

Nesta...

NESTA IDEAS BANK: IDEAS TO TRANSFORM SCOTLAND

April 2016

Introduction

The best political debate is a combination of the practical and the inspirational, the imaginative and the gritty.

Nesta in Scotland has prepared this collection of policy ideas that offer what we believe to be vital contributions to the political discussion ahead of the May 2016 elections and afterwards. Our hope is that they offer radical ideas that are nonetheless grounded in reality – typically in the work of Nesta and our partners from around world.

Scotland has the opportunity to transform itself in 2016 and beyond. With substantially increased focus on the role and powers of the Scottish Government this opportunity is not one to be missed. Particularly the extended powers over areas like tax which are new to the Scottish Government. Whoever forms the government in May can transform our democracy and the relationship between people and public services. There is a huge potential in growing the creative economy. A focus on better data use could allow people to take control of many more aspects of their lives, particularly their health and care.

The unprecedented increase in demand for involvement in public decision-making means Scotland can lead the world in renewing democracy using participatory and online methods. By bringing together approaches that put people at the heart of decision-making we can make rapid and substantial increases in the quality of decision-making – decision-making that is, more than ever before, people powered.

The shared vision of using public services in a preventative way is world leading, and the new health and social care partnerships offer a test bed for real prevention. With effective experimentation, more voluntary action and better use of data we can create a people-powered health and care system.

To make sure that innovation is at the heart of government activity, a government innovation lab could bring together the best ideas from across Scotland, and beyond. The opportunities for cross-sectoral and international learning are too great to be missed. By investing in bringing these ideas together and focusing on how we can replicate them we will be better able to meet Scotland's needs.

We hope to have the chance to work on developing some of them in Scotland in the months and years to come. If you would like to discuss any of them further, please get in touch.

1. A people-powered health service focused on prevention

Patients, peers and communities represent a huge resource that the health service is poor at tapping into. There is a massive opportunity here to improve health and reduce costs.

We live in an era of long-term conditions. For 99 per cent of the course of their disease, people with long-term conditions will be away from contact with clinicians, and will rely on themselves, their peers and their local community. We can choose to invest in and leverage the capabilities of society to prevent and manage ill-health. Or we can pay later, as problems turn up at the front door of A+E.

Generosity is not the issue. There is a tremendous willingness on the part of the public to give their time and energy. One striking example is nearly 9,000 Shared Lives carers who welcome into their own homes and family life nearly 13,000 adults with significant support needs. These people, often with learning disabilities, mental health issues or dementia, either visit regularly or move in to live as part of the family.

Instead, we need to build the quality of the opportunities on offer, and the ability of the statutory sector to integrate these initiatives. This includes ensuring that the 'ask' to volunteers is timely and clear and enables them to do something that makes a real difference to people and health services. It also means designing health interventions to maximise the chances of people taking up health-creating behaviours (rather than persisting with behaviours that undermine health). We need to develop the evidence base, refine our collective expertise, build capability in the sector and raise awareness that these approaches are effective.

Where good evidence exists, such as for diabetes peer-support or supported self-management, concrete policy targets should be adopted in conjunction with initiatives like **People Powered Health and Wellbeing**. How much could we improve people's quality of life, and prevent acute demands on the NHS, if we committed to everyone living with diabetes in Scotland having access to peer support by 2021?

Read more about Nesta's work on people-powered health here: www.nesta.org.uk/health-lab

2. The connected patient

Patients are becoming increasingly connected. We already have pills that broadcast a signal when they have been swallowed and cheap home electro-cardiograms that can pick up intermittent heart arrhythmias. Looking ahead, it won't be long until we see new products like contact lenses that measure blood glucose levels.

Given Scotland's strong record on health data there is a real opportunity to become leaders in connected health. Patients and doctors are already using this data together. A recent Nesta survey showed that 15 per cent of patients with a longer-term condition are already using digital technology - whether an app or other IP-enabled wearable device - to track their symptoms. More surprisingly, 89 per cent of GPs in the UK said they found patient-generated health data like this is useful in consultations.

In coming years, we believe that medical practice will increasingly take advantage of this. Prescribing a sensor that a patient can wear will be the normal outcome of a GP visit, determining if referral is necessary, and making sure any follow-up is well informed.

What we lack today are analytics that can extract a useful signal from complex data. There is good reason to think this will come. The rapidly increasing ability of machines to make complex judgements is in evidence all around us - self driving cars, facial recognition, voice recognition, natural language processing, etc. The efforts of Apple, via HealthKit and ResearchKit, and Google via DeepMind Health, to explore this area, show the serious resources already at work here.

