Planning of secondary airports in the era of Low Cost Airlines – The case of Frankfurt-Hahn

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A The aviation market

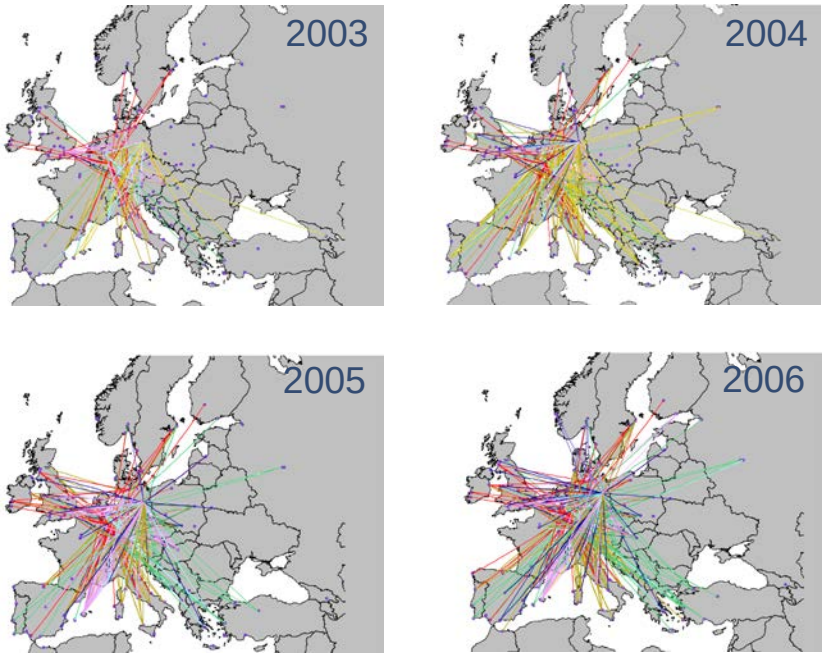
- Air Transport is one of the fastest growing and most buoyant businesses worldwide
- Drivers of the rapid developments are:
  - Manufacturers: New types of aircraft (A380 / Air Taxis etc.)
  - Legislation: e.g. Open Skies / Security Restrictions etc.
  - Airline / Airport Privatization
  - Emerging Markets: Far East, Middle East etc.
  - Upcoming new Business Modells („You cannot have segmentation everywhere in the industry except airports..“) → LCC!
- Airlines / Airports are no longer pure providers for air travel and infrastructure but are transforming into a highly demand driven service industry.

- The air transport business also faces considerable challenges:
  - Capacity constraints;
  - Environmental restrictions;
  - Social-economic impacts through (e.g. Airline bankrupts etc.)

The Low Cost Carrier market

Paradigm change in air transport market induced by LCC

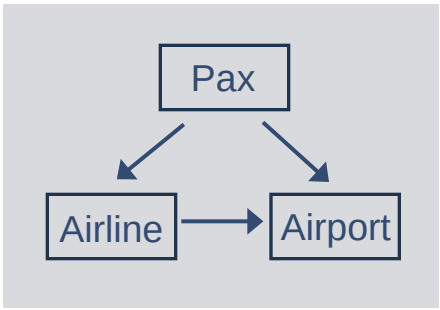
1. Low Cost Carriers **create new demand** by producing seat availability in a highly efficient way and setting it in the market for a low fare („Value for money“ rather than „Low cost“)



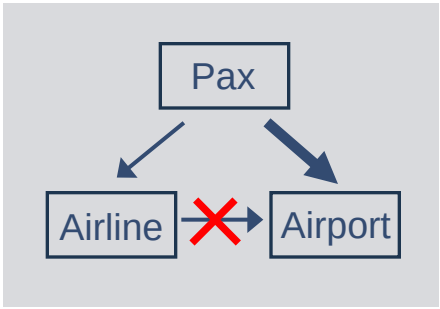
LCC growth in routes

Source: Low Cost Monitor 2/2006

2. Low Cost Carriers **redefine the airline / airport relation**: Airlines are no longer clients to an airport, but the other way around (e.g.: RfP by Easy Jet in March 2005).

