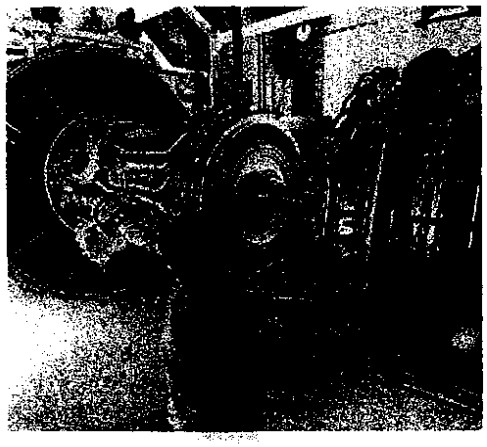
- Overhaul costs (labor, material, repair)
- LLP replacement costs
- Cash flow predictability
- Total cost of ownership
- Lease engine rental costs
- Taxes
- SB's/AD's/mods
- Annual cost inflation

Technical

- Reliability (time on wing)
- Quality workmanship, material, repairs
- Workscope optimization
- Min. build requirements
- Guarantees/warrantees
- SB/AD incorporation
- Training
- Record keeping

Operational, Financial, and Technical Considerations

MCPH Coverage Options

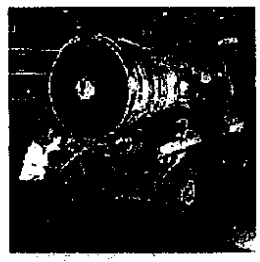


Basic Engine Overhaul

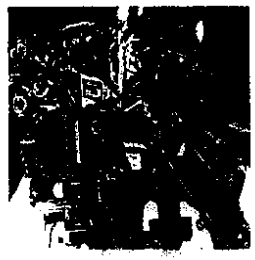
- Assembly, Disassembly, Repair
- All Material, Labor, Repair
- Fleet Management

+

Optional Services



Transportation



LRU Repair & Availability

Remote Diagnostic

On-Wing Support

Spare Engine Availability

LLP Replacement

SB's and AD's

FOD (Foreign Object Damage)

MCPH Coverage Tailored to Meet Customer's Specific Needs

MCPH Offerings

MCPH Base	MCPH Plus	MCPH Total
• **Basic Engine Overhaul** – Shop Material – Shop Labor – Component Repair – Workscoping – UER Engine Caused – Shop Test – Spare Engine Maintenance • **Fleet Management** – MCPH Fleet Manager – Customer Support Manager – Record Keeping/Documentation • **Transportation**	MCPH Base Services + Additional Services (from list below)	**MCPH Plus + Additional Services (from list below)**
	• **Additional Services** – LLP – FOD – Engine BFE / QEC – Flightline LRU's – On-Wing Support – Trend Monitoring	• **Additional Services** – Line Labor – S/B's and AD's – Spare Engines – Initial Provisioning

MCPH Customized to Meet Your Needs

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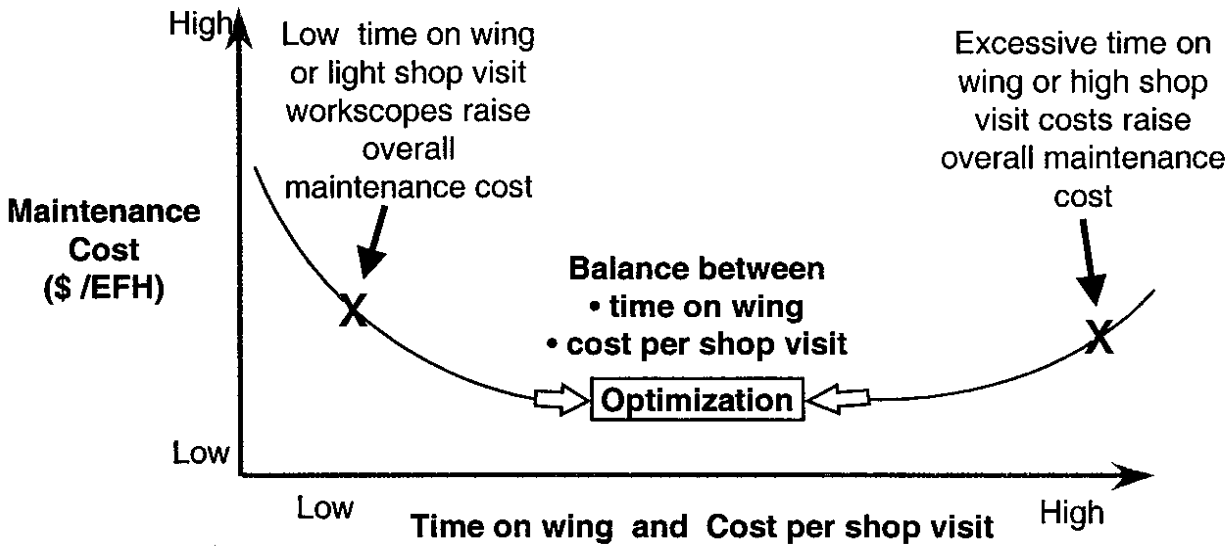
MCPH Maintenance Cost Philosophy

- Maintenance Cost/EFH has 2 variables -- Time on wing and Cost per shop visit
- MCPH's goal is to achieve an engine overhaul workscope that provides a balance between repair cost and time on wing to attain the lowest cost/EFH.



Lowest overall Maintenance Cost achieved in MCPH through . . .

Time on wing

- Technology Infusion - Upgrades, Improvements
- OEM Expertise
- LLP Min Build Optimization
- Fleet Management Experience - Millions of EFH

Cost per shop visit

- Technology Infusion - New Repairs, Upgrades
- Workscoping Expertise
- Shop Process Improvements
- Productivity Benefits built-in

MCPH Maximizes Reliability and Guarantees Maintenance Cost

GEES MCPH Portfolio

Experience to date . . .

- ➔ *40+ Customers*
- ➔ *65+ Contracts*
- ➔ *4000+ Engines*
- ➔ *13 Engine Models*
- ➔ *27 Million+ EFH*

Serving Multiple Customers Across Different Engine Platforms

MCPH Benefits

- ✓ Predictable maintenance costs.
- ✓ Reduced financial risk.
- ✓ All-inclusive services offering.
- ✓ Reduced internal administration.
- ✓ Leverages all of GE Aircraft Engines expertise.

MCPH Provides the Operator Measurable Benefits

New Customized Solutions

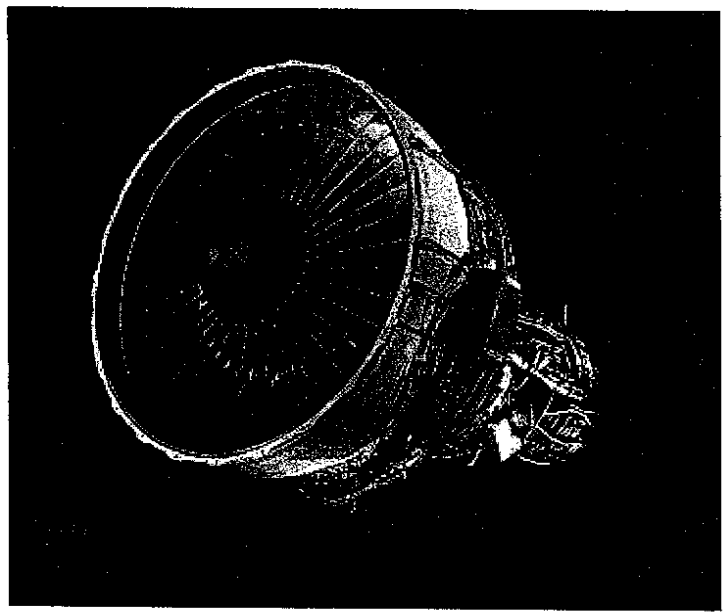
- ***Material-By-The-Hour (MBTH SM)***
  - Guaranteed $/EFH for all new material and repair
  - "Ship Dirty" Program
  - GEES provides repair and scrap replacement

- ***Material Cost Per Set (MCPS SM)***
  - Fixed Price per Set of material removed at a shop visit
  - Available on all GE/CFMI engine lines for HPC, HPT & LPT blades, vanes, shrouds, and interstage seals

- ***Line Replaceable Unit MCPH (LRU MCPH SM)***
  - Guaranteed $/EFH for Repair of engine LRU's
  - Guaranteed Turn-Around-Time

