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INSPIRe

WP11 – Stakeholder Engagement Report

R-062-001-010

Prepared for:



January 2024

CONTENTS

1	INTRODUCTION.....	2
2	STAKEHOLDER ENGAGEMENT DELIVERY	2
3	STAKEHOLDER ENGAGEMENT PLAN	3
4	INTEGRITY 4	
5	STAKEHOLDER FEEDBACK.....	4
6	ENGAGEMENTS WITH OTHER PROJECTS	4
7	WEBSITE 5	
8	PUBLICATIONS	5
9	BRIEFINGS AND PERSONAL CONTACTS	6
10	EMAIL NEWSLETTER	6

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1 INTRODUCTION

INSPIRe follows on from 'MarRINav' ("Maritime Resilience and Integrity of Navigation") a project aimed to research the concept of a UK maritime critical national infrastructure (CNI) to provide resilient high-integrity PNT for ships and ports. Maritime and other sectors are critically dependent on GNSS for navigation and for timing. GNSS signals are extremely weak, and receivers face natural threats such as space weather, man-made threats such as accidental jamming and GNSS system faults, and increasingly malicious threats such as denial-of-service jamming, meaconing and spoofing to fool the user with a false time or position without the user knowing.

The purpose of the INSPIRe (Integrated Navigation System-of-systems PNT for Resilience) project is to define practical measures which could be implemented to indicate to the user if the position or time provided by the navigation system can be trusted to the required level of accuracy, i.e. has sufficient integrity. Integrity requirements will vary for different operations – for example, confidence and accuracy for vessel docking compared is more demanding than for ships on oceanic transit.

INSPIRe is focused on maritime requirements for integrity at system and user level, but the solutions developed in the project could have applications in many other sectors. It should be noted that aviation solutions cannot simply be applied to maritime, as maritime systems just account for longitude and latitude, whilst those for aviation also have to contend with altitude, but water environments present additional challenges, such as signal interference from reflections, signal absorption by water, and the effects of waves and tides.

2 STAKEHOLDER ENGAGEMENT DELIVERY

Work package 11 covers Stakeholder Engagement and is delivered by KTN and NLA International. KTN Ltd is leading WP11, Stakeholder Engagement, working closely with NLA International Ltd. WP11 coordinates preparation for consultations and surveys with work package managers to specify the information they need to obtain, get agreement on the best format for consultations, assist with preparation of materials, and facilitate presentation at these events. WP11 raises awareness of the project through a dedicated website and email newsletter, presentations at conferences and meetings with influential individuals. The role of WP11 is to facilitate these consultations.

Stakeholders are defined as:

- Anyone with an interest in obtaining improved PNT integrity at the point of use.
- Anyone with an interest in designing, developing or supplying systems to provide improved integrity at the point of use.
- Anyone with an interest in improved safety in maritime and other sectors derived from trustworthy PNT solutions.

The purpose of the stakeholder engagement work package is to:

- Assemble a group of stakeholders with an interest in improved position, navigation and timing (PNT) integrity or in providing processes, software or hardware to achieve this.
- Maintain a GDPR-compliant stakeholder register.
- Ensure stakeholders understand that integrity means providing assurance that PNT solutions are trustworthy within defined, quantitative limits at the point of use.
- Consult users and suppliers on their needs.
- Consult users and suppliers on the project's development of improved PNT integrity.
- Solicit information from stakeholders on behalf of work package managers to support project delivery.
- Inform stakeholders of project progress.
- Make outputs such as deliverable documents and relevant supporting information available to anyone interested.

- Encourage others to get involved throughout the life of the project.
- Create an enduring facility to ensure information is available during and after the project.

3 STAKEHOLDER ENGAGEMENT PLAN

A stakeholder engagement plan described the involvement and influence of INSPIRe project stakeholders. It outlined how the project planned to communicate with stakeholders.

