



PartiSim: A Participative Modelling Framework for facilitative Discrete Event Simulation

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Discrete-event simulation

- A modelling approach used to model business processes
- Can be used to facilitate understanding about the system involving stakeholders
- Introducing stakeholder participation in modelling process

But,

How can we involve stakeholders?

When should we involve them?



How can we involve stakeholders?

- Workshops with stakeholders
- Facilitation techniques (facilitator)
 - ❑ Common in Problem Structuring Methods (SSM, SODA, etc) and Group Model Building in SD.
- Tools (brainstorming, process-centred)
 - ❑ To establish a common language

When should we involve stakeholders?

Simulation study steps can be broadly categorised into:

➤ conceptual modelling 

➤ model coding

➤ experimentation 

➤ Implementation 

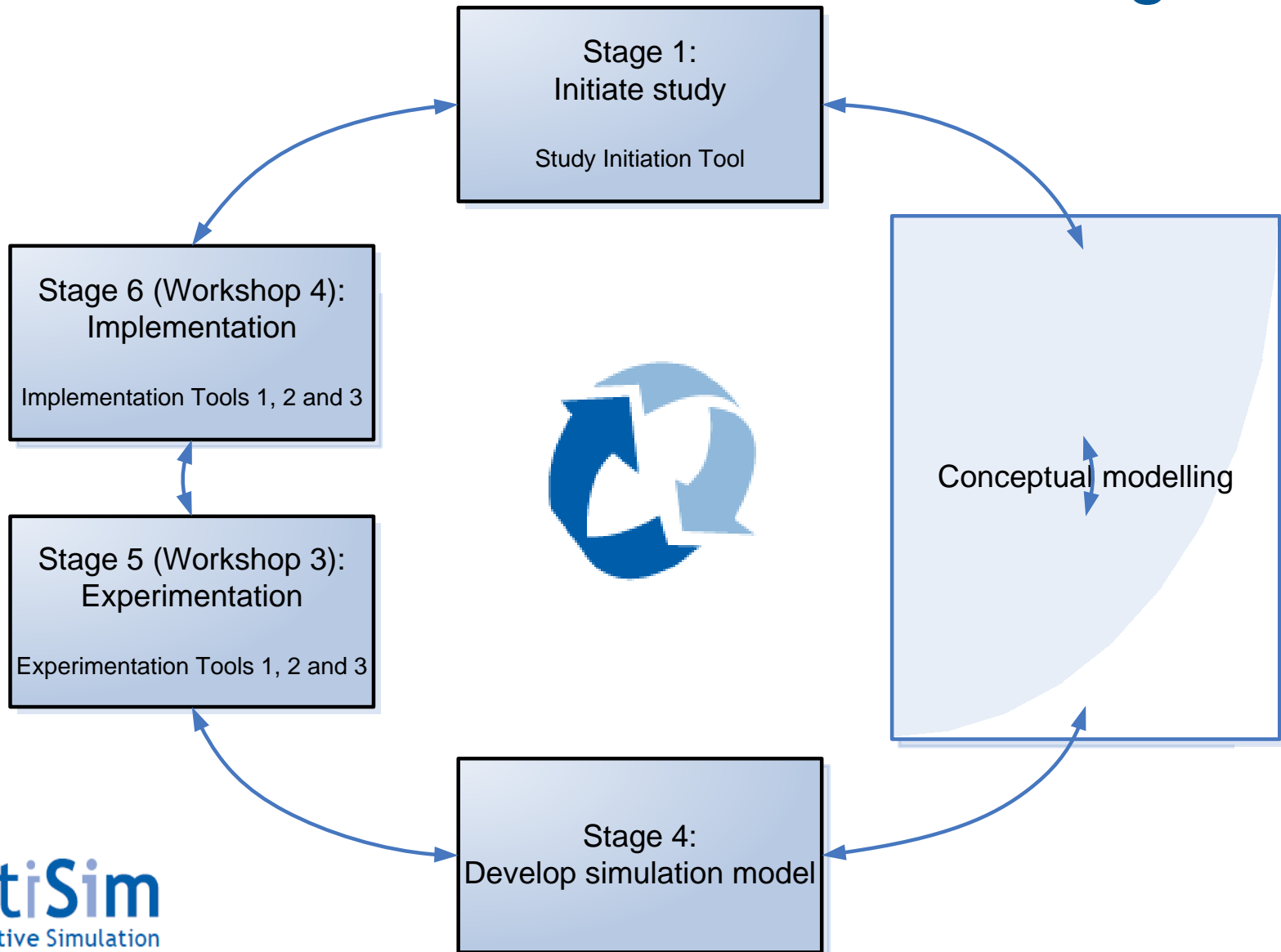
(Robinson, 2004)