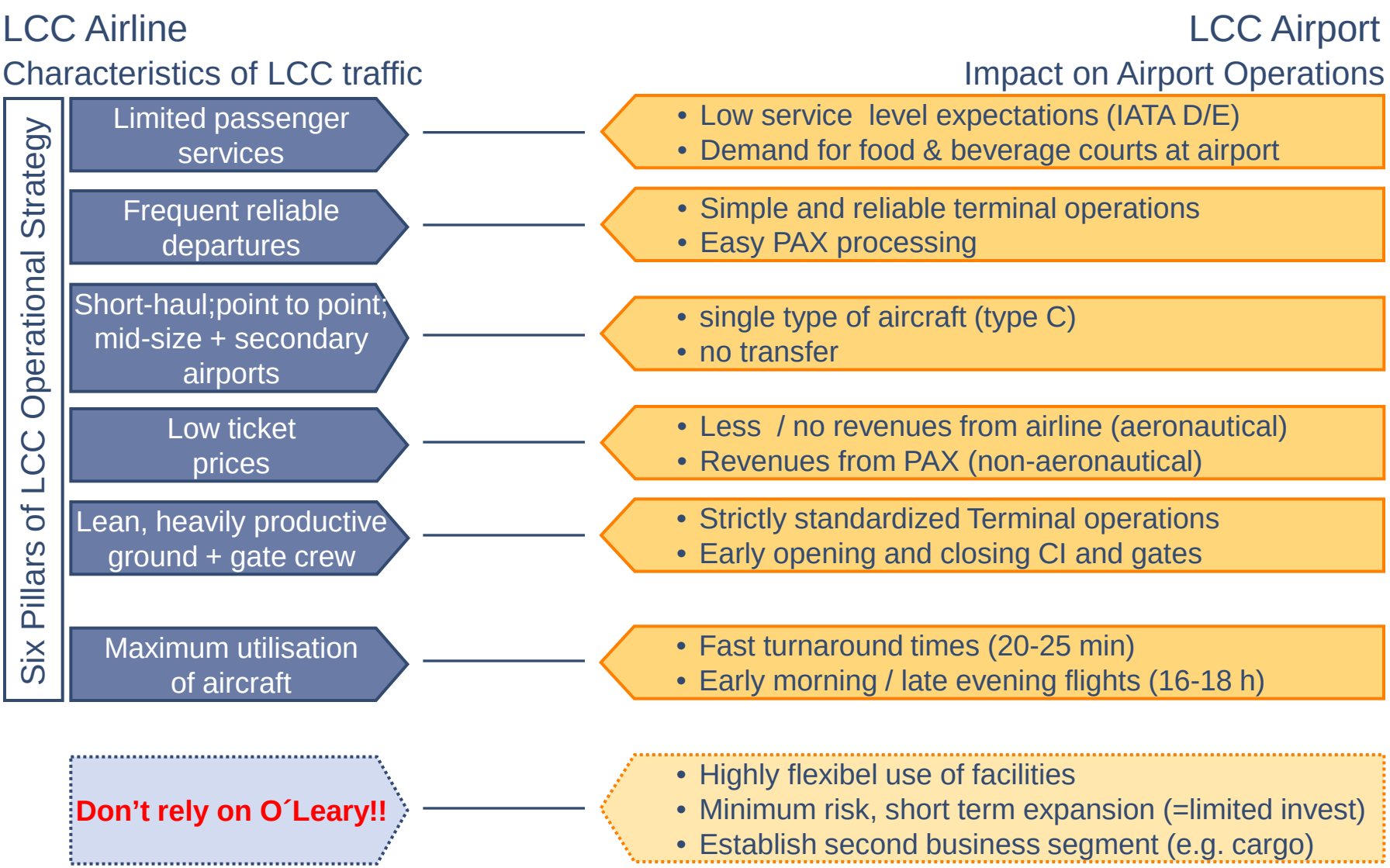


Traditional Airport



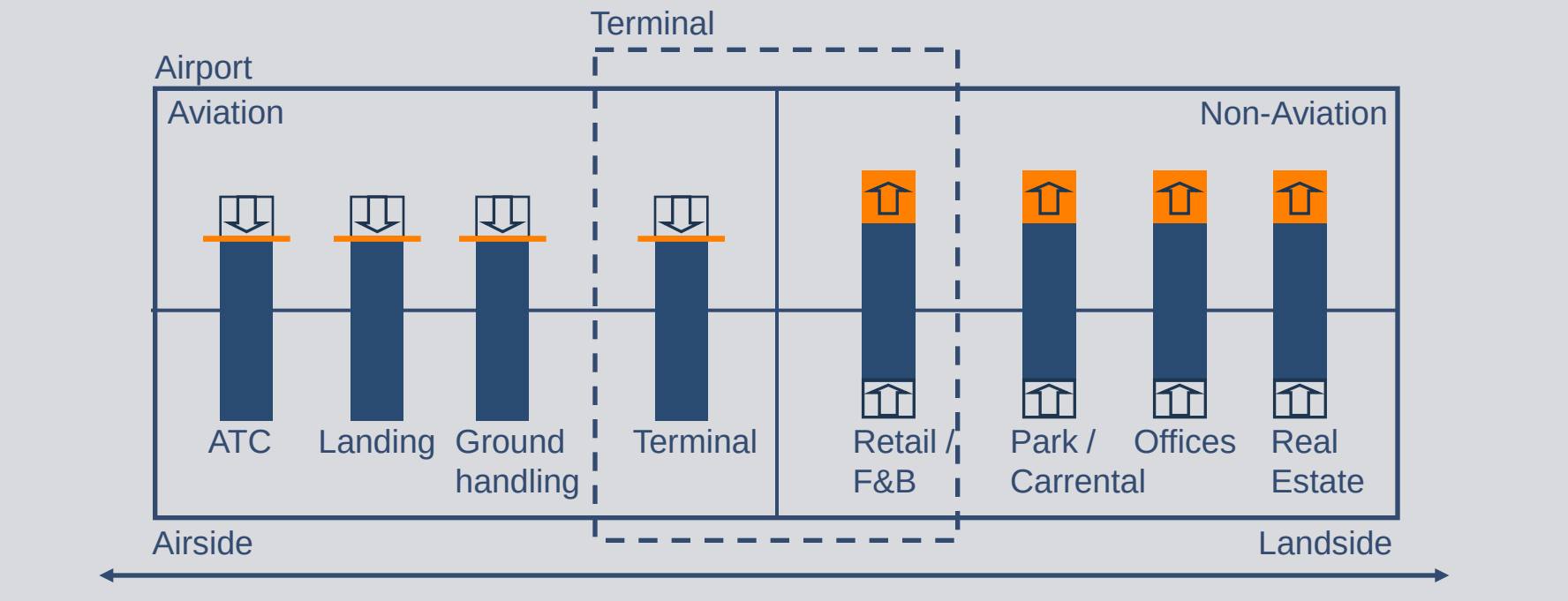
Low Cost Airport

The Low Cost Carrier market



The Low Cost Carrier market

LCA business modell – shifts in cost and revenue situation

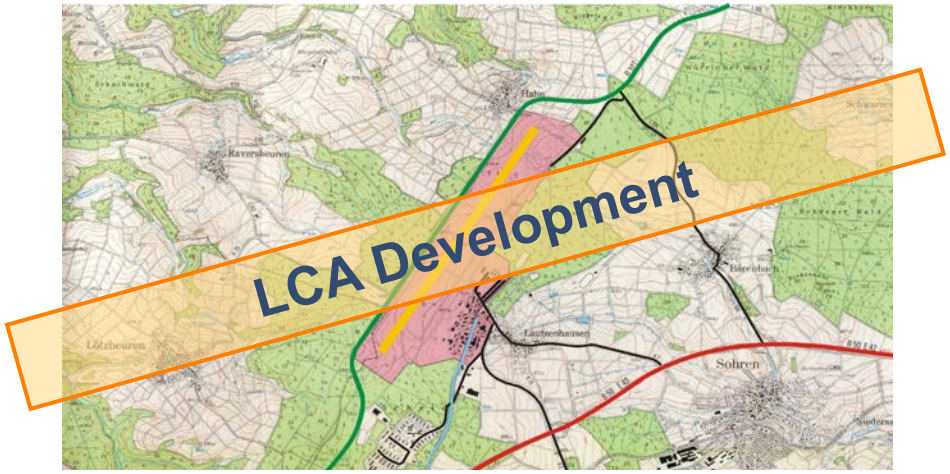


- LCC‘s demand highly efficient airside operations and handling processes but deny to pay
- For LCC the focus of terminal design and operations lies on functionality not on quality.
- Retail and non-aerauautical revenue potential is to be exploited.
  → LCA business: Revenue generation shifts from airside to landside!
  → Cost savings only possible on landside (Terminal & Landside Infrastructure).

