

# **Application of a prototype decision-support tool to a development in the UK Midlands**

Practical Evaluation Tools for Urban Sustainability Conference

15-16 September 2005

Cardiff University

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**Encraft**

## **Content of this talk**

Introduction – Background to encraft and our tools

Theoretical approach

Using simulation to evaluate sustainability

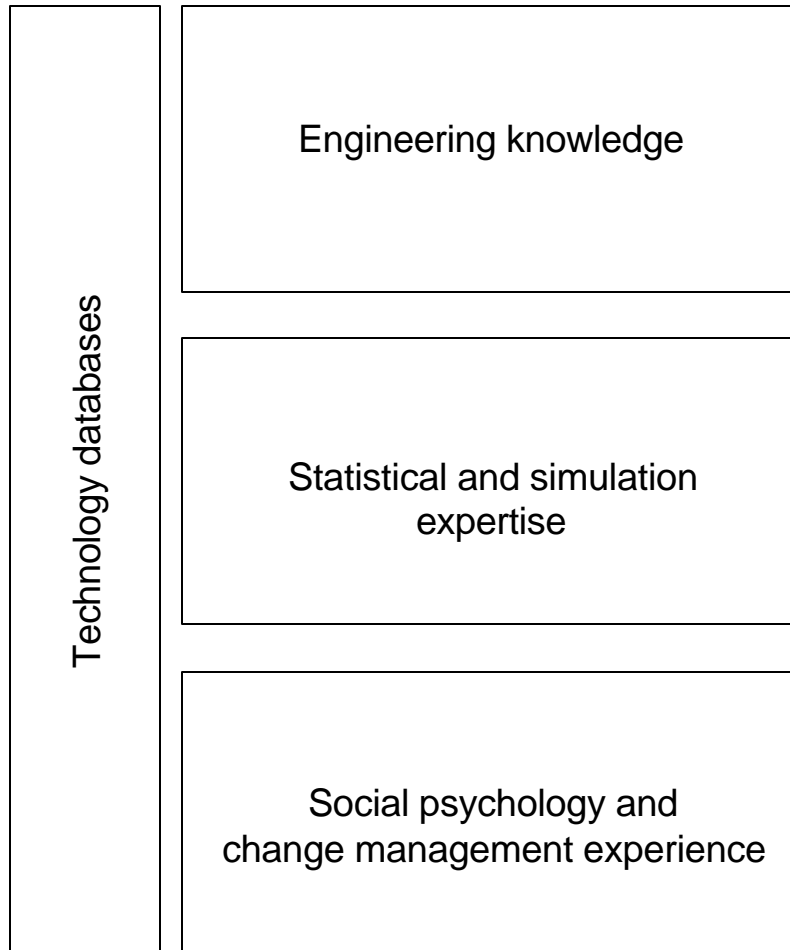
The Warwick Case

Practical experience – what worked

Lessons from this application

Next steps

## Introduction – background to encraft and our tools



### Motivation

By combining the right disciplines in the right way we could create simple tools that could accelerate development of a sustainable economy.

Triggered by German collaboration 2002.