Robinson S. (2004). *Simulation, The practice of Model Development and Use*, John Wiley and Sons, Chichester.

The PartiSim Framework

- 6 stages
- Toolbox:
 - ❑ User guide
 - ❑ Toolset for each stage (tools and manuals)
- Pick & Mix approach

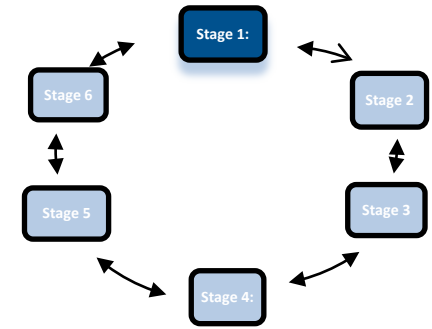
The PartiSim Framework & Stages



How was it developed?

- Tested in 2 studies
 - ❑ Health care systems (obesity & colorectal)
 - Multidisciplinary team of participants
 - Queuing systems & patient flows important
 - ❑ Review & evaluation

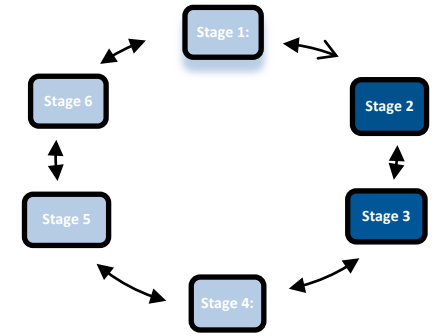
Study Initiation (Stage 1)



- Initial understanding of system
- Role/Stakeholder analysis, including workshop participants (5 – 12)
- **Study Initiation Tool:** organise notes & information collected.
- (One-to-one meetings, on-site observations, secondary research)

Conceptual Modelling

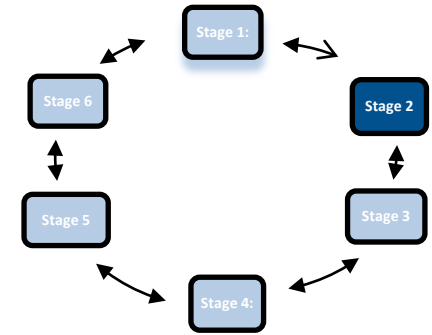
(stages 2 and 3)



- Further understanding of the system/ problem situation with stakeholders (workshop)
- Specify Conceptual Model (objectives, model inputs & outputs, communicative model, data collection)

Workshop 1:

Define the system



➤ Aim: To develop a shared understanding of the problem situation

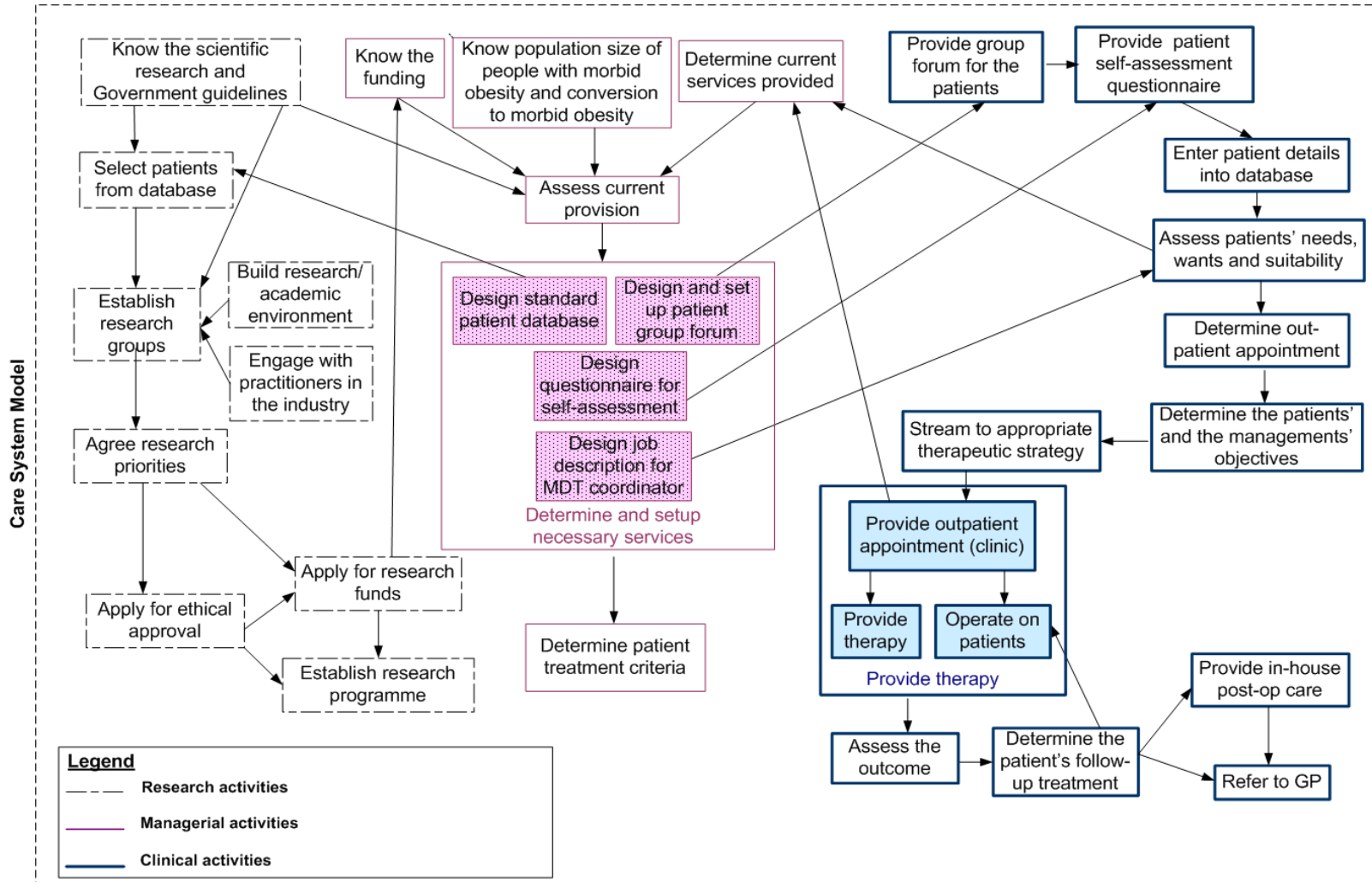
1. Problem statement (brainstorming mode)
2. Map out the system (SSM tools):
 - CATWOE and Root definition:

Conceptual Modelling – Tool 1

- Care system model (CSM):

Conceptual Modelling – Tool 2

Care system model



Workshop 2:

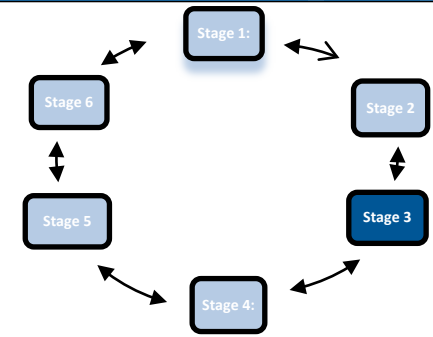
Specify conceptual model

Aim:

- Define study objectives
- Model inputs & outputs
- Data requirements
- Model contents

Tools used:

- Performance measurement model (Kotiadis, 2007)
Conceptual Modelling – Tools 3 & 4
- Communicative model (process flow diagram)
Conceptual Modelling – Tool 5

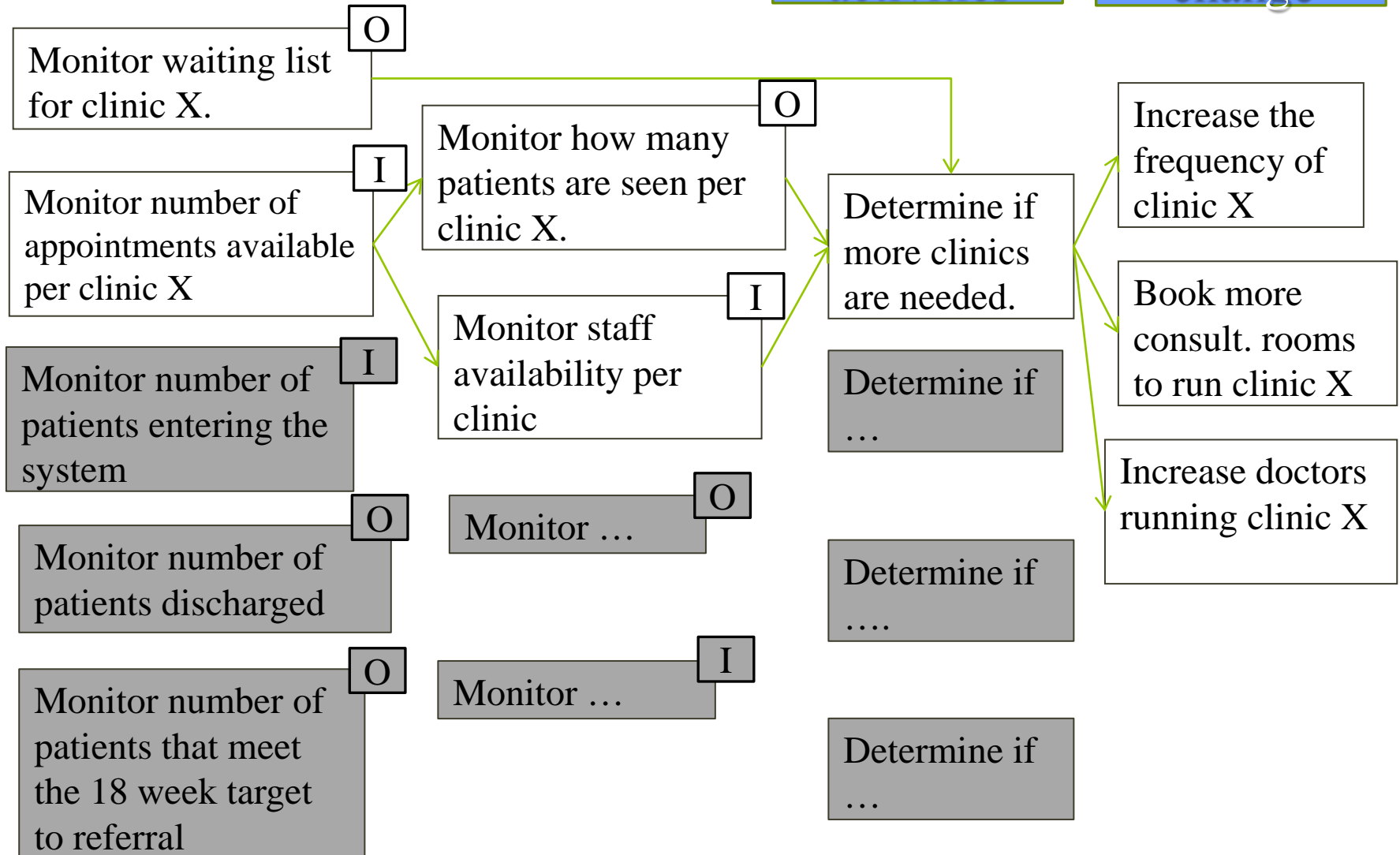


Kotiadis K. (2007) Using SSM to determine the simulation study objectives, Journal of Simulation 1(3).

