ESSEX COUNTY COUNCIL

Data Strategy

2021-2025

Version 0.7

Data is Everyone's Business

Essex County Council

Contents

1. Executive Summary

Welcome to Essex County Councils data strategy, where data is everyone's business.

The recently published national data strategy believes better use of data will drive growth and productivity, improve our society and public services and position the UK as a leader of the next wave of data-enabled innovation.

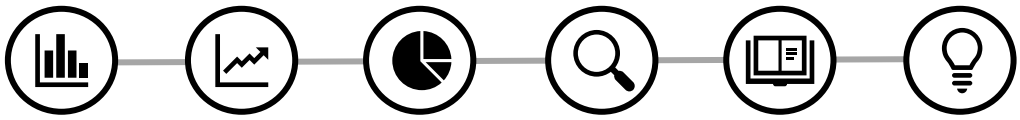
In Essex we have an obligation to realise this ambition and we believe everyone has a role to play. Together, the steps identified in this strategy will allow us to make better use of data – ensuring data use is more integral, more innovative and more widely understood, and as a consequence, outcomes for our residents are improved, both for now and the future.

As with so many sectors, the COVID-19 crisis has caused us to reflect on our priorities. Our response has only increased our understanding of the significance of data use to help us make better decisions, affecting the economy, society and the public sector, underlining the importance of ensuring that data can be shared in timely and trustworthy ways.

Essex County Council is already seen as best in class for the use of analytics. We have developed an Essex Centre for Data Analytics (ecda) that helps us work in partnership including the university of Essex and Essex Police to share data and skills.

We know we need to be better at improving integrity and access to our data so we can make evidence-based decisions, informed by data. We want to improve how we collaborate, sharing insight to help us achieve our corporate priorities. Data can help us fuel innovation & drive future transformation to improve outcomes for local people and places. As an organisation we must treat data as an asset: ensuring it's owned, maintained, understood and unlocked across all levels and by everyone.

Our data strategy will look at how we can leverage existing strengths to boost the better use of data across *all* areas of our business and outline our pipeline for change over the next 5 years. We have synthesised these recommendations into four missions (purpose, process, people and potential) and mapped these onto 12 design principles through which we can deliver them.



2. The Case for Change

2.1 Potential of data

We are currently in the middle of a fourth industrial revolution, the world's most valuable resource is no longer oil, but data. Technological innovation has transformed our lives, changing the way we live, work and play. At the same time, this innovation has brought with it an exponential growth in data: in its generation and use, and in the world's increasing reliance upon it. There is currently 44 billion Terabytes of data in the world. By 2025, it's estimated that 463 million terabytes of data will be created each day globally. The scale of data is allowing organisations to uncover patterns and trends that were previously hidden and allow for more personalised decisions to be made. If we can mine our data intelligently, we can make more effective decisions, we can experiment and innovate faster and bring about positive change quicker.

This exponential increase of data is also seen across ECC with volumes and variety of data being stored in systems that are fragmented and siloed, growing each day as we learn more about our citizens. However valuable insight is often not gained from this wealth of data. A 2019 study of 190 company executives found that only 32% of organisations were able to find tangible benefits from the use of data. Key findings in this report identified a lack of organisational-wide strategy for the usage of data that was supported by executive directors resulted in a lack of data enabled culture.

By embracing data and the benefits its use brings, we face tangible opportunities to improve our society and grow our economy. If we get this right, data and data-enabled technologies like AI could provide a significant boost to the entire economy. Data can improve productivity and provide better-quality jobs. But it can also transform our public services and dramatically improve health outcomes nationally. It can keep us safe and assist the reduction of crime, speed the journey to decarbonisation, and, used well, drive efforts to create a more inclusive, less biased society.

What we mean by data

Data is notoriously hard to define – and it means different things to different people. For an application developer, data is what enables the creation of rich and complex digital services. For a scientist, it is what is collected as part of experiments or surveys. For a data protection practitioner, it is the names and addresses of staff organised in a spreadsheet. For a personal trainer, it is the information in an app recording our heart rate during a workout. And for every one of us, it is the tool that powers our online maps, helps us book supermarket delivery slots, and allows us to check tomorrow's weather forecast.

When we refer to data, we mean information about people, things and systems. While the legal definition of data covers paper and digital records, the focus of this strategy is on digital information. Data about people can include personal data, such as basic contact details, records generated through interaction with services or the web, or information about their physical characteristics (biometrics) – and it can also extend to population-level data, such as demographics. Data can also be about systems and infrastructure, such as administrative records about businesses and public services. Data is increasingly used to describe location, such as geospatial reference details, and the environment we live in, such as data about biodiversity or the weather. It can also refer to the information generated by the burgeoning web of sensors that make up the Internet of Things.

2.2 Why we are doing a data strategy in ECC

We believe the biggest source of untapped potential in the public sector is data and we should make best use of all available data across the whole system, in a joined-up way to tackle some of our biggest issues. As an organisation we must treat data as an asset and understand the need to unlock its potential to help us prepare for the future.

By building a truly joined-up and interoperable data ecosystem across ECC, we will improve the way we collect, use and share data. This will benefit our residents and the way we make decisions by:

- Providing tailored and responsive public services for citizens;
- Increasing efficiencies saving the tax payer money and
- Improving commissioned and operational decision-making

Data enabled decisions should be fundamental to how we run our business and how we transform. We need to use data to not just to understand how we are performing, monitor what has happened and why but use it to help us plan and prepare for the future, predicting issues before they arise. Vast volumes of data are captured ever hour of every day on our residents, the services we provide, our assets, our process and systems at an exponential rate. Therefore, how we manage, use and treat data should come with the highest quality kitemark in order to deliver the best outcomes for people and places of Essex.

A number of interconnected issues currently prevent the best use of data across ECC. As an organisation we do not always adopt a culture that recognises the importance of data which means we don't always make the best use of the data we hold. To harness the opportunities and realise our vision, we need to drive improvement across the entire data landscape, including culture & understanding, data skills & literacy, leadership and sponsorship of data, improved access to and integrity of data.

Our data strategy should be a **collective organisational vision,** with underlying **principles, objectives and goals for how we will acquire, store, manage, analyse and use data.**

3. Our Data Vision

We believe data is everyone business and everyone's responsibility – from our key workers, our back-office staff, our leaders and senior managers, our politicians, our businesses and most importantly our residents.

Our data strategy will be a dynamic living document, updated as our data maturity evolves. We will share this document with our partners and residents, so we are transparent about how we value data, how we maintain, govern and process it and the intention by which we use data to help us make decisions.

Our data strategy has 4 key foundation building blocks for successful data transformation with an overarching mission.

4 foundation blocks for data transformation

3.1 Our missions

Purpose

The true value of data can only be fully realised when it is fit for purpose, recorded in standardised formats on modern, future-proof systems and held in a condition that means it is findable, accessible, interoperable and reusable. Across Essex, our systems don't talk to each other and there is no common way to integrate data. Data integrity issues are prevalent and as a result people create standalone unstructured spreadsheets and databases and collect more data.

That means we should be encouraging better coordination, access to and sharing of data of appropriate quality between service areas and our partners. Ensure appropriate protections for the flow of data are in place. This means we want a single view of our customer, avoiding duplication and improve the experience for the people we serve, where we store it once and use it many times.

