



Government
of Canada

Gouvernement
du Canada

ROYAL CANADIAN
AIR FORCE



AVIATION ROYALE
CANADIENNE

Future Fighter Capability Project (FFCP)

Replacing Canada's Fighter
Aircraft

DISCLAIMER



The information provided today is intended for discussion purposes only.

Any verbal statements made by Canada's representatives will not be binding for purposes of the procurement process. Any verbal comments by Canada must not be construed as a preference, rejection or assessment of any solution. Canada reserves all its rights to take into consideration or not, comments and suggestions received during Future Fighter Industry consultations.

Outline - Policy

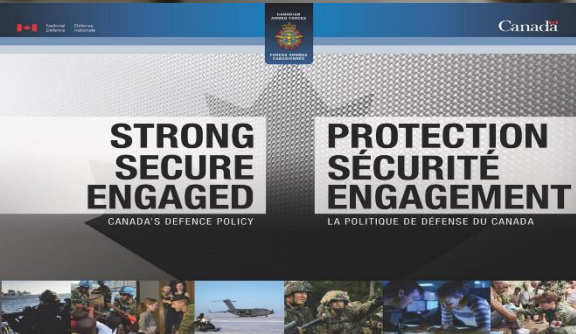


1 Policy

2 Environment

3 Future Fighter Capabilities

SSE – Defence Policy & Vision



- **Strong at home**, with a military ready and able to defend Canada's sovereignty, and to assist in times of natural disaster, support search and rescue, or respond to other emergencies
- **Secure in North America**, active in a renewed defence partnership in NORAD and with the United States
- **Engaged in the world**, with Defence doing its part in Canadian contributions to a more stable and peaceful world



SSE - New Approach



“...Being strong, secure and engaged in the context of an extraordinarily complex security environment requires a fundamentally new, agile, modern and responsible approach to defence...”

- **ANTICIPATE ...**
 - ... emerging threats and challenges
- **ADAPT ...**
 - ... to a fluid and highly volatile global security environment
- **ACT ...**
 - ... decisively with effective military capability through the execution of core missions

SSE - Future Fighter Operations



Deterrence

“...Canada benefits from the deterrent effect provided by its alliances (e.g., NATO and NORAD), and takes seriously its responsibility to contribute to efforts to deter aggression by potential adversaries in all domains...”

- **Global Threat**
 - Operational environment is more lethal and complex and will continue to evolve over the life of the Future Fighter
 - Advanced Fighters
 - Anti-Access Area Denial (A2AD) Surface-to-Air missile systems;
 - Evolving cyber threat
 - Contested Control of the Electro Magnetic Spectrum
 - Proliferation of increasingly technologically advanced equipment
- **Canada will be prepared for future operations with the acquisition of 88 advanced fighters**
 - Seamless interoperability with key allies
 - The platform must be capable, upgradeable and resilient throughout its service life
 - Capabilities that have an operational advantage in relation to present and future potential adversaries

SSE - Security & Interoperability



Interoperability

“Building on our shared values and long history of operational cooperation, the Five-Eyes network of partners, including Canada, the United States, United Kingdom, Australia and New Zealand, is central to protecting Canada’s interests and contributes directly to operational success.”

- **5/2 Eyes Intelligence Mission Data**
 - Robust operational mission data is critical for combat effectiveness, lethality, and survivability
 - The programming of each sensor requires mission data at the 5 Eyes (CAN/UK/US/AU/NZ) level for Contingency Operations and the 2 Eyes (CAN/US) level for NORAD operations
- **5/2 Eyes Intelligence Affects the Fighter Ecosystem**
 - Mission planning
 - Aircraft, offensive/defensive systems programming
 - Support equipment: debriefing/simulators/maintenance
 - Growth path to 2060 and beyond

Environment - CF-18 History



NATO/Contingency Operations

Iraq 1
Desert Storm

Bosnia-Kosovo
Allied Force
OP Echo

Libya
OP Mobile

Ice/Rom/Lithu
OP Reassurance
(2013-present)

Iraq/Syria
OP Impact
(Mid East)

