	PROCEDURE	**Applies from and including** 2021-11-29	**Reference number** V-2021-0821 2.1.	
	Decision maker Vice President for Research	**Amended from and including** 2023-	**Responsible for review and questions** The Research Support Office at the University Administration	

KTH Royal Institute of Technology's Export Control Programme

This export control programme has been adopted by the Vice President for Research (Ref. no. V-2021-0821). The programme shall facilitate compliance with export control regulation, including the regulations adopted by the President: *Tasks and decision-making power within export control*. The Research Support Office within the University Administration is responsible for the review of and questions about the programme.

Contents

1   Introduction

KTH is a university with assignments in education, research, and collaboration, which together constitute the pillars on which free academic activity rests. As a national university and Swedish public authority, KTH shall engage in activities that do not conflict with Sweden's national interests based on the laws and regulations as well as democratic decisions that govern Sweden.

The purpose of export control is to safeguard national security and human rights by limiting the transfer of technology that may be used by third parties for malicious purposes. Export control is of particular relevance to a technical university since a large part of the research can have both civilian and military applications. From a historical perspective, it is clear that a constant exchange of innovation takes place between these sectors. For example, Internet and GPS technology originally emerged for military applications, while aspects of the "gaming"-area have come into use in the military.

While the research is in progress, it is often difficult to predict the exact potential uses. In addition, there is a global trend towards merging civilian and military industries. This duality in technology research creates a complexity that all employees need to help to manage based on their roles and duties. In this way, KTH's international relations will continue to develop in a responsible manner.

The transfer of knowledge, technology and products between countries is regulated by Swedish and EU law, as well as through international agreements. KTH therefore needs to ensure that there are procedures for this, and as part of these efforts has established an export control programme for safe management and compliance.

The programme is mainly based on Commission Recommendation (EU) 2021/1700, but also on the knowledge and instruction acquired from the Swedish regulatory authority Inspectorate of Strategic Products (ISP), the Swedish Export Control Society, as well as European and American universities. The aim is also to develop the programme in consultation with KTH's employees, who are encouraged to submit proposals for revising the programme to the export control function at the Research Support Office.

The programme is also affected by the policies adopted by the University. According KTH's security policy: "KTH shall ensure that knowledge within the organisation with regard to physical security and data security is balanced with the operations KTH is tasked with performing and that security-related functions, authorities and responsibilities are clearly formulated."

The ethical policy states that KTH has:

> "core values based on democracy, the equal value of human beings, human rights and freedom, and free and open discussion. [...]
>
> KTH's activities are based on the conviction that education and research can and should contribute to improved living conditions and to societal development that is ecologically, socially and economically sustainable. [...]

The progress of science is based on openness and collaboration. KTH works for the free exchange of information, and national as well as international cooperation."

KTH shall fully comply with and ensure compliance with applicable export control regulations. Export control classification shall be made of the product, information, intermediary services, technical assistance, or other service to be exported before the export takes place and if it is reasonable to suspect that the products, etc. may be export controlled. If an export licence is needed, the export will depend on such a licence. No product, information or service of cooperation shall be transferred before it is certain that applicable embargo and sanction regulations have been followed.

The export control programme starts with applicable regulations, and a review of these. This is followed by a section containing examples of what this means in practice for employees at KTH.

Division of tasks and decision-making powers within export control at KTH are regulated by guidelines in a separate document.

2 Legislation on dual-use items

Export control of dual-use items is regulated on the basis of what is sent, where it is sent and for which purpose. Figure 1 shows a simplified, but incomplete, illustration of the regulation. The legislation includes a list of products that require a licence in order to be sent. The list includes technical information, which may therefore be illegal to share without a licence. Sometimes a licence may be required for products not included on the list. Whether or not a certain product requires a licence is also affected by how the recipient intends to use the product, whether or not it is sent within the EU, and whether or not there are embargoes against the recipient country or sanctions against the recipient.

In general, the regulation of transactions involving technology is very restrictive in terms of weapons of mass destruction and cyber surveillance.

Export control at a glance

The information, software or thing will be transferred to...

Will be transferred: Systems, equipment, components, including test equipment, production equipment, materials, software, technical instructions or specifications concerning ...		Sweden	EU	Australia, Japan, Iceland Canada, New Zealand, Norway, Switzerland incl. Liechtenstein, UK and USA.	Most countries	Russia North Korea Myanmar, Iran. Military org.
	War materiel, WMD, Cyber surveillance	**Black = Higher risk of denial for license. Prohibitions may apply. Always inform exportcontrol@kth.se and school coordinator.**				
	Stealth, explosives. nuclear, space, crypto, poisons, special sensors.	Green	Red	Red	Red	Red (Higher risk of sanctions. Prohibitions may apply.)
	Pathogens, GMO, poisons, special flight control.	Green	Green	Red	Red	Red
	Materials, electronics, many sensors and lasers, flight/marine, telecom, infosec, chemicals.	Green	Green	Yellow = Usually less administration.	Yellow	Red

Red or yellow = Inform your school coordinator. For support, contact exportcontrol@kth.se

Must inform receiver about dual-use status.

Figure 1: Overview of the legislation on dual-use items for different countries. Note that this is a major simplification.

2.1 How are exports of dual-use items regulated?

Export control of a dual-use item is mainly regulated by EU Regulation 2021/821, the Act (2000:1064) on Control of Dual-use Items and Technical Assistance and associated Swedish ordinances and regulations. The legislation includes content from international agreements. Additional legislation applies to embargoes and sanctions against certain countries, organisations and individuals. The main purpose of the legislation is to control the transfer of potentially very dangerous technology, including weapons of mass destruction, and cyber surveillance technology.