- **We collect data to improves outcomes**

Process

Data is not just an output, it's a process. By improving the quality of the systems and processes we use, we will affect the quality of data we hold. Across Essex there is a lack of data ownership and master data management, with different teams using different data to answer the same questions. For data to have the most effective impact, it needs to be appropriately accessible, understandable, mobile and re-usable to all that need it.

This means we need to integrate to create a single version of standardised views, that is accessible to all using smart technology. Data should be owned, governed and well understood by the people who collect it. Data quality should be visible and addressed at the source. Common processes, tools and standards should be in place that all insight professionals can use to deliver high quality outputs.

- **We proactively fix processes, not data**

People

To make the best use of data, we must have a wealth of data skills to draw on. Delivering good quality, accessible reports designed for the end user in a format they can understand. We should be making better use of AI and digital transformation in service delivery using data to help us do this.

That means bringing the right skills into the organisation, as well as ensuring that existing staff are curious and can continue to develop the data skills they need throughout their careers. This also means strengthening our centre of excellence operating model for use the of data & analytics. Adopting a culture of evidence driven decision making and building respect for the use of data and analytics to support with everyday decisions.

In pursuit of all of this there should be a Board level officer in the organisation whose responsibility is to ensure our agreed approach to data is driven across the organisation.

- **We connect to collaborate**

Potential

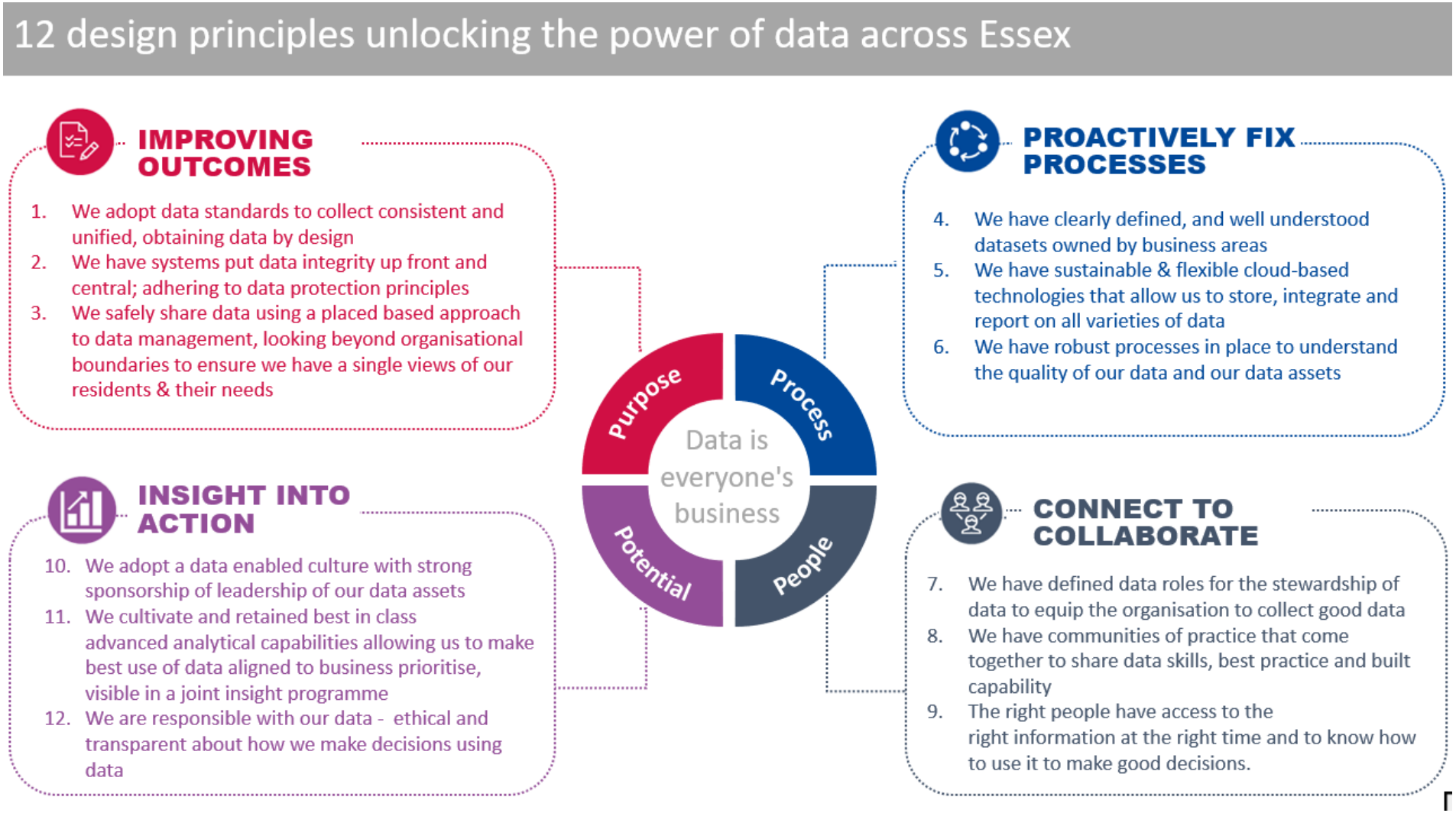
As we drive increased use of data, we must ensure that it is used and shared responsibly, in a way that is lawful, secure, fair, ethical, sustainable and accountable, while also supporting innovation and research. Across Essex our workforce must improve its level of data literacy and understand what types of question data can help us answer and how to take responsible action.

This means data, insight and intelligence needs to be highly visible and championed from our leadership. Data should be used on a day to day basis to make data enabled decisions. We should have system wide capability and capacity to make data part of the organisation's DNA.

- **We turn insight into action**

3.2 Design principles

For each of our missions we have identified three priority areas where action is required. These 12 design principles address key challenges that currently prevent us from taking advantage of the opportunities that data offers.



4. Recommendations

Purpose: We collect data to improve outcomes

Problem Statement	• Our systems don't talk to each other, there is no common way of joining data across. • Data integrity issues are prevalent and as a result people create standalone unstructured spreadsheets and databases and collect more data
Design Principles	1. We adopt data standards to collect consistent and unified, obtaining data by design 2. We have systems that put data integrity up front and central; adhering to data protection principles 3. We safely share data using a place based approach to data management, looking beyond organisational boundaries to ensure we have a single view of our residents and their needs
Recommended Actions	➢ **Adopt data standards**– Setting and driving the adoption of data standards will lead to greater consistently, integrity and interoperability, enabling data to be used and shared effectively. ➢ **Data First contracts** – When we are contracting with third parties' part of the conversation must be about not just what data will be collected but how it will be shared, in what formats, at what frequency. This conversation should be had with the data and insight professions. ➢ **Report on the quality of our data and its impact alongside performance** - We should have regular reports on the quality of our essential data fields alongside performance reports and statutory returns. Monitored by the data board, proactive actions should be taken by business owners to not only fix data but fix processes and systems that have created them in the first place. ➢ **Create a single view of our residents** - We should work with our partners to establish universal person and household identifiers to enable more accurate and efficient data matching across Essex and ECC. Developing tools to match data between key systems. Unique identifiers, such as the UPRN for property data, are widely use to more easily match records across business systems. ➢ **Create a placed based approach to data management** –We should work with our partners to strengthen data governance and minimise organisational barriers and improve sharing of data around a place; building our data structures on geographical footprints.