1982

1991

1997-99

2011

2013

2015

Cold War alert
1953-1993

Counter Drug
Operations
1993-1999

G8/20
2002/2008

Olympics
2010

NORAD Operations

9/11

Operation Noble Eagle



Environment - NORAD

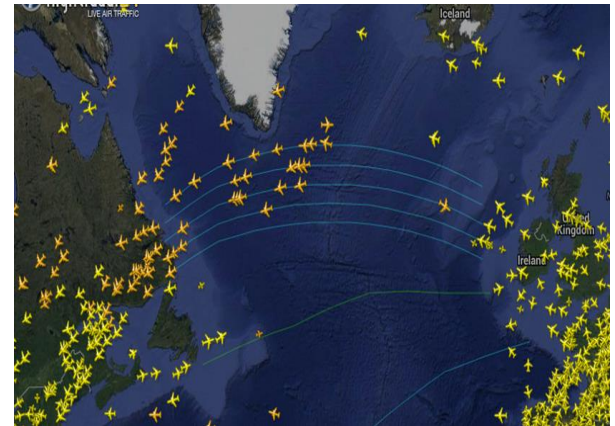


NORAD

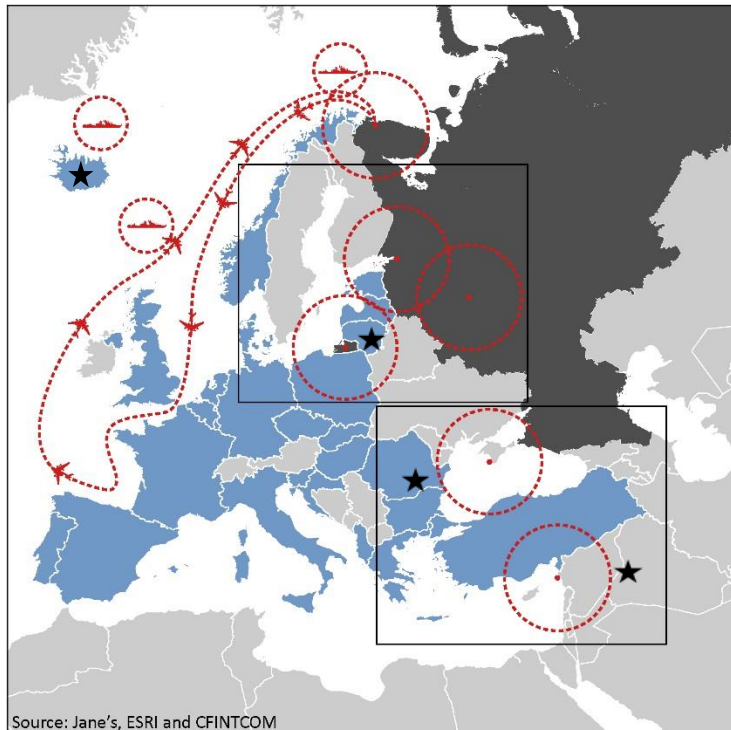
- Detect, deter, defeat threats
- Current/Future threats
 - Long Range Aviation
 - CM KH-101/102
 - Fighters SU-35S/57
 - Contested Airspace

Operation NOBLE EAGLE

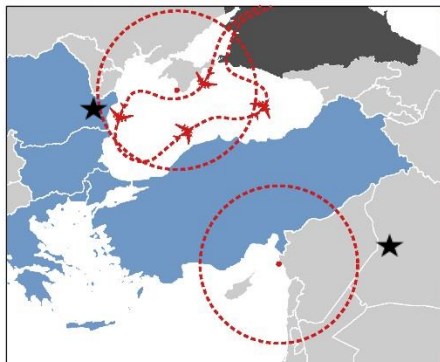
- Higher performance platforms
- Cruising Speeds higher
- Cruising Altitude higher
- Escort to destination
- High-Fast/Low-Slow
- Congested Airspace



Environment - NATO



Source: Jane's, ESRI and CFINTCOM



★ CF-18 Operations

- Environment that can be described as; highly sophisticated, agile, digitized, mobile and passive.
- Advanced current fighters and future advanced fighter threats
 - SU-35S
 - SU-57
- Long Range Aviation threat
 - Bears
 - Blackjacks
- Cruise Missile threats
 - KH-101/102
- Anti-Access Area Denial (A2AD)
 - S300/400
- Air Defence equipped Ships with advanced systems
 - S300+
- Proliferation of ever increasing technologically advanced weaponry
 - All of the above in regional conflicts

Future Fighter Capabilities



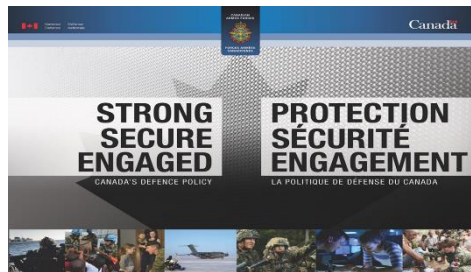
1	Interoperability : NORAD, NATO, safeguard shared 5/2 Eyes intelligence
2	Upgradeability : Ability to maintain Operational Advantage against current and future threats
3	Performance: Range, endurance and speeds required in NORAD and NATO mission configurations
4	Awareness : Ability to gather intelligence, detect, track, identify, assess in permissive and contested environments
5	Survivability : Ability to operate in permissive and contested environment
6	Lethality : Ability to effectively carry out its assigned tasks in permissive and contested environment
7	Sustainability: Ability to sustain Force Generation and Force Employment systems throughout service life

Disruptive Technology



- **Disruptive defined**
 - Technological development which changes the conduct of operations significantly within short time and affect long term goals...
- **Disruptive to whom**
 - Opportunities or threats they present
- **Military Examples**
 - WW II German Blitzkrieg
 - Gulf War 1: Laser Guided bombs and Night Vision systems
- **Possible game changers**
 - Autonomous systems, exploitation of EM spectrum, hypersonic speed, directed energy, network, quantum technology, AI, algorithm, etc.
- **Integration within the ecosystem of military capabilities**
 - Joint and legacy systems
- **Success criteria**
 - Implementation, integration, supporting rules of engagement

Summary



Canada 