

Systems Thinking – an organisational approach

**Developing organisational competence in
whole systems thinking and system dynamic
modelling (using ithink© software)**

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“Systems thinking is a disciplined way of understanding the dynamic relationship between things so that you can make better choices and avoid unintended consequences”

1 Thinking whole systems – what does it mean?

Systems Thinking provides a set of tools that support an issue focused approach to complex organisational or inter-organisational problem solving, change and redesign¹. The approach includes and combines:

- **Dynamic thinking:** positioning your issue as part of a pattern of behaviour that has developed over time;
- **'System-as-cause' thinking:** constructing a model to explain how the problem behaviour arises;
- **'Forest' thinking:** seeing the 'big picture' and taking a more 'on average' view of that system;
- **'Operational' thinking:** analysing how things actually work, the cause and effect relationships, and how performance is actually being generated;
- **'Closed-loop' thinking:** moving away from laundry lists of exacerbating factors and describing the 'feedback loops' that interact to create the performance of the system;
- **'Quantitative' thinking:** quantifying not just the hard data but also the soft variables that are operating in the system;
- **'Scientific' thinking:** using models to test hypotheses and discard falsehoods, not just to ascertain 'the truth'.

Systems Thinking is therefore a way of positioning yourself relative to an organisational or systems issue. People who use systems thinking keep one eye on the big picture and one eye on the detail. They recognise how structures in one part of the system can impact on other parts, and they understand the longer term patterns of behaviour that lead to events and crises.

Systems Thinking uses tools such as causal loop diagrams and graphs over time to analyse and describe problems and ways of making improvements. It is supported by **System Dynamics modelling** that enables the development of a computer simulation model that is able to test alternative policies and future scenarios.

System Dynamics modelling provides an environment in which feedback and delays that underpin system behaviour are brought into play with a focus on a particular issue. It combines 'hard' quantitative data derived from analysis of the system under investigation with other more qualitative information. It aggregates this into a high level strategic model designed specifically to explore policy options and future scenarios that relate to the issue under investigation.

Systems thinking and the use of system dynamic modelling is an essential tool for strategic planners and commissioners working in complex systems. It enables strong analytical competences within an organisation to be harnessed in a way that 'makes sense' to policy makers. It engages these policy makers alongside other stakeholders in a partnership that defines, explores and makes decisions based on their insights. Such decisions are underpinned by good quantitative analysis, but rely equally on stakeholder engagement and an 'intelligent' use of this analysis.

¹ Based on a definition developed by Barry Richmond, Isee Systems, 1998.

2 Developing organisational competence

Primary Care Trusts and Local Authority's are currently being challenged to develop 'intelligent' or 'world class' commissioning. Competency 5 of the PCT World Class Commissioning expects organisations to ***“manage knowledge and undertake robust and regular needs assessments that establish a full understanding of current and future health needs and requirements”***. To excel at this an organisation needs to be able to:

- ***“Analyse progress, identify gaps and the key drivers of variance from expectations, as well as develop appropriate solutions”***; and
- ***“Use predictive modelling and analytical tools to discuss and describe trends in needs, create future projects and identify variants from expectations”***.

Systems thinking and dynamic modelling will help organisations to achieve this level of performance. The Whole Systems Partnership has been undertaking strategic 'systems thinking' projects with clients for 10 years and has trained a significant number of people in systems thinking and the use of system dynamics modelling software. It has often found, however, that there is a mis-match between the skills of individuals using the modelling software and the expectations of their host organisation.

For example, issues for modelling might be suggested without sufficient engagement with key stakeholders and with the expectation of an 'answer' rather than of the learning that informs strategic decisions. Any mis-match between the confidence and competence of individual modellers and the expectations of their host organisation can lead to a rapid deterioration in these skills. This can in turn mean that the host organisation does not benefit from the support that system dynamic modelling can give to those seeking to develop greater use of systems thinking techniques.

The importance of developing ***a co-ordinated approach to the growth of organisational competence*** in systems thinking has therefore led to the design of an alternative approach to support organisations. In the past WSP has offered individuals the opportunity to be trained in the use of systems modelling and has also undertaken strategic systems thinking projects with clients. The approach now available has the following distinctives:

- Ensuring key people in an organisation are familiar with the systems thinking 'toolkit' through a short executive level workshop(s) that demonstrates the approaches and engages them in identifying key issues and challenges for the organisation;
- Training for members of your team that complements the Executive awareness approach and focuses on developing simple, accessible models that are designed to inform strategic decision making;
- Access to a managed learning network including a password protected online learning environment to upload and share models; receive regular e-mail updates; take part in facilitated online discussions; attend network events; and share good practice;
- Support in delivering local systems thinking projects through expert facilitation, guidance for an internal project group and input to the underpinning modelling.

