

A 380 accommodation at Paris - Charles de Gaulle airport



Passenger Terminal expo 2003
Hamburg, February 28th

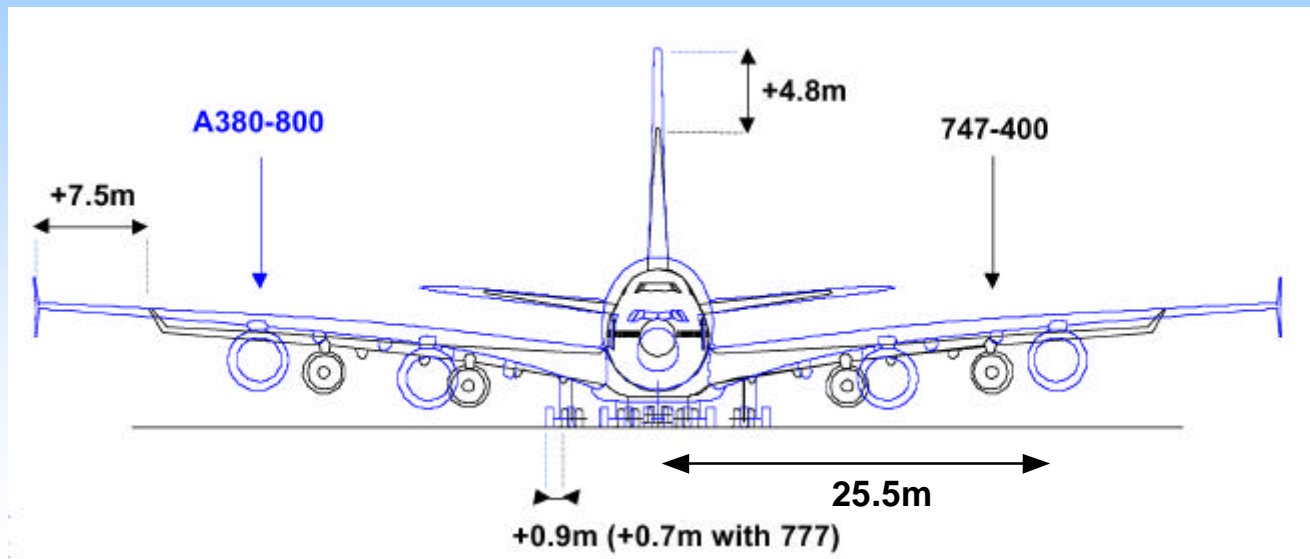
Presentation by Philippe Laborie

Contents



Aircraft data
General approach to the problem
Timescale of studies & projects
Airside
Terminals

Aircraft data



Length	72.7m	
Wingspan	79.6m	
Height	24.1m	
Gear width	14.34m	
Weight	592 t (freighter)	
ACN (code C soil strength)	92 (freighter)	between B747-400 and B777-300ER

Source: Airbus

General approach to the A380 issue



➤ Upgrading is a constant for airports

... Aircraft have always been growing in size

➤ The A380 (main requirements : increased wingspan & weight) is not the only aircraft that demands changes

- B777-300ER (main requirement: landing gear load on pavement)

- A340-600 (main requirement: length)

General approach (continued)



➤ Strategy for airside infrastructure - give the A380 adequate margins

- 1) Apply code F on new infrastructure
- 2) Apply code F for upgrades, wherever feasible practically
- 3) Use internationally agreed A380 specifications where code F recommendations are impractical
- 4) Local safety studies for site-specific situations

➤ Terminals

- The policy is to select for the A380 terminals with a high proportion of common-use facilities...
- ...In order to ensure flexibility, and a level of service comparable to current aircraft

Time scale for studies and on-site work

➤ **NLAs have been foreseen since the 90s**

- ICAO code F standards and recommended practices have been published in the 1999 edition of annex 14
- At CDG the new runways and taxiways (for which work has started in '97) were built using code F specifications

➤ **Time scale for infrastructure upgrades**

- 2000: review of existing airside infrastructure vs the A380
- Beg. 2001: strategic decision - launch of investment programme
- 2001: AACG - working group for the evaluation of A380 airside need
- 2002-2006 for works on the A380-specific projects
 - *2002-2003 for runways (coupled with major pavement maintenance)*
 - *2002-2006 for taxiway obstacle removal, shoulder widening*
- Fillet widening had begun earlier, as it was required for the A340-600 / B777-300

