



National Laboratories Information and Intelligence Platform (NLIIP)

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ISD Scotland better information, better decisions, better health

Access Keys Skip Navigation

Information Services Division

ISD Scotland is part of NHS National Services Scotland

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About ISD

Scotland has some of the best health service data in the world. Few other countries have information which combines high quality data, consistency, national coverage and the ability to link data to allow patient based analysis and follow up. The Information Services Division (ISD) is a division of National Services Scotland, part of NHS Scotland. ISD provides health information, health intelligence, statistical services and advice that support the NHS in progressing quality improvement in health and care and facilitates robust planning and decision making.

[More about ISD](#)

What's New in ISD?

Open Data News

[Cancelled Planned Operations data has recently become available as open data.](#) This open data release provides the number of planned operations, the number cancelled and the reason for cancellations across NHS Scotland by hospital and health board.

There are also [two new Prescribing data releases](#). ISD now provide open data on where items were prescribed and subsequently dispensed and also details of all the different dispensing locations in Scotland.

You will find all of ISD's open data on [NHSScotland Open Data platform](#).

[17 May 2019]

Latest Statistics

- [Insights 2017/18](#)
Published
- [Prescribing Contract](#)
Published
- [Prescribing Dispensing](#)
Published
- [Prescribing Data](#)
Published
- [Chronic](#)
Published
- [NHS Per Department](#)
Published
- [NHSScotland](#)
Published
- [Child and CAMHS workforce](#)
Published



- [A to Z of topics](#)
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Protecting Scotland's Health

Latest news

Publication of the seasonal respiratory report for the week ending 19 May 2019
24 May 2019

This report provides an update on influenza and other seasonal respiratory pathogen activity for the week ending 19 May 2019. View the report on our website....

Publication of the seasonal respiratory report for the week ending 12 May 2019
16 May 2019

This report provides an update on influenza and other seasonal respiratory pathogen activity for the week ending 12 May 2019. View the report on our website....

Browse our A to Z of topics

Products and Services

Highlights

Clinical Profiles – O

Theatres Efficiency measures.

Regional Planning Scotland.

Clinical Profiles



Open in Discovery

Scottish Atlas of Variation | Exploring geographical variation in the health & care system in Scotland

Introduction | **Surgical Procedures** | Same Day Surgery (BADs)

Rate of hernia procedures per 100,000 population by Local Authority; 2017/18

Explore:

Select Financial Year: 2017/18 | Select procedure: Hernia | View by: Local Authority of Residence NHS Board of Residence

Context

A hernia occurs when an internal part of the body pushes through a weakness in the muscle or tissue wall that surrounds it. The abdomen from chest (diaphragmatic hernia) to groin (inguinal and femoral herniae) are most commonly affected. A hernia results from tissue weakness or a defect which might be present at birth or which develops over time due to degenerative change. They can also occur after interventions such as surgical incision (wound/ incisional hernia) and, they can recur after previous surgical repair.

Guidance on the management of hernia exists (NICE, Surgical Colleges and Specialist Societies). This is relatively consistent, recommending repair when the hernia causes symptoms, when there is risk of strangulation and when the benefit from repair outweighs the risk of harm. Patient centred factors should be taken into account, such as co-morbidity and individual wishes. Shared decision making and informed consent are crucial. It would be reasonable, for example, to manage an inguinal hernia causing few symptoms, in a patient who would rather avoid surgery, by "watchful waiting". Management of hernia by means of an external support (truss) is not recommended.

- Significantly higher than Scotland at 99.8% level
- Significantly higher than Scotland at 95% level
- Not significantly different from Scotland
- Significantly lower than Scotland at 95% level
- Significantly lower than Scotland at 99.8% level

