

How can data analytics improve outcomes for vulnerable people in Scotland?

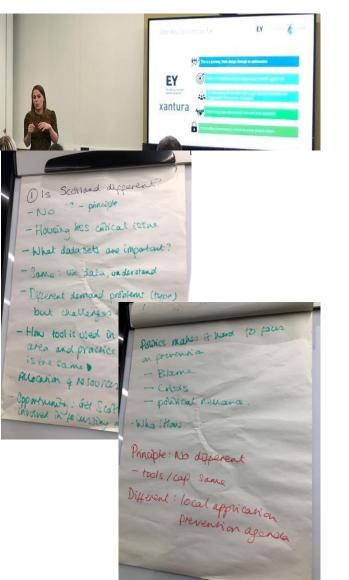
Outputs and Presentation pack



Intentions and outputs of the event....



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We considered how the world is changing in terms of digital progress, and whether we can afford not to embrace the opportunities these approaches and tools present. We also challenged ourselves on why advanced insights and analytics tools had not been widely adopted across Scotland or whether our context is different.

Learning on the day covered global case examples in children's, adult's and homelessness services which have been successful in shifting focus and spend to save investment into earlier intervention and prevention support. We also looked at an example of a collaborative model, London Ventures, where the London Councils have invested in between London Councils, the umbrella body for the 33 local authorities in London, and EY who have been working together for five years to bring innovation to the public sector in London and beyond.

Examples discussed on the day

- EY & Xantura partnership' approach to enabling transformation of the way people are supported, using data and insights to enhance decision making. The session demonstrated live application of the capability and how it integrates and matches data to present a single view of an individual and household including chronology, contextual, historic and wider factors (through Natural Language Generation and automated case notes).
- EY's work in collaboration with a large local authority in London. As the area was facing numerous challenges regarding social care, the initiative has focused on not only allowing for increased data awareness to resolve present issues more efficiently, but also to take a preventative approach by identifying and analysing the underlying issues. The approach has a strong emphasis on providing a more holistic view of the individual's wider household and social situation.

This highlights the benefits the effective data analysis to better identify the people most at risk and offer support, reducing demand for statutory interventions and improving the experience and outcomes for citizens.

We asked ourselves....



No – there would be value in using data to understand demand:

- •Capability is the same, how it used may be different based on local practice
- •There is less focus on prevention agenda. Politics can make it harder to focus on this as there can be a culture of blame
- Different data sets may be available and have differing levels of importance
- More public sector provision than in England also broader range of services at local level (e.g. probation)
- Complexity of IJB landscape across health and adults services
- •There is more of a regulatory presence, clearer focus on professionalising social care
- Policy considerations and sensitivities experience of the named person initiative
- •Things work very differently across local authority areas especially in context of size. Smaller authorities with sparser populations 'know their people' and may not see this as such as priority need
- •Landscape around social work services is different in Scotland more concentrated in the statutory and third sector so may not be able to provide 'savings' as evidenced in England. Would 'cost avoidance' be a quantifiable enough measure in a business case, especially in a small local authority?

•Joining up information across national agencies – i.e. Police and NHS and others – would require a national approach. This is unlikely to be implemented by SG centrally and would need some pressure or push from local authorities across Scotland.

Is Scotland different?

....here is what we discussed



We asked ourselves....

EY Building a better working world social work is scotland leading the profession

Data analytics – opportunity to support practitioners and decision makers or a threat?

....here is what we discussed



There's a lot of potential positive impact in using more sophisticated analysis and algorithm tools – however, should also acknowledge that this would need to be framed carefully

• Opportunity to include Scottish Government to help a government led focus on prevention

•Threat – who will take responsibility for the potential unmet demand? Concerns about unearthing unmet need – recognising that it might reduce costs of care but could raise the trajectory

•Threat – we do not want social work by algorithms, need to make sure it supports decision making?

- •Opportunity to use data to drive strategic decision making both now and going forward
- Huge opportunity in being able to analyse qualitative information
- •Challenge about what you do with this new insight how do you use it to transform practice?
- Risk to the social work profession? Possible perception of replacing professional judgement with computers/ AI
- •Risk that predictive data creates power balance tensions and could reinforce stereotypes (e.g. people on this street behave in this way)
- •Instead, important to emphasise the intentions behind using such technology; supporting professional decision making, not substituting it.

