

# UK Dependence on GNSS & the Impact of its loss

Andy Proctor  
Chair, UK Government PNT Group  
@Innovateandy

**Innovate UK**

# Presentation will cover

- UK Economic Impact Study
- UK Review of our critical service dependencies on GNSS
- Impact on NAVISP
- Why NAVISP matters to the UK

# Motivation

- GNSS use widespread
- Known and increasing vulnerabilities
- Many technical studies about impact of vulnerabilities
- Previous work recommending impact assessments
- No UK economic impact study (gap in knowledge)
- Agreement our understanding of dependence is low

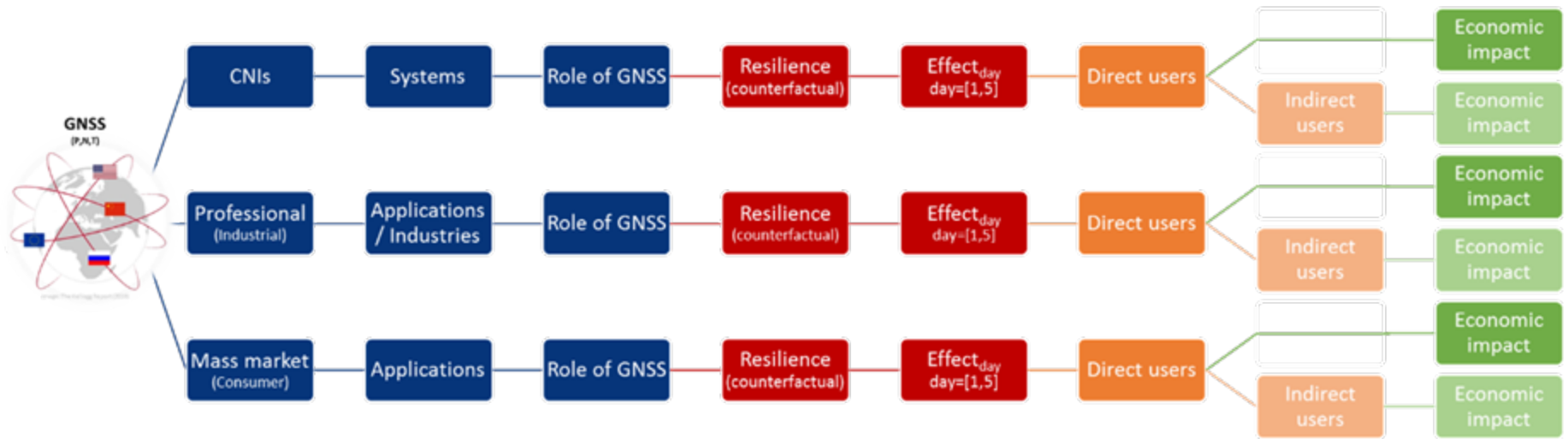


# Research Objectives – Economic Impact

- Identify sectors using GNSS
- What is the economic benefit that GNSS technology and services bring to the UK?
- Estimate the economic impact to the UK (government and private sector) of a disruption to GNSS functionality of up to five days
- Identify the cost and effectiveness of mitigation strategies.
- High-level assessment of the impact of UK public funding of GNSS

What would be the economic impact on the UK through the loss, howsoever caused, of GNSS, for **up to five days**?

