FREQUENTLY ASKED QUESTIONS (FAQs)
National Intelligence Postdoctoral (NIPG) Grants
Round 6 for funding commencing in 2026

All participants should read the National Intelligence Post-Doctoral (NIPG) Guidelines and specific documents available on GrantConnect and SmartyGrants (online grant application portal). as they contain important information for Research Office staff and individuals preparing applications.

Individuals should direct all queries to their Administering Organisation's Research Office (or equivalent). If further information regarding the NIPG program is required, the Research Office should email NIPG@oni.gov.au.

Please ensure that your application is eligible in accordance with the NIPG Guidelines.

This Frequently Asked Questions document will be updated as required.

1. What is SmartyGrants?

SmartyGrants is an online grant application portal. It is where you will complete and submit the NIPG application form.

2. What are the NIPG research Topics?

The NIPG research topics are priority research areas that have been developed by various agencies in the Australian National Intelligence Community (NIC).

The research topics can be found on GrantConnect and SmartyGrants (online application portal).

3. Have the research topics changed since the previous Round?

Yes. New topics are released each Round (some topics may be repeated by round to round).

4. Can I have more than one research advisor?

Yes, but this needs to be justified in the application.

5. Why do I have to provide passport or visa information? Where does this information go and for what purpose?

The Passport and Visa information provided will enable Office of National Intelligence (ONI) to verify Australian citizenship, Australian Permanent Residency or New Zealand Special Category Visa status. Information will be checked with the document issuer or official record holder via third party systems for the purpose of confirmation.

6. Are Australian National Intelligence Community member entities and their staff allowed to be named as participants in these grants?

Member entities of the NIC (a list is available on the NIC website) and their staff are not to be named participants and NIC member entities (agencies) are not to be listed in a NIPG application or funded grant. Existing relationships between participants and the NIC shall be declared and managed as a conflict of interest by the Administering Organisation. For example, participants receiving NIC funding for a different research project must declare this funding to ensure potential conflicts of interest are raised.

7. Can Publicly Funded Research Agencies (PFRAs) be named as participants in these grants?

Yes, a PFRA can be named as a participating organisation if they are able to add to or assist with the proposed research. While a PFRA may be able to engage with an eligible institution on a grant application, there can be no flow of grant funds, either directly or indirectly, from the eligible institution to the PFRA. The PFRA must contribute their own resources e.g. staff time, facility access, etc, into the Project. An example would be if the PFRA was listed as an Other Organisation, and that PFRA's facility or equipment was to be used by the Project, no costs could be charged to the grant for the use of that facility or equipment.

ONI has separate programs to build their relationships with PFRAs, and the policy intent of the NIPG program is to build capacity and capability within the Australian University Sector.

8. Are letters of support from an government agencies permitted?

Letters of support from an government agencies are not permitted to be included as part of an application.

9. Are international collaborations supported by the grant?

Any international collaboration must be necessary to the Project and justified in the application, including the project description and budget justifications and such collaborations should be reviewed by and compliance with the Admin Organisation's Foreign Interference section.

10. Does everyone working on the Grant Project need to be an Australian Citizen?

The post-doctoral candidate and research advisor must be an Australian citizen, have permanent residency or hold a New Zealand Special Category Visa. Individuals working on the Project who would be named in publications must comply with the citizenship eligibility criteria or if otherwise their funding source and employing institution must be clearly noted in the publication. Advice regarding collaboration should be obtained from the Admin Organisation's Foreign Interference section. If data or formulas, etc. were utilised for publications from a non-complying source, they can still be named on the publication, provided it is noted that they are funded by another entity rather than the NIPG grant.

11. Will the success rate for this application round be similar to that of the previous round?

NIPG Round 5 success rate (10 grants) was approximately 19%. Round 6 success rate will depend upon the number of applications received. NIPG Round 6 will fund up to 10 grants.

12. Would it be beneficial to have multiple institutions listed on a grant application? Which industry partners can be added to a project?

The number of participants or institutions will not determine the success of an application. All applications are assessed based on the eligibility and assessment criteria outlined in the Grant Guidelines to determine merit and funding decisions. Applications should include the people and organisations most suitable and necessary to undertake the proposed research.

13. As this program is funded by ONI is there a security classification requirement? Or will outcomes of the research be restricted?

