FlyingGroup
Business Operator, approved for LPV(PBN)

Walter Dierick, TRI/E, Training Mgr

Exclusively prepared for:
EGNOS Service Provision workshop

FLYINGGROUP

Summary

- Flying Group History, Presentation, Fleet
- Operational benefits GPS/Performance-based for BuzAv
- Ex : Flying Service (Antwerp/Belgium) & Flying Group LUX (Luxemburg)
- Ex : Europe & Regional Airport (Mixed BuzAv & CAT)

DIMPLES' & DO

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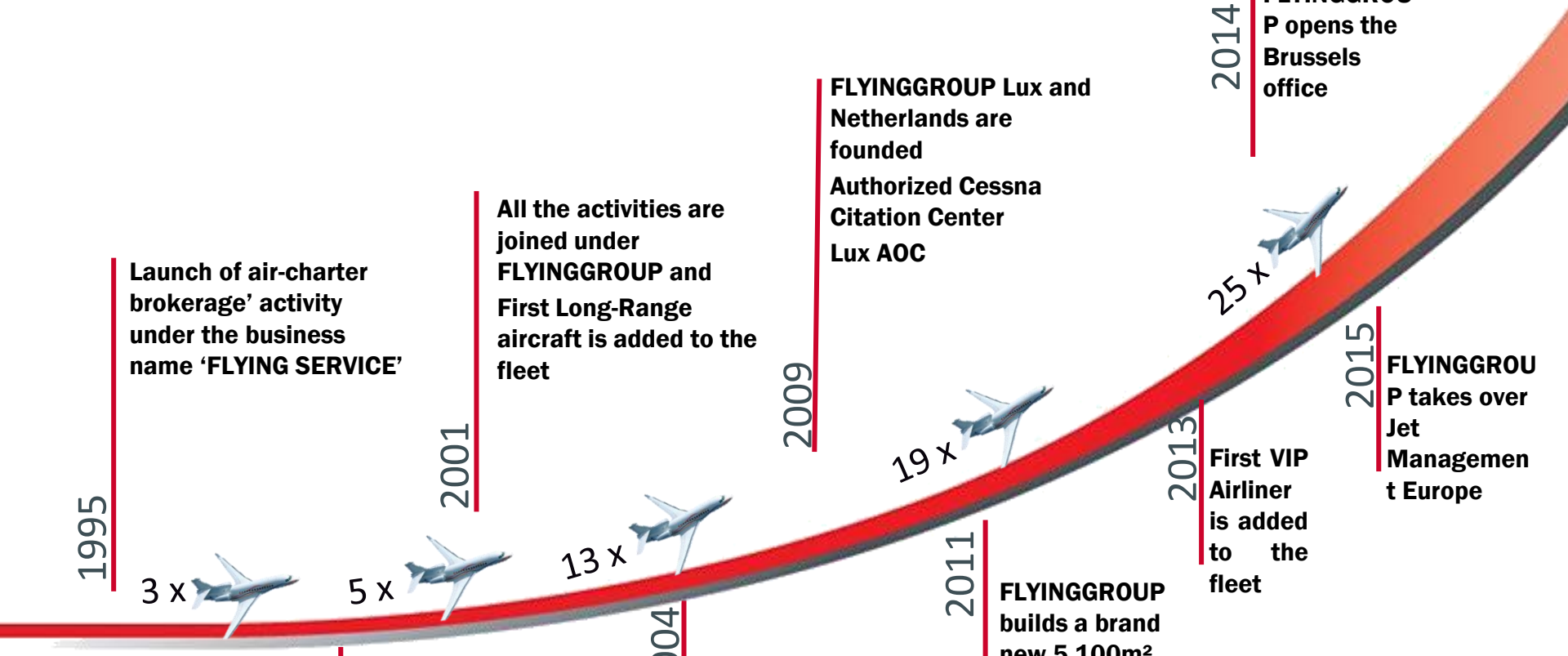
History FLYINGGROUP



1994 — Bernard Van Milders founds FLYING PARTNERS to manage fractional ownership

1995 — Launch of air-charter brokerage' activity under the business name 'FLYING SERVICE'

1997 — Certification as an AOC. Certification as a Recognized Aircraft Maintenance Organization from the Belgian Civil Aviation Authority (JAR-145 BEL 20)

