

ANNEX A: TGMS Initiative Information and Objectives

1 Introduction

The Tri-Agencies consisting of the Natural Sciences and Engineering Research Council (NSERC), the Social Sciences and Humanities Research Council (SSHRC) and the Canadian Institutes of Health Research (CIHR) are federal granting agencies that support research, research training and innovation in Canadian postsecondary and research institutions. Together, NSERC, SSHRC and CIHR annually award in excess of \$3 billion of research grant and award funding.

In 2017, the Advisory Panel on Federal Support for Fundamental Science conducted a comprehensive review of how fundamental research was being conducted. In April of 2017, the Advisory Panel tabled their report entitled the “*Fundamental Science Review*”. This review provided recommendations regarding improvements designed to augment the effectiveness, accountability, and efficiency of how research is conducted and how such research would be funded.

Among the recommendations contained in the final report, the Fundamental Science Review recommended “*a streamlined process for submitting grants, starting with rapid and major improvements to the ease-of-use and agency harmonization of the Canadian Common CV¹*”. This recommendation and others contained in the Fundamental Science Review resulted in a strategic response from the Tri-Agencies for an increasing emphasis on Tri-Agency initiatives and harmonization and specifically a collaboration on development of a common platform for the effective planning, management, administration and benefits realization of the agencies grants and awards funding.

Independent in their governance and authorities, the three agencies are collaborating on efforts to modernize their grants and awards management approaches. This collaborative initiative is referred to as the Tri-Agency Grants Management Solution (TGMS) Initiative.

The TGMS Initiative has adopted an agile procurement and implementation approach to address the requirements for a comprehensive, scalable, flexible, grants management solution. This agile approach incorporates significant stakeholder and industry engagement to establish a clear, relevant and prioritized approach for development of an effective GMS. The business-led approach employs agile development principles by having direct, focused, hands-on stakeholder engagement with operating solutions to accelerate the scoping of an appropriate GMS and associated procurement process.

2 Overview of the Initiative

2.1 Initiative Summary

The TGMS Initiative is a Tri-Agency initiative for the renewal of grants management and, where appropriate, the enabling technologies that support the Tri-Agency staff and Canadian research

¹ The Canadian Common CV (CCV) allows researchers to enter their CV data once and output it in formats suitable for submission to CCV Network member organizations. The CCV Network is a partnership of federal, provincial and non-governmental research granting agencies.

communities' expectations and requirements in terms of efficiency, interoperability, accessibility and usability throughout the grants and awards management process.

Limitations and general operational inefficiencies in the current grants and awards management processes create undue administrative burden for the research community and agency staff. As expressed in Tri-Agency stakeholder feedback, current systems lack the necessary functionality and data sharing capabilities required to meet the demands for greater Tri-Agency coordination and to effectively and efficiently deliver programs that support the priorities of the agencies, Canada Research Coordinating Committee (CRCC), Tri-Agency research funding programs; and which support the introduction of innovative new programs or enable the priorities of the CRCC.

The proposed TGMS initiative reflects a strategic response by the Tri-Agencies to address limitations in the Agencies' existing grants and awards management systems through provision of a modernized, user-centric, seamless grants management solution.

The high-level target TGMS Environment is illustrated in Figure 2.1-1.



Figure 2.1-1: High-level Target TGMS Environment

In this high-level target TGMS environment:

1. The core of the target TGMS is envisaged to be a grants management solution that provides a portfolio of business, user and operational capabilities that, in concert, address the requirements of the grants management lifecycle and exhibit the usability, flexibility and scalability as required by the Tri-Agencies' stakeholder community. The scope of these preliminary requirements is outlined in Section 2.5.1 below.
2. The target TGMS environment will provide a consistent, user-centric, automated, lifecycle approach for the grants and awards process – with consistency and commonality across a spectrum of Tri-Agency stakeholders from researchers seeking and reporting on funding requests,

to funding agencies promoting funded research programs and administering the associated grants and awards processes.

3. Applicants seeking funding will have access to a portfolio of grants and awards programs through a common, consistent user experience. Processes, content and access will reflect the perspective of the researcher in various personas (e.g. peer reviewer, research administrator, applicant) – searching for grants and awards funding programs, applying for funding, reviewing applications, reporting and administration of funds, reporting on end-of-grant.
4. Funding agencies will have access to a portfolio of common processes that address the grants and awards lifecycle from the perspective of the funding agency (including analyst and administrator personas) including, first line support to applicants and their institutions, managing applications and peer review activities, disbursing funds and analyzing and reporting on the impacts of funding.
5. Program design will foster inter-disciplinary and collaborative research with data and analytics available to support effective use of Canada’s resources and enhance the impact of research findings and results.
6. Effective delivery of the TGMS will enhance stakeholder access and help reduce the risk associated with the agencies’ aging legacy systems.

