Shropshire and Staffordshire Strategic Health Authority

Development of a macro modelling tool

Submitted by the Whole Systems Partnership

1   Introduction

This bid builds on the expression of interest submitted in early February for the development of a macro modelling tool for Shropshire and Staffordshire Strategic Health Authority (relevant parts attached).   The previous submission outlined the services that the Whole Systems Partnership (WSP) provides, evidence of suitable experience for being considered in this next stage of the selection process and details of the people and their skills that would be brought together in delivering on the project.

Having considered the SHA requirements set out in the documentation supplied, and reflected on the discussion held on the 23rd February we believe that WSP has a unique set of skills to meet these requirements. This submission outlines the proposed approach and the suggested inputs from WSP consultants. It builds on extensive experience in the development of strategic modelling tools using a system dynamics approach and 'ithink' software as well as a wealth of strategic and partnership building skills.

The approach will facilitate the engagement of a core team at the Strategic Health Authority in building their own capacity and capability in whole systems approaches and system dynamics modelling in particular. The primary objective will therefore be to:

Translate existing knowledge and the outcomes from the visioning process into a flexible evidence based tool that links and quantifies the whole system in such a way as to inform medium to long term development plans.

The outcomes at the end of the engagement would include:

- A system dynamics model, built in 'ithink', that reflects the current understanding and assumptions of the Strategic Health Authority team in relation to the capacity requirements of local health economies. This will include the identification of the physical capacity in each sector of the local health system, the financial implications of the model in terms of revenue and strategic capital and implications of changing patterns of care on staff resources and skills mix, which will inform workforce development and organisational development initiatives;

- Modelling capacity and capability within the Strategic Health Authority to revisit the model at appropriate points over time to review assumptions and update projections;

- Enhanced knowledge and understanding amongst key SHA staff and others of the factors influencing future demand and capacity requirements across local health economies;

- A report that sets out the findings from the exercise and recommends ways in which the model and its outputs should be used in the performance management of local health economies and as a guide to strategic investment decisions. The report would also summarise the process, modelling assumptions and data sources for the model;

- For consideration as options we have proposed a performance 'dashboard' that can be used to monitor progress against the key parameters of the model with the potential for this to be sensitive to individual organisations within the local health economies and a 'NetSim' version of the model to facilitate access and dissemination of the model itself.

2   Partnership working

The Whole System Partnership team will be led by Peter Lacey who will co-ordinate input to maximise benefit to the client. It is expected that one individual at the Strategic Health Authority will provide the key link for day to day management of the project and other contractual issues.

We propose that a Strategic Health Authority project team, consisting of about 6 people, is identified. They will provide continuity throughout the project and perform the function of a steering group. They should participate in each of the key events and provide ongoing quality assurance for the work.

Other groups and individuals with whom it will be necessary to work, and for whom the project team would provide access and co-ordination, would be:

- A small group of 3 or 4 individuals (who may overlap with the project team) for training and ongoing coaching in the development of the model using ithink software;
- A number of 'experts', either within the Strategic Health Authority or partner organisations identified to reflect the workshop programme outlined below, for example, specialists in Public Health, Mental Health services, Social Care, Primary Care, medicine and surgery;
- Lead people from local Programme Boards and key support functions to ensure meaningful translation of model outputs, for example ICT, emergency care, human resources etc;
- Information and analytical capacity locally to source data necessary to build the macro model;
- Access to a support function with access to internal distribution networks and capacity to support event co-ordination.

3   Proposed approach

3.1   Engagement and links with the visioning process

It will be important that a bridge is built between the visioning work being undertaken and the development of the macro model. This would provide an important foundation stone for the identification of key model parameters.

Benefits from this stage would include:

- A consistent approach between the visioning and macro-modelling work;
- A seamless transition and opportunity for iteration between the visioning and macro-modelling work.

3.2   Developing capacity and capability in system dynamics and modelling with 'ithink'

WSP will provide dedicated training for the small group of modellers. Initially this will take the form of a two day foundation course in systems modelling using ithink (mid April) followed up through the course of the project with support and coaching.

