



GNSS for Policy and Decision Makers 21st January 2022

GNSS Challenges

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Challenges

Technical

- Interference
- Jamming
- Spoofing
- Meaconing

Human Resource

- Limited number of institutes to provide
 - GNSS specific education and training
 - Capacity building at enduser level, stakeholders

Research

- GNSS research in Asia is rather new
- Limited or very low funding and resources

Policy and Regulation

- Lack of Policy and Regulations related with GNSS
 - Data usage
 - Privacy issues
 - Equipment import / export

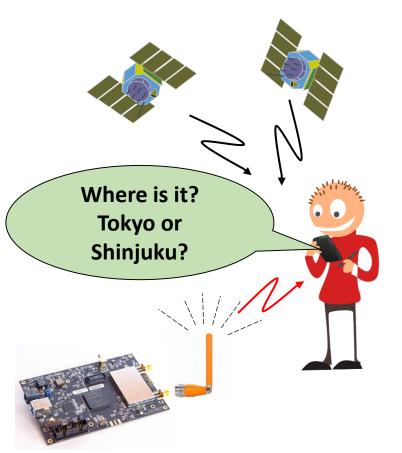
We will focus discussion on Spoofing Issues since this is quite new and not much known





GPS Spoofing

• Falsify GPS Position Data as If it were True Position









Your Location: Tokyo





GPS Spoofing Poses Risk of Future Havoc



GPS 'Spoofing' is No Joke: Dangers of GPS Data Hacking Realized

GNSS spoofing will attain virus status, warns expert

- GPS World

Hacking Global Positioning System with GPS 'Spoofing' Can Lead To Fatalities

http://www.techworm.net/2016/11/gps-spoofing-dangers-gps-data-hacking.html

Dangers of GPS spoofing and hacking for location based services

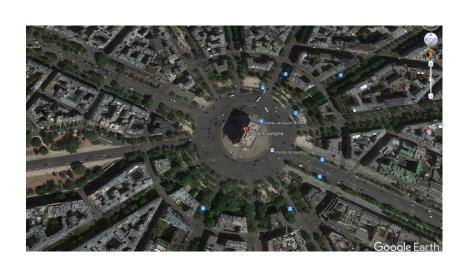
Faking of GPS Data a growing and potentially lethal danger – The Japan Times, FB

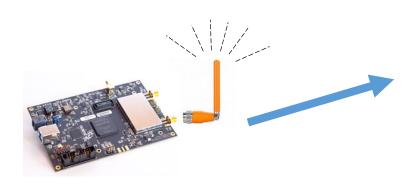


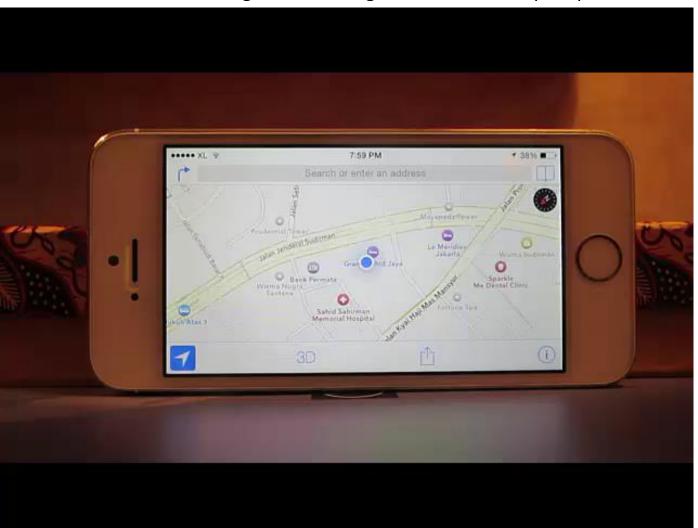


Mobile Phone Spoofing (Jakarta or Paris?)

Spoofer was programmed to broadcast signal so that location data will changed to a driving car in Paris, Triumph Square



