ATM R&D 2013

Keynote speech

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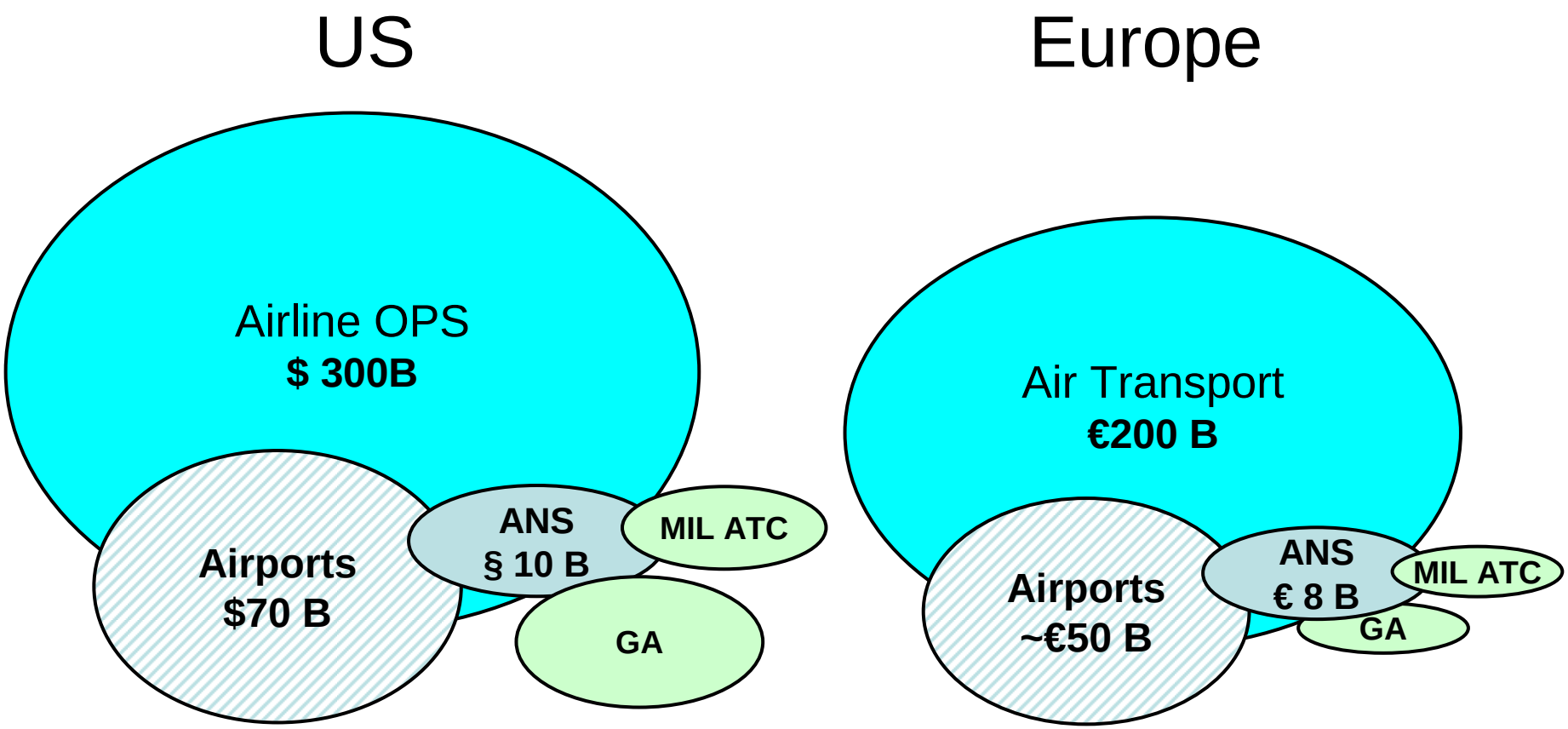
Topics

- Managing ANS Performance
- Where is there room for improvement in ANS performance?
- Some answers from R&D that would be really helpful

