



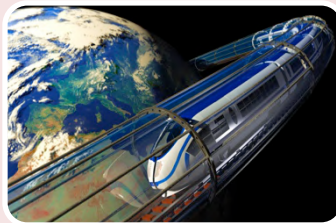
BIG INNOVATION CENTRE

PROVOCATIONS AND DISCUSSION POINTS

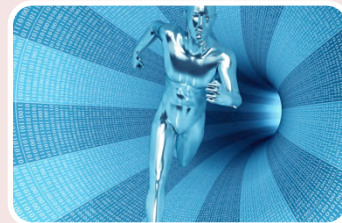
INNOVATORS BOARD 19 JANUARY 2017



1.
BUILDING AN
ARTIFICIAL
INTELLIGENCE
FRIENDLY
ECONOMY



(i)
The Future of Trade
with Artificial
Intelligence and
Automation:
- How good is your
supply chain?



(ii)
A Data Charter:
- What should be
done with personal
and business data?



2.
OPEN
INNOVATION
SYSTEMS



(i)
Big Corporates'
Intrapreneurship
and
Entrepreneurship:
- What does good
looks like?



(ii)
Economic and
Technology
Development
Zones in Britain:
- What do we have
and what do we
need?

1) BUILDING AN ARTIFICIAL INTELLIGENCE FRIENDLY ECONOMY

All-Party Parliamentary Group (APPG) on Artificial Intelligence

Big Innovation Centre (BIC) has just been appointed as the Secretariat for the All-Party Parliamentary Group (APPG) on Artificial Intelligence, in Parliament. Starting this January 2017 the strategy will be set now and it is anticipated it will run for 2 years

It is a cross political party group to be focused on the economic and social impact of AI and evidence gathering for better policy. One early aim is to build a fit for purpose intangible economy infrastructure with respect to policy and regulation around AI and machine learning.

The APPG group on AI will, for example, address ethical issues and emerging / new industry norms and routines (and rules) when applying Artificial Intelligence to machine learning, decision making, natural language understanding, automated reasoning, autonomous systems and more. Without being too technical, how will AI impact financial, health and energy transactions and knowledge-intensive business services and how should it be regulated? How will consultancy, insurance, and legal service be traded and how should the new business models be regulated? What about the associated data? There is a lot to explore and evidence is key for regulation and policy. Of course, the participants will learn a lot from each other at the same time, so it will be fascinating to take part. The group will set many other topics and priorities.

Use cases

As part of Big Innovation Centre's vision, we focus on how disruptive innovations can deliver a positive future for 2025. We are now focusing on Artificial Intelligence.

With increasingly integrated supply chains (business to business trade) and the emergence of the intangible economy in which end consumers are opting to rent rather than buy/own, how will automation and artificial intelligence conceptually change the way we think about trade and ownership? Also, with digital technologies making it easier for data to be shared more than ever before, what is holding us back, and what are the benefits of embracing the sharing economy in this increasingly connected world of new forms of trade 'commons'? (see Future of Trade use-case (i) below)

Focus is also on 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. (see Data Charter use-case (ii) below)

- (i) The Future of Trade with Artificial Intelligence and Automation.
- How good is your supply chain?

Big Innovation Centre believes international trade transactions are set to be transformed with the emergence of automation and artificial intelligence. But how automation and artificial intelligence are disrupting how trade is conducted is still unknown.

For millennia, commerce has focused on exchange of physical goods, natural products, machines, and human capital. More recently, services, knowledge based skills and patents have become an ever-increasing component of world trade. Also, contactless payments and mobile transactions are diminishing the role of cash. As consumers and business' further embrace technology will physical cash become redundant? Are cryptocurrencies closer to being the future, global monetary standard and, if so, what is the future of banks?



How will businesses adapt and embrace technologies that will likely create new supply chains and fluid, personalised marketplaces using real-time data? As Unilever's Director of Commercial Alliances & Supplier Innovation said at The Innovators Board in Big Innovation Centre (24 October 2017): *"I think you cannot digitalize "chicken soup" – but you can – automation, data use and digitalization of the entire business to business supply chain and its relationship with the customers has transformed how trade is conducted"*.

What is happening in the market place, and in particular sectors?

