Think Twice Before Outsourcing Software

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Outline of Presentation

QuickTime™ and a
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- Opening
- Attractions of Outsourcing
- Readiness for Outsourcing
- Outsourcing Risks
- Outsource Infrastructure
- Cost Return Ratio
- Conclusion

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Outline of Presentation

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- ✓ Opening
  - ✓ NAE Report Findings
  - ✓ Trends and New Realities
  - ✓ Business Case Framework
  - ✓ Outlook
  - ✓ Need
- Attractions of Outsourcing
- Readiness for Outsourcing
- Outsourcing Risks
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- Cost Return Ratio
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NAE Report Findings: Offshoring of Engineering

Trends and Impacts

1. *Offshoring of engineering has significantly impacted the engineering enterprise.*
2. *Better data on offshoring is needed.*
3. *Offshoring has contributed to the competitive advantage of firms in a variety of industries.*

Implications for Engineering Education

1. *Engineering education has been a major source of strength for U.S. engineering enterprise.*
2. *Individuals are responsible for their own careers, but national capacity to innovate, create, and compete must be sustained.*
3. *Engineering has become less attractive to U.S. students.*

Implications for Policy

1. *Attracting and retaining world-class engineering require core strengths to be sustained.*
2. *Is offshoring helpful, hurtful , or neutral to engineering in the U.S?*
3. *Are U.S policies on immigration providing artificial advantages or incentives for offshoring?*
4. *Are security concerns on offshoring of engineering in the information technology sector valid?*

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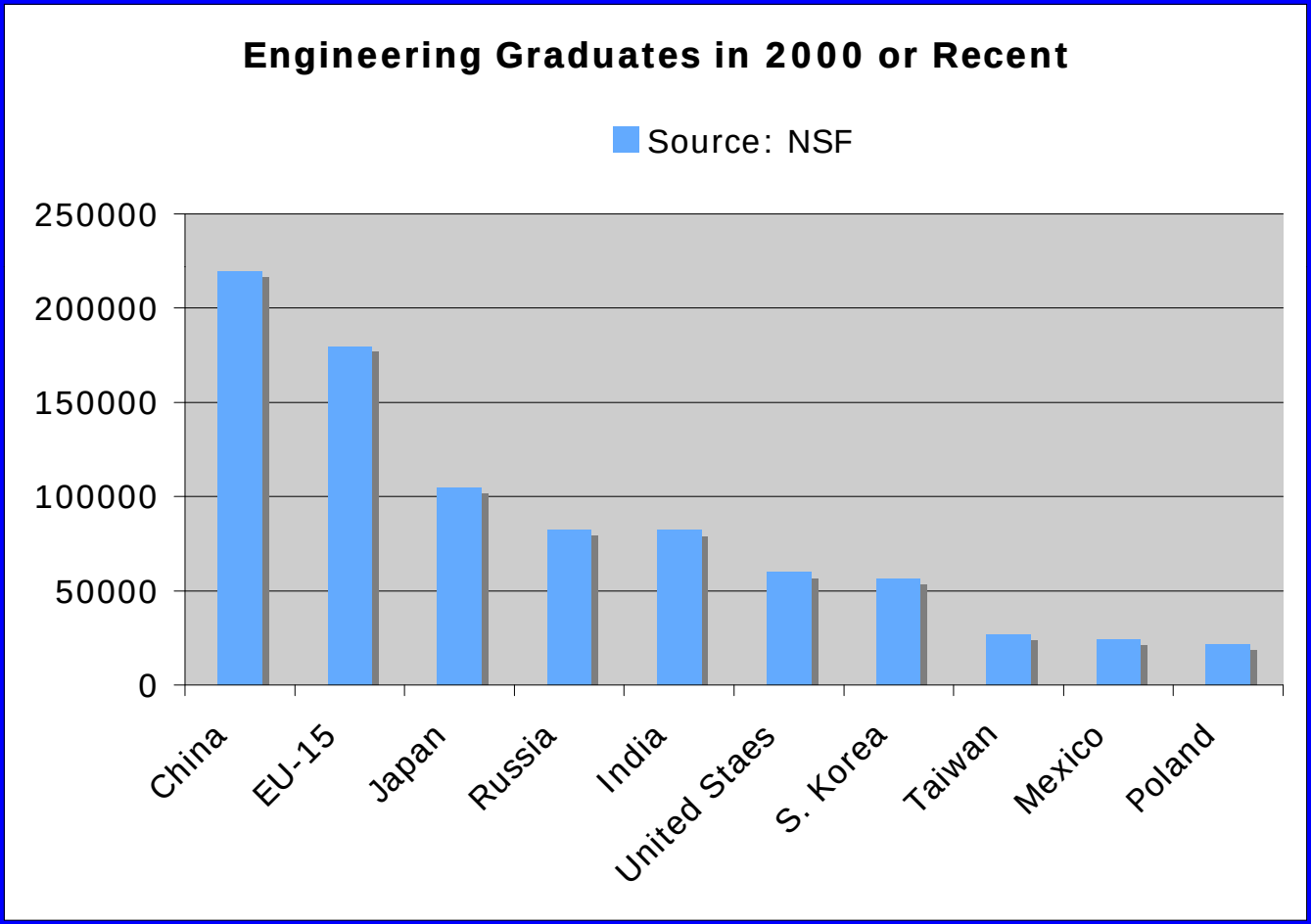
Worldwide Engineering Degrees



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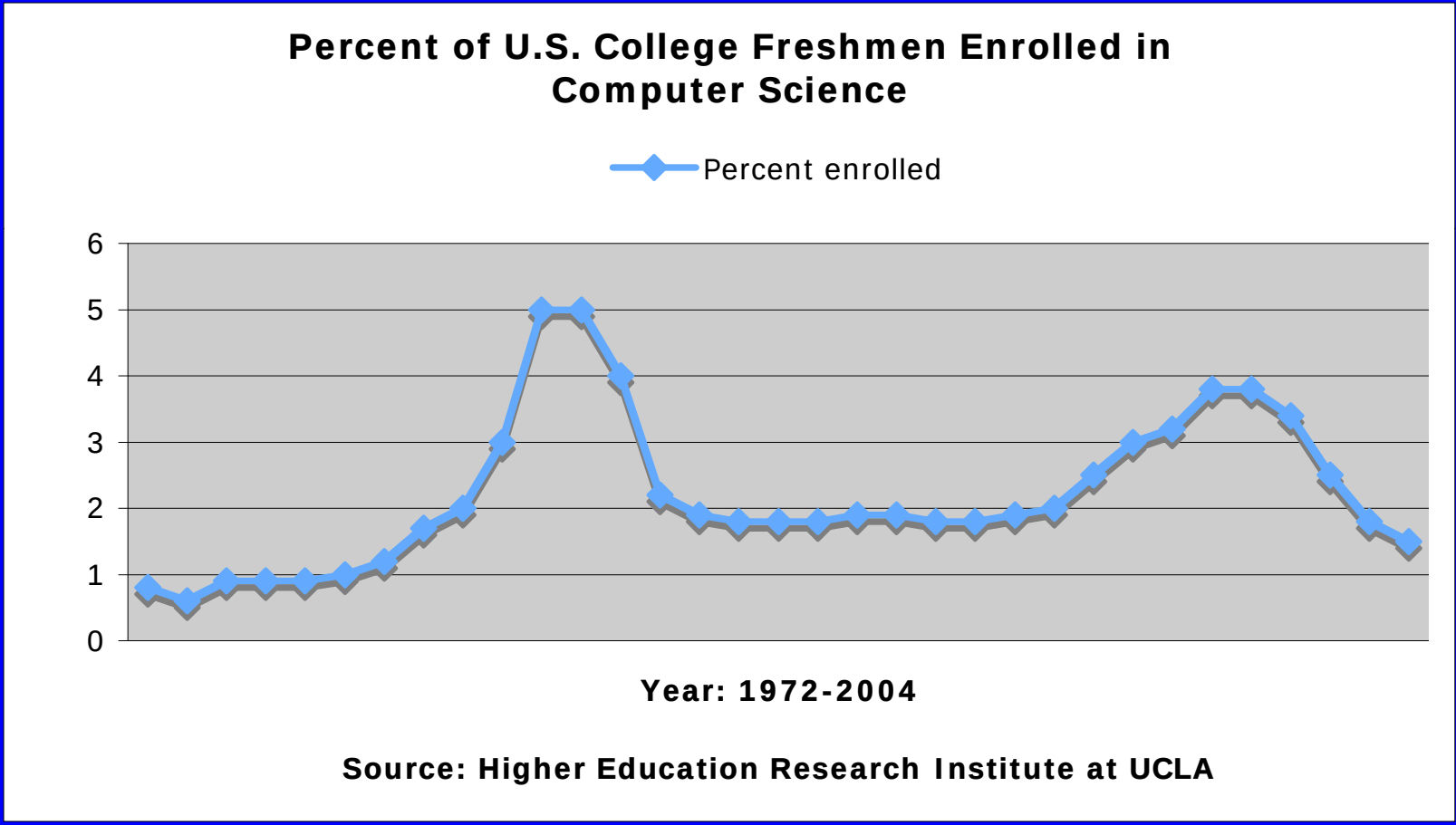
U.S. College Freshmen Computer Science Enrollment



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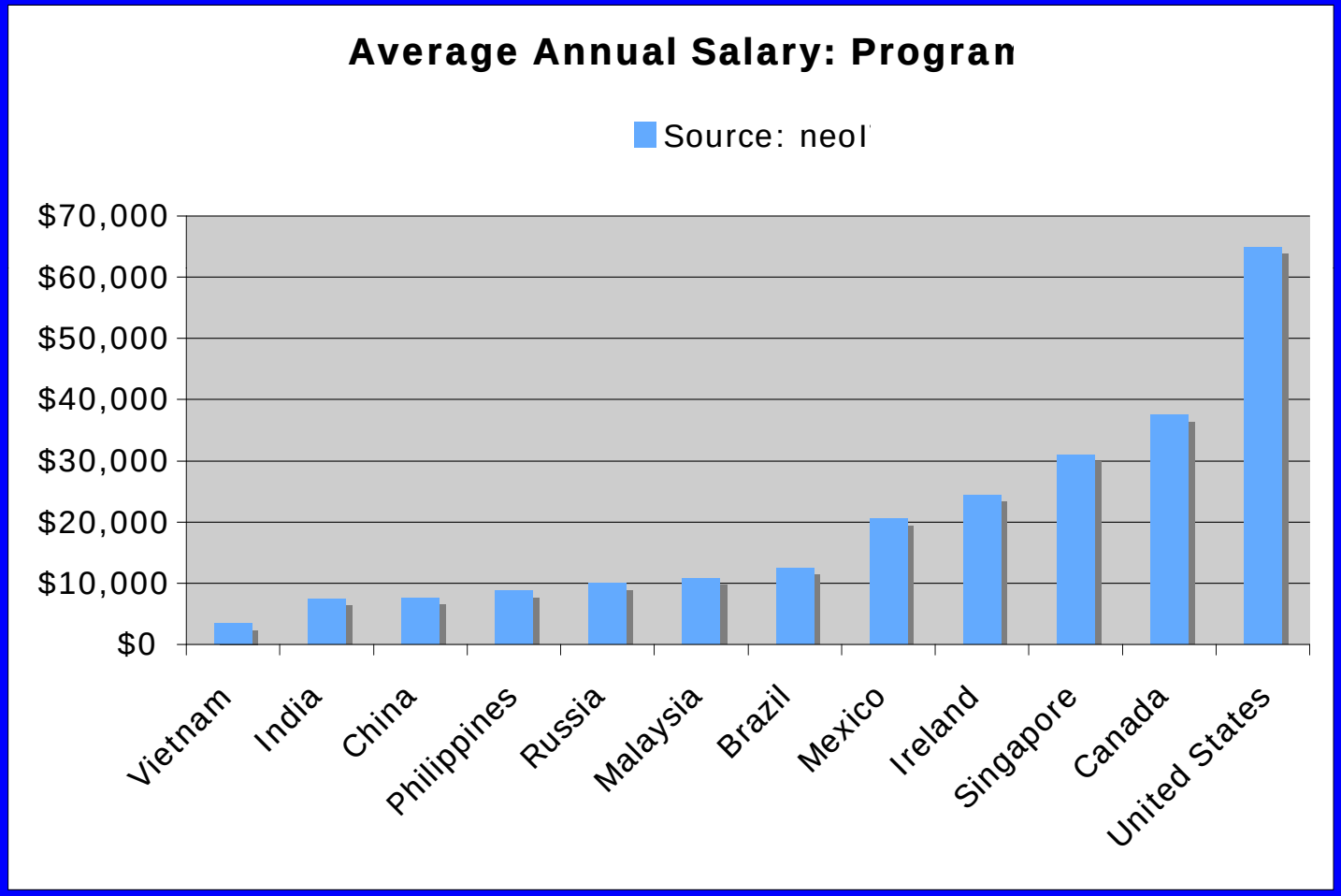
Typical Annual Salary Ranges for Offshore Professionals



