



The Software Industry Workshop

Input to the 2nd National Software
Summit

May 11, 2004

Jim Kane, President and CEO
The Software Productivity Consortium

Panelists

Dr. J.P. Auffret, George Mason University

Dr. Anita LaSalle, Kogod School, American University

Dr. Simon Szykman, Dept. of Homeland Security



Agenda

Workshop Overview

Software Industry Overview

Software Industry Workshop

- Procedure
- Findings
- Priority Areas

Public Policy Perspective

Alternatives and Recommendations



Pre-Summit Workshops

Developing issues/content for NSS2:

—“The Software Workforce”

– *March 17, ITAA, Arlington VA*

—“Trustworthy Software Systems”

– *April 8-9, Naval Postgraduate School, Monterey CA*

—“The Software Industry”

– *April 27, SPC, Herndon VA*

—“Software R&D”

– *April 28, SAIC, McLean VA*

Here at NSS2: Consolidate workshop findings & further the dialog



Industry Workshop

Panel 1 - The Software Industry and National Security

- Moderator: Jim Kane, SPC
- Panelists: Dr. Simon Szykman, DHS; Adam Golodner, Cisco Systems

Panel 2 - The Software Industry and Economic Security

- Moderator: Terry Bollinger, MITRE
- Panelists: Bruce McConnell, McConnell Intl.; Dr. Anita LaSalle, American University Kogod School; Don Anselmo

Panel 3 - Comparative National Policies

- Moderator: Dr. J.P. Auffret, George Mason University
- Panelist: Mike D'Ambrosa, BAE Systems

Plenary Working Session

- Consolidation of Findings by Participants

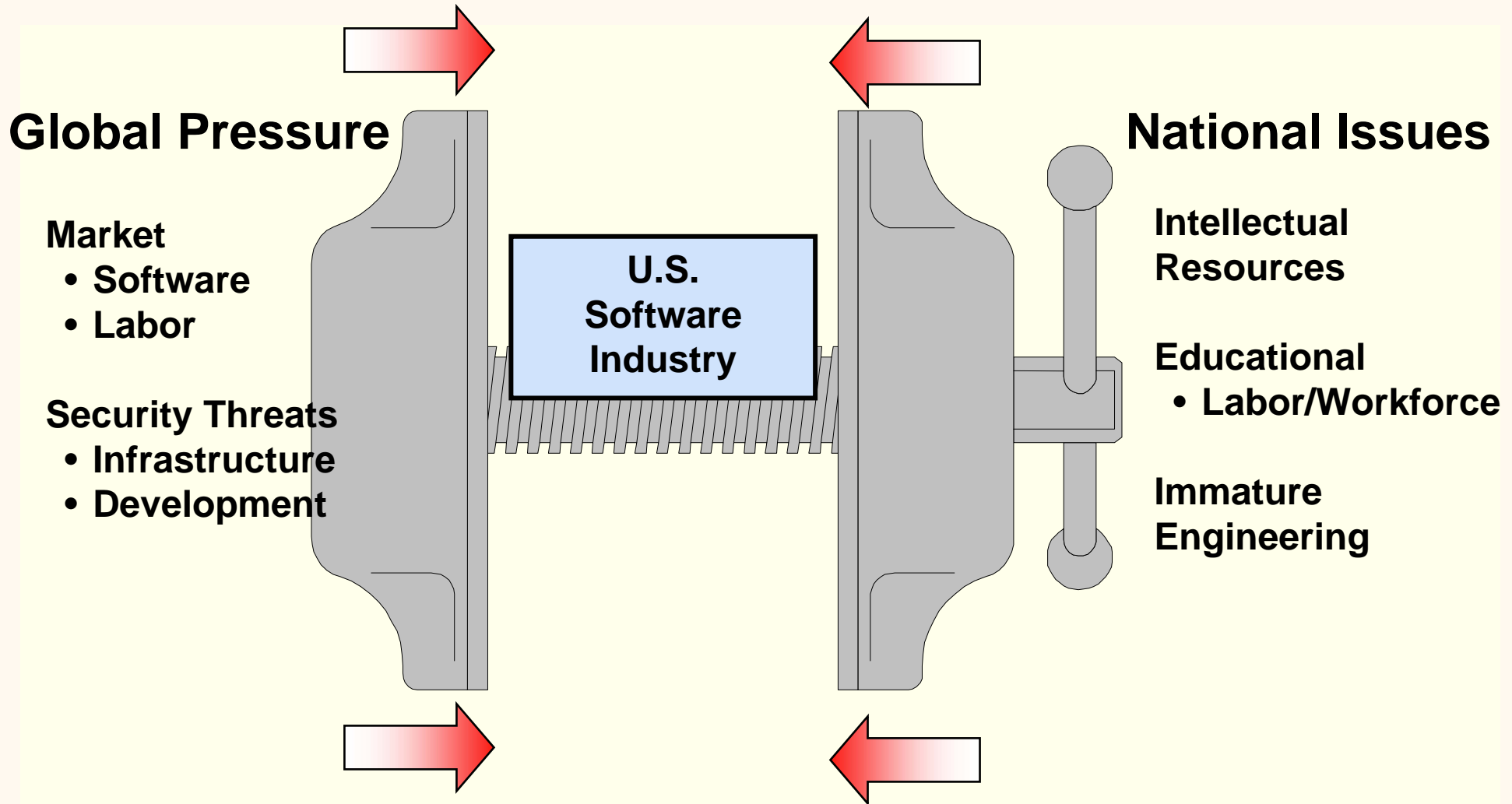
Why SPC? A neutral forum in which to champion the U.S. software industry



