ITAR: understanding the problems & possible solutions

EDA approach to European Technology non-Dependence

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What is EDA*?

*European Defence Agency

> The mission of the Agency is to support the Council and the Member States in their effort to improve the EU's defence capabilities in the field of crisis management and to sustain the CSDP as it stands now and develops in the future.
> COUNCIL JOINT ACTION 2004/551/CFSP

- EU intergovernmental (inter MoD) agency located in Brussels.
- Acts under the Council's authority within the single institutional framework of the Union.
- Develops defence capabilities in the field of crisis management.
- Promotes European armaments cooperation.
- Strengthens Europe's defence industrial & technological base.
- Aims at a competitive European defence equipment market.
- Promotes research aimed at leadership in strategic technologies for future defence & security capabilities.
- Cooperates closely with Member States and European institutional actors.

Introduction

U.S. National Security and the Risks of Dependence on Foreign Technologies and High-Technology Products

"*There have been numerous incidents in recent decades that illustrate the potential dangers of foreign technology and component dependence. Governments of technologically advanced nations, including the United-States, frequently use technology as a lever with which to influence the policies and actions of other nations. The issue of dependence should be examined in the context of limiting American vulnerability to such manipulation.*"

(source: The National Academic Press, Maximizing U.S. Interests in Science and Technology Relations with Japan: Report of the Defense Task Force; http://www.nap.edu/openbook.php?record_id=9294&page=99)

➔ **The above statement applies to Europe, too !**

Real-Time context

Global High-Tech Supply Chain Shaken by Japan Crisis

"Modern global supply chains, experts say, mirror complex biological systems like the human body in many ways.

They can be remarkably resilient and self-healing, yet at times quite vulnerable to some specific, seemingly small weakness – as if a tiny tear in a crucial artery were to cause someone to suffer heart failure"

"Japan is the world's third-largest economy, and a vital supplier of parts and equipment for major industries like computers, electronics and automobiles…

Still, Japan produces a far higher share of certain important chips like the lightweight flash memory used in smartphones and tablet computers. Japan makes about 35 percent of those memory chips."

The New York Post, Thursday, March 24, 2011

What is the issue?

European Technology Dependence

- Microelectronic fabs drain to Asia

- Rare earth and material dependencies to China and other nations

- **Export restrictions: ITAR, Japanese ethic code, …**

- Valley of Death: EU is strong in research and volume of consumers but weak in transition of research to production !

- Skill and know-how depletion in Europe

- Global High-Tech Supply Chain Shaken by Japan Crisis…

Some definitions on Technology dependence

- **Non-Dependence**

  Possibility for Europe to have free, unrestricted access to any required technology

- **Independence**

  All needed technologies developed and accessible in Europe

- **Key Enabling Technology (KET)**

  Technologies which drive innovation and improve design and performance increase

- **Critical Key Enabling Technologies**

  Technologies needed to achieve cutting edge capability (e.g. for electronic warfare and protection)

EDA 2005

Overall Rationale

Political – *Why do we need European Technological non-Dependence (ETnD)* **?**

- Improvement of military capabilities objective of the Lisbon Treaty (art. 42 (3) TEU

- RTD needs to enable & sustain new & improved capabilities

- ➜ **Unrestricted access to needed technologies is a precondition for high quality technology based capability development**

Economical – *Why ETnD at EU level* **?**

- Budget constraints (e.g. financial crisis, limited national budgets), limited funding in national Technology non-Dependence, avoiding duplication

- European industry requires affordable technologies and reliable supply chains

- ➜ **Availability of affordable cutting edge & critical key enabling technology is the basis for industry to achieve technological lead and competitiveness**

The European situation

Excellent sectorial example for ETnD strategies exist

- Critical Space Technologies for European Strategic Non-Dependence
  - ➜ ESA led joint task force with EDA and EC

- Key Enabling Technology initiative of the Commission (DG ENTR)

- EU Raw materials policy (DG ENTR)

What is missing ?

- No overall European framework, strategy or policy exists for ETnD

- Some bigger nations have national strategies for funding ETnD

- However, standing alone, nations will have to accept extensive Technology Dependence due to the high costs for resolving the issue

The GaN Case

➔ **European industrial supply chain for GaN high power electronics**

➔ **Driver: US export embargo for such technologies**

➔ **Three EDA projects so far**

- KORRIGAN (finished) – basic research on GaN
- MANGA (running) – building European sources for GaN on SiC wafers
- MAGNUS (under preparation) – component technology demonstrators
- Total investment in the EDA framework of 80 million Euro
- Complementary investment by EC, ESA & Member States

➔ **Objective: European source at the same technological performance level as the US world market leader – will be reached by 2013**

➔ **Experience shows that breaking monopoly helps removing export restrictions and improves competition**

Summary

➔ Europe understands the **risks of dependence on foreign technologies** and high-technology products

➔ European technological dependence arises from multiple developments – **export restrictions are only one aspect**

➔ European technological non-dependence: **political & economical necessity**

➔ **Excellent sectorial examples exist** where ETnD issues are successfully addressed in joint European approaches, including Defence

➔ However, **no overall European ETnD strategy, policy or framework** exists

➔ EDA strives for **making ETnD a key driver for R&D funding** at European level.