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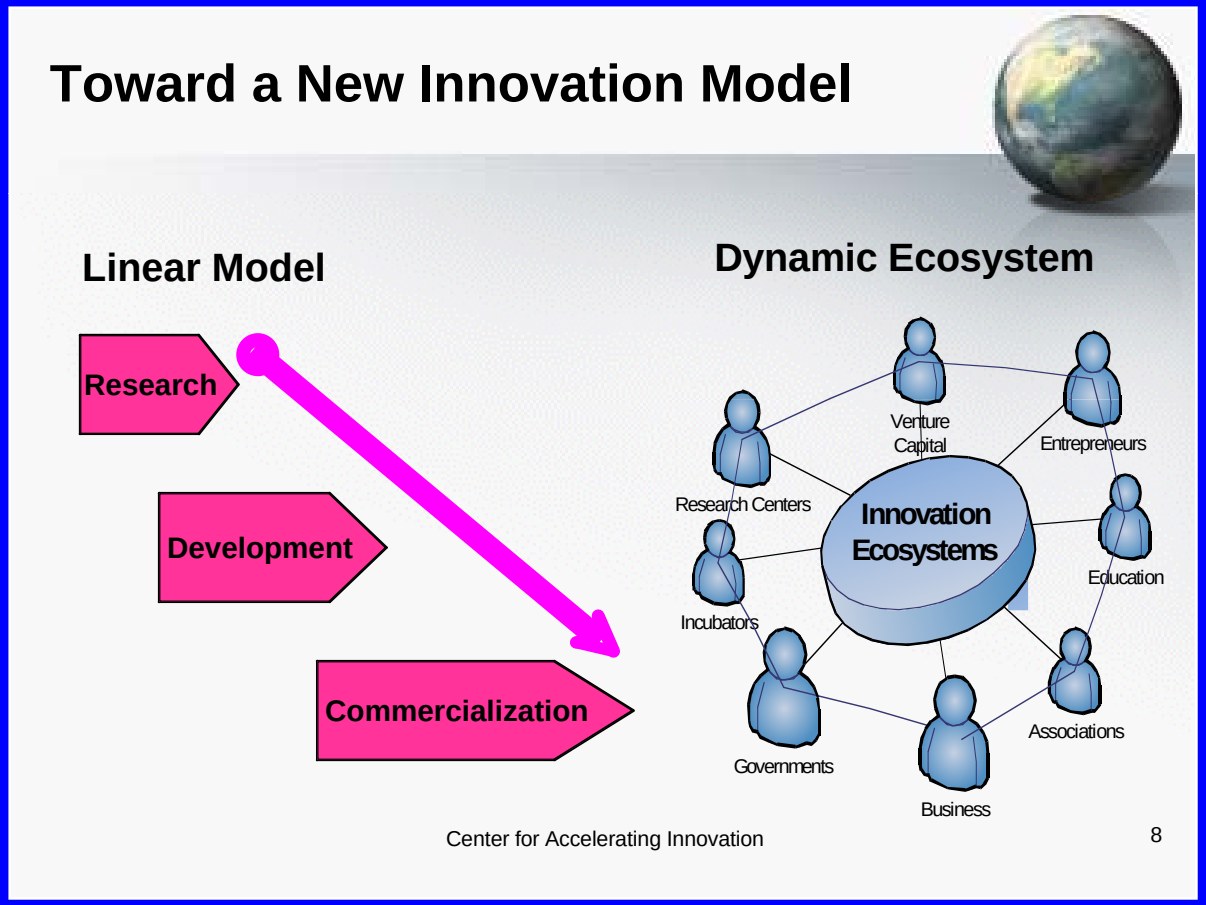
The Basics Are Changing

Globalization and software are driving the innovation ecosystem into a closed loop.



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What Are the Realities of Global Regions?

- **U.S. Leads**
  - **Architecture and standards**
  - **Applying the "New Rules for the New Economy" and openness**
- **Asia Pacific leads**
  - **Application of IT for manufacturing of commodity products**
- **European Companies**
  - **Remain closed and proprietary with own R&D**
  - **While acquiring U.S. R&D via university collaboration**
- **Multi-National Corporations**
  - **Perform marketing and distribution in-country**
  - **Outsource manufacturing offshore**

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Facing New Realities

- Employment of software professionals has become wage scale sensitive
- Investment in software innovation has diminished substantially
- The world supply of engineering graduates has reached ten times the United States contribution
- The immaturity of software engineering art and practice is acknowledged
- Defects in software products are expected and accepted by both producers and consumers
- Software standards are accelerating the commoditization of certain segments
- Software innovation and ideas move around the world with the click of a mouse
- Other nations are simply catching up with the United States
- A high cost is being exacted on United States enterprises by security, spam, piracy, privacy, and intellectual property concerns
- Public policy measures are often viewed as government intrusion

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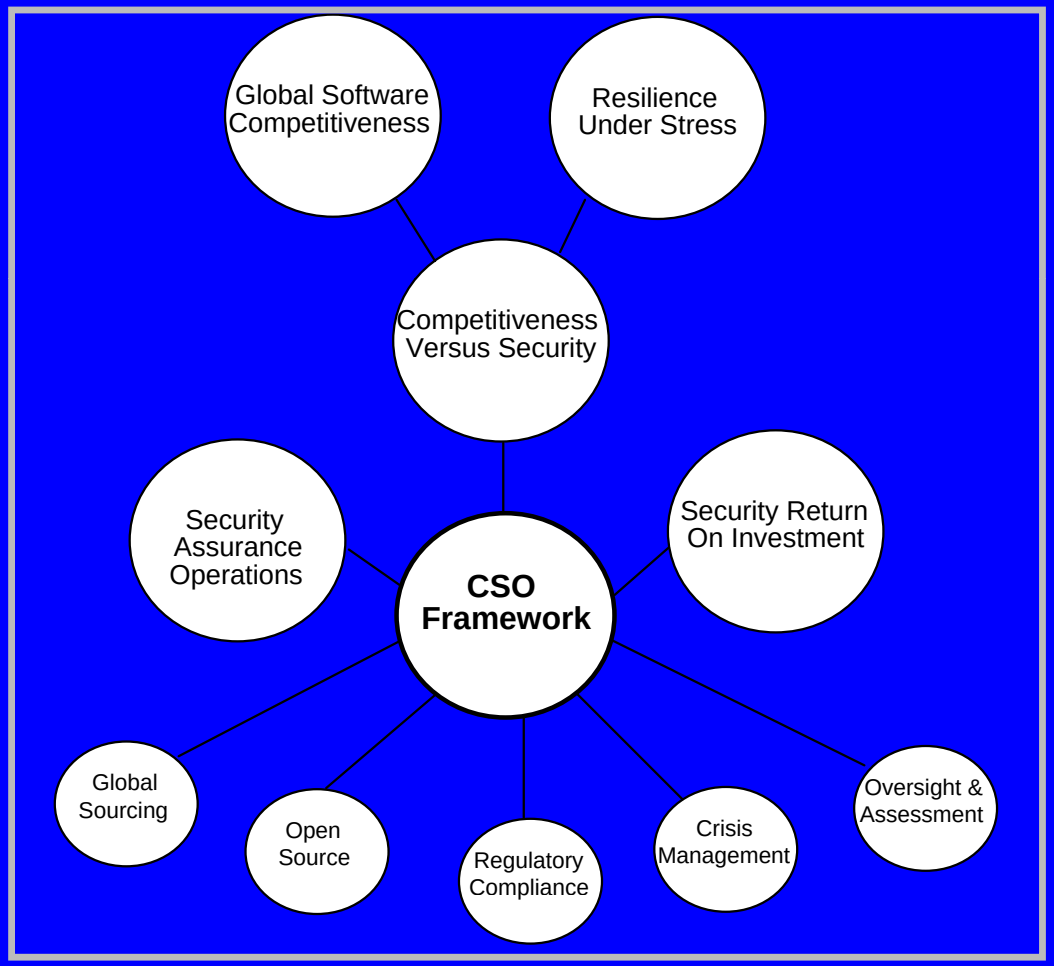
Business Case Framework



O'Neill, Don, "Business Considerations and Foundations for Transforming and Assuring Software Security: Business Case Models for Rational Action", Build Security In web site, February 2007

https://buildsecurityin.us-cert.gov

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Outlook

- As global enterprises increasingly seek to achieve competitiveness on the cheap
  - ✓Global outsourcing is becoming more widespread
  - ✓But due diligence is needed if success is to be achieved

Outlook

- **Questions to consider**
  - ✓ **What benefits do global enterprises look for in offshore outsourcing?**
  - ✓ **What pitfalls should global enterprises look out for?**
  - ✓ **What capabilities are needed for mature global outsourcing?**
  - ✓ **What are the risks for certain country destinations and outsource scenarios?**
  - ✓ **What are the criteria for global outsourcing vendor assessment, selection, and management?**
  - ✓ **What is the cost return ratio for outsourcing, and what wage structures work for typical global outsource scenarios?**

The Challenges of the Broader Context

The Standish Report informs us that software projects fail, fail to complete, or fail to deliver promised capabilities at an alarmingly high rate.

Need

- A multi-dimensional channel capable of rapid exchange of essential management, engineering, process, business, legal, and cultural packets in a predictable, reliable, and safe manner.
- A coordinated interaction between the Global Enterprise and the Outsource Vendor that avoids conflict, smoothes out misunderstandings, and dampens down reaction to shortfall and mismatch in expectation and delivery.

Outline of Presentation

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- Opening
- ✓ Attractions of Outsourcing
  - ✓ Convergence of Factors
  - ✓ Drivers of Outsourcing
  - ✓ Outsourcing in Practice
  - ✓ Profile of Offshore Destinations
- Readiness for Outsourcing
- Outsourcing Risks
- Outsource Infrastructure
- Cost Return Ratio
- Conclusion

Convergence of Enabling Factors

- Cheap telecommunications
  - ✓ Offshore country electric infrastructure may offer risk
- Defined software development life cycle processes
  - ✓ SEI Capability Maturity Model is the stimulus
- Commoditized skills
  - ✓ Low service role: code, test, and maintenance role at first
  - ✓ Higher value chain role: design, code, and test follows
- Low wages
  - ✓ Upward pressure is now evident

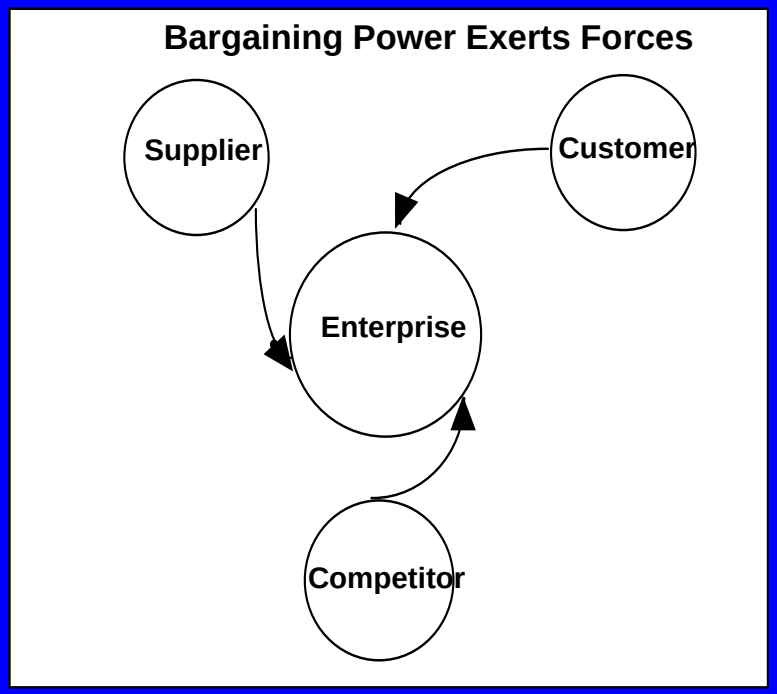
What are the drivers of outsourcing?