Click an area on the map to highlight location across all charts

Distribution chart
Dotplot

Standardised procedure rates with 95% confidence intervals: 2017/18



NHS

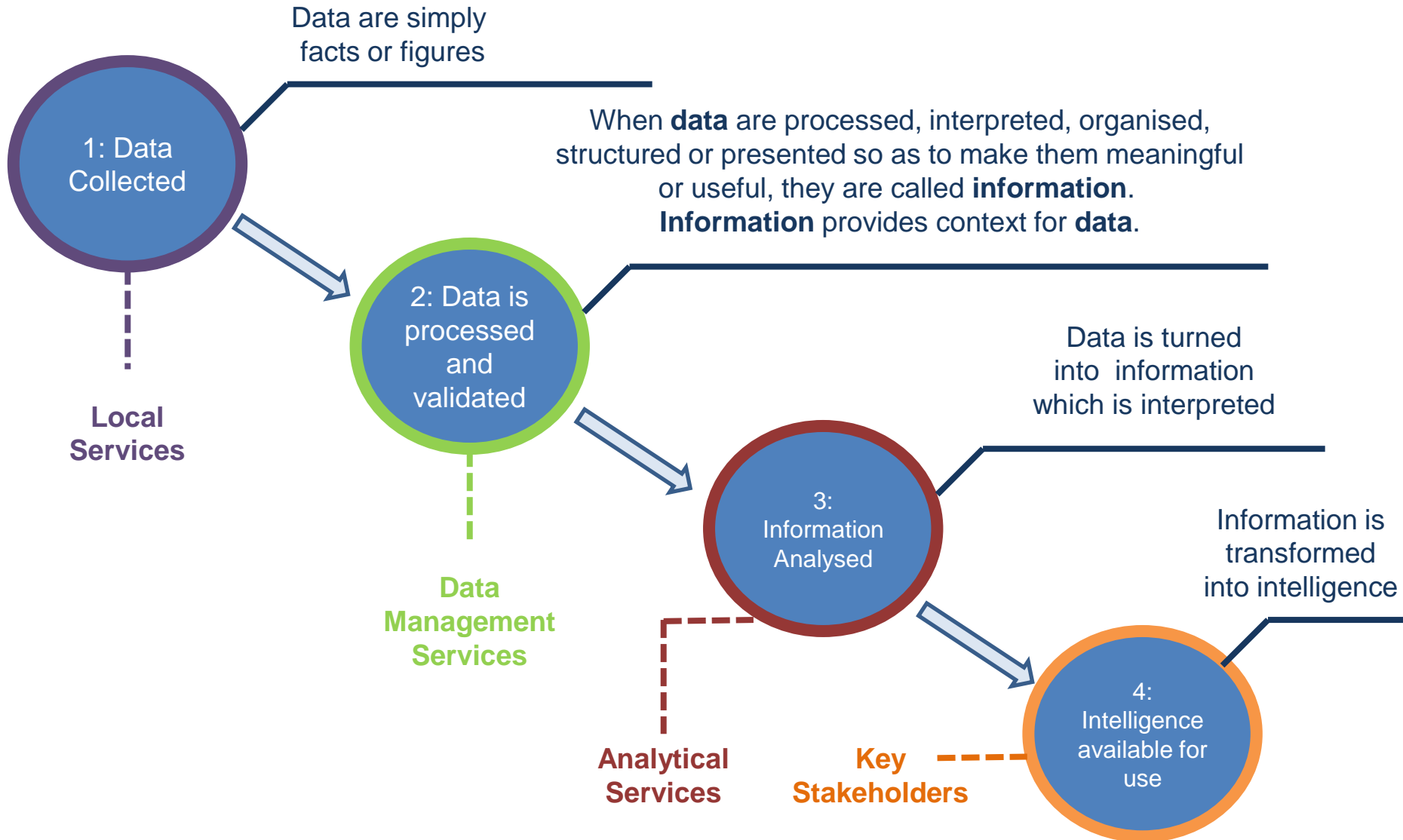
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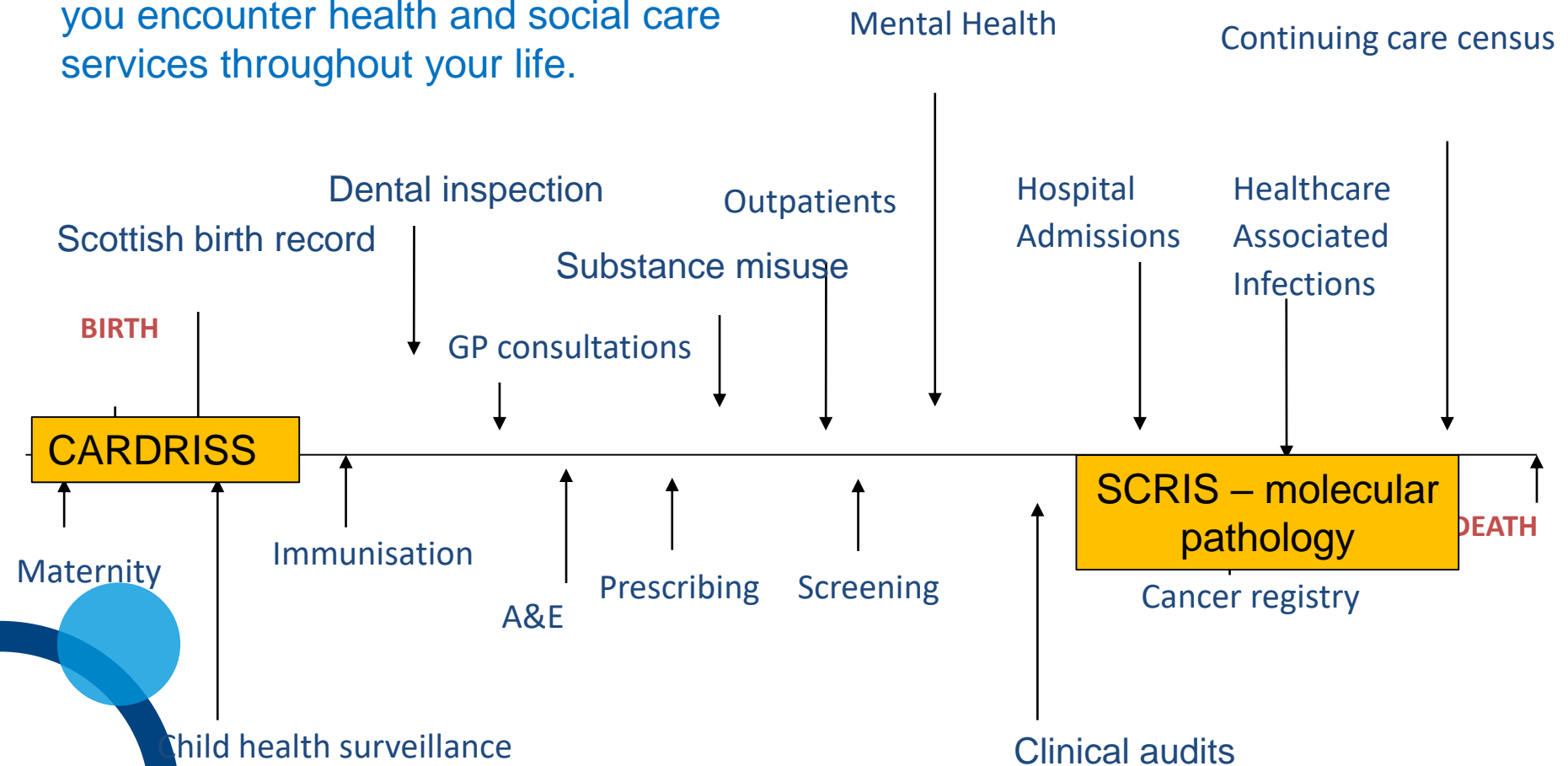
will indicate that
This section

