

## WHAT does exist already and what should be better defined

### 1. GUIDANCE MATERIALS RATHER THAN ICP MODELS: GET INSPIRATION FROM INDUSTRIES

Generally speaking, export controls apply to the research communities just as they apply to individuals, private industries and other organisations. Following on this axiom, when academic research collides with commercial interests, the effectiveness of a robust compliance program can boost scientific and technological advancements by preventing their misuse<sup>20</sup>.

Given the complexity of the export controls regulations and the blurry boundaries between “basic scientific research<sup>21</sup>” and “non-fundamental research”, it is becoming critically important for academia, students, researchers, professors and administrative personnel to be able to identify when their activities may trigger export controls issues. Mistakenly, we might forget that products still in the R&D phase, that are transferred for testing purposes and no-charge customer samples, face the same requirements as commercial products. Growing focus on technical knowledge is then justified by the intrinsic power of technology to lead production and/or enhancement of an unlimited amount of controlled sensitive goods. Thus, nowadays, safeguarding sensitive technologies and

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20 Guidance on Export Control Legislation for academics and researchers in the UK: guide for academics. March 2010.

21 As defined by the UK Export Control Order 2008 – Article 18 (Software and Technology Exception) and by Council Regulation (EC) n.428/2009 – General Technology Note.

software may require more stringent and creative control methods compared to material controls.

Given the breadth of the research, the university environment versus an industry setting is a very different matter. However, there should not be an automatic exemption or dispensation for research or researchers.

### **1.1. What can universities and research organisations learn from private industries to more smoothly and effectively fulfil legal and regulatory obligations?**

The current Council Regulation (EC) n.428/2009 does not contain any specific Internal Compliance Program<sup>22</sup> requirement save the reference of Art. 12(2) for [...] *application by the exporter of proportionate and adequate means and procedures to ensure compliance [...] when applying for a global license*. Indeed, to facilitate the adoption of an Internal Compliance Program, different national government guidance documents targeted at academia and research institutions are available<sup>23</sup>.

Academic organisations that are just starting to establish an embryonal export compliance program may find it a daunting task, not knowing from where to begin. The abundance of legal terms and regulatory terminology does not afford academic actors the luxury of not abiding by the regulations. Researchers, professors, scholars, should be backed up by export control specialists within industries, or external consultants able to provide a higher level

