

> **Ready for the future –
Lufthansa Systems
Portfolio**

Capt Jörg Pikolin
Head of Product Management &
Consulting, Airline Solutions,
Lufthansa Systems AG

July 11, 2012



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Our products

Safety

Efficiency

Precision & Quality

Simplification

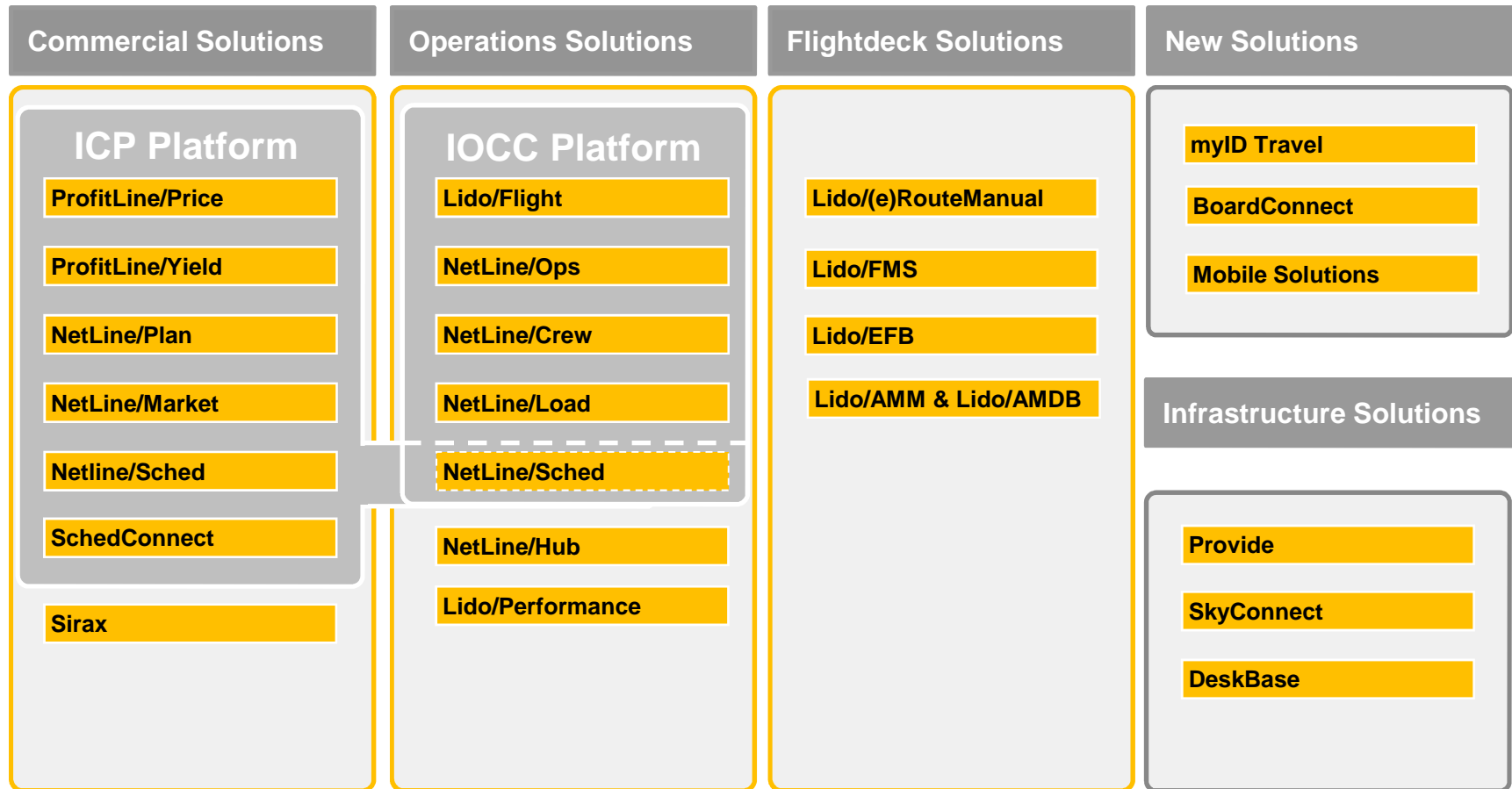
Integration



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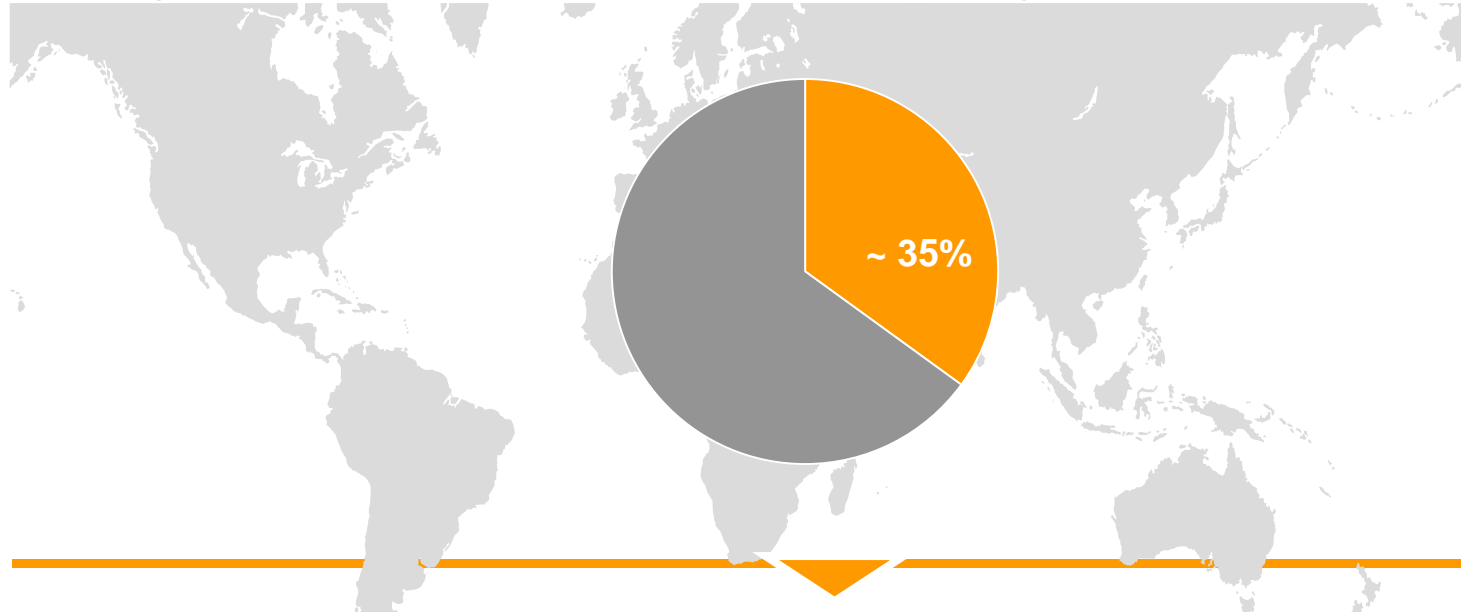
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> Products of the Lufthansa Systems Portfolio



