

PWYLLGOR ADNODDAU CYNALIADWY SUSTAINABLE RESOURCES COMMITTEE

DYDDIAD Y CYFARFOD: DATE OF MEETING:	23 February 2022
TEITL YR ADRODDIAD: TITLE OF REPORT:	Extension of Lightfoot Solutions
CYFARWYDDWR ARWEINIOL: LEAD DIRECTOR:	Huw Thomas, Director of Finance
SWYDDOG ADRODD: REPORTING OFFICER:	Anthony Tracey, Digital Director

Pwrpas yr Adroddiad (dewiswch fel yn addas)

Purpose of the Report (select as appropriate)

Ar Gyfer Trafodaeth/For Discussion

ADRODDIAD SCAA

SBAR REPORT

Sefyllfa / Situation

Following a discussion by the Board at its meeting on 25th November 2021, the purpose of this report is to provide the Sustainable Resources Committee with a summary on the extension to contract arrangements with Lightfoot Ltd and provide greater detail on the current work programme.

The Committee is asked to note the content and future commitments outlined within the body of the report and the proposed exit strategy with the development of an in-house advanced analytical platform.

Cefndir / Background

A key Strategic Planning Objective (3E) of the Health Board is to improve the use of Business Intelligence and Modelling, with an emphasis on real time reporting to support clinicians and managers with day-to-day operational planning in addition to supporting the wider strategic objectives.

To accelerate the use of real time reporting and analytics within the Health Board, we have partnered with several leading analytics companies, such as Lightfoot Ltd, and Microsoft (for cloud analytics), to improve the understanding and use of information and data.

Several data master classes have also been undertaken, which include Executive Directors, Independent Board Members, Operational Leads and Clinicians, to promote the philosophy of a data driven organisation. As part of the agreement with Lightfoot, the Health Board has commenced a transformation programme based around the outputs from the work with Lightfoot, to identify where linked data can improve the understanding of the impact of pathway changes. Work has also commenced with the Planned Care Team on the possibility of using "Signals for Noise" (SfN) for recovery planning.

Asesiad / Assessment

The Board at its meeting on 25th November 2021 previously approved a contract with Lightfoot solutions. At that stage, it was unclear whether an all-Wales contract would be agreed and consequently the contract was time limited.

It has become evident that health boards are being asked to engage individually to improve their data analytic and predictive analytic work. Had this been done on an all-Wales basis, Hywel Dda University Health Board (HDdUHB) would have used that route to market.

This report provides an update to the Committee following the Board's support for an extension of the period of the contract with Lightfoot for 12 months with a clear end-goal to bring provision in-house based on lessons learnt from the engagement.

This period will encompass the use of Lightfoot specifically for recovery planning and waiting list backlog reduction with the extended use of the SfN platform to 31st July 2022 and support for embedding its use within the Health Board.

By 31st July 2022, the Health Board is committed to bringing the analytical capability in-house through the development of an alternative approach to the provision.

The proposed contract extension will cover the following areas:

- Further support for the delivery of the Annual Plan for 2021/2022 through dynamic planning capability, extending to a further six specialities
- Configuration of the SfN Viewers to support dynamic planning
- Deliver a Performance Reporting Framework
- Coaching and Mentoring Programme to ensure use of SfN
- Winter Pressures Interventions through the use of Venn Diagram Viewer
- SfN Licensing and Hosting Options

In more detail,

- **Dynamic Planning**

Providing specialist consulting and technology to enable the Health Board to develop the capability required to deliver data-led dynamic demand planning and clinical prioritising of the backlog reduction. The current budget for this programme supports working with four specialties and the proposal is to increase the further delivery needed to enable Lightfoot to work with an additional six specialties, giving 10 in total, thus allowing the completion of Phase 1 of the four-phase approach to full production. As part of this work, there will be onsite consulting and office-based developments to produce patient flow SfN Viewers for live monitoring and initiative / workstream outcomes tracking.

