NEL BI Cloud Software - NELIE

G-Cloud 12 Cloud Software Options

NEL – July 2020

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1.0 About NEL

NEL is your trusted system partner

As part of the system, we understand the challenges of achieving integrated care.   We provide expert support and advice to help clinical commissioners and emergent systems deliver improved health and care services to their populations. We provide operational solutions and transformational support, working shoulder-to-shoulder with you to deliver change on the ground.
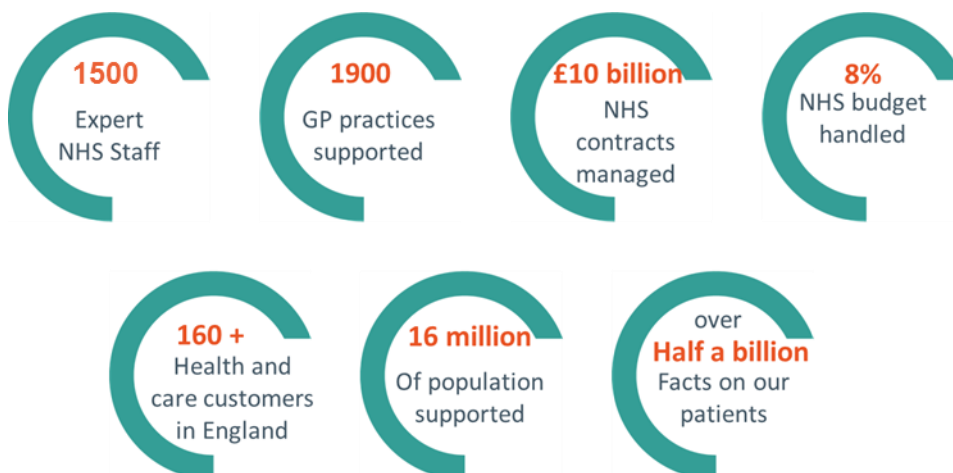
Our people are key to our success – our 2000 strong workforce share our NHS values and are committed to making a difference for the communities we work with. We attract and retain the best talent to deliver excellent services and believe in investing in our people's development to enable them to have a great career within the NHS. We are committed to creating a diverse workforce and an inclusive organisational culture built on respect and embracing diversity.

Our specialist services, advice and information is underpinned by our local knowledge and relationships. Our service offer spans over forty service lines, across four key business areas:

- Data insight – we harness data to help you make the right decisions to improve health and care for your population.

- IT and Digital – we offer comprehensive high-quality IT services to manage your technology infrastructure and operations, alongside innovative digital healthcare technology to engage and involve your population.

- Business services – we offer a breadth of operational business services to deliver additional capacity or enhanced capability to your business as usual requirements.

- Transformation - our consultancy approach, across a range of specialisms, provides bespoke portfolio, programme and project management solutions to support your change initiatives.

Our solutions support over 160 health and care customers across England including Clinical Commissioning Groups, STPs / ICSs, NHS England and NHS Improvement, Local Authorities, Primary Care federations and networks, community services and other healthcare providers.

NEL in numbers

1500 Expert NHS Staff	1900 GP practices supported	£10 billion NHS contracts managed	8% NHS budget handled

160 + Health and care customers in England	16 million Of population supported	over Half a billion Facts on our patients

2.0 Introducing NEL Business Intelligence

We at NEL fully understand the scale of your Business Intelligence challenge, namely to ensure that you are making data-driven decisions that improve health and healthcare nationally. NEL are the leading provider of analytics to NHS, putting you, the customer, at the heart of everything we do, as we deliver consistent high-quality products and services, all overseen by our Executive Team.

For us, Business Intelligence means two things, the tools and data that underpin your key commissioning decisions and the analytics to support you in the day to day running of your health system. You can be confident that NEL delivers both of these, and furthermore brings the added advantages of close working relationships with staff at all levels in your health and care systems and deep familiarity with the local care landscape. As such, we understand your priorities and are well-equipped to support your drive towards improving prevention and public health, sharing budgets between health and social care and implementing new models of care.

Through NELIE (NEL Information Exchange), our award-winning BI Intelligence Platform, you will have access to a plethora of leading edge, modular tools and services. With its intuitive and user-friendly front end, and supported by expertly designed underlying architecture, NELIE provides easy access to self-service reporting, dynamic performance dashboards and strategic and clinically-focused products which support opportunity identification, forecasting and risk stratification. NELIE is used by over 40 CCG customers and supports document sharing and collaboration portals.

The NHS Long Term Plan provides a significant challenge to us all. During these uncertain times, we will be your trusted advisor, bringing an ethos of co-design – and partnership with other organisations when that provides the optimal solution for you – as you manage your business as usual and develop your integrated care systems and place-based interventions.
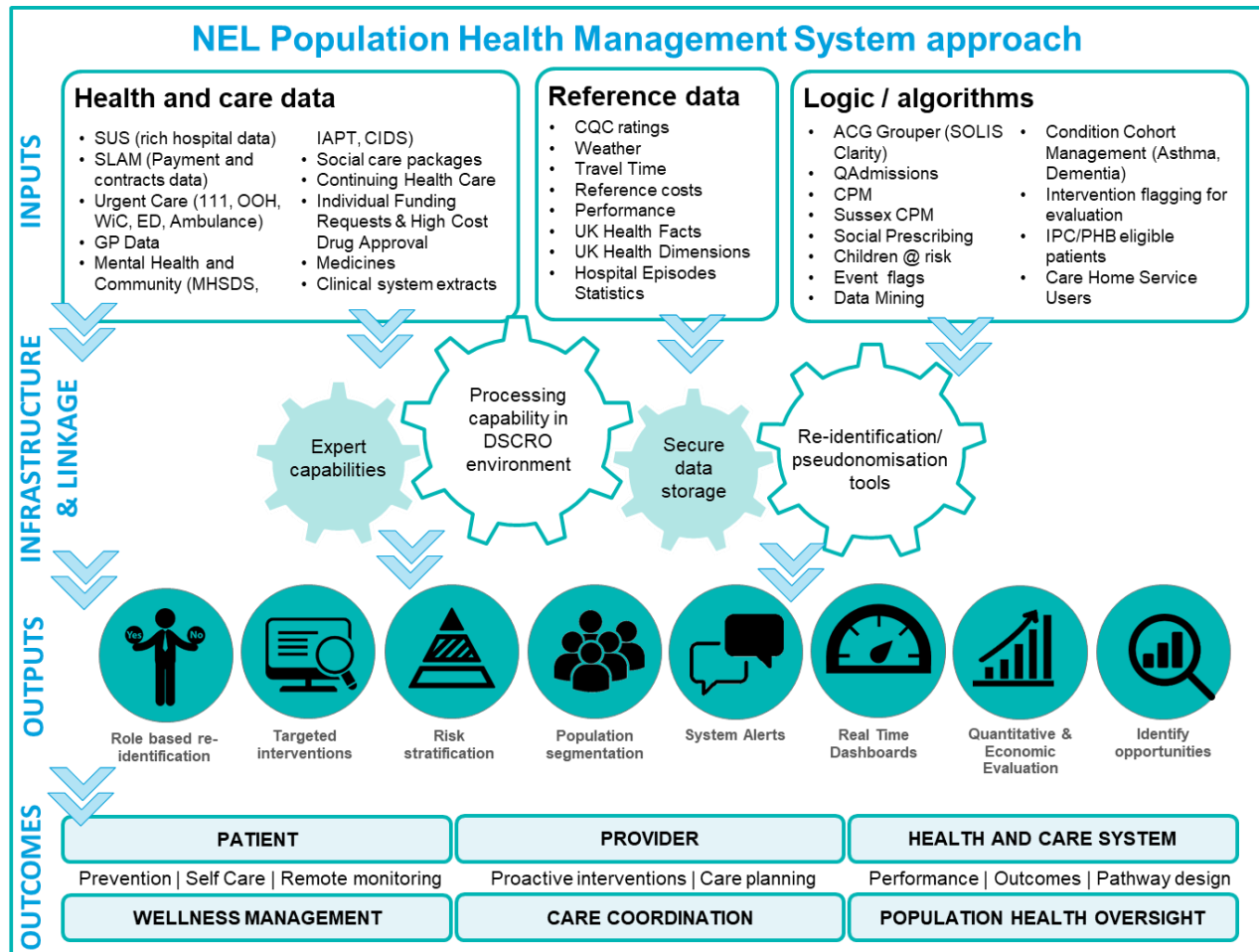
3.0 About NELIE

NELIE is a suite of services providing access to data management, consumption and reporting. The core modules are designed flexibly and shaped to meet differing reporting needs and analytics skills of different users. Freeing actionable insight and intelligence to be delivered to those who can make informed population health management decisions.