> Lufthansa Systems Market Position

27 Mio. flights in total (2011) / Market shares LSY in % of flights



>300 customers worldwide with:

- nearly 9 Mio. Flights per year / one flight each 3,5 seconds
- around 6.000 Aircraft
- approx. 800 Mio. Passengers
- ca. 100 billion FTKs

Source: ICAO, ATI,
Analysis AF/P



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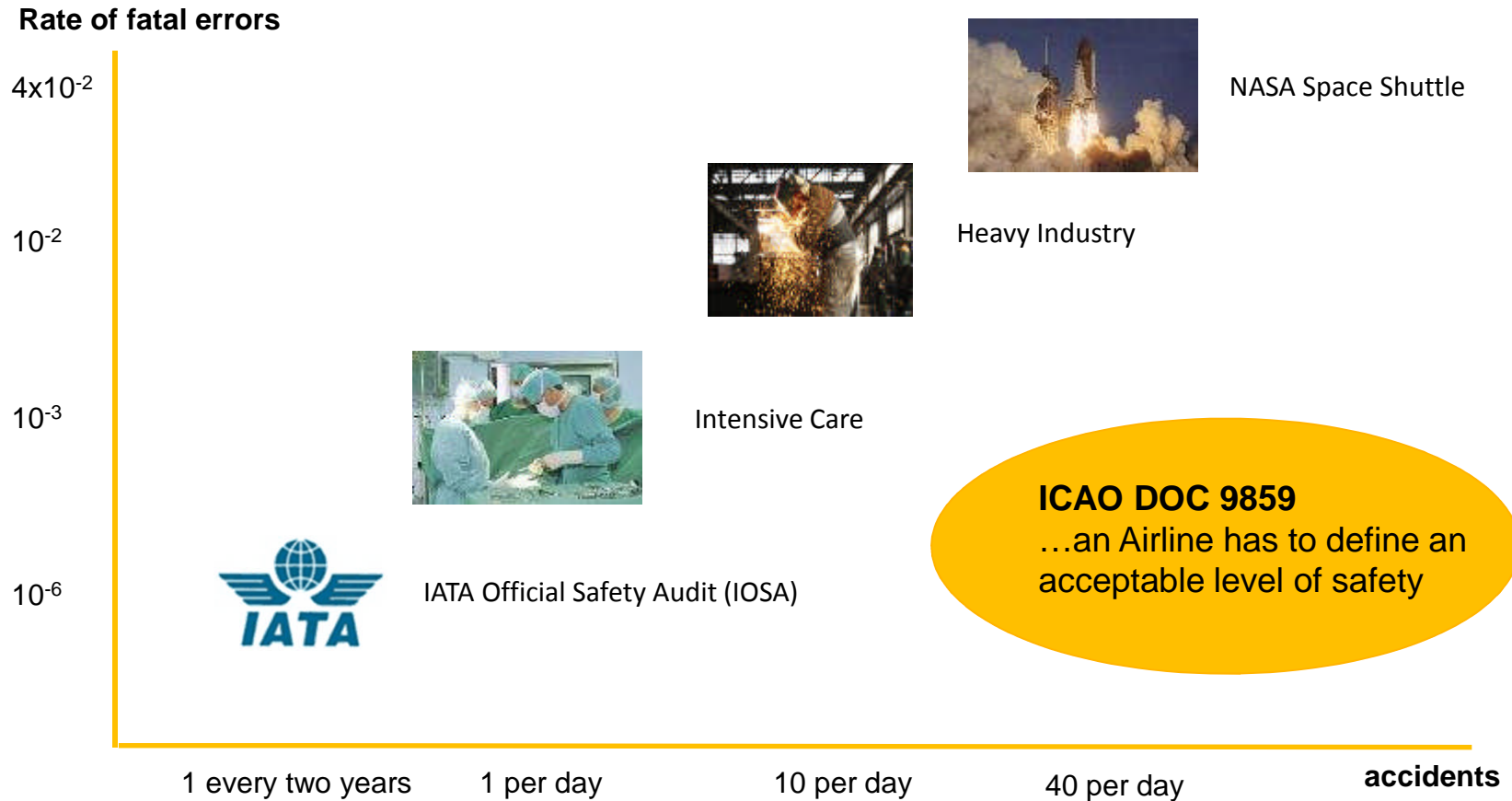


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> The Impact of Safety Levels