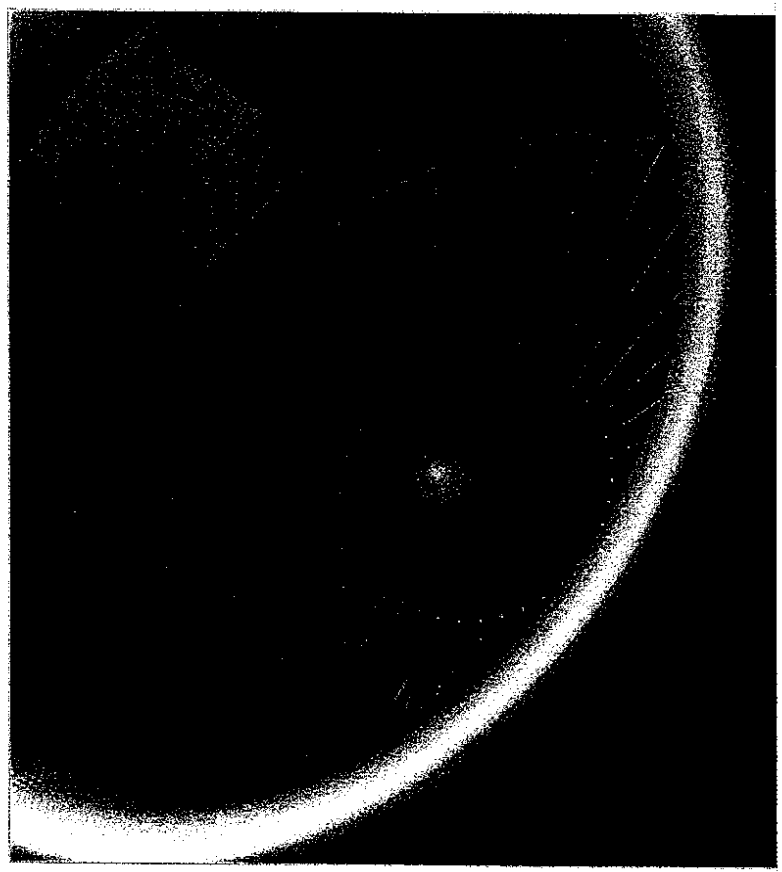
- ***Guaranteed LRU Availability (GLA SM)***
  - Guaranteed $/EFH for engine LRU Repair . . . *PLUS:*
  - GEES owns dedicated & pooled assets
  - AOG-Critical LRU's guaranteed within 4 hours of notification
  - Non-AOG-Critical LRU's guaranteed within 24 hours of notification
  - Available on CFM56 and CF34 engine lines

GEES Material By The Hour (MBTH)sm



Customized Solutions

- Customized Solutions
  - Tailored to customer operational needs
    - Maintenance Cost Per Hour℠
    - Material By The Hour℠
    - Material Cost Per Set℠
    - Guaranteed LRU Availability℠
    - Line Replaceable Unit MCPH℠
  - Matching expenses to your revenue stream
  - Maximizing your workflow efficiency
  - Lowest cost of ownership



All That We Offer ... Working for You

Customer Productivity

Customer Productivity

- Reduced Cost of Ownership
- Improved TOW / Reliability
- Used Material Alternatives
- OEM Spare Parts Value
- World Class Repair Yields
- Customized Quick Repairs
- Global Asset Management

GE Customer Solutions

- Flexible Material Solutions
- GE Aviation Materials
- Commercial Spares
- Repair Clusters
- Speed Cell
- Asset Integration

Responding to Customer Needs with Flexible Material Solutions

Customized Products

Value
Focus

Infrastructure Reduction
(Maint. Management)

Complete Maintenance Solutions

Risk Avoidance
(Guarantees; T&C's)

Cost Avoidance
(Workscope Limitations)

MCPH....Maint. Cost Per Hour

MBTH.....Material By The Hour

Asset Management.....

MCPS.....Cost Per Set

FFP.....Firm Fixed Price

NTE.....“Not to Exceed” Price

FPLB.....Fixed Price Labor & Benchstock

FPL .....Fixed Price Labor

T&M.....Time & Material

Comprehensive Range of Maintenance Solutions Designed to Fulfill Customers Specific Operational and Financial Requirements

GE PROPRIETARY

Material-by-the Hour (MBTH)

Features

- Customer "ships dirty" complete engine/module sets
- Customer transfers specified material to on-site Logistics Center
- GE coordinates repair and scrap replacement of parts, and returns to customer
  - GE manages customer-owned inventory
  - GE manages all transportation
  - Pre-determined price and fixed payment schedule based upon utilization
  - GE provides record keeping and documentation

Benefits

- Significant customer shop TAT improvements
- Reduced /eliminated rotable inventory
- Higher service levels - program Mgt. focal point
- Logistics support
- Reduction in administrative burden
- Predictable, level costs
- Reduced total maintenance cost via shared productivity and escalation caps. (15% - QF)
- OEM repair standardization
- Prevents obsolete configurations in fleet
- Guaranteed supply chain TAT for repaired or replaced components
- Dramatically reduced initial provisioning for new engines
- Higher new part content

LT, Does this apply?

Benefits

Cost Benefits

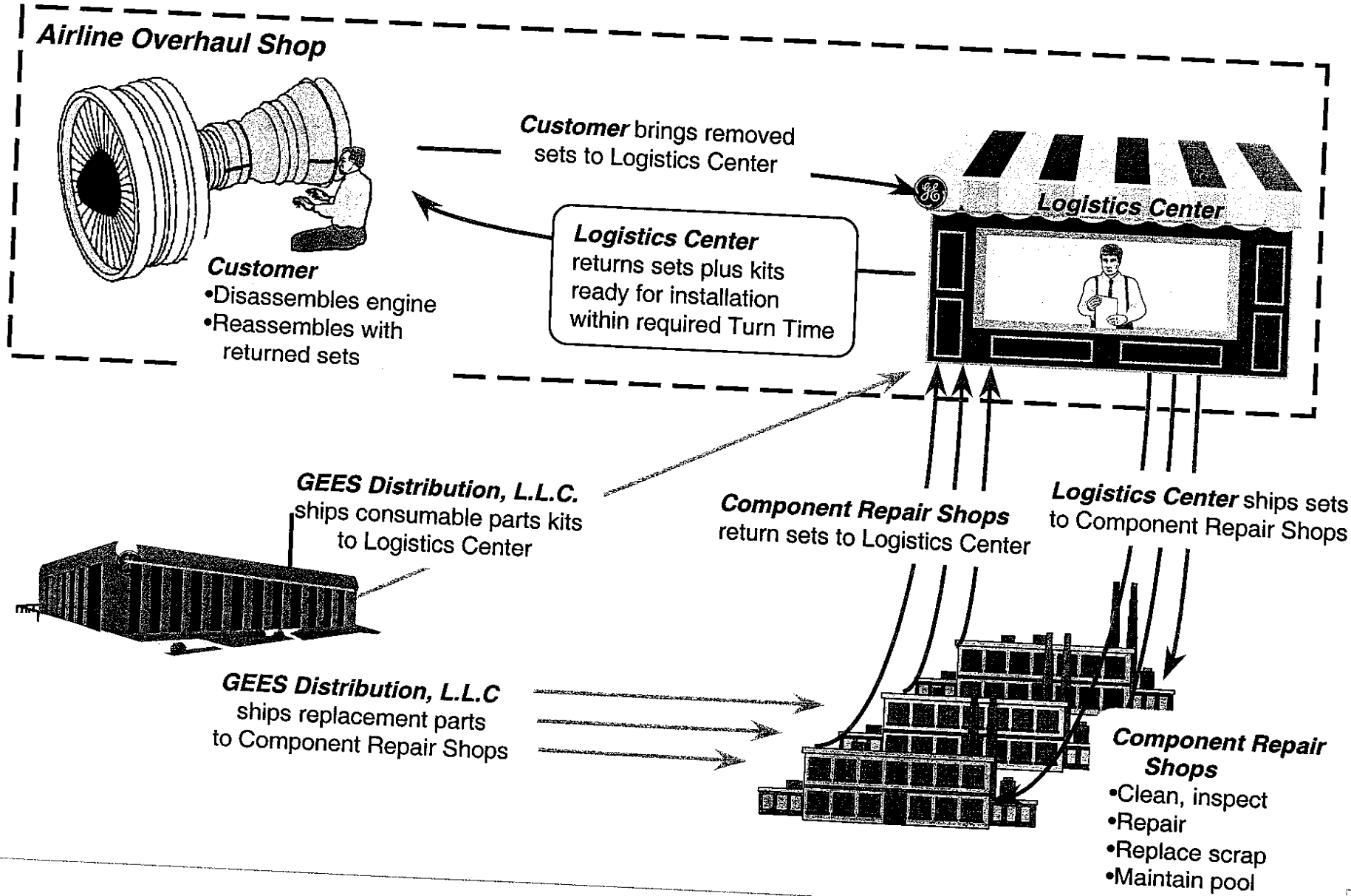
- Guaranteed predictable material costs for contract term
- Protection against variation in repair yield
- Saves administrative time for purchasing spare parts, repairs and used material for the same engine visit
  - Regardless of overhaul source
- Potential reduction of inventory
- Program tailored to workscope requirements, including repair limitations and used material requirements

Shop Process Improvement

- Improves overhaul shop turn around time by eliminating cleaning, inspection, disposition and set accumulation time