At first it is expected that Whole System Partnership consultants will develop elements of the emerging model in 'ithink' and share this with local modellers with a view to

refining and populating the model(s) with appropriate data. It should be possible for local modellers to take some of the initiative in developing the model using WSP consultants in an 'expert advice' role (May through August).

Toward the end of the project (September and October) WSP consultants will ensure that the macro model is fit for purpose by rigorously testing it's operation and identifying key outputs to inform the final report. This stage would include building an appropriate interface for the model to enable ease of use by a wide range of interested parties and the provision of 'runtime'[1] or web enabled versions of the model.

Benefits from this stage would include:

- Local capacity and capability in the development and application of system dynamics and modelling using ithink software;

- Local ownership and understanding of the model as it is built enabling more effective communication of the model parameters and behaviours.

3.3   A facilitated process of identifying model parameters and key issues

The central process for model development will be to capture the project team's understanding of the whole system (the 'macro' system), using, where appropriate, experts to advise and feed into the process. It is proposed that the following schedule of workshops is undertaken:

1. A full day workshop with the project team (mid May) to identify:

    a. The broad parameters of the model including timescales (retrospective and prospective), level of detail, boundaries for the modelling and key investigations for further development;

    b. The system 'as is' with a view to developing an initial 'high level' map;

    c. Exploring some of the underlying demographic and public health influences on the system.

2. A series of up to 6 half day workshops (during June) involving invited participants with appropriate expert knowledge, exploring key client groups, for example:

    a. Chronic disease management;

    b. Emergency and urgent care;

    c. Ambulatory and diagnostic services;

    d. Mental health services;

    e. Acute inpatient care.

3. A second full day workshop (early July) for the project team to draw the different elements together into an initial macro-modelling tool for development during August.

4. A third full day workshop involving representatives from each of the specialist workshops to present and receive feedback from the emerging macro model (September).

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[1] Runtime versions of the software are available at minimal cost and enable people to run models but not to alter, save or print outputs.

5. A final half day workshop for the project team to receive the model and outputs (October).

Throughout the process it will be necessary to convene project team meetings to ensure effective review at key stages of the process. In addition, particularly toward the later part of the project it will be necessary to engage with key people in support functions to ensure model outputs are shaped to inform specific resource considerations, for example capital and human resources. This will be achieved through the engagement of WSP consultants directly with these staff.

Within this stage WSP modellers will develop stand alone models from specific workshops, for example mental health services. This would include preparation and feedback to these groups.

Benefits from this stage would include:
- Clear statements and understanding of high level capacity considerations and trends within key areas;
- Significantly enhanced understanding amongst the local team of the inter-play between different parts of the local systems;
- The identification of particular 'hot-spots' in terms of issues or locations;
- Engagement with key experts with their knowledge reflected in the macro model;
- A model that reflects capacity requirements across the SHA, and in each key service area and for key resources;
- A model that allows for the exploration of options and different scenarios of relevance to key strategic investment decisions.

3.4   Development of a web enabled application for the model

WSP will translate the macro model into a web enabled 'NetSim' application that would enable queries and scenarios to be tested after the project is completed. The solution enables an ithink model to be accessed on an intranet through a standard web browser. Such a 'NetSim' application could be used to demonstrate the model remotely and minimise the need for extensive training and awareness in the actual modelling process.

Benefits from this approach would include:
- Access to the model from any web enabled computer that is connected to the nhs net with appropriate access permissions eliminating the need to distribute model files and install software on local machines;
- Connectivity, such that model data can be drawn from, and model output exported to, any existing management information systems;
- Freedom to create a bespoke user interface, that matches the look and feel of the corporate intranet and is integrated with the tools the end users are currently using;
- Online help and user guides can be built into the web application, minimising the need for user training.

3.5   Development of dashboard for performance management purposes

We also propose that a performance dashboard or capacity monitor should be developed. This would be undertaken by:

1. Identifying key levers and indicators from within the macro model that can be shown to reflect balanced outcomes for the proposed strategic vision underpinning the macro model.