1. Financial transactions (e.g. bitcoin, PayPal and blockchain) – How will these digital currencies impact on the financing of trade?
2. Knowledge-intensive business services - How will artificial intelligence and automation transform how consultancy, insurance and legal service are traded?
3. Energy and clean technology services - With improved solar harvesting and increasing demand for electricity and smart grids, how will this impact the way energy is traded?
4. Fast moving consumer goods - With the regular replacement and disposable nature of many of our modern goods (such as furniture, consumer electronics, chicken soup(!)), what are the new forms of trade relations from ownership to renting or upgrading?
5. Technology transfer and IP commerce – How will commercial trade in scientific knowledge and IP become automated and standardized? Even how Innovate UK wants to transact R&D grants, IP and technology will be affected by automation and artificial intelligence.

(ii) A Data Charter

- What should be done with personal and business data?

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.



revolution.

- 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

Discussion

- What topics do you think the Parliament should consider when building a fit for purpose intangible economy infrastructure with respect to policy and regulation around AI and Machine Learning?

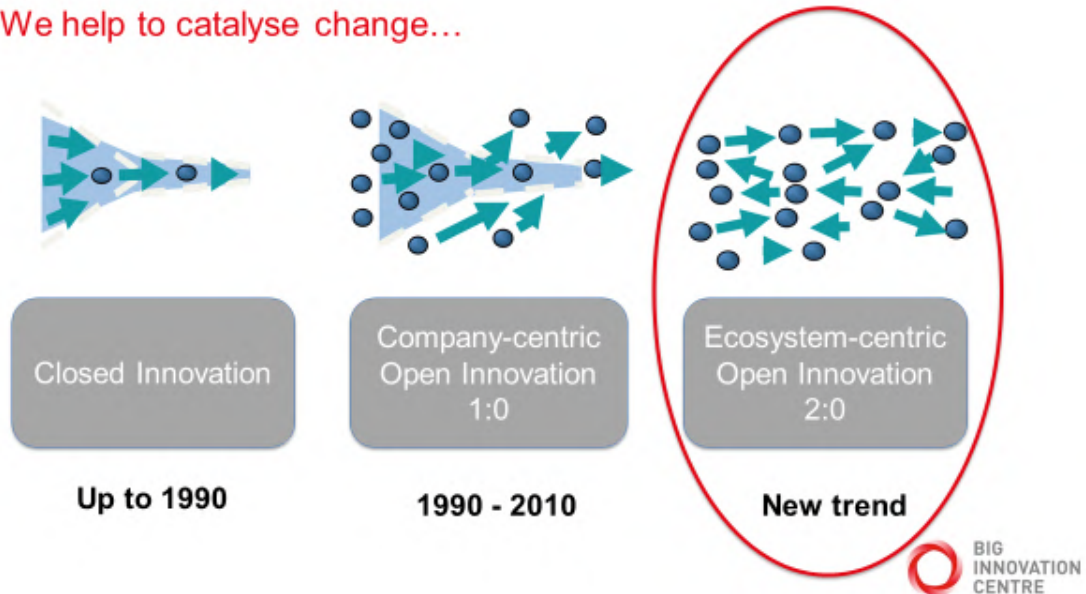
Taking part in the All-Party Parliamentary Group (APPG) on Artificial Intelligence

- **Do you want to take part?**
- You could participate as an 'observer' at all the evidence-giving meetings in the House of Commons, where AI thought leaders and industry stakeholders are invited to give evidence.
- There will be other activities and events as applicable, and high level networks across AI industry stakeholders, Members of Parliament, and thought leaders.
- We plan research to underpin evidence based policy on AI.
- There will be an APPG on AI advisory board.

2) OPEN INNOVATION SYSTEMS

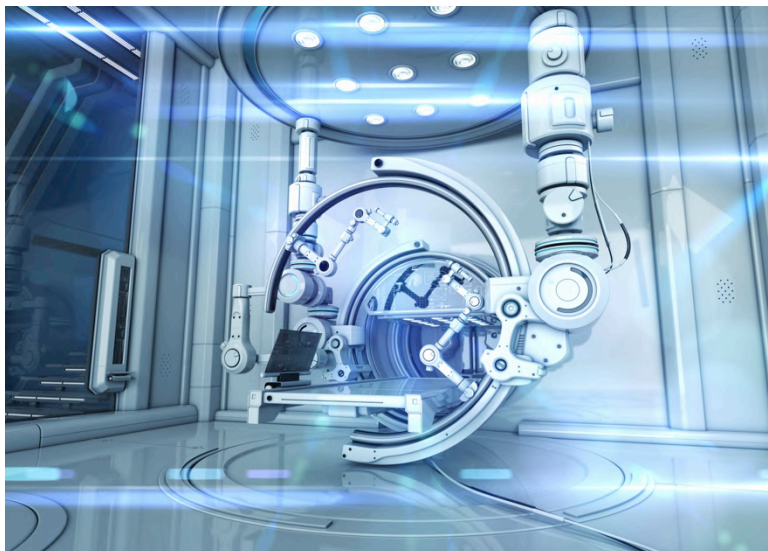
Open innovation and the systems approach are complementary strategies. They are now increasingly being adopted into the way corporates think (see use-case (i) below) and how global regions regenerate (see use-case (ii) below). But what does good look like? Are there lessons to be learned?

