EGNOS Workshop Athens

3 October 2017

EGNOS Benefits for General Aviation and GAGA overview

We will cover

- What is AOPA?
- Economic Benefits
- GAGA project
- Project organisation
- Implementation steps

What is AOPA

- AOPA (The aircraft owners and pilots association) is a NGO.
- AOPA has been representing the interests of General Aviation in the USA since 1936
- Last year was our 50th Anniversary as AOPA UK
- All national AOPA's are affiliated to International AOPA
- Over 500,000 members globally

General Aviation – ICAO Annex VI

Also includes:

- Sports flying
- Recreational flying
- Flight Training
- Personal Air Transport (self-fly business/ touring)
- Business Aviation (Corporate Aviation)
- 98% of VFR flights take place outside of controlled airspace


E-BLU


G-OGGM
SR22 G9 TS


G-SLCT

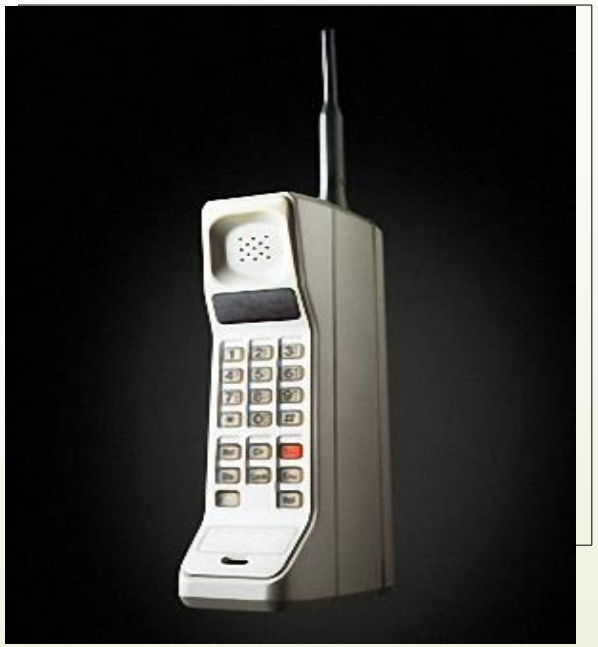

G-NOXY

February 1990

This was the year I joined AOPA in the United Kingdom.

General Aviation was a little different back then but it is still basically the same today.

But what else was different?



Today

Changing Times

Glass Cockpits

The value of GA to the UK

- Impact of GA on the economy is expected to be £3.0 billion of Gross Value Added (GVA) and support in excess of 38,000 jobs
- GVA includes:
  - an economic footprint from GA flying operations of £1.1 billion
  - the export component of GA manufacturing of around £1.1 billion
  - the additional wider benefits deriving from the use of business aviation of at least £0.8 billion

The economic value of GA in the UK is between £1.4 - £2.8 billion p.a.

- Maintenance and Production 300+
- Flight Schools 600+
- Airfields 600+
- Jobs in GA 11000+

Aircraft sales, Insurance, Fuel sales etc. all contribute to the economic value.

The economic value of GA in Europe is between €14 - €28 billion p.a.

- Maintenance and Production 20,000+
- Flight Schools 6,000+
- Airfields 5,000+
- Jobs in GA 110,000+

Aircraft sales, Insurance, Fuel sales etc. all contribute to the economic value.

The economic value of GA in the USA is estimated at $150 billion p.a.