In Sweden, it is the Inspectorate for Strategic Products (ISP), the Swedish Radiation Safety Authority (SSM) and Swedish Customs that are responsible for the supervision and control of these issues. In addition, there are international bodies and licensing authorities in other countries that, under certain circumstances, have the right to exercise supervision outside of their country's borders based on the international agreements that the Government of Sweden has signed.

2.2 Export and transfer

In this context, the act of distributing dual-use items outside EU is called "export". Distribution between EU countries is instead referred to as "transfer".

The regulation of exports is extensive, while the regulation of transfer is more limited, and only applies to particularly sensitive technology. However, remember that even if a research project,

for example, has partners only within the EU, export can be in the form of export-controlled technical information being disseminated through publications or conference presentations.

Exports as well as transfer can, for example, be in the form of sending an item, making a software application available on the Internet, explaining over the phone how a machine is used, giving a lecture to people resident abroad, bringing a demonstration model of an item to a conference, or publishing research.

2.3   Dual-use item list

Dual-use items consist of items, software, or specific information about technical specifications or operations. To be treated as a dual-use item, a product must have both civilian and military applications. For example, dual-use items can also include equipment for manufacturing or developing items, software, or information with both civilian and military applications, or components and materials for such equipment.

What are mainly treated as dual-use items are listed in Annex I of EU Regulation 2021/821. The content of Annex I is changed over time. Then, new regulations are decided containing annexes with the valid lists of dual-use items. The presently valid list is indicated at isp.se. The list of dual-use items are divided into the following areas:

> *Category 0: Nuclear materials, facilities and equipment*
> *Category 1: Special materials and related equipment*
> *Category 2: Materials processing*
> *Category 3: Electronics*
> *Category 4: Computers*
> *Category 5: Telecommunications and "information security"*
> *Category 6: Sensors and lasers*
> *Category 7: Navigation and avionics*
> *Category 8: Marine*
> *Category 9: Aerospace and propulsion*

Source: Council Regulation (EC) No 2021/821, Annex 1

The regulatory authority for Category 0 is the Swedish Radiation Safety Authority (SSM) (stralsakerhetsmyndigheten.se). The regulatory authority for the remaining categories is the Inspectorate for Strategic Products (ISP) (isp.se). Each regulatory authority also issues the required licences, respectively.

Each category includes subcategories designated A-E. Subcategory A is called "Systems, Equipment and Components" and it lists items that can be directly used in both civilian and military applications. Subcategory B is called "Test, Inspection and Production Equipment" and mainly lists items that can be used to test, develop, optimise or produce items listed in subcategory A. Subcategory C is called "Materials" and mainly lists raw materials and the semi-finished materials required for producing items listed under subcategory A or B. Subcategory D is called "Software" and usually lists software that is specifically designed to develop, produce or enable the use of another dual-use item, but sometimes also software that can be directly used in civilian or military applications. Subcategory E is called "Technology" and usually lists specific information required to develop, produce, or use another dual-use item, but sometimes also information that is itself directly applicable in a civilian or military way (e.g. by having a cryptographic function). For subcategory E in particular, and sometimes D, specific provisions and exemptions apply that may or may not complicate research, teaching, and collaboration. More on this below.

To see examples of export-controlled products, reference should be made to "Appendix 1" in the [Commission Recommendation 2021/1700](#), on the first page of [KTH's export control checklist](#), the [Swedish Customs commodity description list](#) or simply read directly from Annex 1 of [EU Regulation 2021/821](#).

2.4   Requirements for licences

Based on the content of the dual-use item list, it can be concluded that KTH's research and education operations often may include dual-use items. Before this type of information, item or software is sent or distributed in any other way, an export licence may be required. This is applied for via an export control officer at the Research Support Office. Assistance is also available at the RSO to assess whether a licence requirement applies.

When an export licence is required, it is normally for exports to countries outside the EU. But particularly sensitive dual-use items require a licence in order to be transferred to another EU country. The latter case concerns dual-use items such as missile-related technology, aerospace technology, encryption, detection and detection reducing technology, explosive materials and related technology, as well as materials/substances that can be used for weapons of mass destruction or similar purposes.

There are general licences for a number of activities and countries. Where these apply, the administrative burden is eased considerably. For example, the general licence, EU001, allows the export of most, but not all, dual-use items to Australia, Iceland, Canada, Japan, Norway, New Zealand, and Switzerland, including Liechtenstein, the United Kingdom and the United States.

An export licence is sometimes required for a dual-use item even when the product in question is not listed in the presently valid dual-use item list. This applies when it is known that the end use is linked to weapons of mass destruction, detection and defence against these weapons, or cyber surveillance with oppressive purposes. Also, the same applies when it is known that the exported product will be used for military purposes and there is an arms embargo against the end-user.[1] Everyone aware of any such intended end uses must notify it to the exporter. Swedish legislation supplements and tightens control of weapons of mass destruction as further described [below](#).

It is important to note is that a licence requirement (as opposed to a ban) does not mean that items cannot be exported. The item can be exported when the required licences have been obtained, and applications are often treated with an assumption of approval (unless there is a link to weapons of mass destruction or cyber surveillance).

To obtain a licence normally requires an end use and end user to be specified. This is essentially not possible when it comes to scientific publications. It may therefore be difficult to publish certain information in a legal way. Some subject areas are affected more than others. In such cases, the Research Support Office holds a dialogue with the regulatory authority. Later in this document, there are suggestions for [routines concerning publication](#).

2.5   Duty to provide information and registration and reporting requirements

The provisions also include a duty to provide information. When a dual-use item listed in the presently valid dual-use item list is sent to a recipient within or outside the EU, the recipient

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[1] Council Regulation (EC) No 2021/821, Article 4-6. A cyber surveillance product is defined in Article 2 (2) as a DUI specially designed to enable hidden surveillance of persons through information and telecommunications systems.

must be informed that what is sent has been export controlled.[2] A classification code should then be specified. Conversely, when receiving advanced equipment, software, or technical information, requesting export control status could become part of the routine. See more [below](#).

