Case Study - Airbus A 380

Introduction
This case illustrates the challenges that major projects face when undertaking large scale innovation. In particular it shows the effects of late design changes, most likely caused by inadequate preparation prior to implementation. It also highlights the importance of effective communications, governance systems and stakeholder engagement.

You will find these references provide excellent material on the A380 project, its background and current status, including videos, pictures and technical data.

http://en.wikipedia.org/wiki/Airbus_a380


The following information summarises aspects of the case relevant to the Advance Work Task.

Background
The Airbus A380 is currently the largest and most complex passenger aircraft in service. Its complexity is significantly greater than other civil aircraft. It also incorporates many innovations in areas including engine technology, advanced composite materials for structure, fuselage, wings and control services. The electronic systems are state of art. The configuration has many variants to allow for high levels of customisation by airlines. The A380 can carry up to 853 passengers whereas the next largest Airbus aircraft carries less than half that number.

The Airbus organisation has a number of facilities based throughout Europe and work is shared across these sites. This requires large aircraft sections to be designed and manufactured at different locations and by different teams. These sections are transported to Toulouse in France for integration.
Thus the A380 project presented a number of challenges for the Airbus organisation in terms of the aircraft design, production and organisational interfaces. Airbus had successfully built many aircraft types and numbers, though none as large or as complex as the A380.

**History**

In 1991, Airbus began research into the potential demand for a large passenger aircraft which would add to their existing range and compete with the Boeing 747. Boeing had also been considering a successor to the 747 around the same time, though decided to cancel their own project in 1991.

Airbus continued studies into the market potential and feasibility of the large aircraft and began development in 1994. Many options were considered and finally a double deck layout was selected with a capacity for over 800 passengers.

In December 2000, Airbus began building the aircraft and had already captured 55 orders from six launch customers. The final configuration was frozen in 2001 and manufacture commenced in 2002. In 2005, Airbus completed the prototype and began flight tests. At the same time, they began marketing especially to South East Asia and Australia.

In June 2005, Airbus publicly announced a six month delay in the delivery schedule. This shifted the order intake and consequently sales and revenue forecasts to later timescales. The delays also increased costs, financial exposure and affected cash flow. The following year, Airbus announced further delays to the production schedule and as a consequence a number of customers decided to either cancel or reschedule orders. In some cases, customers made large financial

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**October 2006:**

Christian Streiff resigns as Airbus’s chief executive less than 100 days after taking the job after a battle with EADS for more autonomy to implement radical restructuring. He is replaced by Louis Gallois.

EADS issues a fresh profit warning, this time for €4.8 billion. The launch of the A380 is put back for a further year.

Tom Bawden
‘The Times’ 7 November 2006
compensation claims. In October 2006, a third delay was announced. This caused an increase in the earnings shortfall to €4.8 Billion. A further consequence was the cancellation of all orders for a freighter version, with orders diverted to Boeing 747 freighters instead. This caused Airbus to suspend work on the A380 freighter option.

In September 2006, the first passenger carrying flight took place to evaluate onboard services. Further tests took place to evaluate the aircraft operating performance under typical airline operating conditions. The ‘Type’ certificate was awarded jointly by the European Aviation Safety Agency and the US Federal Aviation Administration in December 2006 and the first aircraft delivered in January 2008 to Singapore Airlines.

Currently, Airbus has orders for 192 aircraft (Wikipedia). However, the break even point has now increased from 270 to 420 orders (BBC News, 1 November 2006). Airbus is expecting to sell 750 aircraft overall (Robertson 2006, Clark 2006).

As a result of the development problems, two directors left the company including the head of EADS, the parent company of Airbus. The company has been restructured and a cost cutting programme is underway which is expected to lead to job losses and factory closures (Bawden, 2006).

**Project Delays**

The main cause of the delays during development was attributed to aircraft wiring problems (Robertson 2006, Clark 2006). These were certainly complex, for example each seat required extensive wiring for services and operation. Seats now incorporate more personal facilities including entertainment and communications. However, there were many other factors that contributed to delays including cultural differences in the way the different parts of the organisation worked, the methods used and the way in which problems were communicated.

This was the first time that a project of this size and complexity had been
undertaken by Airbus. Project complexity almost certainly increases risk and it is important to ensure that the objectives are realistically set to accommodate such risk. Clark (2006), reports that the project timescale constraints were similar to smaller aircraft and did not take the greater complexity into account.

“Normally you need four to five years from the time you announce the launch of a new plane until delivery,” said Jean-François Knepper, co-president of the European workers’ committee at Airbus and a representative of the French Union, Force Ouvrière. “Airbus had never built a plane of this complexity before”, he said, “and yet managers did not take the precaution of building more flexibility into the delivery schedule.” (Clark 2006)

When problems began to occur, they were not reported quickly to senior management. In fact it was almost a year after the problems first began before a formal announcement was made. This meant that delays could not be discussed with customers to reduce the effect on them and which would possibly have reduced the size of compensation claims. According to Clark (2006):

‘Throughout the autumn of 2004, assembly line managers duly reported the problems at the plane’s regular progress review meetings. But no one, at that stage, seemed to believe they were significant to merit a red flag to top management.’ (Clark 2006)

When delays occur, there is a tendency to maintain production schedules whilst design work must continue. This overlap tends to cause further problems and of course late design changes are generally more expensive and difficult to implement.

**Summary of Project results**

First scheduled delivery slipped by 18 months, finally achieved in January 2008.

Order cancellations & compensations leading to anticipated losses of €5Billion

Main causes of delays:
Complex cabin wiring

Use of different engineering methods at different Airbus sites causing wiring to be incorrectly designed for manufacture.

Concurrent design & production

Late weight reduction design changes

References

Robertson D, 2006, ‘The Times’, 20 October 2006,