# Opportunities and Challenges in Managing American Technology Powerhouse into US Competitiveness in the Global Market

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# Technology and Management Experience of Author

## BELL-LABORATORIES - NJ

- Semiconductor Materials and Device
  - III-V and Si Integration
  - Epitaxial Growth Technologies: MBE, MOCVD
  - Materials Engineering
- Wireless Technologies
  - 2G, 3G, 4G, 5G, LTE
  - Broadband Wireless Internet
- Fiber-Optic Communication (Photonic Switch)

# Technology and Management Experience

## BELL-LABORATORIES - NJ

- Technology Management
  - Technology Business Economic Modeling
  - Value-Chain Analysis
  - Global Supply Chain Management
  - Benchmarking and Competitive Analysis: Best practice
  - Simultaneous – Concurrent  Engineering
  - Product-Service Life Cycle Management (TCO..)
  - Total Quality Management

# Technology and Management Experience

## KSA:Technology Transfer

- Non-Oil Industrialization
- 11 Strategic Research Initiatives

## UK: EU Technology Synergy

- DTI/SERC
- Academy-Industry-Govt

## WB: BD Infrastructure Strategy-Dev

- ICT
- Power
- Governance: policy Bottlenecks

# Today's Global Technology Paradigm Shift

- Wireless and Mobility
- Internet and Global Village
- Automation and Paperless
- West to East: Outsourcing...
- Social Networking Life Style
- ……..

# America's Technological Superiority

- **Funded Technology Development (Federal, Private, Academy...)**
  - Wireless
  - Internet
  - System Design House
  - Nanotech
  - World talent pool: Technologists Dev
  - ……

# America's Current Status of Global Competitive Strength (Trade...)

- Manufacturing Sector
- Software: Architecture, System Design, Development, Marketing,....
- Electronics: Design and Fabrication
- High Tech System Supplier
- Customers replacing American products
- Shifted Trade Balance
- Inventions/patents commercialized outside
- ……..

# Impact of weak competitiveness

- Engineering and manufacturing employment
- Less R&D Investment
- X% of economic activities outsourced
- Trade Imbalance
- ……

# Academy-Industry-Govt Collaboration

- **Academy:**
  - Production of Engineering Manpower
  - Research: Govt/Industry funded
- **Industry:**
  - Drive Academic Research
  - Market oriented Curriculum
- **Government:**
  - Conducive Policy Support
  - Funding: Research and Education
  - .....

# Future National Technology/R&D Strategy

- **Refresh Strategic Initiatives given global paradigm shift**
  - Prioritize between Developing Technology vs Better Management of Technology
  - Focusing on Service Sector
  - Getting on to the High End of Value Chain
  - Lower cost product/service development
  - .....

# Retention of High Value in Value-Chain

- **Need specific steps, since Internet diluted national uniqueness and advantages**
- **Examples: How to keep the value inside**
  - Identify American unique role in telecom service sector: analyze value-chain comp
  - New Tech reduce Capex/Sub; $/Voice-Minute and $/Mbps
  - New Tech reduce cost of a mobile set

***Where could America retain most value?***

# Can the Academia play a Pro-Active Role?

- **Development of Curriculum close to Market**
  - Closer relationship of business faculties with real life business
  - Making the Graduates Job-Ready
- **New Academic Programs like:**
  - Technology/Engineering  Management
  - Industry Pilot Facility co-located with university (Malaysia)
  - Degree Programs combining:
  - Business-Engineering

# Can the Academia play a Pro-Active Role?

- **Academic Research Strategy**
  - Research in alignment with Industry's forward looking product-service dev teams
  - Total Cost and Quality Mngement Research
  - ….
- **Brain-Storming from SUNY-Farmingdale Academia**
  1. Engineering Departments
  2. Business Departments
  3. Social Science Departments
  4. **Our Actionable Follow-up Items**