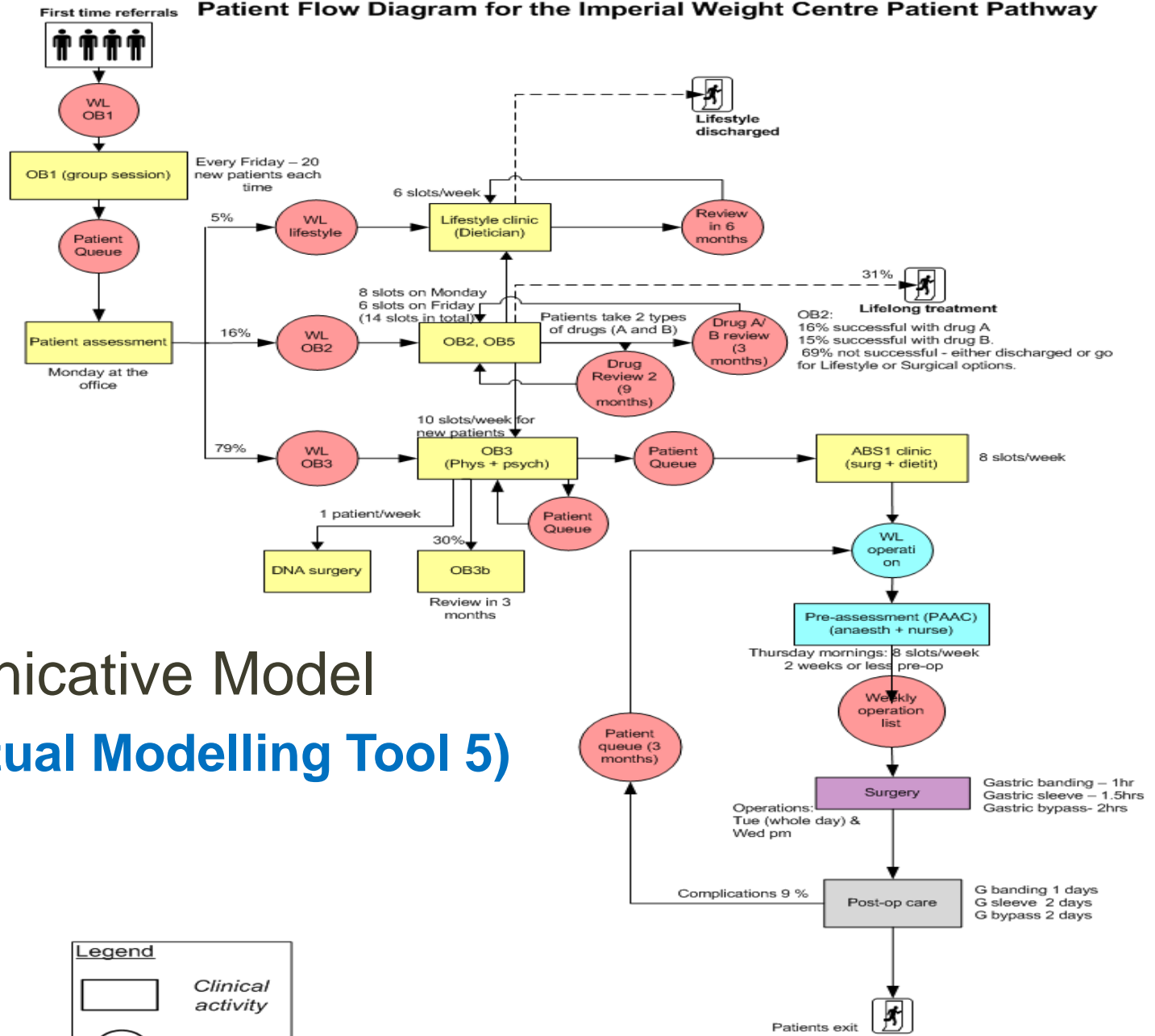
Monitoring activities

Determine if activities

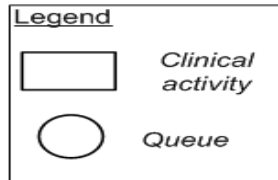
Decide on change