Individuals are not required to apply for or hold a security clearance during the grant. The NIPG program is intended to facilitate unclassified research and therefore all outcomes may be published in accordance with the ARC Open Access Policy available on the ARC Website.

14. Can applications with a social sciences or humanities focus, or applications with a mix of STEM and non-STEM participants, be submitted for NIPG?

Yes. Applications must address a research topic and will be assessed on their merits.

15. If the grant is awarded, how will progress be measured?

Each awarded grantee is required to complete a progress report every 8 months and a final report at the completion of the project. In addition, financial acquittals and outreach by ONI will provide additional insight into the progress of research funded under the NIPG program.

16. Are funding decisions made based solely on application merit, or is the intention to fund a grant for each research topic?

Decisions on funded grants is based on merit and the fit with the relevant research topic for the NIC priority research needs, Australia's national interest, including national security, applications already funded, and available funding. At least ten NIPGs will be awarded.

17. How will 'outreach' for the NIPG program be conducted?

Outreach under the NIPG program is intended to support the objectives and outcomes of the program including the objective to 'enhance collaboration in the research, science and technology community'. Outreach will be completed by ONI to better understand the research.

18. Where will I find feedback from an unsuccessful application?

Feedback will not be provided.

19. How do I know if my project is in scope?

ONI are unable to provide applicants with pre-emptive advice about whether a project proposal is in scope for the NIPG program and for a specific research topic.

Projects are, however, expected to support basic or fundamental research, and that research is expected to be undertaken at a low level of technological readiness.

20. My passport expires in February 2026. I am planning to apply for a new passport but for the purpose of citizenship proof, will the current passport suffice?

As long as the details you enter are from the one document (a current or expired passport) your details will be able to be verified. If there are any issues regarding your citizenship, we will contact you.

21. International collaborations

Researchers may discuss their projects with outside parties however, they should be mindful of not divulging potential IP or discoveries that should be retained for the benefit of Australia. The projects are not deemed secret, but we suggest that the research be discussed with some care.

Individuals working on the project who would be named in publications or would otherwise link their association with the project, such as being a collaborative partner, must meet the

citizenship criteria or must be reviewed by and comply with the Admin Organisation's Foreign Interference section.

Please talk to your heads of department, make use of systems and regulations within the university. Contact your University's counter foreign interference officer / office to seek specific consideration of the proposal and advice re sharing and collaboration. ONI advises that if you have questions about collaboration and partnerships, their advice, if any, will be dependent on the university foreign interference office assessment.

22. Annual Conference in Canberra

NIPG ONI recipients are required to attend the annual ONI conference in Canberra, provisionally to be held in the second half of each year. The conference will provide a networking opportunity with the NIC and an opportunity to present your research to the attendees.

Applicants should include a line in each year of the budget for travel to Canberra which can include accommodation for two nights and flights (depending on participants location). A registration fee is not applicable.

The conference dates and agenda will be provided by ONI closer to each conference.

23. Is there a restriction on the type of organisation a project can collaborate with?

While Grants are provided to Australian Universities, collaborative engagement with Australian organisations including start-up companies is strongly encouraged.

24. Does ONI encourage collaboration with start-up companies?

Yes. Collaborative engagement with Australian start-up companies is strongly encouraged. ONI suggests in the development of your application, you liaise with your University start-up incubator and/or industry outreach facility, where appropriate.

25. Can someone in the process of obtaining citizenship apply?

All named participants must be Australian citizens, Australian Permanent Residents or New Zealand Special Category Visa holders on the day the Applications close.

26. What should be the format of the PDF upload listing ALL publications by the applicant?

The format of the PDF upload listing ALL publications is up to the applicant. ONI does not require individual publications uploaded to the application form.

27. When will the outcomes of NIPG Round 6 be announced?

ONI anticipates that successful applicants will be notified under embargo in June 2026, with public announcement in July.

