



# Concept Symposium 2016

## Governing the Front-End of Major Projects

### Flexible project management strategies with real options thinking and Scenario Planning



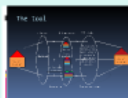
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Cadastre Land Registry and Mapping Agency  
The Netherlands

Most large construction projects are characterized by complexity, uncertainty, and a long timespan from planning to execution and finalizing the project. And not to forget the maintenance phase, where new developments might create other demands towards the construction. We developed a decision support tool with real options thinking and scenarioplanning to develop flexible real estate strategies. The tool is developed for real estate projects within healthcare, but is applicable to various types of construction projects. In this presentation I will describe how the tool was developed and how it influenced the participants' sensemaking on future uncertainties. I will conclude with applications of the real options thinking method on large engineering projects in watermanagement.

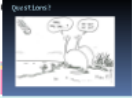
In the Netherlands in 2008, the healthcare regime changed dramatically which forced healthcare organisations to think and act more strategic to prevent bankruptcy. Among others, they needed to manage their real estate more efficiently. We developed a decision support tool based on the real options theory and scenario planning. A real option is the right and not the obligation to exercise an option. It creates flexibility and therefore adds value to a project. Derived from financial options, a real option applies to real investments, i.e. tangible assets. Both real options 'in' and 'on' the project exist; on the physical construction and in the construction process. An example 'in' the project is the option to grow, which creates flexibility to expand the construction. The option to stage is a process option, created by go/no-go moments within the process. We identified various real options in two in depth case studies of two construction projects in healthcare.

The decisions support tool was tested whether it increased sensemaking on flexible real estate strategies, by means of three workshops in different healthcare organisations. In combination with scenarioplanning the real options approach was recognized as a useful tool to prepare to future uncertainties. We used the backcasting method, in which one reasons back from a desired image of a future situation to identify those changes that are required to create this image. Considering multiple scenarios, flexible strategies with real options can be formulated. The tool proved to offer a useful means to make sense of abstract uncertainties that influence an organization, aspects which are normally outside the scope of real estate managers. The real options approach, as a way of thinking, offered a more structured way of balancing the costs and benefits of strategies to deal with future uncertainties.

Recently, the real options way of thinking has been recognized as a useful tool to support decisionmaking on large water related infrastructure projects in the Netherlands. Considering the many uncertainties around these projects, calculating the value of real options is not realistic, and calculations become too complex. However, the process of thinking about options is sufficient to guide decision makers.



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September 8th 2016, Stavanger  
7th Concept Symposium on Project Governance

# REAL OPTIONS AND SCENARIO PLANNING: CURE FOR THE FUTURE?

Maartje van Reedt Dortland

# Content



- Background
- Example of a project under uncertainty
- Concepts
- Decision support tool
- Sensemaking
- Other applications

# Uncertainties in healthcare real estate

- Uncertainties in healthcare developments
- New types of project coalitions (PPP: DBFMO)
- Little experience in NL with DBFMO
- Flexibility in real estate increasingly important

# EXAMPLE OF A HEALTHCARE PROJECT UNDER UNCERTAINTY

Analysis of decisions influencing flexibility:

**'Critical events' 2003-2013**



# starting situation



2003	2004	2005	2006	2007	2008	2009	2010	2011
1	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4
1	1	d	pd	pd	pd	pd	pd	pd

1 = initiative phase  
d = definition phase  
pd = preliminary design phase  
fd = final design phase



2003		2004		2005				2006				2007				2008				2009				2010				2011			
		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4		
i	i	i	i	i	i	d	d	pd	pd	pd	pd	pd	pd	fd	fd	i	i	i	i	i	i	d	d	pd	pd	pd	pd	pd	pd	pd	

- i = initiative phase
- d = definition phase
- pd = preliminary design phase
- fd = final design phase