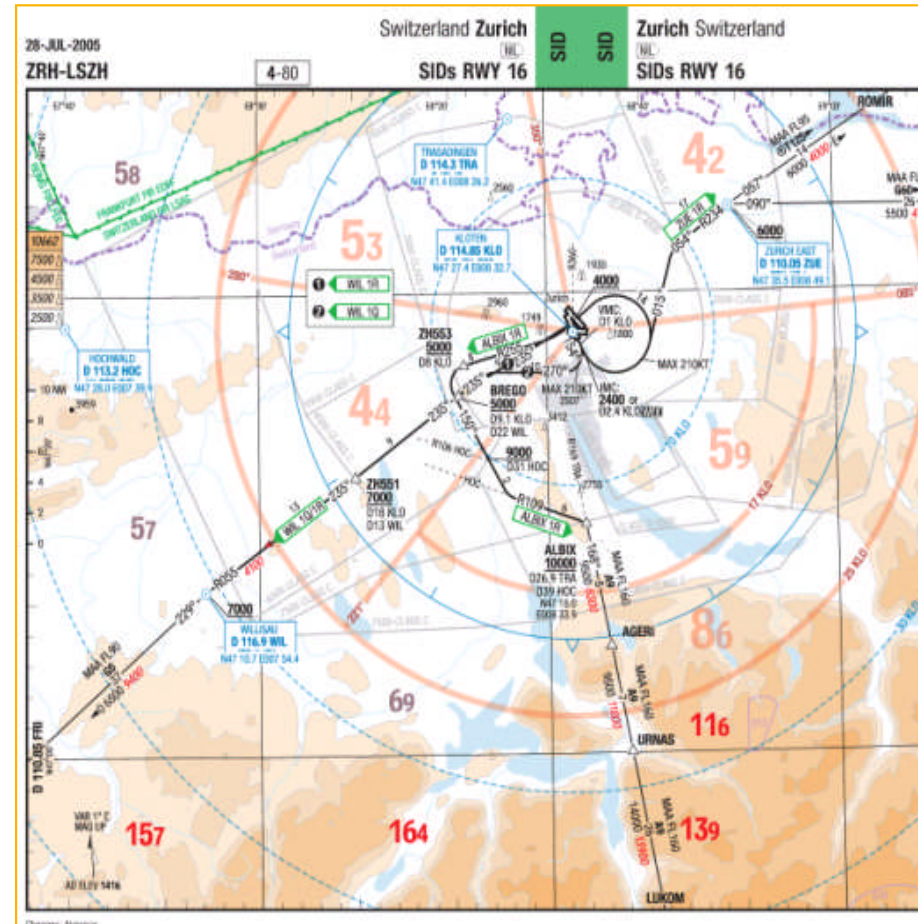
Based on an operation with 1000 flights per day



> Lido/eRouteManual – Key Product Characteristics

Focus on situational awareness and improved flight safety

- Charts are drawn to scale, topography, grids and various minimum altitudes are included
- Charts graphically align important elements like MSA with related information; e.g. terrain
- Charts have standardized format and color coding for faster perception of relevant navigational details following recommendations e.g. by ICAO, Flight Safety Foundation



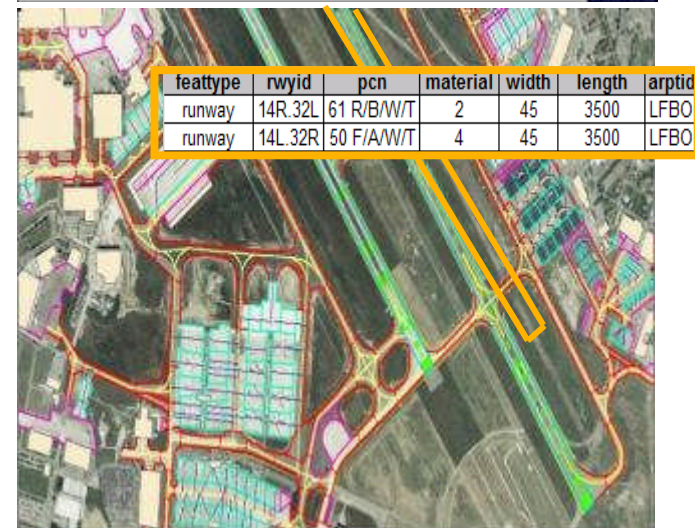
> Lido/AMM – Key Product Characteristics

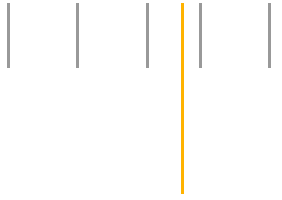
Lido/AMM (Airport Moving Map Application)

- Aircraft Ownship Position overlaid onto geo-referenced vector-depiction of airport layout (AMDB)
- Serves to improve situational awareness and reduction of pilot workload during taxiing
- Reduction of runway incursion risk and taxi accidents
- Improves safety

Lido/AMDB (Airport Mapping Database)

- Airport Layout from high-res satellite imagery and/or national AIP
- Functional attributes from aeronautical database
- Used for A380, B777, B787, B747-8 and various avionics applications
- Applicable standards: RTCA Do-272A, Do-291, Do-200A, ARINC 816





