

# Effective modelling in healthcare – case studies and lessons

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Fast, Easy to Use Simulation Software

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# Covering..



- Strategic and operational simulation
- Typical operational problems
- Generic models or example models
- A way forward?

# What users say...



- “ This has really helped with problem structuring”
- “ I knew that we had a 1:3 ratio of outpatient follow-ups but now I can see how that is happening and I can ask clinicians better questions about why and how we can change it”
- “ Now I understand why my operating theatres are running inefficiently and I can show people how to improve them”

# Strategic vs Operational



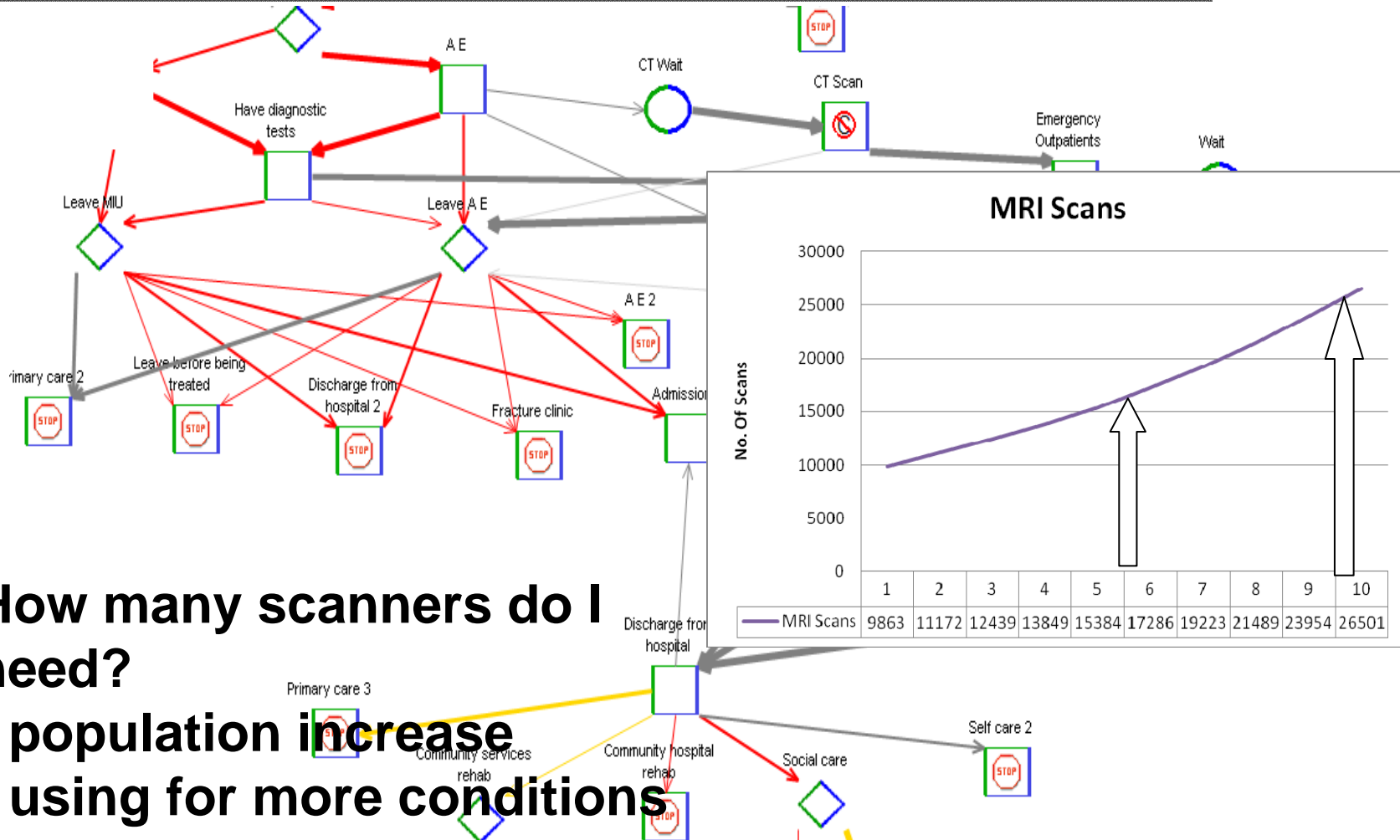
## Strategic

- Annual planning rounds
- Impact of population growth/prevalence questions
- Impact of significant system or pathway change
- Impact on the wider system

