BIG INNOVATION CENTRE

PROVOCATIONS AND DISCUSSION POINTS

INNOVATORS BOARD 20 OCTOBER 2016

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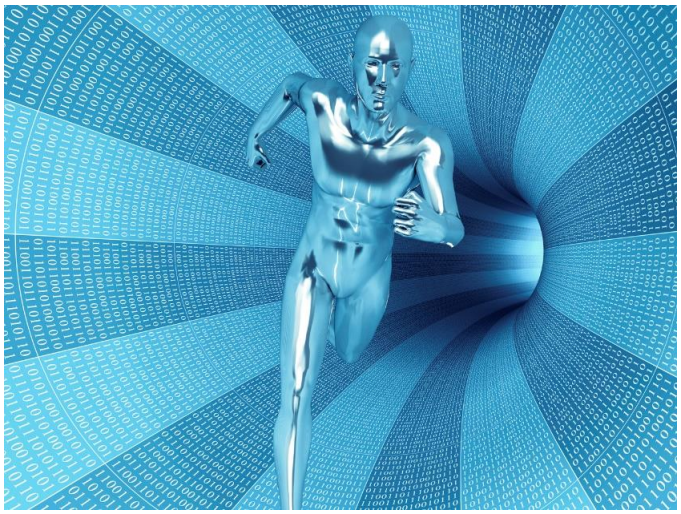
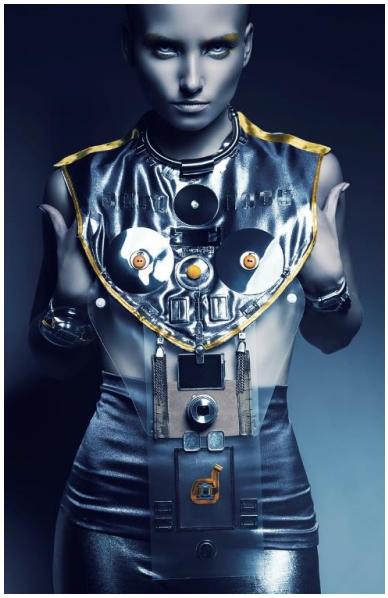
IP BACKED FINANCE: How can firms best be supported in financially capitalizing on their IP assets?

1) ARTIFICIAL INTELLIGENCE: What does it take to build an AI friendly economy?



As part of Big Innovation Centre's vision, we focus on how disruptive innovations can deliver a positive future for 2025. This year we are focusing on Artificial Intelligence, in particular how the use of personal and business data increasingly compels the ethical dimensions of data use to be addressed. Whether transport, health or energy or even smarter day to day living it has become ever more obvious that the capacity to transfer decision making to automated, AI driven machines that have their own capacity to learn – and in some decades time perhaps a capacity to think simulating conscious human beings (although this is disputed) - raises massive ethical questions

Companies deploying AI are going to have to create mechanisms to manage the ethical dilemmas; at the very least introducing purpose statements, stakeholder panels and appeal systems that go well beyond today's pilot processes. For example, Deep Mind is confronting and creating such processes now. However, this needs to be done in a wider context in which basic ground rules about data ownership and use are established legally. We recommend the introduction of a 'Data Charter' on what can be done with personal and business data, including 'Fair Use' & an "Opt-In Unless You Opt-Out" approach to data disclosure.



The greatest opportunities from ideas and 'big data' require links across organisational boundaries. The data and IP rights regime needs to be reframed to foster the open innovation and sharing revolution, encouraging citizens, companies, universities and government to open up to each other and to co-create new technologies and business models. This means that IP and big data policy must shift from ownership rights and data protection issues to governing the uses of IP and data. We need a 'privacy commons' for business and society and a 'charter' on what can be done with personal and business data.

- By introducing a 'Charter' on what can be done with personal and business data, everyone will know how their data is used, which in turn increases trust and creates incentives to allow data to be shared. This means a shift from policies around controlling the use of data to how data use is governed.
- Such a Charter should also introduce 'fair use' of personal and business data clearly establishing that data can be used if you are not competing with the owners of the data or harming their ability to monetise it. This would create a truly free space to innovate by supporting entrepreneurship from the data revolution.

The Charter should also adopt an 'opt-in unless you opt-out' approach to personal and business data disclosure to maximise the public good of data being widely shared. Just as there is no point in being the only one with a telephone or on Facebook, the opportunity from personal data can best be exploited when it is widely if not universally shared. A charter on how business can deploy private data will empower each citizen from birth to be born into a data sharing revolution.