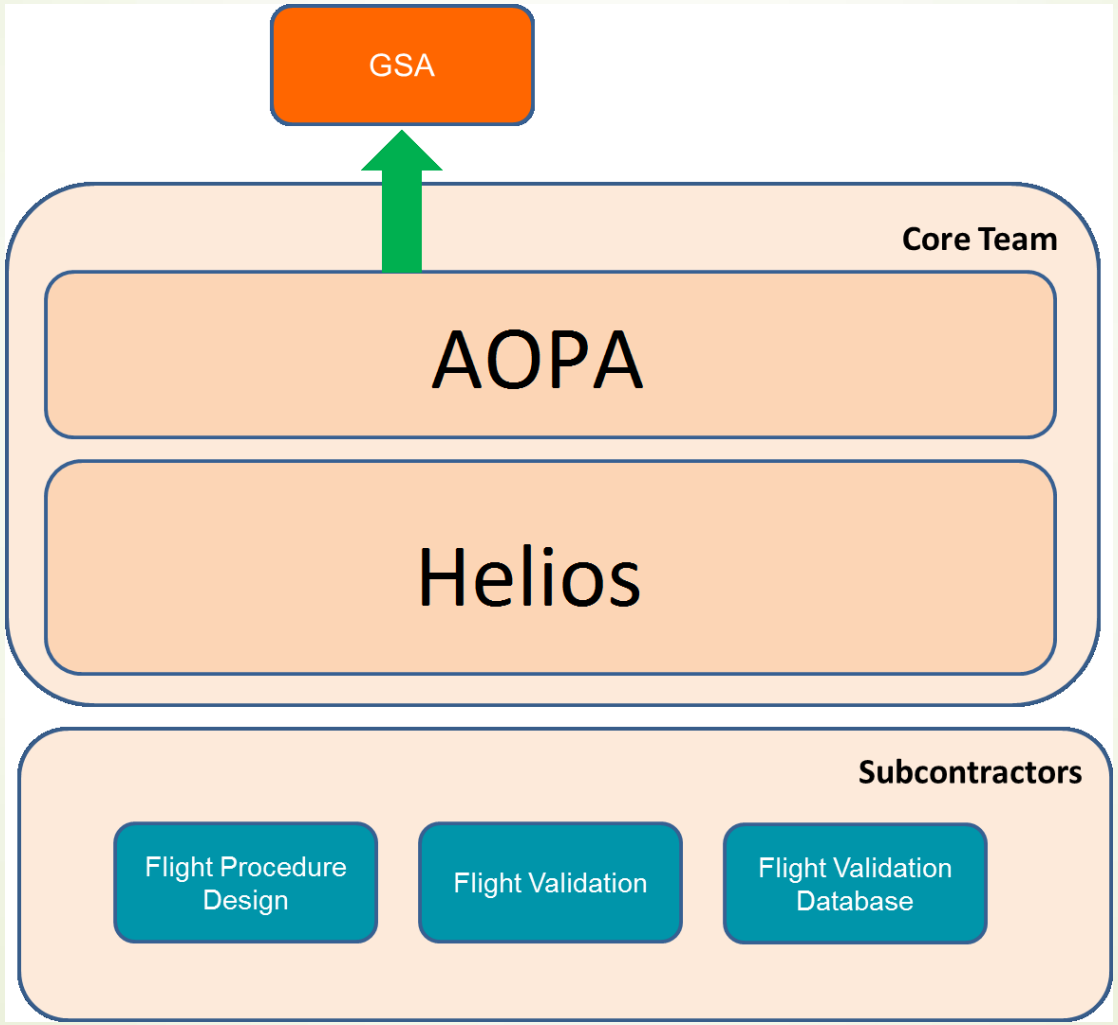
- 1.2 million jobs
- $150 billion going into the US economy annually. (Total population 265 million)
- 14,000 airfields connecting local communities

Aircraft Sales, Flight Training, Insurance, Fuel Sales etc., all contribute to the economic value

Why we want GNSS approaches

- No need for the ground infrastructure
- Smaller demand for aircraft equipment
- Larger accessibility of the airports (especially for GA and BA)
- Contingency procedures for adverse weather conditions
- Greater availability of IAP (Instrument Approach Procedures) for GA users
- Facilitate pilot training – Instrument rating
- Increased flexibility of commercial operations
- Support the training needs instrument pilots
- Attract new commercial operations (where use of IAP is required by AOC licensing)

