HANDING BACK THE SOCIAL COMMONS

A REPORT TO THE NEW ZEALAND PRODUCTIVITY COMMISSION

Hand back the business of policy, service design and innovation to the NGOs, philanthropists, citizens, innovators and researchers within the sector. A sector-owned data commons and peer-to-peer mobilisation enable the sector to be organised as a Social Commons. One that is orientated and aligned to value, is self-learning and is highly enabled to be adaptive and innovative to constantly improve outcomes.

James Mansell // April 2015

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DISCLAIMER

The ideas in this report are those of the author and do not necessarily reflect those of the New Zealand Productivity Commission or any of the other organisations or people referred to in the report. These ideas are provided in the spirit of enabling a free and frank exchange of ideas to begin a conversation.

VERSION 0.1

This is version 0.1, a first draft of a conversation. The social sector needs to collaborate to get to version 1.0

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PRODUCTIVITY COMMISION

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EXECUTIVE SUMMARY

The transformative influence of big data can be used to improve effectiveness and innovation within the social sector.

It is possible today to enable the social sector to be better focused on delivering value, more easily learn what works, and better mobilise a community of common interests within the sector who will better adapt and introduce innovative new services to improve outcomes.

Safe, high-trust data sharing forms the foundation for the sector to become a shared "Social Commons". It would mean building a sector that is managed peer-to-peer (P2P) by the key actors within the sector; non-government organisations (NGOs), innovators, researchers, service providers, and citizens; where visibility and interest and alignment in social values and the ability of actors within the system to own and change the system are all held *in common*.

Handing back ownership of a Social Commons to the actors within the sector will deliver a step change in social, fiscal and economic return on New Zealand's investment in social services.

This report shows how that is possible and what needs to be done to achieve it.

Understanding the limits to effectiveness of the current social system

Whole industries, such as media, retail, music, financial, transport and even the accounting profession are in the process of being disrupted by big data. In some cases these sectors are innovating to the point of re-invention. Comparatively, the state sector has not adapted at all.

Consider also that the social sector is familiar with this kind of criticism; that it is slow to innovate and does not reward success (or respond to failure) quickly enough; that it is often not value focused or know what works or where to invest.

I argue here that this is fundamental to how the sector is run. The way the current social system is organised it will never be innovative, collaborative, and value focused.

The sector's dominant player (the state sector) has organised it to be a system that is good at productivity through cost reduction. And the way that it has tried to drive improved productivity is by using various iterations of the Taylorist school of thinking. Modern variants include Lean Six Sigma and Balanced Score Cards.

This approach emphasises the value of specialisation and reductionism to manage processes. Centrally planned, highly specified processes, and micro-management of inputs and outcomes can all work to reduce costs by reducing waste. Central actors look for duplication and invest in innovation aimed at production efficiency. This has led to a sector that is segmented into groupings

organised around distinctions between services and professions. Budgets, line management accountability, KPIs, research, innovation, risk management and financial models all align around deeply entrenched servicing channels – to meet this need to improve the operational efficiency of each channel.

The resulting social sector is organised, from the front line to vote analysts in the Treasury, along servicing channels. But the (well known) problem is that these deep, highly specified channels and processes make collaboration, change, coordination, cross-selling and global optima all very difficult to achieve.

To understand why this makes effectiveness and innovation ad hoc at best requires understanding the social sector in terms of the kind of network that it is.

A network is simply the description of who engages with whom, and how they engage and transmit information between each other. The current social sector network is a series of services aligned around hubs that are centrally controlled by those servicing interests and fragmented from each other. The workers line up and orientate inwards to the centre of government, and this central hub controls the network: the flow of information, budgets, authority and incentives. Each service/profession has its own such hub and these are not (meaningfully) joined up, so the sector is fragmented – by those deep channels mentioned.

What we know is that networks that are characterised as having centralising hubs are not resilient. This is a system that is fragile and open to failure since all traffic goes through this monopolising hub. A single point of failure is poor for the transmission of information, for innovation and engagement or for selecting good ideas. It breeds echo chambers of similar thinking at the centre through lack of diversity of interests and perspectives at the decision-making table. It tends to breed asymmetric information flows. These kinds of systems accrue greater influence at the centre and diminish peer-to-peer engagement and mobilisation.

The social sector is also fragmented into isolated networks around servicing interests. These servicing hubs never join up. Even at the Cabinet decision-making table, competing services-focused policy interests provide disparate advice, based on their own data and interests, on their view of their part of the sector. Nobody has genuine visibility of the system as a whole. One of the most obvious and serious flaws in a set of fragmented networks is that data and knowledge is locked inside those silos and this in turn causes an “epistemic challenge”. Fragmented data means nobody sees the whole customer or their pathway across services. This means the ability to know what is going on, to orientate towards value, or spot risk early, or learn what works is poor. There is very little sustainable or systemic social learning across boundaries.

Unless these features – centralised service-orientated monopolies, and fragmentation of the sector – are fixed directly, these features of the current

system will continue to dominate and diminish the ability to drive improved social value. Ad hoc forced additions to devolving power to regions, having innovation hubs, or forced collaboration will not sustainably enable the social sector to lift performance by anything other than small, slow and easily reversed increments. System-level transformation of the sector is required that focuses on the real nature of the problem – it is the system of organising and controlling the social sector that is itself at fault. It is now possible to change that.

Big data enables a more effective peer-to-peer network

This report recommends that we address these underlying limitations directly. The social sector needs to be a peer-to-peer network. This will defragment the view of the sector and will enable peer-to-peer mobilisation and engagement to drive innovation. It removes the fragility of reliance on a single centralising hub (node), so builds resilience and the use of social learning to improve decision making.

Big data now provides the necessary tools to make that possible. It now enables the kind of high-trust, peer-to-peer sharing of social data necessary to sustainably improve outcomes.

Ubiquitous networking, digitisation, remote sensing, wireless access to data, huge improvements in computational processing, machine learning and the ability to automate and experiment in real time are *collectively* disruptive.

What can be known, and the ability to manageably observe whole systems in all of their complexity (including the highly multivariate influences on lives), can all now be better understood.

In addition, traditional ways of mobilising human endeavour are being re-shaped and new alternatives are emerging. In particular, this allows dis-intermediation; the role of controlling middlemen embedded within hierarchically organised institutions is being displaced. There is now the potential to organise peer-to-peer networks for collaborative human enterprise in non-hierarchically organised communities that share a common interest. This can be done at scale. Uber, Kickstarter, Bitcoin, Wikipedia, and GitHub are new, peer-to-peer collaborative, yet distributed, networks of aligned interests that are re-defining the way enterprises are organised.

It is possible to reform the social sector using the same kind of technology. Technology that allows people to mobilise peer-to-peer with each other to coordinate activity, to design, build, deploy and operationalise new services that are fast, collaborative, self-learning and constantly innovating towards common goals.

Improved data sharing is of particular relevance to the social sector for two reasons

The first reason is that peer-to-peer sharing of data is fundamental to the transmission of social value. A lot of the business transacted within the social

sector *just is* sharing data between people. People communicate (share data) between themselves to provide social learning and support for each other. Providers and citizens share data to customise services (e.g., do needs assessments, diagnose and test). Sometimes providers need to share data between themselves to make new kinds of hybrid service offerings. Providers and their sponsors (egg, governments, philanthropists and shareholders) need to share data for the investor to know who to pay and to monitor the effectiveness of that service. Researchers and citizens, governments and providers share data to learn what works. Collecting, accessing and sharing data is the central feature of much of what the social sector does, so doing it well matters.

The second reason to share data is that increased sharing in itself provides the opportunity to increase value. The value of data increases when more and different kinds of people use the data and different kinds of data get added together.

When data are locked in silos a "Tragedy of the Non-commons" tends to happen. Data are not rival goods – they do not get used up when used by somebody. Any datum can be used multiple times for a diverse range of purposes by any number of people. The marginal cost of re-using data is tiny. Data re-use, including re-use by different people, means the range and quantity of goods increases. Sharing the weather forecast can help to save fishermen's lives, and now real-time access to the rain radar helps you to decide when to hang your washing out or when to bike to work.

Data (re)use also drives *economies of scope* – joining two pieces of different information together increases the overall value that can be created from that information. And as noted, this matters to the social sector because much of the service provided within the sector is just data sharing. So improved ability to share data will enable exactly the kinds of innovations that the social sector will needs to improve value.

The need for leadership to solve the tragedy of the non-commons

Improved data sharing will not "just happen" on its own. We currently do it poorly and are unlikely to leverage improved data sharing to drive value without leadership. A bunch of things need to happen for this to work.

Technically it requires APIs and meta-data standards across the social sector. The more challenging work is to rethink ownership and control of data.

The current monopoly "owners" of data need to have their narrow interests overthrown to realise the public value of data that is made available to the commons. Similarly, the ability to use data to learn what works requires that the interests of providers (funded by government) who do not wish to let people know how well they perform need to be overthrown in the common interest.

An important concern that needs to be addressed is people's anxiety that data about them will not be misused and that they can have confidence in those

who have control over it. For this reason, data needs to be handed back into the control of citizens who can decide if they wish to re-invest their data (transfer, copy, share it) elsewhere. The interests of citizens, and trust and control of their data, means that the centre of government (due to its coercive powers) needs to be limited to anonymous use of shared data – unless individuals give their genuine consent to do otherwise.

With this in mind, adopting the four principles of the New Zealand Data Futures Forum (NZDFF) is a good place to start to form a "New Deal" on the data of the social sector. These principles require that use of a person's data is of high *value* to them, within a high *trust* (i.e., secure) system, in their *control*, and inclusive (meaning nobody is excluded). These four principles have informed the suggested design of a safe and high-value Data Commons for the social sector.

Building a Data Commons to enable two forms of data sharing

To ensure safe use of often highly personal data, *and* to unleash the power of the value proposition of sharing requires two kinds of data sharing. The "Data Commons" needs to enable peer-to-peer sharing and general access through a "Social Data Exchange".

- *Consent-based, peer-to-peer sharing for personal value*. The social system needs to allow free and unfettered access to allow citizens, on the basis of their own consent, to share their identifiable social data, peer-to-peer with whoever they please. This could be government-to-government, provider-to-provider, from provider-to-family, or citizen-to-citizen. High-value private data transactions on the basis of consent are possible at scale as is evidenced by the financial sector and cloud computing. Modern peer-to-peer options such as a Personal Information Management Systems (PIM) (egg, Xero) are emerging that may provide even higher trust. There are also decentralised alternatives (e.g., Blockchain technology) that look even more promising.
- *General access to high-trust, non-personal use of that same data to realise public value – via an operational "Social Data Exchange"*. The actors in the social system all need to be able to see that system as a whole, so that value can be seen, risks understood, and the social sector can mobilise in the direction of value. A de-identified "*Social Data Exchange"* is required to make non-personal uses of data inclusively available and safe.

A Data Commons is the foundation for a Social Commons

A safe, open "Data Commons" is the foundation for a peer-to-peer- owned "Social Commons". A Data Commons opens the door to a more diverse set of actors by not being controlled by government or by private provider monopolies who will tend to fragment the sector, attempt to control it, or monopolise data. It allows all of the actors within the sector to mobilise peer-to-peer to self-organise so as to move towards a common goal to improve

outcomes. In short, it enables the sector to transform from a series of services-centric, isolated, highly controlling hierarchical hubs to a whole-of-system view and peer-to-peer ownership and control of a shared Social Commons.

A Social Commons drives social value in three ways.

1. **Orientation of the commons towards value:** Providing a view of the whole system enables a new range of knowledge tools that allow the sector to better focus on value. In particular, it provides the ability of the commons to systematically observe social, fiscal and economic outcomes. Further, by building "Value-Add" style metrics, the commons can orientate better on the customer and their whole life course – so helping to avoid investing too little too late, risk and cost shifting, and the resulting "tails" of high-needs people forming. By enabling the system to measure and attribute Return On Investment (ROI), the commons can learn what works and form new kinds of procurement relationships with sponsors – relationships that allow more latitude to the sector to innovate and share in the value added. It will enable research to be undertaken faster, peer reviewed more easily, and answer a wider range of more complex questions. Where research is linked to a wide range of social, economic and fiscal outcomes, researchers and policymakers of all stripes will able to influence government policy more directly on the basis of sounder evidence. Evidence from the Ministry of Social Development (MSD) suggests significant upside to using analytics to better target employment services,. including, in one case, a four-fold increase in effectiveness from smarter targeting.
2. **A Social Commons better leverages social learning:** The source of ideas greatly expands when you open up peer-to-peer engagement across heterogeneous groups of people and remove powerful centralising monopolies. Transparency, orientation towards value, symmetrical access to information, and owning the problem allow social learning effects to inform solutions to make a better social system. This is done by the parties most interested in better outcomes and most able to invest and buy in to nuanced solutions; based on a deep understanding of their piece of the puzzle, *and the ability to integrate this thinking* with a better understanding of how their piece fits into the wider (now transparent) social system. The use of software such as i-lign (in Ports of Auckland Limited (POAL)) and adaptive leadership styles of handing back the work (in the Canterbury District Health Board (CDHB)) illustrate the significant upside of localised, peer-to-peer mobilisation of problem solving that is enabled by visibility of the whole system. In the Canterbury case. it led to a 40%+ increase in elective surgery by mobilising a shared approach to problem solving by general practitioners (GPs) and surgeons.
3. **The Data Commons improves adaptation and innovation:** Data sharing is central to the ability of the social system to collaborate and

coordinate. Data-enabled service innovation can emerge quickly through an open, low-cost ability to share and re-use data. Peer-to-peer ownership of a high-trust Data Commons that is not controlled by a monopoly of professionals, government, or big business interests reduces the barrier to entry. Peer-to-peer sharing also improves the ability to technically support localised collaboration and coordination across more traditional service offerings. An open Data Commons provides greater rewards and incentives to people who share data. Monopolising data will be low value when everyone else is sharing. Service users will select service offerings that leverage economies of scope to provide high-value contextualised service offerings. For example, if a person has diabetes, it is better to have a personal blood sugar reading that is linked to their doctor than to leave medical records and blood-sugar data fragmented in silos. Similarly, Duolingo illustrates the value of sharing the person's language-learning data (non-personally) with 14 million other learners to obtain personal and social value. According to one study, Duolingo has reduced the time to learn a foreign language from 130+ days to 35 days through building a constantly improving and highly contextualised learning service.

Transformation into a self-learning, peer-to-peer network

Currently the social sector is fragmented into servicing hubs that are highly controlling and attempt to centrally plan to improve value. This is a situation where visibility and focus on value is largely non-existent, and where the ability to collaborate, coordinate, invest wisely, and adapt and innovate at pace is minimal at best.

Contrast that with a Social Commons, built on a foundation of safe, high-trust, peer-to-peer data sharing. This enables the commons to focus on improving social, fiscal and economic value – to be able to learn what works at scale; and to mobilise localised, peer-to-peer collaboration to adapt and innovate at pace to improve effectiveness.

This will mean better outcomes for New Zealanders at less cost. It will improve targeting to ensure investment in early risks and avoidance of risk and cost shifting into the future – where people get left behind in tails of high disadvantage. It will improve the ability to solve coordination and cross-discipline challenges to provide services in cases of multiple high needs.

The benefits will accrue to the whole of New Zealand. Better outcomes for less means better value for money and perhaps less tax. Better outcomes for service users also means safer communities. And, as a corollary to all of that, building this kind of safe, social data ecosystem will also support the growth of the new digital industry. Positioning New Zealand as a safe, high-value, open, innovative market will attract and retain talent and investment in both research and technical innovation.

Kick-starting transformation

Some recommended next steps include:

- The community of social sector actors (researchers, philanthropists, service providers, the tech community, NGOs) should mobilise for themselves to co-own the design process and build a shared Data Commons. This will require support from the Government for a "New Deal" on state-sector data.
- Central government should build a population-based, value-add accountability structure and budget-allocation system based on analytics. This new role of the centre as a steward with visibility of value within the system means that the centre can more easily let go of the business of *how* to achieve value.
- Central government picks a couple of areas in need of attention to trial this approach to improving social value. Productive areas might include health (obesity or youth mental health) and education (the tail of under-achievement). Population-based segments should form the basis for funding, incentivising and rewarding improved social, fiscal and economic outcomes.
- Service design and policy about *how* to improve value should sit near the frontline using a peer-to-peer approach to design, and self-learning, perhaps including the use of tools such as i-lign. In agreement with the centre, devolved entities should trial a range of different localised solutions and do so in a way that enables measurement of value. The centre can trade off losing control of the *how* question with greater expectation about measurability of value.
- Interface and data standards and a sector-owned Data Commons will form the basis for innovators, researchers, NGOs, philanthropists and other communities of interest to rapidly design, deploy and learn how new, data-enabled innovations work.

An initial scan, and the examples outlined in detail in this report, suggest that there is enough skill and talent in the philanthropic, information and communications technology (ICT), NGO, research and innovation sectors to collaborate to make this happen. All that is required from central government is letting go of some work (policy, innovation, service design, and control over data) and picking up a new kind of role. This role will be as the steward for a safe, self-learning Social Commons that is orientated towards and rewards value.

In turn, a productive Social Commons, based on safe use of shared data, will drive a wide range of downstream social and economic benefits. And if New Zealand Inc. becomes the first country to solve the challenge of how to safely use big data to better invest in social value, it could well generate substantial spill-over benefits of world-class research and innovation, and exciting new export opportunities.

INTRODUCTION

This report was sponsored by the New Zealand Productivity Commission to support their inquiry on how to improve the effectiveness of social services. Their question was:

> *How might emerging "big data" technology be used to increase the effectiveness of social services? In particular, how might big data be used to better target services to improve outcomes and be more adaptive and innovative in solving old challenges or capitalising on emerging big-data-driven opportunities to become more effective?*

It will be clear to anybody watching the emerging technology – and its hugely disruptive effect on many sectors – that this is a daunting question. How does one predict what might happen when the rules of the game are changing and new data technology is reforming whole sectors and challenging existing ways of working? Further, the topic and tools provided by big data are only 10 to 20 years old and still changing rapidly.

Add to this the curious nature of the state sector. Whole industries, such as media, retail, music, financial, transport and even the accounting profession have already or are in the process of being disrupted by big data. Yet, the state sector monopoly seems largely immune to this outside disruption. New kinds of approaches to personalised health and education, and applying social learning methods to social challenges, all have the potential to improve social services. Yet these and more radical innovations in organisational life have all but bypassed the state sector.

Comparatively, the state sector has not adapted at all. For example, the adaptation happening in Work and Income on the back of welfare reform, although eye-opening to the state sector, is merely the application of a customer-centred business model first introduced and refined 20+ years ago in the private sector. So, an underlying question is how does a state sector monopoly consume such potentially disruptive technology well (or at all)?

The speed of change elsewhere and comparative absence of disruption to government have shaped this report.

In particular, I am seeking to answer the more ambitious question; 'how can the transformative influence of big data be unleashed enable a step-change in effectiveness. To do this I have chosen to contain the scope of my answer in several ways.

First, I use a tight definition of the social sector. I include most services in health, education, and social development but exclude the coercive use of data to impose services on citizens. Although the state sometimes needs to be coercive – for example in the case of child protection and policing – I have largely avoided these topics because of time/space constraints and the

fundamentally different nature of the kinds of data-sharing arrangements and controls that are required when harvesting data without consent. Instead, I focus on cases where the interests of the state and service users are largely aligned and where sharing data is of mutual benefit.

A second consideration has been to narrow the focus down to a few key areas in the emerging big data revolution. I focus mostly on the value of (1) customer-centred analytics, (2) data sharing and (3) new methods of mobilising and organising human endeavour. These are likely to be the right place to focus for they lean on the need for change itself and how that change might be introduced, and in particular are relevant to the mobilisation of a sector focused on people (the social sector).

These are also the levers that will drive systemic and sustained transformation within the social sector. For, as the disruption to other sectors suggests, big data has the potential to be transformative. We should therefore consider that possibility; how might the social sector be transformed, what that might look like, and whether that will be a good (or bad) thing for the social sector – for it should be noted that there are better and worse possible futures available on the back of big data, depending on the route we take.

Second, these are the kinds of leverage points that mean the sector will be sufficiently enabled to become, in itself, a more adaptive and self-learning system and so able to absorb well the emerging pace of change. So, rather than attempting to force ad hoc additions of big data tools into the sector, my position is that we should focus on getting the foundations right to create the environment within which the social sector will be a more self-learning adaptive system that constantly seeks to improve effectiveness.

Finally, a word about the pedagogy of this paper. The aim is to introduce the new ideas by illustrating what has already been done. There exist already examples of partial innovations within the social sector. If there are no appropriate examples from the social sector, then I use examples from other sectors. The reason is to use this paper to show what is possible, to introduce and clarify some of the new language, and to review what works and does not work to guide thinking.

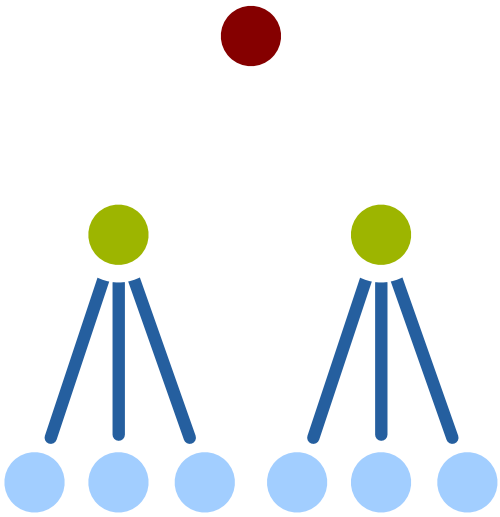
I do not have all (or even many) of the answers. However, I think there is enough progress and experience to raise some challenging questions about why the social sector finds it hard to improve effectiveness at the moment and is poor at innovation – including failing to capitalise on the technology revolution.

This revolution is both entirely relevant to the social sector and likely to drive huge improvements to the outcomes that can be achieved. However, realising these improvements requires transforming the way that we work.

But to make a suggestion about what to change, first you need a theory about what the problem is.

INTERPRETING THE CHALLENGE

THE SOCIAL SECTOR IS A SERIES OF FRAGMENTED, CENTRALISING NETWORKS FORMED AROUND SERVICES THAT CANNOT CONSISTENTLY ORIENTATE, INNOVATE AND ADAPT TO IMPROVE SOCIAL VALUE.



1 A FRAGMENTED AND CONTROLLED SECTOR

The social sector is poor at measuring and improving effectiveness because it is largely organised to achieve operational efficiency and so is a system that is characterised by fragmentation by service, and centralisation of power into those at the centre of those servicing hubs.

1.1 THE VALUE OF TAYLORIST THINKING

There are a bunch of reasonably well-accepted criticisms of the social sector:, it is not value focused; it is slow to innovate and does not reward success well (or failure quickly enough); and we often do not know what works for who.

But this should be no surprise since that has not been the focus for the last 20–30 years. The reforms of the 1980s have arguably enabled social services to be more cost effective.

This objective to be cost effective is being realised through Taylorist kinds of thinking about what it takes to be operationally efficient. Principles including reductionism (specialisation), highly specified processes, micro-management of inputs and outcomes can all work reduce costs. Henry Ford and the 1900s demonstrated the value proposition of doing this, and it continues to inform management thinking today. The public sector caught up in the 1980s. The social sector is now structured and run largely according to Taylorist principles.

The social sector – from the frontline to vote analysts in the Treasury – is segmented into groupings organised by services and professions. Think of the current structure divided into the justice sector (for lawyers, police, and courts people), health sector (for managing health services by health professionals), the social sector (for social working professions of various shades) and education (characterised by the education professions, teachers, and schools).

The structural incentives are embedded into the way the social sector works as a system line up on improving efficiency. Budgets, line management accountability, and KPIs are all clearly bounded around the business of operational service delivery for each specific kind of service. Visibility is focused on micro-analysing operational processes.

Risk management is done through improved management of processes and queuing behaviour. So Child, Youth and Family (CYF) continually responds to child deaths (risk) by increasing its control over processes and queues, and makes relatively little investment in better decision making (which is largely an epistemic challenge of knowing more about your clients, rather than solely being a process challenge).[1]

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[1] Mansell, 2006, 2011.

Financial models and the General Ledger reflect the services focus. We cost kinds of services, not kinds of customer. Accountability is for service delivery. Much of IT spending goes into capturing and managing operational processes and workflows.

The state sector has probably improved its ability to manage inputs (finances, budgets, back office) and deliver outputs (services). Return on investment (ROI) has likely improved through streamlined operational processes. This has been useful for creating operational efficiency dividends. Trying to do more with less works to improve overall Return On Investment (ROI).

This reductionist thinking is a great way to improve ROI by reducing the investment side of the equation. A $2 burger really is a feat of reductionist specialisation, supply chain and process engineering, and micro-managing inputs such as cost. It is great for competing on price point and driving innovations aimed at improving efficiency. Improving efficiency can make the bang for our buck lead to more people getting elective surgery than they would in an inefficient health sector. Taylorism is a great way to do things cheaply.

1.2 ...AND THE UNINTENDED CONSEQUENCE FOR VALUE

But it does not matter how cheap something is if it does no good for you. Being cost effective requires you to focus on *effectiveness* as well as *cost*. And we have not been so good at that. I argue here that this is the unintended consequence of the way we have built and manage the social sector.