28. Will you provide a previous successful application?

Yes. See below for an application from Round 1 with identifying information removed. *Note that the application form has evolved since Round 1.*

Example Proposal

Postdoctoral Candidate:	
Research Advisor:	
Sponsoring University:	

Research Problem Title:

NIPG-2021-006: Digital Cities/Countries for Intelligence and investigative purposes

Proposal Title:

Platform for Semantic Integration of Heterogeneous Sensor Sources

Abstract: *(Limit of 400 words)*

A car is seen driving erratically in the Melbourne central business district. Shortly after emergency services are flooded with calls. Decision makers have minutes to determine the driver's intent, what actions to take, and the level of risk to other drivers and pedestrians conditional on the vehicle's next movements and actions taken.

Decision makers have access to diverse forms of sensor data that could be used to provide a more complete picture of the situation as it evolves; vehicle sensors at intersections can be used to detect anomalous traffic flows, security cameras provide visual sensors to identify vehicles and individuals, pedestrian counting sensors to assess crowding, early observations shared on social media (which functions as a social sensor), and in some circumstances mobile phone location data. These sensor observations can feed a simulated model (digital twin) of the city to support what-if analysis to assess the risks under each possible situation.

Despite the availability of such data, a key issue in releasing this vision is that the different forms of sensor types are not semantically interoperable with each other (Jacoby 2020) due to heterogeneous data with no consistent schema and varying degrees of reliability that need to be fused together and presented to the user. Ontologies and knowledge graphs have been proposed to model and link diverse sensor data in a unified manner (W3C 2017), including adaptations for purposes of smart city waste management, air quality monitoring, traffic congestion, energy and smart parking/lighting (Gyrard 2018, Espinoza-Arias 2019). However, these lack concepts and reasoning models aligned to the vocabulary and events of interest to the intelligence community. Furthermore, realising these ontologies as the basis for a digital twin requires targeted development effort to implement a scalable platform that supports exploration, analysis and visualisation.

This research seeks to address the following key gaps:
i) The lack of smart city ontologies and knowledge graphs to support the principled integration and interrogation of heterogeneous data for intelligence and investigative purposes.
ii) Human obstacles (e.g. colour-blindness) to the uptake of digital twins of cities.
iii) Scalability concerns when data is expanded to a city or country level.

The research will involve concept development and evaluation from stakeholders in the intelligence community. The concept will be demonstrated through application to real-time transport data and social media feeds to form a single geospatial model that captures and predicts behavioural changes as events unfold.

Statement of specific problem to be addressed by this research:

Digital twins involve a combination of Internet of things (IoT), big data infrastructure and machine learning (ML) analyses (Jacoby 2020). However, there is increasing evidence from industry that ML applications are particularly prone to technical debt (cost of performing future developments to maintain the system as a result of early design choices) when placed in production (Scully 2015). This issue is compounded for smart cities, as the

available data sources are constantly changing and have an unstable schema, thus solutions that are developed with a particular dataset or application in mind are difficult to adapt to new datasets or scenarios.

Traditional data processing pipelines for ML depend critically on the selection and pre-processing (data wrangling) of data features into a form suitable for the predictive algorithm; however these choices are data (sensor) and application specific, making it difficult to maintain such systems or incorporate new forms of IoT devices and sensors. Thus a machine-readable representation of the sensor system itself is needed to support an inference algorithm to intelligently fuse information from new sensors without the need for manual algorithm adjustments. Ontologies and knowledge graphs have emerged as an approach to structure data for smart cities in an extensible and interchangeable manner. This is still an active area of research, and new ontologies for smart cities are still being proposed and catalogued (Gyrard 2018, Espinoza-Arias 2019); for instance, we have ontologies for smart cities that focus on waste management, air quality monitoring, traffic congestion, energy and smart parking/lighting (Gyrard 2018). However, current ontologies for smart cities have not been developed targeting the needs of the intelligence and investigative domain.

The core challenge that I seek to address in this research is to design an appropriate modelling framework for semantic integration of heterogeneous sensor data sources for digital cities that support the intelligence and investigative domain. The architecture shall support modelling diverse sensors (including social sensors) at a micro-level, capture a full record of data provenance, integrate with simulation and ML models to support what-if questions of a digital twin, and respond to sensor updates in real-time while also scaling efficiently when applied at a city- or even country-level. Furthermore, the platform shall consider the needs of decision makers (that sit at the end of the pipeline).

