

## **Session 4**

### **Contractual development strategies**

#### **Objectives:**

Economic growth is often presented as the main objective of the company. However, this growth is often restricted, wrongly, to an increase in the size of the company. The search for economic growth can either take the form of a growth strategy or, on the contrary, the form of a development strategy, which can lead the company to disengage from activities that it had previously undertaken. The aim is to grow not its structure, but the value that can be created. In this context, the economic growth of the company requires the questioning of its growth strategies.

In order to understand how economic growth can be achieved through a development strategy, we will study the case of outsourcing the production of the Boeing 787 Dreamliner.

The objective of this session is to assimilate the motivations and implications of outsourcing strategies with the help of a concrete case. Its motivations and implications go beyond the company's borders and must be integrated into a complex mesh that links it, in a networked organizational mode, to suppliers, customers and even competitors.

#### **Required work:**

##### **Presentation topics:**

**Two groups of students** will address **one of the** following **two topics in the** form of an **oral presentation**:

**Topic 1:** Would Boeing have been better off not using an outsourcing strategy for the Dreamliner?

**Topic 2:** Was the outsourcing implemented by Boeing strategic?

##### **Preparatory work :**

Students **who do not participate** in the oral presentations will deal **individually** with the questions at the end of the booklet.

## THE DREAMLINER CASE

### **Document 1 - Presentation of the Dreamliner**

Source: <http://boeing-commercial.skynetblogs.be> ; [http://lexpansion.lexpress.fr/entreprise/le-pdg-d-airbuscompte-bien-depasser-son-rival-boeing-en-2018\\_406106.html](http://lexpansion.lexpress.fr/entreprise/le-pdg-d-airbuscompte-bien-depasser-son-rival-boeing-en-2018_406106.html)

#### **The Boeing Company**

Although challenged by its main competitor Airbus, *The Boeing Company* still holds the world leadership in aircraft manufacturing. Sales by market can be broken down as follows:

- defence (57.5%): communication systems (37.5%), military aircraft and security systems (37.4%: warplanes, helicopters and defence missiles), support services (15.3%: logistics, engineering, maintenance and training services) and space equipment (9.8%: satellites, launch pads, etc.)

In addition to commercial aircraft, the group supplies spare parts and offers technical support, maintenance and engineering services. The balance of sales (2.8%) relates in particular to commercial and private aircraft financing and aircraft equipment leasing. The geographical breakdown of sales is as follows: United States (70.6%), Asia (15%), Europe (8.6%), Oceania (2%) and others (3.8%).

#### **The Boeing 787 Dreamliner**



Meeting the demands of airlines around the world, the Boeing 787 Dreamliner is an extremely efficient airplane. A global team of aviation industry leaders is developing the airplane at Boeing's Everett plant near Seattle.

(...) The 787 will revolutionize air travel not only by enabling mid-size aircraft to fly distances now reserved for larger aircraft, but also by improving its environmental impact, starting with unprecedented fuel savings. For the same flight, this aircraft will consume 20% less fuel than its competitors, while reaching speeds similar to those of the largest aircraft currently on the market (Mach 0.85).

787 passengers will also benefit from the innovations that characterize this new aircraft: a less dry interior environment, improved comfort, more practical features, etc.