There are three reasons why connected patients and smart analytics should be seen as highly significant, clinically and financially.

Firstly, knowing more about patients allows us to apply medical knowledge in a more timely and accurate way, with fewer errors. Clinical medicine has become amazingly good at deducing diagnoses from a fairly small amount of information. However, connected patients can make diagnosis and monitoring much easier and more reliable.

Secondly, connected patients who share their data could boost medical research progress. Medical science typically concerns itself with the average response to the treatment of a patient with a single diagnosis. It tells us little about what causes variation between patients, and what to do about patients with more than one condition. Rich data from connected patients, combined with advanced analytical techniques, is likely to be far more effective at unearthing these complex relationships than successive randomised controlled trials. They could also be much cheaper and much faster.

Thirdly, this precision medicine could help reduce costs. In medicine, unlike almost any other industry, new inventions and technologies have largely increased costs. Each new treatment or intervention requires an accompanying dose of clinical labour, and sometime a whole new specialism. Precision medicine is different. It improves the speed with which the right diagnosis and treatment plan can be arrived at, and our ability to adjust and respond in real time. As well as better care, this is could often means less clinical time, and less senior clinical time.

To realise this potential we need to:

Develop the analytics. The integration of health and social care offers us the opportunity to gather data sets of the size and quality necessary for which data scientists can work. And doing this requires that we:

- Build simple and clear digital consent procedures. This new data is produced, owned and controlled by patients. The public do not tend to support ideas that seem not to respect this ownership. So, as is right, it will be accessed on their terms, and with their consent.
- Produce well-defined interfaces with compelling functionality. NHS patients tend to be older, and of a generation that is not well served by digital developers and designers. Digital interfaces remain hard to use, for those who did not grow up with them.
- Finally, and most importantly, we need to do all the above with people. We need to build active communities of engaged patients that are working on these problems together with researchers and developers.

3. Leverage the data we have

Billions have been spent on health IT and informatics over the last few decades. We are finally in a position to reap the benefits.

Real integration of care cannot happen without a unified view of the patient. If complex and changing teams of professionals are to provide a coherent and efficient service to an individual, then there must be a single (or connected) record holding all clinically relevant information and a single care plan collectively agreed on. We're still a long way from this, and it is a key reason that integration has proved frustratingly elusive over 30 years.

The NHS in Scotland has world-class data, both in terms of quantity, and in the extent to which that data is linked. There is much more that can be done to learn from this data. It is standard practice for most businesses to continuously examine their data, constantly tweaking and testing to create marginal improvements to user experience and profitability. Google and Amazon do this, but so do older businesses such as Tesco, Easyjet, or GE. There is a massive opportunity for the NHS to learn much more from its data and use this to constantly improve its own processes and ways of working.

The health service needs to take a more active role in originating and rigorously testing approaches. Of particular importance are process and service improvement. Initiatives such as the WHO surgical checklist, or senior doctor triage in A+E, show that significant outcome and cost gains are possible from the arrangement of people and the communications that take place between them. Robust and real-time data can provide a spur to innovation and also improve people's experience of the health system.

4. Make Scotland the world's first evidence-based government

There is a huge opportunity in taking a rigorous approach to implementing what we know works. With better evaluation of programmes and a commitment to experimentation and measurement.

Scottish Government has started the innovation process with a commitment to prevention through Change Funds. The largest was to pave the way for Health and Social Care Integration. These funds were used to support innovative programmes that could start to deliver on prevention. They have been successful in funding a wide range of innovative programmes, but often the evaluation takes too long. Too often the effectiveness of a programme is assessed on the sole basis of years of experience. When innovative change is required there should be a confidence about being experimental and prototyping new approaches. This will require more tolerance of failure – but unless we are willing to try new ways of doing things we will find prevention difficult to deliver.

With the devolution of the Work Programme and disability related benefits a strong evidence base for design, delivery and evaluation of these programmes will allow better benefits for those who need them most. It may also allow Scotland to lead the UK in effective changes to social security.

5. A citizen's income

Increasing automation and a crisis in social security have made the case for a Citizen's Income, or Universal Basic Income much more attractive. There has been a great deal of work on Citizen's Income by organisations like [the RSA](#). At the same time there is an emerging understanding that the most important barrier to a better society is inequality in wealth, which is often in the form of land and property, rather than income. With Scotland having the most unequal land ownership in the OECD, the case for linking a land tax to a Citizen's Income could address both problems at once. There has been a great deal of attention on local taxation, but new powers coming to the Scottish Government will allow the creation of a new national tax. This additional tax could be focused on high-value estates and distributed as an annual income to all.

