Platform Issues in Commercial Aircraft Companies

Presented by
Damien Bador - MIT

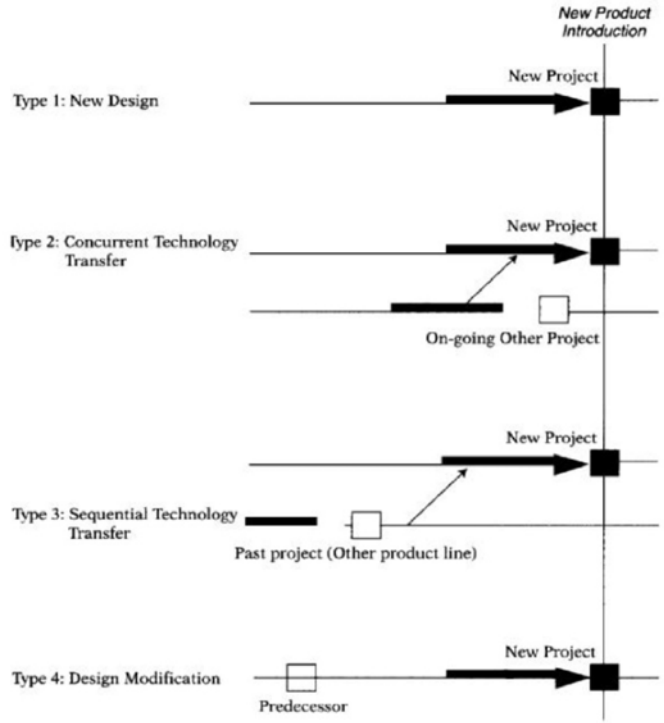
April 18th, 2006

Damien's Biography

- **Master's student in Aero-Astro and ESD at MIT. Industrial Engineer student at ENSAM Paris.**
- **Joined LAI in Spring, and integrated the Product Lifecycle Team.**
- **Practical work experience during summer internships in aerospace companies in Europe.**
- **Focus on long-term Platform issues in commercial aircraft industry.**

Interest of Product Families

- Reduce the overall development cost of products portfolio.
- Reduce lead time of derivative products.
- Integrate new technology faster through module improvements.
- Increase standardization of the development process.



Source: Nobeoka and Cusumano, 1995, p. 398.

Specificities of Aircraft Industry

- Long lead time - Few development projects at the same time.
- Few new projects - Increasing specialization of aircraft engineers.
- Long product lifecycle - Sequential evolution of products.
- Complexity of products - Intricate development process.
- Specific requirements - Constraints on integrality / modularity trade-offs.

Current State of the Practice

- **Platforms advantages perceived.**
  - **Ex: Airbus A320 family.**
- **Need to integrate legacy systems and reframe organization.**
  - **Ex: duplicated processes resulting from Boeing mergers in the late 1990s.**

- **Unequal integration of platform strategies into more global Product Development reframing.**
- **Platform strategy used to achieve different goals in different enterprises.**

Observations to date
Commercial Aircrafts

Boeing:

- recent focus on commonality. Extreme differentiation across aircraft models.
- high integration level of enterprise transformation. Top-down strategy.
- specialized knowledge scattered across the enterprise.

Airbus:

- historical concern about product families. Commonality central to its success.
- more emphasis on product innovation than on enterprise-level improvements.
- production system dispersed across Europe.

Sources:

- Willcox, Karen and Wakayama, Sean. "Simultaneous Optimization of a Multiple-Aircraft Family." Reston, VA: Journal of Aircraft, Vol.40, No.4, July-August 2003.
- Nuffort, Matthew R. "Managing Subsystem Commonality." Cambridge, MA: Massachusetts Institute of Technology, February 2001.
- Boeing and Airbus websites (http://www.boeing.com and http://www.airbus.com).

Developing metrics

Some propositions:

Functional **(external point of view)**	***Organizational*** **(internal point of view)**
Aircraft training savings	**Production tools and machines savings**
Maintenance productivity increase	**Lead time reduction for derivative aircrafts**
Spare parts investment savings	**Percentage of elements reused**

Future Research

- How platform strategies should be tailored to the aircraft industry? Current initiatives of main companies (Boeing / Airbus)?
- What metrics could be best assess the efficiency of aircraft platforms?
- What is the integration of platform strategies in current overall Product Development transformations (ex: Boeing Lean+)?

Questions?

Damien Bador

Contact: **(617) 253-7633**

elendil@mit.edu