Specifically, the research is designed to answer the following research questions (RQs):

- **RQ1:** How can evolving heterogeneous sensor data streams be modelled to support seamless integration and interrogation as part of a single knowledge platform for intelligence and investigative purposes?
- **RQ2:** What are the human computer interface challenges to the use of digital twins and how can we overcome them? E.g. automatically adapting the visualisation if the user suffers from colour-blindness.
- **RQ3:** What is the relationship between modelling choices and the scalability of the digital twin?

Candidate background, previous experience and relevance to proposed research:

My PhD research focussed on the design of spatio-temporal data analytics workflows for processing wearable sensor data to recognise team-level behavioural patterns in sport. This work has positioned me with the skills to harness sensor data for mapping and modelling of events and behaviours in real-time, while also making me acutely aware of the practical limitations faced due to noisy sensor data and privacy issues that can undermine such systems if not taken into account during the initial design phase.

Prior to completion of my PhD, I worked part time as a software engineer/data analyst. Projects include integrating and visualising transport network sensor datasets and supporting the development of an IoT smart home system that uses AI to detect anomalies such as falls. I also assisted in spatial analysis of combat simulation output as part of a research collaboration with the Defence Science and Technology Group, and hold an Australian Government Negative Vetting 1 security clearance.

Following my PhD, I worked with Prof. and Dr. on Domain-Specific Visual Languages for Big Data Analytics Applications (ARC Discovery Project). Due to my past experience with transport network sensor datasets, I was asked to assist the Civil Engineering department at Monash University in selecting the infrastructure to build a digital twin of the Victorian transport system. This served as a case study in subsequent publications and I believe will position me well when working with collaborators and stakeholders to ensure the right approach is taken to the design of digital twins at a city/country level.

Currently, I work as a postdoctoral research fellow at the XXX University under supervision of Prof. and Dr.. I led a large-scale analysis of code quality issues in data science code and am currently engaged in an Innovation Connections grant with SURROUND Australia to evaluate a methodology to model industry and government data using knowledge graphs. I also collaborate closely with Monash University on human-centric model-driven approaches for the design of AI systems. I believe that building upon model-driven development techniques and knowledge graphs will be the key to facilitating a platform that supports collaborative and agile development while avoiding the pitfalls of data science code that assumes a particular dataset or approach and thus is unable to be maintained in the long term or scaled-up.

General methodology, procedures to be followed and expected timeline for completion

To answer the research questions, the study involves four phases: 1) a systematic literature review to identify core modelling concepts to support design of smart cities for intelligence and investigative purposes; 2) development and evaluation of data fusion techniques for intelligence and investigation over smart city ontologies; 3) development of a proof-of-concept and conducting a case study using transport and social media data; 4) empirical investigation of the scalability of the platform when deployed to the cloud.

Phase 1: Literature review and identification of core modelling concepts for intelligence community needs
Knowledge graphs and ontologies are building blocks that permit context aware searching and reasoning. Phase 1 will involve a systematic literature review to identify core modelling concepts from knowledge graphs and ontologies that can be used to model a smart city for the purpose of intelligence and investigative purposes.

The W3C Semantic Sensor Network Ontology (SSNO) (W3C 2017) provides an open standard for describing sensors and observations in a unified manner, and W3C provenance standard (PROV) (W3C 2013) provides a mechanism to record the full workflow through which conclusions were derived from observations. Such standards are important, not just because they provide a standardised format for sharing diverse forms of sensor data, but because they allow linking different datasets together as part of a single knowledge graph. This ability to link different sensor datasets in a unified way is key to building maintainable smart cities/countries that can continue to grow and evolve as new datasets become available.

The goal of this phase is to identify a core set of modelling concepts, e.g. based on the SSNO and PROV standards, suitable as the basis for an open platform to support smart cities for intelligence and investigation purposes. It will also assess the suitability of existing smart city ontologies (Gyrard 2018, Espinoza-Arias 2019) against the needs of the intelligence community. The outcome of this phase is expected to be a new ontology for smart cities focussed on the needs of the intelligence community (extending or aligned

with existing ontologies), which will serve as the basis for a modelling framework. This will support the first half of RQ1 seeking a method by which to model sensor data streams in such a way that they can be seamlessly integrated as part of a single knowledge platform for intelligence and investigative purposes.

