Exporting technology & software under the DU regulation

Spring University on XC for GUAM Countries

Overview

Part A: An overview

- ✓ What is technology and why do we apply technology controls?
- ✓ Modes of technology transfers

Part B: Legal Framework

- ✓ EU legal basis for tech., software and TA
- ✓ Practical implementation

Part C: Applying controls in a research context:

- ✓ Case 1: The H5N1 studies
- ✓ Case 2: Fabrication of synthetic diamonds

Technology controls: fine, but WHY?

- **"Unlike raw materials technology provides the recipient with an enduring improvement in capabilities"**

Mastanduno, M.,Economic Containment: COCOM and the Politics of East-West Trade, Cornell University Press, New York, 1992.

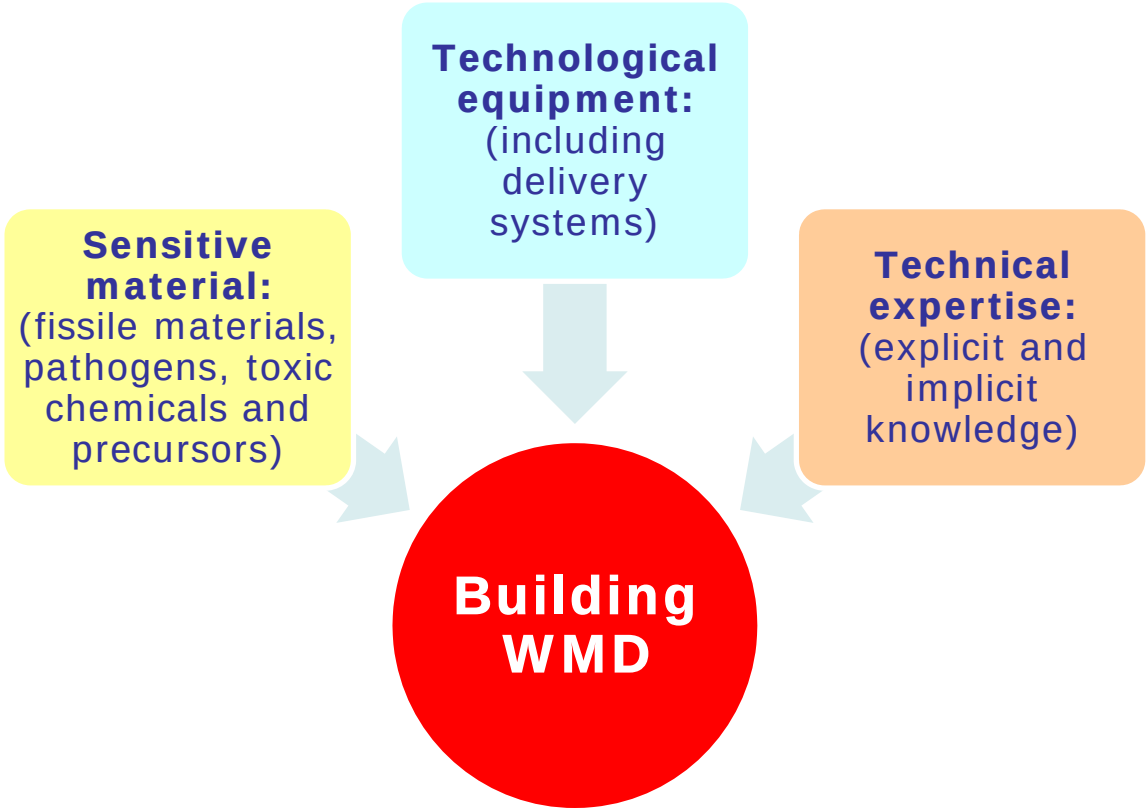
- **"The real acquisition of Western technology was accomplished one graduate student at a time"**

Reed, C.T., Stillman, B. D., The Nuclear Express: a political history of the bomb and its proliferation, Zenith Press, Minneapolis, 2009.

- **"The nature of nuclear problem confronting mankind is in its fundamental sense, a problem of knowledge"**

Smith, K.R., Explaining the Non-proliferation Regime: Anomalies for Contemporary International Relations Theory, International Organization, Vol. 41, No2 pp.266, MIT Press, 1987.

Technology controls: fine, but WHY?



Technology: explicit & tacit knowledge

- Explicit knowledge is the information that can be codified, written down in the form of a recipe or laboratory protocol, and transferred from one individual to another by impersonal means, such as publication in a scientific journal.

- Tacit knowledge, in contrast involves skills, know-how, and sensory cues that are vital to the successful use of a technology yet cannot be reduced to writing and must be acquired through hands-on practice and experience.