Bargaining Power Exerts Forces

Competitive capabilities are eroding

Bargaining power forces of suppliers, customers, and competitors are exacting concessions

Counter acting forces of Innovation, technology, and public policy are lagging



Sourcing

Education pipeline

- U.S. graduates only one-tenth of world's science and engineering resource pool
- 4th, 8th, 12th graders underachieve in standardized tests

Balancing demographics

- Some self-select out of the pool

Foreign nationals

- Security concerns limit defense industry utilization

Offshore outsourcing

- Security concerns limit defense industry utilization

Drivers of Outsourcing

- The enterprise driven by its vision of the future
  - ✓ May be pulled into outsourcing to accelerate disintermediation and reduce headcount.
- The enterprise driven by its competitors and customers
  - ✓ May be pushed into outsourcing to obtain high value capabilities for which it is unprepared.
- The enterprise driven by the shortage in the availability of software skills for high end services
  - ✓ May be forced into outsourcing.
- The enterprise driven by customer bargaining power to reduce costs for low end services
  - ✓ May be forced into outsourcing.

Outsourcing in Practice

- Pro's
  - ✓ Immediate cost reduction
  - ✓ Skilled workforce available
  - ✓ Less turnover and retraining among outsourced workforce
  - ✓ Commoditization of programming skills
  - ✓ Elimination of personnel issues
- Con's
  - ✓ Irreversible decision
  - ✓ Strategic value of software
  - ✓ Software absence in board room
  - ✓ Unvetted workforce
  - ✓ Security, privacy, piracy concerns
  - ✓ Shifting winds of immigration and export control policy
  - ✓ Toothless sanctions associated with patent and copyright protection
  - ✓ Immature outsource management and oversight
  - ✓ Immature requirements and specification capability

Profile of Offshore Destinations- Circa 2005

India	Russia
•$12.7B per year •Goal: $50B by 2008 •$10-25 per hour •1,000,000 programmers •Pipeline of skilled workers	•$60-100 million per year •$5 per hour •7,500 programmers •High disregard for intellectual property •Government is not friendly
China	**Ireland**
•$6.8B per year •$5-10 per hour •English language weakness •High disregard for intellectual property	•$6B per year •$15-25 per hour •200,000 programmers

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- Attractions of Outsourcing
- ✓ Readiness for Outsourcing
  - ✓ Global Enterprise Assessment Questions
  - ✓ Global Enterprise Outsourcing Maturity
  - ✓ Outsource Vendor Profile Questions
  - ✓ Outsource Vendor Profile
- Outsourcing Risks
- Outsource Infrastructure
- Cost Return Ratio
- Conclusion

What enterprise capabilities are needed to engage in outsourcing?

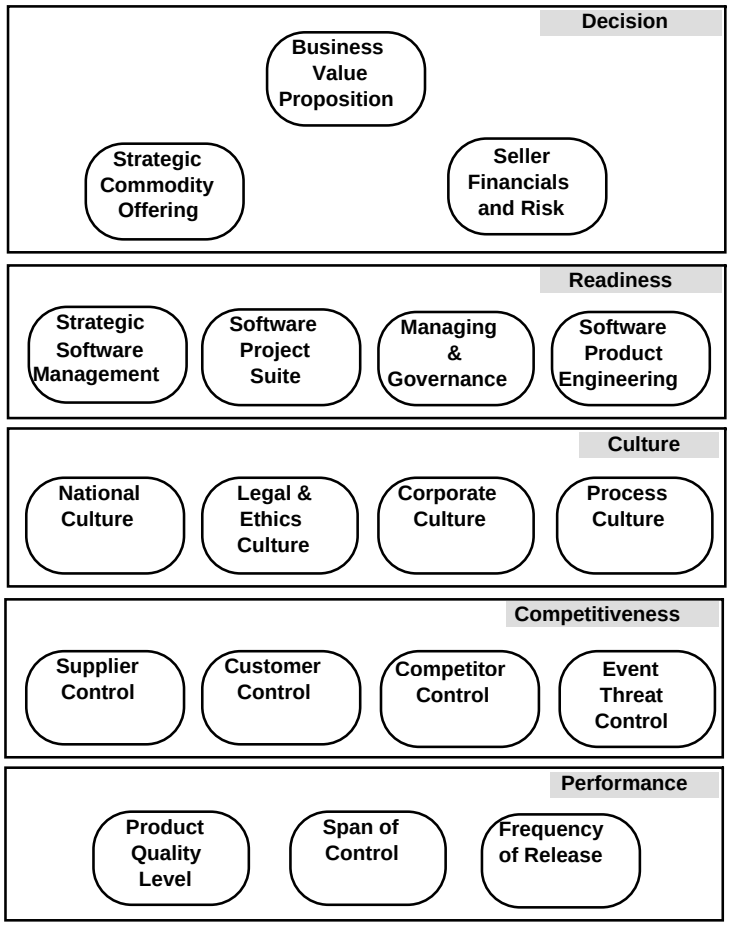
Global Enterprise Assessment Questions

- Is the business value proposition driven by return on investment, wage structure elasticity, and risk factors?
- Is the outsource offering strategic or commodity?
- Does the financial analysis consider in-house cost estimate and outsource cost estimate?
- Does the enterprise exercise strategic software management?
- Does the enterprise utilize a defined project suite of process?
- Are enterprise management and governance practices in place?
- Has the enterprise considered national culture factors, legal and ethics factors, corporate culture, and process culture?
- Are performance expectations in place including quality level, span of control, and release frequency?

Global Enterprise Outsourcing Maturity

Global Enterprise Outsourcing Maturity (GEOM)

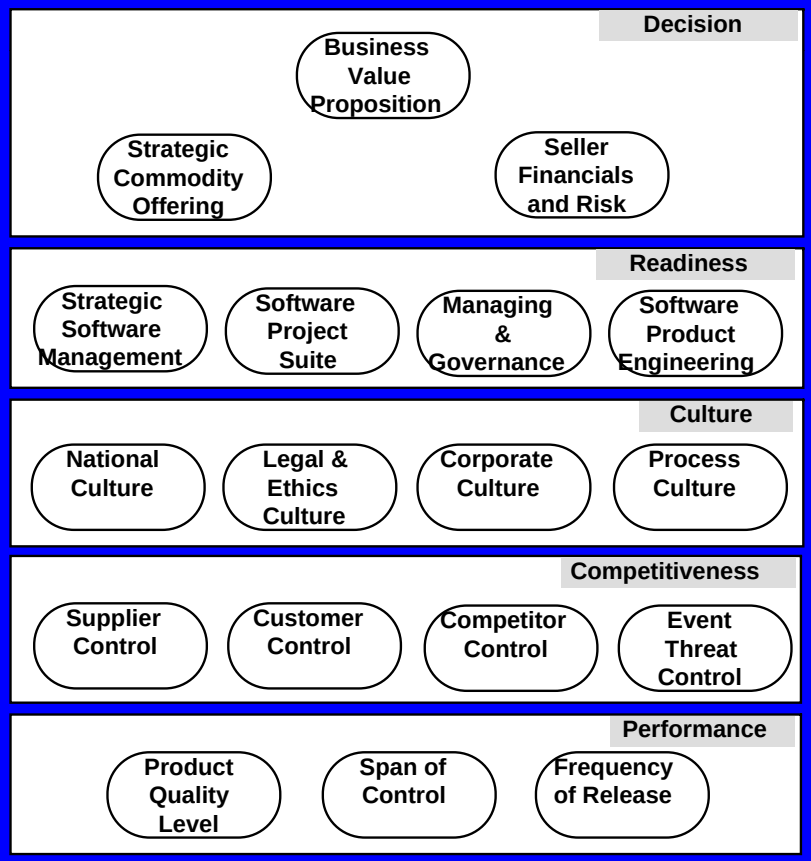
- Decision
- Readiness
- Culture
- Competitiveness
- Performance



Global Enterprise Outsourcing Maturity

ECISION

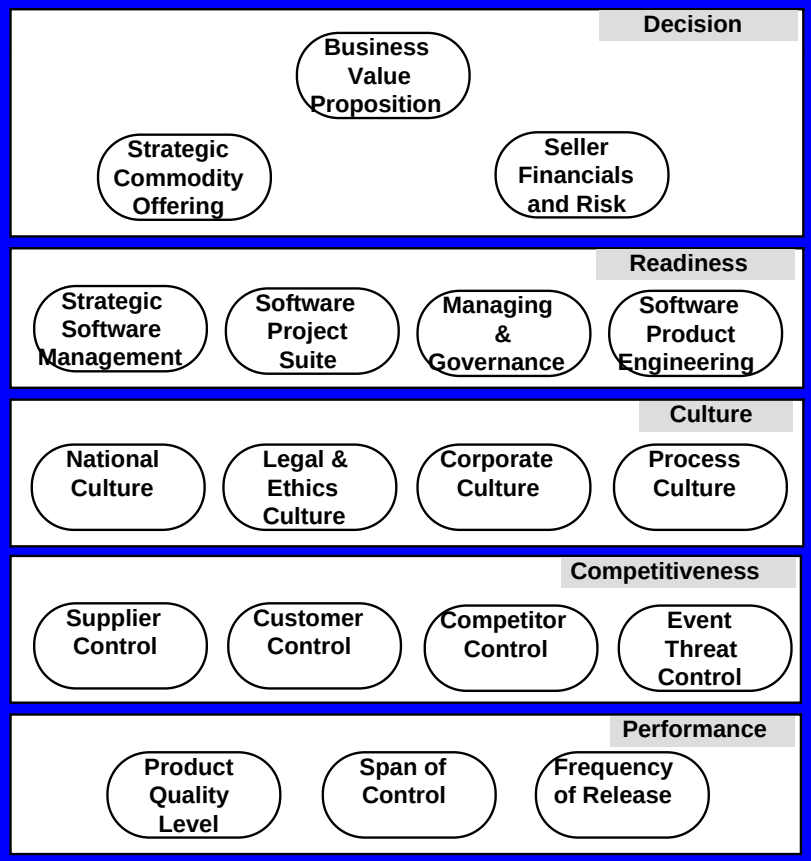
- Business Value Proposition
- Strategic/Commodity Offering
- Seller Financials and Risk



Global Enterprise Outsourcing Maturity

EADINESS

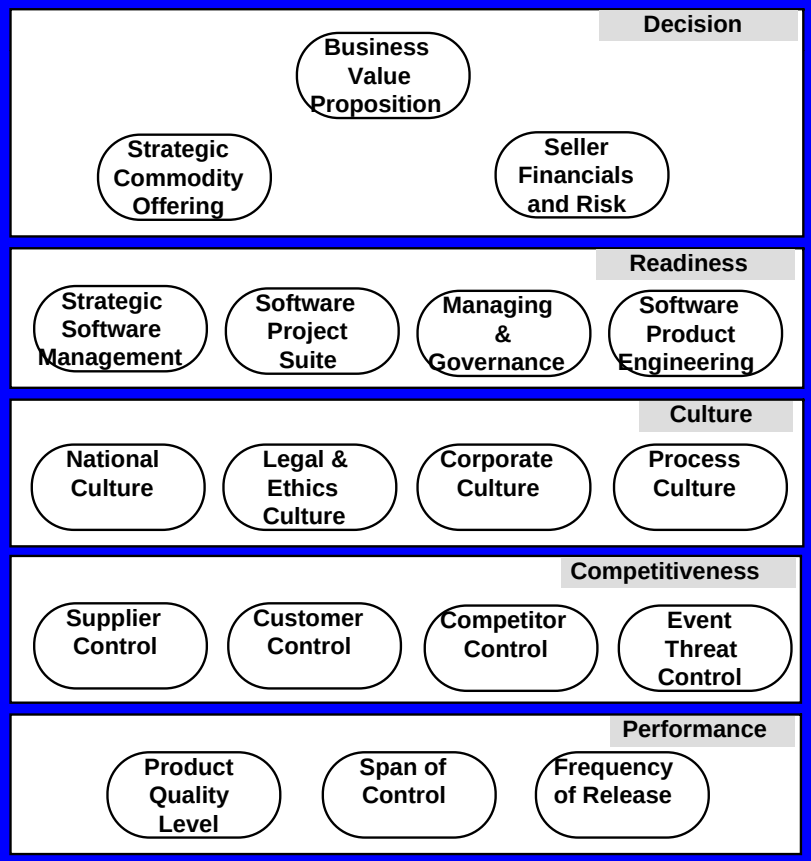
- Strategic Software Management
- Software Project Suite
- Managing & Governance
- Software Product Engineering