## Operational

- Efficient running of individual parts of the system
- Daily/weekly planning of capacity to meet demand
- Management of arrivals

# Strategic question example



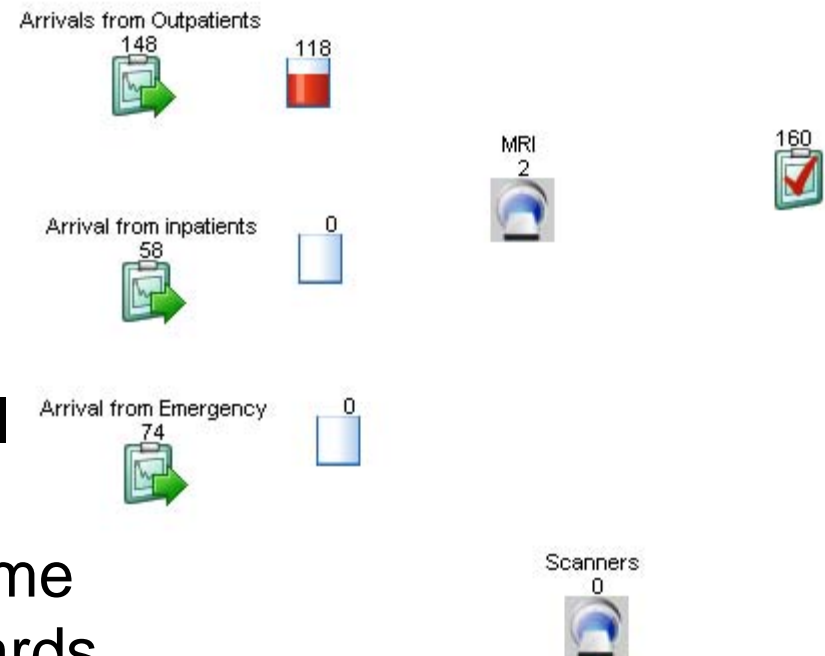
**How many scanners do I need?**

- population increase
- using for more conditions

# Operational question example

How can I manage use of scanners better?

- priority of arrivals
- time of day of arrival
- one scanner only operational 9-5 for 5 days
- scanners need some downtime
- there are waiting time standards



# From the White Paper



- Health AND social care
- Urgent care
- Personal health budgets
- Outcomes/Standards and link with payments
- QIPP initiatives
- Choice of consultant team, provider, treatments..

# Typical operational questions



- Managing outpatient clinics
- Operating theatre utilisation
- Managing A&E
- Improving patient discharge
- The impact of a new procedure/drug intervention in a care pathway
- Merging back-office functions
- Managing winter pressures



# Example: Operating Theatre



- Efficient utilisation of operating theatres
- Ensuring sufficient time for each part of the process
- Coping with emergency demand
- Effective scheduling

# Example: Operating Theatre

Resource Legend:

- Cancellations: 0
- Anaesthetists: 1
- Anaesthetic Assistant: 1
- Scrub Practitioners: 1
- Consultants: 1
- Recovery Practitioner: 1