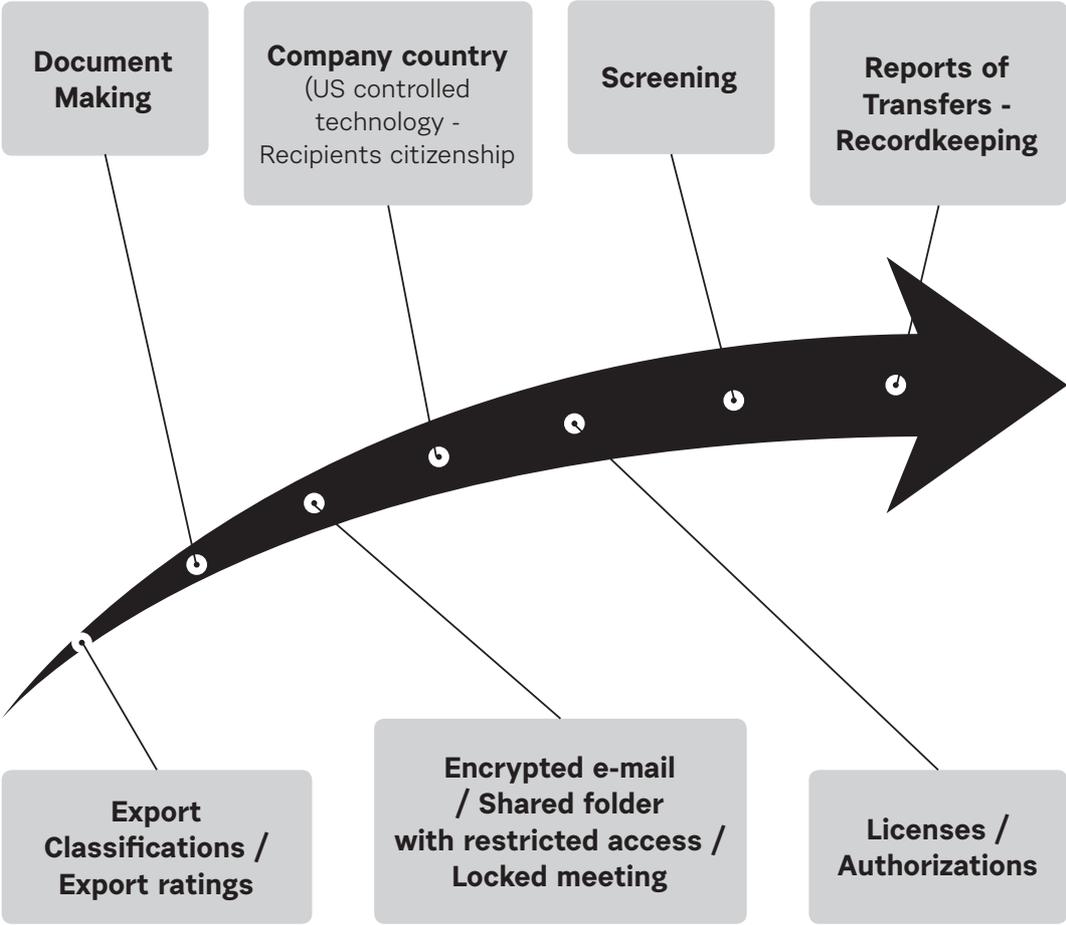
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22 Generally, the Internal Compliance Program includes aspects of management commitment, responsible officials, risk assessment, export compliance policies, procedures and communication, systems, relations with governments, record keeping, monitoring and control, and regular training.

23 S. Bauer, K. Brockmann, M. Bromley and G. Maletta, 3. Sector and actor specific compliance-related challenges, *Challenges And Good Practices In The Implementation Of The Eu's Arms And Dual-Use Export Controls*, SIPRI JULY 2017 [https://www.sipri.org/sites/default/files/2017-07/1707\\_sipri\\_eu\\_duat\\_good\\_practices.pdf](https://www.sipri.org/sites/default/files/2017-07/1707_sipri_eu_duat_good_practices.pdf).

of professional support on comprehensive compliance processes and systems.

This chart summarises the path which leads to the compliant transfer of technologies:



Based on private sector models, universities mandatory policies should govern at a high level how export control activities are set and work across the organisation. Policies, possibly linked or embedded in code(s) of conduct and IT security policies, will provide a solid structure for the organisation's overall commitment to export control compliance. Simplified written working instructions and lower level procedures should then locally instruct on how to carry out specific export control activities within specific

departments. The main goal for a work instruction, is to set up the *conditio sine qua non* prior to the transfer of technology/ies.

Valuable working instructions must be at the same time easy to read and easy to follow without neglecting subjects relating to:

**1. Export control ratings:** the first important step is determining whether an export authorisation/licence is required. Guessing or overclassifying an item is not the right call. An internal database should be made available; it will contain the most common classifications used within the department. It can be a Department-based database or a database acting on a higher level. It must be a dynamic tool to be fed and updated continuously. Experts (internals or externals) who can help in identifying export classification have to be selected and trained. They could be affiliated to one specific Department, and in this case, they could be trained accordingly to the internal needs of the Department they work in to become eventually functional (export control) experts on their research topics, or they could be professionals acting from a higher level in cooperation with scientific scholars, academics and researchers.

**2. Document marking guidance:** how, where, when a document needs to be visibly marked and what is the minimum information required (e.g., classification, country and date).