LCA Development planning: Balancing all Interests and Constraints

Requirements and constraints from operations of LCC

(Six Pillars of LCC Operational Strategy)



Profit / Risk Stakeholder´s Interest (Entrepreneur, Operator, Government)

Airport situation

On airport
- Existing Infra / facilities etc
- Contracts land use
- Traffic characteristics (competition / home carrier)
- operational restrictions

Off airport
- Geographical / airspace
- Airport System/ competition
- Political environment
- Existing Infra (accessibility)
- Catchment, O/D-Potential

Secondary Airport Planning

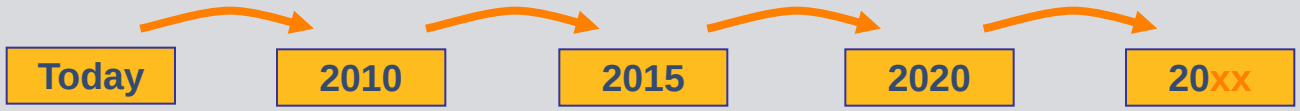
Levels of planning

Planning horizon	Periodical Update
Up to 30 years	5-10 years
15-20 years	3-5 years
5-10 years	2 years
2 years (immediate)	according to needs

Secondary Airport Master Planning

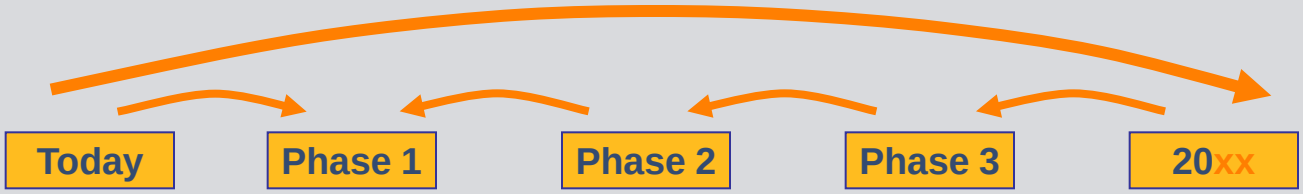
Two principal approaches of Masterplanning

„Bottom Up“ - Methodology



Based on forecasts:
- Data from preceding years
- virtual flight schedules
- deceiving level of detail

„Top-Down“ -Methodology

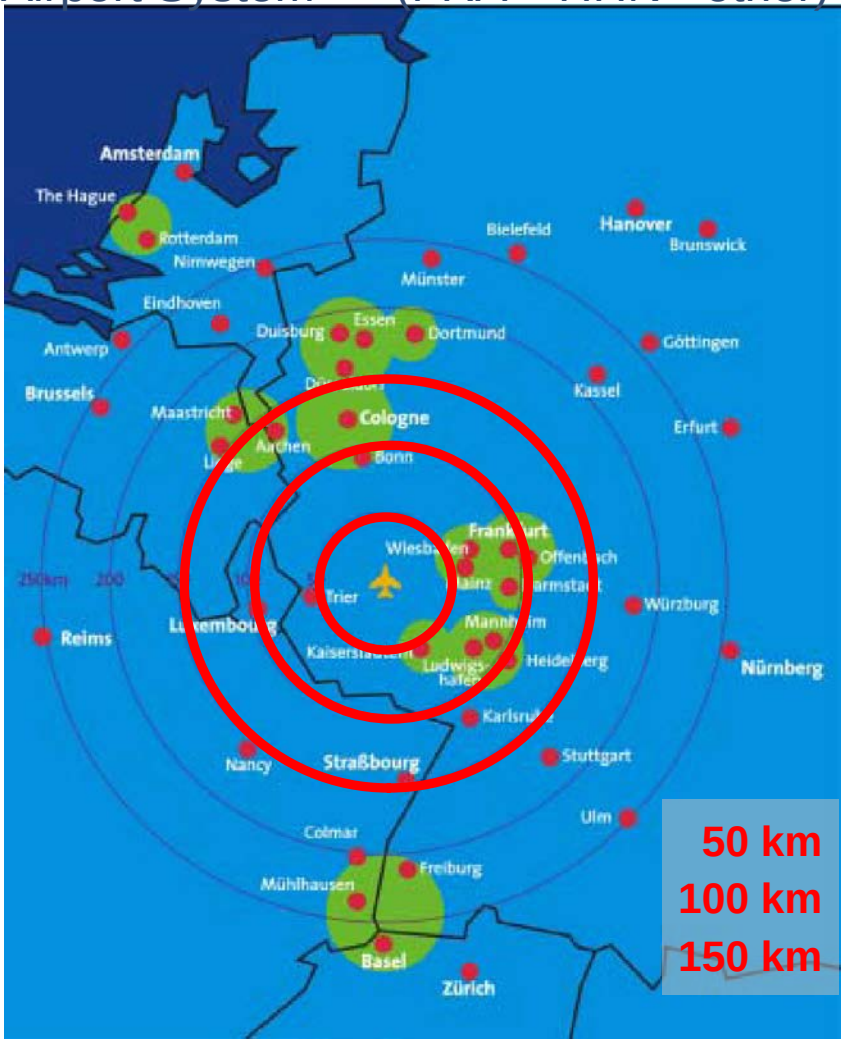


No forcasting:
- Airport boundaries / available location sets airport capacity limits (20xx)
- site in optimum balance (airside vs landside)
- Planning with scenarios for traffic and user profile

Top down methodology: Applicable for secondary airport planning

Secondary Airport Planning

Airport System – (FRA – HHN - other)



- Distance Frankfurt-Hahn – Frankfurt am Main: 100 km
- 2h Catchment area of Hahn: > 8 Mio inhabitans
  - 15% PAX < 50 km
  - 45% PAX < 100 km
  - 83% PAX < 150 km
- Other Low Cost Airports:
  - Köln
  - Dortmund
  - Weeze
  - Eindhoven
  - Zweibrücken
  - Karlsruhe
- 78% of PAX are Originating

Secondary Airport Planning

Airport System – (HHN – FRA)