Orders of magnitude



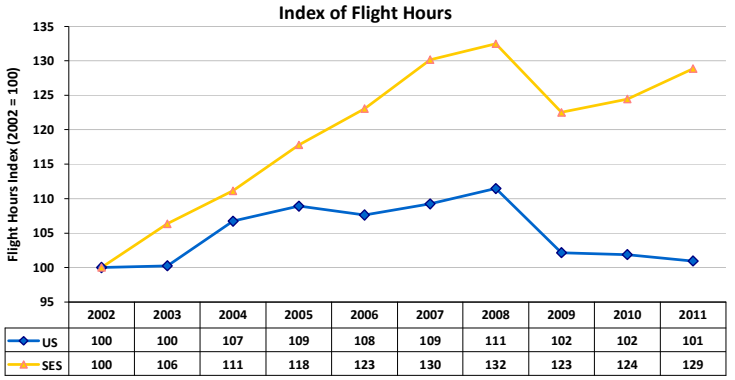
Orders of magnitude for illustrative purposes only

Some figures about ANS in US and Europe

Calendar year 2011	SES area	USA	Difference USA vs. SES area
Geographic area	9.4	10.4	+11%
Flight hours controlled (million)	12.7	23.4	+84%
Controlled flights (IFR) (million)	9.4	16.0	+70%
Number of ATCOs in OPS	14600	13300	-9%
Number of other staff	29100	22200	-24%
Total staff	43700	35500	-19%
ATM/CNS costs (in MPPS 2011)	6.8	7.9	+16%

What are the high level issues with European ANS?

- Economy is slowing down, highly volatile
  - Air traffic highly volatile as well
- ANS is rigid and expensive (800€/flight)
  - Labour intensive industry (63% of costs)
  - Monopoly situation
  - Service provision & infrastructure fragmentation
  - Social issues
  - Capacity and demand don't match
    - Both spare capacity (>600 sectors) and shortage (~30 sectors)
    - Low productivity, high capacity and delay costs
- Low air transport punctuality
  - Complex airport, users and ATM relationships
- ANS contribution to Environmental sustainability
- Safety issues?



	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
US	100	100	107	109	108	109	111	102	102	101
SES	100	106	111	118	123	130	132	123	124	129

How to drive ANSP performance?

- Control of State ANSP
  - Under Parliament and State authority
- Regulation of independent ANSPs
  - Safety
  - Economic, performance
- Competition
  - For service
  - In service?

Innovation (R&D)

European experience in regulating ANS performance

- Started in 1994: ECAC institutional strategy
  - Focus on performance (outcome), not only means
- Independent Performance Review Commission created in 1998
  - Light-handed regulation. No enforcement, just information.
  - Proved to be rather effective in favourable growth conditions
- SES II adopted in 2009
  - Enforceable regulation, both EU and national/FAB level
  - SES II legislative toolbox includes performance scheme

SES Performance Scheme

Performance targets

- Reference periods (RP1: 2012-2014, RP2: 2015-2019, etc)
- EU-wide targets adopted by EC
- Binding National/FAB Performance Plans adopted by States
  - Including targets and incentives
- Process to ensure consistency between EU and local targets

Ensuring targets are met

- Monitoring of performance
- Corrective actions at national/FAB and EC initiative

Independent Performance Review Body (PRB) assists the EC

EU targets for RP1

Safety

Monitoring only in RP1

Some national targets

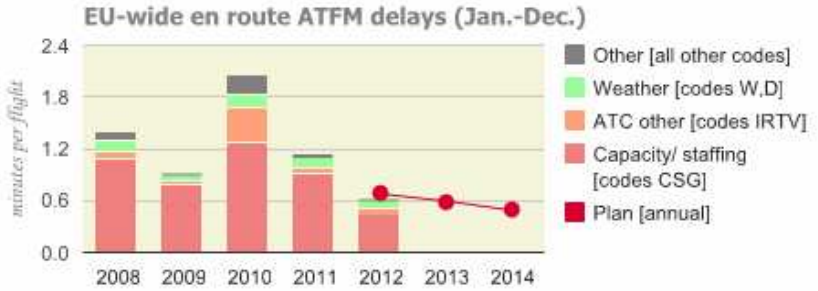
Performance targets from RP2

EU and national levels

CAPACITY

En route ATFM delay KPI (Meta data)