**3. Transfer of export-controlled technology:** a list of allowed and not allowed electronic means to share sensitive data is fundamental. Users need to know which are the available tools (whether in-house solutions, such as spreadsheets, or “off the shelf” ones). Work instructions should explain how to set these tools to secure the transfer (e.g. point-to-point encrypted emails, shared folders with restricted access, locked video conferences and others available). It is easy to understand that an effective training program takes on a crucial importance. Every person who is potentially able to share and/or spread controlled data/technology must be trained on how to compliantly transfer materials.

**4. Travel.** All personnel, students, researchers, professors must have a signed permit for taking IT equipment overseas when export controlled technology and/or software are stored. All exports of controlled IT devices, software or technical data must be made under a valid export authorisation (including a re-export licence if content of US-origin is involved). In case of access to controlled technology from another country, individuals must make sure (prior to accessing the technology from overseas) that the country where the technology resides has a valid license which authorises access from the country they are in.

**5. Screening.** Screening activities should not be considered as one-time actions but they must be undertaken on a regular basis and especially where there is the possibility that the contact is from a country, entity, company or institution hit by a sanction regime. Make sure that recipients (including any intermediaries) and destinations of goods, technology, software or services are not restricted or debarred under any regulatory regime.

**6. Record keeping.** A register of “exports” whether physical shipments or electronic transfers, should be maintained, in a central storage location where possible. The register should meet the spirit of record keeping requirements i.e. being fully functional for search when required by internal/external audits. What do governments want to know during audits?

- What is being exported;
- Where it is being sent;
- Who is receiving the export;
- Why it is being exported;
- How it is being exported;
- When and for what period it is being exported;
- Under which license/authorisation the export/transfer took place;
- Quantity and value of the export (if goods, not applicable to technology).

That is the primary information that needs to be kept for at least 3 years<sup>24</sup> from the end of the calendar year in which the export/transfer took place (or longer based on national requirements e.g., 5 years from the end of the calendar year in Singapore).

**7. Voluntary disclosure:** promoting a culture which encourages voluntary disclosure of red-flags, potential problems/violations should be considered as part of an internal transparency program and should be seen as an important part of the internal governance. Reporting compliance gaps helps to mitigate risk and implement corrective and preventative actions. Personnel need to take responsibility for the performance of due diligence activities and there should be a clear escalation route for any issues highlighted that require governmental disclosure.

**8. U.S. export control overview:** because of the peculiarity of nationality criteria and extraterritorial aspects of the U.S. export control framework, which impacts foreign-owned companies and universities in complex ways beyond the boundaries of the U.S soil, the Federal Bureau of Investigation (FBI) is very interested in universities and research institutions activities worldwide. Taking the correct precautions before travelling with and/or sharing US export-controlled content, should avoid breach of the US regulations<sup>25</sup> (EAR and ITAR).

Other specific procedures/work instructions can be addressed by identified departments whose activities may involve export controls requirements e.g. Human Resources should issue a procedure for visiting scholars' categories.

The long-term effectiveness and efficiency of an export control compliance program cannot be fully driven without a sustained involvement of both key process owners, who are responsible

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24 Council Regulation (EC) 428/2009 Art. 20(3).

25 See Federal Bureau of Investigation website <https://www.fbi.gov/news/stories/advice-for-us-college-students-abroad>.

for executing day-to-day controls according to the “proximity principle”, and senior leaders, who should “lead by example” by taking the legal obligations of export control seriously. It is worth stressing the awareness concept concerning export control matters: those who manage daily processes (operational activities) and associated workflows must be aware of the key requirements of the regulations and the strong commitment to compliance by the university’s president/chancellor and senior professors.

As a minimum, basic export control awareness training should be mandated for all staff in order to have personnel ready when an export control matter arises, such as during travels, conferences, technical presentations, publications etc.

Tailored training and guidance should be then delivered to key stakeholders<sup>26</sup> across universities to support the integration of export control principles into their research activities and administrative tasks. The subject of export control needs to become something discussed regularly within functions and when arranging meetings, calls, presentations and projects. Compliance should be embedded as part of the academic culture. Tailored solutions, for gathering support, will then help enhance and stabilise compliance across the entire organisation.