•There are some benefits to a national approach – it would be more economical to invest at this level and would support data sharing as well as demand management.

• This could be a 'game changer' but there are considerations around the value of the investment vs the capacity and resilience to resource such a programme of change .The reality for some areas is that funds would need to be cut from an operational budget to resource this.

So, how can you get in touch to learn and share more?



Many thanks to the participants who joined us on the day, working collaboratively and openly. There was a general view that this is an important agenda and an appetite to follow up on this discussion.

SWS and EY would welcome any feedback, comments, questions or ideas from participants or anyone who could not make it on the day. We are keen to hear your views on the opportunities and challenges around the use of data analytics in your work.

We would also be happy to arrange a follow up discussion with you to build on the momentum and energy created on the day.

For further information contact:

Edith Wellwood - <u>EWellwood@uk.ey.com</u> or Cat Park <u>Cat.Park@uk.ey.com</u>



Appendix: Presentation

Change is here

Ben Farrugia – Director, Social Work Scotland



- From the 'embedded' to the 'encoded' data analyst: Over past ten years the focus has shifted from the value of having an embedded data analyst in a social work team / service, to the potential of using computers to connect and analyse the data itself. (The capacity of "machine learning" to spot patterns by analysing large amounts of information from various sources, including administrative data and case notes.)
- Demand from the front-line, push from the centre: Social Workers are keen to do the best job they can, and to utilise all available tools; this has generated interest and appetite for the use of technology and data analytics. At the same time, government initiatives (policy, programmes and/or funding) have encouraged the piloting and adoption of new technology; austerity and research driving a shift to 'prevention', 'spend-to-save', 'innovation funding', etc.
 - Using algorithms to determine individuals at risk of HIV in a network of homeless young people (California, USA)
 - Prediction of suicides (Florida, USA); Prevention of falls among older people (UK)
 - Use of predictive algorithms in children's social work (UK)

Change is here

Ben Farrugia – Director, Social Work Scotland



Useful tools, insidious threat - What do these global developments mean for social work in Scotland? In England a debate has began, facilitated by the What Works Centre for Children's Services, on "when and where these tools are effective, ethical and acceptable". The discussion is being buttressed by a comprehensive literature review (Rees Centre, Oxford University), events, online debates and the learning from pilots. Scotland can learn and be part of these developments, but is our situation different?

Questions we're interested in at Social Work Scotland

- > Why have these tools not been adopted at scale in Scotland?
- What are the ethical and legal considerations?
- Are there issues with partnering with the private sector? How/why would it be different if partnering with a public body or university?
- How does the social work profession lead this debate, not be lead by it?



Challenging the Status Quo' through data insights and advanced analytics

Ben Farrugia – Director, Social Work Scotland Shu Fei Wong – EY

National Scene

Ben Farrugia – Director, Social Work Scotland



The Digital Health and Care Strategy April 2018

- Provides a vision and roadmap for how digital technology can reshape health and social care services, accelerating person-centred care, and improving planning, recording, etc.
- Initiated the development of a single, national health and care national digital platform, using secure cloud-based architecture to bring together in one place all relevant health and social care information. Hope is that this will help people to better manage their own wellbeing, improve service delivery and facilitate innovation.
- There is a central role for private sector stakeholders, utilising their expertise, agility (and the general power of the market) to develop tools which aid more effective and efficient delivery of public services.

National Scene

Ben Farrugia – Director, Social Work Scotland



Current investment in data analytics tools in Scotland

- Wide-scale, localised investment in data analytics by universities and the private and third sectors. Health care is driving public sector investment, but local authorities (independently or through Integrated Joint Boards) are piloting new models.
- Improvement Service, the national improvement organisation for local government in Scotland, has developed a Data Hub; an online data matching and cleansing solution to help public sector organisations to improve customers' experience and make better decisions based on sound intelligence
- ► The UK and Scottish Government's **City Region Deals**, which comprise a programme of interventions backed up by significant public investment to support positive, transformative change in an area. In every case connectivity and digital innovation are central components.
- Connected to the Edinburgh and South-East City Region Deal, the Data for Children Hub, a collaboration between UNICEF, the Scottish Government and Edinburgh University's which seeks to bring insight and solve problems using data and data science techniques.



