



Driving Open Innovation

Learning from Three Cases

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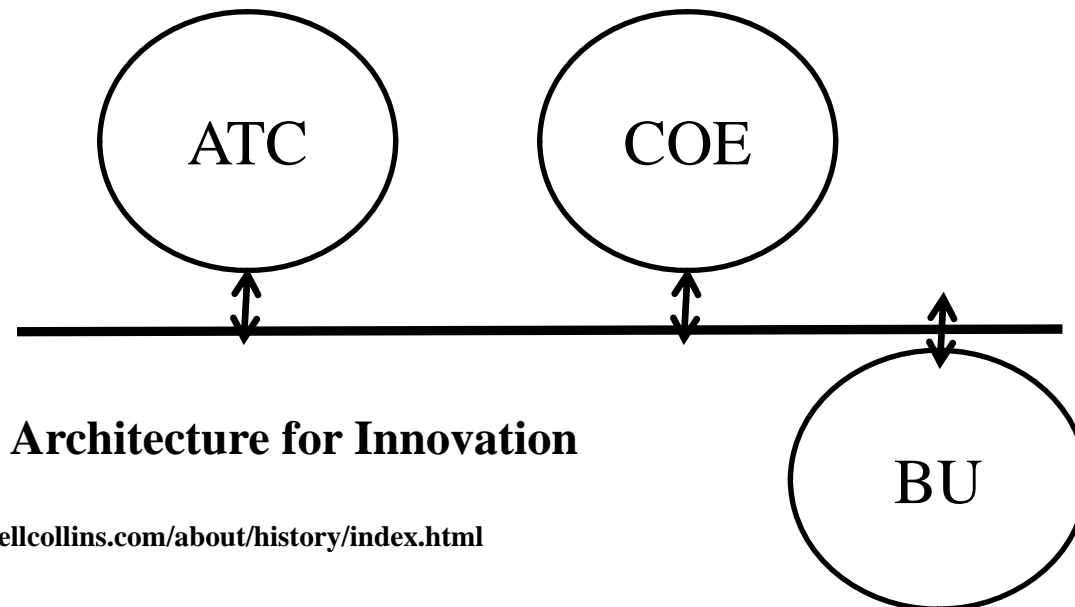
- **Open innovation in Knowledge-Intensive Firms**
- **Opening up Innovation**
 - Rockwell Collins
 - EuroTel's P-Dev Unit
 - OpenSource
- **Takeaway**

Knowledge-Intensive Firms

- We adopt Alvesson's* definition of knowledge-intensive firms –
those in which most work is said to be of an intellectual nature and where well-educated, qualified employees form the major part of the workforce
- Case Domains - Avionics, Telecommunications and Software Development

*Alvesson, M. (2000). 'Social identity and the problem of loyalty in knowledge-intensive companies'. *Journal of Management Studies*, 37: 8, 1101-1123.

Rockwell Collins-brand aircraft electronics are installed in the cockpits of nearly every airline in the world and its airborne and ground-based communication systems transmit nearly 70 percent of all U.S. and allied military airborne communication.*



*<http://www.rockwellcollins.com/about/history/index.html>

Innovation at Rockwell Collins

- **1998 – Focus on Technology-enabled growth**
 - Connect innovation to the business, but not be driven by the business
- **A system of innovation**
 - Technology panel based planning
 - Scorecard with *sales growth leverage (SGL)* at the core

$$\text{SGL} = \frac{\text{Total 5 yr. R\&D Expenditure (ATC)}}{\text{Projected Impact by BU's (looking out 5 years)}}$$

Synthetic Vision

- **1998 – AFRL research grant**
- **1999 – NASA selects Rockwell Collins to develop synthetic vision for business and commercial aircraft**
- **2002 – Synthetic Vision tested by USAF**
- **2004 – Synthetic Vision demonstrated by NASA Team**
 - **Also demonstrated the modified weather radar**
- **SVS team honored with the 2006 Prometheus Inventor of the Year Award**
- **Integrated SVS into their ProLine Fusion line of products**

Fostering Innovation

- **The 10X program – Initiated in 2004 to foster disruptive thinking**
 - **Launched with a budget of USD 500,000 – funded 8/46 ideas**
 - **Expanded to US Engineering in 2nd year with USD 1 Million**
 - 70+ ideas
 - **Third year**
 - 180 proposals