By both addressing the problem of unequal distribution of land and assets, and creating a Citizen's Income we can help with the transition to a more automated economy, promote equality and help people to study and pursue careers in creative industries.

Read more about [Nesta's prediction on Citizen's Income here](#).

6. Build Scotland's economic future on creativity and technology

Scottish Enterprise should prioritise Regional Selective Assistance funding to develop creative clusters, with matched funding from the private sector, local government and cultural funders.

Scotland has a history of bringing technology and creativity together to lead the world in innovation. Today this means we need to catalyse manufacturing that is design-led. As we move from fossil fuels and heavy manufacturing, digital making, video games and design-led manufacturing will become more important.

Our analysis of the Office for National Statistics' Annual Population Survey suggests that, as in the UK as a whole, creative jobs are clustered across Scotland. The top three Scottish areas (at the NUTS-3 level) in terms of number of creative employment (Edinburgh, Glasgow and Aberdeen) account for 43 per cent of all creative jobs compared with 34 per cent of the workforce as a whole.

Nonetheless, hotspots of creative activity are to be found across Scotland, and growing these clusters requires strategic investment from local government, universities and cultural funders. We suggest that a targeted public fund should be set up in Scotland using Regional Selective Assistance money to incentivise this investment.

Similar investment schemes across Scotland have shown significant return - leveraging private funding sources to develop clusters alongside public investment. As highlighted earlier in 2015, Scottish Enterprise's Scottish Investment Bank (SIB) invested £66.5 million into 155 Scottish companies during 2014-2015, leveraging a record private sector investment of £99 million. This investment has been seen in a diverse range of 'growth' sectors, including life and chemical sciences, energy, technology and advanced engineering, food and drink, and importantly 8 per cent of total investment was made in creative industries.

7. Government should invest in 21st century infrastructure

Scotland's record on installing high-speed broadband should be extended to ensure that we are best placed to take advantage of the 21st century economy. This will both promote inclusive economic growth and allow a flourishing creative economy.

Having the right digital infrastructure is essential to many creative companies, which rely on fast and reliable connections for sharing, editing and distributing creative content across the globe.

Groundbreaking initiatives to boost connectivity in some of Scotland's largest cities are at early stages. They include the likes of Edinburgh CORE by CityFibre, which will roll out a new ultrafast network to enable gigabit connectivity for around 7,000 businesses. Importantly, the recent DCMS Digital Communications Infrastructure Strategy outlines the UK government's aspiration to bolster ultrafast infrastructure, and promote innovation in infrastructure installation.

Ultrafast technologies are in developmental stages when it comes to implementation on the ground in the UK. As in other policy areas where technological and market uncertainties are great, governments should not underestimate the vital role they can play in uncovering opportunities through experimentation with digital technologies, on behalf of and jointly with the commercial sector.

We suggest that the government create a £10 million Ultrafast Digital Infrastructure Demonstrator fund for Scotland. This would support adoption of a dynamic, experimental approach to infrastructure investment, working with the private sector to generate knowledge about workable technologies, applications and customer demand for ultrafast speeds where this may unlock barriers to investment. This would include working with those commercial providers, like CityFibre in Edinburgh, who are at the cutting edge in already devising different ultrafast solutions for their communities.

8. Rethink how we fund the arts to support the Scottish cultural revival

Nesta recommends that arts and culture funders like Creative Scotland should devote at least 1 per cent of their budgets to Research and Development in their sectors, as should their counterparts in the rest of the UK. Across the UK as a whole, the largest funders should in addition between them commit £10 million each year to piloting innovative financing schemes like venture funding and accelerators. Nesta suggests that, with plausible assumptions for co-funding, these measures alone could attract up to £72 million in additional funding for the arts through matched funding.

This would mean greater support for initiatives like Creative Scotland's Public Art Research and Development programme, which ran during 2013-2014, but in August 2014 the fund was closed. Arts organisations are now directed to the Open Project Fund, which does not prioritise research and development, but covers a range of activities including the arts, screen and creative industries; supporting projects that help organisations explore, realise and develop their creative potential.

9. Back Scotland's world-beating video games industry

The Scottish government should work with the UK government to establish a National Lottery distributor for the video games industry, following the model of the BFI.

The UK games industry is experiencing rapid growth - in part, led by an entrepreneurial boom. Not only is the number of companies increasing by 22 per cent year-on-year (to 2014), the industry as a whole is much larger than previously thought: we have found 1,902 games companies active in 2014, which we estimate could be contributing to the UK economy as much as £1.7 billion. In Scotland, balanced games hubs like Dundee and Edinburgh show a strong mix of large, established companies like Rockstar North, and smaller, younger companies which are often IOS specialists.