# Establish Benefits Determine Impacts

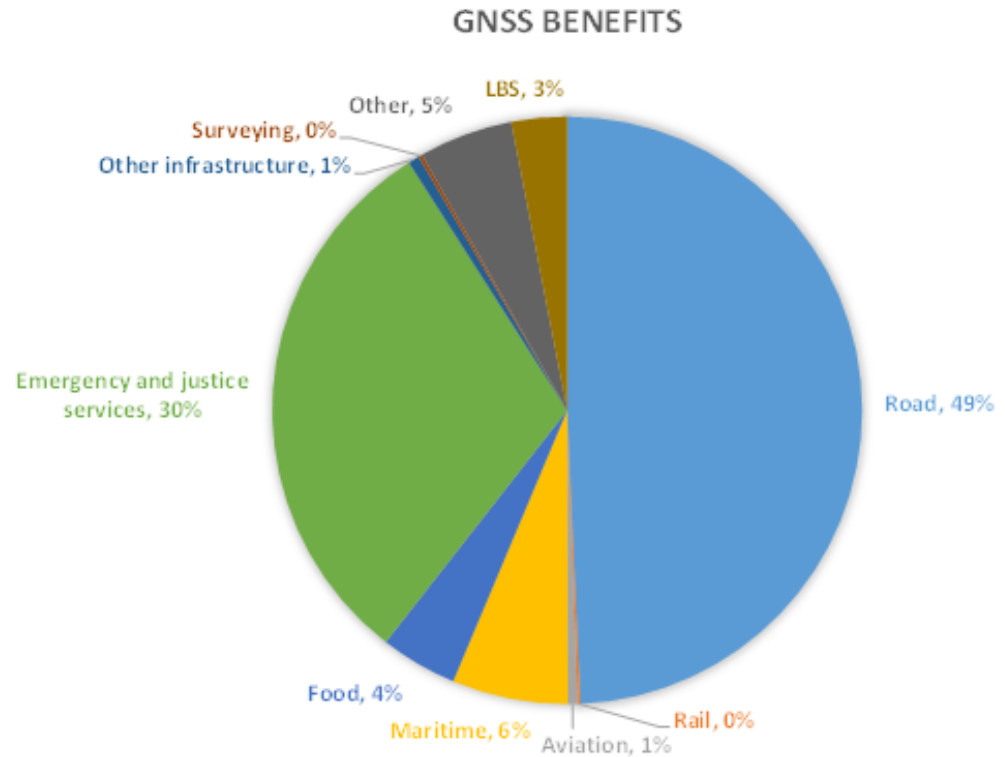


# Key Findings

- GNSS – Invisible Utility
- PNT derived £1.4bn of turnover and 4000 jobs (2014/15) in the UK
- Sectors generating 11.3% of UK GDP are supported directly by GNSS

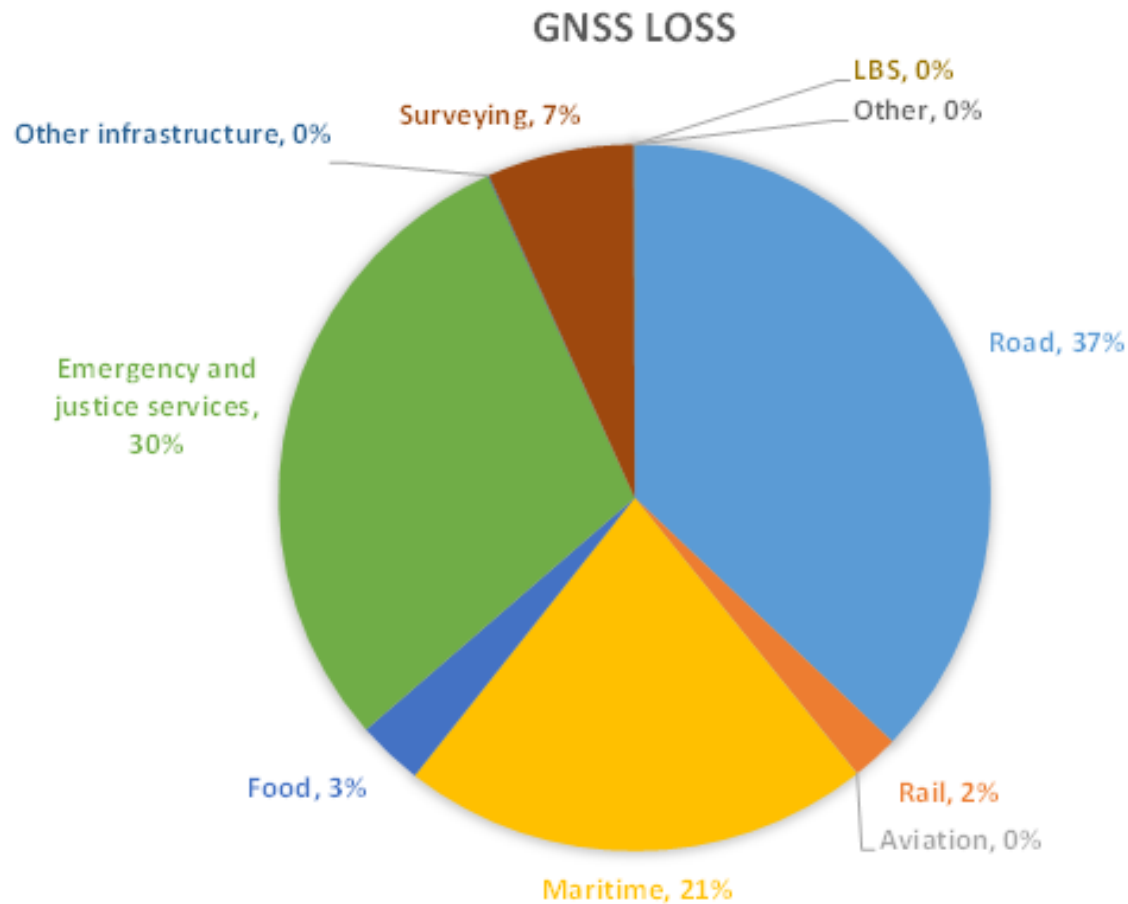
# Economic Benefits of GNSS

- Quantified **economic benefits** to the UK of GNSS have been monetised at **£6.7bn per annum**, comprised of £1.2bn in Gross Value-Added (GVA) benefits and £5.5bn in utility benefits (efficiency, safety, etc.)
- Conservative estimates
- Cannot monetise all benefits
- **Consider this a LOWER BOUND**



# Impact of Loss of GNSS (for 5 days)

- The economic impact to the UK of a five day disruption to GNSS has been **estimated at £5.2bn.**