Case Study: New Zealand's Transformation Journey Edith Wellwood-EY

Improving lifetime wellbeing for vulnerable children by introducing a new child centred operating model

- In April 2015 the government asked an expert panel to examine ways to overhaul the country's child protection system
- The panel recommended introducing a new child centred operating model with a stronger focus on preventing harm and intervening early





Case Study: New Zealand's Transformation Journey Edith Wellwood– EY



Improving lifetime wellbeing for vulnerable children by introducing a new child centred operating model.

Context

- In April 2015 the New Zealand government asked an expert panel to examine ways to overhaul the country's child protection system. The panel recommended introducing a new child centred operating model with a stronger focus on preventing harm and intervening early
- This uses life course modelling and evidence of what works to identify the best way of targeting early interventions, so all children receive the care and support they need

What did our work involve?

- ▶ We worked with the Ministry of Social Development to develop and build the underlying model of children's life courses
- ► The model identifies the indicators associated with better and poorer wellbeing and associated future outcomes, shows the likelihood of these outcomes occurring and identifies the avoidable fiscal costs associated with poor outcomes
- > The model covers all children aged 16 years and under in New Zealand, and includes projections up to the age of 25
- It draws on the Integrated Data Infrastructure, a linked, longitudinal and anonymised research and policy data set that combines information from a range of organisations
- > This gives the Ministry a broad view of each child, their parents, family and carers
- We also helped to develop a wellbeing framework to model child outcomes over their lifetime. To do this, we drew on data and expertise from the child protection, education, health, justice and welfare agencies. We also used analytic and decision support tools and processes to inform decisions across the operating model

Case Study: New South Wales





NSW

Edith Wellwood– EY

Context

Redesigning the child protection service and cost model: in the last decade the New South Wales Government in Australia has seen a **steady rise** in the number of children needing protection services, and a **decline in step-down rates**

What did our work involve?

- We worked with the government department of Family and Community Services to create a more child-focused and financially sustainable service geared towards giving children the chance to have a safe, loving, permanent home and helping them reach their potential
- The new approach requires the Government to change the way it funds service delivery partners
- It has developed outcomes-based contracts that focus on helping families to stay together
- It is also developing a single framework to define the desired outcomes, based on safety, permanency of care and a wider focus on child wellbeing

London Ventures

Shu Fei Wong – EY



London Ventures is a unique partnership between the private and public sector

London Ventures seeks to drive long lasting societal change improving outcomes for local public services and citizens alike. It is delivered by a partnership between London Councils, the umbrella body for the 33 local authorities in London, and EY who have been working together for five years to bring innovation to the public sector in London and beyond. Together we have engaged with over 100 businesses and worked across all 33 London local authorities bringing £6m financial benefits and the best innovation to local public services.

The core London Ventures programme is an innovation programme focussed on driving sustainable transformation across London. It is sponsored by the Capital Ambition Board (CAB) and commissioned by London Councils five years ago.

The programme currently consists of two developed workstreams:



A general ventures workstream consisting of an innovation portfolio of 13 market ready venture partners.



A targeted workstream focusing on new ventures to tackle the major challenges

1. Homelessness, housing and temporary accommodation

2. Children and families.

Our objectives



To lead a fundamental shift in how public services are delivered



To generate investment into public services and use public funds effectively



To create an exciting opportunity to bring together a vast and diverse landscape of networks, bodies and stakeholders



To actively pioneer innovation in order to drive sustainable change across the sector

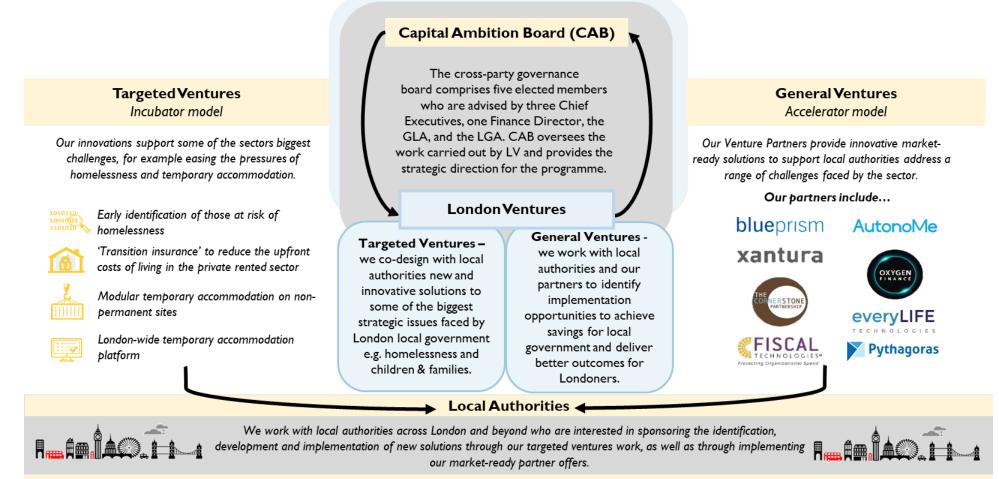
"Opportunities for local authorities to access innovation and transformation that will improve their effectiveness and efficiency while ultimately supporting radical improvements in outcomes for London's citizens, communities and businesses"