Reduces Cost Variability and Guarantees Costs

MBTH Parts Flow



MBTH Customer Benefits

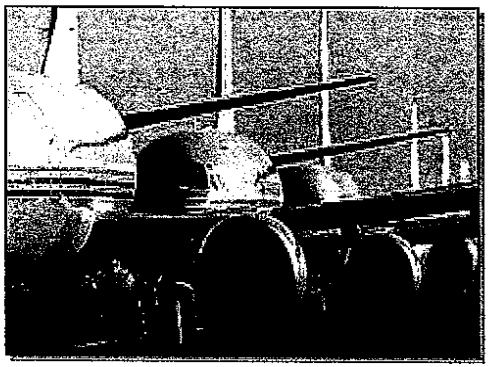
- Guaranteed material cost per shop visit
  - Predictable, long term, material budget
- Indirect cost reduction
- Tailored workscopes
- Reduces/eliminates rotable inventory

Total Material Cost/SV Risk Transfer

GE Aircraft Engines

Line Replaceable Unit (LRA) Asset Management Concepts

What Our Customers Want from "Outsourced" Services



- Improved asset availability
- Maintenance / asset cost predictability
- Improved asset reliability
- Lower cost of ownership
- Release of cash (for core activities)

Availability, Reliability and Responsiveness Necessary to Meet Airline Requirements

LRU Service Options Portfolio

Customer Value

One-off repair (Catalog)

- Airline owns LRUs
- $ per event

$/Hour repair

- Airline owns LRUs
- $ per hour

Sale/ Leaseback

- Service Provider owns LRUs
- $ per month

Guaranteed LRU availability exchange (GLA Exchange)

- Airline & Service Provider owns LRUs
- $ per hour

Guaranteed LRU availability (GLA)

- Service Provider owns LRUs
- $ per hour

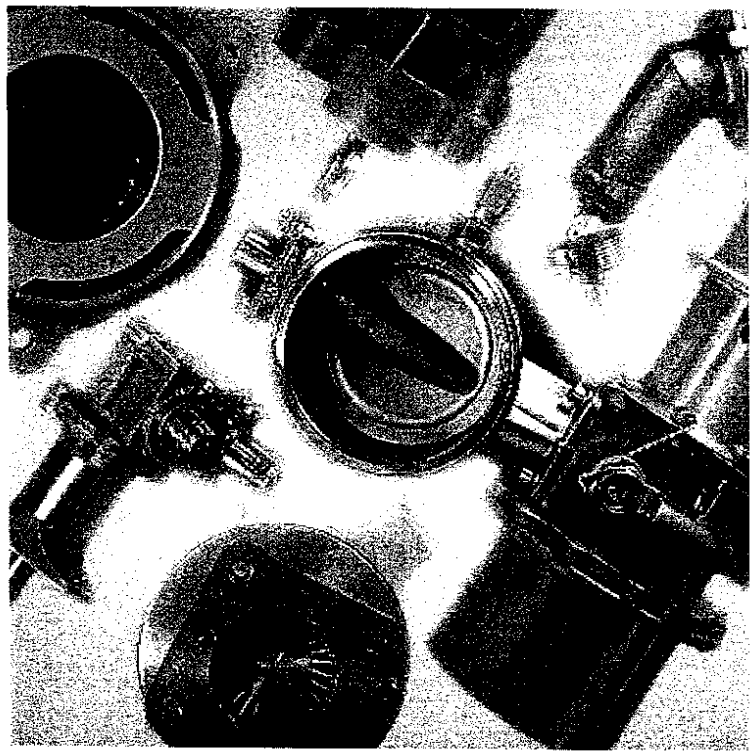
Cost Predictability

Multiple Options to Fit Customer Requirements

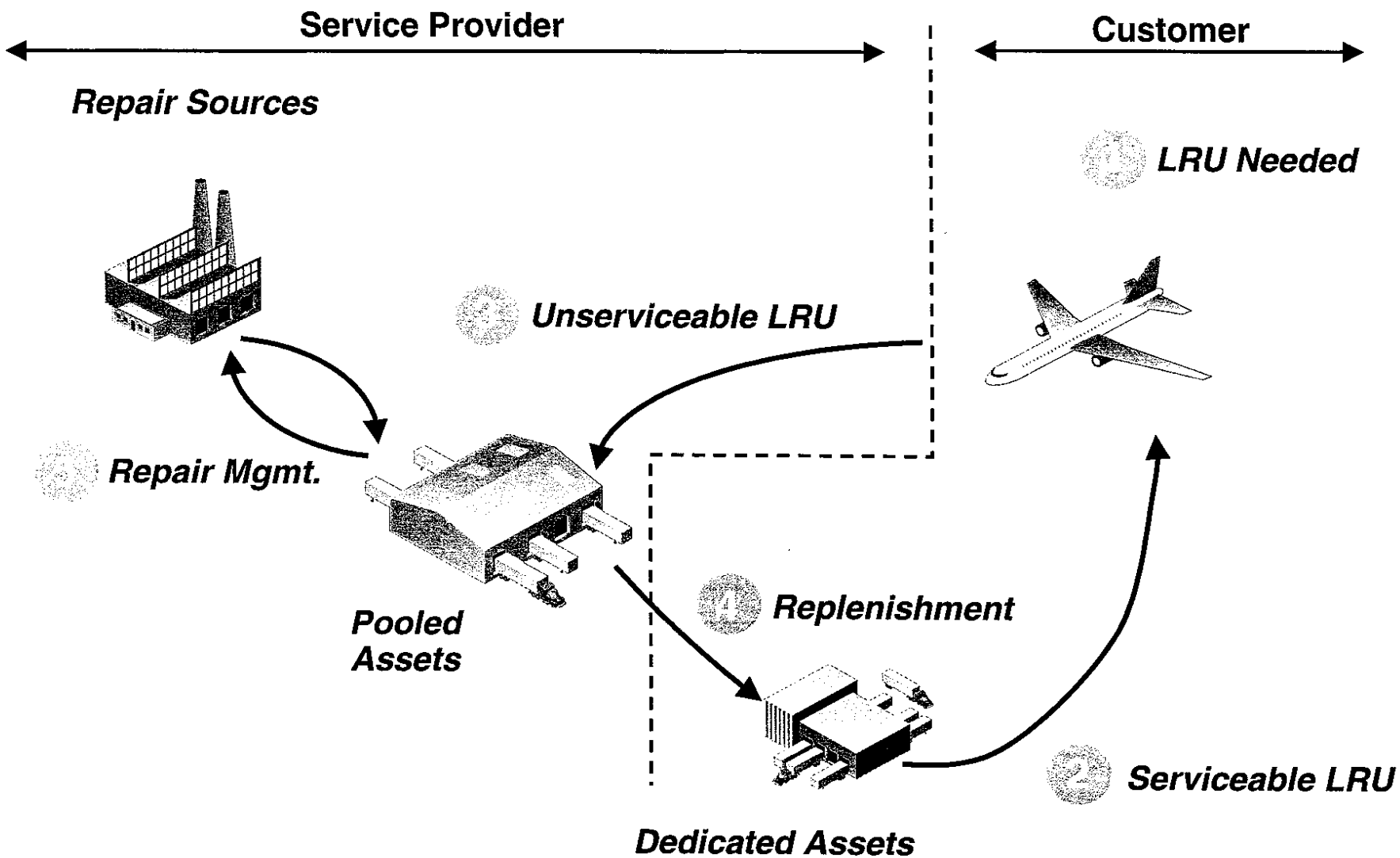
Product Definition

Guaranteed LRU Availability (GLA) Service ...

- Service Provider owns all LRUs in the dedicated and pool stock
- Service Provider guarantees provisioning from pool and replenishment of dedicated stock
- Service Provider manages:
  - Repair of LRUs
  - LRU obsolescence
  - Logistics: MRO to Replenishment
  - Provisioning/fulfillment of LRUs
  - Configuration/quality standards
  - $/EFH pricing
- 24X7 dedicated priority support desk



LRU Asset Management Concept



LRU Service Can Benefit and Airline by ...

