

Katarzyna Chałubińska-Jentkiewicz\*

# The commercialisation of research and development results for cybersecurity

## Abstract

Under current legislation, an institution of higher education may only form single-person companies (special purpose vehicles) for the purpose of indirect commercialisation, consisting in subscribing to or acquiring shares in companies or subscribing to subscription warrants entitling them to acquire shares in companies to implement or prepare for the application of the results of scientific research or the related know-how. The results of scientific research may contribute to improving cybersecurity.

**Key words:** commercialisation, intellectual property, scientific research

\* Assoc. Prof. Katarzyna Chałubińska-Jentkiewicz, PhD, War Studies University in Warsaw, Head of the Academic Centre for Cybersecurity Policy, e-mail: kasiachalubinska@gmail.com, ORCID: 0000-0003-0188-5704.

The dual nature of cybertechnology, as well as securing civilian products and services, is crucial for the military sector and contributes to improved cybersecurity. In the EU's capability development priorities, it is stressed that situational awareness in cyberspace and cyber defence technologies are of paramount importance in countering security threats. Authorising the Cyberspace Defence Forces to perform logical operations in ICT networks allows them to develop, acquire, store and use the so-called hacking tools, i.e. software subbed as „malware” (malicious software), including viruses, worms, rootkits, spyware, etc.<sup>1</sup>. AI solutions and BIG DATA technologies are likely to gain importance as well. To ensure cyberspace security, it is necessary to develop a uniform policy for the protection of intellectual property (copyright, industrial property protection, database protection) to guarantee the reliability of solutions for the implementation of tasks, to ensure the development of own know-how, as well as provide support for R&D works with an explicit assignment of industrial property rights and copyright for the development of the competencies of the Cyberspace Defence Forces. The project assumes the development of a policy for the protection of intellectual property in cyberspace in the military domain. Technological innovation is mainly driven by private enterprises. Hence, cooperation with the private sector and civilian stakeholders, including industries and entities involved in critical infrastructure management, civil society, organisations and academia, is crucial. To make it possible, a cooperation policy in the area of development, financing and use of dual-use items is needed. Promoting collaboration with academia to support R&D programmes in the field of cybersecurity to develop new common technologies, tools and skills applicable to both the civilian and defence sectors is an absolute requirement.

One of the main issues related to the development of intellectual property policy for cybersecurity is the management of industrial property and the establishment of rules for the commercialisation of R&D results at higher education institutions<sup>2</sup>. The legal basis for the introduction of the aforementioned rules and procedures is Art. 149 of the Higher Education and

1 One of the best pieces of hacking software, enabling network operations ranging from port scanning, transmission, interception or network disruption, is Carnivore developed for the FBI.

2 On the issues of commercialisation of R&D results see A. Niewęglowski, *Wyniki prac badawczych w obrocie cywilnoprawnym*, Warszawa 2010.

Science Law (HESL)<sup>3</sup>. Under the provisions of the aforementioned law, the obligation of higher education institutions to develop and adopt rules for the management of intellectual property rights, as well as the commercialisation of the results of R&D works, along with organisational solutions for the management of intellectual property and commercialisation of research results, will contribute to increasing the practical use of the research potential of institutions of higher education in the economy. When discussing the commercialisation process, we should first mention the most important definitions related to the reform enabling the development of industrial property. Commercialisation is understood as the organisation of scientific, artistic, literary and other activities based on commercial terms<sup>4</sup>. The primary objective of the commercialisation process is to market protected R&D results. One can distinguish between direct commercialisation, on the one hand, which is a process of granting the right to market an item protected by intellectual property rights by way of a licence (based on a licence agreement specifying in detail the scope of such use) granted to the entity that introduces the object of protection to the market, and on the other hand, indirect commercialisation, which consists in the establishment by the institution of higher education of an economic entity (spin-off company), the purpose of which is to introduce an object of protection to the market.

As regards indirect commercialisation, the company commercialising R&D results is an entity generating profit from the trading of the rights thereto. However, in the first stage, it is necessary to contribute a specific amount of capital, to make certain investments on the part of the higher education institution, and to select appropriate managerial staff and attract investors. The activity of such a company is based on market demand, subject to the rules of market competition. An SPV may be established by several public or non-public institutions of higher education. A public institution of higher education may join a special purpose vehicle established by another public institution of this kind, while a non-public institution of higher education may join a special purpose vehicle established by another non-public institution. Only higher education institutions may be partners or shareholders in such special purpose vehicle.