Process: We fix processes not data

Problem Statement	• Data is not owned by business areas. • Different teams use different data sources to answer the same questions and professionals cut data in different ways or use unvalidated sources to provide the answer that we want to make decisions
Design Principles	4. We have clearly defined, and well understood datasets owned and maintained by business areas 5. We have sustainable & flexible cloud-based technologies that allow us to store, integrate and report on all varieties of data 6. We have robust processes in place to understand the quality of our data and our data assets
Recommended Actions	➢ **DD&T transformation pipeline–** We should have joined up ways of working involving Data, Digital & Technology, working together to identify key transformational projects that support business priorities. Creating agile multidisciplinary teams for transformation projects- wrapping data, digital and technology skills around business priorities to put data up front and central to the design. ➢ **Strengthen ECC's single data warehouse approach** - seek council wide agreement to the integration of data from across multiple systems into one place, use by all for reporting. Understanding of Data Architecture is promoted and cultivated across levels of the organisation, and the function is appropriately resourced. ➢ **Governed master data management** - ECC needs to adopt a process of master data management with a single common set of definitions, data sources and standards trusted and agreed by business owners. These datasets should be used by all insight professions for the purposes of performance reporting, business intelligence, insight & analysis. ➢ **Minimise the use of excel to capture and process data–** We should investigate and understand why large volumes of data are held or processed outside existing systems. Taking appropriate actions which could include amendment to systems to meet business needs or automation developments ➢ **Develop a data catalogue**- A catalogue should map out all data held by us as a council and detail data owners. It should catalogue the reports that are being distributed and standardised data views available for others to use, reducing the volume of duplication and versions of the truths that are used to answer requests. ➢ **Invest in corporate data Infrastructure stack –** set of tools that takes data through a processing pipeline, for delivery and dissemination of data & insight to the organisation. Data is used in real-time where possible, often with APIs.

People: We connect to collaborate

Problem Statement	• No one is responsible for our overall data strategy in the organisation • Data is not always accessible to the end user in a format they can use
Design Principles	7. We have defined data roles for the stewardship of data to equip the organisation to collect good data 8. We have communities of practice that come together to share data skills, best practice and built capability 9. The right people have access to the right information at the right time and to know how to use it to make good decisions.
Recommended Actions	➢ **Define role for Chief Data Officer** - Align chief data officer responsibilities to SIRO - responsible for enterprise-wide governance and utilisation of information as an asset, via data processing, analysis, data mining, information trading and other means. ➢ **Establish Data & Insight Forums with data leads –** Leads and forums aligned to business areas to create routes of accountability, govern data, share insight and encourage good practice with tools & methods. ➢ **Establish a data board –** to oversee the implementation of the action plan and progress the recommendations from the data strategy. Sponsored by the CDO with representatives from data leads from across the organisation ➢ **Invest in Data Stewards**– Data stewardship is the management and oversight of an organisation's data assets to help provide business users with high-quality data that is easily accessible in a consistent manner. ➢ **Establish communities of practice** - Communities of practice should be used bring together data professionals and improve data skills & capability across ECC. Develop and share best practice with regard to use of data and tools to undertake analysis, building capability and understanding across the organisation. ➢ **Adopt a data competency framework -** We should develop analytical capability and offer bitesize development workshop to help the organisation build its capability. We should create a culture that both encourages data curiosity (all roles) and develop capabilities (specialist). ➢ **Build data capabilities into role profiles and adopt a data competencies framework**- Work with ODP to develop a data culture and data curiosity. Defining what capabilities are required for different roles across the organisation.

Potential: We turn insight into action

Problem Statement	• There is a lack of trust with the data and reports available and data literacy is weak as a result there is a tendency to retro fit the data to the answer wanted • Weak data culture across the organisation
Design Principles	10. We build a data enabled culture with strong sponsorship and leadership of our data assets 11. We cultivate and retain best in class advanced analytical capabilities allowing us to make best use of data aligned to business priorities 12. We are responsible with our data - ethical and transparent about how we make decisions using data
Recommended Actions	➢ **Have a strong sponsorship of data** - Data programmes should be sponsored from leaders in the organisation to create the right conditions for success. The senior management team and councillors should champion the use of data for decision making, process optimisation and performance management across the organisation ➢ **Adopt a Data Culture –** Work with Organisational Development & people to develop a data culture across the organisation. Data is used to support service delivery in real time, is used to understand granular detail issues of performance and to understand effectiveness of services and individual interventions. The organisation is prepared for and embracing new developments in the field, such as AI. ➢ **Make better use of analytical and data science skills with unstructured data**– Align analytical skills with business priorities and develop a series of use case examples that show the value in making better use of unstructured data held in our systems ➢ **Build public and expert industries collaborations** – driving innovation and best practice across the data ecosystem, formalising collaborations between industry experts, the public sector, universities and institutes. Developments in data analysis and science practice are monitored closely so that staff skills remain up to date ➢ **Ethics committee and framework** - We should adopt data ethics framework to support data analytics decisions and engage with our residents about what we are doing and why via the essex centre for data analytics (ecda) and ethics committee already established.

5. Purpose: We collect data to improve outcomes

Data must be treated as an asset across the organisation. We should be clear what data we hold about our residents, what the quality of this is and how we are using it. New systems and processes should ensure that data is considered as a key enabler at the start. Any digital, AI or technological solutions as a default should allow us to collect, store and protect data that is deemed essential for both day to day operations, business planning and future transformation.

Our current challenges:

- Our systems don't talk to each other, there is no common way of joining data across.
- Data integrity issues are prevalent and as a result people create standalone unstructured spreadsheets and databases and collect more data

Our design principles must ensure:

- We adopt data standards to collect consistent and unified, obtaining data by design
- We have systems put data integrity up front and central; adhering to data protection principles
- We safely share data using a placed based approach to data management, looking beyond organisational boundaries to ensure we have a single view of our residents and their needs

5.1 Data by design and default

Data protection issues must be part of the design and implementation of systems, services, products and business practices, and data protection seen as an essential component of the core functionality of our processing systems and services.

- Data protection by default requires you to ensure that you only hold and process the data that is necessary to achieve your specific purpose and only for as long as needed to satisfy that purpose.
- Data protection by default means you need to specify this data before the processing starts, appropriately inform individuals and only process the data you need for your purpose.

When designing or commissioning new services we should ensure we own, understand and value the data that needs to be collected on our behalf, ensuring that data captured is utilised to not only help us understand our current performance and needs by allow us to prepare for the future, drive service transformation and helping us to meet future demand.

In order to ensure **data is reusable and interoperable** in a meaningful and consistent way, ECC should operate against a series of data standards to help us collect and maintain data of high quality. This should be a set of rules by which data is described and recorded. In order to share, exchange, and understand data, we must standardise the format as well as the meaning.

The data maturity assessment noted a blocker to sharing information is the lack of integration between different systems and difficulties in matching up data sets across these platforms. Different personal identifiers and address identifiers used adds to this issue.

> *"Too many systems and none of them communicate"*

As a result, we will:

- **Adopt data standards**

Setting and driving the adoption of data standard will lead to greater consistently, integrity and interoperability, enabling data to be used and shared effectively.

