DATA EVOLUTION PROJECT

SUMMARY FINDINGS

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DATA ORCHARD
JANUARY 2017

DataKind UK

DATA ORCHARD

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Key Definitions

DATA - When we say 'data' we have a broad definition. We include all the types of information an organisation might collect, store, analyse and use.

SOCIAL SECTOR – In the context of this project we're defining the social sector as being charities and social enterprises (businesses trading for social and environmental purposes).

DATA MATURITY – The journey towards improvement and increased capability in using data.

When we say 'data' we have a broad definition. We include all the types of information an organisation might collect, store, analyse and use.

About Data Evolution

This project came about because two organisations, Data Orchard and DataKind UK, share a goal: "To help organisations working for good in the world, to use data to achieve greater impact." Having worked with many charities and social enterprises we noticed there were certain stages and phases in their data development. We suspected there was a pattern, a journey?

The Data Evolution project was about exploring both the theory and real-life practice of how organisations improve and increase their capability in using data.

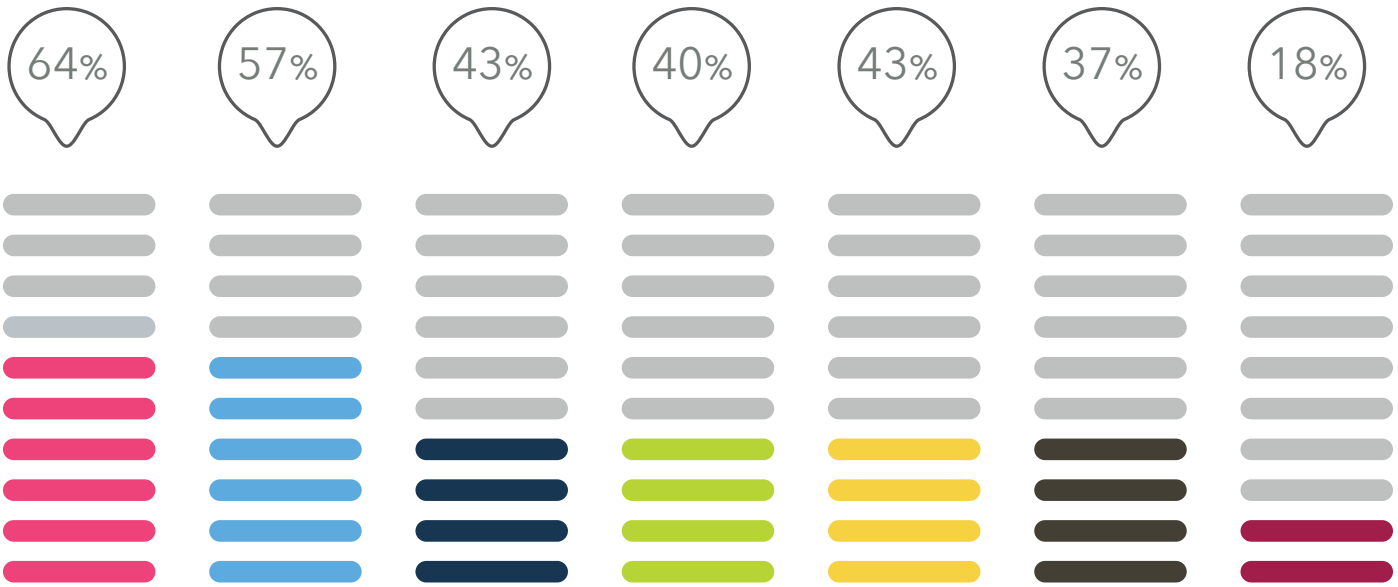
The research was conducted between March and November 2016 and engaged hundreds of charities and social enterprises in England and Wales. We're delighted to be able to share the model framework to explain the key factors and the stages of data maturity.

THE KEY COMPONENTS OF THE RESEARCH WERE:

- A review of existing Data Maturity models in different sectors.
- **2 WORKSHOPS** attended by **56 SOCIAL SECTOR LEADERS** and people in data-related roles.
- A national survey, with **200 RESPONDENTS**, to get an indicative picture of the current state of data maturity in the sector.
- In depth data and analytics assessments involving interviews with **47 PEOPLE FROM 12 ORGANISATIONS** to dig deeper into the contours of data maturity and test out how to measure it.
- Creation of a prototype tool for assessing, scoring, and generating basic data maturity diagnostic/benchmarking reports.
- Design of a theoretical model and framework for describing the journey towards data maturity.

Data is Important

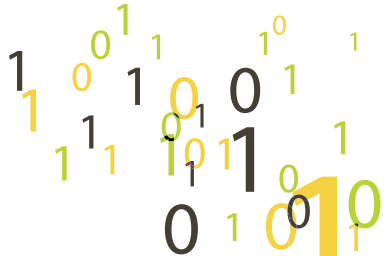
We found data is an integral part of life in charities and social enterprises. For 69% of the respondents in our survey, data is a priority either organisation-wide or at least in some departments. It's critical to their survival; they collect and use lots of it, but its power remains largely untapped. The survey showed:



Have confidence and trust in the quality of their data	Collect the right data	Have the right skills to analyse data in useful and meaningful ways	Have good tools and systems for collecting, managing and analysing data	Have robust data governance i.e. ownership, management, policies, access and control	Say data is accessible to everyone in the organisation that needs it	Invest enough in data related resources i.e. people, skills, learning, tools

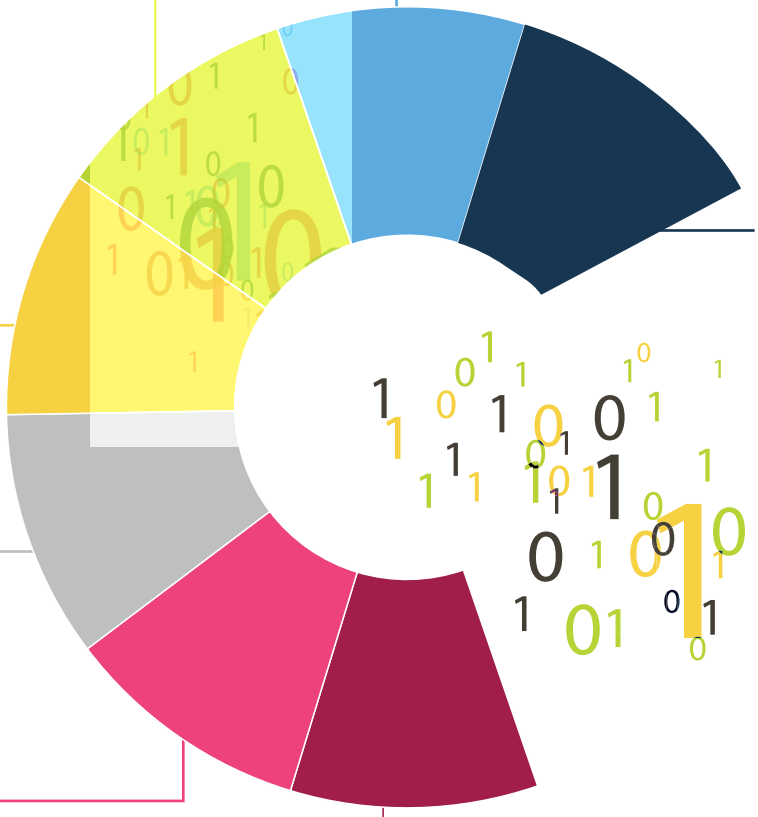
Our more in-depth research suggests some of the percentages above may be optimistic. The majority of those we spoke to were not aware of the possibilities of data and analytics for advancing their organisation and its goals. Few were geared up in terms of leadership and culture to take advantage of its potential. We suspect data is a rather niche-interest subject and whilst people thought it was important it was still difficult to engage them.

Amongst those most advanced, where there is commitment and investment, data is delivering rich and transformational rewards at an organisational level. In some cases, this extends into sector and cross-sector wide benefits.



Which factors are most influential in enabling data maturity?

This research has confirmed our theory that the crucial factor in data maturity is people. Tools and techniques are of course important and the raw material (i.e. the data itself) is essential. But the leadership's vision, the collective drive towards greater impact, and the investment in peoples' continued learning, and adaption toward that goal ultimately drive data maturity. We identified seven key themes and a number of sub-themes as the main factors determining data maturity:



CULTURE
Team approach, self-questioning, openness and sharing, governance.

SKILLS
Internal capacity, roles and skill levels, access to external knowledge and expertise.

LEADERSHIP
Attitude, investment, plans for data development, alignment to business plans, capability.

DATA
Assets, collection, sources, quality.