- **Release of Cash**

  No "up-front" investment means airline can use capital elsewhere

- **Inventory Buy-back**

  LRUs owned by the airline can be considered for purchase

- **Asset Management/Reliability**

  Service Provider ensures LRU configuration is current

- **Lower Management Costs**

  Maintenance/Contract/Infrastructure work covered by service provider

- **Guaranteed Availability**

  LRU dispatch guaranteed

- **Maintenance Cost Predictability**

  $ per engine flight hour rate

Challenges ... Configuration Control

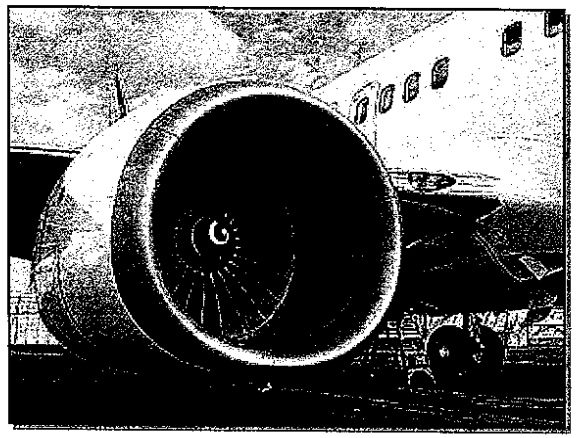
- Pooled parts can not conform to multiple specifications
- Different Customers may want different specifications
- User groups allow different airlines to have a say in what Workscopes and Service Bulletins are instituted

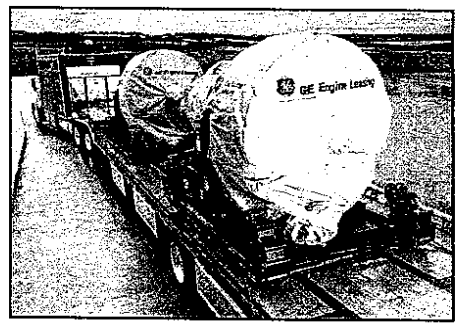
Quality Considerations Require Accountability In Configuration Management

Summary

Asset Management Outsourcing Advantages

- Reliability and availability guarantees
  - Offload of risk
- Concentration on core competencies
  - Release of cash
- Cost predictability
  - Moving toward lower cost of ownership





Trade-offs Come With All Choices ... Variety of Products and Risk Levels to Individualized Choice

Attachment 9

Characteristics of FAR Part 12 Logistics Contracting (KC-10)

Streamlining……
the Key to KC-10 Success

Characteristics of FAR Part 12 Logistics Contracting

Edward Will, Director of Finance
Acquisition Policy and e-Business
Boeing Integrated Defense Systems

Boeing Aerospace Support Center
San Antonio, Texas

Commercial Contracting

- KC-135 Programmed Depot Maintenance
  - Contract F42620-98-D-0054
  - Customer: Ogden ALC
  - Value: ~$500M (including options)
  - One transition year, 5 year FFP order period,
  - 3 option years

- KC-10 Contractor Logistics Support
  - Contract F34601-98-C-0125
  - Customer: Tinker ALC
  - Value: ~$1.5B (including options)
  - One base year, eight option years

F34601-98-C-0125 KC-10 CLS

- Contractor Operated and Maintained Base Supply (COMBS)
  - McGuire AFB, NJ -- Travis AFB, CA
- Forward Supply Locations (FSLs)
  - Ramstein AB, GE -- Yokota AB, JA
- Field Service Representatives (FSRs) at same 4 locations
- Fixed Rate per Flying Hour – provide repair/replenishment of recoverables, replenishment of non-recoverable materials/parts/labor to maintain peculiar/common support equipment, replenishment of bench stock, all associated material handling, overhead costs, transportation of parts, management services, warranty administration, and performance of oil samples. Also, provide support for Beyond Fair Wear and Tear (BFWT) and/or Beyond Economic Repair (BER) as per matrix schedule.
- Perform C-check inspections, sand/scuff and paint aircraft, remove & replace/overhaul nose/main landing gear, engines, booms, perform APU maintenance, engine thrust reverser repair, wing aerial refueling pod maintenance, heavy machine maintenance, and over & above work.

Scope Summary

- Accomplish 85 -89 C-Check Inspections per year
- Accomplish Service Bulletins, TCTOs with C-Check
- Provide Drop-In Maintenance
- Perform Major and Minor Modifications
- Paint 12 Aircraft per year
- C-Check Inspections Transition to MSG3
- Provide Field Teams Material Support Worldwide
- Provide Engine Repair / Overhaul
- Aircraft Spares and Warehousing
- Technical Support - Field Service Representatives (FSRs)
- Support Equipment Maintenance
- Mylar Blankets

CLIN/ACRN Structure

- 22 Contract Line Items (CLINs)
  - 139 sub-CLINs
- Pricing Information
  - Two 5 X 10 matrices - flying hour pricing
  - 20 fixed labor rates
- 59 total ACRNs
  - 11 Accounting Lines (ACRNs) in a year

Simplification & Streamlining

- **Streamlined proposal/funding/payment**
  - **Invoicing allowed upon acceptance**
  - **Payment process by mutual agreement**
  - **Use of Contractor Quality Program**
  - **Certified FAA Repair Station**
  - **Commercial Warranty**
  - **Govt. reserves right to reject non-conforming items upon tender for acceptance**
- **Acceptance via SF1449 in lieu of DD Form 250**

Plans & Other Requirements

- Contractor Statement of Work (SOW)
- KC-10 Technical Requirements Document
- Security Classification Specification
- Quality Assurance, Safety of Flight & Critical Process Surveillance Plan
- Contract Data Requirements List (CDRL)
  - 13 data items for KC-10 - 11 for KDC-10

T&C's

- Estimated Utilization Flying Hours & Landing Cycles
- Additional Security Provision
- Option to Extend Period of Performance
- Phase-out
- Consideration & Payment for Work to be Accomplished under Contract Maintenance & Base Operations Support
- Rights in Maintenance Data
- CLS Term Incentive
- CLS Shared Savings Program
- Pre-Operational Planning/Award Delay
- Project Monitor for Contracting Officer

T&C's (cont'd)

- Emergency Work Procedures
- Contractor Personnel Qualifications
- Contractor Privileges in Overseas Theaters
- Required Insurance
- Identification of Government-Furnished Property
- Safety and Accident Prevention
- Performance of Services during Labor Strikes
- Rights of Government to perform functions
- Health & Safety on Government Installations
- Boeing Commercial Data Rights
- All Operations/Regional Technical Meetings

Estimated Flying Hours

The flying hour and landing cycle projections (are) based on anticipated requirements … provided for planning and budgetary purposes, and to permit the Contractor to schedule resources accordingly. Funding is subject to budget controls and may be changed without notice.

CLS Term Incentive

This incentive is the potential exercise of two additional option years to be added to the contract as a reward for performance exceeding contractual requirements. Evaluation of the contractor's performance shall be accomplished using the CPAR system. To be eligible for incentive, the contractor must achieve a Purple or Blue rating in five of the CPAR evaluation areas.

CLS Shared Savings Program

The Contractor is entitled to share in savings resulting from implementation of cost reduction projects, in the form of Price Reduction Proposals (PRPs), approved by the Contracting Officer. These must result in a net reduction of contract price. Any PRP much not change the essential function of any products or purpose of services. The Contractor's share shall not exceed 50% of the total savings … (except) any savings that are internal to the Government. The period in which the Contractor may share in those savings will be limited to no more than six years. PRPs will not be entertained during the first year of performance.

Summary

- Excellent example of FAR Part 12 streamlining for military derivative of a commercial aircraft
  - Simplified terms and conditions
  - Award term contract using existing process (CPAR)
  - Share in savings provision, but not used so far
  - Recognition of contractor commercial data rights
- Complicated contract structure and accounting
  - Global support
  - Excessive number of line items and accounting categories
  - Buys a service, not performance

Excellent foundation to move to PBL in future

BACK UP CHARTS

KC-10 Program Locations

TRAVIS AFB
27 AIRCRAFT

AIR MOBILITY COMMAND (AMC)

McGUIRE AFB
32 AIRCRAFT

GENERAL ELECTRIC

= COMBS

OC-ALC/LKK

BASC - PROGRAM OFFICE AND C-CHECK FACILITY

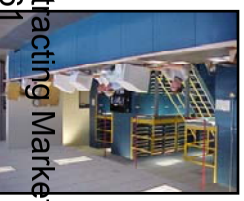
- KDC-10 Eindhoven
- Forward Supply Locations
  - -Yokota AB, JP
  - -Ramstein AB, GE

KC-10 Program Elements

- Accomplish 85-89 C-Check Inspections Per Year
- Accomplish Service Bulletins, TCTOs With C-Check
- Provide Drop-In Maintenance
- Perform Major and Minor Modifications
- Provide Field Teams Material Support Worldwide
- Paint 12 Aircraft Per Year
- Provide Engine Repair / Overhaul
  - Up to 50 Engine Overhauls Per Year
  - 60 Day Turn Time

Aircraft Spares and Warehousing

- Supply Technicians at Each COMBS to Maintain:
  - Serviceable Spares for Over 18,000 Line Items
  - Assemble MSK/ESK Deployment Kits
  - A/C and Component Configuration Control
- Responsible for Vendor Repair / Spares and Bench Stock Supply
  - FAA Certified Repair
  - Purchase of Consumable
  - Vendor Quality Assurance



Technical Support - Field Service Representatives (FSRs)

•Senior FSR, Airframe/Fuel, Avionics and Engine FSRs

•Provide Customer With:

- Technical Guidance - World Wide
- On-The-Job Training
- System Troubleshooting
- Limited On-site Repair of Components
- Assistance in Incident / Accident Investigations
- Technical Publications Review
- Assistance in Quality Deficiency Reports/engineering Problems
- Provide Support for DV Missions

Support Equipment Maintenance

- Support Equipment Technicians at Each COMBS Provide Servicing and Repair of 160 Items of Support / Test Equipment
  - Maintain Equipment for Dispatch in Excess of 80%
  - Maintain Calibration on 128 Items of Test Equipment
  - Support Equipment Shop Capability to Weld, Machine, and Fabricate Non-Powered Equipment / Components

Attachment 10

Application of Commerciality Principles Overhaul and Logistics Support for Military Components and Systems

APPLICATION OF COMMERCIALITY PRINCIPLES, OVERHAUL AND LOGISTICS SUPPORT FOR MILITARY COMPONENTS AND SYSTEMS

Purpose:

To demonstrate the applicability of utilizing FAR Part 12, *Acquisition of Commercial Items,* to procure overhaul and logistics support for components and systems of military specific use. This can apply from either the assertion of commercial items, or as commercial services, depending on the situation.