The UK government has already recognised the cultural significance of video games through providing tax relief for video games development. It should now follow through its logic by setting up a separate video games National Lottery distributor which, following the example of the BFI, would champion 'a breadth of bold and distinctive games development across the UK, nurturing new talent and enriching UK culture'.

This would enable burgeoning Scottish games talent and leading Scottish games companies alike to benefit from targeted funding. The industry would work with the Big Lottery Fund Scotland to meet local needs in addressing challenges like skills and infrastructure. This prioritised funding would ensure the growth of the games industry and further access to games as a cultural activity in Scotland.

10. Build a STEAM-powered education system

We recommend that Creative Scotland make a commitment to exploring the role of STEAM (**S**cience, **T**echnology, **E**ngineering and, **M**athematics + **A**rts) in bridging creative and technical skills to prepare students for the workplace of the future.

Nesta has shown that working alongside automating technologies will become increasingly more commonplace, and many routine components of existing jobs will be replaced by machines in coming decades. Therefore, an important component of this debate is the role of Careers Advice in raising awareness of the role that STEM and Arts skills will play both within creative industries, and the creative economy more broadly.

You can read more about [STEAM in Scotland here](#).

11. Create a new Scottish enlightenment by building trust in data

To make the most of new digital technologies, like big data, we need trust: companies need to be trustworthy, regulations need to encourage trust, and citizens need to be happy with the rules. Too often our data is harvested without our full knowledge, or comes to attention when it is

If Scotland gets this right we can have a new Scottish Enlightenment in many of the leading technologies of the 21st century. Scotland already has significant strengths in the most significant of these areas like digital healthcare and big data.

Scottish Government should encourage this by proactively developing a Scottish strategy for privacy, data and digital technologies, and using its power to regulate to enable this.

12. Crowdsourcing legislation and grassroots democracy

Scotland's people and communities have a real appetite for more involvement in the decisions that have an impact on their lives. The referendum saw a deepening and broadening of the public debate and a real desire for more participation in democratic processes. While Scotland has led the way with a Parliamentary petitions committee, there is a great deal of exciting democratic practice both within and without Scotland that we should draw on. The CoSLA Commission on Democracy has identified a democratic deficit in our communities. We can make rapid progress in addressing this using already existing participatory tools and digital platforms to include many more people than ever before.

In Finland **Open Ministry** has assisted citizens in drafting laws over the past couple of years. An amendment to the Constitution passed by citizens' initiative amendment in 2012 gives each Finnish citizen the right to have their bill presented to the parliament. In order to have the bill presented at least 50,000 people of voting age need to support the bill. Open Ministry has been involved in drafting bills aimed at changing copyright laws and establishing the equal marriage.

13. Participatory budgeting and planning in Paris and Leith

Participatory Budgeting and Participatory Planning (planning in this case being the process of making plans, rather than spatial planning) allow citizens to determine the priorities for government activity and spending at a local level. **Leith Decides** is a successful example of Participatory Budgeting in North Edinburgh, where the community grants fund is distributed through a participatory process in which any citizen can play a part. In recent years the number of participants has passed 1,000 and Scottish Government has recognised this success with a programme of participatory budgeting pilots, and the **Participatory Budgeting Programme in Gallatown, Fife** supported by Creative Scotland. This should be extended to other public authorities, and also from budgeting to planning, so that people can be involved more directly in the process of governing their towns, cities and country.

You can read more about how Paris is implementing [participatory budgeting here](#).

14. A government innovation lab

Nesta and Cardiff University have created a partnership for a public services innovation lab for Wales - Y Lab. The goals of Y Lab are to work with public services and other organisations in Wales to develop and test new solutions to major societal challenges; to build innovation capacity within the Welsh public sector by modelling and demonstrating different methods in action; and to contribute to the knowledge base on public services, innovation, efficiency and effectiveness. During the referendum we heard a lot about how the Scandinavian countries do things in interesting ways. There are fascinating lessons to be learnt from Latin America on democracy. But these need to be adapted to a Scottish context. A Government Innovation Lab would help do that. It could take ideas that work on a small scale and examine how they could be used throughout the system, or perhaps in a slightly different area of public policy.

More details can be found on [the Y-Lab site](#).

15. A community energy revolution

Austerity and cuts to council budgets will put further strain on local government. Many will struggle to make further efficiency savings and even fulfil their legal responsibility to provide frontline services. New ways of generating income and reducing the impact on the services will be needed. Local energy initiatives can help generate new income streams, save the council and residents money on energy bills as well as tackle fuel poverty. Cold homes are a key cause of both physical and mental ill-health issues.