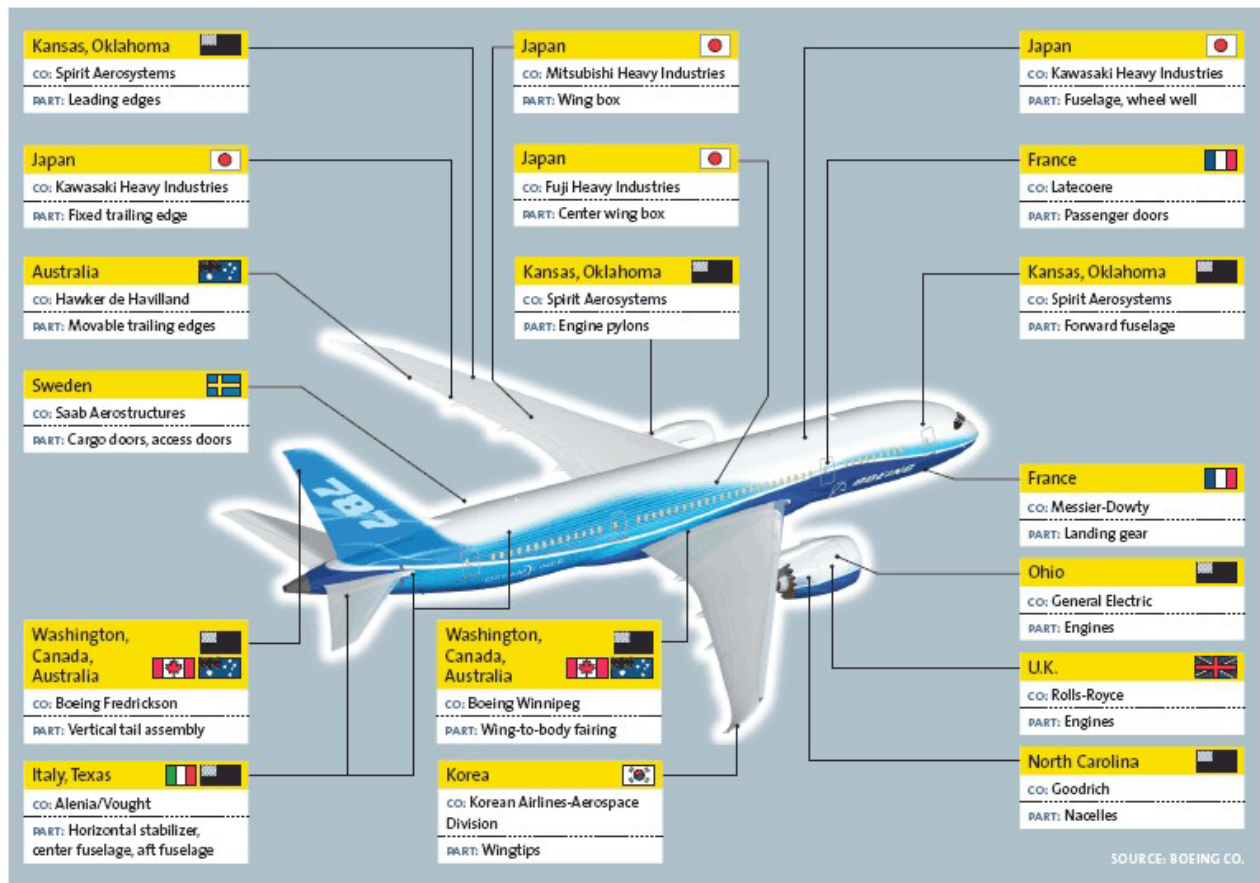
In addition to its performance, the Dreamliner's environmental impact has become a greater concern. Throughout the history of jet aviation, Boeing has made continuous progress in improving the environmental performance of its aircraft in areas ranging from fuel consumption to air pollution to

public noise. With the 787 Dreamliner, Boeing is once again introducing new technologies to improve the environmental performance of its commercial airliners. The company's commitment to improving the environmental performance of its products is based on a strong belief that caring for the environment is a positive thing in itself. This is especially true for an aircraft manufacturer, as one of the main reasons people choose to travel is to enjoy the wide variety of natural wonders of our planet. The 787 Dreamliner consumes 20% less fuel than current aircraft of similar size. The 787 has been designed to go far beyond current requirements (a 30% improvement over the current 767) and those of the future, particularly the regulations soon to be put in place by the Committee on Aviation Environmental Protection (CAEP). It also allows for quieter takeoffs and landings. The 787 Dreamliner employs a number of new technologies to ensure that any sounds above 85 decibels - traffic noise heard from the roadside - never leave the airport's boundaries. In fact, the 787's noise footprint is more than 60 percent smaller than that of similar-sized aircraft today. The 787 Dreamliner's range is also an environmental benefit, allowing airlines to offer more direct flights between medium-sized communities. While larger aircraft are capable of such flights, their size prevents them from being economically viable on medium-sized city-to-city routes. However, the intermediate size of the 787 allows it to be operated more cost-effectively between such cities, eliminating many unnecessary take-offs and landings, since the flight is non-stop. Finally, because the 787 is made primarily of carbon fiber composites, a material cut like cloth, the manufacturing processes will generate less material loss and waste. Modern aircraft are primarily made of aluminum, which must be milled and machined from large sheets or blocks to create an aircraft structure. Although this material is recyclable, it is best to avoid waste as much as possible. The composite solution used for the 787 addresses this efficiency concern. Boeing is already working with companies around the world to ensure that the processes are in place to allow the 787 to be recycled when it reaches the end of its life. While these aircraft are not expected to be retired for another 30 to 40 years, it is important to prepare for this today.