There are also requirements for KTH to maintain a central register of dual-use item exports, and to make an annual declaration of dual-use item sales. This means that each individual employee involved in exporting dual-use items must submit copies of all types of dispatch documents to the school's coordinator for export control issues. These (or supplementary information) must provide a description of the exported dual-use item, the quantity, identity of exporter and recipient, as well as end user and end use if known. It must also declare whether or not it involves a sale. If the transaction involves a sale, the sales value also needs to be specified. In KTH's case, a sale can take place through, for example, contract research, contract education, or the divestment of obsolete equipment.

2.6 Technology and technical assistance

As mentioned above, a licence may be required for the export or transfer of a certain type of information. In the light of academic freedom, such a rule can be seen as paradoxical, but its function is comparable with other confidentiality provisions. In research, as a general rule, the identity of research participants, trade secrets, or security-protected information is also protected. However, when it comes to export control, it can be more difficult to know exactly what information requires a licence in order to be transferred to whom.

The terms *technology* and *technical assistance* are used to describe technical information in the legislation. We italicise these terms throughout when we use them in the section on dual-use item in the senses described here, and in the section on military equipment, respectively.

2.6.1 *Technology* is a type of information

Technology is listed in the subcategories E in the dual-use item list in accordance with the description above. In export control, the word *technology* refers to technical information that is so detailed that it can be directly operationalised in order to develop, produce, or use a certain dual-use item. The information must therefore be specific in order to be treated as *technology* - an exploded view without dimensions, for example, is not *technology* in this context.

Apparently, the terms development, production and use entail important limitations for which type of information that is *technology*. In this context, development means all phases prior to serial production – from concept to the final test in the operational environment. Production includes, in addition to the obvious, also inspection and quality assurance. Use means operation, installation, maintenance, reparation and similar aspects.

Please note that information for use includes information that helps to get something to function. It does not include information that helps gaining benefits from something once it is functional. Thus, the information required to get a super computer operational is *technology* in this sense. The information required to do calculations with the help of a super computer is not *technology* merely because it means to use a super computer.

Another important limitation for the term *technology* is that – normally – only "required" information is included. That is information needed to pass the threshold before a certain dual-use item reaches the properties, performance levels or functions specified in the legislation. Other information on the use, development or production of a dual-use item is usually not subject to export control. An important exception from this is information about a dual-use item

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[2] Council Regulation (EC) No 2021/821, Article 11.9

in the form of nuclear technology (Category 0). All information on the use, development or production related to nuclear technology (and listed in Category 0) is subject to export control.

The information can be provided in the form of instructions, such as in teaching or by explaining to a colleague how a certain type of equipment is used. The information can also be provided in the form of technical data, such as in a drawing, a diagram or a model.

2.6.2 Regulation of *technology*

With the knowledge that an activity includes items or software that are subject to export control, it is reasonable to assume that the *technology* belonging to the items or software is also subject to control. Even if the activity only includes the *technology* and, for example, uses it with equipment that is not subject to export control then the *technology* as such is subject to control.

The basic rule is that *technology* listed in the dual-use item list must not be exported without a licence. In some cases, licences are required even if the *technology* is only transferred within the EU. But in contrast to the export of items, *technology* can sometimes be generally exempted from the licence requirement.

One of these exemptions applies to basic research. Basic research is defined as "experimental or theoretical work undertaken to acquire new knowledge of the fundamental principles of the phenomena or observable facts and is not directly focused on a certain practical purpose or objective."[3] It has been interpreted by ISP to apply to research that takes place at Technology Readiness Level (TRL) 1 or 2, which limits the exemption considerably. According to the EU Commission's guide, TRL 1 means "Basic principles observed", and TRL 2 "Technology concept formulated".[4] On the other hand, TRL 3 means "Experimental proof of concept".[5] The transition between TRL 2 and 3 should therefore be characterised by an idea no longer just being discussed, but also being tested to some extent.

The transfer or export of research results that reach TRL 2 but no higher therefore never needs an export licence. The basic research exemption applies only to technology and not software or items.

Another exemption applies to patent applications. *Technology* that needs to be communicated in a patent application may be communicated in this event even if it involves a transfer of the *technology*. However, this exemption does *not* apply to *technology* related to nuclear technology, i.e. is listed in Category 0.

Technology already publicly available is also exempted from the legislation. Publicly available means, for example, a scientific article, non-password protected website or a book. However, information from a supplier that controls its availability to certain groups or individuals is not publicly available. Information that is classified as confidential by an authority and trade secrets are other examples of information not treated as being publicly available. Information that is "leaked" in an illegal or contractually improper manner is also not considered as being publicly available. Note that making technology publicly available is still subject to a licence requirement (unless it takes place through a patent application and it then does not concern nuclear technology).

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[3] Council Regulation (EC) No 2021/821, Annex I.
[4] Commission Recommendation (EU) 2021/1700, Appendix 8.
[5] Commission Recommendation (EU) 2021/1700, Appendix 8.

2.6.3 *Technical assistance* is a way to transfer information in a broad sense

A broader term is *technical assistance*. Education on technology is a type of *technical assistance*. The term includes technical support in relation to development, production, maintenance, repair, installation, consulting or the brokering of such services. Such activities are considered to entail a kind of information transfer that sometimes requires a licence.

As opposed to *technology*, *technical assistance* includes services and information concerning things, software and technical information that are listed dual-use items as well as non-listed dual-use items. The term thus touches upon all technology.

Transactions by *technical assistance* can occur in various ways. One form of *technical assistance* is to communicate the information from Sweden to a party outside the EU, such as via email, distance learning courses, or telephone calls. Another form is to travel outside the EU and communicate the information at a conference or by giving a guest lecture, for example. A third form of *technical assistance* is to communicate the information from within the EU to a party visiting the EU but residing outside the EU. This third form means that the technical assistance may include a dialogue in Sweden with a guest researcher. Therefore, *technical assistance* that actually takes place in Sweden also involves an export in the legal sense that may require action.

