



URBAN OPS

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Recherche et développement
pour la défense Canada

Defence Research and
Development Canada

Canada

URBAN OPS

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Defence Research and
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Canada

URBAN OPS

summary

INTENT

PLANNING

- 1** What, why, who is concerned ?
 - History
 - Lesson from history
 - Constraints: today and tomorrow
- 2** How - Research and development
 - Main areas
 - Our target
 - Examples
- 3** Milestones
 - Wishes and reality
- 4** Conclusion

DESIRED FINAL STATE



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History



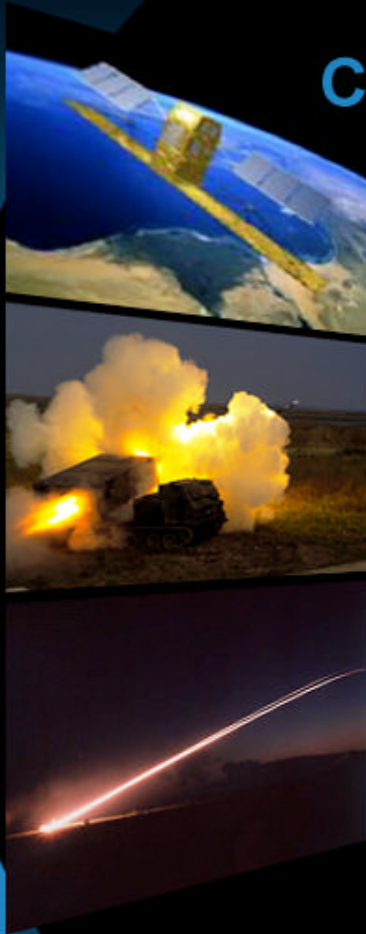
Winston S. Churchill



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History

Cold war legacy



Numerically superior foe

Armoured warfare

Open terrain

Long range precision weapons

US military developed means to detect
and neutralise the enemy at longer ranges
than the enemy could target US forces



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Particularities



Restrictions

- Command and control
- Engagements occur at short range
- Difficult manoeuvre
- No coordination or fire support from higher echelons

Isolation

- Dismounted close combat
- Traditional weapons are not suited for UO
- Communications are difficult
- Navigation is difficult

Fratricide

Political problems

- Physical damage to cities: vital infrastructures, cultural sites.
- Non-combatant casualties



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History

~500 av. J-C : Sun Tzu

202 B.C. : Carthage

Scipio Africanus

CITY	YEAR	CITY	YEAR	CITY	YEAR
RIGA	1917	*MANILA	1945	QUANGTRI CITY	1972
MADRID	1936	JERUSALEM	1967	SUEZ CITY	1973
WARSAW	1939	*SAN MANUEL	1945	XUAN LOC	1975
ROTTERDAM	1940	ALGIERS	1954	SAIGON	1975
MOSCOW	1942	CARACAS	1958	BEIRUT	1975
STALINGRAD	1942	*PANAMA CITY	1989	MANAGUA	1978
LENINGRAD	1942	*GRENADA	1983	ZAHLE	1981
WARSAW	1943	*PORT AU PRINCE	1996	TYRE	1982
*PALERMO	1944	*SEOUL	1950	*BEIRUT	1983
*BREST	1944	BUDAPEST	1956	NICOSIA	1958
*AACHEN	1944	*BEIRUT	1958	SIDON	1982
ARNHEM	1945	*SANTO DOMINGO	1965	*COLON	1989
ORTONA	1944	*SAIGON	1968	*MOGADISHU	1993
*CHERBOURG	1944	*KONTUM	1968	*KUWAIT CITY	1991
BRESLAU	1945	*HUE	1968	*MONROVIA	1994
*WEISSENFELS	1945	BELFAST	1972	*SARAJEVO	1996
BERLIN	1945	MONTEVIDEO	1972	*BRCKO	1997

*Direct US troop involvement.