Phase 2: Development of data fusion methods for intelligence and investigation over smart city ontologies
This phase will investigate and contrast techniques for data fusion over ontologies (Boury-Brisset 2003) to support reasoning over smart city data. A key advantage of data fusion using ontologies over black-box ML techniques is that the ontologies assist in the explainability (Thakker 2020) of the results. I will adapt and test algorithms under simulated data degradation to test robustness to faulty sensors—a key threat to smart cities, particularly at scale. Data fusion is key to addressing the second half of RQ1, specifically whether the method is suitable for intelligence and investigative purposes.

Phase 3: Proof-of-Concept and Case study
This phase will involve development of a proof-of-concept and a case study applying the platform to unclassified data, such as integration of real-time transport data and geo-located social media feeds as part of a single geospatial model that captures and predicts behavioural changes as events unfold (Figure 1). This phase will also seek feedback from stakeholders to identify obstacles that may limit uptake from decision makers.

The goal of this phase is to uncover human computer interface challenges (RQ2) that arise in the use of digital twins, and to identify methods by which to overcome them. For example, the number of dimensions involved (space, time, sensor features) may exceed what humans can perceive, resulting in visualisation challenges, particularly for users with color-blindness who struggle to differentiate certain color combinations. To address these challenges, I intend to investigate the suitability of human-centric model-driven software engineering approaches (Grundy 2020) to support generation of interfaces and visualisations tailored to the needs and abilities of the user.

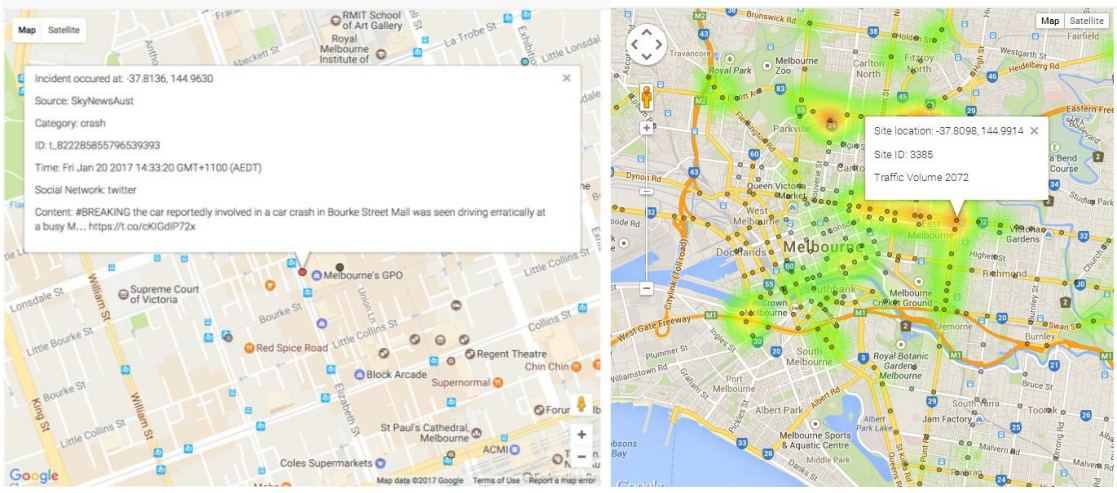

Figure 1: Mockup of how proposed platform will monitor incidents (e.g. January 2017 Melbourne car attack) as they unfold on news/social media (left) and impacts on traffic patterns (right).

Phase 4: Evaluation and Refinement
This final phase will involve scaling the platform on the cloud with a combination of real-world and simulated data to perform an empirical investigation of feasibility and viability of this form of technology to assist decision makers at scale. In particular, it will trial different modelling approaches and measure both technical (e.g. latency and scalability)

and human issues (based on metrics from phase 3) that arise when the approach is scaled to large datasets. This is intended to address RQ3 seeking to understand the relationship between modelling choices and the scalability of the digital twin.

Dissemination: Conference and Journal publication
Each phase is expected to result in one or more conference paper publications that advance the software engineering and modelling communities, e.g. targeting the ACM/IEEE International Conference on Model Driven Engineering Languages and Systems (MoDELS). I will also attend the annual Intelligence Community Academic Research Symposium and seek to discuss/showcase my work. At the end of the project, the complete work will be disseminated in the form of a full-length journal article, and all source code and data analyses will be packaged and released as open source.

