



National
Defence

Défense
nationale

CANADIAN
ARMED FORCES



FORCES ARMÉES
CANADIENNES

Canada



IDEaS

**INNOVATION FOR DEFENCE
EXCELLENCE AND SECURITY**



**STRONG
SECURE
ENGAGED**

**PROTECTION
SÉCURITÉ
ENGAGEMENT**



New Defence Perspective

Innovative technology, knowledge, problem solving are critical for Canada and its allies to mitigate new threats, stay ahead of potential adversaries, and meet evolving defence and security needs, while generating economic benefits for Canada.

Strong, Secure, Engaged
Canada's Defence Policy 2017



In SSE, DND announced the Innovation for Defence Excellence and Security (IDEaS) program and will invest **\$1.6 billion over 20 years**





Defence & Security Science & Technology (S&T)

- ⚙️ The complex and constantly evolving nature of conflict and crises requires that S&T address **potential threats and risks**, such as:
 - **Space, cyberspace**
 - **Natural disasters, major accidents, crime**
 - **Emerging disease, pandemics**
 - **New and unpredictable adversaries (e.g. ISIL)**
 - **Unstable and failing states**
 - **Terrorism and technology**
 - **Globalization of S&T and pace of technological development (e.g. quantum, synthetic biology, artificial intelligence, etc.)**

- ⚙️ In this new environment, **IDEaS** is an augmentative approach to accessing innovation allowing Canada's military to better tap into extraordinary talent and ingenuity resident in Canada.





The Innovation Imperative

WHY WE MUST INNOVATE

- ⚙️ **Nature of conflicts and threats** is rapidly evolving and changing as new technologies, players and domains emerge;
- ⚙️ To **enrich defence capabilities** that address current and emerging challenges;
- ⚙️ To **stay ahead** of rapidly evolving technology;
- ⚙️ To **inform** future decisions; and
- ⚙️ We must innovate to **remain economically competitive**.

HOW WE CAN INNOVATE

- ⚙️ **Recruit** more of the Canadian innovation ecosystem to partner in the delivery of S&T for defence and security;
- ⚙️ Foster a **technologically advanced** and **innovation-driven** defence and security sector capable of addressing evolving threats and generating economic benefits;
- ⚙️ **Increase partnerships** and collaboration to foster and build on emerging S&T developed across the innovation ecosystem; and
- ⚙️ **Leverage government buying power** to target sectors that have the most innovative solutions.





Aligning with Allies

- ⚙ In 2014, the **U.S.** launched its *Third Offset Strategy* (U.S. \$3.6 billion) aimed at leapfrogging the conventional R&D process by tapping into civilian efforts and improving collaboration with innovative private sector enterprises.
- ⚙ In 2016 **Australia** launched the *Next Generation Technologies Fund* (\$730 million over 10 years) and a *Defence Innovation Hub* (\$640 million over 10 years) to undertake collaborative innovation activities from initial idea, through testing to application.
- ⚙ In 2016, the **United Kingdom** in support of Innovate UK, launched the *Defence Innovation Initiative* (£800m over 10 years).





Innovation Lessons Learned

Canada has learned from its allies as well as from organizations at home and abroad. These principles form the foundation for the design and operations of IDEaS.

INNOVATION PRINCIPLES

- ✿ Agile business process proposal, selection and engagement
- ✿ Multidisciplinary teams
- ✿ Learn fast through frequent trials
- ✿ Hardest problems attract best ideas

In 2018, Canada announces the Innovation for Defence Excellence and Security (IDEaS) program (\$1.6 B over 20 years)





Program Mandate

RECRUITING INNOVATORS



- ✦ Experts and entrepreneurs engage in **ideation** sessions to gain new insights on defence and security problems
- ✦ **Innovation networks** build S&T expertise across academia, industry, and government defence
- ✦ **Mobility** of experts allows a sharing of experience and proficiency

Vibrant innovation community

SUPPORTING INNOVATION



- ✦ Supporting **projects** to foster development of promising ideas and solutions
- ✦ Create **contests** to support demonstrable solutions
- ✦ **Sandboxes** assess the applicability and effectiveness of a prototype