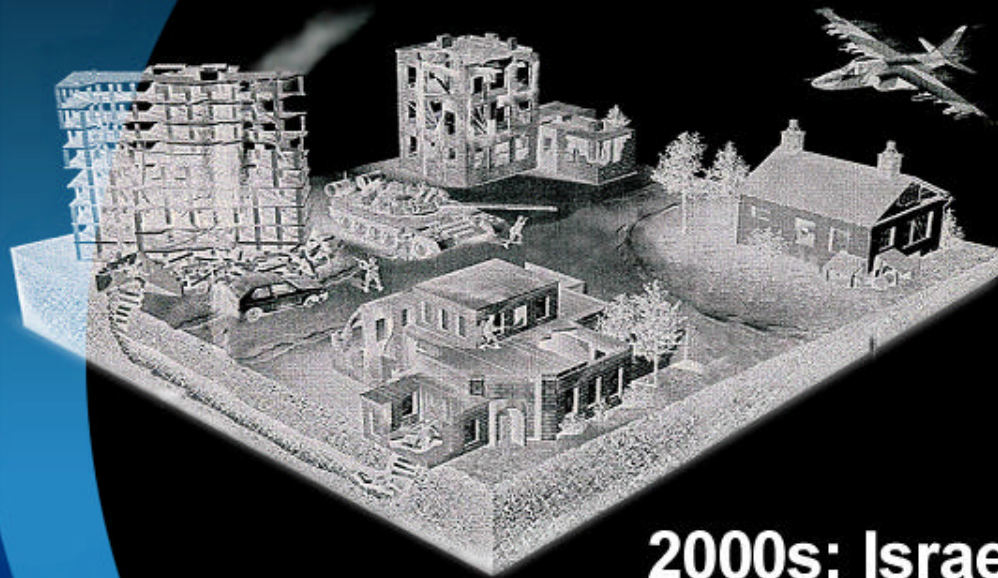




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History

1990s: Grozny, Mogadishu



Navigation: e.g. tourist maps

Disinformation, deception

Terrain occupation:

e.g. multiple-floor buildings

Threat awareness: mines and booby-traps

Tactical communications

No tanks without extensive dismounted infantry support

Support from logistics = difficult

Mental well-being = very low

Snipers = very efficient

UAVs = very efficient

2000s: Israel, Palestine, NY+Washington

Offensive

Defensive

9 à 27 : 1

The enemy is invisible

Combatants and non-combatants mixed together



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History

... moreover

CBRN threats

WMD stored in urban areas

Coalitions

Counter-terrorism

Riot control



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History

... moreover

CBRN threats
WMD stored in urban areas
Coalitions
Counter-terrorism
Riot control

Who is concerned ?

Strategic objectives
&
critical points

Operational objectives
&
critical points

Tactical objectives
&
critical points

Strategic & critical
Operational & critical
Tactical objectives & critical points



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Lessons from history

Engage
Understand



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Research and development

C4I

Digitization

- Command and control
- Localisation/navigation
- Communications
- Identification
- Mission planning
- Intelligence

Others

- Vision technologies
- Future urban warrior
- Robotics
- Counter-measures
- Non-lethal weapons



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Research and development



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Urban Data Fusion Command Centre (UDFCC)