Global Enterprise Outsourcing Maturity

ULTURE

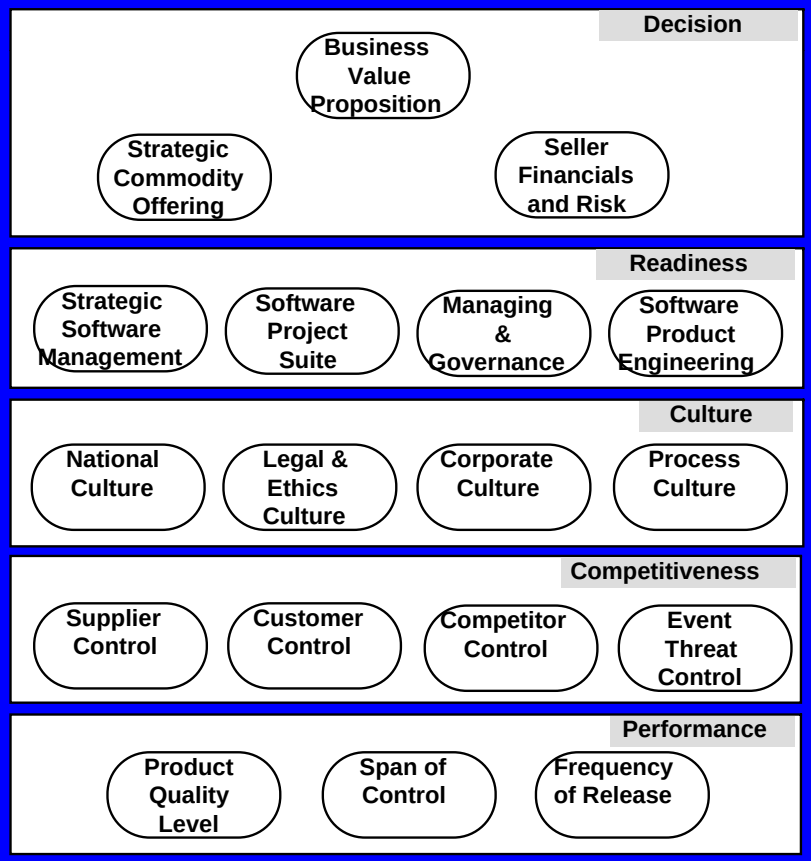
- National Culture
- Legal & Ethics Culture
- Corporate Culture
- Process Culture



Global Enterprise Outsourcing Maturity

OMPETITIVENESS

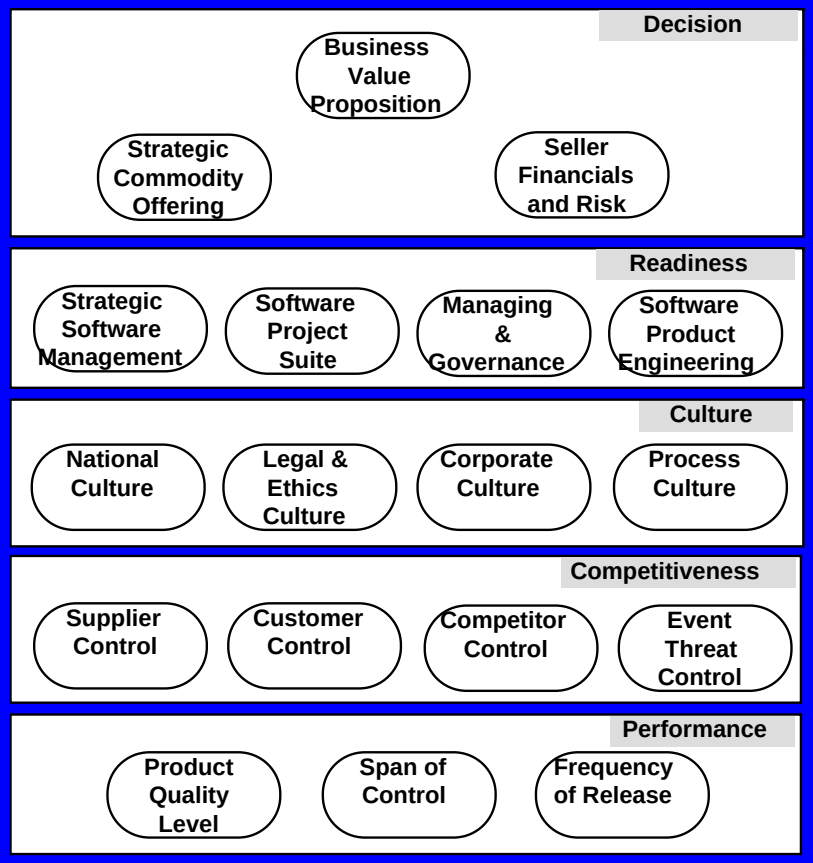
- Supplier Control
- Customer Control
- Competitor Control
- Event Threat Control



Global Enterprise Outsourcing Maturity

ERFORMANCE

- Product Quality Level
- Span of Control
- Frequency of Release



How should an outsource vendor be profiled?

Outsource Vendor Profile Questions

- Are the management and technical staff fluent in English?
- Is the management staff financially literate?
- Is buyer anonymity and privacy assured?
- Are workers vetted for professional capability and background?
- Are modern telecommunications available?
- Is network and computer security protected?
- Is the management and technical staff CMM experienced?
- Is software quality assurance practiced?
- Is software project management practiced?
- Is disciplined software engineering practiced?
- Is intellectual property protected?
- Is intellectual property created recaptured?

Outsource Vendor Profile

Outsource Vendor Profile (OVP)

Initial Conditions

Infrastructure

Experience

Factors	China	Russ.	India	Ireland	U.S.
Initial Conditions					
English language	no	no	yes	yes	yes
Low wage structure	yes	yes	yes	yes	no
Financial literacy	no	no	yes	yes	yes
Established companies	no	no	yes	no	yes
Vet for security	no	no	no	no	yes
Worker compliance	yes	no	no	yes	yes
Privacy & anonymity	yes	yes	yes	yes	yes
Infrastructure					
Software education	no	no	yes	no	yes
CMM experienced	no	no	yes	no	yes
Software management	no	no	no	yes	yes
Disciplined engineering	no	no	no	no	yes
Technology clusters	no	no	yes	no	yes
Modern telecommunications	no	no	yes	yes	yes
Security protection	no	no	no	no	no
Government support	yes	no	yes	yes	yes
Legal structure supp.	no	no	no	yes	yes
Mutuality in trade	no	no	no	yes	yes
IP protection and recapture	no	no	no	no	yes
Experience					
Product offerings	no	no	no	no	yes
Services offerings	yes	yes	yes	yes	yes
Source for mainten.	yes	yes	yes	yes	yes
Packaged application skills	no	no	yes	yes	yes
Open source exper.	yes	no	no	no	yes
Tradition of innovation	yes	yes	no	no	yes
Application domain skills	yes	yes	no	no	yes
Totals					
yes	9	6	13	13	23
no	16	19	12	12	2

nitial Conditions

or each factor, ask and answer the following questions:

	Low	High
o what degree has the factor been considered?	**[1][2][3][4][5]**	
low important is the factor?	**[1][2][3][4][5]**	

eading Indicator

	a. Degree	b. Importance
nglish language	[1][2][3][4][5]	[1][2][3][4][5]
ow wage structure	[1][2][3][4][5]	[1][2][3][4][5]
nancial literacy	[1][2][3][4][5]	[1][2][3][4][5]
stablished companies	[1][2][3][4][5]	[1][2][3][4][5]
et for security	[1][2][3][4][5]	[1][2][3][4][5]
Vorker compliance	[1][2][3][4][5]	[1][2][3][4][5]
rivacy and anonymity	[1][2][3][4][5]	[1][2][3][4][5]

nfrastructure

or each factor, ask and answer the following questions:

	Low High
o what degree has the factor been considered?	**[1][2][3][4][5]**
ow important is the factor?	**[1][2][3][4][5]**

eading Indicator

	a. Degree	b. Importance
oftware education	[1][2][3][4][5]	[1][2][3][4][5]
MM experienced	[1][2][3][4][5]	[1][2][3][4][5]
oftware management	[1][2][3][4][5]	[1][2][3][4][5]
sciplined engineering	[1][2][3][4][5]	[1][2][3][4][5]
echnology clusters	[1][2][3][4][5]	[1][2][3][4][5]
odern telecommunications	[1][2][3][4][5]	[1][2][3][4][5]
ecurity protection	[1][2][3][4][5]	[1][2][3][4][5]
overnment support	[1][2][3][4][5]	[1][2][3][4][5]
egal structure support	[1][2][3][4][5]	[1][2][3][4][5]
utuality in trade	[1][2][3][4][5]	[1][2][3][4][5]
protection and recapture	[1][2][3][4][5]	[1][2][3][4][5]

Experience

or each factor, ask and answer the following questions:

	Low	High
o what degree has the factor been considered?	**[1][2][3][4][5]**	
low important is the factor?	**[1][2][3][4][5]**	

eading Indicator

	a. Degree	b. Importance
roduct offerings	[1][2][3][4][5]	[1][2][3][4][5]
ervices offerings	[1][2][3][4][5]	[1][2][3][4][5]
ource for maintenance	[1][2][3][4][5]	[1][2][3][4][5]
ackaged application skills	[1][2][3][4][5]	[1][2][3][4][5]
pen source experience	[1][2][3][4][5]	[1][2][3][4][5]
adition of innovation	[1][2][3][4][5]	[1][2][3][4][5
pplication domain skills	[1][2][3][4][5]	[1][2][3][4][5]

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- Opening
- Attractions of Outsourcing
- Readiness for Outsourcing
- ✓ Outsourcing Risks
  - ✓ Top Ten Buyer's Risks
  - ✓ Commodity Versus Strategic Content
  - ✓ Outsource Architecture
  - ✓ Sources of Friction in Outsourcing
- Outsource Infrastructure
- Cost Return Ratio
- Conclusion

What are the buyer’s risks in offshore outsourcing?

Top Ten Buyer's Risks

1. Buyers want to protect the intellectual property they share with the outsource vendor.
2. Buyers want to recapture the intellectual property created during the engagement.
3. Buyers want to be assured that industrial strength network and computer security measures are employed by the outsource vendor.
4. Buyers do not want to be associated with the piracy of packaged software.
5. Buyers would like to know that the outsource vendor workers are vetted for professional qualifications and background checks.
6. Buyers want to deal with financially literate outsource vendors.
7. Buyers want to deal with outsource vendors who practice good software management.
8. Buyers may wish to remain anonymous and be assured of the confidentiality of the offshore engagement.
9. Buyers wish to avoid a mismatch in cultural style between their corporate culture and that of the outsource vendor.
10. Buyers may prefer to outsource commodity workload but not strategic workload.

Commodity Versus Strategic Content

Commodity

- Enterprises contemplating outsourcing are readily willing to outsource commodity products or services.
- A commodity outsource project is one that delivers a supporting product or service, based on well known industry knowledge that is not the basis for distinguishing the organization from its competition.
- For example, it may an administrative software system that everyone needs and anyone can build. Or it may be software maintenance involving code and test of legacy software (old software) that still needs to operate.