At its core NELIE has always been designed around a patient to ensure data, where available, is always linkable back to that patient and our solution incorporates the wider determinants that contextualise the health of the patient and the societal factors which influence lifestyle and expected health. The data can then be used for numerous purposes including patient care service management, and planning using aggregated data.

3.1 Population health management by design

At its core NELIE has been built around the patient. It has been designed in a modular way to leverage the best from each element but when integrated into business / care system improvement projects it can support and improve population health management. NELIE takes analytics beyond the traditional health analytics to assist users to proactively manage services through identifying prevention and health promotion programmes as well as strategic plan the focus of the transformation plans.

NEL Population Health Management System approach

INPUTS

Health and care data
- SUS (rich hospital data)
- SLAM (Payment and contracts data)
- Urgent Care (111, OOH, WiC, ED, Ambulance)
- GP Data
- Mental Health and Community (MHSDS,
- IAPT, CIDS)
- Social care packages
- Continuing Health Care
- Individual Funding Requests & High Cost Drug Approval
- Medicines
- Clinical system extracts

Reference data
- CQC ratings
- Weather
- Travel Time
- Reference costs
- Performance
- UK Health Facts
- UK Health Dimensions
- Hospital Episodes Statistics

Logic / algorithms
- ACG Grouper (SOLIS Clarity)
- QAdmissions
- CPM
- Sussex CPM
- Social Prescribing
- Children @ risk
- Event flags
- Data Mining
- Condition Cohort Management (Asthma, Dementia)
- Intervention flagging for evaluation
- IPC/PHB eligible patients
- Care Home Service Users

INFRASTRUCTURE & LINKAGE

- Expert capabilities
- Processing capability in DSCRO environment
- Secure data storage
- Re-identification/pseudonomisation tools

OUTPUTS

- Role based re-identification
- Targeted interventions
- Risk stratification
- Population segmentation
- System Alerts
- Real Time Dashboards
- Quantitative & Economic Evaluation
- Identify opportunities

OUTCOMES

PATIENT	PROVIDER	HEALTH AND CARE SYSTEM
Prevention | Self Care | Remote monitoring	Proactive interventions | Care planning	Performance | Outcomes | Pathway design
WELLNESS MANAGEMENT	CARE COORDINATION	POPULATION HEALTH OVERSIGHT

3.2 Insight to action

The data in NELIE can be integrated with business processes like, but not limited to, personal health budgets (PHB) to support identification of patient cohorts that a suited to PHB / Integrated Personal.

Commissioning, Social Prescribing Initiatives and other targeted interventions. NELIE can then be used to monitor said cohorts to track changes in care usage and make changes as necessary. Through bolt-on modules NELIE can be enhanced to delve into wider pools of data to better target those who would benefit from these interventions, and those likely to accept an offer of an intervention.

Intelligent Personal Health Budget (PHB) invitation process

Understand the population	Agree cohorts	Setup processes	Invite (call)	Review & offer PHB	Monitor (recall)
• Securely link pseudo data via NELIE system • Provide access, training and guidance on how to use the tools • Build business case	• Select criteria from clinical condition groups, various risk stratification algorithms and target demographic data to select suitable cohorts to offer PHBs/IPCs.	• Configure tools to access cohorts in three clicks • Agree referral codes in systems monitor outcomes . • NELIE Support team provided face to face and remote support to promote tools	• Tools also those clinical relationship to re-identify patients • Invite via existing call/recall process • Flag intervention of referral via coding	• Follow care review SOP to review, offer and enable care planning • Seek funding approval and agree care support	• Monitor patients change in heath use and condition status • Compare projected care consumption vs actual • Link to Patient Reported Outcome Measures

3.3 Meeting quintuple aim objectives with the help of NELIE

The challenge

Responding to the challenges of the quintuple aim namely improving care outcomes, controlling costs, improving patient and clinician experience as well as addressing inequalities, customers wanted to understand the behaviour of patients accessing services and create a model to identify opportunities to treat them differently. They observed a number of patients that were repeatedly attending A&E (Emergency Departments), often within a 12 month period, for conditions that may have been managed differently (e.g. self-care, accessing 111 for advice and guidance, attendance at pharmacies or waiting for a pre-bookable GP appointment).

The customer recognised the value of utilising our processed data, integrated into our **tools**, to better understand their system, identify opportunities to redesign care pathways and improve patient outcomes. The CCG required support to maximise the functionality of the data and tools (evidencing proof of concept), identifying areas to collaborate with neighbouring delivery partners and facilitating the interpretation and application of the acquired intelligence. The CCG aspired to embed PHM approaches into their Business As Usual (BAU) operations, but required support to make the process as simple as possible, maximising existing systems, tools and available supporting data whilst minimising additional spend.

3.3.1 Our Analytics team supported the customer achieve this by:

- providing the infrastructure, tools and training to support the teams to access and use the linked data fields;

- ensuring the legal compliance in the use, access and storage of the data for the proposed purposes;

- working with local project change leads to understand the desired outcomes;

- enabling local delivery units to interpret data and apply evidence to engage commissioners and clinicians;

- identifying appropriate modifications to the care pathway, influencing the selection criteria to identify patients;

- using NELIE to establish care cohorts, segmenting the population based on local criteria to identify and prioritise individuals and adapting into existing call and recall processes to engage with them;

- contributing to a business case for and enhanced service model to deliver new ways of working;

- co-developing a process flow-chart to enable frontline staff to capture and record live event data correctly supporting the evaluation of their initiative;

- providing face to face and remote support to promote and enable the use of these tools; and

- Configure the tools to enable access to the data within three clicks, allowing the use of data entry in existing clinical systems to monitor the outcomes of proposed interventions.

3.3.2 The Outcomes

A key lesson has been the challenge of activating specific segments of the identified population, acting as a catalyst for further pathway refinement to understand how to engage with hard to reach patient groups.

The customer has seen a significant cultural shift in the way that data is used to influence and shape commissioning decisions. Additionally, this approach has provided insight into some variation in practice, enabling targeted intervention by primary care support teams. Building on this success, the local Sustainable Transformation Partnership (STP) is replicating the approach for similar cohorts across the system.

4.0 Service Definition Summary

NELIE provides a platform for Analytics, Design and implementation services to help health and care organisations to use data and IT to organise commissioning functions and target improved outcomes, all in the context of constrained financial resources, evolving commissioning models and the introduction of accountable care systems. We help health and care organisations to prepare for optimisation of cloud services.

5.0 Why work with NEL

We offer

- Unrivalled knowledge of health and social care data and underlying systems.

- Our pragmatic strategy and design solutions will focus on outcomes.

- Adaptive solutions.

- Sound and robust investment cases.

- Delivery at pace with focus on benefits realisation.

- Building stakeholder support and commitment to change.

- A collaborative working style, building internal team working.

- Skills transfer enabling continuous improvement.

- Social value creation.

- Influence, scale and partnerships.

6.0 NEL BI NELIE Cloud Software Services

NEL has knowledge and skills in numerous areas that can support customers in leveraging cloud solutions. It can include planning cloud roadmaps and integration with organisational and wider ecosystem plans to maximise any existing investment in cloud services that customers have already made.