The Central Question

**What national policies can best help
the U.S. software industry?**

The Squeeze is On





Software Industry Overview

Software is the infrastructure within the *global* economic infrastructure

- **Global software industry a \$200B business**
- **“U.S. \$240B IT Services industry” (BusinessWeek, Dec. 8 2003)**
- **Worldwide virus impact: we’re all wired**

International software markets to grow by approximately 7% by 2007

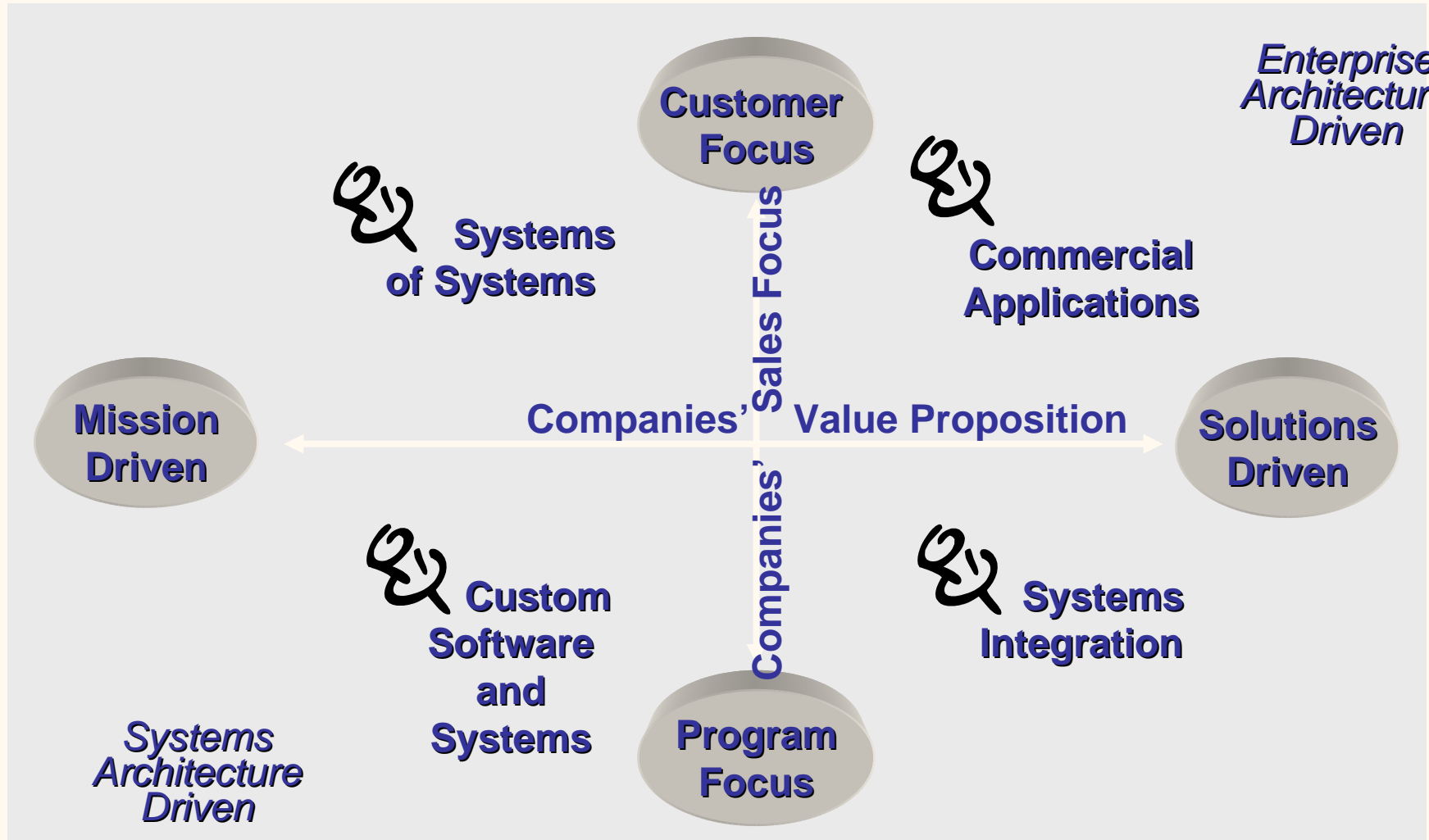