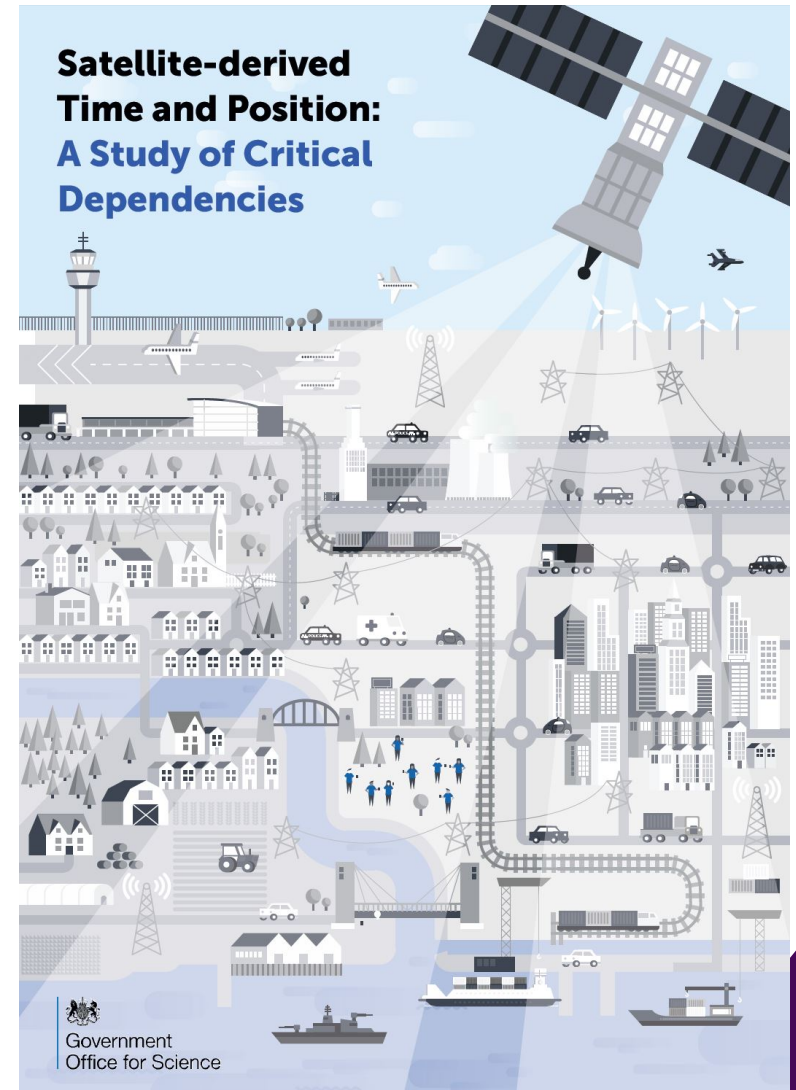


# Impact of Public Funding

- Estimated societal benefits at between £4 and £5 per £1 of public investment.
- The UK has made a €1.5bn investment in GNSS since 2000.
  - Most of this investment (94%) impact in GNSS is strongly tied to the UK's benefits from the European GNSS programmes (EGNOS and Galileo).
  - The UK's **€94.9 million** downstream investments since 2000 have also unlocked significant benefits to end-users and the rest of society that would have been lost without UK funding
- Report presents a strong case for continued public investment in GNSS.

# Blackett Review of GNSS Dependence

- Key questions
  - Why do we use GNSS/PNT and how
  - What sources do we *actually* use
  - Standards, regulations, need for additional?
  - Resilience, existing or future
  - Future needs
- Process
- Summary of recommendations



# Blackett Process

- ~35 Experts from the UK
- Supported by officials and invitees
- 4 meetings over 6 months
- Specialists writing on their own topic
- Chaired by the Prime Minister's Science Advisor and endorsed by a Minister



# Summary of Recommendations

- 12 unclassified recommendations
- Raise awareness (formally), throughout government and CNI
- Protect spectrum and address risks & interference issues
- Have a formal internal (government) advice system and deploy GNSS backup systems
- Address common terminologies, procurement approaches, legislation,

# NAVISP

- Our new Space Minister mentioned NAVISP in a speech last week
- Resilience a theme in NAVISP #2 applications
  - Not just UK, but other projects too
- Already a NAVISP element #3 project being worked to address the issues raised
- Use of NAVISP for strategic analysis of projects in UK
  - Wider reach and benefit
- Challenges
  - Turning 4-5:1 into 7-8:1 (process, terms, speed)
  - Promotion of NAVISP, perception of ESA
  - Co-funding for [micro]SME's and low investment companies

# Thank You

Andy.Proctor@Innovateuk.gov.uk  
@InnovateAndy

## Innovate UK

North Star House, North Star Avenue, Swindon SN2 1UE

Tel: +44 (0)1793 442 700

Email: [support@innovateuk.gov.uk](mailto:support@innovateuk.gov.uk)

[www.innovateuk.gov.uk](http://www.innovateuk.gov.uk)