

GNSS

THE PROVIDERS VS NON-PROVIDERS

The 12th. ICG Meeting
KYOTO

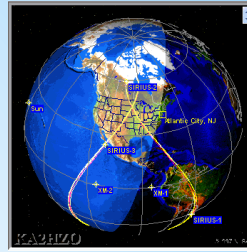
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PREFACE

Over the past three decades, GPS has grown into a global utility providing multi-use services that are integral to;

Security, Economic growth,
Transportation, Safety of lives
and R&D



GNSS has contributed to the economic growth, the worldwide trade, increasing the transportation capacity and promote the productivity of many countries.

The GNSS signals are offered absolutely free of charge to the end user independent of where they operated



So

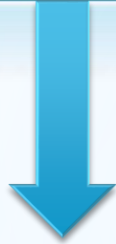
The GNSS Signals are the Gift
of the System Providers for the
Users in The World

*In the Same Time It has become
the Most Soft and Velvet Power
which has Invaded the World*

THE COST OF PROVIDING THE GNSS

- The cost of R&D
- The cost of Building up the system
- The cost of Experiments
- The cost of the Fail and the Success
- The social cost of the Tax Payers
- The cost of the Implementation and Administration
- The cost of maintaining the system Efficient, Effective, and providing the needs of the End Users,
- And above all, the cost a long history of the good quality education
- etc.,...etc.

**The Commitment of
the Providers
is to maintain GNSS ***



**Assuring Effective, and
Resilient PNT
Independent Sources.**

Availability
Accuracy
Reliability
Continuity
Accessibility
Integrity
Coverage,
Strength
Propagation,
Acquisition
Tracking

GNSS Applications

- **Agriculture**, precision control of farming
- **Transport, real-time navigation for Aviation, and surface transportation, Road, Rail, Inland Water-Ways, Maritime and autonomous cars**
- **Location Based Services**
- **Mapping** and virtually every first-order survey
- **Emergency, Security, and Humanitarian Services,**
- **Science, Environment, and Weather,**
- **Civil Engineering,**
- **Crucial Time References, Energy and Power** distributions
- **Military**, at a Wide-range of applications
- + + + + + +

GNSS speed up the rescue operations, secured the safety of lives and provided unlimited capabilities to support many nations needs.

GNSS has also become a formidable instrument for time-stamping in the financial transactions.

By large the GNSS Facilitated the social activities, the communication networks and strengthen the security measures.

