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Response to Centre for Data Ethics and Innovation Consultation

COMMUNITY HAT Hub-of-All-Things FOUNDATION

5. September 2018

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HAT Ecosystem

WHAT IS A HAT MICROSERVER?

The HAT microserver is a new technology that confers intellectual property rights of personal data to individuals through their ownership of a database, wrapped with containerised microservices. The HAT microserver is fully portable across devices, but is commonly hosted in the cloud. It is provisioned by a trust anchor and by way of its legal, economic and technology architecture, the personal data within can be legally owned, controlled and processed by individuals. Individuals can install plugs to bring their data in from the Internet, exchange data with applications through data debits and install tools in their microservers to have private AI for insights into their data, their health, their history and their memories. The HAT is fully open sourced but services in the HAT ecosystem are built by commercial as well as non-profit organisations.

Learn more at www.hubofallthings.com

THE HAT COMMUNITY FOUNDATION

The **HAT Community Foundation** (HCF) is a non-profit organisation promoting the use of HAT microservers by individuals, startups, corporations, universities and government. It is the regulator of the HAT ecosystem and represent the community of HAT owners and HAT partners.

Learn more at www.hatcommunity.org

THE HAT DATA EXCHANGE LTD

The **HAT Data Exchange** Ltd. (HATDeX) operates the HAT technology helping organisations large and small change the digital relationship that they have with their customers by enabling them to give their customers HATs. HATDeX supplies companies with bulk HAT microservers and is the creator of the HAT App, Smart HAT Engine, and Milliner and DEX technology services.

Learn more at www.hatdex.org.

THE HATLAB

HATLAB is the knowledge hub and the home of research, education and policy for the HAT ecosystem. HATLAB is the innovation space where new projects, MVPs, and pilots or proofs of concept are created before they go into the HAT live environment. It is home to more than £6m worth of national and regional government funding across 8 universities.

Learn more at www.hat-lab.org.

THE HAT ACCELERATOR

The HAT Accelerator is a start-up and scale-up accelerator programme, helping entrepreneurs and businesses all over the world **create a business** around HATs, or **integrate** their offerings with HATs so that they can **increase their capability in data** and **create benefits** for individuals, firms and society.

Learn more at www.hataccelerator.org.

Introduction

In this response, we addressed the 8 questions for consultation. We first express our opinion in terms of the solutions the Centre provides to address these issues. We also identify the potential issues that may be encountered in addressing these questions. We then propose the potential approaches to addressing these challenges.

Q1: Do you agree with the proposed role and objectives for the Centre?

The role and objectives are comprehensive and appropriate. However, the role of the Centre also sets up challenges. The data economy leaves many questions unanswered, from the economic value of data, the engineering (and re-engineering) of its rights, its ability to create derivatives and signals (Ng, 2018[1]) to opening up new markets. The broad role and objectives of the Centre is generally welcomed, but our concern is its remit.

THE CENTRE'S REMIT

Digital data, encoded as a bitstring, is a sequence of binary digits, 0s and 1s, with the potential to become digital or information goods. These goods range from pieces of code, digital records of people, to retail and financial transactions. One can claim that everything that is digital is data. The speed of moving such potential digital goods across the world is measured in seconds. The Internet is a vast space, transcending national boundaries making government less relevant in some aspects and yet able to influence behaviours in others. It is commendable that the Centre's role and objectives is to advise government on the use of legislative and regulatory instruments for ethical data and AI innovation. However, the statutory limitations of national governments on the Internet must be acknowledged and we propose that the remit of the Centre must go beyond national boundaries, if it truly aims to have a global leadership role. There is a further reason for a wider remit. It is well established that income shifting for the digital economy is a common occurrence, aided by data and data transactions. Indeed, the OECD/G20 BEPS Project was deliberately set up to equip governments with domestic and international instruments to address tax avoidance particularly from the digitalisation of economic activities. The BEPS project sets out to create a single set of consensus based international tax rules to protect tax bases from base erosion and profit shifting to ensure that "profits are taxed where economic activities generating the profits are performed and where value is created"[2]. In the data economy, the economics of the innovation in data is even more complex owing to the way data is generated in one place, processed in another, and controlled in many different ways and locations. For example, AI at the edge can use data in the UK (say, on a device), process it in Asia and return it to the UK. The data supply network that creates value is a web of activities not easily disentangled. Data platforms are not sovereign in nature nor are they constrained by physical territories, and are often multi-national entities. With data supply networks as complex layers, value shifting constantly occurs, not merely for tax reasons, but usually due to power dynamics between business players and the nature of competition on the Internet. Data transactions are often not explicitly monetary but contribute substantially to pricing and revenues. Regulatory arbitraging to find the best data flows for the greatest value and lowest cost is a common phenomenon amongst corporations large and small, and many data-driven contracts between corporations are opaque. The Centre's remit to advise national government presumes that the government has the power to legislate or regulate data flows, when in fact, there is no statutory authority on the Internet. This creates a challenge for the Centre in term of its remit. We propose that the Centre has to be global in nature and has to look for global instruments, including those that are market driven, to achieve its objectives.