We have modularised our services to enable flexibility and choice in the features and benefits of use to customers. Many of these services are built on a core and optional module basis, with layers of services built on top of one another, from Data Management, through Data Consumption to Data Reporting.
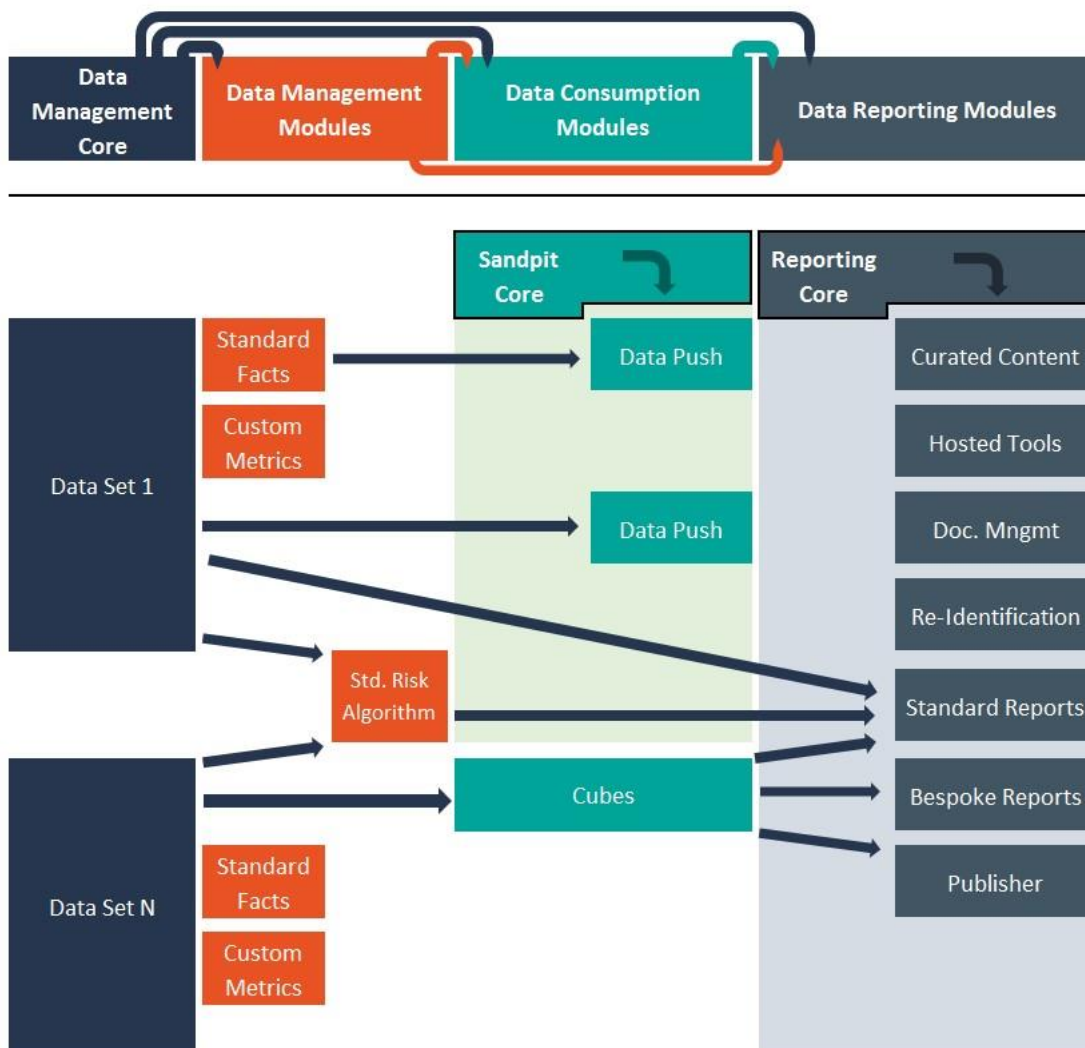
6.1   Data Management Services: Core Services

We believe data should be collected once, where possible, and fed to multiple systems. Our solutions have evolved to support this and maximise the efficiencies possible, and our modular service approach is designed to facilitate this.

Our services are built upon data, as the foundation to the NELIE BI Platform services. We have extensive knowledge in a wide array of health and social care datasets and can rapidly integrate new datasets into the wider repository of data available to you.

Beyond staff we believe data is one of the most valuable assets within Health and Social Care settings. The improvement in use of electronic systems, meeting the 2020 paperless NHS vision and technology has placed a greater emphasis on the availability of electronic records which can be used in new ways.

The publication by NHS England of the Long Term Plan document has signalled a move to joined up population centred approaches to health and care services and NEL has equipped itself to support our customers on this journey.

In addition to data sets sourced from Data Services for Commissioners Regional Offices (DSCROs), such as that hosted by NEL, we have expertise in entering into Data Processing Agreements with local Data Controllers. We make use of this approach to acquire, process and manage data sets covering such areas as GP Services.

We procure and normalise data within NELIE Data Management Services, taking raw data and processing and supporting other interoperability standards (HL7 FIHR). While nationally mandated data is subject to consistent coding methodologies, this is not the case with local data flows, and we have undertaken significant work to derive and apply meaningful classifications to support monitoring and comparison. We have also built a FACT engine, which infers logical 'facts' about any given patient derived from available data sources, making the data more accessible and meaningful for non-technical users and facilitating enhanced analytics.

6.1.2 Features

We have expertise to support datasets such as:

- Secondary User Services Extracts (Acute).

- Mental Health Services Data Set (MHSDS).

- Improving Access to Psychological Therapies (IAPT).

- Community Services Data Set (CSDS).

- Maternity Services Data Set (MSDS).

- Primary Care Services Data Set.

- Urgent Care Services such as 111 and OOHs.

- Performance Data Sets.

- Social Care.

- Patient Master Indexes.

- Locally Defined flows not elsewhere classified.

- And the datasets that support the wider determinants of health namely Housing, Education, Income/Deprivation, Pollution and Transport.

6.2 Data Management Services: Module 1: Facts

NELIE has a library of standard national metrics. These are converted into logical "Fact Engine" algorithms through which we place relevant datasets.

We routinely monitor national frameworks to update and refine our algorithms, in addition we liaise with our advanced business analysts to define business critical facts that currently have no national basis, such as High Frequency Attenders of Emergency Departments.
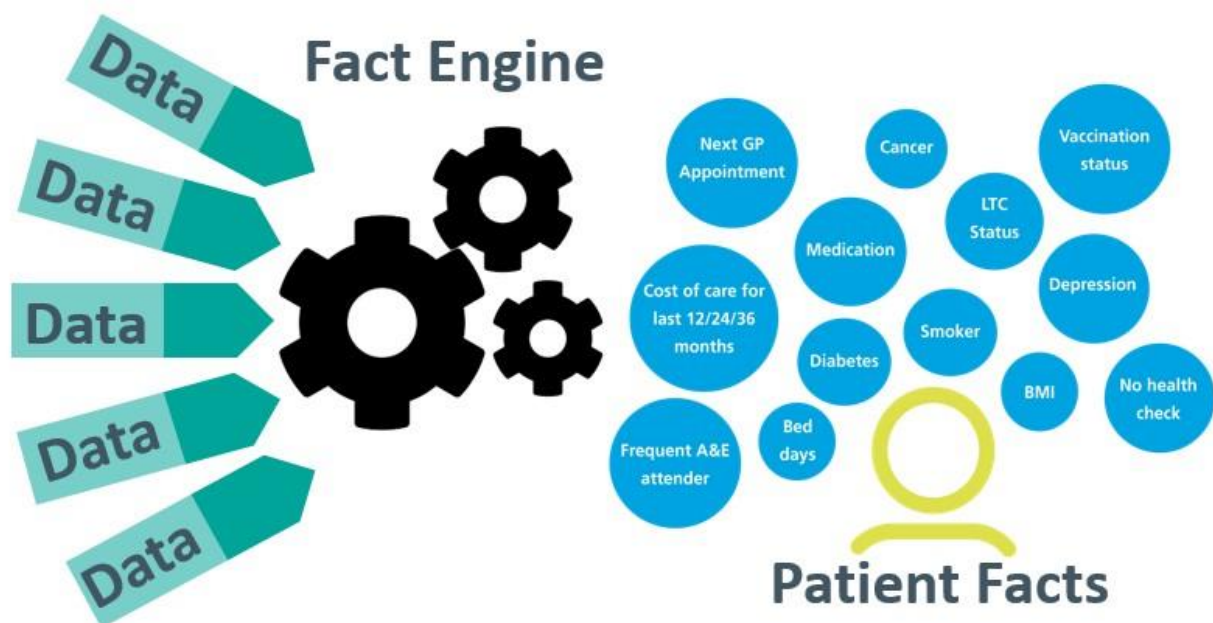
The outputs of these algorithms are designed to support the repeatable use of data within our systems. Outputs can be combined with our Sandpit Services or fed into selected modules within our Web Portal solution. Dependent upon the data source used, facts are presented at pseudonymised patient level and are consequently linkable to other data sets available through our BI services.