In particular, the way we run the social sector means that the sector has become highly fragmented.

Data sharing is more difficult – and this includes common garden variety talking to one another. It is discouraged or non-existent, since it is not required to improve efficiency. If your focus is on the service you deliver, then what need is there to share data about somebody else's service? Because of this, there is limited visibility of how the system affects customers, or a systemic view of the customer's engagement experience of services or their outcomes, and this leads to the first problem for achieving value.

This is a very poor system for learning about, and adding value for all kinds of people. It improves "value for money" or ROI, not by seeking better outcomes (or "effectiveness" or "value") but by reducing the cost side of the equation.

Sticking with this way of running the social sector will, at best, make things slightly cheaper. At worst it reduces ROI and leads to worse outcomes for many people.

This approach to improving costs is close to mature. There are probably few step-changing efficiency initiatives that will result in large improvements to

ROI via reduced cost for each service. When you start measuring desk sizes, you are nearing the end of the road of silliness in cost cutting to drive value.

Our ability to measure value is poor. It is too easy to be efficient at delivering services when there is no accounting for the value the services are meant to add. The state sector has sporadic, little, or no understanding or measurement of the wider social, health, economic, and fiscal returns on investments in social services.

It is difficult to learn what works. Because we cannot measure value. determining what works is slow, sporadic, inconsistent or simply not done. Evaluation of effectiveness is often tacked on, only done once, and seen as an "on/off" assessment for a project, rather than as a means for continually learning how to incrementally improve targeting of value. Such evaluation does not provide the kind of detailed actionable information about what worked for which kinds of clients that can be used to target the next round of investments – so reflects a "waterfall" (set and forget) and not a closed loop (constant seeking for value). It rarely measures the Return on Investment of services for different kinds of service users. Where it does measure the impact on outcomes, this is very rarely comprehensive (such as with fiscal, social, and economic impacts). Knowledge about value is not built into operating as systemically as are, for example, finance systems and operational KPIs. Value plays second fiddle to keeping the wheels turning.

Structural incentives drive stagnation not innovation. The current business model for the state sector is vertically orientated, placing authority and accountability for performance in the hands of those in charge of particular services or the professional groupings being evaluated. Experimenting and gathering knowledge that challenges the value of the service line is discouraged, while great emphasis is placed on evidence that demonstrates the need to expand a service line. This kind of confirmation bias drives stagnation, not innovation. The result is a state sector characterised by a lack of transparent experimentation and a culture of quarantining innovation from business as usual.

Silo thinking, cherry picking, and risk and cost shifting. This kind of services-orientated structure makes collaboration difficult to foster and sustain, particularly for high-needs service users with multiple challenges. People in the system who foster and sustain collaboration are doing what they do despite systemic incentives, not because of them. The result is that many clients "fall between the gaps". They receive inappropriate or even damaging services. What they receive is unresponsive to them and comes without the other necessary supports.

"Cross-selling" is difficult. Integrated service offerings and ad hoc hybrid services face off against systemic incentives to maintain the large, deep intractable service channels.

Tails emerge due to asymmetric investment incentives. The lack of a life-path view of value (i.e., outcomes for people), combined with a services-centric

budget allocation model and cherry picking (to meet operational performance objectives), means that investment is skewed to where costs emerge later, rather than risks that emerge earlier. It also does not address emerging high needs early when costs are low and outcomes can be shifted, and so creates "tails" of very poor long-term outcomes.

Organising authority by servicing interests stifles innovation. The social sector is not characterised by innovation or receptivity to new ideas of ways to create social value. Over the last 20 years, the private sector has gone through some of the largest and most systemic disruption to existing services and business models and seen a flowering of innovation on the back of the emerging internet and big data revolution. The social sector has not been similarly disrupted.

Trimming costs can unintentionally trim value and so lead to a worse outcome for service users.

These are not new observations. On the back of this kind of assessment of the social sector there are no shortage of suggested solutions.

- Do better, more joined up policy, set cross agency KPIs.
- Devolutionists want to devolve power to the regions and reap frontline innovation,
- "Agglomerationists" want to suck all that devolved power back into the centre to create super ministries that have more control to force change or choose innovation.
- The right wing suggests opening the sector to market forces and competition.
- The left wing wants to spend more or buy it all back.
- MBA management school thinking is still toying with the latest variant on Taylorist style thinking – Lean Six Sigma.
- Traditionalists, such as the professions, want to move back to the heady days of a model built on trust and ethics and personal responsibility, before all the MBA management and measurement came along: "Trust us because we were doing fine until you all came along".

I am agnostic about most of these ideas. Sometimes some of them may work in some situations. But to me they all appear like ad hoc fixes that do not address the underlying challenge. They do not address the fact that it is the way the social sector *as a system* is organised that is the root of the problem. The change required to reap a step change in performance is a fundamental change to the way the system works *as a system.*

Taylorism is not an evil in and of itself. In fact it is powerful in some situations, including the social sector. That is arguably where there are simple, well-known challenges with obvious outcomes that are fairly predictable and where we know what to do (e.g., how to fix a broken leg). However, the problem is the kind of system that has built up to enable Taylorist practice that builds the

kind of network that will always be poor at innovation and adaptation and orientation towards social value.

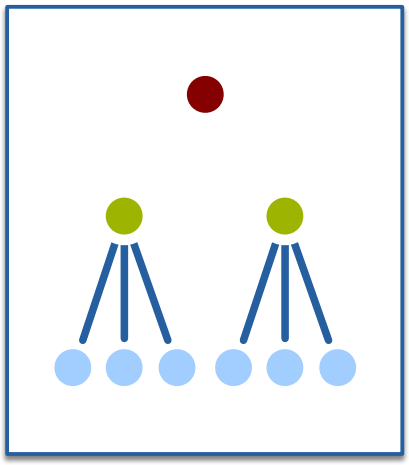
To do this, I outline the features of the social system as it is today and why it does not work. The good news is that the technical revolution has provided new kinds of tools to re-formulate the social sector into a new and more effective kind of system.

1.3 WE HAVE THE WRONG KIND OF SYSTEM TO ACHIEVE HIGH SOCIAL VALUE

When people organise themselves, engage together, exchange value and ideas and work, mobilise and orientate to undertake human endeavour, they form a network. Sociologists have been studying kinds of networks for decades. What is happening now is that big data is allowing scientists to gather data and analyse the complexity in these networks and study the effect of different kinds of network on performance. In particular, how do networks drive or stifle successful innovation and performance?

Real-time experiments can now be conducted on networks of people to see how information is used, how engagement happens and the effects of the kinds of networks on the success in both generating good ideas and selecting them. How communities align and mobilise and the effect of social learning are now being understood. For more on this, read Alex Pentland's summary of the literature in Social Physics.[2]

I think that the reason that the social sector finds it difficult to orientate towards value, or mobilise and engage to innovate to solve challenging social issues is because the social system, as it is currently organised and run, creates a network that is ineffective in those respects.



If you look at the social sector as a social network, then what kind of network is it?

The first observation is that it is dominated by networks with a hub-spoke structure. That is to say, some people sit at the centre of these networks and so control the network. These get described as centralising networks. All roads lead to Rome (or Fred – the green dot).

Here is what we know about this kind of system.

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[2] Pentland, 2014.

> *A centralized system can thus be thought of as a hub-and-spoke structure, where a key player (or players) sit in the middle and direct all of the traffic. This [is the traditional structure of the] modern financial system, commercial airlines and city planners. … A failure of the hub means that the system cannot function. … in other words, if the hub fails, the spokes fail as well.*[3]

In this kind of system not all of the nodes are equal. Some (green dots) have more responsibility for ensuring the system works (or fails). This single point of failure is poor for the transmission of information, for innovation and engagement or for selecting good ideas. It tends to breed asymmetric information flow. The central hub (green node) in charge of the system dominates and controls the flow of data, engagement, conversation with the executive (red node) and frontline (blue node).

The second observation is that this is a series of (largely) isolated networks that are not joined up meaningfully. The social sector is a bunch of "isolated networks" around servicing interests. Yes they finally "join up" at the Cabinet decision-making table (red node), but not really. This is where competing policy voices provide disparate advice on their part of the network. That is why the red dot is isolated in the diagram. Nobody has genuine visibility of the system as a whole. The social system is not treated as single system and nobody has visibility of it as a system. It has been fragmented. One of the most obvious and serious flaws in a set of fragmented networks is that data and knowledge is locked inside those silos.

This fragmentation is particularly troubling in the context of the real social phenomena that this system is supposed to cater for (see diagram above). Real people live inside a very real joined-up network of social influences. The effects that shape lives are not neatly separated – genotype, nurture, previous services, social learning (family, peer and community engagement effects) *together* shape lives. Likewise, the impacts of services are multiple. There are multiple spill-overs from a positive/negative outcome for both the customer and a host of other agents (such as family, community and victim). Consider too that each complex individual is also a single node in a complex social system of family, community, economy and location. (See the diagram on the next page).

Reductionism, Taylorism, and fragmentation of the social sector is **always** going to do a terrible job of understanding, measuring, aligning or mobilising social value. These are the wrong tools for the job.

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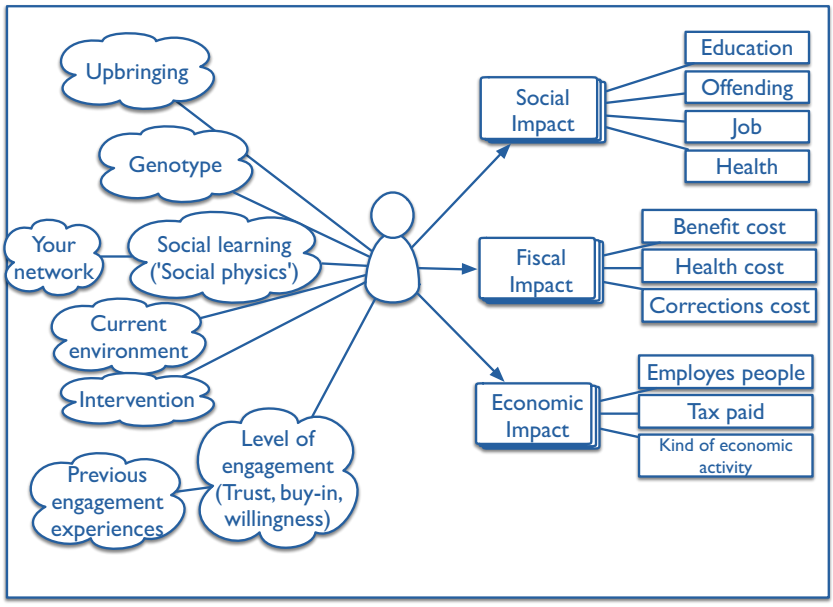
[3] Kelly, 2015, pp. 65–66.



Note also that centralised hubs are open to key person failure (i.e., monopolisation by narrow interests). Added to this is the fragmentation of these hubs so that nobody can see what is going on, where value or risk sit, who is providing it, what kind of value is being generated. Together these properties of the current system create a recipe for the stagnation observed. Powerful central actors who reflect servicing interests are in charge of part of something they cannot really see or learn from. This does a disservice to them (and to the system if they are competent). If anyone manages to drive value in this kind of system, it is probably through sheer goodwill and dint of bloody-mindedness. Because the system is not set up to be self-learning, it also requires an uncommon degree of common sense and good luck to do something that is effective where there is a more than mildly complex social need.

The system is broken in two fundamental ways.

- The ability to mobilise and engage in meaningful collaboration and coordination to solve complex challenges is poor. Centralised systems accrue greater influence to the centre and diminish peer-to-peer engagement and mobilisation. The first challenge is that everyone orientates towards the centre, not each other. So for example GPs and surgeons look to get their needs met through the centre (hub) and not via each other – more about that later). This is a system that is fragile as it is highly open to central hub failure (since all traffic goes through this monopolising hub).
- The second “epistemic challenge” is caused by fragmentation of the social system and losing sight of the customer. Fragmented data means nobody sees the whole person. This means the ability to know what is going on, to learn and to orientate towards value is poor; the system is not treated as a system. This fragmentation will make the system poor at spotting value and risk.

Unless these are fixed directly, these features of the current system will continue to dominate and diminish the ability to drive improved social value in the ways that everybody notes – too low and too slow with innovation, unable to measure and orientate towards value, and finds it difficult to sustainably mobilise local engagement to better solve problems.

Most current attempts to solve challenges within the social sector have done so within the paradigm of the status quo. They therefore focus on the symptoms and not the cause – "try to join up". They do not address the underlying cause, that the existing authority, KPIs, budgets, line management, control, and organising around servicing interests are structures that are fundamentally fragmented and rely on centralising actors.

These attempts to solve the problem are not sustained, because they have tried to force the network to behave like a different kind of network. They have tried to forcibly devolve power to the non-central nodes, forcibly tried to make different networks join up, and forcibly invited the private sector in.

That will not work within the system the way that it currently operates – or at least will not be sustained. The way the system is run (services-focused careers, budgets, accountability, KPIs) will mean that it reverts to the kind of network that it is today.

To achieve lasting and significant improvements you need to change the nature of the system itself, so as to achieve a network that is better at innovation and orientation towards value.

Fortunately, big data provides some tools that make that possible.

Before I get to that, we have a number of different kinds of networks to choose from. Consider the following four kinds of networks (see diagram on next page). In these simplified network diagrams the green nodes represent service providers, red nodes represent the executive (sponsors, shareholders, and government), and blue nodes are consumers.

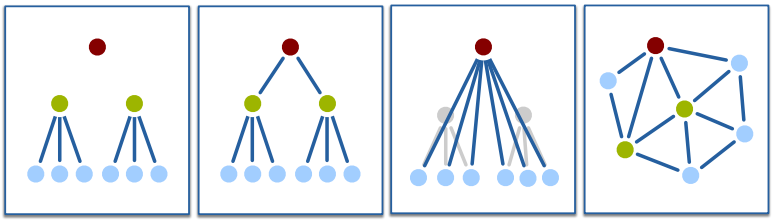
Fragmented and controlled sector: Box one reflects the status quo: a series of isolated centralising (hub-and-spokes) networks organised around professions/services. This is great when using Taylorism to drive costs down, but is less suitable for mobilising around complex social phenomena.

Joined centralised network (little brother): Box two is an option to at least gain visibility of the system by just data sharing (bridging the gap across those fragmented networks). In so doing, the executive will know what is going on and provide the ability to choose winners better (maximise global optima (ROI) across the system).

Highly monopolised network (big brother): Box three is what box two will decompose to – a highly centralising hub-and-spokes system. This is some of what is happening in the private sector. Amazon and others are using the ability to consume complexity and niche targets across a diverse network to bypass the middle men (other booksellers) and form a highly coercive and

powerful monopoly. My worry is that the state sector could easily turn into this, and in fact that the system dynamics predict that it will, if we follow this path. I talk a bit about this in section 12 under “big brother”. While this may provide some short-term improvements, for a number of reasons it will erode social value over time, and in fact may become the problem.

Peer-to-peer network: Box four is a distributed system or peer-to-peer network. The nodes are all equally connected to the network and do (roughly) equal work. This is a far more effective network to mobilise around complex social phenomena. It has the same level of visibility of the system that the highly controlling network does, and avoids the pitfalls of a centralised hub-and-spokes option. It avoids single point failure (a malevolent dictatorship or monopoly), and it enables engagement and mobilisation in ways that support social learning, innovation and orientation towards social value.



Peer-to-peer networks allow provider-to-provider, provider-customer, and customer-to-customer engagement to flourish. In particular they allow more heterogeneous engagement (more different kinds of people) around the decision-making table, and this pooling of diverse viewpoints is good for social learning and therefore for innovation.[4] Mobilisation works better because peer-to-peer networks facilitate deeper social learning, an ability to engage and encourage heterogeneity (diversity). I talk more about the value proposition of this kind of network for the social sector – how it works to improve social outcomes – in Part three.

In section 2 (next) I talk about how build a social sector that is characterised by peer-to-peer behaviour.

1.4 THE KIND AND LEVEL OF CHANGE REQUIRED.

Shifting the kind of system that the social sector is, is a big change.

Whereas the private sector was disrupted by new technology (nobody asked Rupert Murdoch’s permission to disrupt his media empire), the public sector, due to its unique monopolistic position with respect to outside influence, does not have the same need to adapt.

[4] Pentland, 2014.

This is why most of the solutions that are proposed are solutions that tweak the status quo by doing something people feel familiar with without causing uncertainty or confusion. So for example, in the context of this paper, restructuring is typically tweaking the status quo. The hierarchy remains, just the actors in it have moved. It is not a fundamentally different way of working.

Living within a prior set of assumptions about how the world works is useful. It helps us to navigate and assess options and make good decisions about what to do based on what we "know" to be true. People who have a good grasp of those assumptions usually get paid the most because they know how the system works.

But what happens when it is those assumptions themselves that are in question? Then you have an adaptive challenge.[5]

Moving from a social system that is a series of isolated hub-spoke networks to a truly peer-to-peer network is a fundamental shift. Budgets, what people are accountable for, ways of formulating policy, the kinds of KPIs, who has authority to change things, will *all* be different.

The system will need to change some of its DNA. Old customs, competencies, power structures, assumptions, and jobs will need to change. This is why these kind of changes generally do not happen spontaneously from within the status quo. Everybody in positions of power within the status quo has a vested interest in their competency in managing the status quo. Why would I let go of the data? Give up my monopoly? Learn new tricks?

The place to look for an example of the depth and breadth of the change is to look at the huge disruption that the private sector has already gone through in the last 10 years. This has been characterised by disruption to existing ways of working, by new kinds of authority and accountability, by new industries that have emerged and others that have disappeared. It is the effect of technology enabling new ways to engage, orientate and mobilise human endeavour. Ways that are different to how we did things during the last 100 years.

This paper is all about how the social sector can use this as an opportunity to adapt well to a different way of working. It is a way of working that is more focused on value and mobilises efforts to improve social value in a very different way than we did previously. It is a way of working that better accommodates the complexity of some social phenomena.

I cannot tell you exactly how everything will work. This simply has not been done before. This kind of change is going to be uncertain and experimental and there will be blind alleys. But I think there is enough information out there already to show what is now possible and why the shift is a good one. There is also enough information to point towards where we should start. The initial direction that might be usefully travelled.

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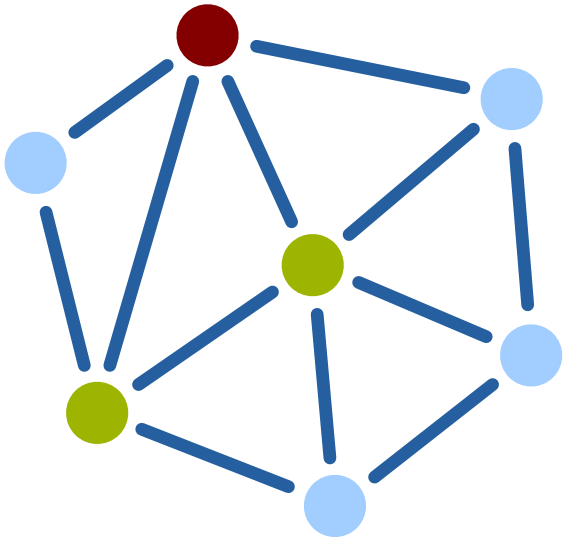
[5] Linsky, M., & Heifetz, R., 2002.

BUILD A PEER-TO-PEER SOCIAL DATA COMMONS.

BIG DATA ENABLES HIGH-TRUST PEER-TO-PEER SHARING OF SOCIAL DATA THAT IS THE NECESSARY FOUNDATION TO BUILD SOCIAL VALUE.



2 BIG DATA IS CHANGING THE WAY PEOPLE ENGAGE TOGETHER

Data science and data technology has taken off in the last few years. This section outlines what has changed and the implications for how we might organise the social sector.

The last couple of decades has seen an explosion of technical innovation.

- **Smarter use of data:** Machine learning methods – sometimes called "advanced analytics" or "data mining" – are ways of analysing large datasets to extract insights. We can now examine unstructured data including free text, pictures and audio content. The new methods deal with sparse or noisy error-prone data better than previous methods and can look at high-volume data (the whole population). These methods also allow identity matching, so the need for unique identifiers to join data together is less pressing.
- **Management of high volume and complex data:** Data processing using innovations such as Hadoop allow high-volume parallel processing of large datasets. This allows very large communities to access huge volumes of data in real time.
- **Connectivity:** Cheap, ubiquitous, and fast networking is enabling communities of users to join up and collaborate in the cloud and to communicate peer-to-peer, coordinate, or mobilise at scale globally on matters of mutual interest. Networks allow disparate sources of data to be shared, copied and combined together to enable diverse sources of data to be re-used.
- **Mobility:** Mobile connectivity includes wireless technology and portable powerful personal computing, and connectivity to large datasets and analytics capability on the "cloud", making all that power available across many channels and locations, and taking personal computing into public spaces.
- **Data collection:** Miniaturisation and developments in the science of measurement are making new kinds of sensors possible. These sensors are more portable/wearable and accessible (including cheap to own). For example, watches read heart rates and will soon read blood sugar, and phones locate people and have cameras. Cities have cameras that can count people and kinds of vehicles (such as in Wellington).
- **Cost of production:** High-powered personal computing, the internet, 3D printing and software place powerful design and production capability in the hands of ordinary citizens at a fraction of the cost and expertise previously required.

It should not be surprising that this technical revolution in how we create, transfer, analyse and consume this "big data" is deeply disruptive. Ubiquitous networking, digitisation, remote sensing, wireless access to data, huge

improvements in computational processing machine-learning and the ability to automate and experiment in real time are *collectively* disruptive.

Taken together, these innovations provide opportunities to build new kinds of knowledge-based tools and adopt different kinds of business models and ways for people to engage and interact with each other and their built environment.

- **Services and tools can be smarter and cater better for context** and be self-learning to better adapt to individual needs.
- **Niche targeting:** Some businesses are using the ability to better cope with complexity and scale **and** still focus on individual needs to manage highly individualised needs (as Amazon does for books), yet do so on a global scale. Such businesses are improving both efficiency and ability to niche target services at scale.
- **New kinds of peer-to-peer business models are emerging:** These models are actually probably more correctly called new forms of mobilisation of communities using peer-to-peer management, communication and information management solutions. See Morning Star[6], a global multinational food giant where everybody is a manager and there are no hierarchies. Everybody can authorise spending, goes on leadership courses, performance manages themselves and their peers. This is a billion dollar business that dominates it's sector and has beaten all rivals. Peer-to-peer is radically altering the way that communities of interest (business, social, or other kinds of interest) can mobilise, orientate, coordinate and collaborate to meet aligned interests. The emergence of peer-to-peer capability is also introducing new ways to manage human enterprise and disrupting standard notions that centralisation, individual leadership and authority owned by specific individuals are the only way to organise human enterprise.
- **Mobility is pervasive, allowing different forms of engagement:** Cloud computing and ICT provide the ability to manage complexity across highly distributed and geospatially distant networks, remotely, within public spaces, and to integrate data collection and engagement with traditionally back-office support (information, analysis, expertise, authorisation), all in the field.

It is common knowledge that traditional services and business models are being disrupted within the transport, finance, retail, music, accounting and media industries. In many cases traditional centres of power are being disrupted.

- Bitcoin is predicted to disrupt the financial sector.
- Rich and cheap production and communication channels are challenging universities with MOOCs (Massive Online Open Courses).

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[6] Morning Star: http://www.morningstarco.com

- Networks of communities are forming to crowd-fund venture capital raising (e.g., Kickstarter).[7]
- Crowd-sourced cooperative human endeavour such as that organised through GitHub is transforming traditional modes of production and can produce highly specified products (such as software) without resorting to hierarchical or micro-managed employees.
- Trade Me and eBay have reshaped the antiques and second-hand trades.
- Uber is disrupting the taxi industry.
- Remote sensing and wireless technology, together with advanced analytics, makes knowing things easier. For example, an iPhone app in Boston can measure bumps in the road as cars travel over it to tell the city council where to send the road repair crew. If the bump is getting smaller, it could be a small animal. If it is getting bigger, it is probably a new hole forming underneath.
- Wearable health technology linked to your location and communications technology (your phone) such as the Apple Watch and soon-to-be-released personal blood sugar sensors are sure to positively disrupt ways of working in the health sector.

What has changed is ways of knowing and ways of organising human enterprise. The ability to manage diversity, complexity, and mobilise and organise effort at scale has just exploded into our lives.

And this ubiquitous peer-to-peer transfer of knowledge and data is hugely disrupting to a status quo characterised by highly controlling middle men and hierarchically organised human endeavour.

But, notably absent from the list of disrupted sectors, in the midst of this fundamental shift and creative disruption in the way things are done, is the state sector and the way it is run.

In this section I argue that it is possible to creatively disrupt and reform the social sector using the same kind of technology. But to do so we need to unleash the social sector data in two important kinds of way.

Before I get to those specifics, there is the case to be made about why data sharing in principle is a good thing in particular for the social sector. In Part One I argued that poorly joined and centralising networks were behind much of the malaise in the social sector. Here I argue the positive side of the story: that a highly connected, peer-to-peer social system is crucial to drive social value.