The Data Journey



What we collect - The healthcare data journey (cradle to grave)

Information is collected on you each time you encounter health and social care services throughout your life.



(this example is based on a selection, not all the data sets)

The Data Landscape

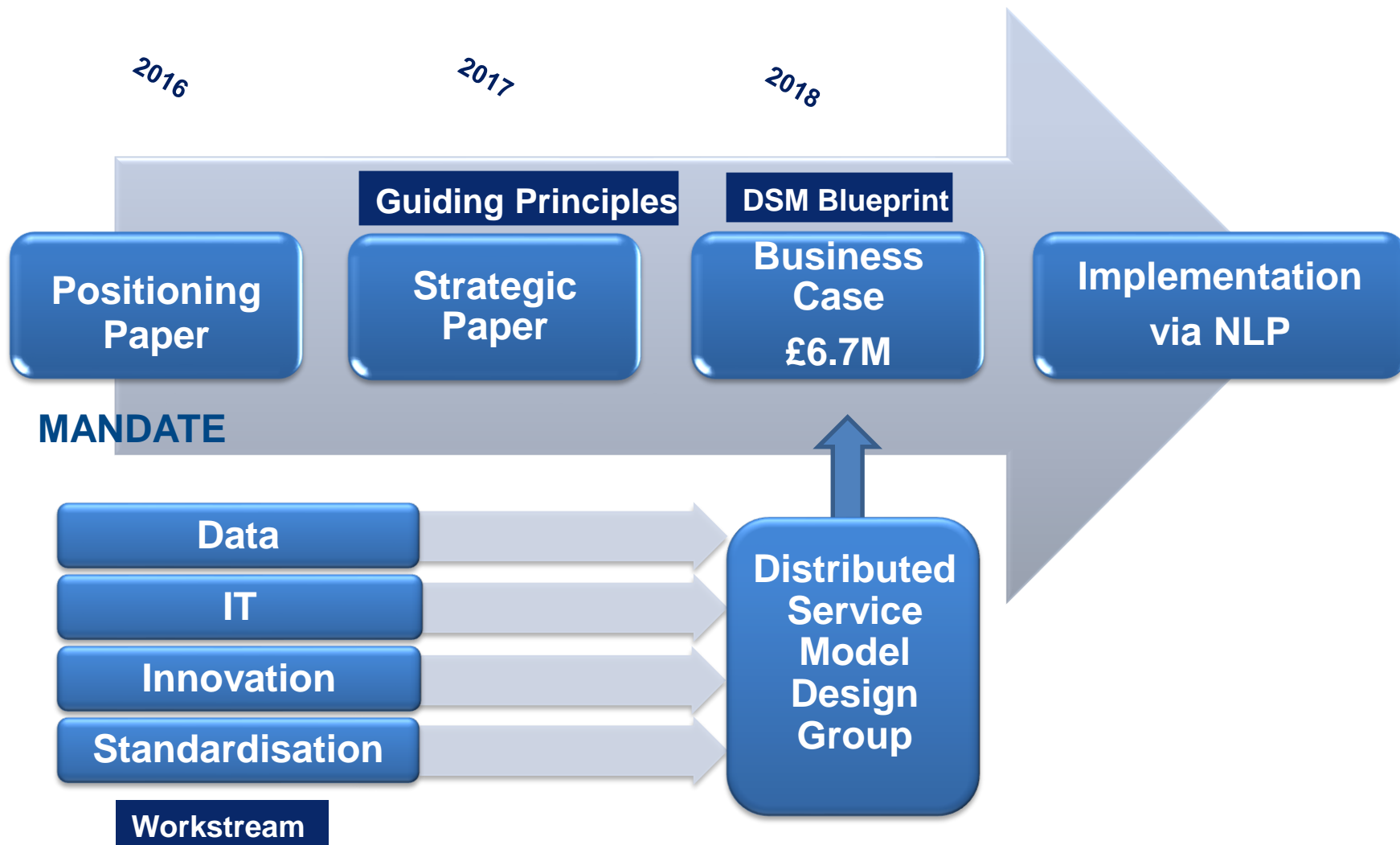
Every week in Scotland data are
collected on around:

- 1,000 Births**
- 15,000 Out of Hours attendances**
- 20,000 Screened for cancer**
- 30,000 Hospital admissions**
- 30,000 A&E attendances**
- 40,000 NHS eye exams & tests**
- 90,000 NHS dental treatments**
- 200,000 New outpatient clinic attendances**
- 500,000 GP practice consultations**
- 2,000,000 Drugs dispensed**



**National
Laboratories
Information and
Intelligence
Platform (NLIIP)**

National Laboratories Programme - Context



Key Elements of National Laboratories Programme

Laboratories DSM Blueprint and Guiding Principles

- Deliver a vision for the future service model to enable an incremental approach towards the optimal DSM.

Proposed Governance Framework

- Enables consistent & incremental delivery of the vision
- Enables and supports regionalisation agenda.

Data Sharing: National Laboratories Information & Intelligence Platform (NLIP)

- Delivery of data for the DSM design and other applications.
- Provision of analytics applied to near real time data to provide current business & clinical intelligence.

Lab to Lab Connectivity: NPEx

- Enables evolution to the new delivery model
- Delivers electronic Lab to lab connection of new and old LIMS systems to enable workload and result transfer.

High Level Specification for LIMS

- Enables convergence of Laboratory Information Management System functionality and standardisation.