It should be noted that this approach can be effectively developed within a single organisation or across organisational boundaries where there is a 'formal' and accountable group such as a Partnership or Joint Commissioning Group.

3 An organisational approach

3.1 Executive and project support

To maximise benefit from adopting and incorporating a systems modelling approach within your organisation it has been shown to be most effective with Executive and Senior Management buy-in. Knowing the type of questions that systems modelling is best suited to address is crucial to maximising this benefit.

It is therefore recommended that whenever an organisation seeks to use systems modelling that an Executive briefing session be organised. Standard WSP consultancy rates will apply for this, which can be incorporated into a proposed project or in advance of training being provided for key staff within the organisation.

To ensure a robust process of developing organisational competence in this area it is recommended that:

- The Executive Team are fully involved in the initial briefing;
- That projects identified as being suitable for this approach are managed and delivered using a locally acceptable form of project management with regular feed-back to the Executive Team;
- That a member of the Executive Team becomes responsible for liaison and 'management' of these projects in a way that reflects local arrangements (this may require the adoption of a 'matrix' management approach);
- That a minimum of 3 to 5 people within the organisation or local system are trained in the use of the software and that this software is made available to each of these people;
- That individuals with training in system dynamics modelling have protected time for their own development and for involvement in the managed learning network.

3.2 New Partnership software licences & network membership

WSP have, in negotiation with isee systems, introduced two new opportunities for organisations seeking to develop a systems modelling capability:

1. The pricing structure for Corporate Partnership arrangements will make the purchase of two licences by one organisation the same as if bought individually, but then entitles that organisation to purchase further licences at less than half the standard price.
2. When allied to the model sharing capabilities and the development of the WSP online managed network for systems modelling this creates a powerful way for an organisation to leverage up their systems modelling

| | | Example benefits: | | | | | |
|--|--------|-------------------------|---|---|--|--|---|
| | | Accessing online models | Access to tutorials and other information | Involvement in network discussions and support from the network manager | Receipt of members newsletter on a regular basis | Ability to set up temporary model sharing with non members | Technical support and software upgrades from Isee |
| Corporate WSP Partnership arrangements²: | | | | | | | |
| First Partnership Licence | £2,195 | ☺ | ☺ | ☺ | ☺ | ☺ | ☺ |
| Subsequent Partnership Licences | £695 | ☺ | ☺ | ☺ | ☺ | ☺ | ☺ |
| Individual network membership³: | | | | | | | |
| Individual membership: | £95 | ☺ | ☺ | ☺ | ☺ | | |
| Temporary/Guest Network Member: No charge | | ☺ | ☺ | | | | |

3.3 Transfer from existing licence arrangements

For existing licence holders⁴ WSP will upgrade these to a Corporate WSP Partnership licence for a one off charge of £695. The Netsim licence and Network membership will be additional to this and will apply to each licence held by the organisation. This will entitle licence holders to full membership of the network outlined above and will commence a new full year of technical support and software updates.

3.4 Standard software licences & training opportunities

A full price list of standard licence arrangements, upgrades and related products, as well as information about our training courses can be found on the WSP web site at www.thewholesystem.co.uk. An individual licence for itthink currently retails at £1,250.

Our training courses offer bundled software prices when purchased at the same time as the course. A place on the two day course costs £695 per delegate (public sector, charity and voluntary sector).

4 The Whole Systems Partnership

4.1 WSP distinctives

The Whole Systems Partnership strives at all times to be:

1. Genuinely '**leading edge**' in our understanding and interpretation of key policy drivers and their implications for strategic thinking and planning.
2. Overtly '**challenging**' in the application of this knowledge.

² Partnership licences are designed to meet the needs of people and organisations in the health and social care sector in the UK.

³ For individual members the normal licence costs apply – see section 3.

⁴ itthink version 9 (earlier versions will also require upgrading to v9 prior to entering into this arrangement).

3. Taking a systemic and '**whole system**' view of issues in order to ensure sustainable solutions.
4. '**Engaging**' of all stakeholders party to delivering meaningful change, building understanding and knowledge.
5. Building on and contributing to an understanding of what works by acquiring knowledge of 'sites' of significance and **best practice** and in applying research.
6. Dedicated to supporting clients to deliver **improved outcomes** for individuals and local communities.
7. Ensuring that recommendations arising out of our work are set in a contemporary context, that they empower individuals and communities and are **achievable and sustainable**.
8. Bringing the different and wide ranging skills and experience of the Partnership to bear in **meeting the needs of clients**.
9. Adopting processes in our own work that seeks transformational change and **adaptive learning**.
10. Ensuring the highest standards of **personal and corporate diligence** in all matters relating to our relationship with clients.