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[7] Kickstarter is a vehicle for crowd-sourcing funding for new ideas/enterprises. It provides a peer-to-peer way to join people with ideas directly to people with funding. See https://www.kickstarter.com

3 THE CASE FOR INCREASED DATA SHARING

There are two reasons why data sharing is crucial to an effective social sector. The first is that this just what it *is* to be the social sector – to share data is fundamental to social transactions. The second is that increased sharing drives increased value.

3.1 SHARING IS CENTRAL TO AN EFFECTIVE SOCIAL SECTOR

A lot of the business of the social sector *just is* transacting (sharing) between people. So when I say "data sharing", this includes just talking and seeing and engagement with other people – it is not restricted to digital ways of sharing numbers (though includes that as well). All of these modes of data sharing are crucial to driving social value.

- Citizens share data between themselves to provide social learning and support for each other. Think of the formation and management of community gardens, child minding, care, fostering, and numerous volunteer agencies.
- Service providers share data with citizens to customise services and citizens need to share data (such as their heart rate) with service providers (such as their doctor) for the same reason.
- Sometimes providers need to share data between themselves to make new kinds of hybrid service offerings where multiple disciplines are required to coordinate for a single client – such as where a health service and recruitment service work together to provide services for people who are ill or disabled. Or where a GP and specialist, or mother and father, confer to decide how to help somebody.
- Sharing is crucial to commission, measure and exchange value. Providers and the centre of government need to share data for the centre (investor) to know who to pay and to monitor the effectiveness of that service on behalf of the public and provide incentives, and for providers to receive remuneration from sponsors for further work.
- Some of the data that is shared is actual content such as books and lessons and courses, names of mentors and contacts, directions to locations and undertaking tests.

This collecting, accessing and data sharing is the central feature of so many social services – think of diagnosis, testing, course material, collaborating and coordinating, identifying needs, solving problems, and so on. Social transactions are the exchange of value between people. This suggests that improved data sharing will have a wide range of benefits.

In some sense this is a no brainer – we would not have lifted ourselves up from our Australopithecus bootstraps unless we had shared information with each other.

In the next section I show how increased sharing of that kind of social (data) transaction increases value.

3.2 THE "TRAGEDY OF THE NON-COMMONS"

Data that is locked in silos forms a "Tragedy of the **Non**-commons".

A well-known challenge for rival goods is the more familiar "Tragedy of the Commons". Where there is open access to resources that are rivals in consumption (in the sense that a unit consumed by one person is unavailable to anyone else) and users fear they will miss out, there is potential for a race to use those resources.

A tragedy of the commons emerges when the mass use of a common resource diminishes its value to everybody. For example, it is in everyone's narrow self-interest to catch more fish than the next person. The tragedy occurs where this "arms' race" in fishing depletes the fish stock in ways that make it unavailable to anybody once the race concludes –the depleted cod fishery in the North Sea is one example.

However, data are not a rival goods – they do not get used up when used by one person. Any datum can be used multiple times for a diverse range of purposes by any number of people. The marginal cost of re-using data is tiny.

Data re-use, and often re-use by different people, means the range and quantity of goods increases. Sharing the weather forecast can help to save fishermen's lives, and now real-time access to the rain radar helps you to decide when to hang your washing out or when to bike to work. But it is even better than that.

Sometimes data use drives **economies of scope** – joining two pieces of different information together increases the overall scope of value that can be created from that information. In a simple example if I know your height and your weight separately this is one thing. But if I join them together, I can learn new things (that you might be overweight). This is something I could not have known if the data could not be joined. The "scope" of what you can know increases as you add more data together. So joining data can increase value by increasing the scope of what you can know.

The moral here is that overall value is not lost by allowing other people (with their perspectives, assumptions and problems they are solving) access to data. It is increased.

With a monopoly on data, the value to the community decreases if other people are stifled from doing other or better things with it. Although there is a personal monopoly interest in retaining ownership and control of data, the common good is in sharing it.

Compare this with a rival good such as consumption of water. There are personal interests of two sorts in retaining a monopoly on water use. First, you

get to use the good (water) to run your business. Second, you and the community benefit from avoiding a tragedy of the commons (lack of water). There is a shared interest in removing the common right and creating property rights to limit water over-use.

It is different with data. You can get personal value in monopolising data – to protect your business. However, for the common good and you personally, other goods are not possible from siloed monopolised data. You and the community also have an interest in free access to re-use and link up other sources of data. There is minimal cost and large economies of scope in having a Data Commons. Apart from narrow business interests by existing owners of data, everybody wins when there is an unfettered Data Commons.

One potential objection is whether making data freely available stifles the desire to invest in its collection? This is not a game stopper for a couple of reasons. First, the cost of collection is vanishing. Think of the difference in doing a survey now (such as with Survey Monkey) compared with in the past. Previously it was probably inconceivable to collect data on the scale that Duolingo does to learn what works in education from analysing the results from 14 million users.

The Apple Watch is another example of data within a rich data ecosystem (location, heart rate, cadence, and so on) that was probably inconceivable 10 years ago. First, data collection will be more ubiquitous and cheaper. Second, there are ways to manage incentives for this kind of investment. One example might be through a variant on the patent system where the use of intellectual property rights has built-in expiry dates.

What we should avoid is creating a market for the sale of data. The NZDFF[8] was specific on this. The underlying value proposition is that there is value in including a wide variety of users (and perspectives) to have access to data (i.e., be inclusive).

The value to be gained is not in collecting and on-selling the data, but in using it in enterprising ways to drive value. Let people own solutions, not data that can drive solutions. By all means provide a head start in the market, but strictly time limit this to ensure the huge innovation dividend on the back of economies of scope from data sharing.

So, to reprise the challenge: how can we drive innovation and adaptation within the social sector? How can we encourage the uptake of new ideas and new technology to provide a broader spectrum of service offerings? How can we provide services that are more fine-grained to the particular individual's

[8] The New Zealand Data Future Forum was a government-appointed think tank that looked into the question of how New Zealand could do more data sharing to drive value and at the same time do so more safely. The results have been well received within New Zealand and internationally. See https://www.nzdatafutures.org.nz

needs? And how can we provide joined-up service offerings quickly and easily as the need for these emerge? How can we adapt new insights to quickly build services that are relevant and accessible? How can we do this in a way that retains the ability to know whether these services are effective or not as well as communicate this to the market of potential service providers or directly to citizens using self-service offerings?

The answer is to enable two kinds of data sharing to happen more freely. But to do that will require some form of intervention.

3.3 SOLVING THE TRAGEDY OF THE NON-COMMONS

Improved data sharing will not "just happen" on its own. We currently do it poorly and are unlikely to leverage improved data sharing to drive value without leadership.

Some technical barriers are relatively straight forward.

- The locus of funding ends up being the locus of control. Access to the technology, funding, and authorisation to share data is controlled by central government. In that sense we have a "planned" data-sharing ecosystem that stifles innovation in the same way that a planned economy does. The bureaucracy is a monopoly with its own vested interests, customs, assumptions, appetite for risk, and perspective. It is too slow to adapt to the data-sharing needs of the sector.
- There tends to be a high cost of entry, which is exacerbated by having few standards for data sharing, metadata, or Application Programming Interface (API) that work across the sector. This makes the barrier high for effective data sharing for the small- to mid-sized service providers, researchers, philanthropists, and entrepreneurs who dominate the sector.

There are also adaptive challenges to enabling more sharing. In particular, three kinds of interests stifle data sharing:

A. The interests of service consumers who do not want to be subject to the coercive powers of government and adversely affected from sharing their personal data;
B. Current monopoly "owners" of access to data (usually at the locus of funding and so data collection) –they have their own personal interest in maintaining their business model as the sole provider of insights; and
C. Service providers do not wish to be performance managed or have their performance transparent to government, sponsors, or service users since this might threaten their viability.

The first of these interests (A) needs to be addressed directly and accounted for – we need to not use data coercively to achieve greater value for

New Zealanders. This will be addressed in large part by applying the four principles of the NZDFF:

1. By leaving service users in **control** of decisions about the use of their data;
2. **Included** in governance and access to data;
3. In a high **trust** Data Commons that
4. Drives **value** *for them*.[9]

The second two monopolistic interests (B, C) should be overthrown in the name of public good. Social sector data is funded by New Zealanders, about New Zealanders, and should be available for the common good.

For these kinds of technical and adaptive reasons, we fail to consistently and comprehensively achieve the goods that openly shared data provides.

3.3.1 An open data commons requires market regulation

If the analogy of economic markets is used to consider the barriers mentioned above, then there is a failure in our data-sharing market. Monopoly and narrow interests, mistrust, and uncertainty all conspire to keep data sharing difficult at best and avoided at worst.

The Government needs to regulate the data-sharing market to encourage a virtuous cycle where sharing drives value, which in turn drives more sharing.

The NZDFF provided some of the answers to how this market should work and some of the benefits of it. In large part that work was about arguing for a safe, high-trust, data-sharing ecosystem to drive high value for New Zealanders. I refer the reader to that work for an in-depth analysis of how this works. Here I will pull out several key features of that work and add a further component.[10]

Trust is an asset. The private sector has learnt that providing a high-trust, data-sharing market enables people to share highly personal information for personal value. The private sector also learnt that, where trust is eroded, people are less willing to share data and can withdraw their cooperation. Organisations such as Facebook and Google attempt every now and then to push the boundaries. New kinds of Personal Information Management Systems (PIMS) offerings (such as Xero) are providing more control to users in recognition of the value of that trust.

3.3.2 A New Deal on social sector data

New Zealand should negotiate a ”New Deal” on social sector data. And by this I do not mean the commercial one that Pentland (2014) and US thinkers seem to be promoting. I mean a deal that adheres to the principle of the NZDFF and encourages the safe, high-trust re-use of personal data within the Social Commons to drive social value.

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[9] For more information, see the NZDFF reports (2014) available online.
[10] NZDFF, 2014.

There is not space here to develop all of the thinking in detail. In this section I merely include some of the key features for any "New Deal" on social sector data for this to work.

Sector data sharing is owned by the sector

Ownership of access to social sector data should be taken back by the sector. In particular, data about individual citizens should be in the control of those citizens so the value can be driven through their willingness to share on the basis that they are in control, not excluded, and there is high value for them and high trust in the system and in the people governing it.

In addition, this control extends to the executive-level decisions about sharing sector data. Representatives of the various interested parties need to be around the decision-making table, which should not be monopolised by one group – whether government, profession, citizen, or entrepreneur. That is, governance of data sharing must also adhere to the four principles of the NZDFF: inclusion, control (by the interested parties), value, and trust.

The public good overrides personal consent where data is used non-personally

Ownership of identifiable access to your data includes the right to consent or withhold consent for specific identifiable personal uses of personal data. That is, users of data who use that data to personally identify you for targeting some service.

But this is not an exclusive ownership right to all forms of use of your data.

There is also a shared public right to use your data in de-identified form **for non-personal use** for other kinds of goods.

The public (government, other citizens, business, researchers) have an interest in the public good of using data in de-identified form to carry out research and for other non-personal uses (i.e., in ways that do not target and invade the privacy of particular individuals).

These two kinds of use of social sector data are outlined in more detail in sections 3.4 and 3.5 below.

The role of the centre needs to be clearly defined and limited

Because of the coercive nature of government, the centre of government must be reduced to only having access to data for non-personal uses. The use of this data must be highly restricted to monitoring providers and investment decision making and research in de-identified form. Case-level use of freely consented data cannot be co-opted coercively for case-level targeting.

Decisions about using data to target individuals without their consent also need to be vested into the hands of the sector.

Sometimes people will request access to personally identifiable data to find fraudsters, child abusers, terrorists or to undertake policing. Such cases are,

they will argue, for the public good (personal or community safety) and override the right to privacy.

Even in these cases, the Government should not be able to nationalise control of social sector data without the consent of its governing custodians. It should be in the hands of the people governing the Data Commons when to override privacy. This is because the social sector is best placed to assess the value and risk of doing so.

The sector will best know the unintended consequences of eroding trust. For example, coercively grabbing health data to find child abuse may lead to the unintended consequence that young children do not wish to share concerns with their doctor in the first place for fear that they will be taken away from their parents. These instances of trade-offs will be best understood and owned by the sector who has an aligned interest to provide a good result. Social learning and engagement will likely to lead to better decisions – and less risk for central government, since the process itself will lead to a result owned by the sector, not rorted by the sector.

The public's right to know about the effectiveness of publically funded services

The second place where a public good outweighs the right to privacy is with publically funded services. The taxpayer, service users, general public, the Government should have the right to know what they are paying for and whether it is working.

There is a narrow private interest in any one service provider not wishing results of their service to become public. There is a far greater benefit in allowing the public and its representatives to know those results, rather than respecting some service provider's right to privacy. That "right to" privacy really only protects poor service providers.

Although I have thumbnail sketched a few ideas here, the approach should be that the business of designing what works for the sector should be handed to the Social Commons. The social sector should work through the series of issues to form a "New Deal" on Data for the sector – who owns what, how to remove monopoly interests, and how to regulate a freer data exchange and data-sharing commons.

The process itself needs to adhere to NZDFF principles; be inclusive, be high trust, and where the subjects of data are in control of the process (citizens), not monopolised by professions or central government.

We need to hand back the work of working out how to manage the sector as a commons, built on the back of shared data and a shared view and understanding of what is working.

In practice, two forms of data sharing need to be enabled to build a social sector that is more peer-to-peer and can retain visibility.

3.4 ENABLE CONSENT-BASED PEER-TO-PEER DATA SHARING FOR PERSONAL VALUE

The social system needs to allow free and unfettered access to allow citizens, on the basis of their own consent, to share their identifiable social data, peer-to-peer with whoever they please, whether government agency-to-government agency, provider-to-provider, provider-to-family, or citizen-to-citizen.

So if teachers and doctors wish to share citizen data for some putative good, then they should ask the individuals concerned, and central government should enable this and stay out of the decision. This creates a free market for data sharing. This means that decisions about what can and should be done reside where they should, with the people concerned and who are in the best place to gauge the risk and value to themselves.

It is beyond the scope of this report to outline in detail, but the technology exists now to hand back control of citizen data to citizens.

In the past few years, PIMS are emerging that give users more fine-grained and genuine control over their personal information. Xero is one such example created and based in New Zealand (outlined below).

Use of metadata standards and APIs will make peer-to-peer data sharing easier.

There are a range of models for the safe handling of personal information: centralised data hubs, federated models of allowing data transactions and using Bitcoin style (i.e., Blockchain) technology to put total ownership of all aspects of your data use in the hands of citizens in a truly distributed (and so not able to be controlled) network.

3.4.1 BLOCKCHAIN TECHNOLOGY

Use of the technology developed around crypto-currencies may be a sound solution to allow safe, private, high-value social data transactions peer-to-peer across a distributed network. If possible, this form of data sharing would allow truly peer-to-peer data sharing (where all nodes are equal) and remove any single point of failure.

I am only just learning about this, but if some kind of similar solution is available then it has several advantages over traditional approaches to managing safe information sharing.

- This kind of solution can be built by the open source community and so truly owned and transparent, adding essential trust into the process.
- A “social data wallet” is secure, private, and can essentially have built in elements of a PIMS –ownership and tight control over who can use this data for what, including a retrospective ability to revoke permissions.

- It provides the ability to police poor behaviour. For example, Blockchain allows recording of all transactions undertaken with the data. This provides the ability to self-police. It keeps visible who tried to re-identify personal details without permission.
- It is truly peer-to-peer; with an equal say over the network and no centralised control.

That high-value, private-data transactions on the basis of consent are possible at scale is evidenced by the financial sector and cloud computing. Modern peer-to-peer options are emerging that may provide even higher trust and decentralised alternatives to achieve the same ends.

Some thought needs to go into what the best solution is. This should be done by members of the social sector who should own the solution.

3.5 RETAIN THE ABILITY TO SEE THE WHOLE SYSTEM VIA A SOCIAL DATA EXCHANGE

It is no good if you make peer-to-peer sharing possible but in the process lose sight of the social system by being unable to bring that shared activity back together to understand what is going on.

The social system (the actors in it) all need to be able to see that system, so that value can be seen, risks understood, and the social sector can mobilise in the direction of value. peer-to-peer without visibility means not knowing what is going on or how to improve social value.

For this reason a second form of data sharing is required – a de-identified "Social Data Exchange". This is required to allow non-consent based safe sharing of social data for public and private goods purposes. That is, all users of the Social Data Commons also consent to non-personal uses of their data within a Social Data Exchange. Note that I am using "research" here in a broad sense. This non-consent based data exchange would likely be used by:

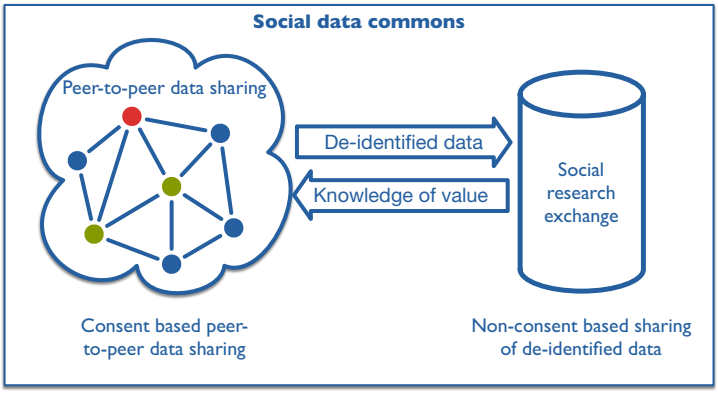
- researchers, providing the ability to integrate consent-based personal data about their subjects, and to compare with similar persons (in de-identified form) without consent;
- the centre of government and others to understand risk, measure value and better procure value for citizens; and
- app designers, perhaps operationally, in de-identified form, to provide new kinds of services. One example in real time is when you compare your heart attack prognosis against several thousand other app users to constantly iterate and improve. Duolingo is a good example of this kind of operational data-sharing that relies on anonymous access to data about other people, so does not harm them and is of great benefit to all users.

So the so-called "research" data exchange (for want of a better phrase) is also able to be used operationally (integrated into practice). This is not the

Statistics New Zealand Integrated Data Infrastructure (IDI) which reflects the old mode of research in that it doesn't currently enable these new forms of data sharing for non-personal uses.

Incentives need to be built into the Social Data Exchange to avoid misuse. So for example, if anyone misuses your data (i.e., re-identifies you without permission) this goes against their record (potentially Blockchain) and is visible to the social network. If you abuse trust you should find it difficult to ever use other people's data again. In that sense, the system can police itself to some extent.

A note about terminology here: I use "peer-to-peer Data Sharing" and "Research Data Exchange" to refer to two types of data sharing, not necessarily two data sharing systems. peer-to-peer Data Sharing refers to the consent-based use of individual identifiable data to do something for a specific person – with their consent. The language of a Research Data Exchange is meant to reflect the non-consent based use of social sector data for public and personal goods, but to do so in ways that uses data for non-personal uses that does not reveal an individual's private details.



I am agnostic as to whether these two forms of data sharing require two separate systems for managing data. I hope they do not. But there are two ways to share personal information safely – identifiable only with consent, or in de-identified form to not target individuals. Where I refer to both together I will use the terminology "Social Data Commons", and this refers to the safe use of personal social sector data – either with consent for personal uses or without consent for non-personal uses.

3.6 USING A SOCIAL DATA COMMONS AS THE FOUNDATION FOR A "SOCIAL COMMONS"

Enabling both peer-to-peer data sharing and opening up the ability to see the whole system is handing control of the social system to the social sector and taking control away from centralising hubs that tend to stifle innovation.

Doing so on the basis of consent by affected individuals where peer-to-peer operational data sharing is required (the Social Data Commons), and enabling

de-identified use of all information together (the Research Data Exchange) provide a safe data ecosystem.

Together they also provide the necessary open data ecosystem that will create the right incentives and enablement to be innovative and self-learning.

This hands back the social sector to the researchers, providers, citizens, and government in a form that is an enabler of innovation. It greatly mitigates the overly controlling centre, but still enables the centre to have the best ideas (if they do). It creates an open market for innovation and testing whether that innovation works rapidly and transparently.

In 2012, while working at the Treasury, I was approached separately by three individuals who all wanted access to social sector data.

- The first was the head of a large philanthropic trust who had invested heavily in improving health and education outcomes in south Auckland and wanted to evaluate their service.
- The second was from a private hospital that wanted to make the case for better rehabilitation services that its local DHB was doing. The hospital needed access to public health data to assess the business case for themselves and, if that looked satisfying, to make the case to re-allocate health funding where they thought it was best placed for improved long-term outcomes from early onset stroke and brain injury.
- The third was from a researcher who wished to link their longitudinal data to social sector data to do better research and so leverage more value from their existing data collection.

A systemic approach to enabling safe sharable data makes an open Social Commons possible. It opens the door to a more diverse sect of actors by not being controlled from the centre – the centre does not have a monopoly on good ideas. Unfortunately they do have a monopoly on access to the data. A Social Data Commons maintains visibility of the whole system by avoiding the fragmentation of siloed data. It allows more kinds of data to be integrated to drive innovation or the re-allocation of resources. It allows more competitive and contestable policy to emerge. It is the basis for a self-conscious, self-learning Social Commons. A safe, open Social Data Commons is only the foundation for shared Social Commons – a social sector not owned and controlled at the centre by a few individuals, but by many people. peer to peer.

So how does mere peer-to-peer data sharing enable the social sector to orientate towards value, mobilise engagement and drive innovation and adaptability to improve social value?

HOW A SOCIAL DATA COMMONS DRIVES SOCIAL VALUE

A SOCIAL DATA COMMONS ENABLES ORIENTATION TOWARDS VALUE, MOBILISES PEER-TO-PEER ENGAGEMENT AND ENABLES THE INNOVATION REQUIRED TO LIFT VALUE.

In this section I outline how a Social Data Commons will enable the social system to improve social (and fiscal and economic) outcomes. It provides three ingredients to drive value.

- **Orientation of the social system towards value (see section 4):** Providing a view of the whole system enables a new range of knowledge tools that allow the sector to orientate better towards value. In particular, it provides the ability:
    - to see and manage complexity and measure outcomes by being customer focused
    - to improve investment returns by allowing system level allocation (maximise global optima)
    - to incentivise market to focus on adding value across a wide range of fiscal, social and economic outcomes
    - to measure and reward value, learn what works, and so enable new forms of procurement.

Research will be able to be undertaken faster, peer-reviewed more easily and data shared to answer a wider range of more complex questions, by linking to a wide range of social, economic and fiscal outcomes. This will enable government policy to be influenced more directly.

- **Improved social learning effects (section 5):** The source of ideas greatly expands when you open up peer-to-peer engagement and remove powerful centralising monopolies. Transparency, orientation towards value, symmetrical access to information, and owning the problem allow social learning effects to inform solutions to make a better social system. This is done by the parties most interested in better outcomes and most able to invent and buy in to nuanced solutions – based on a deep understanding of their piece of the puzzle, *and now* the ability to integrate this thinking within the wider framework of now understanding how their piece fits into the wider (now transparent) social system.

- **Lifting and supporting innovation (section 6):** Data-enabled social sector innovations that improve outcomes (often for less) will be possible. It creates the right environment for tech savvy innovations to emerge quickly through open, low barrier and high reward entry to open social market (i.e., not controlled by a monopoly of professionals, government, or big business interests). peer-to-peer sharing also improves the ability to technically support local solutions, to collaborate and coordinate across more traditional service offerings.

All this adds up to building a self-learning adaptive Social Commons.

As a corollary to all of that, building this kind of safe social data ecosystem will also support the growth of the new digital industry, position New Zealand as a

safe, high-value, open innovative market to attract, retain talent and investment in both research and technical innovation.

4 VISIBILITY OF THE WHOLE SYSTEM ENABLES ORIENTATION TOWARDS VALUE

Using data in de-identified form, all of the actors within the social system can see the social sector as a system and understand what is going on. This knowledge of the system, as a system, in all its complexity, is necessary to focus incentives and investment on value – positive social, economic and fiscal outcomes from better targeting of what works for specific kinds of customers.

Section 4.1 provides a high-level view of the approach to becoming customer-outcomes focused. Since many of the concepts are new, sections 4.2–4.5 outline particular elements in more detail.

Section 4.6 re-imagines the role of the executive (i.e., ministries or "the centre") as being almost solely about designing, building and maintaining this visibility of the system and the levers to orientate towards value. This is a shift away from the centre also being choosers of targeting strategies (policy and service design). It is a different form of procurement from the centre – one focused more on outcomes and less on *how* to achieve these (micro-managing inputs and outputs).

4.1 THE EXPANDING TOOLKIT TO MANAGE COMPLEXITY, ORIENTATE TOWARDS VALUE AND CATER FOR INDIVIDUALISED NEEDS AT SCALE

The social sector needs to be built on the back of a customer-centred business model that is broad bandwidth (that looks at all outcomes and all customers). This is a model that builds outcomes-focused incentives and measures a wide range of impacts – a system that is aware of where investment is being actually applied. This provides the knowledge platform for a social system that is self-learning and able to orientate towards real value and consistently get better at doing so over time.