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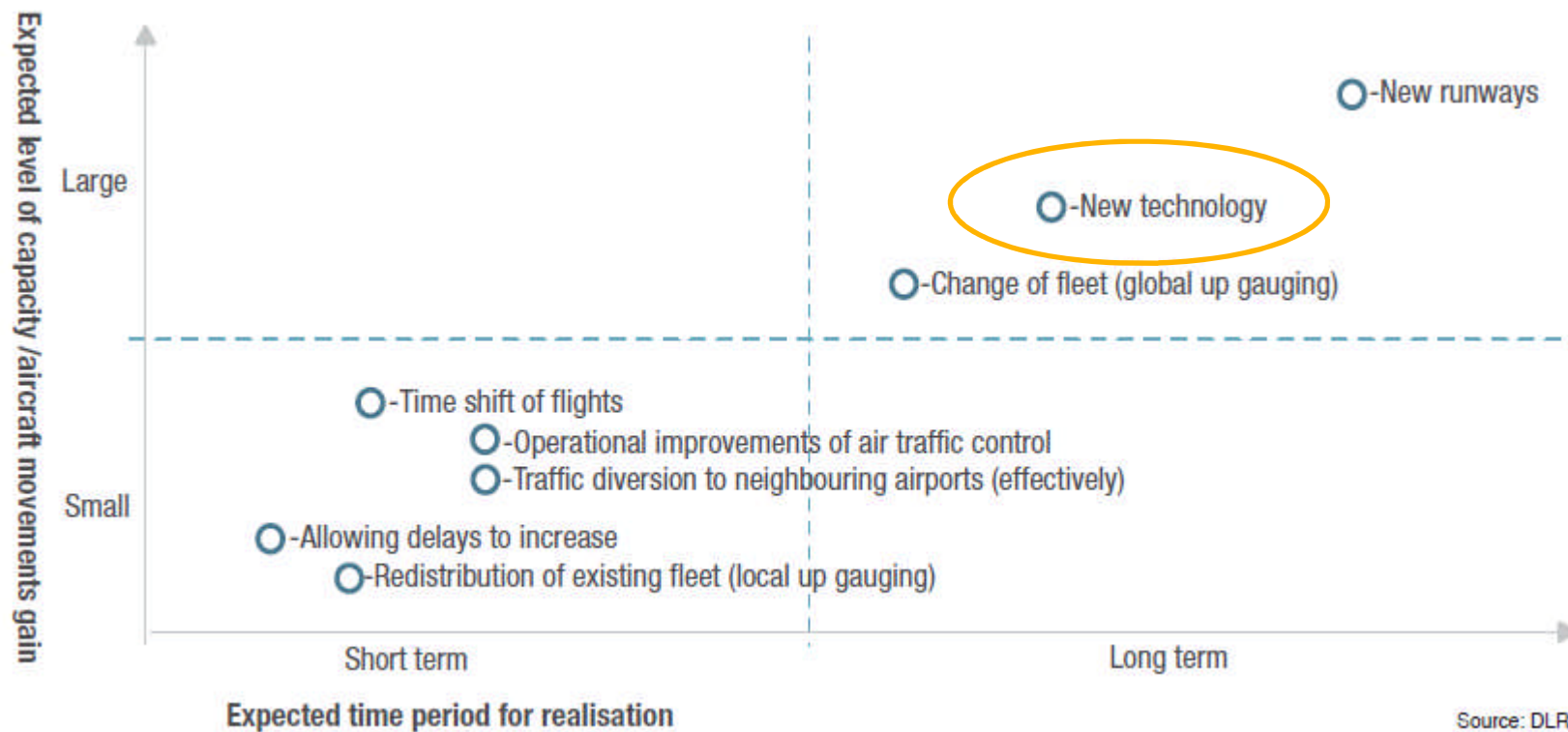
11. February 2011



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> Airports are congested and reach their capacity limit

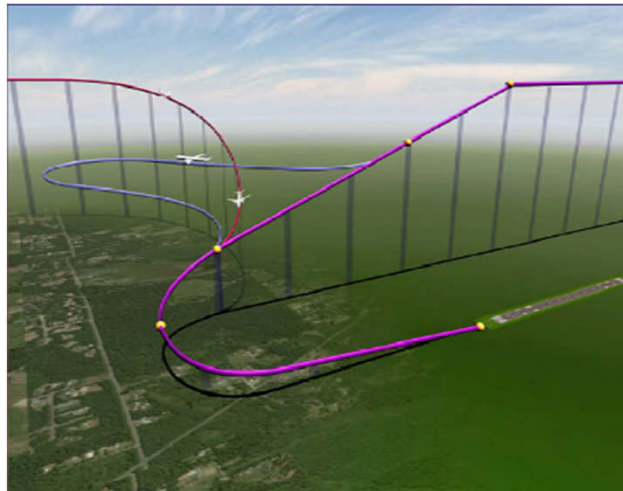


> SESAR and new technologies

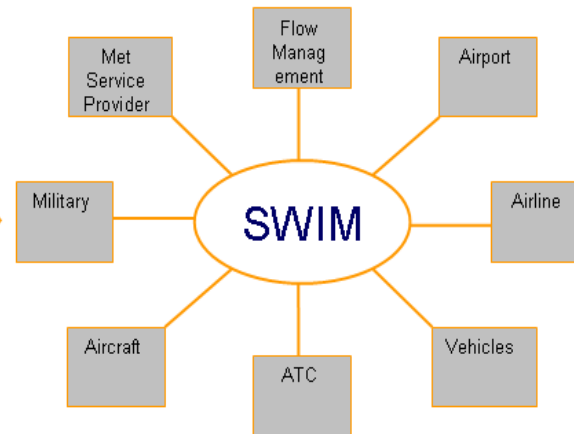
4D Business Trajectory

SWIM

- **Flight Planning shall be able to:**
- Generate 4D trajectories incl. cont climb/desc techniques
- Build complete 4D flight profiles optimized for multi criteria
- Consider and delivery of of electronic information (xWeather, xNotam, xAIM, xRAD, ...)



