Future challenges in Aeronautics and Defence

–

The perspective of the Swedish Armed Forces

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Swedish Air Force Mission & Task

Support Swedish Security Policy, to maintain Peace and Independence

Territorial Integrity
Crisis Prevention
National Defence
Support to Society

How shall we best use and enhance the assets – today and in the future?

(New) Tasks

Changing Security Environment

New challenges & threats

Dramatically changed Security Policy:

- *"From isolation to participation".*
- EU member & NATO partner

Key issues

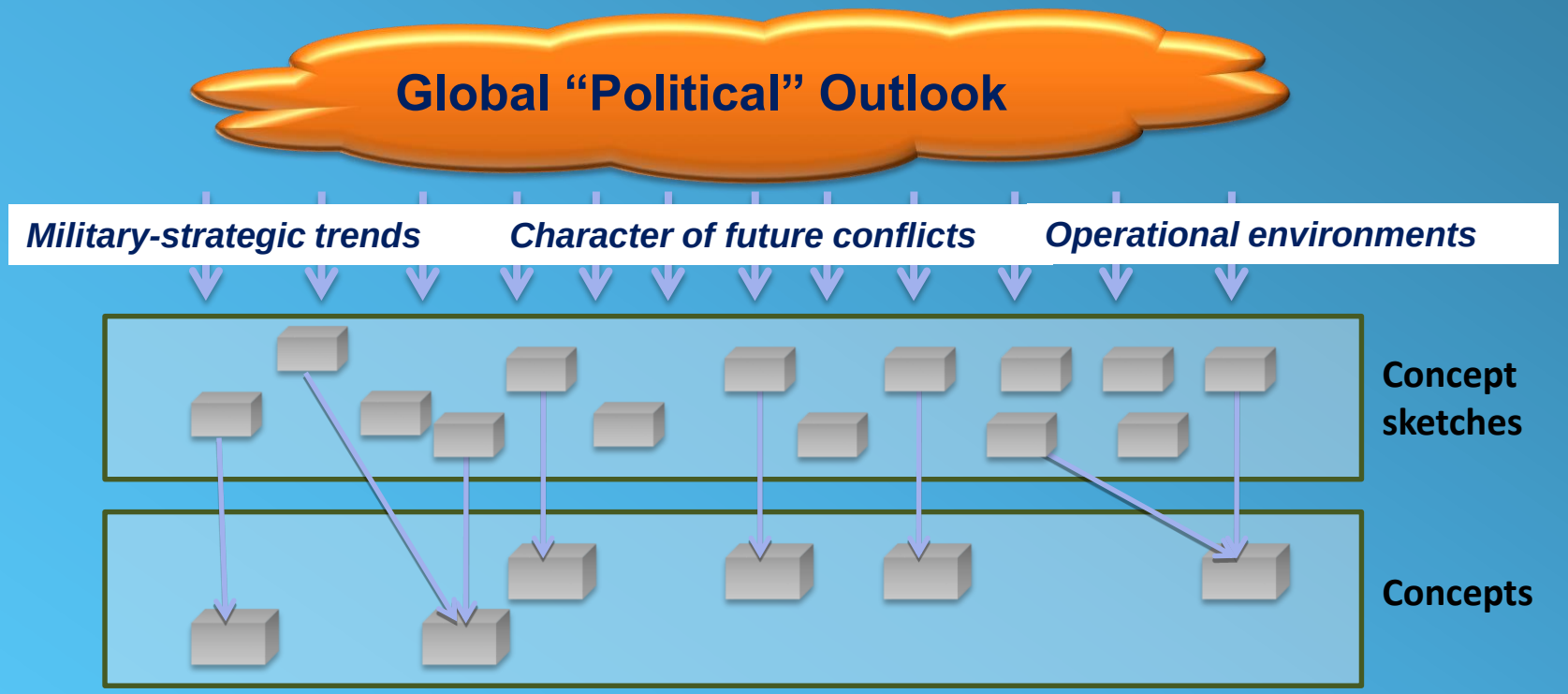
From large National, Territorial force ->

Interoperable, Deployable Force ->

Expeditionary Force

And now back to focus on Territorial Defence again, but with smaller structures

Concept Shaping



A developed concept is built from assumptions about the international security policy, strategic and operational ideas, central factors like critical capabilities, units and materiel systems, decisions taken in "cross-roads" questions, other strategic decisions and cost calculations (economy).