Background:

A key tenet of the acquisition reform initiatives undertaken by the DoD and Armed Services, is the change in procedure and policy to utilize best commercial methods and practices. These methods and practices, when applicable, can lower costs and improve value received by the DoD, thus providing better sustainment of our aging military systems and controlling the overall cost of ownership.

The early literature carried definitions for support such as *Direct Vendor Delivery* and *Flexible Support* to categorize new ways of doing business. Many contracts in the 1990's were titled under these names to differentiate from traditional contracts. Given time and experience, the provision of commercial-type logistics support for military programs, including repair, overhaul, rotable pools, supply chain management, and others, has become institutionalized under the heading of *Performance Based Logistics (PBL).* This document will consider all such commercial-type support[1] for military use as PBL.

References:

a) ***Joint Aviation Logistics Board Report on Commercial Support of Aviation Systems***, July 1999

b) ***Performance Based Business Environment Implementation Pamphlet***, Aeronautical Systems Center, WPAFB

c) ***Performance Based Logistics: Purchasing Using Performance Based Criteria***, Acting Under Secretary of Defense (AT&L), August 21, 2004 [Attachment 1]

d) ***Commercial Item Handbook***, Office of Secretary of Defense – Acquisition, Technology, and Logistics, November 2001 [Attachment 2]

Discussion:

By offering performance based logistics packages, contractors provide a support methodology that is a dramatic change from military business-as-usual. The goal is to provide an *end state of being* — availability of assets — rather than engage in a supply contract for fixed-price repair of a certain quantity of items. This brings a holistic approach to support — pay for value and incentivize desired behavior throughout the supply chain.

Under these methods, the buyer will shift responsibility *(and risk of performance)* to the

---

[1] It should be noted here that *"Power by the Hour"* is a widely recognized term; however, the name has been copyrighted by Rolls Royce and cannot be used without permission. The title *cost per flight hour* or CPFH, generically describes the same program.

contractor for receiving, storing, and issuing government-owned assets directly to a demanding location, e.g. an ICP, or a Main Operating Base. The contractor sustains the hardware to meet contractual delivery time frames, disposes of condemned assets, and introduces replenishment assets to maintain the availability and reliability levels established by contract. More reliable parts manifest savings to both buyer and the user. Fewer failures allow for decreased inventory, less labor removing and replacing failed items, and decreased transportation costs. Since the contractor receives funding independent of failures and/or replenishment spares, they are incentivized to overhaul or improve the asset at first failure to make it last as long as possible.

The overall objective is to integrate best commercial practices and procedures into the military environment, and reap the benefits of lower total ownership cost. A PBL program, with its commercial-type underpinnings, will provide improved availability, system reliability, and long-term assured logistics support to the user.

OEM Contractor as Source of Supply:

The original equipment manufacturer is the only responsible source with both (a) the necessary manufacturing, production, and process data to perform required manufacture, repair, overhaul, and/or modification, and (b) the necessary design and reliability knowledge, to optimize on-wing time of products under their design authority. Both (a) and (b) are required to provide optimized availability and reliability to the end user at a minimized total life cycle cost.

Fair and Reasonable Price

It is imperative that a PBL program be provided at a fair and reasonable price to the buyer. The best providers of PBL realize their fiduciary responsibility to openly provide suitable and adequate data to substantiate the value offered. However, traditional negotiation based upon cost and pricing data cannot be employed. As a technical point, PBL support meets the criteria of commerciality as set forth in FAR Part 12, therefore certified cost and pricing data are not required. However, the contractor must provide adequate "information other than cost or pricing data" to allow determination of fair and reasonable price as well as value to be received. The price for a PBL program is typically developed using logistic and life-cycle cost models ─ not historical cost accounting data. Consequently, all data review and negotiation must be price-based upon the portfolio of service elements proposed. Elements not considered under traditional contracting include: risk being assumed by the seller, carrying costs for inventory required to meet program metrics, and the assumption of responsibility for obsolescence management and technology refreshment. These are key to a successful program, but can truthfully only be estimated.

Three additional elements are interconnected to the fair and reasonable determination. First, a PBL program is for a complete support package, or *"end state of being"* ─ not any specific quantity or billable hours. Thus individual cost elements cannot be estimated against buyer proposal data. Secondly, activities connected with the repair and supply of items are estimated by predictive modeling techniques, and may or may not become realized during the execution of the program. This again precludes cost data analysis for a specific quantity, since the contractor must provide a quantity whose sum is unknown until the end of the program. Third, if actual historical data is not available (as in a weapon system less than three years old,) predictive modeling is employed to estimate the activities required to provide a desired "state of being."

Business Case Analysis (BCA)

An additional tool to be employed in these price-and-value-based determinations, the business case analysis technique can bridge information from cost for work received, to price for value received. These analyses can help to delineate, in both numeric and summary text, the necessary crosstalk to link the seller's offered value of bundled services to the buyer's expected spend for traditional individual elements of repair and spare packages.

While the format and content of a BCA has not been specified in policy, several suggested models are available from commercial sources as well as Defense Acquisition University[2]. Early in the process of developing a PBL offering, both buyer and seller should decide on elements that will be of significance and evaluated within a BCA. Also, it is typical for the seller to develop a BCA representing business-as-usual, and a BCA representing the PBL offering, to ensure the buyer both understands the content of the PBL and desires all the elements contained within the PBL offering.

In summation, the buyer must determine fair and reasonable prices based upon (a) the value of support services offered, and (b) the value of "traditional" costs that will be reduced, or avoided, during the execution of a PBL support program. It is truly an evaluation of best value per dollar spent.

Commercial Support:

To meet the test of "commerciality," the FAR 2.101 definition of a "commercial item" sets forth:

"Commercial" means

> Any item, other than real property, that is of a type customarily used for non-governmental purposes and that
>
> has been sold, leased, or licensed to the general public, or,
>
> has been offered for sale, lease, or license to the general public.

For PBL programs, the CLIN (or "commercial item") is the program itself — delivery to demand with availability metrics — not a specific part number or group of part numbers. Parker does, in fact, offer and provide "*cost per flight hour"* programs to commercial airlines, thus selling to the general public. The typical airline CPFH program includes repair/overhaul of repairables, along with replacement of failed components, in order to meet availability goals. Both the commercial CPFH as well as PBL programs require the contractor to implement material management processes, requirements forecasting, make/buy – subcontractor decisions, inventory management, and direct distribution to the demanding location. Further, FAR 2.101(c)(1) and (2) allows that minor modifications to the commercial item does not exempt that item from being considered commercial. Thus, the variation in specific terms and conditions of the individual program to suit the military requirements does not negate commerciality. It is Parker's position that since CPFH programs are sold to the general public, PBL efforts qualify for contracting in accordance with FAR Part 12.

Excerpting in part from the *Commercial Item Handbook* (see Attachment 2, page two):

"In addition, the FAR definition of a "commercial item" also includes services. A service

[2] See https://acc.dau.mil

is considered a commercial item when it is provided in support of an item that meets the commercial item definition, or when the service itself is of a type offered and sold competitively in substantial quantities in the commercial market on the basis of established catalog or market prices for specific tasks performed under standard commercial terms and conditions. The latter, stand-alone definition does not preclude the inclusion of Government-unique requirements or terms and conditions, as long as there are sufficient "common characteristics" between the commercially available service and the service being acquired. Warehousing, garbage collection, and transportation of household goods are examples of services that are commercial. Other more sophisticated services (e.g., repair and overhaul work, research-related services, software design, testing, and engineering consultation) can also be commercial.

"In order to meet the commercial item definition, the price for the stand-alone services must be "based on established catalog or market prices." The established market price for stand-alone services does not have to be published or written. Market research enables the Government to collect data from independent sources in order to substantiate the market price."