From: Tucker, Innovation, Dual Use, and Security, 23.

How can technology be transferred ?

Intangible transfer:

Technology is contained in people‘s minds

Intangible electronic transfer:

Transfer of technical data by intangible means

Tangible transfer:

Technical data is fixed

in a tangible medium of expression

Legal Basis: EU reg. 428/2009

- **Article 2§2 (iii):** the transmission of software or technology by electronic media, including by fax, telephone, electronic mail or any other electronic means to a destination outside the European Community" constitutes an export. (active transmission)

- It includes making available in an electronic form such software and technology to legal and natural persons and partnerships outside the Community. (passive transmission).

- Export also applies to oral transmission of technology when the technology is described over the telephone.

When is technology controlled?

- **Technology** is the specific information necessary for the 'development', 'production' or 'use' of a product. Technology may take the form of **technical data** and **technical assistance.**

- The export of technology which is **'directly associated' or 'required'** for the 'development', 'production' or 'use' of items controlled in Categories 1 to 9 according to the provisions in each category. Such technologies remain under control even when applicable to non-controlled items.

- **'Required' technology** refers only to that portion of technology which is peculiarly responsible for achieving or exceeding the controlled performance.

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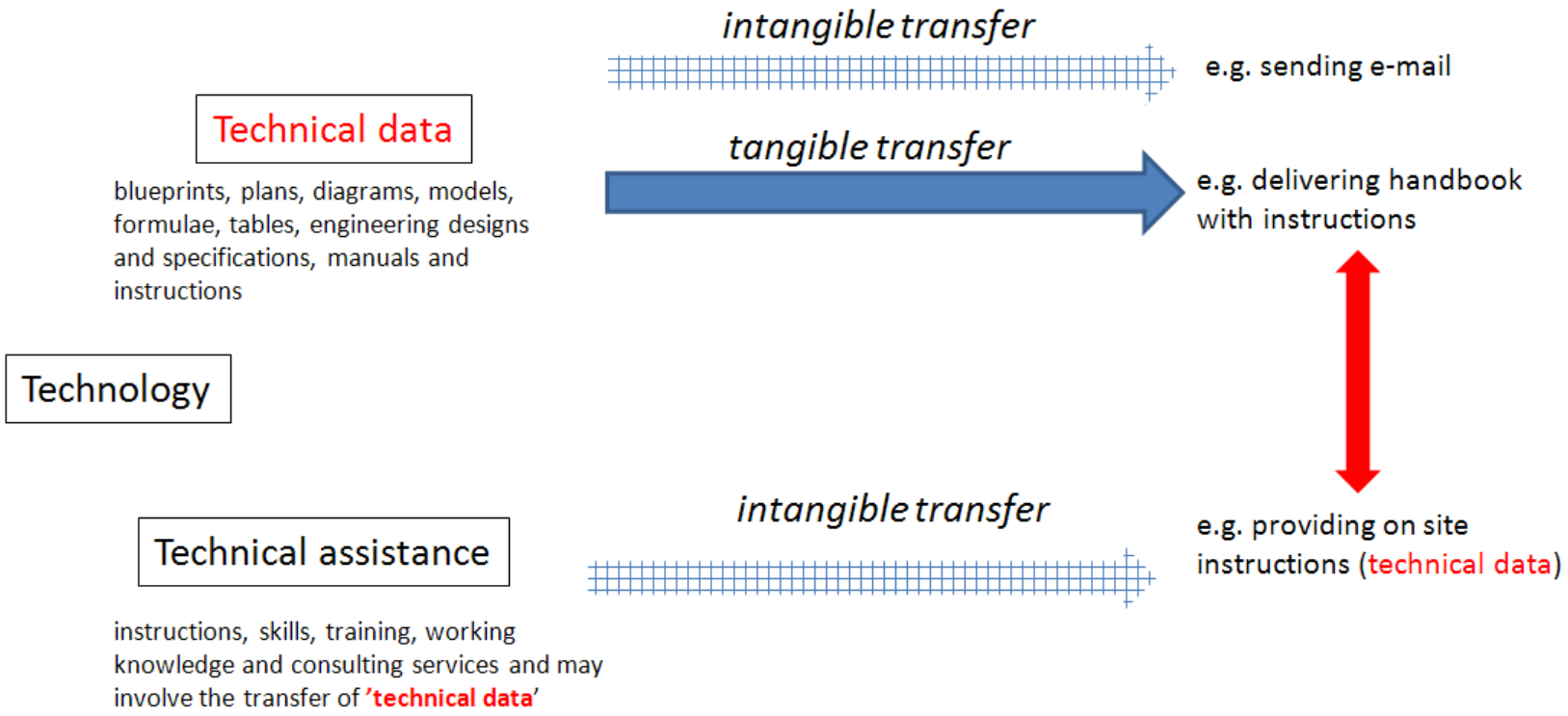
How is technology transferred?