Forming the Armed Forces of tomorrow

- Must be based on a national security strategy
- High threshold level effect needed
- Concepts: Reactive, Active or Proactive?
- ”Cross-roads choice”:
  - Alt 1: sustain the old ”quantitative” organization
  - Alt 2: go for a qualitative development

Needs and ways to work, when choosing a qualitative way ahead

- Replacement of old materiel and an ability to introduce new capabilities
- Continuous adaptation to the high-tech character of the Swedish society + Triple Helix Cooperation
- International cooperation is reached by means to sustain and develop capabilities and structures that are expected to be attractive also to partners
- Extended producibility through international cooperation

Technology Development

IT and communication technology (C4)

Unmanned systems

Space based ISR systems

Cooperative Engagement Capability
(System of systems)

Disruptive Technologies

The will to utilize military power

Cyber

Neuro-science

BVR systems, incl. ballistic and cruise missiles

Increasing Ranges | Stealth Technology | Electronic Warfare | Automation

Swedish Air Force Development

Aim:	A well organized, professional and robust Air Force with high availability and usability, for both national and international missions
Driver:	Current Operations & National Defence Planning
Enabler:	Cooperation (incl Pooling & Sharing), Interoperability and “System of Systems Thinking”

Challenges

But
- It is not only Gripen
- Tactical Airlift and Trainers needed within 10 years
- And all within the budget…

Long term (beyond 2040)
- Gripen E/F – keeping a balanced design
- Gripen E/F – enhanced capabilities & flexibility
- Enhanced load capability, reach & survivability, ISTAR capability
- Harmonization of requirements together with other Gripen Users

Ways to solve it
- The Gripen Program changes over time is based on “iterative editions” where new functionality is added every three years, in a series of “editions”
- In this way the Air Force will get upgrades in balance with other systems and with the threat changes

BVR Capability

WVR Capability

JAS 39 GRIPEN

Air-to-Sea Capability

ISR Capability

Development Strategy

Balanced Development

- Control of the Air
- Air Mobility
- Situational Awareness & Decision Making
- Precision Engagement – Land & Sea

Prioritized Development

- Operational Capability
- Presence
- Survivability
- Operational Efficiency
- Interoperability