The rules concerning internal IP policy are based on a long-term strategy of action that allows, first and foremost, the fulfilment of the public mission

<sup>3</sup> Act of 20 July 2018 – Higher Education and Science Law (consolidated text, Journal of Laws 2022, item 574, as amended).

<sup>4</sup> *Encyklopedia Gazety Wyborczej*, vol. 8, Warszawa 2005, p. 396.

of the institution and the dissemination of new ideas with potential economic value, as well as the establishment of ownership of research results. The commercialisation of R&D results allows the maximisation of socio-economic benefits. To promote the use of publicly funded research results and maximise their socio-economic impact, it is necessary to consider all possible types of knowledge exploitation mechanisms (such as licensing or the creation of spin-offs) and to select possible partners in this respect (such as spin-offs or existing companies, other public research organisations, investors or innovation support services or agencies). An active commercialisation policy can generate additional revenue for public research organisations. To make better use of the intellectual and technical potential of higher education institutions, as well as to transfer research results to the economy, such institutions can operate academic business incubators and technology transfer centres.

Direct commercialisation is the task of a technology transfer centre or it may be carried out by a special purpose vehicle (the form of operation is chosen at the discretion of the higher education institution, which may entrust, for a fee or free of charge, a special purpose vehicle with the management of intellectual property rights for direct commercialisation). Indirect commercialisation can only be carried out by special purpose vehicles. Academic business incubators are established to support the economic activity of employees, undergraduates, graduates and PhD students of institutions of higher education. It may be established: 1) in the form of an institution-wide unit, operating based on regulations approved by the Senate of the higher education institution; 2) in the form of a company, operating based on its constitutional documents.

Technology transfer centres are established for the purpose of direct commercialisation. A technology transfer centre established in the form of an institution-wide unit operates based on regulations approved by the Senate of the higher education institution or, in the case of a non-public higher education institution, by the body indicated in its Statutes.

The commercialisation procedure, as defined in the Higher Education Law, also establishes rules for cooperation with employees of higher education institutions. Employees provide an institution with information on the results of scientific activity and related know-how. If an employee submits a declaration of will concerning the assignment of the rights to these results and the related know-how, the higher education institution decides on their commercialisation within three months of its receipt. In the event where a public higher education institution decides against the commercialisation, or if the deadline referred to above expires, it is obliged to make an offer to

such employees within 30 days to conclude an unconditional agreement for the assignment against payment of the rights to the results of scientific activity and the related know-how, including information and works along with the title of ownership to the media on which such works are recorded, and technical findings. The remuneration, due to the higher education institution, for the assignment of such rights may not be higher than 5% of the average remuneration in the national economy of the previous year, as announced by the President of Statistics Poland (GUS). Should the employee reject the offer referred to above, the rights to the results of the scientific activity and the related know-how, including information and work, along with the title of ownership to the media on which these works are recorded, and technical findings shall be vested in the public institution of higher education.

This procedure does not apply in situations where the R&D works were conducted: 1) under an agreement with a party financing or co-financing such R&D works, obliging the researcher to assign the rights to the results of R&D works to that party or an entity other than a party to the agreement (in the event of commissioned research or development works); 2) with the use of financial resources, the rules for the allocation or use of which stipulate a different method of use of the results of R&D works and the related know-how other than the one arising from the Act.

The HESL imposes the following obligations on employees of higher education institutions: 1) maintaining the confidentiality of the results of R&D works and the related know-how; 2) assignment to the public institution of higher education of all information in the possession of the employee, as well as works along with the title of ownership to the media on which such works are recorded, and technical findings necessary for commercialisation; 3) refraining from any activities aimed at the commercial implementation of the results; 4) cooperation in the commercialisation process, including in terms of obtaining exclusive rights – for a maximum period equal to the duration of the rights held by the public higher education institution.

Article 155 of the HESL lays down the rules for the distribution of funds obtained by higher education institutions in the case of the commercialisation of R&D results. Higher education institutions are obliged to offer their employees no less than: 1) 50% of the value of the funds obtained by the higher education institution from direct commercialisation, reduced by, at the most, 25% of the costs directly related to the commercialisation that were incurred by the institution or the special purpose vehicle; 2) 50% of the value of the funds obtained by the special purpose vehicle following any indirect

commercialisation, reduced by, at the most, 25% of the costs directly related to the commercialisation that were incurred by the institution or the special purpose vehicle.

