

PartiSim: A Participative Modelling Framework for facilitative Discrete Event Simulation

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East Midlands Simulation, 29th February 2012

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.

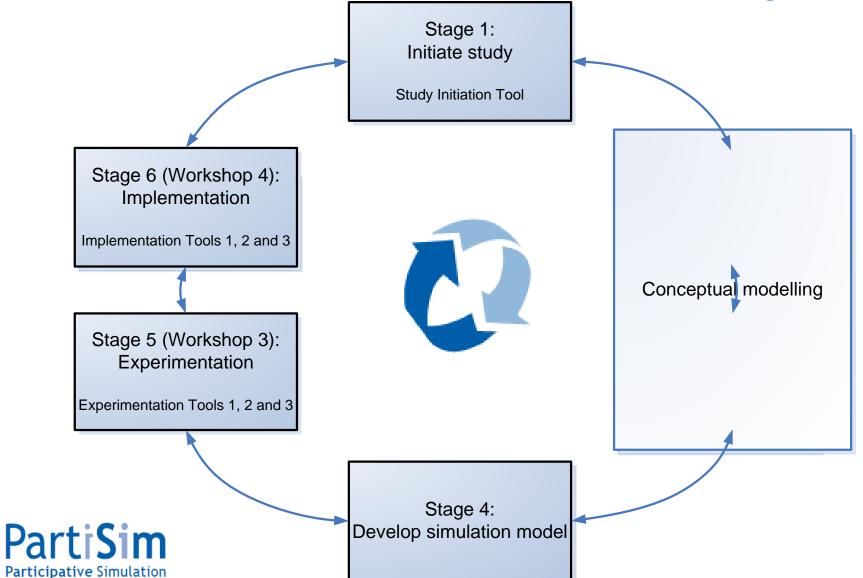


The PartiSim Framework

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



The PartiSim Framework & Stages

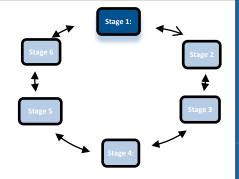


How was it developed?

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



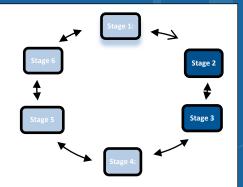
Study Initiation (Stage 1)



- 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)

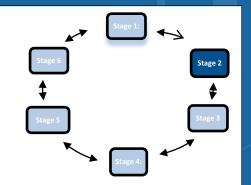


- Further understanding of the system/ problem situation with stakeholders (workshop)
- Specify Conceptual Model (objectives, model inputs & outputs, communicative model, data collection)



Workshop 1:

Define the system



- Aim: To develop a shared understanding of the problem situation
 - 1. Problem statement (brainstorming mode)
 - Map out the system (SSM tools):
 - CATWOE and Root definition:

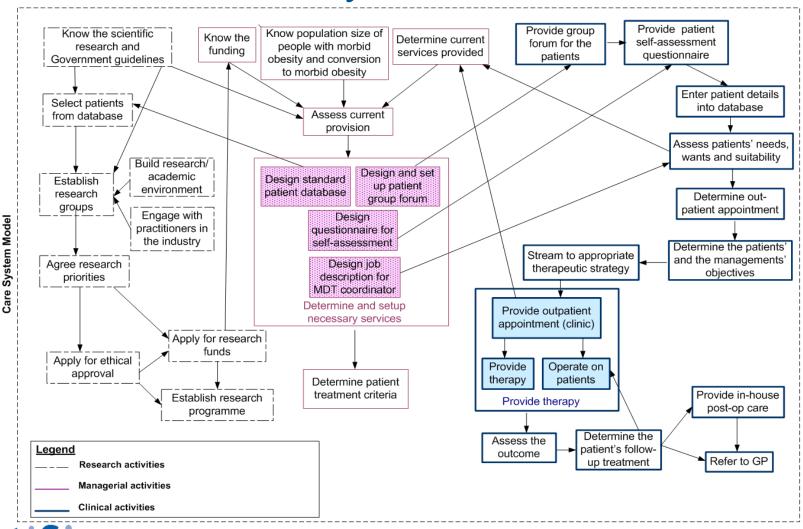
Conceptual Modelling – Tool 1

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:

Performancemeasurement model(Kotiadis, 207)

Conceptual Modelling – Tools 3 & 4

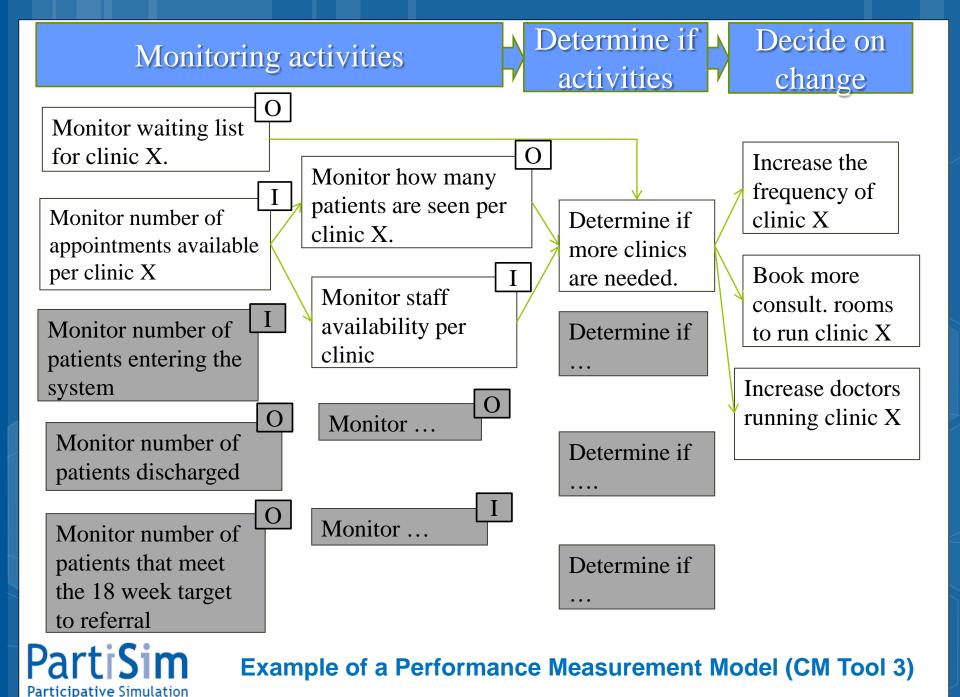
Communicative model (process flow diagram)