It is envisioned that the implementation of the initial TGMS deployment will be conducted in an agile and iterative manner, engaging stakeholders through a user-centric / design-thinking approach. This overall approach is outlined in Section 2.6 below and is integrated with the agile procurement process outlined in Section 3. Subsequent enhancements and evolution of the TGMS will follow the principles of agile development and continue the process of extensive stakeholder engagement.

The initial configuration and deployment of the TGMS will implement a portfolio of grants and awards programs selected by the Tri-Agency stakeholders and will reflect the initial wave of supported programs. Through an ongoing series of deployments, additional programs will be implemented and deployed using the TGMS. These subsequent waves of programs will leverage the experiences gained in configuration and deployment of the earlier programs.

The Tri-Agencies envisage ongoing operation and provision of ongoing enhancement and support services for the TGMS solution will be performed by the contractor selected through the agile procurement process.

Provisioning and operation of the underlying technical infrastructure has not been finalized. Options under consideration include use of government provided infrastructure (e.g. through Shared Services Canada) and various options leveraging contractor provided and operated infrastructure as managed services. In all cases, the security requirements are a primary consideration.

2.2 TGMS Initiative Stakeholders

The TGMS Initiative will support a wide range of stakeholders – from Tri-Agency programs and services stakeholders to a broad research community spanning government, academia and research partners. Providing common and consistent processes for grants and awards programs while respecting sector / community specific attributes is a key objective of the TGMS initiative.

The stakeholder segments are described below:

- **Researchers** include applicants, grantees/awardees, trainees and peer reviewers
- **Internal Stakeholders** include business owners, subject matter experts, core and extended TGMS Initiative team and collaborative organizations (e.g. CFI)
- **Institutional Partners** include Vice-Presidents of Research, University Delegates and Canadian Association of Research Administration and institutional administrators
- **Research Partners** include federal, provincial and international funding partners. For example, NGOs, research funders, industry partners
- **Government Partners** such as Minister's Office, Privy Council Office/Treasury Board Secretariat, Office of Privacy Commissioner and Public Services and Procurement Canada
- **Solution Providers** include suppliers

2.3 The Current Model

The current approach for grants and awards management is based on a portfolio of legacy grants management systems using a variety of technologies that reflect the mandate, focus and granting processes of the individual granting agencies - CIHR, NSERC, and SSHRC.

Systems currently used by the granting agencies to support the grants and awards management process are at the end of their effective operational lifecycle. Many of the current systems:

1. Lack interoperability and data sharing required for an effective, coordinated research and granting program.
2. Require manual workarounds to accommodate the complexities in the grants and awards regime – and to address the growing pressures for timely awards, consistent process, and increased harmonization / collaboration across sectors.
3. Lack flexibility to address changing priorities and research focus by allowing new funding programs to be quickly launched.
4. Face increasing costs and effort to sustain even in current levels of functionality.
5. Make use of some technologies that no longer have vendor support.
6. Are not user-friendly for internal or external stakeholders

These systems are illustrated in Annex E. In response to these and other challenges, the Tri-Agencies are collaborating on a next generation grants management solution based on a common foundation – the TGMS Initiative.

2.4 TGMS Initiative Objectives

Through the TGMS Initiative, a user-centric solution will be deployed to support the grants management lifecycle (i.e., from funding opportunity design to end-of-grant reporting) to achieve the following business outcomes:

1. Improved user experience for the research community, and Tri-Agency staff
2. Improved effectiveness and collaboration
3. Increased efficiency and flexibility to meet the changing needs of the research community and enable new opportunities for collaboration
4. Reduced risk of aging technologies, providing a strong foundation for the future

Delivering these business outcomes will contribute to the three key results of each of the Agencies' Departmental Results Frameworks:

1. Canada's research is internationally competitive;
2. Canada has a pool of highly skilled people in the Agencies' respective disciplines;
3. Canada's research knowledge is used.