Single communication source



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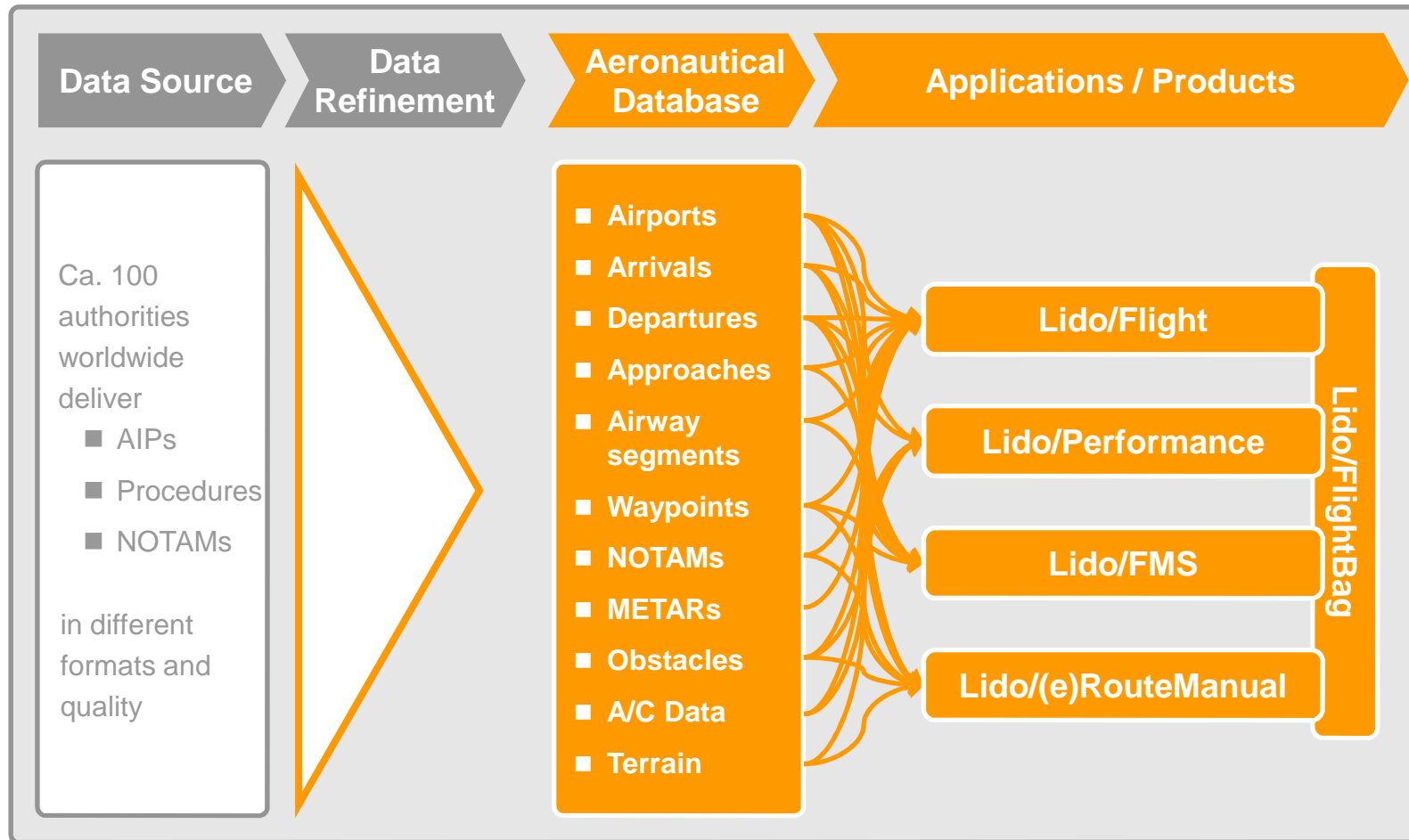
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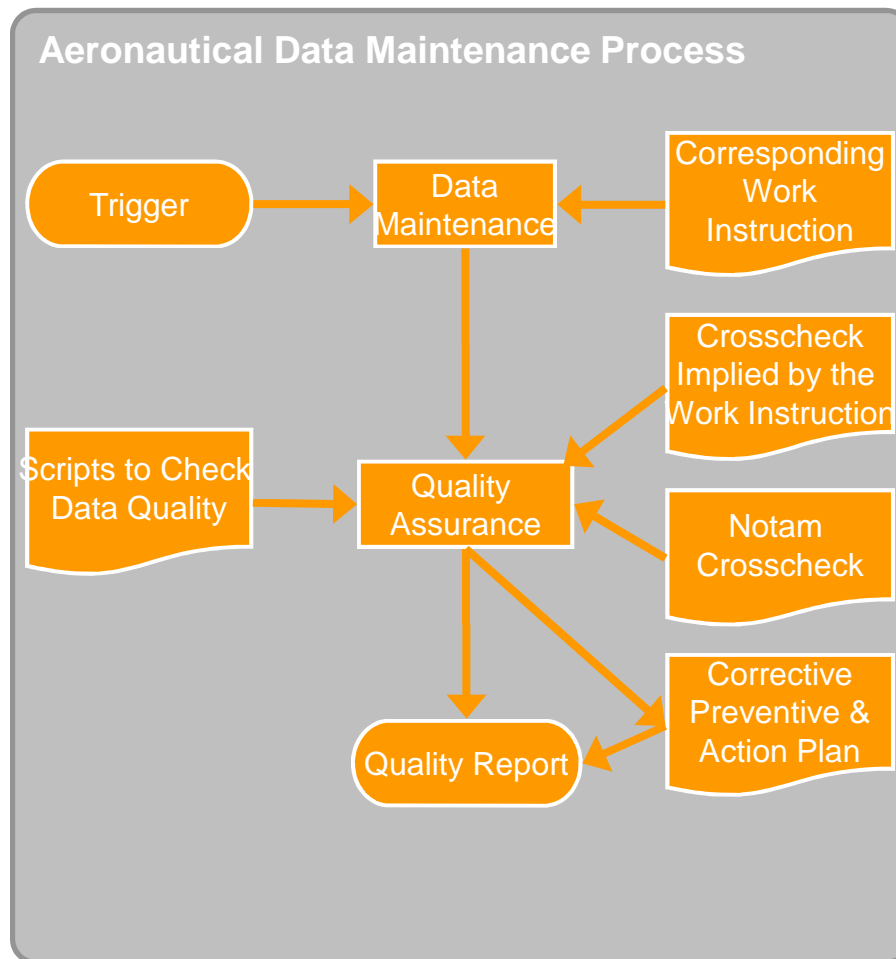
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> Applications are directly linked and dependent on aeronautical data ...