Discussion

- What ethical elements do you consider to be key for the implementation of AI?
- Do you agree on our Data Charter on what can be done with personal and business data, including 'Fair Use' & an "Opt-In Unless You Opt-Out" approach to data disclosure?

2) OFFICE FUTURES: What is the future of your office?

The office is outdated, costly to run, and underperforming. Media, music, and book publishing were the first to face the digital revolution. Now manufacturing is confronted with automation and robotics. The next economic sector to be disrupted will be 'the office'. The first wave of effects will be felt in professional services, public services, and regular, routine office work in companies and manu-services. The professional office is already being impacted by adopting micro-electronics into existing business processes. The next displacement is the creation of completely new routines, from the generation of content and services to their delivery and use.

Bespoke, craft based, professional services are being standardized and systematised, and offered to markets at a fraction of the price, sometimes even free or as part of a commons principle. The impact is not just internal, but will effect the markets for services themselves.

The access to professional services will be transformed as prices fall, reaching beyond rich companies or wealthy individuals who can afford to pay for specialized professional services, or big firms which can afford to operate expensive specialized office departments, such as legal services. The increased quality, combined with speed of delivery and affordability, will democratise access to know-how and the building of capabilities.

The Big Innovation Centre is piloting examples. Thus, our IP Exchange(discussed later in Provocation 4) which creates a world's first peer-to-peer market place for IP using standardized trading sheets at a fraction of the price, and our Big Innovation Map (see item 3) where companies through self-audits benchmark their innovativeness at a detailed level. We plan to use same methods for tools we develop to audit the intangible assets of companies (our Innovation Gold project) and our Lab of Labs which analyses open labs strategies.

Discussion

What opportunities and threats do you see your office facing?

Would you adopt automated professional service systems?

> *The authors (Richard and Daniel Susskind) of "The Future of The Professions: How technology will transform the work of human experts" suggest that most reactions fall into the following categories:*
>
> – *Hope you can hold on to retirement*
> – *Pretend it is not happening*
> – *Build barriers to protect traditional ways of working*

Who will adopt or commercialize BIC's proto-typed automated professional tools (developed or under development) in the area of

- business-innovation capability auditing
- open labs management
- IP licensing and communities
- intangible asset auditing

3) INNOVATIVE CAPABILITIES: How can you transform, streamline and boost your competitiveness?

Innovation in digitalization, internet applications, robotics, automation and AI is transforming businesses. The evidence is that while there is no single strategy for success, an all-around focus is the precondition for navigating through the challenges. We suggest seven broad categories in which to group strategic responses.

1. Cost efficiency and margins - *How innovative is the company in reducing costs and boosting margins, leading to improved financial performance?*

2. Product, service and/or technology innovation - *How innovative and successful are the company's products, services and/or technologies?*

3. Business model and/or strategy innovation - *How innovative and successful are the company's business model and/or strategy?*

4. Human, intellectual and cultural capital - *How innovative and entrepreneurial are the company's people and culture?*

5. Agility and absorptive capacity - *How capable is the company of adjusting to change, responding to opportunities and absorbing external ideas?*

6. Network exploitation and leverage - *How effectively has the company leveraged and exploited its networks for innovation?*

7. Wider impact on society and the economy - *How impactful are the company's innovations on the wider society and the economy?*

Big Innovation Centre is now (via Big Innovation Audit digital tool) able to harness the power of the internet and data analytics to ask each person in each organisation – whether public, private, big or small – what they think of their organisation's innovation profile. The problem with existing innovation business data sets is that they are collected with the assumption that a 'right person' within the organisation is fully representative of their organisation when they fill in a survey. However, the innovative capability profile of organisations is based upon the collective – those who make it happen, from the most senior to the most junior.

Whereas firm level data can bench mark firms againt best practice, throught thought leadership knowledge and computerized data analytics, the aggregate data can be used to map the innovativenes of sectors, places and networks. This online automation of professional services, data analytics and user experience - completed via support services and international market reach - is key to the 21st century learning organization in the fast phased enviroment. Users are corporates, consultancy houses and governments.

Discussion - http://www.biginnovationauditmap.com/

- Are these seven categories useful ways to group strategic thinking?
- Would big companies find it useful to apply the Big Innovation Audit to map the innvative capability of their supplier network?

4) ONLINE IP & KNOW-HOW COMMUNITIES: What instruments are available to firms and universities?

