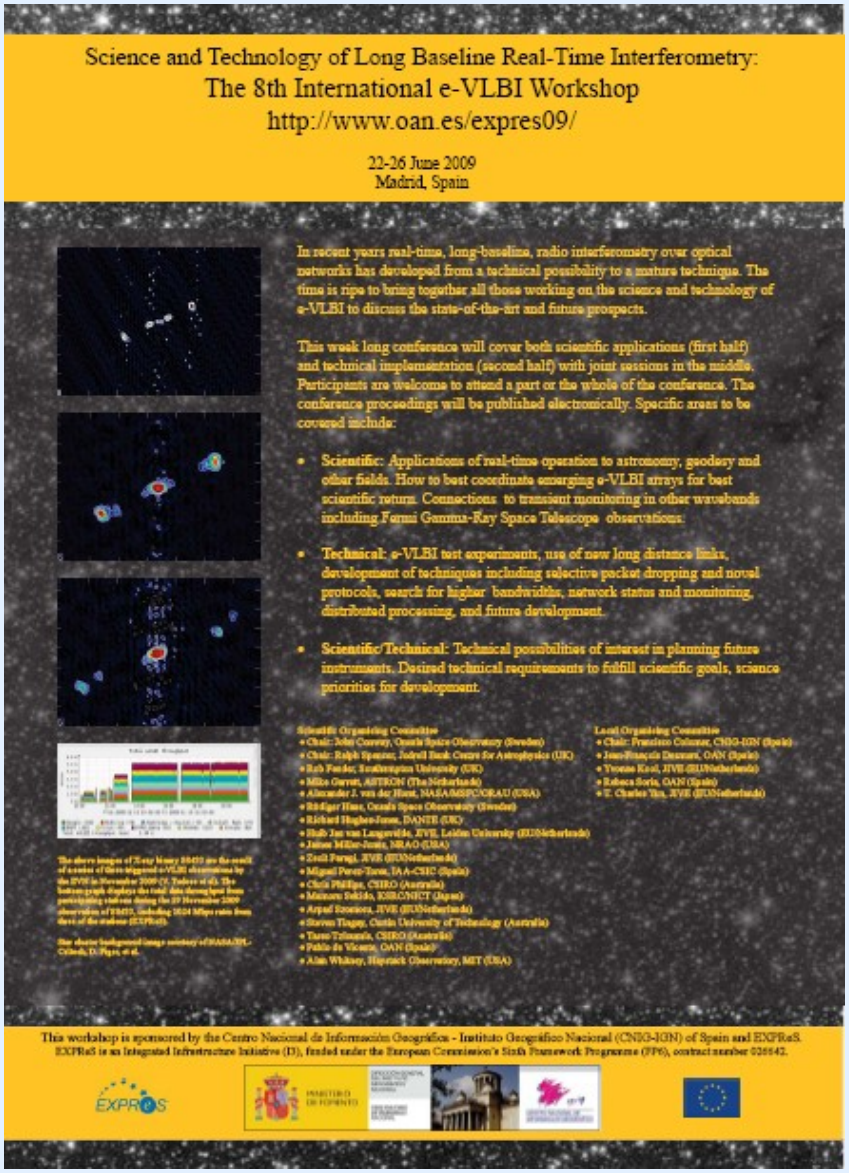


EXPReS Sci+Tech Workshop

June 22-26 2009

Madrid, Spain

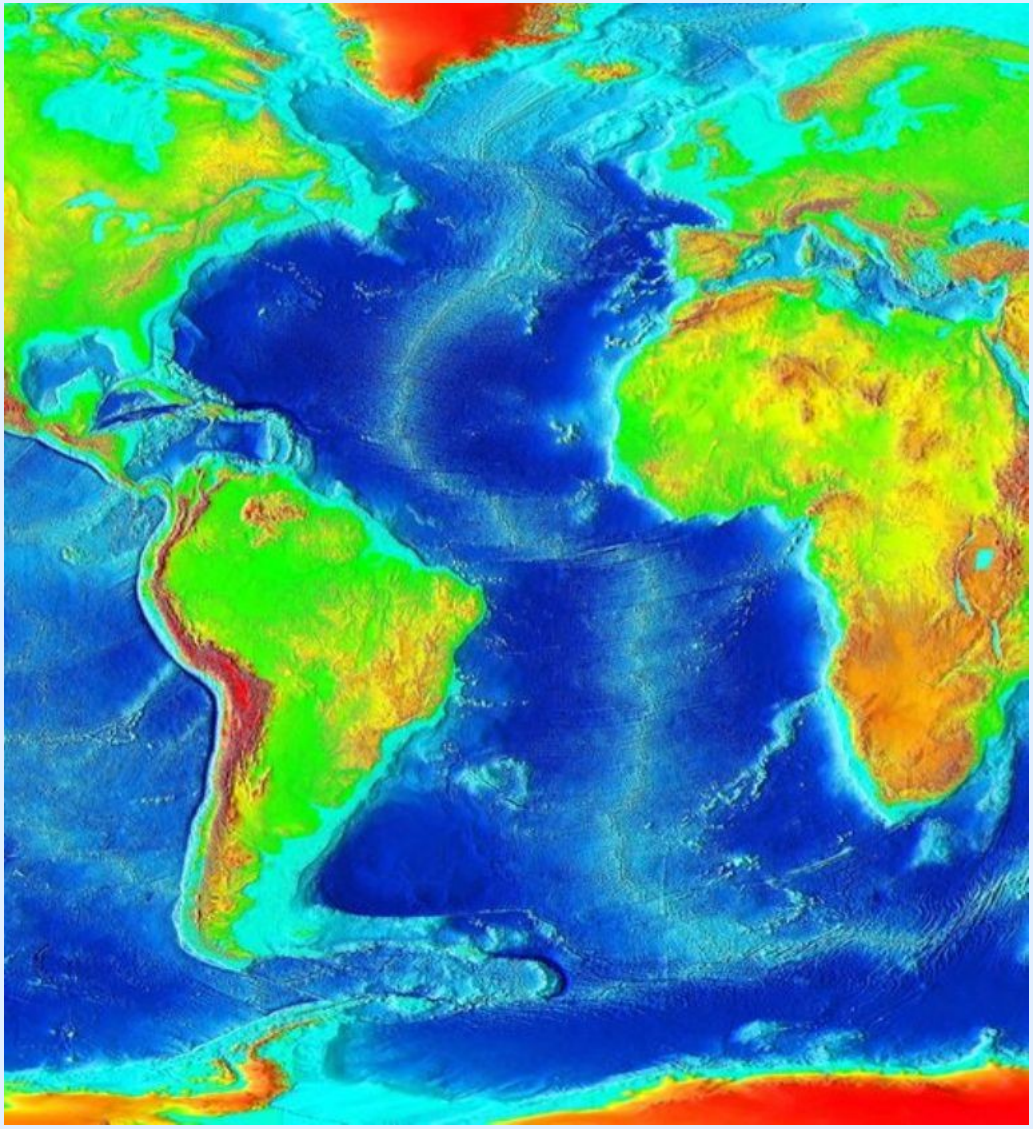
http://www.oan.es/expres09/

April 15th: Registration deadline

April 21st: Hotel booking deadline

May 1st: Abstract deadline

❖RED ATLÁNTICA DE ESTACIONES GEODINÁMICAS Y ESPACIALES



Jesús Gómez-González

Francisco Colomer

Instituto Geográfico Nacional
Spain

1. The RAEGE project

Establishment of an Spanish-Portuguese **Network of Geodynamical and Space Geodesy Stations** *(RAEGE)* by the installation and operation of **four fundamental geodetic/astronomical stations** provided with radiotelescopes fulfilling the VLBI 2010 project specifications: Yebes (1), Canary Islands (1) and Açores Islands (2).