The expected timeline to completion is as follows:

- Phase 1 (6 months): *Literature review and identification of core modelling concepts*
- Phase 2 (6 months): *Development of data fusion methods for intelligence and investigation over smart city ontologies*
- Phase 3 (6 months): *Architectural discovery and Case study*
- Phase 4 (6 months): *Evaluation and Refinement*
- Dissemination (concurrent): *Conference and Journal publication*

Explanation of new or unique techniques:

Adaptations of sensor ontologies have been proposed in the literature in order to represent smart cities (Gyrard 2018, Espinoza-Arias 2019) for purposes of waste management, air quality monitoring, traffic congestion, energy and smart parking/lighting. *However, these have not been designed to meet the needs of the intelligence and investigative domain, and thus lack key concepts and reasoning models aligned to the vocabulary, events of interest, and analysis workflows of the intelligence community.*

Innovations: This research proposes a novel new approach for integration and analysis of streams of heterogeneous sensor data for intelligence and investigative tasks, supported by the use of sensor ontologies and provenance standards. A key innovation of the approach is supporting fusion of sensor streams from new kinds of IoT devices into intelligence analysis through a focus on modelling the source of the sensor data rather than adjustments to the analysis algorithms, and the use of data provenance standards (W3C 2013) to describe the analysis workflow by which intelligence reports were derived from the underlying sensor data (Figure 2).

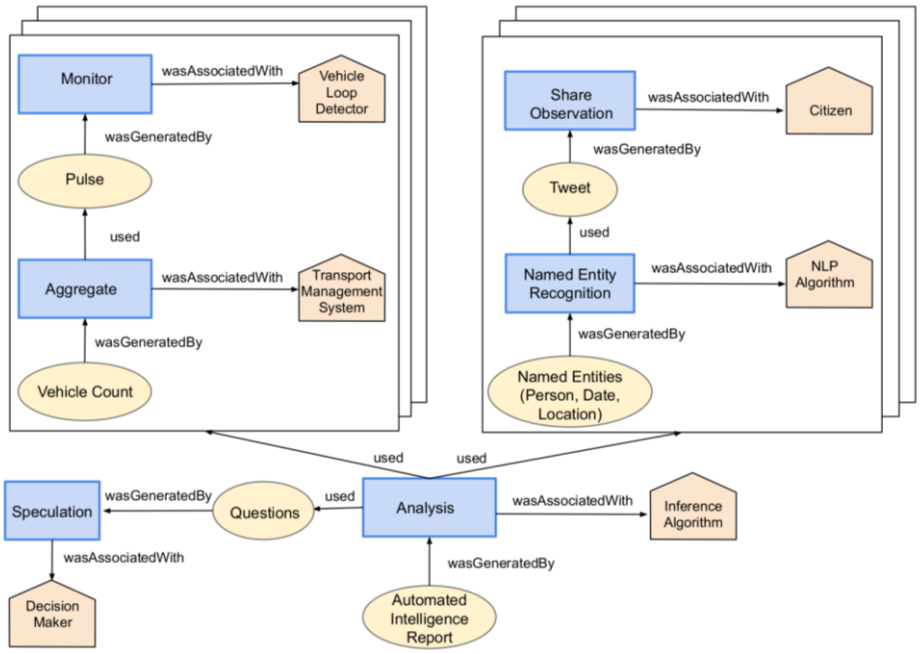

Figure 2: My proposed application of W3C provenance standards to assist in the analysis of smart city data for intelligence and investigative purposes

Expected results, significance and anticipated applications:

The research is expected to result in a new ontology for smart cities to meet the needs of the intelligence community. It will also result in identification/adaptations of a set of associated techniques for fusing, presenting, and interrogating heterogeneous sensor data in a unified manner. This is significant and timely as it provides a principled approach to deal with the proliferation of new IoT devices and other data sources that organisations, in particular the intelligence community, seek to integrate into their systems for analysis.

Anticipated applications of the research include shared situational awareness across agencies within the intelligence community due to the ability of the platform to serve as an open and extensible architecture for sharing all forms of sensor data. It will also provide a means to structure data and organise to perform what-if reasoning at a city or even country level based on all information the intelligence organisation has available.

Literature citations:

List all references cited.