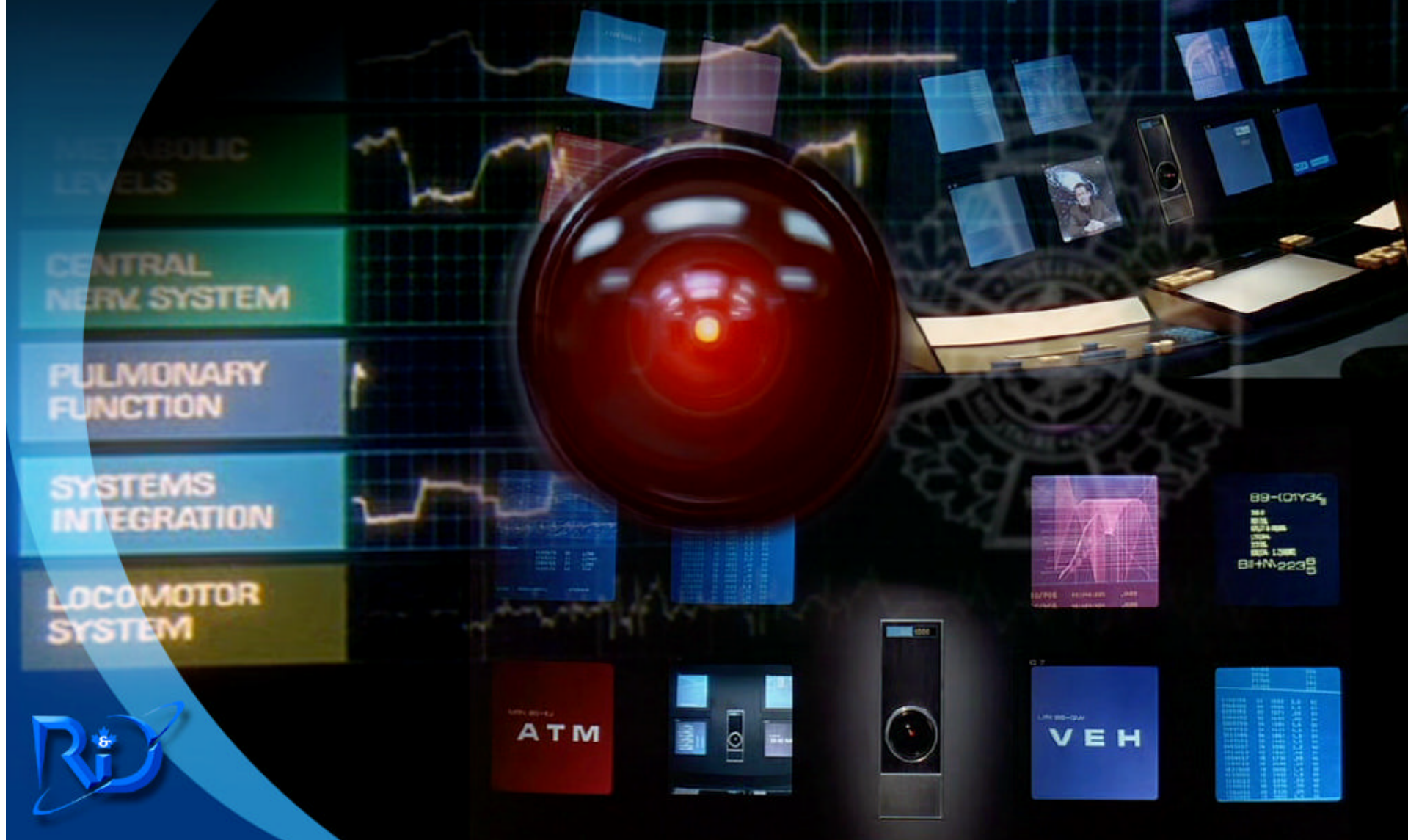


- Operational and tactical support
- Directs Intelligence collection
- Mission planning
- Provides high level C2
- Directs logistic
- EMS Control and exploitation
- Redundant secure communications
- Co-ordinates land, sea and air assets



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Research and development



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Research and development



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Research and Development

Mission planning
and rehearsal

DIRECTION

Synthetic urban
battlefield
vizualisation

COMMANDER'S
MISSION

Synthetic urban
battlefield up to
date reproduction
and formalization

COLLECTION

PROCESSING

Urban battlefield
data exploitation



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Research and development

Modeling of the urban theatre of operations Infrastructures and services

Buildings

Transportation

Utilities

First responders

Industries

Culture

Language

Religious beliefs

Government/Politics

Social groups

Economic classes

ORBATS



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Research and development

Modeling of the urban theatre of operations

Infrastructures and services



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Research and development

Modeling of the urban theatre of operations

Blue, Red, Yellow, ...