Last but not least, executing a systematic, clear risk assessment is meaningful and truly adds value for the organisation, enabling focus to be correctly assigned to the identified top risks.

The application of the Pareto 80/20 rule<sup>27</sup> will help the accountable organisation to close out the key risks and support research continuity, without slowing the establishment down as the gaps are closed.

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26 Stakeholders for trade compliance include (but not limited to) shipping, IT, engineering, human resources, finance and manufacturing departments.

27 The 80/20 rule was originally mentioned by Italian economist Vilfredo Pareto (therefore it is often referred to as the Pareto Principle). Pareto wrote that in economics, 80% of your greatest results often come from 20% of your efforts.

To conclude, a trustworthy reputation built on a strong compliance program, which includes export controls, can benefit the bottom line of companies and universities in multiple intangible and tangible ways like technology licensing opportunities and other entrepreneurial endeavours of researchers in both industry and academia.

Departments within universities do not need to work in silos. An export control committee or Task Force, who can help understand what is controlled and what is not, can be a university enabler of a collaborative environment between students, researchers and professors and export control point of contact. Establishing export control community of practices and surgeries, where sharing experiences, common practical scenarios and good knowledge, can be a suitable path to raise awareness in individuals working at, and for academia.

## **2. ADAPTING THE INDUSTRY EXPERIENCE TO UNIVERSITY SETTINGS: POLICIES-PROCEDURES-TOOLS**

A basic premise reads that each organisation be it a firm or a university or other research institute is in charge of defining what fits best its organisational structure, overall profile and needs. “No one size fits all” and this is a consolidated perception also among industrial operators and particularly SMEs who have to come up with inventive ways in order to tailor ICP main elements to their scales and resources. Academic organisations are characterised by a great degree of autonomy and represent often times decentralised governance models. As explained in chapter 1, academic research stands out for its own traditions, motivations and objectives placing the freedom of research and a “publish or perish” mentality in the heart of a university organisation<sup>28</sup>. These features hint at a need to rethink ICP components discussed at an industry context and assess their usefulness in a university context. Besides, export control authorities from different countries (UK, Belgium, Germany, US) have opted so far to clarify legal aspects of the application of export controls to academia and research communities without defining ICP guidelines targeting specifically the academia. For instance, the recent draft of the EU-wide guidelines on best practices for ICPs, presently under approval by the EU MS, clarifies that such guidance applies equally to research, academic and other entities<sup>29</sup>. It appears

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28 For the differences and similarities between the different types of research organisations (universities, firms, other research centres) see: C. Charatsis, “Interferences between non-proliferation and science: ‘exporting’ dual-use know-how and technology in conformity with security imperatives”, Liege: European Studies Unit, December 2017, pp. 20-34.

29 Footnote 1 of the Guidelines clarifies that: “For the purpose of this document the term ‘companies’ should be understood in a broad sense. It includes research, academic and other entities,” retrieved from: [http://trade.ec.europa.eu/doclib/docs/2018/september/tradoc\\_157336.pdf](http://trade.ec.europa.eu/doclib/docs/2018/september/tradoc_157336.pdf).

that authorities in the EU and beyond see the basic principles and components for ICPs as valid for any type of organisation.

The quest for a reliable and efficient export compliance system initiates with an initial risk assessment. As a company has to rate its exporting products against export control lists and determine whether an authorisation requirement is relevant, a university has to clarify whether its research activities are captured in the scope of regulations. Therefore, conducting a basic risk assessment is a useful thing to do for evaluating the relevance of export controls to a given university or faculty and identifying priorities. In order to do so, one should (a) be aware of and understand the export control imperatives and ensuing obligations set out in the law, (b) identify most risky areas of research performed and training provided by the university (c) taking also into account the type of activities involved in undertaking such research such as international collaborations, online courses and teaching abroad. According to the US experience, “using a sliding scale, based upon research subject, amount of foreign participation and international collaboration along with reviewing funding source requirements allows for areas of greatest exposure to be reviewed first”<sup>30</sup>.