Project GAGA organisational structure

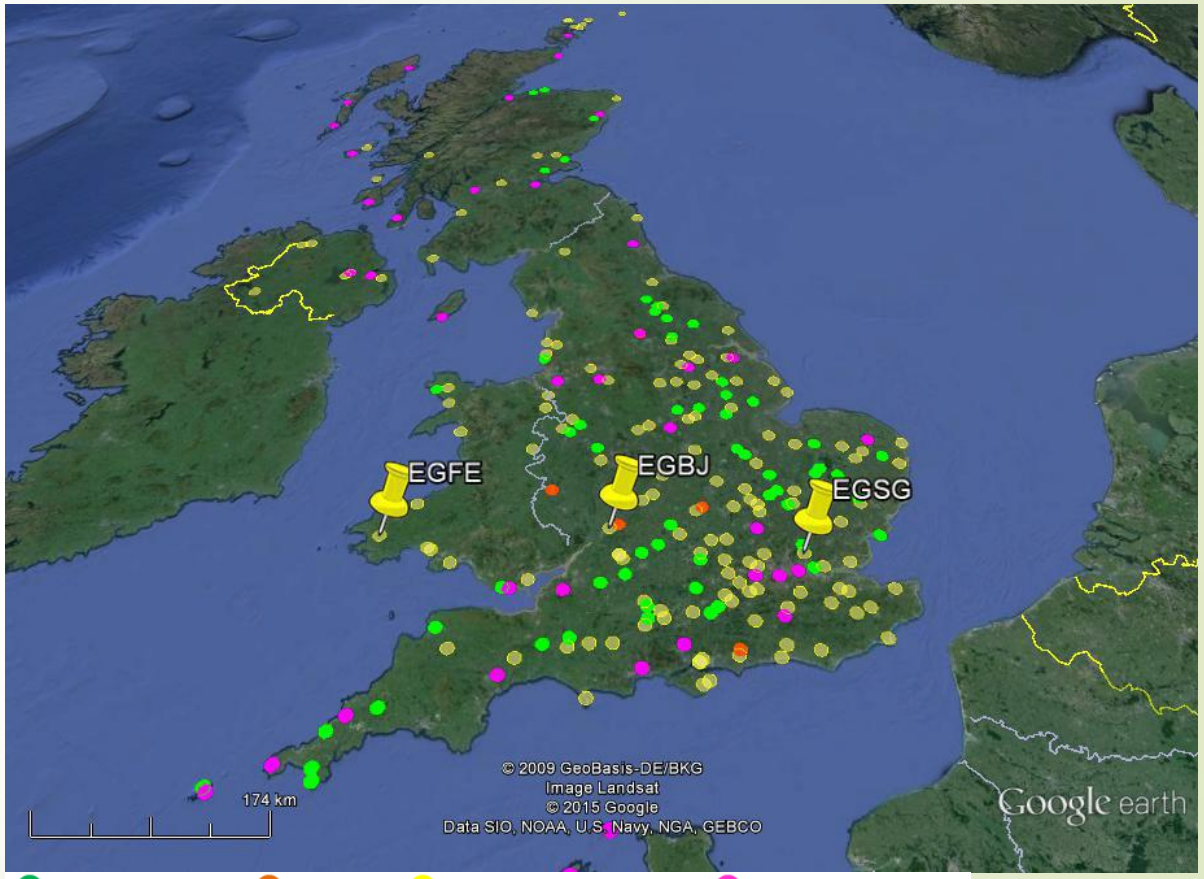


Objectives of the project GAGA

- Increase the availability of LPV approach procedure (focusing on GA airports)
- Reduce costs for IFR rating training
- Contingency procedures during adverse weather conditions
- Implement IAP procedures to airports which do not meet ICAO requirements for instrument runways
- GNSS use will be supported by following domains:
  - Encourage adoption of LPV (EGNOS based) procedures on general aviation VFR airports with no instrument approach procedures
  - Promotion of GNSS technologies within GA
  - Familiarization and flight training of pilots to gain experience of GNSS approaches using EGNOS based procedures

Density of GA traffic in UK

- 60% of traffic concentrated in Southern England
- Competition for airspace with Commercial Aviation



= Strip only airports; = Heliports; = Mixed traffic GA airports; = Airports with >50% Commercial Traffic

Selected airports - EGFE

- Haverfordwest
- No IAP
- LPV RWY 03/21 without ATC/APP
- Trans-Atlantic/ local business traffic is forced to use Cardiff airport due to operator AOC requirements

Selected airports - EGBJ

- Gloucestershire
- IAP – RNAV, ILS, NDB
- LPV RWY 09/27
- Customer demand from BA / backup in case of ILS outages
- For all sites we also need to conduct local airspace consultations under the UK ACP- this adds to the cost and time