2.6.4 Control of *technical assistance*

Technical assistance requires action when you have reason to suspect that the assistance provided is, or may be, intended to be used for weapons of mass destruction. The same regulations becomes applicable if you have reason to suspect that the assistance provided is, or may be, intended to be used for military end-use in a country against which an arms embargo is currently in place.

It may seem like a high threshold must be exceeded before the regulation on *technical assistance* comes into effect. That may, however, not be the case, while it is enough that there is reason to suspect that the end-user *may* have an intention. Depending on what the cooperation is about and political circumstances, it may suffice that the cooperative party is located in a country with nuclear capabilities for the threshold to be overpassed. If such a country is, furthermore, fusioning the civil industry with the military, then the threshold for the '*may*-criterion' is further lowered.

When the regulation of *technical assistance* becomes applicable it is required to inform the ISP about the plans. Any assistance that have been initiated must be terminated immediately. The technical assistance must not be given before the ISP has taken a decision whether an export license is required. If such a licence is required the *technical assistance* may only be given if a licence is issued. Please observe that this may pertain to exchanges within education and research in Sweden.[6]

Transfer or export of technical information required for the installation, maintenance, operation or repair of a dual-use item for which an export licence has already been obtained does not require a licence. The above exemption for basic research and publicly available technology also applies to *technical assistance*. *Technical assistance* to Australia, Canada, Iceland, Japan, Norway, New Zealand, Switzerland including Liechtenstein, the United Kingdom and the United States, does not require a licence, regardless of what it is used for.

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[6] Förordning (2000:1217) om kontroll av produkter med dubbla användningsområden och av tekniskt bistånd 4 d § [Swedish ordinance on control of dual-use items and technical assistance 4 d §]

To explain how a dual-use item is used does not mean to provide technical assistance, but this type of information is often referred to as a dual-use item subject to a licence requirement. However, dual-use item technology subject to a licence requirement does not need a licence in order to be transferred to other individuals within Sweden (and usually not within the EU). It is therefore permissible to explain to a visiting researcher how to use research equipment regardless of where the visitor has permanent residence and regardless of whether the research equipment is a dual-use item.

2.7 Special provisions applicable to dual-use item software

Making dual-use item software publicly available through the Internet, for example, is basically subject to a licence requirement.

The exemption regarding public availability also applies to software and thus concern software that is already publically available. Publicly available software includes an item that is sold over the counter or can be downloaded from the Internet. The exemption does *not* mean that software can be made publicly available without a licence

Software for information security has a special exemption if it meets certain conditions. In practice, this means that the software for information security that meets the conditions may be made publicly available (free-of-charge or placed on the market). These conditions are to some extent complicated, and can be read in EU Regulation 2021/821.[7] Typical signs that software for information security is not a dual-use item is when security functions cannot be changed by the average user, when the product is easy to use by the average consumer, or when it is part of a product for mass consumption.

In the same way as for technical information, it is generally permitted to transfer or export software required for the installation, maintenance, operation or repair of a dual-use item for which an export licence has already been obtained. However, this does not apply to software for information security that is subject to a licence requirement.

3 Legislation on military equipment

Military equipment is regulated by the Military Equipment Act (1992:1300) and related ordinance and regulations. Corresponding regulations also exist at EU level, which affect the Swedish legislation. Certain UN treaties also affect the handling of military equipment.

Please note that all activities involving military equipment on KTH must be reported to an export control officer at the Research Support Office. The officers may also assist when classifying the equipment.

3.1 What is included in military equipment?

Not everything used in military activities is military equipment. Military equipment refers to items, software and information that are designed for military use and are also listed in the Annex to the Ordinance (1992:1303) on military equipment. Typical military equipment is the JAS 39 Gripen. It can therefore be concluded that components, software, and technical information designed for the JAS 39 Gripen (i.e. military use) and included on the International Munitions List are items of military equipment. Production equipment that is specially designed to manufacture components for the JAS 39 Gripen (and listed) is also military equipment.

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[7] Council Regulation (EC) No 2021/821, Annex 1, Category 5, Part 2 (see Introductory notes).

A particular consideration with military equipment components is that they "spread upwards". If such a component is attached to an otherwise civilian product then the whole product is treated as military equipment. A standard truck that is equipped with a specially adapted armoured front for military purposes will therefore become military equipment. Similarly, civil software used with military equipment can result in the data generated being regarded as military equipment.

Military equipment for combat is military equipment that has a more manifest destructive effect. Examples include gun barrels, ammunition, firing mechanisms and tracking systems. Other military equipment includes military protection and reinforcements, production equipment, software, and technical information. Both categories are affected by the same regulations, but it may be easier to obtain licences for non-combat military equipment.

The International Munitions List consists of the following categories[8]:

> *ML1 Smooth-bore weapons with a calibre <20 mm*
> *ML2 Smooth-bore weapons with a calibre >20 mm*
> *ML3 Ammunition*
> *ML4 Bombs, torpedoes, rockets, missiles*
> *ML5 Machinery and equipment for fire control of MEC*
> *ML6 Ground vehicles*
> *ML7 Chemical and biological toxic agents, radioactive materials, etc.*
> *ML8 Energetic materials*
> *ML9 Vessels of war, etc.*
> *ML10 Aircraft, etc.*
> *ML11 Electronic equipment and spacecraft*
> *ML12 High velocity weapon systems*
> *ML13 Armoured or protective equipment*
> *ML14 Equipment for military training*
> *ML15 Imaging and countermeasure equipment*
> *ML16 Forgings, castings and similar*
> *ML17 Miscellaneous equipment, materials*
> *ML18 Production equipment*
> *ML19 Directed energy weapon (DEW) systems*
> *ML20 Cryogenic and superconductive equipment*
> *ML21 Software*
> *ML22 Technology*
> *NL1 Nuclear explosive devices and special parts thereof*
> *NL2 Fortifications*
> *NL3 Certain chemical weapons*

The military equipment list is common to the EU in terms of ML-codes, while the NL codes are national extensions specific to Sweden. The military equipment list is much shorter than the dual-use item list (approx. 30 pages). Many categories consist of a mixture of military equipment for combat and other military equipment.

