

Advancing Applied Analytics Community of Practice

The development of a Community of Practice focussed on the use of System Dynamics modelling as the bridge between STP strategic challenges and the contribution that analytics can make.



Headlines.....

- The Health Foundation have confirmed funding of c.£100k from their Advancing Applied Analytics call for the purposes of developing a Kent-wide Community of Practice (CoP);
- The focus is on combining the power of the Kent Integrated Dataset (KID) and system dynamics modelling to address the complex capacity planning challenges of the Sustainability and Transformation Partnership (STP) and the emerging ACS/ACOs (Accountable Care Systems/Organisations);
- The project will last for 18 months;
- The lead agency is Kent County Council;
- The ‘supplier’ of support in System Dynamics modelling is the Whole Systems Partnership;
- The CoP will link in to existing and emerging strategic groups for purposes of governance.

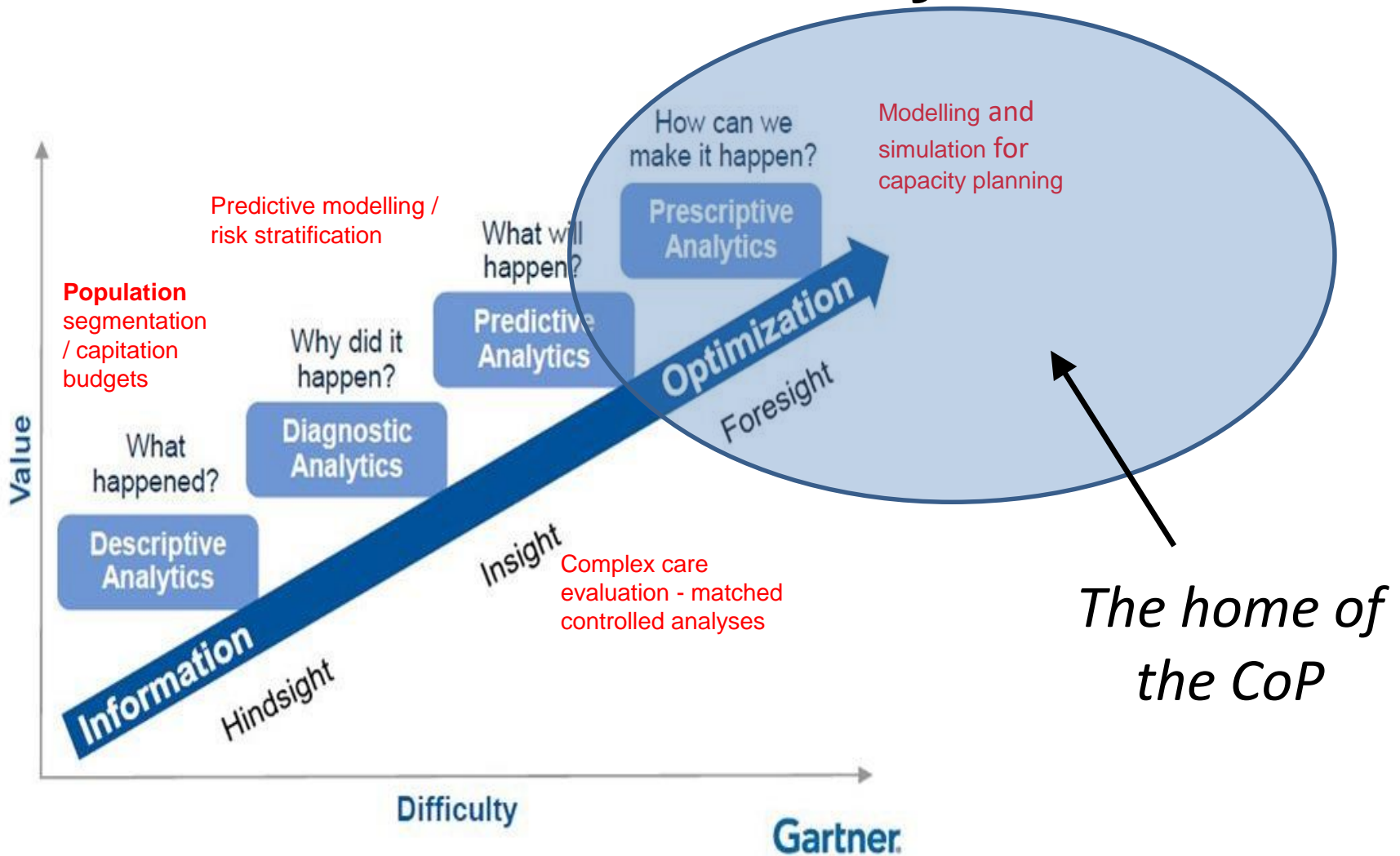
Activities.....