Frankfurt-Hahn

Traffic Figures :

- 3,7 MAP (2006)
- ATM 29.000 (2006)
- 127 PAX/ac
- 99% Ryanair traffic
- Transfer HHN: 2,5%
- Transfer FRA-HHN: 0,6%

Facts :

- Modal Split: > 65% by car / 20% by bus
- 120 employees
- 260.000t Cargo (incl. Trucked)
- 65% owned by Fraport
- 24h unlimited ops license

Frankfurt am Main

Traffic Figures:

- 52 MAP (2006)
- ATM: 490.000 (2006)
- 106 PAX/ac
- > 75% Star Alliance (55% DLH)
- Transfer: 50% (total); 65% (StarA)

Facts:

- 12.000 employees
- 1.900.000 Mio t Cargo (incl. Trucked)

- Joint Stock Company (AG)
- Night curfew (24:00 – 6:00)

C The Case of Frankfurt-Hahn Airport

History of Frankfurt-Hahn Airport

1953 - Hahn Air Base – US Air Force

1993 - Hahn Air Base was turned over to civil German authorities

1998 - Fraport becomes operator and main share holder

1999 - 24/7 operation license

2000 - Air France hub and ACL Cargo

2001 - Inauguration of new terminal

2001 - Hahn Airport is officially renamed to Frankfurt-Hahn Airport

2002 - number of airline passengers exceeded the million mark

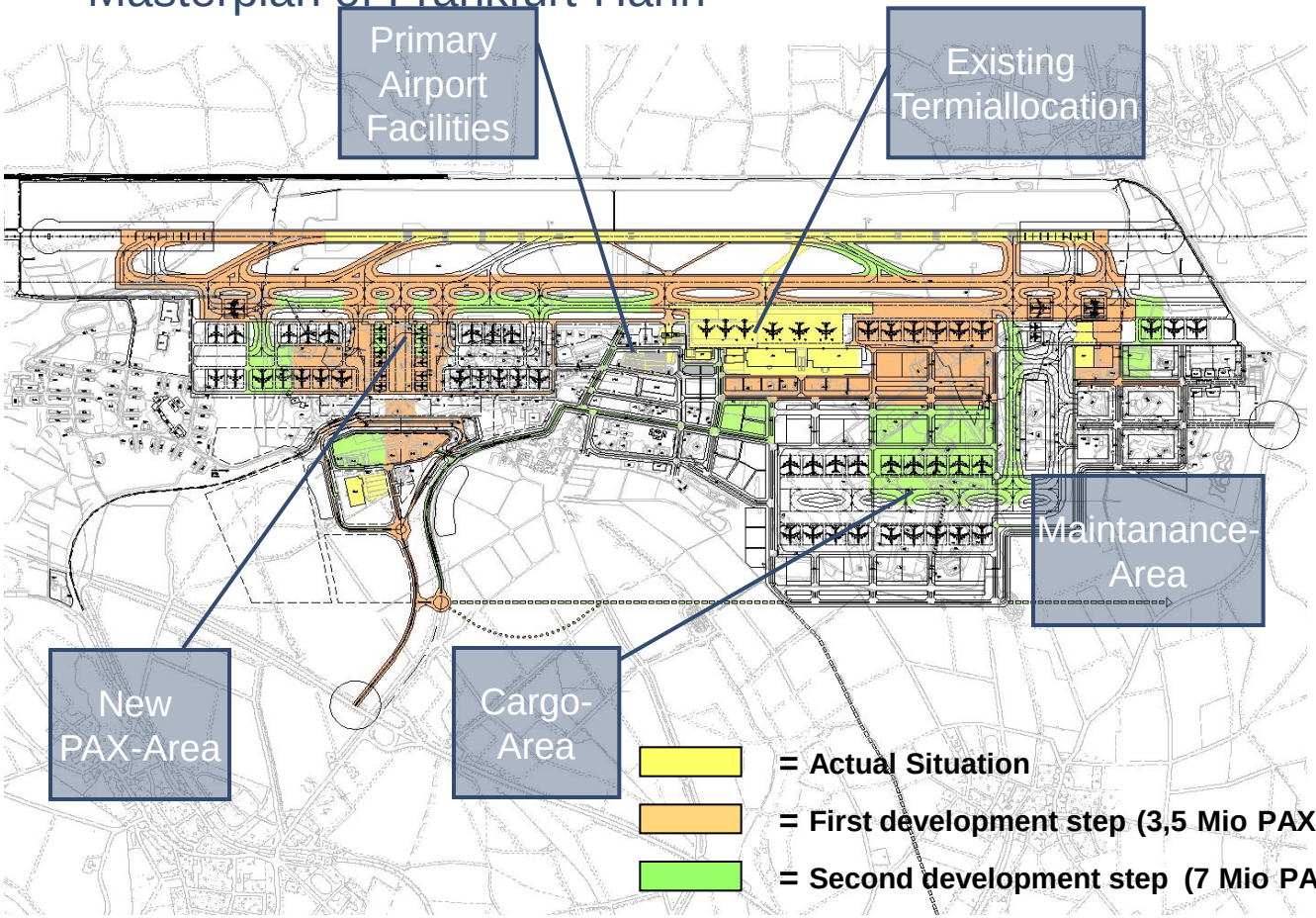
Ryanair selects Frankfurt-Hahn as second Continental European base

2003 - 2 million PAX – Terminal 2 is opening

2005 - 3 million PAX – extension of the RWY (3800m)

Secondary Airport Master Planning – The Case of Frankfurt Hahn

Masterplan of Frankfurt-Hahn



Demerging Cargo and PAX area to allow independent development

Single RWY system as limit (40ac/ph). → TWY-system, Aprons, Facility and Landside-capacity accordingly (= balanced system).

Maximum site potential calculated on 12-15 MAP and 1,2 –1,5 Mio t Cargo.

Landside accessibility from two sides

Difficult topographical situation (25 m height differences)

Secondary Airport Master Planning – The Case of Frankfurt Hahn

Masterplanning

Primary aim of Masterplan:

To provide a tool that enables the airport to set the right short- and medium term development steps as traffic grows, without compromising a long term vision and ultimate stage development.

New (!) Second aim of Masterplan: Marketing instrument

To sketch a compelling development of the airport in order to attract
a) potential traffic b) real estate developpers c) the commercial industry / other investors.