Project stakeholder register

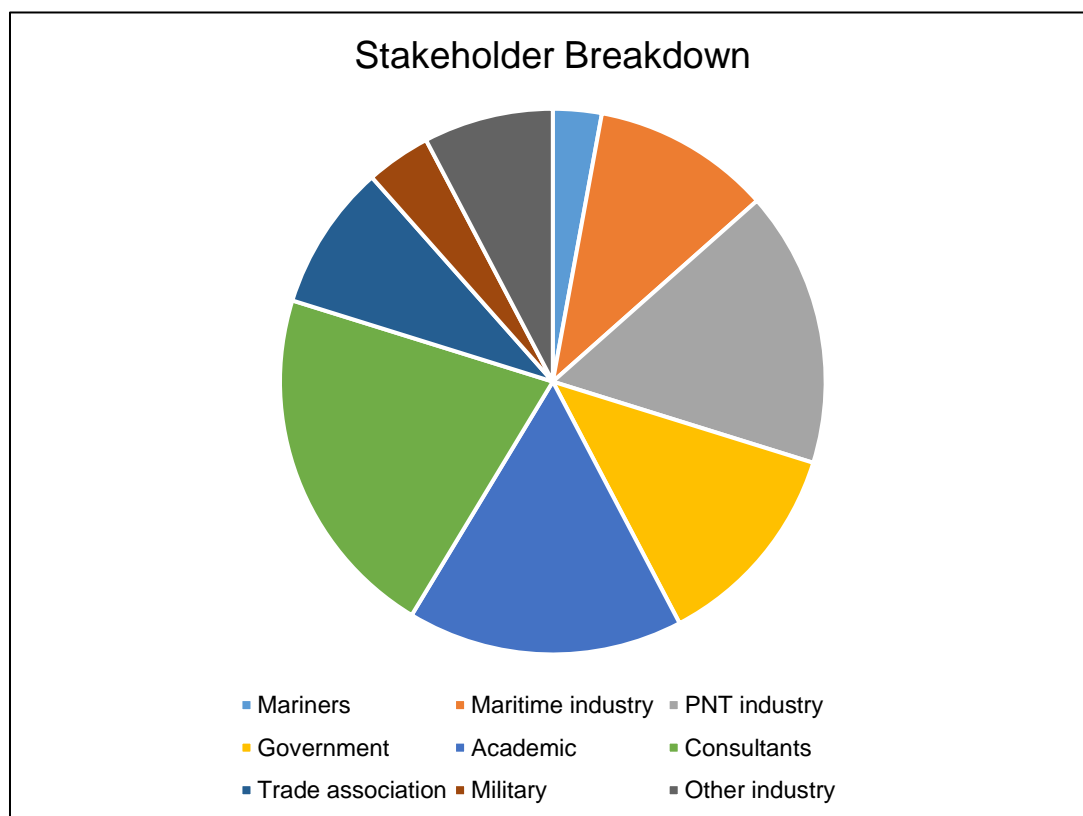
This comprises stakeholders and all with an interest in PNT integrity and in the project.

An initial list was created from the earlier MarRINav list, and from current contacts known to INSPIRe project partners. All on the MarRINav list had given permission to be contacted, and new people were contacted in the first instance by project partners who were already known to them personally. This ensures INSPIRe complies with GDPR.

In-person and virtual delegates at the first project event on 27th February 2023 were added to the list, and others subsequently joined from the website. In May 2023 the list had 127 entries. New stakeholders are encouraged to join the list via the website and email newsletters. The list is a living document for the life of the project and accessible to work package managers.

Stakeholder Map

The membership breakdown is shown below. We review the spread of our stakeholders to ensure we engage stakeholders from across the industry and ensure to invite a mix of stakeholders from all groups to INSPIRe engagements.



4 INTEGRITY

An internal workshop comprising the project partners was held in September 2022 to agree the definition of user level integrity to be used in the project.