Open competition of ideas

MATURING INNOVATIVE IDEAS INTO PRODUCTS



- ✦ Procure limited quantity for **assessment** by operators
- ✦ Provide support to mature solutions using **integrators** and transition to operators

Validated innovative solutions

Elements may be used independently, or in support of one another, to access and foster innovation





Program Elements



INNOVATION
NETWORKS



CONTESTS



COMPETITIVE
PROJECTS



SANDBOXES



ASSESSMENT &
IMPLEMENTATION

Innovation Enabling Elements



MOBILITY

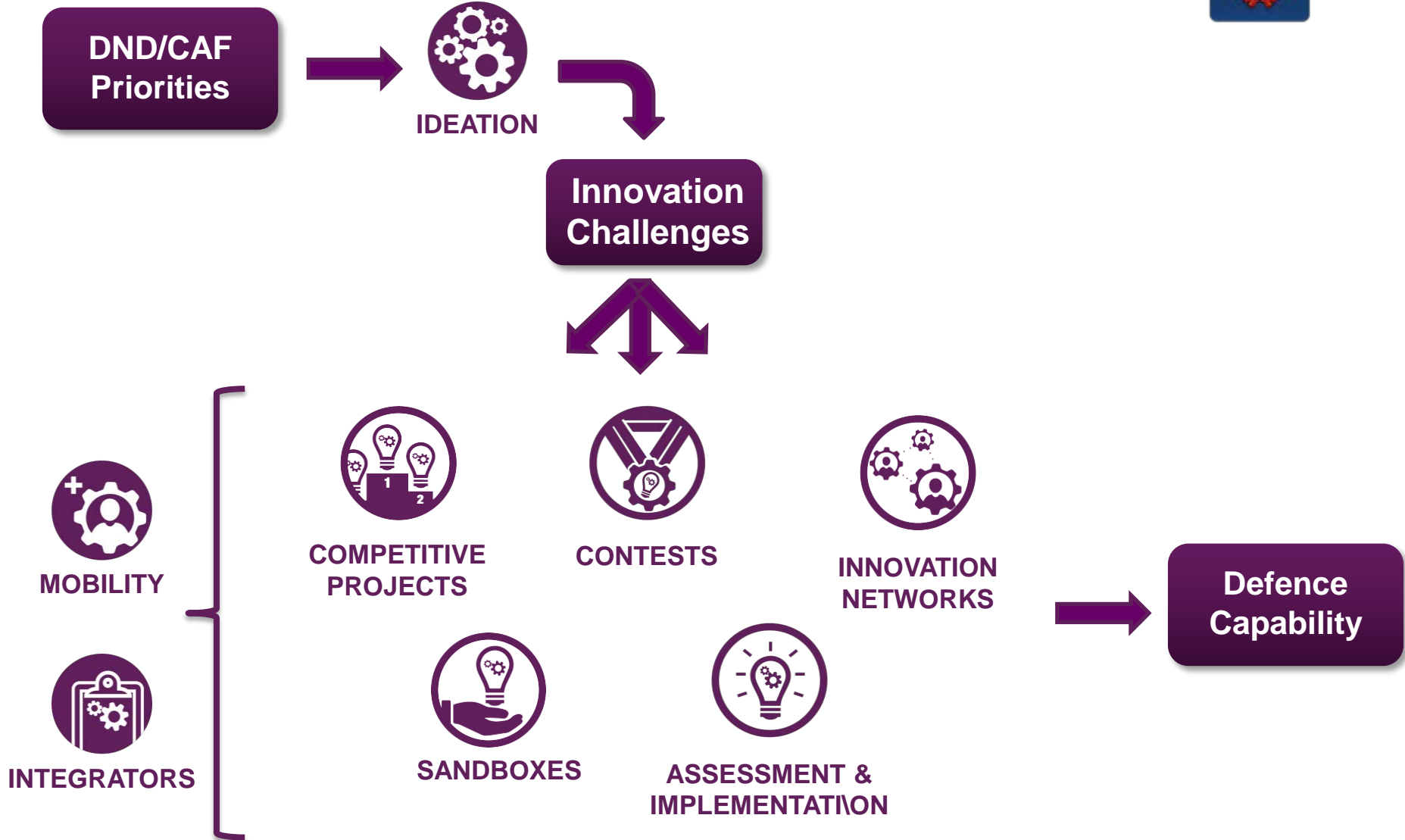


INTEGRATORS



IDEATION



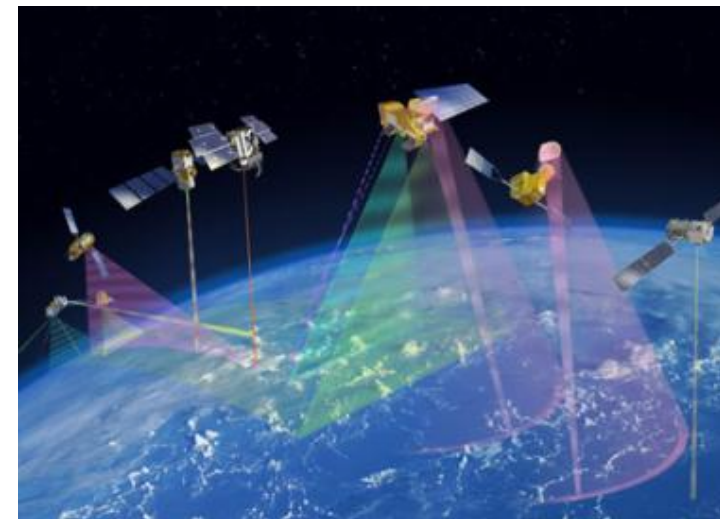




IDEaS in action

Hard Problems turned into Innovation Challenges

- ⚙️ **Detection and Classification of Objects of Interest**
 - How to augment the ability to detect, recognize, track and identify persons or objects using seamless information sharing across a decision network?
- ⚙️ **Autonomous systems**
 - How can operators trust and work effectively with autonomous systems?