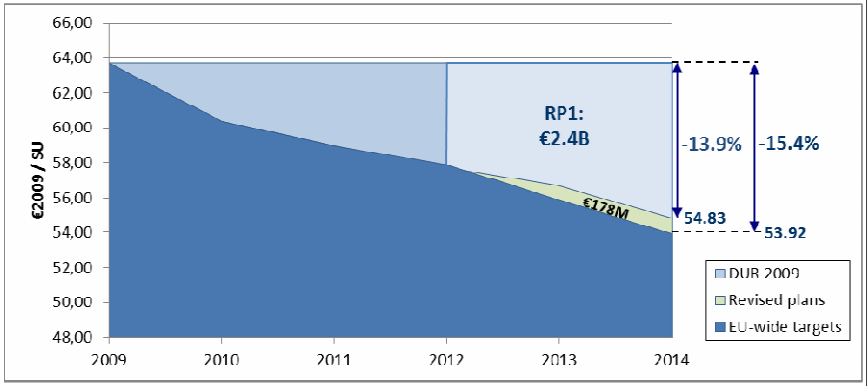
Time	Plan [annual]	Actual [Jan.-Dec.]	[actual vs. plan]
2012	0.70	0.63	-0.07



Environment

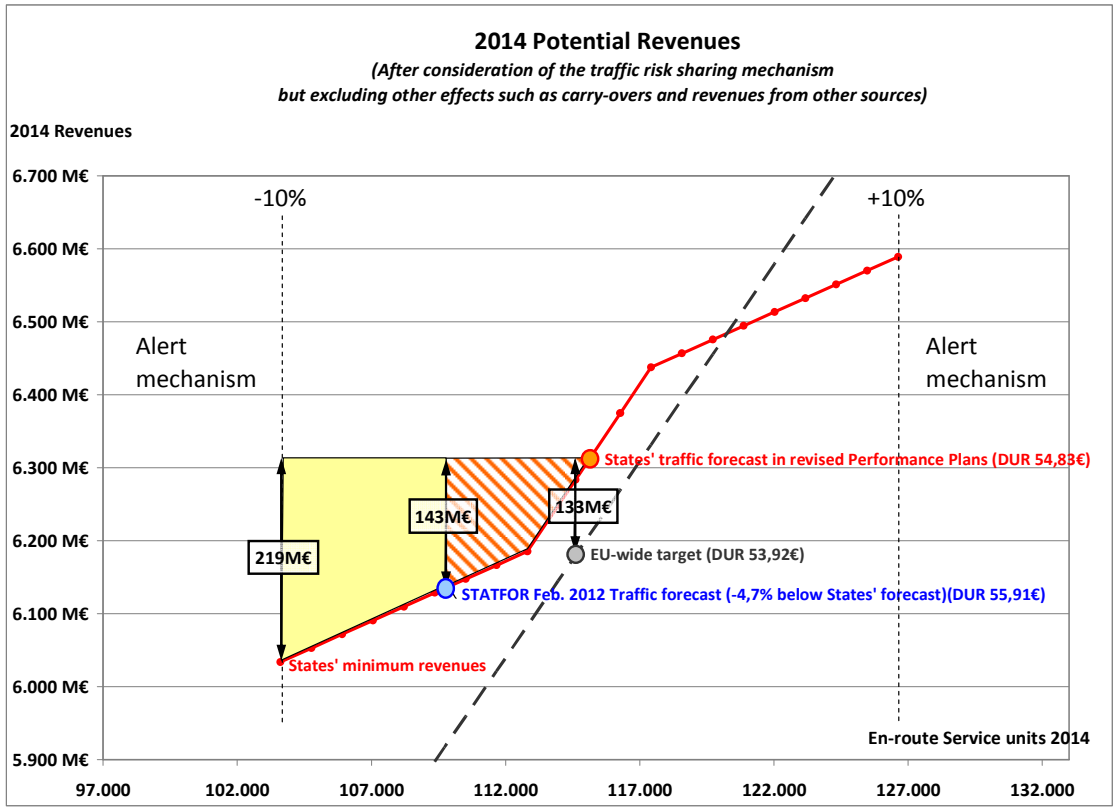
Horizontal en route flight efficiency KPI (Meta data)

Cost-efficiency



Incentives: Risk sharing mechanism

- Cost risk borne by State (revenue cap)
  - Incentive to reduce costs
- Traffic risk shared 30/70 beyond dead band (2%), within alert threshold (10%)
  - Additional revenue when more traffic
  - Incentive to reduce cost when traffic goes down
- RP1 starts with a stress test!