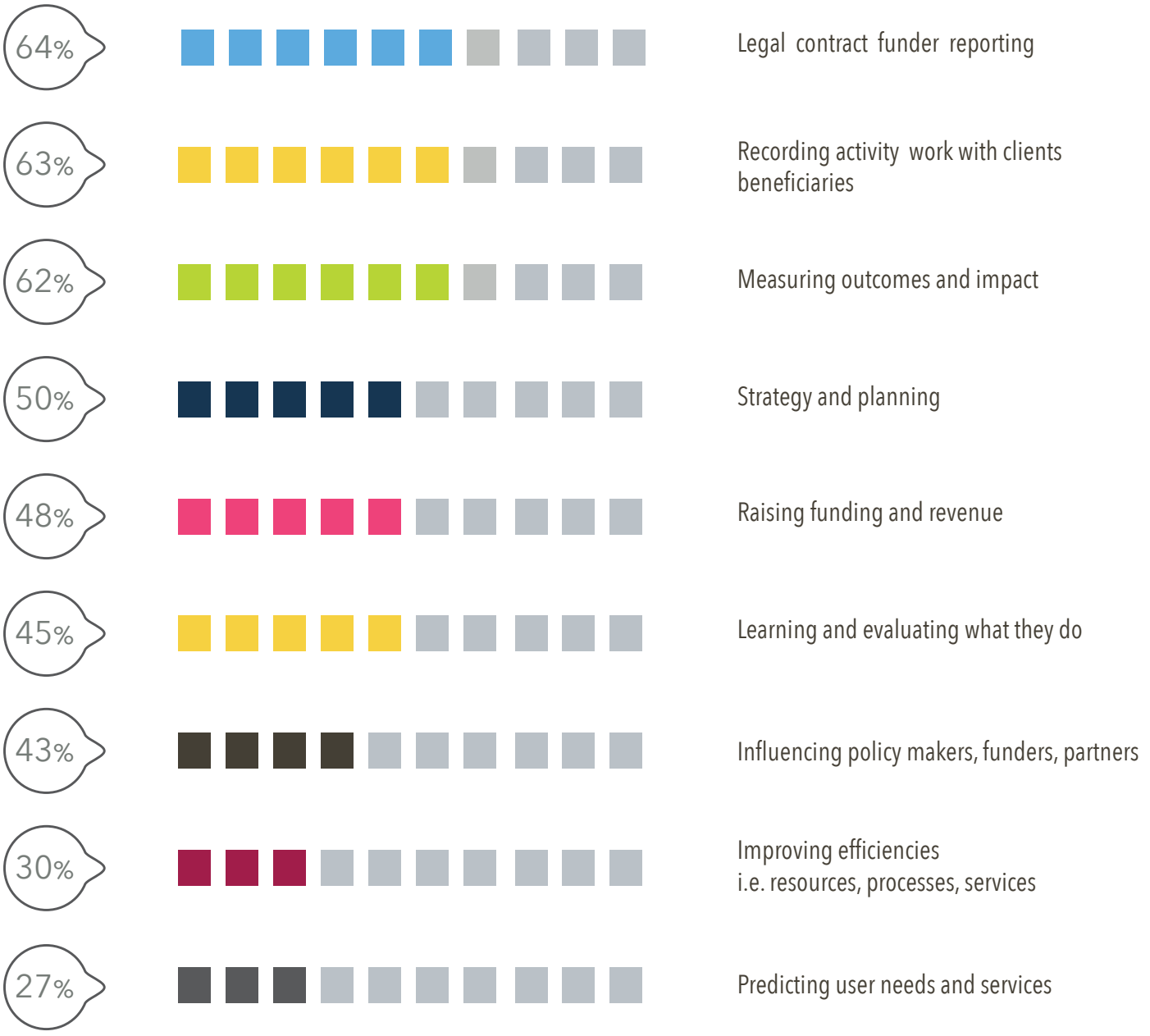
TOOLS
Storage, type and quality of tools and infrastructure.

USES
Range and extent of reasons for collecting and analysing data, and benefits and rewards reaped.

ANALYSIS
Type of data analysed, techniques, presenting and communicating.

Uses and benefits of data

Just about every organisation records data about their activities with clients/beneficiaries. Equally data is used extensively to meet legal, contract, and funder requirements. This was true across the survey respondents and organisations we assessed. However for the other areas we explored, the patterns of use differed considerably depending on how much of an organisational priority data was.



The chart above shows where organisations said they are using data a lot. We wanted to focus on the range and extent of data use.

Outcomes and impact measurement was less common among those less mature but a key feature of the more advanced. Where data is a major organisational priority (31% in our survey) measuring outcomes and impact was their top area of use. All of them used data for this purpose, most extensively so. Other areas where these organisations led the field were in using data for learning and evaluating what they do, and strategic planning and decision making. This group were also the ones using forward looking predictions around client needs and service options.

In our in-depth assessments we had an opportunity to explore in more detail what data was enabling organisations to achieve. The most advanced were seeing some very significant benefits in the following areas:

IMPROVED OUTCOMES AND IMPACT

SAVED MONEY THROUGH EFFICIENCIES

INCREASED CREDIBILITY AND INFLUENCE

STRENGTHENED PARTNERSHIPS

Even those at earlier stages of maturity reported positive benefits such as:

IMPROVED PRODUCTS AND SERVICES

INCREASED KNOWLEDGE AND LEARNING

IMPROVED PLANNING AND DECISION MAKING

INCREASED INCOME

Looking under the bonnet

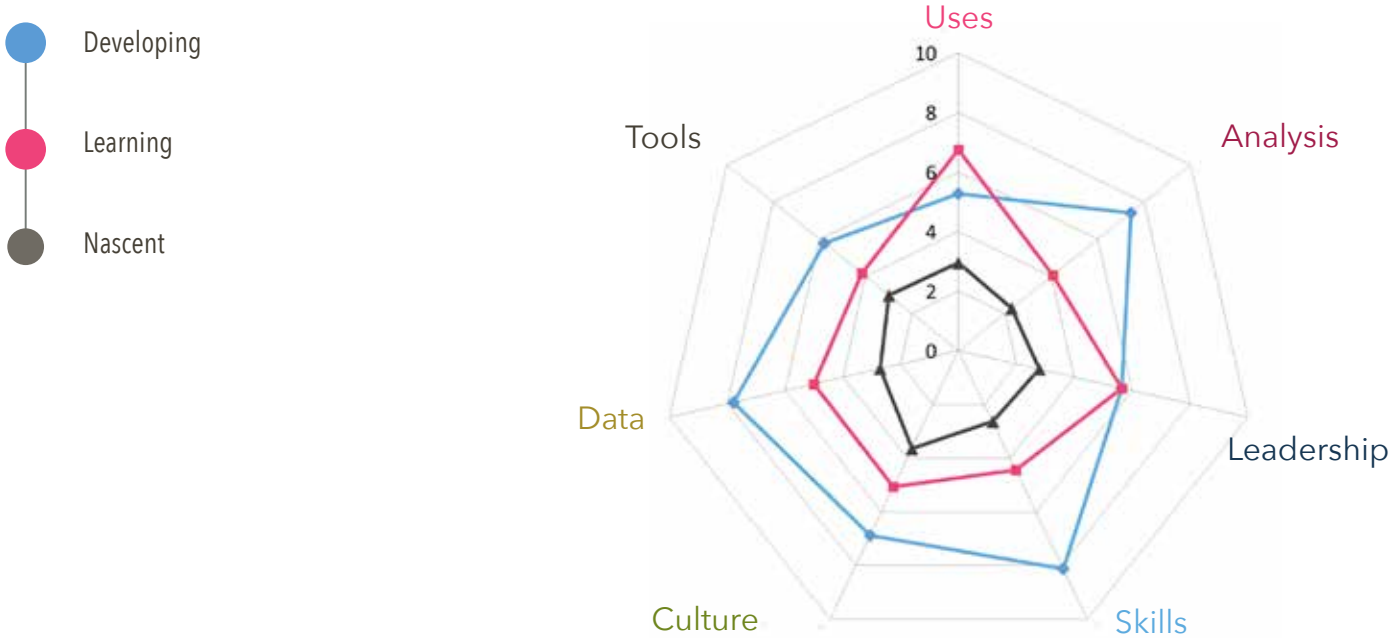
Data maturity is complex and varies from one organisation to the next. There are some challenges: Many people don't understand what is meant by 'data'; it's a huge subject and means different things to different people. How people think, and what they say about data in their organisation, depends on who they are and what they do… and they usually don't all think or say the same thing! And, since most advanced and exciting developments in data are relatively new, complex, and geeky, the concepts and language are not familiar to most non-data people.

So in order to assess data maturity in depth, we needed to get the right people and ask the key questions in the right language. We selected a diverse range of 12 organisations and invited groups of at least three people from each to take part (crucially including someone in a leadership position). We designed a detailed assessment based around the key themes to capture their different perspectives. Next, we created a prototype scoring tool to measure their organisation's strengths and weaknesses (based on the collective scores of the individuals) and benchmarked these against the rest of the trial group.

Examples of organisations at different stages of maturity

The chart shows the key themes scores for three of the organisations we assessed. The scale 0 to 10 represents data maturity with 0 being completely unaware and 10 being the most mature. organisations.

Whilst the three organisations broadly fall into the Nascent (score 2-4), Learning (score 4-6) and Developing (score 6-8) stages, each has its own strengths and weaknesses.