- **Design and Deliver a Performance Management Framework**

Lightfoot will provide support for the development of viewers that will assist the Health Board performance management framework, allowing interactive access to real time information.

- **Coaching and Mentoring Program / System Ownership**

This funding will be utilised to provide expert coaching and mentoring of Health Board staff to support the skills and knowledge transfer in order to utilise the platform for analysis and measurement to bridge operational and planning functions, with the aim of identifying areas for improvement and to measure the impact of resulting system change.

- **Winter Pressures**

This will provide the immediate support to identify and set up interventions to reduce winter pressures. This will include working with the patient cohort identified through the Venn diagram Viewer, which has been developed in conjunction with the Health Board.

- **SfN Licensing and Hosting Options**

Extend the current SfN licensing and hosting agreement to 31st July 2022. This will allow further use and adoption within the Health Board to move the Health Board from its current 50 developer and 200 viewer licence arrangement to an unlimited enterprise arrangement. The Enterprise Pricing provides the following benefits:

- Unlimited data sources
- Unlimited user numbers
- Use of the SfN licensing element for the Regional Partnership Board

Summary of the Costs

The table below provides the costs of the contract extension:

Programme of Delivery	Cost (£)
Support for the Delivery of the Annual Plan– Dynamic Planning capability (Adding further 6 Specialties)	£70,000
Configuration of the sfn Viewers to support Dynamic Planning	£18,000
Design & Deliver a Performance Management Framework	£18,000
Coaching and Mentoring Program	£40,000
Data winter Pressures Intervention through the use of Venn Diagram Viewer	£37,500
Sub Total Services (not including sfn hosting and licensing)	£183,500
sfn Licensing & Hosting	£364,721
Total Costs (ex VAT)	£548,221

In-house Development (Advanced Analytical Platform)

The Advanced Analytics Platform is being built using R and Shiny as a modular web tool. R is a free and powerful open-source scripting language, which is used for predictive analytics and data visualisation. It is used extensively across the NHS to solve complex problems and, as a result, there is an active, thriving NHS R community. Shiny is the Graphical User Interface (GUI) for R that provides an elegant and powerful web framework for building web applications using R.

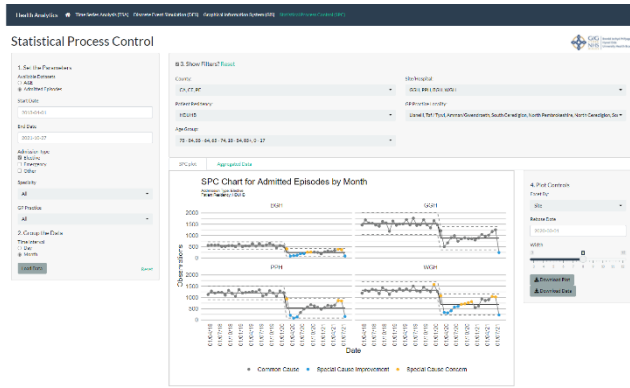
The advantages of building an Advanced Analytics Platform are that it provides the ability to dynamically alter analysis through a user interface. Different datasets can be generated, then visualised to show current and forecasted information. This level of analytics usually cannot be performed in a tool such as Power BI, as the data imported is generally static.

The platform will contain specific areas:

- Statistical Process Control (SPC)
- Time Series Analysis (TSA)
- Discrete Event Simulation (DES)
- Geographic Information System (GIS)

Each of these areas will also be able to be broken down further into such variables as specialty, site, county, admission type, available datasets, GP Practice, cluster, age bandings, etc. All data and graphs will also be able to be downloadable into Excel or PowerPoint.