4.1.1 DE-FRAGMENTING THE CUSTOMER TO OBTAIN A FULL VIEW OF THEIR SITUATION

It is now possible to achieve a full view of the (de-identified) customer and their pathway across the social sector – that is, understanding of all engagements with all providers, linked to cost and organised longitudinally. Pathways tracked across the social sector provide both needs and outcomes data and the ability to learn what works. This provides the foundation stone for being able to build a more customer-centred budget allocation, KPIs, and

accountability to systematically and comprehensively orientate the sector towards value for customers. As the social sector is primarily about getting better outcomes for people, you need to be able to see those people properly to do that. This is outlined in section 4.2 in more detail.

4.1.2 POPULATION-BASED (SEGMENT LEVEL) ACCOUNTABILITY AND BUDGETS

The data-led identification and use of population-based "segments" (groups of similar) people forms a new kind of taxonomy around which to organise accountability, budgets and strategies.

Where the old business model tended to focus on appropriations and accountability for services, the new business model identifies kinds of customers first and then asks which kinds of services offerings work for this kind of person. Population (segment)-based budget allocation and accountability frees up choice about re-allocation of investment. It allows the segment owner to choose between services – or develop hybrid or new solutions. Currently the system builds in a prior answer to questions of re-allocation because the social system is segmented and controlled by servicing interests. Re-allocating from within servicing interests to other servicing interests is less likely. The population-based accountability and budget allocation place a layer above servicing interests and so people are freer to choose where to invest to drive value.

Accountability targets for each population-based segment can include RETURN ON INVESTMENT expectations for several kinds of impacts (fiscal, social, and economic) – see below.

4.1.3 A BROAD RANGE OF IMPACTS CAN BE TRACKED

There is very rarely just one outcome when a person gets better/worse off. A comprehensive view of a person's trajectory across the social sector provides the opportunity to track a wide range of relevant fiscal, social, economic and cultural impacts. These impacts are not just client outcomes; they need to include improved personal *and* community outcomes. This includes the ability to optimise expenditure (and save tax) and also invest in social services to drive economic growth.

Governments of different stripes will pick which aspects to focus on and which trade-offs to make. The state sector can provide a sounder basis for some of those trade-offs by having a broad bandwidth of impacts from social investments. Once you start looking at people and not services, some old boundaries break down – this includes between economic and social investments and (presumably) between the left and right in thinking about social investment.

4.1.4 INCENTIVES CAN CATER FOR CUSTOMER DIVERSITY

New kinds of "value add" incentives can be introduced that better account for adding value for different kinds of customer and build in future risk into today's incentives. Examples from education and the benefit system illustrate how these kinds of incentives mitigate poor targeting and the formation of tails of under-achievement or ballooning fiscal liability. See section 4.3.

4.1.5 THE ABILITY TO MEASURE AND REWARD VALUE

A Social Data Commons provides the opportunity to measure what works continuously and at scale. Section 4.4 outlines a nice example from MSD of how Random Control Trials (RCTs) are being integrated into practice to continuously improve Return On Investment (ROI) and report back results to a fine grain of detail.

A Social Data Commons available to researchers and the centre will allow this kind of fine-grained measurement of what works for specific kinds of customer to be done remotely for most services.

Quasi-experimental methods can be used to continuously assess value and orientate towards it. Estimation of what works is possible where data is available that allows us to distinguish between kinds of people and to profile their level of risk or need or kind of need and then to measure the impacts of services provided**.** A wide spectrum of impacts can be tracked over time to look at the effects of each approach *for similar kinds of people*.

Experimentation should also be part of the procurement contract at the provider level – as in the Work and Income example (see 4.4). Allocative decisions at the provider level will be less adventurous, but still have the ability to maximise ROI within the range of service offerings provided.

4.1.6 UNDERSTANDING OF TO WHOM INVESTMENT IS ACTUALLY TARGETED

Much of the task on the frontline is figuring out who your customers are so to better ensure that services are targeted well. This is in essence a decision-making service that is sometimes highly uncertain. This is typically managed very poorly (if at all) in the social sector.[11] Poor targeting can lead to intentional or unintentional risk shifting and cherry picking.

A Social Data Commons will allow the social sector to be able to monitor targeting performance directly. Targeting performance metrics helps provide knowledge about where your investment is *actually* being spent – what level of needs is receiving what level of service? It can be used to monitor and incentivise improvement of the decision-making performance of service providers. Section 4.5 shows how all of this is possible.

4.1.7 BEING OUTCOMES-FOCUSED ENABLES PURGING OF CULTURE AND INCENTIVES THAT SUPPORT SILO ACTIVITY

Culture and incentives that support silo activity can get in the way of targeting flexibly across boundaries. Because outcomes can now be focused on, the centre can let go of the business of micro-managing inputs and outputs.

The experience in Work and Income illustrates this point. The frontline and management are now starting to question the value of existing KPIs and metrics that appear to be getting in the way as processing incentives conflict with a customer focus: *'Why must I still process this guy fast when he is a high-*

[11] Mansell, 2006, 2011.

needs customer who will require more time, but be a high-value-add investment if we can help?' For more on this example, see section 4.3.6.

Many of the ideas outlined here (4.1) are considered in more detail below (4.2–4.5) using real examples.

4.2 BETTER VISIBILITY OF THE CUSTOMER IS THE FOUNDATION

Customer-centred data and analytics provide an improved view on what is really going on in the social system. This includes fine-grained detail about service consumers' pathways through the social sector, including the services they have accessed and ability to track downstream consequences (see Figure 1 below). Being able to do this at scale for everybody provides rich and detailed information about what is going on in the social sector. Where long-term risk sits. Who is providing value? Where there are gaps or emerging issues.

Marc (not his real name) illustrates what things can look like when you look across services and across time (in this case, from 1991 to 2010)– longitudinally. This is an example of using shared data from Education, Child Protection, Youth Justice, Youth Transition Services, Work and Income, and Corrections to better understand outcomes.

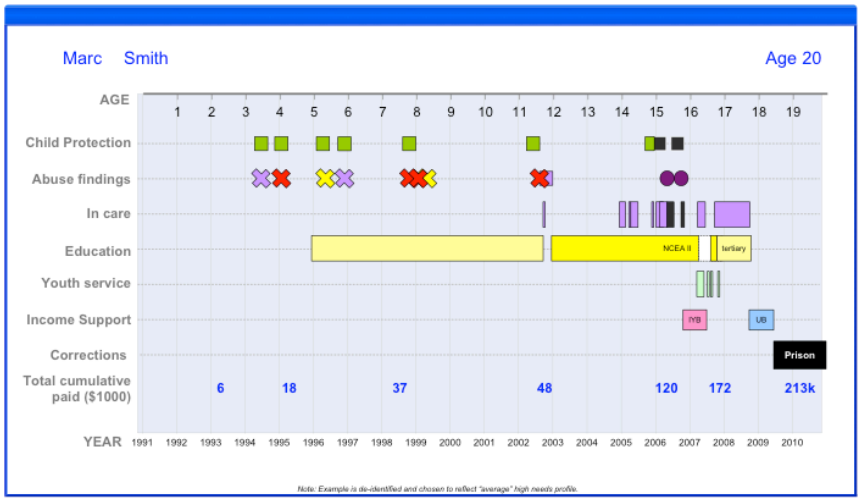


Figure 1: The view of a person across servicing silos and time.[12]

Marc progressed from behavioural difficulties at age three and a half, through to substantiated cases of physical and sexual abuse through to age 11, on to youth offending as a teenager and was taken into state care from age 14. He

[12] An animation of this, including explanation of coloured markers, is available on YouTube: https://www.youtube.com/channel/UCQC_bQD5F9mQYxQCwitlNxA

had multiple placements with foster carers and spent time in a youth justice residence. He didn't do too badly in education, all things considered, getting one subject at NCEA Level 2. However, as a young adult he went from tertiary study onto a benefit and had spent time in prison by age 20.

The state sector has spent well over $200 000 on Marc, yet his outcome is poor. The outcomes for the community, for Marc's victims and for the taxpayer are also poor. Importantly, these outcomes are typically invisible and nobody is accountable for them. Because data are typically fragmented within service silos, nobody can track outcomes like this.

The profile Marc illustrates is not uncommon. Thousands of New Zealanders have a similar profile or are even more socially costly to themselves and their communities. Fiscally, a small number of people cost the country billions. This does not have to happen. Rather than waiting to trickle-spend hundreds of thousands of dollars over a person's lifetime, and waiting until too late to rehabilitate, shared data allows us to identify high-risk pathways early and provide the knowledge and confidence required to make government service providers accountable for what really matters earlier. Enabling us to spend a little more upfront makes a bigger difference – and then results are tracked and providers become accountable for outcomes.

Shared state-sector servicing data provides a crucial tool to make these pathways visible and to learn how to invest more effectively to make a difference. All New Zealand benefits when the state sector can have a whole-of-person perspective.

This is achieved by re-using existing administrative data and organising it to track people longitudinally (that is, tracking people's pathways through services). This can be done safely through use of de-identified data to preserve anonymity. None of the examples below require the centre to be able to identify an individual to target a specific service. Yet we can now make providers accountable for who they target, build more highly targeted policy, and hold people accountable for outcomes.

The big difference is that this understanding can be used to mobilise large-scale effort *while also retaining an individualised focus on needs*. The sector can now deal with the complexity of providing services to large volumes of people and still make those services highly personalised. There is no need to lose sight of the customer any more, even when working at scale.

Without this ability to observe people in all their richness, and without the tools to handle this complexity, the social sector is running blind. It is also obvious from this example that traditional reductionist servicing boundaries break down when you look at people and the influences on them.

Figure 3 below is the result of text mining 25,000 child protection case notes. What it shows is what the front line sees every day. It illustrates why highly siloed service delivery, accountability and budgets all get in the way of front line practice. Some cases are complex. Multiple agencies are interacting across multiple issues. Using reductionist Taylorist central planning for that kind and level of need for coordination and collaboration is just kind of nuts.

The social sector needs to be enabled to a self organising system locally to cater for this level of complexity.

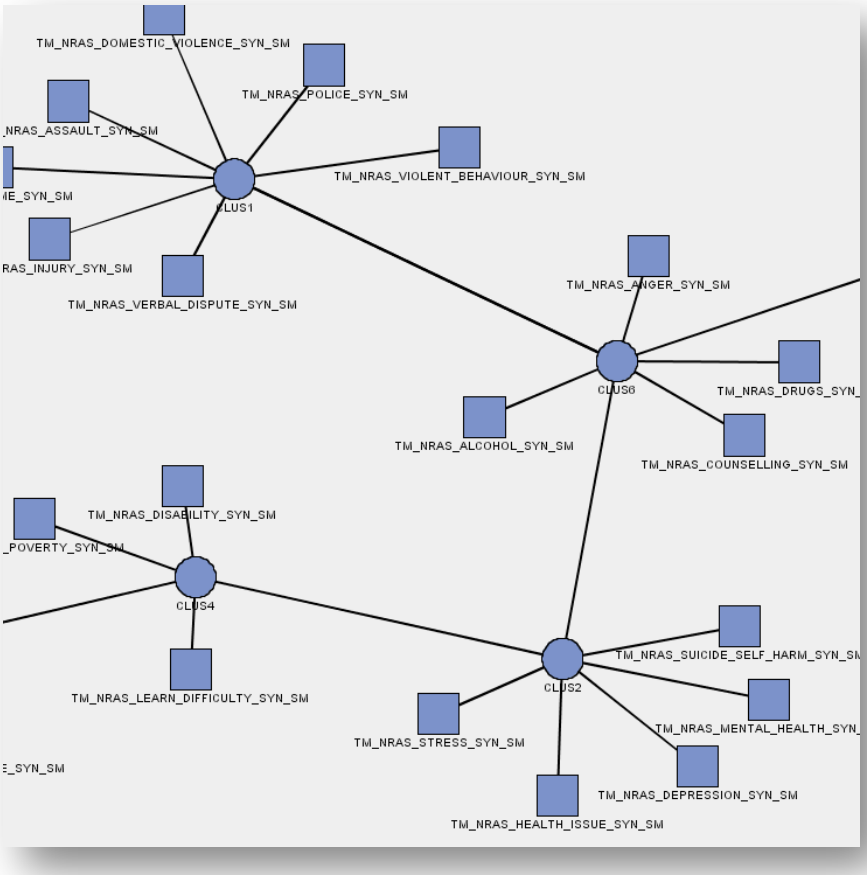


Figure 3: Text mining to observe what the frontline sees

Whilst this is recognised, what tends to stop it is the need to ensure investment is wisely allocated. You cannot just hand over the tax payers hard earned money and hope for the best. The system also needs to be able to orientate towards and be accountable for value and learn what works.

Previously the assumption was that the only way to do this was tight centralised control. That is just not true any more.

4.3 PROCURING SERVICES ON THE BASIS OF ADDING VALUE FOR EACH KIND OF CUSTOMER

One key challenge facing the social sector is to build incentives to better target value for *all kinds of customer*, and, in particular, to build incentives that do not leave people behind. Existing incentives can lead to risk shifting (including "parking" difficult cases) and cherry picking (the easy cases), which in turn leads to tails forming – and people like Marc Smith who fall between the cracks. Two examples illustrate this challenge.

4.3.1 THE WORK AND INCOME TAIL

The traditional incentive that drove practice in Work and Income was how many people got back to work. But, as the Welfare Working Group discovered, this did not incentivise adding any value for *all* kinds of customer.

Treating every client as an average led to the situation where most effort in Work and Income was provided to customers who were most easy to get back to work (unemployment beneficiaries).

Work and income was cherry picking easy clients, expending effort where success was most likely and easiest to obtain. Difficult clients were parked within sickness and invalids categories where almost no effort was expended to get people back to work. As the Welfare Working Group pointed out,[13] this is risk shifting difficult cases into the future and leads to the "tail" of burgeoning forward liability. That is, the number who stayed for longer time in benefit had worse outcomes and higher "forward fiscal liability". The cost was shifted into the future and mostly likely also to shifted health problems and other kinds of negative impact.

The old goal of getting the most people back to work treated getting every person back to work as an equal achievement. But that is not the case. Getting a long-term sickness beneficiary back into employment is a major win for everyone concerned – beneficiary, taxpayer, and community. Getting an able bodied Harvard-educated investment banker back into work is perhaps not quite worth the same sense of achievement.

This is not to blame the agency and case workers. All of their incentives were to do just that. It is the fault of the simplistic KPIs that treated every case where somebody got back into work as the same level of value to that person, the provider and the taxpayer. This kind of non-person-specific KPI encourages this kind of outcome.

4.3.2 THE EDUCATION TAIL

Non-person-specific ("averages based") KPIs are also commonly used in education. This leads to a similar "tail" in educational under-achievement.

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[13] Welfare Working Group, 2011.

The incentive to ensure all students reach a specified level of academic achievement is an "averages based" KPI. It is not the kind of incentive that encourages providers to accelerate growth for *every* learner.

For example, the Better Public Services (BPS) target of getting 85% of 18 year olds achieving NCEA Level 2 (the BPS5 target) encourages schools to focus on those students who are already close to achieving NCEA Level 2 and assist them to achieve it. This can encourage cherry picking and risk shifting. That is because an incentive to meet a specific static achievement level will be easier to achieve for some students than others (Figure 4 below).

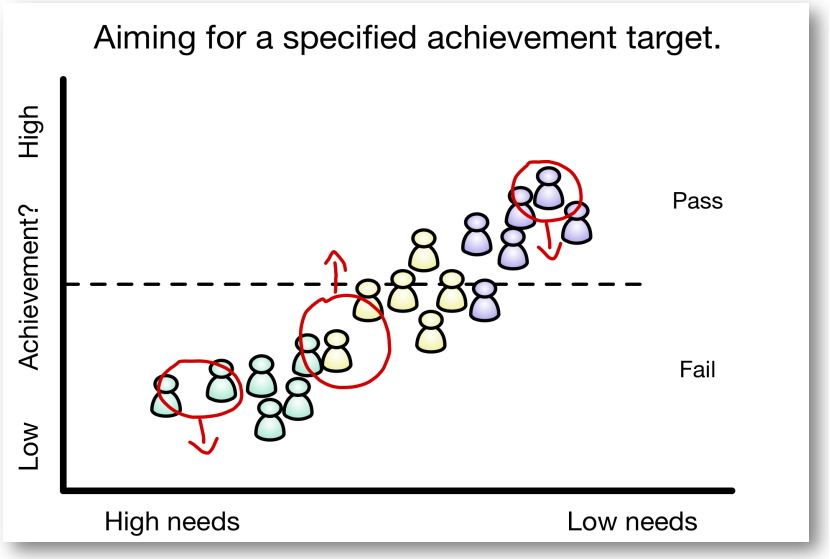

Figure 4: The effect of incentives that are not person specific

A non person-specific initiative is a poor incentive for those who would achieve NCEA Level 2 regardless of the effort a school puts in. Obviously, you do not need to put much effort into your high achievers since they will achieve NCEA Level 2 with ease. It might be wise to attract more of these kinds of students to "cherry pick" success into your school.

Likewise, this incentive also fails those at the bottom who require much greater assistance. There is little incentive to expend time and energy on low performers, because they are unlikely to achieve Level 2 even with assistance. Risk shifters have a better business strategy: remove these kinds of students from your books to improve your books, and risk shift their needs into the future or laterally (to another school). Doing so is a benefit to you and to the other students (who might be disrupted by their behaviour) – a win-win for the school.

The emerging effect of cherry picking and risk shifting is starting to show up in the figures. In the Programme for International Student Assessment (PISA),[14] we see larger proportions of 15 year olds at the lower benchmarks and fewer reaching the top benchmarks.

The nose of the achievement spread is shortening and the tail is lengthening, because there is little in the way of systemic incentives to solve these challenges.

This is not the fault of the new Better Public Service (BPS) target. It is the unintended consequence of this and all previous incentives that do not build in a customer needs focus into the incentive. Although the BPS5 target might be a great *goal*, it is not the right kind of operational *incentive* to get there.

4.3.3 Poor incentives compound disadvantage and erode high performance

Within the context of long-run value common to the social sector, this kind of structural incentive to risk shift is exacerbated. If education or youth offending is a journey of 10 years or more, then risk shifting and cherry picking add up.

If everybody's risk and costs shifts for 10 years, then the damage has already been done by the time someone has to get these kids through NCEA Level 2. What would have been easier to accomplish during 10 years becomes very expensive and, in some cases, perhaps impossible to turn around at this point.

Ad hoc high-needs approaches, such as slightly increased funding or specific programmes for low achievers, are typically swamped by the structural incentive – to get a certain number over a particular hurdle. They have limited effectiveness against incentives that compound the tail over time. To be effective, incentives need to be sustained for many years.

You could get the opposite dynamic if every teacher throughout a child's schooling were accountable for accelerating learning by exceeding potential for every kind of learner in every year. This would compound potential in each year of a 10-year journey.

4.3.4 Value-add incentives

Value-add-based KPIs do just that. They provide incentives that cater for a high diversity of needs systematically. Value-add incentives are useful where there is the risk of cherry picking and risk shifting and so against tails forming.

This is done by making targets highly personalised based on the level of customer need. Value-add KPIs estimate the propensity for a potential outcome (such as benefit stay, educational attainment, maltreatment, fiscal liability, tax take) *given what we know about a person*. The goal is then to "add value" by improving those impacts.

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[14] PISA is a triennial international survey that evaluates education systems worldwide using standardised testing of 15 year olds. Sixty-five economies took part in 2012, including New Zealand. PISA is run by the OECD.

Value-add incentives reward good practice for a wide range of needs. They drive the desire to find solutions because they make success and failure transparent for each kind of customer.

Value-add models can be applied directly to a wide range of social, fiscal and economic outcomes – any impact that you think a service might have where you have data. It comes down to whether you have the right kind of reliable data to estimate the impact. Three examples are below.

- In the case of Work and Income (benefit payments), the expected time (and cost) on a benefit is estimated and the value add is to reduce the future time spent on the benefit.
- The NewPin Social Benefit Bond applies value-add incentives for child protection outcomes in New South Wales to first raise capital, then to reward investors if value has been added. The incentive is to increase the rate at which vulnerable children are returned back to their families above the expected rate for that cohort.
- Value-add incentives are also used widely in the education sector. Education potential is estimated and then the goal is to grow potential.

In each case, the service provider is incentivised and rewarded for improving a person's lot – "adding value" by changing a person's expected outcome *and* for the effects on the rest of society (such as tax paid, victims saved).

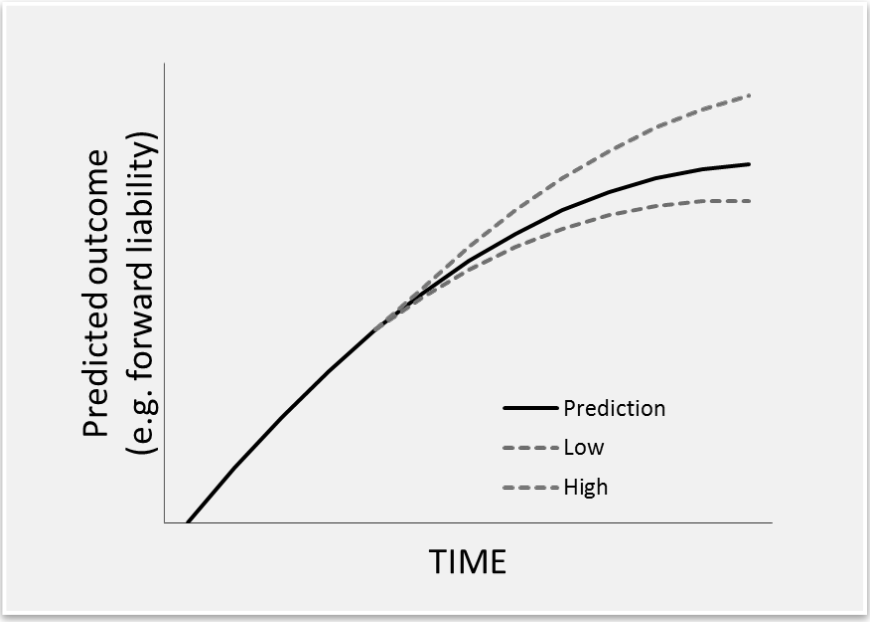

Figure 5: Value-add incentives

One limitation is that accurate measurement requires large numbers. These kinds of incentives need to be applied to segments that are large enough to accurately measure the actual value added. This is not a special feature of value-add measures: all forms of measurement suffer from small samples and/or poor data. However, value-added measures *do* involve additional noise

because they are a difference in two measures – so will tend to require larger sample sizes.

Focusing the sector on value by focusing the sector on the incentive to *add* value in this manner can drive substantive change to both business models and practice.

Two applications of value add style incentives are used to illustrate both the main idea and how this can radically transform the way providers operate.

4.3.5 Lifting education potential

Education Value Added Assessment System (EVAAS) is a reporting package provided by SAS (an analytics software and services business). It has been rolled out to schools throughout the United States to help teachers and principals learn how to improve results for each individual student. Similar tools are used elsewhere in the world, including New Zealand.

In 2011, I interviewed officials from Beaufort County and Grandville County in North Carolina to see how this tool is being applied in practice.

- County education supervisors use the tool to provide incentives for schools to add value for every learner – to achieve the "no child left behind" policy of the United States. In this case, the data are only at the level of the school, not teacher or student.
- Principals use the tool to organise classes and manage the school. In this case, the data are at the level of the teacher and student.
- Teachers use the tool to manage their classes and learn from each other to improve practice.
- Teachers, with students and their parents, sometimes use the tool to set individualised learning targets for each student – but only where there is a perceived level of maturity in how to interpret this kind of predictive information well.

Figure 6, "Neglecting the middle" is a screen shot of a report that shows a teacher's value-add report for a class. The green line is the predicted potential of each student. In this example, individual learners have been segmented into three groups; low, medium and high potential learners. Getting a bar above the predicted potential reflects adding value, while below the line means eroding potential. This teacher has successfully added value for both high-achieving and low-achieving students in the teacher's class, but those whose achievement was predicted to fall around the middle segment have not been well served and potential has been lost.

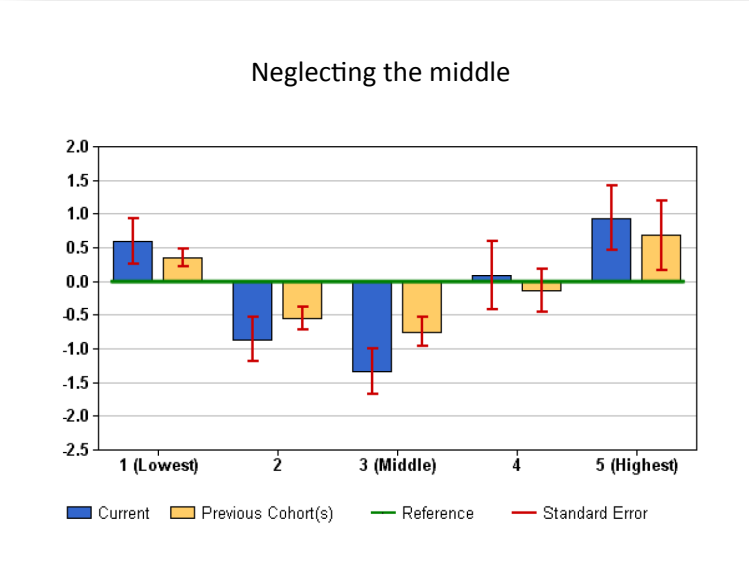

Figure 6: Value-add school report – neglecting the middle

In the second example – Figure 7 ("Cherry picking the high achievers") – a different teacher has succeeded in accelerating learning for only those students who are already top performers. Potential has been lost for low achievers, and so risks shifting a lower starting point for those students into the next teacher for the next year. The next teacher will have a greater task to meet or exceed potential for these students.