Clock  
0:00:00  
Mon

Elective Arrivals  
0

Ward 4 A  
0

Anaesthetic 4  
0

Surgery 4  
0

Ward 5 A  
0

Anaesthetic 5  
0

Surgery 5  
0

Ward 7 A  
0

Anaesthetic 7  
0

Surgery 7  
0

Ward 8 A  
0

Anaesthetic 8  
0

Surgery 8  
0

Trauma  
0

Work Center 35  
0

0 0 0

0 0 0

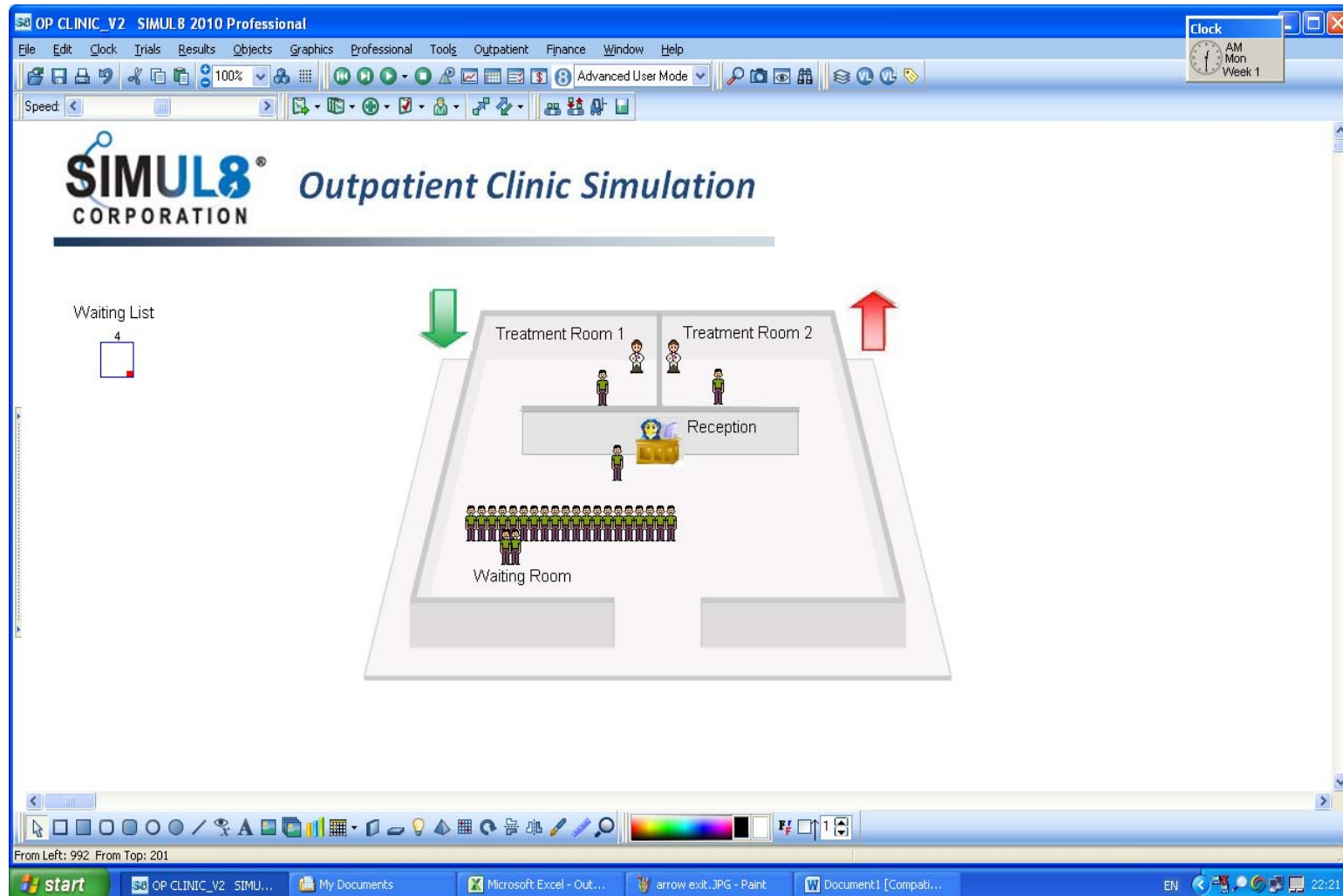
0

# Example: Outpatient Clinics



- Managing clinic schedules so that:
  - patients are not waiting too long
  - clinician time is effectively utilised
  - emergency cases can be dealt with in time
- Scheduling for choice of consultant team