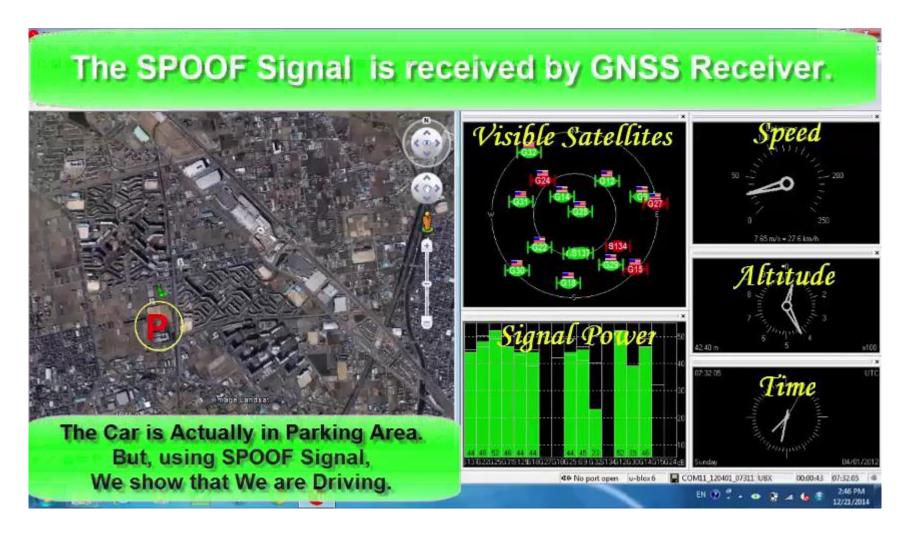








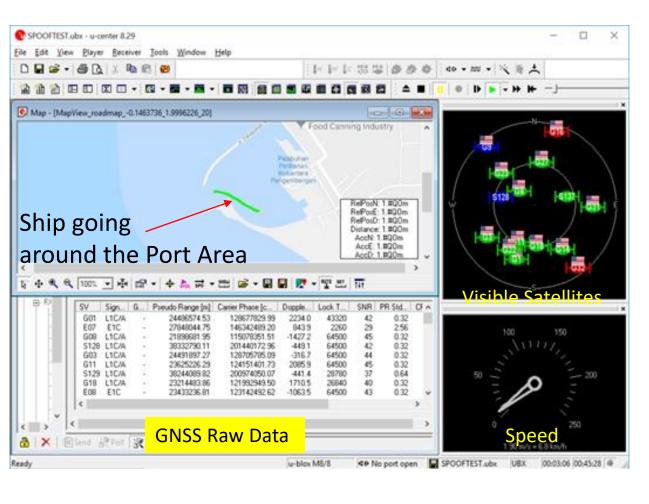
SPOOFing a Car: <u>Is he driving the car?</u>

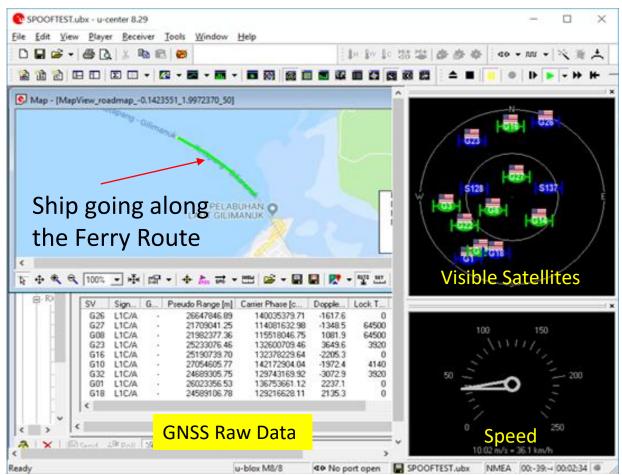






Can you identify TRUE Data and SPOOF Data?









GPS Spoofing in Black Sea?

24th June 2017

A GPS spoofing attack in June, involving

over 20 vessels in the Black Sea, has been

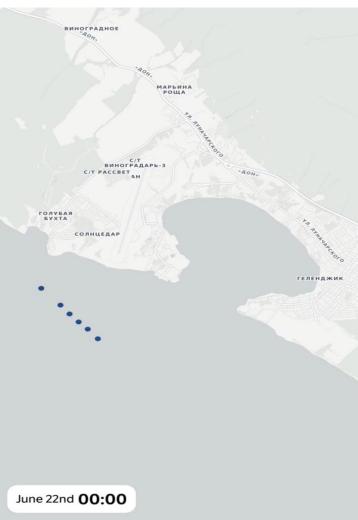
reported. *Probably the first official record*

of spoofing. More.....

Vinogradar' •

Black Sea





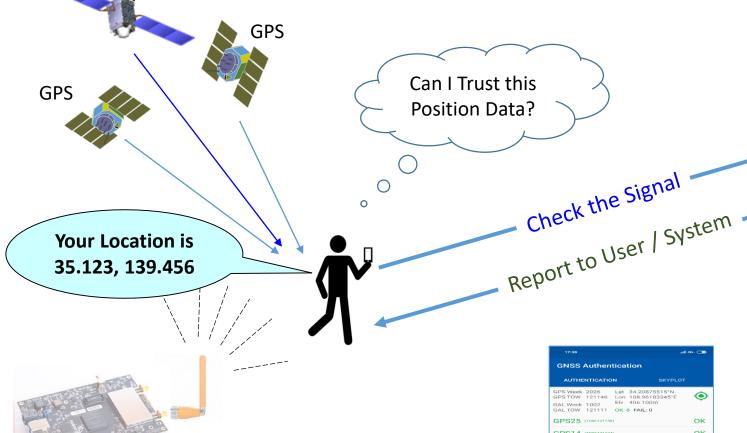
https://www.rin.org.uk/newsitem/4969/GPS-Spoofing-in-Black-Sea



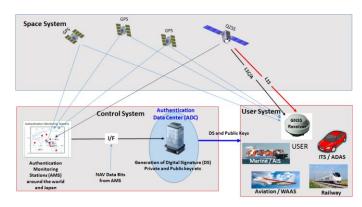
Spoofer



Our Solution for Anti-Spoofing -> Signal Authentication



Signal Authentication System



Solution developed for Spoofing Check / Authentication