The key to this outstanding performance is the array of new technologies developed by Boeing and its global team of industry partners. Nearly half of the 787's structure will be made of composite materials. The 787's systems will be based on an open architecture. These systems will be simpler than those on current aircraft and will offer more functionality. For example, the team is looking to integrate aircraft health management systems that will allow the aircraft to self-diagnose and report maintenance needs to computer systems on the ground. Boeing has selected General Electric and RollsRoyce to develop the engines for its new aircraft. Advances in engine technology are expected to contribute to an 8% increase in performance for the new aircraft, which is almost a two-generation leap in technology for the core market. Another source of efficiency is the way the new aircraft is designed and manufactured. New technologies and processes are being developed. They should help Boeing and its suppliers achieve unprecedented levels of performance in every phase of the program. For example, by making a fuselage section out of one piece, we are eliminating 1,500 aluminum sheets and 40,000 to 50,000 fasteners.

### **Document 2: Boeing's Partner Network**

*Source: CIO Insight (2006), "Boeing, New Jet, New Way of Doing Business"*



**Document 3: Boeing's interrupted dream**

Source: *The New York Times*, "A Dream Interrupted at Boeing", 6 September 2009.

Here in Boeing's cavernous factory, temporary scaffolding rises next to several of the first Dreamliners to be built. Workers climb the steel floors so they can slide all the wiring to the hydraulic systems into the planes. In other compartments, crews operate giant tools that help integrate wing-shaped parts built for the older 747, 767 and 777 models. Thuds sound from pneumatic rivet guns. Cranes lift wings and fuselage sections onto the assembly floor. The scene described typifies the discipline of an organized industry on a colossal scale. But the fact remains that such scaffolding should never have been necessary for the Dreamliner. The wings and main fuselage sections were supposed to arrive from external suppliers fully adapted, to be assembled directly on the aircraft. However, it appears that the suppliers were overstretched to install all the systems. Boeing says that since then, the pace has picked up and the planes should soon be able to taxi away from the scaffolding. Because of this type of subcontracting misstep, Boeing is suffering huge penalties. The Dreamliner - the first passenger plane made primarily of lightweight plastic composites - is now more than two years late and still awaiting its first flight tests. Boeing admits the problems have caused customers and suppliers to lose patience, damaging its credibility. Already, 60 orders have been cancelled, mainly because of the delay.

Company president W. James McNerney Jr. concedes that Boeing has lost control of the manufacturing process by outsourcing the design and production of its aircraft as never before, removing itself from close control over the work of its suppliers. According to the president, the company is in the process of regaining control. In the end, one might ask whether it was worth it. McNerney says, "My answer is yes. That's why we took the risk. But could we have organized our production more intelligently? Yes ". Even after the cancellations, the Dreamliner has more promised orders from airlines - about 850 - than any other commercial aircraft in history. Boeing is partly reassured because its main rival, Airbus, does not expect to complete its first composite aircraft until 2013. At an average selling price of \$125 million,

those 850 Dreamliners could turn into \$110 billion. Boeing's message to airlines is clear: with half of its structure made of reinforced plastics, carbon fiber - a lighter and stronger compound than aluminum - and more efficient engines, the 787s could reduce fuel costs by up to 20%. The aircraft will be able to fly longer distances, offering new opportunities for "point-to-point" routes, reducing the need for transit through *hubs*.

Chicago-based Boeing recently said it was fixing the Dreamliner's latest snag: a series of unexpected difficulties at the junction between the wings and fuselage. According to Boeing, the plane should begin test flights this year. Boeing hopes to deliver the 787 in the last quarter of 2010. In any case, Boeing's troubles could not have come at a worse time. The economic recession is affecting aircraft orders by shortening the time between delivery and payment, causing difficulties for airlines (the 787 delays are a relief for some airlines that don't have the cash flow at the moment). Boeing's military business, which helped the company avoid a *crash* following the terrorist attacks of 2001, has also suffered because of Pentagon spending cuts on major weapons systems. In light of all these difficulties, the company is taking steps to try to maintain its cash position, which was estimated at \$5 billion at the end of June and \$7 billion at the end of 2007. In addition, the company has announced an overhaul of its organizational structure with the promotion last week of James F. Albaugh, director of military affairs, to commercial military affairs. Aerospace experts are beginning to be skeptical of the company's 60-year-old chairman, McNerney, a former 3M chairman accused of several ethics scandals after joining Boeing in 2005.