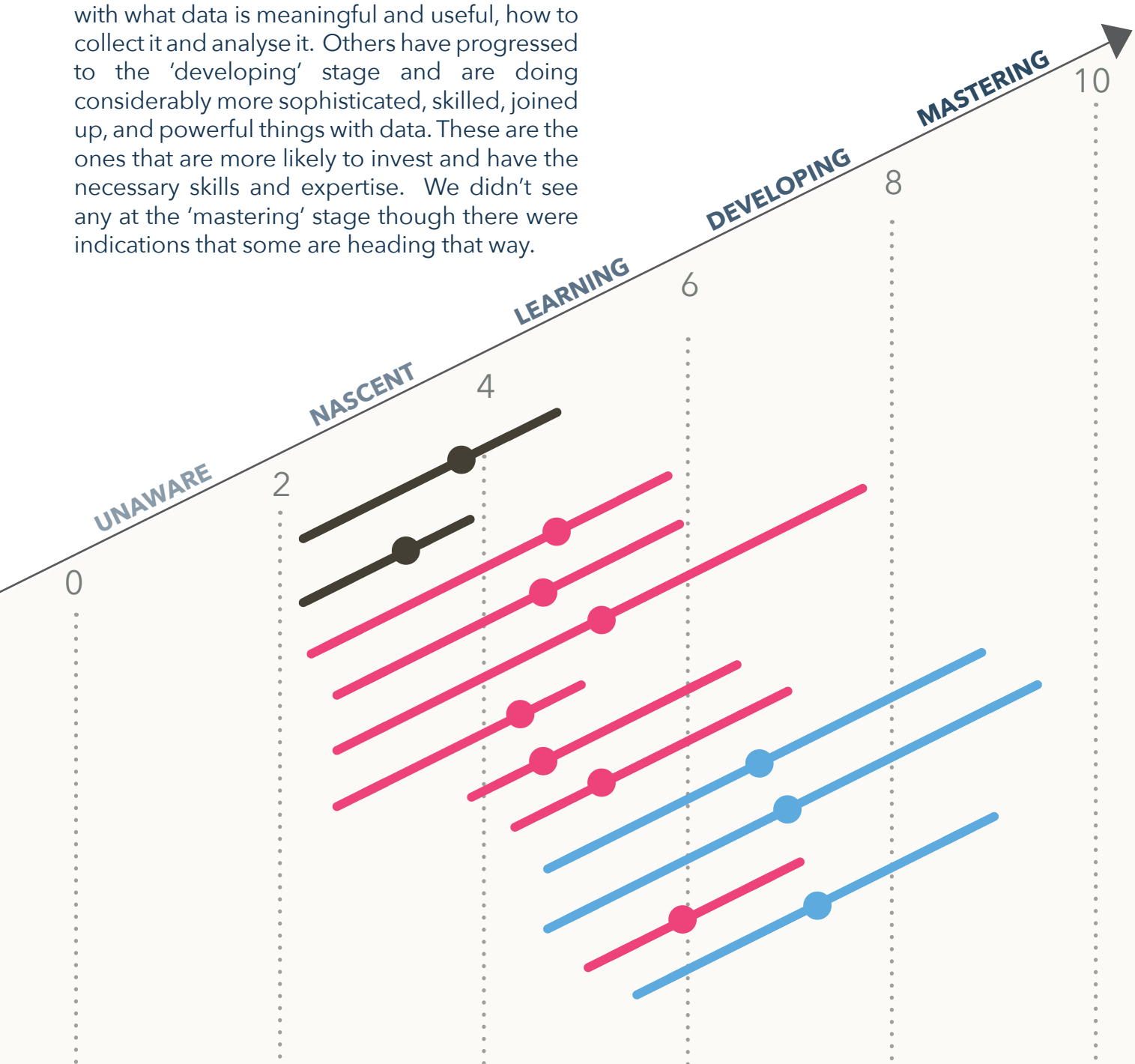


Our data maturity framework is attached at the end of the report. It sets out five stages of the journey: 'unaware', 'nascent', 'learning', 'developing' and 'mastering'. It's based on a range of indicators and attributes grouped and scored across the key themes and subthemes. Of the organisations we assessed in detail we were encouraged to find most organisations have set off on their journey and are aware of the importance of data. However it's worth noting that in our survey 1 in 20 organisations said there was 'little awareness and data was neither an interest nor a priority'.

Our research suggest most are at the 'nascent' and 'learning' stages. These are still grappling with what data is meaningful and useful, how to collect it and analyse it. Others have progressed to the 'developing' stage and are doing considerably more sophisticated, skilled, joined up, and powerful things with data. These are the ones that are more likely to invest and have the necessary skills and expertise. We didn't see any at the 'mastering' stage though there were indications that some are heading that way.

Stages of Data Maturity for Assessed Organisations

Each of the lines on this chart represents one of the twelve organisations we assessed. The starting point on the line represents their lowest score across the seven key themes and the end point represents their highest score. The circle along the line is their average score across all seven themes and as such is considered to be the overall measure of data maturity.



What barriers prevent organisations from becoming data mature?

Organisations at different levels of data maturity face different barriers. For those least mature, it tends to be a combination of low awareness, lack of skills, difficulty collecting data and poor tools. Sometimes it's about the attitude and willingness of leaders; and sometimes it's about not having the capacity/resources to move beyond the data requirements being externally dictated by funders and commissioners. Some particular barriers we identified were:

LOW/NO SKILLS CAPACITY

For over half the organisations in our survey there was little or no dedicated staff with data skills. One in five had none at all. One in three it was a part-time role or it was part of another role. Amongst the organisations we assessed in detail, dedicated data roles represented between 0 and 16% of the workforce. What made the skills issue such a tricky area to assess was that data was so integral to so many people's jobs. For example out of the 47 people in the 12 assessed organisations only 3 had the word data in their job title yet on average most spent nearly half their time working with data (leaders and trustees less so). So whilst levels of investment were reported as low there's clearly a lot of human resource involved.

Data skills, knowledge and expertise are a big gap in the sector and support services are thin on the ground. Much of the existing professional development associated with data is focused around specific and separate functions like fundraising, finance, marketing/communications, ICT, research and evaluation.

DIFFICULTY COLLECTING DATA

In the private sector it's suggested that 80% of the effort goes into collecting and cleaning data in any data project. Data collection is difficult, resource intensive and time consuming, especially for small organisations. This is especially so if they work with very marginalised, disadvantaged and hard to reach beneficiaries. Others delivering via networks, partnerships or intermediaries also experience challenges in defining and collecting consistent data where they are reliant on imposing upon/persuading others to provide it.

Capturing who they serve, what they do and what difference it makes can be challenging and costly (especially since they have to do it repeatedly to measure outcomes and impact). Those organisations that deliver some/all of their services online have the advantage of already digitised data. Of course many charities and social enterprises conduct their activities face-to-face out in the field, by phone, as well as (increasingly) online.

DIGITAL TECHNOLOGY MATURITY

We found data maturity is substantially entwined not just with more sophisticated impact assessment but also with digital technology maturity. We're not just referring here to online web/social digital maturity but the full range of digital tools and systems an organisation has at its disposal. Indeed our research suggests good tools and infrastructure are not just essential but may be a pre-requisite for data maturity. Arguably it's the data these systems collect and deliver and the purpose for which it is used that's most important.

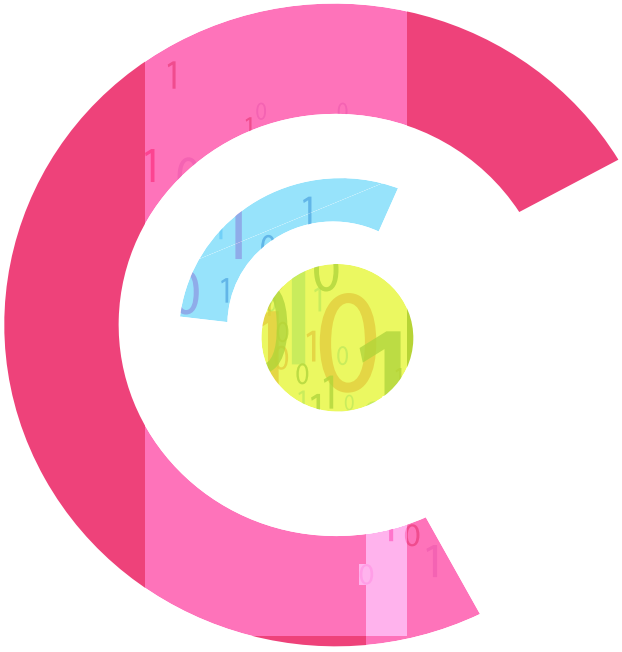
In our survey only 16% of those where data was an organisational priority said they didn't have good tools and systems. Amongst those with little data awareness it was 81%. Of the seven key themes we looked at in the assessments, 'tools' was the lowest scoring.

LEADERSHIP

Whilst there's been a notable drive around digital transformation and in some cases digital leadership, there is very little happening around 'leadership in data' or 'data in leadership'. Taking the overview of data, seeing the big picture at an organisation-wide level, requires leadership engagement. We were encouraged that many leaders we met during this research were open and enthusiastic about data, however a significant number were not and some found the subject deeply uncomfortable.

Is it different for different kinds of organisations?