Development Strategy

Key to Success in Air Warfare

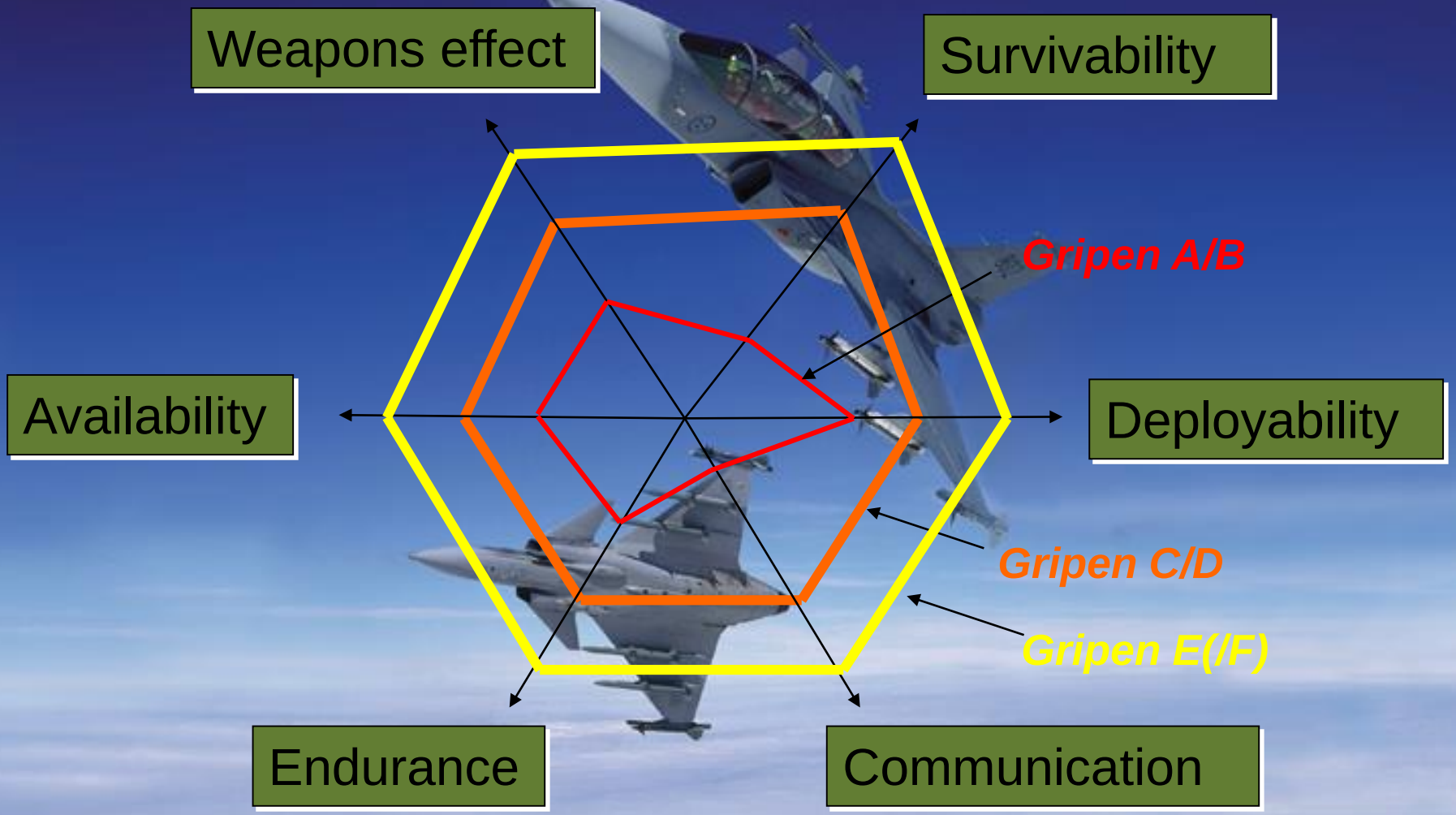
- Superior Numbers
- Superior Technology
- Superior Tactics

Sweden will probably not be Superior in Numbers…

Technology

- As accelerator, not as a problem solver
- Evolutionary process

Gripen Development Path



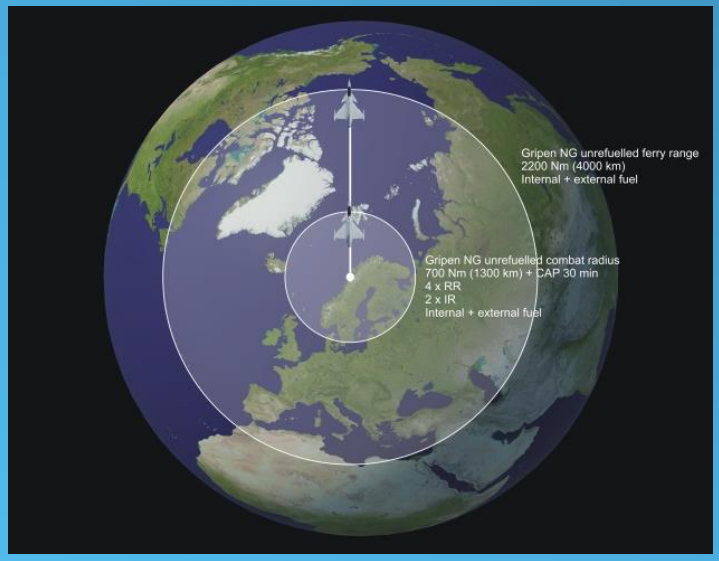
Key Features of Balanced Design

Increased range/endurance
- Less dependence of AAR
- Longer loiter times – better persistence
- Greater Sensor and Area Coverage