- ⚙️ **Persistent Maritime Surveillance**
 - How can offshore waters be monitored to detect underwater threats by using rapidly deployed, persistent, autonomous, solutions?
- ⚙️ **Enhancement effectiveness of space-based capabilities**
 - How do we develop a Common Operating Picture of space assets to improve situational awareness?



Enhancing Domain Awareness and Joint ISR





IDEaS Elements Solving Innovator Challenges

Networks to Build Capacity

- Make innovators aware of Defence needs for Artificial Intelligence(AI) ideas (**Ideation**)
- **Innovation Networks**
- Embed experts (**Mobility**)

Incentivize Competitions

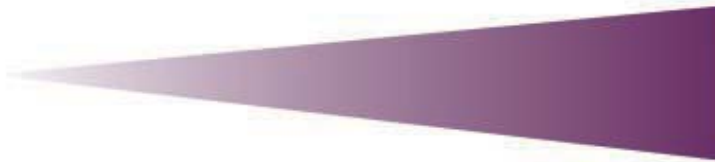
- Provide multiple funding options to orient the best research towards innovation challenges (**Competitive Projects, Contests, Sandboxes**)

Validation

- Provide expertise, guidance, feedback (**Integration**) and opportunity for solutions to be validated in a realistic setting (**Innovation Assessment**)