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[8] Swedish military equipment list; Ordinance (1992:1303) on military equipment, Annex A.

3.2   Classification of military equipment

To class military equipment means that you assess whether a product (thing, software or information) is a piece of military equipment and, in that case, which munitions list code it has. The code begins with "ML" or "NL" and is specified by using the munitions list.

It is not always as easy to assess a product as in the case of Jas 39 Gripen. The way to class military equipment, i.e. to distinguish between military equipment and other equipment, has changed over time. In March 2021, ISP published a clarification on how to class military equipment.[9]

Previously, military equipment was always characterized by them being specially designed or modified for military purposes, which meant that there were no civil usages for the product at hand. This can still be used a guiding thumb-of-rule, but do not give any final or necessarily correct classification.

Presently, classification rests on qualifications made in the introductions of each category of the munitions list. In some introductions, it is stated that products in those categories still should be specially designed for military use in order to be military equipment (for example ML5). For other categories, the products should instead be specially designed for other products in the munitions list (for example ML16), which in their turn may be specially designed for military use. In still other categories simply list products which all are considered military equipment (for example ML9 or ML21).

The assessment of when something is designed or modified for military use (which, thus, is only relevant for some ML-categories) depends on, just like earlier, whether there are civil equivalents and how those differ from the product. There are, however, further parameters to take into account and the fact that there are civil equivalents do not exclude the possibility of a product still being military equipment.

Other parameters are the reason for why the product is developed and who the stakeholders are. Furthermore, you are expected to assess whether the product's performance, composition or materials are of a kind typically used for military purposes.

For example, a KTH-researcher delivers a flow-dynamical modelling (calculations) of a geometry that can be a feature of a propulsion engine of an air plane. That would not, in its self, be a piece of military equipment. If, however, the modelling reflect conditions that today only exist in military propulsion engines that would be an obvious sign of that the product may have to be classed as military equipment. If the modelling was ordered by a company known for their military jets, the case is closed. If, however, the modelling was ordered by a purely civil air company that develops a new kind of civil jets with some similarities to military ones, the case is less clear.

Mistakes can be made, but in the case of military equipment it is especially important to err in the right way. If you classify a product to not be military equipment when the opposite is true it may have significant consequences for you, your colleagues, KTH and third parties. If you deliver something to a company with military products it is best to assume that your planned product is a piece of military equipment until the opposite stands completely clear. If you need help with classifying a product, please contact an export control officer at the Research Support Office.

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[9] https://isp.se/media/1486/isp-fortydligande-av-klassificeringsgrunder.pdf

3.3 Technology for military equipment

Just as within the dual-use item area, military equipment can come in the form of technical information (ML22). In the context of military equipment, the terms *technical assistance* and *technology* have a slightly different and more coherent and complete sense compared with the legislation on dual-use item.

Technical assistance means a communication of what is called *technology*. *Technology* is technical information (in the form of technical data or instructions) *necessary* for the development, production, operation, installation, maintenance, repair, overhaul or refurbishment of military equipment. Furthermore, the term *technology* includes the technical information *necessary* for the design and assembly of components to products in the munitions list. Also, communication of technical information necessary for operation, maintenance and repair of complete production facilities for military equipment is in itself military equipment in the form of *technical assistance*. The latter also includes technical assistance of components not on the military equipment list. *Technology* also includes several more special cases of information.

Note that the necessity requirement will mean that much technical information that *can* be used within the above activities is not actually treated as military equipment. The subset of information that is military equipment can be said to be the information necessary to pass the threshold before the above activities are made possible.

3.4 Control of military equipment

While dual-use items can generally be transferred throughout the EU without a licence, military equipment is subject to tighter controls. Licences are needed more often and for more activities. The administration of military equipment are more cumbersome in other aspects as well. Certain licences may also be necessary even when nothing is sent or distributed from KTH and may be necessary when sending military equipment within Sweden.

A licence by ISP is necessary before entering an agreement about cooperating on joint development or production of military equipment with foreign partners.[10] It then does not matter whether KTH actually delivers or in any way handles military equipment. The licence is for the collaboration and must be given before signing, for example, consortium agreements or grant agreements. Such licence is for example necessary for collaborations within the framework of European Defense Fund.

Activities where there are plans to provide military equipment to another party must have a licence by ISP.[11] Such a license is a basic business licence to have for anyone that handle military equipment. The license to provide military equipment is also necessary when mediating military equipment between two foreign parties, for example when being the coordinator of a collaborative project where such exchanges are planned. Provisions of technical assistance (see above) within Sweden does not need a licence.

Production (including development) of military equipment needs licence.[12] That is one of many reasons why it is important to classify probable research results before they are actualized.

Each case of exporting military equipment from Sweden needs an export licence. The export licence is thus needed on top of other licences. There are general export licences that are

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[10] Military Equipment Act (1992:1300) 8 §.
[11] Military Equipment Act (1992:1300) 4 §.
[12] Military Equipment Act (1992:1300) 3 §.

applicable for certain transactions within EES. In those cases, the only necessary action is to contact export control officer at the Research Support Office before the product (be it a thing, software or information) is sent. For larger projects there are also smoother solutions than to apply for single export licences each time someone in the project needs to, for example, have a phone call on information classed as military equipment. Please contact an export control officer to find a solution.