- Baseline capacity and capability assessment for modelling and simulation across the K&M STP footprint;
- Development and delivery of engagement workshops to target gaps and bring stakeholders up to the necessary level of awareness and understanding to participate fully in the CoP, including the identification of subsequent modelling projects;
- The development of a number of System Dynamics models, based on KID intelligence, to address the key issues identified through stakeholder engagement;
- Project evaluation by an academic partner including a review of the effectiveness of the programme leading to sustainable solutions for the CoP.

Outcomes.....

- The outcomes from the CoP will be:
 - New tools and approaches for determining the suitability and application of simulation and modelling approaches;
 - Accessible and user friendly system models that inform the strategic decision making processes for the STP and ACSs;
 - A group of analysts with the technical and systems thinking skills to ask the right questions of the data and develop these models in a sustainable and consistent way;
 - An evaluation of the approach to inform future sustainability and impact;
 - A showcase for advancing applied analytics that will attract interest and share learning as widely as possible.

What sort of analytics....



The distinctives of the KID

- Started 4 years ago as national pilot
- KCC Public Health works closely with local data warehouse team that collates and link NHS and non NHS data from up to 250 health and social care organisations
- > 700 million rows of data vs 897 columns, spread across 28 exclusive data tables
- Minimal cost but IG arrangements time consuming
- > 30 analytical projects carried out supporting local health and care commissioning including Kent & Medway STP
- Development is incremental – Adding more datasets, flags, segmentation tools etc
- Considerable R&D potential – number of universities want to work with us
- Opportunities develop and improve standards on KID data quality and coding to support variety of applied analytics such as modelling and simulation

Why System Dynamics modelling?

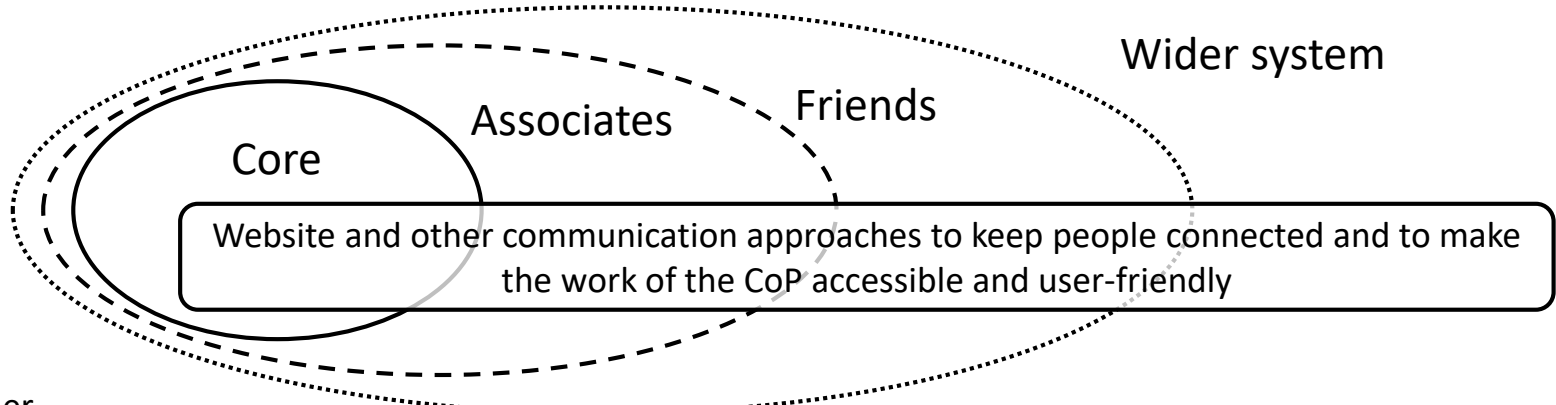
- System Dynamics modelling is the 'tool of choice' when:
 - ✓ The scope of an issues is '**strategic**' rather than operational or tactical;
 - ✓ The importance of variability or tracking individuals within a system is low;
 - ✓ The number of entities is **large**;
 - ✓ When control over the system is exerted through **rates** rather than queues;
 - ✓ When timescales are **relatively long**;
 - ✓ When the purpose is **to inform policy making** and to gain understanding about a system.

