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Dear Minister

UK Research and Development Roadmap

The IP Federation[1] welcomes the opportunity to comment on the R&D Roadmap, which sets out an exciting and ambitious agenda for the UK as an innovative powerhouse.

The UK is well placed to continue its stand-out role in world research and development built on its world-class university sector delivering academic excellence and breakthroughs, its R&D intensive businesses in strategic sectors, its thriving start-up and scale-up community, and its highly valued intellectual property (IP) regime.

The IP Federation submits the following responses across the enquiries posed in the survey and welcome the opportunity to continue to engage with the Government on these and other IP issues going forward.

How can we best increase knowledge and understanding through research, including by achieving bigger breakthroughs?

This is a very broad question and the answer will be multi-faceted. However, it is crucial to provide incentives for research, frameworks for fair and trusted collaboration, and mechanisms for knowledge transfer and commercialisation. Central to each of these requirements is a system of intellectual property rights (IPRs) which is robust, balanced, understood, and enforceable when not respected. The UK's IP system is widely recognised as being among the best in the world, and that situation must be preserved. But innovative businesses base their strategy on a global view, taking account of the IP environment in all the states which their operations will touch, be that for R&D, production, or sales, for example. That is why the UK's membership of significant international IP treaties, such as the non-EU European Patent Convention, is vital in supporting UK-based innovative businesses. It is also important for the UK to be an active player in established

[1] The IP Federation aims to improve the IP framework to meet the needs of innovative industry by representing, nationally and internationally, the views of UK-based businesses. Its membership of influential IP-intensive companies has wide experience of how IP works in practice to support the growth of technology-driven industry and generate economic benefit. As a cross-sectoral industry organisation covering all technologies, the IP Federation is able to offer a viewpoint which is authoritative and balanced. Details of the IP Federation membership are given at the end of this paper.

multilateral processes for improving the global IP system, such as that aimed at bringing greater harmonisation to international patent law.

Private equity and inward investment can make a huge difference to the feasibility of an R&D initiative. This is especially the case for the most complex challenges, from which "bigger breakthroughs" might be expected but the costs of which are extremely high. In such circumstances, an IP system which commands respect and confidence is vital, to attract finance and other resources and to provide a framework for the proper application of the results.

How can we maximise the economic, environmental and societal impact of research through effective application of new knowledge?

The Roadmap correctly acknowledges that over two-thirds of R&D funding comes from the private sector and that R&D carried out by private firms is influenced by a wide range of rules, systems and interactions, from the tax regime, to our intellectual property (IP) system and the networks of contacts and exchanges that promote the sharing of ideas. As an organisation representing innovative industry, the IP Federation is also quick to acknowledge the significant role, and the value of research and knowledge generated by, the non-profit sector and stakeholders, whether that is publicly funded academia or scientific organisations such as medical charities.

The ecosystem that promotes the creation and application of knowledge, resulting in innovative products and services that in turn generate economic value and provide benefits to society, is complex and involves various inter-connected elements.

In 2015, investment in intangibles:

- amounted to £134 billion (versus £142 billion investment in tangibles) with 47% of this investment (£63.5 billion) protected by IP rights
- made up over 10% of market sector gross value added (GVA) and made an important contribution to productivity growth[2].

The IP framework is critical to the functioning of this ecosystem which drives innovation. It provides the means by which investment in intangibles is captured, protected and can be commercialised. It does so not only by enabling revenue-generation by those with IP rights but also by providing a secure framework for the collaborations between the various stakeholders in the innovation ecosystem which are increasingly important for success.

Without a robust and balanced IP system, business would have limited incentives to invest in R&D. Further, the knowledge created by the non-profit sector would be unlikely to be applied, through collaborations and other means to create new products and services.

The UK is rightly regarded as having a world-class IP system which drives both innovation, economic growth and the dissemination of innovative products and services. However, there are challenges to be faced in improving the substance of the system, for example to take into account emerging technologies arising from the 4th industrial revolution such as AI. But for the societal impact to be positive, a much greater understanding is needed in the public at large of the crucial enabling

[2] https://ipo.blog.gov.uk/2018/03/20/ip-and-the-intangible-economy/

role of IP in encouraging R&D and mediating its application. This points to the need for mainstream government communications and education about IP at the level undertaken in other innovative economies, for example Singapore and Japan.