2001 — All the activities are joined under FLYINGGROUP and First Long-Range aircraft is added to the fleet

2004 — FLYINGGROUP France is established

2009 — FLYINGGROUP Lux and Netherlands are founded. Authorized Cessna Citation Center Lux AOC

2011 — FLYINGGROUP builds a brand new 5.100m² hangar in EBAW

2013 — First VIP Airliner is added to the fleet

2014 — FLYINGGROUP opens the Brussels office

2015 — FLYINGGROUP takes over Jet Management Europe

3 x 5 x 13 x 19 x 25 x

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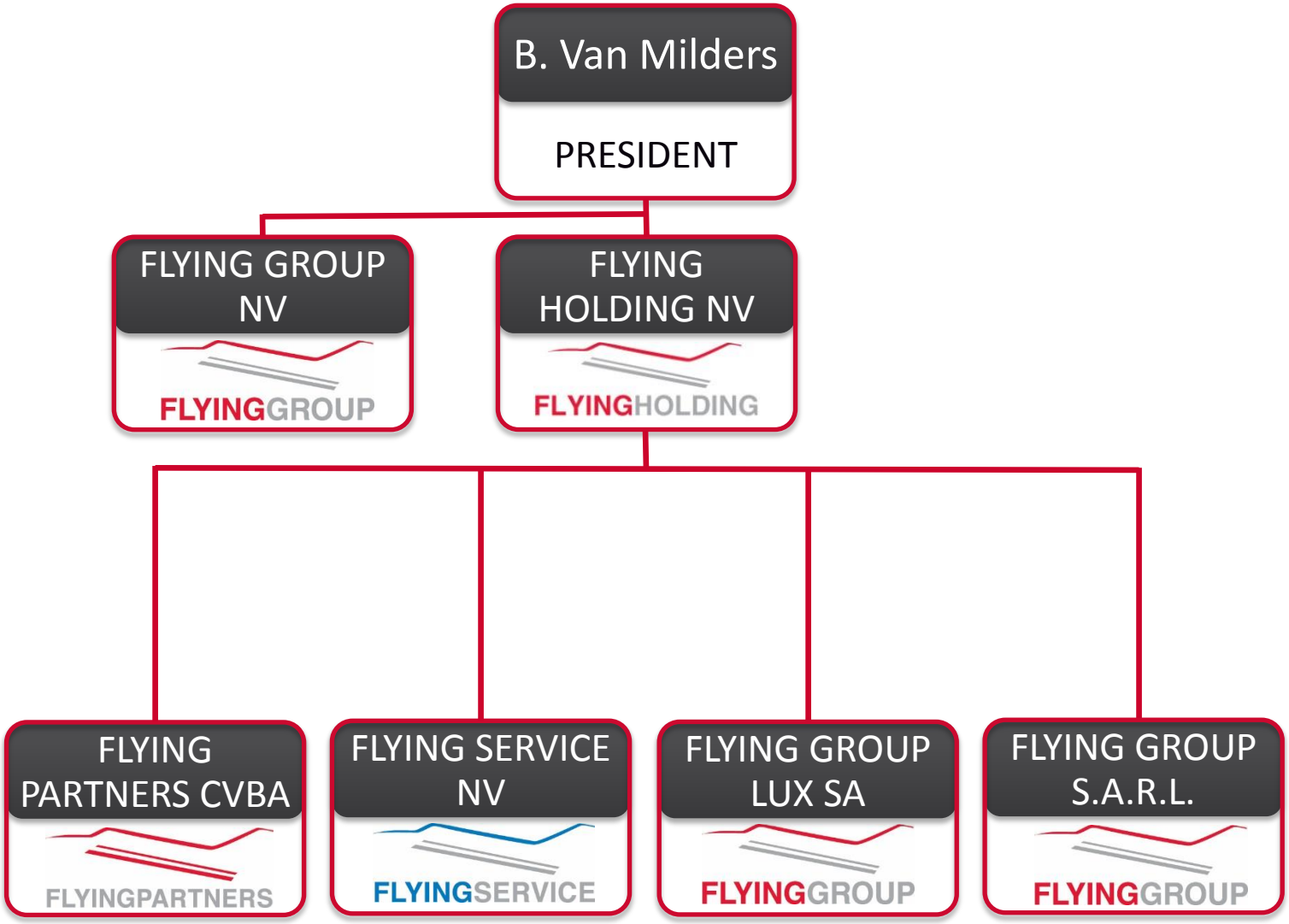
FLYINGGROUP Structure