The social sector is hugely diverse and organisations differ enormously in what they do, where they operate, who they serve, and the size and scale of their operations. We were curious to explore whether these factors made any difference to data maturity. Matching the registered charity and company numbers of those completing our survey to open data sets we were able to do some in-depth analysis to satisfy our curiosity. We found:



LARGER ORGANISATIONS are not necessarily doing better with data. It's true the larger the organisation, the more likely they are to have dedicated data staff. However we found small ones commit a lot of people to data and some large ones don't.

HIGH INCOME ORGANISATIONS (those with incomes over £500K) were more likely to say that data was a priority in some departments but not across the whole organisation compared to lower income organisations. This suggests they have greater challenges with silos – typically marketing and communications, research and evaluation, fundraising or finance.

YOUNGER ORGANISATIONS (those less than 11 years old) seem to consider data more of a priority than older organisations.

URBAN V RURAL ORGANISATIONS. We didn't find any evidence to suggest rural organisations are doing less well with data than urban.

CHARITIES V SOCIAL ENTERPRISES. There were no discernible differences between the data maturity of social enterprises and charities.

What's needed and what's next?

Many social sector organisations are grappling with the challenges of data. We've started building a directory of services and support on our website www.dataevolution.org.uk. If you're looking for help check this out. If you provide help, add your details.

WHAT ARE THE NEEDS?

It seems that needs are different at different stages of maturity. Since most are currently at the 'nascent'/'learning' stages, much of their need is about being able to better define what data they require, work out how to collect it and find the right tools for managing and analysing it. However, for those 'learning' organisations, the challenges are more around connecting and aligning their different data, their systems, and bringing it all together as part of an organisational strategy. For those at a more advanced 'developing' stage, their needs are more about accessing and developing high level advanced skills and applying/embedding good data practice across the whole organisation.

Of course there is a big difference between what organisations might need and where there is demand i.e. what they're motivated to seek out. Awareness is a big issue. Those we spoke to in this research said they don't know what "good/great" looks like when it comes to data in the social sector. They were really keen to hear real-life examples and to learn from others breaking new ground in this area.

From this research it appears the data market in the social sector is under-developed both in demand and supply. There aren't many services available for the social sector. Much of what we found is short-term project based consultancy, pro-bono, academic support, linked to technology products, or fairly small scale. We found little, if anything, that aims to support or develop data maturity at a leadership level.

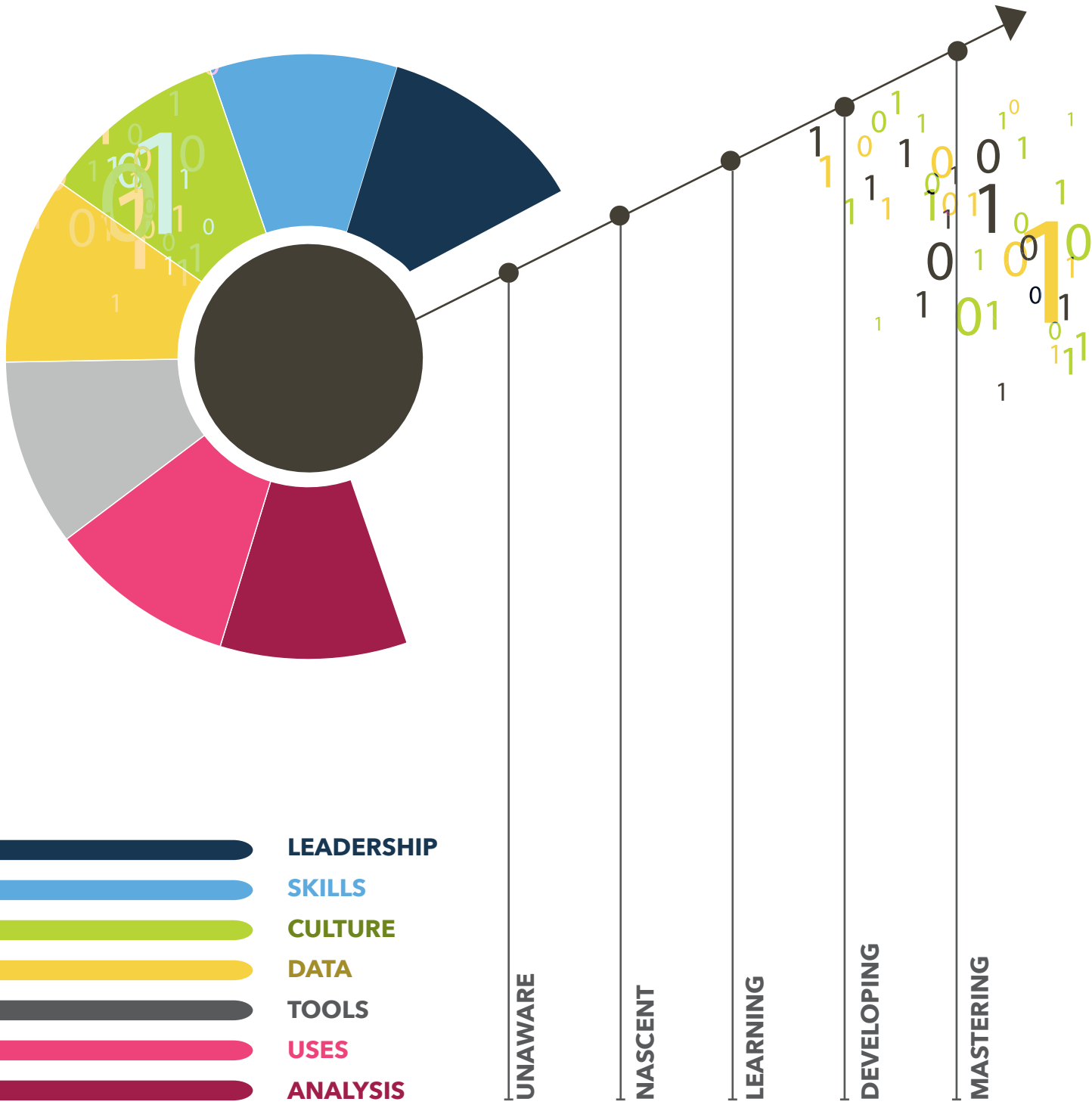
WHAT NEXT?

Data Orchard CIC and DataKind UK will reflect on the findings to inform how they design and deliver future services. The data maturity framework will be used as part of our efforts to diagnose and support social sector organisations to improve their use of data. The research findings will be disseminated as part of our ongoing efforts to raise awareness of the power and potential of data.

There are opportunities to build on this research both on a practical and strategic basis. We hope others wishing to strengthen and support the social sector nationally will consider how to address the range of needs. At a strategic level there are some bigger questions and opportunities about the collective data assets OF the sector, the data ABOUT the sector and open/available data FOR the sector. We look forward to some interesting developments.

The full research report is available on the project website www.dataevolution.org.uk