➤ **The first A380 at CDG is expected in the autumn of 2006**

The AACG: “A380 specifications”



- An informal group called A 380 Airports Compatibility Group (AACG), gathering ACI, Airbus and CAAs and main airports of France, Germany, the Netherlands and UK, was set up in 2001.
- The purpose of AACG was to reach an agreement on specific airside specifications for A 380, applicable at the existing airports of the four countries, and intended at providing an equivalent level of safety with current ICAO code E for B 747-400 or JAR/FAR specifications.
- After review of deviations surveys performed at Heathrow, Fraport, Schiphol and CDG, and a scientific evaluation of the associated risks, AACG findings were presented in Nov 2002 to ICAO and FAA. The resulting specifications are about half way between code E and code F.

Standards for main airfield items



Item	Annex 14 code F SARP	AACG A380 agreement for the adaptation of existing facilities
Obstacle free zone	155m	Could be reduced for 45m wide runways
RWY-TWY separation	190m	190m (interim position - conservative?)
TWY-TWY separation	97.5m	91m
TWY-object separation	57.5m	49m
RWY width (+ shoulder)	60m +2x7.5m	45m (pending A380 certification) +2x15m (outboard engine)
TWY width (+ shoulder)	25m	23m
TWY bridge width	60m	49m +2x5.5m (blast protection)

Sources: ICAO, AACG

Runways



➤ Two existing 45m (+2x7.5 shoulders) runways

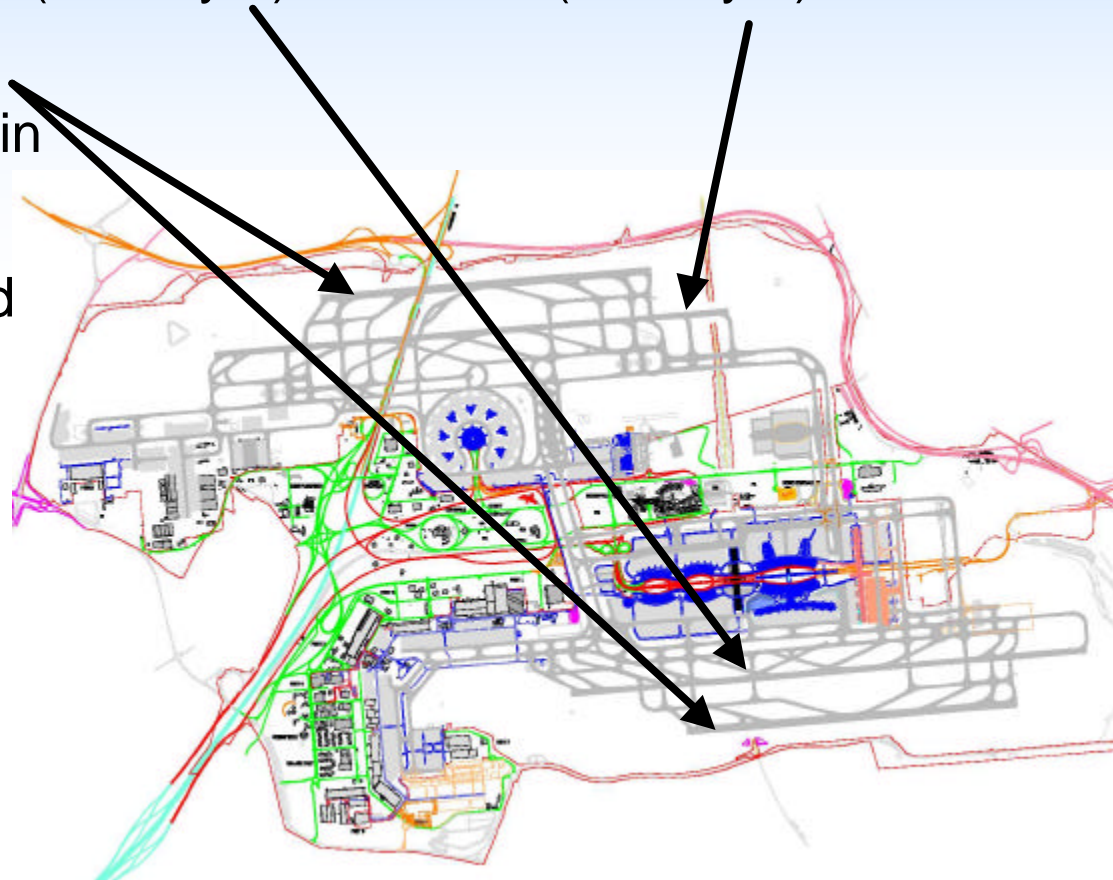
- The upgrade operation includes strengthening of pavement (B 777) & widening of shoulders to 15m (A380 outboard engine)
- Work schedule is 2002 (runway 2) and 2003 (runway 1)