Strategic

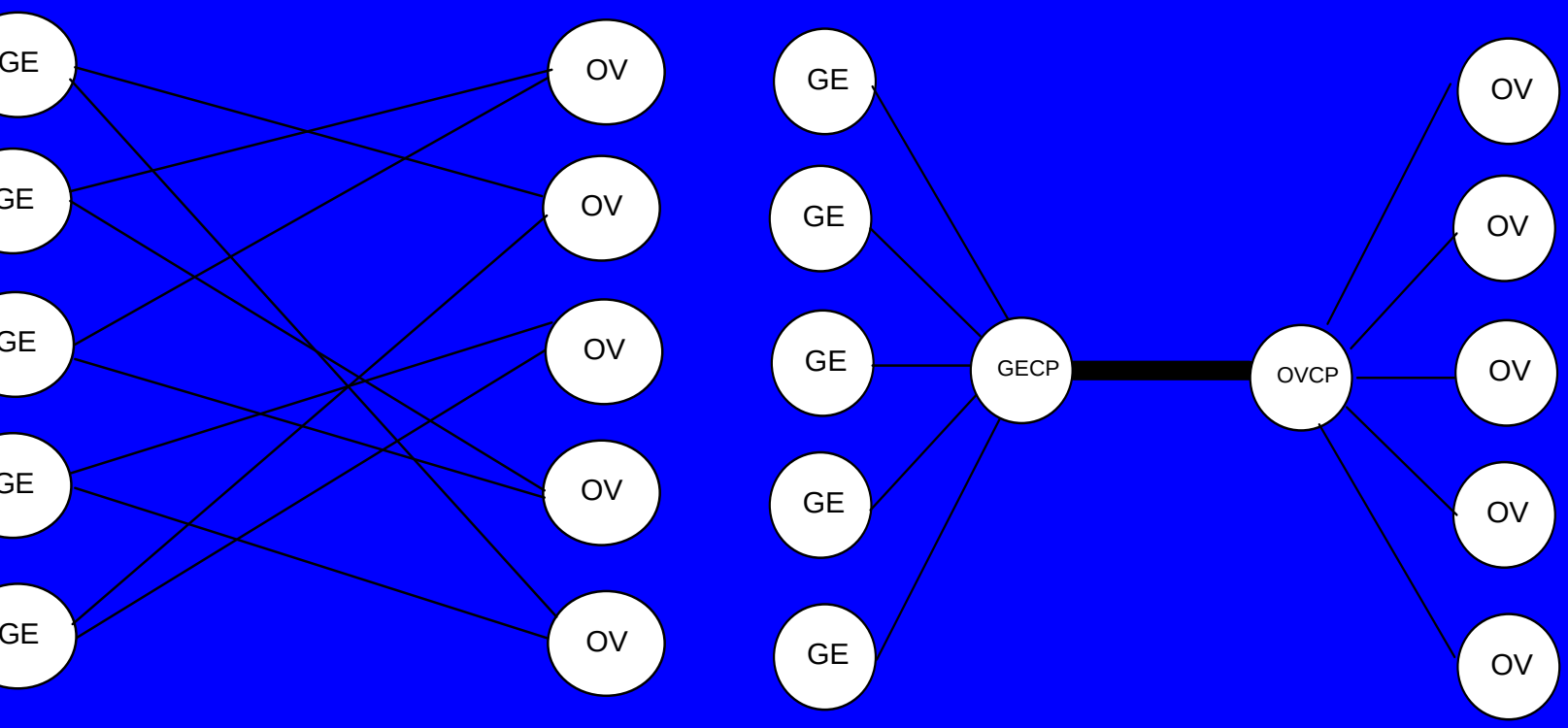
- ✓ Enterprises willing to outsource commodity products or services may be reluctant to outsource strategic products and services.
- ✓ A strategic outsourcing project is one that delivers a core product or service, perhaps based on enterprise proprietary intellectual property, that distinguishes the enterprise from the competition.
- ✓ For example, it may be a scientific software system based on proprietary mathematical algorithms. Or it may software design, code, and test of new development central to the future operation of the enterprise.

Drivers and Enablers Impacting Offshore Outsourcing

- Value
- Cost
- Skills
- Risk
- Commoditization
- Scale up

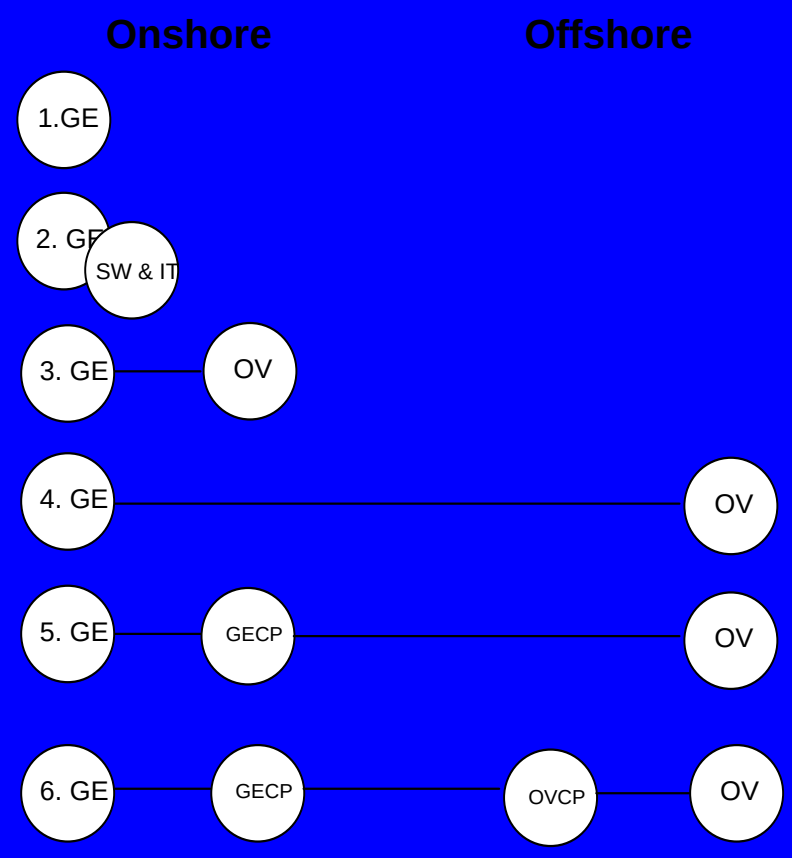
Offshore Outsourcing Architecture

Reducing Complexity by Disassembling and Repackaging Functions and Information Flow



Disassembling and Repackaging Software and IT

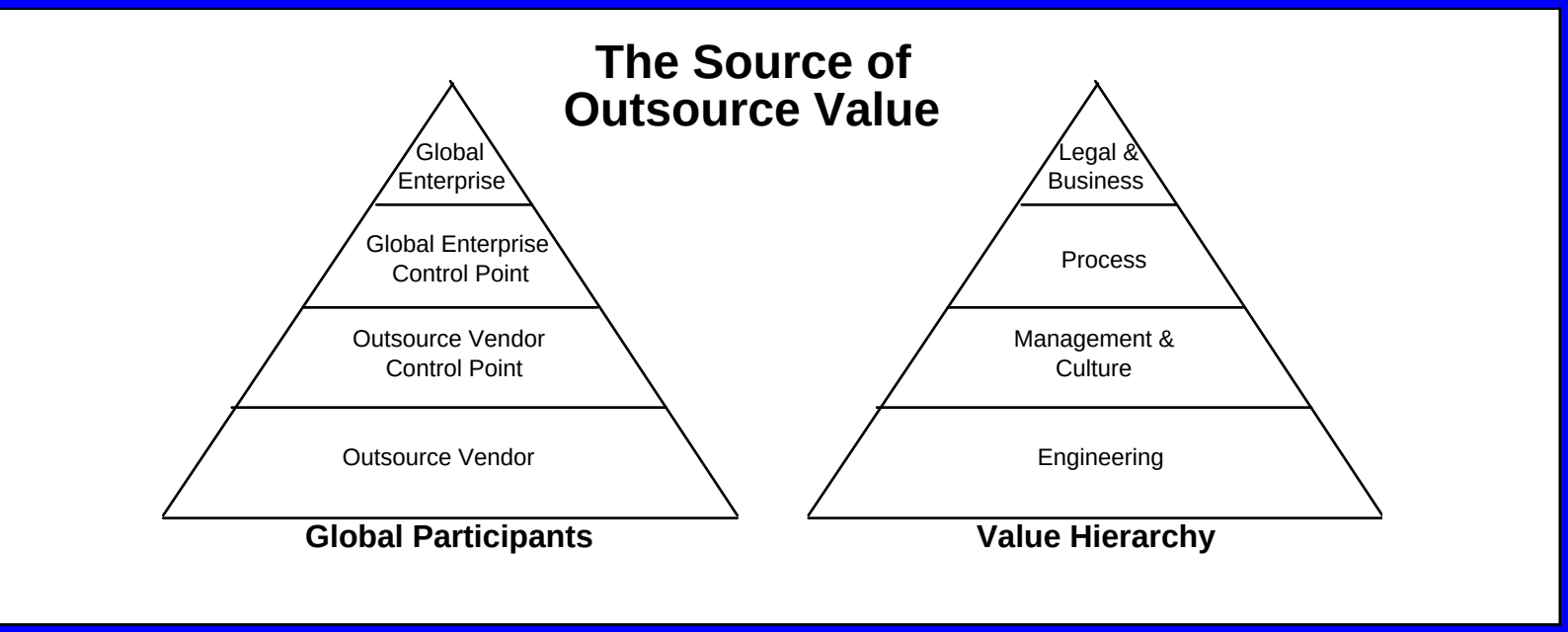
1. Software and IT integral to using departments of a global enterprise
2. Functionalizing software and IT as an in-house operation
3. Functionalizing software and IT as an outsourced onshore vendor operation
4. Functionalizing software and IT as an outsourced offshore vendor operation
5. Further functionalizing the administration of the offshore outsourcing operation as an outsourced onshore control point
6. Splitting the offshore outsourced operation into onshore and offshore control points



Control Points Eliminate Friction!

The business need of the Global Enterprise is met by the engineering solution of the Outsource Vendor.

Control Points staffed by intelligent middlemen eliminate friction through process, management, and culture functions.



Sources of Friction in Outsourcing

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Business and Legal

- Intellectual Property protection
- Commodity/Strategic balance
- Corporate Anonymity, Privacy

Cultural

- Shortfall and relationships
- Multi-dimensional views
- Mismatch in cultural style

Technical and Legal

- Control of computer and network security
- Control of piracy
- Vetting of workers
- Elimination of corruption

- Software Engineering and Management
  - Shift from capability maturity to product engineering
  - Process of experimentation facilitated
  - Cost, schedule, and quality control
  - Coordinating cost, billing, and change
  - Management, oversight, and governance
  - Seat in board room

Broad Role of the Intelligent Middleman

Skills
al Dimensions
ersonal ethics
ork ethic
ofessional ethic
egal ethic

ral Mediation
ational culture
orporate culture
ocess culture

ectual Property
otection
ecapture

Trusted Pipe Architecture Layers

1. **Ethical Dimensions**
2. **Cultural Mediation**
3. **Intellectual Property**
4. **Security and Privacy**
5. **Management and Engineering**
6. **Domain Knowledge**
7. **Technology Infrastructure**

Hard Skills

Security and Privacy
- Network security
- Computer security
- Privacy policy

Management and Engineering
- Ad hoc
- Structured
- Disciplined

Domain Knowledge
- Models
- Templates

Technology Infrastructure
- Electronic networks
- Desktops and servers

Ethical Dimensions

- Personal ethics
- Work ethic
- Professional ethic
- Legal ethic

Cultural Mediation

- National culture
- Corporate culture
- Process culture

ntellectual Property

- Protection
- Recapture

Security and Privacy

- Network security
- Computer security
- Privacy policy

Management and Engineering

- Ad hoc
- Structured
- Disciplined

Domain Knowledge

- Models
- Templates

Technical Infrastructure

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- Outsourcing Risks
- ✓ Outsource Infrastructure
  - ✓ Trusted Pipe™ Architecture
  - ✓ Control Points
  - ✓ Nodes Specified as ETVX Diagrams
  - ✓ Inside Track Training
- Cost Return Ratio
- Conclusion