Social Sector Data Maturity Framework

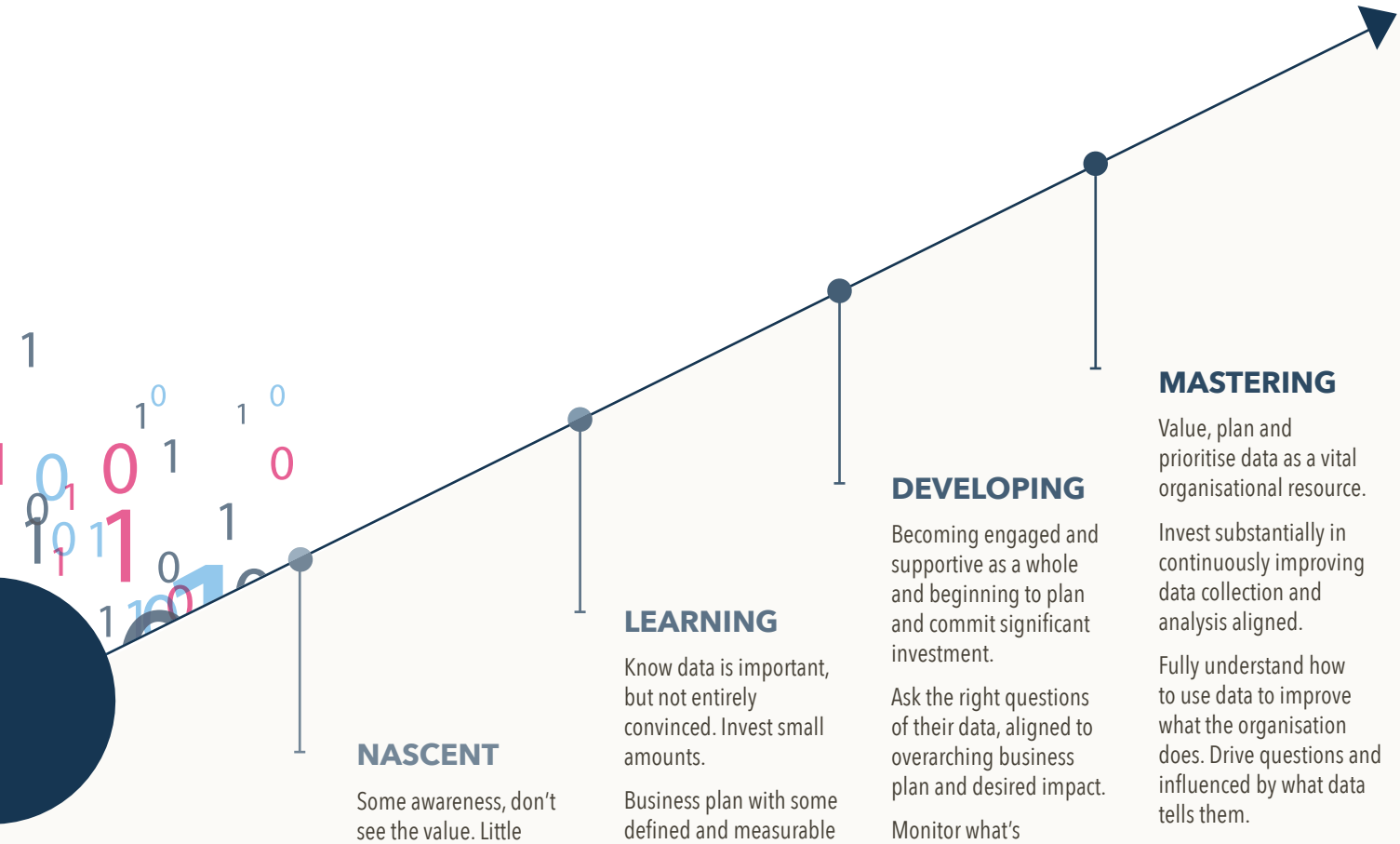


7 KEY THEMES

5 STAGE JOURNEY

Leadership

Attitude Investment Plans Capability



UNAWARE

Not interested and do not invest in data and analytics.

Don't use data for decision making, instead use experience and gut feeling.

No data or analytics expertise or understanding.

NASCENT

Some awareness, don't see the value. Little investment.

Typically use data about what happened in the past and verbal accounts of what's happening for decision-making.

Limited data and analytics experience and expertise.

LEARNING

Know data is important, but not entirely convinced. Invest small amounts.

Business plan with some defined and measurable targets though data collection/analysis may not align.

Might use past and current data for decision making with some simple trends analysis.

Learning through experience, building adequate skills.

DEVELOPING

Becoming engaged and supportive as a whole and beginning to plan and commit significant investment.

Ask the right questions of their data, aligned to overarching business plan and desired impact.

Monitor what's happening in the present as well as past trends. Some exploratory forward-looking research and predictions.

Data champion within senior management. Addressing skills gap in leadership as a whole.

MASTERING

Value, plan and prioritise data as a vital organisational resource.

Invest substantially in continuously improving data collection and analysis aligned.

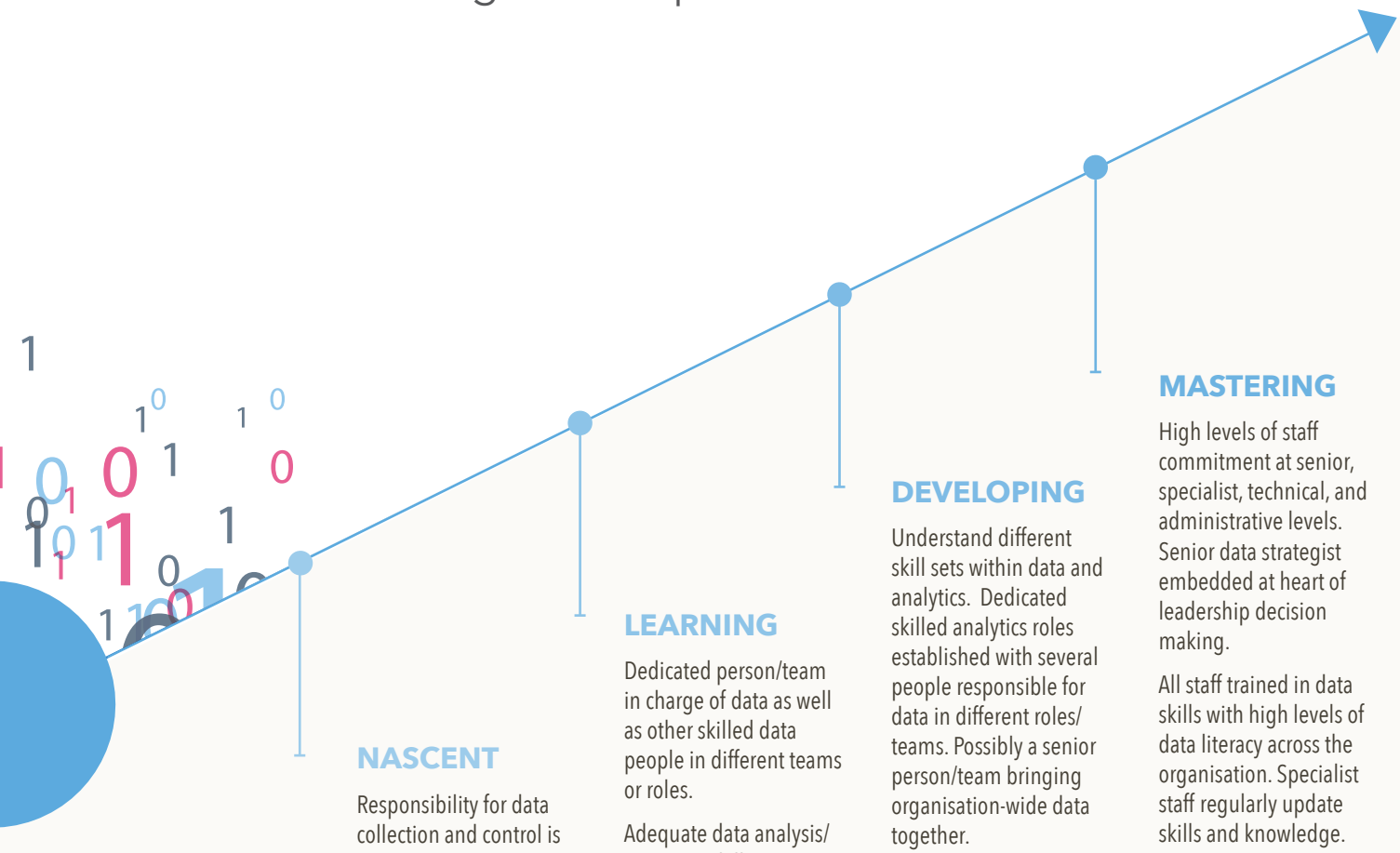
Fully understand how to use data to improve what the organisation does. Drive questions and influenced by what data tells them.

Use past, present and forward looking data for business planning and decision making.

Range of people with data analytics expertise in leadership including at Board level.

Skills

Internal capacity Skilled roles
Access to knowledge and expertise



UNAWARE

No staff commitment beyond basic administrative level and finance roles.

Mostly count up what they do, minimal data recording.

Little or no internal skills, training or expertise.

NASCENT

Responsibility for data collection and control is at administrator level.

Most analysis done by admin, finance and/or multiple staff using own systems aligned to their role/projects. Basic/adequate skills and training.

Occasional support from trustee/ volunteers relating to database/ finance or reporting.

Data literacy is patchy, mostly low, amongst staff.

LEARNING

Dedicated person/team in charge of data as well as other skilled data people in different teams or roles.

Adequate data analysis/ reporting skills as part of their jobs with some investment in more advanced skills development.

Fairly regular use of external support and advice, mostly around specific tools, systems or projects with some skills development.

DEVELOPING

Understand different skill sets within data and analytics. Dedicated skilled analytics roles established with several people responsible for data in different roles/ teams. Possibly a senior person/team bringing organisation-wide data together.

Increased data literacy/ responsibility across the organisation.

Ongoing use of advanced external expertise. Regular engagement in learning.

MASTERING

High levels of staff commitment at senior, specialist, technical, and administrative levels. Senior data strategist embedded at heart of leadership decision making.