Masterplan 2002 sent to 200 potential clients

2003: RfP from DHL as Primary Europ.Hub
- 2 RWY‘s (65 ac movements/ph)
- > 80 aircraft stands

Successful LCA Terminal Development

Terminal development – 1. Basics

- Substantial PAX growth only as a LCC-base! Not as a spoke / destination.
- Prior to investment in facilities: Contractual commitment of LCC to PAX-growth szenario (xx MAP in 20yy)
- Apply target costing methodology: „How much may the facility cost at what contractual conditions with the LCC“. (⟶ Integral Planning of Business Plan – Terminal Planning)

LCC Airline | **LCA Airport**

LCC commits to cater for demand (50% loan of terminall invest)

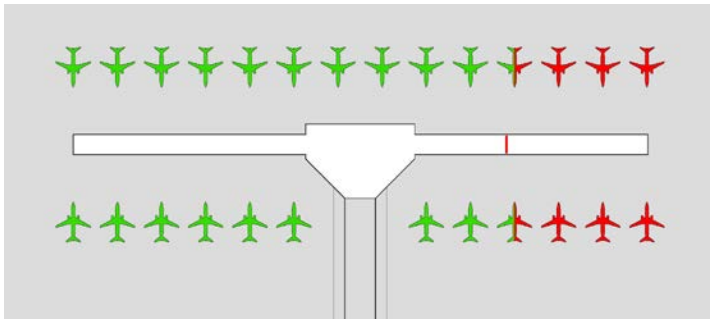
year	based aircraft	MAP	PAX/ph	Terminal building [m²]
2008	12	5,2 MAP	2.700	44.500 m²
2009	15	6,6 MAP	3.300	47.500 m²
2010	18	8,0 MAP	4.000	50.000 m²
20xx	26	11,6 MAP	5.800	61.000 m²

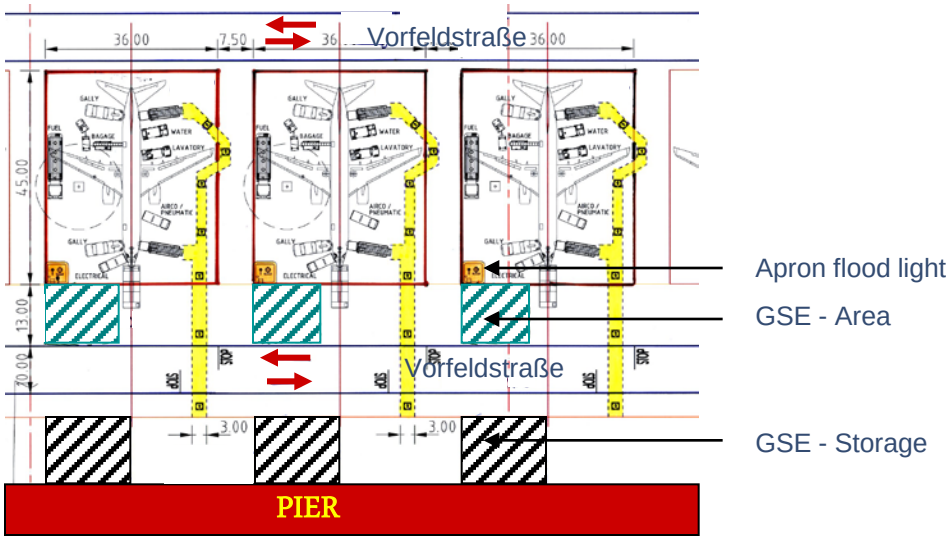
LCA commits to provide facility (50 Mio EUR)

Example: Frankfurt-Hahn Airport

Successful LCA Terminal Development – The Case of Frankfurt Hahn

Terminal development – 2. Functionality - Airside





Optimum use of airside

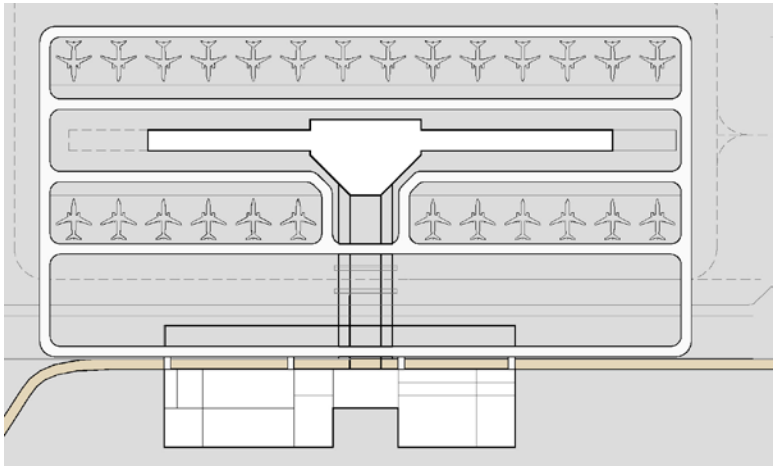
- Only Code C+ Aircraft
- No bridges / walk to AC
- optimal correlation gate / ac position
- Pier with two side AC-Pos

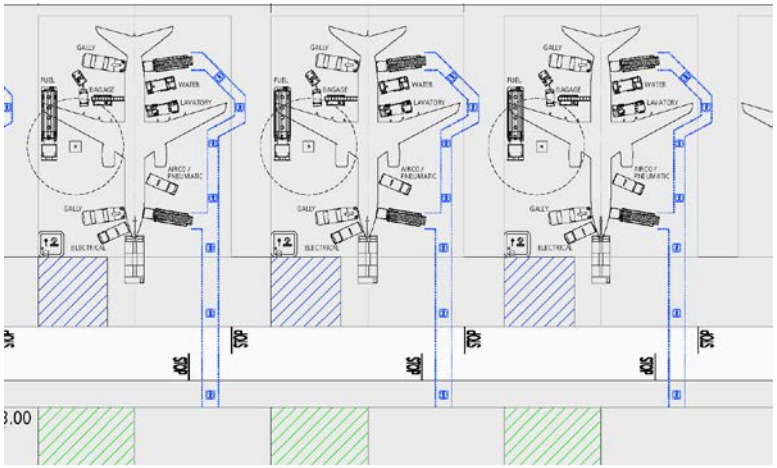
Optimum apron configuration to guarantee fast processing