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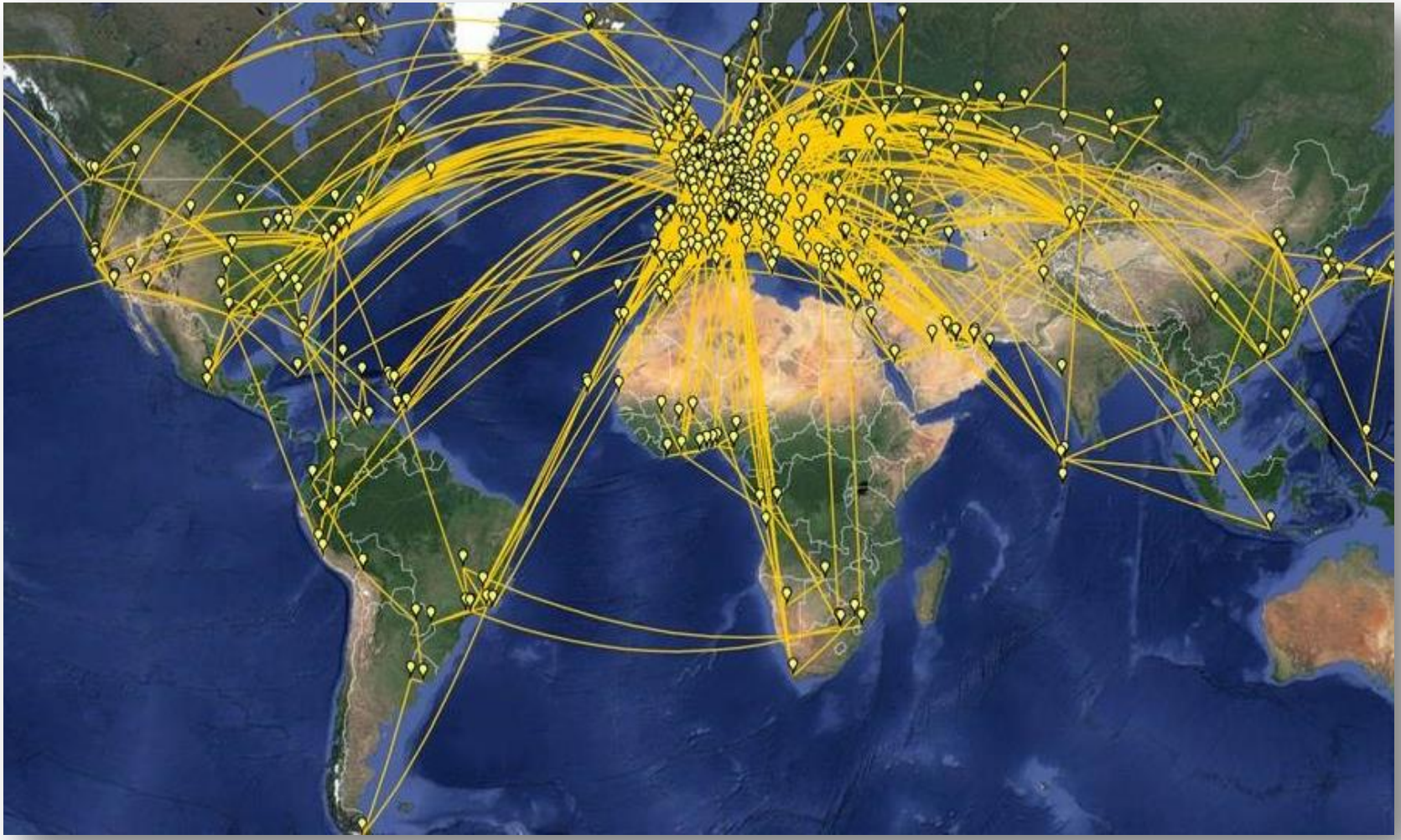
FLYINGGROUP Area of Operation