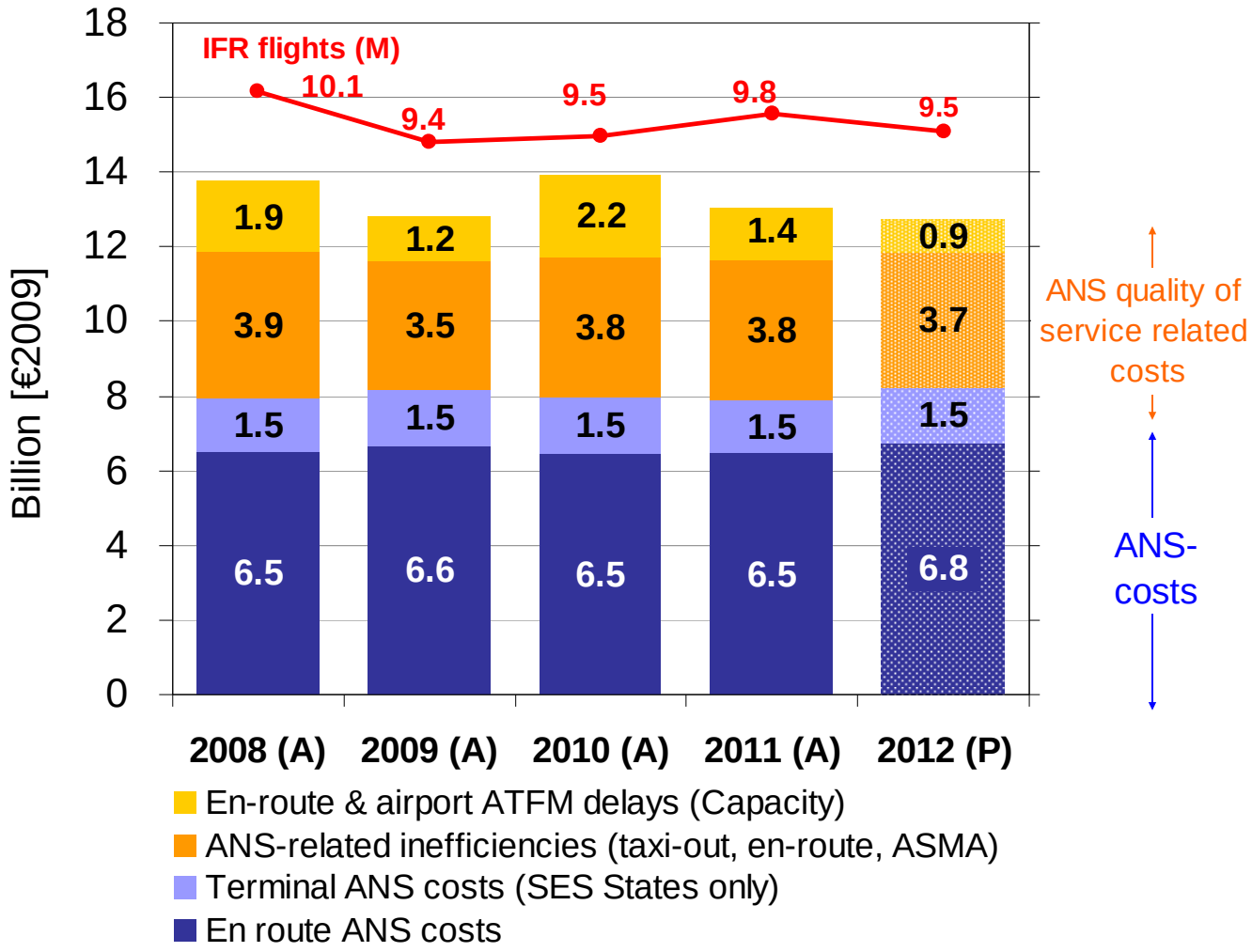


Setting targets for RP2

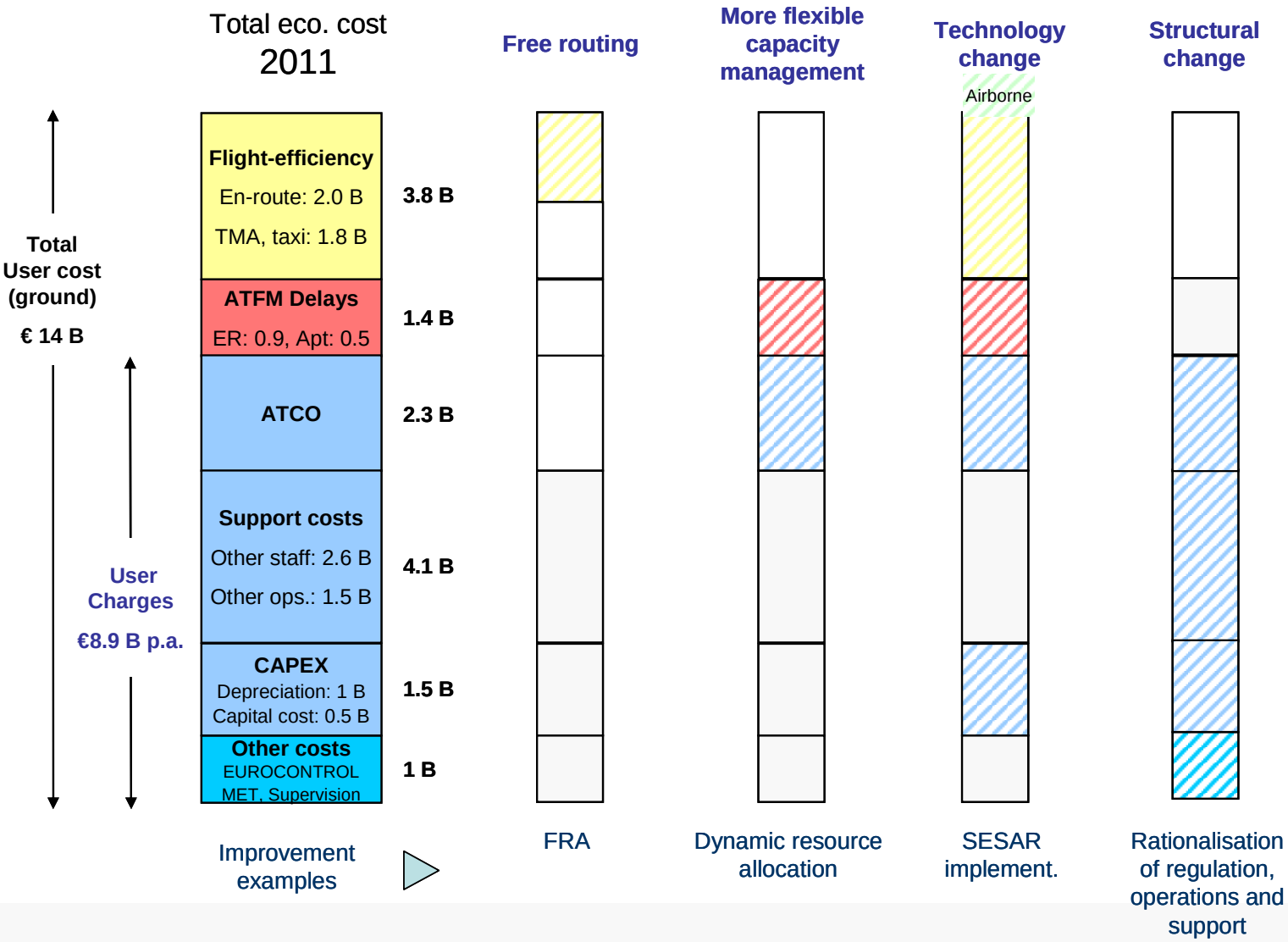
Minimising total economic cost

within prescribed safety standards

Estimated ANS-related economic costs to airspace users (gate-to-gate)