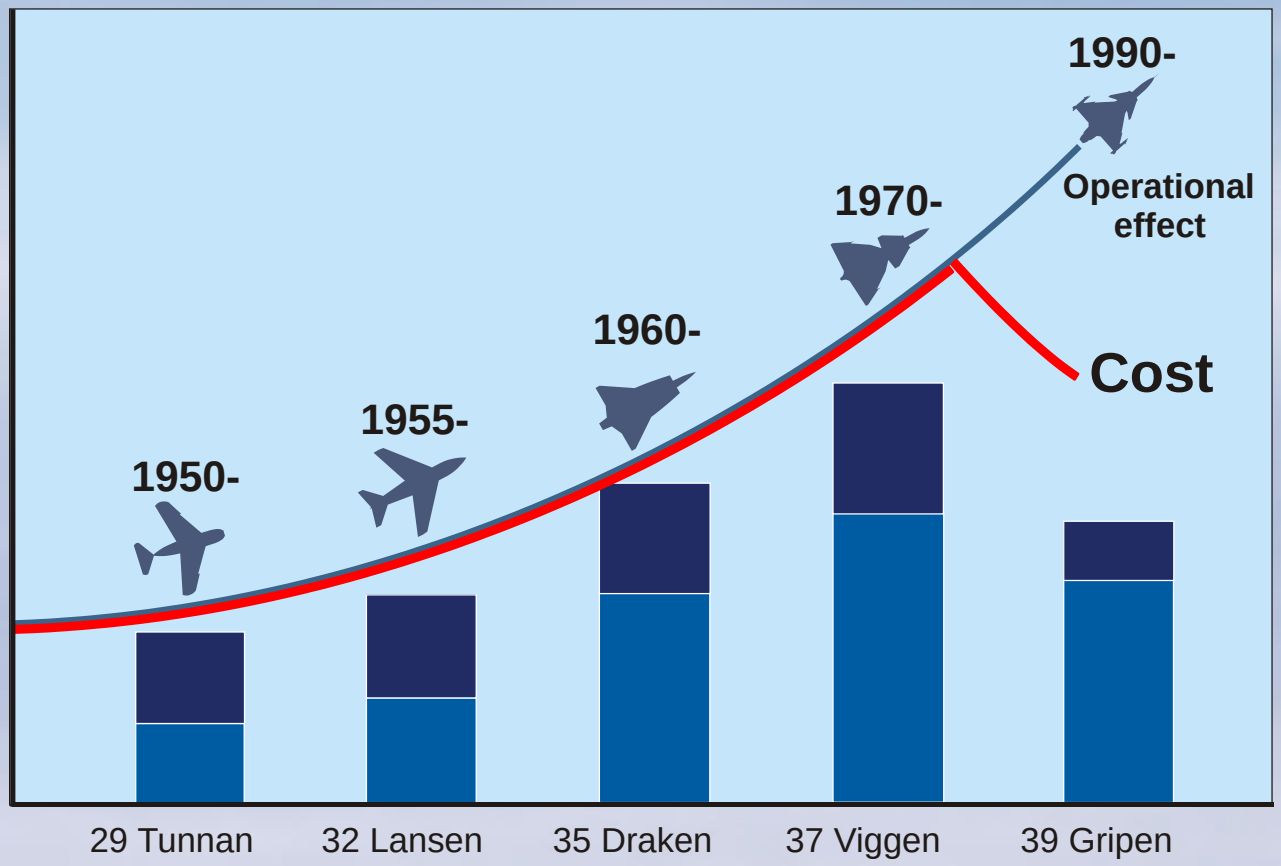
Increased payload & flexibility
- 10 weapon stations
- Increased MTOW
- Full support of smart weapons
- Full support of future BVR weapons

Operational
- Omni Role
- Minimized RCS without being stealth
- Super-cruise
- Integrated sensors, avionics and weapons
- Situational awareness

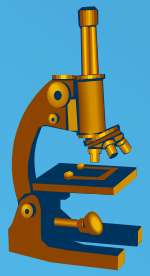
Cost efficiency
- Low Life Cycle Cost
- Growth potential