Today's economies' competitive advantage is in intangibles, and the UK should aim to be the world leader in IP commerce with trading extending to intangibles. Using Office of National Statistics (ONS) data Big Innovation Centre estimates that licensing and royalties from IP now account for 5% of UK services exports, and that licensing and royalties from IP now contribute 6% of the UK's services trade surplus. Big Innovation Centre developed an IP Exchange because our partners wanted to turn their supplier networks into open innovation hubs – having flexible possibilities to interact with SMEs and access knowledge beyond their immediate network. Also, universities and public research organizations (PROs) interactions with businesses and communities are fast growing in the UK. Three of the top 50 international patent applicants from global universities are from the UK: ISIS Innovation Limited - Oxford University, Cambridge University, and Imperial Innovations Ltd. Intellectual Property (IP) created by companies, entrepreneurs & universities has become the new foundation of progressive economies. However, we are under exploiting our IP assets. According to research by the EU Patval Survey organisations across multiple sectors believe that they are unlikely ever to license between 25% and 75% of their licensable IP. Of the 43% of the global patent market, only 8% of patents are currently being licensed. Average Brokerage Commissions to trade patents are 25%, compared to 5.3% for real estate and less than 1% for large and small capitalization equities. (Source: ITG, Real Trends, CDC Group, IAM (Intellectual Asset Management) magazine March/April 2014).

The current market for sale & licencing of IP is opaque, inefficient and in desperate need of disruption. IP transactors (those selling/buying IP) are faced with 3 core problems.

- there is no 'marketplace' for sellers and buyers to meet and have opportunities to trade with a wide range of potential transactions: as a result it is hard to find both the best, fit-for-purpose IP & who owns it;
- transactions are too time consuming & expensive, with too many parties at the table including internal decision makers, lawyers, brokers for each item IP trade;
- it is hard to assess the value of IP, undertake due diligence & negotiate a fair price/terms for any given deal.

Existing IP market institutions as governments IP services needs support for the era of IP Capitalism: Although the overall IP transaction market is growing slowly, there is evidence of significant pent-up demand and future potential growth in what is already a large and growing market. There is strong growth in IP registration applications, particularly in rapidly growing economies such as China. Global IP transactions in a market that is widely recognised as too opaque and inefficient are even now estimated at £300 billion, with evidence that the market could be at least half as large again if organisations could more easily licence the IP they possess.

IP Exchange is the world's first and most user-friendly IP online marketplace doing transactions in real time, in an era during which IP is becoming ever more commercially relevant & valuable. The focus is on IP transactions involving patents, copyright, design, trademarks, trade secreats, know-how and research collaborations. We now propose to develop the novel "Pavilion" and "Seller Packages" features. A Pavilion is a community feature where organizations & individuals pre-agree to respect the privacy of meeting each others mutual requirements and disclosing available IP to meet business & institutional needs – an exchange within the exchange, in which hubs or partner organisations can create their space using a series of interactive features.

The strategic gains from the online communities are manyfold, - related to innovation, competetivness, revenue, and building strategic networks. IP due diligence information will be packaged together in unique Seller Packages, thus providing addition support and info for the buyer. We expect our new platform to disrupt current business models regarding IP sales and licensing leading to significant levels of global revenue & profit

Discussion - www.ipexchange.global

- Could UK build an international network of IP clusters and communities on the IP Exchange?:
- Which sectors and who will lead?

5) OPEN INNOVATION HUB COMMUNITIES: How can big firms transform their supply chains?

Over the last five years an increasing number of companies from a wide range of industries have begun to experiment with novel collaborative ways of how they do business and even think – from researching new products to re-configuring how they approach business. Through open labs these businesses can form external relationships in order to co-create with others, enlisting expertise and capabilities outside the company. This allows cross-fertilisation from other business models and technologies, not to mention opportunities for cost saving and minimising the chance of making expensive mistakes. Labs, innovation gateways, design spaces and accelerators have become a popular way for companies to innovate and re-innovate their business models, product markets, and networks. They come in many guises – although heterogeneous, all are recognisably new forms of open collaboration. But how to do openness in an era of uncertainty?