6.2.1 Features & Benefits

- Access to a range of standard patient level 'facts'

- Repeatable, consistent definitions of national and business critical measures.

- Surfaced within a range of our Data Consumption and Reporting Modules, such as a Sandpit Data Push Service.

- Refreshed on a regular cycle dependent on the data source.

- Maintained and administered centrally, once for all.

- Consistently applied across customer organisations, facilitating benchmarking and ensuring reliability in an equal comparison.

6.2.2 Custom Metric Development

In addition to our standard facts, we offer a service to explore the design and development of bespoke metrics. The custom metrics are similarly populated through our Fact Engine, and the outputs able to be applied with repeatable consistency in our systems.

We engage with customers to understand the detail of the requirements, explore the intended uses of the metric in detail, document and plan the development, and finally test and deploy the metric to customers.

6.3 Data Management Services: Module 2: Risk Stratification Algorithms

Risk stratification uses algorithms to determine a patient's risk of a specific outcome. NEL have provided both proprietary and bespoke risk stratification solutions across the country for over a decade.
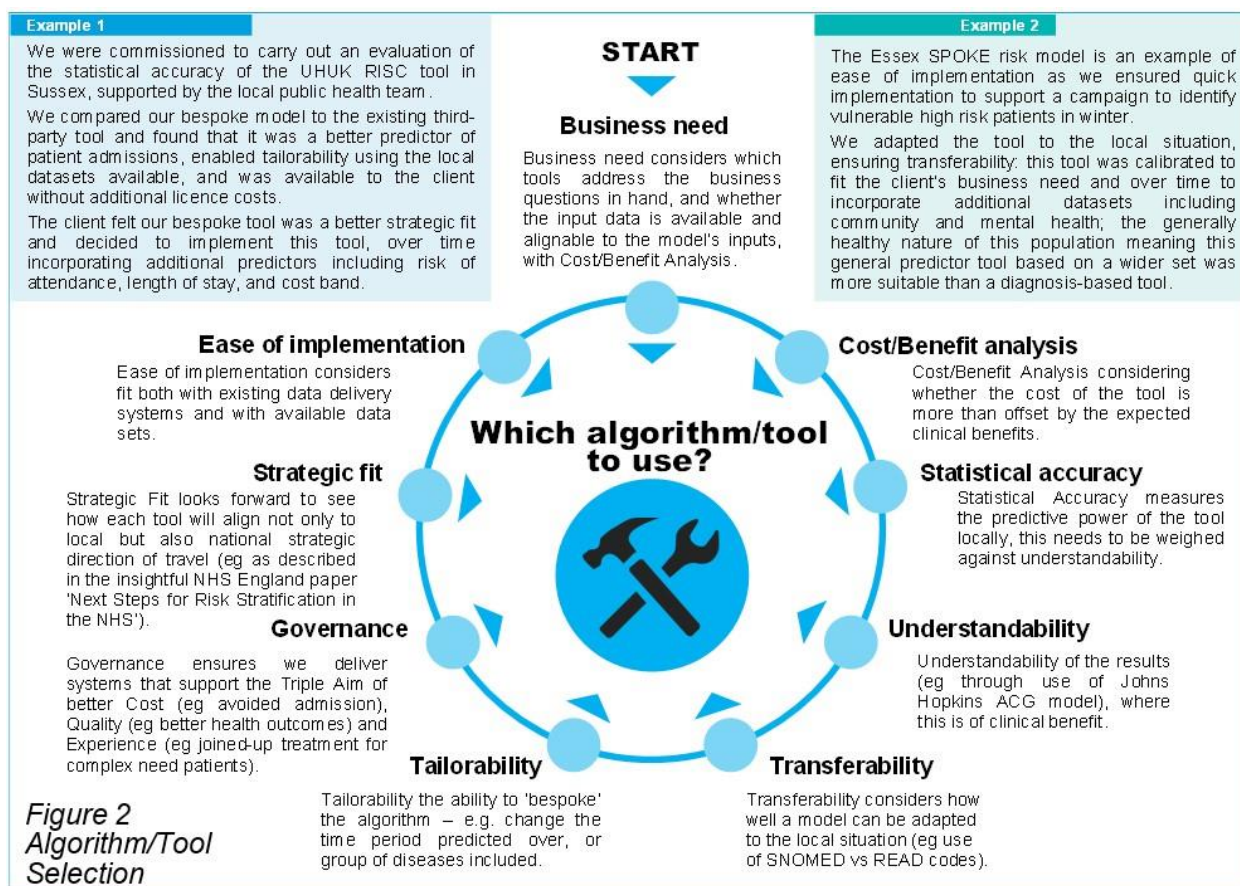
Our tools are:

- Flexible in answering to different business needs and adapting to different algorithms. Depending on our clients' needs, we can either provide implementation of third party tools (including Johns Hopkins ACGs, national CPM, PARR-30, Q-Admissions), or generate and implement bespoke algorithms to predict a range of events working with stand-alone, disparate or integrated datasets;

- Co-designed with CCGs and clinicians in order to support clinicians with individual case finding, and provide commissioners with actionable insight;

- User-friendly for both commissioners and clinicians - delivering the right information, to the right audience, through the right channel, in order to drive both better healthcare and effective use of resources; and

- Secure as they ensure that patients' data is protected. Our unique pseudonymisation process allows commissioners to communicate with clinicians about individual patients in a secure environment without the need for NHS number sharing.

We empower commissioners to address the key needs of the local health system by stratifying their whole population and exporting data locally for further manipulation; we also enable clinicians to target the "right" patients using a unique NHS number, ensuring a secure environment where patients' data is protected. Based on AGILE methodology, our comprehensive six-step approach to risk stratification/patient segmentation provides a tried-and-tested framework for selection and implementation:

	1 Discover	2 Define	3 Assure	4 Develop	5 Integrate	6 Review
	Opportunity analysis	Approach definition	Ethical considerations	Data acquisition, linkage	Review statistical performance	Model review
What it cover s?	Identify the potentially avoidable low quality, high cost, poor experience events, ensuring that these are avoidable via a more effective, less costly healthcare input	Define optimal inputs, outputs and stratification approach (eg in-house tool vs third party); user engagement	Potential for bias or exclusion (eg lack of data for certain patient cohorts); clinical impact (might use of this tool have an adverse impact downstream?)	Develop Data Processing Agreements; securely load and link source data; data quality review	Statistically evaluate against independent historic dataset	Undertake regular review/feedback loop of tool performance – pool together findings across organisations to negate impact of small numbers
How we do it	Horizon scanning; Cost Benefit analysis	Business requirements analysis; data analysis; market research	Undertake an Ethical review with stakeholders	Non-reversible pseudonymisation for linkage within secure environment	Statistic measures (eg PPV, ROC) - using local data set	Not only pre/post studies but also 'placebo' comparison group
	Business Requirements	Peer review	Information Governance	Bespoke model calibration	Model Implementation	Model recalibration
What it cover s?	Identify the big questions the client is specifically looking for the solution to answer	External verification of strengths and weaknesses of the model	Development of Information Governance framework	Iterative calibration of internal model to achieve optimal performance for the particular data set	Integrate or embed model within reporting or real-time clinical systems	Updating the algorithm where predictive power of the model is below expectation
How we do it	Client's mission statement; Stakeholder interviews	Literature search; case studies; reference site visits; best practice	Impact Assessment; Fair processing notices; support for patient opt-out	Pre-mining regression tests; variable clustering; multiple mining tools	Liaison with suppliers as necessary; user training	Investigate changes in data recording; source additional data if possible; recalibrate model
	Baseline review		Ensuring Equality		Integration within PHM	
What it cover s?	Review data availability and advise on data quality		Ensuring no segment of the population is inadvertently disadvantaged as a result of using the tool		Provision of the new risk algorithm as a dimension within the Population Health Management toolset	
How we do it			Equality Impact Assessment		Additional 'facts' about population enabling multi-dimensional analysis	

By using this comprehensive approach, we have continually delivered a population-based model, including patient level risk scores, trends, conditions, co-morbidities and other health and lifestyle factors. This information is delivered to both clinicians (to identify and target patients for care) and commissioners (for population segmentation and analysis) either through our award winning NELIE Web Portal interface, or integrated third party tools.