2. Setting targets consistent with the model that can be profiled for each local health economy or local organisation.

3. Identifying local data sources that can feed a dashboard or monitor approach.

4. Building an interface using appropriate technology to provide widespread access to the tool.

WSP are currently working with the NHS Information Authority who are piloting the development of a Performance Dashboard in association with the Modernisation Agency through its Implementation Support Service. The possibility of using this technology, or other appropriate applications, will be considered with the full involvement of the project team.

Benefits from this stage would include:

- A clear means of monitoring system behaviour informed by the macro model and consistent with high level indicators;
- Engagement and understanding within the service of the key deliverables in the light of the macro model and SHA strategic vision;
- A bridge to the service in sharing the model outcomes and expectations.

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Expression of interest details

SERVICES PROVIDED

The Service Provider shall list the services provided by the company and group:

The Whole Systems Partnership provides specialist consultancy to health and social care partners in strategy development, particularly where this requires close partnership working and an understanding of strategic impact on whole systems.

The Partnership supports clients through its programme areas, which regularly overlap to provide an integrated solution:

1. Partnership development and support;
2. Whole systems strategy and service reviews;
3. Whole system dynamic modeling;
4. Project and programme management.

Capacity monitoring and systems modeling both form essential tools within the portfolio of services. Spreadsheet solutions are used, however where more dynamic systems need to be captured, and the learning process through engagement of local stakeholders is paramount, we have extensive experience in the use of 'ithink' system dynamic modeling software. Many of these examples are provided in section I of this expression of interest.

Further information and examples of the work undertaken by the Partnership can be accessed on its web site at www.thewholesystem.co.uk

The Partnership is also currently supporting the NHS Information Authority in the development of National Analytical Services (being formally launched at a national conference on the 18th February 2004). We see potential benefit to both the IA and the Strategic Health Authority in shaping a solution that can be applied across health economies.

There is therefore the potential to bring together national analytical capacity, strategic consultancy skills and dynamic modelling capability. In addition the NHSIA has expertise and capacity, through its Implementation Support Team, to support the process of rolling out products or services such as the modelling tool that may be beneficial.

EXPERTISE AVAILABLE

Evidence of suitability (experience and expertise) - The Service Provider shall demonstrate relevant expertise and experience to deliver this product.

Following the release of 'modelshire' in 2001 the lead Partner (Peter Lacey) developed a translation of the spreadsheet model into a more accessible and dynamic product using 'ithink' software for Leeds Health Authority. This was used to inform the local planning processes in response to capacity projections.

The Whole Systems Partnership has worked with Strategic Health Authorities in the North of England in developing consistency across PCTs in respect of Continuing NHS Care. This has included the development of monitoring processes and the assessment of financial and capacity risk assessments for PCTs and the Strategic Health Authorities.

The Partnership is currently supporting Audit Scotland in undertaking a National Review of Delayed Transfers of Care. It is providing facilitation, coaching and technical support in modelling local systems and developing an understanding of local impact of initiatives to alleviate the problems that delays cause to the whole system. The Partnership has also provided support to the Centre for Health Leadership in NHS Wales in promoting and utilising systems modelling in a range of local applications.

Whole system reviews and modelling have also played a significant role in a wide range of projects, particularly in Cumbria, Langbaurgh, Bolton and St Helens & Knowsley. The Partnership has undertaken a wide range of other projects relevant to the brief that have entailed working with local health and social services teams in modelling local systems with a view to improved understanding of capacity requirements and increased integrated working. For example in:
  – Leeds – long term care needs of older people, including those with mental health needs;
  – Leeds – long term care needs of children looked after;
  – Leeds – impact of care home closures in the context of winter planning;
  – North Kirklees – capacity requirements for intermediate care services;
  – Cumbria – capacity model of N Cumbria health and social care system;
  – Torfaen – systems model for the introduction of a new reablement team into the local system of care;
  – Blaenau Gwent – delayed transfers of care;
  – Monmouthshire – development of a local community hospital.