**2003**

Long term housing plan



**2005**

Start definition phase



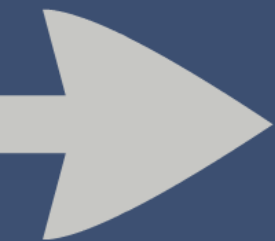
**2006**

Economic feasibility study and market research by 2 consultancy firms



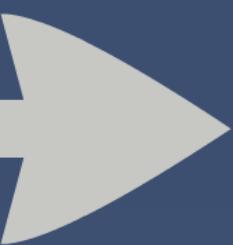
**2007**

Preliminary design, approved by board



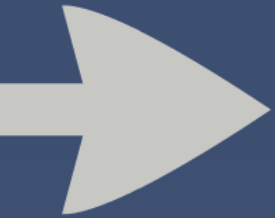
**2007**

final design



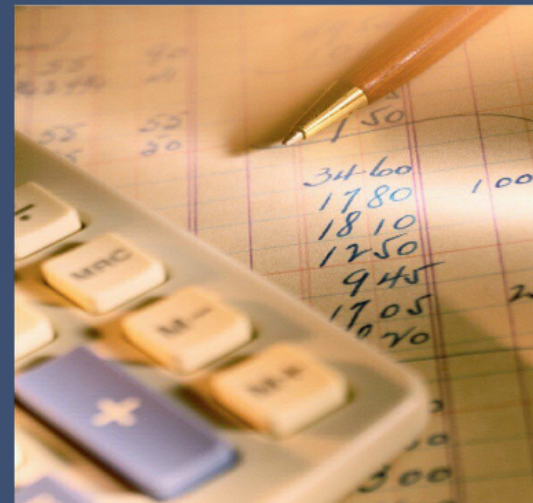
**2008**

Policy change --> new  
starting points for  
calculating rentability



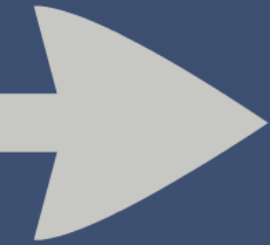
2008

Problems with value  
on the balance sheet  
of the building



2008

new ideas on  
elderly care  
concepts





**2008**

Merger between Ibis and Crane.

New real estate manager doubts the design and suitability with Long Term Housing Plan



**2008**

Reverification report by consultancy, project on hold

Starting up again in 2009



**2009-2010**

Second preliminary design



**2010**

new idea: wellness center



**2010**

Feasibility study and search for partners...



**2010**

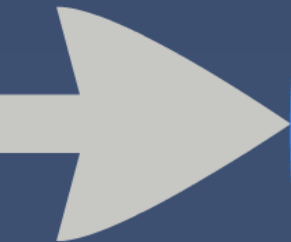
...and deferment of final design by board  
because of uncertainty around wellness  
center



**2011**

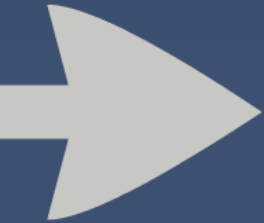
New board, new ideas:  
separate bathroom for all  
clients --> recalculation and  
redesign of somatic house.

Board decides on new  
building instead of  
renovation of somatic house



**2014**

construction starts 2014, first part finishes  
in 2015





in conclusion, a  
very flexible  
process but...

## ...VARIOUS CONSEQUENCES

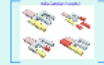
- Negative:
  - Frustration and loss of commitment and trust by stakeholders: Project team, advisors, municipality, personnel, working groups, clients, partner in project
  - Costs of reports, extra rent of temporary housing, expiration of fire department license, advisory- and design costs
- Positive :
  - Design that is more rentable and competitive
  - Value of balance sheet diminishes with time

# Research question

- How can real options be used in decision-making regarding strategic real estate management in healthcare?