- **Non-U.S. software providers focused on *high-end innovation***
- **India moving into financial analysis, R&D, modeling**

Industry trends, drivers and paradoxes

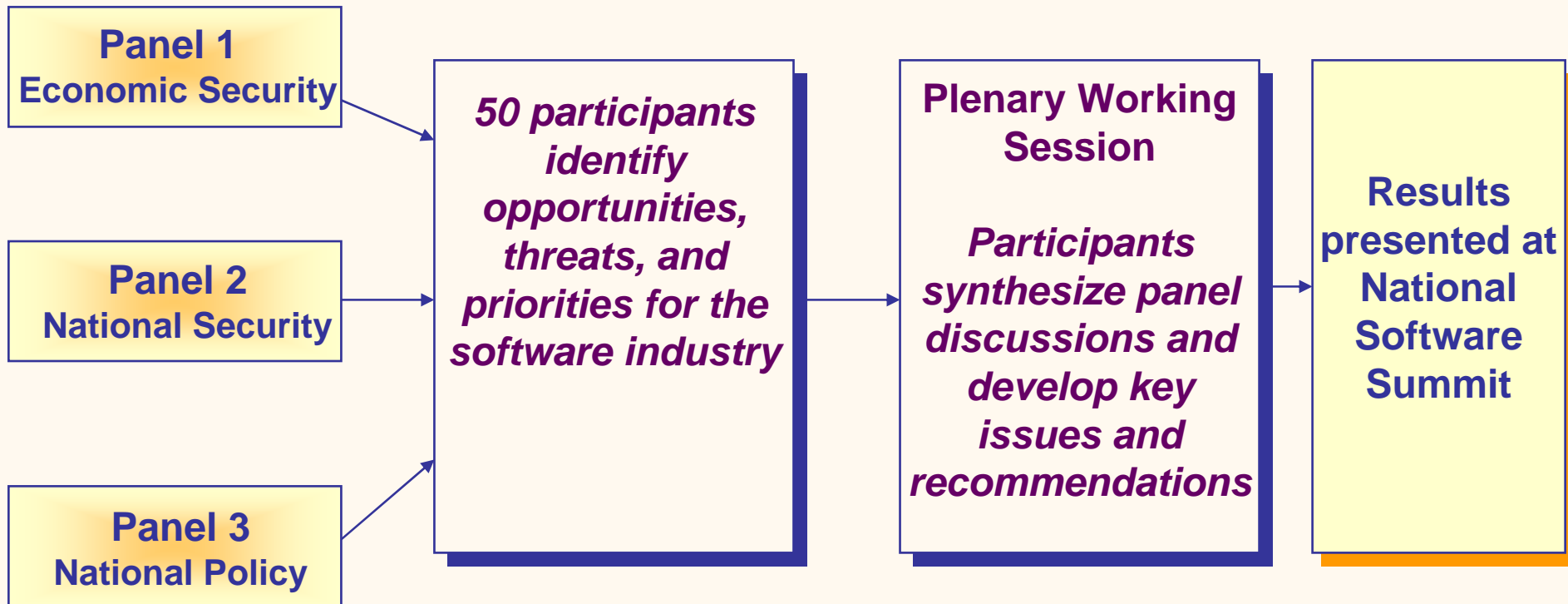
- **Software is not just a specialized world . . . it’s general and mainline**
- **Software enables connectivity and collaboration . . . but opens security threats**
- **Software is integrated in everything we do . . . but our technical and intellectual advantage is weakening**
- **Software competitiveness is about speed of innovation**