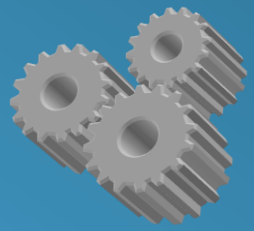
Life Cycle Cost - Aircraft Projects Swedish Air Force



Gripen Development Areas



The Swedish Armed Forces Research & Technology Programme 2014



- Domain-oriented R&T within 11 areas
- Studies
- R&T Transfer Programme
- Concept Development
- National Aeronautical Research Programme, NFFP

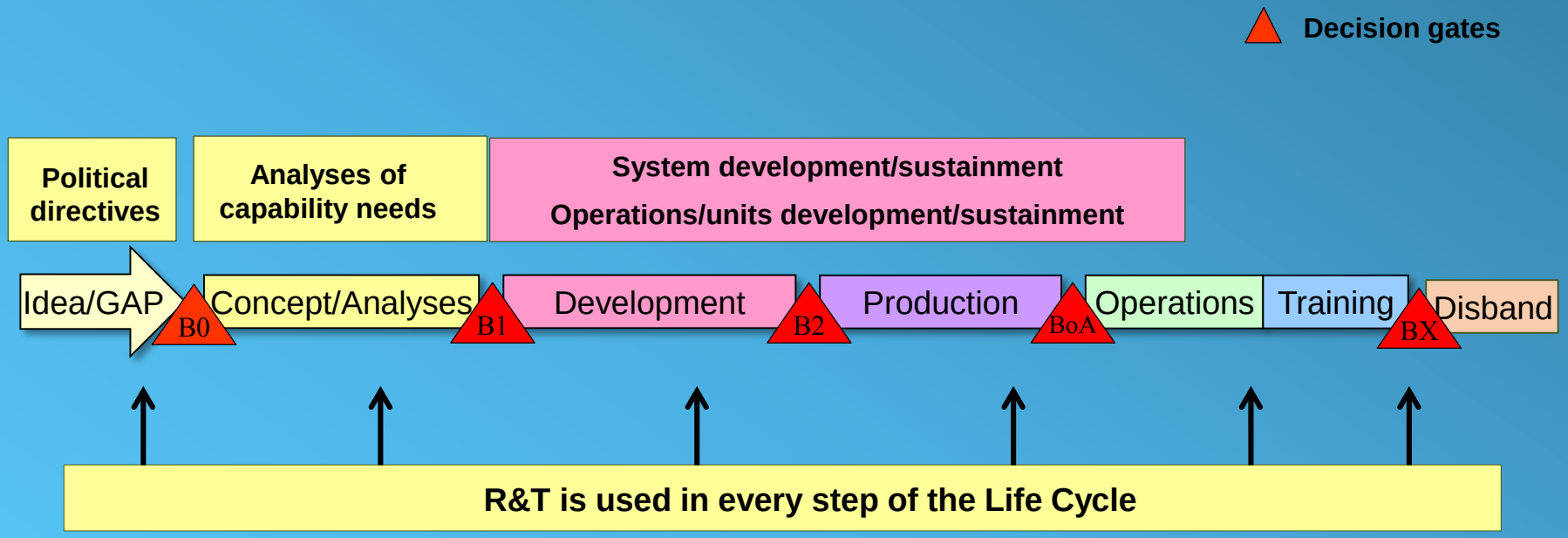
Research and Technology Development in Cooperation

In recent years, the Swedish Armed Forces has participated in various national and international programs, in order to meet the need for advanced capabilities also in times ahead.

Examples are (in addition to NFFP), demonstrators on higher TRL like Neuron, MIDCAS and of course the Gripen Demo Program.

There is now an interest for the Swedish research community, including the Armed Forces, to identify relevant cooperation projects with our Brazilian Gripen partners.