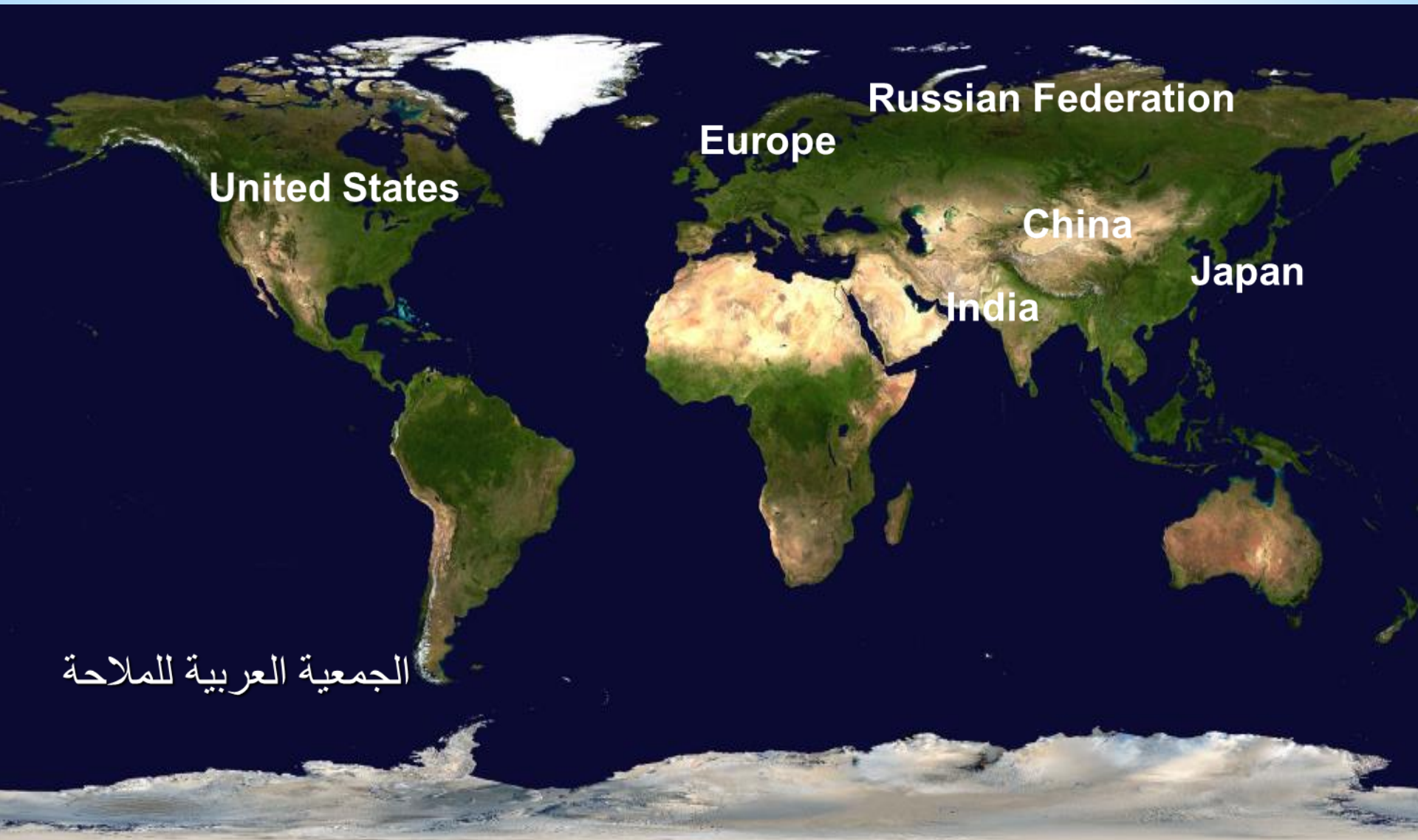


SO
*GNSS has become the invisible
public utility,*

It is hard if we go without it



THE PROVIDERS OF THE GNSS



الجمعية العربية للملاحة



**What
is the Problem**

The threats to GNSS continue to evolve, and increase.

- The availability of Jamming and Spoofing has dramatically increased over the last decade,
- Cyber-attack threats are real and growing. Specifically, technologies are available for intentional Jamming, blocking the GNSS signals and spoofing providing false signals to GNSS receivers.