We help to catalyse change...



Use cases

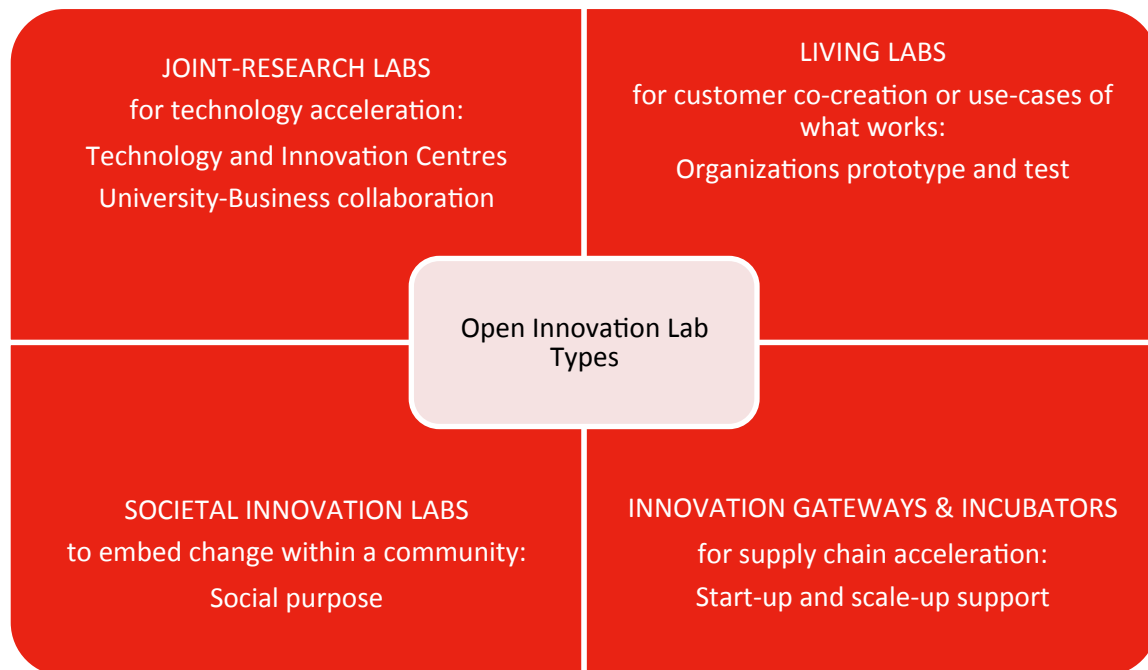
- (i) Big Corporates' Intrapreneurship and Entrepreneurship
– What does good looks like?



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-

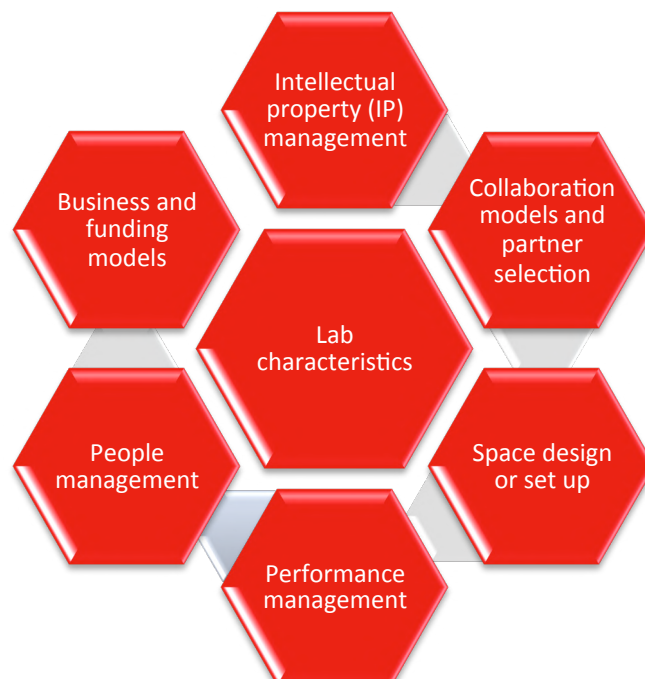
fertilisation from other business models and technologies, not to mention opportunities for cost saving and minimising the chance of making expensive mistakes. Labs, innovation gateways, design spaces and accelerators have become a popular way for companies to innovate and re-innovate their business 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 blueprinted 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:



Discussion:

But what does good looks like?