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Research and development

Modeling of the urban theatre of operations

Social networks

Organized crime



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Research and development
Data and information processing and exploitation



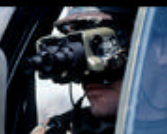
DITE

Detect

Identify

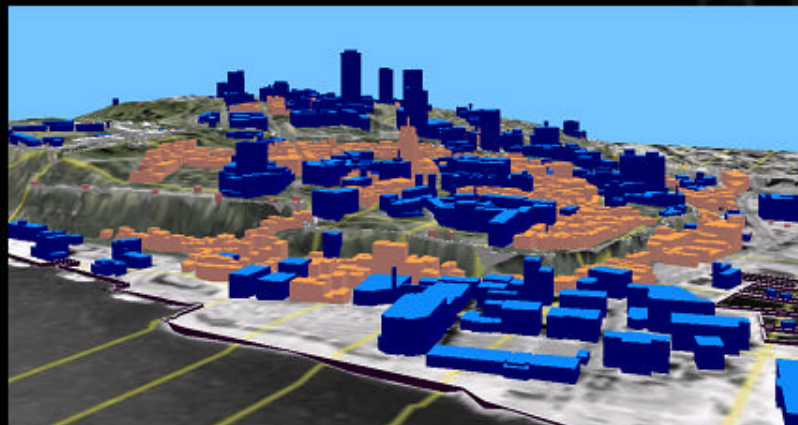
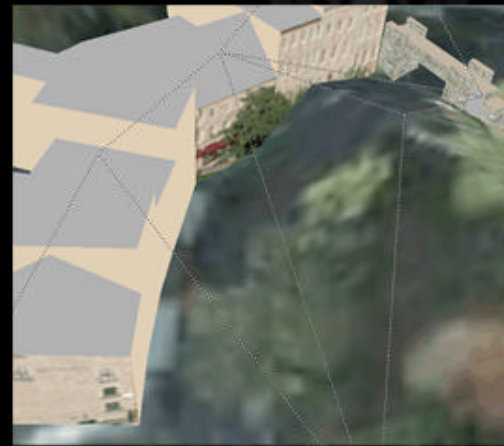
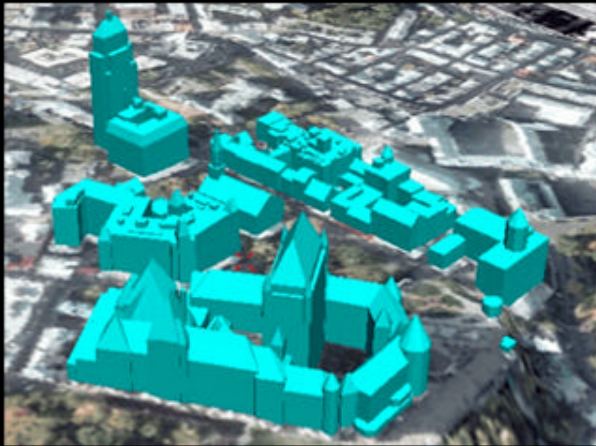
Track

Estimate future state



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Research and development
Data and information processing and exploitation