Hydraulic component/system overhaul and logistics support are services of a type offered and sold competitively in substantial quantities in the commercial marketplace based on established catalog or market prices for specific tasks performed under standard commercial terms and conditions, viz.:

- American Airlines, *repair and supply of flight controls utilizing rotable pools.*
- Trans States Airlines, *repair and supply of flight controls utilizing rotable pools.*
- The Boeing Company, C-17 PBL program, *repair and wholesale supply of items, technical services, reliability enhancement, obsolescence management, as a FAR Part 12 acquisition of logistics services. Prime metric is issue effectiveness at the assigned ICP.*
- The Boeing Company, F-18E/F "FIRST" PBL program, *a FAR Part 12 acquistion of wholesale supply of component parts, subassemblies, and top assemblies to support organic-depot repair. Prime metric is issue effectiveness at the assigned ICP.*

All contracts for the described overhaul and logistics support are classified as firm-fixed price contract vehicles. The contractual price includes all required repair, overhaul, supply of parts or items, engineering services, technical services, or other services as appropriate to the need. It is important to differentiate that while logistics support may be billed either as a flat rate per month, or as rate per flight hour, they are not of the same type as *"services sold based on hourly rates"* as described in FAR 2.101.

ATTACHMENT 1

THE UNDER SECRETARY OF DEFENSE

3010 DEFENSE PENTAGON
WASHINGTON, DC 20301-3010

ACQUISITION, TECHNOLOGY AND LOGISTICS

AUG 16 2004

MEMORANDUM FOR SECRETARIES OF THE MILITARY DEPARTMENTS

SUBJECT: Performance Based Logistics: Purchasing Using Performance Based Criteria

The Deputy Secretary of Defense memorandum of February 4, 2004, "Implementation of the Defense Business Practice Implementation Board (DBB) Recommendation to the Senior Executive Council (SEC) on Continued Progress on Performance Based Logistics", directed that my office issue clear guidance on purchasing weapon system logistics support using performance-based criteria. That guidance follows.

DoD 5000.1, the Defense Acquisition System, requires program managers to develop and implement performance based logistics (PBL) strategies that optimize total system availability while minimizing cost and logistics footprint. PBL strategies may be applied at the system, subsystem, or major assembly level depending upon program unique circumstances and appropriate business case analysis. PBL arrangements will be constructed to truly purchase performance, as detailed in this memorandum.

Those purchasing PBL should follow Federal Acquisition Regulation (FAR) and Defense Federal Acquisition Regulation Supplement (DFARS) guidance, as appropriate, for the acquisition of logistics services and support and should seek to utilize FAR Part 12 – "Acquisition of Commercial Items" to acquire PBL as a commercial item. Additional information regarding PBL implementation is included in the DoD Interim Defense Acquisition Guidebook.

For PBL, "performance" is defined in terms of military objectives, using the following criteria:

(1) Operational Availability. The percent of time that a weapon system is available for a mission or ability to sustain operations tempo.

(2) Operational Reliability. The measure of a weapon system in meeting mission success objectives (percent of objectives met, by weapon system). Depending on the weapon system, a mission objective would be a sortie, tour, launch, destination reached, capability, etc.

(3) Cost Per Unit Usage. The total operating costs divided by the appropriate unit of measurement for a given weapon system. Depending on weapon system, the measurement unit could be flight hour, steaming hour, launch, mile driven, etc.

(4) Logistics Footprint. The government / contractor size or "presence" of logistics support required to deploy, sustain, and move a weapon system. Measurable elements include inventory / equipment, personnel, facilities, transportation assets, and real estate.

(5) Logistics Response Time. This is the period of time from logistics demand signal sent to satisfaction of that logistics demand. "Logistics Demand" refers to systems, components, or resources, including labor, required for weapon system logistics support.

PBL metrics should support these desired outcomes. Performance measures will be tailored by the Military Departments to reflect, specific Service definitions and the unique circumstances of the PBL arrangements.

The preferred PBL contracting approach is the use of long-term contracts with incentives tied to performance. Award term contracts should be used where possible to incentivize optimal industry support. Incentives should be tied to metrics tailored by the Military Departments to reflect their specific definitions and reporting processes. Award and incentive contracts shall include tailored cost reporting to enable appropriate contract management and to facilitate future cost estimating and price analysis. PBL contracts must include a definition of metrics and should be constructed to provide industry with a firm period of performance. Wherever possible, PBL contracts should be fixed price (e.g., fixed price per operating or system operating hour). Lack of data on systems performance or maintenance costs, or other pricing risk factors may necessitate cost type contracts for some early stage PBLs. Full access to DoD demand data will be incorporated into all PBL contracts. PBL contracts should be competitively sourced wherever possible and should make maximum use of small and disadvantaged sources. PBL contractors should be encouraged to use small and disadvantaged businesses as subcontractors, and may be incentivized to do so through PBL contractual incentives tied to small and disadvantaged business subcontracting goals.

The Defense Acquisition University (DAU) website (www.dau.mil) provides courses in performance based service acquisition and PBL as well as PBL "lessons learned." Maximizing use of these DAU resources will increase our ability to support the warfighter.

This guidance is effective immediately and will be incorporated into the Defense Acquisition Guidebook.

Michael W. Wynne
Acting

ATTACHMENT 2

Checklist for Commercial Services

Sample Commercial Item Checklist

Part 2: Acquisition of Services

Can the Government's requirements be satisfied by—

1. Installation services, maintenance services, repair services, training services, and other services?

   A. If Yes, proceed to 2 below.

   B. If No, proceed to 4 below.

2. Services in 1 above in support of an item that has been, or could be, designated a commercial item in Part 1 above, regardless of whether such services are provided by the same source or at the same time as the item?

   A. If Yes, proceed to 3 below.

   B. If No, proceed to 4 below.

3. Services in 2 above from a source that provides similar services to the general public and the Government at the same time and under similar terms and conditions?

   A. If Yes, designate the services as commercial and annotate information concerning their source, as appropriate.

   _____

   _____

   B. If No, proceed to 4 below.

4. Services of a type offered and sold competitively in substantial quantities in the commercial marketplace

   A. If Yes, proceed to 5 below.

   B. If No, proceed to 7 below.

5. Services in 4 above for which the price is based on established catalog or market prices for specific tasks performed?

   A. If Yes, proceed to 6 below.

   B. If No, proceed to 7 below.

6. Services in 5 above that are offered under standard commercial terms and conditions?

Appendix C
Commercial Item Definition Discussion

As a follow-up to the definition of "commercial item" set forth in Appendix B, the discussion below walks through this definition to discuss its subtleties.

Generally speaking, a commercial item is any item that is *of a type* that has been sold, leased, or licensed or even merely offered for sale, lease, or license to the general public. Several indicators of this are the existence of a commercial sales history, listings in catalogs or brochures, known established price, existence of multiple distributors, and availability or announcement to the general public.

The phrase "of a type" is not intended to allow the use of Federal Acquisition Regulation (FAR) Part 12 to acquire sole-source, military-unique items that are not closely related to items already in the marketplace. Rather, "of a type" broadens the commercial item definition so that qualifying items do not have to be identical to those in the commercial marketplace. The best-value offer in a competitive Part 12 solicitation can be for an item that has previously satisfied the Government's need but has not yet been sold, leased, licensed or offered for sale, lease, or license to the general public (e.g., a nondevelopmental item). In this scenario, the phrase "of a type" allows the best value offer to qualify for a Part 12 contract as long as the items offered are sufficiently like similar items that meet the Government's requirement and are sold, leased, licensed, or offered for sale, lease, or license to the general public. In such instances, "of a type" broadens the statutory commercial definition to allow Part 12 acquisition of a Government-unique item that can compete with commercial items that meet the Government's requirement. This avoids the undesirable result of preventing otherwise price-competitive preexisting suppliers of Government-unique items from responding to Part 12 solicitations.

Also included in the commercial item definition is any item that evolved from a commercial item as described above, through technical/performance advances—even if the item is not yet available in the commercial marketplace, as long as it will be available in time to satisfy the Government's requirements. Commercial items that evolve as a result of advances in technology or performance include product updates, model changes, and product improvements. For example, new versions of software fall into this category. Through this aspect of the "commercial item" definition, the Government can access new technology first.

A commercial item does not have to be "off-the-shelf" to be classified as commercial; items that require only modifications of a type customarily available in the commercial marketplace or minor Government-unique modifications still are considered commercial items. Thus, two types of modifications are available: (1) modifications of a type available in the commercial marketplace; and (2) minor modifications of a type not customarily available in the commercial marketplace, made to Federal Government requirements. For modifications of a type available in the commercial marketplace, the size or extent of the modifications is unimportant. For minor modifications, the item needs to retain a predominance of nongovernmental functions or

Attachment 2 (page 2)

essential physical characteristics. In either case, the source of funding for the modification does not impact its qualification as a commercial item.

