Robotics
Revolution vs Evolution: A Canadian Force Development Perspective

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Trends:
Robotics and Military Operations

Globally

Canada
## Global Spending on Robotic Autonomous Systems

<table>
<thead>
<tr>
<th>Country</th>
<th>Annual R&amp;D Spend inclusive of Robotic Autonomous Systems +</th>
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</thead>
<tbody>
<tr>
<td>United States of America</td>
<td>$2.39B/Year (c. 2014)</td>
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<tr>
<td>Australia</td>
<td>$438M/Year (c. 2015)*</td>
</tr>
<tr>
<td>China</td>
<td>$129M/Year (c. 2014)**</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>$7.60M/Year (c. 2015)</td>
</tr>
<tr>
<td>Canada</td>
<td>$3.00M/Year (c. 2015)</td>
</tr>
</tbody>
</table>

* This figure represents AUS's extant R&D research funding ($408M/year Military + $30M/year Civilian Programs). RAS is encapsulated in this figure.

** This figure represents China's extant capability and by extension their ambition moving fwd wrt Robotics.
Science and Technology

Commercial/Academic sectors are leading Options?

Factors to consider?
Capability Based Planning (CBP)

Phase 1
Initiation
“Foundational Framework”
- Refresh Joint Capability Framework
- Define Measures of Capability
- Establish Force Elements
- Rehearse the Scenario Assessment Process

Phase 2
Assessment
“Test”
- Determine Mission Capability Requirements for each Scenario (projected 15 years into the future)
- Identify Capability gaps, affluences, and surplus
- Conceive Capability-based Future Force options and assess risk

Phase 3
Integration
“Turn Senior Leader Choices into Guidance”
- Develop Capability Production Courses of Action, based on CBP recommendations and Senior Leaders input
- Assess Residual Risk

CBP Tools Refreshed and Approved
CBP Final Report
Force Capability Guidance/Plan

DND/CAF SENIOR LEADER ENGAGEMENT

CFDS
FSE
FDSS

MYEP
IP
DAG
CIPRR
Capital Investment Program Plan Review (CIPPR): Methodology
## Conflict-Driven Imperative (CDI) vs. Value Proposition (VP)

<table>
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<th>Campaign Type</th>
<th>Priority</th>
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<tbody>
<tr>
<td>Pre-Afghanistan Campaign</td>
<td>Fight for prioritization</td>
</tr>
<tr>
<td>Afghanistan Campaign</td>
<td>CA and RCAF prioritized</td>
</tr>
<tr>
<td>Post-Afghanistan Campaign</td>
<td>Fight for prioritization</td>
</tr>
<tr>
<td>ISIS/ISIL</td>
<td>CANSOF and RCAF prioritized</td>
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</table>

The ITB Policy is a more powerful government lever because it includes a *Value Proposition*, which requires bidders to compete on the basis of the economic benefits to Canada associated with each bid. Winning bidders are now selected on the basis of *Price*, *Technical Merit*, and their *Value Proposition*. 
So What?

Investment and Innovation

Flexibility

(Value Propositions vs Conflict Driven Imperatives)

Niche Technology

Revolution or Evolution?