### History

Project since May 2003

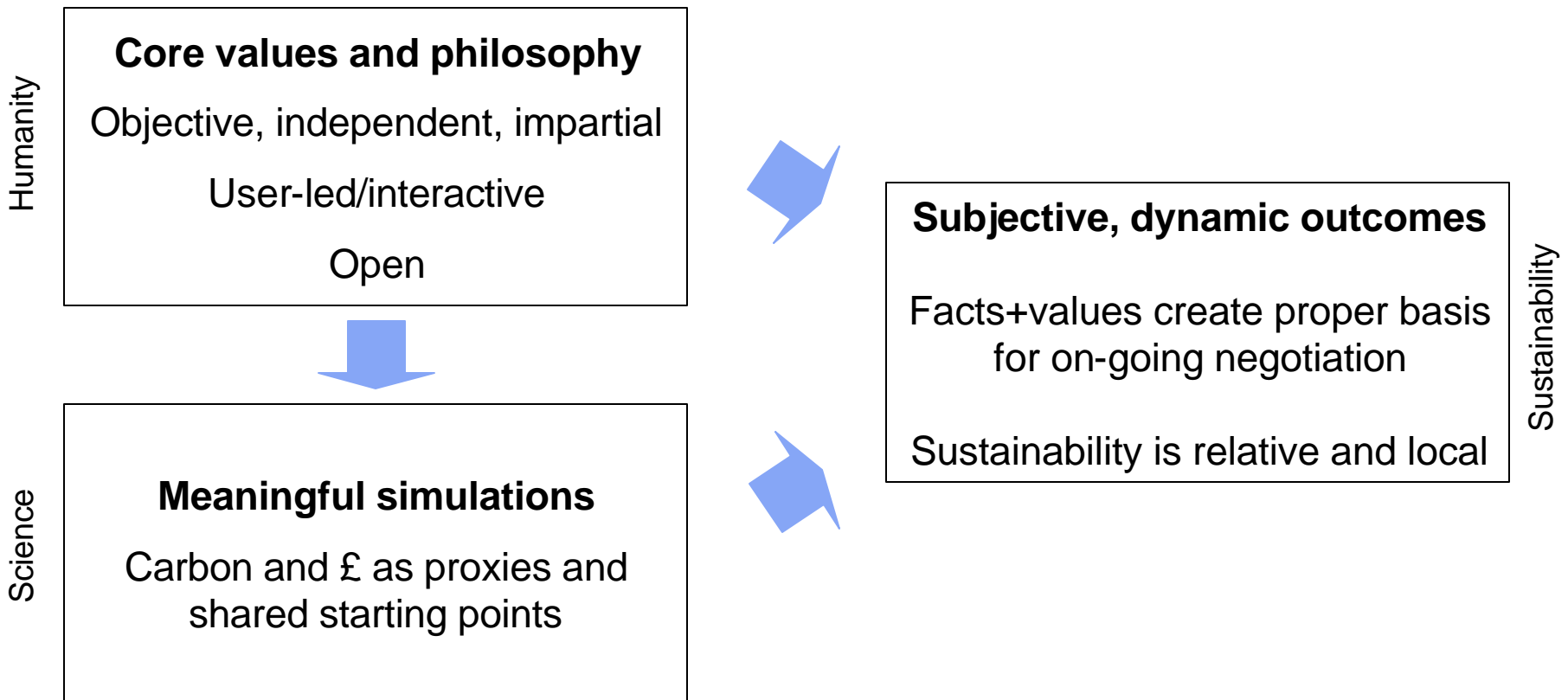
Privately funded

Two years research and development

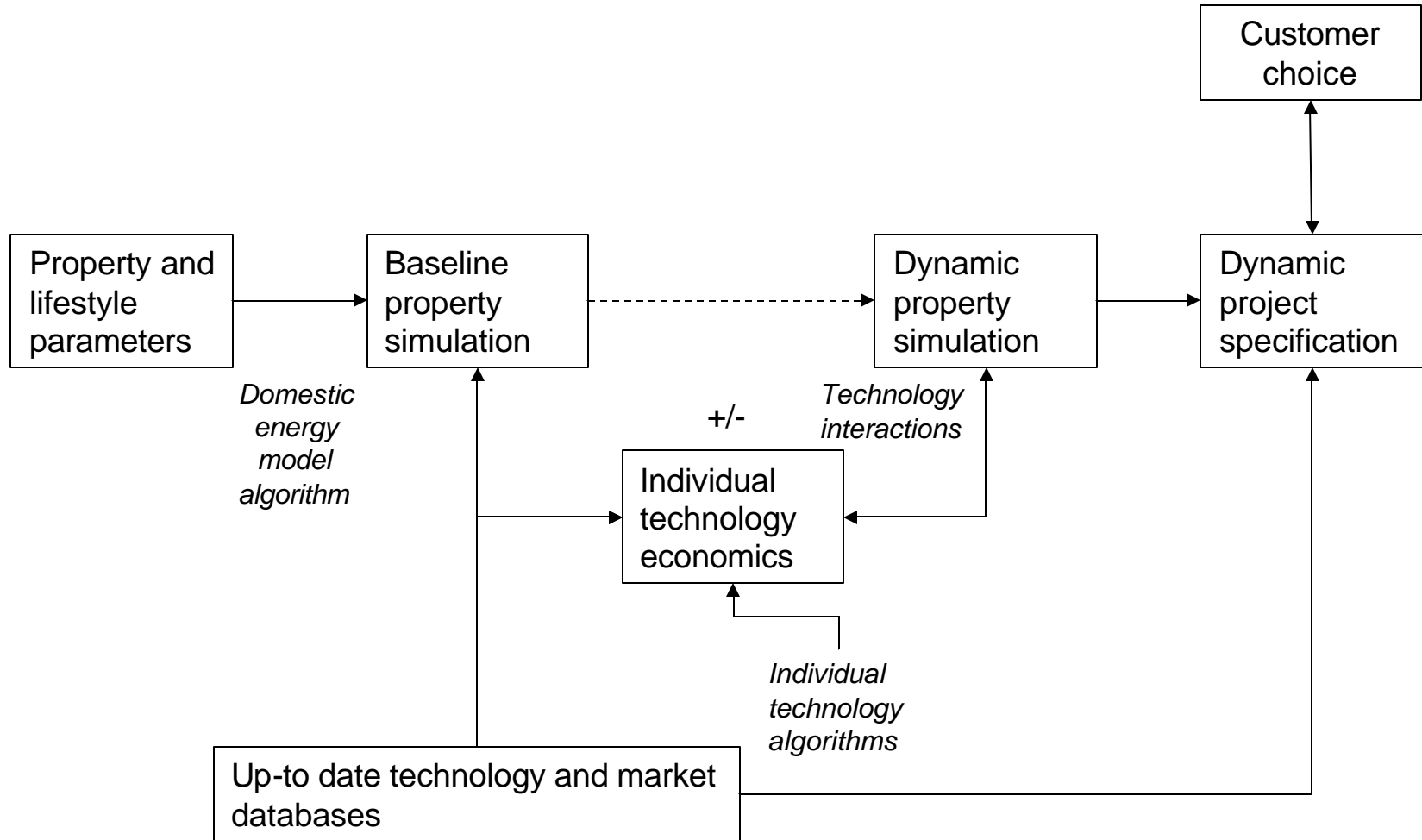
Six months pilot operations

# Theoretical approach

Science + Humanity = Sustainability



# Using simulation to evaluate relative sustainability 1



# Using simulation to evaluate relative sustainability 2

**Encraft Eco-Project Simulator - New Project**

Personal project specifications  
5 screen summary. For a full report in Word, click on the report icon.

Name: **Exeter**  
Report date: **20-Feb-05**  
Project ref.: **Qantok... drilled on-grid** Home extension

**The impact of this project on your property**

How your property performs today

Annual fuel bill	£1,235	Annual annual savings	£6
Annual CO <sub>2</sub> emissions	11.20 tonnes	Annual CO <sub>2</sub> emissions	11.20 tonnes

How your property will perform after your address

Annual fuel bill	£1,263	Total % CO <sub>2</sub> reduction	3.3%
Annual CO <sub>2</sub> emissions	11.67 tonnes	Technologies included	

How your property will perform after adding new technologies

Annual fuel bill	£1,263	Potential (without property saving)	Bottom third
Annual CO <sub>2</sub> emissions	11.67 tonnes		

Technologies you considered but decided not to incorporate in your specification

Installed cost (out of pocket)	Net financial savings per year	Annual CO <sub>2</sub> emissions saved (t)	Flaw