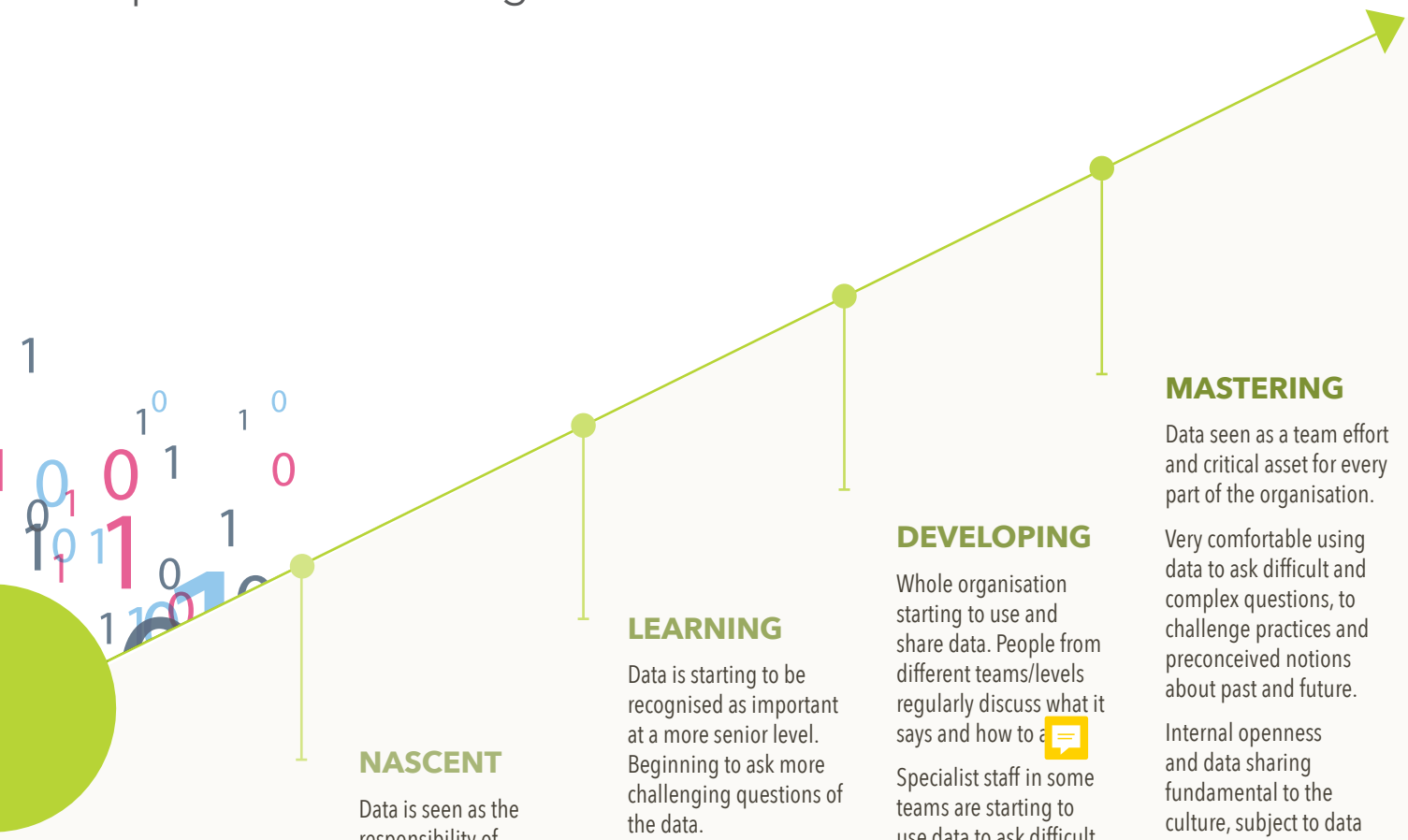
All staff trained in data skills with high levels of data literacy across the organisation. Specialist staff regularly update skills and knowledge.

Able to independently manage/drive and maximise data analytics to an advanced level. Use range of suppliers providing advanced expertise e.g. data scientists.

Becoming the experts that others use as a resource.

Culture

Team approach Self-Questionning Openess and sharing Governance



UNAWARE

Nobody is interested in data. Data only accessible to a single person or team, usually junior staff.

Opinion, observation, passion and belief are used for decision making.

Data requirements are seen as a chore and data rarely shared internally or externally.

Don't have any policies related to data.

NASCENT

Data is seen as the responsibility of 'someone else'. Recognition that data should be collected but it is not seen as a whole team activity.

Data mostly sought out and used to support and evidence what the organisation already believes or knows.

Organisation's culture doesn't encourage data sharing across teams, though this may occur occasionally verbally or via reports.

Basic policies for data protection and security may be in place but not monitored or enforced. Little/ no staff/volunteer training.

LEARNING

Data is starting to be recognised as important at a more senior level. Beginning to ask more challenging questions of the data.

People would like to share more but are constricted by access/ permissions/barriers.

Some data insights are shared with partners and in the public domain.

Data protection and security policies in place. Access to data limited by default (rather than design). Staff and volunteers have basic training. Senior management have a limited understanding of legislation and best practice.

DEVELOPING

Whole organisation starting to use and share data. People from different teams/levels regularly discuss what it says and how to a

Specialist staff in some teams are starting to use data to ask difficult questions.

Use forecasts to challenge views of future performance.

External data sharing is done on an aggregated basis and insights are shared including shared measures and benchmarks.

Data protection and security policies and practices are well established. Individuals responsible have advanced training and skills. Trustees and senior management keep abreast of current legislation and best practice.

MASTERING

Data seen as a team effort and critical asset for every part of the organisation.

Very comfortable using data to ask difficult and complex questions, to challenge practices and preconceived notions about past and future.

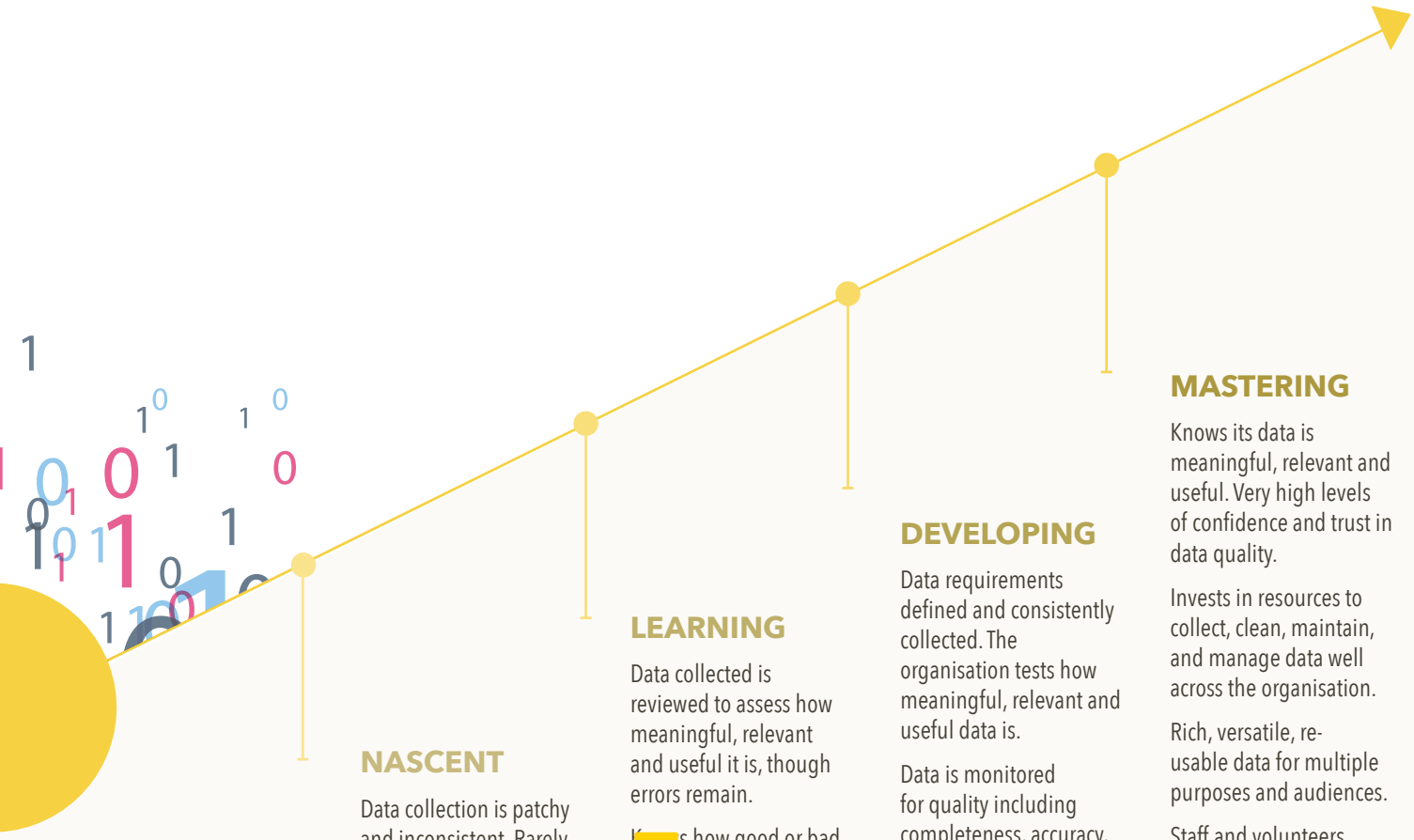
Internal openness and data sharing fundamental to the culture, subject to data protection/security.

Data insights and evidence are publicly available. Extensive data sharing, with protocols in place with partners, networks, stakeholders to address shared problems and solutions. Data may be shared with beneficiaries as part of service/support.

Data governance policies and practices are robust. Widespread knowledge and skills. Trustees and senior management keep abreast of future changes in legislation and best practice.

Data

Collection Sources Quality Assets



UNAWARE

Limited data (if any) collected. Not checked for validity or accuracy.

Infrequently, if ever, updated.

Collected manually for specific purpose.

No external data sources used.

Nobody is aware or interested in the data assets in the organisation.

NASCENT

Data collection is patchy and inconsistent. Rarely updated and cleaned.

Occasional use of external information sources relating to the wider context of the organisation's work.

Data isn't regarded as meaningful or useful beyond meeting legal/funder/contract requirements.

Mixed levels of confidence and trust in data.

Know where most data is, but there may be more.

LEARNING

Data collected is reviewed to assess how meaningful, relevant and useful it is, though errors remain.

Knows how good or bad different data sets are, and therefore which data sources can/can't be trusted.