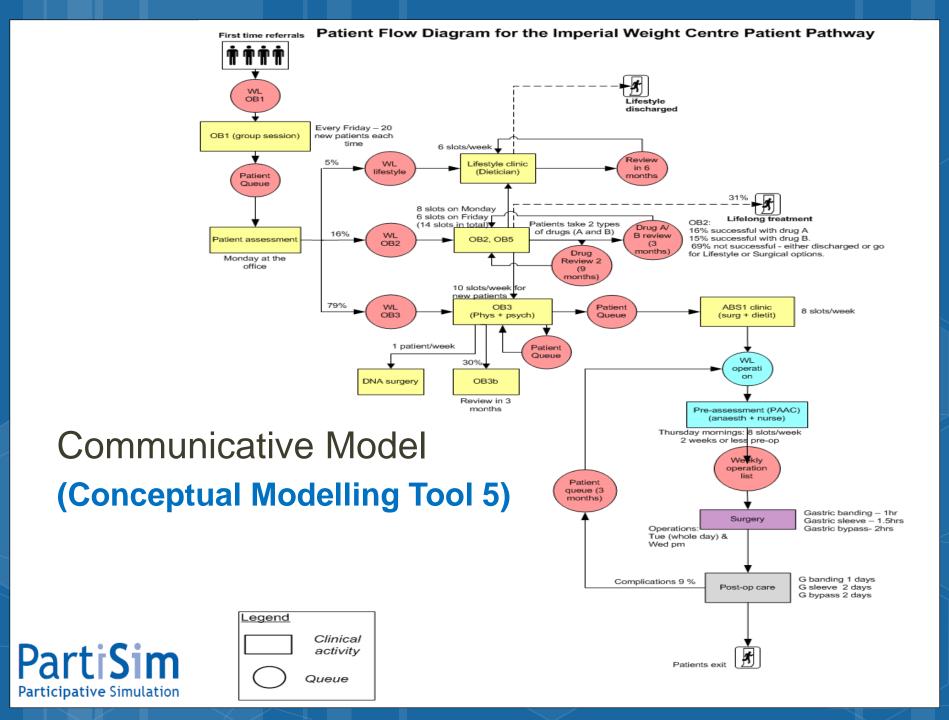
Conceptual Modelling – Tool 5

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









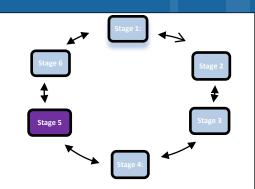
Develop computer model (stage 4) Stage 4: **GP Referrals** Patient Induction & Education OB1 (group session) Patient assessment WL OB1 DNA surgery 521 Lifestyle clinic Surgery clinic lifestyle clinic Pharma Clinic returning patients for Lifestyle followup (dummy) Drug A review in 3 months (dummy) WL ABS1 ABS1 clinic WL\OB3 clinic OB3 Drug A review WL OB2 Lifestyle patients that require follow up 153 post ABS1 (dummy Complications OB3b clinic Psycho review in 3 months Drug B review in 3 months (dummy) Drug B review OB2, OB5 WL operation review in 6 months (dummy) 2nd review Operations preassessment (PAAC) weekly operation list send back to lifestyle Drugs did\not work for patient send back for surgery _discharge (dummy) Discharges (lifestyle & Pharma) Discharged no Pharma succes Surgery discharges Lifelong treatment Lifestyle discharged Gastric bypass discharged Gastric sleeve discharged Gastric banding discharged



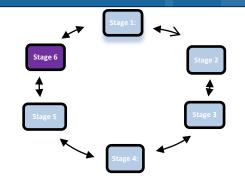
Experimentation (stage 5) Workshop 3

- Workshop 3
- Model validation & verification
- Ranking of performance measures
- Scenarios & results presentation
 - Understanding about system behaviour

Deciding feasible scenarios lst time Referrals: Number Entered WL OB1: Current Contents (Experiment. tool 2) WL OB2: Current Contents waiting lists WL OB2 and Followups: Value V·I·S·A Total referrals waiting for surgery: Value Overall Gastric banding discharged: Number Completed Operations Gastric sleeve discharged: Number Completed Gastric bypass discharged: Number Completed % breach 18 week target: Value Participative Simulation



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

Don't have skills

Have Knowledge

Resources are attainable

Will take a while to implement

Process in place



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