(ii) Economic and Technology Development Zones in Britain
- What do we have and what do we need?

Transforming our regions and our supply chains to become innovation hubs like Silicon Valley, Boston or Bangalore is a major aspiration for the United Kingdom. There are global exemplars of what works. Whereas Silicon Valley and Boston developed with close links around world class Universities, Bangalore developed with close global supplier links to Silicon Valley until it became a thriving hub in its own right. Eindhoven, located in a much smaller provincial part of Europe, took a different route with Philips Electronics (a big corporate) as the hub – but with a good-enough local university and looking to outsource IP and technology to an innovative supplier network. Philips Electronics crowded 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’. All the approaches created opportunities for the local regions to upgrade. However British regions have few comparable assets, nor have our own efforts so far have shown much success.

China has taken a different, more systemic approach – what it characterises as an ‘Opening up of the system’ approach for regional and economic development, transforming regions and cities with high tech clusters, industrial parks, and taken millions of people out of poverty. Big Innovation Centre’s CEO visited five Chinese regions and believes there are lessons to be learned.



Economic and technology development zones:

Shanghai – Nanjing – Hangzhou – Zhengzhou - Beijing

Hangzhou Smart e-valley



Copying what works in China?

If we adopt a Chinese approach to the Northern Powerhouse and the Midlands’ Engine, as British Economic and Technology Development Zones, what do we have and what do we need?

Borrowing from the Chinese ‘Opening up of the system’ approach, we will map the same categories and diagnostic tools- especially the data - for the Northern Powerhouse and the Midlands Engine as the Chinese use. We will research, building on work with our partners, what a British variant of the Chinese economic and technology **system** model might look like – and how it could be developed

given the two regions' existing assets and what would need to be created to reproduce the Chinese approach.

'Opening up of the system' approach

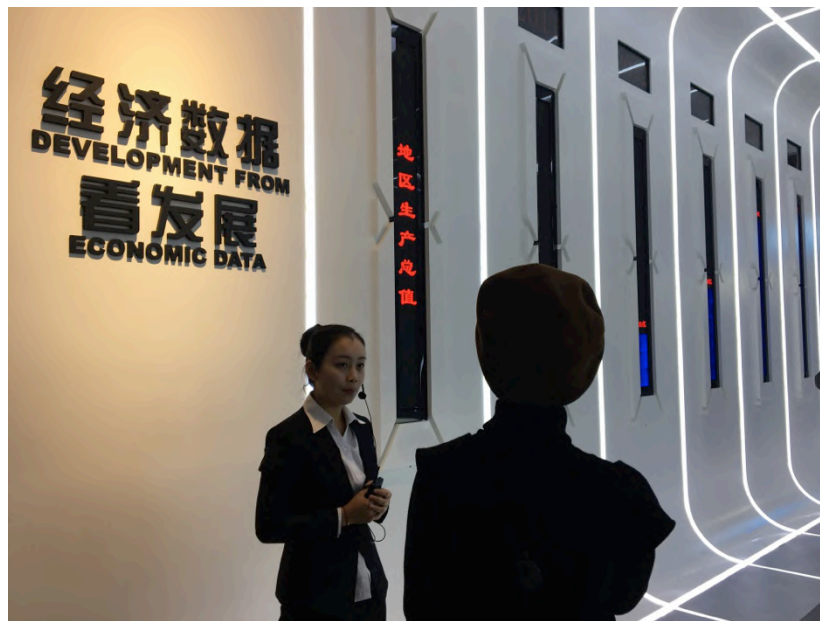
Using the Chinese methodology we propose an 'Opening up of the system' for regional and economic development of the North of England and the Midlands. This requires the building of a sound innovation ecosystem in key areas. Note the emphasis on **systems**:

- Modern industrial **system** (e.g. big industries, emerging industries, related: what is unique / special about the regions).
- Innovative start up **system** (e.g. birth and growth of firms or lack of)
- Entrepreneurship innovation talent system (e.g. university, entrepreneurs, areas of talent)
- Capable global **system** (e.g. any global links or not, export, outsourcing, insourcing, foreign direct investment)
- People's livelihood **system** (e.g. unemployment, living standard, Jobs: Employment security of the whole region, Access to culture and education, infrastructure: International schools, hotels, shopping and entertainment)
- Modern urban and regional **system** (e.g. transport, buildings and land-use, sustainability)
- Modern management **system** (e.g. intellectual property right agents, consultancy agents, specialized banks)
- Regional demonstration **system** (e.g. prototyping zones, museums, expo-centres)

OPENING UP THE SYSTEM: DEMONSTRATION OF STRATEGY



OPENING UP THE SYSTEM: DEMONSTRATION OF THE USE OF ECONOMIC DATA USED AS DIAGNOSTIC TOOLS



How does the Northern Powerhouse and the Midlands Engine currently look in the context of these variables? What needs development?

Benchmarking and “achievements from system construction” (as the Chinese calls their key performance indicators) will be developed from these categories.

EXAMPLES OF “ACHIEVEMENTS FROM SYSTEM CONSTRUCTION”



The success of this type of systems approach is also noted in a new book “The Smartest places on earth – Why Rustbelts are the emerging Hotspots of Global Innovation (by Antoine van Agtmael and Fred Bakker)

Central catalyst

The Chinese economic and technology development zones have a central catalyst, located in a location which features:

- CULTURAL advantages (strong history)
- LOCATION advantage (proximity)
- HUB advantages (airport, highway, railway, sea ports)
- PLATFORM advantage (special support zones, tax-advantage zones)
- INNOVATION advantage (a place with proven innovative capability)

CENTRAL CATALYST: FRAMEWORK FOR LOCATION OF CENTRAL CATALYST



Is there a natural central catalyst in the Northern Powerhouse and the Midlands Engine, and what does it need to excel?

EXAMPLES OF ECONOMIC AND TECHNOLOGY DEVELOPMENT ZONES DESIGN WITH CENTRAL CATALYST



Lessons to be learned?

We're building a Northern Powerhouse



Autumn Statement 2014 announces **£7 billion** further investment in the North

We're connecting up the North to create a Powerhouse by:

- investing **£6bn** in the north's roads, to reduce jams
- introducing **new modern trains**, and **20% more capacity** to end overcrowding
- developing **HS3** to make east-west travel faster
- doubling the number of northern cities to benefit from the government's superfast broadband programme

To build on the North's strength in science, we're funding:

- a new **Sir Henry Royce Materials Research Institute** based in Manchester, with centres in Leeds, Liverpool and Sheffield
- a new **Innovation Centre for Ageing**, in Newcastle
- a new **Cognitive Computing Research Centre** in Daresbury, Warrington
- a new **National College for Onshore Oil and Gas** in Blackpool, with centres at Chester, Redcar and Cleveland

Civic leadership
In November we announced a groundbreaking devolution deal with Greater Manchester, as well as the first metro-wide elected mayor outside London.

Culture
We're committed to developing the thriving cultural heritage of the North, so we're announcing:

- a **GREAT Exhibition in the North** to showcase the best northern art, culture and design
- £78m funding** for a major new **theatre and exhibition space** in Manchester

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Source: Autumn Statement 2014, HM Treasury

Lessons can be learned from the Chinese approach. A quick glance at how the Northern Powerhouse initiative has been planned throws up a few issues:

- Imbalance: £6bn of the £7bn is about roads.
- Scattered: The initiative supports dis-connected local science ambitions,
- Inward facing: The initiative is inward facing not taking advantage of global opportunities
- Lack of vision: The entire initiative lacks a vision
- No central catalyst: it is hard to see how it can catalyse regional development



Discussion

- Which local and national data should we research to measure (or apply to build) regional innovation systems in the UK using the Chinese Opening up the Systems Approach?
- Who can provide the data?

THE FUTURE OF MONEY: THE DEATH OF CASH



Contactless payments and mobile transactions are diminishing the role of cash and bolstering its problematic connotations with the black economy and even the criminal underworld. It is estimated that the U.S loses \$1.3 trillion a year in lost tax to the cash economy, with proportionally similar losses in the UK. As consumers and business' further embrace technology will physical cash become redundant? How will businesses adapt and embrace technologies that will likely create new supply chains and fluid, personalised marketplaces using real-time data and price elasticity? Are cryptocurrencies closer to being the future, global monetary standard and, if so, what is the future of banks?

WHAT DO YOU THINK?



BIG INNOVATION CENTRE

Ergon House, Horseferry Road, London SW1P 2AL

www.biginnovationcentre.com

@BigInnovCentre