➤ Two new runways

- They have been built in 1997-2000 to code F specifications
- No upgrade is needed

➤ Holding points

- Under study (ILS interference simulations)



Taxiways



- **Almost all taxiway separations comply with code F**
- **The recent taxiways are 25m wide**
- **Existing taxiways:**
 - *Width*: it complies with the French specification equivalent to code E : no change (to be confirmed by a safety study using deviation measurement)
 - *Fillets*: they are being upgraded for long aircraft (A340-600, B777-300 ER & A380) on preferred routes; work is under way for a total of 40 curves
 - *Spacing* (RWY-TWY, TWY-TWY) : they are already code F-compliant
 - *TWY-object distance*: a review of obstacles is under way, based on the preliminary conclusions of the AACG; the scope of obstacle removal work will depend on these conclusions being confirmed by deviation measurements that are being made at several major airports in the US and Europe.

Taxiways

Fillet widening



Main taxiing routes between terminals and inner runways

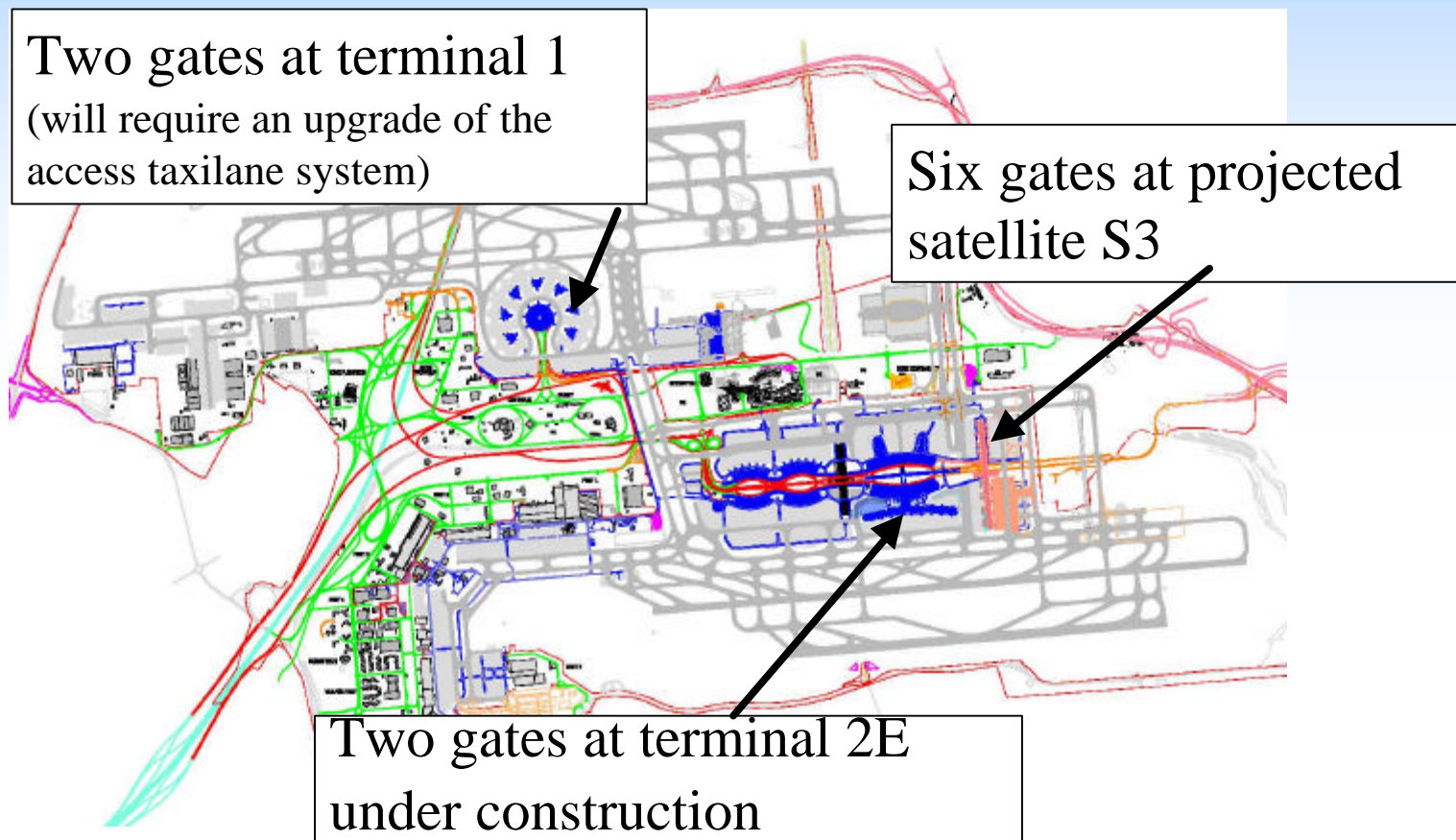


Programme of fillet widening

Terminals



Current plans for A380 gates



Terminals



- **One new building (satellite S3 of terminal 2E)**
 - A380 requirements have been specified in the initial design

- **Existing terminals (Terminals 1 and 2E)**
 - A review of the capacity of processing facilities has been conducted:
 - *Check-in, controls, boarding lounges*: evaluation of peak flow generated by an A380 as a percentage of overall available capacity...
 - ... This technique is relevant for common-use facilities (which is the case in most of CDG terminals)

Terminals: upper deck access



➤ Upper deck access (third boarding bridge) is a plus for aircraft servicing, but not a necessity

- Boarding time 22'; Deboarding 14' without upper deck access (two bridges serving the main deck)

(Source: Airbus)

➤ It can however be requested by airlines (specialized access for First/business class passengers)

➤ Under study at CDG terminals