❖RED ATLÁNTICA DE ESTACIONES GEODINÁMICAS Y ESPACIALES

Baselines:

- Yebes – Canary Islands : 1800 km
- Yebes – Sao Miguel : 2000 km
- Yebes – Flores : 2400 km
- Canary Islands – Flores : 2000 km
- Sao Miguel – Flores : 540 km

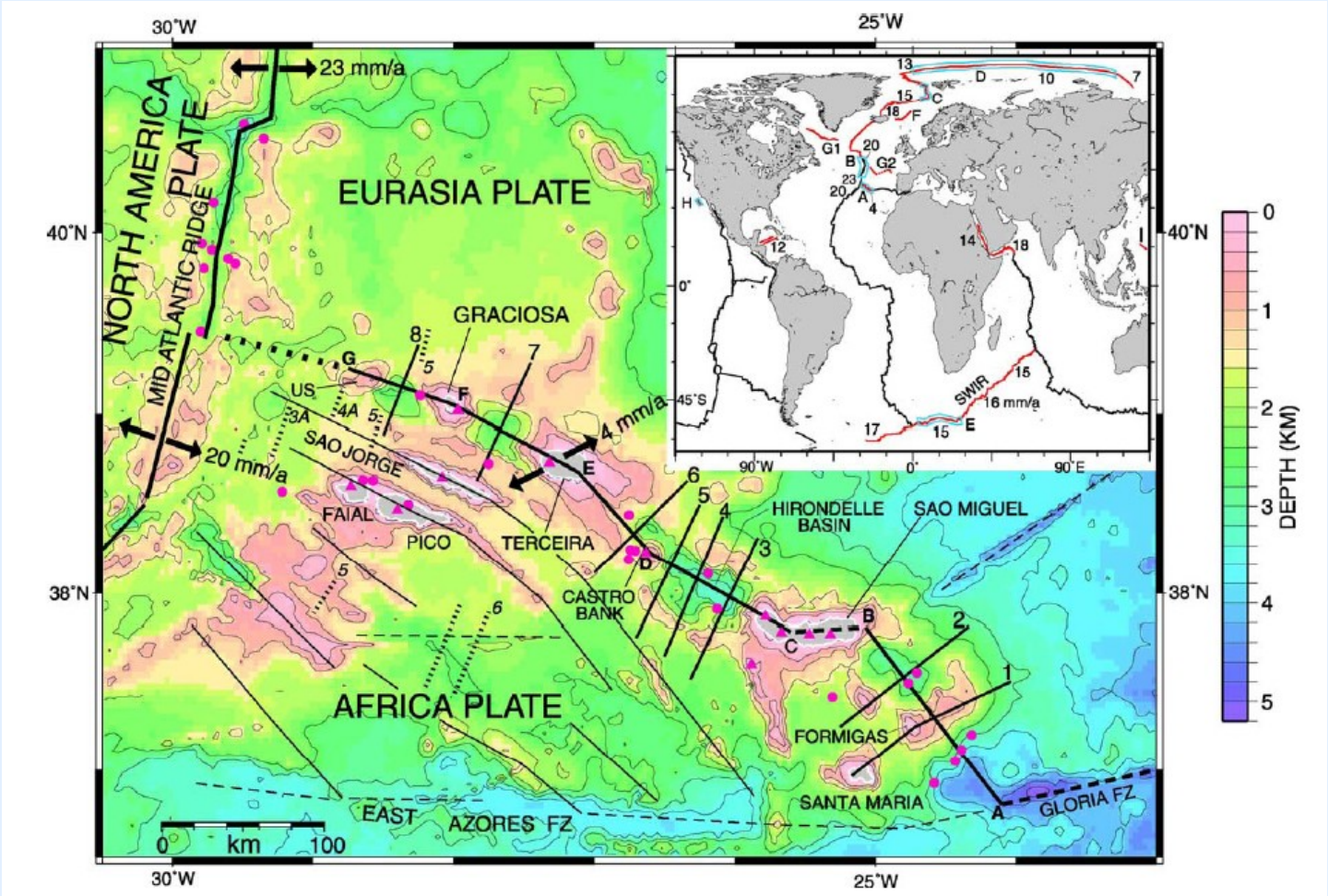
❖RED ATLÁNTICA DE ESTACIONES GEODINÁMICAS Y ESPACIALES

Baselines:

- Yebes – Flores : 2400 km
- Gran Canaria – Flores : 2000 km
- Sao Miguel – Flores : 540 km

