



Public Safety and Emergency
Preparedness Canada

Sécurité publique et
Protection civile Canada

Canadian Public Security Science and Technology Program “A look to the future”

2006 R&D Workshop

International Collaboration on Cyber Security Research and Development

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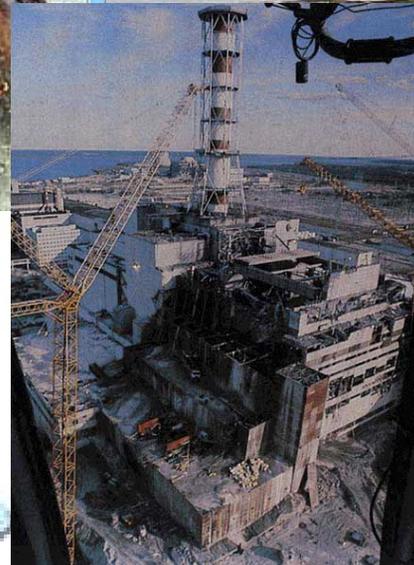
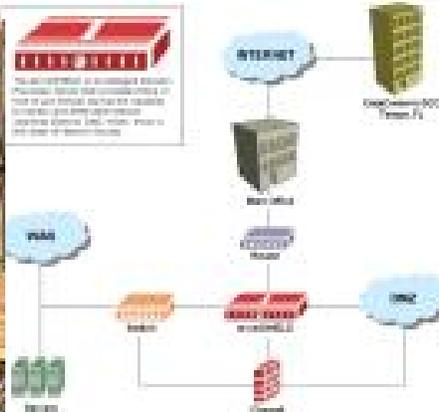
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Public Security – The challenge!



Canadian Border
1/2 Mile Ahead





Public Safety and Security Strategy

Key Initiatives are underway - some examples:

- National Security Policy
- National CBRN Strategy
- Government Operations Centre
- Cyber Incident Coordination System
- National Exercise Plan
- National Disaster Mitigation Strategy
- Canada Public Health Agency
- Canadian Forces - Canada Command
- Cyber Security task Force
- **CRTI and PSTP**

How can S&T better inform and enable decisions?



Public Security S&T Program

S&T Response to the Global Terrorism Threat:

- **S&T Counter-terrorism Program Development: CRTI (2002)**
 - CBRN terrorism focus
- Canada - US S&T Response to the Smart Borders Accord (2002)
- The Canada -US Public Security Technical Program (2003)
- The Security and Prosperity Partnership (CDA USA MEX) (2004)
- **DND-PSEPC Partnership: Centre for Security Science: (March 2006)**
 - Memorandum of Understanding (August 2006)
- CRTI Renewal Treasury Board Submission (October 2006)
- **Public Security Technical Program (PSTP) - Memorandum to Cabinet and Treasury Board Submissions (Fall 2006)**