Others wonder more broadly: Can Boeing regain its former prestige by launching new programs in the U.S. market? *"It's very clear that this company excels at dreaming big, so big at times that they've even taken the breath away from their competitors"* - says Heidi Wood, an analyst at Morgan Stanley - *"but lately there's been some evidence that it's been harder to realize those big dreams.* In 2003 and 2004, when the Dreamliner was planned, Boeing's commercial aviation business was still suffering from the radioactive fallout of the September 11 attacks. Boeing was also losing market share to Airbus, the European consortium that was winning the battle with the sale of the mid-size wide-body aircraft (A-330 series). Boeing knew it had to make the next technological leap if it wanted to get back ahead of Airbus. And most aviation experts still believe that the Dreamliner, designed to replace the old 767, could be a game changer.

With the Dreamliner, Boeing was looking to expand its long-term subcontracting relationships - primarily for parts manufacturing - by instituting a risk-sharing program in which suppliers would also be Boeing's partners. *"The idea was to outsource risk to other people,"* says Aboulafia, *"but the 787's difficulties may be related to this technological approach.* For example, Boeing outsourced the design and construction of the wings - one of the most labor-intensive parts of the aircraft - for the first time in its history. It also left other companies to struggle with the complicated task of processing plastic and forming composite materials. Instead of getting paid when parts are delivered, partners agree to wait and get their capital back plus a share of the profits once Boeing delivers the planes to customers. But Boeing executives now say this outsourcing has left the entire manufacturing process vulnerable because any part of the chain is subject to delays. Problems with *start-ups*, shortages of simple parts such as nuts and bolts, and a staff strike at Boeing last year, are responsible for the delays and, like a *domino* effect, have intensified the pressure on the most financially fragile suppliers. *"I think there were places where we went too far,"* says Scott Carson, who heads the commercial division. *"We clearly made some errors in judgment about the capabilities of individuals.* McNerney has had a good relationship with several airline executives since he was head of General Electric's aviation business. When the Dreamliner problems first surfaced, he said he would call his contacts and ask them to be patient and to offer new contracts if necessary. He visited the major suppliers to get more involvement in the problems. He also visited Spirit AeroSystems of Wichita, which makes the forward fuselage in a former Boeing plant. Spirit has cut costs by negotiating down old Boeing labor contracts, and Boeing cites it as one of the best outsourcing success stories.

Analysts estimate that the company had initially planned to invest between 8 and 10 billion dollars but that the investment could exceed 20 billion dollars including the penalties it will owe for delays in delivery. Last spring, events went well during the ground tests of the first plane. But at the end of May, a new and final crisis appeared with technical problems during the wing bending test. Patrick M. Shanahan, vice president in charge of aircraft programs in the commercial aeronautics division, said the results were totally unexpected but, initially, not worrisome. He says his engineering team had been

hedging its bets about what kind of last-minute problem might arise that would prevent the first test flight of one of the planes on June 30. No one thought the aircraft's structure, which had always exceeded our expectations during testing, "would fail us," he says. But in mid-June, additional tests proved that the aircraft's structure needed reinforcement, and the test flight had to be cancelled. The problem put more strain on suppliers, especially Vought Aircraft Industries, which has a plant in South Carolina that makes the rear fuselage. In 2008, Boeing had already bought this activity from Vought for a parallel service. Boeing also advanced \$422 million to the company to help it meet production demands. But Vought CEO Elmer L. Doty said he could not continue to raise the money to run the program. So in early July, Boeing bought Vought's rear fuselage plant. Scott Hamilton, managing director of Leeham Company, an aviation consulting firm, says some of Boeing's other suppliers are angry about the delivery delays. They are demanding that Boeing pay them an advance on expected profits. McNerney said Boeing would provide cash to some of them. Boeing's takeover of Vought's operations was crucial. According to McNerney, it redrew the lines of its partnership model and reintegrated a key part of its business. He says its other major partners are all moving forward to ensure reliable production. And while Boeing still believes in its partnership outsourcing model by involving its subcontractors in risk sharing, the company plans to keep more of the technology in-house on future projects and monitor the work of its partners more closely. According to McNerney, Boeing has the size and resources to overcome the challenges on the project.

