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# PURPOSE

## Concerns about privacy and security are barriers to sharing data between organisations and sectors in the infrastructure industry. The purpose of this requirement is to consider issues around data sharing in the infrastructure industry, identifying where the issues arise (e.g. regulatory, legislative, cultural, security and privacy) and what Government could do to facilitate data sharing.

# BACKGROUND TO THE CONTRACTING aUTHORITY

## The Authority (Her Majesty's Treasury) is the Government's economic and finance ministry, maintaining control over public spending, setting the direction of the UK's economic policy and working to achieve strong and sustainable economic growth.

# Background to requirement/OVERVIEW of requirement

## The National Infrastructure Commission (“NIC”) is an independent body (an Executive Agency of HM Treasury) which provides the Government with impartial, expert advice on major long-term infrastructure challenges. Whilst Her Majesty’s Treasury is the Contracting Authority, all analysis and outputs in the requirement are commissioned by, and will be delivered by the Successful Potential Provider exclusively to, the NIC. Analysis and outputs must not be shared or discussed with any party other than the NIC, without explicit NIC consent.

## The NIC was set up in an interim basis on 5 October 2015 and formally became an Executive Agency of HM Treasury on 24 January 2017. The NIC’s objectives are to support sustainable economic growth across all regions of the UK, improve competitiveness and improve quality of life.

## The NIC has committed to delivering a National Infrastructure Assessment (NIA) once in every Parliament, which will assess the UK’s long-term infrastructure needs (across a 10-30 year horizon) with recommendations to the Government. The NIA covers six infrastructure sectors (transport, energy, water and wastewater, digital communication, solid waste and flood risk management), also considering their interdependencies and wider cross-cutting issues. The delivery of the NIA will be overseen by the NIC’s Commissioners, appointed by the Chancellor. The NIA is being driven by an extensive programme of stakeholder engagement, including sector workshops, regional visits and social research, as well as a public call for evidence.

## The focus of the NIA is on the long-term strategic plans, and therefore, it will not seek to discuss very short-term infrastructure delivery issues which are outside its scope (including current projects such as HS2, Hinkley Point C and South East airport capacity), except when these issues have strong strategic bearings on the overall long-term plans.

## The NIC has also been commissioned by the Government to report on specific infrastructure challenges, which to date have included: energy innovations, London transport, Northern connectivity, mobile connectivity and the Cambridge-Milton Keynes-Oxford corridor. At Autumn Statement 2016, the Chancellor requested that the NIC undertake a new study on how new technologies can improve infrastructure productivity.

## The Chancellor asked the National Infrastructure Commission to:

### Identify which emerging technologies have the most potential in terms of optimising the management, performance and maintenance of existing and future infrastructure assets to support economic growth;

### Make recommendations to Government on what actions it should consider to support the deployment of those technologies across infrastructure areas and sectors, including identifying where trial approaches may be appropriate.

## The Successful Potential Provider should read both the NIC’s [February 2016 Call for Evidence](https://www.nic.org.uk/news/nic-launch-technology-study-call-evidence/) for the technology study, as well as HM Treasury’s [Terms of Reference](https://www.nic.org.uk/our-work/tech-study/) for the study, in order to understand the broader context for this requirement and inform their response.

# definitions

|  |  |
| --- | --- |
| **Expression or Acronym** | **Definition** |
| Infrastructure sectors | The sectors which fall under the NIC’s remit: transport, energy, water & wastewater, digital communication, solid waste and flood risk management. |
| Infrastructure productivity | The performance of infrastructure systems, determined by the management, operation and maintenance of these systems. |
| New technologies | Digital technologies already at a level of readiness to allow for full deployment over the next 10-30 years (i.e. those with the potential to realise the maximum gains from implementation). |
| Digital twin | A computerized companion of a physical asset that can be used for various purposes, including real-time monitoring of the asset, and modelling future situations. |
| National digital twin | A comprehensive digital twin of the nation’s infrastructure across all sectors. This could be used for real-time monitoring, planning, and identifying system impacts (among other uses). |
| Regulatory sandbox | OfGem’s energy regulatory sandbox allows innovators to trial business propositions that will benefit consumers without incurring all of the usual regulatory requirements. OfGem provide bespoke advice upon which the innovator can rely for the duration of the trial (up to 24 months). The outcomes of the discussions depend upon OfGem agreeing the regulatory arrangements for the duration of the trial. More information can be found [here](https://www.ofgem.gov.uk/about-us/how-we-engage/innovation-link). |
| Data spectrum | The Open Data Institute have developed a data spectrum, showing how data can range from closed to shared to open. More information can be found [here](https://theodi.org/data-spectrum). |

# scope of requirement

## Through the initial Call for Evidence, meetings with stakeholders, and reviewing industry publications, the NIC team has identified a shortlist of emerging technologies with the most potential to improve infrastructure productivity. The NIC intends to focus the new technologies study on digital technologies, including:

### Sensing (including radar, lidar, sonar, satellite imaging, thermal imaging, quantum sensing and the use of drones) and the internet of things;

### Artificial intelligence, machine learning, robotics;

### Virtual and augmented reality; and

### Blockchain and distributed ledger technologies.

## The development and deployment of many of these new technologies is linked to or dependent on the availability of high quality data in the specific area that the technology will be applied to. Therefore, in considering what actions the Government should consider to support the deployment of those technologies across infrastructure sectors, the NIC team will need to consider how Government can support the accessibility of high quality, interoperable data in the infrastructure industry, including through:

### encouraging the effective collection and management of data;

### ensuring data collected is high quality and interoperable where necessary, e.g. through the use of standards;

### facilitating the secure sharing of data.

## In particular, the NIC would like to develop our understanding of how Government can help facilitate the sharing of data across the different levels of the [data spectrum](https://theodi.org/data-spectrum) (from completely open data, through licensed data, to data shared securely through authentificaton or specific contracts). The scope of the requirement includes:

### A quantitative assessment of the potential value unlocked by increasing data sharing in the infrastructure sectors, including productivity value within organisations or systems, transactional value when a service is based on data, and indirect value (e.g. through uses of open data);

### A high level assessment of the barriers to sharing data at different levels of the data spectrum in the infrastructure sectors (e.g. legislative, regulatory, cultural);

### In-depth assessment of the current and incoming legislative and regulatory framework (including consideration of data standards, and the incoming General Data Protection Regulation), considering to what extent these present a barrier to data sharing in the infrastructure sectors, and proposing potential solutions and mitigants (including assessing existing or proposed mitigants such as OfGem’s regulatory sandbox);

### In-depth assessment of privacy and security issues around data sharing, and an assessment of how Government can help facilitate data sharing at different levels of the data spectrum to support innovation in the infrastructure sectors whilst ensuring security, including through considering:

#### Approaches already in practice which could be expanded across the infrastructure sectors,

#### Approaches recommended or proposed elsewhere (for example in the AI review being led by NIC and the Royal Society/British Academy data Governance project),

#### Approaches taken in other countries, and

#### The potential use of blockchain and distributed ledger systems;

### Considering privacy and security issues around digital twin models and simulations, up to and including a potential national digital twin and how these could be mitigated; and

### Convening a roundtable(s) jointly with the NIC with lawyers and data experts (e.g. the Open Data Institute, Royal Academy of Engineering, the Alan Turing Institute, and the Royal Society and British Academy) to aid with the assessment of the issues set out above.

## Where solutions or mitigating factors are being proposed, the NIC is keen to have an understanding where possible of to what extent these are likely to address the issue, potential costs, risks, and any knock-on impacts.

## The NIC would expect any proposed team to include a lawyer(s) capable of undertaking the requirement at 5.3.3, and with an understanding of the challenges faced by companies attempting to share data in the infrastructure industry, as well as individuals with specific data expertise.

# The requirement

## A report, finished to a publishable standard and delivered by 13th October 2017.

## The report should set out:

### A summary of the barriers to sharing data in the infrastructure industry and how this is a barrier to innovation;

### An in-depth assessment of regulatory and legislative barriers to sharing data in the infrastructure industry (including data standards);

### A list of the potential solutions or mitigants to any regulatory or legislative barriers to data sharing in the infrastructure industry, with an assessment of their relative effectiveness;

### An in-depth assessment of privacy and security issues around data sharing;

### A list of potential approaches by Government to facilitate the secure sharing of data in the infrastructure industry, with an assessment of their relative effectiveness; and

### A deep-dive into the concept of a national digital twin, examining the potential privacy and security risk, concluding with a recommendation of potential mitigants of these risks.

# key milestones

## The Successful Potential Provider should note the following project milestones that the Authority will measure the quality of delivery against:

|  |  |  |
| --- | --- | --- |
| **Milestone** | **Description** | **Timeframe** |
| 1 | Project inception meeting with the NIC, to agree the milestones for the project and precise coverage of the report. | Within week 1 of Contract Award |
| 2 | An inception report to be provided, and agreed by the NIC, clarifying the approach to be taken, along with a plan setting out key milestones and dates for deliverables, risks and how these will be managed. | Within week 2 of Contract Award |
| 3 | Update meeting / phone call on the project including any findings or assumptions to agree upon. | Weekly |
| 4 | Presentation on the barriers to sharing data | Within week 2 of Contract Award |
| 5 | Roundtable | Within week 4 of Contract Award |
| 6 | Presentation on national digital twin and potential risks and mitigants | Within week 4-5 of Contract Award |
| 7 | Presentation on regulatory and legislative barriers and potential solutions/mitigants | Within week 5-6 of Contract Award |
| 8 | Presentation on privacy and security issues and potential solutions/mitigants | Within week 5-6 of Contract Award |
| 9 | First draft of final report to be shared with the NIC. | Within week 7 of Contract Award |
| 10 | Final version of the report suitable for publication. | Within week 8 of Contract Award |

## The above timetable is subject to change, and is dependent upon key gateway points being met in terms of receiving information from the customer and obtaining all required approvals.