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[1] Ng, Irene C. L. (2018) The market for person-controlled personal data with the Hub-of-all-Things (HAT). Working Paper. Coventry: Warwick Manufacturing Group. WMG Service Systems Research Group Working Paper Series (01/18) at http://wrap.warwick.ac.uk/101708/

[2] https://www.oecd.org/g20/topics/taxation/beps.htm

Q2: How best can the Centre work with other institutions to ensure safe and ethical innovation in the use of data and AI? Which specific organisations or initiatives should it engage with?

We would advise that ethical innovation in data and AI have to consider the role of markets. If Britain aims to lead in ethical data innovation and AI, it must respect the cultural frameworks globally that consider data ethics differently from the West, most notably, in the way markets play a role. Prohibition of data use for privacy purposes, for example, may run the risk of being too broad. The role of markets in data could usefully learn from the economics and ethics of markets for human organs (Hansmann, 1989[3]).

We agree that in well-functioning markets, real innovation does not only centre on technical, economical, but also social values by genuinely considering the interests of citizens. Thus, we agree that the Centre needs to clarify the trade-offs to ensure their recommendations deliver the greatest benefits for our society and economy for human flourishing. However, we are cautious that ethical obligations at a reductionistic level (e.g. being imposed on organisations or individuals) could result in the tragedy of the commons. Data can be considered to be a commons, a resource that is shared by several parties. Given the commons problem, we propose that in determining ethical innovation and AI, it is the collective (and the specification of which is collective) that has the obligation for ethical innovation, and not the individual entities within, so as not to have unreasonable expectations of individuals and organisations in a reductionistic manner.

We agree that it is important for the Centre to work with existing institutions such as regulators, renowned research institutes, learned societies and think tanks, leading edge businesses and public bodies, citizens, consumers and civil society, and global collaborators.

However, we must again stress the need for the Centre to be global, working with global organisations such as World Economic Forum, OECD etc. and could advise national governments beyond the U.K.

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[3] Hansmann, H. (1989). The economics and ethics of markets for human organs. Journal of Health Politics, Policy and Law, 14(1), 57-85

Q3: What activities should the Centre undertake? Do you agree with the types of activities proposed?

Yes, we agree that the Centre should undertake these activities: (1) analyse and anticipate: analysing existing regulatory framework and horizon-scanning new and emerging data-driven technologies; engaging all the relevant entities in the institutional field of the use of data and AI; (2) agree and articulate best practices: catalyse and coordinate for the development of standards both national and international, voluntary codes and principles of conduct, framework for the use of data and AI; (3) advice on the need for action: ensuring law, regulation and guidance for keeping pace with developments of technologies; publishing recommendations; provision of expert advice and support to regulators.

It is clear that the activities proposed to be undertaken by the Centre encompass a broad spectrum that commences from research and analysis, to identifying and communicating best practices as well as guiding the regulatory body on practices and standards based on the evolving developments in data and AI technologies. However, it would be ideal for the Centre not to fragment these activities but to instead facilitate a constant flow of information by stimulating dialogues and engagements between the different stakeholders identified under each activity to create synergistic collaborations that will lead to holistic data governance. Although the equation between governance of ethics and innovation may seem interrelated, the one size fits all approach is not plausible under the circumstance that each aspect is specific to context (e.g., ethics and innovation in healthcare creates a different set of possibilities and risks when compared to utilisation of personal data for the purpose of product and service personalisation). The equation becomes further complicated when the economic value of data is added to the mix and how the true economic potential may be obscured when ethical and innovative issues arising from the monetisation are not fully explored within the activities proposed.

We also strongly take the view that, while the current design of activities addresses what currently seems necessary, there are gaps of what is needed to face the challenges that may arise from the future. Hence, it is important that activities are tailored to tackle novel questions and issues in anticipating the consequences of the today's decisions on future generations. The cumulative effects from the technological disruptions affect all. The differing facets about privacy, personal data protection, commercial use, user rights, innovation, digital flow, security, etc., should have the primary purpose of diffusing confusion in the younger generation via inculcating digital literacy to make informed decisions and choices. The key component to this is to increase the ease of adoption of new technologies through education and empowering the future generation on the perceived risks and realities of such disruptions, as well as the sustainability benefits that may arise when embracing new technologies.