- For Paris airports, ADP tends to prefer access to both decks from a single departure level (avoid having a terminal layout specific to the aircraft internal layout)
- the decision on building or not will depend on the level of usage (A380 traffic expected on each terminal)

Terminals: baggage delivery



- **Computer simulation work has been carried out to establish the requirements of an A380**
- **For 60m long units, we tend to recommend delivery on two units (e.g. first/business on one unit, economy on the other)**
- **Above 80m, there seems to be little gain (in terms of throughput) in increasing length unless there is a second point of baggage injection**

Costs



➤ Infrastructure

- 100-110 M€ up to 2006-2007 for the “generation” A340-600, B777-300ER, A380.

➤ Terminals

- Direct A380 costs are of little relevance (the consequence of this aircraft is a « do different », rather than a « do more » per passenger); it does however have an impact on terminal layout and operation
- A 380 needs have been specified in the evolution of our terminals resources: renovation of CDG 1, new buildings in CDG 2.

➤ **In these areas, the cost and complexity of being A380-ready for 2006 appear manageable**

- with the help of three factors:
 - An airport layout with provisions for large aircraft, from the outset
 - Having begun early the on-site work
 - Having terminal projects for the horizon 2006-2007, in which the A380 needs can be included

Summary - A380 issues



➤ Planning

- Apply code F for all new infrastructure

➤ Upgrading of existing airside infrastructure

➤ Terminals

- Including A380 features in future ones
- Reviewing and upgrading existing ones

➤ Studies

- Asking the DGAC (CAA) early for guidelines on the A380 specifications to be applied where code F cannot be met
- Contributing to the definition of « A380 standards »: taxiway deviation measurements, participation in the European AACG
- Safety studies for local peculiarities

➤ Operations

- Passenger flow management
- Gate handling
- ARFF