- **Start Data First Conversations**

When we are contracting with third parties' part of the conversation must be about not just what data will be collected but how it will be shared, in what formats, at what frequency etc and that this conversation should be had with the data team.

5.2 Data integrity

Data integrity is the accuracy, completeness, and reliability of data throughout its lifecycle and is a critical aspect to the design, implementation and usage of any system which stores, processes, or retrieves data. ECC needs to ensure it not only reports on and addresses data quality issues as they are found but puts in place robust and sustainable solution These solutions should ensure data is captured and processes to the highest quality and maintained so it is kept up to date on an ongoing basis.

Data is of good quality, if it is **FACT - Fit for purpose, Accurate, Complete and Timely**. Good quality data can help us in the business planning process, to make key decisions and to deploy our limited resources in a more efficient manner. The process of data quality assurance verifies the reliability of our dat. Managing data quality therefore requires a methodical approach that typically involves periodically updating, standardising and cleansing records.

Data quality can mean different things depending on your role, but it is the **responsibility of us all to ensure data is captured, entered, stored and maintained effectively**. Business rules should be used to define critical data fields in our systems and processes. Data quality reports should be made readily available to service areas for them to act accordingly. Performance reports should be used to flag increasing omissions and errors which will impact upon performance and trainers used to ensure that staff know how to collect good data capturing process, outlining any statutory data items that workers are responsible for keeping up to date and accurate.

During the data maturity assessment, trust in data was generally regarded as lacking and some respondents admitted that there is a general 'knowledge' and acceptance that data is wrong. 4 of the 14 respondents abstained from responding, stating that data quality was not in their remit or that they weren't able to affect/address this. This could be seen as indicative of a lack of ownership for data and data quality.

> *People talk about the fact that they know the data isn't right and there are issues, but I've not seen anything anywhere that says 'Our confidence in this number is X*

As a result, we will:

- **Report on the quality of our data and its impact alongside performance**

We should have regular reports on the quality of our essential data fields alongside performance reports and statuary returns. Monitored by the data board, proactive actions should be taken by business owners to not only fix data but fix processes and systems that have created them in the first place.

5.3 Data that is joined up

Data is not universally available for shared use across the council and different formats for recording creates barriers to matching data from across the council. Modernising the way, we manage and share data across government will generate significant efficiency savings and improve services.

Across different organisations in Essex, data about individuals is stored on different systems and databases which don't communicate with each other or have a common shared personal and household identifier. This leads to difficulties matching data for a whole picture and results in time consuming localised solutions or gaps in data. We should ensure that we only capture data required and aim to reduce the amount of times we are asking for the same information from our residents – so they only **tell us once**. By taking a more joined-up approach we believe we can tackle some of the county's biggest challenges.

As a future aspiration we should aim to develop a placed based view of data management, whereby we remove organisational barriers to what we know about people in an area, allowing for more **efficient, safe and effective data sharing** practices between organisations. Considering the whole community—how it works and what it needs—and collaborating with different public and voluntary sectors, a place-based approach aiming to make a lasting difference to people's lives. 7/10 residents have said they support data sharing for social good and feedback from resident engagement workshops suggest many don't realise we are not already sharing data across boundaries.

The data maturity assessment noted one of the most common themes was a lack of join up and ability to cross reference datasets across systems, although more than one respondent suggested that some systems couldn't be relied upon for internal consistency.

> *"It's getting better, but it doesn't happen nearly enough. Covid-19 has made sharing information better because we've had to collaborate quickly"*

As a result, we will:

- **Create a single view of our residents**

We should establish universal person and household identifiers to enable more accurate and efficient data matching across ECC. Developing tools to match data between key systems.

- **Create a placed based approach to data management**

Strengthen data governance to minimise organisational barriers and improve sharing of data around a place.

6. Process: We proactively fix processes not data

If Essex is to fully realise the benefits of our ongoing technological transformation, we must start by getting the basics right. This means being more effective in how we collect, curate, store, manage and delete data. Left alone, data does not sort itself out. If it is to become a powerful tool, data requires effective governance, management and stewardship. It also requires modern infrastructure, allowing data to be shared across systems that can interact with one another.

Our current challenges:

- Data is not owned by business areas.
- Different teams use different data sources to answer the same questions and professionals cut data in different ways or use unvalidated sources to provide the answer that we want to make decisions

Our design principles must ensure:

- We have clearly defined and well understood datasets owned by business areas
- We have sustainable & flexible cloud-based technologies that allow us to store, integrate and report on our data
- We have robust processes in place to understand the quality of our data and our data assets

6.1 Digital, Data & Technology

The causes of poor data are often complex, involving inter-relationships between people, process and technology. This has significant implications for how to go about improving data quality. Poor data quality is a holistic authority problem. A key thing to understand about data quality is that it is not an Information Technology problem or a service problem. In reality it is usually a combination of both. **Systems and processes must be designed in a way that maximises our ability to generate high quality data first time.**

Digital, data and technology departments should work together to design and commission cloud based solutions and redesign solutions that minimise standalone excel processes to manage and collect data, diverting the amount of time front line staff are having to manage data to making user friendly reports designed to meet their needs.

There is no one place where available data is logged or stored which adds to the difficulties of efficiently accessing data. Data is used inconsistently so different messages can be interpreted from the same data by different analysts. There is no system for easily sharing data and insight reports with a mix of stakeholders from ECC and external organisations, for example organisations we commission. This leads to localised solutions being developed. Access to a centralised database, such as a data warehouse where organisational data is held, greatly increases the usability of data.

> *"It takes up a lot of our time when the numbers don't agree. Especially in Adults, we spend a lot of our time. How many months was it we spent on that project between D&A and Finance because the two numbers were telling two different stories. And we still haven't resolved it"*

As a result, we will:

- **Create DD&T transformational pipelines**

We should have joined up ways of working involving Data, Digital & Technology, working together to identify key transformational projects that support business priorities. Creating MDT's for transformation projects- wraping data, digital and technology skills around business priorities to put data up front, central to the design.

- **Strengthen ECC's data warehouse approach**

Seek council wide agreement to the integration of data from across multiple systems into one place, use by all for reporting. Understanding of Data Architecture is promoted and cultivated across levels of the organisation, and the function is appropriately resourced

6.2 Master Data Management

In order to maintain integrity within the reporting & analysis of data, ECC needs to agree a master data management approach to storing and manipulation of data. Master data management is a technology-enabled discipline in which business and Information Technology work together to ensure the uniformity, accuracy, stewardship, semantic consistency and accountability of the enterprise's official shared master data assets.

The data maturity assessment noted inconsistency of data as prevalent issue, with few respondents aware of data definitions or standards being in place. Those respondents that did respond positively used data separately from central ECC sources. Most respondents, however, relied on systems that span the organisation and gave negative responses.

> *"teams pulling off same set of data got different results because one went on postcode and one went on school. We have no clear standards"*

As a result, we will:

- **Governed master data management**

ECC needs to have a process of master data management with a single common set of definitions, data sources and standards trusted agreed by business owners. These datasets should be used by all insight professions for the purposes of performance reporting, business intelligence, insight & analysis.