# Example: Outpatient Clinics

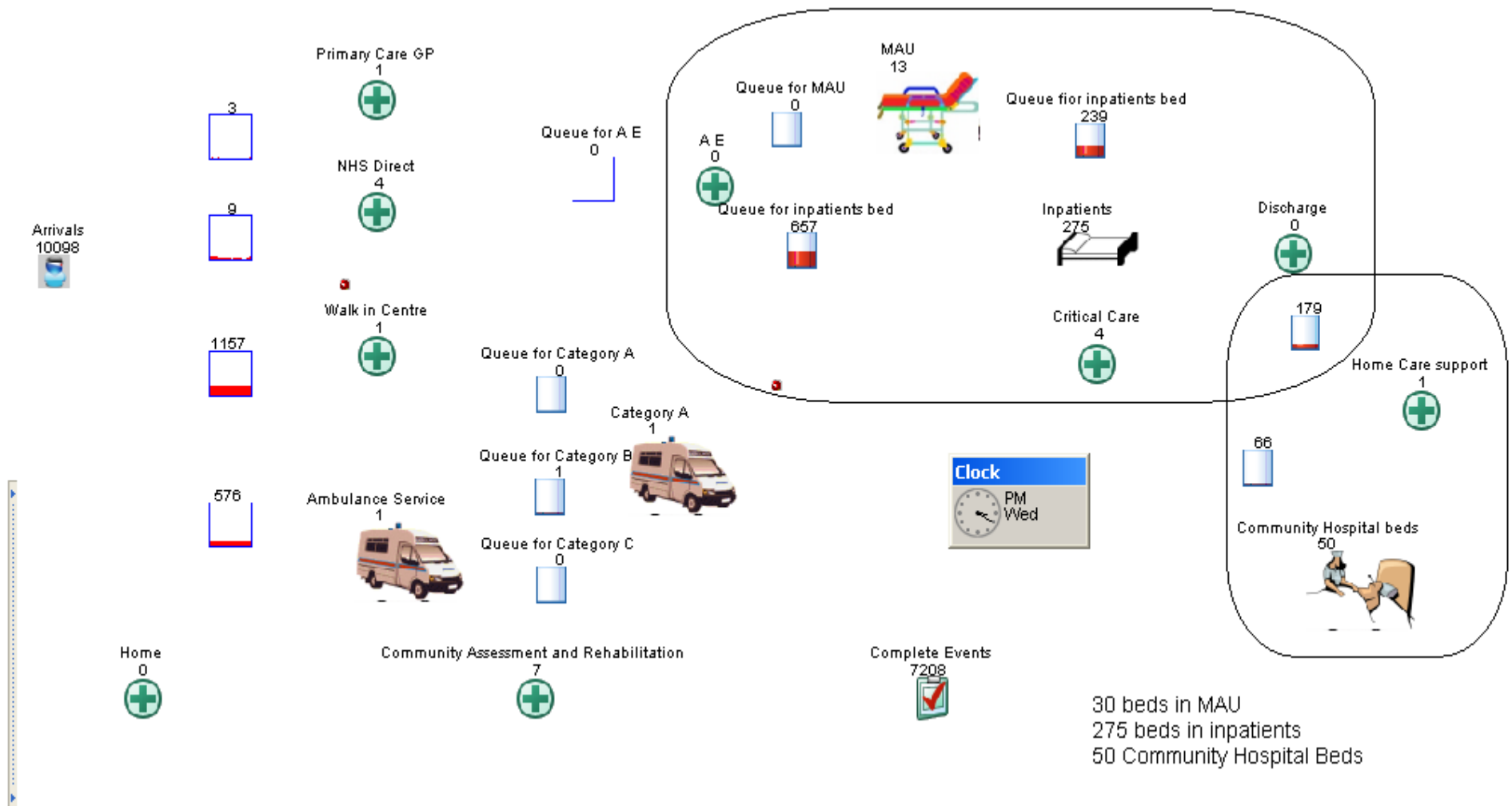


# Example: Winter Pressures



- What happens when demand builds on the health and social care system?
- And staff are off sick and a ward is out of action with norovirus?
- What rules need to be in place?
- When should they be implemented?
- Where is capacity needed?

# Example: Winter Pressures



# Making it easier?



Q. Simulation seems complicated

A. Yes, but the health system IS complicated

Q. I am used to using a spreadsheet

A. A spreadsheet can't show you impact of variability on waits and complexity of return visits.

Q. Can a tool do it for me?

A. Some things... but you still have to do the thinking

# Making it easier?



- Experts to help the NHS
- Sharing models
- Producing example models
- Viewing models
- Software easier to use



# Generic vs Specific Models



- No clear design, data collection/validation or implementation differences between generic and specific models (Fletcher, Worthington 2007)
- Often a consensus on the key issues to be modelled
- BUT all need good involvement from the client in the process for success

# Sharing Models: Stroke Example



- South Central Stroke pathway
- Used by a number of healthcare organisations
- Clinically correct
- Once used, most organisations completely redevelop to answer local questions
- Can see results quickly in one session
- There is confidence in the model

# A way forward?



- Generic/Example/Shared models answering typical health and social care problems
- A management learning tool
- Enable healthcare users to grasp the key issues – maybe some answers
- Understand why it is worth using simulation
- Quicker than starting from scratch
- Helps to build the skills to develop localised models

# What next?



- Try out these models on the SIMUL8 stand today
- Tell us what healthcare problems you need to simulate
- We will allow you to test them on the web