We are also concerned that the Centre's activities are too passive. The speed of the data economy and data flows across the globe would need new legislative and regulatory instruments to be developed to incentivise the appropriate behaviours. Would the Centre be tasked to develop the new instruments or does it merely advice that new instruments need to be created? If it is the latter, this need has already been reported by the Royal Society report[4] and the Which! Report[5]. We propose that it is time for action and the Centre is an appropriate place where such instruments are developed, especially with regard to data ownership models and models for economic value assessment. We are also concerned about the over emphasis on evidence and insufficient emphasis on model and scenario building. It is unlikely that data led innovation will have much evidence in practice. The best models may not yet have been created.

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[4] https://royalsociety.org/topics-policy/projects/data-governance/

[5] https://www.which.co.uk/policy/digitisation/2659/control-alt-or-delete-the-future-of-consumer-data-main-report

Q4: Do you agree with the proposed areas and themes for the Centre to focus on? Within these or additional areas, where can the Centre add the most value?

Yes, we agree that these proposed areas and themes for the Centre to focus on are important such as: (1) targeting; (2) fairness; (3) transparency; (4) liability; (5) data access; (6) intellectual property and ownership. However, we propose that the Centre should be re-prioritising their efforts to where the Centre can add most value, which we recommend as:

- **Intellectual Property and ownership.** This should be the first and foremost priority for the Centre and where the most value can be added due to the following:

Data has the economic property of *non-rivalry* and *expansionability* (Ng, 2018; Quah, 2003[6]). That means the same data can be copied again and again and put in different places without a high marginal cost to the original technological source that obtained it. Data portability under GDPR is creating more copies of such sources for different economic uses. However, the IPR of data depends on where it sits at rest, how it was obtained from the source and how it is used and re-used (with or without conditions, liens, encumbrances). All other recommendations for ethical innovation and AI will fundamentally depend on this. For example, Facebook data sitting in Facebook may be owned by the individual but all rights of data at rest, in transit and in use are controlled by Facebook. Conversely, Facebook data sitting in the HAT (hub-of-all-things) microserver obtained by the owner through subject access ascribes different intellectual property rights due to the owner's database rights on the HAT microserver. This is the same with user-owned databoxes at home, user-owned devices at the edge. This same data, resting in different places would have different legal, economic and technological properties and create different uses for ethical innovation and AI. It fundamentally changes all aspects of targeting, fairness, transparency, liability and data access as well as how markets form around the data. For this reason, we recommend that IPR and data ownership models is top of the Centre's list of activities. The IPR issue affects:

- **Data access**: Depending on the IPR of the data which can change when it moves, the Centre has to recommend the appropriate incentives and structures for the creation, collection, sharing and analysis of data.

- **Transparency**: Data transparency (technically and policy-related) and the mechanisms for recommendations for individual decisions has to be made clear but more importantly, how the derivatives of the data and the inferential signals from the data are transparently treated. Finally, the ways data moves on the Internet to create value for different entities have to be appropriately modelled. Much of value creation is at an ecosystem/network level, so sources may not be aware of other sources. There is a great danger of "flattening" or changing the structure of data value networks in the attempt to regulate it. Hence, transparency has to first understand value creation in the complex web of data networks.

- **Fairness** With data being expansionable, the sharing of economic rents have to be considered, especially with respect to source. However, sharing models have also to be considered with respect to the market. Who ascertains fairness? Allocative efficiency can be created from markets and through central planning. Who decides on the allocation? There is a real danger of conflating the data market economy with simple idealogues. There needs to be proper economic modelling to understand when and how social welfare can be best achieved either by the market in a data economy or through greater regulation and intervention.

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[6] Quah, Danny (2003) Digital goods and the new economy. CEP discussion paper; CEPDP0563, 563. Centre for Economic Performance, London School of Economics and Political Science, London, UK at http://eprints.lse.ac.uk/2236/

- **Liability** The Centre can develop new models of liability for IPR in data in decentralised systems and the use of autonomous systems; the distribution of risks and benefits across the sectors in such systems.
- **Targeting** The Centre can evaluate and recommend best practices for targeting, which is dependent on the derivatives of data (e.g. inferential signals) to ensure that individuals would receive the recommendations and services which they value from personal own/control data. We believe the market for data signals and achieving better matching and targeting can be a big contribution to the economy and we believe the Centre can contribute substantially to this.