Laboratories Programme Data Workshop – January 18

A National Laboratories Data Mart will be used for:

- Service- planning, optimisation and development
- Benchmarking
- Financial and clinical auditing
- Patient laboratory and treatment surveillance
- Standardised patient treatment pathways
- Application of a consistent methodology
- Quality and accreditation

Data Needed to achieve this:

- Equipment and resources
- Activity data including the number of tests provided/requested
- Test complexity
- Workforce data incl. staffing, training
- PHI, disease incidence, diagnostic outcome
- Geographical information
- Governance

Exercise Themes

Existing data sources:

- LIMS, TRAK, SCI store
- NHS departments including Payroll, HR, PECOS
- ECOSS
- DATIX, Q-pulse, MHRA
- Health Boards
- Patient records
- NPE_x

Priorities for Standardisation are:

- Activity-** including test code, units, reference ranges
- Workforce-** number of staff, profiles, vacancies
- Financial-** costing model (cost per test), consumable costs
- Reporting-** Diagnostic outcomes
- Other-** Resources, MSC, SNOMED CT

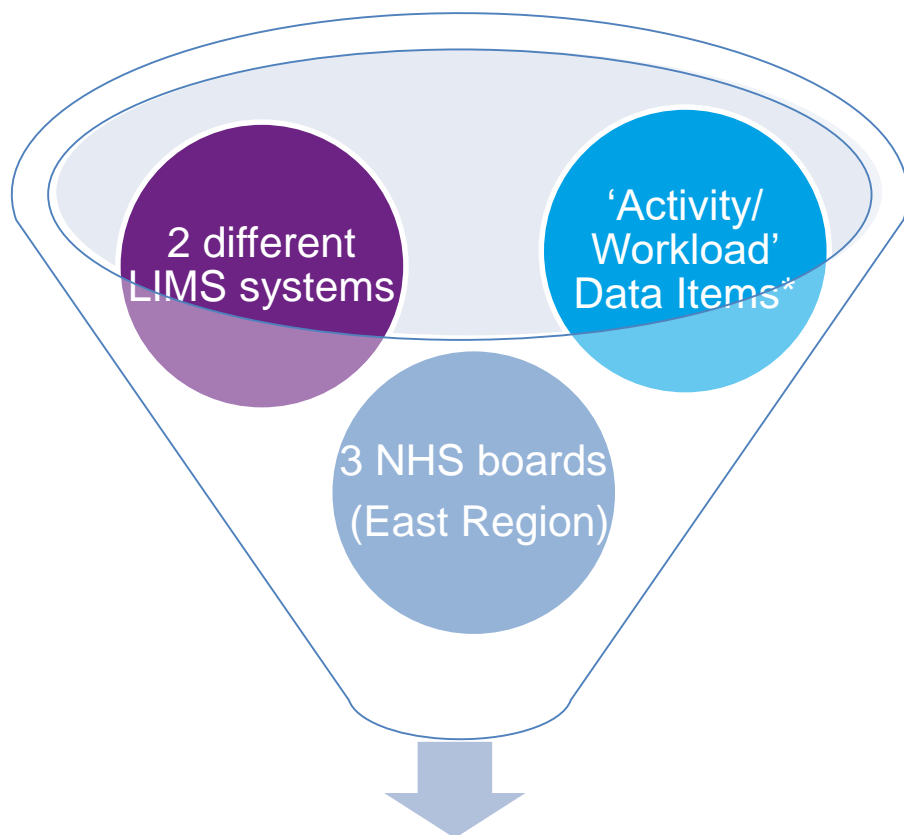
NLIIP – Key Benefits

- Reduce burden of manual extraction from LIMS by exploring **automatic extraction of a routine standard file specification from LIMS** with IT staff and LIMS suppliers
- **Patent level data conforming to standard file specification** will be submitted routinely from LIMS e.g. monthly to a secure data mart held within NSS, using a secure file transfer mechanism
- Data quality monitoring and mapping to ensure **robust comparable data**
- Analysis of data to produce **dashboards to aid service planning, flag variation and enable Scotland wide quality decision making on service redesign** - move to Distributed Service Model.
- **Access to timely granular data** – access levels to be agreed with and strictly managed in line with NSS and ISD policies and information governance legislation



NLIIP Proof of Concept

Proof of Concept - Scope



Proof of Concept Dashboard

Containing non-patient identifiable data
Dashboards based on small number of indicators

Access to <10 users in East region

*Subset of Core Data Items in Proof of Concept


Data Item	Description
Specimen number	Unique identifier for the specimen
Consultant code	Local code to identify the consultant responsible for the patient who the sample was taken from
Location code	Local code to identify the location the sample was taken
Department	Local code to identify the department where the same was taken
Hospital code	National location code for location where sample was taken
Patient Category	Local values to indicate patient category e.g. NHS, private (derived from location code)
Patient Type	Local code to identify if the patient was an inpatient or outpatient when sample was taken (derived from location code)
Specimen Type	Local code to identify the specimen type
Received Date Time	Date time the sample was received
Test code	Local code to identify the identify the test
Discipline	Local code to identify the discipline
Lab ref no.	System generated identifier for the activity
Activity Type	Indicates the activity type e.g. NHS, private, research study
Specimen study code	Indicates the clinical trial the specimen was taken for

Data for 2.5 Years: 01/04/2016 – 30/09/2018.