London Ventures

Shu Fei Wong – EY



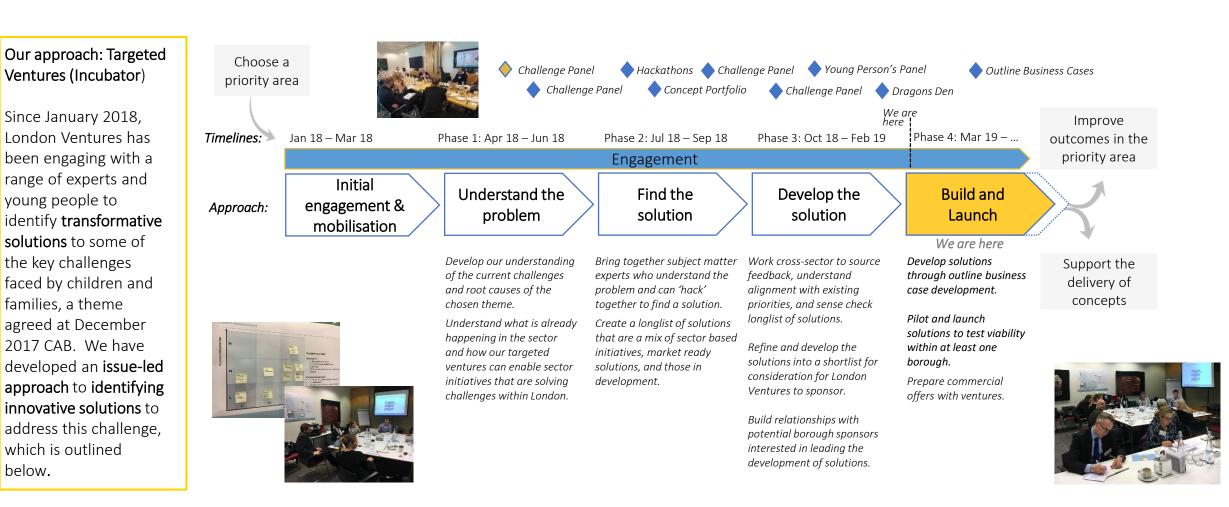


External Stakeholders

We engage with a range of third and private sector organisations who help the programme understand the complexities of our strategic issues, and the identification and development of solutions to support the public sector.

London Ventures

Shu Fei Wong – EY



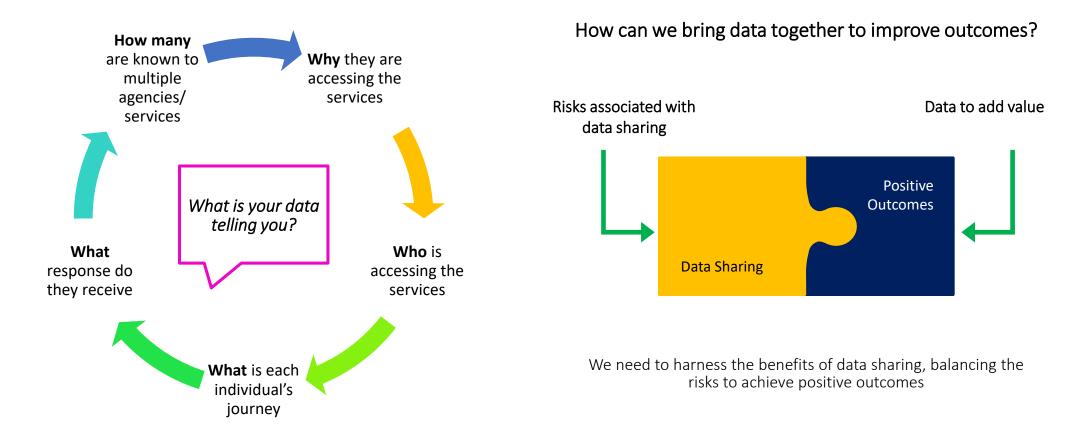
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Data Driven Transformation