Q5: What priority projects should the Centre aim to deliver in its first two years, according to the criteria set out above?

The first project that should be prioritised following from our response to Q4 is to explore data ownership models and to recommend the type of ownership and IPR models that would have the greatest economic allocative efficiency and with the lowest externalities and costs to society. These would include various centralised and decentralised data ownership models.

The second project is to create transparency around current data value networks and contracts, in particular the advertising economy, and create transparency around the contracts between various corporations. It is one of the Internet's worst kept secret that broadband providers contract with corporations in the advertising supply network directly for the flow of data into consumers' homes. While it may be for the good intention of not burdening consumers with ad data volume, the situation is slowly becoming untenable as more analytics and AI are done, resulting in reduced broadband speeds, completely opaque to the users.

The third project is to start a test bed on scenarios using the works from the first and second project to create a sandbox of innovation experimentation and scenarios.

The final project we propose is to bring evidence-based empirical understanding of personal data as currency - where the value of data is not certain or non-contextual, but a holding pattern could be created to ensure data use at the highest value can be achieved. This would require a mapping of real use of data and the value it creates.

Q6: Do you agree the Centre should be placed on statutory footing? What statutory powers does the Centre set out above?

Yes, we agree that the Centre should be placed on statutory footing.

The Centre needs to have statutory powers to enable it to request information from institutions engaged in the data economy so that it can obtain evidence for providing its recommendations.

The Centre, through its statutory footing, can clarify and standardise the overlaps between regulatory bodies for example ICO, HMRC, FCA, all of whom seem to have a different set of working rules for innovation, compliance, data access and liabilities, just to name a few rules.

Statutory footing is also necessary to request opaque 'back-room' contracts between data controlling entities on the Internet.

However, since there is no statutory authority to regulate the Internet, we caution against the remit of the Centre. There is a real danger that increasing regulation in the data economy for just the UK, even with the best of intentions, could result in even more regulatory arbitraging, loss of tax revenues and reduced economic growth. We therefore recommend that the Centre consider developing market instruments and incentive mechanisms for intervening on the Internet.

Q7: In what ways can the Centre most effectively engage stakeholders, experts and the public? What specific mechanisms and tools should it use to maximise the breadth of input it secures in formulating its actions and advice?

We agree that the Centre need to deploy a range of mechanisms to engage with a spectrum of stakeholders and experts and draw on the insights and perspectives of all these organisations.

It may seem to organisations that the gain in competitive advantage by capitalising on the asymmetry of knowledge outweighs transparency or changing their policies. Such actions leads to surveillance capitalism that causes a trust deficit in the eyes of the public resulting in tightening of legislation by the government and consequently creating a vicious circle. The Centre should ensure that all stakeholders, experts and the public should play a proactive role to be stewardship of data for sustainable development and innovation and not impede its potential. The positive externalities of data are realised when data is shared and utilised responsibly and ethically across the different economic actors. As such, questions such as how can industry play a pivotal role in creating a sustainable future in this digitalised economy by working together to support data-driven insights across organisations and sectors as well as how can society in return contribute to these outcomes have to be on the agenda. The Centre should strive to build momentum for greater collaborations between policy makers and other spheres of authority, industry, experts and the public in resolving issues on the trust deficit. The engagement should be proactively nurtured rather than reactively enforced.

We believe that the Centre can be innovative with this.

We propose that the centre operate a “test bed” that is able to test reactions and impact from various viewpoints, and allow stakeholders to participate in the test bed to simulate new models where there is insufficient evidence, to learn from one another, and to adopt best practices; as well as a regulatory role to experiment and observe innovation and ethics challenges. However, we believe that actual instruments and artefacts must be created and engineered to illustrate and exemplify concepts that are of a social science nature e.g. behaviours, rights, perceptions and beliefs at the individual level and transactions, business models and economic instruments at the meso level. The creation of actual exemplar social, legal, technological and economic artefacts that could be used by governments and industry would be a much more powerful driver of change, and evolve the empirical understanding of the data economy.

If the data economy is to be as large as the financial economy, resources that include the development and operation of interventions and support mechanisms for the data economy, much like the Bank of England is for the financial economy, must be considered (for more details, see provocation paper for the Royal Society[7]).

The test bed could be a “TEBBI” (Technological-Economic-Behavioural-Business) sandbox to allow stakeholders to engage in the innovation and allow the Centre to formulate actions and advice. These stakeholders include individuals as testers of different concepts as well. A subset of services with different groups of stakeholders could be managed as different panels.