This means that necessary licences must be had before military equipment may be developed on KTH's premises or servers. This also means that staff must not contribute to the development or manufacture of military equipment at either KTH or at some other legal entity, unless there are appropriate licences.

We are also forbidden to supply military equipment (regardless of who developed or produced it) without a licence. For a KTH researcher within his/her position at KTH to contribute to military equipment by means of sharing *technology* with a foreign party is treated as *technical assistance* that is subject to a licence requirement. It makes no difference whether or not the information is communicated in the form of tangible help or just words, or within or outside the EU. Note that technical assistance subject to a licence requirement can also take place through the publication of military equipment in the form of *technology*, regardless of whether it concerns research or studies.

It is permitted for an individual employed at KTH to develop military equipment if the individual is also employed at a company with appropriate licences for military equipment, if the development takes place at the company and within that employment. This also applies to externally employed doctoral students who are enrolled at KTH but employed at a company.

Note that it is still not permitted to develop military equipment on KTH's premises or servers or to publish military equipment *technology* in a thesis without authorisation. It is also not permitted to store military equipment in the form of technical information on a computer, to take this to KTH, and to transfer military equipment from KTH to another party abroad (even if the other workplace has a licence for the transfer).

3.5 Exemptions from export control of technical assistance for military equipment

The Swedish, European and international legislation includes a number of exemptions from the rules on export control of military equipment. Exemptions exist for technology or technical assistance (in accordance with the above definitions) such as if it consists of basic research, is publicly available, and needs to be communicated in patent applications. See the section on dual-use items for a more detailed description of how to interpret the exemptions (in particular how "basic research" is interpreted very restrictively by the regulatory authority). There are also further exemptions that apply in special cases.

4 Sanctions

A sanction is imposed when legislators want to stop or increase control of trade and other exchanges with a certain party. There are currently a number of different sanctions and embargoes in force against certain persons, organizations or countries. Sanctions are not always obstacles to collaborations, but they always require that great care and precision is taken when forming collaborations affected by sanctions – especially while sanctions tend to change often and on short notice. Nevertheless, it is important that legal collaborations are not avoided due to fear of sanctions.

Sanctions vary in their design and cover different aspects that may be relevant to KTH. For some countries, for example, sanctions are against *technology* and *technological assistance* that could help increase their ability to repress their own populations. Research collaborations in some areas of research may be prohibited in one particular country, while collaborations in other areas of research in the same country are permitted. Sometimes sanctions prohibit certain collaborations or exchanges. In other cases, licences are required for exchanges that are normally not controlled.

KTH is primarily bound to follow sanctions decided by the UN Security Council, EU-sanctions and Swedish sanctions. There are presently no Swedish sanctions. The UN-sanctions are integrated by EU in their sanctions. On EU Sanctions Map, valid EU sanctions are searchable. Please note that if a sanction is listed on that homepage, but the column *Legal acts* is empty the sanction is not legally binding.

Sanctions are often directed against persons and organisations. Many sanctions only concern financial transactions to persons who have or have had high political, civil or military positions and made themselves guilty of gross corruption or other significant abuse of power. It is also common that it is prohibited to collaborate in any way with persons who are or have funded terrorists. It is very unusual that persons or institutions with academic activities are sanctioned.

Sanctions may also be made against nations. Current and more extensive sanctions primarily include those against North Korea, Myanmar, Iran and Russia, which may also serve as examples of what sanctions against nations may contain. Sanctions against North Korea is very extensive. It is difficult to see any opportunities for substantial exchanges with North Korean parties.

The sanctions against Myanmar contain prohibition against exporting dual-use items (incl. *technical assistance*) where end-use or end-user is military, and prohibition against export of military equipment (incl. *technical assistance*). Some governmentally owned companies and many persons with high military and political positions have had their financial (foreign) assets frozen. Except the security situation there is nothing obvious that would hinder exchanges within research and higher education with non-sanctioned parties in Myanmar.

Gradually more restrictive sanctions were instigated against Russia after the invasion of Ukraine. Also note that some of the sanctions of Ukraine are directed against Russian interests. The sanctions are presently very extensive. Formalised exchanges with governmental organisations in Russia, including universities, are to presently be understood as prohibited. If exchanges with Russian parties are required in order to uphold KTH's activities, then contact a export control officer for assessment. For example, minor purchases from private companies may be allowed. To keep in touch with friends and family in Russia or invaded parts of Ukraine is not a kind of exchange that is regulated by the sanctions.

Sanctions against Iran include prohibitions against providing *technical assistance* or products concerning certain technologies (aerospace/missile technology including certain materials). The sanctions also include licence requirements for providing *technical assistance* or exporting products concerning nuclear technology that are not otherwise controlled. Some technical and military universities and a few persons with research background (and high positions) have had their assets frozen and agreements with those are basically prohibited.

That sanctions include prohibitions or licence requirements concerning *technical assistance* complicate KTH's activities. One way to provide *technical assistance* is teaching. Those who offer courses that contain information that must not be freely distributed to all parties must

therefore harmonise the course contents or admission requirements to the sanctions. Also, the appropriateness of offering such courses online should be considered.

4.1 Sanctions of other countries

In international collaborations it may be the case that KTH must comply to other countries' sanctions. Not the least the USA has sanctions more extensive than those valid within the EU. Please be aware of that US-citizens that are in Sweden (possibly residents) and only acts towards Swedish parties, according the US law, still are obligated to follow US sanctions. The same may be true for a person using technology originating in the USA or are manufactured on a US-patent. This can be important to consider in order to care for one's staff and colleagues.