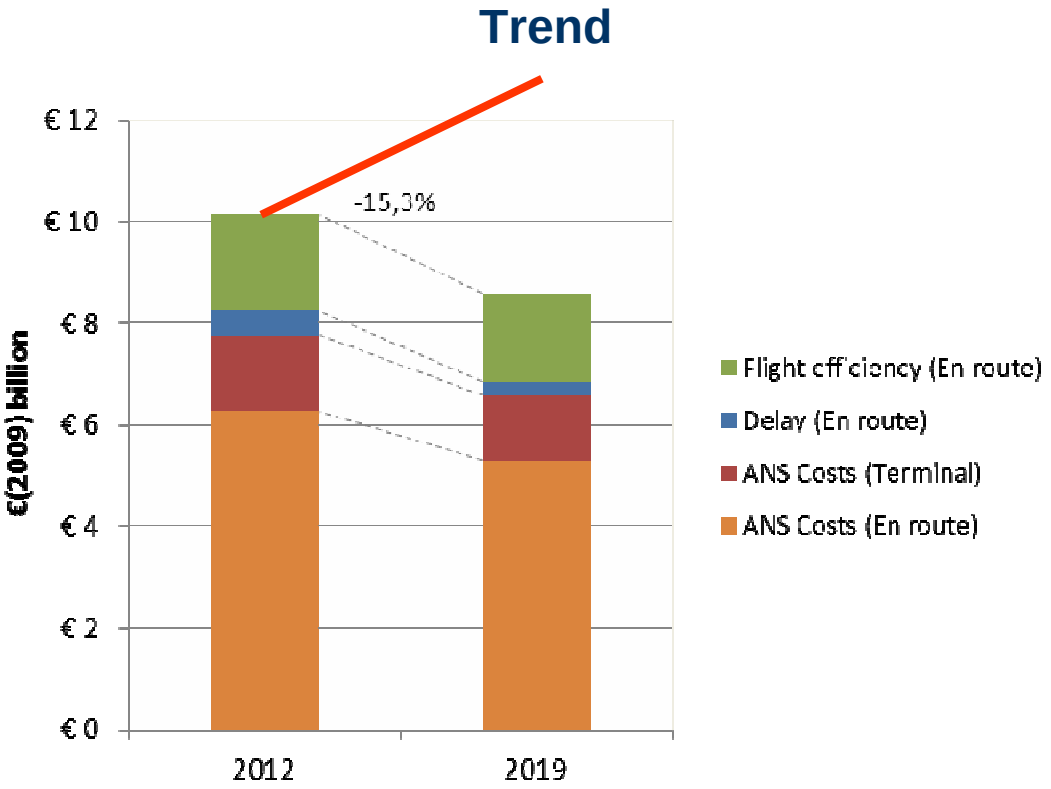


Areas for performance improvement (outside safety)



Target setting for RP2

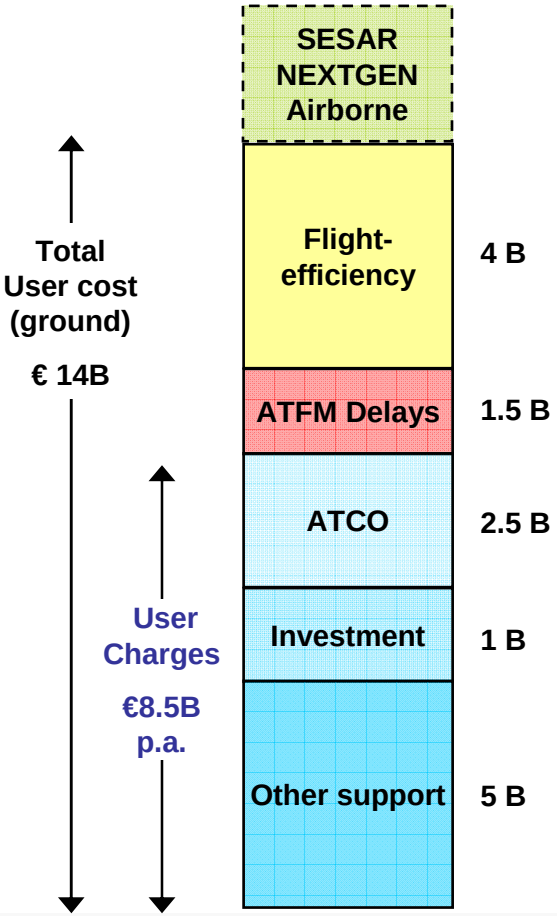
- Safety targets
- All ANS-related costs directly borne by airspace users in Europe
- Balance considering interdependencies (e.g. cost vs. capacity)



Some R&D themes to support performance improvement: Safety

- Measuring safety, risk
- How to define acceptable safety levels?
- Setting safety targets, separation standards, etc
- Relationship between regulation (compliance) and performance
- Improving safety?
  - Redundant separation (on board + ground)?