- **Minimise the use of excel to capture and process data**

The volume of silo-ed data sets where data is manually produced needs to be investigated in greater detail. The volume of these manual data spreadsheets needs to be reduced through the use of expanded governance and working to add these metrics to the data warehouse. Where they are needed, we need to ensure they are properly maintained. / updated etc

Governed datasets should be:

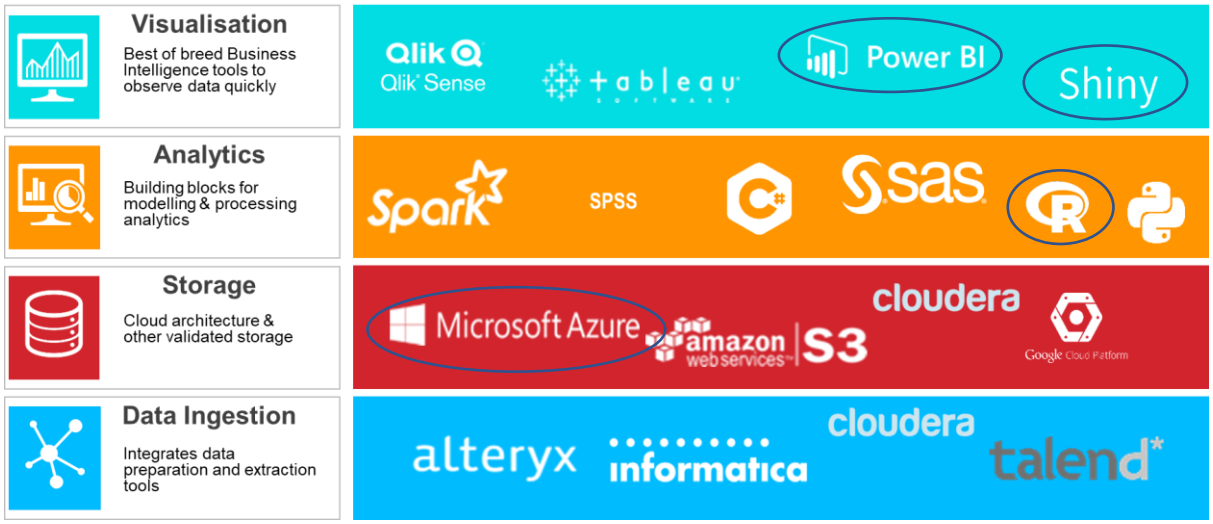
- Set on **rules defined by the business**, be clear and transparent with guidance documents to show what is being counted and how.
- be maintained and governed by local data & intelligence forums aligned to business areas
- made readily accessible to the organisation using the agreed methods of dissemination and be used by all data professions across business areas including commercial, finance, ODP, SIE, and data teams within business areas.

Data as an output should be available in three varieties

1. Governed (reported) – set of standard performance & BI reports published to end consumers
2. Self serve (accessible) – set of structure datasets & views that end consumers of insight can manipulate using filters and drag and drop functionality to answer additional questions
3. Augmented (modelled) – set of accessible data on which data professionals can perform in depth and complex analysis, analytics and data science.

6.3 Interoperable tools

Building on a master data management approach, we should invest in interoperable reporting and analysis tools. A series of corporately agreed infrastructure stacks that allow data professionals to create, push and pull reports out in the same consistent way. Reports should be logged and accessed via one central location with permissions set as appropriate based on role profiles. New technologies must be **carefully cultivated to become a trusted core capability**. Real value often only comes with scalability, repeatability and effective deployment



To ensure we are making best use of the data held, avoid duplication and allow data professional to quickly find what they need ECC should develop a data catalogue, that lists our data assets, where they can be found and who the owners are. A catalogue should enable others to self-serve and find answers to questions themselves without having to ask a data professional. This should contain a data dictionary that remains updated and kept live for data professional across the council in conjunction with the data & intelligence forums.

The data maturity assessment found the biggest limitations to insight creation mentioned by respondents were access to data and tools and the time required to process and manipulate data.

“The right tools and right skills aren’t readily available on tap to create insight”

As a result, we will:

- **Develop a data catalogue**

A catalogue should map out all data held by us as a council and detail data owners. It should catalogue the reports that are being distributed and standardised data views available for others to use, reducing the volume of duplication and versions of the truths that are used to answer requests.

- **Invest in corporate data Infrastructure stack**

Set of tools that takes data through a processing pipeline, for delivery and dissemination of data & insight to the organisation. Data is used in real-time where possible, often with APIs.

7. People: We connect to collaborate

Data alone won't solve your business problems but people can. To make the best use of data, we must have a wealth of data skills to draw on. Delivering good quality, accessible reports designed for the end user in a format that can understand. Aligning the right types of skills and capabilities across the organisation and embedding this within a strong centre of excellent model can creating the right conditions and professionalisation for success.

Our current challenges:

- No one is responsible for our overall data strategy in the organisation
- Data is not always accessible to the end user in a format they can use

Our design principles must ensure:

- We have defined data roles for the stewardship of data to equip the organisation to collect good data
- We have communities of practice that come together to share data skills, best practice and built capability
- The right people have access to the right information at the right time and to know how to use it to make good decisions.

7.1 Roles & Responsibilities

We must clearly define who holds accountability for data and ensure all service areas have named contacts who are specifically responsible for ensuring that the data is accurate, highly quality and fit for purpose. We should have strong corporate and senior sponsorship for data via a Chief Data Officer aligned to the current Senior Information Risk Owner (SIRO). This is an Executive Director or member of the Senior Management Board of an organisation with overall responsibility for an organisation's information risk policy. **A chief data officer is a corporate officer responsible for enterprise-wide governance and utilisation of information as an asset,** via data processing, analysis, data mining, information trading and other means.

Each business area must have a **data owner who is accountable and responsible** for the security and use of a set of information. They should understand the business use, value, and risk of the data. Employees with specific roles and responsibilities for data quality must comply with the standards set out in the Data Guidebook (see appendix 2).

Employees involved in data quality should receive appropriate training and support. **Responsible officers should ensure that systems and processes provide data which has the characteristics of good data.**

All employees involved in producing data and information (whether you are defining, collating, recording, extracting, analysing or reporting) have a responsibility for the quality of this data and information. They are responsible for data accuracy and ensuring ECC can meet its statutory data

protection obligations. They must ensure collect, manage and use data and information appropriately and effectively. Less data mature organisations will have centralised models for data stewardship, more mature hybrid and federated models of delivery.

As a result, we will:

- **Invest in Data Stewards**

  Data stewardship is the management and oversight of an organisation's data assets to help provide business users with high-quality data that is easily accessible in a consistent manner.

- **Define role for Chief Data Officer**

  Align chief data officer responsibilities to SIRO - responsible for enterprise-wide governance and utilisation of information as an asset, via data processing, analysis, data mining, information sharing and other means.

7.2 Centre of excellence

Responsibilities for data are distributed across our organisation. Given the structure we have agreed, based on a centre of excellence, with spokes out into the business, we need to continue to develop the head of profession model in order to make. the best use of scarce analytics talent and drive alignment to common standards and priorities in line with the organisation's strategy, goals, level of analytics maturity, and the supply and demand of organisational capabilities. To the extent to which we allow additional data hubs to proliferate they will militate against our ability to join data across the business based on the principles set out in the rest of this strategy. Where such hubs do exist they must be strongly linked into the centre of excellence and governed by the same processes and subject to the same oversight.