4.2 Choosing the right modelling approach

WSP have been partnering with Brunel University in the 'RIGHT' project which seeks to aid in the selection of appropriate modelling techniques for a range of issues across the health and social care economy⁵. The 'positioning' of systems thinking and dynamic modelling suggests that the approach is most appropriate where there is a need to inform:

- System (re)design at policy and strategic levels; and for
- Corporate strategy, disease dynamics, ecological and environmental issue simulation.

As part of the RIGHT exemplar projects Brunel 'shadowed' and evaluated a recent WSP project. They identified the potential for greater organisational engagement in the use of systems thinking tools to complement the modelling approach. It also, however, acknowledged key strengths in the project including:

- *"A very effective stakeholder engagement process (when only 5% of modelling and simulation studies in healthcare benefit from real stakeholder engagement)."*
- *"Impressively strong managerial support throughout the project."*
- *"Good use of process/service map diagramming in the project."*

4.3 Lead Consultant

Peter Lacey had a wide range of General Management experience, covering both commercial and voluntary sectors, before joining the health service in 1990. Since then he has undertaken both strategic and operational change management programmes and has developed particular expertise in strategy development,

⁵ Undertaken by Brunel University as part of the 'RIGHT' project, which is developing a workbook approach to selecting appropriate modelling techniques for different types of situations in the health and social care sector (visit <http://www-edc.eng.cam.ac.uk/right/> & <http://www.right-toolkit.org.uk>).

systems redesign and systems thinking approaches, including system dynamic modelling. He has extensive programme and project management experience and provides training in project management, strategic planning and systems modelling to a wide range of clients.

Peter completed an MBA at Durham University in 1998, during which he received a prize for his dissertation work on intermediate care services in the UK and Sweden. Peter is also an associate of the Centre for the Development of Healthcare Policy and Practice at the University of Leeds and Chairman of a national charity 'The Relationships Foundation', which develops and applies research into the importance of relational values and practices in both public and private sector organisations. Peter is also a member of the International (and UK chapter of the) System Dynamics Society.

Peter's experience in systems modelling goes back to the early 1990's when he managed a project at the Yorkshire Regional Health Authority. Since then he has applied the approach in a wide range of health and social care environments from the time that he started consultancy work in 1998. Since that time Peter has undertaken consultancy projects for Local Authorities and PCTs in England as well as equivalent bodies in Wales and Scotland. At a national level he has worked for the predecessor to the Information Centre for Health and Social Care, the existing NHS Institute for Innovation and csed in England as well as for Audit Scotland and the Social Services Improvement Agency in Wales.

WSP has access to a range of experienced systems modellers and has an 'in-house' capacity to support the learning network. It also has a close working relationship with Isee systems and their technical support team.

4.4 Strategic partnerships

WSP have formed strategic partnerships with a number of organisations that add value to the rigour and developmental potential of our consultancy, in particular:

- WSP are Isee systems partners (Isee systems are the software house responsible for the development of the Ithink simulation software) and are closely involved in the development of the software to best meet the needs of its clients;
- Brunel University, where WSP are partners in a major research project to identify transferable approaches for the application of modelling and simulation methodologies in health and social care settings;
- The University of Leeds Centre for the Development of Nursing Policy and Practice, where involvement in practice development programmes has provided invaluable access to a network of good practice – WSP are currently developing a 'managed network' to support the sharing of best practice across accredited units on behalf of the University;
- The Relationships Foundation, a research institute based in Cambridge working to identify benefits and practical ways of strengthening corporate and individual relationships in both business and the public sector.

WSP also make a number of their reviews available to download from its website at www.thewholesystem.co.uk.

4.5 Current and recent programme of work

A small number of recent examples of work in the area of systems thinking and dynamic modelling undertaken by the Whole System Partnership has included:

- Exploring the development of services for older people with mental health needs in Monmouthshire;
- Undertaking a service mapping exercise for intermediate care in Warrington together with the modelling of future needs;
- Undertaking a 'strategic needs analysis' to explore recent trends in rates of admission to long term care in Leicestershire taking a 'whole system' approach and using modelling to simulate possible futures.
- Completing the economic appraisal and advising on the developing of the successful Leicestershire POPPs bid for end of life care.
- Strategic modelling project across Leicester City and Leicestershire focussing on the development of unscheduled care models of service with a particular emphasis on workforce modelling and shifts in the balance of care.
- Undertaking a whole systems strategic modelling exercise with Shropshire and Staffordshire SHA to develop a high level 'Health System Simulator' tool to inform key capacity decisions including implications for physical build and human resources.
- WSP have undertaken a range of focussed strategic systems modelling projects with Cheshire social services across all clients groups including learning disability and mental health services.

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