> ... hence Quality of Aeronautical Data is paramount



Features

- All necessary elements for dispatching a flight are included & integrated.
- Continuous staff training and staff qualification monitoring.
- Corrective Prevention and Action Plan / CPAP.
- Monthly quality reports
- Monthly bulletin.
- Regular quality assurance action plan from audits.
- Internal Monthly Report / KPI.



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- > Nowadays every fourth flight is delayed – Over 25 percent of the departure delay is attributable to ground handling

Overview and context

- 2010 modest traffic growth, after unprecedented drop in 2009
 - 9.5 million, c.f. 9.4 million (+ 0.8%)
- 24.2% of arrivals > 15 mins late in 2010 (17.9% in 2009)
 - worst on record (since 2001); average delay per flight (all) = 14.8 mins
 - now very similar to 2006 traffic (when 22% of arrivals > 15 mins late)
 - still the prevalent KPI, more on which later
- Arrival delay is mainly driven by departure delay
 - 46% reactionary; 54% primary, of which:
 - 56% attributable to "turnaround"* (airline, airport, handling agents)
 - 33% ANS: airport < en-route: significant increase e/r mostly due strikes
 - 11% weather (non-ANS) - increased; bad weather December 2010
 - total ATFM delay mins up 82% (2010 on 2009) mainly due to en-route

* Careful what this means, sometimes "ground" or "at-gate" is better.