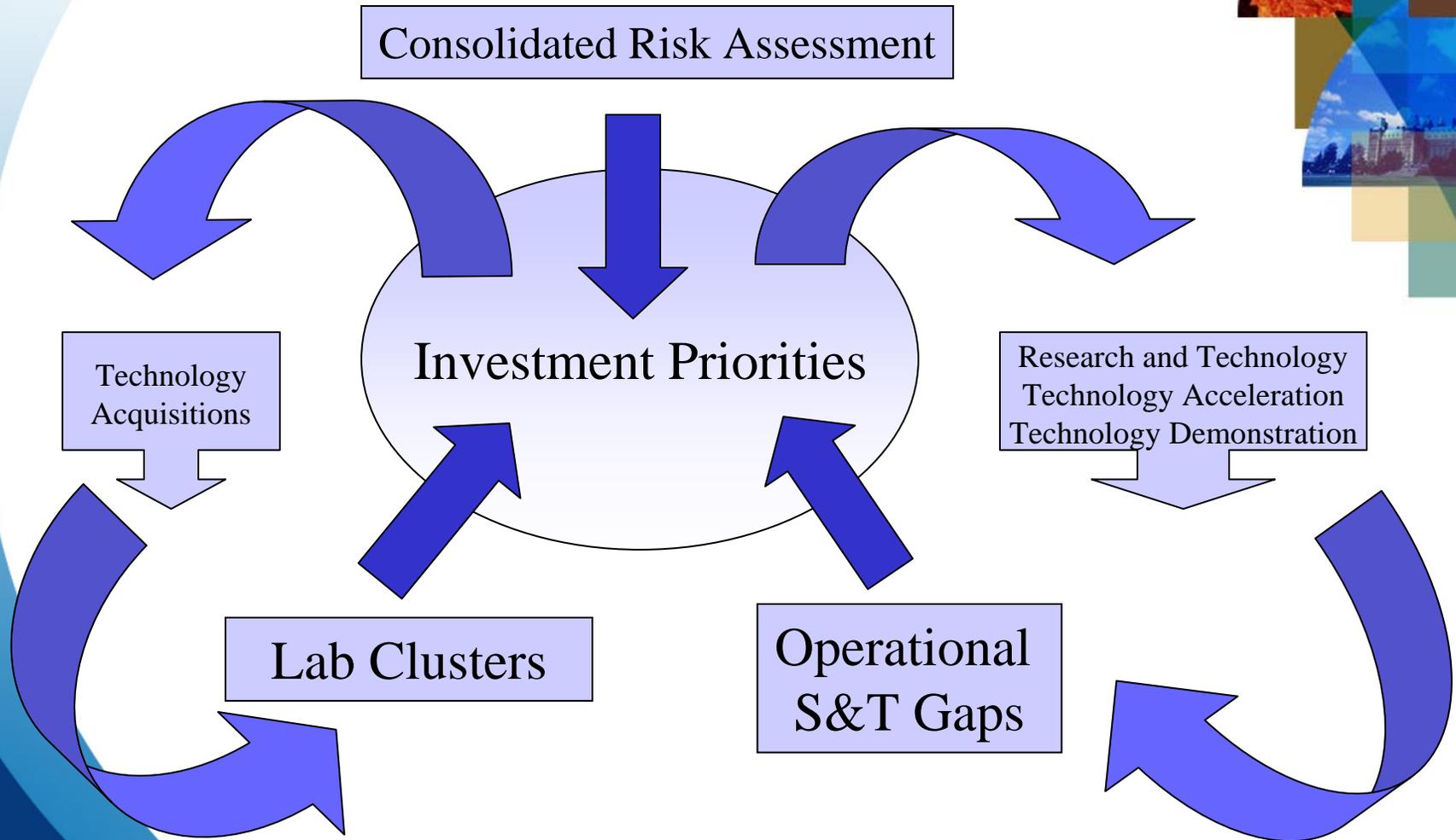
The logo for CRTI-IRTC features the text "CRTI-IRTC" in a blue, serif font. Above the letters "I" and "T" are small blue crown-like symbols. The background of the logo is a light yellow gradient.

CBRN Research and Technology Initiative

- Launched May 2002
- \$170M funding over 5 years
- **Mission:** to strengthen Canada's preparedness for, prevention of, and response to a CBRN terrorist attack through new investments in science, research, and technology capacity
- **Scope:** CBRN terrorist threats against people in urban areas and enclosed spaces, food, water, agro-systems, and critical infrastructure



CRTI Investment Model





CRTI Program Accomplishments

- Five rounds of projects launched in three and a half years
- CRTI investment \$150M: 167 projects launched valued over \$313M
- Consolidated Risk Assessment to direct investments
- Communities of Practice established and non-traditional partners engaged via Laboratory Clusters
- New knowledge generated and disseminated – CRTI Portal
- Many projects delivered capabilities into the hands of first responders to provide Security for Canadians



**CBRN
Decontamination
& Restoration**



**Chem-Bio
Blast Helmet**



4Warn Scout 3000



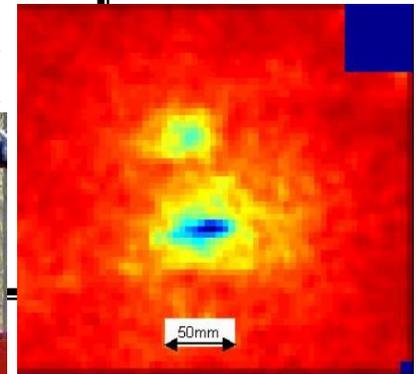
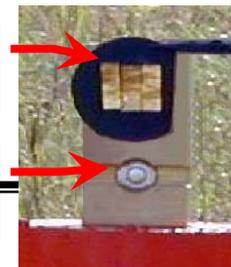
**Rapid Triage
Management
Workbench**