Data becoming richer, more relational and therefore versatile.

Internal data usually in siloes.

Additional internal and external data is sourced.

Data assets known but not formally recorded.

DEVELOPING

Data requirements defined and consistently collected. The organisation tests how meaningful, relevant and useful data is.

Data is monitored for quality including completeness, accuracy, and validity. Tools and systems exist for cleaning and maintenance.

Richer data collection with more integration/ alignment between systems reduces duplication, inefficiency and error.

Open data is occasionally used.

Recorded lists of all data assets.

MASTERING

Knows its data is meaningful, relevant and useful. Very high levels of confidence and trust in data quality.

Invests in resources to collect, clean, maintain, and manage data well across the organisation.

Rich, versatile, re-usable data for multiple purposes and audiences.

Staff and volunteers are trained in data collection and collection is automated where possible.

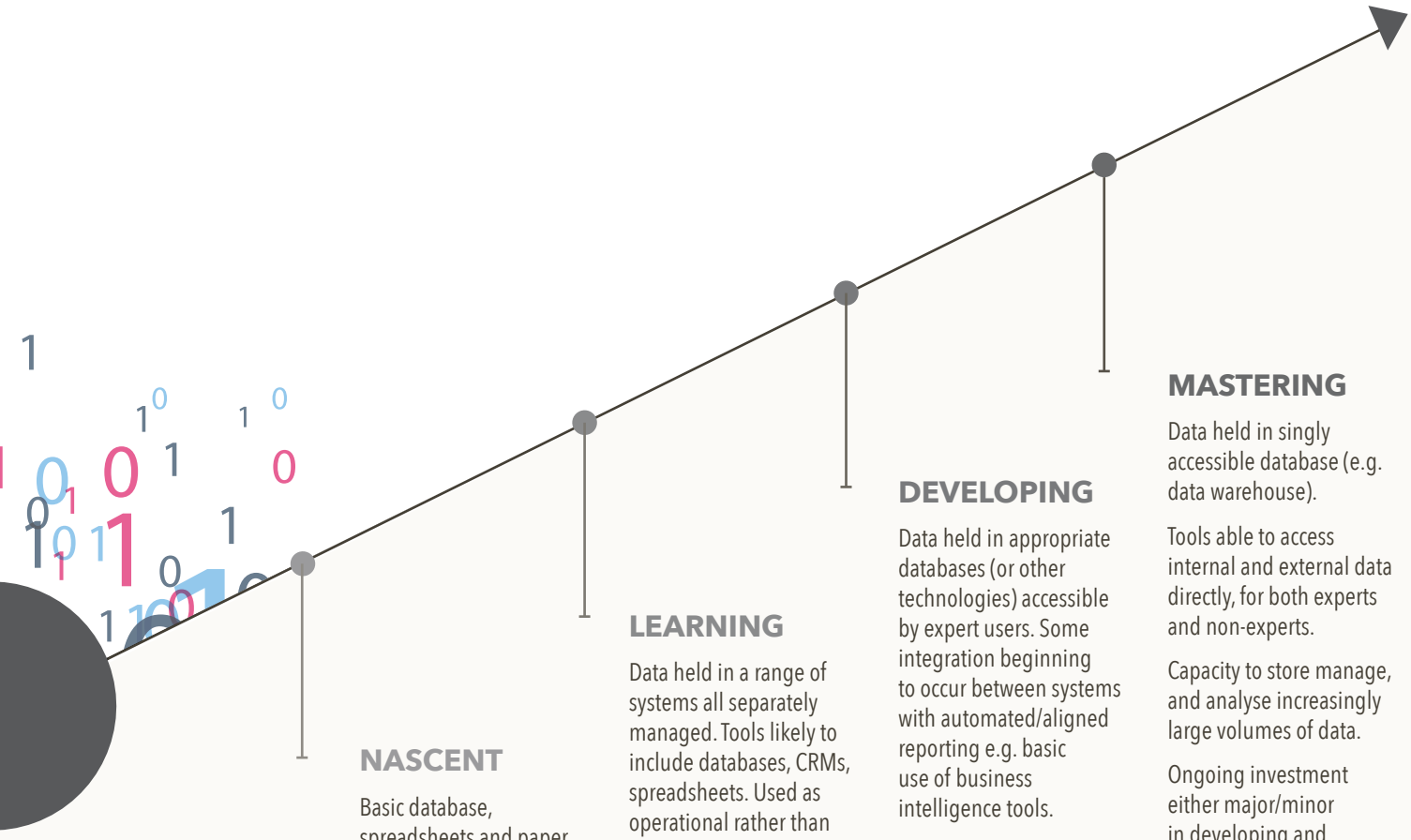
Compares its data with other organisations through shared measures and benchmarks.

Regular use of valuable open/public data sets.

Maintains an inventory of data assets with data dictionary, clear ownership, review periods, development plans for each.

Tools

Storage, type and quality of tools
Infrastructure



UNAWARE

Data is stored inconsistently, if at all. Data mostly held on paper or in spreadsheets.

Spreadsheets not used analytically.

Tools not available or not fit for purpose.

No planned investment in any tools, systems or infrastructure.

NASCENT

Basic database, spreadsheets and paper used for recording data.

Spreadsheets and reports in databases may be used for basic analytical tasks.

Tools are limited. May not be up-to-date, don't meet current needs, and may not be documented or supported.

LEARNING

Data held in a range of systems all separately managed. Tools likely to include databases, CRMs, spreadsheets. Used as operational rather than analytical stores. Likely to be one off purchases/ builds with limited flexibility for growth, change or improvement.

Tools may allow some inbuilt analysis and reporting but most often data has to be extracted for analysis. Possible advanced analytical tool e.g. SPSS, R or SAS, used for basic data processing or descriptive statistical analysis.

Joining data or analysis across teams requires manual exporting and re-stitching.

DEVELOPING

Data held in appropriate databases (or other technologies) accessible by expert users. Some integration beginning to occur between systems with automated/aligned reporting e.g. basic use of business intelligence tools.

Most tools up to date with support available. Work-arounds understood and replacements planned for poorer tools.

Occasional major investment in new tools/integrations.

Advanced tools being used for sophisticated analytics in some depts. e.g. SPSS, R, SAS, Python etc.

Models using batch analytics being used to understand and create efficiencies in processes.

MASTERING

Data held in singly accessible database (e.g. data warehouse).

Tools able to access internal and external data directly, for both experts and non-experts.

Capacity to store manage, and analyse increasingly large volumes of data.

Ongoing investment either major/minor in developing and improving tools, systems and infrastructure. Analytical infrastructure is a priority.

Advanced analytics and data science tools present throughout the organisation. Analytical models may be deployed in websites and other interfaces.

Automated reporting e.g. through dashboards. Self-service analytics available both inside the organisation and in partner organisations.

Uses

Reason for collecting and analysing data, benefits and rewards

UNAWARE

Collect and use data only for requisite purposes e.g. legal/ financial/ funder compliance.

Record clients and activities in order to operate and to fulfil external reporting requirements.

Little or no benefits or rewards.

Continued funding may be seen as the only reason for collecting some data.

NASCENT

Collect more data than required by legal/ funders/contracts.

Most data is based around activities and outputs and basic financial analysis and forecasts.

Raising income likely to be key focus for additional data collection e.g. fundraising events, donors, sales to understand performance.

Rewards mostly around improved understanding of beneficiaries and income generation.

Able to feedback information to funders around specific projects.

LEARNING

Collect a lot of data on clients and how they engage. Capture some outcomes data.

Historical service user/ project level analysis to evaluate performance within depts.

Use data for income generation and some forecasting of sales and donations leading to more effective fundraising and commercial income.

Better able to adapt to changes in external environment.

Able to demonstrate work being done for specific user groups in specific projects.

Can start leading conversations with funders, partners, clients using data.

Use own data as well external sources to evidence need and some outcomes and impact.

DEVELOPING

Data routinely used to measure outcomes and impact. Beginning to test assumptions on difference made and to understand why clients behave in certain ways.

Services/products/ campaigns are monitored to show performance on how, when and where these are used by whom.

Monitor what's happening in present as well as what's happened in the past. Some forward looking analysis.

Operations and services are more effective and efficient. Staff/volunteer performance is managed and improved.

Starting to differentiate between approaches, and understand what's working and what's not.

User group segmentation allows better understanding of needs, enabling development of services/ products /campaigns.

Can coherently make the case to funders/investors/ clients for existing and new services/products/ campaigns.

Services/ products/ campaigns targeted and optimised at project/ dept level.

MASTERING

Used extensively and in inter-linked strategic ways for wide range of purposes.

Understanding, evidencing and improving outcomes and impact is primary focus. Experiment to identify differentiated impact and how to predict and optimise this.

Predict user needs and service/product options. Understand why users behave in certain ways and how to influence behaviours.

Learn, evaluate, and build knowledge.

Influence policy makers, funders and partners to create positive change.

Improve efficiencies (resources, processes, services/product delivery).

Products, services and campaigns are continuously improved.

Robust evidence builds credibility and influence.

Partnerships and networks are strengthened.

Effective planning and decision making.

Design and delivery of services/products campaigns is optimised at an individual/ personal level.