# authority’s responsibilities

## The NIC will share pertinent information received through relevant stakeholders and introduce the Successful Potential Provider to relevant stakeholders, which can offer valuable advice on the requirement.

# reporting

## As set out in Section 7 (Key Milestones). Additionally, the Successful Potential Provider will be expected to update the NIC on project progress on at least a weekly basis via a meeting or phone call, including to flag any issues or early findings.

# volumes

## This is a substantial piece of work – the expectation is that the key outputs and related materials will be both extensive and of publishable standard.

# continuous improvement

## The Successful Potential Provider will be expected to give due consideration to the way in which the required Services are to be delivered throughout the Contract duration and can be continually improved.

## Changes to the way in which the Services are to be delivered must be brought to the NIC’s attention and agreed prior to any changes being implemented.

# Sustainability

## n/a

# quality

* 1. The NIC will be looking to cite this report’s findings in its study on new technologies. Outputs should therefore be to a publishable standard, with all evidence, assumptions and caveats clearly highlighted.
  2. The source of data and assumptions, as well as advice on its robustness, should be clearly set out, and it will need to be demonstrated how the findings have been suitably quality assured. The report will need to be a self-standing piece that can set out its analysis and justify its conclusions to leading experts in the fields of digital technologies and infrastructure.

# PRICE

## Prices are to be submitted via the e-Sourcing Suite Appendix E, excluding VAT.

## The value of this Contract shall not exceed more than £99,999.99 (excluding VAT). Any bids above this shall be deemed as non-compliant.

## Prices should be inclusive of all expenses and exclusive of VAT.

# STAFF AND CUSTOMER SERVICE

## The NIC requires the Successful Potential Provider will provide a sufficient level of resource – with sufficient but not excessive senior involvement and oversight – throughout the duration of the Contract in order to consistently deliver a quality service to all Parties at value for money.

## The Successful Potential Provider’s staff assigned to the Contract shall have the relevant qualifications, experience and expertise to deliver the Contract. The NIC does not prescribe any single set of minimum requirements in terms of skills or qualifications, but the Successful Potential Provider must demonstrate as part of its bid that its delivery team contains staff with sufficient expertise and skills.

## The Successful Potential Provider should not replace staff members in the team which was assembled and presented in the bidding process without informing and obtaining consents from the NIC.

## The Successful Potential Provider shall ensure that staff understand the NIC’s vision and objectives and will provide excellent customer service to the NIC throughout the duration of the Contract.

# service levels and performance

## The targets set out below assume that the contract will be awarded by Thursday 7th September 2017. The NIC will measure the quality of the Supplier’s delivery by:

|  |  |  |  |
| --- | --- | --- | --- |
| **KPI/SLA** | **Service Area** | **KPI/SLA description** | **Target** |
| #1 | Agreed approach | Clarifying the approach to be taken, along with a plan setting out key milestones and dates for deliverables, risks and how these will be managed, etc. | 8th September 2017 |
| #2 | Output from Interim Report for Milestones 5, 6, 7 and 8 | A draft report addressing the issues set out in the requirement including the first draft of analysis, views and findings. | As set out at 7.1 |
| #3 | Outputs from the Final Report, in publishable form | A final report cover the key outputs described in the requirement. | 13th October 2017 |

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# Security requirements

## Due care must be taken by the Successful Potential Provider to protect the confidentiality of all analysis and outputs (including in development and draft phases) relating to this requirement, to avoid pre-empting the NIC’s placement of the final report in the public domain.

## All data storage must be UK based.

# intellectual property rights (ipr)

## All analysis (including any calculations and models) used to generate the outputs should be provided to the NIC for future use. This analysis, and the interim and final reports, will be the property of the NIC. The Successful Potential Provider must not disclose the report (either in part or in full) to any third parties prior to publication by the NIC, unless the NIC gives express consent to do so.

# payment

## Payment can only be made following satisfactory delivery of the pre-agreed certified products and deliverables. Payment will be made in arrears, subject to invoice(s) being submitted for work carried out.

## Before payment can be considered, invoice(s) must include a detailed elemental breakdown of work completed and the associated costs.

# additional information

## The Successful Potential Provider should demonstrate that they are open to working collaboratively with other suppliers, contracted by the NIC.

# Location

## The location of the Services will be carried out at the offices of the successful potential provider. Weekly meetings will need to take place with the National Infrastructure Commission at the NIC’s offices Eastcheap Court, 11 Philpot Lane, London EC3M 8UD. There may be occasional visits to other NIC sites in the UK. Travel and accommodation will be based on NIC T&S rates.