Challenges in Implementing Enterprise Architectures in the Semiconductor Equipment Industry

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Agenda

- Applied Materials Profile
- Industry Spending History
- Industry Revenue History
- Key Behaviors leading to Challenges at Applied Materials
- Strategies to address challenges
- What has some of the Strategies yielded?
- Conclusion
Applied Materials Company Profile

- Fast Facts
  - Founded in 1967
  - Our company develops, manufactures, markets and services semiconductor wafer fabrication equipment for the worldwide semiconductor industry
  - Worldwide Locations
    - 14 Countries
    - Approximately 70 Sales and/or Service Locations
    - Manufacturing in North America, Europe and Israel
    - Development in North America, Asia, Europe and Israel
  - 12,400 employees
Applied Materials Financial Profile

- Past Four Quarters New Orders
  - $4,598 Million
- Past Four Quarters Revenue
  - $4,702 Million
- Gross RD&E Investment (5 years)*
  - $4,918 Million

* Note: RD&E data prior to FY '99 does not include Etec Systems
Worldwide Semiconductor Capital Spending

Source: Applied Materials Corporate Marketing estimates
Wafer Fab Equipment Company Revenue

Total Revenue ($M)

- Applied Materials
- Tokyo Electron
- ASML
- KLA
- Nikon
- Canon
- Novellus
- LAM

Sources: Company Reports, VLSI Research 2/03
09/15/03 The Open Group Presentation - 6
Applied Materials Rapid Rise and Success has led to Key Behaviors

- “Now” or Action oriented culture
- Emphasis on Innovation and Time to Market as key to revenues
Key Behaviors Leading to Challenges

- “Now” or Action Oriented Mentality leads to:
  - Tendency towards finding “silver bullet” solutions in lieu of thorough analysis
  - “Bell cow” approach
  - Tendency towards solutions that can be implemented in short amount of time (30 – 90 days)
Key Behaviors Leading to Challenges

- Emphasis on Innovation and Time to Market as key to revenues leads to:
  - Entrepreneurship/internal competition encouraged to drive innovation
  - Inadequate Communication (as a result of competitiveness)
  - Highly de-centralized organization. Solutions tend to focus on local needs as opposed to enterprise wide.
Strategies to Address Challenges

- Education
  - Educate up (show business value, gain sponsorship)
  - Educate sideways (earn credibility)
  - Educate down (show big picture, forest instead of trees)
  - Education through practical examples and/or actual practice (not through preaching)
Strategies to Address Challenges

- Turn some challenges into opportunities
  - Use of “bell cow” approach (to redirect the cow to greener pastures)
  - Take an indirect approach, focus on how to divide up into winnable chunks
Strategies to Address Challenges

- Focus on internal collaboration instead of competition
  - Entrepreneurship / Internal Competition, while maybe good for product innovation, wreaks havoc for operations
  - Use of the Architecture Institution to “extend the olive branch” to various IT Silo’s, open the communication lanes, be the broker of knowledge
What have some of the Strategies Yielded?

- Created organizational momentum to further the cause of architecture
  - Formation of an Architecture Review Board
  - Formation of an extended Architecture Team
    - Forum to discuss technical issues (that otherwise never surface)
    - Only forum for technical impact analysis
- Implementing Architecture Compliance Process
  - To enable better planning for project managers
  - To free up architect time (less phone calls)
- Better communication and collaboration
  - Architecture Review Requests have risen
  - Projects have been engaging the Architecture Team earlier in their planning process
Conclusion

- Don’t treat as a “sprint”,

... treat more as a “marathon”

- Fulfilling the Enterprise Architecture Vision is a journey whose every step can yield business value (Terry Blevins, The Open Group)