Ref: Brailsford et al, *Discrete-Event Simulation and System Dynamics for Management Decision making*, (2014), Wiley

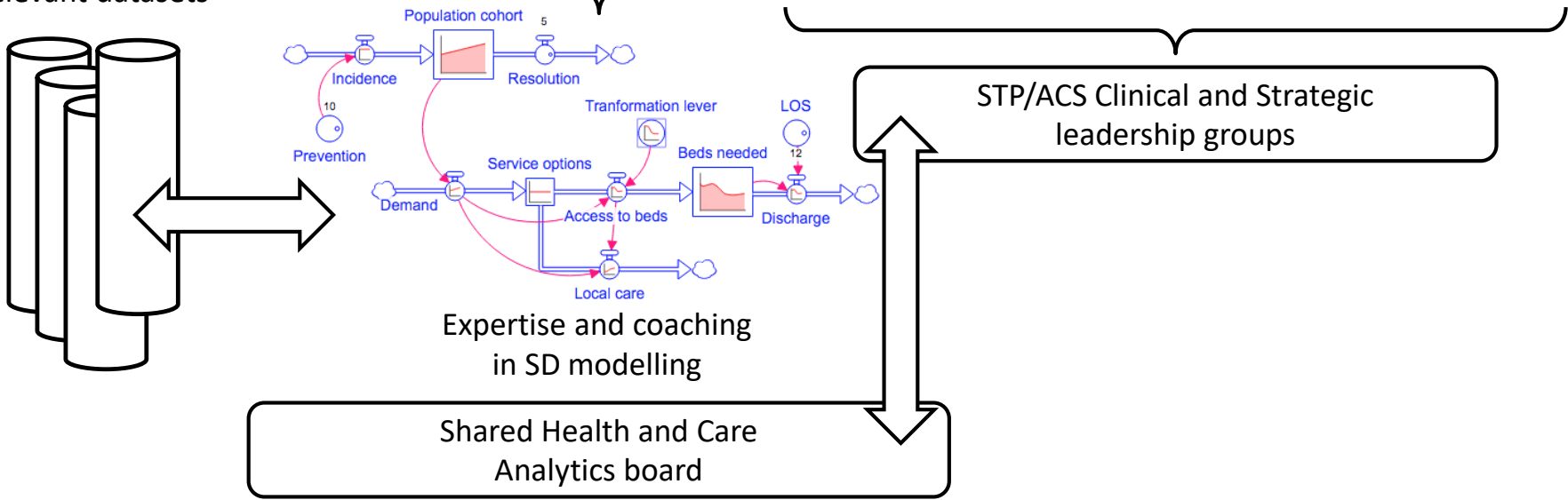
Modest beginnings – big ambitions

- During 2016/17 Kent County Council Public Health Department, the KCC Social Care Team, the Encompass Vanguard and the West Kent CCG have commissioned the development of System Dynamics models, examples of which include:
 - What are the population health drivers for future health and social care demand, and how do risk factors and prevention strategies impact on these over the longer term?
 - What (human) resource requirements are needed now and in the future to deliver the Encompass CHOCs local care service model?
 - How will the implementation of new models of primary mental health care impact on wider system resources?
 - How do we manage demand for home care services?
- Those involved in these modelling projects have been encouraged and supported to develop skills in systems thinking and modelling with modest success – something that the CoP will build on;
- The CoP will benefit from these developments and have access to the modelling tools, appropriate coaching and supporting information to enable re-use and development of these models.

The community and it's resources.....