Shu Fei Wong – EY



Understanding your data provides you with the insights you need to provide the **right services**, to the **right people**, at the **right time**.





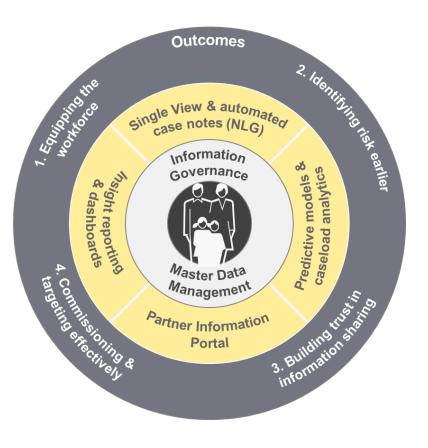
Challenging the Status Quo' through data insights and advanced analytics

Wajid Shafiq – CEO, Xantura Cat Park – EY

EY & Xantura Wajid Shafiq – CEO, Xantura



Our full capability enables transformation of the way people are supported, using **data & insights to** enhance decision making:



1. Equipping the workforce with richer information and greater capacity, reducing administrative effort to free up time to engage with the household and make informed decisions

2. Identifying risk earlier to improve outcomes by providing the right support at the right time

3. Building trust in sharing information to facilitate joined up working which will encourage greater holistic support for the individual and household

4. Commissioning & targeting outcomes-based services more effectively to support more effective third party spend with greater impact

Single View of a Household



This capability integrates and matches data to present a single view of an individual and household including chronology, contextual, historic and wider factors (through Natural Language Generation and automated case notes)

Risk summary and chronology

What are we worried about? (causes of concern)

Looking over the entire history of the data for a family, Forename 2 has a 23% attendance for the last term, 1819_AUT. Their rolling average for the previous 3 terms is also lower than 80% (calculated at 54% for Forename 2), across all pupils, this level of attendance places them in the highest level of need for attendance in the last term and in the highest level of need for their three-term rolling average. This rolling average represents an improving attendance performance with respect to their previous three terms rolling average.

Over the past 12 months the following set of risk have been identified in the household: N9-Cases other than children In need (attendance). In terms of trends concerns around N9-Cases other than children In need (attendance), appear to be reducing.

What do we know has happened in the past that has caused harm to the child and what are we worried might happen to cause harm in the future?

On a positive note, looking over the previous three terms none of the children were excluded from school. The last exclusion was in 2017.

What responses have they received in the past? What support are they currently receiving? DOB Allocated Allocated Allocated worker email Age worker worker at phone start name 11/02/ 077516984 Nancy.evans@anycouncil.gov. Nancy 1936 34 uk Evans

Demonstration

What are potentially some key risk

factors for the family?

Date	Event	Source	Case reference	
20/12/2018	Attendance dropped below 80 % (1819_AUT) for Forename 1	Census	478891276	
18/07/2018	Attendance dropped below 80 % (1718_SUM) for Forename 2, Forename 1	Census	879923111 478891276	What is their journey with the council to date, key events and
01/07/2018	Rent arrears recorded for Forename 5 for £1654.00	Civica	99999999967	their engagement with other services?
27/03/2018	Attendance dropped below 80 % (1718_SPR) for Forename 2	Census	879923111	

What other services is this person known to?

System references				
Case reference				
106630				
143639, 1786654, 418873, 766565				
766565				
777656				
99999999967				
478891276				
	106630 143639, 1786654, 418873, 766565 766565 777656 999999999967			

Household composition

Forename(s)	Last name	DoB/Age	School		Attendance %	Case ref
Forename 1	Surname	26/07/2003 / 15	Northwick	School	82% (Term - 1819_SPR)	478891276
						143639
Forename 2	Surname	09/09/2001 / 17	Northwick	School	16% (Term - 1718_SUM)	87992311
2						1786654
Adults – age	e ascending			Wh	no are the ad	dulte
Forename(s)	Last name	DoB/Age	Case ref	00	d obildrop in	
Forename 3	Surname			an	d children in	
Forename 4	Surname	16/03/1999 / 20	77786523,		household	?