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Fleet

Type:	Hawker Premier 1
Default Base:	Brussels
Seats:	6
Cruise Speed:	845 km/h
Range:	2650 km
Cabin Dim. (HxWxL):	165 x 169 x 417 cm
Number in Fleet:	1

Type:	Citation Bravo
Default Base:	Antwerp, Paris
Seats:	7 (+1)
Cruise Speed:	751 km/h
Range:	2390 km
Cabin Dim. (HxWxL):	143 x 146 x 480 cm
Number in Fleet:	1

Type:	Citation CJ3
Default Base:	Antwerp
Seats:	7 (+1)
Cruise Speed:	773 km/h
Range:	2760 km
Cabin Dim. (HxWxL):	145 x 147 x 478 cm
Number in Fleet:	2

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Fleet

Type:	Citation XLS+
Default Base:	Antwerp, Luxemburg, Perugia, Cannes
Seats:	8
Cruise Speed:	893 km/h
Range:	7408 km
Cabin Dim. (HxWxL):	189 x 235 x 802 cm
Number in Fleet:	1

Type:	Citation Sovereign
Default Base:	Antwerp, Bucharest
Seats:	9
Cruise Speed:	850 km/h
Range:	4900 km
Cabin Dim. (HxWxL):	174 x 168 x 770 cm
Number in Fleet:	

Type:	Hawker 4000
Default Base:	Antwerp
Seats:	8
Cruise Speed:	870 km/h
Range:	6000 km
Cabin Dim. (HxWxL):	182 x 197 x 762 cm
Number in Fleet:	1

DIMPLES' & DO

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Fleet

Type:	Flacon 2000LX
Default Base:	Antwerp
Seats:	10
Cruise Speed:	893 km/h
Range:	7408 km
Cabin Dim. (HxWxL):	189 x 235 x 802 cm
Number in Fleet:	1

Type:	Falcon 900C
Default Base:	Amsterdam, Cannes
Seats:	14
Cruise Speed:	850 km/h
Range:	7600 km
Cabin Dim. (HxWxL):	189 x 235 x 1012 cm
Number in Fleet:	1

Type:	Falcon 900DX
Default Base:	Antwerp
Seats:	14
Cruise Speed:	850 km/h
Range:	760 km
Cabin Dim. (HxWxL):	189 x 235 x 1012 cm
Number in Fleet:	1

DIMPLES' & DO

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Fleet

Type:	Flacon 900EXy
Default Base:	Europe
Seats:	14
Cruise Speed:	850 km/h
Range:	8200 km
Cabin Dim. (HxWxL):	189 x 235 x 1012 cm
Number in Fleet:	2

Type:	Falcon 7X
Default Base:	Antwerp, Amsterdam, Athens
Seats:	14/16
Cruise Speed:	905 km/h
Range:	11027 km
Cabin Dim. (HxWxL):	189 x 235 x 1192cm
Number in Fleet:	5

Number in Fleet:

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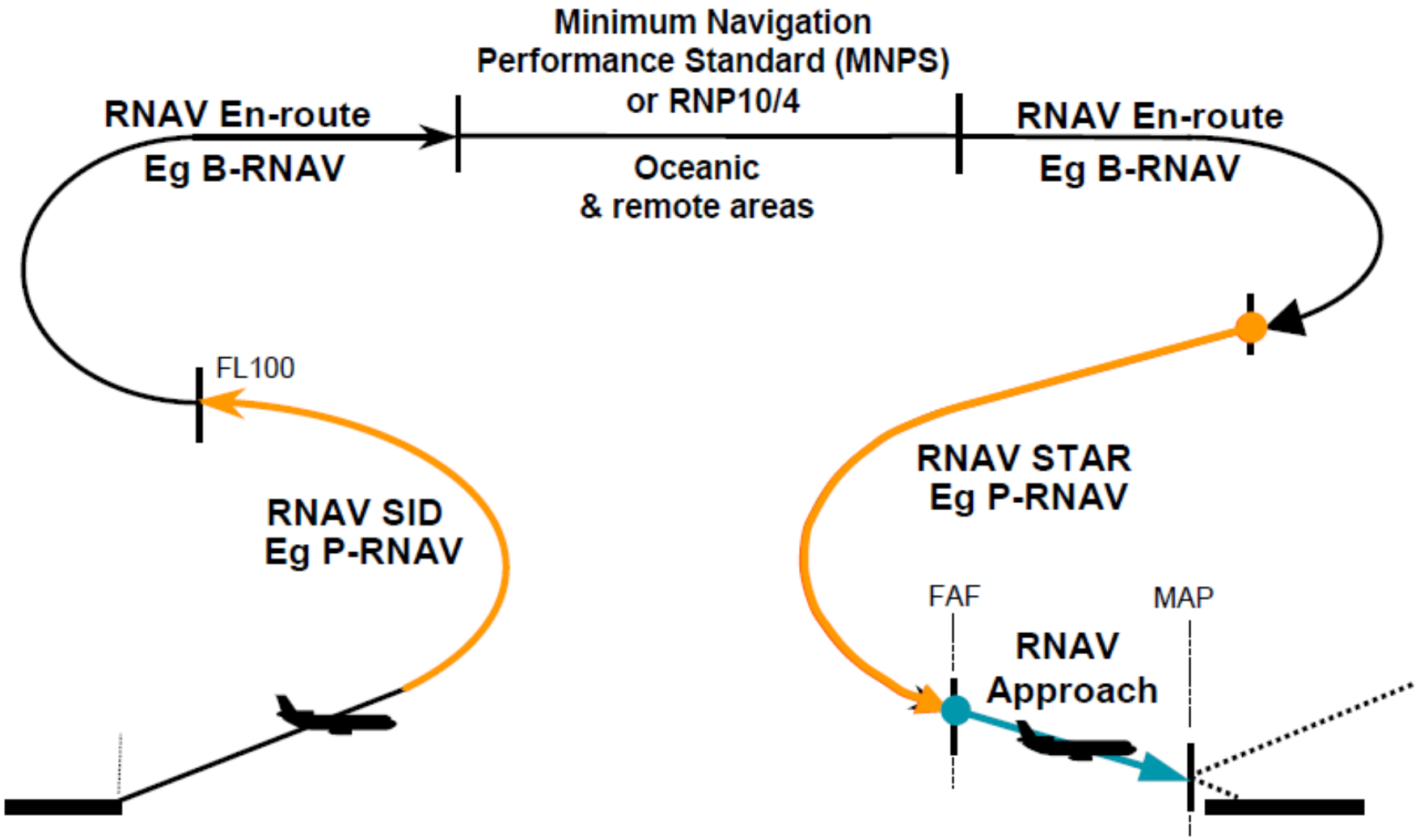
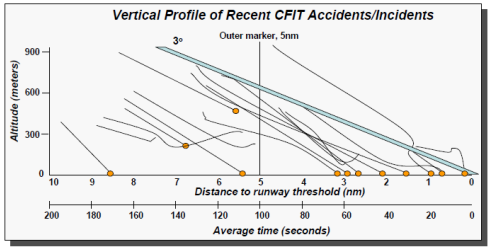
RNAV / BRNAV / PBN



Ops Benefits / SAFETY

* CFIT Reduction : Additional safety by barometric or GPS/GNSS assistance

- Traditional NPAs can be hazardous in IMC
  - Account for 60% of CFIT accidents
  - 47% of accidents during step-down approaches
  - Most common cause is a descent below MDA



* Avoid NPA with lower precision & higher minima
  -> Self contained GPS system with higher precision & lower minima

* Avoid ‘Circling’
  -> If no (multiple) ILS/VOR procedures (Regional airports)

* Avoid barometric & temperature fluctuations & errors

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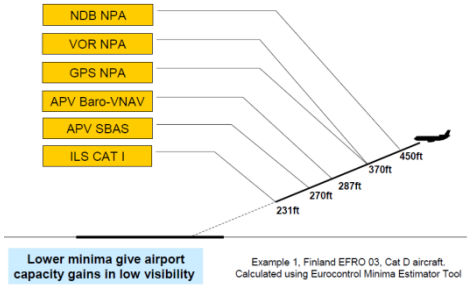
Ops Benefits / COST & EFFICIENCY