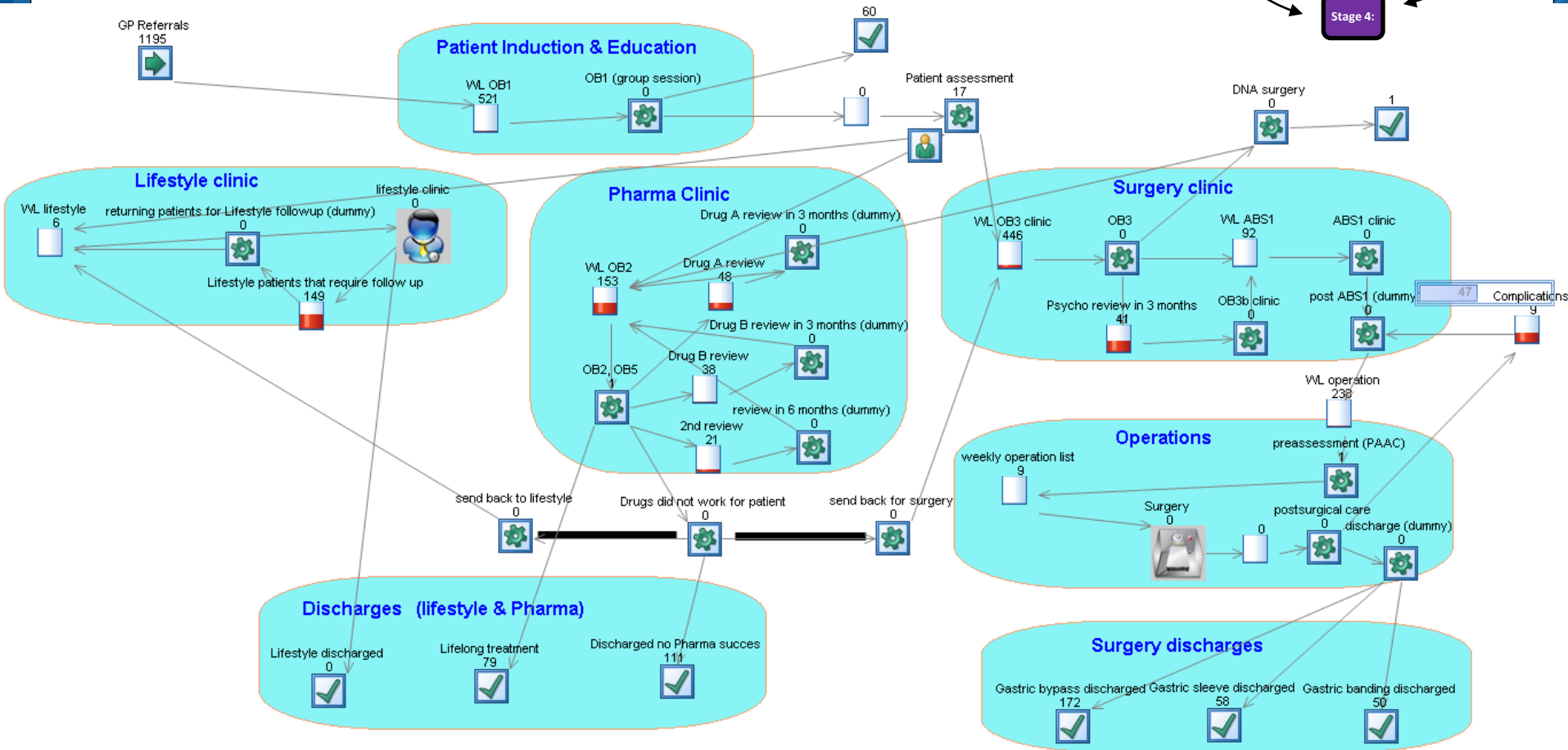
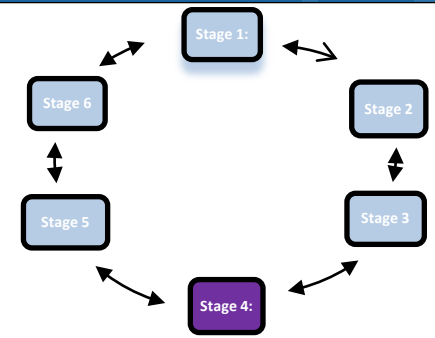
Patient Flow Diagram for the Imperial Weight Centre Patient Pathway