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Outsource Infrastructure

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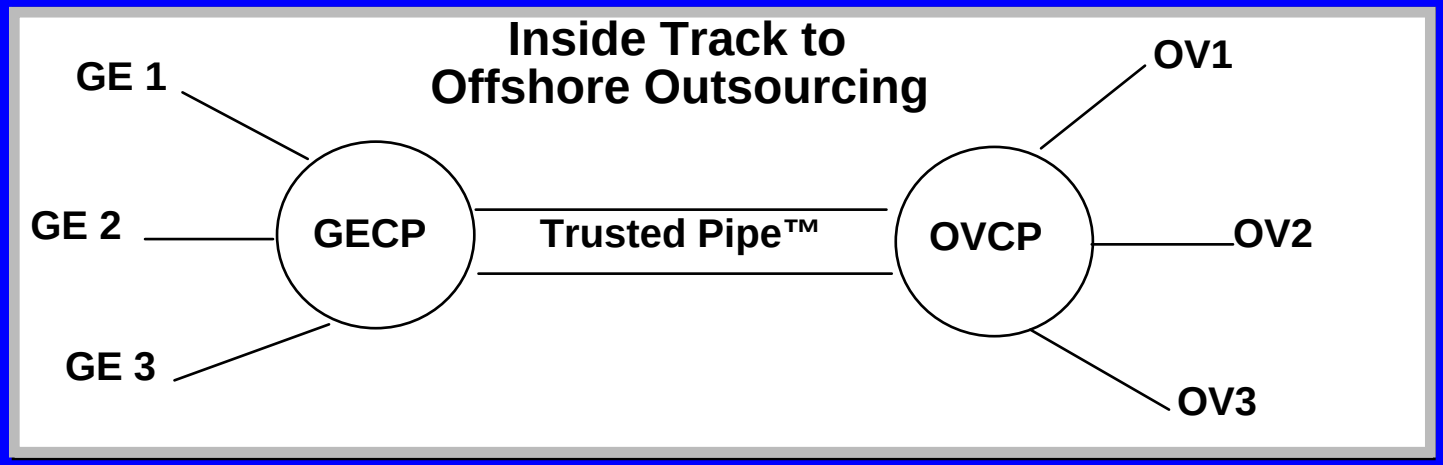
Trusted Pipe™

- Ensures high fidelity coordination for essential management, engineering, process, business, legal, and cultural aspects
- Avoids conflict, smoothes misunderstandings, dampens reaction to shortfall



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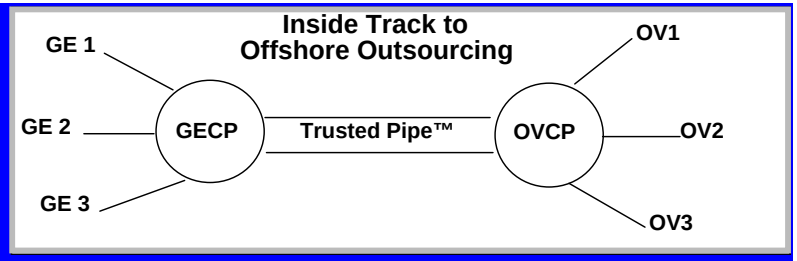
Control Points



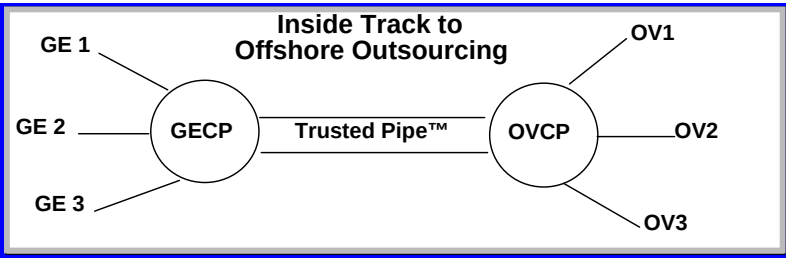
Global Enterprise Control Point (GECP)

- ✓ Manages the network of Global Enterprises of buyers
- ✓ Assesses Global Enterprises and matches buyers and sellers
- ✓ Supports engagement process, training, and measurement
- ✓ Provides oversight and governance of engagements
- ✓ Provides Process Assurance

Outsource Vendor Control Point (OVCP)

- ✓ Manages the network of Outsource Vendors of sellers
- ✓ Profiles Outsource Vendors for leading indicators preferred
- ✓ Establishes due diligence controls
- ✓ Provides Software Quality Assurance

Global Enterprise



Global Enterprise ETVX

Entry

- Outsource Vendor profiles
- Customer needs
- Completed Outsource Vendor product
- Intellectual property canonical form

Task

- GEOM assessment
- OV selection
- Contracting
- Planning
- Requirements
- Change mgt.
- Acceptance
- Innovation management

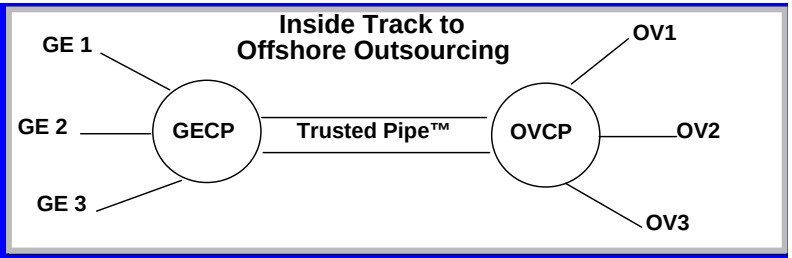
Validation

- Product assurance

Exit

- Selected Outsource Vendor
- Project plan
- Requirements
- Changes
- Approved contract
- Funding
- Cost return ratio

Global Enterprise Control Point



Global Enterprise Control Point ETVX

Entry

- Outsource Vendor profiles
- Project plan
- Requirements
- Changes
- Approved contract
- Funding
- Risks

Task

- GEOM assessment
- OV selection
- Process rollout
- Stakeholder training
- Change mgt.
- Risk management
- Quality management
- Culture mediation

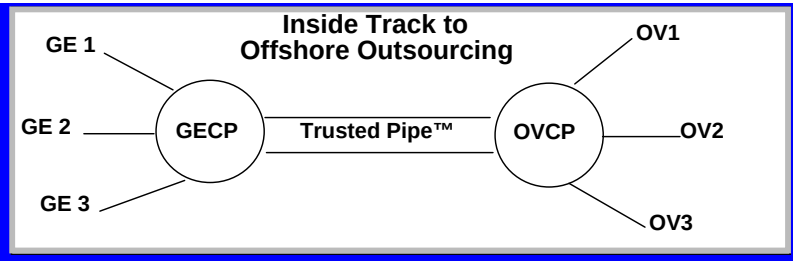
Validation

- Process assurance
- Management oversight

Exit

- Matched Outsource Vendor profile
- GEOM assessment
- Approved Offshore contract
- Offshore funding
- Trained stakeholders
- Project plan
- Requirements
- Changes

Outsource Vendor Control Point



Outsource Vendor Control Point ETVX

Entry

- Project plan
- Requirements
- Changes
- Approved contract
- Funding
- Risks
- Completed Outsource Vendor product

Task

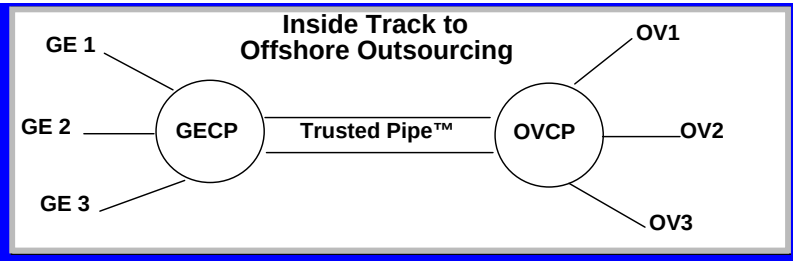
- OV profiling
- OV selection
- Contracting
- Planning
- Requirements
- Change mgt.
- Project tracking
- Risk management
- Culture mediation

Validation

- Software quality assurance

Exit

- Outsource Vendor profile
- Project plan
- Requirements
- Changes
- Approved Outsource Vendor contract
- Funding
- Cost return ratio



Outsource Vendor

Outsource Vendor ETVX

Entry

- Project Plan
- Requirements
- Changes
- Approved Outsource Vendor contract
- Funding
- Risks

Task

- OV profile
- Software product engineering
- Change mgt.
- Innovation management

Validation

- Software inspections

Exit

- OV profile
- Completed Outsource Vendor product
- Intellectual property canonical form

nside Track Training

Inside Track Training Product Foundation

Program Introduction
- Inside Track to Offshore Outsourcing Kickoff

Competitiveness and Strategic Management
- Global Software Competitiveness Seminar and Assessment Workshop
- Global Software Competitiveness Seminar
- Strategic Software Management Seminar and Assessment Workshop
- Strategic Software Management Seminar

Participant Assessment and Profiling
- Global Enterprise Outsourcing Maturity Assessment Workshop
- Outsource Vendor Profile Workshop

Quality Management System
- Capability Maturity Models
- Project Suite Defined Program Seminar and Assessment Workshop
- Project Suite Executive Seminar

Project Management
- Essential Management Practices
- Software Project Management
- Software Risk Management Workshop
- Peer Reviews Skills and Behaviors

Measurement
- Complex Factors and Nonlinear Outcomes
- Metrics Exercise
- Fact-based Software Management

Disciplined Software Engineering
- Software Life Cycle Management
- Software Product Engineering
- Software Inspections Course and Lab

Management of Innovation
- Canonical Form for Intellectual Property Recapture
- Process of Experimentation
- Innovation
- Change Management

Bridging the Cultural Gap
- Ethics
- Civil Workplace Exercise
- Cultural Diversity Exercise

Trusted Pipe™ Responsibilities

Requirements and planning	GE
Contracting and changes	GE
Process creation and planning	GECP
Training of stakeholders	GECP
Assessment and profiling	GECP, OVCP
Due diligence activities	
• Vetting workers	OVCP
• Establishing security controls	OVCP
• Establishing piracy controls	OVCP
• Establishing intellectual property controls	GECP, OVCP
• Recapturing intellectual property created	GECP, OVCP
Management support activities	
• Quality and process assurance	GECP, OVCP
• Monitoring cost, schedule, and quality	GECP, OVCP
• Mediating cultural issues	GECP, OVCP
Engineering support activities	
• Disciplined software engineering	OV
• Product artifact inspection	OV

Software Project Suite Capabilities

apability Areas	GE	GECP	OVCP	OV
roject Management				
oftware Project Planning	*	*	*	
oftware Project Track/Oversight		*	*	
ubcontract Management	*	*	*	*
ter-group Coordination			*	*
oftware Risk Management		*	*	
roduct and Engineering				
equirements Management	*			
oftware Configuration Mgt.	*		*	*
oftware Product Engineering				*
eer Review				*
oftware Quality Management		*	*	
uantitative Process Management		*	*	
rocess Management				
oftware Quality Assurance			*	
rganization Process Focus		*	*	
rganization Process Definition		*	*	
tegrated Software Management		*	*	
raining Program		*		
letrics		*	*	

Bootstrapping Trusted Pipe™
Sequence of Operations

GE	GECP	OVCP	OV	
	-Create process & plan			
	-Standup GECP			
	-Obtain OVCP commitment			
	-Standup OVCP	-Be trained		
e assessed	-Conduct assessments	-Perform profiles	-Be profiled	
e trained	-Rollout process to GE			
lentify outsource	-Access repository			
elect vendor -Rollout process to OV		-Be trained		
	-Ensure anonymity	-Vet workers		
	-Verify controls	-Establish intellectual property, security, piracy controls		
lanning				
equirements				
	-Process assurance	-Quality Assurance	-Spec	Inspect
	-Cost, billing, changes	-Cost, schedule, quality	-Design	Inspect
	-Management & oversight	-Mediate cultural issues	-Code	Inspect
	-Risk management	-Risk management	-Test	Inspect
hanges	-Changes	-Changes	-Changes	
ccept Product				
ecapture				
tellectual property				
ake seat in boardroom				
ncrease strategic				
ontent in outsourcing				

Outline of Presentation

QuickTime™ and a
TIFF (LZW) decompressor
are needed to see this picture.

- Opening
- Attractions of Outsourcing
- Readiness for Outsourcing
- Outsourcing Risks
- Outsource Infrastructure
- Cost Return Ratio
  - ✓ The View on the Factory Floor
  - ✓ Tracing the Offshore Delta
  - ✓ Outsourcing: Facts of the Matter
  - ✓ Calculating the Cost Return Ratio
- Conclusion

The View on the Factory Floor

- Done in the US a project takes 100% of effort, about 33% high value jobs and 67% low value jobs.
- When outsourced offshore, this software project takes 130% effort.
- The 33% of old high value jobs (business, legal, and program management functions) remains in the US.
- The 67% low value jobs (engineering) move offshore.
- The added 30% created by offshoring are medium value jobs evenly split between US (process functions) and offshore (software management and culture mediation).
- Important to note, US workload is full cost; offshore workload is one-sixth to one-third of US full cost.
- As a result, the US performs 48% (33% + 15%) of workload in high and medium value jobs. The offshore operation performs 82% (67% + 15%) of workload in medium and low value jobs.
- Outsourcing delivers 11% cost savings at higher offshore rates to 22% cost savings at lower offshore rates.
- Outsourcing cost savings stimulate additional project initiation.