Statistical Process Control (SPC)



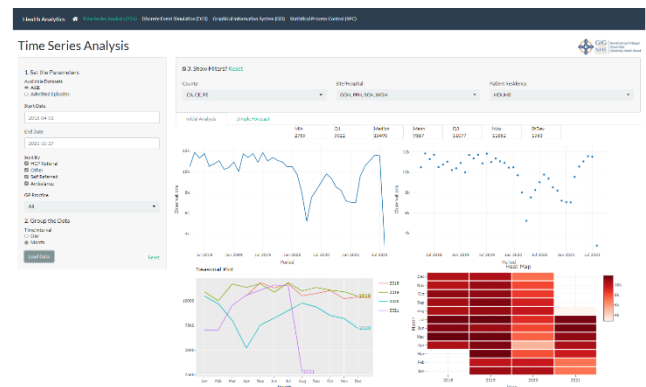
SPC is a good technique to use when implementing change as it enables the user to understand whether changes made will result in improvement; this is a key component of the Model for Improvement widely used within the NHS.

SPC is commonly used in the NHS to understand whether change results in improvement and provides an easy way to track the impact of improvement projects.

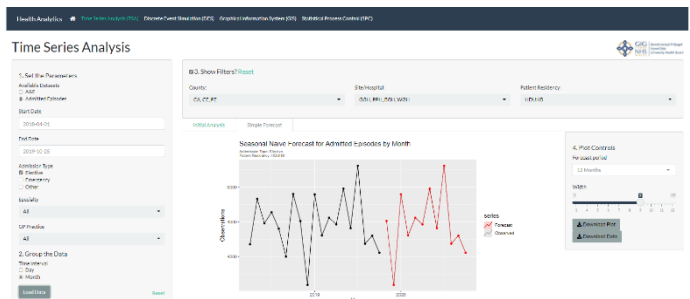
Below is a screenshot of beta output from the Advanced Analytical Platform using the previously agreed approach.

Time Series Analysis (TSA)

Time Series Analysis (TSA) uses historical data in order to identify any statistics or patterns that could be used to predict future values. Once analysis has been undertaken on a dataset, different forecasting model methodologies can be assessed using a sample of historical data against known actual values in order to determine the optimum model to use for the forecasting of that dataset.



The Health Analytics Team is currently developing TSA and forecasting. After data is loaded, statistics and guidance is provided which aids decision making regarding which forecast method would produce the most accurate estimated projections. Forecasts can then be generated with the chosen model for any time period required.

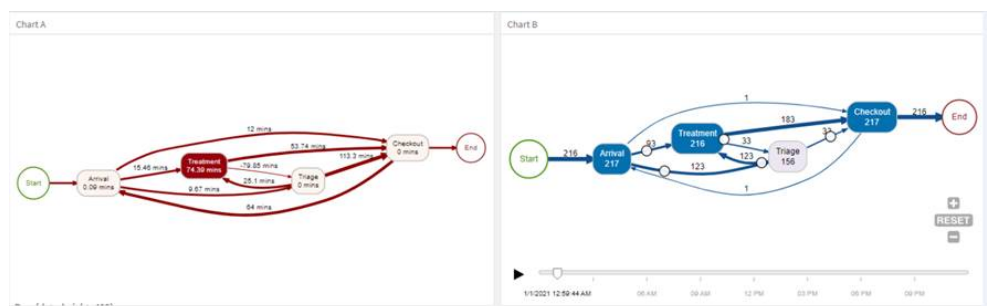


It is envisioned that this tool could be used by the Health Board in a variety of ways to provide patient activity estimates/projections which could assist with planning care and services. Examples include clinics, specialties or departments.

Discrete Event Simulation

Discrete Event Simulation (DES) is a method of simulating the behaviour and performance of a real-life process, facility or system. In essence, it attempts to model a system whose state can only change at discrete points in time. Therefore, it is useful for examining existing and/or hypothetical models, to gain insight.