Communicative Model (Conceptual Modelling Tool 5)



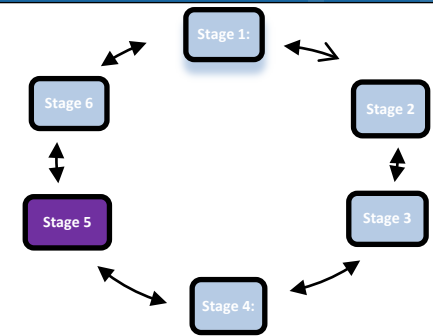
Develop computer model (stage 4)



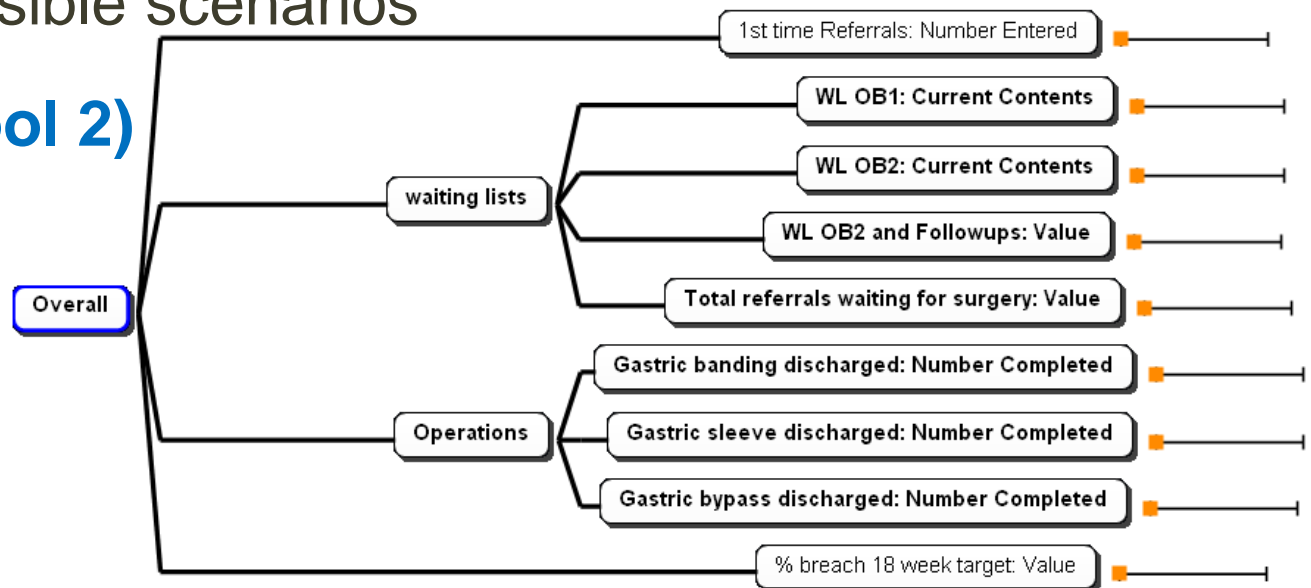
Experimentation (stage 5)