Tracing the Offshore Delta

velopment Activities	Onshore Base	Offshore Delta	Inhouse Portion	Offshore Portion
nning	10	5	10	5
quirements Determination	20		20	
shore Vendor Selection		2	2	
nsition Offshore		8	4	4
ecification/Design	20			20
de	20			20
t	20	5	5	20
nsition Inhouse		8	4	4
ersight	10	5	10	5
	100	33	55	78

Outsourcing: Facts of the Matter

Onshore Wages

- High $120/hour
- Medium $90/hour
- Low $60/hour

Offshore Wages

- 1/3 of onshore
- 1/6 of onshore
- 1/9 of onshore

- **Workload Ratio %**

Onshore	Offshore
25	75
33	67
50	50
67	33

- **Offshore Delta %**

Onshore	Offshore	
15	15	year 1
7.5	7.5	year 2
5	5	year 3

Calculating the Cost Return Ratio

shore se	In-house Portion	Offshore Portion	Onshore Base	In-house Portion	Offshore Portion	Cost Return Ratio	Offshore Rate Versus U.S.
00%	25%	75%	7500	4350	1950	0.16	(1/3)

alculate Wage Weighted Resources [i.e., Percent Dollars] as Follows:

00 [Onshore Base]

25% * $120/hr. =3000	High Value Labor
75% * $60/hr. =4500	Low Value Labor

350 [In-house Portion]

25% * $120/hr. =3000	High Value Labor
15% * $90/hr. =1350	Mid Value Labor [Offshore Delta]

950 [Offshore Portion]

75% * (1/3*$60/hr.) =1500	Low Value Labor
15% * (1/3*$90/hr.) =450	Mid Value Labor[Offshore Delta]

ost Return Ratio=[Onshore Base-(In-house Portion+Offshore Portion)]/Onshore Base
ost Return Ratio=[7500-(4350+1950)]/7500
ost Return Ratio=[7500-6300]/7500=1200/7500
ost Return Ratio=0.16

Cost Return Ratio
Year 1

Year 1 (+30% delta)

Cost Return Ratio

Cost Return Ratio=[Onshore-(Inhouse Portion+Offshore Portion)]/Onshore

Onshore Base	Inhouse Portion	Offshore Portion	Onshore Base	Inhouse Portion	Offshore Portion	Cost Return Ratio	Offshore Rate Versus U.S.
100	25	75	7500	4350	1950	0.16	(1/3)
			7500	4350	975	0.29	(1/6)
			7500	4350	650	0.33	(1/9)
100	33	67	7980	5310	1790	0.11	(1/3)
			7980	5310	895	0.22	(1/6)
			7980	5310	597	0.26	(1/9)
100	50	50	9000	7350	1450	0.02	(1/3)
			9000	7350	725	0.10	(1/6)
			9000	7350	483	0.13	(1/9)
100	67	33	10020	9390	1110	-0.05	(1/3)
			10020	9390	555	0.01	(1/6)
			10020	9390	370	0.03	(1/9)

US rate	Offshore (1/3)	Offshore (1/6)	Offshore (1/9)	Onshore Base	Inhouse Portion	Offshore Portion
120	40	20	13.33	*	*	
90	30	15	10		* (15%)	* (15%)
60	20	10	6.67	*		*

Cost Return Ratio
Year 2

Year 2 (+15% delta)

Cost Return Ratio

Cost Return Ratio=[Onshore-(Inhouse Portion+Offshore Portion)]/Onshore

Onshore Base	Inhouse Portion	Offshore Portion	Onshore Base	Inhouse Portion	Offshore Portion	Cost Return Ratio	Offshore Rate Versus U.S.
100	25	75	7500	3675	1725	0.28	(1/3)
			7500	3675	863	0.40	(1/6)
			7500	3675	575	0.43	(1/9)
100	33	67	7980	4635	1565	0.22	(1/3)
			7980	4635	783	0.32	(1/6)
			7980	4635	522	0.35	(1/9)
100	50	50	9000	6675	1225	0.12	(1/3)
			9000	6675	613	0.19	(1/6)
			9000	6675	408	0.21	(1/9)
100	67	33	10020	8715	885	0.04	(1/3)
			10020	8715	443	0.09	(1/6)
			10020	8715	295	0.10	(1/9)

US rate	Offshore (1/3)	Offshore (1/6)	Offshore (1/9)	Onshore Base	Inhouse Portion	Offshore Portion
120	40	20	13.33	*	*	
90	30	15	10		* (7.5%)	* (7.5%)
60	20	10	6.67	*		*

Cost Return Ratio
Year 3

Year 3 (+10% delta)

Cost Return Ratio

Cost Return Ratio=[Onshore-(Inhouse Portion+Offshore Portion)]/Onshore

Onshore Base	Inhouse Portion	Offshore Portion	Onshore Base	Inhouse Portion	Offshore Portion	Cost Return Ratio	Offshore Rate Versus U.S.
100	25	75	7500	3450	1650	0.32	(1/3)
			7500	3450	825	0.43	(1/6)
			7500	3450	550	0.47	(1/9)
100	33	67	7980	4410	1490	0.26	(1/3)
			7980	4410	745	0.35	(1/6)
			7980	4410	497	0.39	(1/9)
100	50	50	9000	6450	1150	0.16	(1/3)
			9000	6450	575	0.22	(1/6)
			9000	6450	383	0.24	(1/9)
100	67	33	10020	8490	810	0.07	(1/3)
			10020	8490	405	0.11	(1/6)
			10020	8490	270	0.13	(1/9)

US rate	Offshore (1/3)	Offshore (1/6)	Offshore (1/9)	Onshore Base	Inhouse Portion	Offshore Portion
120	40	20	13.33	*	*	
90	30	15	10		* (5%)	* (5%)
60	20	10	6.67	*		*

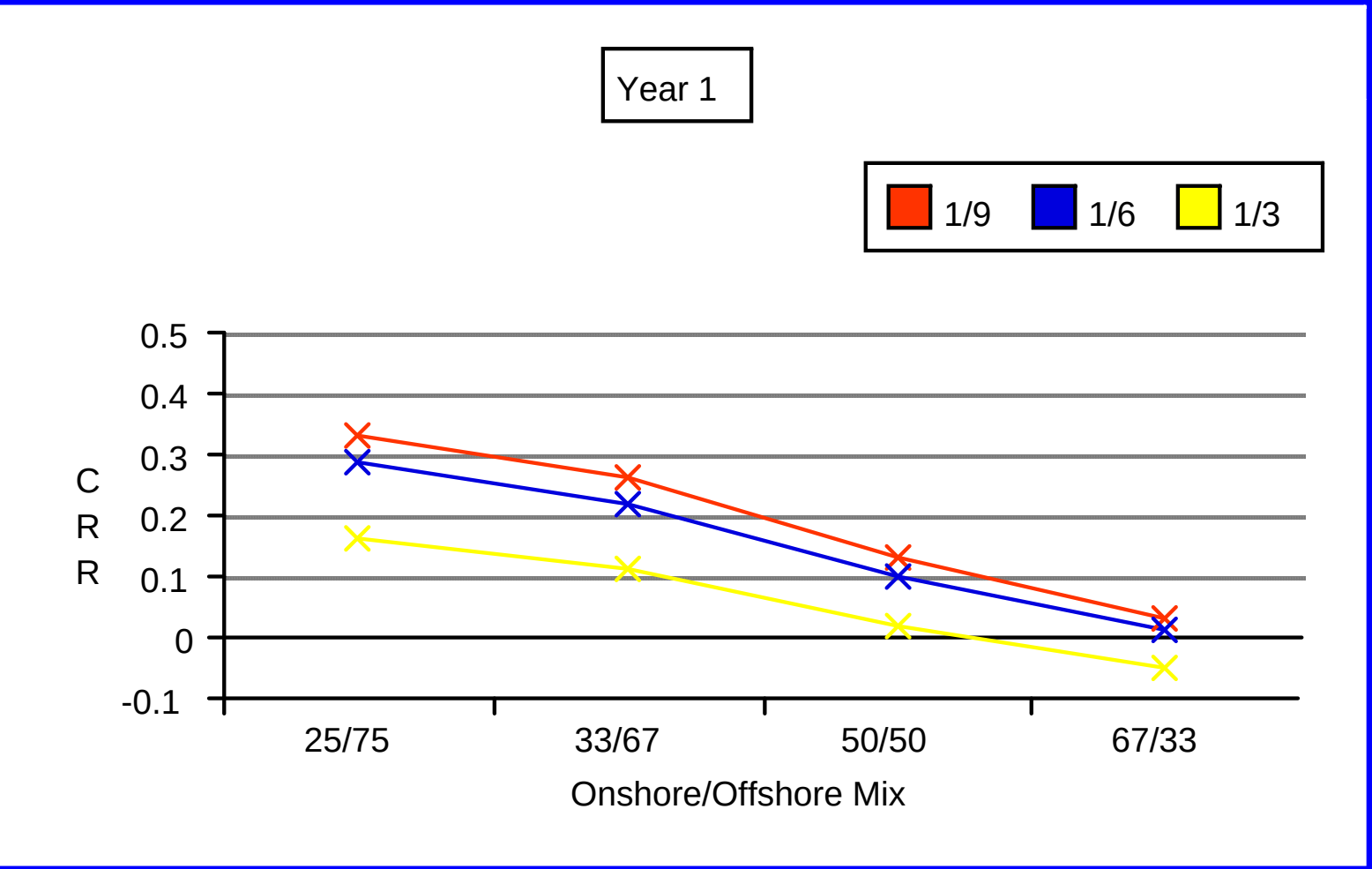
Cost Return Ratio by Onshore/Offshore Mix

Year 1	25/75	33/67	50/50	67/33
1/9	0.33	0.26	0.13	0.03
1/6	0.29	0.22	0.10	0.01
1/3	0.16	0.11	0.02	-0.05

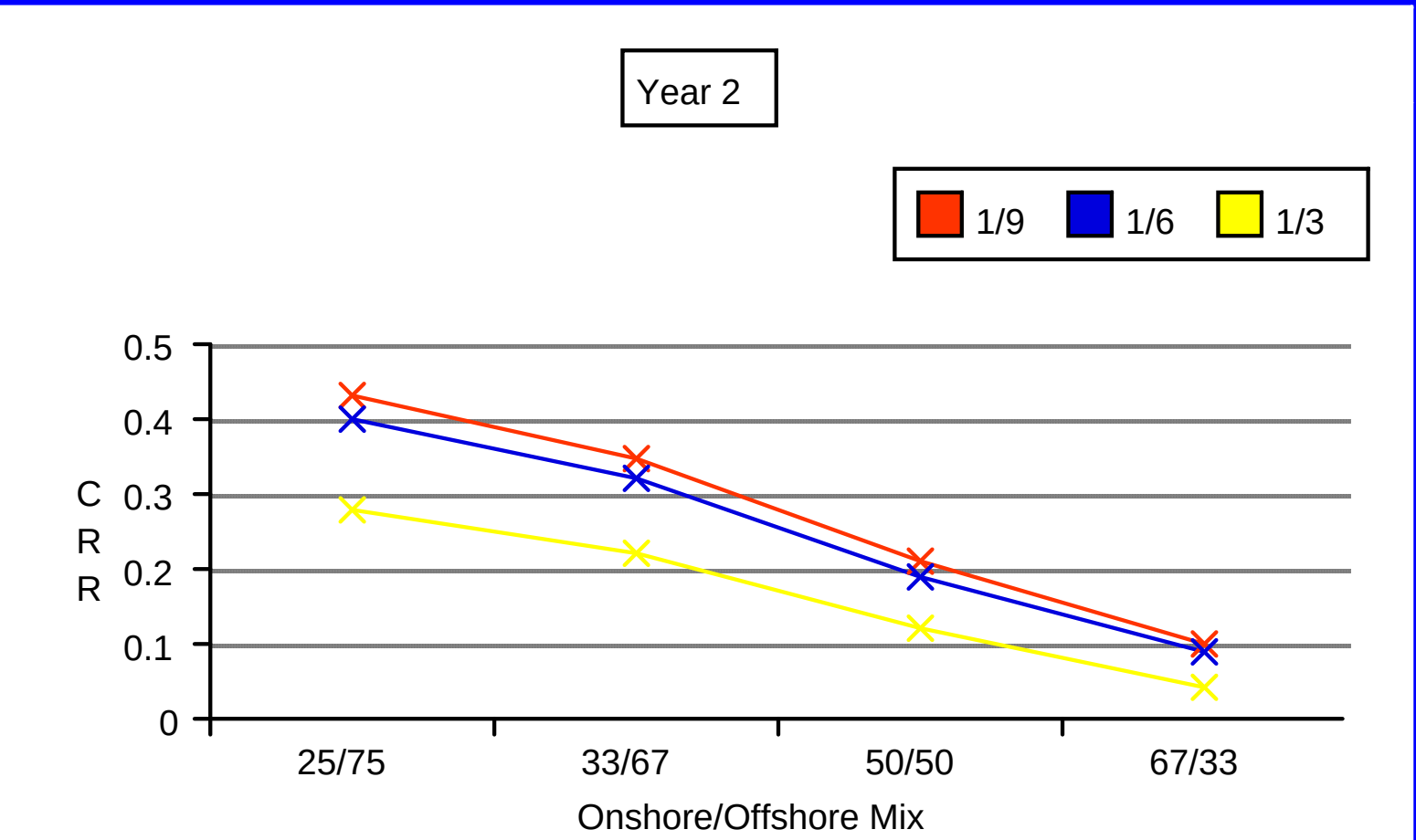
Year 2	25/75	33/67	50/50	67/33
1/9	0.43	0.35	0.21	0.10
1/6	0.40	0.32	0.19	0.09
1/3	0.28	0.22	0.12	0.04