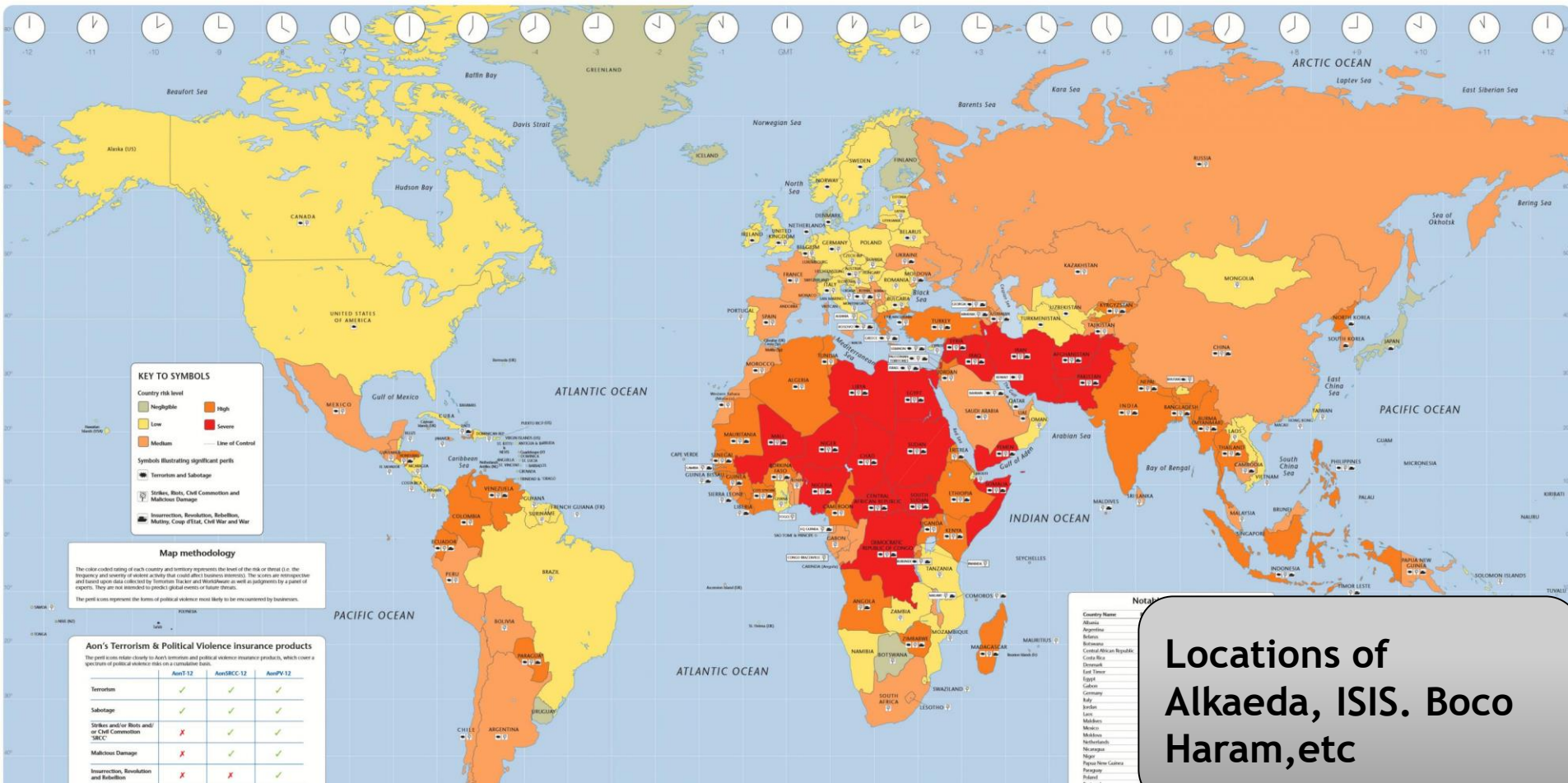
Non-provider countries may unaware of GNSS weakness and vulnerabilities.

Even when they are, they are not willing to invest in more expensive equipment to reduce the threats of disruption. And reluctant to take an action regarding the Interference Detection and Mitigation

Interferences Jamming / Spoofing on GNSS

2013 Terrorism & Political Violence Map

AON



-The Role Non-Providers is to contribute to maintain clean GNSS signals, un-contaminated by Interferences, Jamming or Spoofing and provide the necessary equipment to protect the signals and implement the necessary policies to maintain PNT resilient



-They should Set necessary local measures and enforce law to seal trading or the use of interference devises, and have a plan for IDM in their respective countries

Cooperation Between Providers and Non-Providers

1- Voluntarily cooperation with the international communities in protecting and augmenting the GNSS

2-The providers may schedule a Bilateral agreements, understandings and dialogues program with the Non-Provider regarding the IDM and the related information exchanges

3-Launch an excessive awareness and education programs in the lower band of the Non-providers focus on the cost/ benefits of GNSS and signals protection

***The International Organizations ICAO, IMO, ITU, IALA,
IHO, and UNOOSA***

have an crucial course to play with their member states in protecting the GNSS signals in their specific domains and enhance the Interference Detection and Mitigation.

***They may request their member states to provide a National Radio-Navigation Plan (NRP) in which they may show the use of the GNSS and the necessary measures for the
IDM***



**IN
SUMMARY**



Good of the GNSS Signals

- Extremely Useful
- Free of Charges

Bad of the GNSS



- **Extremely Weak**
- **Extremely Vulnerable**

Ugly



- If WE Are Not Able to
Maintain and Protect

If WE Are Not Providing for
Resilient PNT

* Conclusion

*The Non System Providers have Unprecedented Opportunities to Capitalize on the free use of the
GNSS*

Maintain

Protect

Mitigate

Educate

GNSS

Providers of or Non.

Protect The Signals



thank you