Example 1
We were commissioned to carry out an evaluation of the statistical accuracy of the UHUK RISC tool in Sussex, supported by the local public health team.

We compared our bespoke model to the existing third-party tool and found that it was a better predictor of patient admissions, enabled tailorability using the local datasets available, and was available to the client without additional licence costs.

The client felt our bespoke tool was a better strategic fit and decided to implement this tool, over time incorporating additional predictors including risk of attendance, length of stay, and cost band.

START

Business need
Business need considers which tools address the business questions in hand, and whether the input data is available and alignable to the model's inputs, with Cost/Benefit Analysis.

Example 2
The Essex SPOKE risk model is an example of ease of implementation as we ensured quick implementation to support a campaign to identify vulnerable high risk patients in winter.

We adapted the tool to the local situation, ensuring transferability: this tool was calibrated to fit the client's business need and over time to incorporate additional datasets including community and mental health; the generally healthy nature of this population meaning this general predictor tool based on a wider set was more suitable than a diagnosis-based tool.

Ease of implementation
Ease of implementation considers fit both with existing data delivery systems and with available data sets.

Cost/Benefit analysis
Cost/Benefit Analysis considering whether the cost of the tool is more than offset by the expected clinical benefits.

Which algorithm/tool to use?

Strategic fit
Strategic Fit looks forward to see how each tool will align not only to local but also national strategic direction of travel (eg as described in the insightful NHS England paper 'Next Steps for Risk Stratification in the NHS').

Statistical accuracy
Statistical Accuracy measures the predictive power of the tool locally, this needs to be weighed against understandability.

Governance
Governance ensures we deliver systems that support the Triple Aim of better Cost (eg avoided admission), Quality (eg better health outcomes) and Experience (eg joined-up treatment for complex need patients).

Understandability
Understandability of the results (eg through use of Johns Hopkins ACG model), where this is of clinical benefit.

Figure 2 Algorithm/Tool Selection

Tailorability
Tailorability the ability to 'bespoke' the algorithm – e.g. change the time period predicted over, or group of diseases included.

Transferability
Transferability considers how well a model can be adapted to the local situation (eg use of SNOMED vs READ codes).

We offer a suite of services to deploy risk algorithms to suit the needs of customers:

1. **Standard:** Application of Combined Predictive Model, as a tested, credible risk scoring tool
2. **Licensed:** Application of selected licensed algorithms and applying them into our systems
3. **Custom:** Development of bespoke algorithms and models based on customer requirements

6.3.1 Features

- Deployment of algorithms based on a customer's needs.
- Information, advice and guidance about open source facts.
- In-house expertise and skills to construct and design custom algorithms to suit customer needs.

6.3.2 Benefits

- A focus on a particular cohort of patients.
- Used to improve services and Identify patients that may need early intervention to improve direct patient care.
- Understand long term conditions of population.

6.4   Data Consumption Services: Module 1 Sandpit

For technical users, we can provide direct access to the data via sandpits, an SQL environment populated with the linked data feeds. In this area analysts can create, amend and analyse their own tables and link these tables to their tools of choice. We offer a range of self-service tools, from pre-written dynamic reports to the ability to mine data directly, to complement the diversity of user skillsets. All of our end products are of course fully-documented, from data sources and definitions through to assumptions and methodologies.

The Sandpit is a SQL environment where analysts can access the data that has been processed through Data Management Services Modules to enable commissioners understand patient and service activity and costings through deep dives. The sandpit Datasets include SUS, SLAM, GP, Community, Maternity, Mental Health, Primary Care Prescribing, Improving Access to Psychological Therapies (IAPT), Urgent Care (OOH/111), Performance and more.

6.4.1   Features:

- Role-based access controls.

- Navigational training included.

- Wide range of datasets can be flowed into the tool.

- Fully supported and administered data warehouse solution.

- Automated refreshes.

- Drill down to record/patient level.

- Standard service includes SQL repository accessible via a multitude of applications such as SMSS, Excel and Access.

- Option to enhance service to include further SQL stack features such as SSAS and SSIS.

- Access to the latest data mining, machine learning, statistical packages and available AI tools in the Microsoft Azure platform.

6.4.2   Benefits:

- Allows deeper dives into data, enabling complete manipulation.

- Full flexibility to construct your own custom data models.

- Facilitates linkage across datasets.

- You can run your own calculations and reporting methods.

- Can support any business questions.

- Can create your own, store procedures and functions.

- Easier to manipulate large data sets.

- Can be accessed via MS Excel, SSRS, MS Access.

- Provides foundation for local experimental data modelling and ad-hoc reporting.

6.5   Data Consumption Services: Module 2: Cubes

NEL has cubes for various data sources with pre-created dimensions and measures that allows a customer with limited training and intermediate Excel skills to be able to create reports that can be both saved and refreshed with new data.

6.5.1   Features

- Pre-defined dimensions and measures, collaboratively constructed from a range of knowledgeable analysts both inside the CSU and within our customer base.
- Facility to drill-through to Patient level data and links to Re-identification Services.
- Includes linked patient Facts where available.
- View multiple patient attribution methods using a single consumable tool.
- Development and automation tools for data services and reporting.
- Role based access controls.
- Drag and drop allowing the creation of bespoke reports.
- Training included.

6.5.2   Benefits

- Empowers Self-service report creation.
- Automated data refresh.
- Consumable via multiple platforms, e.g., Excel and Power BI.
- No expert analytics knowledge required.
- Report on prebuilt metrics.

6.6   Data Reporting Services: Core: NELIE Portal (Web Intelligence)

NELIE Portal is a web-based platform designed and developed with SharePoint. Many of the data modules are hosted and supported through the NELIE Portal which is flexible to add additional modules when needed. NELIE Portal is accessed securely via the Public Sector Network connection and allows customers to independently navigate around existing healthcare reports and create their own reports. The platform uses our own service modules, however there is additional option to bolt on third party tools.

We have success in the long-term adoption of new tools, including rolling out our secure, self-service NEL Information Exchange (NELIE) web-based Portal in primary care. We know that solutions need to meet the differing needs and informatics skills of different users, all of whom need data to make informed decisions.
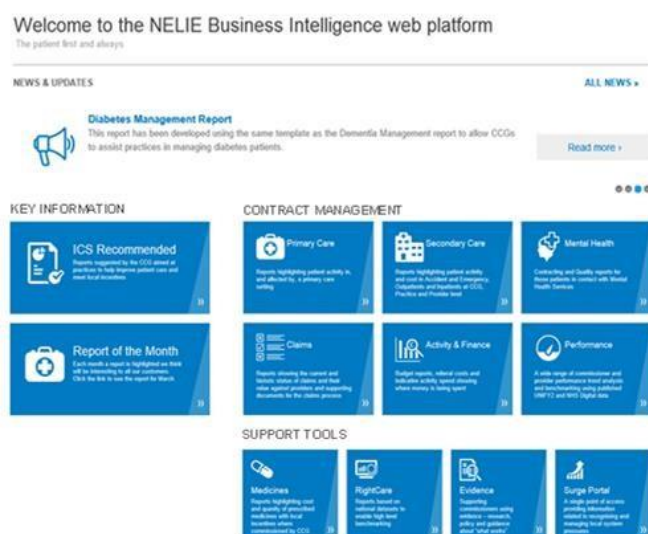
There is a vibrant suite of reports available to GPs, Commissioners and Providers within NELIE Portal, through the Standard Reports Module, including frequent users of care and children at risk, which nudge changes and intervention in clinical practice.

Take up and usage of NELIE by GPs has been very successful with 519 practices now using the system, and 519 users within those practices. This was achieved by designing the 'skin' of NELIE in consultation with GP users so that it feels intuitive to their needs and practices, providing cutting-edge customer support using the Zendesk platform to handle customer queries and improve their experience, identifying clinical champions in each practice and reinforcing communication messages through a regular newsletter

6.6.1 Features

- Add on module for Reports for commissioning and clinical reporting.

- Simple clean navigation.

- Single Point of Access for intelligence services.

- Consistent look and feel across reports.

- Tailored content depending on user.

- Training and client engagement services are Included.

- Share content within and across organisations.

6.6.2 Benefits

- Workflow capabilities to facilitate dialogue between commissioner and Providers.

- No software installation required.