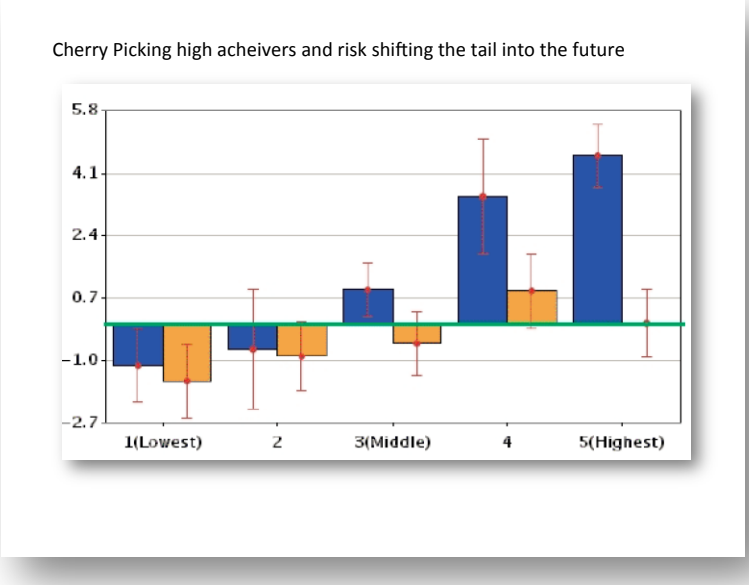

Figure 7: Value-add school report – Cherry picking

A similar approach is being used in New Zealand independently by some colleges today to inform and so improve practice.[15] "Ed Potential" uses this value-add thinking to focus teachers on improving performance for all students. It is being used to improve practice and learn what works within the school.

This excerpt from interview with the supervisor for Beaufort County, North Carolina (2011) illustrates how one principal is using this kind of tool in planning:

> *One of my best principals told me a story about how he was using this tool to get his school from a 45% graduation rate to an 85% graduation rate in five years. He uses EVAAS to help organize classes to help get every kid over the line. He knows which teachers are better with which kinds of students. There is one story that stands out though.*
>
> *Every year, two teachers would get together and choose 40 kids who were to be put into a high achievers math class – effectively to jump a year to increase their potential.*
>
> *This time the principal put all those selected student names into the EVASS model to see who the teachers had chosen. He was pleased to find that (using their own judgment) they had identified 40 students who were predicted to do very well by jumping a year. But he was also surprised to find another 40 students who were also predicted to do equally well by the EVASS report but not selected by the teachers.*
>
> *When he approached the teachers to suggest that these other 40 kids should also be jumping a year and doing high achiever math, they refused. In fact, when he insisted that they have 80 kids this year who will jump a class, one of the teachers resigned because 'he is questioning my judgment, those kids will never be able to handle it'. The other remaining teacher reluctantly agreed to take all 80 students (having two high achiever math classes that year).*
>
> *All (except one student) passed the high achiever math test that year.*
>
> *The interesting thing was that the original list of 40 students provided by the teachers were all white. The model correctly identified a further 40 African American and Mexican kids who were also predicted to do well. And, when given the chance, they did.*

Note here that the wrong conclusion to make from this is that data science models always outperform human decision makers. Work done in Child, Youth and Family (CYF) in 2008 suggests that, at least in the case of some kinds of decisions, humans out-perform models and, at other times, the models do

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[15] These colleges are using "Ed Potential", an analytics and information and consulting service developed and delivered by Victoria University.

better. What they can do, as in the case above, is provide a yard stick and independent information with which to question and learn about how to make better decisions.

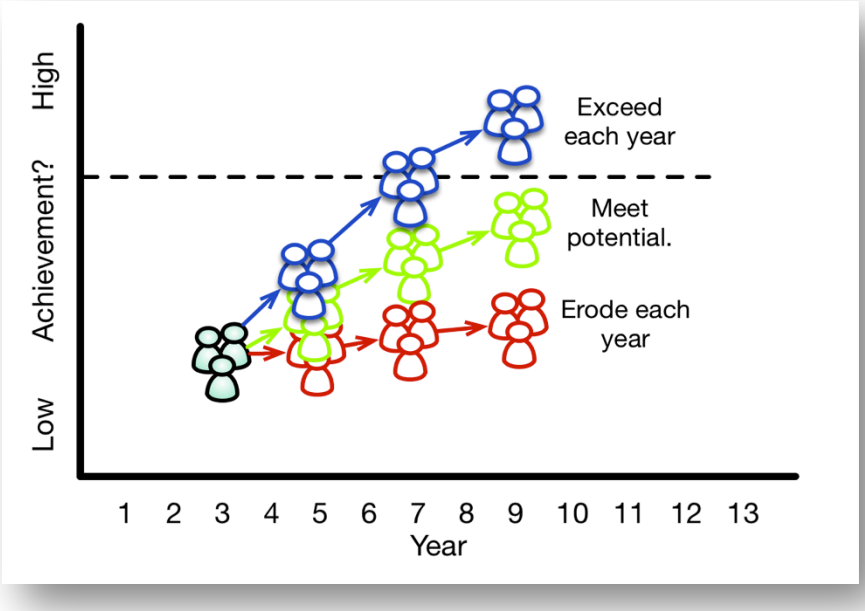

Figure 8: The compound effects of adding/eroding value each year

From a more systemic perspective, these kinds of models can be used to sustain the drive to improve potential for the whole learner journey for many years. Every teacher in every year is accountable to not merely meet potential, but to grow it, every year.

In practice, this means that, when the school keeps the foot on the accelerator for a child for several years, then large deficits can be overcome to produce high achievement.

Some schools just want a fairer system. Value-add incentives can be used to measure the accelerated learning that Dave (see Figure 9 below) claims to have achieved. Under this model, Dave might be one of our star principals, accelerating learning for all learners, even though his school might not achieve the BPS5 target.

Dave's claim may well be true. His school might *add* more social value, economic impact and fiscal forward liability reduction than many schools where 85% of students pass NCEA Level 2, yet potential may have been eroded both for high potential achievers and for low achievers.

Change wanted: Rata St School principal Dave Appleyard says National Standards do not always accurately reflect pupils' achievements. Photo: FAIRFAX NZ

School wants standards stats to delve into progress

LIAM HYSLOP

Staff at Rata St School in Naenae are happy with National Standards but want progress to be shown when results are reported.

The decile-one school with 384 year 1 to 6 students prides itself on taking students who are below National Standards and bringing them up to standard.

Principal Dave Appleyard said the statistics did not always reflect that.

In 2013 the percentage of students reading below or well below National Standards was 40.2 per cent. For writing it was 59 per cent and for maths 53.7 per cent.

What that did not show was a breakdown by year level or how students had improved from year to year, Appleyard said.

"We would love to be able to show progress of students that have been at Rata St for four, five or six years and not just show a snapshot of all students in that year," he said.

"Too much data can confuse people but it could be packaged in a way which showed the progress students were making, which is what you want to see from a school – that they improve students."

Contributing to the perceived lack of progress was the transient nature of the school's pupil base, with a third of the roll changing each year.

One child who came into Rata St in year 3 was Te Awhitu Tipene, who is now 10. He said that when he arrived from Auckland he was well below all the standards but had been helped to the point where, in year 6, he was now meeting them. "I was looking at my scores and pushed myself to make it to the high end."

The school's use of Chromebook laptops had helped him and he had been "excited" when he finally got his first "at standard" mark.

Appleyard said that sort of story was never shown in the reporting of National Standards results.

Deputy principal Glenda Stewart said she supported National Standards. However, her teachers were often frustrated with inconsistent Overall Teacher Judgments (OTJs), which were used to decide achievement against the standard.

"Because of the transient nature of our school, often when the OTJ comes in from another school it isn't in line with what we would say it is. Some of that is the wording of the standards . . . and often it doesn't come with evidence," she said.

"It could be improved with more online examples and, starting in our own area, we should make sure we are consistent. Then our region could get together with others and make sure it is consistent across New Zealand."

Stewart said her teachers were able to use National Standards to show how a student's progress could help them all the way to high school and, if they got to the level they should be when they hit college, "the world will be open to them".

Parent Rob Scrimgeour said his year 6 daughter Mia loved knowing what her next National Standards goal was as they made her strive to achieve more at school and to attain an "above" standard mark.

Figure 9: News article, Dominion Post, 13 November 2014[16]

4.3.6 Use of value-add incentives to induce Work and Income to become value-focused

In 2011, the Government introduced a new metric and accountability framework for Work and Income.

Work and Income became accountable for the reduction in *predicted time on benefit* (the value add) for all beneficiaries. If a case manager gets a person back to work in four weeks at a cost of $500, then whether this is good or not now depends on what kind of person they got off a benefit. If the client was a high-flying investment banker, then perhaps this is not as laudable as if they were a person with a history of having been maltreated and in state care.

This single new incentive has been revolutionary in Work and Income.

The Work and Income business model is moving from its traditional focus on operational efficiency to adding the capability to better target and measure

[16] http://www.stuff.co.nz/national/education/in-our-schools/10738819/Look-beyond-National-Standards-for-progress

value and to learn how to improve targeting for specific client groups to optimise the Return On Investment (ROI) in services.

> *Prior to the welfare reform changes of 2012, over 85% of service delivery was spent on services directed at ... unemployment benefit clients (those with the lowest average [forward] liability) ... over the past two years, three concrete steps have been taken to ensure a better match between the purchasing of supports and services and the needs of a broader range of clients:*
>
> *First, spending on ineffective programs has been stopped and directed towards more effective programmes.*
>
> *Second, spending has been directed away from lower liability clients (short-term jobseekers) towards higher liability clients such as sole parents. This has required a better targeting of spending at both national and regional level.*
>
> *Finally, a wider range of services to support sole parents and clients with health conditions and disabilities are also being purchased.*[17]

The new focus on finding what works for each person is beginning to drive interest in better understanding service users.

> *On one level labelling a client a 'long-term beneficiary' might seem an adequate description to base case management streaming and an investment in services and support on. However, when you understand the client entered the system as a teenager, with no qualifications and having spent significant time within CYF [child protection] care prior to entering the system – this becomes a different set of criteria on which to base those investment decisions.*[18]

The service line is re-thinking service offerings for traditionally underserved client groups:

> *With over half the caseload in Work Focused Case Management [Service] being sole parents, this has required the work brokerage part of the business (the part that works actively with employers to find vacancies) to find vacancies for sole parents. Like the changes to case management services, this has been a significant shift – focusing on a broad range of clients and their role within the wider system.*[19]

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[17] Edwards & Judd, 2014), pp 10–11.
[18] Edwards & Judd, p. 7.
[19] Edward & Judd, p. 10.

Managers now actively seek out and consume evidence in a way not experienced before by iMSD.[20]

A value-add incentive based approach is not at odds with also needing to find efficiency – *for some kinds of clients*. Sometimes this approach is misunderstood as enabling a better focus on high needs. The way to think about it is that it allows the business to apply different kinds of strategies for different kinds of needs – because the KPI naturally builds in a different kind of value proposition for different levels of needs.

Although the need to add value by finding new services for high-needs customers will improve ROI, improving ROI for low-needs service users might mean doing less (being more allocatively efficient) or streamlining services (being more productively efficient). Banks use EFTPOS and internet banking to drive efficiency to improve ROI for retail (low-value) customer segment. This is, in part, some of the thinking behind MSD's re-development of its operating model for high-volume services.

This section concentrated on how customer-centred analytics can be used to better understand and focus on where value sits using value-add incentives. The main benefit is that it systemically aligns the sector on what matters – outcomes. The second effect is that these targets are needs-specific. In this way, the incentives mitigate cherry picking, risk shifting, and the formation of tails.

The next section shifts the focus to learning what works. Once incentives are aligned, how does the sector figure out what to do to actually drive better outcomes?

[20] iMSD is the new name for what used to be the Centre for Social Research and Evaluation. The name reflects a shift from traditional evaluation work to more data science led analysis.

4.4 MEASURING VALUE AND LEARNING WHAT WORKS

Big data also allows us to do more science and better science at scale to understand what works.

Big data does not change the need to do good science. It enables science to be done at scale (for whole populations), systemically and for a lot less money and embed this into operational service delivery. It also enables science to measure a broader range of impacts (fiscal, social, economic) that are tracked continuously, using a much broader range of behaviour-based data (to isolate *for whom* services worked best – *amenability*).

Using already available data mitigates the need to manually collect as much data as was required in the past. This reduces costs and intrusion.

Re-using existing administrative data has its limitations. However, these are largely the same limitations faced by traditional survey methods. They are the limitations faced by all good science:

- sample size is still important – as it usually is;
- data quality is important: traditional surveys (and their traditionally low response rates) and administrative data can both be biased by poor collection and so lead to spurious results; and hybrid approaches allow cross checking of biases; and
- because we are measuring the changed behaviour of people and the longer-term impacts of these changes, sometimes results will be slow (though not as much as you might think).

Within a service delivery context the idea is to learn what works fast and to keep learning. An example below (from MSD) shows how an RCT can be used to measure value and learn what works. Sometimes this is called champion-challenger learning or A-B testing.

The real-value proposition is that you can use quasi-experimental[21] methods to obtain pervasive, high-level, first approximation measurement of what is working for whom for the whole population and all services. It shows where value is likely to be generated or lost within the system. These are natural experiments that capitalise on servicing variability to learn more about the system and estimate what works.

It needs to be understood that often times understanding why something works is a bonus, and not the main aim of this work. This is not an attempt to

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[21] Quasi-experimental methods here refers to when, if you cannot have a true randomised comparison (control) group, you can use person profiling to find similar people elsewhere to create a virtual comparison group. For example, if I am treating left handers with service A then, although I have not required a comparison group of left handers into the actual experiment, I can find and observe other left handers (maybe somewhere else in the country) and compare their outcomes over the same time period.

do explanatory science. The objective is merely to use some scientific tools to learning about how to drive value. It is typically an affront to traditional ways of thinking about policy and evaluation that often seek in the first instance a rationale ("intervention logic") for doing something.

This ability to learn what works can be built into core systems and practice. To illustrate what is possible, take this example provided by the team in iMSD working closely with Work and Income to better target services.

In 2011, in response to welfare reform, I and others recommended a trial-based approach to measuring ROI and using the new outcomes measure as the basis for calculating return on investment. On the back of this, MSD invested in campaign management software to support the ability to rapidly trial and measure ROI. This was initially for the Youth Pipeline,[22] with a view to building internal capability for more generalised campaign-based closed loop targeting – A-B testing and champion-challenger testing. Campaign management software builds the ability to run an experiment into the heart of the data warehouse so that an organisation can constantly learn how to do a better job and track results as business as usual – rather than as a one-off evaluation near the introduction of a new service.

An experiment was used to assess the value of two services: Work Search Support (WSS) and Work Focused Case Management (WFCM). WSS is a one-to-many service for a group of people who receive support. WFCM is a more intensive one-to-one case management service.

A group of individuals were also assigned to receive General Case Management (GCM) – which is non-specific support. This group acted as the comparison group; helping to answer what happens to people if we do not invest in WSS or WFCM.

After tracking everyone for 30 weeks:

- 33% of the GCM (comparison) group were back at work;
- 40% of the WSS group were back at work; and
- 43% of the WFCM group had returned to work.

Although both new services look pretty good in isolation (40% and 43% effective), the addition of a comparison group shows that all the extra cost is still only providing a marginal return of (7% and 10%) over normal case management, which is 33% effective (and presumably cheaper). However, this effectiveness measure on its own is not the whole story.

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[22] The Youth Pipeline is a programme to identify young persons who are not in education, employment or training and so at higher than normal risk of long-term unemployment. This policy team's derived definition of who to target only uses three variables and so is pretty blunt when compared with the 20+ variables (such as facts about parents, CYF involvement and so on) that the analytics team uses to more precisely target risk of unemployment.

The marginal *value add* can be measured. The "return" in this case is the reduction in benefit liability – the pre-defined measurable outcome. Note that this could include several fiscal, economic and social impacts.

Then, when you add the cost of each service, the iMSD team could measure the marginal ROI. What looks like the best service (WFCM) at 43% effective at getting people back to work actually provides a lower ROI because it is so expensive for each person ($925). It takes a year to get your money back through reduced benefit payments. By contrast, WSS at $188 for each person is getting a $1 ROI for every $1 invested within 22 weeks. My suspicion is that GCM probably performs even better because it is presumably cheaper and still 33% of people get back to work.[23]

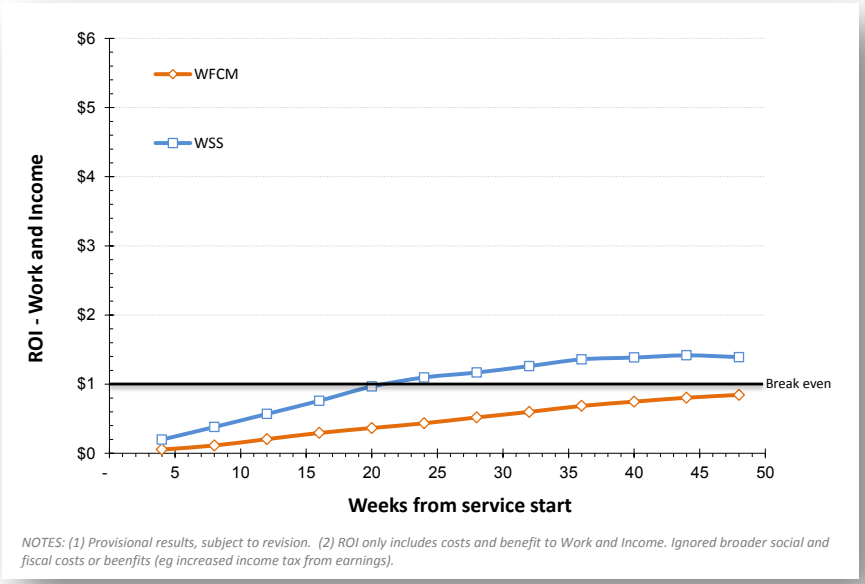

Figure 10: Return (money saved from benefit payments), for each dollar invested on services

Being better able to measure the ROI of each service is a great start (and typically where most evaluations stop). The point here is not to ask the very blunt question "What works?" That only allows selection between services. To really improve ROI, you need to answer the question "What works *for who*?" When you do that, you can better match services users to services that work *for them*. And this drives your ability to target services more accurately to a whole new level.

[23] The results for this experiment will continually change as results are continually tracked and updated in near real time.

4.4.1 IMPROVING RETURN ON INVESTMENT THROUGH IMPROVED TARGETING

As the example above illustrates, even a seemingly effective service can often provide an only marginal return on investment. This is not uncommon. But rather, for finding a better service, what would happen if this existing service was targeted more effectively – allocated more to people for whom it was more effective?

First consider how poor the ROI is when the service is targeted randomly. The new services (WSS and WFCM) did not add any value for most people who received them. Take the WSS course that had the best ROI over time. If the course had been given to 100 participants, then 40 of them went back to work.

- Of those 40, 33 participants did not need the course (as demonstrated by the GCM control group). For these people the course was a "false positive", because they would have had a good outcome from GCM alone. They did not need WSS.
- Nor did the course add any value for another 60 participants, who stayed on a benefit after the course. These 60 people were also false positives because the course was ineffective for them. For these people, neither WSS nor GCM worked – they stayed on the benefit.
- This means that WSS was effective for 7 of the 100 participants – "true positives". There were course participants who received some value added. They got a job they would not have otherwise got.

WSS was rightly targeted to seven out of 100 beneficiaries and a waste of money for the other 93 people. That is a lot of false positives and a lot of wasted taxpayer money – and time doing courses that were adding no value for 93% of attendees.

Even with such a small number of successes (the 7% who got value), WSS still made a dollar-for-dollar ROI within 22 weeks – presumably because, for each of the seven people (from a hundred) affected, you can stop paying them hundreds of dollars a week. This swamps the meagre cost ($188) of the course. But what if we could target the course more effectively to more people who looked similar to this 7%? That is, what if we could find more people for whom the course *does* tend to work?

The question answered in many conventional evaluations is "What is it about this *course* that makes *it* successful?" It is a services-centric question, asked by services-centric organisations and professions – of which the state sector is a great example. However, the trick is not to hunt for a better course. It is to maximise the ROI of the course you already provide by better targeting it to the people it is most likely to work for. Who is most *amenable* to it? Enrol more of those kinds of people to increase your true positives above 7/100. If you are getting $1 back within 12 weeks with only 7 successes, then imagine the ROI if you could add a few more successes, say +3 for a total of 10/100.

In this example iMSD[24] asked exactly that question. They used analytics to better understand who WSS works for best. And this makes a massive difference. The information collected about who that 7% are becomes gold. What were the characteristics of that 7% that meant that WSS was successful for them? What was it about the *people* that made *them* amenable for the course? How did they differ from the 93% who the course did not work for?

This kind of customer-centred insight and business model are about closing that loop. A better understanding of your customers allows you to better understand what works for whom, so you can re-allocate the intervention better next time around. It is all about aligning people to services and constantly learning what works.

iMSD found that WSS worked better for younger people who were non-immigrants.

If this service was targeted at those kinds of customers, then the ROI would improve dramatically. Refining the targeting to focus on people for whom WSS is most effective provides a *potential* of more than $4.00 ROI within 20 weeks for WSS service the next time around – when we target it more precisely to those *for whom it is most effective* and waste less effort and investment on false positives. Non-nuanced targeting of WSS is only returning $1.00 after 20 weeks (merely breaking even).

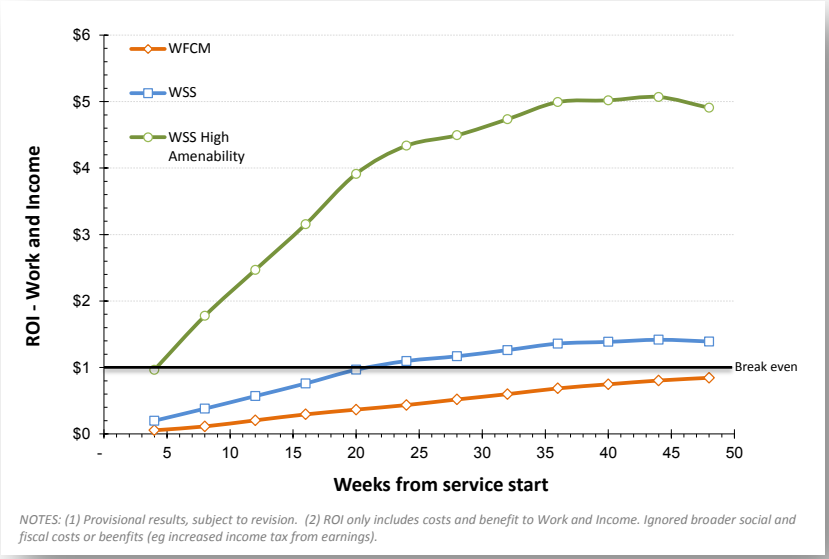

Figure 11: Return on investment using amenability

MSD has yet to do this (as at March 2015), so this closed loop learning is still latent potential – but should be encouraged due to the benefits to beneficiaries (less time wasted on courses that do not work, or getting better

[24] iMSD is the analytics and research group in MSD.

access to the right service early for those for whom they do work), and to taxpayers (better ROI).

The moral of this story is that poor targeting wastes time and money that would be better spent elsewhere. Poor targeting is usually why we do not always get the ROI we would like from state sector services.

If you can close the loop by continually using previously targeted services to consistently track who those services are working for and use that information to better target it next time, then you have closed loop learning. The ROI constantly improves through constantly learning more about your customers and what works for them.

This treats every engagement with a service user as a chance to also learn what works. The mental attitude is to go in there thinking that you do *not know* what works, and constantly seeking to learn what does, then re-calibrating who gets offered what. This is not added on to business as usual – it becomes business as usual.

4.4.2 Amenability and feeding insight back into the business

This kind of profiling to learn what works can also be fed back and integrated into frontline practice and policy formulation. MSD has used this information to build amenability scores for each kind of client for tested service offerings. Young non-immigrants have a higher amenability score to WSS than old immigrants. For each person coming through the door, the idea is to see who they are most similar to so as to see what will most likely work for them. The "Amenability to WSS" score can be used to score every client at a case level to help case workers make precise targeting decisions. In some cases, where there is high confidence and low risk, it might automate access to some services to speed referral, leading to both operational efficiency and improved targeting dividends.

Learning precisely which kinds of customer are amenable to which kinds of service improves an organisation's ability to get people what they need when they need it. It is the basis for building smart, continuously self-improving service offerings.

This sort of closed loop learning and measurement of value improves where you have a better understanding of who your customer is. It works well where there is a shared Social Data Commons. Where people can see what services have been provided and then compare outcomes for similar people who did not get the service.

The social sector has the opportunity to consistently and comprehensively and continuously learn what works and make this transparent so that the system can constantly improve.