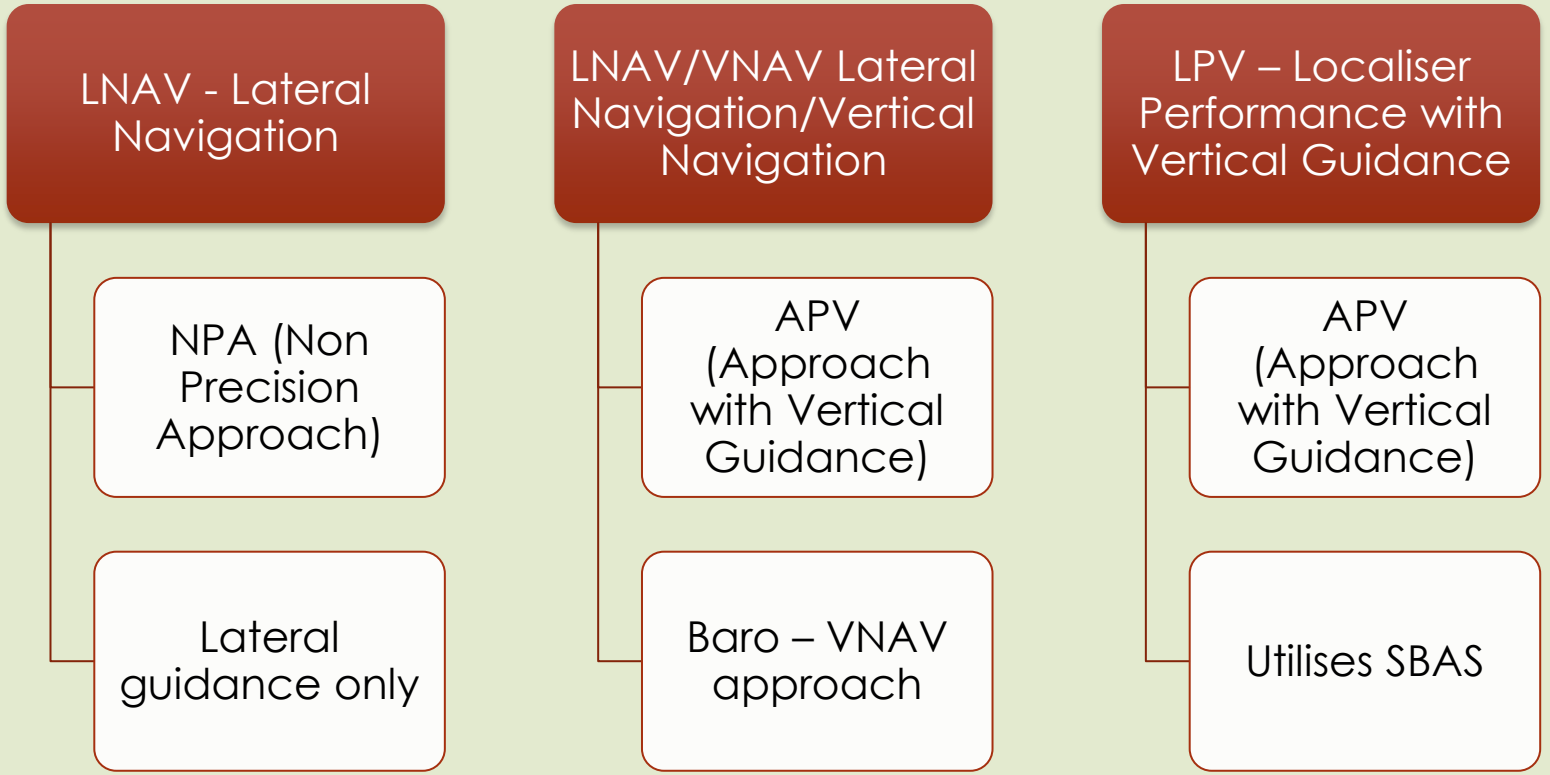
Selected airports - EGSG

- Stapleford (vicinity of London)
- No IAP
- LPV RWY 22/ (04) without ATC/APP
- Commercial pilot training, SE/ME IFR rating training, currently utilising en-route LAM VOR (will be decommissioned in **2** years)
- CAP 1122 and CAP 168 supports the activity
- But the regulator is a risk

Several UK CAA specifications have to be complied with

- CAP 785 Approval Requirements for Instrument Flight Procedures for Use in UK Airspace
- CAP 1122 Application for Instrument Approach Procedures to Airports without an Instrument Runway and/or Approach Control
- CAP 670 ATS Safety Requirements
- General change in the flow of aircraft ground track is also subject to public consultation, process is governed by:
  - CAP 724 Airspace Charter
  - CAP 725 Airspace Change Process Guidance Document

Which GNSS approaches will be implemented



Implementation steps

1. Obstacle and terrain data verification/validation
2. Procedure design
3. Procedure validation
4. Safety assessment
5. Establishing EGNOS Working Agreement (EWA)
6. ACP
7. AIP Publication

- Note: Publication of procedures in AIP is expected at the end of 2018

Large number of GA aircraft have LPV solutions available

AC11	BE58	C303	C560	DR10	LJ45	PA32	TBM8
AC90	BE76	C310	C56X	E50P	M20P	PA34	TOBA
AT72	BE9L	C421	C650	EA50	P28A	PA46	TRIN
B350	BN2P	C441	C680	EC35	P28R	PAY2	
B461	BN2T	C500	C750	F2TH	P32R	PAY3	
BE20	C172	C501	CL30	F900	P46T	PC12	
BE30	C206	C510	D228	GLEX	P68	SR20	
BE33	C208	C525	DA40	GLF4	PA23	SR22	
BE36	C25A	C550	DA42	H25B	PA30	SW4	
BE40	C25B	C551	DH8C	L410	PA31	TBM7	

General Aviation potential future growth in Europe

- If a 5% growth p.a. over 10 years is achieved it equals a 125% growth in revenues and jobs.
- GA will not be a means of mass transportation, but it can occupy an important niche in personal travel.
- Very Light Jets will significantly expand the market.
- New fuels and engines will improve ecology.
- New avionics and air traffic technolgies (EGNOS) will improve safety and efficiency. A single airspace classification - perhaps
- Regulatory impact should match the activity and be proportionate to the risk. BUT underpinned through high quality training and education.

Thank You