Scotland has already been very innovative in its support of local energy initiatives, particularly community-driven projects. More specific support and investment in the capacity of local authorities to undertake local energy initiatives would help build economic and social resilience at a volatile time. Ample investment is available, for example the Green Investment Bank struggled to spend its capital. To capture more of this investment local authorities need more support in creating viable business models and understanding how they can work hand in hand with local communities to deliver these projects. New initiatives like the CARES scheme could be used to provide this support to local authorities.

You can read more in [Harry Armstrong's piece](#).

16. Create a machine intelligence commission

Machine intelligence systems present exciting opportunities for private and public organisations, but it is not necessarily clear how to be responsible when using algorithms or machine learning as we do not have adequate tools to measure quality or the broader social, ethical or legal impacts. There is a huge 'first mover' advantage to the country that first gets the answers to these questions right.

Little specific regulation for machine intelligence currently exists, but there are crossovers with legislation for data protection, intellectual property and even defamation. It is unclear what effective regulation will look like in this area. But public and private sector trust will be vital for innovation and the wider adoption of these valuable tools. The use of these systems already affects many people's lives but we do not yet have a robust public dialogue to inform future use of systems.

Nesta proposes a 'Machine Intelligence Commission', closely connected to the Information Commissioner in Scotland and the United Kingdom, with powers of investigation and recommendation in the first instance. This Commission will be built with strong capacities in technical skills, legal expertise, social science and design capabilities across a number of sectors.

The role of the commission will be to investigate how these systems are being used and their social, ethical and legal impact with strong powers of access to information and software. It will support the development of impact assessment and regulatory tools, bring in a range of stakeholders to develop meaningful standards and promote adherence and certification.

It will also meet the need to explore new forms of regulation that will overcome the challenges algorithms present, such as opacity and constantly changing systems with a view to making recommendations.

The Commission could provide compliance support and advice to the private and public sector and develop a strategy for public engagement and education to engage people with a topic that has important impacts on their lives. The Commission could also look into appointing an independent ombudsman to help resolve any complaints that arise from the use of algorithms in making decisions about the public or individuals.

17. Measuring the BBC's impact on the Creative Economy

Scotland should argue for a new public purpose for the BBC- to maximise the BBC's contribution to the creative economy. But if it is to be effective in guiding the BBC's priorities and assessing its performance, it needs to be able to be evaluated.

This could be evaluated by estimating the BBC's contribution to value added, and employment, in the creative economy on a strictly consistent basis with other public investments, based on the Department for Culture, Media and Sport's Creative Industries Economy Statistics.

Scotland could also use micro-metrics to track those impacts on the creative economy which are difficult to capture using conventional economic statistics. In recent weeks, for example, Nesta has published research into [how programme credits can be used to track the BBC's support for creative talent, and how the BBC impacts on technology innovation in the creative economy through its open source software activities](#).

A broader analysis using [public economics to measure](#) the contribution of the BBC to economic wellbeing - both through its user value to consumers and its social value to citizens.

A new BBC public purpose calling on the BBC to maximise its contribution to the creative economy would be a major development for Scotland. By endorsing it, the Government would be acknowledging the vital public-private mix that is a hallmark of the UK's creative economy.

See more at: <http://www.nesta.org.uk/blog/maximising-bbcs-contribution-creative-economy-0>

Conclusion

Nesta's commitment to putting ideas into practice matches perfectly the current democratic energy in Scotland. Our ideas can help to make a country that meets the highest democratic expectations. A country that delivers better, smarter, public services based on people power and the technologies of the 21st century. A country that harnesses the power of its creativity. We can have a new Scottish Renaissance based on the transformational power of data to better understand the world.

Our work blends the important advances in technology driven by innovation with an understanding that changing our country will have social innovation at its heart. These ideas are the start of a conversation in Scotland, one we would like you to be a part of. Please do keep in touch through our reports, our website and our social media channels.

Compiled by **Peter McColl** with contributions from: **Harry Armstrong, Hasan Bakhshi, Brenton Caffin, Annie Finnis, Helen Goulden, Dan Jones, Halima Khan, John Loder, Louise Marston, Geoff Mulgan, Jen Rae, Stian Westlake** and **George Windsor**.

About Nesta

Nesta is an innovation foundation with a mission to help people and organisations bring great ideas to life.

We are dedicated to supporting ideas that can help improve all our lives, with activities ranging from early-stage investment to in-depth research and practical programmes.

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