All tests for all labs disciplines in NHS Boards.

A record is uniquely identified by a combination of the received date+time and specimen no and test code.

Proof of Concept - Deliverables

- Data profiling of information submitted to ISD to understand data quality
 - Dashboard developed in collaboration with users from East region and feedback from demonstrations with other regions
 - Engagement visits held with NHS Boards to inform scope, timelines and priorities for future phases
 - Final Report with findings and recommendations for consideration by LOB
- 

NLIP Proof of Concept Data

NHS Board	No. Disciplines Submitted	No. Of Extracts Submitted	File Format	Largest File Size
NHS Borders	3 – Biochemistry, Microbiology, Haematology and Blood Transfusion	24 files – 8 Biochemistry 8 Microbiology 8 Haematology and Blood transfusion	STP file	423.6 Mb, 2,462,447 rows. 2016 Biochemistry data.
NHS Fife	5 – Blood Sciences, Blood Transfusion, Microbiology, Serology, Pathology.	18 files – 5 Blood Sciences 1 Blood Transfusion 2 Microbiology 5 Serology 5 Pathology	CSV file	1173.6 Mb, 5,280,371 rows. 6 months blood sciences data
NHS Lothian	3 – Blood Sciences, Microbiology, Pathology	21 files – 13 Blood Sciences, 5 Microbiology, 3 Pathology	CSV file	569.5 Mb, 3,816,160 rows. 3 Months, blood sciences data.

NLIP Proof of Concept - Findings

VARIATION IN LIMS

- 11 different LIMS
- Multiple LIMS in one Board
- Discipline Modular approach

ANALYTICAL OUTPUTS

- Data not comparable – significant mapping/ standardisation required
- Dashboards successfully produced
- Useful feedback for future

LACK OF STANDARDISATION

- Local codes; no national coding
- Data variation between disciplines
- Measurements e.g. turnaround times

CAPACITY ISSUES/ RESOURCES

- Multiple ongoing initiatives/projects
- Limited capacity in networks/ NHS Boards
- IT/ LIMS supplier expertise required to support automated extraction

NLIP Proof of Concept - Dashboards



Activity Dashboard

This dashboard presents details on the number of Specimens received and the Tests requested. It presents figures for the latest year as by default, so you can see the year to date figures and the most recent month. It is then possible to compare these figures to previous years. To aid in understanding the types of work being received you can see the Top 10 Specimens Type and Tests Code and then filter the Dashboard by a selected Specimens Type or Tests Code.



When and How long Dashboard

This dashboard presents details on the when work is received and how long it takes to arrive and process. It is possible to change the analysis on the dashboard to present the data by either Specimens received or Tests requested. It presents figures for the latest year as by default, so you can see the year to date figures. To aid in understanding the types of work being received you can see the Top 10 Specimens Type or Tests Code and then filter the Dashboard by these.