On August 27, when it announced the new flight test and delivery schedule for the Dreamliner, Boeing also said it would take a \$2.5 billion provision, or a \$2.21 billion share, in the third quarter to amortize the cost of research and development for the first three Dreamliners. The company is also cutting 10,000 jobs this year, or 6% of its workforce. Its share price peaked at \$104.99 in 2007 when the Dreamliner deals were flowing in. By Friday's close, the price was at \$49.15. Aviation experts warn that the 787 project could still falter if new problems arise during flight tests or certification checks. But McNerney believes the company's gamble on the Dreamliner will still pay off handsomely, especially if it keeps Boeing ahead of Airbus in using composite technologies to replace obsolete models. "We got the right airplane," he says, "and the good news is that when we finish this project, we're going to be way ahead of our competitors."

#### **Document 4: Chronology of the successive delays in the launch of the 787 "Dreamliner"**

Sources: [www.challenges.fr](http://www.challenges.fr); [www.lemonde.fr](http://www.lemonde.fr);

[http://www.viadeo.com/shareit/share/?url=http://www.latribune.fr/entreprises/industrie/aeronautiquedefense/20090623tribo00391353/boeing-retarde-encore-le-premier-vol-du-787-dreamliner.html?title=Boeing delays again the first flight of the 787](http://www.viadeo.com/shareit/share/?url=http://www.latribune.fr/entreprises/industrie/aeronautiquedefense/20090623tribo00391353/boeing-retarde-encore-le-premier-vol-du-787-dreamliner.html?title=Boeing%20delays%20again%20the%20first%20flight%20of%20the%20787) ;

(...) As for the industrial organization specially set up by Boeing for the 787, which consists of entrusting the construction of the aircraft's components to subcontractors, leaving only the final assembly to its Seattle factories, it is still far from having proved itself. So much so that Boeing announced on 28 March that it was buying 50% of one of its main suppliers, Global Aeronautica. This company, in which the Italian company Alenia holds the remaining 50%, is responsible for the pre-assembly of the 787 fuselage.

#### **Early December 2009**

The first test flight of the long-delayed 787 Dreamliner aircraft will take place in late 2009, about two years late, Boeing said Thursday. The company also said it intends to deliver its first Dreamliner in the fourth quarter of 2010, originally scheduled for delivery in May 2008. "Clearly, the conduct of this program has had its challenges, and there is still work to be done," Boeing executive W. James McNerney said on a conference call. But Boeing, which has touted the 787 as a "game-changer" for the airline industry, said it still expects the program to be profitable.

#### **December 15, 2009: After five delays, the Boeing 787, or Dreamliner, has finally taken flight**

The end of a bad dream. Such must have been the wish of Boeing executives when they saw the 787 Dreamliner take off for the first time on Tuesday 15 December. The plane took off from Everett, near Seattle, Washington, two and a half years behind schedule. While schedule overruns are not uncommon

in the aviation industry, this time the stakes are much higher for Boeing. The 787 is the culmination of a major strategic evolution, both industrial and technological, which began in the early 2000s. At that time, caught up with Airbus, the American manufacturer decided to change its model by abandoning manufacturing to concentrate on the design, assembly and delivery of aircraft. The group then sold its industrial sites. Its objective was to reduce costs and development time and to use new materials to lighten the weight of the aircraft and reduce its fuel consumption. Hence the idea of using composite materials that are lighter than aluminum. In 2004, while Airbus was developing the A380 to put an end to the 747's monopoly on the wide-body aircraft market, Boeing decided to focus its offensive on medium-capacity long-haul aircraft carrying 200 to 300 passengers. Using its research on the Sonic Cruiser, a quasi-supersonic aircraft project abandoned in 2001, it designed an aircraft made of more than 50% composite materials, with a carbon fibre fuselage. A first in civil aeronautics.