- Two way apron road system in front and back of ac-Pos.
- Ample GSE storage space close to Position
- Independent two door boarding

Successful LCA Terminal Development – The Case of Frankfurt Hahn

Terminal development – 2. Functionality - Airside





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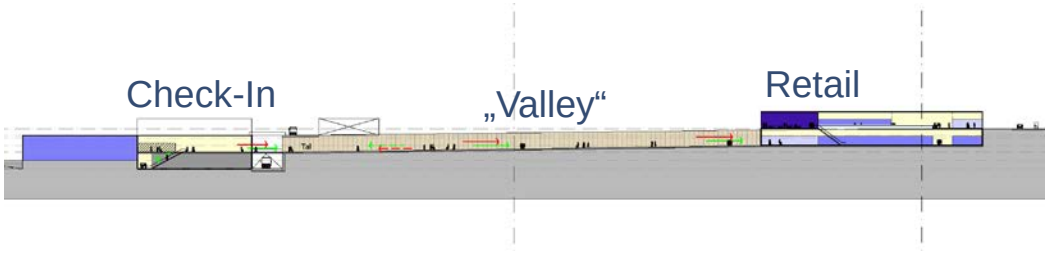
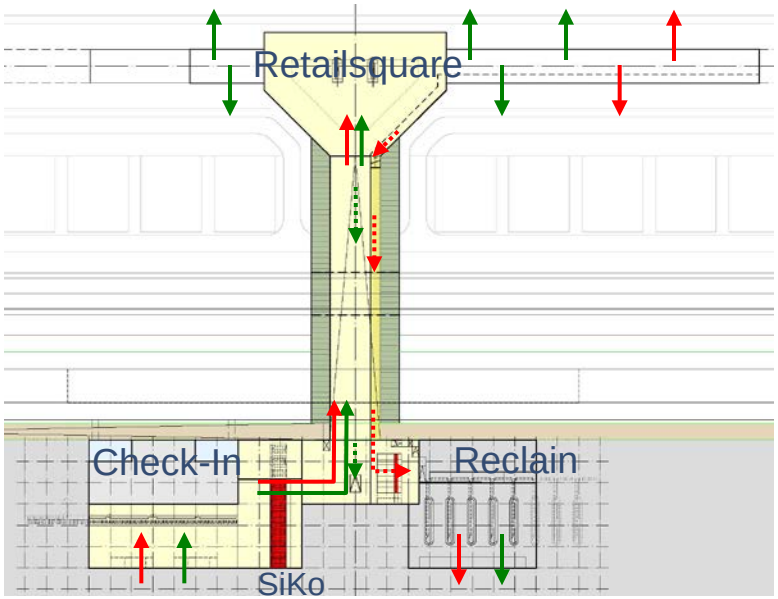
Successful LCA Terminal Development – The Case of Frankfurt Hahn

Terminal development – 3. Functionality



Optimum use of level differences in terrain



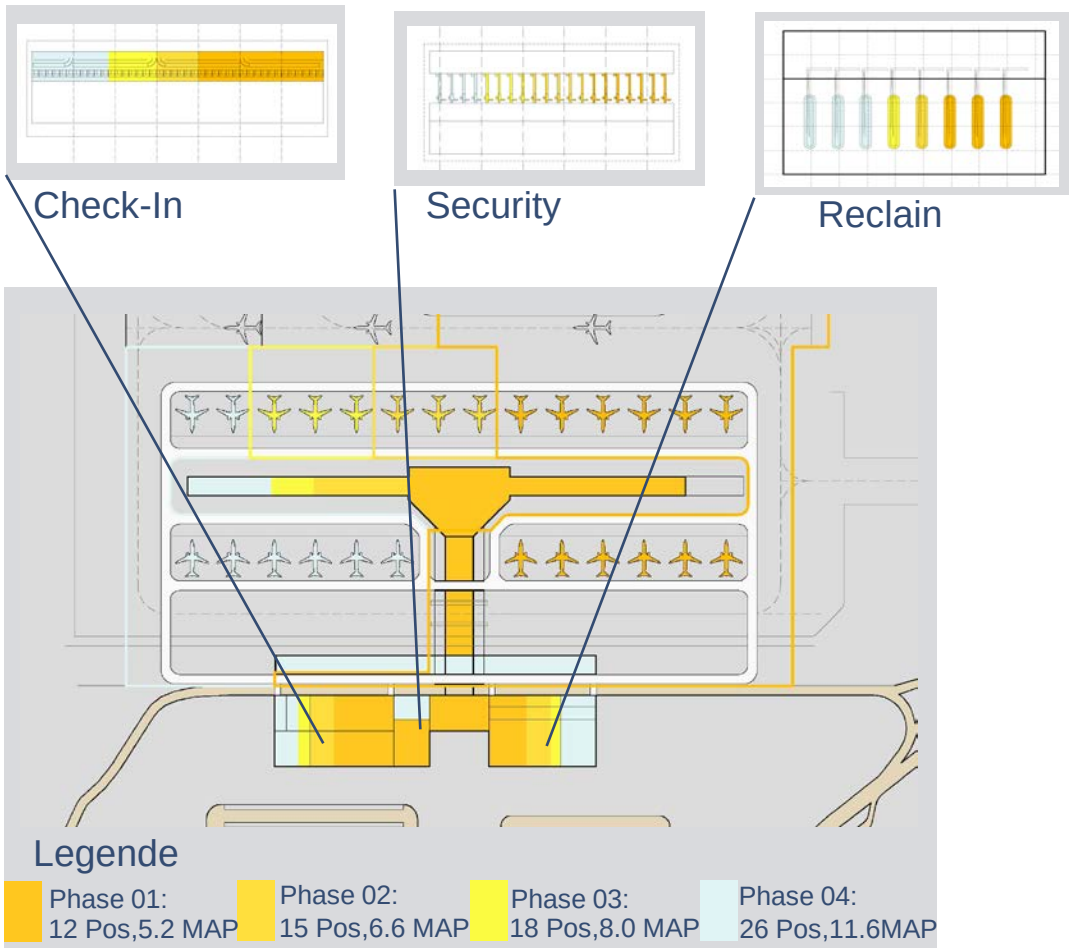
Central Security Concept

Pure O/D-Terminal

- No transfer PAX-flows
- No additional filters (Security, Emigration etc.)
- Simple baggage handling system