Industry Diversity

The software industry is integrated across government and business



Workshop Process



These results become the basis for NSS2 follow-on



Key Themes Among Panels

How we develop software (and who does it)

- Our security infrastructure and our human capital are much larger issues of national policy than “off-shoring”

Innovation

- Public/private partnerships
- Education base is critical element . . . and we’re losing ground

Markets and Competition

- “Markets work” . . . Leverage demand-side forces

General consensus

- SECURITY - Prioritize threats, targets, & remedies
- TECHNOLOGY - Leverage common standards
- TRADE - No barriers with technology-independent policies

Participants' Priorities

Tier 1

- Secure Infrastructure & Development
- Education and Human Resources

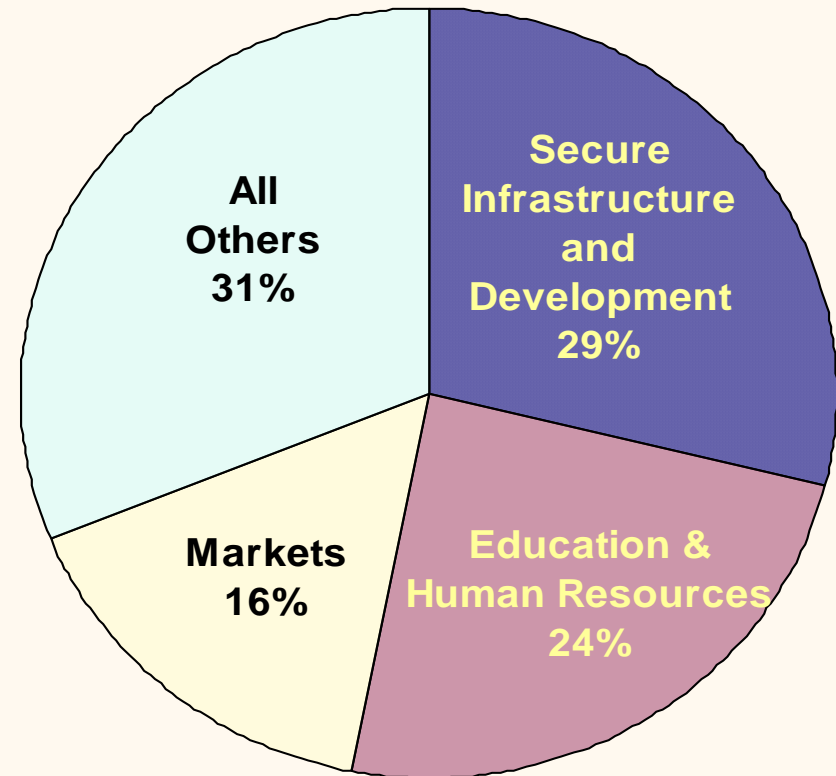
Tier 2

- Markets

Tier 3

- Procurement
- Legal, Trade
- Open source
- Onshore, offshore
- Other

Distribution of 106 Recommendations by 50 Participants



Security and Education/Human Resources Overshadow All Others



Security Themes

Participants identified three aspects of security

- Security as an attribute of the global infrastructure
- Security awareness within companies and organizations
- Security as an element of the software development process