106632

Household Address

Current / active interventions Start date Service Full name

ASC

Interventions

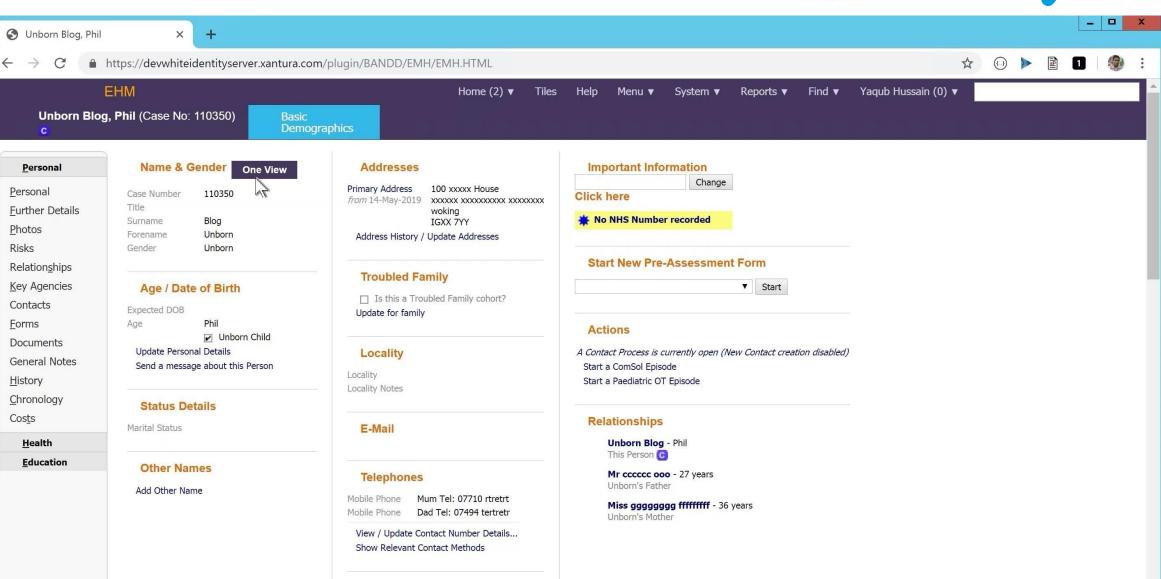
02/02/2018

1 The Street, The Lane, The Town, Postcode

Forename 7

Surname 2

Demonstration



Disability ☐ Is Disabled?

social work

Building a better working world scotland

leading the professio

Advanced Analytics Models



This capability produces identifies individuals / families at greatest risk interventions in the future, so timely alerts can be surfaced for professionals to intervene early

Risk Indicators

The risk prediction models analyse data received to identify trends and patterns over a period. Based on historical data, each model utilises several variables and predictors to establish a list of risk indicators based on pattern and characteristics of historical cases – e.g. what were the factors present in the 12 months before an individual receive crisis intervention. In very broad terms these risk indicators tend to be static (e.g. a disability) or dynamic (e.g. mental health) and the modelling process considers the degree to which these are modifiable.

Predictive Models

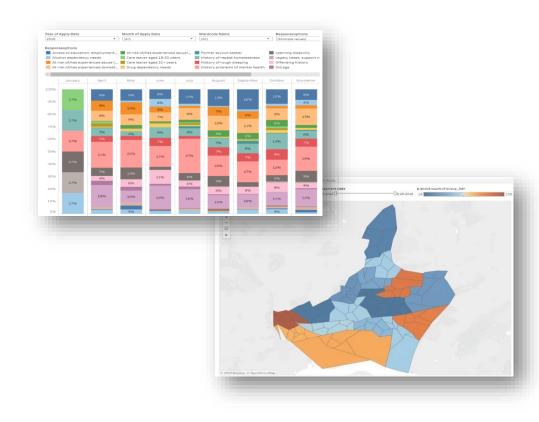
Provider's predictive model capability typically demonstrates **80% accuracy** in identifying cases that would have escalated to crisis point without early intervention. Models developed for other clients:

Model	Description	
Early Help targeting	Probability that a family in Universal+ will be in CIN / CP or LAC in the next 9 months	
CIN step up / step down model	Probability that a family in CIN that will be in CP or LAC in the next 9 months	
CP step up / step down model	Probability that a family in CP will be in LAC in the next 12 months	
LAC step down model	Probability that a family in LAC will be stepped down in the next 12 months	
Exclusion risk	Probability of an Exclusion incident in the next 9 months	
Attendance risk	Probability of Attendance dropping below 85% over 3 rolling terms in the next 9 months	
Homelessness prediction	Probability that a family or individual will present as homeless in the next 2 months	
Arrears risk	Probability of Arrears worsening in the next 9 months	

Process & Intervention Analytics



This capability drives insight into the efficacy of interventions and the likely outcomes based on characteristics, management reporting via dashboards



Analytics Dashboard: Support Needs Analysis

Dashboard demonstrates risk indicators that led to homelessness. The data is gathered from across service lines and enable identification of:

- Which risk indicators contribute to a crisis point
- Patterns across service lines

GIS Mapping: Ward Level Analysis

Ward level analysis provide ability to establish which areas received most interventions. Through assessing data from across the Council services and its partners, we will be able to answer:

- Who is at risk or in need of support? Where are they based and what support do they need? Is this the right support level?
- On a ward level, how are the volumes and support needs changing over a period of time?
- Consequently, what interventions and *resources* should be in place for this area / need?

Case study - London Local Authority



Context

- This authority is facing a number of challenges including increased demand for services coupled with engrained social issues; it is in the bottom three London boroughs for unemployment, child mortality and early mortality. In the category of "qualifications at the end of school" it ranks last.
- To counter these challenges councils are beginning to consider new, innovative ways of working to deliver their vital services. This authority has an ambitious strategy to take a proactive approach to early intervention and redesign service delivery to improve outcomes for vulnerable people. This transformation will be underpinned by data insight and analytics

What has our work involved?

- Working with stakeholders across Children's, Adults and Housing services to understand key service pressures and strategic aims
- Developed enhanced information governance to allow teams to securely share data in accordance with GDPR requirements
- Undertaken initial data gathering and analysis to generate insight into the underlying issues that are causing residents to contact the authority for services
- Co-developed Natural Language Generation (NLG) outputs to automate case notes for Children's, Adults and Homelessness
- Engaged with the staff to understand how to deploy advanced analytics models to preemptively identify risk so earlier action can be taken
- Created a series of dashboards for use at strategic and operational level so support improved service planning and management
- Undertaken a period of live testing to refine the platform prior to go live, launched end of July 2019



Case Study: Where are we now?

Cat Park – EY



Successful deployment of "Single View of Household" case summary for Children's and Housing services across 9 teams (200+ staff)

Benefits:

Enable decision making

Professionals focus their time and attention on assessment and decision making, rather than administrative and information gathering activities

Encourage collaboration

Optimise joint working and multi-agency response by having a more holistic view of individual's wider household and social situation

Support early intervention and prevention

Proactive risk alerts highlight cases at risk of escalation, or which may be ready for step down, allowing workers to intervene earlier

Week 1 of deployment in Children's team:

What are users saying:

This case has just been assigned to me (on the system), I am preparing to meet this client for the first time so this (Single View) is very helpful context and information I would otherwise not know [until much later]

The Single View will save me 3 hours of time finding information.

This is a starting point giving me useful background with a click of a button. Before I had to go into 5 different systems

A case was open for a Single Assessment and there were concerns of emotional neglect and that the parents were fabricating an illness for one of the children, and in the past they had used this to claim disability benefits for the child. The Single View summary we looked at had a sentence in risk summary on benefits and said they were currently claiming benefit for a Child with Disability (CWD). Officer is keen to discuss this with the family, as she was concerned this was happening but didn't have any proof or evidence. She was looking into it as a fabricated illness case. This info will help her quickly support her assessment, identify lines of enquiry, and work out best next step.

Case Study: What do staff think?



Cat Park – EY

"In this borough, relationships are at the core of our practice. As we are working in an exciting but challenging environment for social workers, using One View as a support tool can give us a stronger opportunity to collaborate closely with colleagues, partners, and directly with our families to ultimately improve the lives of our most vulnerable children and their families.