The aircraft manufacturer also decided to entrust 70% of its production to 43 subcontractors in 25 countries. Each one is responsible for a component that is then assembled at Boeing. This system is fragile, as the slightest failure can disrupt it. Subcontractors such as Italy's Alenia and Japan's Mitsubishi are rapidly encountering difficulties in mastering these new materials. The parts sent to Boeing had to be revised. To remedy this, the manufacturer sent teams of engineers to Italy and Japan, hoping that this would not cause any delays. But after the euphoria of the presentation of the first Dreamliner on the symbolic date of July 8, 2007 (7/8/7), it was a cold shower with the announcement, in October 2007, of the first shift in the schedule. There will be four others. The group then encountered other setbacks linked to a shortage of rivets. The aircraft manufacturer also had to review and improve the aircraft's central casing. In the spring of 2008, in an internal memo, the group's president, Jim McNerney, acknowledged that Boeing had gone too far in outsourcing. The approach will be changed in future programs, he said. Already, the cursor has been moved upstream. Boeing has taken over certain industrial activities. In March 2008, it became a shareholder, along with Alenia, in Global Aeronautica, a subcontractor for the pre-assembly of the fuselage. In July 2009, the aircraft manufacturer took over an American factory from the equipment manufacturer Vought Aircraft Industries, which was considered essential for the programme, as it specialised in the manufacture and assembly of fuselage parts. However, it was because of problems with the attachment of the wings to the central section of the 787 that Boeing abandoned the first flight of the Dreamliner, scheduled for the end of June 2009, *in extremis*. This new difficulty, now resolved, and this fifth delay will cost Scott Carson, the head of Boeing's commercial division, his job. For reasons of credibility, Boeing had to keep its commitment to make the first flight before the end of 2009. Especially since the cancellations, which concern 83 aircraft, have multiplied since the beginning of the year. Nevertheless, the American aircraft manufacturer still has 840 Dreamliners on order, making it the best-selling aircraft to date before its launch.

**Document 5: How the Boeing 787 Dreamliner became an industrial nightmare** *Source:* [www.lemonde.fr](http://www.lemonde.fr) "How the Boeing 787 Dreamliner became an industrial nightmare", 26/06/09

On paper, it is marvelous. Its creators gave it a nice name: Dreamliner, the dream mail. That was in 2003, at the end of the year, when Boeing's board of directors decided to launch the 7E7, renamed the 787 Dreamliner two years later. Today, it would be the Dramaliner, the nightmare plane. Seven years later, an old hand at Boeing, quoted by the *Seattle Times*, says: "It's absolute hell..." or "the industrial apocalypse" (1). Scott Fancher, the program's boss, acknowledged last December that he and his team had "a lot of work to do", even though the first 787 should have been flying three years ago.

### **Dream on paper, hell on the factory floor**

There is a very simple rule in the industry that when faced with complex problems, you take it one step at a time. But Boeing's board of directors must have been in a hurry and wanted to rush through the process. The engineers were putting on the table a new generation aircraft with extraordinary performances. A Lego plane built in three days (this remains the stated ambition), with 20% less fuel consumption, 30% lower maintenance costs and even 10% savings per seat and per mile flown. And for passengers, more room to put an end to the "elbow war", much larger windows and more humidity. No more dry throats and no more running out for a glass of water. A dream.

So to change everything, Boeing has really changed everything. The list of innovations is long: the materials used, the technologies implemented, the way of working with suppliers and the final assembly of parts from all over the world. All this is described in detail and with pride on the manufacturer's website.

(...)

### **An intercontinental Airbus**

Airbus had experienced the difficulty of sharing the development of the A-380 over the Rhine and found itself with cables coming from Germany that were too short, too long or coming out where they were not expected. Sharing the development of an entirely new aircraft is good for the image, it helps to sell aircraft, but it triggers an epidemic of headaches in the design offices and the financial department. Replace the Rhine with the Pacific or the Atlantic and you will have an idea of the difficulties encountered. According to American analysts contacted by the *Seattle Times*, the cost of the 787 has risen from \$5 billion to \$12 billion or even \$18 billion.

The twenty-five airplanes currently waiting on the Everett tarmac in the Boeing factory opposite Seattle (Washington) must undergo 105,000 basic operations to correct defects or errors. Some take less than a day, others a week... So much for the date of the first delivery. In principle, All Nippon Airways should receive the first 787 in the third quarter of 2011. Before that, the FAA and its European counterpart, the European Aviation Safety Agency, will have to sign the authorizations. In the United States, certification flights resumed in January and work will begin in Europe in April. Boeing specified in its press release that it was leaving itself "a margin". Since then, time has taught us to be cautious on the Seattle side.

At Airbus, the situation is appreciated. "At the beginning, we were five years behind with the A-350, now we are only two years behind..." says a senior executive of the European manufacturer.

### **Document 6: Boeing buys factories that make key components of the Dreamliner**

Source: *The New York Times* "Boeing Buys Plant That Makes Crucial Part of Dreamliner", July, 7, 2009.