We adopted this text to introduce integrity on the website:

“Providing a level of confidence is what we mean by integrity – ensuring that the data displayed to the user is sufficiently reliable for the manoeuvres in progress at the time, and warning the user if it is not. This has two components: system level integrity – are the raw signals transmitted by the satellites compromised? – and user level integrity – have good satellite signals been degraded at the point of use by local factors?”

Trustworthy positioning and timing is critical to support the growing use of such data within the maritime sector and more so when the room to manoeuvre is reduced due to increasing offshore renewable energy production and other such infrastructure.”

5 STAKEHOLDER FEEDBACK

A hybrid workshop was held on 27th February 2023 to present the results up to that date, provide an overview of all work packages, and to capture responses via Q&A, live discussions and the MentiMeter on-line voting tool. All were accessible to the 27 in-person and 11 on-line delegates. The full Menti results are on the website, but headline outcomes were that delegates understood integrity and its importance, and many had experienced loss of integrity and loss of GNSS. Some commented that a spatially accurate representation of error bounds – i.e. more than just a Google-style blue disk or a simple go/no go indication – would be helpful, and that poor accuracy could still be useful provided that integrity measures could guarantee an accuracy to specified limits within a defined boundary. In other words, 100m accuracy could be useful provide the user could be certain to defined limits (e.g. 95% confidence) that the true position lay within 100m of the indicated position.

6 ENGAGEMENTS WITH OTHER PROJECTS

EGNSS-R TRENI project

We held an introductory meeting between the INSPIRe project team and the TRENI (Train Receiver for Navigation and Integrity) project team, who developed a GNSS receiver for railway safety-related applications to demonstrate resilient PNT according to railway standards. This provided the team with an awareness of the aims and objectives of the TRENI EGNSS-R project.

UK SBAS

INSPIRe consulted with the UK SBAS project to understand how a possible integrity solution could support the UK SBAS' aim of supporting safety-critical applications. The engagement provided an awareness of each projects' aim and objectives and identified some potential opportunities for future mutual support.

Ordnance Survey

Meetings were held on 23rd May and 20th June to inform OS about INSPIRe and specifically to discuss OS data availability. There was agreement that, although out-of-scope for INSPIRe, more work is needed on Receiver autonomous integrity monitoring (RAIM), for Precise Point Positioning and Real-Time Kinematic positioning.

Engagement continues, especially as INSPIRe consortium individuals and OS staff have professional contact outside INSPIRe.

7 WEBSITE

The INSPIRe website can be found at www.inspire-pnt.org. The purpose of the website is to provide general information about the project, a document portal to make project outputs accessible to all, and to link to relevant external documents and information.

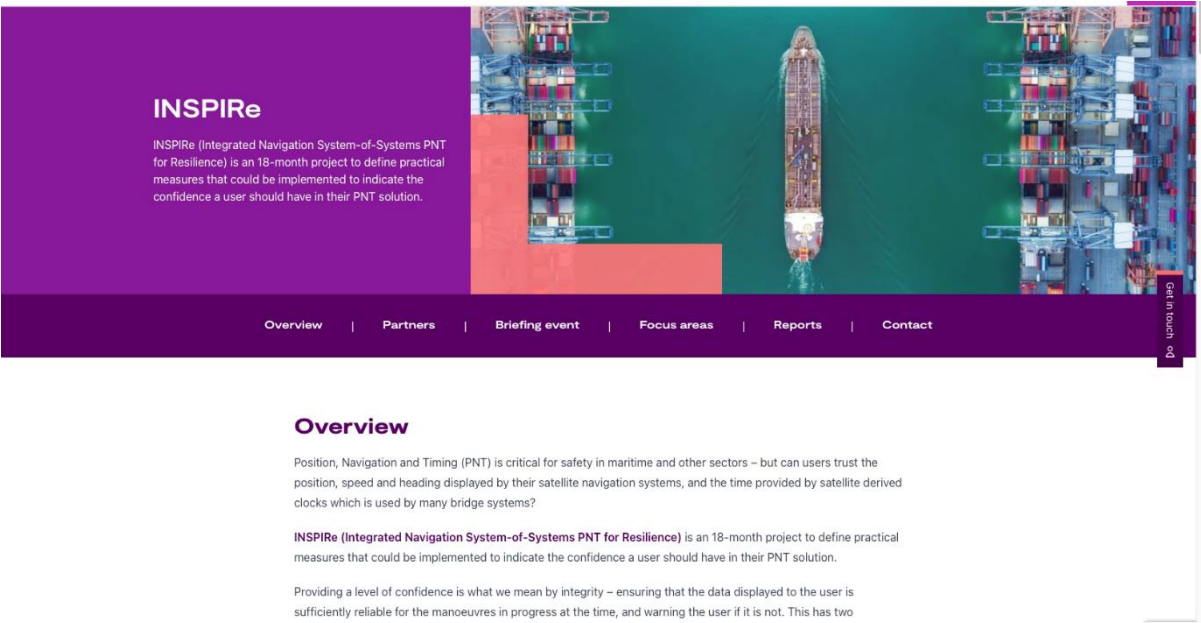
The site provides a point of contact and a facility to register for the email newsletter.