Through IDEaS, future capabilities will be available sooner and more diverse

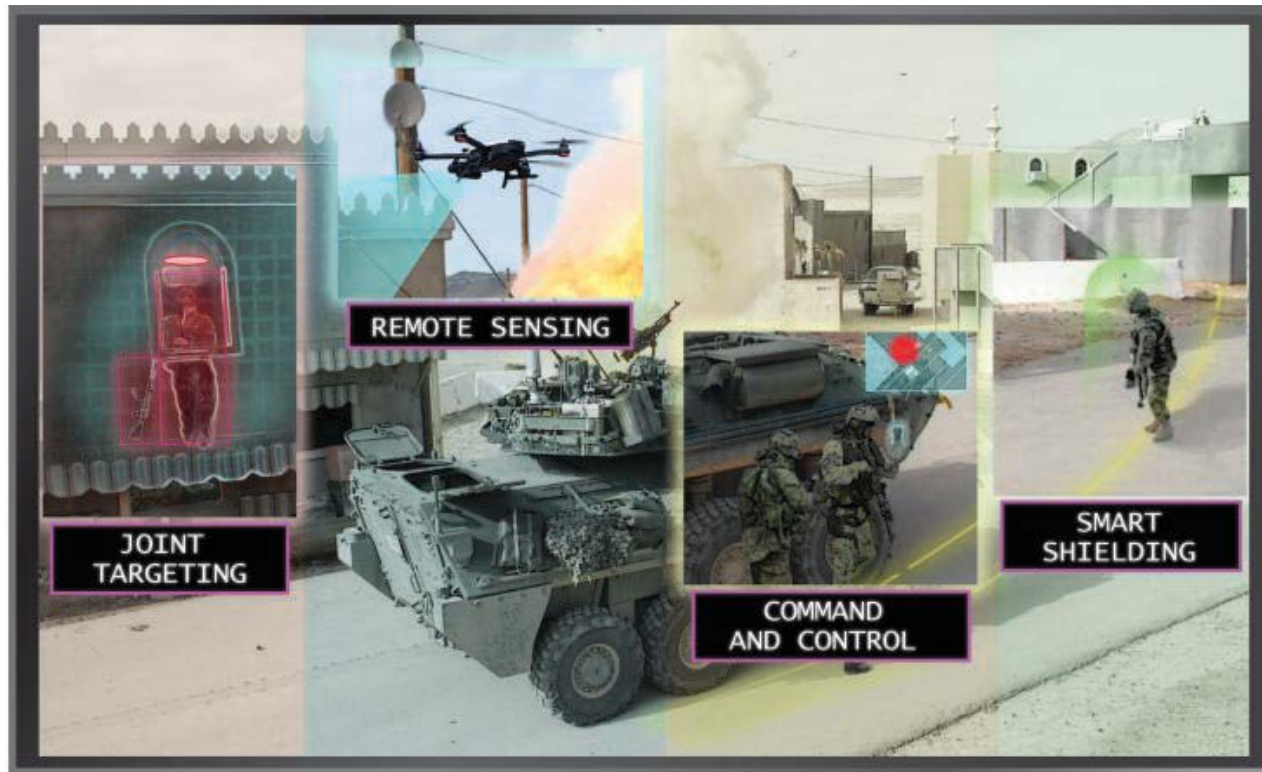
IDEaS : Accelerating Implementation





IDEaS in Practice: Building Defence Capability

Using Artificial Intelligence as an example: IDEaS elements can help achieve maximum potential from Unmanned Air Vehicles, sensor arrays, command & control solutions, etc





Competitive Projects



Innovators are awarded Contracts or contribution funding for their defence and security solutions

- The first CFP with 16 challenges was launched on April 9th 2018 and closed June 7
- The contracting process will generate up to 10 contracts per Challenge, for a potential maximum of 160; out in September/October
- Multiple CFPs each year, next being planned for October 2018





Innovation Networks



Increase innovator engagement in defence and security challenges to build capability

- This element of IDEaS has been launched with its first Call for Proposals to establish micro-networks
- Topic: Applications of Advanced Materials (camouflage and protection)
- Two phase process, with a Letter of Intent and a Full Proposal
- Second CFP also launched in early July – Autonomous Systems
- They are both in the Phase 2





Sandboxes



Curated trial opportunity for innovators to receive feedback on a potential solution

- Launched on August 21st
- Two-phase process by which we propose a series of Challenges to the innovators to interest and the solicit applications
- Multiple instances/year starting in late 2018 / early 2019





Contests



Incentivize innovators to develop demonstrable solutions

- Under final development
- Some Challenges are ready to be used and submitted to the Canadian innovators
- Multiple instances/year (4-8) starting in October





Innovation Assessment & Implementation



Innovator solutions are evaluated by IDEaS, DND and CAF

- Under final development
- Some Challenges are ready to be used and submitted to the Canadian innovators
- Multiple instances/year starting in early spring 2019