In the case of commercialisation by an employee, a public higher education institution is entitled to 25% of the value of the funds obtained by that employee therefrom, reduced by, at the most, 25% of the costs directly related to the commercialisation which were incurred by the employee.

The costs directly related to commercialisation are understood as external costs, including, in particular, the costs of legal representation, expert opinions, valuation of the object of commercialisation and administrative fees.

Relevant provisions determine the rules for the distribution of funds obtained from the commercialisation process of R&D results concerning the amount of remuneration and the share in the funds obtained from commercialisation, to which the employees forming part of the research team and the public higher education institution are entitled.

The employees forming part of the research team have the right to claim, from the public higher education institution, a share in the funds obtained from the commercialisation process and are responsible to that institution for their obligations related to their participation in the research team up to the amount of their share in the joint ownership of R&D results and the related know-how.

Upon receipt of information from an employee about the results of R&D works and the related know-how, the public higher education institution and the employee in question may specify, by way of an agreement, the rights to such results or the manner and mode of commercialisation thereof, otherwise than provided for in the Act.

The current regulations provide that an employee of a public higher education institution is guaranteed intellectual property rights to the results of scientific research (including inventions, utility models, industrial designs or layout designs of integrated circuits, bred or discovered plant varieties, etc.), development works or artistic activity created as part of the duties under the employment relationship with that institution, similar to the provisions of the previous Higher Education Law<sup>5</sup>.

5 On the permitted use of research work results see E. Nowińska, M. du Vall, *Dozwolony użytek cudzych utworów w pracach naukowo-badawczych*, „Zeszyty Naukowe Uniwersytetu Jagiellońskiego” 2004, no. 28.

In the case of commercialisation involving the sale of intellectual property rights, a public higher education institution has the right of first offer, whereas in the case of other types of commercialisation or making intellectual property rights available free of charge, a public higher education institution or a research institute has the right of first refusal. It should be emphasised that employees are obliged to immediately notify the public higher education institution of a legal transaction involving commercialisation within one month of the date on which the legal transaction was made.

The Senate, or in the case of a non-public higher education institution, the body indicated in the statutes, adopt regulations for the management of copyright and related rights, industrial property rights and rules for commercialisation of the results of R&D works, as well as the regulations for the use of research infrastructure of the institution.

In the case of indirect commercialisation, a higher education institution may establish special purpose vehicles (single-person companies) to implement or prepare for the implementation of the results of R&D works or the related know-how. In order to cover the share capital of such a special purpose vehicle in whole or in part, a higher education institution may make an in-kind contribution in the form of the results of scientific activity and related know-how. Special purpose vehicles are established by the rector with the consent of the Senate.

They are a convenient organisational unit for higher education institutions to operate under the conditions of risk involved in business activity, especially in the area of commercialisation, given that, as a public entity, they should refrain from assuming such risks. Such companies operate based on the unity between the partners/shareholders and the company, whereby only higher education institutions may be the partners/shareholders. Several public higher education institutions or several non-public higher education institutions may also establish joint special purpose vehicles, as well as join a special purpose vehicle established by another public/non-public higher education institution. Only higher education institutions may be partners or shareholders in such collective special purpose vehicles<sup>6</sup>.

By way of an agreement, a higher education institution may entrust a special purpose vehicle with 1) management of the rights to the results

<sup>6</sup> T. Jędrzejewski, [in:] *Prawo o szkolnictwie wyższym i nauce. Komentarz*, ed. J. Woźnicki, Warszawa 2019, Art. 149.

of R&D works or the related know-how for direct commercialisation; 2) management of the research infrastructure.

Dividends of special purpose vehicles are used by higher education institutions for the execution of their tasks. Special purpose vehicles may also carry out an additional business activity, separate in organisational and financial terms.

An SPV may be established by several public or non-public institutions of higher education. A public institution of higher education may join a special purpose vehicle established by another public institution of this kind, while a non-public institution of higher education may join a special purpose vehicle established by another non-public institution. Only higher education institutions may be partners or shareholders in the special purpose vehicle. In such a case, such a special purpose vehicle may be entrusted with the management of intellectual property rights for direct commercialisation.

The above-mentioned solutions apply to ownership rights to the results of R&D works that are an invention, a utility model, an industrial design or a layout design of an integrated circuit, a bred or discovered plant variety, and a work or information related thereto (including, in particular, know-how).

In addition, to implement or manage research infrastructure projects, higher education institutions may establish companies or join companies established by other higher education institutions, research institutes, institutes of the Polish Academy of Sciences, Łukasiewicz Centre, Łukasiewicz Research Network institutes or other entities.