Açores Islands, Portugal

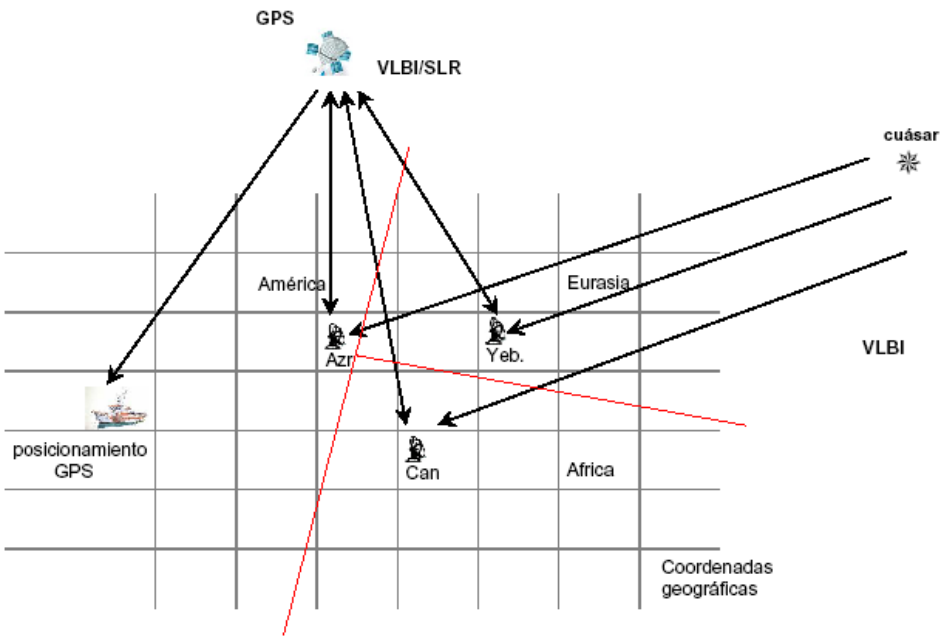
❖RED ATLÁNTICA DE ESTACIONES GEODINÁMICAS Y ESPACIALES



❖RED ATLÁNTICA DE ESTACIONES GEODINÁMICAS Y ESPACIALES

Canary Islands, Spain

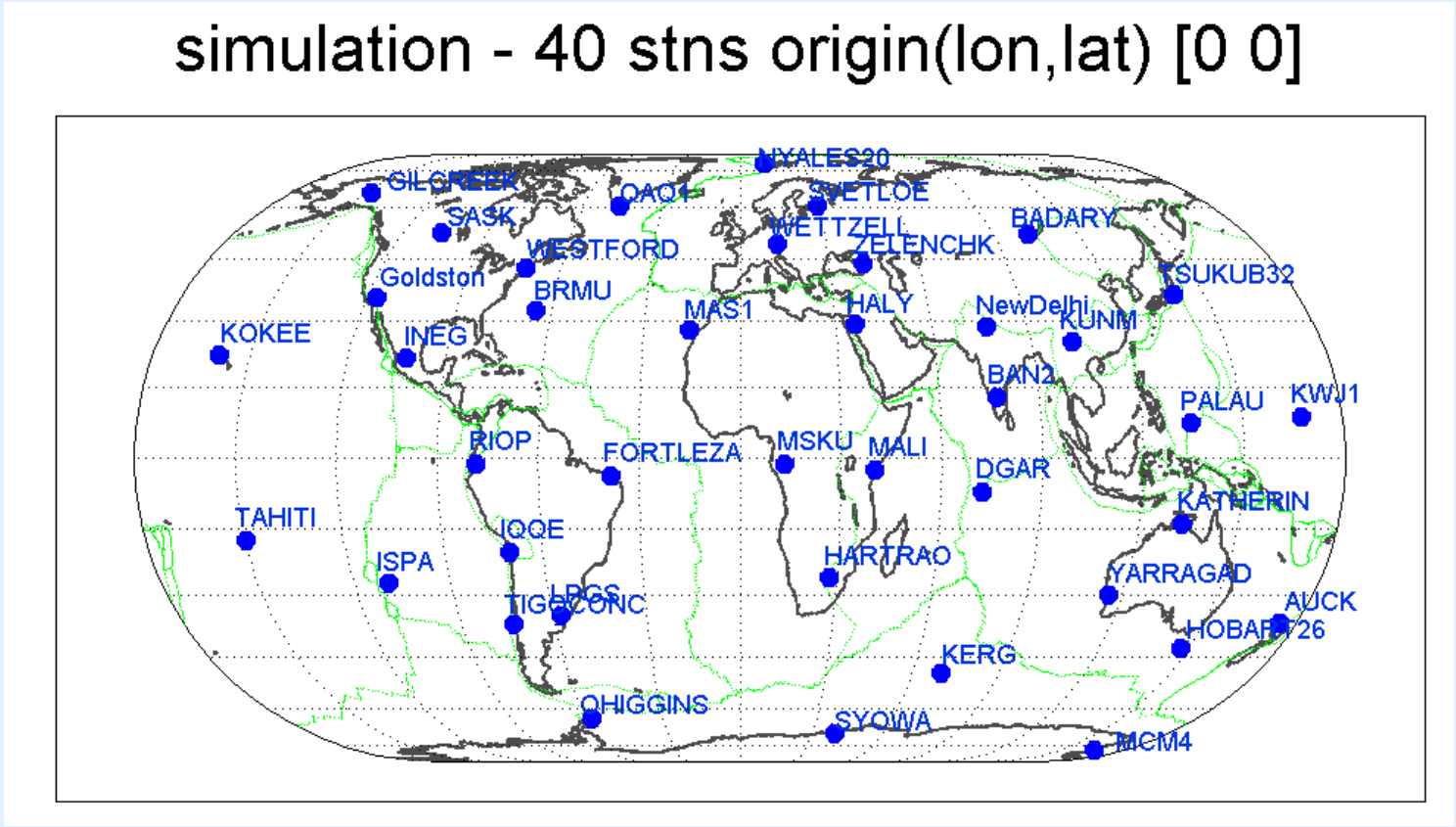
2. Scientific and technical fundamentals: the VLBI2010 project



❖RED ATLÁNTICA DE ESTACIONES GEODINÁMICAS Y ESPACIALES

Products	Specification	Status 2002	Goals (VLBI2010)
Polar Motion (x_p, y_p)	accuracy product delivery resolution frequency of solution	x_p ~ 100, y_p ~ 200 µas 1 – 4 weeks – 4 months 1 day 3 days/week	25 µas 1 day 10 min – 1 h 7 days/week
UT1-UTC (DUT1)	accuracy product delivery resolution	5 – 20 µs 1 week 1 day	2 µs 1 day 10 min
Celestial Pole ($d\varepsilon$; $d\psi$)	accuracy product delivery resolution frequency of solution	100 – 400 µas 1 – 4 weeks – 4 months 1 day ~ 3 days/week	25 µas 1 day 7 days/week
TRF (x, y, z)	accuracy	5 – 20 mm	2 mm
CRF (α; δ)	accuracy frequency of solution product delivery	0.25 – 3 mas 1 year 3 – 6 months	0.25 mas improve. for more freq. bands 1 month