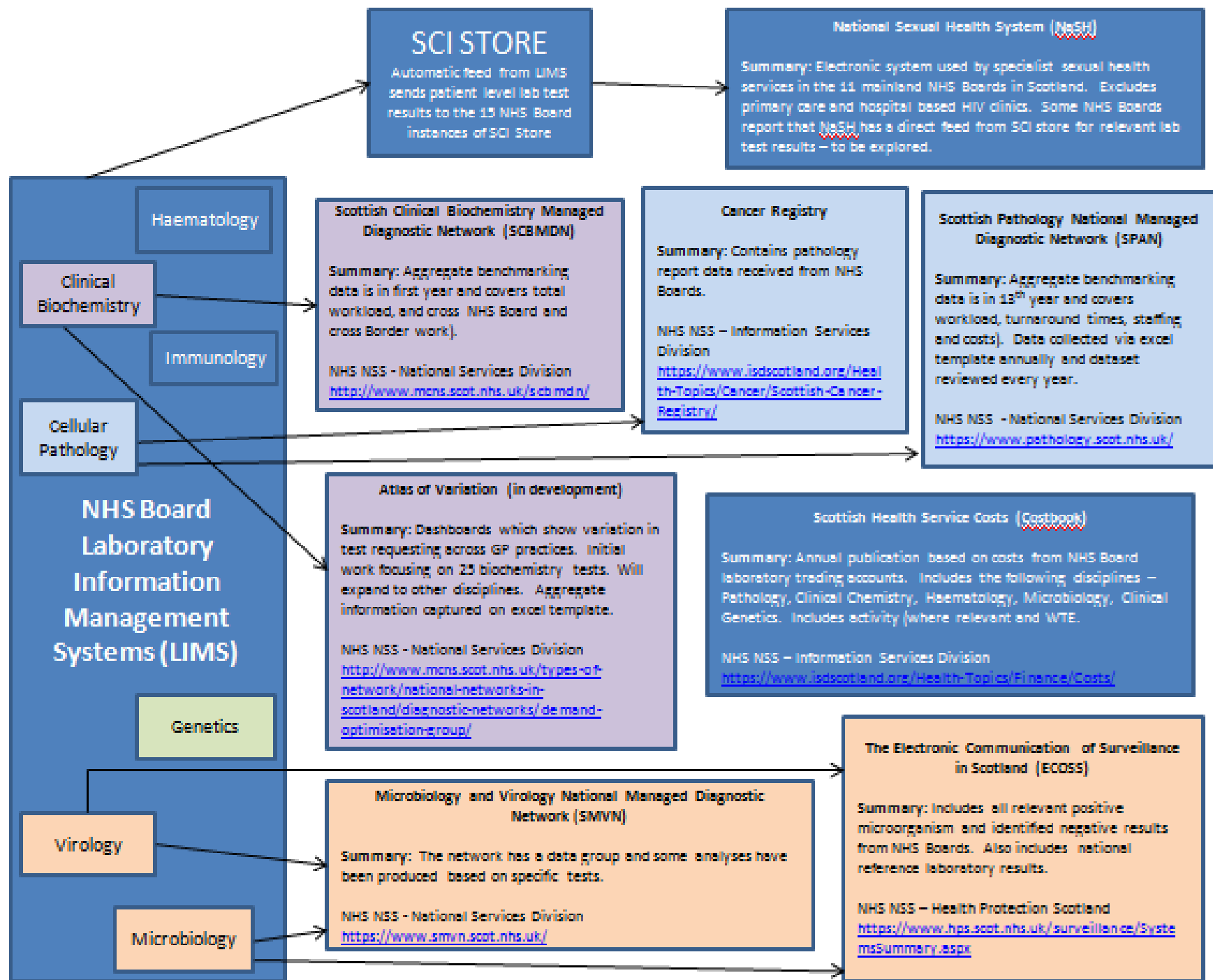
Where from Dashboard

This dashboard presents details on the where work is received from, currently uses Patient Type as an example only. It is possible to change the analysis on the dashboard to present the data by either Specimens received or Tests requested. You can see the year to date figure and compare to the same period in previous years. To aid in understanding the types of work being received you can see the Top 10 Specimens Type.

It is also possible to use this dashboard to drill-in to the lowest grain of data based on any selection made on the dashboard, the results of this selection appear on the PoC - Drill-in Example dashboard.



Laboratory machines and Middleware



NLIIP Proof of Concept - Recommendations

Data source(s)
for routine,
automated
submission
needs explored

Standardisation
is key

Extensive
stakeholder
engagement
will be required

Information
requirements
need to be
prioritised and
agreed

The **FINAL PROOF OF CONCEPT REPORT** gave an overview of findings from the phase and detailed a total of **31 RECOMMENDATIONS** to consider in the future approach to developing the final NLIIP product.

NLIIP Development – Rationale for Discipline Approach

Provides refined focus in an otherwise complexly structured service

Easier to reach consensus with one discipline

Learning from one discipline can be adapted and aligned to another where applicable

This aligns with the way laboratory services currently operate

Opportunity to deliver discipline-specific information needs as well as national, regional & board level

Less resource intensive for NHS Boards if only focusing on one discipline at a time

Some disciplines already supply data to NHS NSS, adopting a discipline specific approach to development will enable us to explore in detail whether the existing information NSS hold for that discipline is fit for purpose for use in NLIIP