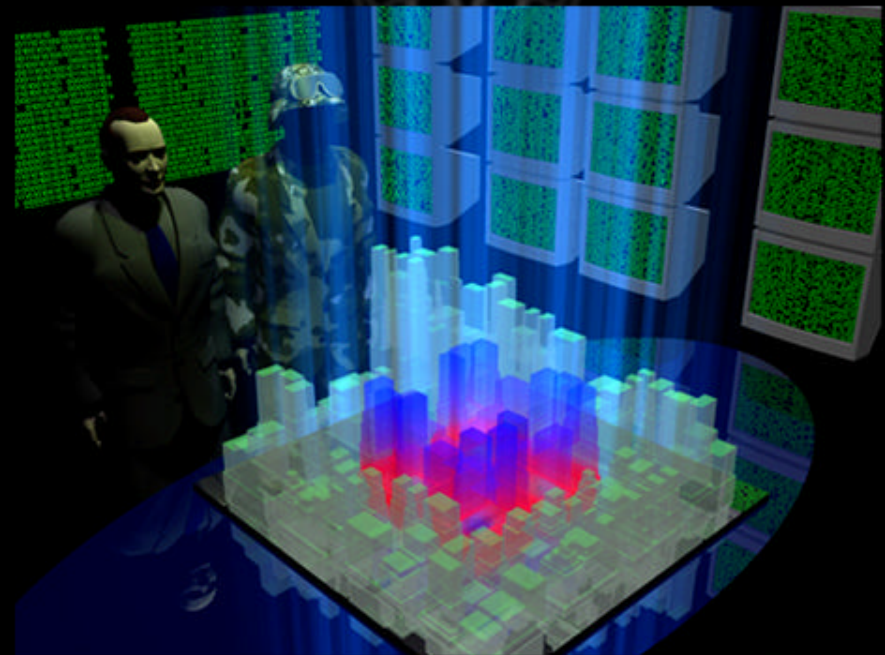
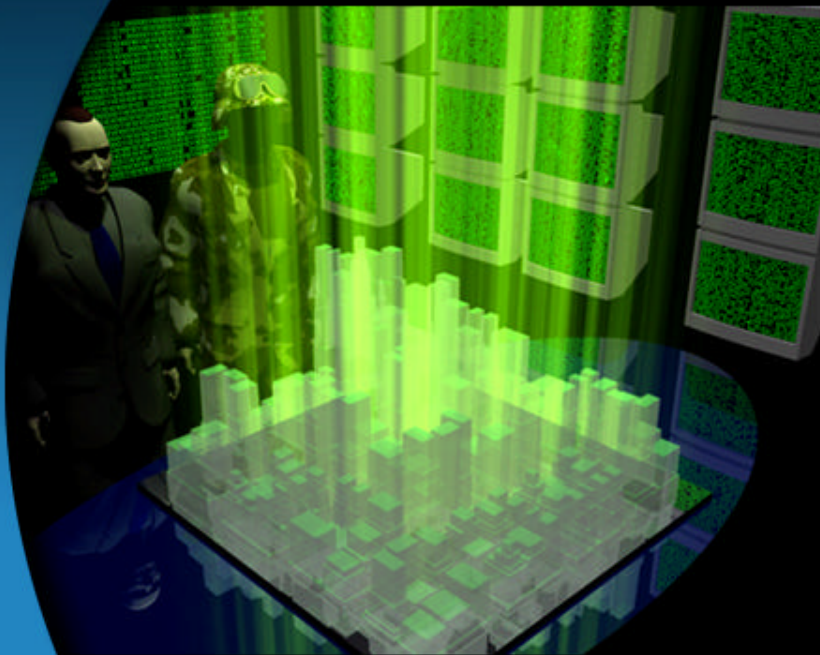
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Research and development
Visualisation