AGIFORS Airline Operations Conference
London, United Kingdom, May 16 - 19, 2011

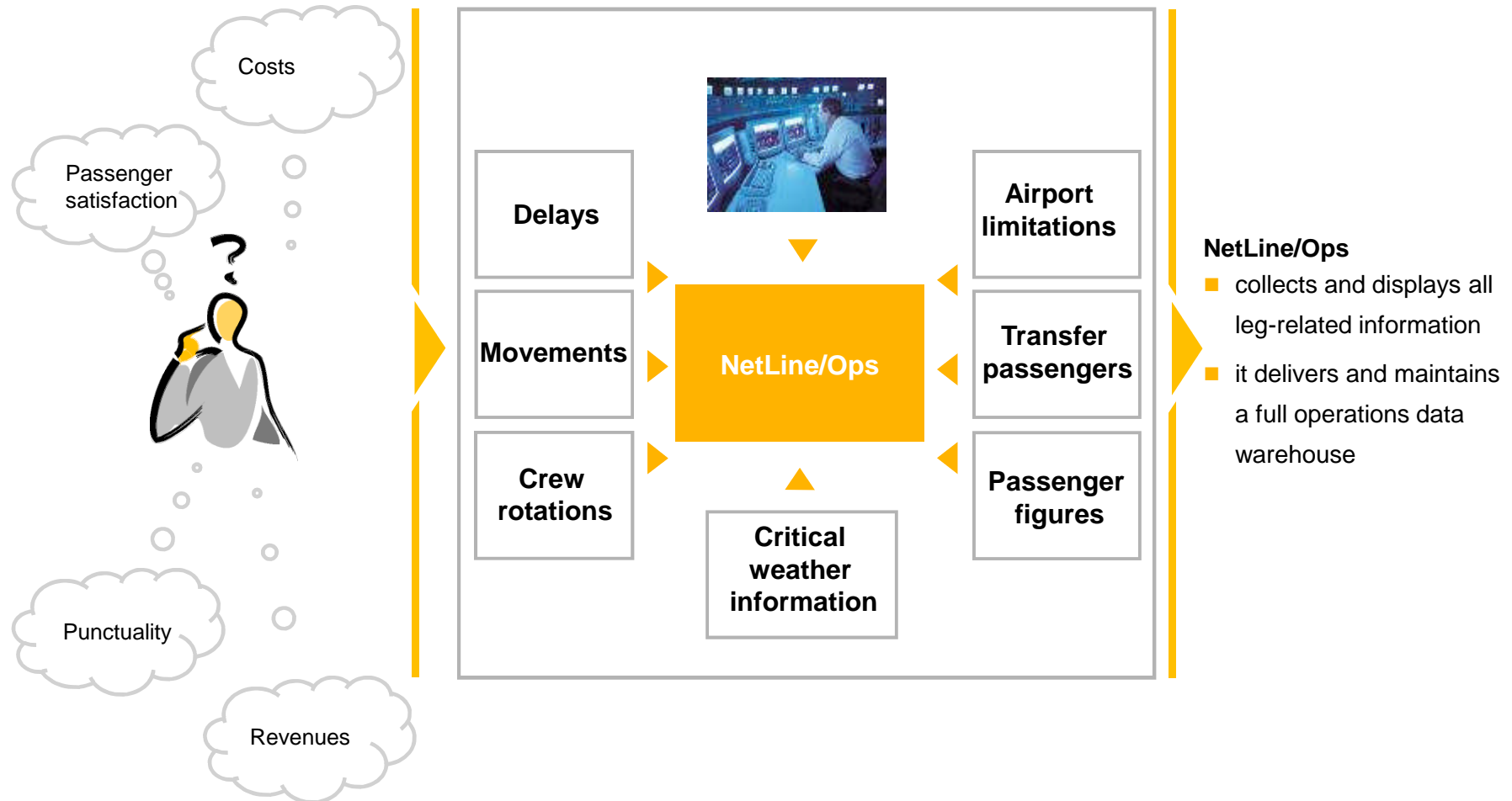
UNIVERSITY OF WESTMINSTER



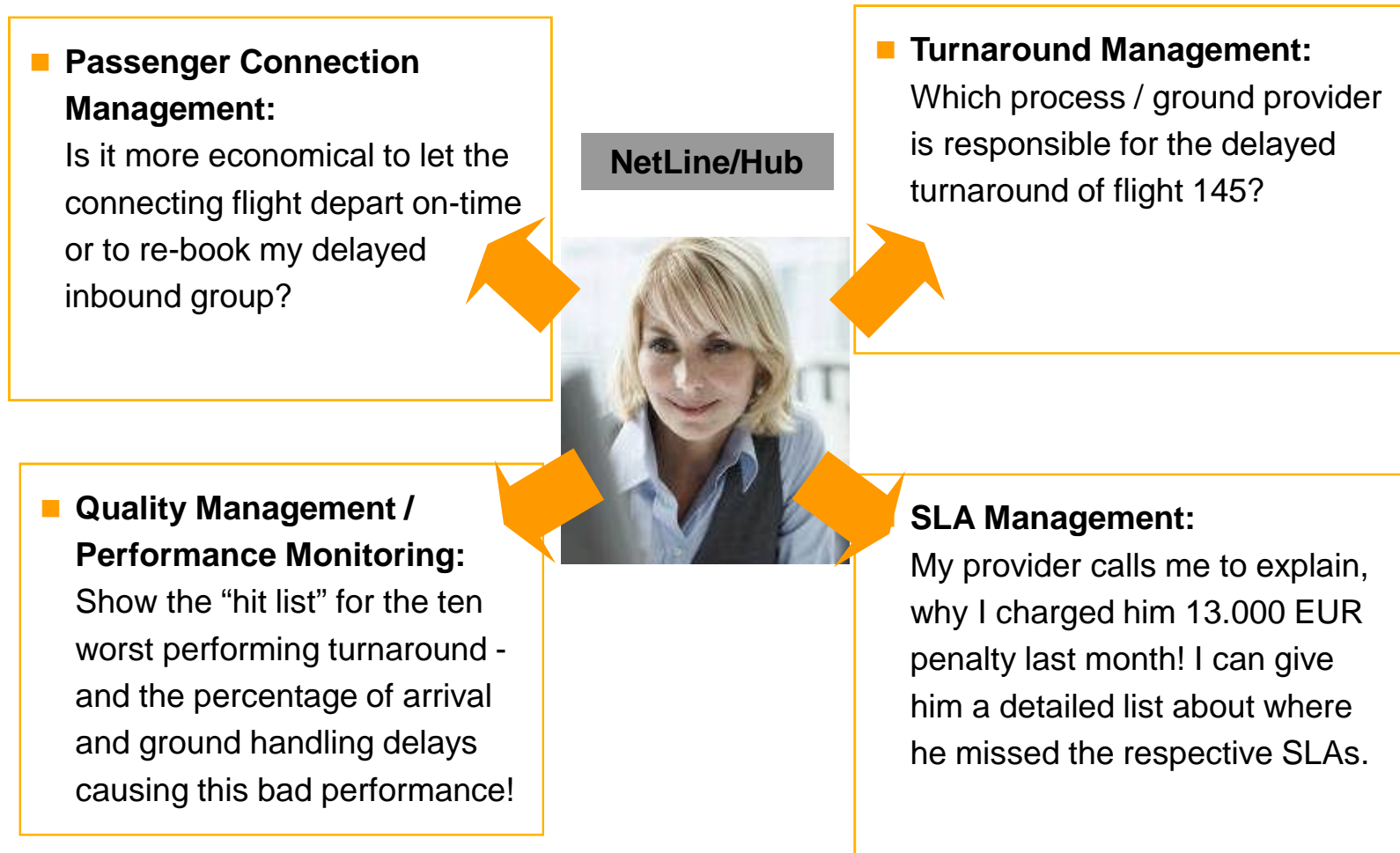
Source: Dr Andrew Cook, Principal Research Fellow Graham Tanner, Research Fellow University of Westminster: Modeling the airline costs of delay propagation – a European perspective. Presentation held at AGIFORS Ops in London, 2011.