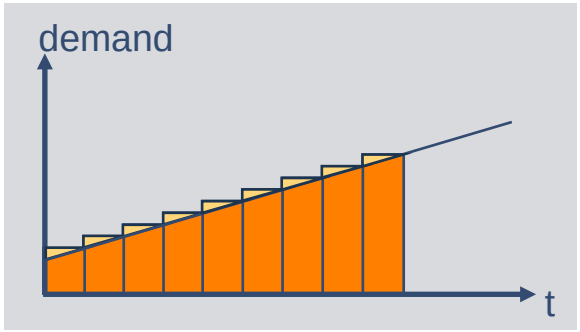
Successful LCA Terminal Development – The Case of Frankfurt Hahn

Terminal development – 4. Capacity



Separation of the processors

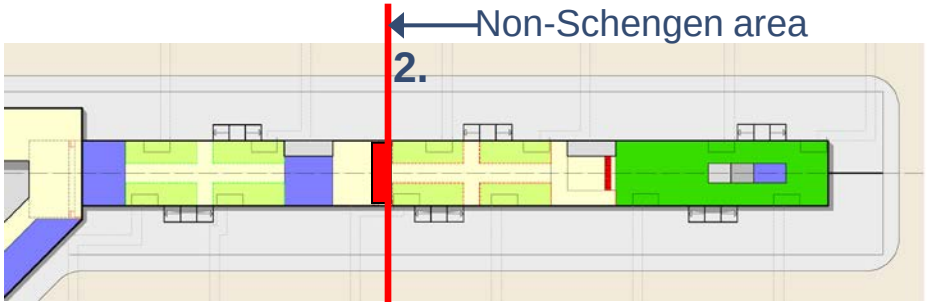
- modularity
- short term extendable processors for optimal capacity



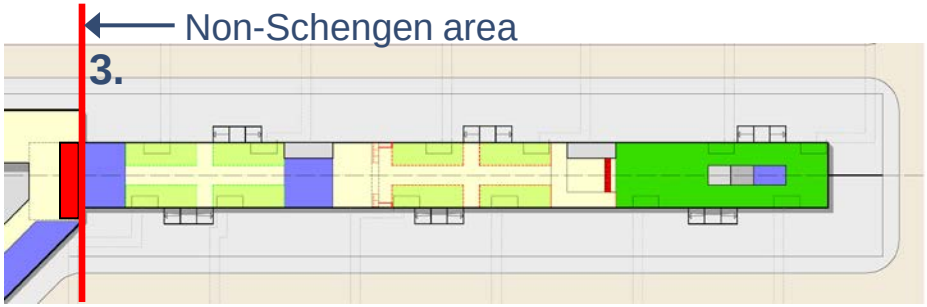
Successful LCA Terminal Development – In the Case of Hahn

Terminal development – 5. Flexibility

Border controll for 4 ns gates



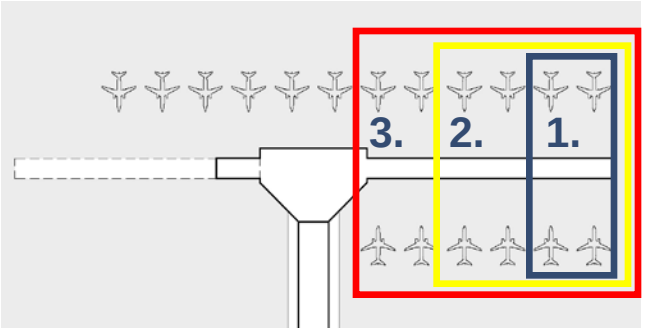
Border controll for 8 ns gates



Border controll for 12 ns gates

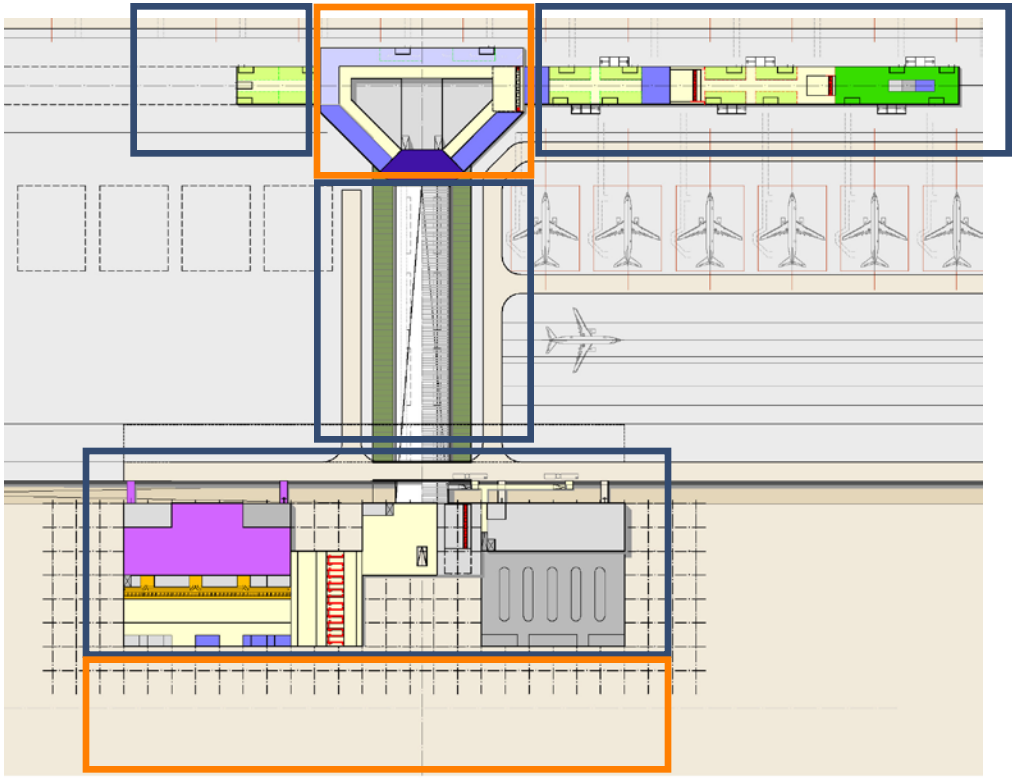
Provide flexibility in the total concept in order to

- easily extend the facility
- be able to redesign the facility according to needs of other users (once the LCC is gone)
- Modularity in all processors (check-in hall;baggage reclaim etc.) in order to pricesely dimension capacity to the required demand