Sanctions are used in the so-called 'trade war' between USA and China. The US sanction of Huawei has to some degree affected KTH's activities. Projects with Huawei are checked against regulations and the concerned staff is informed about U S sanctions. China has recently imposed a law that prohibits anyone to follow US sanctions against China, a regulation that China claims is valid in Sweden. Contradictory situations may thus arise for those that simultaneously cooperate with US-parties and Chinese parties. Especially KTH-staff with citizenships in USA or China should consider personal risks before cooperations over the border of the trade war are initiated.

If you have questions on how sanctions can limit or complicate a planned collaboration or other exchange, please contact an export control officer at the Research Support Office.

5 The export control process at KTH

The essence of export control is to not transfer products that have the potential to cause harm to parties intending to use them to cause harm. To prevent this, there are different regulations in force that everyone who exports or transfers products must observe. The regulations are not always adapted to all activities, and to facilitate compliance, we hereby propose procedures for export control. The actual design of procedures has to be adapted to the actual activity, but unless otherwise stated, the purpose of the procedures is based on legislation and KTH's regulations adopted by the President: Tasks and decision-making power within export control.

In practical terms, KTH's export control process starts with the checklist for export control being filled-in by operation managers (principal investigators, course coordinators etc). The checklist is available on KTH's website for export control and is used as a tool for finding out whether export control is relevant in an activity. Alternatively, you approach an export control officer at the research support office.

If export control is relevant, this is notified to the school's coordinator for export control issues. This applies even if general licences or certain exemptions are considered to apply for the activity. The purpose is for the school to obtain a general overview of this type of activity.

Additional support is available from export control officers at the Research Support Office. KTH employees apply for licences through export control officers at the Research Support Office, from where it is also possible to get assistance on export control. Environments where export control is often relevant may, but do not have to, develop local procedures (which otherwise comply with law, delegation of authority, etc.).

5.1 Information on export control

In order for other procedures to work, staff must have a basic knowledge of export control to the extent that each employee knows when to seek additional support. Export control officers at the

Research Support Office will provide general information to staff via a special website on KTH's intranet. The information on the website will be supplemented by targeted sessions for environments where export control is often applicable and/or have many international collaborations. Export control officers will adapt the information material according to the particular environment that shall be informed.

Environments in need of information on export control should contact export control officers at the Research Support Office. When environments in need of information on export control are identified, the school's coordinator for export control issues contacts the export control officers at the Research Support Office. Export control officers should take the initiative to identify environments in need of information on export control.

5.2   Product classification

A university is essentially an open activity. The basic position is that knowledge, software, laboratory equipment, etc., should preferably be shared. At the same time, information and other products are created at KTH that third parties could use for undesirable and even harmful purposes. In order to continue to be open to the outside world, all employees must be aware of whether products in activities they have insight into are subject to export control.

To classify a product means to identify it as a dual-use item or military equipment, or neither, as well as to specify what type of dual-use item or military equipment is involved. The objective is to find the product's export control code and therefore be able to determine whether it is subject to a licence requirement and, if so, in what way or whether it is cleared and therefore not subject to a licence requirement.

A party with activities that consist of technologically advanced products that could be included in one of the categories of the dual-use item list or the munitions list should learn and become familiar with the products that are included there. The checklist for export control includes instructions on how to search for a product in the lists where the export control codes are provided. Export control officers at the Research Support Office should be contacted if assistance is needed for classifying. Export control officers at the Research Support Office must always be contacted when handling military equipment.

The classification of products may need to be repeated, in particular in research, due to the continuous flow of new products (not least in the form of information) in activities typical for KTH.

If the conclusion is that the activity includes export-controlled products, it is important that the individuals handling the products are aware of this in order to prevent unintentional transfer.

5.3   Due diligence

The Swedish Security Service has noted that technical universities are particularly vulnerable to espionage and for that reason estimates that Sweden loses amounts running into billions every year.[13] Export-controlled information is advanced technology of high interest to a foreign power, and could be used to degrade our national security or that of others, or to harm and oppress individuals.

Due diligence in activities that handle dual-use items (as KTH does) is praxis and significantly facilitate compliance of export control. It is therefore important that KTH employees make it a habit to not only identify the technology they handle in their activities, but also who they

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[13] Swedish Security Service Yearbook 2020, p 23 ff.

collaborate with, and what risks there are of unwanted leakage. Note that due diligence is not the same as being suspicious of colleagues.

Due diligence within export control is to identify and react to warning signs that a planned delivery, for example, could fall into the wrong hands. Obvious reasons to halt a specific delivery or collaboration include receiving information that the delivery or collaboration will be used for weapons of mass destruction or cyber surveillance for repressive purposes. In such cases, export control officers at the Research Support Office must be contacted. Export control officers then examine whether any licence requirements exist and apply for a licence if this is the case.

The EU Commission advices on other and less obvious warning signs in Appendix 3 of its Recommendation 2021/1700. Common elements of these warning signs are that relations, activities or partners stand out as anomalies, with indistinct identity, or with lack of consistency. Attention should be paid to unusual arrangements, such as unusual contract terms, payment paths, or financiers. Care must also be taken to identify and to get to know collaboration partners or financiers. If it proves difficult to obtain information via the Internet or otherwise on the identity of someone who is sending an invitation to collaborate then this is a reason to decline. Lack of consistency may mean that an invited researcher does not have expertise in his/her supposed area of research, that the product ordered is not compatible with the end use specified by the recipient, that a party is more secretive than is justified by the activity, or a financier is unreasonably generous.

The type of warning sign is not evidence, and unusual or incoherent occurrences in experimental or intellectual activities do not necessarily need to be considered as odd. But warning signs can be a reason to contact an export control officer in the Research Support Office for further discussion.

Sometimes, there are reasons to be diligent concerning invited individuals and especially if they get access to sensitive research environments or KTH's systems. Export control officers can make a risk assessment concerning export control in such cases.

5.4 Dissemination and teaching

To publish, teach, present at a conference, and basically all the activities that characterise how the University makes an impact on the outside world involve the dissemination of information to the general public. It is also common for software developed by researchers to be made public on the Internet with open source code.