Boeing has celebrated the release of its new 787 Dreamliner aircraft. This event is doubly important to the company. Not only are these planes state-of-the-art, but the launch represents a model for the company to streamline its manufacturing process, which is largely based on an outsourcing policy. But on Tuesday, that vision was marred by Boeing's \$1 billion buyout of a struggling supplier, Vought. Boeing has already faced other supply and production problems on its delayed 787 Dreamliner, a product critical to the company's future. The difficulties stem in part from Boeing's creation of a complex global supply chain. The goal was to help the company escape rising labor costs, but that supply chain has made it difficult to control and command the manufacturing process. Heidi Wood, an analyst at Morgan Stanley, wrote in a note to investors that it was possible Boeing would use the old Vought plant as a second assembly line once it increased production. Boeing assembles the first 787 in Everett, Washington, where a strike by unionized machinists halted work for eight weeks last fall. Jim Proulx, a Boeing spokesman, says the company has not yet made a decision about a second production line. The former Vought plant makes parts for the rear fuselage of the 787. It is located near the department that makes the other part of the fuselage.

Boeing stunned investors on June 23 when the company delayed the initial flight of the Dreamliner to resolve a structural problem with the attachment of wings to the sides of the plane. The problem involved parts designed by Boeing and two Japanese suppliers. The companies are working together on the design difficulties. The company had promised a week earlier that it would complete the flight by June 30. No new test program has been announced since. David E. Strauss, an analyst at UBS, said "*they're going to have to make a list of payments*" including penalties to suppliers who performed on time. He declined to estimate the total amount, but "*right now it's huge*," he said. Vought had had problems earlier, and its chief executive, Elmer L. Doty, explained that the program's financial requirements "*are growing beyond what the company could support because of its small size*". Boeing said it would pay the plant \$580 million and waive repayment of previous advances to Vought. Proulx estimates those advances at



\$422 million. Vought, based in Dallas. Doty says Vought, which will continue to make components for the 787 and other aircraft, had to invest twice as much as it had planned to do on the Dreamliner. He said that with the banking crisis, the company could not find financing for the hundreds of millions of dollars it would have needed to complete the parts. Wood said Boeing's decision to reinstate the job would give it more control over "a historically problematic process. But Credit Suisse analyst Robert Spingarn said the Vought acquisition will increase Boeing's fixed costs.

**Document 7: Boeing changes its industrial model to save the B 787 (to be removed)**

Source: *Le Figaro*, 7/07/2009

***The American giant is drawing a line under its outsourcing strategy by buying out the site of one of its subcontractors.***

Boeing is learning from the repeated delays of the B 787 "Dreamliner", its new generation long-haul aircraft. The first flight of this aircraft has been postponed five times and the program is two years behind the initial schedule (the first aircraft should have been delivered in May 2008).

The American manufacturer has decided to review its new industrial model based on a hitherto unseen outsourcing of the development and manufacture of a new aircraft to major partners who are also financially involved. The aircraft manufacturer is refocusing on its core business: design, final assembly and marketing. With the B 787, nearly 80% of which has been outsourced, Boeing intended to validate this organization, which enabled it to reduce its own financial and industrial risk by sharing it.

But Boeing's innovative approach - inspired by the auto industry, which outsources more than 60 percent of a vehicle's value-added and development to its subcontractors - fell short. With the notable exception of Spirit (a former Boeing entity) located in Wichita, several major partners were unable to keep up with the pace of the program and the technical specifications made more complex by the massive use of composite materials.

Boeing had to take emergency action several times, notably in Japan and Italy, sending in-house engineers and injecting billions of dollars to make up for the shortfalls and take over some of the workload in its Seattle and Everett plants.

**Lessons to be learned for Airbus**

On Tuesday, Boeing took a further step in its takeover of subcontractors by announcing the outright purchase of a plant responsible for making composite fuselage sections belonging to the American equipment manufacturer Vaught. The Chicago-based giant will spend \$580 million to acquire the Charleston, North Carolina-based site. Last March, Boeing had already taken over Vought's 50% stake in Global Aeronautica, a subsidiary set up with Italy's Alenia to carry out the pre-assembly of fuselage components manufactured in Italy and also in Japan by Mitsubishi.