2.5 Scope of Solution

The TGMS is envisioned to be a seamless grants management solution provided and operated by single contractor. The scope of the TGMS encompasses:

1. **A GMS software solution** providing a comprehensive, seamless portfolio of grants management capabilities as further set out in Section 2.5.1 below.
2. **A secure, robust and scalable technical infrastructure** providing the processing, storage, communications and other required technical infrastructure required to operate, sustain and support the GMS software solution. This infrastructure requirement is further outlined in Section 2.5.2 below.
3. **Provision of the professional services** required to implement the initial deployment of the TGMS and to provide ongoing operational, sustaining and support services.
4. **Compliance with the security and privacy requirements of Canada** as required to meet commercial and national security sensitivities associated with government funded research programs. For clarity, Canada's security requirements are such that the TGMS as implemented must comply with Canada's data sovereignty requirements².

2.5.1 *GMS software solution requirement*

The GMS software solution functionality is required to address the grants and awards management lifecycle from the perspective of both those funding and administering grants and awards programs, the grantors, and those seeking and using funding, the research communities.

This Business Capability Model found in Annex D illustrates the scope of the grants and awards management lifecycle and identifies the high-level processes associated with each stage.

The GMS software solution is required to provide a comprehensive portfolio of grants management capabilities encompassing:

1. An intuitive, user-centric interface and stakeholder management functions in both of Canada's official languages (English and French) supporting the range of stakeholders requiring access to the GMS environment.
2. A core repository of programs, policies, research materials, researchers and related materials related to the effective and efficient implementation of the agencies' program strategies.
3. A portfolio of business processes that implement the lifecycle of the grants and awards process as detailed in Annex D: TGMS Business Capability Model.

² As referenced in the IT Policy Implementation Notice 2017-02

<https://www.canada.ca/en/government/system/digital-government/modern-emerging-technologies/direction-electronic-data-residency.html>

4. A platform architecture that provides the flexibility, scalability, interoperability and other attributes required for an effective service-oriented implementation for ease of deployment and internet accessibility.

2.5.2 Hosting Platform Services Requirements

Canada requires that the physical infrastructure on which the GMS software solution is hosted and operated includes but is not limited to:

1. Processing and storage capabilities required to operate and support the GMS and meet the required performance related service level targets.
2. Network and communications related infrastructure as required to enable web-based access to the GMS by stakeholders and to enable connectivity with agency line of business systems (e.g. agency financial systems).
3. Infrastructure as required to support multiple operating environments including production, testing, training, “sandbox”, disaster recovery and related scenarios.

Although Canada is adopting a “cloud first” approach in the provision of automated solutions, the Tri-Agencies recognize that the security and logistics associated with this TGMS Initiative may limit the otherwise viable business grants and awards management solutions and as such have not finalized the overall platforming approach at this stage in the initiative.



Figure 2.5.2-1: Hosting Platform Environment

Although Canada is not specifying a target hosting platform technology, the provided physical infrastructure must provide and deliver performance, capacity, security and other capabilities that meet Canada's requirements for infrastructure in support of the TGMS.

2.5.3 Implementation, Operational and Support Services Requirements

The Contractor will be required to provide the professional services to implement the initial deployment of the TGMS solution and to provide ongoing operational, support and enhancement services. These services may include but are not limited to:

1. Design and planning services for the implementation of the Contractor provided and operated TGMS to meet the business and operational deployment requirements of Canada.
2. Services to configure the GMS as required to provide the TGMS capabilities for initial deployment.
3. Services to interface the provided solution and designated Tri-Agency business systems (e.g. departmental financial and reporting systems).
4. Services to migrate core business data as required to enable deployment of the solution in support of the initial wave of Tri-Agency grants and awards programs.
5. Provide training, documentation and user support services as required to enable the effective use of the solution.
6. Services to operate and support the TGMS on a day-to-day basis to meet operational service level targets as set out by Canada.
7. Services to enhance, sustain and maintain the TGMS as configured and deployed to meet Canada's changing requirements including introduction of new grants and awards programs, policies, and initiatives.

2.5.4 Security and Privacy Requirements

Canada has determined that the materials accessed in the delivery of grants and awards management systems and services have been designated up to the level of "Protected B". As defined by Canada, Protected B designation applies to information or assets that, if compromised, could cause injury to an individual, organization or government.

The provided infrastructure must meet the security and privacy requirements of Canada for the implementation, operation, support and evolution of the hosted TGMS solution commensurate with the security requirements for Protected "B" materials. These include but are not limited to:

1. Data sovereignty requirements whereby all data and associated processing of Canada's grants management materials must remain in the sovereign territory of Canada.
2. Conformance to Canada's security requirements for systems and services processing Protected "B" materials including:
 - a. Facility security requirements for facilities and organizations processing and storage of Canada's confidential materials;
 - b. IT security requirements for technical infrastructures used in the processing, transmission and storage of Canada's confidential materials; and,
 - c. Personnel security requirements for contractor personnel having access to Canada's confidential materials.