4.4.3 The ethics of experimentation?

Sometimes people suggest that is it unethical to run experiments without consent. That is true, so consent is desirable.

But policy run (poor) experiments every day without consent. Laws are changed, services invented/chosen/discarded with only executive consent (Cabinet vote). But these "experiments" (policies) are done without learning in mind. You could argue that, if we do not really know very well what does work for whom, then it is unethical to not try to find out and then try to do better. It is a poor use of people's time sending them on services that do not work (and in many cases may be more harmful) and poor use of the public purse wasting all that resource when it could be better directed elsewhere – *if only we knew where*. It is highly unethical for policy to experiment in people's lives (as they currently do) without it actually being an experiment (where we continually learn how to do better).

So some thought needs to be given to how to enable experimentation as part of business. Clearly the lines are blurring between what counts as research and what counts as operational delivery. And I hope they blur to a much larger extent, and that the social sector is constantly seeking to learn systematically from each attempt to provide value. How consent fits into all of that needs to be considered.

4.5 KNOW WHERE AND HOW WELL YOU ARE INVESTING

The social sector's biggest service is just making decisions about who can access what services. The social sector (in part) is a large decision-making engine. How well it performs at this is a key determinant of outcomes. So it is not just the service itself that determines outcomes, but the prior decision to provide/not provide it to a particular person. As the previous example shows, better targeting pays big dividends for everybody.

It is also possible on the back of a Social Data Commons to know where investment is actually being targeted and incentivise better targeting – without invading privacy. This enables the system to know where risk shifting or unmet needs may be occurring. It also helps to focus the sector on its ability to make good targeting decisions – as a key output. Risk shifting and cherry picking become highly visible when who is being targeted can be tracked.

Risk profiling can be used to see which providers are targeting what levels of needs and kinds of needs. Figure 16 (below) uses real data to illustrate the ability of the sector to use case-level data (in de-identified and aggregate form to respect privacy), to directly observe the characteristics of the people who providers/programmes are actually servicing. It becomes possible to observe risk shifting and cherry picking behaviour and to know where there are service gaps. In this case these high-needs services are being targeted mostly to those most likely to pass NCEA Level 2 – an example of cherry picking.

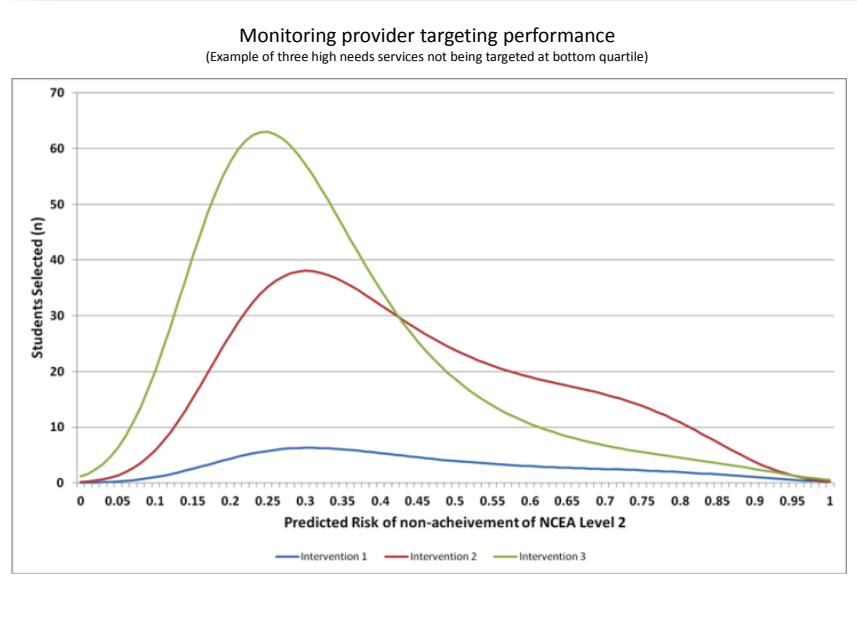

Figure 16: Monitoring risk profile of people targeted by three high-needs services

Care needs to be taken when interpreting these kinds of results. It is not always intentional that people risk shift or cherry pick on the frontline for nefarious purposes. Sometimes it is because policymakers under-estimate the level of difficulty in targeting high needs, and so in practical terms build policy and funding that is insufficient to meet those needs. This kind of monitoring about where services are being targeted and where the social sector fails to target (a species of "market failure") cuts both ways and can let the centre know when it has made a mistake. It is a necessary part of the feedback loop to allow the social system to be self-learning and know where things are working/not working.

Sometimes poor frontline targeting can occur through lack of the tools and data and decision-making practice to make a good decision. But improving frontline targeting decisions is not easy.

When deployed, needs assessments, predictive models and other kinds of expert decision support on the frontline generally have low success rates in improving frontline decision making. In particular they do not work well when merely added into existing incentives (to manage demand/risk) within the system. Nor do these tools cater well for the in-built capability/deficits of the human decision maker.

One curious feature of our species is our chauvinism when it comes to our own decision-making performance. We think we are really good when we are often not. As Tversky, Kahneman and Gigerenzer all point out, human beings are not hyper-rational calculators when they make decisions. Rather, they are

subject to numerous "heuristics and biases" (Tversky and Kahneman)[25] or "adaptive decision-making" modules (Gigerenzer).[26]

To become better at making frontline targeting decisions requires treating decision-making performance as a measurable (and improvable) output. Monitoring provider frontline allocative decision-making practice builds the incentive to be self-aware and continuously improve decision-making by:

- treating targeting as a departmental output;
- incentivising improvements to decision-making performance;
- forcing reflection on epistemic effects of the task environment and of system pressures on decision makers;
- incentivising professional development, specialisation, and training in the use of evidence to make better decisions; and
- recruiting expertise in human decision-making performance and decision management to support operational and IT design of the task environment.

This in turn will support:

- people being more willing (*wanting*) to use evidence for decisions;
- more people being *able to* use evidence well;
- people being more willing to use tools such as predictive risk models to improve their decisions;
- people understanding when decision making on human instinct beats statistical models ... and when it does not; and
- better demand and risk management at the provider and strategic level.

Directly measuring decision-making performance is also relatively straightforward. In 2007–2008 social work decision-making performance was measured directly to look at the accuracy of social work **intake targeting decisions**.

Receiver operator characteristics (ROC) curves (see Figure 17 below) can be used to determine both accuracy and threshold and monitor how both change over time. Figure 17 shows Child, Youth and Family oscillating between managing risk (on the back of concerns about a child death) and managing demand (on concerns about high numbers of false positive investigations), but decision-making accuracy itself does not change very much.[27] If this was a core output class, then you might see some concentrated effort on making better decisions. And a greater appetite to use tools to assist better decision making.

This also enables the centre to let go of telling the frontline exactly who to target – the centre merely monitors their targeting performance: Are you

[25] Tversky & Kahneman, 1982.
[26] Gigerenzer, 2002.
[27] Mansell, 2006, 2011.

able to target the kinds of people that I want you to and is your decision-making performance increasing?

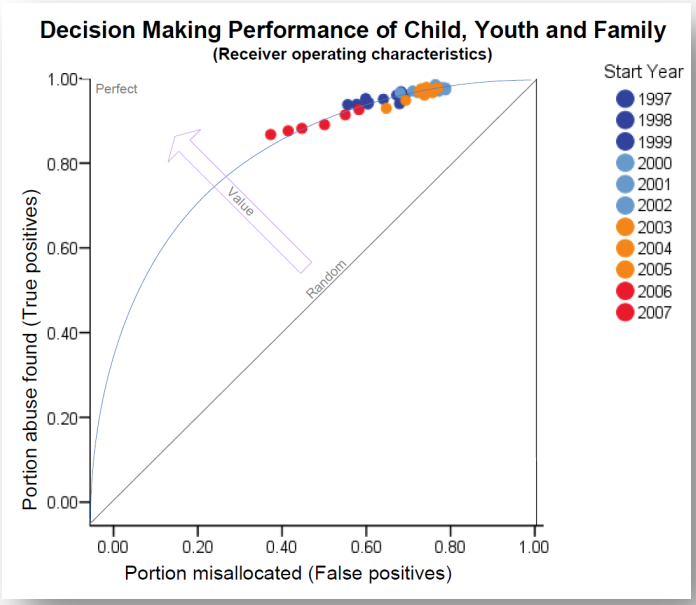

Figure 17: ROC Curve for CYF intake decision making

It also means that the centre does not have to use identifiable citizen information, yet can still incentivise improved targeting performance.

A Social Data Commons (shared data) provides comprehensive visibility of the complex relationship between people, their needs, the targeting services and the wide range of effects these services can have on fiscal, social and economic outcomes.

The kinds of knowledge tools that then become available can be used to help orientate the social sector, as a complex system, towards value and enable it to be a self-learning system about how to better target and achieve value.

An important part of this will be the traditional centre (the executive sponsors of the social sector) letting go of designing inputs and outputs and confining their role to being all about building this visibility and the right incentives to orientate towards value. That is a big change.

4.6 THE CENTRE AS CUSTODIAN OF THE MEASUREMENT AND ORIENTATION TOWARDS VALUE

This whole-of-system view of value does not work if it is only implemented at the level of the provider. The system must be able to re-allocate, and learn as a system at the system level. But the centre is currently organised along servicing lines – into kinds of professions or services.

I do not know the particular institutional arrangements that need to replace the centre to realise the latent value of a better view of the value across the system by having visibility of that system. In fact, throughout this document you may have noticed I have fudged the notion of a "centre" and do not often mention ministries.

This is because I don't know how any central decision-making function should work – it has not been done this way before. But without knowing the future organisation of the current centre of the social sector (DPMC, Treasury, State services and various profession-bounded ministries), I suspect it would look very different.

Does this mean you amalgamate the social sector ministries into a human services ministry? Some kind of customer-centred super ministry where the role is more steward of the ability to see and reward value and where innovation happens at the provider level? Should Treasury vote teams be organised by segment, not service? Should the size of ministries be reduced and operational policy analytics and policy capability farmed out to the regions? Should service delivery be privatised (this would be easier with these kinds of tools)? Should Work and Income be broken up into employment agencies competing to improve outcomes by targeting services more effectively?

One thing is clear. Merely changing the knowledge levers (population based accountability) will not change things much if appended to the current structure (underneath servicing interests).

The private sector tends to re-organise its business when it becomes truly customer focused – diminishing the role of servicing interests and raising the role of customer-value interests within the hierarchy. Perhaps the state sector could follow the likes of Insurance Australia Group's lead and merge into customer service-driven services (where the customer has an active role), coercive services (policing, child protection etc., where the consumer has no or little say), and corporate services.[28]

There does seem to be, at face value, a redundant middle layer of ministries. And this would be consistent with the kind of disruption seen in other sectors (taxis, media, music, retail, finance industries to name a few). However, I am agnostic about specific arrangements. They merely need to solve the problem of allowing and enabling whole-of-sector level re-allocation of investment to achieve the best return on that investment.

In this section I argue that some consideration needs to be given to enabling system-level re-investment and using the new knowledge capability for the basis of organising the sector around populations of needs (the interests of citizens) rather than servicing interests (the interests of professions), so as to realise a step change in value for New Zealand .

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[28] Stubbs. Personal communication.

4.6.1 THE GRAIN OF ANALYSIS MATTERS

A joined-up view of the system and whole customer, and the new kinds of knowledge tools, budgets, incentives can be applied to improve targeting at multiple grains of decision making:

- for fine-grained decisions to make better frontline decisions: 'Should I invest more time and effort in person A or person B?';
- at the service provider level, as illustrated above in Work and Income or within an individual school: 'Should I roll out service A or service B for this kind of client?'; and
- coarse grain at the investor level: 'Do I prefer provider A or B? Who gets the biggest ROI with these kinds of clients?'

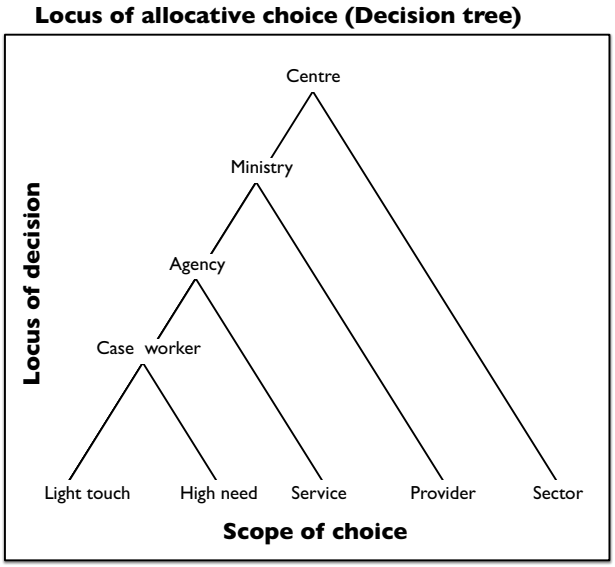

Figure 15: Grain of allocative choice

At different levels of decision making, you get different levels of cross-selling. You get broader experiments at a coarser grain of analysis, and hybrid servicing and hybrid profession models emerge at the investor-level decision-making grain. The pallet of new value-focused knowledge tools (outlined in sections 4.2–4.5) work at all grains of analysis to align the sector from executive down to frontline. This is because these tools are all using the same basic unit of analysis – what works best for a particular kind of person.

One key feature of building a customer-centred business model is that this needs to be done at the top if the more fine-grained application is to be driven down to the frontline and provider level. Further, if the centre changes, then the social sector will need to adapt.

4.6.2 GLOBAL OPTIMISATION OF ROI BY RE-ALLOCATION AT A SYSTEM LEVEL

Managing the complexity challenge of multiple outcomes, and re-imagining who should be accountable for those outcomes requires the use of population-based segments from a non-provider centric perspective.

Segment accountability should sit above servicing interests to maximise the ability to re-allocate investment. The centre tracks a portfolio of investments throughout the social sector to identify opportunities for re-allocation at a system level. Should I profit-share a reduction in forward benefit liability for this segment of beneficiaries with primary health organisations – that is, re-allocate this away from Work and Income?

Above-provider/profession decisions mean greater flexibility to enable hybrid service offerings and to re-invest more freely across traditional boundaries. Bigger investment decisions can mean bigger allocative efficiency dividends (i.e., by closing down something that does not work).

4.6.3 BROAD BANDWIDTH SYSTEM-LEVEL LEARNING

In cases where you do not know what works, narrow bandwidth experimentation within a particular service offering (or particular profession) may not be enough to learn what to do. This is because of the narrow span of allocation when done from within a particular servicing/profession silo. Trial-based learning can occur at a more strategic level. For example, we could investigate a public-health communication approach to obesity against surgery, against exercise regimes or even the effect of employment status on health.

4.6.4 IMPROVED MANAGEMENT OF SYSTEM-LEVEL RISKS

A range of risks in the poor targeting of services are system-level risks that need to be managed and monitored independently at a system level above servicing interests.

- System-level cost and risk shifting can be monitored and mitigated; to stop shifting forward benefit liability into forward student loan liability (as anecdotally may be happening).
- Monitoring customer-level effects: which customers are being over-serviced, repeat serviced, and, by assessing the same kind of services through different servicing channels, are getting no service?
- Trade-offs between a wide variety of outcomes (such as health, social, fiscal and tax) need to be made at a system level, above servicing interests.
- Long-run effects for citizens are system-level effects that emerge through time and so need to be managed above servicing interests – where the pathway through services over time is one of the key questions. For example, the sector invests more in recidivist offenders (who are in Corrections aged 30) than those likely to become recidivist offenders (at age 6).

4.6.5 Independent advice to Cabinet

An independent view of what is working by measuring this directly mitigates the risk of siloed services-centric interests having a monopoly on understanding what works and providing self-serving advice.

4.6.6 Aligns incentives from the centre to the frontline

Another advantage of doing segmentation and population-based budget holding is that this naturally aligns incentives throughout the system. The lens of the "value add" t*o people* is the lens that frontline practitioners have, as well as ministers who are thinking what their constituents need. As Edwards and Judd (2014) point out, Work and Income:

> *...makes the approach compelling for the front line operational staff, ... who care a great deal about improving their client's lives. ... This compatibility between high level government objectives and front line staff delivery objectives underlies the inherent value of taking [this] approach.*[29]

4.6.7 Better ability to lever value from "cross-selling"

Customer-centred integrated businesses enable "cross-selling" opportunities to drive improved ROI to be discovered. This is identifying where one part of the business might support another part of the business. A manufacturer of refrigerators might purchase a dishwasher product line because it can cross-sell dishwashers to customers looking for fridges. Cross-selling opportunities are likely to provide some of the biggest returns, yet face the stiffest challenges to being actioned. Acting on these insights is hard where deep service culture and channel boundaries get in the way.

The kinds of opportunities include skills-based cross-selling and customer cross-selling.

- **Skills-based cross-selling:** There are probably opportunities to mobilise our skill base more effectively. This includes using Work and Income's expertise in high-volume, GCM and the expertise of CYF's social workers in dealing with complex cases of social disadvantage.
- **Customer cross-selling:** In some cases, customers can potentially help each other. Are some beneficiaries assets rather than liabilities? Consider that CYF often has trouble finding appropriately qualified and experienced respite caregivers, foster carers, youth mentors, "big brothers" and employment mentors. MSD also has on its books beneficiaries who are seniors, grandparents, ex-educators, mentors, carers, and previously successful foster carers. Some of these "liabilities" might be potentially huge assets to other clients. Can the sector identify, incentivise, and mobilise people to help solve each other's challenges? Customer profiling supports this approach by identifying potential helpers, estimating the potential ROI of

[29] Edwards & Judd, 2014, p. 5.

improved peer support, and examining the marginal return (fiscal and social ROI) of really good parenting/mentoring. It also tells us how much more we could be investing in high-quality care (through increased support for carers, training and social support) and the potential ROI for the resulting improved care.

Sometimes you can mobilise support from communities simply by providing information to let people cross-sell for themselves.

Here is one example of mobilising the Pasifika community with information. In 2009, Tofa Gush from CYF (Pasifika adviser) grabbed a list of 150 Pasifika children in CYF's care and challenged the Pasifika community and churches with finding good carers and wrapping support around these children in need. At first, the community was surprised to know so many of their young ones were in trouble. Then they responded.

This very effective information-sharing mobilised a community response to improve care for Pasifika kids for roughly the cost of an air ticket. I suspect this was not a bad return on that investment.

Tofa's example of mobilising the crowd to solve a social problem through information sharing is a fine example of finding ways to leverage our latent social assets – our people and knowledge of our people in their communities – to help people to help each other.

4.6.8 Apply accountability more effectively across the system

If you do not have a good grasp of the system from an outcomes and needs perspective *above servicing interests*, then this can drive some silly strategic decisions. A good example of this is the poorly aligned accountability in Work and Income. Just because *this* service provider (Work and Income) pays the forward liability bills does not mean *this* provider is the best place to locate accountability for improvements in that forward liability. The fact is that Work and Income probably has influence only over a small part of the $78 billion in forward fiscal liability. Consider these cross-selling opportunities.

- **CYF forward liability on benefit system:** Modelling work found that having a CYF history adds about a 10%–30% premium on forward benefit liability. One estimate suggested that ex-child-protection clients make up 35% of young beneficiaries and 51% of the total paid to them. The Deputy Chief Executive of CYF should be accountable for reducing forward benefit liability by getting better outcomes for children in care. For example, doing a better job in child protection should include making sure the children in your care do not end up as long-term beneficiaries. This is an outcome that any parent can appreciate.
- **Work and Income's impact on maltreatment:** Conversely, what is the impact of housing, losing a job, and the level of income support and associated policies on maltreatment rates? The Children's Predictive Risk Model (PRM) found that time on a benefit was the second most

predictive variable indicating risk of maltreatment. It is possible that better outcomes for beneficiaries might mitigate some of the risk of maltreatment. Therefore, the full value of income support is unable to be measured solely using forward fiscal liability unless a fully customer-centred business model looks across the whole sector to leverage cross-selling opportunities and broad bandwidth and correctly applied accountability for outcomes.

- **Education:** As recent work in the Ministry of Education and the Youth Pipeline work suggests, educational attainment is a predictor of longer-term benefit dependency for some people. Therefore, increased effort to support better educational attainment might have a significant effect on long-term employment resilience for a particular segment. This means that the education sector will be in control of some of Work and Income's forward benefit liability.
- **Health:** The health sector is probably the sector with most control over forward benefit liability. They sign off certificates requesting benefits for people who cannot work because of health reasons. They also supply the health interventions required to get people back to independence. The 2012 benefit valuation estimates that unemployment makes up 4% of the total forward liability. Benefits relating to health make up 36%, nine times that of the unemployment benefit. The health sector largely controls it, yet MSD is accountable for an improvement in forward benefit liability. In 2011, discussions with the National Health Board about applying forward liability thinking in health determined that some of the forward benefit liability could reside in treatable chronic health conditions where an earlier aggressive intervention would have a lasting effect. Four conditions were identified: youth mental health, early onset stroke, diabetes, and lower back pain.

Realising the value from cross-selling and more sophisticated targeting of services is likely to struggle against deep channels and existing incentives to be compartmentalised by service lines and professions where accountability is misapplied.

Visibility of the client and their outcomes and being able to make system-level choices above the level of service centricity (and have the knowledge tools to do so) will allow the system to orientate better towards value and be better at learning what works.

But a Social Data Commons is better than that. peer-to-peer data sharing also allows the social sector to self-organise more effectively to design better solutions.

4.6.9 INDEPENDENT NEEDS ASSESSMENTS

Finally, there is an additional role that should be undertaken independently of servicing interests. That is the role of being custodian of good information about the needs of and outcomes for New Zealanders.

A key limitation on knowledge is the quality of the data being used.

Administrative data have proven to be rich in untapped information. Predictive models show impressive results, consistent with or exceeding traditional methods of survey-based needs assessments in some cases.

Some of the challenges include the chance for biased sampling and incomplete information and a high level of noise from things such as low inter-rater reliability with administrative data.

This can and should be improved by using a hybrid model – one that relies on administrative data and the results of more traditional survey methods. Work should be undertaken to carry out at least *some* key needs assessments within the social sector *by people with no vested interest in the results of those assessments*.

Independence from servicing interests is required to reduce the significant risk or intentional/unintentional bias associated with providers who carry out assessments, whose ability to then engage with a client is a result of that assessment. This is a conflict of interest and should be mitigated.

A centre that commissions regular independent needs assessments will provide a sounder basis for all of the other analytics work required for this kind of business model – measuring outcomes, measuring needs, and risk profiling. The model also potentially provides a broader range of independently collected outcomes and risk factors.

Think of this as a similar level of investment in data quality that the accounting sector has to ensure so that accounting data are reliable. We do not skimp on that for good reasons. Nor should we skimp on having independent data to support better investment decision making. That is, money that is highly accounted for, yet cannot account for the value it generates, is money that may as well be thrown away in the first place.

The centre has a key role in helping orientate the sector towards value and to encourage learning and the measurement and rewarding of value.

However, this approach also implies that the centre has a reduced role in mobilisation of the problem-solving required to actually improve value.

The next section looks at how a peer-to-peer network, using aligned interests around a population of needs, will be a better source of solutions than the current hierarchical management model – that is, a centralising network.

5 IMPROVED MOBILISATION AND ENGAGEMENT

The social sector will work better as a peer-to-peer network of actors who work together to improve value. Data sharing via a Social Data Commons is not the only sort of peer-to-peer sharing that should be fostered to improve social outcomes. peer-to-peer engagement (people working together) around system-level challenges is an effective way to mobilise problem identification, solutions and the kind of engagement required to select and buy in to solutions.

Until recently the best way to mobilise a large group to achieve something was to build a centralised command-and-control structure. Traditional approaches disperse orientation towards an objective, and empowerment to achieve it (resources), downwards and outwards through a hierarchical network that is centrally controlled. You could argue that this is necessary when one wants to mobilise more than a few hundred people since there is not the bandwidth or capacity of the group to all know, share and socially learn from each other (once groups get too big). The business of focusing on the objective and allocating resources to achieve it needs to be centralised to get over some practical communication, observation and networking challenges.

But now big data is reshaping our options to mobilise effort. Two things have happened that make peer-to-peer ways of organising human endeavour possible.

First, as noted in the previous section (4), it is possible to now orientate towards value and so mobilise the sector in the right direction through better visibility of the system.

Second, in the era of massive social networks based on cheap, hi-fidelity and high bandwidth, and two-way communications, different kinds of models for mobilising effort can more easily emerge that do not require centralisation into controlling hubs. For examples of this leading to different forms of mobilisation, think of the Arab Spring. GitHub, Wikipedia and Bitcoin are examples of peer-to-peer networks from the high-tech community.

5.1 SOCIAL LEARNING (AND SOCIAL PHYSICS)

Scientists are beginning to use big data to understand how such networks form and perform – what makes some forms of networks more innovative than others. The ability to monitor the formation of relationships between people and link this to outcomes is lifting our understanding of both the importance of social learning in driving outcomes and how to do that well. The science is essentially of how social influence (think “peer pressure”) drives behaviour and how levels and kinds of engagement within networks drive value. Different kind of networks perform differently at driving value. How we

form and manage relationships and ownership of the work makes a great difference to the results achieved.