❖RED ATLÁNTICA DE ESTACIONES GEODINÁMICAS Y ESPACIALES



3. Initial equipment to be installed at each station

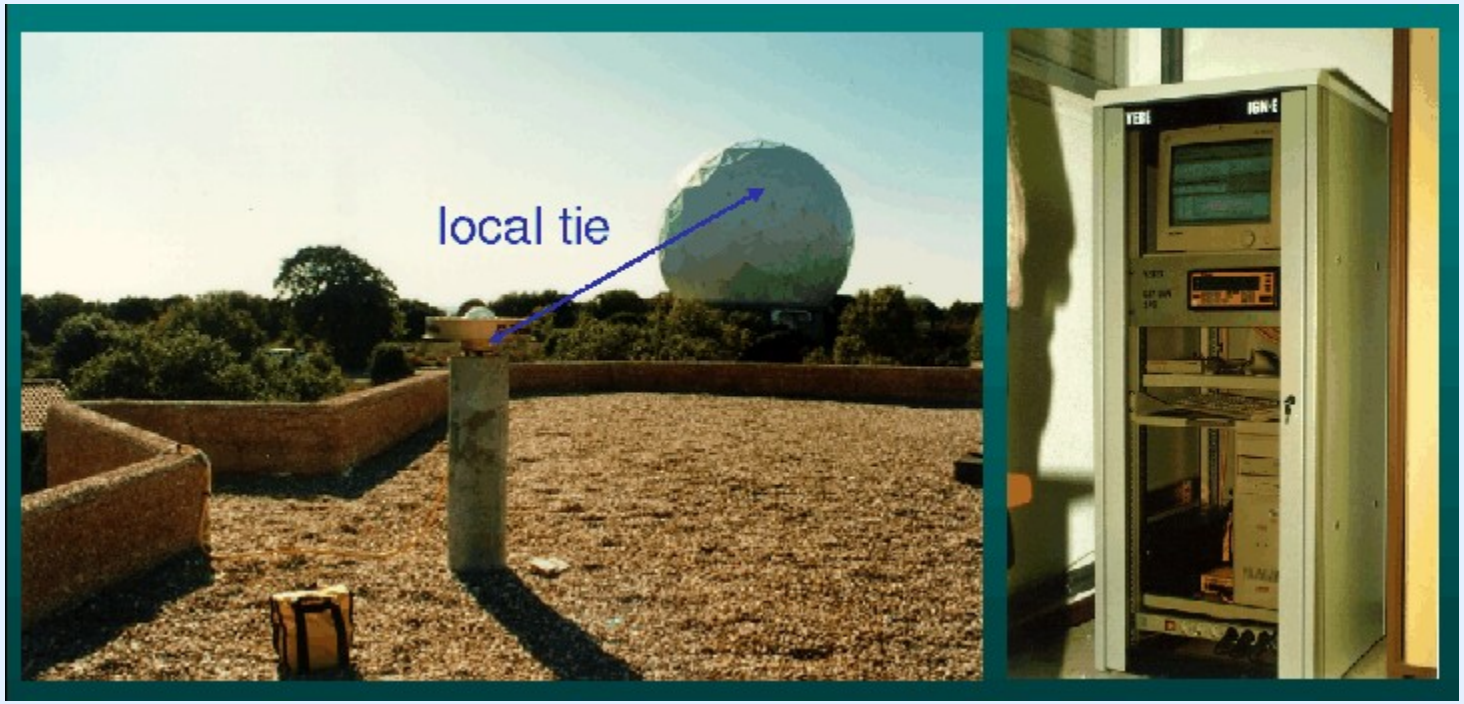
- Geodetic VLBI 2010 radiotelescope:
  - Diameter ≥ 12m, freq ≥ 40GHz
  - Most could be built in Spain.
- Superconducting gravimeter.
- Permanent GNSS station.
- Satellite Laser Ranging (Yebes).

❖RED ATLÁNTICA DE ESTACIONES GEODINÁMICAS Y ESPACIALES

VLBI2010 radiotelescope

TTW:

- Main reflector: 13.2m
- ALMA mount
- Optics: ring focus, Axiallydisplaced ellipse reflector
- f/D = ~0.29
- Subreflector with hexapod mount
- Vel.: Az 12°/s, El 6°/s
- Acc.: Az/El 3°/s²
- 27 bit Encoder: 0.3m°



Permanent IGS station “YEBE”

Gravimeter building and equipment at Yebes:

- Seven pillars for instrument comparison
- Two gravimeters (A10 & FG5)
- Purchasing the first superconducting gravimeter (2010)

4. IGN capabilities

- Long time experience in technical aspects of VLBI (radiotelescopes, front-ends and back-ends).
- Participation in the VLBI networks and organizations (IVS, EVN).
- Infrastructures and equipment for the main station (Yebes).
- IGN geodetic/geophysical centre at Canary Islands.
- Collaboration agreement between IGN and the Açores Regional Government.

GOBIERNO DE ESPAÑA
MINISTERIO DE FOMENTO
INSTITUTO GEOGRÁFICO NACIONAL

Thank You!

IGN España