Infrastructure

- Build a “consensus of expectations” to prioritize threats & build rapid response
- International standards for secure interoperability with incentives for industry to comply

Corporate and Organizational Awareness

- Security is “not an option” in SW design and development
- Security integrated into product life cycle

Software Development

- Security architectures & information explicit in systems development
- Performance measures for SW and system security



Security, Government & Industry

Government

- Improve guidelines and policies for “secure software infrastructure”
- Improve consistency between security policy and systems being deployed
- Exert purchasing power to demand security via performance measures vs. mandated standards
- Invest in R&D; subsidize education and training

Industry

- Develop, share, and use “best practices”
 - Organizations: Common standards for Systems Security
 - Products: Security Verification
- Foster voluntary standards for security assurance
- Demand security from vendors



Human Resource Themes

Participants identified three aspects of Human Resources

- Education, particularly higher education
- Labor force, particularly intellectual capital
- The engineering community, particularly software “engineering”

Education

- Market forces drive universities to provide “instant gratification” degrees (no deep theoretical understanding)
- Curricula perpetuates the immaturity of software engineering
- Schools don’t understand how industry works & what businesses need

Labor Force

- Intellectual capital being nourished offshore
- U.S. computer science enrollments plummeting
- The problem will get worse with aging workforce and fewer IS degrees

Engineering Community

- SW engineering isn’t engineering – a persistently immature discipline



Security, Education & Engineering

Higher Education

- Teach “Systems Engineering” to include architectures, software, and security ... and better map curricula to industry needs
- Formalize systems & software degree programs to include quality, reliability, security, testability

Government

- Stimulate student demand to pursue software oriented degree programs
- Support degree programs in math, science, systems and security engineering

Engineering Community

- Partner with the higher education community to develop the “maturity” of software and systems engineering



Markets and Public Policy

Participants identified two Market-oriented themes

- Market-driven public-private partnerships
- Market-based incentives for innovation and R&D

“Markets work”

- Recognize that private sector owns 85% of US information infrastructure
- Leverage competitive market forces that can drive security as a productivity & competition enabler
- Keep the focus international/global and avoid conflicting standards

Partnerships work

- Implement policies to foster innovation, creativity, productivity, and competitiveness
- Keep government involved . . . but in the background (avoid mandates)



Other Topic Areas

Procurement

- Can government demand “certified” software?
- Or, will voluntary standards work?

Legal

- **Liability:** Indemnification policies to spread risk among stakeholders (builders, buyers, users)
- “Certification”— feasible? Useful as an indemnifier?

Open Source

- An “Irresistible Force” . . . but how to manage & make secure?
- Boost education of open source use and associated issues