Funding Eligibility *

- ⚙ Educational institutions chartered in Canada;
- ⚙ Canadian not-for-profit organizations or associations;
- ⚙ Provincial/territorial or municipal government organizations;
- ⚙ Canadian for-profit companies, organizations or associations;
- ⚙ Individuals;
- ⚙ International S&T collaborators partnered with an eligible Canadian recipient; and
- ⚙ Any group composed of eligible recipients above

* Identified within each call for proposals





Intellectual Property (IP)

- ⚙ Innovators will own the IP they develop under this program; and
- ⚙ The Crown may license any of the IP generated under IDEaS to use for defence purposes.





Contact Us

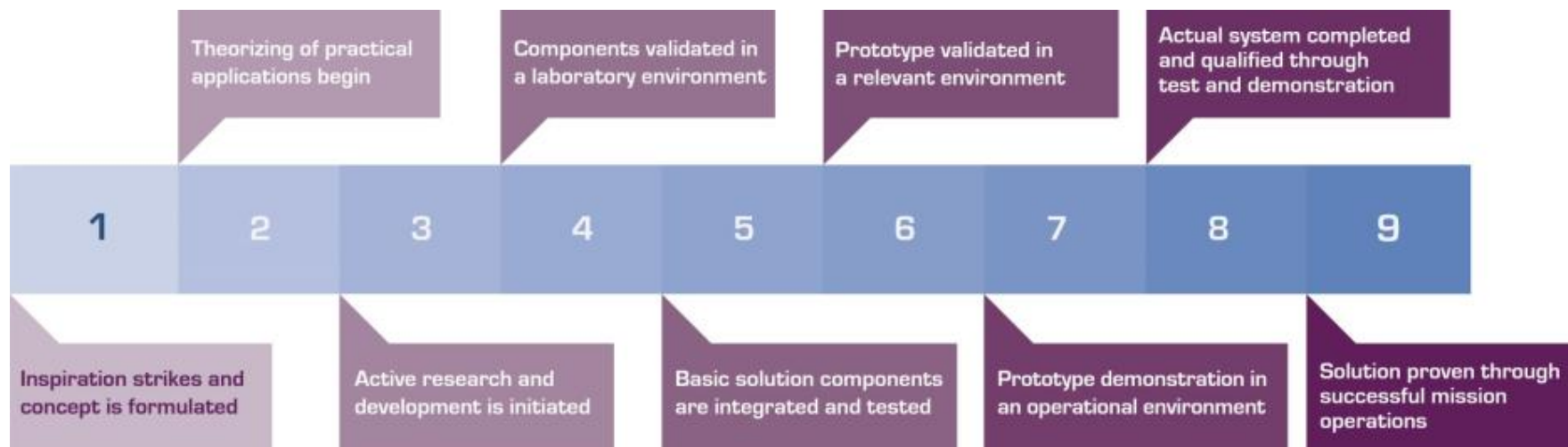
- ⚙ E-mail: DND.IDEaS-IDEeS.MDN@FORCES.GC.CA
- ⚙ Web: [**Canada.ca/defence-ideas**](http://Canada.ca/defence-ideas)
- ⚙ Follow us on Twitter [#DefenceIDEaS](https://twitter.com/DefenceIDEaS)





Innovation Continuum

SOLUTION READINESS LEVEL (SRL)





IDEaS Elements

**Competitive
Projects**



Innovators are awarded Contracts or contribution funding for their defence and security solutions

**Innovation
Networks**



Increase innovator engagement in defence and security challenges to build capability

Contests



Incentivize innovators to develop demonstrable solutions





IDEaS Elements

Sandboxes



Curated trial opportunity for innovators to receive feedback on a potential solution

Assessment and Implementation



Innovator solutions are evaluated by IDEaS, DND and CAF





IDEaS Enablers

Integrators



Link between external innovators and the defence and security community

Ideation



Multidisciplinary collective brainstorming process to refine challenges and explore solution

Mobility



Enables the exchange of expertise between organizations