When is technology not controlled?

- Controls do not apply to that ‘technology’ **which is the minimum necessary** for the installation, operation, maintenance (checking) or repair **of those goods which are not controlled or whose export has been authorised.**

- Controls on "technology" transfer do not apply to information "**in the public domain",** to "**basic scientific research**" or to the **minimum necessary information for patent applications**.

When is software controlled?

- "**Software**" (GSN All) means a collection of one or more "programmes" or 'micro-programmes' fixed in any tangible medium of expression.

- "**Software**" specially designed or modified for the "development", "production" or "use" of controlled items as specified in each category.

- "**Source code**" (or source language) is a convenient expression of one or more processes which may be turned by a programming system into equipment executable form ("**object code**" (or object language)).

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When is software not controlled?

- **Generally available to the public by being**:

1. Sold from stock at retail selling points, without restriction, by means of:

a. Over-the-counter transactions;

b. Mail order transactions;

c. Electronic transactions; or

d. Telephone call transactions; and

2. Designed for installation by the user without further substantial support by the supplier;

- "**In the public domain**"; or

- c. The **minimum necessary "object code**" for the installation, operation, maintenance (checking) or repair of those items whose export has been authorised.

Recurrent terms…

- **"Production"** means all production phases, such as: construction, production engineering, manufacture, integration, assembly (mounting), inspection, testing, quality assurance.

- **"Use"** means operation, installation (including on-site installation), maintenance (checking), repair, overhaul and refurbishing.

- **"Development"** is related to all phases prior to serial production, such as: design, design research, design analyses, design concepts, assembly and testing of prototypes, pilot production schemes, design data, process of transforming design data into a product, configuration design, integration design, layouts.

Examples…

1E **Technology**

1E001 "Technology" according to the General Technology Note for the "development" or "production" of equipment or materials specified in 1A002 to 1A005, 1A006.b., 1A007, 1B or 1C.

1E002 Other "technology" as follows:

a. "Technology" for the "development" or "production" of polybenzothiazoles or polybenzoxazoles;

b. "Technology" for the "development" or "production" of fluoroelastomer compounds containing at least one vinylether monomer;

6D **Software**

6D001 "Software" specially designed for the "development" or "production" of equipment specified in 6A004, 6A005, 6A008 or 6B008.

6D002 "Software" specially designed for the "use" of equipment specified in 6A002.b., 6A008 or 6B008.

6D003 Other "software" as follows:

Legal Basis for Technical Assistance: Council Joint Action(2000/401/CFSP)

Definition (Article 1): 'technical assistance' means any technical support related to repairs, development, manufacture, assembly, testing, maintenance or any other technical service and, it may involve the transfer of technical data.

Scope (Article 2 & 3): Natural or legal person established within the EU provides TA outside the EU in connection with (a) WMD or missile end-use; (b) military end-use to an embargoed destination.

Recast: Inclusion of TA control in the regulation.

Technology controls in a research context

Scenarios in the EU context					
I. Transfers of equipment and materials		*II. Transfers of technical data and software*		*III. Provision of technical assistance*	
Tangible means	Provision of equipment, materials (e.g. under a multilateral contract)	*Tangible & intangible means*	Sharing data/ software by electronic means (e.g. e-mail, upload on web-sites) or by post	*Intangible means*	Teaching/ Providing assistance in third countries (e.g. in trainings & conferences)
			International research projects and exchanges		
	Decommissioning of reactors and dismantling of labs (e.g. selling or giving away used equipment)		Publishing scientific research (in printed or e-versions)		Oral provision of assistance by e-mail/ phone from the EU (e.g. consulting services)

Publishing sensitive research results!

- Academic research is usually exempt:

- Academic research is intended to produce new knowledge and ideas

- It is therefore **basic scientific** research which pertains to the public domain.

- Need to respect the principle of academic freedom

- But: There is also **applied academic research** (*e.g.* conducted for industrial partners). Therefore:

- Universities must have systematic approach to compliance

- Academic staff must know of the university's policy

- Universities can also export tangible controlled goods (for experiments etc.)

The Decontrols:

- **'Basic scientific research'** means experimental or theoretical work undertaken principally to acquire new knowledge of the fundamental principles of phenomena or observable facts, not primarily directed towards a specific practical aim or objective.