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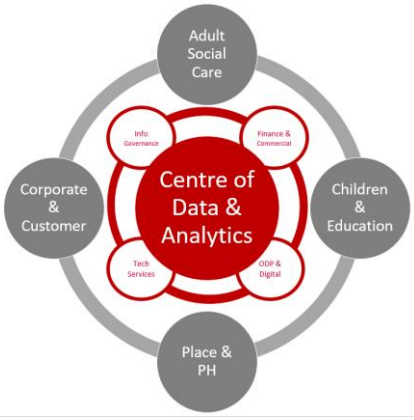


As part of the data maturity assessment many respondents noted that while there were elements of collaboration and sharing insights taking place between teams, this was not widespread across the organisation and was not enabled or facilitated by processes or tools.

It was noted that improvements have been made in recent times with the setting up of Intelligence Hubs and sharing forums or driven by the needs of the organisation to response to the COVID-19 pandemic. However, there is still a lot of progress to be made to ensure the organisation is effectively supporting and facilitating collaboration and sharing. There was a feeling that collaboration largely took place due to personal contacts and relationship

> *"Sharing insight is very limited between teams. There are instances where we are sharing best practices and information, but it's not widely spread"*

As a result, we will:

- **Establish communities of practice**

  Communities of practice should be used bring together data & research professionals and improve data skills & capability across ECC. Develop and share best practice with regard to use of data and tools to undertake analysis, building capability and understanding across the organisation.

- **Establish Data & Insight forums with data leads**

  Leads and forums aligned to business areas to create routes of accountability, govern data, share insight and encourage good practice with tools & methods. Having a joined up and insight programme that supports business priorities and future transformation.

7.3 Data literacy

We recognise that different roles across the council will required different levels of data skills & understanding. To become data-enabled, an organisation needs to focus more on data and create a culture where data literacy is embraced. Data literacy is the ability to **understand, engage, analyse and reason with data** and this is a key factor for successfully implementing a data enabled culture.

While organisations are starting to use advanced analytics and are exploring the power of machine learning and artificial intelligence, many struggle with successfully implementing solutions in their day-to-day business. This is not due to technical limitations since developments and innovation in the data analytics field come at a tremendous pace. It is because there is a gap between data experts or analytical specialists. This gap can be filled by **further educating the organisation on the concept of data as fuel for the analytics** that give the insights to improve the work, and by educating the data experts on the business implications of analytics.

The Data Skills Framework from ODI illustrates how technical data skills must be balanced with other skills – such as service design, data innovation and change leadership – to help ensure data projects are impactful and lead to the best social and economic outcomes for everyone. Research shows that

if organisations focus solely on technology and technical skills, they are less likely to unlock the full value of data.

All hierarchical layers within an organisation need to have at least a basic understanding of the concept of data, and they need to be able to understand and engage with data fitting their role. Making business decisions based on gut feeling is a thing of the past; acting upon solid factual data needs to become the company-wide standard.

> *Sometimes anecdotal information is interpreted as being firm evidence*

As a result, we will:

- **Adopt a data competency framework**

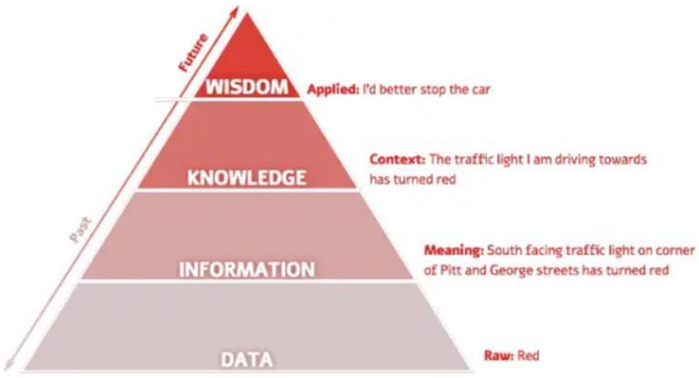
  We should develop analytical capability and offer bitesize development workshops to help the organisation build its capability. We should create a culture that both encourages data curiosity (all roles) and developed capabilities (specialist)

- **Build data capabilities into role profiles**

  Work with organisational people development to develop a data culture and data curiosity. Defining what capabilities are required for different roles across the organisation.

8. Potential: We turn insight into action

Information is the product of data that is created by processing, manipulating and organising data to answer questions that adds to the knowledge of the Council. This knowledge (also called intelligence) often involves interpreting the information and adding relevant context that clarifies the insights the information contains.



Data is therefore knowledge. By having access to more of it, combined with the ability to analyse it through modern techniques, we get greater insight into what works and what does not – both in terms of improving outcomes, and in terms of making our own processes and practices more efficient.

Our current challenges:

- There is a lack of trust with the data and reports available and data literacy is weak as a result there is a tendency to retro fit the data to the answer wanted
- Weak data culture across the organisation

Our design principles must ensure:

- We build a data enabled culture with strong sponsorship of leadership of our data assets
- We cultivate and retain best in class advanced analytical capabilities allowing us to make best use of data aligned to business priorities
- We are responsible with our data - ethical and transparent about how we make decisions using data

8.1 Data Culture

Shifting towards a data-enabled organisation, focused on supporting the digital transformation, requires a cultural change. To become data-enabled, ECC needs to focus more on data and **start using data in their day-to-day activities.** This involves defining data roles, defining the expected levels of data literacy proficiency and designing your cultural change plan.

KPMG defines four data roles for the business users, with different data skills, capabilities and learning requirements.

Recruitment, performance appraisal and ongoing employee development processes should take account of the data that is relevant for individual roles and use this data to aid these processes.

As a result, we will:

- **Have a strong sponsorship of data**

Data programmes should be sponsored from leaders in the organisation to create the right conditions for success. The senior management team and councillors should champion the use of data for decision making, process optimisation and performance management across the organisation

- **Adopt a data enabled culture**

Work with Organisational Development and People to develop a data culture across the organisation. Data is used to support service delivery in real time, is used to understand granular detail issues of performance and to understand effectiveness of services and individual interventions. The organisation is prepared for and embracing new developments in the field, such as AI

8.2 Analytical Capabilities

Like many, digital skills are increasingly important for all aspects of life, but especially for the working environment. Increasing numbers of jobs require technical data skills. One estimate suggests there was over a 50% increase in data professionals between 2013 and 2020 – increasing from 1.1m to 1.7m employees.

Across ECC there are 293 FTE with a data professional job titles representing 5% of the workforce. Estimates from a DCMS-commissioned module of the February 2020 ONS 'Opinions and Lifestyle' survey found that nearly half (48%) of the working population use 'basic' data skills at work a lot, and just under a quarter (24%) use more advanced skills, such as data analysis and making graphs, a lot in their current job.

We need to ensure we are bringing in/building skills, recruit leaders to build a strong candour, train analysts, review and enhance training, design career pathways and support a wider networks of local government data professionals to join up connect and build skills for the developing use of analytics & data science in public sector.