Some R&D themes to support performance improvement: OPS, Environmental and Economic efficiency

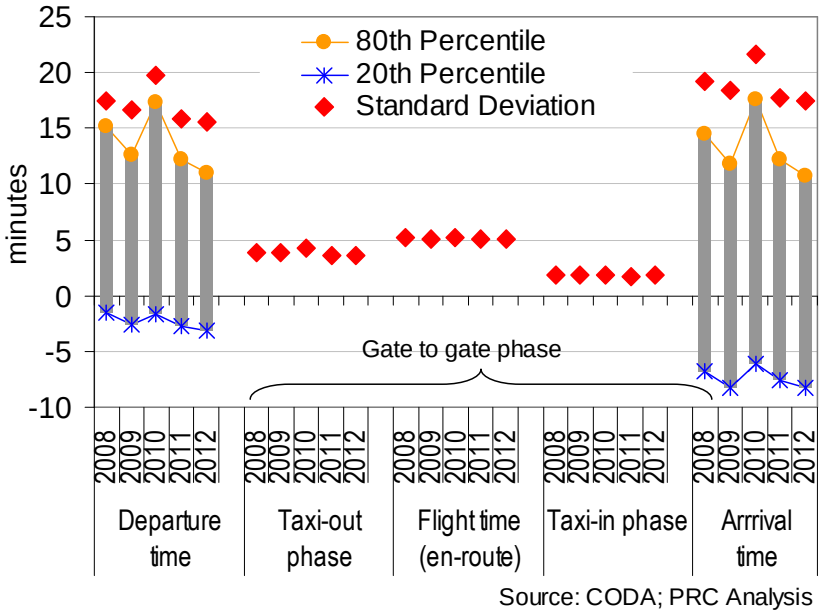


- ANS technology and operational concept shift
  - Step change in ATCO productivity, capacity?
  - Improving support costs?
  - What is the efficient level of investment?
- Structural shift of ANS
  - Industrial organisation (OPS, technical)
    - Economic research
  - Labour vs. capital
  - Flexible capacity
    - Capacity management
    - Human resource management
- External shifts?
  - Impact of new aircraft (e.g. UAS), fuel availability, economic shift to Asia, new airport concepts?

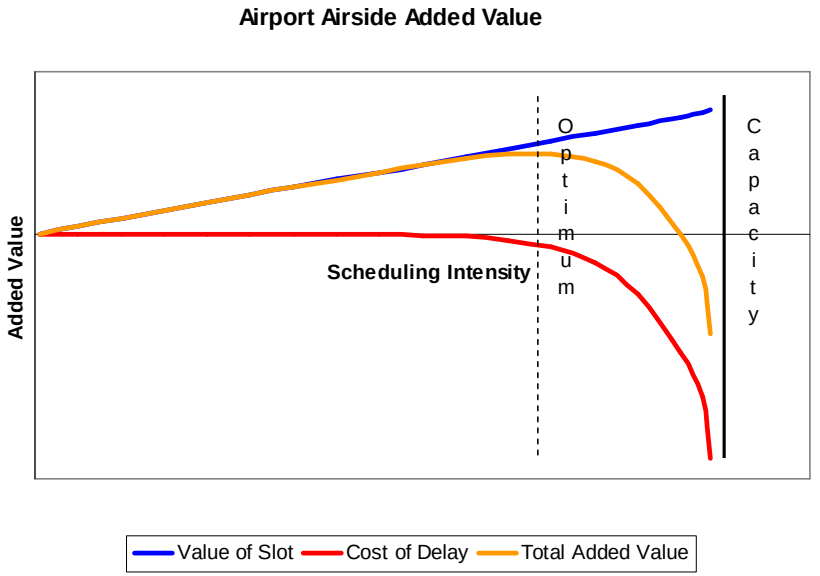
Some answers from R&D that would be really helpful

- How far, how fast can we push ANS performance, within acceptable safety levels?
- What are the key performance enablers: technical, operational, managerial, organisational, regulatory, etc?
- What are interdependencies between ANS performance areas?
- What are interdependencies between ANS, airline and airport operations (e.g. airport scheduling intensity vs. delays managed by ANS)
- Do we have a notion where is optimum performance within the boundary of performance achievable today?
- Any paradigm shift in sight, that would move the boundary of achievable performance?

Relationship of ANS performance with airline and airport OPS performance



Source: CODA; PRC Analysis



Some 80% of arrival time variance originates from the gate departure

Can total economic value be extended beyond ANS?

Conclusions

- Performance is the bottom line
- R&D should be even more performance focused, concentrating on performance gaps
- Need to better understand link with airport, airlines OPS
- How to make sure that R&D results are translated into effective benefits?
- Looking forward to results from the R&D community