However, the UK should not only look to the UK IP system when seeking to increase UK innovation. Without appropriate levels of IPR in export markets, the penetration of UK innovative products and services will be diminished and the return on investment slashed, for example through the effect of counterfeiting and piracy. The UK should actively influence the development of IP systems in other markets. It has a significant role to play in developing innovation-friendly IP systems in third countries both in international organisations such as the Word Trade Organisation and the World Intellectual Property Organisation (and other UN organisations) and, where appropriate, through bilateral trade agreements.

How can we encourage innovation and ensure it is used to greatest effect, not just in our cutting-edge industries, but right across the economy and throughout our public services?

Maintaining and improving the IP framework in the UK and elsewhere has a key role to play here for the reasons set out in answer to the first two questions: an effective IP system is crucial to provide incentives for research, frameworks for fair and trusted collaboration, and mechanisms for knowledge transfer and commercialisation. The role of the IP system in supporting R&D and also its successful application across all sectors of the economy and society has been brought into the sharpest relief by the Covid-19 pandemic. In the past, it has been asserted that intellectual property rights are unhelpful in times of crisis, when technological cooperation is most called for. However, the reaction of the UK's biggest IP owning businesses to the current crisis could not paint a more different picture. A combination of continuing innovation and the sharing of hard-earned rights, the result of so much investment of time, money and resources, is being used to combat the challenges facing our society as a result of the Covid-19 pandemic. That sharing has taken many different forms and encompassed many different intellectual property rights. Companies have literally opened their books and shared complex technical drawings, tools, data and know-how. Highly qualified personnel have been mobilised across different companies to ensure that this cooperation is effective in the achievement of key goals. Vital innovation has been pooled and shared to enable rapid progress in technology and pharmaceutical developments. This experience demonstrates beyond doubt that creativity and innovation are essential to ensuring the significant health, social and economic effects of a pandemic are reduced so that the impact we have seen in 2020 *never happens again.*

It would though be a huge mistake to imagine that IPRs are only important for "bigger breakthroughs" or potential "moonshots". A great deal of business innovation is evolutionary and may arise in unheralded fields. Yet its economic and societal impact may be enormous. For example, new solutions to problems in the construction industry may appear low-tech, but they can save materials and labour, shorten timescales, and establish profitable businesses. The IPR system has a major role to play in the incentivisation of green innovation to combat climate change. It is also worth bearing in mind that serial innovators bring their ingenuity to bear across technologies. For example, Sir James Dyson may be best known for vacuum cleaners and other air-moving products, but his earlier innovations were in fibre-glass boats and wheelbarrows. Strong and effective IPRs were and are important for all his products.

How can we attract, retain and develop talented and diverse people to R&D roles? How can we make R&D for everyone?

Attracting, retaining and developing talented and diverse people is crucial in all areas of business, not just R&D. The benefits of a vigorous policy of diversity and inclusion properly targeted are widely recognised. By its nature, R&D stands disproportionately to benefit from the synthesis of the widest mix of inspired ideas and approaches, knowledge and backgrounds. While this question may be focused primarily on front-line research scientists and engineers, it follows from the importance of the IP system to successful R&D that those responsible for applying and devising that system are the best that they can be.

The IP Federation has a formal objective "to promote diversity, inclusion and social mobility in the field of IP", which it is energetically working to achieve in a number of ways. As well as promoting the adoption of diversity and inclusion policies in all its member organisations, the IP Federation has plans to promote n diversity and inclusion directly supporting a social mobility charity.

The IP Federation is also a founding organisation and sponsor of "IP Inclusive". IP Inclusive is a not-for-profit-organisation run mainly on a voluntary basis. The initiative aims to bring people together from across the IP sector in pursuit of a common goal: to promote and improve equality, diversity and inclusion within the IP community. It welcomes IP professionals of all types, at all levels of seniority, from all kinds of working environments and in all parts of the UK. Wherein "IP professional" is defined broadly, as anyone who works in or with intellectual property. That includes, for example, patent attorneys; trade mark attorneys; barristers and solicitors working in IP; staff within IP registering offices; patent and IP managers; IP administrators, secretaries and paralegals; IP licensing executives; information scientists, searchers, translators and any other professionals (including HR and management professionals) working in IP or with other IP professionals; those who provide representative, support or advisory services to IP professionals; and regulators of IP professionals.

Initiatives like these need to be widely supported and promoted across the R&D landscape.

How should we ensure that R&D plays its fullest role in levelling up all over the UK?