Stakeholders want to understand what will happen to an existing service if anything is to change within the



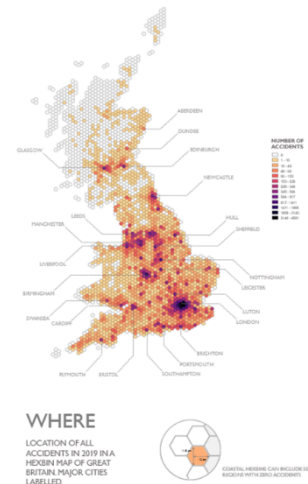
current system. To achieve this, there are hypothetical questions that need to be answered. 'What if' scenario analysis is a necessity for general management, but also transformation and service redesign. People conduct this type of analysis regularly without DES, but a functional DES model could enable visualisation, quantification and provide an evidence base for any decision making.

By comparing a baseline scenario to an alternate scenario, the effects can be assessed. This allows the effect and the magnitude of possible service changes to be determined. DES fundamentally supports and advocates evidence-based decision making and planning by enabling:

- Visualisation of patient flow
- Bottleneck identification
- Generate insight into systems
- Test hypothesised changes without consequence
- Stress test existing systems using projected demand
- Helping to answer hypothetical questions about change

Geographical Information System

Geographical Information Systems (GIS) are computer-based tools used to store, visualise, analyse, and interpret geographic data. Geographic data (also called spatial, or geospatial data) identifies the geographic location of features. This data includes anything that can be associated with a location on the globe, or more simply anything that can be mapped. For example, roads, country boundaries, and address are all types of spatial data. The use of GIS can help answer questions about how location impacts disease and disability. If this is coupled with Drive Time Analysis (DTA) questions regarding how a diverse geographic area impact service redesign can start to be understood.



Conclusion

Whilst Lightfoot has accelerated the use of information and data within the Health Board, this has incurred a significant investment. Significant progress has been made with the Advanced Analytical Platform in readiness for July 2022, and the ceasing of the contract with Lightfoot Solutions Ltd.

Argymhelliad / Recommendation

The Committee is asked to:

- **NOTE** the continuation of our relationship with Lightfoot Ltd.
- **NOTE** the work to scope the development of an Advanced Analytics Platform

Amcanion: (rhaid cwblhau)

Objectives: (must be completed)

Cyfeirnod Cofrestr Risg Datix a Sgôr Cyfredol:
Datix Risk Register Reference and Score:

Not Applicable

Safon(au) Gofal ac Iechyd: Health and Care Standard(s): Hyperlink to NHS Wales Health & Care Standards	All Health & Care Standards Apply
Amcanion Strategol y BIP: UHB Strategic Objectives: Hyperlink to HDdUHB Strategic Objectives	All Strategic Objectives are applicable
Amcanion Llesiant BIP: UHB Well-being Objectives: Hyperlink to HDdUHB Well-being Objectives Annual Report 2018-2019	9. All HDdUHB Well-being Objectives apply

Gwybodaeth Ychwanegol: Further Information:	
Ar sail tystiolaeth: Evidence Base:	Not Applicable
Rhestr Termiau: Glossary of Terms:	Contained within the body of the report
Partïon / Pwyllgorau â ymgynhorwyd ymlaen llaw y Pwyllgor Adnoddau Cynaliadwy: Parties / Committees consulted prior to Sustainable Resources Committee:	Not Applicable

Effaith: (rhaid cwblhau) Impact: (must be completed)	
Ariannol / Gwerth am Arian: Financial / Service:	The financial impact is continued within the main body of the report.
Ansawdd / Gofal Claf: Quality / Patient Care:	The availability of real time information is essential to provide accurate real time information to clinical teams will improve decision making.
Gweithlu: Workforce:	Not Applicable
Risg: Risk:	The lack of information is a risk to the organisation in terms of clinical decisions and service planning.
Cyfreithiol: Legal:	Not Applicable
Enw Da: Reputational:	Making decision based on inaccurate information and data could affect the reputation of the Health Board
Gyfrinachedd: Privacy:	Not Applicable
Cydraddoldeb: Equality:	Not Applicable