Year 3	25/75	33/67	50/50	67/33
1/9	0.47	0.39	0.24	0.13
1/6	0.43	0.35	0.22	0.11
1/3	0.32	0.26	0.16	0.07

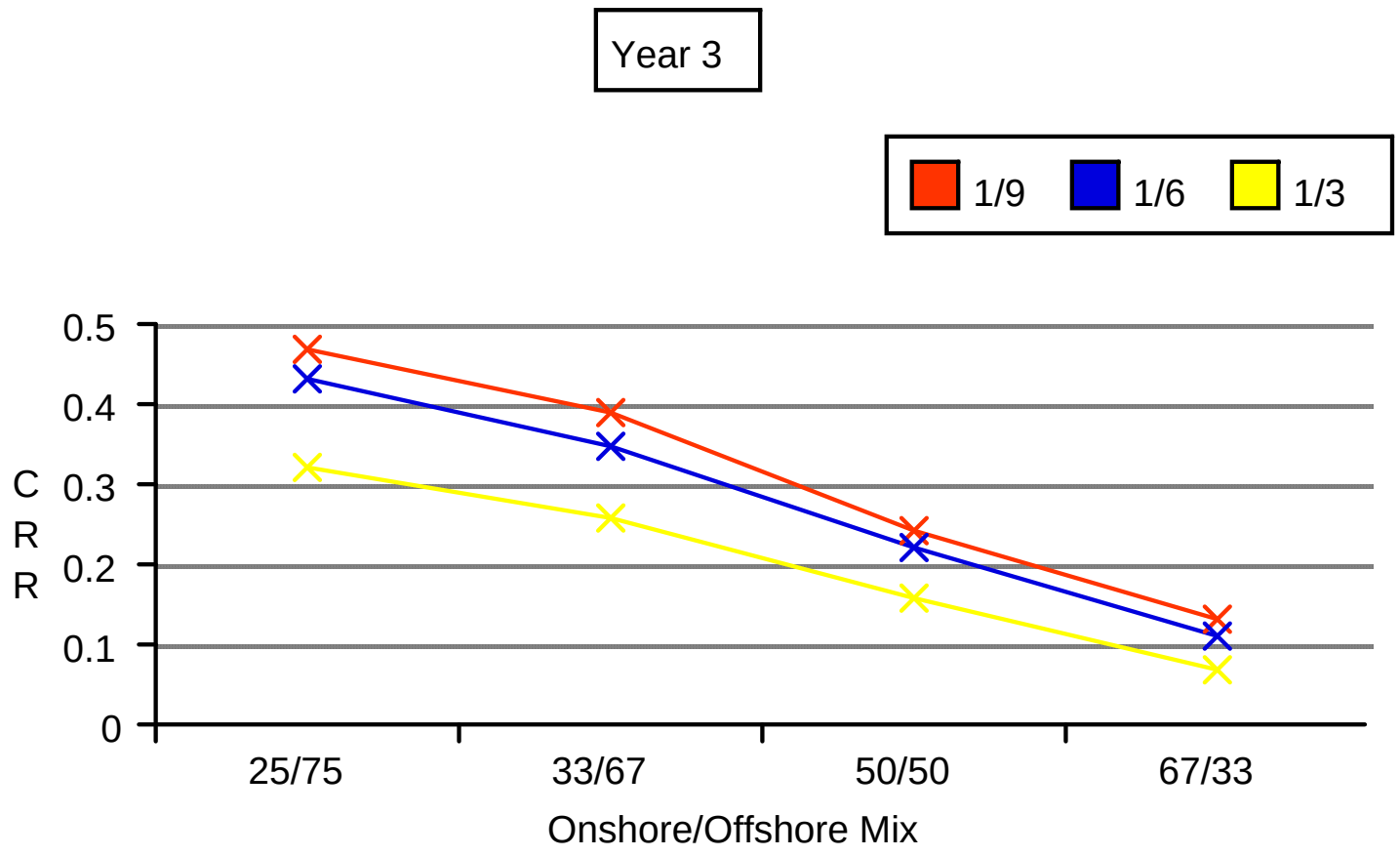
Cost Return Ratio by Onshore/Offshore Mix- Year 1



Cost Return Ratio by Onshore/Offshore Mix- Year 2



Cost Return Ratio by Onshore/Offshore Mix- Year 3



Further Efficiencies Sought

The intermediate functions of requirements determination, product architecture and specification, project management, process management, and quality assurance are most subject to rearrangement where the criteria for rearrangement is tied to the prospect for innovative contribution.

On the other hand, certain process, management, assurance, and culture functions necessary to eliminate friction and improve the predictability of the outcome are only loosely coupled with innovation-driven activities and are thereby accorded less value.

Process Activity, Innovation, Wage Worksheet

Process Activity, Innovation, Wage Worksheet

Sorted By Value Hierarchy Innovation Potential

Process Activity/ Job Description	Consumer Innovation Potential	Producer Innovation Potential	Value Hierarchy Innovation Potential	Hourly Wage Salary Scale (Fully Loaded)	Onshore	Offshore
Business Management	1	3	1	150	*	
Legal Counsel	1	2	1	150	*	
Requirements Determination	1	2	1	105	*	
Business Process Engineering	1	2	1	105	*	
Algorithm Design	1	1	1	75	*	*
System Architecture	1	1	1	90	*	
System Specification	1	1	1	90	*	
System Modeling	1	1	1	60	*	
System Testing- Validation	2	2	1	60	*	
Program Management	2	3	2	120	*	
Change Management	1	3	2	75	*	
Algorithm Development	2	1	2	60	*	
System Design	1	1	2	75	*	
Module Specification	2	2	2	60	*	*
Data Design	2	2	2	60	*	*
Project Planning	3	3	3	105	*	*
Project Tracking	3	4	3	90	*	*
Risk Management	2	4	3	90	*	*
Subcontract Management	2	4	3	90	*	
Development Management	3	2	3	75	*	*
Module Design	3	2	3	60		*
Module Testing- Verification	4	2	3	45		*
Module Programming	4	3	4	45		*
Data Administration	4	4	4	45		*
Configuration Management	4	4	4	60	*	*
Quality Assurance	4	4	4	60	*	*
System Transition to Use	4	4	4	60	*	

Innovation Potential 1= very high 2= high 3= moderate 4= low

Outline of Presentation

QuickTime™ and a
TIFF (LZW) decompressor
are needed to see this picture.

- Opening
- Attractions of Outsourcing
- Readiness for Outsourcing
- Outsourcing Risks
- Outsource Infrastructure
- Cost Return Ratio
- Conclusion

Questions Posed

- Opening
  - ✓ What is the global context?
- Attractions of Outsourcing
  - ✓ Why would we want to outsource?
- Readiness for Outsourcing
  - ✓ Are we ready and able to outsource?
- Outsourcing Risks
  - ✓ What are the uncertainties and pitfalls in outsourcing?
- Outsource Infrastructure
  - ✓ How can the outsourcing engagement be structured and managed to overcome the uncertainties and downsides?
- Cost Return Ratio
  - ✓ How do you know when you are succeeding?
- Conclusion

Detailed Outline of Presentation

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- Opening
  - NAE Report Findings
  - Trends and New Realities
  - Business Case Framework
  - Outlook
  - Need
- Attractions of Outsourcing
  - Convergence of Factors
  - Drivers of Outsourcing
  - Outsourcing in Practice
  - Profile of Offshore Destinations
- Readiness for Outsourcing
  - Global Enterprise Assessment Questions
  - Global Enterprise Outsourcing Maturity
  - Outsource Vendor Profile Questions
  - Outsource Vendor Profile
- Outsourcing Risks
  - Top Ten Buyer's Risks
  - Commodity Versus Strategic Content
  - Outsource Architecture
  - Sources of Friction in Outsourcing
- Outsource Infrastructure
  - Trusted Pipe™ Architecture
  - Control Points
  - Nodes Specified as ETVX Diagrams
  - Inside Track Training
- Cost Return Ratio
  - The View on the Factory Floor
  - Tracing the Offshore Delta
  - Outsourcing: Facts of the Matter
  - Calculating the Cost Return Ratio

Questions

QuickTime™ and a
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are needed to see this picture.

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Additional Resources

To see the Trusted Pipe™ web resource, visit
http://www.trustedpipe.com

To read "Inside Track to Offshore Outsourcing Using the Trusted Pipe™", visit

http://members.aol.com/ONeillDon2/competitor7-4.html

To read "High Paying Jobs From Offshore Outsourcing: An Oxymoron?", Bill Elder interviews Don O'Neill for Technical Support Magazine, December 2005, visit

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nside Track for Offshore Outsourcing

tudies on global software competitiveness reveal that offshore outsourcing is an asymmetric tactic that delivers a competitive advantage. As global enterprises increasingly seek to achieve competitiveness on the cheap, global outsourcing is becoming more widespread. But due diligence is needed if success is to be achieved.

he Trusted Pipe™ architecture is a preferred approach to offshore outsourcing that will enable management and engineering personnel ("intelligent middlemen") located in offshore areas to facilitate the exchange of multi-dimensional messages spanning subjects that are cultural, technical and legal rights and remedies, software engineering and various other business skills, from buyer to seller. Primarily, the Trusted Pipe™ will manage a network of global enterprises (GE) seeking to outsource software development and operations offshore to offshore vendors (OV). There are two major types of control points (CP), at least one GECP that operates in the U.S. and manages the network of global enterprises seeking to outsource software development and operations offshore and at least one OVCP that operates in the target country and manages the network of outsource vendors.

he object is to minimize the risks and maintain the benefits of an economic globally based enterprise that deals with software producers in off shore nations that would otherwise be barred by adverse risks associated with such global enterprises.

® Trusted Pipe is registered with the U.S. Patent and Trademark Office by Don O'Neill

Don O’Neill

Don O’Neill is a seasoned software engineering manager and technologist. Following his twenty-seven year career with IBM’s Federal Systems Division, Mr. O’Neill completed a three-year residency at Carnegie Mellon University’s Software Engineering Institute (SEI) under IBM’s Technical Academic Career Program and recently served as an SEI Visiting Scientist.

Mr. O’Neill served on the Executive Board of the IEEE Software Engineering Technical Committee and as a Distinguished Visitor of the IEEE. He is a founding member of the Washington DC Software Process Improvement Network (SPIN) and served as the President of the Center for National Software Studies (CNSS) from 2005 to 2008. Mr. O’Neill has a Bachelor of Science degree in mathematics from Dickinson College in Carlisle, Pennsylvania.