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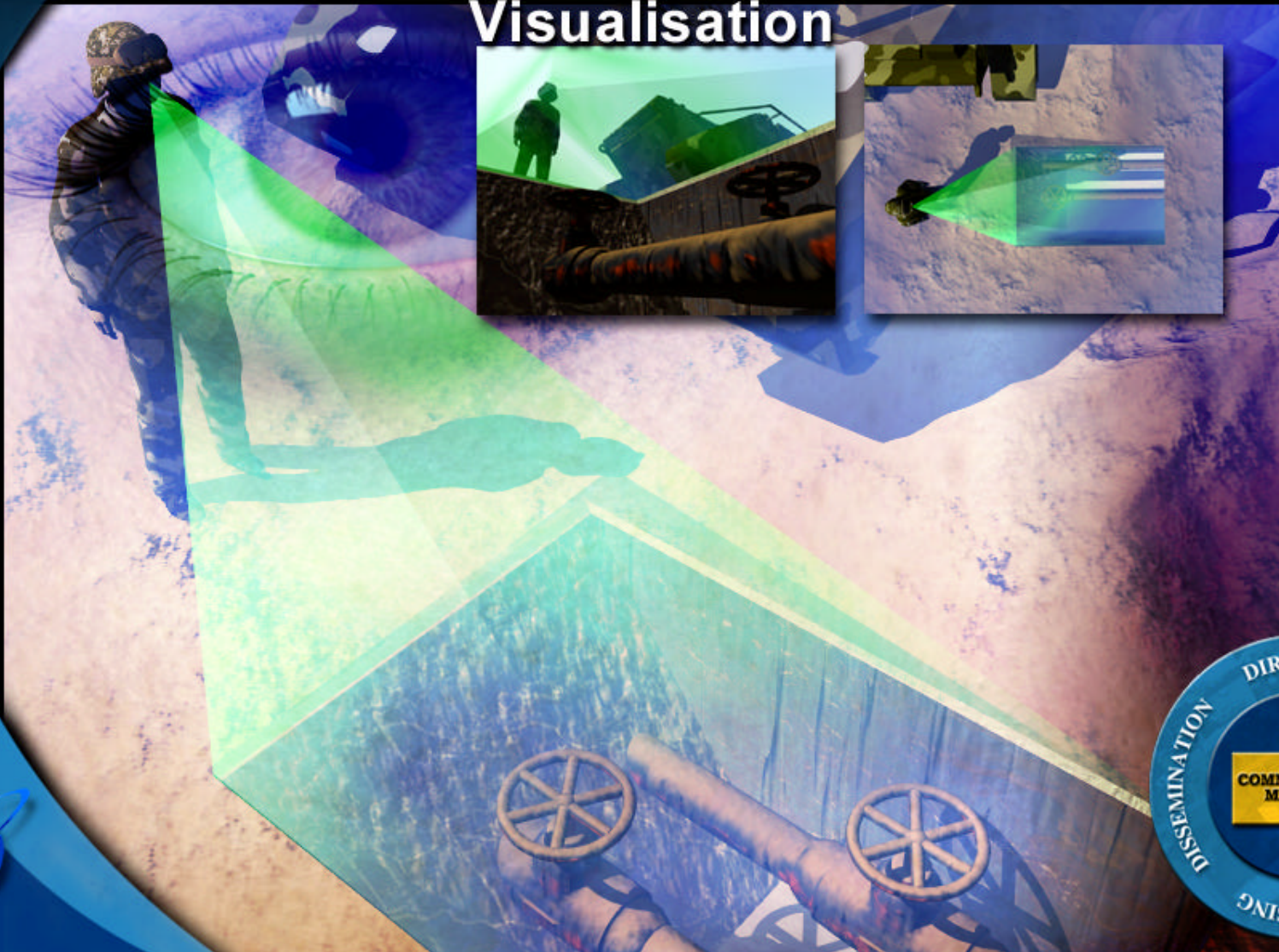
Research and development
Visualisation



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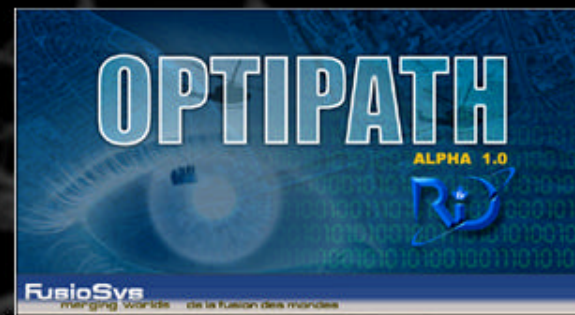
Research and development

Visualisation



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Research and development



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Deadlines

2025

2020

2015

2010

2003

Vital for 2020 (NATO SAS-030)

Number one target for 2020 (U.S. GMI)