In experiments carried out at MIT and elsewhere, it is being found that innovation is less likely to happen in highly homogenous social networks (networks full of the same kinds of people) than in highly heterogeneous social networks (where people are from different backgrounds, expertise or roles).[30]

It turns out that heterogeneous networks out-perform real-world decision making that relies on a few people with more intellectual horsepower. You can measure the idea flow and explorative potential of networks of individuals – the decision-making capital of the network itself supervenes over the quality of the individual decision makers within the group.

Some of the key ingredients for successful decision making and mobilisation of group effort include:

> ***Social learning is critical:*** *Copying other people's successes, when combined with individual learning, is dramatically better than individual learning alone. ... The power of social learning can be seen in social networks. Increasing your reach and your network's diversity makes it more likely that you can find the best strategies.*
>
> ***Diversity is important:*** *When everyone is going in the same direction, then it is a good bet that there is isn't enough diversity in your information and idea sources, and you should explore further. A big danger of social learning is groupthink. How can you avoid groupthink and echo chambers? ... If the so-called common sense from social learning is just an overconfident version of what isolated people think, then you are likely in a groupthink or echo chamber situation [i.e., if the individuals within the network in isolation say what the group as a group thinks, then there is too little diversity]. In this case, a surprisingly good strategy is to bet against common sense.*
>
> ***Contrarians are important:*** *When people are behaving independently of their social learning, it is likely that they have independent information and that they believe in that information enough to fight the [powerful] effects of social influence. Find as many of these 'wise guys' as possible and learn from them. Such contrarians sometimes have the best ideas, but sometimes they are just oddballs. How can you know which is which? If you can find many such independent thinkers and discover that there is a consensus among so large subset of them, then a really good ...strategy is to follow the contrarian consensus.*
>
> *In summary, people act like idea-processing machines combining individual thinking and social learning from experiences of others.*

[30] Pentland, 2014.

> *Success depends greatly on the quality of your exploration and that, in turn, relies on the diversity and independence of your information and idea sources.*[31]

A Social Commons, where the system is more transparent and aligning and makes visible genuine social value *and* hands back the work, will tend to work better lever social-learning effects to drive value. At the very least it avoids single point failure that is a characteristic of centralised and controlling hubs (the status quo).

As an aside, New Zealand has just invested in building the science of social physics in our universities. Te Pūnaha Matatini is the new Centre of Research Excellence (CoRE) devoted to the science of complexity – the study of networks, including social networks and social learning, and how this can drive social outcomes and economic growth. This is a cross-university and cross disciplinary centre (keeping the network heterogeneous) including Auckland, Wellington, Canterbury and Otago Universities and includes researchers from physics, biological sciences, economics, ecology and social sciences.

Handing back the work is crucial to allowing the social sector to adapt well to the challenges the social sector is facing – such as shrinking budgets and the emergence of seemingly intractable tails. In addition, learning fast, adapting to and introducing new technology and leveraging the opportunities emerging from big data will also be improved where the social sector can form peer-to-peer relationships without interference from centralising and controlling hubs. As the learning is more likely to be highly coupled with results (good and bad), social learning will be richer and more adaptive. Strong engagement can also build better cooperation across the system to drive improved outcomes.

> *There is growing evidence that the power of engagement and direct strong positive interaction between people is vital to promoting trustworthy cooperative behaviour.*[32]

But this is not all just theory. People are putting this kind of idea to work to increase social value today in New Zealand. The executive team in Canterbury DHB illustrates what this approach looks like in practice – how to hand back the work to improve re-targeting investment.

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[31] Pentland, 2014, pp. 39–40.
[32] Pentland, 2014, p. 65.

5.2 SOCIAL LEARNING AND HANDING BACK THE WORK AT CANTERBURY DHB

The Canterbury District Health Board (CDHB) was facing a significant financial hurdle in 2007. More importantly, the health system was not meeting the demand of its population. At the time, CDHB was operating under the old services-centred model where hierarchies at the centre focused on improving efficiency (which was largely about doing more for less cost), controlled allocative decisions, and drove operational policy and innovation. Under this approach, the centre tightly controlled input and output decisions through budget allocation, accountability, and ownership models that were vertically orientated down through servicing lines.

This centrally monopolised planned system led to similar sorts of distortions that have been discussed in previous sections. CDHB was operating as a series of fragmented centralising, controlling servicing silos organised around services (GPs, Allied health, surgeons and so on). But the health system needs to be treated like a system.

With this in mind, rather than try to work within the status quo imposed by the centre (Wellington), CDHB's leadership subverted it and created a new business model. This was done largely by protecting the DHB from the centre's allocation of investment (i.e., reductionist and organised according to professions). This meant removing the controlling hub at the centre.

This included re-imagining the role of the former agents of that controlling hub. The DHB's planning and funding function, which is traditionally seen as the barrier to innovation, changed its role from controller to facilitator. They:

- developed information assets that gave the DHB a view of the entire system;
- took all of the various siloed budget allocations provided from the centre and placed them in one pool to provide a systemic single budget to allow reallocation decisions closer to the frontline; and
- aligned the strategic incentives of the system to focus on populations of service users and their outcomes rather than services and processes.

In all aspects of this, the Planning and Funding team mitigated the effects of a services- and load-focused budget allocation model. It acted as a translating service for the health system within Canterbury to focus on itself as a system.

The next step was to hand back the work to mobilise engagement across the community of actors within the system to own and solve their own challenges of coordination to improve outcomes.

The Planning and Funding team shifted its role from being the manager of particular silo interests (budgets aligned to services) or the gate-keeper for those budgets depending on what "should" or "should not" be done with this budget. The new role was to focus on enabling and facilitating actors within

the system to come up with solutions for themselves and to support that process. As Carolyn Gullery (GM of Planning and Funding) puts it, “Our job is to say “yes, how can we help?”, never “no” or ‘‘that won’t work’’.”

Another key ingredient to handing back the work was to build a holding environment (i.e., a safe place where a difficult conversation could take place), within which different actors within the system (such as GPs and specialists) needed to work together to provide system-level solutions to meet tough incentives to focus on value.

In one example, “HealthPathways”, GPs and specialists worked together to design a solution for more collaborative decision making about referral for specialist services. This has effectively shifted health service delivery into a community setting. The relationships developed also led to the design of a collaborative data-sharing solution to enable such collaborative decision making to occur.

HealthPathways has led to a material difference in allocative efficiency. GPs own more of the work and refer fewer false positives to specialists. The resulting savings have translated into a 43% increase in access to elective surgery for the Canterbury population, with a reduced requirement for face-to-face outpatient visits (22% less that the national average age-adjusted rate) and a higher conversion rate from specialist assessment to surgical treatment.

Another example of the dividends of improved targeting is the shared design of solutions for aged care. By re-allocating resources throughout the system to provide more in-home care, a significant and absolute reduction in long-term aged care has occurred against a background of an increasing aged population. This was done by having a diverse range of health professionals, handing back the work, transparency about the problem (data), and aligning them to the common objective to improve outcomes by re-allocating investment. Seven years on from the change in direction, Canterbury is spending the same amount of money on aged residential care as it was in 2006/07. This has been achieved by reducing the numbers of people in care and the time spent in care.

Part of this change has been facilitated by focusing on supporting older people in their own homes and communities, and reducing the need to access emergency and hospital-based care. CDHB has an age-adjusted acute admission rate that is 30% below the national average (7426 per 100 000 nationally against 5209 in Canterbury, using the World Health Organization age adjustment). The proportion of the population aged over 65 attending the emergency department has reduced from 27% to 22% during the last seven years.

This kind of solution is possible when the whole system is engaged as a network of actors who are highly engaged with each other in looking at solving problems that are systemic. This allows for re-allocation where high value can be identified. Tracking the pathways of service users throughout the system, the shared interest of the actors in the system (who are incentivised to find

better outcomes for all customers), and the actors owning the solutions to help make them work, solves previously seemingly intractable challenges.

In essence, CDHB's approach has shifted the dynamic for the actors within the system.

In the first instance, the interest in the actors on health outcomes is reinforced by incentives that are focused on populations of health consumers. Converting siloed incentives to a system-wide investment in health outcomes further reduces the siloed focus on actors within the system.

Under the old services-focused accountability and incentives model that focuses on inputs and outputs and where the centre makes allocative decisions, the mental model of the actors within the system could be characterised as "How do I adapt to *the system*, or subvert it, to secure a better outcome for patients?" Or "How do I use what is it within my control to improve health outcomes?"

I used to teach doctor–patient ethics at the University of Otago's School of Medicine and would summarise the dominant meme (idea) as being one of not trusting the system and feeling the need to work around the system to get good work done: "If the patient can't pay, put them on ACC; if it's not an accident, put them on the sickness benefit; if they can't go on the sickness benefit, I'll put them on ACC." The primary obligation was to work *around* the system to meet the needs of the patient.

The cultural shift that CDHB has been able to introduce is to shift the actors in the system to a different relationship with that system. The new mental model could be described as "How do *I adapt the system* to work for a better outcome for my patient?" Under this approach, the system becomes an ally, not an impediment. That is, you get higher engagement in terms of focus, buy-in and problem solving when the people who work in that system are engaged in designing it – and have to own the effects of any changes to it.

By aligning the incentives of the system, purging the system of siloed incentives such as allocative budgets from the centre and handing back the work to all of the parties within the system, with high visibility about how that system is working, CDHB has engaged social learning to solve systemic problems.

The system becomes a self-learning and a self-adapting system since all the nodes (actors within the system) are aware of the whole and able to influence the whole system. They all have a stake in it.

Social learning is fostered through strong engagement among a network of diverse actors with high ownership and transparency of the challenge to do better. This has overcome powerful traditionally narrow economic incentives to not re-allocate for the greater good.

From an adaptive leadership perspective, CDHB's leadership has enabled people to not merely be actors within the system but also to see the system as a whole and therefore re-engage to adapt the system to get a better outcome.

But this result is not unique to the health sector.

5.2.1 Using value-add measures to enable localised learning loops

Providers with clear outcomes focused on value-add objectives have the incentive to improve targeting of services. Indeed, the whole point of this model – focusing the provider on measurable outcomes relating to a well-defined set of customers and risks – is that that provider can then learn what works within their ambit and quickly respond to re-prioritise spending and drive value. This was what happened within Work and Income where value-add incentives were applied.

> *The introduction of investment approach has challenged the traditional policy development process. Previously investment decision making generally followed a well-established part of the policy group of MSD developing advice for ministers to prioritize how allocated funding is spent, with service delivery, as the operation, simply executing these decisions. Now, investment decisions and prioritization occur within the service delivery line in consultation with the board...*[33]

The service line is taking over investment decision-making from the policy team – using the new multi-category appropriation (MCA) mechanism now available in New Zealand. This mechanism is designed to allow providers to be more flexible, with the intent of better enabling hybrid service offerings. The frontline will learn much faster about what maximises ROI than the more distant and decoupled policy team who has no skin in the game. All the executive (MSD) needed to do was align the incentive (reduce forward benefit liability), make the provider accountable to measure and attribute ROI, and let the provider experiment to find out what works and for who.

5.2.2 The emergence of peer-to-peer management solutions such as i-lign

This kind of thinking is also influencing the kinds of information transfer, knowledge management practice, project and document management solutions for engagement and mobilisation in human enterprise.

Traditional approaches such as email and document and project management systems provide the ability to close off and control conversations and to silo projects, communication and ideas. This suits the need of centralised actors who wish to impose hierarchies on subordinates. In so doing, it serves their narrow self-interests to maintain control. However, it also reduces the social

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[33] Edwards & Judd, 2014, p. 12.

learning effects of peer-to-peer engagement across the business and so stifles innovation.

To enable improved peer-to-peer collaborative work across businesses, solutions are emerging that implement a distributed network approach for peer-to-peer communication, project management, information sharing and knowledge management.

i-lign is one such New Zealand solution for information and document management, communication, project management, strategic management and idea tracking. This is based on the assumption of a distributed peer-to-peer (rather than hierarchical) network as the main organising principle for engagement across the business.

i-lign provides a solution that is scary for old-fashioned leaders of tightly controlled hierarchical business models. This greater engagement vertically and horizontally within a business in a transparent fashion does not suit some styles of management. Some businesses have adopted i-lign, then quickly closed it down when they realise it threatens old power structures.

But this is now changing. Other businesses now use this kind of technology to thrive by achieving greater buy-in and mobilising innovation and problem solving, and most importantly engaging their people in new ways.

Ports of Auckland are now using i-lign. A few years ago it was facing industrial unrest and was all over the newspapers for the wrong reasons. Since the introduction of i-lign, the “us-and-them” mentality has largely gone. i-lign is enabling management and the frontline to together mobilise around making Ports of Auckland a better work place and more competitive. In their words, “they’ve given all their staff a voice” through Ideas. And since i-lign tracks where ideas come from, it has been relatively easy to see that 100% of the innovations introduced came from the frontline.

All participants already had skin in the game to get a good result (wages for everyone will continue if POAL is competitive. i-lign mobilises that common interest by allowing peer-to-peer engagement and discovery and selection of useful ideas to improve performance. These ideas are no longer restricted to a more distant and controlling centralising hub. Information flow is now transparent, symmetrical, and peer-to-peer. The shareholders of POAL have a greater likelihood of increased ROI by investing in a company that can mobilise latent social capital to improve innovation and efficiency.

5.3 MOBILISING A COLLECTIVE INTEREST IN SOCIAL OUTCOMES

The social physics literature suggests that mobilising social engagement using peer-to-peer networks is a far better solution than investing heavily in single point failure, hierarchical controlling networks.

The executive at the centre could choose to reduce its role to being stewards of the Social Commons and enablers of a system that is adaptive and self-learning, rather than controllers of the system. So the role of the centre is to orientate and monitor where the system is working to a focus on value. The executive does not need to be a solutions provider as much as was necessary when all we could do (in a non-sharing, and fragmented sector) was manage inputs and outputs tightly. Ironically, moving to outputs means letting go of traditional roles or re-imagining them.

Three factors make this more feasible now than in the past.

1. Incentives throughout the system can be aligned to systemic outcomes that are person centred and relevant to all. Value-add incentives and segment-based budgets with outcomes-focused targets allow the sector to incentivise and monitor value for people in a way that has not been achieved before in the social sector.
2. The centre has an increased ability to know what is going on in fine detail – to identify who is being targeted with what, risk and cost shifting, what is working and where things need to be improved. This provides the necessary confidence to let go of accountability for operational policy, innovation and resource allocation, more secure in the knowledge that this investment is not being misapplied.
3. The various actors within the system have the same increased ability to collectively know what is going on in detail – what is working and not working, and to understand their own influence on the system. This transparency alone will mean the tough questions get asked and the Social Commons will look to more collaborative ways to solve more intractable challenges because the evidence will not be captured by fragmented interests, but rather will be open to the Social Commons. A symmetrically informed system has a better ability to identify and name distortions and solve collective coordination challenges.

Symmetrical information means that the Social Commons can start working as a system rather than as a bunch of hierarchical silos that are immune to knowledge of their impact.

The epistemic standpoint from the centre is useful – to ask the bigger questions. It is just that this is merely one standpoint and not a privileged one if there is transparency about the system across the system.

In most other sectors, big data has dis-intermediated middle men and allowed design and production closer to the action. This kind of shift can be used to leverage the combined information from many standpoints throughout the system to solve problems. The wider system (the actors within it) can allocate investment, innovate and adapt to improve outcomes.

An adaptive leadership style approach to generating solutions hands back the work where it belongs, to those with the best means to solve it. This requires all of the various actors in the system to work together to provide a systemic

solution, rather than bequeathing ownership and accountability to one party within the system. This keeps the system-level perspective at the table and does not privilege one set of actors. It allows visibility about what is going wrong to be shared, reduces the ability to scapegoat and requires collaborative solutions to change the way things are done.

5.3.1 Will people override narrow self-interests to align around common social goals?

It might be argued that the idea of handing back the work does not take into account the potentially narrow economic interests within the system that want to maintain localised positions of privilege (budgets, ownership). Such interests are not working for the good of the system; they are defaulting to narrow interests. I think this is a fair concern, but it does not take into account shared transparency and the new visibility of success and failure. It also misrepresents the social sector in an important way.

Aligned interests and willingness to sacrifice short-term personal economic incentives for the common good are latent goods that can be leveraged. Personal motivation is often aligned towards social value rather than (or in addition to) solely personal economic interest. Professionals embedded at the frontline see the damage of a poorly functioning system, have to deal with the resulting increased workload and face the poor outcomes.

People who work in the social sector typically do not do it for the high pay packets. Hosts of volunteers, social entrepreneurs, philanthropists, foster carers and NGOs spend huge amounts of time, money and effort to improve social outcomes without an economic advantage to themselves. There is a lot of goodwill and effort in the social market to solve social problems and drive better outcomes. People are motivated by good, old-fashioned caring – in spite of the lack of fiscal recognition. Humans are not entirely rational self-interested maximisers of personal utility.[34]

This implies that the social market has not failed through people's lack of willingness to invest considerable effort in improving it. There are enough people devoted to improving lives, sometimes irrespective of narrow financial interest.

Results from a wide range of experiments are also suggesting that social-learning incentives often trump economic incentives.

> *Standard economic incentives miss the mark because they frame people as individual, rational actors rather than social creatures influenced by social ties. Further there is evidence that economic incentives don't work very well anyway.*[35]

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[34] Frank, 1988.
[35] Pentland, 2014, p. 66.

We are evolved to be cooperative animals.[36] Big data is also helping us learn how to lever networks in ways that encourage social cooperation.

5.3.2 THE VALUE PROPOSITION OF HANDING BACK THE WORK

Handing back the work has several benefits over maintaining the centre's monopoly and control over innovation, policy, allocative decisions and fine-grained management of inputs and outputs.

- The actors within the system, sometimes those who generated problems, have to solve them and own the problems. Any solutions generated are more likely to be well understood and bought into by the actors who created the solution.
- This is the best place for epistemically grounded and nuanced solutions that take into account a wide range of aspects of the way the system is currently working.
- It removes the centre from being the lightning rod: In keeping with adaptive leadership principles, it is truly handing back the work and so avoids scapegoating the centre as avoidance behaviour to the sector owning its "part of the mess".[37]
- It crowd-sources creativity and fine-grained adaptation. When various communities have to solve problems, the solutions are likely to be less one-size-fits-all and more relevant to the challenge at hand. Because solutions are crowd-sourced, the system can be adaptive at scale but in a nuanced fashion. Think here of the example of Xero – 300 independent software designers are providing more nuanced variations to service localised niche interests. So there are accounting packages that solve particular challenges for consultants, for farmers or for fishermen.
- It allows adaptation from the bottom up, informed by a view of the whole system. In this way, the tension between localised needs and systemic needs are accounted for. In the CDHB example, the old tension between doctors overly focusing on the doctor–patient relationship – "I need to rort the system to get you care because the system does not work" – gave way to doctors having a vested interest in the system that they had created and owning the tension between the one-to-one relationship with the patient, and in their influence on the wider public health (system-level) implications.

[36] Sterelny, 2012.
[37] Heifitz, 1998.

6 ENABLER FOR INNOVATION AND ADAPTATION

At well as helping to orientate the system towards value, and mobilise engagement peer-to-peer across the system, a Social Data Commons also enables the kinds of technical supports that collaboration and cooperation require – systems that communicate *across* the social system.

Further, in addition to enabling more efficient development of technical support for collaboration, the social sector will be disrupted by new forms of information collection (e.g., the Apple Watch) and new forms of context sensitive self-learning and automated learning "Apps" such as Duolingo (detailed below). In addition, rich channels for communication now make distance learning (e.g., MOOCS) more rewarding and remote expert opinion (and even remote surgery) possible.

An open peer-to-peer Social Data Commons will allow the social sector to absorb the pace of change. It will also mitigate the risk, when a wider range of businesses begin to collect more data than government providers do, which the sector fragments even further.

6.1 THE INCENTIVE TO SHARE

A peer-to-peer Social Data Commons in itself will incentivise sharing. It rewards the use of data, not the holding (monopolising) of data. Providers who join the Commons will be able to provide better services than those who do not.

A Social Data Commons supports innovation and sharing in several ways.

- It lowers the barrier to entry for innovators by making market reach throughout the sector available at low cost and provides the ability to move to scale quickly and simply.
- Service users (such as doctors, teachers, students and patients) can select from a range of innovations transparently if they are able to see what tools are being used and what works for similar people elsewhere.
- If the Commons is owned by the main participants within the sector, then innovators can form relationships directly with providers and service users. It allows the technical side of coordination and collaboration and building new kinds of tools to be peer-to-peer rather than a monopolistic central hub that picks winners.
- The added safety of ownership and ability to exclude the centre from using identifiable data about citizens is more likely to make people willing to share personal data.

- A social data hub enables innovators through free (consent-based) access to data, by reducing the barrier to entry and by providing a ready transparent market for data-enabled innovations.
- Being able to innovate is likely to attract new investment (philanthropic or private) and new kinds of capital raising will be easier (e.g., social bonds) due to better knowledge of the value proposition of adding value.
- The ability to share data, do real-time testing and calibrate against outcomes (such as Duolingo does) will enable a range of new kinds of "data-enabled", context-driven, service offerings in health and education. See Duolingo below for more on this.
- Having a high-trust Data Commons in New Zealand supports retention of intellectual capital and research in New Zealand. At the moment Duolingo's data on New Zealand learners all goes offshore. Further, it is not able to be linked to long-term New Zealand learning outcomes or to our national standards. The same will be true if New Zealand innovators cannot link the Apple Watch to New Zealanders' medical records (with their consent). In that case, the innovators will more likely be in California than in New Zealand. If the sector stays or becomes more fragmented, the economies of scope for researchers will disappear or be joined up offshore. It will improve the ability of New Zealand to attract high-quality researchers and funding for such a rich, deep and wide longitudinal data store on social sector activity that links this to outcomes.
- Professions get to integrate new and emerging technology into practice pathways and existing technology solutions.

Increased productivity means more for less, so either improved outcomes or less taxes. Either way, the social benefits (well educated, healthy workforce) or reduced taxation will further spur a competitive advantage for New Zealand.

6.2 DUOLINGO

Data sharing enables new kinds of "data-enabled" services that can provide more context specific services and improve over time.

Duolingo is a language-learning service. However, it does this with a twist. Most data-sharing courses are static and do not adjust well to your learning level. Nor do they become better over time – they are not "self-learning". Duolingo is both a context-dependent service (adjusts to your needs), and a self-learning system (improves over time). This is enabled on the back of information sharing.

Duolingo relies heavily on crowd-sourcing and on constantly experimenting to learn what works for each language learner. Duolingo is doing so with the consent of more than 14 million people who use the app. The application designers use A-B testing (providing slightly different questions to different

learners) so they can figure out which kinds of questions work with which kinds of people to improve outcomes through experimental and analytics driven content delivery.

When someone logs in to learn French, they are constantly profiled (along with several million others) to figure out how to improve this.

This means that Duolingo is a highly contextualised and highly customised learning experience for all kinds of customer. Globally, although 14 million people will all be working at significantly different levels of competence, all are having a highly individualised learning experience.

This ubiquitous testing of the progress that 14 million people make using the app has enabled Duolingo to improve learning outcomes by a significant margin. Think of this as an evaluation done on 14 million users constantly and in real time to measure the ROI of different approaches. It is, in effect, a self-learning system that will constantly refine itself and improve over time.

Figure 12: Duolingo

Independent university testing[38] has confirmed that it takes 35 days for somebody to learn conversational French using Duolingo compared to 130+ days from a standard college course. That would free up a lot of class time for more direct engagement with students where they need it most.

This is the kind of new data-sharing and analytics-led content delivery that is going to disrupt existing notions about teaching and learning. There will be many more ways to learn using data science.

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[38] Vesselinor, Grego, 2012.

In recent news, Duolingo can now share learning results with teachers through consent-based data sharing. Teachers will soon get detailed analytics on learners' progress, which means that this analytics-driven content-producing software can be integrated into the classroom and teaching practice if so desired. This kind of data-enabled innovation is going to radically transform the classroom and enable personalised health solutions.

6.3 XERO AND THE VALUE OF A GOOD 'PIMS'

Xero is perhaps the most advanced example in New Zealand of a Personal Information Management System (PIMS). The personal information that Xero collects helps users to leverage value from their personal financial information. This is (nominally) a company that provides accounting services for small- to medium-sized businesses. Xero is a great New Zealand example of an emerging new kind of business model created around data science to build a data-sharing ecosystem or "commons" where the aligned interests of all parties work to drive innovation.

As a small business owner, I can log on to Xero and give my consent to my accountant and my book-keeper and other employees who use this accounting software. I can provide consent for my bank to automatically upload banking transactions into Xero. There is a community of 300 000 other users who are all offering advice and sharing accounting questions, challenges and support to each other.