6.7 Data Reporting Services: Module 1: Curated Content

We provide a range of external tools and resources that are of benefit to health and social care services facilitating a portal that provides a single point of access to intelligence resources including those supplied and managed externally to the CSU.

Our searchable Evidence area on the NELIE Portal hosts Commissioning Intelligence and STP Policy briefings.

6.7.1 Features

- Links to evidence on QIPP innovation and NICE guidance.

- Benchmarking tools and resources.

- Links to national and international benchmarking applications.

- Briefings and summaries of national policy directives.

6.7.2 Benefits

- A single point of access to business intelligence tools and resources.

- Supports data analysis with evidence of effectiveness.

- Briefings on policy areas and key topics.

- Development of customer understanding and analytical intelligence.

6.8 Data Reporting Services: Module 2: Document Management

NELIE Portal is built on a Share Point infrastructure that allows customers to take benefit of the document sharing functionality. NELIE Portal becomes a central hub for customers to share information internally, with other organisations such as GP Practices and NEL to streamline communication.

6.8.1 Features

- Role based access control, supporting varied roles to create, edit and read documents.

- Secure storing of documents.

- Backed up and managed storage.

6.8.2 Benefits

- Centralised communications between you and your partners.

- Monitor who is accessing documents.

- Access to Version Control features within SharePoint.

- One place for teams and their trusted sources to access.

- Controlled, instant sharing within a team or across a region.

6.9 Data Reporting Services: Module 3: Re-Identification

NEL Hosts NEL Data Services for Commissioners Regional Office (DSCRO), a subsidiary of NHS Digital. Within this environment we have a legal basis to store Patient Identifiable Data pertaining to datasets including our Patient Master Index. We apply a consistent pseudonym to patient data from all data sources. NELIE's re-identification process allows for secure web-links to be disseminated to GPs with a direct relationship with the patient's allowing secure communication between GPs and Commissioners.

6.9.1 Features

- Role based access controls, including internal validation of the patient attribution.

- One-stop re-id solution which can be linked in to other NELIE modules and/or local reporting

- Quickly identify a patient, where an established legal basis to view clear data exists.

6.9.2 Benefits

- Secure sharing of NHS numbers.

- Enables communication between GPs and Commissioner regarding a single patient, or a cohort, whilst complying with relevant Data Protection and NHS Information Governance policies.

- Quick and Easy to use.

6.10 Data Reporting Services: Module 4: Standard Reports

NEL build reports centrally at scale and in collaboration with our customers. We perform horizon scanning to assess where monitoring and in-depth reporting is required, and work with our customers to continually improve and expand upon our range of reports. Once a report is live and hosted it becomes available for all customers to use. A customer's access to these reports is dependent on the specific data layer a customer has procured.

Diabetes Management Report
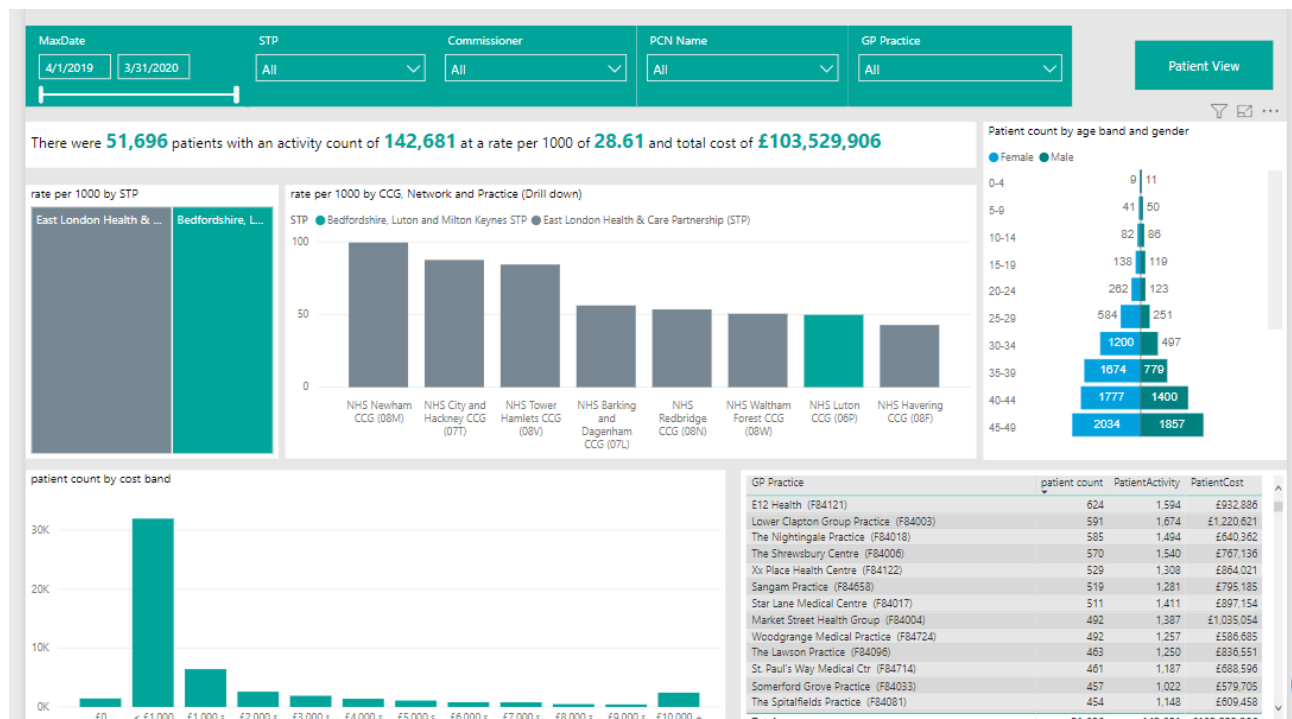
We work with public health colleagues, commissioners, internal and external analysts, health economists and more, to ensure our reports are robust, easy to use and enable decision makes to act on the intelligence displayed.
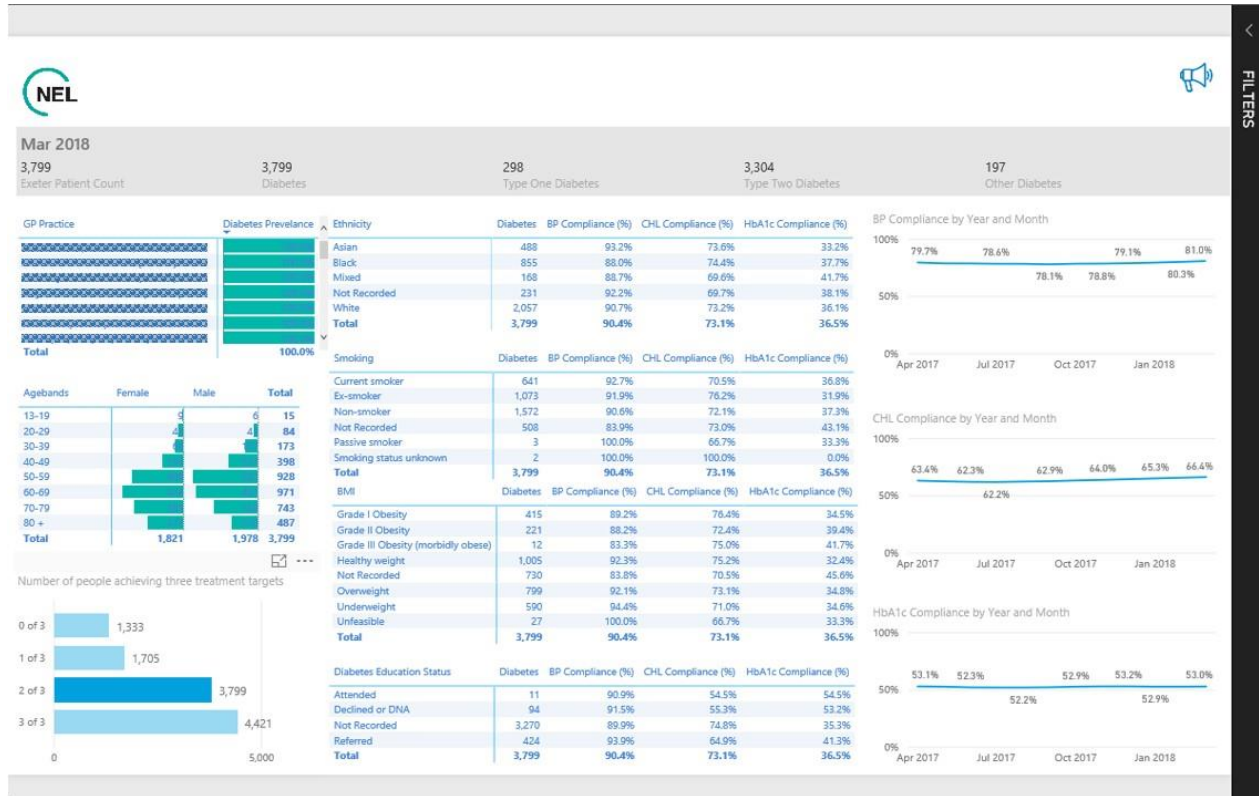
Our GIS service helps commissioners and providers answer questions about the health system that relate to geography, location and travel: how patients access and use services, and how characteristics of local populations might influence this.