If Boeing is backing down, it's because the B 787 is in danger and its credibility is at half mast. The stakes are high: the Dreamliner has been a dazzling commercial success with airlines. It alone has 840 orders. Given the delays - they lead to penalties or commercial considerations and increase the program's break-even point - Boeing must absolutely speed up and probably build a second assembly line to be able to deliver its customers within a reasonable time. The Airbus A 350 XWB, the future rival of the B 787, is expected to be in the sky in 2013. While the gap between the two is narrowing, Boeing's misadventures in trying to change everything at once, too fast and too hard, are rich in lessons for the European aircraft manufacturer. It has in fact adapted the Boeing model, even if it has limited the proportion of outsourcing to 50%.

**Document 8: The consequences of the Dreamliner's problems**

Sources: *www.latribune.fr* "Investigation into Boeing's serious problems", 26/06/09; *www.lemonde.fr* "Black series for the Boeing 787", 27/07/13

Qatar Airways is negotiating a revised delivery schedule for the 787 Dreamliner aircraft it ordered from Boeing and is seeking compensation, saying the new delay announced by the U.S. aircraft manufacturer affects the expansion of Qatar's national airline. Ali al-Rais, the airline's executive vice president for

commercial matters, said no new deadline had been set for the deliveries at this time. *"They already know they are at fault,"* he told reporters in Dubai. *We will not argue with our supplier. There are indemnities and we are discussing the schedule."* Boeing in December postponed its 787 Dreamliner program for the fourth time, bringing the delay to the plane's introduction to nearly two years. Qatar Airways has about 200 planes on order, including 30 787 Dreamliner aircraft, and was only expecting a 12-month delay for the Boeing planes.

Incidents are multiplying on Boeing's latest 787 *"Dreamliner"*, which has already been grounded for three months this year due to battery problems. A 787 belonging to Qatar Airways has been grounded since Monday in Doha after an incident with an electrical panel led to overheating. A spokesman for the airline in London confirmed a *"very minor incident"*, without giving details. At the same time, media reports indicated that smoke had been released from another 787 aircraft operating a domestic flight for Air India. The company also said it was a *"minor incident"*. Japan's All Nippon Airways (ANA) said on Friday it had found faulty batteries in two 787 emergency beacons, a defect suspected to have been the cause of a fire on board an Ethiopian Airlines plane of the same model in London in early July. Boeing would not comment on the incidents in isolation, referring to the airlines involved. *"The 787 is a good airplane, and we know it will continue to receive increased attention for reliability events,"* a spokeswoman for the manufacturer said, however. *"Any new aircraft encounters component reliability issues when it enters service,"* she said, and *"overall"* the 787 is on par with another of the company's wide-body aircraft, the 777, in its early commercial operation. *"That said, we continue to focus on improving the reliability of the 787,"* she added. The 787 program has been plagued by setbacks since its launch. After many delays, the aircraft entered service in October 2011 and Boeing says it has delivered 70 to date to 13 companies. The biggest blow was a three-month worldwide flight ban following two incidents in January involving lithium-ion batteries: a fire on a JAL plane in Boston and an overheating with smoke emission on an ANA plane in Japan. After the Ethiopian Airlines incident in London, British authorities recommended that all 787s have their emergency beacons deactivated. The US Federal Aviation Agency (FAA) and the European Aviation Safety Agency (EASA) ordered carriers operating in the US and Europe to remove or inspect them. On the same day as the London fire, a Thomson Airways Dreamliner had to return to Manchester shortly after takeoff. Last week, a JAL aircraft from Boston to Tokyo was also turning back, *"for maintenance"*. The 787's problems did not stop Boeing from reporting better-than-expected second-quarter results on Wednesday and raising its annual forecast.

# QUESTIONS

For each question, you must first answer with a sentence using the appropriate concepts and then quote the relevant text passages - *use quotation marks and indicate the number of the document quoted.*

**1.** Demonstrate why it is appropriate to speak of a genuine outsourcing strategy in the case of the Dreamliner and not of subcontracting:

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**2.** Is this an operational or strategic outsourcing? Justify:

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**3.** To what extent can we speak of a "refocusing" process?

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**4.** Using transaction cost theory, propose an assessment of the risks of this outsourcing strategy:

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**5.** Referring to the analysis grid of the "pivot" role, what are the mistakes made by Boeing in the case of the Dreamliner?

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**6.** What were Boeing's strategic shifts to limit the consequences of this failure? How can they be qualified in terms of growth strategy?

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