- **'In the public domain**' means "technology" or "software" which has been made available without restrictions upon its further dissemination.

- **Copyright restrictions** do not remove "technology" or "software" from being "in the public domain".

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Footh and Mouth Disease (FMD)*

- FMD Virus is controlled under 1C351.c.14
- Export of FMD virus is controlled
- Export of vaccine against FMD virus is exempted from control
- Simulation software for spreading FMD virus from farm-to-farm is not controlled
- Publication on enhanced tranmission of FMD virus between animals and humans may be export controlled depending on…

* By J.Evers, Flanders Department of Foreign Affairs , Belgium

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The H5N1 case

"Almost all biotechnology in service of human health can be subverted for misuse by hostile individuals or nations"

The Fink Report, 2004

Publishing sensitive research:

- Avian influenza (AI): 'bird flu' infectious viral disease of birds.
- Some types of avian influenza such as A(H5N1) and A(H7N9) may infect humans.
- Recent outbreaks: in Asia, Europe and Africa (2003 and 2004)
- A(H5N1) virus subtype: first infected humans in 1997 in Hong Kong SAR, China.
- Human mortality: 60% of the infected cases.
- Ways of transmission: infection through direct or indirect contact with infected live or dead poultry.
- Containment: controlling the disease in animals is the first step in decreasing risks to humans.

* Info from the WHO website:
http://www.who.int/mediacentre/factsheets/avian_influenza/en

The H5N1 case: the background

- ESWI Influenza Conference (Malta, September 2011): results first presented by Fouchier
- Kawaoka paper: Uni. of Wisconsin in collab. with Uni. of Tokyo (US)
- Fouchier paper: Medical Centre of Erasmus Uni. (Netherlands)
- methods used appear appeared to be more dangerous.

- ‘The airborne transmission of the H5N1 among mammals is possible if certain mutations in the strain of virus occur’.

H5N1 is a controlled pathogen under 1C352 of the EU regulation and related technology is controlled under entry 1E001.

The H5N1 case: the background

Fouchier Case

Kawoaka Case

Publishing sensitive research:

Plaintiff:

- ‘Fundamental objective’: new knowledge on the genetic principles governing air-born transmission
- ‘Publicly available information’: methods and mutations used already available

Defendant:

- Demonstrating how to make a virus transmissible is a practical objective
- The researchers took steps and made choices that led to entirely new outcomes

District Court: “exceptions should be interpreted restrictively” & “non-proliferation concerns shall take precedence against any exemptions”.

Appellate Court: “an appeal is well founded only if a eventual remedy can bring the applicant in a better position”.

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Synthetic diamonds

Dr. Dmitri Kopeliovich

Diamond is a crystalline, transparent and extremely hard allotrope of carbon.
The crystalline structure of diamond is FCC (face centered cubic), in which each carbon atom is bound carbon atoms forming a triangular prism. Diamond occurs and exists only in mono-crystal form.
Properties of diamond are characterized by high hardness (the hardest of the natural minerals) and high re 2.42 (measure of how a ray of light bends when passes from vacuum to the medium). Due to these character is widely used in jewelry. Industrial applications of diamond are associated with its hardness: cutting tools polishing.

Natural diamonds of high optic quality are very rare and extremely expensive therefore significant efforts ha to develop industrial techniques of producing artificial (synthetic) diamonds.
Synthetic diamonds have been fabricated commercially since 1950s.

Diamond types

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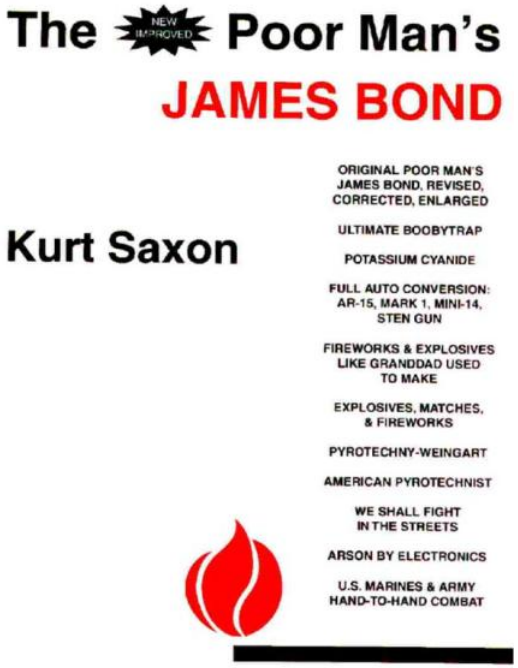
Can we ever address everything?



Thank you for your kind attention!

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