The triptych “Policies-Procedures-Tools” can guide us through the necessary options to be considered and steps to be taken when setting up an internal export compliance system for a university. A university main policy stating its commitment to comply with the export control law respecting at the same time the academic freedom appears to be a fundamental element. The same policy could highlight why export compliance matters for the organisation, what are its main principles/requirements and what are the potential consequences of non-compliance. Such a main policy statement will underpin the specific policies to be developed for applying internal control procedures. It shall be

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30 C. Charatsis, “Interferences between non-proliferation and science: ‘exporting’ dual-use know-how and technology in conformity with security imperatives”, Liege: European Studies Unit, December 2017, p.176.

made available to all scientific and administrative staff potentially cornered and, it could be also enshrined in different documents such as internal regulations, main research missions and internal codes of conducts for ethical and lawful research. As a part of the university's commitment to export compliance students and other scientific staff could be required to take knowledge and sign the university's compliance policy when accepting a contract or being admitted to a study programme of proliferation concern. Overall, a sound and clear stance towards export compliance as demonstrated with a policy statement can have a bearing in infusing an export control compliance culture across a university or a firm.

A relevant question to ask here is what specific policies and guidance can be required for implementing the universities polices. Admittedly, existing institutional procedures may need to be adapted and new ones might need to be devised in rendering an ICP operational. Along with these elements, clear responsibilities need to be allocated to staff for performing the main export compliance tasks. In an ideal world, a university could invest in preparing detailed export compliance manuals containing policies for all relevant export control procedures and responsibilities for all export control roles. Such relevant export control procedures requiring a certain degree of attention may include the following:

- collaborating with foreign partners
- screening procedures for exporting and procurement of tangible items,
- making available software and data
- travelling abroad to provide onsite technical assistance and lectures,
- publishing and applying for patents
- admission of new staff, students and visitors

A pragmatic approach would emphasize on adapting existing university policies and procedures (such as those concerning safety and security, financial scrutiny and transparency) for

accommodating export control objectives and tasks. This is also the advice of experienced export control officers from the American universities. For instance, Mark Peters, compliance officer at Oregon State University (OSU) has noted that “for a standalone export compliance system, it would be very difficult to get the user’s attention; however, if presented as part of shipping or dangerous goods compliance it receives much more attention and buy in”<sup>31</sup>.

Concerning main compliance roles, an export control compliance structure would require someone from the top-level management to assume overall responsibility and a chief export control officer to function as the main coordinator and point of reference concerning export compliance questions. In addition, the lead researcher of a research group conducting research of dual-use interest has to refer/report an export control issue to the main chief compliance officer and apply for a license if necessary. In the US, this role is entrusted with the principal investigator who shall be in position to identify risks and inform personnel involved in their research for such risks and subsequent obligations<sup>32</sup>. In several cases in Europe, staff of the research office or the legal department has this coordination role and again the main responsible of a research project has the obligation to take the necessary steps for complying with the law. This compliance landscape is subject to the peculiarities and needs of each institution. For instance, a large, research intensive university with activities of concern may need to maintain different points of contact for each department or faculty and invest increased resources for training and internal tools. Export compliance requires both legal and technical expertise and this must be reasonably reflected in the compliance structure.

Awareness raising and training as well as a procedure for record keeping are two further components of every compliance system targeting either industry or academia. A university may need

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31 *Ibid*, p.175

32 *Ibid*, p.179.

assistance in gaining experience and preparing material for training and awareness raising events. In some countries, authorities can provide training upon request on top of regular outreach activities that they may organise. Training is not only useful for familiarising staff with export controls and internal procedures but also is necessary for keeping up to date concerned staff with export control developments and lists updates. It also strengthens regular contacts between the main export control office and the researchers. Their close collaboration and trusted communication are necessary for identifying risks and addressing possible areas of concern at an early stage. Reporting possible export control issues such as any suspicions or red flags concerning a specific project or activity and defining a way forward passes through the close collaboration between the export control officer and the researchers. Record keeping is also of paramount importance since can assist the university to (a) fulfil obligations set in the law, (b) alleviate consequences in the case of proven noncompliance (c) enable internal review of the compliance system and audits and (d) feed useful findings and information to databases for risk assessment.