Detailed security requirements, including required document safeguarding, organizational and facility clearances, and related materials as required, will be provided to industry in advance of the Request For Proposal (RFP) stage of the procurement process.

Note: The Canadian Centre for Cyber Security (CCCS) is now responsible to establish the security requirements for cloud computing platforms – see <https://www.cyber.gc.ca/en/publications>.

2.6 Overall Solution Approach

As indicated above, the proposed overall solution approach combines an agile procurement and implementation approach to address the requirements for a comprehensive yet flexible grants management solution. This agile approach incorporates significant stakeholder and industry engagement for the purposes of clarifying, prioritizing, prototyping, and implementing a comprehensive TGMS.

The goal of the TGMS Initiative is to have the initial portfolio of grants and awards programs in live operation by Q1 of the 2021/22 fiscal year. The preliminary master schedule is outlined in Section 2.7: Master Schedule.

Implementation of this initial TGMS solution shall use an agile procurement approach. This approach is outlined Section 3 below with emphasis on the initial agile procurement activities.

2.7 Master Schedule

In summary:

1. Depending upon the procurement timeline it is expected that the TGMS implementation and onboarding work would start following contract award.
2. Wave 1 grants and awards programs and related services will be initially migrated onto the new solution, tested and operating by Q1 of the 2021/22 fiscal year.

Currently the estimated Procurement Timeline (which is subject to change) is as follows:

- a) Industry Day – August 23, 2019
- b) One-on-one meetings with interested suppliers following industry day – September 4, 2019 – September 16, 2019
- c) Pre-qualification – Q3/4 2019/20 (to be determined)
- d) RFP - Q1 2020/21 (to be determined)
- e) Contract award - Q4 2020/21 (to be determined)

2.8 Target Operating Model

As indicated above, the target-operating model envisages a seamless TGMS supported by a single prime contractor. The operating model will be finalized pending the final provisioning / contracting for the software solution and enabling technical infrastructure.

The operating model reflects the requirements for:

1. An effective operating model during the set-up of the TGMS and incorporating the onboarding of the initial wave of grants and awards programs as established by Canada and as implemented collaboratively with the Contractor through an interactive, agile development process; and,
2. An operating model that reflects the effective and efficient day-to-day operation of TGMS services following cutover to live operation with the finalized technical infrastructure and resources.

2.9 Volume of Grants and Awards Funding and Activity

On an annual basis, CIHR, NSERC and SSHRC process over 50,000 grant and award applications combined. Of these applications, they fund approximately 12,000 awards and manage over 37,000 active awards yearly. To support these operations, the federal research granting agencies employ nearly 1200 staff and manage a combined budget of over \$3 billion dollars annually including operating costs.

3 Overview of the Proposed Agile Procurement Approach

Canada anticipates that the contractor for the provision of the TGMS will be selected through an agile procurement approach. This approach incorporates extensive industry and stakeholder engagement through a multi-stage procurement process.

The proposed agile procurement approach may be modified following the industry and stakeholder engagement process. The objective of this agile approach is that any potential solution will need to be designed in a user centric manner and allow the TGMS Initiative to create an appropriate target system architecture collaboratively, collectively and iteratively. A key lesson learned from previous solution modernization efforts is to ensure that any solution be constructed with the user as the focal point of all decisions and designs. This user-centered design (UCD) approach, also referred to as User-Driven Development, is a methodology that puts the user at the forefront of design and design decisions. Playing heavily on how to make a particular product usable for the person it is intended for, UCD puts the human back as priority one in terms of workflows, process flows, and even in how the solution is anticipated to be used by the user vs. the more traditional approach of having the technology functions drive decisions.

The proposed TGMS Initiative agile procurement employs this user--centric approach. Extensive stakeholder involvement, e.g. through the initial scoping exercise and subsequent solution clarification and “capability and usability evaluation” stages, are an integral part of the pre-qualification process.

The proposed TGMS Initiative agile procurement approach is described at a high-level as follows:

The initial, **industry and stakeholder engagement stage (Gate 1)**, uses prior community experience and available market research to identify and provide preliminary scope for a seamless grants management solution. This preliminary scope material is reflected in the preliminary TGMS target model outlined in Section 2 herein.

Through this **industry and stakeholder engagement process**, as reflected in the industry day and one-on-one meetings, Canada will establish the broad requirements for the TGMS. These requirements will form the basis for a pre qualification process of suppliers.