Workshop 3

- Model validation & verification
- Ranking of performance measures
- Scenarios & results presentation
 - ❑ Understanding about system behaviour
- Deciding feasible scenarios

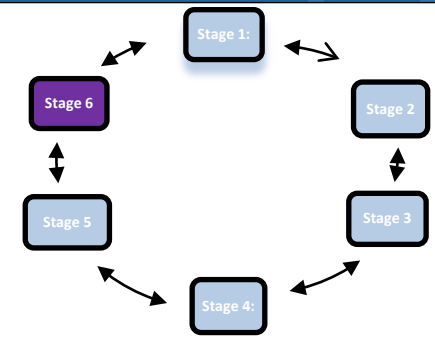


(Experiment. tool 2)



Implementation (stage 6)

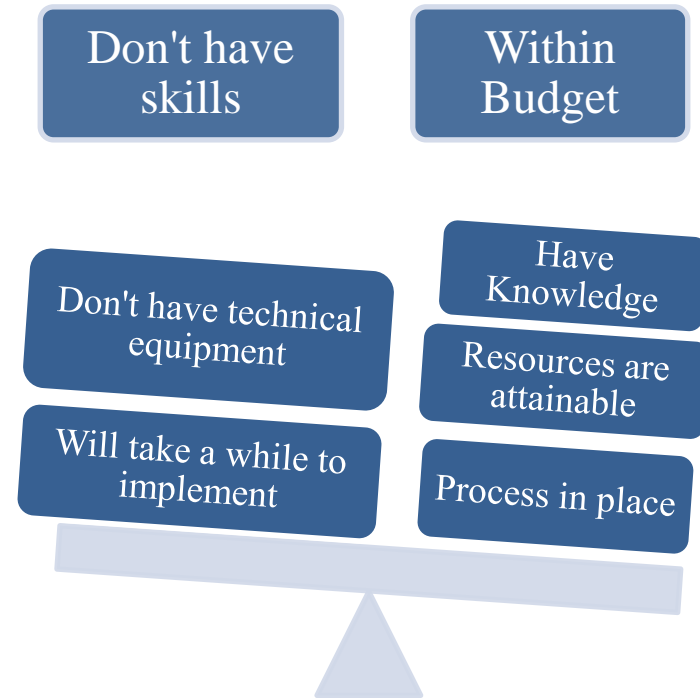
Workshop 4



- Aim: Establish implementation plan (changes)
- Moving away from the model
- Simulation model results & scenarios discussed
- Raise awareness of learning and insights gained
- Identify changes already implemented
- Feasibility and risks of change (**Implementation tools 1 and 2**)
- Action trail (**Implementation tool 3**)

Implementation tool 1 (an example ...)

Preferred Future Scenario changes: Add 1 Surgeon
Less 55 referrals



Outcomes & reflections

- More structured and leaner modelling process
- Consensus reached (desirable and feasible solutions)
- Findings were accepted
- Implementation took place
- Learning facilitation practice
- Stakeholders take ownership & implementation
- Project champion took an active role outside workshops

Thank you!

- Comments, questions?
- Website: www.partisim.org.uk