We help commissioners evaluate and plan service reconfiguration with detailed travel time analysis by any mode combined with data on service utilisation. Healthcare activity, demography and health conditions are spatially analysed revealing patterns of service use over time, helping to direct services and preventative measures to where they are most needed.

We evolve our Standard Reporting Module with innovation and scale in mind. Where a tool, feature or report is developed for one, it becomes available to all module users. We build our products in an agile fashion to expedite delivery and hone in on the metrics, visualisation and properties of reporting that provide actionable insight.
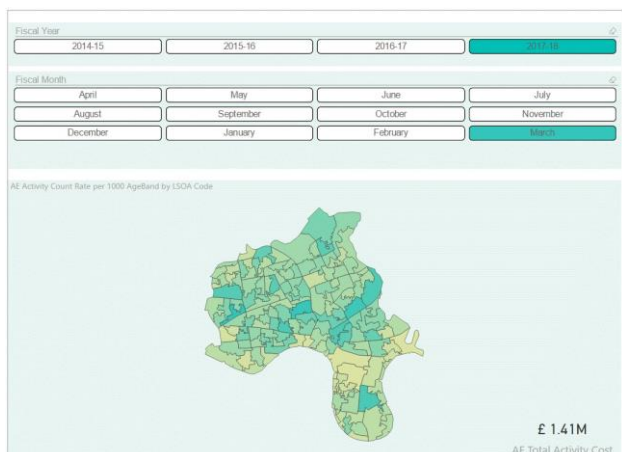
6.10.1 Features

- Standardised report look and feel for all customers.
- Export and saving snapshot of reports to local systems.
- Patient-level reports.
- Links primary, secondary, community and social care data.
- Combines financial and healthcare activity data.
- Long-term condition management.
- Data refreshed on a regular basis.
- Quick drill down to patient level.
- Emerging hotspot analysis and clustering of significantly high service use, by geography and population.

6.10.2 Benefits

- Economies of scale: access to existing and future standard reports.
- Reports addressing national QOF targets.
- Dynamic dashboards which are user-friendly, easy to understand and use.
- Monitor a patient's healthcare activity without access to NHS numbers.
- Service level agreements, budget monitoring and quality indicator performance.
- National, regional and local peer comparators.
- Deliver reliable data and accurate information.
- Comparison by specialism, geography and demographics.
- Manage and understand CCG population health to provide better patient care.
- Accurate evaluation of activity and finance data to identify improvement opportunities.
- Location intelligence provides enhanced understanding of population distribution, needs and gaps in provision.
- Contributes to a comprehensive evidential position for service changes.
- Insight into the accessibility of services from the perspective of patients.
- Underlying healthcare system patterns are revealed by patient location and characteristics not only by the site of the service.

Approach to promoting and scaling innovation
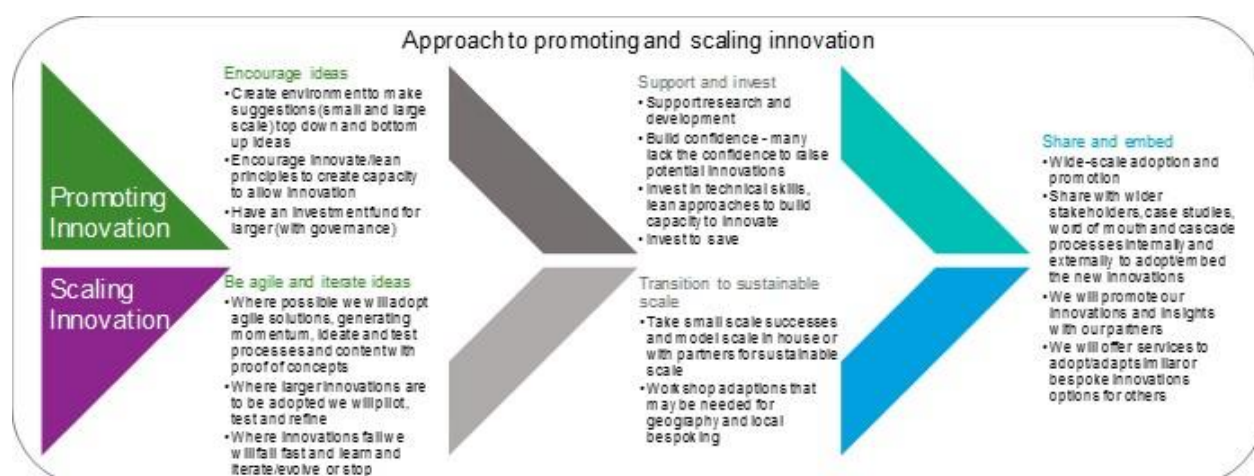
6.11 Data Reporting Services: Module 5: Custom Reports

A customer can commission specific reports to be built. NEL will work with the customer to finalise a specification to build the report. Through user acceptance testing and iterative development NEL guides the customer through the entire development process to final report publication.

Since service utilisation and cost analysis needs to reflect the perspective of the user (e.g. using PLICS data as well as commissioning unit costs) and provide actionable insight, we provide a flexible platform and applications which group, categorise, aggregate and manipulate data to align with the end user's focus. Data sources are fed in from a variety of sources that also include aggregated finance, asset usage, workforce usage and services for which patient-level data may not yet be available across the ICS.

We have worked with a range of partners from primary care, acute, mental health, community, prescribing and social care to link data across the system, including aggregate data where we have developed and applied an agreed set of assumptions to allow us to attribute costs across care settings and programmes. In this way we have used the best available data to enable analysis of programme budget spend across the system, to segment this view by long term condition and risk stratify to better understand the cohorts accounting for highest spend.

We have also developed innovative tools supporting analysis across care settings, such as monitoring against capitated budget and financial modelling of future spend. By applying custom groupings and categories, Integrated Care Systems can view and analyse their utilisation and service cost in a highly flexible way across care settings including at Primary Care Network (PCN) level. Our dashboards, flexible data cubes and reports facilitate easy whole pathway analysis whatever the activity currency or care setting and enables the ICS / STP to understand the number of patients and costs associated with a particular condition, to monitor compliance with best practice guidance such as RightCare optimal pathways at a population cohort level and to understand where there are opportunities for improvement. Analyses are presented using innovative data visualisations including theographs (or individual patient timelines) and "bow tie" diagrams to illustrate patient pathways.