The inspire-pnt.com site was built as an addition to the UKRI site by KTN staff. The rationale was:

- efficiency, as adding to an existing site is faster and easier;
- risk reduction as the site has a permanent in-house team to build, update and maintain it; and
- longevity so the site can persist beyond the end of the project.

Deliverable documents are made downloadable from the website as soon as they have been released. Links to relevant external material are added as soon as it becomes available.

Site front page screenshot:



8 PUBLICATIONS

An article introducing INSPIRe was published in the Royal Institute of Navigation's *Navigation News* (May/June 2023 Edition). This publication has a print run of ~2,000 and is sent to all RIN members.

NLA International had opinion articles published in IMAREST's 'Marine Professional' Issue 3/2023 - the official magazine of the Institute of Marine Engineering, Science and Technology and the Institute of Shipbrokers quarterly professional magazine 'Shipping Network'. NLA International also posted regularly on its Blue Economy channels highlighting INSPIRe's progress.

9 BRIEFINGS AND PERSONAL CONTACTS

INSPIRe was introduced at a RIN event on LEO PNT on 1st February 2023 hosted by Inmarsat in London.

Consortium members use all opportunities to raise awareness of INSPIRe and encourage others to become involved.

Examples include contacts with OS and UK SBAS to explore future collaboration and specifically data sources; contact with the UK Marine Pilot's Association, Ship Brokers and Marine Insurance organisations.

10 EMAIL NEWSLETTERS

Newsletters are published according to the following plan and has been updated as required throughout the project.

All issues will include a “get in touch” link and repeat the introduction to INSPIRe, as newsletters may be read by people unfamiliar with the project. Brief explanatory text and links are provided if existing documents are up-issued.

Single-issue emails can be sent as required with time-critical news or to publicise events. Reports are on the website and the newsletter contains links to access them.

1st issue – published 11th May 2023

Content:

- Short (one paragraph) intro to INSPIRe
- Report on consultation, brief text on outcomes and link
- M(G)RAIM GMV report, brief intro text and link
- Test specs GMV report, brief intro text and link
- Intelligent supply chains, brief intro text and link
- List of publications carrying INSPIRe articles

2nd issue – drafted for publication in December 2023

Content:

- Advance notice of the final virtual event on 21st February 2024
- Updated list of documents available on the website
- Updated list of external relevant documents including links
- Links to other post-project activity including
 - University of Tokyo report on PNT resilience strategies
 - Updated London Economics report on the cost of losing GNSS
 - UK CNI PNT protection framework
 - UK National preparedness Commission report on loosing GNSS

3rd issue – 2024 promoting the Project final event scheduled for the week commencing 28th May

11 FINAL EVENT

This is envisaged to be an online ESA NAVISP day, which will be open to all. This will be held in mid-June 2024. The agenda is under discussion with INSPIRe and ESA.