> Operations Control – Managing expectations by finding the right solution



> NetLine/Hub: act and don't react



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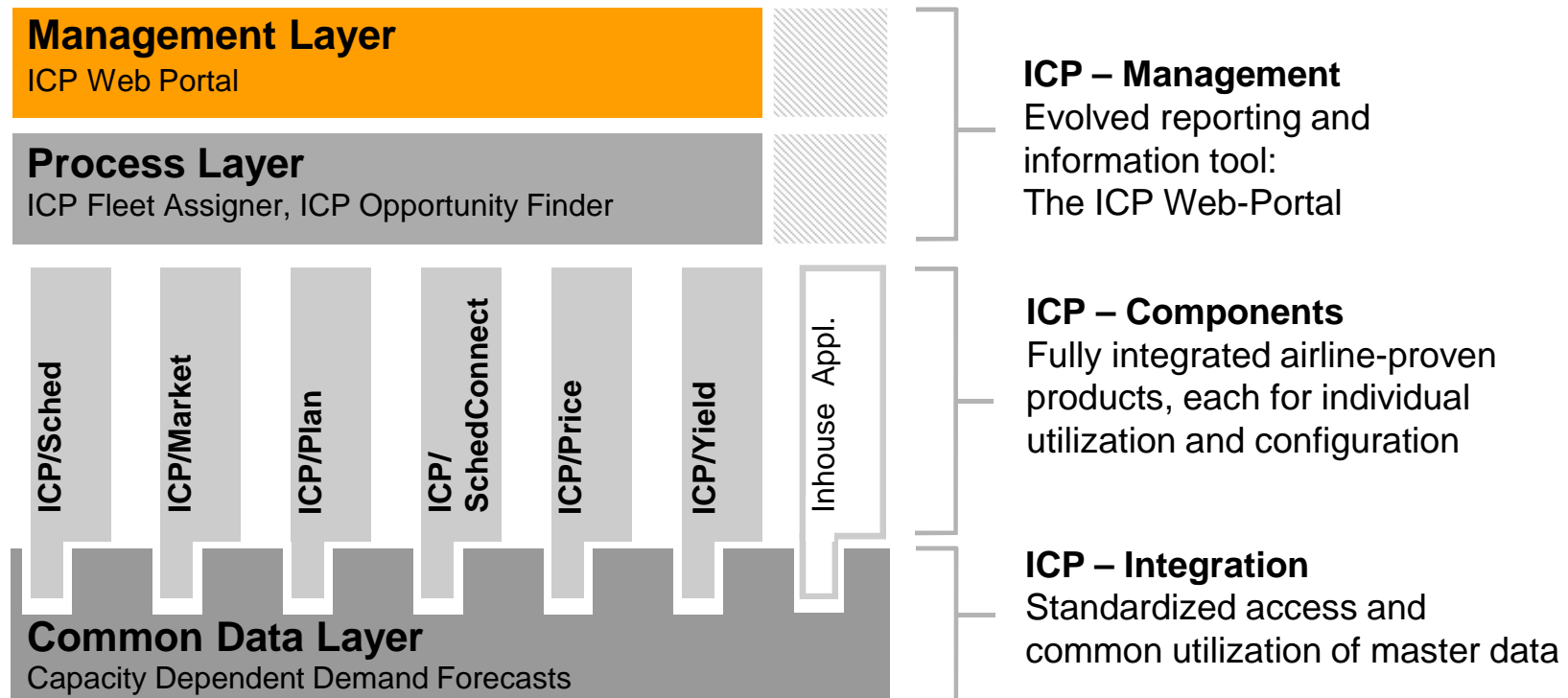
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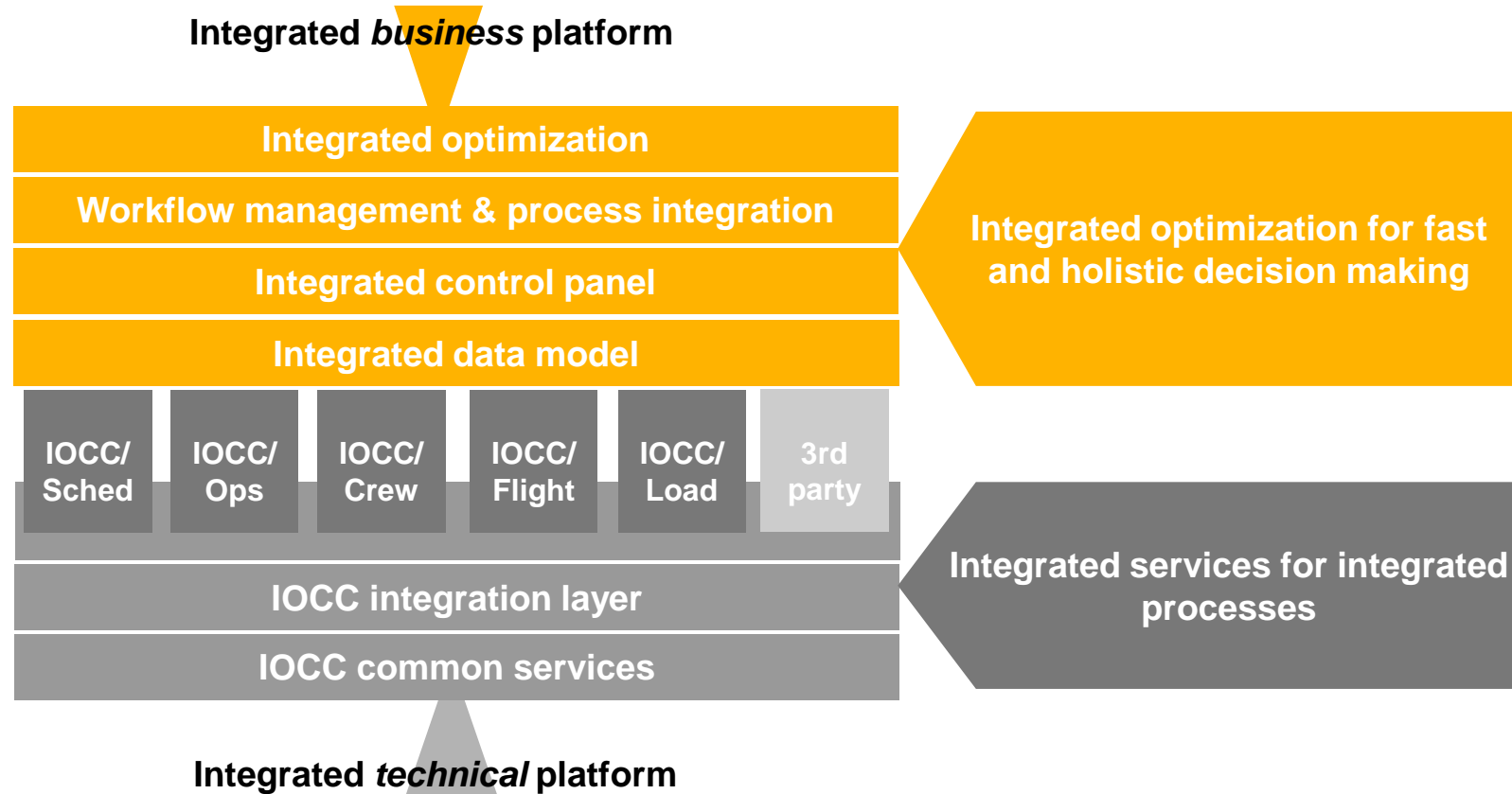
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> The Integrated Commercial Platform (ICP) elevates the integration of its applications to the next highest level



> Lufthansa Systems' IOCC Platform elevates the integration level of its operational core applications to the next higher level



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中国民航局-汉莎系统研讨会



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