The data maturity assessment noted there has been quite a good development in this area compared to many years ago, however, as we continue to grow, we need to ensure we align analytical capabilities to business challenges and make better use of unstructured data held by our people and services. Unstructured data is information that either does not have a pre-defined data model or is not organised in a pre-defined manner. Examples of unstructured data includes things like video, audio or image files, as well as log files, sensor or social media posts

Predictive analytics should be used to help the organisation:

- Priorities and target activity to people and places that need it the most
- Plan and prepare for the future by understanding trends & forecasts, thinking about what might happen next, where and where
- Predict and prevent undesirable outcomes from occurring to intervene earlier and prevent or delay crisis

> *"I feel confident that we do have expertise in the organisation so sophisticated data science can be done and is being done in certain areas"*

As a result, we will:

- **Make best use of analytical and data science skills with unstructured data**

  Align analytical skills with business priorities and develop a series of use case examples that show the value in making better use of unstructured data held in our systems

- **Build public & expert industry collaborations**

  Driving innovation and best practice across the data ecosystem, formalising collaborations between industries experts, the public sector, universities and institutes. Developments in data analysis and science practice are monitored closely so that staff skills remain up to date

8.3 Responsible data

In order to reap the benefits of greater data use, we must maintain a fit-for-purpose legal and regulatory regime capable of keeping pace with, and responding to, the increasing importance of data in our economy, society and lives. A regime that reflects what people really care about and preserves their trust, while also enabling the opportunity that responsible data use creates.

Our data regime should empower individuals and groups to control and understand how their data is used. It should also instil confidence in individuals, increasing their comfort with the use of data, including their personal data, to deliver benefits for the whole of society. We must ensure use of data takes place within a framework of transparency, safeguards and assurance. Which builds and maintains public trusts including ethics, commitment to open data and transparency measures

Essex will be responsible with data. This mean data is handled in a way that is **lawful, secure, fair, ethical, sustainable and accountable, while also supporting innovation and research**. We use the data ethics framework to support data analytics decisions and engage with our residents about what we are doing and why via the Essex Centre for Data Analytics (ecda). However, there is also an understanding that not sharing data is a risk in its own right.

Open data is data that is open for anyone and everyone to access, use and share. As well as our own staff, Essex residents, partners and businesses can also access the data and insight we chose to share on this platform. We have identified a series of open data core principles for our work that improves accountability and efficiency in access to and delivery of public services to **facilitating greater collaboration and innovation**

- **TRANSPARENCY -** Improved transparency and access for members of the public (e.g. expenses information and signposting to items regularly requested)
- **EFFICIENCY & IMPROVED DECISION MAKING -** Quick and easy access to wealth of information and insight – 'one stop shop' and single version of the truth for internal data & insight and signposting to other external sites and tools – saving time and supporting improved internal decision making
- **SUPPORTING COLLABORATION -** Facilitating sharing across Essex Partners and beyond, so central government, voluntary sector, Essex businesses……
- **INNOVATION & TRANSFORMATION -** …Stimulating innovation through bringing together and opening up data sets to address social problems or service challenges

As a result, we will:

- **Ethics committee and framework**

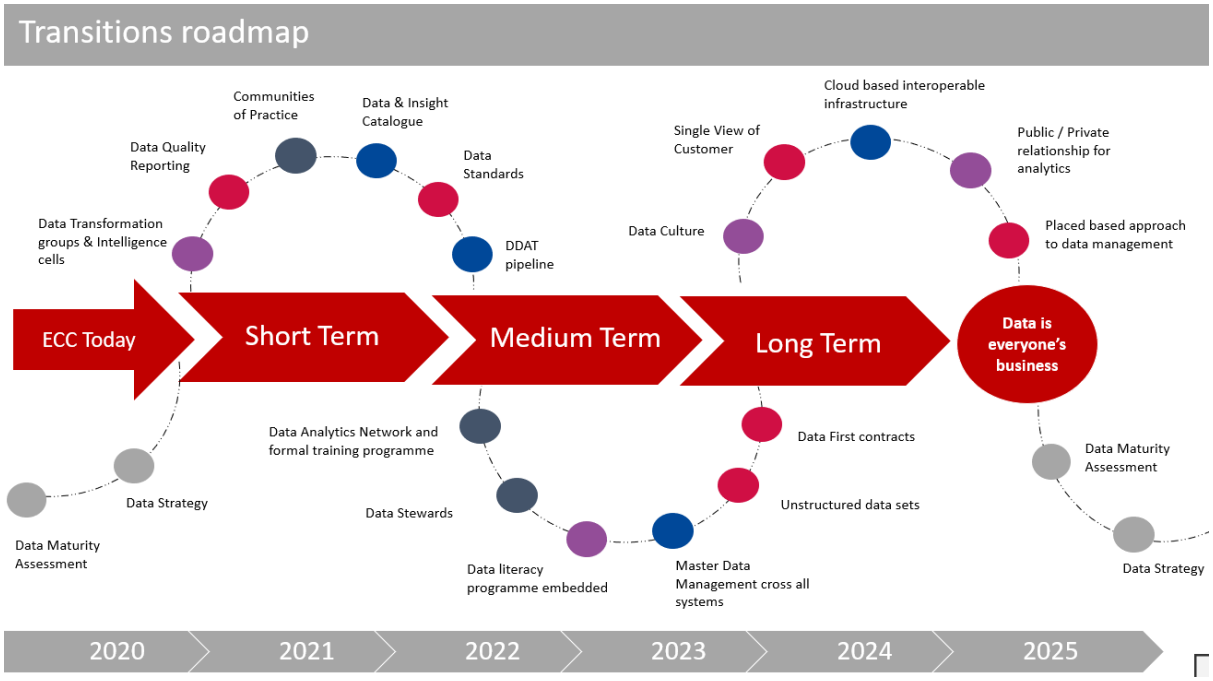
We use the data ethics framework to support data analytics decisions and engage with our residents about what we are doing and why via the Essex Centre for Data Analytics (ecda).

9. Transition roadmap

As part of the strategy we believe it's not just important to state our future vision and ambition statements, but to be clear on what action needs to be taken in order to help us secure our future. As an organisation we don't start from a blank canvas, so we will continue to build on elements of strengths and success as outlined in our data maturity assessment.

The transitions roadmap will act as a pipeline of change over the short, medium and long term. The roadmap details a series of sequential and dependent interventions that help us close the gap in achieving our vision to ensure that data is everyone's business.

Some of these activities are enablers creating the right conditions for success (addressing culture & process) whilst others are structural (addressing technology & systems)



Short Term Activities: 0-12 months

	Short Term Activities	Owner	Measures of success
Purpose	- Data quality and data ownership - Data Standards	- PBI & business area via data & Intel forums - Service transformation and product design, Open data team	- We need to ensure data quality is reporting on and visible within the organisation. We need to be clear on who owns data and what good processes and action look like to resolve any gaps. - We need a set of data standards that allow us capture consistent and unified data at source
Process	- Data & insight catalogue - DDAT Pipeline	- D&A - D&A, Service Transformation and Technology	- We need a data catalogue accessible to all -
People	- Communities of practice	- D&A, TS, Commercial, ODP	- We need to connect data professionals against a common cause - We need to develop a training plan that addresses any gaps for insight professionals - We need to join up when working on projects
Potential	- Data transformation groups & intelligence cells - Data champions	- Insight leads in business areas & SIE - CLT / PLT	- We need improved visibility on work being delivered and the outcomes it helps other achieve - We need clear accountability routes for who is taking what action and identification of key business problems

Medium Term Activities: 12-24 months

	Medium Activities	Owner	Measures of success
Purpose	- Plan for unstructured data & business critical data - Data First contracts	- Data Transformation groups (MDT's lead by D&A)	- We need to be clear what the essential and business critical data & intelligence requirements to reduce manually collected data process as part of transportation programmes ie SCCM and CSP. - All contracts have data requirements built in so we have better access & use of data held by third parties