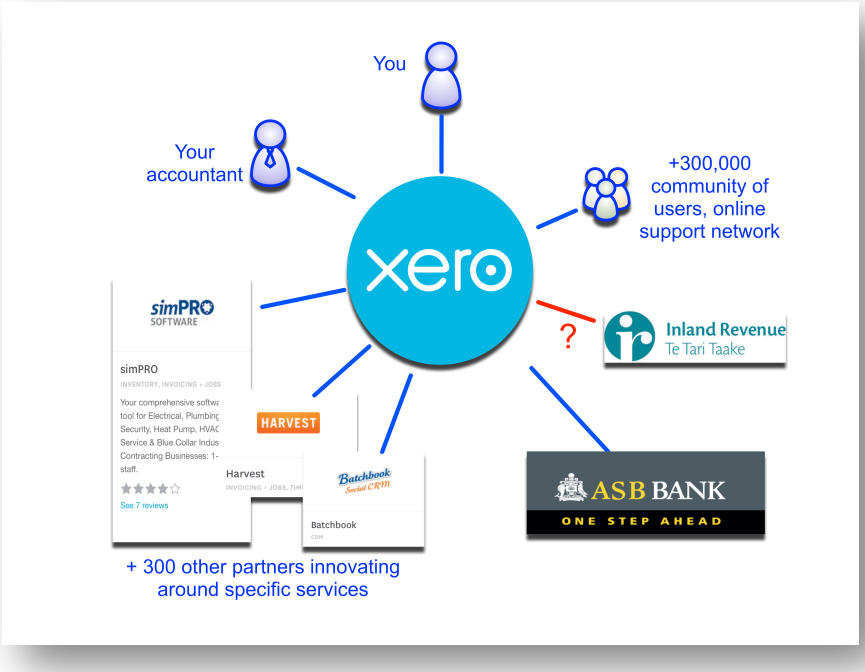


Figure 13: Xero

Better still, more than 300 third-party providers are building other related service innovations ("Apps") that I might find useful and consent to use. These services have been reviewed by the community to help me choose those which I might find useful.

By creating a safe data-sharing environment, Xero has crowd-sourced its innovation and performance improvements. The innovation is done by thousands of users with specific needs and problems that they are solving. Xero is squarely focused on being safe and effective stewards of a self-adapting and innovating data ecosystem.

In the process, Xero is supporting access to a market for providers of services to small businesses. Because it has provided an easy platform for innovators to share data and achieve scale quickly with few barriers, the service offerings are much cheaper for consumers. It is all consent-based sharing of highly sensitive commercial information.

The private sector realised that to drive innovation and adaptation at pace requires letting go and it found a useful tool in the creation of data markets and PIMS to outsource innovation to where it belongs – close to the location of the problem that requires innovation.

Xero also illustrates that New Zealand leaders in technology can build these kinds of high-trust data markets to drive value. The technology is not a million miles away from Wellington.

The social sector could learn a lot from this kind of example.

Enabling this kind of personalised data sharing platform (in a more peer-to-peer way than monopolising interests such as Xero and Apple) will provide a firm foundation for an innovative and adaptive social sector.

Being based on a consent-based PIMS, Xero takes the question of risk and value in data sharing out to where it belongs. Xero put it in the hands of the risk holder and beneficiary – the person whose data it is, and so the best person to judge what value and risk they wish to take.

THE IMPACT OF A SOCIAL COMMONS

IMPROVED EFFECTIVENESS AND INNOVATION, CHANGING ROLES AND OPPORTUNITIES

It is difficult to forecast exactly what kinds of value, roles and opportunities will emerge for different actors within a more truly peer-to-peer Social Commons. I include some initial thoughts below, but these are by no means comprehensive.

7 INCREASED VALUE FOR NEW ZEALAND

It is very hard to forecast any expected improvement in fiscal, social or economic value created by adopting a Social Commons approach to the social sector.

The best we might do is to note the following.

- First, MSD has found (the potential) to increase ROI four-fold for some services merely through better targeting and measuring outcomes – from $1.00 ROI (break even) within 20 weeks to a potential for $4.00 if analytics-based targeting and continual experimentation are adopted. Closed loop learning using person-centred data and experimentation is going to provide a large upside to social value for no extra cost.
- Second, consider the improvements obtained by CDHB. By using a population-based (customer-centred) view of their system, and handing back the work, CDHB has increased elective surgery capacity by over 40%. Re-targeting investment is a powerful method to drive improved value.
- Finally consider the potential upside of re-allocating investment earlier. Work in the social sector to investigate where costs occur has revealed that 10 000 New Zealanders cost three agencies over $5.5 billion due to poor long-term outcomes. People with a profile like Marc Smith experience huge disadvantages (like child abuse) at a young age and yet do not receive significant funding until after they end up in prison. It is possible to predict with a fair degree of accuracy who is most at risk and institute long-term, outcomes-based accountability and funding to mitigate long-run risks. Re-allocating investment on the basis of a better understanding of pathways provides significant opportunities to improve the value from the social sector. Re-allocation essentially (if the services are found) can eradicate long tails of disadvantage and the disproportionately expensive late remedial social spending. Risks identified earlier are usually more cheaply and effectively mitigated than later when behaviour or conditions have significantly worsened.

If you think about it, the justice sector and parts of the benefit system are a reflection of poor investment in targeting services more effectively. For example, the avoidable benefit tail will be more than $40 billion in fiscal forward liability. If that can be rectified, even a small amount, then it is not

hard to imagine doubling the value of every dollar currently spent on social services.

Together, better tracking of outcomes, better incentives to add value, closed loop learning, and accountability to improve outcomes for specific populations of well-defined needs, will drive for improved targeting of social services.

With respect to the effect of opening up the social sector to peer-to-peer collaboration, coordination, mobilisation and the sector being more open to new ideas, it is impossible to tell what effect this will have. peer-to-peer social learning and the opportunity of data-enabled solutions (such as Duolingo or a watch that can read heart rate and sugar level to help predict a heart attack) will help solve old problems in new ways. In some cases, this means solving problems we did not recognise as problems because we just accepted the status quo (e.g., for the watch, that you cannot predict heart attacks accurately enough). Whatever the specific innovations are, it is a safe bet to think the direction will be positive.

Consider also that if this data sharing is done safely and visibility of the value created is available, this will help innovations to be quickly chosen that work and failures to discarded just as fast. In a microcosm, Duolingo is an example of that kind of data sharing and self-learning system and has putatively sped up learning a language three-fold.

There is a potential export market here. If New Zealand is first to market with a safe, high-trust Social Data Commons, then there is no reason that other citizens globally cannot join up and have a safe place to do peer-to-peer data sharing about their personal information in a way that gives them tight control over it ("de-fragments" it to drive value for them).

8 THE CENTRE

A peer-to-peer Social Commons based on the free flow of information is most likely to shift the role of the executive. The traditional role of "the centre" is likely to change.

The executive is likely to be the holding environment for system-level procurement of outcomes for populations of needs. The executive can now measure and monitor value more consistently and reliably, look for market failure and add incentives to innovators and researchers. Governments in their role as stewards of the social system for New Zealanders will be able to procure and monitor the outcomes that providers achieve.

The executive should allocate funding and accountability for populations of specified needs (segments), leaving policy, service design, and the management of inputs and outputs to the providers. What the centre loses in control over inputs and outputs is gained in procuring innovation to achieve

better outcomes. If the system devolves to having centralised owners of segments of population and their outcomes (rather than as is the case of current ministries with their focus on services and professions), then these segment-owner executives are going to be the drivers rather the doers of experimentation and innovation.

The centre should have the crucial role of also procuring needs assessments *that are independent of any service provision*. High-quality data on what is going on is at a premium and will be the biggest thing the centre can do to add value to the system. Well, that and reward success.

The centre might also be an underwriter for a social Bitcoin – perhaps one solution to the enable the freer transaction of social value. (This needs a lot more thought, but there is a hint here that a free social market for the trading of social value might be able to emerge over time. This possibility is beyond the scope of this report, is but worth thinking about.)

9 CITIZENS

The NZDFF principles are built into the very fabric of the solution provided here. Citizen inclusion, control, high trust and high value are the foundations for sharing data safely across the social system on the basis of consent (when targeting specific individual value), or public common goods (but only when identifying any individual with their consent).

Citizens will be owners of their own digital destiny by joining a Social Data Commons and not be captured or coerced by big government or big business. You can also vote with your feet if you do not like the way people are using your data. This includes revoking permissions and enabling data portability – as the owner of the data collected about you, you can share it with whoever you like.

Because of this, service consumers are more likely to share data and reap the value from doing so. Consenters will receive improved personal value, can have joined up (non-fragmented) services, will be the beneficiaries of better government investment in needs, and be the beneficiaries of new kinds of services that would simply not be possible without a Social Data Commons – that is, if data were still locked in monopolistic silos.

All New Zealanders (even non-service users) will be receivers of and contributors to public value. Improved targeting in government means less tax or improved social outcomes (i.e., more for less). All New Zealanders receive improved value through the positive effects on other people's lives (e.g., less crime is good for potential victims).

Shared social sector data will also have a powerful democratising influence. Individuals and organisations can use data to mobilise around policy and

research that meets their needs (if these are not being met). Access to the same data that officials use allows society to keep governments and officials honest by analysing directly what is going on.

Freer access to data means that Kim Hill (the fifth estate) can get her analyst to look at the numbers before interviewing a minister. This more open access to information will be most advantageous to under-supported minorities and special interests who have not traditionally had the muscle to work on their own needs.

10 RESEARCHERS

Researchers benefit from:

- being able to easily add research data to other data to expand the scope of their research, and so answer more diverse questions by pooling data (e.g., genomics data can be linked to Apple Watch data);
- the ability to replicate research ("deep" peer review), with other researchers re-doing results using the same sample;
- greater access to subjects and their already collected data (i.e., economies of scale);
- comparison groups being freely available for quasi-experimental work;
- being able to study the whole population in some cases (where data are available or can be interpolated);
- being able to use government data on fiscal, economic and social outcomes to improve the scope of questions answered by research (including the ability to provide results made relevant to government policy);
- being able to study a country that has almost all data pooled and not fragmented, and linked to social and economic outcomes. What other country has this? This is likely to attract or retain a lot of talent within New Zealand and allow New Zealand Researchers to lead the world in social science, health, economic and education research. It is likely to put New Zealand researchers and New Zealand universities on the map internationally.

11 INNOVATORS AND SERVICE PROVIDERS

Providers of services funded by government or private providers will need to shift their mind-set. Thinking about retaining control and limiting access to data because the data itself is a key asset (monopoly on insight) will be less

successful if there is a Social Data Commons. People who can link up data and use it in creative ways to drive value are more likely to attract business.

A product such as an Apple Watch that is linked to my personal health record, alerts my GP (in a high trust environment that I control), and where that data can be linked to the blood sugar reading sensors of another company is far more valuable than a product that is isolated and where I cannot consent to download and use the data as I please. Providers who join the Commons will be able to provide better services than those who do not.

The mind-set shift is from thinking that having a data monopoly is the asset, to the ability to *use data innovatively* is an asset. The social sector will reward use of data, not holding (monopolising of data).

A second mind-set shift will be from social service providers who typically want to retain data to avoid people monitoring them or knowing how valuable their service really is. This protective mind-set will stifle their own learning. Smart providers will treat learning and adapting as the business of staying relevant and providing high value. By using shared data and opening up (and using tools like i-lign), smart nimble and adaptive companies will streak ahead in the value they provide and the further business they get from having done so. Those who decide not to join will face the tragedy of the non-commons – their fragmented data will unlikely save them from irrelevancy when competing with more open-service providers.

A Social Data Commons creates a more vibrant and competitive environment for service providers. Smart providers who are open to learning will win out over those entrenched in their thinking and protective of today's monopoly.

Because the Government can see and measure value, it will also be able to invest and reward the creators of social value. This will provide a more open entry to the market – one where monopoly interests find it harder to stifle a creator's ability to demonstrate value.

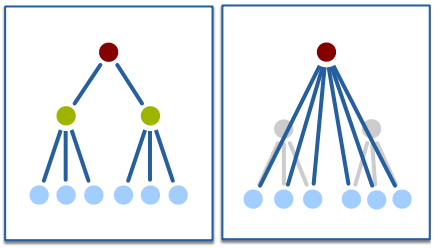
Innovators and providers will be able to undertake their own market research to help identify or solve social problems. There will be a low cost of entry for new services and for more collaborative (hybrid) service offerings, since peer-to-peer data sharing should be simple and require the consent of service users rather than the consent of government.

There is potentially an export market for innovators. If overseas doctors wish to sign up for a safe Data Commons and their patients want to link their personal health sensing data, then they will be able to turn to New Zealand with its thriving, high-trust Social Data Commons – a Commons not owned by government or big business, but rather owned and run by citizens, researchers and social philanthropists.

THE ALTERNATIVE IS BIG BROTHER

12 THE CENTRE CONTINUES TO MONOPOLISE AND CONTROL THE SOCIAL SYSTEM

Of social data that is shared across government by government and where traditional roles are retained within the social system – that is, the social services network remains a hierarchical (hub-and-spokes) network – then the centre will attempt to be the sole mover and controller of the social system and carry on its current monopoly thinking about innovations, policy, solutions, and the (micro) management of inputs and outputs.



With an improved epistemology about what is going on, the centre will likely find a large upside in re-allocating investment – as is illustrated in Work and Income, but from a more central position within government. The ability to know where value sits and to optimise investments to improve the return on that investment from the centre will undoubtedly find benefits in re-allocation – areas where services are not working and could be better targeted. This will also drive an improved level of innovation from the centre (than currently exists). Where the existing portfolio of service offerings seems to be failing, the centre will have more impetus to learn what else might work.

However, I think this approach of keeping the centre's monopoly on thinking is ill-advised for several reasons. The value proposition is likely to be short-lived and it does not adapt to the real-value proposition of big data – so will miss out on a lot of upside.

Consider what is at stake here. Roughly two kinds of enterprise are emerging on the back of big data: (1) more powerful controlling monopolies; and (2) open peer-to-peer sharing. New Zealand's social sector has the same choice. The new technology will enable the centre to grasp more power and control. This is the same result that we see in the likes of Amazon. One big powerful monopoly can dis-intermediate local smaller booksellers and essentially put

them out of business. Once the monopoly is formed and taken over, it will be harder for other entrants and other ideas.

This is a bad idea for the executive and for citizens.

Increased control at the centre increases the accountability of the centre for the results of frontline work. It moves accountability up the pipeline to where the pipe is least able or likely to experiment or take risks. Culturally speaking, this allows the frontline and providers to devolve responsibility for improving things back upwards and to scapegoat the centre rather than getting on and solving real operational coordination challenges. That is, it misses out on all the mobilisation and engagement effects that a peer-to-peer approach would take. So, to refer back to the example, in Canterbury DHB, the clinicians used to see the system as frustrating them and rorted it to get what they needed for their patients, rather than owning and building a system that worked for their patients.

There are several undesirable effects.

- Having a tightly controlled approach at the centre is likely to reduce trust by citizens and providers who have to provide data – if I do not own the system, at least I can rort it by sending in spurious data or disengaging. This erodes data acquisition and quality.
- It leaves the potential pool for solutions untapped. Does the centre (a small number of people distant from the problem) have a monopoly on good ideas about how to solve it?
- It fails to account for the appetite for low risk at the centre that can prevent innovation.
- It is likely to fail to find smart, nuanced solutions to systemic problems.
- It is likely to miss out and be too slow to adapt to emerging data-enabled technology.

Building a centralised monopoly on understanding will entrench many of the failures of the current system – those relating to the limitations of a highly controlling central hub.

Many of these assertions rest on my assumption that the epistemic balance of power just shifted. The strong version of this train of thought is as follows.

If there is an ability to use big data to view the whole system from fine detail to the macro-level picture, and this was made available to the centre *and to the various other actors in the system*, then those other actors are likely to be more epistemically privileged.

People working closer to the frontline get big data *and* fine-grained experience and engagement with the customer and other agents throughout the system. By using big data the executive at the centre now has the same lens into that system, but not the frontline engagement and highly coupled feedback. The frontline has this same lens **plus** the ability to test that lens against reality on the frontline. Though better than the status quo by several orders of

magnitude, big data is not omniscient. The actors within the system that deliver services and engage with customers have an epistemically privileged standpoint. They also get to see when the data are wrong.

A mellower version of this claim is that different actors within the system will tend to have a deeper understanding of the particulars within their sphere of engagement. That is true of the centre and frontline. All actors can now have a view of the whole system – the epistemic wins in tracking engagement, outcomes, risks and so on levels the playing field in this respect, but increases the transparency of the system as a whole. However, various actors within the system are still going to have a privileged view of their parts of the system. In fact, their ability to interpret their part of the system just improved because they can now test their narrow bandwidth experience with a view of the global system and so better interpret that localised experience *systemically*.

For this reason alone, it is worth considering handing back the business of managing the system to those who already have to do so and are immediately affected by it. At the very least, it is worth considering more collaborative problem-solving approaches with multiple actors within the system at the table. peer-to-peer works. SoundCloud, GitHub and various open peer-to-peer networks are adaptive, responsive and innovative. Within 24 hours of the earthquake in Christchurch, the tech community created an information-sharing solution to support people in Christchurch to find each other and to know what was going on.

Not handing back the data means the centre must be the sole picker of the emerging technology that is disrupting almost every other sector. Good luck with that.

To summarise then, two things can be handed back: the job of finding solutions, and the data.

1. The job of finding solutions: Change the role of the centre to be system steward rather than system controller to allow actors within the sector to drive more relevant, nuanced, and successful innovation.
2. The data: Remove the monopoly on data to allow new kinds of solutions and faster adaptation and innovation by providing a high-trust platform within which the sector can retain visibility of all engagements and not fragment the ability to see the system.

In short, if the work can be handed back and the role of the centre limited to being steward, the social sector can leverage the common interest in better outcomes, with a common (transparent) view on how the sector is performing. A Data Commons can become a key enabler to enable the social system to collectively own and be challenged to be a creative, adaptive, self-learning social system. The alternative is called “big brother”. It centralises epistemic power and control into the hands of a few elites and so will not only stifle innovation, but will likely become highly coercive to retain that power. Yes, they will be able to mobilise themselves to better choose winners based on better information. But you better not get off side, or be too adventurous.

NEXT STEPS

13 RECOMMENDATIONS

How do you get started?

- The social sector – including; open source community, philanthropists, researchers, NGOs, innovators and existing social service providers – should band together and co-fund and co-design a safe, high-trust Social Data Commons that they can collectively own.
- There should be minimal central government or ministry involvement – treated as one voice among the many actors in the social sector.
- The Government should use existing data (only in de-identified form) to build the first view of the social system. This should be used to move to population-based funding and accountability for outcomes (i.e., funding outcomes for specified needs; moving away from funding services (outputs)).

Kick-starting engagement

- Pick a couple of areas to first build the Social Data Commons for and for which government will fund things on a population (segment) and outcomes (value add) basis.
    - Pick obesity as a first national challenge for the Social Commons, as this is a complex issue that involves multiple influences and outcomes (lifestyle, health support, employment, etc.). There is a lot of research required and learning what works will likely indicate different solutions for different kinds of people. The forward fiscal risk to government makes this a high fiscal ROI for government. The forward social costs are likely high too.
    - A second area is to improve educational outcomes for the tail of under-achievement in New Zealand. Take a population-based funding model and providers, philanthropists, researchers and innovators working through the Social Data Commons to improve educational outcomes. Again, this is amenable to this approach, because improved outcomes are likely to drive a large social, fiscal and economic ROI. The issues will be complex. The value of data sharing will be high.
    - Use a range of procurement models including social bonds and prizes and (for example) profit sharing a reduction of forward benefit liability to reward any value added.

Potentially philanthropists or community Kickstarter funding could be used as well as government funding for this.

- Direct all publically funded social sector research through the Data Commons.
- Negotiate the ”New Deal” on government data. Hand back ownership to citizens, and determine what that means in practice.
- Develop metadata standards and APIs for open (citizen consent based) to all government-held citizen data in health and education. That is, service providers funded by government must hook into the Social Data Commons.

This is a very big topic, and clearly well beyond the scope of one person to figure it all out.

I have hoped, through examples, to illustrate what is now possible and why New Zealand should move in this direction to start the conversation. The next step should be for the social sector – providers, NGOs, innovators, philanthropists, researchers, and citizens – to kick the tyres on this idea and take it into a more collaborative – and heterogeneous – design phase.

There is a huge opportunity to improve social value by handing back the business of generating value to the Social Commons. The first step is to come to a common understanding on the opportunity and to work together to realise it.

GLOSSARY

Analytics enabled (or driven) service: Analytics can be used to in real time profile the characteristics of a person (or situation or both) to determine the best course of action. In some instances this might be for triage decision making to route a person to the best service offering or provider. Analytics driven personalised content is also now being used to refine the targeting content delivery to specific situations. So personalised education material may be offered up depending on a bunch of factors about the learner, time of day, the previous answer, etc.

Application Programming Interface: The way that one program can be integrated ("talk to") another program. So designers of cloud computing, PIMS, and other applications can publish their API to attract innovators to design add-ons.

Customer-centred analytics: The unit of analysis is the customer. The data is organised by customer and the analysis is with reference to kinds of customer.

Data-enabled services: A service that requires data or more usually data sharing as the basis of the service. For example, directions apps on your iPhone are now possible because of data sharing across map makers, and iPhone location.

Dynamic efficiency: Return on investment is improved by efficiently innovating to drive new ways to achieve value or reduce costs.

Economies of scope: Economies of scale are where efficiencies are generated solely due to the scale of the endeavour – a supermarket purchases more cans and so can get them cheaper than the dairy. In a data context, economies of scope are where increased scope for action/service/decision are supported by increased sharing of different kinds of data. When I add height data to weight data, I get to answer a third question I could not answer before (Am I overweight?) and so increase the scope of what is possible beyond the two input datum.

Improved targeting: Re allocation of investment (better targeting of services) better targets value. Return on investment is improved through returns created for the same level of investment.

Improving efficiency: Return on investment is improved by producing the maximum number of services (production) for each unit cost – focusing on the "I" in ROI.

Metadata: Data that describes the data being held.

Non-rival use: Use a resource that still leaves it available for others to use.

Noosphere: The sphere of noos (mind). Data sharing, analytics, communication and sensing are all aspects of capabilities of human minds. Books, the telegraph, the internet and machine learning are all prosthetics for

thinking and mind. The noosphere used to connote the emergence of human thought can also be used to describe the capability of the current information technology revolution as developing the "noosphere".

Personal Information Management Systems: A new breed of data-sharing services where the user has fine-grained control over consent to share that data. Who a user's personal information can be seen by can be managed by that user.

Rival Goods: A resource that is used which is not then available for others to use.

Tragedy of the non-commons: Where, in virtue of a resource not being open to the commons (i.e., being owned by some people and not available to others), an opportunity for a greater common good is lost. So data, by not being commonly available, locks up latent value in its broader use by a more diverse range of people to drive value.

Value-add: An incentive where an assessment of performance is related to how much value you added to what was estimated as expected (i.e., predicted).

BIBLIOGRAPHY

Edwards, D. & Judd, E. (2014). *Measuring tomorrow's outcomes today: Adopting an investment approach within the Ministry of Social Development*. Dunedin.

Gigerenzer, G., & Selten, R. (Eds.). (2002). *Bounded rationality: The adaptive toolbox*. Cambridge, MA: MIT Press.

Kelly, B. (2015). *The Bitcoin Big Bang: How alternative currencies are about to change the world*. Hoboken, NJ: Wiley.

Linsky, M., & Heifetz, R. (2002). *Leadership on the Line: Staying Alive through the Dangers of Leading*. Boston, MA: Harvard University Press.

Ministry of Social Development (MSD). (2014, February). *Cost-effectiveness of the pilot of WFCM and WSS: one year results*. Retrieved 23 April 2015 from www.parliament.nz/resource/en-nz/51SCSS_EVI_00DBSCH_FIN_59352_1_A427832/8fb014fc3c27e6d0725838b68da66d301e679e9e

NZDFF (New Zealand Data Futures Forum). (2014a). *New Zealand's data future*. Retrieved 23 April 2015 from www.nzdatafutures.org.nz/discussion-documents

NZDFF. (2014b). *Navigating the data future: Four guiding principles. Retrieved* 23 April 2015 from www.nzdatafutures.org.nz/discussion-documents

NZDFF. (2014c). *Harnessing the economic and social power of data: Key recommendations and catalyst projects*. 23 April 2015 from www.nzdatafutures.org.nz/discussion-documents

Mansell, J. (2006a). *The underlying instability in statutory child protection: Understanding the system dynamics driving risk assurance levels*. Social Policy Journal of New Zealand, 28, 97–132.

Mansell, J. (2006b). *Stabilisation of the statutory child protection response: managing to a specified level of risk assurance*. Social Policy Journal of New Zealand, 28, 77–93.

Mansell, J., Ota, R., Erasmus, R., & Marks, K. (2011). *Reframing child protection: A response to a constant crisis of confidence in child protection*. Children and Youth Services Review, 33(11), 2076-2086.

Pentland, A. (2014). *Social physics: How good ideas spread – the lessons from a new science*. New York: Penguin.

Sterelny, K. (2012). *The evolved apprentice: How evolution made humans unique*. Jean Nicod Lectures. Cambridge, MA: MIT Press.

Tversky, A., & Kahneman, D. (1974). *Judgment under uncertainty: Heuristics and biases*. Science, 185(4157), 1124-1131.

Vesselinov, R., & Grego, J. (2012). *Duolingo effectiveness study. New York. City University of New York*.

Welfare Working Group. (2011). *Reducing long-term benefit dependency: recommendations*. Wellington: Welfare Working Group.