In addition, the FAR definition of a "commercial item" also includes services. A service is considered a commercial item when it is provided in support of an item that meets the commercial item definition, or when the service itself is of a type offered and sold competitively in substantial quantities in the commercial market on the basis of established catalog or market prices for specific tasks performed under standard commercial terms and conditions. The latter, stand-alone definition does not preclude the inclusion of Government-unique requirements or terms and conditions, as long as there are sufficient "common characteristics" between the commercially available service and the service being acquired. Warehousing, garbage collection, and transportation of household goods are examples of services that are commercial. Other more sophisticated services (e.g., repair and overhaul work, research-related services, software design, testing, and engineering consultation) can also be commercial.

In order to meet the commercial item definition, the price for the stand-alone services must be "based on established catalog or market prices." The established market price for stand-alone services does not have to be published or written. Market research enables the Government to collect data from independent sources in order to substantiate the market price.

Although many Government systems are truly Government-unique items, this fact does not eliminate the need for acquisition professionals to promote the Government's preference for the procurement of commercial items. The commercial item definition is not limited to items acquired by the Government from prime contractors; it also includes commercial items acquired from subcontractors at all tiers, including items transferred from a contractor's divisions, affiliates, or subsidiaries.

Attachment 11

Commerciality Study
Rolls-Royce TotalCare and CorporateCare Approach

AIA PSC PPP Tiger Team
FAR Part 12 Commerciality Study
Rolls-Royce TotalCare and CorporateCare Approach

The following are details of the commercial business model employed by Rolls-Royce Corporate & Regional Airlines group for the support and service of their engines with commercial operators. This model also applies to the large engine Airlines group working out of Derby, UK and Dahlewitz, Germany for engines operated by the major airlines around the world.

Approximately 2500 AE3007 series engines have been delivered to the aircraft OEM's and operators by the Corporate & Regional Airlines group within Rolls-Royce. Of that number, approximately 2000 engines were delivered to regional airlines and 500 engines delivered to corporate customers. Greater than 80% of the engines delivered to regional airlines are covered by TotalCare, while greater than 60% of engines delivered to corporate customers are covered by CorporateCare services agreements. TotalCare and CorporateCare are service contracts offered to operators that cover all work on the engines required to be handled in a Rolls-Royce designated repair facility, as well as a menu of other services, provided as a fixed price per hour of engine operation.

In the major airlines business, Rolls-Royce has more than 2800 engines under TotalCare, with 100% of Trent 800 customers enrolled and significant numbers of engines for the other engine families enrolled as well.

Engine data is required to be downloaded from the aircraft Central Maintenance Computer every week by the operators and transmitted to Rolls-Royce's designated engine health monitoring supplier, as part of their contractual obligation, *analogous to DoD onboard PDHM and engine life recorders*. This data is used to determine engine trends and results in an "on watch" list of engines that may need further action or even removal before more significant engine damage or and in-flight shutdown can occur. This service is available for operators regardless of their maintenance scheme (i.e., TotalCare or T&M), but with TotalCare they get a more personalized service approach and more complete access to Home Office technical personnel, as well as the knowledge that Rolls-Royce will be responsible for the engine repair work once an engine is removed.

This data is not transmitted electronically from the aircraft to a ground station for Corporate & Regional aircraft, but instead must be downloaded by computer and transmitted via internet or telephone connection to the service provider. For Airlines aircraft (large commercial airlines) the data is typically available while the aircraft is still in flight.

The trend plots for each customer's engines are then made available to that particular customer on the service provider's website on a 24/7 basis, with alert's sent by telefax to the customer's designated notification point.

Rolls-Royce also uses this engine operational information to update each operator's operational characteristics; if their engine operational characteristics fall above or below the baseline established in their TotalCare Agreement, an adjustment will be agreed with respect to their rate per flying hour for TCA coverage. Rolls-Royce also maintains a master configuration database for all engines in operation with commercial operators, which is updated for any Service Bulletins and shop visit work performed at a Rolls-Royce designated repair facility. From this data, Rolls-Royce are able to identify the major causes for removal and repair and is able to generate a forecast of engine repairs and removals that will be required in the foreseeable future. This system is *completely analogous to the DoDs RCM (Reliability-Centered Maintenance) program.*

Turbofan engine maintenance is a competitive business, and Rolls-Royce offers flexible TCA (TotalCare Agreement) contracts, including a menu of other service activities to be performed by Rolls-Royce personnel. Rolls-Royce always seeks at least a firm 5-year term (and often a firm 10-year term) for their TCA's - interesting to this group because *this position is consistent with the Defense Industry position that longer-term contracts are needed to induce the contractor to invest* with a contract timeline sufficient to realize an acceptable ROI (Return On Investment).

Terms and conditions on Rolls-Royce TCA contracts are *similar to defense PBL contracts*, with unscheduled shop visit maintenance and condition-based shop visit maintenance always covered, and line maintenance parts replacement service available. Rolls-Royce has piloted taking on the responsibility for on-wing maintenance for engines with several operators and may move toward making this service a standard offering in the near future. Everything but FOD (foreign object damage), intentional misuse and abuse, and failure to follow the maintenance requirements in the Aircraft Maintenance Manuals with respect to the engines, is covered under Rolls-Royce's TCA coverage.

Rolls-Royce's pricing for their TCA contracts is provided on a FFP (Firm Fixed Price) per flight hour basis, with adjustments defined based on changes in operational parameters, *completely analogous to one of OSD's Top 5 PBL metrics- a Cost Per Unit Of Usage arrangement*. The metric within the DoD likely would be "time on wing", "flight hours per cycle", "flight hours per year", etc.

In constructing their TCA contracts Rolls-Royce demonstrates command of the factors that can adversely or positively affect the profitably and competitiveness of their offerings, and they analyze the equipment, the application, the number of flight hours and cycles, the anticipated usage, and even the distance of the

operator from their nearest designated engine repair facility. *The OSD analogy is the BCA (Business Case Analysis) that the services conduct in determining the true lifecycle cost of maintaining their equipment.* Rolls-Royce also provides (for those who wish to enroll in a lease engine program and avoid the investment in spare engines) back up cover for operators through a spare engine pool to augment the operator's ability to maintain the aircraft's operation when inevitably a shop visit is required.

Conclusions:

- Rolls-Royce is an industry leader in a very competitive commoditized service business environment.
- Rolls-Royce is successful because;
  - they are committed to continuous improvement,
  - they invest in innovation,
  - they partner with their customers to develop win/win commercial services contracts that employ incentives encouraging Rolls-Royce to maximize "on-wing" time by investing,
  - they leverage catalogue pricing to make themselves easy to do business with,
  - and they employ contracting periods of performance sufficient for Rolls-Royce to realize the ROI from their investments.

Attachment 12

Performance-Based Logistics: Corporate Contacting

Rolls-Royce

Performance Based Logistics:
Corporate Contracting

Nadine Melind
Rolls-Royce
January 26, 2005

Corporate Contracting Experience and Issues

- Rolls-Royce is dedicated to establishing PBL contracts with the DoD in support of our products
- It is our objective to establish Corporate PBL Contracts to speed the time to contract and remove administrative burden
- Rolls-Royce is organized into customer facing businesses
  - R-R Defense North America is focused on the DoD and has created a dedicated PBL program development team,

Corporate Contracting Experience and Issues

- Rolls-Royce currently has 3 Performance Based Logistics Programs:
  - USN Contract: USMC customers, FAR Part 12
  - USN Contract: USMC customer, FAR Part 12
  - USN Contract: USN customer, FAR Part 12
- Rolls-Royce has 1 non-PBL Corporate Contract for material
  - USAF (Tinker ALC) Contract: DLA and ALC customers, FAR Part 12

R-R Engine PbtH Program #1

- Contract Overview
  - Customer: USMC
  - Base year contract: 1995
  - Contract period: 1995-2006
- Metrics
  - Provisioning Accuracy
  - Supply Availability
  - Replenishment Availability

R-R Engine PbtH Program #2

- Contract Overview
  - Customer: USMC
  - Base year contract: 2002
  - Contract period: 1 yr + 4 options
- Metrics (Goal)
  - Material Availability: 90%
  - Turnaround Time—Engines & QEC: 90 days
  - Turnaround Time — Prop: 30 days

R-R Aircraft PbtH Program #3

- Contract Overview
  - Customer: USN
  - Base year contract: FY 2004
  - Contract period: 1 yr + 4 options
- Metrics
  - Engine Availability
  - IPARS/CPARS
    - Grades Based on:
      - Quarterly MTBR
      - Quarterly Service Failures
      - AMMT Inspection Results

R-R Corporate Contract for Material

- Contract Overview
  - Sole-Source Corporate Contract w/ OC-ALC
  - Effective June 2001, Optioned thru 2008
  - Expires 2013
  - 353 Items: Managed and Warehoused by DLA (310 items), USAF (40 items)
  - Firm Fixed Price, Far 12 (based on Fall 2000 standard costs + escalation)
  - Includes Post Production Engineering Support allocation
- Metrics
  - IPARS/CPARS

R-R Corporate Contract for Material—con't

- Pros
  - Frees both sides from RFP process
    - Administrative Lead cut by 160 to 180 days
    - Negotiations Streamlined
  - Transactional burden frees both sides to focus on:
    - Co-forecasting
    - Customer Service
    - Quality
- Cons
    - Transactional burden still exists on items not covered by the corporate contract
    - Each DoD entity has their own priorities and incentives

Attachment 13

Commerciality of DVD Supported Weapon Systems (Pre-decisional)

The attached paper written at NAVICP in December of 1996 was a pre-decisional recommendation for justifying the commerciality of Direct Delivery for Reparables (DVD-R) a precursor concept that evolved into Performance-Based Logistics (PBL). It is a very useful document to consider in the discussion of the commercially of PBL and the application of FAR Part 12 to PBL contracts.