During and following the 2008 financial crisis, investment in intangibles including R&D outstripped investment in tangibles and was a key driver for growth in the economy. Intangible investments and their increasing place in the economy indicate a growing dependence on IP rights which protect and quantify intangible innovations. Levelling up the economy across the entire UK depends on a strong ability to generate innovative property as a basis for these investments. This requires widespread access to world-class education, high quality professional services and world-class legal and policy frameworks including IP policy. Social policy also plays an important role. A renewed emphasis on inclusion and social mobility will ensure the most innovative and creative minds contribute to the future of the UK economy irrespective of background.

Energising start-ups and attracting established R&D players to new locations will require investment and infrastructure. Ensuring that timely and accessible IP advice is available will be part of that mix. Science parks that have thrived have shown how beneficial this is for facilitating effective protection, partnering and commercialisation. Many UK companies achieving "unicorn" status have depended on world-class domestic professional services in IP. Expanding the reach of these

services to all parts of the UK and all parts of the economy will drive informed intangible investment and growth all over the UK.

Levelling up includes embracing the 4th industrial revolution (4IR), leading in the development and adoption of 4IR technologies nationwide and becoming a recognised centre for 4IR development. The UK must attract the people, resources and organisations instrumental to these goals through R&D incentives such as tax credits and Patent Box, and comprehensive and resilient IP rights built upon the education and professional services outlined above.

How should we strengthen our research infrastructure and institutions in support of our vision?

A system of intellectual property rights (IPRs) which is robust, balanced, understood, and enforceable is essential in harnessing research effort and investment to an overarching vision and goals. It provides incentives for research, frameworks for fair and trusted collaboration, and mechanisms for knowledge transfer and commercialisation. Within the research structure and institutions, understanding of the importance of IP and how the system can and should be used to optimise R&D and its benefits is patchy. This points to a significant requirement to boost levels of IP expertise in such bodies, for example through training and access to advice. Technology transfer officer and like roles need to be reinforced and given greater input to the targeting of research. Also, while education in IP as part of science and engineering courses has been improved, it should be made more widespread and prominent, and its fundamental importance more enthusiastically and genuinely promoted.

How should we most effectively and safely collaborate with partners and networks around the globe?

A system of intellectual property rights (IPRs) which is robust, balanced, understood, and enforceable when not respected is essential in providing incentives for research, frameworks for fair and trusted collaboration, and mechanisms for knowledge transfer and commercialisation. The UK's IP system is widely recognised as being among the best in the world, and that situation must be preserved. But innovative businesses base their strategy on a global view, taking account of the IP environment in all the states which their operations will touch, be that for R&D, production, or sales, for example. That is why it is important for the UK to be an active player in established multilateral processes, such as that aimed at bringing greater harmonisation to international patent law. The UK government should also intercede with the authorities in other states when their laws and practices fail to provide sufficiently secure or well-enforced frameworks for UK businesses to operate with confidence.

How can we harness excitement about this vision, listen to a wider range of voices to ensure R&D is delivering for society, and inspire a whole new generation of scientists, researchers, technicians, engineers, and innovators?

The UK R&D Roadmap is right to say (on page 58) that the envisaged comprehensive R&D plan "… will only be effective if it is developed with people and businesses across the UK". It goes on to list a range of stakeholders which will be represented in a series of Ministerial chaired meetings to hear from a range of stakeholders from across the UK. The IP Federation would very much like to contribute to that debate, and believes it is uniquely placed to offer authoritative and cross-cutting insights. Celebrating its centenary this year, the IP Federation aims to improve the IP framework to meet the needs of innovative industry by representing, nationally and internationally, the views of UK-based businesses. Its membership of nearly 50

influential IP-intensive companies has wide experience of how IP works in practice to support the growth of technology-driven industry and generate economic benefit. As a cross-sectoral industry organisation covering all technologies, the IP Federation is able to offer a viewpoint which is authoritative and balanced.

Yours sincerely

Scott Roberts, President
IP Federation

c.c. Amanda Solloway MP, Parliamentary Under Secretary of State
Jo Shanmugalingam, Director General, Industrial Strategy, Science and Innovation
Tim Moss, CEO, IPO

IP Federation members 2020

The IP Federation represents the views of UK industry in both IPR policy and practice matters within the EU, the UK and internationally. Its membership comprises the innovative and influential companies listed below. The CBI, although not a member, is represented on the Federation Council, and the Council is supported by a number of leading law firms which attend its meetings as observers. It is listed on the joint Transparency Register of the European Parliament and the Commission with identity No. 83549331760-12.

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