Successful LCA Terminal Development – The Case of Frankfurt Hahn

Terminal development – 7. Quality and Costs



General Layout based on IATA Service Level E

Providing low quality for functional parts of the building

- no / limited climatisation
- one story layout
- cheap / no furniture

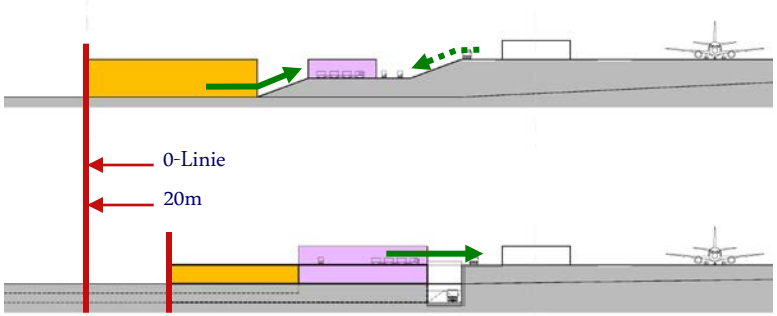
High quality for retail and gastro areas – to create a comfortable and attractive atmosphere.

„Low Cost“-Facilities
• pier, gates, processor building
for **750,-/m²**

„High Quality“-Facilities
• market place, landside retail
for **3000,-/m²**

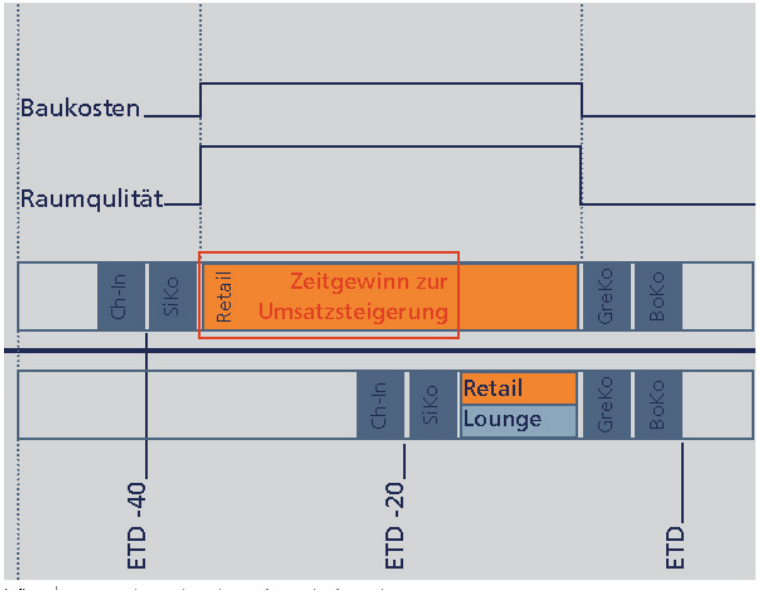
Successful LCA Terminal Development – The Case of Frankfurt Hahn

Terminal development – 8. Profitability



Gain of primary landside area

Create Landside space for commercial developments

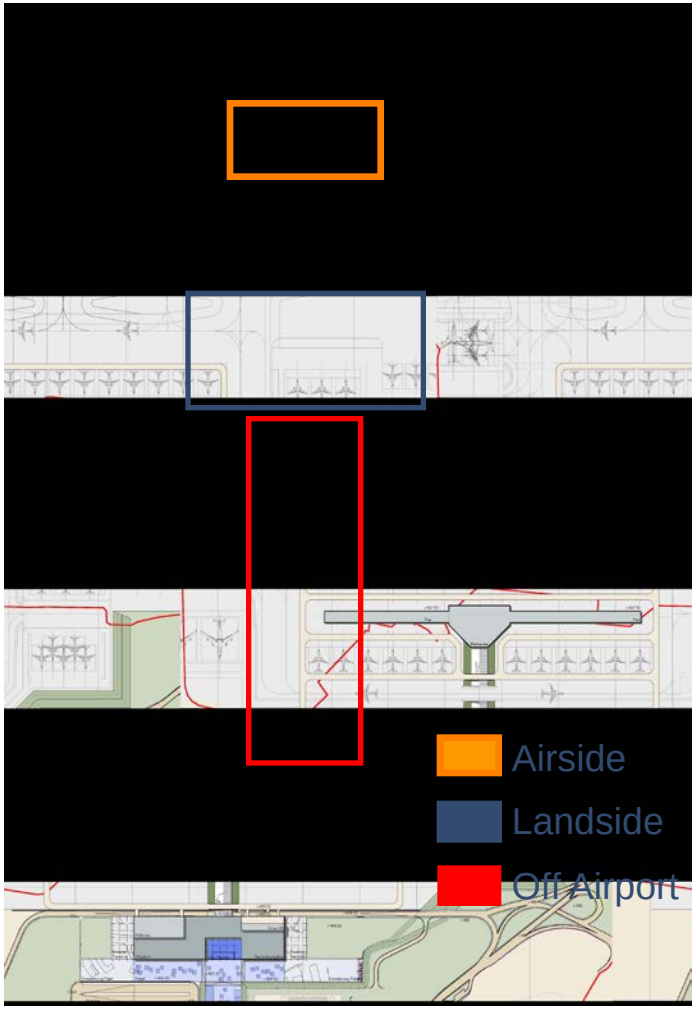


Increase spending time at airport

- on airside (by operational measures: late gate call)
- for PAX / meeters and greeters at landside
- Enhance shopping attractiveness

Successful LCA Terminal Development – The Case of Frankfurt Hahn

Terminal development – 8. Profitability



Three areas of commercial development:

- Airside Retail
- Landside Retail
- Off airport commercial development (e.g. Factory Outlet)

Forced PAX-Flows on Landside

- From Parking to Terminal (through Shopping Boulevard)
- From train station to terminal (through Shopping Boulevard)

C The Case of Frankfurt-Hahn Airport

Michael O´Leary:

„…I wanted to say how pleased and impressed we are at the simplicity, efficiency and effective use of space design.

I have no doubt that this new terminal will set a new benchmark for terminal facilities not just across Europe but indeed worldwide.“

C Backup

C Examples of LCC Airports

Schiphol

Eindhoven

Weeze

Schönefeld