The KID and other relevant datasets



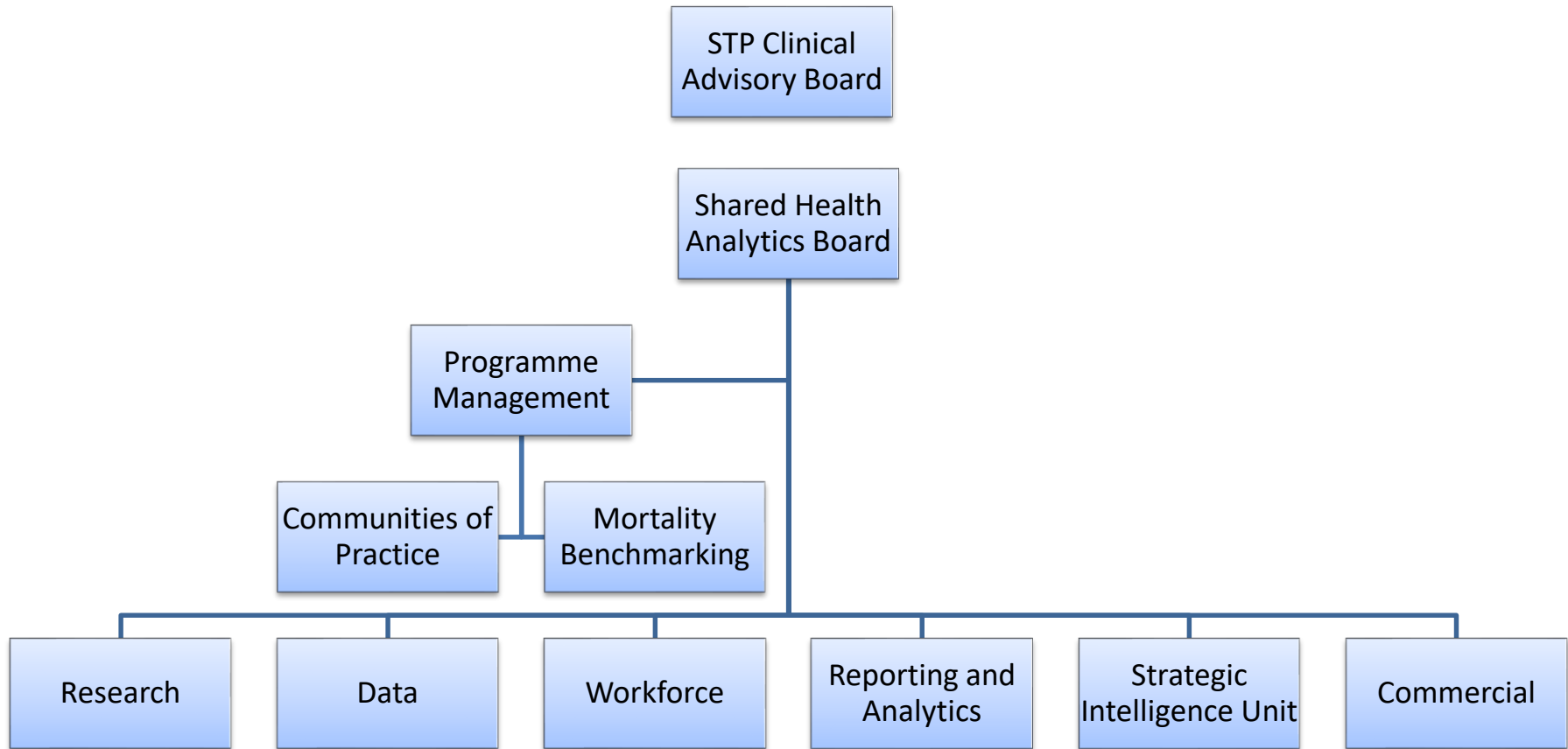
We are looking for.....

- Core members of the CoP who have commitment from their host organisation and dedicated time to devote to the CoP, plus some or all of the following:
 - An enquiring mind with a leaning toward developing systems solutions;
 - Good analytical skills and/or highly numerate (it is not expected that all the core members of the CoP will have 'Analyst' in their job title);
 - Some experience in service improvement projects and design methods.

We are also looking for.....

- Associate members of the CoP who have commitment from their host organisation and dedicated time to devote to the CoP, plus some or all of the following:
 - A good grasp of the challenges facing the STP/ACS in one or more areas of significance to the transformation programme;
 - Significant experience in service improvement and/or design methodologies;
 - A level of confidence and competence in handling data to inform strategic or policy challenges;
 - A questioning and probing mind when faced with complex challenges.