Analysis

Type, Technique, Presenting, Communicating

UNAWARE

Limited analysis of financial and contracted data. Mainly counts.

Data is not used in reports – anecdotes are preferred.

NASCENT

Analyses starting to explore service users/ customers and target audiences.

Analyses may include external data e.g. to evidence scale of need/ problems.

Basic analysis, using counts and spreadsheets.

Use of basic charts.

Analysis and report creation skills variable.

LEARNING

Whole organisation analyses are beginning to be performed on an ad-hoc basis. Reports are collated manually using different sources of descriptive data.

Comparative trend analysis conducted over time (perhaps on an annual basis).

Some routine automated analysis and reporting.

Data is arduously reworked for presentation in static reports for different internal/external audiences.

Variable quality of analysis and presentation.

DEVELOPING

More consistent and regular approach to data reporting and trends analysis.

Aware of difference between correlation and causality.

Some real-time dynamic reporting done for different audiences.

Some use of more advanced analytics to understand where/ why things happen e.g. clustering and root cause analysis. Some attempts at A/B testing. Occasional use of predictive analytics in some areas.

Complex, analysis and querying done by some specialists in the organisation.

MASTERING

Data brought together in automated way to provide an organisation wide analysis.

Forecasting and predictive models are used to plan for the future needs of beneficiaries, to target services, and to maximise income.

Advanced approaches are available and used: network analysis, deep learning, text analytics.

Non data specialists are able to explore, analyse and report on the organisation's data.

Data visualisation delivers meaningful analysis to different internal and external audiences.

Analysis extends beyond the organisation to its wider context with cooperative analyses performed with partners/ other agencies.

Appendix 1
Who was involved in Data Evolution?

THE DATA EVOLUTION PROJECT TEAM

SIAN BASKER
PROJECT LEAD
DATA ORCHARD

ROLE: Project manager and lead research consultant. Desk research, workshop planning and presentations, survey design and analysis, assessments design and analysis, data maturity framework design, report writing.

Sian is a social entrepreneur passionate about the power of data for making the world a better place. She has been a pioneer of digital technology in the non-profit sector since 1991 and played a key role in setting up the UK's first community Internet access and training programmes. She's worked in local, national and international contexts driving digital development, research, inclusion, and capacity building. She specialises in research, impact measurement, digital systems for new knowledge and positive change.

EMMA PREST
PROJECT LEAD
DATAKIND UK

ROLE: Lead partner, overseeing project contracts, managing relationships and reporting to funders, coordinating project board/governance, support with events/survey marketing and promotion, coordinating data science input.

Emma runs DataKind UK where she handles the day-to-day operations. That includes managing data-for-good projects, supporting the influx of volunteer data scientists and building understanding about what data science can do in the charitable sector. Emma has spent the past decade working for non-profits helping them to make sense of their data and communicate it in interesting ways.

MADELEINE SPINKS
SENIOR RESEARCH CONSULTANT
DATA ORCHARD

ROLE: Desk research, surveys design, analysis, intensive assessments, contributing to analysis and reporting.

Madeleine has been a researcher for over 20 years working in voluntary, community and public sectors and across a range of partnerships. Her specialism is analysis and interpretation of varied data sets and geographical mapping. Madeleine led a local authority research and intelligence team for many years, working in partnership with the voluntary and community sector. She is actively involved in her local community, gathering evidence to support and sustain community run facilities e.g. pub, preschool and school (where she is chair of trustees).

BEN PROCTOR
COMMUNICATIONS LEAD
DATA ORCHARD

ROLE: Communications and marketing. Facilitated engaging workshops. Used data, mapping and social media to promote and target survey respondents.

Ben is a communications professional with a background in local authority and community communications. He specialises in supporting and encouraging the use of social media, open data and open source tools. He's worked with: The BBC, The Woodford Foundation (now SIGNAL), Shell UK, Shropshire Community Recycling Ltd, the NCS Trust and The Bulmer Foundation. He is a member of the core team of the Standby Task Force a global humanitarian organisation that relies on social media to fulfil its mission.

TONY CRAMP

RESEARCH CONSULTANT
DATA ORCHARD

ROLE: Built our prototype tool to score and benchmark data and analytics maturity for the charities and social enterprises in our test group.

Tony has a background in engineering, computing and local government research. He's used his statistical expertise and understanding in complex survey design and data quality analysis in public, private and non profit sectors.

STEFANIA GARASTO
DATA SCIENCE VOLUNTEER
PHD STUDENT AT
IMPERIAL COLLEGE

ROLE: Using Charity Commission and Company Check data, Stef matched up the survey participants to other data about each organisation, such as size, income, sector and geographical location. Undertook in-depth exploration of the data to test theories, correlations, and see what it showed.

Stef has an academic background in Mathematical Engineering and is in her final year of a PhD in Neuroscience on computational models for the processing of visual inputs. She is considering a career as a data analyst in the social sector.

TIRZA ABB
GRAPHIC DESIGNER
THINK BLINK DESIGN

ROLE: Graphic Design

Tirza is the Managing Director of Think Blink Design, working in both the UK and Australia. Kick starting her career in 2004 with an RSA award for sustainable design, she has always chosen to work with companies that actively engage in projects that do good in the world. " *I woke up one day and wondered why someone didn't just do something to help and then I realised that I am someone.*" Her clients include: Data Orchard, Edith Cowan University, The Bulmer Foundation, Travellers' Times, National Parks WA, Byron Shire Council, Fremantle Press and a wealth of small companies and trusts doing positive work.

CLEM ATTWOOD
RESEARCH CONSULTANT
DATA ORCHARD

ROLE: Data cleaning and initial analysis of our survey data. Helped with the presentation of some of our results.

Clem is a Director at Data Orchard and also works in research and data analytics in Geneva including with the United Nations Development Programme and the International Institute for Sustainable Development. He has a range of research experience from local government, the non-profit sector and campaign groups.

DAISY BISHOP
RESEARCH ASSISTANT
DATA ORCHARD

ROLE: Research, admin and marketing support. Helped get us organised and tracked down all the networks and contacts for promoting the survey and workshop events.

Daisy has worked for a range of organisations in PR, marketing, research and administration roles. She's an active volunteer in her local community, editing the local community magazine, running a sports club, organising events, and fundraising.

THE DATA EVOLUTION PROJECT BOARD

DUNCAN ROSS
CHAIR DATAKIND UK
CHIEF DATA SCIENTIST
AT TIMES EDUCATION
SUPPLEMENT GLOBAL

As part of his role Duncan talks to customers and prospects across the world about the joys of data science - which is why he got involved in DataKind. If companies could do this, then why not charities? He set up DataKind UK with Fran, Kaitlin and Hannah. He is a serial volunteer, having been a City Councillor, chair of trustees of a national charity, founder of a farmers' market, press officer for a historic building on reality TV, and co-founder of the Society of Data Miners.

ALEXANDRA REHAK
PRACTICE HEAD OF
INTERNET OF THINGS
OVUM

Alexandra is an independent strategy consultant and analyst with over 20 years of experience in the telecoms, media and technology sector, focusing on the Internet of Things, digital health and big data. She's currently an Associate Partner with STL Partners where she helps companies find the best ways to analyse and interpret data. After volunteering for DataKind UK in early 2015 to support a children's health charity, Auditory Verbal, she was hooked on the idea of data for good!

MADELEINE THORNTON
SOCIAL IMPACT ANALYST
BIG ISSUE INVEST

Madeleine works in the social investment arm of the Big Issue Magazine. She supports social enterprises to develop their capacity in evaluation and social impact practice, working across a variety of fields and sectors. Madeleine began her career working in housing and social security before moving into research and evaluation in the charity sector.

GAIA MARCUS
PROJECT MANAGER
YOUTH HOMELESSNESS
DATA BANK, CENTREPOINT

Gaia manages a team bringing innovative approaches to the youth homelessness sector. Previously, as Senior Researcher at the RSA, she led research for the Connected Communities programme and the organisation's social network analysis. She launched the Social Mirror project- the first ever digital social prescribing project using tablets to automatically prescribe local activities to people suffering from isolation or low wellbeing.

ED ANDERTON
STRATEGY AND
POLICY MANAGER
ACCESS SOCIAL INVESTMENT

Ed leads Access's Capacity Building programmes, alongside managing their work with data, systems and reporting. Previously Ed spent three years at Nominet Trust, the UK's leading #techforgood funder, where he led their involvement in the 360giving open data initiative, developed systems for their Triple Helix impact reporting process, and was principal researcher for the Nominet Trust 100. Prior to this he worked in performing arts education, which led circuitously into community development, education consultancy, conflict resolution, and a stint in Whitehall (BIS) on improving social sector regulation.

DATA MATURITY EXPERTS

JAKE PORWAY
FOUNDER & EXECUTIVE DIRECTOR
DATAKIND, NEW YORK

DUNCAN ROSS,
DATA AND ANALYTICS DIRECTOR
TES GLOBAL
(FOUNDER/CHAIR DATAKIND UK)

JONATHAN SEDAR
CONSULTING DATA SCIENTIST
APPLIED AI LTD

SHYANN SEET
DATA & ANALYTICS ADVISOR
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