As mentioned, for KTH, some of the information may be export controlled and be subject to a licence requirement. Therefore, the individual handling export-controlled items in his/her activity must classify the information or software before it is disseminated. Here it is also important to avoid self-censorship, that is, to avoid publishing important research or including important course content even though it would be perfectly legal.

An example of a procedure when publishing information in an activity with a dual-use item is as follows (exemptions presumed not to apply):

1. Ensure that the information does not need to be security protected (that dissemination would not involve a direct threat to Swedish security) or handled confidentially for some other reason. If it is not confidential, proceed as below.

2. Before the first submission, the main author(s) examine whether the information in any section of a publication, or combinations from different sections, meets all the following conditions:

   a. The information is precise, i.e. so detailed that operationalisation is directly possible (cfr. drawing/blueprint).

   b. The information is necessary, i.e. it is required, as such or in combination with more information, for activities as use, production or development of a thing or software.

   c. The information type is listed in the dual-use item list. Observe that classification of the information is only required if criteria a. and b. are both fulfilled.

3. Assess whether it is necessary to include the information in the article for scientific reasons.

4. If it is not scientifically necessary to include the information, revise the sections affected so that at least one of the above conditions are no longer met. If it is scientifically necessary to include the information, there are a number of options:

   a. The publication is produced in a closed form that requires the reader to identify him/herself and certify compliance with export control legislation. This can take place, for example, by means of the reader personally collecting a hard copy of the publication from KTH. The publication will then have a cover page with text informing about export control - see example.

   b. Contact is made with export control officers at the RSO who then hold a dialogue with ISP and, if appropriate, apply for a licence for open publication. This is not common practice, but may be a possibility.

   c. If possible and appropriate, the information is published in the form of an application for a patent. Note that the patent application may then only contain information that is strictly necessary for the patent application.

   d. Communication of the controlled information is limited to taking place behind closed doors, for example, at closed conferences where the selection of participants reflects export control regulations. Defence organisations have experience of this type of conference.

In research environments where sensitive technology is handled on regular basis, the above routine may be bolstered by the principal investigator attesting in writing to the prefect that a publication does not contain information requiring licence to be distributed.

This example procedure should be adaptable to other cases of potential global information dissemination, such as distance education. Export control officers are available at the Research Support Office to provide assistance if necessary.

5.5   Emerging technologies and new products

Legislation on dual-use items is primarily based on the existing opportunities currently offered by technology. At the same time, emerging technologies also include dual-use items that potentially pose a significant threat without being listed. New products can also be developed in

established technological fields, resulting in uncertain export control status. Such dual-use items may arise in KTH's activities and be scientifically important to develop and research.

If a KTH employee belives that a technology developed in his/her activity constitutes a dual-use item with significant inherent risk, but with undetermined export control status, an export control officer in the Research Support Office must be contacted. The export control officer will then hold a dialogue with the regulatory authority about the matter. The result may be that the product is classified by ISP. The product may then be classed as non-controlled, or be added to the national list of dual-use items (that is valid in the EU).

5.6 Purchasing

New equipment, software, associated manuals, and other technical information that is purchased for KTH may be export controlled. Export control does not apply when the equipment arrives at KTH, but export-controlling the inflow of equipment, software, and associated manuals, and other technical information considerably simplifies the classification process, safety assessments, and subsequent divestment.

Whether an item is export controlled is often stated on delivery notes and similar. Otherwise, it may be stated on the supplier's or manufacturer's website, for example. An export control officer at the Research Support Office and the export control coordinator at the relevant school must be notified if an export-controlled item has been purchased.

The export control officer registers the purchase.

5.7 Sales, divestments and destruction

KTH sells services through contract research and contract teaching. When such a sale involves a dual-use item or military equipment, this must be reported on an annual basis to ISP, and a central register of sales is therefore required. As the sender, KTH is also obliged to inform the recipient that the consignment is export controlled.

The same applies for obsolete equipment being sold off. Before equipment of advanced technology is sold, consider whether it instead should be destroyed due to security reasons.

This means that the individual responsible for the activity must ensure that classification takes place of the services or products that are sold. The sales value of each export-controlled product must be stated separately on the delivery note or similar. The delivery note or similar must clearly indicate which products are export controlled. If it involves a dual-use item where the product is not included in Annex IV of EU Regulation 2022/1, the following, for example, can be written:

> *[Product] is a dual-use product according to Regulation (EU) 2023/66. An export authorisation will be required for temporary and permanent export to all destinations outside the EU. The product may be transferred within EU without authorisation, but with this information attached.*

If dual-use items that is listed in Annex IV of EU Regulation 2022/1 will be sold to someone outside Sweden, then an export licence is required (this includes sales to other EU-countries). Other regulations may also become applicable, for example concerning radiation safety. The information to the buyer may then for example be:

> *[Product] is a dual-use product according to Annex IV, Regulation (EU) 2022/1. An export authorization will be required for temporary and permanent export to all destinations outside the exporter's country. Further regulations may apply.*

If it does not take place automatically via the school's system, the operation manager then sends copies of the documentation to the school's coordinator for export control issues. The coordinator compiles a list of the school's sales of dual-use item and military equipment during the year and forwards it to an export control officer at the Research Support Office in order to facilitate feedback reporting to ISP.

5.8 Secrecy examination

The principle of public access require that KTH as a governmental agency is obligated to share official documents to whoever asks for them. Still, confidential information must be masked before the documents are shared. Many documents that concern export control often contains confidential information that should only be shared with involved staff within KTH.

If KTH-staff receives a request to release official documents concerning export control, then contact export control officers at the research support office. Export control officers may offer advise to some extent concerning the mandatory secrecy examination. For further guidance, please contact administrative lawyers at the management office.