Open Innovation

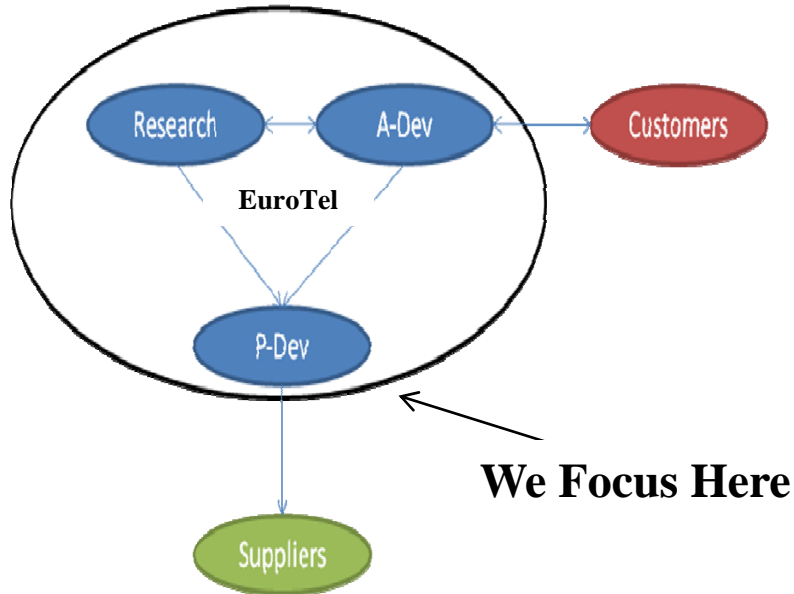
- Initiated in 2005 to answer the question :

How do we collaborate smartly so that we can take ideas and come up with innovative solutions for our customers problems, faster and cheaper than our competitors?

- Fighting the NIH syndrome to drive open innovation – transitioning from *invent & develop* to *connect & develop*
- Established a Technology area council

Cognitive Radio

- **Leveraging Adapt4 technology**
 - **Demonstrate cognitive radio capability for legacy military equipment**
- **David Baugh – 2007 Q4 Open Innovator Award Winner**



- **Tension between the business units**
 - **Minimization of P-Dev's innovation capabilities**
- **Vertical disintegration**
 - **From developing hardware and software to COTS**
- **Multiple channels**
 - **Outsourcing**
 - **Near Shoring**
 - **Global Development**
 - **Students**

P-Dev's Innovation Challenges

- EuroTel does not perceive P-Dev to be the source of innovation
- Diminishing of domain expertise
 - Downsizing and retirement
- Increased offshoring
 - Expect to leverage supplier capabilities, yet
 - Limited investment in supplier capabilities

- **Developing open-source version of a ‘proprietary standard’**
- **Unusual case**
 - reverse engineering
 - Corporate sponsored
- **Team structure – core/floating/observers**
 - Salaried employees
 - Pro-bono contributors

Takeaway

- **Successful firms match their innovation strategy to their business model**
 - Rockwell Collins focuses on both value creation and value capture, while OpenSource focuses on value capture
- **Change management and leadership commitment are critical**
- **Engaged and Empowered employees both**
 - Drive the innovation engine
 - Provide the strongest organization sense-making mechanisms

Selected References

- Katz, R. and T. J. Allen (1982). "Investigating the Not Invented Here (NIH) syndrome: A look at the performance, tenure, and communication patterns of 50 R & D Project Groups." [R&D Management 12\(1\): 7-20.](#)
- Davenport, T. H. and L. Prusak (1998). [Working knowledge, Harvard Business School Press Boston, Mass.](#)
- Cohen, W. M. and D. A. Levinthal (2000). "Absorptive capacity: a new perspective on learning and innovation." [Strategic learning in a knowledge economy: Individual, collective and organizational learning process: 39-67.](#)
- Victor, B. and A. C. Boynton (1998). [Invented Here: Maximizing Your Organization's Internal Growth and Profitability, Harvard Business School Press.](#)
- Chesbrough, H. (2006). "Open Innovation: A New Paradigm for Understanding Industrial Innovation." [Open Innovation: Researching a New Paradigm. Oxford University Press, Oxford 400: 0-19.](#)
- Chesbrough, H. W. (2003). "The Era of Open Innovation." [MIT Sloan management review 44\(3\): 35.](#)
- Chesbrough, H. (2004). "Managing Open Innovation." [Research-Technology Management 47\(1\): 23-26.](#)
- Henkel, J. (2006). "Selective revealing in open innovation processes: The case of embedded Linux." [Research Policy 35\(7\): 953-969.](#)
- Chesbrough, H. and A. K. Crowther (2006). "Beyond high tech: early adopters of open innovation in other industries." [R&D Management 36\(3\): 229-236.](#)
- Chesbrough, H. W. (2007). "Why Companies Should Have Open Business Models." [MIT Sloan management review 48\(2\): 22.](#)

Research Overview