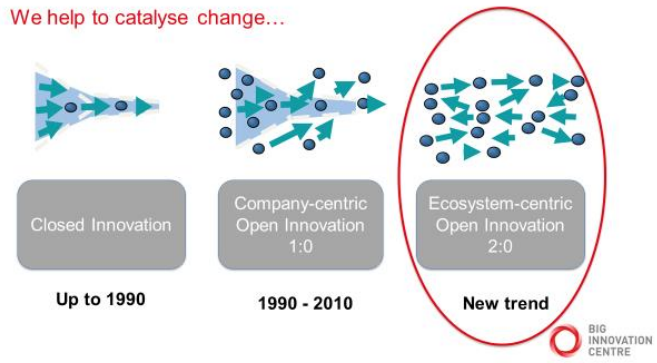
Big Innovation Centre has prototyped an Internet Tool which is able to develop typologies of labs, design how openness is conceived, and how financial paybacks should be calculated, exploring 'what good looks like' in the many types of labs:

- university-business open labs,
- accelerators co-innovating with SMEs,
- business to business co-innovation labs,
- co-creation labs with customers

Discussion

Would you find it useful to analyse your labs in relation to your

- Lab characteristics
- Business and funding models
- Intellectual property (IP) management
- Collaboration models and partner selection
- People management
- Performance management
- Space design or set up



Do UK's major firms aspire to do what Philips Electronics did and transform the UK regions – What does it take?

- Transforming our regions and our supply chains to become innovation hubs like Silicon Valley, Boston or Bangalore is a major aspiration for Europe. Whereas Silicon Valley and Boston developed with close links around Universities, Bangalore developed with close global supplier links to Silicon Valley until it became a thriving hub in its own right..
- Philips Electronics was located in a much smaller provincial part of Europe – but with a good-enough university and looking to outsource IP and technology to an innovative supplier network. Being neither a centre of a global university or with having locally the critical mass of innovative suppliers, Philip developed their own innovation hub creating opportunities for the local region to upgrade, while crowding in expertise from world class academics – often created a link to the local university - and opened space for entrepreneurs to co-create with them locally. They invested in new buildings and converted outdated factory space 'not fit for purpose'. They specialized in value driven intellectual capital (IP licensing), innovation and entrepreneurship.
- There were concerns when Google and other large firms set up in Tech City - that they would crowd-out local innovators and entrepreneurs. Except for offering free rent, did these high-tech companies do anything?

6) IP BACKED FINANCE: How can firms best be supported in financially capitalizing on their IP assets?

The UK success in IP trade is matched by an increasing UK investment in IP and intangibles. The UK's overall investment in IP has doubled from £ 34,313 million (or £ 35 billion) in 1997 to £ 67,941 million (or £68 billion) in 2014, using current price index. However IP backed finance is not a core part of any UK funding programme. The UK has provided no challenge to match Google, Amazon and the like, but it should. High-growth SMEs are key contributors to the regeneration of jobs and economic growth in the 21st century. Unsurprisingly, the very same firms which show the strongest signs of innovation, are IP rich and rich in intangible assets. For high-growth small and medium sized firms the financing problems are especially serious.

The numbers shows that high-growth UK firms have 74% more intangible assets and intellectual property on their balance sheet than their slower growing counterparts, but these firms do not get the support from the financial ecosystem which matches their potential. (Sameen and Quested 2013, Big Innovation Centre report). Moreover innovative firms are finding it harder over time to get funding. 57% of innovators had trouble obtaining finance in 2012, up from 38% in 2007, and there is no evidence that the situation has changed radically since. (Lee, Sameen and Lloyd 2013, Big Innovation Centre report). There is much readier finance available for residential and commercial property than there is for intellectual property – with attendant consequences for property prices and innovation.

The U.S, China and Japan increasingly take over the UK's growth stars, with ARM the latest to be sold. It is widely observed that British companies are too often forced to sell off shares far too quickly and cheaply which hampers their ability to scale up. Often they sell to foreign companies for all the wrong reasons, Britain is renowned for coming up with great inventions – the jet engine, the computer, the medical scanner and now graphene – but it is other countries and companies who have gone on to exploit them.

The decades ahead are going to see many more disruptive and transformative general purpose technologies, of which digitalisation is the most important. There needs to be a wholly new approach.

Discussion

One proposal is to develop underwriting mechanisms to ensure a concrete objective value for IP to allow it to be banked against with less risk. Government agents (e.g. Innovate UK or the British Business Bank) could become the lead UK IP underwriters, creating IP badged and underwritten products and services. Using this underwritten IP as collateral, the financier's funding will be de-risked. Because IP rich companies are more likely to succeed, the government's own risk is less than in other public funding schemes. The scheme could trigger a new commercial IP market place, creating a step change in direct IP funding (loans, equity, grants) to companies and university spin-outs.

- Is this the way forward?

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