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[7] https://royalsociety.org/~/media/policy/Publications/2017/Data_management_and_use_governance_in_the_21st_century_2017_seminar_report.pdf

The sandbox/test bed will fill an urgent need to harness the insights from multi-stakeholder discussions and collaborations between policy makers and industry to engender free-flowing dialogues on resolving the tensions between economic growth and the externalities created (e.g. loss of privacy), beyond just talking about it, giving stakeholders an actual experience of what is being done. It would operationalise and make concrete an actionable plan to narrow the gap in digital trust that has greatly widened amongst the key stakeholders.

There is also the need to reconcile the dichotomy of trust and perception of trust and the heterogeneity of society. While it may seem that there is a trust deficit, evidence shows that apps are created everyday with new data hogging services consumed by many people. The heterogeneity of society needs to be carefully weighed otherwise the Centre will seem to be representing a subset of society that overly weighs data privacy against the data commons.

As mentioned, in this is a digitised world, data transcends jurisdictional borders and consequences of disruptive technologies from abroad can have a direct impact on the UK. Accordingly, the focus of the Centre should not be limited to a national scope but instead connect deeply with diverse communities by incorporating an international body that engages in dialogue to determine best practices for privacy, security and economy; cultivating devotion to the cause of free flow of data; and providing the right resources and tools to being a global citizen. However, the creation of such initiatives need not be constrained to a single comprehensive body but instead embrace competing approaches and viewpoints. The Centre should adopt a global approach when formulating its actions and advice by engaging closely with other nations. A global outlook programme with the aim of developing a framework for collaboration to assess the progress, set benchmarks and further redefine the best practice guidelines should be aligned to the Centre's proposed area of targeting, fairness, transparency, liability, data access as well as intellectual rights and property ownership.

Q8: How should the Centre deliver its recommendations to government?

Yes, however, we suggest that transparency and openness are needed not at the stage of delivering the reports, advice and recommendations but be a principle for the whole process of developing these reports, advice and recommendations. The challenging issue is how to make the whole process more transparent.

Transparency and openness are crucial for gaining trust and enhancing engagement of stakeholders to the development of advice, recommendations for ethical use of data and AI innovation. Transparency is an attribute of an entity. In order to enhance transparency, the public need to gain information about the operations and structures of a given entity. In our context, the entity is the Centre. The centre would need to make the process of the development, the principles, framework and advice/recommendations accessible and approachable to the stakeholders and public. Also their opinions/voices need to be revealed and represented in this process. In this space, the centre can also be innovative. For example, using an ontological engineering approach perhaps within the sandbox/test bed environment, the centre can publicly demonstrate the process and graphically reveal the result of the analysis. Based on the analysis, the key issues could be identified and then the stakeholders can engage in the shaping of the principles and recommendations. This would enhance their engagement and improve the transparency of the Centre.

The HAT Community Foundation represent a community of organisations and individuals who have developed new ownership models of data. We believe the data ownership and IPR can be designed and engineered to be owned by individuals and have created artefacts (the 'HAT') to that end through >£4m of UKRI and private equity funding and a further £6m of funding for its use in research. We believe a balanced IPR distribution of data between corporations and individuals that is clear and well defined is the future of market making, economic growth and is better for society.

We look forward to engaging with the centre and would be happy to contribute to its mission, role and objectives.

(For more on the HAT ecosystem, please visit https://hubofallthings.com.)

This response is a combined response from 4 HAT Entities on behalf of its ecosystem partners and members:

HAT Community Foundation Ltd (https://hatcommunity.org)
HAT Data Exchange Ltd (https://hatdex.org)
HATLAB @ University of Warwick (https://hat-lab.org)
HAT Accelerator (https://hataccelerator.org)

Authors

Professor Irene Ng
Professor of Marketing & Service Systems, University of Warwick; Director, HATLAB; CEO, HAT Data Exchange

Dr. Susan Wakenshaw
Research Fellow, WMG, University of Warwick

Dr. Lalitha Dhamotharan
Research Fellow, WMG, University of Warwick

Dr. Xiao Ma
Senior Fellow, WMG, University of Warwick; Director, HATAccelerator

Paul Tasker
Chief Executive, HAT Community Foundation Ltd

Professor Roger Maull
Deputy Head of the Department of Digital Economy and Professor of Management Systems, Surrey Business School

Professor Jon Crowcroft
Marconi Professor of Communications Systems, Computer Laboratory, University of Cambridge

Professor Glenn Parry
Professor in Strategy and Operations Management at Bristol Business School & University of West England