Last but not least, academics and researchers have a need for practical tools and instructions in order to be better positioned to assess the export control relevance of their research. Such means can include:

- Informative publications with links to relevant legislation and other training material such as checklists with red flags, guides with examples of controlled items, technologies and software including real prosecuted cases, online videos and distance learning;
- Flowcharts with instructions for understanding who can help with their query each time and what is the relevant export control process to be followed;
- Databases for items and technology classification as well as for end-use/user screening, and E-Systems for managing

approvals for internal export procedures and record keeping obligations.

Quite interestingly, a League of 23 European Research Universities (LERU) has recently highlighted in its position paper the need for a user-friendly interface, backed up by an accurate, easy to use and up to date database with the aim to help researchers to navigate through the EU control list and assess whether their research falls under the scope of the regulation<sup>33</sup>. Identifying whether a research poses some sensitivities and in particular judging on its basic or applied nature is not always crystal clear at least on the basis of existing legal provisions and available guidance. The Technology Readiness Levels scale (TRLs) along with an objective technical evaluation can be a useful tool in that regard<sup>34</sup>. In addition, for export risk assessment against EU restrictive measures (sanctions), the government of Estonia has made publicly available an online tool for checking against sanctioned countries and entities by sanctions' thematic area<sup>35</sup>. In connection with tools to be applied in the future, modern approaches like Distributed Ledger Technologies (blockchain) are expected to facilitate compliance procedures such as logistics and document access all along the supply chain and consequently can have some value for university compliance structures as well<sup>36</sup>.

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33 The LERU position paper is publicly available in the following link: <https://www.leru.org/files/Publications/LERU-Dual-Use-Note-July-2018.pdf>.

34 The TRLs are a nine-step scale for assessing the readiness of a given technology to be used for practical purposes. The TRLs metric was first developed by NASA scientists in 1970s and adopted by the Air Force Research Laboratory as a means of evaluating the readiness of technologies to be incorporated into a weapon or other type of system.

35 The open source tool can be accessed here: <https://www.sanctionsmap.eu/#/main>.

36 For an overview of the role of blockchain technologies in the global supply chain including connecting challenges please see: Blockchain in the supply chain: where are we now? Trade Security Journal, Issue 8 (2018) 9-11.

### **3. OTHER INSTRUMENTS THAT CAN ACT IN SYNERGY WITH EXPORT CONTROLS**

In the absence of robust frame specifically designed for applying control on the dissemination of academic and scientific dual-use knowledge, and although it is not their primary function, other policy instruments may be used as levers for inserting, implementing or enforcing controls in the research and education sphere. These “dual-use” instruments are corollary to the performance of the academic and scientific activities and can be found in the environment in which these activities take place.

Taking inspiration from the “supply chain compliance” in place in the industry, which globalizes the approach of controls a company shall exercise on its own trade, this section investigates the possibility to make use of a comprehensive approach regarding the controls to be performed by the academic – and scientific - actors on education or research activities. The following listing of potential levers for applying controls does not pretend to be exhaustive. However, it shows that, for these specific activities, both top-down and bottom-up approaches may be fruitful and may either apply in synergy with trade controls *per se* or contribute to set forms of incentives - or deterrence - with a view to preventing diversion of academic and scientific knowledge.

The following categories and levers could be identified, described in their current relevance for contributing to the fight against the proliferation of weapons of mass destruction, and prospectively discussed for further enhancing their relevance *vis-à-vis* controls.

#### **3.1. Levers for a bottom-up approach**

Instruments set up for policing the academic and scientific activities at the level of the institutions, such as the universities, can be relevant in the sense that they already apply or promote

self-control on the dissemination of knowledge, or that they could do so if the adequate conditions were met.