The solutions adopted in the HESL aim to improve technology transfer from higher education institutions to business practice, in particular by motivating scientists and researchers to actively participate in commercialisation processes, thus increasing the innovativeness of Polish enterprises.

One of the main problems highlighted by academia and entrepreneurs is the fact that only an insignificant part of patents are used for commercial purposes (a significant part of applications are made to obtain additional points for the parametric evaluation, with the resulting patents used only to a limited extent commercially). The amendments under the previous Act concerning granting rights to R&D results to scientists were aimed at overcoming these problems and promoting the implementation of scientific research results.

Such solutions involving vesting economic intellectual property rights with employees of higher education institutions as creators are already in force in several other countries.

One of the arguments in favour of granting such rights in Poland is the fact that they would provide a significant financial stimulus for scientists and the motivation for active involvement in the commercialisation of R&D results, especially in cases when higher education institutions are not interested. It can be assumed that revenues from the commercialisation of R&D results will constitute a significant share of the total income of scientists, or correspond to a multiple of the annual income they obtain as natural persons. The mentioned solutions also make it possible to increase the efficiency of support services for the commercialisation process, as creators will be interested in cooperation with such entities (including technology transfer centres, innovation brokers, etc.).

To conclude, it can be stated that the purpose of commercialisation processes of R&D results is to identify their commercial potential, including the degree of market and social demand for them, potential target groups, direct recipients, etc. Well-organised cooperation between the market and academic organisations should enable the direct exploitation of R&D results in practical terms. Such results can also contribute to improving the security of cyberspace<sup>7</sup>, including information security<sup>8</sup>.

The idea behind the establishment of spin-off companies by higher education institutions is related to the indirect commercialisation of R&D results. The purpose of such companies is mainly to acquire shares in other companies or to create such companies to implement the results of scientific research and development works. Higher education institutions transfer the results of R&D works, in particular industrial property rights, to such a special purpose vehicle in the form of an in-kind contribution. The objective of the commercialisation of the results of R&D works conducted within the higher education system is to introduce them to the market and adapt them to the

7 For cybersecurity, please see: K. Chałubińska-Jentkiewicz, M. Karpiuk, J. Kostrubiec, *The legal status of public entities in the field of cybersecurity in Poland*, Maribor 2021; M. Karpiuk, *Position of the Local Government of Commune Level in the Space of Security and Public Order*, „*Studia Iuridica Lublinensia*” 2019, no. 2; K. Chałubińska-Jentkiewicz, *Cyberbezpieczeństwo – zagadnienia definicyjne*, „*Cybersecurity and Law*” 2019, no. 2; M. Karpiuk, *Activities of local government units in the scope of telecommunication*, *ibidem*, no. 1.

8 For information security, please see: K. Chałubińska-Jentkiewicz, M. Karpiuk, *Prawo nowych technologii. Wybrane zagadnienia*, Warszawa 2015; M. Karpiuk, K. Chałubińska-Jentkiewicz, *Prawo bezpieczeństwa informacyjnego*, Warszawa 2015; M. Czuryk, *Informacja w administracji publicznej. Zarys problematyki*, Warszawa 2015; K. Chałubińska-Jentkiewicz, M. Karpiuk, *Informacja i informatyzacja w administracji publicznej*, Warszawa 2015.

needs of potential recipients. It also reflects the idea of the entrepreneurial university assumed in current legislation<sup>9</sup>.

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## Komercjalizacja wyników badań naukowych i prac rozwojowych na rzecz cyberbezpieczeństwa

### Streszczenie

Ustawodawca wskazuje, że uczelnia w celu komercjalizacji pośredniej polegającej na obejmowaniu lub nabywaniu udziałów lub akcji w spółkach lub obejmowaniu warrantów subskrypcyjnych uprawniających do zapisu lub objęcia akcji w spółkach w celu wdrożenia lub przygotowania do wdrożenia wyników działalności naukowej lub know-how związanego z tymi wynikami może tworzyć wyłącznie jednoosobowe spółki kapitałowe (spółki celowe). Wyniki działalności naukowej mogą służyć m.in. poprawie cyberbezpieczeństwa.

**Słowa kluczowe:** komercjalizacja, własność intelektualna, badania naukowe

<sup>9</sup> H. Izdebski, J.M. Zieliński, *Prawo o szkolnictwie wyższym i nauce. Komentarz*, Warszawa 2019, art. 149.