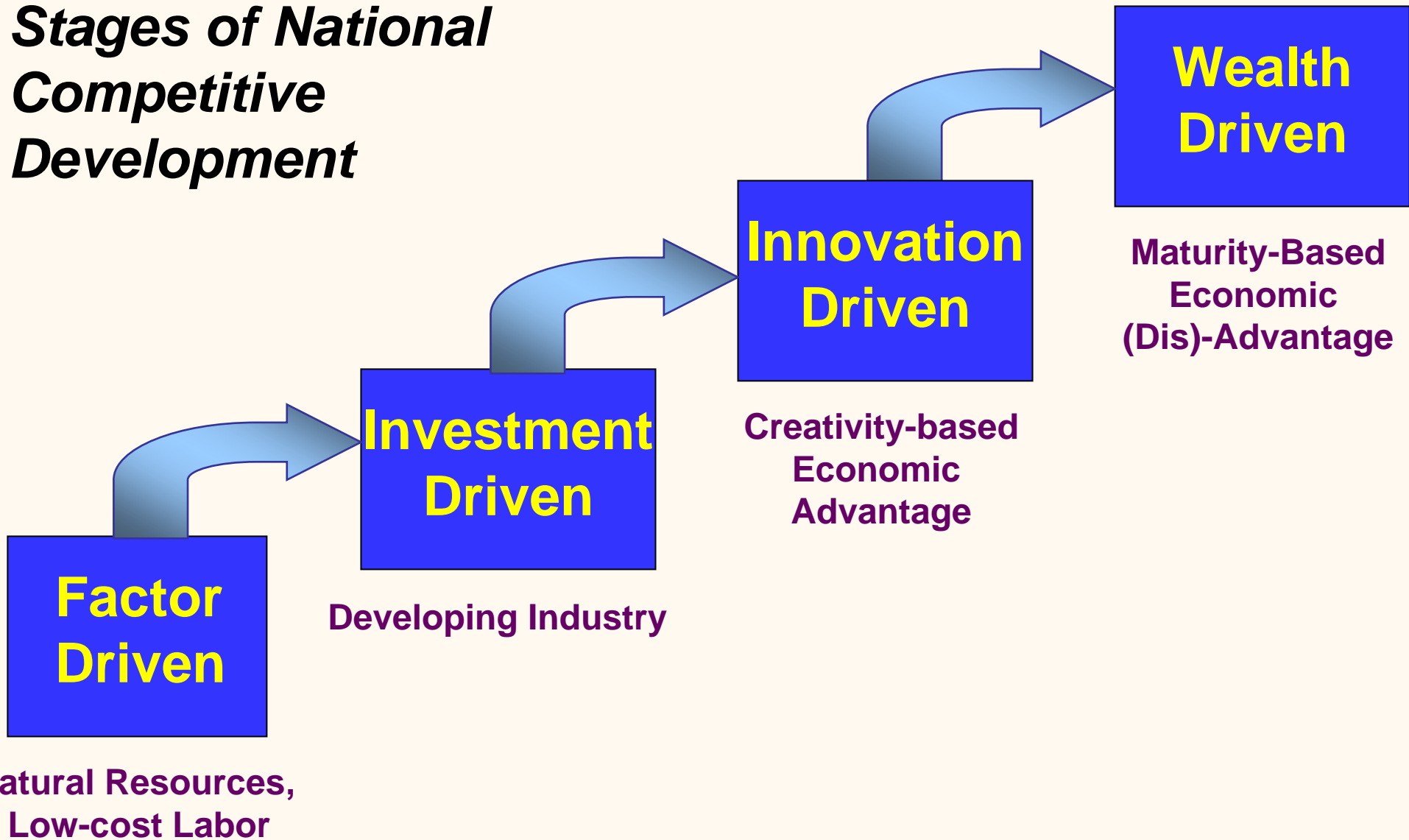
Offshoring: A very open question!

- If a problem, is it fixable?
- Possible government role: maximize upside, minimize downside
- Incentivize onshore vs. offshore?



Policy Framework

Stages of National Competitive Development



Source: Dr. Michael Porter, Harvard University

Policy Alternatives

Alternative national policies, applicable depending on the stage include:

-  — Tax policy
-  — Education investment and policy
-  — Regulation
-  — Standards policy and efforts
- Demand stimulation
- Industry targeting through short-term industry investment and protection
- Foreign ownership laws
- Labor policy
- Antitrust legislation and enforcement
-  — R&D investment by sector and by basic versus applied
-  — Intellectual property laws and enforcement
-  — Defense investment
-  — Trade policy
- Product liability legislation
- Infrastructure development

Source: Dr. Jean-Pierre Auffret, George Mason University



Key Recommendations

Codify a Secure Infrastructure

**Reenergize U.S. Engineering Curricula
("Sputnik II")**

Incentivize Innovation