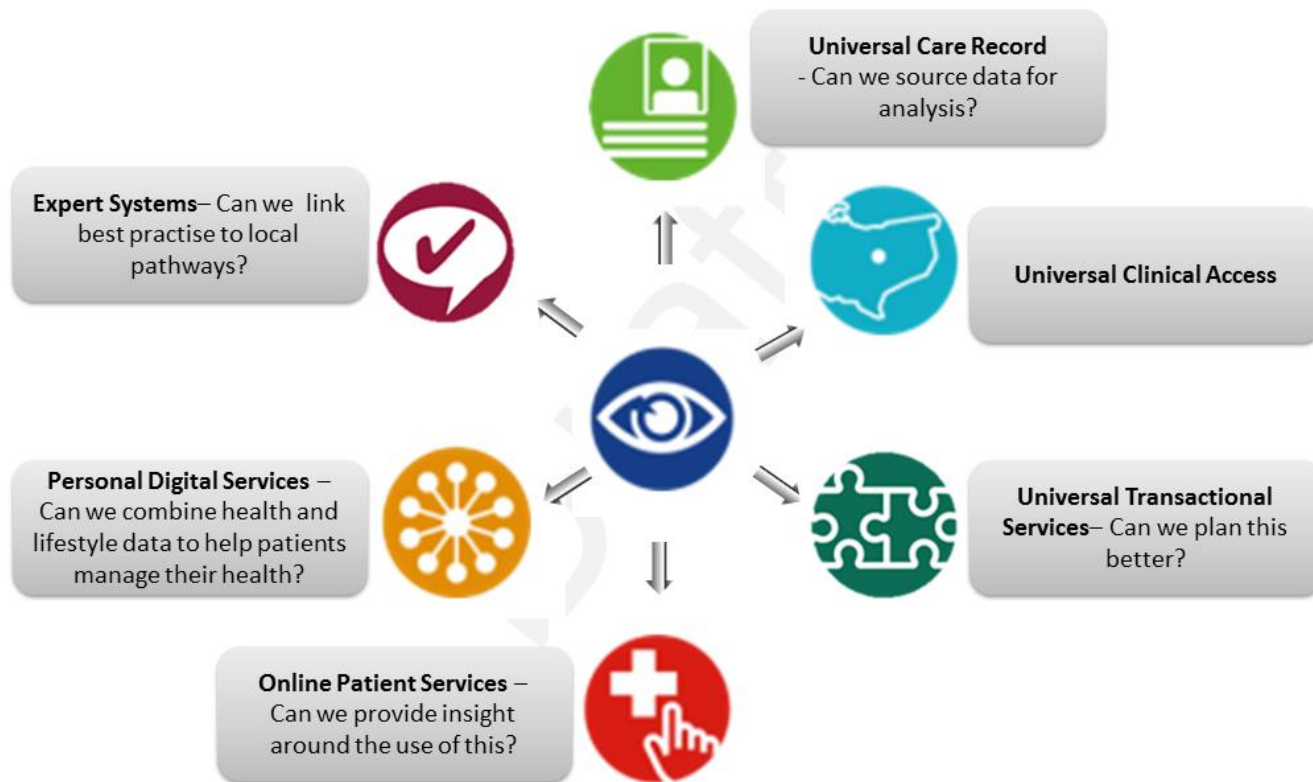
Governance of the CoP



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Relating Shared Health Analytics to Workstreams ⁴



Version 0.9 14/02/17

The community in a snap-shot

Members of the CoP:	Core:	Associate:	Friends:
Approximate numbers	8-10	15-20	No limit
Key development opportunities	System conceptualisation Model building Defining and carrying out data queries – asking the right questions of the data	System conceptualisation Model use – asking the right questions of the model	Input to system conceptualisation Using model outputs to inform policy and strategy
Commitment	Involvement in CoP training and other workshops Leading on, or playing a significant role in, a modelling project Average commitment of c.4-6 days per month	Involvement in CoP workshops to socialise the approach and showcase outputs Advice and input to CoP programme Average commitment of c.2 days per month	Involvement in CoP workshops as appropriate to areas of interest Informing the questions that need to be explored by the CoP Part of people's day-job

Early milestones

- Launch event to be held in January 2018 (date TBA);
- Recruiting members to the CoP (January & February 2018);
- First CoP workshop for Core and Associate members in March 2018;
- Baseline assessment of capacity and capability in the use of modeling and simulation approaches (end of February 2018);
- Making available existing modelling tools, including the population cohort model currently being completed as part of the enhanced JSNA programme of work;
- Development of a process/protocol for agreement of modelling project and agreement with Clinical and Strategic leads as to early priorities;
- Agreeing with local partners how the CoP will be evaluated – by March 2018.



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Additional notes



Notes on the modelling software

- **Stella** software has been developed by Isee Systems (www.iseesystems.com) - it was also previously marketed as 'ithink'. The company has been at the forefront of system dynamics modelling software for over 20 years;
- Isee Systems provide a range of online training and technical support to license holders independent of any relationship with WSP;
- WSP resells the software in the UK on behalf of Isee Systems but has no other commercial interest – this arrangement is not critical to the delivery of the CoP as end users are free to secure software direct if they so wish;
- Current costs through WSP are a one-off payment of £2,450 (+vat) for a full license (1 license per user), and then an annual renewal of £490 (+vat). WSP have negotiated an exclusive arrangement for reduced license fees when securing multiple licenses (note that the software remains functional without renewal, but there is then no technical support or version upgrades).