**Get Technology Details**

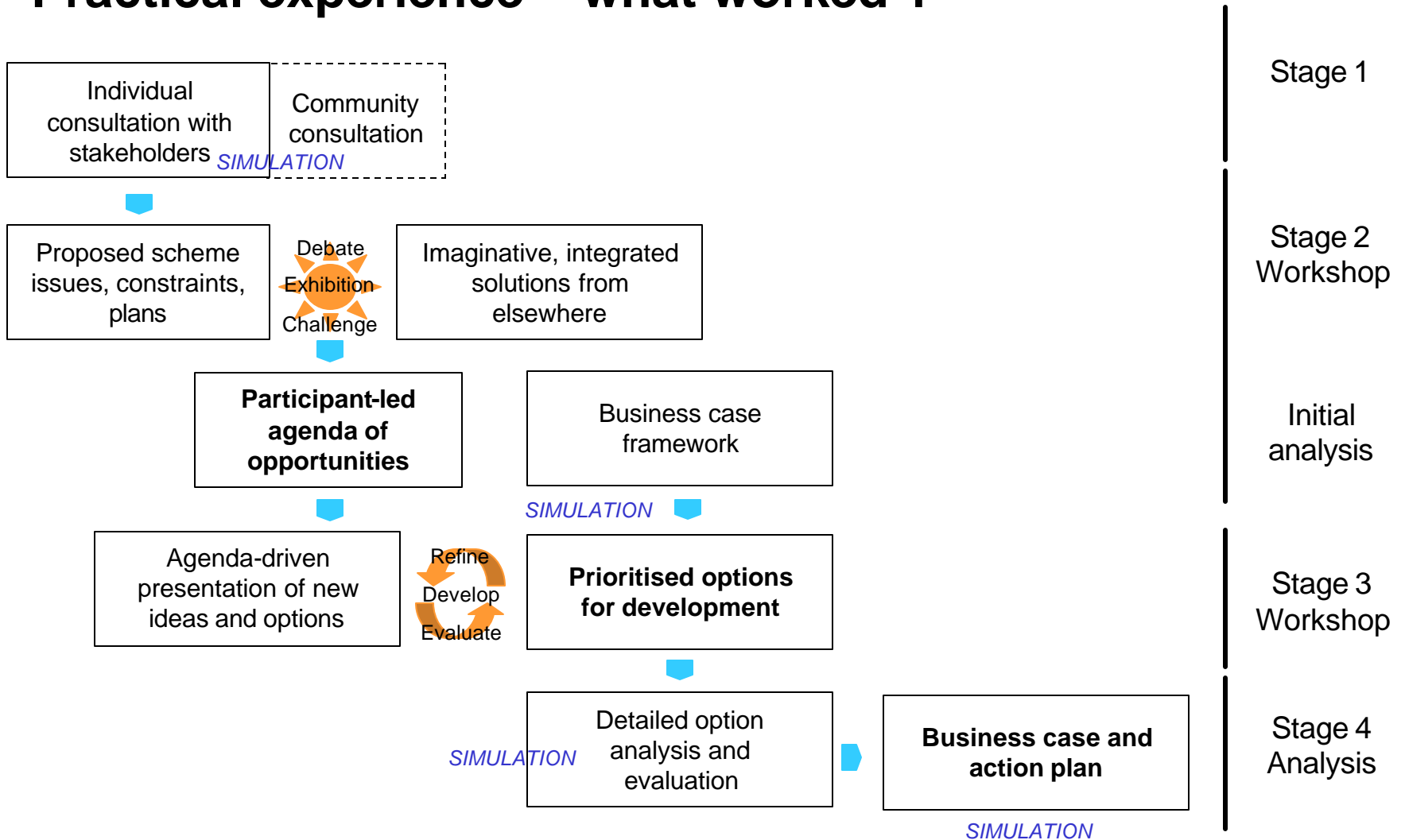
Choose the technology you want to enter/revise details for:

Group	Technology	Has Data	Selected
Insulation	Cavity wall	Yes	Yes
Insulation	Roof	Yes	Yes
Insulation	Floor	Yes	Yes
Solar	Solar Panel	Yes	Yes
Solar	Solar PV	Yes	Yes
Renewable	Wind	Yes	Yes
Renewable	Biomass (stove)	Yes	Yes
Renewable	Biomass (woodburner)	Yes	Yes
Renewable	Hydro	Yes	Yes
Water/energy	Water saving	Yes	Yes
Water/energy	Electric boiler	Yes	Yes
Water/energy	Gasfiring boiler	Yes	Yes
Other	Heating controls	Yes	Yes
Other	Kitchen	Yes	Yes
Other	Electrical appliances	Yes	Yes

## The Warwick case



# Practical experience – what worked 1







# Practical experience – what worked 2

	Commercial criteria			Environmental criteria			Social criteria
	Capital cost	Lifetime costs	Valuation	CO2	Visual	Biodiversity	
<b>Base</b>	£1000-1200 per sqm	£400 p.a. per unit	£150k per unit	1500-2000t p.a.	Not yet met through planning process		
<b>Option 1</b>	+5-7%	-10-15%	+6-12%	-15-25%	Arguments for and against ....		
<b>Option 2</b>							
<b>Option 3</b>							
<b>etc</b>							

**Hard simulation**



**Soft simulation**



## Lessons from the application

### A techno-political process

Rigorous simulation creates a level playing field

Honest and open *local* politics (unlike checklists)

### Multi-layered value

Sustainable outcome

Sustainable capacity

Sustainable imagination

The right tools, used well can change how and what people design and commission, not just single outcomes

## Next steps

### Repeated applications

- from single properties to larger scale developments
- live public pilot in progress

### Simulation model enhancement

- user interface development
- commercial module

### Regional, sector and international partners

## Contact us

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