- “On board technology” in modern BuzAv aircraft
  - •By far most developped & advanced
- ‘FREE’ for any EGNOS End User
- Constant Descent Flight Angle (CDFA) to Minimums for landing …
  - •Lowers Carbon Emissions & Fuel savings
  - •Noise benefit
- Availability Legacy ground- based navigation aids
  - •BuzAv avoid ‘VFR-limited’ on Regional/remote airports
  - •Increased BuzAv Capability & Flexibility on Regional/remote airports
- More efficient instrument procedures
  - •Continuous Descent Approach
  - •Lower Approach minima achievable



- Avoid yearly Maintenance cost on legacy ground- based navigation aids (ILS 50.000€) …
  - •Rationalisation & Decommissioning conventional navigation aid infrastructure

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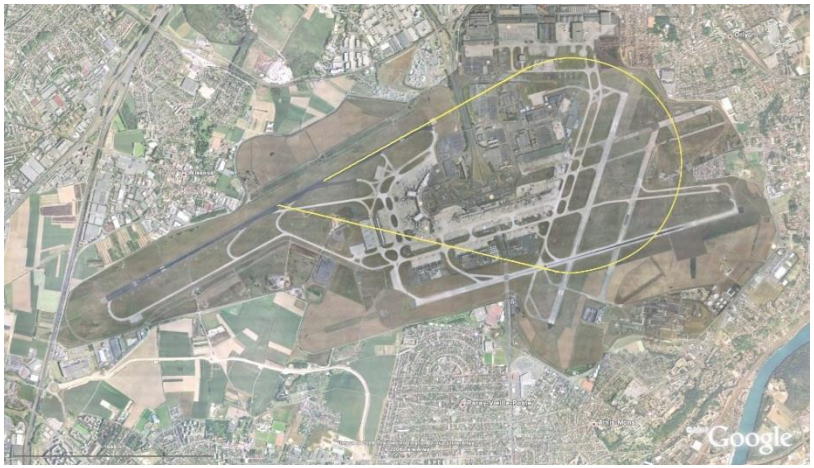
Ops Benefits / HUMAN Factor

- Pilots
  - •Familiar ILS-like skills
  - •CDFA
  - •Reduces pilot workload
  - •Training & Checking Rqrd (NAA Ops Approval)

- ATC
  - •More accurate Fight path adherence, including altitude, interception and turns
  - •Reduces ATC workload

Ops Benefits / Future

- Primary navigation system
  - •Improves RNAV, Low height routes, more efficient airspace & instrument procedures
  - •Improves operations in areas & airports with poor navigation infrastructure
  - •Eliminates the operational requirement to ensure GPS availability using RAIM
- Potential future use with HUD/EVS
- Future potential for even lower Minima
- SBAS can support RNP AR operations & Curved approaches
  - •BuzAv … ??
  - •CAT III-style Ops Approvals



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PBN Ops Approvals & Process

Operational Approvals

•BRNAV	Early NAA Ops Aproval
•PRNAV	NAA Ops Approval (almost a year)
•RNAV GPS/GNSS (CDFA)	NAA Ops Approval (about 1,5 year …)
•RNAV GPS/GNSS (Baro VNAV)	NAA Ops Approval (idem)
•RNAV LPV	NAA Ops Approval (idem)
•RNAV (AR)	*Capability Available* *No BuzAv Requirement (ILS Cat II)*

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Flying Service / Flying Group / OPS approvals

Aircraft	Nbr	AOC	LNAV	LNAV/VNAV	LPV
Raytheon 390	1	BE			
Cessna C525	2	BE	In Process	In Process	
Cessna 550	1	BE	In Process	In Process	
Cessna 560	1	LUX	NAA Ops Appr	NAA Ops Appr	
Cessna 680	3	BE & LUX	NAA Ops Appr	NAA Ops Appr	Planned
Hawker4000	1	LUX			
Falcon F900c	1	BE			
Falcon F900EASyII	2	BE & LUX	NAA Ops Appr	NAA Ops Appr	NAA Ops Appr
Falcon F2000EASyII	1	BE	NAA Ops Appr	NAA Ops Appr	NAA Ops Appr
Falcon F7x	6	BE	NAA Ops Appr	NAA Ops Appr	NAA Ops Appr
Embraer Lineage	1	BE	NAA Ops Appr	NAA Ops Appr	
	20				