In general, universities and research centres commit to ethics and conduct principles in the course of their activities. These commitments, which are considered as rules and bind the academic and scientific personnel, usually take the form of charters, codes of conduct or guides which are to be followed by all the members of the profession. Each university, or even department, may develop or adapt its own material through a real “bottom-up” approach. Very often, however, the basic principles are common to the entire profession as they are set at the national – or federal – level, thus mitigating the bottom-up approach into a more horizontal one. France, for instance, has elaborated a National Charter for Ethics in Research Professions<sup>37</sup> and a Guide<sup>38</sup> for supporting the implementation of the Charter by the relevant institutions. In the European practice, it is not common ground to find in the contents of such guidance on ethics provisions about the potential risk of diversion of research and teaching outputs to WMD proliferation – or even arms’ development, in general –. They tend to concentrate on misconducts such as possible conflicts of interests or plagiarism. A few exceptions can be found, however, and efforts are currently made in Europe by the relevant institutions, individually or collectively, for inserting also measures aimed at preventing the misuse of academic and scientific products. It is possible, therefore, to strengthen counter-proliferation measures through these instruments. The enforceability of these sources or rights and obligations for the profession can be questioned from a legal perspective: their content is prescriptive but their form is not directly binding on individuals. However, these can be made

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37 Available: [http://www.cnrs.fr/comets/IMG/pdf/charte\\_nationale\\_\\_deontologie\\_signe\\_e\\_janvier2015.pdf](http://www.cnrs.fr/comets/IMG/pdf/charte_nationale__deontologie_signe_e_janvier2015.pdf) (consulted 20/06/2018).

38 Available: <http://www.cnrs.fr/comets/spip.php?article181> (consulted 20/06/2018).

mandatory through their reproduction or insertion as annexes into the employment contracts of the academic and scientific personnel.

Another instrument that can be used by the academic and scientific institutions for preventing the misuse of their products for proliferation purposes is the vetting of the students. The selection of the students who may have access to the knowledge accumulated by the academic and scientific institutions before these students benefit or take part to learning or researching activities is a practice that is commonly shared by the European institutes. In a very few exceptions, however, this selection is also performed on criteria covering the possible misuse of the knowledge acquired. The research centres, owing the economic value and possible sensitivity of their activities, are more prone to set conditions for the access to their knowledge but the universities, the primary mission of which is to disseminate “public domain” knowledge, may be less accustomed to such controls on in-flows. Notable exceptions, such as the internal guidance developed by the King’s College London<sup>39</sup> in coordination with the national licensing authority, demonstrate that the selection process for research or academic institutes can comprise preventive controls on the risks related to the country of origin, the proliferation of weapons of mass destruction and the application of the knowledge to be acquired.

### **3.2. Levers for a horizontal approach**

The institutions defining or implementing the policies in scientific research and academic activities are also found organizing themselves horizontally for preventing abuse or misuse of their products.

National advisory boards, or academies of science, or even professional fora where the target institutions seat or take some guidance from, are arenas which can be used for elaborating good control practices and outreaching the relevant stakeholders.

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39 Website: <https://www.sieps-france.fr/> (consulted 20/06/2018).

University associations, for instance, are adequate fora for creating a level-playing field for designing controls to be implemented by competitors in academic and scientific activities. The example of the initiative launched by the universities of the Belgian Flanders and the regional authority of setting common guidelines for the controls through a Committee for Ethics on the Dual-Use Research is particularly highlighting the relevance of such horizontal approach. Similar projects for gathering a “critical mass” of academic and scientific knowledge “exporters” have been initiated, notably in Sweden, on the model of the processes set in the – even more competitive – world of the industry. The model of dual-use “exporters’ unions”, such as the *Syndicat des Industries Exportatrices de Produits Stratégiques* (SIEPS) in France, or the lobbying scheme, such as the initiatives taken in the framework of the think-tank *BusinessEurope*<sup>40</sup>, may legitimately inspire the knowledge providers.