**Standoff Detection
of Radiation**

1.2 mCi
Alpha Source

500 mCi Beta
Source



CRTI Deliverables – Some Examples



Centre for Security Science

- Jointly sponsored by PSEPC and DND/DRDC
- Sponsor S&T programs with a range of partners/clients
 - Renew the Successful of the CRTI program
 - Establish a Public Security Technical Program (PSTP);
 - Capability Analysis; Forecasting and Risk Assessment; Outreach;
- Manage International Activities
 - CA/US PSTP bilateral
 - CA/US Security and Prosperity Partnership (SPP) Goal 10
 - AS/UK/others
- Engage Innovation Sector
 - Government; Academia; Industry

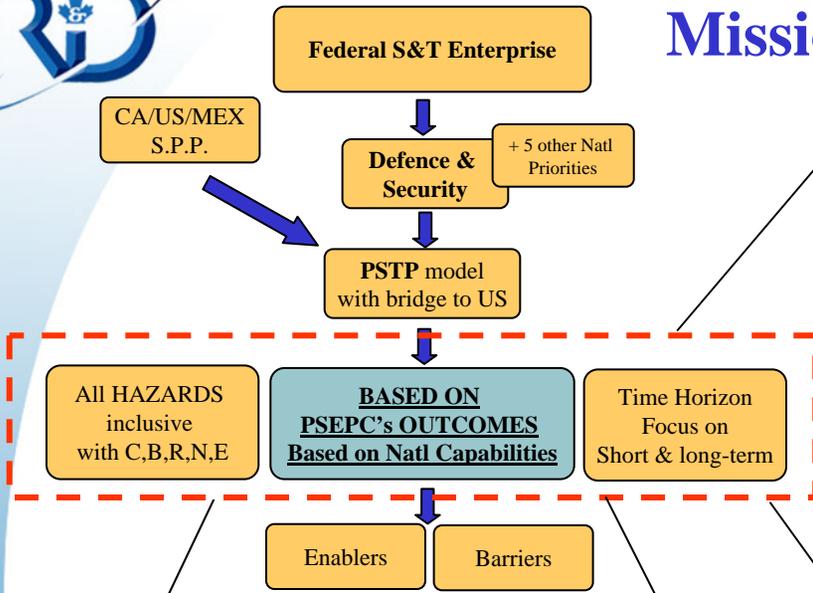


The Canadian Public Security Technical Program

- Builds upon a solid foundation put in place by the highly successful CRTI program and directly supports the CA/US PSTP initiative
- Moves towards an “All-Hazards” approach
 - Terrorism
 - Criminal
 - Natural disasters
 - Accidental (Technical) disasters
- Expanded Mission Areas construct
 - CBRNE (CRTI is CBRN terrorism contribution)
 - **Critical Infrastructure Protection**
 - Disruption and Interdiction
 - Systems Integration, Standards and Analysis



Mission Critical Outcomes



Public safety and security POLICY toward National CAPABILITY

National EMERGENCY MGT SYSTEM to ensure CAPABILITY is in place and responsive

Robust national surveillance and intelligence gathering, analysis and dissemination for rapid intervention

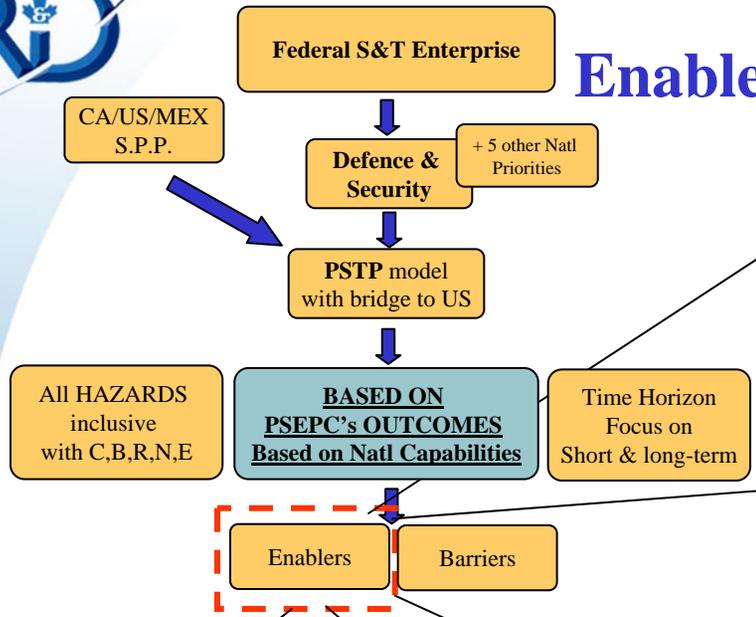
Rapid identification of Critical Infrastructure vulnerabilities to achieve enhanced all-hazards robustness