By holding more complete information, and spending less time to gather this information, we have more time and understanding to work with families and making the best decisions possible with them. We know that social workers holding more information might feel like a further power imbalance for our clients, but if this information is used ethically then we can all ensure the best outcomes for the children we work with.

As we do this, we should remember that using our professional judgement and showing professional curiosity is still crucial. We have to think even more carefully about what our families need and how we can help them achieve it, working closely to build close, trusted relationships and ensure that we are collaborating with them along the journey.

If we use the opportunities created by One View in this way, in line with the approaches discussed in the Children's Practice Framework, we can ultimately improve the outcomes of all children and families whom we work with."

Principal Social Worker

Case study: What are the benefits?





- Reduction in demand on statutory services by improved early identification of people at risk alerts mean we will know earlier and in more depth about the risk factors across the household
- Improved early identification of situations with escalating risks through alerts mean we will know earlier and in more depth about the resilience factors across the household. This will help us to make an informed decisions about the most appropriate intervention / support and help us to focus on maximising independence



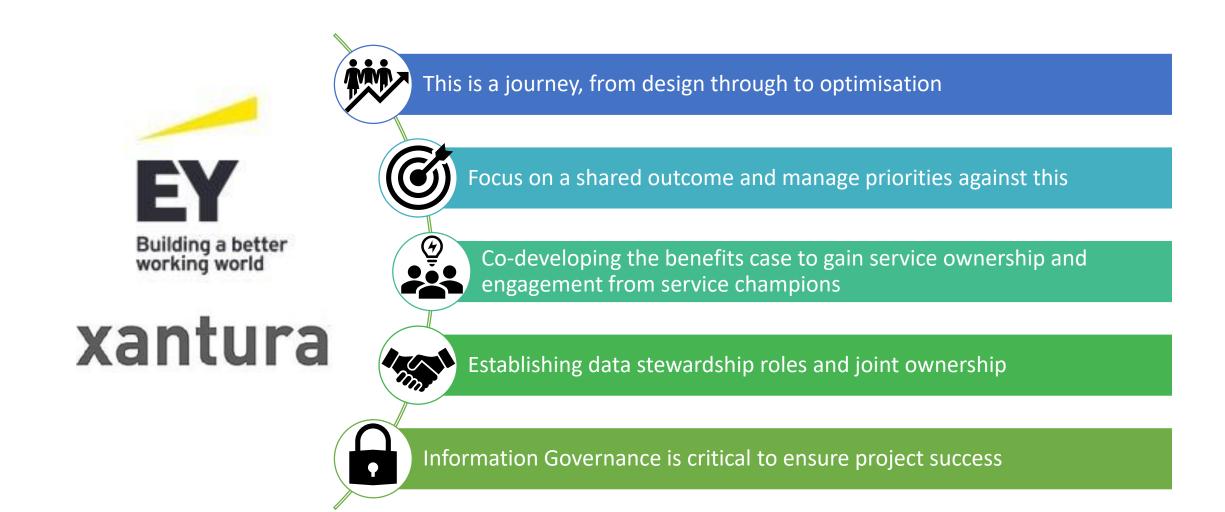
- Ensuring people get access to support that is more likely to work by improving efficacy of interventions. We use intervention analytics to understand which interventions are working well based on the prevailing risks they are addressing. This will also contribute to reducing demand on statutory services
- Families will have a better experience of the system because timescales for decision making will be reduced, meaning children and families receive the support they need more quickly



- Reduction in time spent in statutory services by improved identification of cases for step down through risk alerts allowing us to move children and families onto a more cost effective safe package
- Reduction in the amount of time worker spend gathering assessment information. Staff will have better experience, spending more time working directly with families to improve outcomes and resulting in greater job satisfaction

Our Key Lessons So Far...







Facilitated Workshops

We will now break out into three groups to discuss the two key themes below – we have added prompts to aid discussion:

Discussion Point 1:	Discussion Point 2:
Is Scotland different?	Data analytics – opportunity to support practitioners and decision makers or a threat?
Delieu/nelitical landscape	Concept
 Policy/political landscape 	Consent
 Demand 	Quality
 Capacity/financial pressures 	Ethics
 Geography 	
 Demography 	
Demography	