A horizontal approach could also be used taking advantage of another important link in the relationship between the different academic and scientific institutions: funding. In the scientific sector specifically<sup>41</sup>, the activity of the institutions - e.g. universities or other research centres – often depend on external funding opportunities. In the European practice, these are rarely conditioned by any sort of asserted compliance with dual-use goods’ trade controls. The flagship research programme of the European Commission “Horizon 2020”<sup>42</sup>, which seeks to promote and facilitate the dissemination of research deliverables on a very wide range of disciplines worldwide, creates – as developed in previous chapters - an obligation for the benefiter of its funding

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40 See for instance: <https://www.businesseurope.eu/publications/business-seuropes-key-points-communication-export-controls-dual-use-items> (consulted 20/06/2018).

41 The academic actors for the teaching part of their activities, do not depend in the same way on external funding programmes.

42 The programme is described in a previous chapter on the reasons for controlling the transfer of dual-use items and technology in the specific academic and scientific activities.

to self-assess the link between their activities and the control of the flows of goods and information, as soon as during the phase of application to the programme. This obligation, which is defined as an ethical one, is enforceable by the European Commission<sup>43</sup> through performing assessment of the applications, checks and audits. Hence, despite the possible lack of knowledge - or even of simple awareness - of the researchers and of their institutions on dual-use trade controls, and despite the declaratory form of the ethics commitment that is requested in the application process, a legal obligation of contractual nature is undoubtedly set for the beneficiaries in the framework of this programme.

Beside the Horizon 2020 programme and even though it is not aimed at developing science, funding in the framework of the Centres of Excellence of the European Union on the mitigation of the risks related to chemical, biological, radiological and nuclear material and equipment is important for research activities that can be affected by proliferation concerns. However, it is not subjected to any of such obligations or commitment. Prospectively and in line with the Horizon 2020 programme, all these instruments set by the European Union, should legitimately and equally be used for giving effect to the principles contained in the European Regulation through a contractual “non-proliferation clause” in the arrangements between the donors and the researchers or implementers. As a temporary measure and before these could become effectively contractual, these principles could even be introduced as best practices in possible “users’ manuals” and the selection criteria, where relevant.

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43 Regulation (EU) No 1290/2013 of the European Parliament and of the Council of 11 December 2013, laying down the rules for participation and dissemination in “Horizon 2020 - the Framework Programme for Research and Innovation (2014-2020)” and repealing Regulation (EC) No 1906/2000, Article 14.

### **3.3. Levers for a top-down approach**

Finally, instruments of a political nature can be found relevant for inserting controls in the practice of “exporters” of academic or scientific knowledge. These actors, indeed, are subjected to the Law, as is often reminded in the commitments they have elaborated or taken in the field of ethics.

A vector for promoting controls in the dissemination of knowledge could be to integrate this particular form of flow – or transaction – in the considerations related to the internal and external security of a country. In practice, examples of countries putting on equal footage the risks related to the misuse of “national” knowledge and the misuse of national items in their national security strategies, for instance, are rare, if even existing. However, every country sets regulations for controlling inflows and outflows of intelligence and controlling classified information. The dissemination of information which is in position to harm the national – and international - security is limited and constrained by special, penal, defence-related legislations or even a combination of all these, such as in France. The practical challenge, nonetheless, lies in the status of the academic or scientific “information”, especially given the innovative purpose of scientific research: “Information” or “knowledge”? “Public domain”, “basic scientific research” or “restricted information”?

Prevention of the misuse of knowledge with proliferation intent can also be implemented through national inflow controls in the form of visa screening. These controls can be performed after an infringement has been committed, notably in banning the offender from the national territory, such as in France, but it is also possible to include the proliferation risk into the visa vetting scheme before an individual enters the territory, such as in Germany. Potentially, it can be envisaged to harmonise these practices throughout the Schengen area in order to highlight the importance of consistently performing specific controls on the dissemination of dual-use knowledge.

It could be also considered to use the economic instruments available to the public authorities for inserting controls on the possible diversion of the academic and scientific knowledge. Although the trend is in favour of the development of foreign investments in the European education and science, a relevant form of preventive mechanisms could be to insert proliferation-centred control into the foreign direct investment policies and legislations.