(Pre-decisional)

COMMERCIALITY OF DVD SUPPORTED WEAPONS SYSTEMS

11 DEC 1996

PURPOSE:

To demonstrate the applicability of FAR Part 12, ACQUISITION OF COMMERCIAL ITEMS, to procurements for "Power By The Hour" (PBH) total weapons support under the Direct Vendor Delivery concept.

BACKGROUND:

Today's environment of streamlining and reform has established a preference for Government procurement activities to operate more like their commercial counterparts in the private sector. The need to reduce infrastructure is also of utmost concern in today's military environment. Every dollar spent on supporting and maintaining existing systems is one unavailable to provide new, state of the art weapon systems to the sailors, pilots and marines in the fleet. The various political directives, such as continued downsizing, commercialization and privatization, have provided opportunities for creative and innovative approaches preciously unheard of within the rigidly structured world of federal contracting.

In response to this changing environment, The NAVICP has adopted the strategy of Direct Vendor Delivery in order to provide a dramatically different approach to supply support. DVD not only satisfies the organization's ultimate responsibility to the fleet to provide a high degree of availability of materials, but must also do so at lower cost to the end user, the fleet. DVD shifts the responsibility to more efficient suppliers to perform many functions which organic activities currently perform. Due to internal downsizing at the NAVICP, our organization has had to learn more efficient ways to provide support with a dwindling workforce. One of the goals of DVD is to help the NAVICP continue to provide equal or improved levels of fleet support. For example, the contractor will receive, store and issue government owned assets. Additionally, as government-owned assets in the supplier's custody are consumed or disposed of due to aging or poor condition, the supplier will be responsible for providing replacement assets, if any, necessary to meet contractual delivery time frames. We will also ask the supplier to improve and guarantee the reliability of his products. Since fewer failures occur in more reliable systems, reduced cost to the Navy will be experienced through decreased inventory levels, less hands on labor removing and replacing failed units and fewer transportation costs. A further feature of the strategy is to ask the supplier to insert the latest technology into the weapons system. This serves two purposes, reducing or eliminating the incidence of parts obsolescence and at the same time providing state of the art equipment to our customer, the fleet.

DISCUSSION:

Early on in the conceptual stages of the DVD type of support for repairables, it became evident that a contractual vehicle priced in a manner to incentivize contractors to avoid costs would assist in lowering the total cost of ownership. Under traditional programs, the more reliable the contractor makes a unit the less his profits will be in terms of follow-on spare part orders and repair business. In an environment where reliability improvements are deemed crucial to total cost reduction, this traditional pricing structure is incompatible. Industry was surveyed regarding any unique commercial support arrangements which may provide win/win situations for both the Government and prospective contractors. Immediately the "Power by the Hour" type of support surfaced as being almost identical in nature to our DVD programs and already in widespread use in the commercial sector. Under the PBH concept, the vendor can make a unit more reliable and, at the same, time, continue to make a profit. An hourly rate is negotiated and the contractor is paid in advance (quarterly, monthly…) based on the forecasted flight hours for the aircraft / system. Overages and shortfalls based on actual flight hours are either added to or credited from the next period's forecasted amounts. Since the contractor receives funding independent of failures and /or replacement spares, he is then incentivized to overhaul or otherwise improve the asset the first time it fails to make it last as long as possible. Under the PBH concept, the fewer times the contract touches a unit, the more money he makes.

In order to minimize the time required to contract of these DVD / PBH initiatives, the NAVICP has embraced the "ALPHA Contracting" initiative. As a result, during the joint NAVICP / Contractor Statement of Work, preparations, several contractors have stressed the similarities of the DVD programs to their commercial endeavors under PBH. While the NAVICP's initial intentions were to solicit traditional contracts and to require certified cost and pricing data, several contractors have presented compelling arguments regarding the commercial nature of the programs notwithstanding the fact that the specific weapons systems to be supported are not commercial systems.

The DVD program is comprised of the same key tenets as the PBH programs as negotiated in the private sector. The efforts both include repair / overhaul of repairables or replacement of assets at the contractor's option in order to meet availability goals (SMA). Both PBH and DVD require the contractor(s) develop and implement material management processes, such as inventory management, requirements forecasting to include repairable and consumable parts, procurement make-or-buy decisions and subcontractor selection, receiving and inventory management and the holding of inventory for distribution to field users as needed. Maintaining configuration control for changes not impacting from fit, or function (Class II) is also common between the programs, thus enabling the contractor to make timely technology upgrades based on this own internal affordability decisions.

In reviewing the FAR guidelines pertaining to commerciality, the definition of a "commercial item" as set for the in FAR 2.101 is as follows:

"Commercial" means

(a) Any item, other than real property, that is of a type customarily used for non-Governmental purposes and that
   1) Has been sold, leased, or licensed to the general public, or,
   2) Has been offered for sale, lease, or license to the general public

Under the specific DVD programs being contemplated as commercial, the line item or the "commercial item" is the program itself, i.e., system support and availability, rather than the specific part number or system designation. Therefore, it is the NAVICP's position that sine PBH programs are sold to the general public, the definition is met and the effort qualifies for contracting in accordance with FAR Part 12. Additional, FAR 2.101(c)(1) and (2) allow that minor modifications to the commercial item does not exempt that item from being considered commercial. This is significant in that it will allow the NAVICP some flexibility in negotiating slight variation to the specific terms and conditions of individual programs to best suit the military environment.

It should be noted that paragraph (f) of FAR Part 2.101 addresses commercial services and excludes "…services that are sold based on hourly rates without an established catalog or market price for a specific service performed." It has long been NAVICP's legal position that its repair of repairable contracts are not considered services, but rather are supply contracts. The repair efforts more closely resemble a remanufacture or overhaul program and as such are subject to the provisions of the Walsh-Healy Act rather than the Service Contract Act. DVD further expands upon that distinction in that it also requires the contractor to provide replacement spares in addition to overhauling and remanufacturing. As a result paragraph (f) is not deemed applicable to this effort.

Some of the rationale provided by several contractors is felt to be relevant to this discussion and is provided below:

- The DVD concept is currently in practice at a specific contractor's plant in its commercial operations under a PBH program. The jointly developed DVD statement of work based largely on the contractor's commercial contract with an airline.

- The commercial pricing developed under the PBH contract was based on cost savings to the airline and not based on actual cost.

- Fair and reasonable prices cannot be determined by historical costs in the contractor's cost accounting system and engineering estimates. There is no historical data available for large portions of the efforts anticipated under DVD and therefore traditional fact-finding methods cannot be performed on the majority of the proposed elements. More similar data can be derived from the contractor's commercial databases accumulating costs under PBH programs.

- Under current contracting methods, a fair and reasonable price is based on estimated cost plus profit. Under DVD, a fair and reasonable "price" is for total logistics support and will be based on improving current life cycle coast (LCC) and the analysis of LCC savings.

- Government price evaluation does not account for the unquantifiable factors that a contractor will assume under its expanded role in the DVD program:

  - Risk is not recognized as a cost element
  - Opportunity costs are not covered
  - Cost of financing inventory is not allowable
  - Cost of future obsolescent technology and hardware cannot be qualified
  - Cost of technology insertion cannot be quantified
  - Out-of-production support (i.e., maintaining expertise and vendor base) and increased risk cannot be quantified.

- Government bid and proposed rates are estimated for five years only. The potential period of performance of these type contracts are five to ten years

CONCLUSION:

From an overall perspective, we're attempting to establish DVD contracts to integrate commercial work into a military environment and to take advantage of commercial practices and processes that are currently available. After thorough review, the NAVICP has concluded that the efforts contemplated under DVD are available in the commercial market. The spirit and intent of FAR Part 12 is to encourage the Government to evolve more toward the commercial practices and processes, or in essence, to privatize. DVD is the epitome of commercial practices or privatization. The improvements and savings we hope to achieve will be more likely to accrue if we allow the contractor to implement the efficient practices already in place in the private sector. These efficiencies and cost savings will ultimately yield improved readiness, which is the primary objective of the NAVICP.

Based on the foregoing, it is the NAVICP's intention to determine, on a case-by-case basis, the applicability of FAR, Part 12 in contracting for DVD initiatives and, when deemed appropriate, to exempt contractors from submitting Certified Cost and Pricing Data in accordance with FAR Part 15.804-.