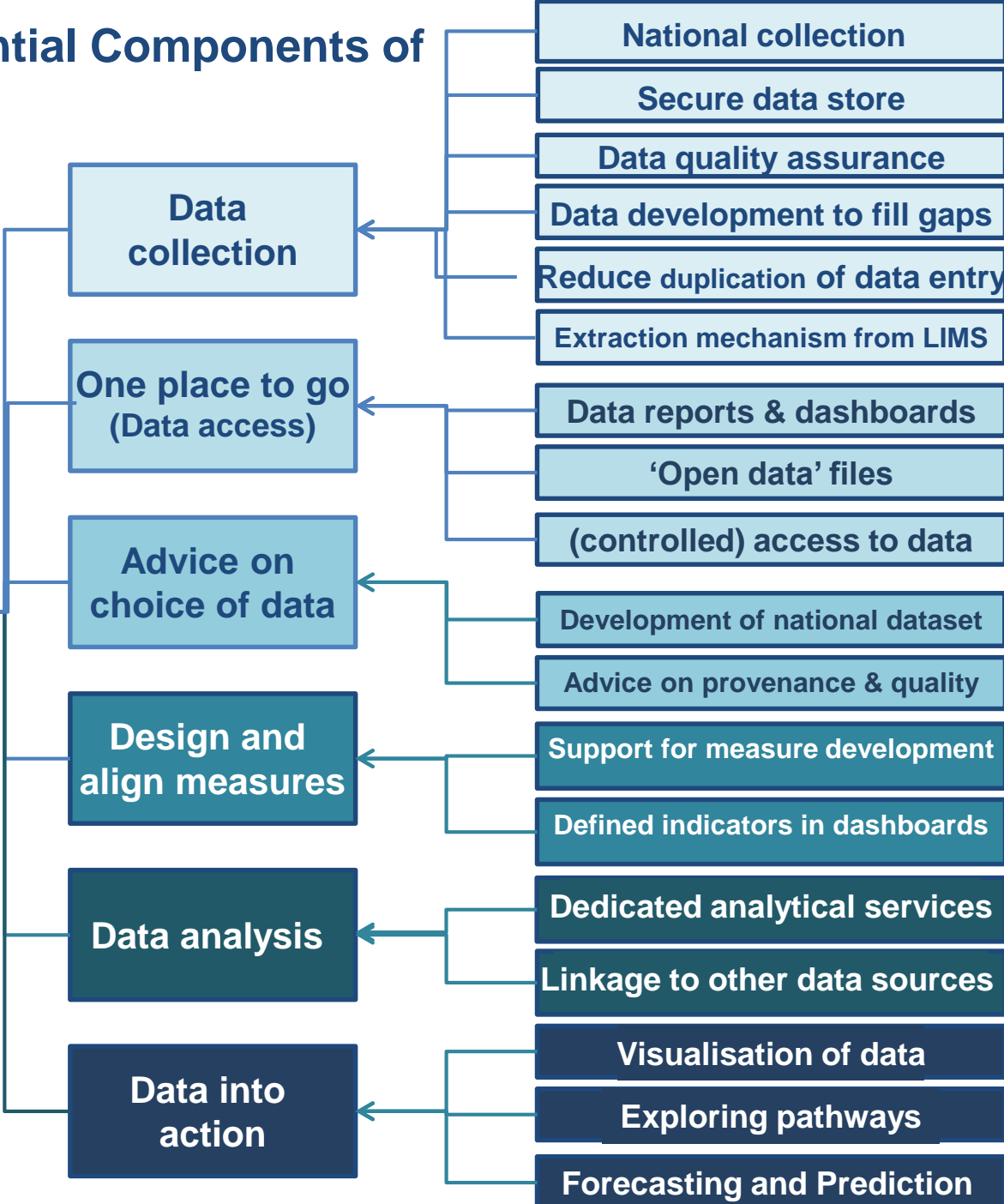
NLIIP Development – Possible Future Dashboards

- Developed to meet the needs of each discipline and showing range of views/ drill downs e.g. laboratory, NHS Board, region and all Scotland.
- **Activity Dashboard** - Showing breakdowns of specimens received and tests requested. Ability to search by specific test and to group certain tests
- **When and How Long Dashboard** – Showing work received and how long it takes to arrive and process over periods of time. Ability to drill down to see activity at specific hours of the day. Turnaround times by test. Rural/ urban split.
- **Where From** – Showings specimens/ tests sent from various sources and enabling drill down by sending location. Ability to view tests by GP practice, with ratio per population size. Could have map visualising distance travelled for each specimen.

The Vision - Potential Components of NLIIP



National Laboratories Information and Intelligence Platform



*Draft version 0.1
21 September 2018*

**ANY
QUESTIONS?**

Thank you
for your
time