National Capabilities ensuring safe, secure and efficient flow of people, goods and services across borders and Ports of Entry

Note: to be finalized



Enablers to Critical Outcomes



Affordable, interoperable and effective *technologies* for responders and operational authorities

National *standards* for interoperability across public safety and security capabilities and organizations

National protocols for the use of *modeling* and other techniques in support of decision making

National protocols for *Information sharing* and *knowledge management*

Integrated national *risk assessment*, *intelligence* and *surveillance* capability

Note: to be finalized



PSTP Mission Areas (proposed)

CBRNE

Capabilities to prevent, prepare for and respond to CBRNE threats to public security, whether derived from terrorist or criminal activity, natural causes or accidents. (*CRTI addresses the CBRN terrorism aspects*)

Critical Infrastructure Protection (CIP)

The robustness, reliability and protection of physical and IT facilities, networks, services and assets, which if disrupted or destroyed would have a serious impact on the health, safety, security, economic well-being or effective functioning of the nation.

Disruption and Interdiction (DI)

The ability to identify and stop terrorists/criminals and their activities, including surveillance, monitoring, disruption and interdiction of their activities as pertaining to border and transportation security.

Systems Integration, Standards, and Analysis (SISA)

The performance, integration and interoperability of national and international public security and emergency management capabilities and supporting systems, including the enabling standards, and vulnerability and systems analyses.



PSTP Mission Area Portfolios

(proposed)

CBRNE

- Chemical
- Biological
- Radiological/Nuclear
- Forensics
- Explosives

Critical Infrastructure Protection (CIP)

- Physical CIP
- **Cyber CIP**

Disruption and Interdiction (DI)

- Integrated Communications, Intelligence and Surveillance
- Policing and Officer Safety
- Border and Transportation DI
- Maritime DI

Systems Integration, Standards, and Analysis (SISA)

- Risk and Vulnerability Assessment
- Emergency Management and Disaster Mitigation
- Interoperability and Standards
- Modeling and Simulation



Cyber CIP – What is it?

- Computers are pervasive in our modern society
 - Energy and Utilities
 - Communications and Information Technology
 - Finance
 - Health Care
 - Food
 - Water
 - Transportation
 - Safety
 - Government
 - Manufacturing

The hardware, software and networks/communication circuits that implement and connect these systems are vulnerable to cyber attack



Cyber Security - 2015

- A recent *Prospective Futures Workshop – Vision 2015* sponsored by DRDC and PSEPC concluded that these pressures would continue to escalate into the future. For example:
 - Continued rapid growth of wireless networks and associated security issues
 - Continued growth in complexity of private networks and sub-networks with increasingly distributed ownership
 - Advances in nano and bio sensors will allow large-scale sensor networks to produce ever more complete descriptions of ourselves and our opponents
 - Introduction of quantum computing may/will render “normal” cryptographic keys useless



Cyber Security – Way Ahead

- Continue to develop both Canadian and CA/US communities of practice in this field
 - Government: PSEPC, DRDC, IC, CSE, NRC, etc.
 - Industry
 - Academia
- Identify critical vulnerabilities using appropriate risk assessment methodologies
- Develop S&T roadmap that identifies current and planned projects that target these capability gaps
- In association with the community of practice, develop program to address remaining high priority gaps
 - International collaboration with US and others



Summary

- DND/DRDC and Public Safety and Emergency Preparedness Canada PSEPC are developing, in consultation with federal departments and agencies, a horizontal initiative to address the highest priority public safety and security needs – **including CYBER CIP**
- Federal government has provided \$15.5M over 5 years to establish the PSTP secretariat to lead and coordinate the development of this program. Program funding is being pursued this fall.
- Centre for Security Science
 - Stood up March 2006
 - MOU between DND and PSEPC August 2006
 - Staffing currently underway
 - Program being developed
 - Re-engaging US via CA/US PSTP and Goal 10 of Security and Prosperity Partnership



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QUESTIONS?

WWW.CRTI.DRDC-RDDC.GC.CA



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