Life Cycle Management (LCM)



Command	Engagement	Information	Mobility	Sustainability	Protection
ARMY	NAVY	AIR FORCE	C4ISTAR	LOGISTICS	

Priorities (and trends)

Long Range Weapon Systems

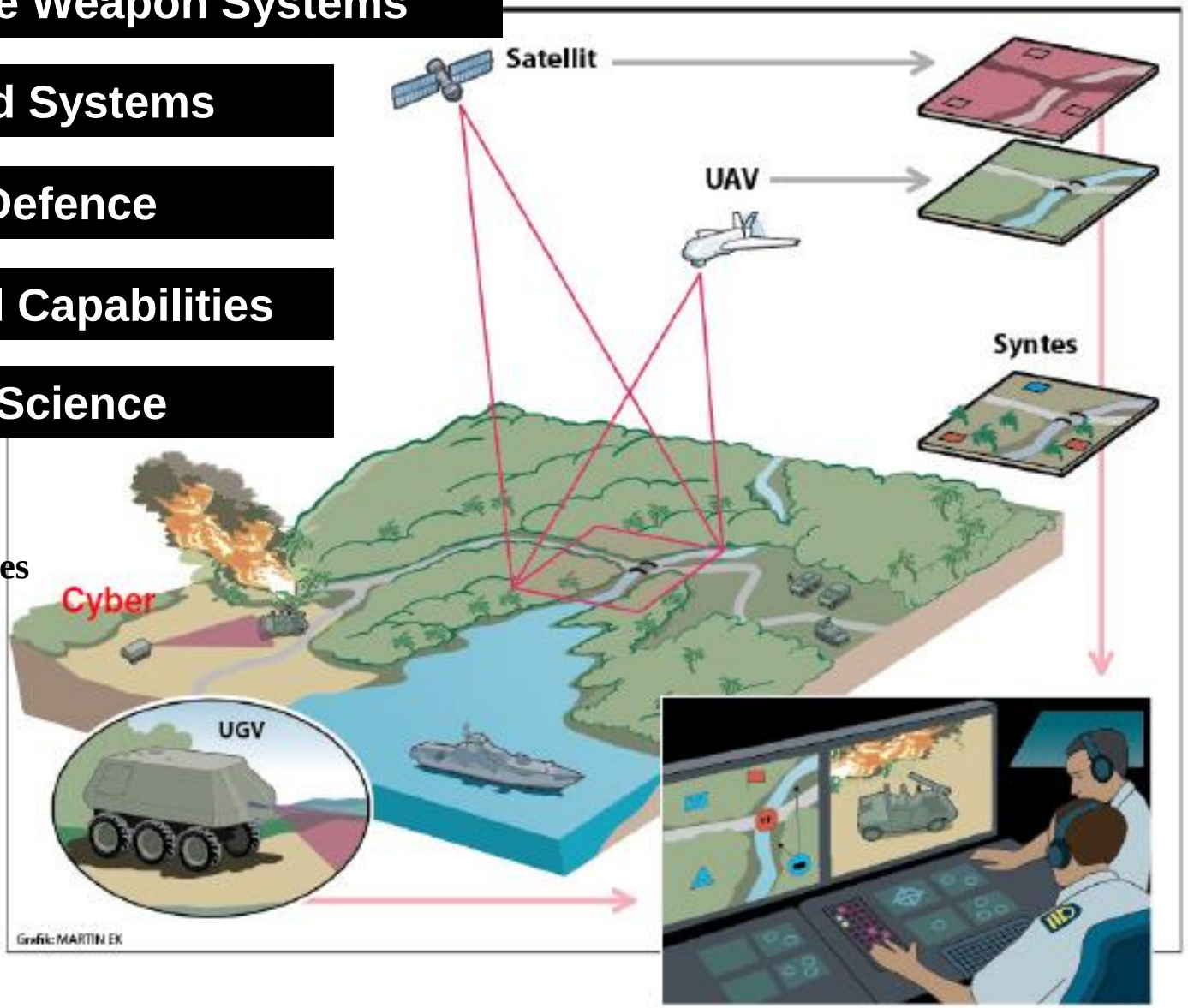
Unmanned Systems

Cyber Defence

Space Based Capabilities

Human Science

- **Emerging Technologies**
- **Cloud Computing**
- **Cyber Security**
- **Internet of Things**
- **Nano Technology**



THANK YOU!