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PBN Ops Approvals & Process

NAA Operational Approval process (Regulator outperformed by available technology)

- AC Certification
- On board NAV DB Certification
- Company Manuals & Procedures
  - Falcons procedures pre-built in
  - Cessna's post-produced
- Pilot Training & Checking
  - BuzAv subcontracts to ATO (2 worldwide)
  - ATO may have EASA-approved Trg (by now)
  - EASA-approved Trg >< NAA required Company procedures >< EASA licencing (TBC)

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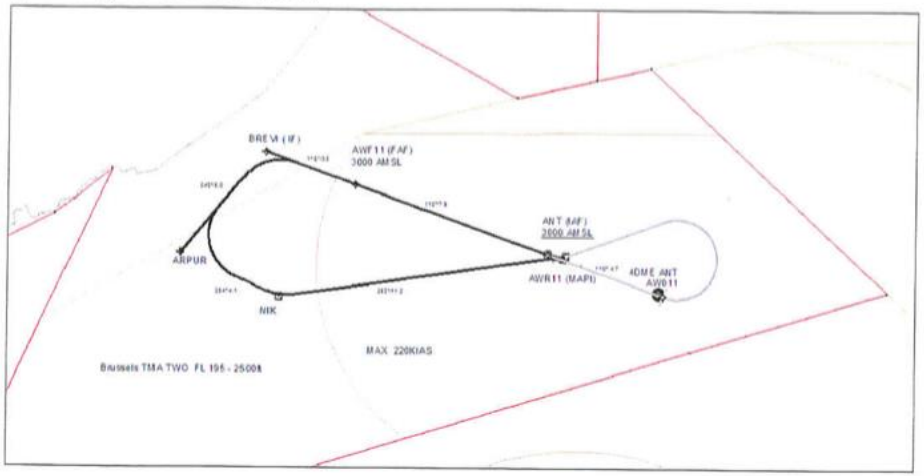
LPV in Europe

141 + airports in Europe fully operational with EBAP (EGNOS-Based Approach Procedures)
A further 208 in process to be EGNOS enabled

Antwerp Airport / BE

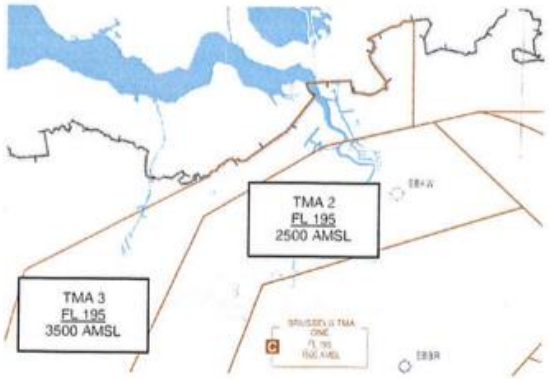
LPV Planned to be fully operational, by NLT end ‘15

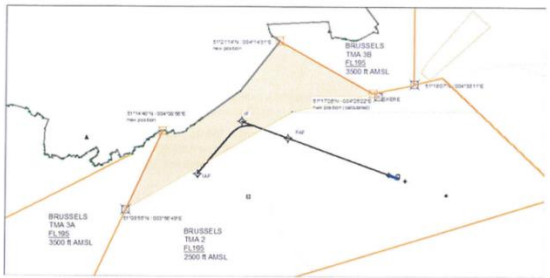
The LPV procedure, designed by the Belgocontrol procedure designer and as described in the Concept of Operations, has been introduced.



OCA (OCH)

CAT of ACFT	A	B	C
LNAV	500(460)	500(460)	500(460)
LNAV/VNAV			
LPV	340(300)	340(300)	340(300)
CIRCLING			





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Conclusion on EGNOS

- FREE to the End-user
- Safe
- Maximised efficiency in use of available resources for
  - •Regional Airlines, BuzAv, GenAv, & Helo community
  - •Regional/remote airfields (or helipads)
  - •Example : Flying Service BE & Flying Group LUX
- Successful operational implementation of EGNOS in Europe -> Collaborative effort needed
  - •European ANSPs
  - •CAAs
  - •EUROCONTROL
  - •Airlines
  - •Airspace users

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Any questions? Thank you!

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