Traditional Product Development Process
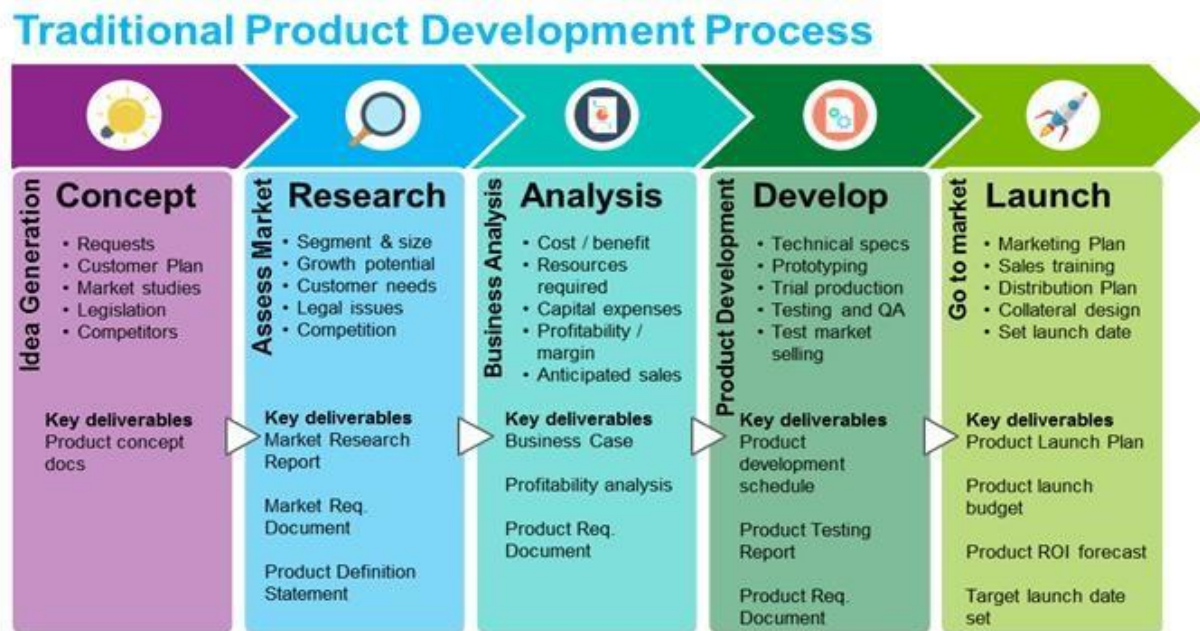
Using custom mapping-based analysis through GIS, we help commissioners evaluate and plan service reconfiguration with detailed travel time analysis by any mode combined with data on service utilisation. Healthcare activity, demography and health conditions are spatially analysed revealing patterns of service use over time, helping to direct services and preventative measures to where they are most needed.

6.11.1 Features

- Custom reporting set-up.
- Business Intelligence and Reports.
- Visualizations.
- Modelling optimal site location, weighted by population distribution and need.
- Multiple origin/destination travel time analysis by any mode: public transport, driving, walking, cycling.
- Bespoke online interactive maps and tools.

6.11.2 Benefits

- Built specifically for you as a customer.
- Use of expert NEL knowledge and experience.
- Enables data-driven decision making.

6.12 Data Reporting Services: Module 6: Report Publishing

NEL offer a route for customers to develop and administer the design and publication of their own reports via applications such as Power BI and publish them within a dedicated section in NELIE. A

customer only area can be created in NELIE allowing for the customer to publish and manage their own content.

6.12.1 Features

- Secure area only accessible with permissions, dedicated to the needs of the customer.

- Full control of dedicated site to design and load reports.

- Support and training to utilise SharePoint features.

- Route to deploy advanced Interactive visualisations to data consumers.

6.12.2 Benefits

- Complete control by customer.

- Flexibility in report creation.

- Makes sharing data simple to achieve.

- Makes collaboration easier.

- Support data-driven decision making and policy design.

6.13 Data Reporting Services: Module 7: Performance

The performance portal hosts a wide range of commissioner and provider performance trend analysis and benchmarking using published NHSE, NHSI and NHS Digital data. This allows customers to use these reports as insight to identify local and national trends as well as areas for service improvement.

Accessed via NELIE, our performance portal is designed to support the system in meeting its statutory reporting requirements.

6.13.1 Features

- Flexibility - A greater range of graphical and tabular analysis available easily customised, with backing data available in download for any further analysis.

- Timeliness -Individual performance reports and tools available internally and to clients in 2-3 working days of national publication of raw data rather than once per month.

- Consistency - All data extracted, cleaned and validated once, giving one version of the truth.

- Benchmarking - Maximising the use of available national data to provide tools that allow for system, provider and commissioner benchmarking for a self-defined peer group, regional areas and nationality.

- Scalability - Provides both a better service to customers at the same cost and allows developments to be shared across all customers.

- Professionalism - Supports a professional approach by providing an easily accessible repository of technical guidance

- Impact modelling and cost forecasting – data can be used to triangulate and forecast issues.

6.13.2 Benefits

The provider performance data is quality assured centrally by our data experts and provided to customers through the NELIE portal. It offers reporting for all key NHS constitution standards and national performance measures. Access to finance and activity reporting will support your decision making at a contract and system level.

You get easy access to reports about the performance of your care system, allowing you to assess and work towards assuring their quality, efficiency and sustainability.

- Identify cost saving opportunities across the health system
- Holistic view of the healthcare system
- Visibility into patient pathways to increase
- Provides regular reports and dashboards summarising your local performance

7.0 Customer obligations

To access the services available, customers will need to:

- Sign up to terms and conditions of service.
- Engage in the service roll-out planning.
- Support and arrange access to suitable training environments.
- Define requirements and specifications of service needs clearly.
- Ensure legal access to data is maintained.
- Sign-up to any Data Processing Agreements as necessary.
- Support the roll-out of Data Processing Agreements to any third-party controllers (GP Data).
- Participate in the development of any Data Privacy impact Assessments (DPIA).
- Accept role based access models and permissions.
- Advise of any third-party organisations and applications in use.
- Note that where there is an expectation of integrated authentication requirements other suppliers/vendors must be contracted to support the project separately if required.
- Inform the backup requirements of service.

Ensure data can be provided in the format / specification required. Any data transformations required to meet this standard will be subject to further charges.

8.0 On-boarding

Customers are required to complete Data Processing Agreements allowing NEL to extract data on a legal basis. Any new projects involving data flows will require a Data Privacy Impact Assessment (DPIA).

Following this, we will propose a roll out plan that includes registration, training modules and support for all customers locally or remotely. We also follow the Agile methodology to deploy new features as and when they become available.

9.0 NELIE Support Services

NEL has knowledge and skills in numerous areas that will support our customers in leveraging the NELIE cloud solution and ensuring we work in collaboration to formulate the best option/s.

9.1 First-Line / Service Desk Support

As a standard offering, first-line support will be provided between 8:30AM am to 5:30PM pm, Monday to Friday (excluding national holidays) via self-service portal, email and phone. The core functions of support provided are listed below. These functions and the core support hours can be extended and customised to meet our customers' requirements.

- Ticket logging for all service requests and incidents relating to access and/or use of systems;

- Ticket logging for all service requests and incidents relating to requests for data;

- Ticket logging for all service requests and incidents relating to queries and ad-hoc requests;

- Assignment of logged service requests and incidents to the appropriate team for resolution; and agreeing priorities for logged service requests and incidents with the designated team in line with customer business needs and priorities;

- Escalation of a ticket from incident to problem - internal escalation process;

- Provide monthly reports on the performance of the service;

- Liaising with second-line and third-line support teams;

These functions and the core support hours can be extended and customised to meet our customers' requirements. In addition the self-service portal allows you to:

- Log request directly into the Zendesk system.

- Track your request whether it was raised by email, telephone or through the portal. CSU and CCG users have visibility of all tickets across their area.

- Request updates via the Self-service portal from the team the ticket is assigned to. You will be able to do this at a time that is convenient to you.

A further benefit of the self-service portal is that it contains a knowledge base containing guidance articles to enable customers to find answers without having to wait for the service support teams to respond.

10.0 Ways of working

Working in partnership is at the heart of our strategy and vision. We offer expertise to local health and care services and can help any health or social care organisation with cloud solutions big or small. We expect to establish close working relationships between NEL and our customers.

We work with you to achieve your goals, asking you for advice or guidance on shaping local strategies or support the implementation of a local project or digital solution to achieving the best possible outcomes for your area.

11.0   We look forward to working with you

NEL would be delighted to have the opportunity to work with you and believe we would add tremendous value due to our close working relationship, and complementary NHS expertise and cloud service knowledge, skills and experience.

All proposals assume that our customers, working closely with NEL, will commit to jointly drive and deliver each phase of your project. In return, you can expect NEL to utilise its experience in providing cloud services and a commitment to streamlining and automating work wherever possible, to ensure continuity and improve outcomes for customers.

Appendix A: Modular Service Levels Available

Module	Option
Core Services	ICT support to provide authentication and access route to the Private/Public Cloud. Options via Azure ADFS, Network Trust and Local Network Accounts. Service Assets (Servers) access licenses (SharePoint F1/E1/E3) Service Support including Service Desk, Client Engagement, SharePoint Administration, Data Tools Administration
Reporting Services	Managed Reports, including Data Warehouse development and Data Management, Power BI Server.