Further information about WSP's work in the area of whole system dynamic modeling, together with working examples of models, is available at **www.thewholesystem.co.uk/dynamics.htm**. A case study was featured in the September 2003 issue of *'The Connector'* at **http://www.hps-inc.com/hps/zine/SeptOct03/lacey.html**

The NHS Information Authority (National Analytical Services) seeks to provide information services and knowledge for decision making. It has recently undergone a strategic re-alignment to respond to the need for a National Patient Record Analysis Service, which will evolve as the National Programme for IT is rolled out. However, the service already offers access to an unprecedented range of national data sources for comparative (and potentially modelling purposes) with a major new offering (building on Organisational Health Check and replacing OSCAR – both currently in use across the NHS) with a significantly enhanced analytical tool called 'Performance Investigator', scheduled for May 2004. Dependent on the nature of the intervention and the extent to which this requires expertise in developing analytical tools, or in implementation support, there is an understanding in place that will enable this expertise to be shared. (www.nhsia.nhs.uk)

<u>Peter Lacey</u> (WSP Partner and Project lead)

Peter has a General Management and health background with commercial and voluntary sector experience before joining the Health Service at a Regional Health Authority in 1990. Peter has extensive project management experience and provides training in project management, business planning and systems modelling to a wide range of clients.

He has worked extensively on capacity mapping and systems modelling using a facilitated approach coupled with simulation software to engage with partners in understanding the behaviour of complex systems. Peter also works closely with the NHS Information Authority in developing Information Strategies to support NSFs and was responsible for developing the Older People's Information Strategy. Peter completed an MBA at Durham University in 1998.

<u>Jackie Glew</u> (analytical support and research)

Jackie has supported WSP in an analytical and research capacity since the formation of WSP. Her background is in health promotion and primary care development, but prior to her current responsibilities she managed the Corporate Performance team for a large Health Authority.

Jackie's skills rest in developing web based technologies as well as being competent in systems modelling and experienced in the presentation of monitoring material to inform strategic decision makers.

<u>David Corben</u> (WSP associate and systems modeller)

David has experience in consultancy using system dynamics and modelling techniques over a 10 year period. He has worked with a number of 'blue-chip' clients including BP, Glaxo, AstraZeneca and the Royal Bank of Scotland. He was awarded his PhD in 1995 for work on modelling for management learning.

In recent years David has worked with the leading UK distributor of ithink software in the delivery of consultancy projects and in training and development for clients using the approach. Other relevant work relates to collaboration in the areas of performance management and balanced scorecard development alongside several supply chain and production projects.

<u>Richard Borrie</u> (WSP associate and IT specialist)

Richard currently works part time (2 days a week) with the 5 Leeds PCTs Health Informatics Service (NHS) as a Project Manager providing a wide range of IM&T resources to primary and community care in Leeds. His work supports the procurement and implementation of a community information system, which will support the clinical and administrative requirements of approximately 2,000 staff across in community services in Leeds. He has particular responsibility for business analysis of current processes and implementation planning as well as eGIF compliance.

Previously, Richard's role has been to co-ordinate the annual pan-Leeds FLIS report (Information for Health Strategy) which was consistently ranked as one of the most comprehensive in the region. In addition Richard provides system consultancy through Amarsys Ltd – eCommerce solution providers. Clients over the past 3 years have included major retail and distribution companies including TK Maxx (fashion retailer), Technicare Services (textile quality testing), Keepers Nursery (largest retailer of trees in the UK), The Society of Dyers and Colourists (colour resources for the dying industry), Yarto (retailer of porcelain and collectibles), LWPrint Finishers (distribution of carpet and curtain binders to retail outlets), MeetMarkets (online dating community). His specialist area is in XML and database integration.

Other potential team members – through it's relationship with the Information Authority WSP is in a position to negotiate input from a range of skill sets and experience that may be relevant to the requirements of the Strategic Health Authority. This can be discussed during subsequent stages of the process once these requirements are more clearly understood.