Process	- Master data management	- D&A, TS	- We have one approach to master data management across ECC with standards adopt by all insight teams - Business areas have a good understanding of what is being reported and how
People	- CPD - Data stewards	- D&A - Insight Leads in business -	- We have a careers pathway for future analytics & data science professionals - We have a series of CDP courses that allow analysts to upskill across ECC - We have dedicated roles that enable business areas to maintain, access and understand good quality data
Potential	- Data literacy programme - Data culture	- DDAT - WOW	- We have a data skills framework in place - We have equipped key roles with the right level of data skills required and built expectations into job profiles

Long Term Activities: 2-5 yrs

	Long Term Activities	Owner	Measures of success
Purpose	- Single view of customer - Placed based approach	- TS, IG, D&A - TS, IG, D&A, ecda	- We have a single view of our residents with the right professional having access to the right information - We share regular data with our partners to understand our places
Process	- Cloud based interoperable infrastructure	- TS, D&A, ODP, SCCM, CSP	- All data, reporting and analysis is stored in cloud based interoperable solutions with a stack approach to management of new technologies
People	- Centre of excellence	- D&A, Insight business leads	- We have strengthened the centre of excellence approach to data & analytics which is recognised as best in class nationally
Potential	- Public / Private collaborations	- D&A, Insight Business Leads	- We have well developed added value relationships with a group of professionals who help us to further develop and retain skills inhouse

Appendix: Characteristics of Good Quality Data

Accuracy	• Data should be captured once as close to the point of activity as possible. It should provide a true account of what it is intended to represent to enable informed decisions to be made. • The level of accuracy should be balanced with the need to provide timely data and the costs/efforts involved in collection. • Limitations in the level of accuracy should be stated to help appropriate interpretation of resulting information.
Validity	• Data should appropriately reflect what it is intended to measure or report, e.g. in the case of performance data accord with any agreed definition and relate to the outcome it is being used to measure. • Where proxies are used in the absence of actual data careful consideration needs to be given to how well data will support effective decision making.
Reliability	• Data should be consistently calculated, recorded, analysed and reported over time in a way that reflects the situation in a meaningful way, to give managers and stakeholders confidence that progress towards targets reflects real changes rather than variations in data collection approaches. For example, definitions and guidance must be followed in the same way each time performance data are produced to enable assessments to be made consistently over time.
Timeliness	• Data should be available frequently and captured promptly enough (as near to 'real-time' as possible) to be valuable for managing service delivery and decision making, providing the opportunity to influence decisions about service improvement and take interventions/corrective action where needed.
Relevance	• Data should be defined/selected, collected, recorded and analysed with the intended use and audience in mind so that it is fit for purpose and adds value to the decision making process. • It is important to keep relevance under review and give feedback where data appears to no longer be fit for purpose.
Completeness	• Data should be complete and comprehensive to ensure it provides a full picture of the current situation, e.g. for performance data enabling assessment of how we are doing against our targets and/or others. • Where data are incomplete and/or could be misleading this should be stated to enable appropriate judgements about its use to be made (e.g. on 'Audit Trail' templates and/or other supporting papers as well as in the form of commentary/caveats on relevant reports).

Appendix 3: Specific Roles and Responsibilities for Data Quality

	Areas of responsibility
CEO	• Has the ultimate strategic accountability for the quality of data used to inform decision making.
All Employees	• Should be aware of your individual responsibilities relating to data quality and how your day to day work can affect the quality of data/information and ultimately impact upon the quality of services provided.
Corporate Leadership Team	• Has overall responsibility for ensuring that arrangements are in place to assure the quality of data (in particular data that is business critical) and that improvement action is taken. • The Executive Director for Corporate and Customer has specific responsibility for ensuring that the council's performance information is robust and used to drive improvement and support the efficiency and value for money agenda.
Chief Data Officer & Senior Information Risk Owner	• The Senior Information Risk Owner (SIRO), is an Executive Director or member of the Senior Management Board of an organisation with overall responsibility for an organisation's information risk policy. • A chief data officer is a corporate officer responsible for enterprise-wide governance and utilisation of information as an asset, via data processing, analysis, data mining, information trading and other means.
Functional Performance Management Specialists	• Keep up to date all knowledge of relevant performance measures and outcomes delivered, requirements and issues, and cascade appropriate information to any other employees • Work closely with the functions to ensure that high quality information is regularly provided within the timescales agreed. This includes highlighting any changes, caveats or potential issues relating to the information provided (e.g. changes to systems, sources and definitions) so that sound judgements can be made about how this information should be used and interpreted. This should also include regular appraisal of data quality, highlighting areas of concern, responding to issues/taking action and providing updates on progress as appropriate. • Ensure that the information provided is supported by underlying working papers/ records and that these are retained as appropriate. • Share learning relating to data quality from inside/outside the organisation, applying good practice and collectively tackling data quality issues.
Performance & BI	• Produces a robust Performance Management Framework (with related suite of guidance/tools) to support the delivery of high quality performance data and ensure we have the information we need to support decision making and drive improvement. • Maintains an overview of performance information to satisfy internal and external corporate reporting requirements, ensuring systems and processes are in place to collect and report this corporately. • Maintains an overview of performance data and quality standards, using wider intelligence to adopt a risk based approach to internal quality assurance and review work. • Monitors progress against any data quality/compliance issues identified, offering challenge and targeted 'critical friend' support as appropriate. Ensures issues and progress are escalated and reported where appropriate.
Internal Audit and Risk	• Has an annual audit programme to include the review of the underlying systems used to produce performance information where data quality issues have been identified using a risk-based approach. • The Organisational Risk Team ensures a framework for managing risks and captures data quality risks within a JCAD system (at appropriate level).

Appendix 4: Data Literacy levels

Understand	A user should be able to understand what is presented in the graph. What does the data tell us? Which insights can be derived from it? What is the impact on business processes? Fully understanding the data also requires not taking the data for granted and being able to critically think about the visualisations and analysis shown.
Engage	People need to use data and know what is available within the dataset. This includes knowing how the data is composed; understanding the type of data; where it originates from and who is using it. Answering these questions will help understand the data and its context.
Analyse	Creating valuable insights from a given dataset and analysing the data is becoming more and more a combination between technical skills and business knowledge. The analytics and business perspective will converge further. A data scientist is not able to create business insights if he is not comfortable with the business perspective. On the other hand, business users need to have a certain level of understanding of analytics in order to work together with a data scientist and comprehend their approach on analysing a dataset for a specific business purpose. This doesn't imply that a business user needs to deep-dive into algorithms used or become an expert in data analytics, but it does require a business environment with a high level of trust in the insights provided
Reason	One of the most important, and complex, aspects of data literacy is the ability to reason with data. Understanding and analysing data is important, but if you cannot talk the language of data or reason with data in a proper way, misalignment or misunderstanding will take place. Telling the right story and guiding your audience through the steps you have followed within an analysis will clarify your results and create a starting point to discuss the impact of the results.

Becoming data literate is important, but the required proficiency depends on the data role of the business user. According to Gartner there are five levels of proficiency in data literacy: conversational, literacy, competency, fluency and multilingual.