# Concepts

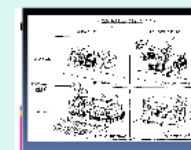
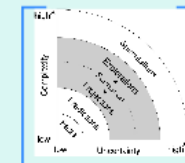
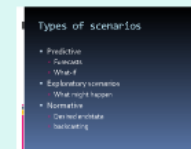
## Real options



## Corporate Real Estate Management



## Scenario's



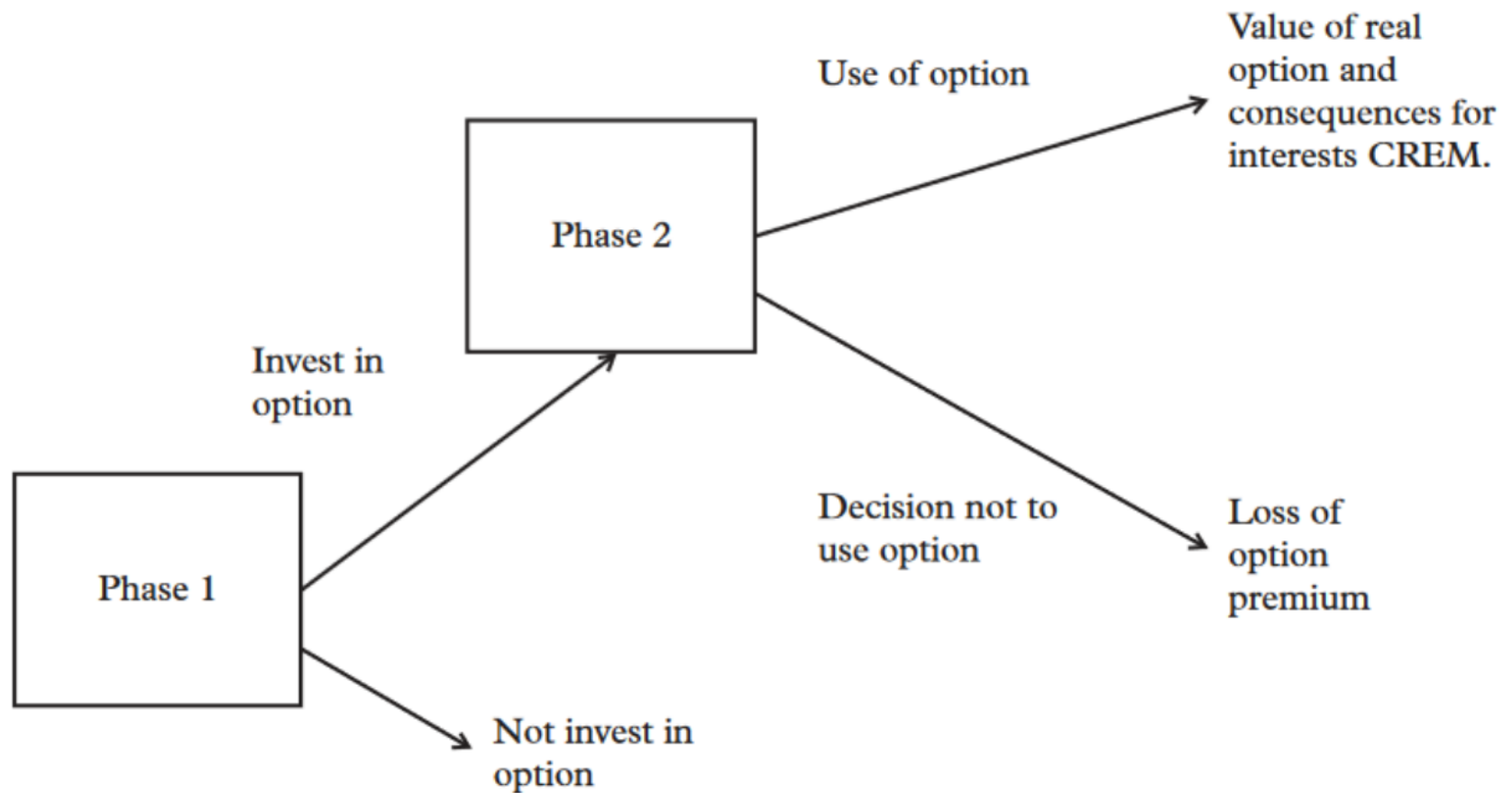
# Real options

- Right, not the obligation to exercise an option
- Initial investment ( option premium)
- Value = (consequences with option) – (consequences without option)
- More uncertainty = more need for flexibility = more value
- Expiration date

1. Uncertainty leads to choice regarding real option

2. Activity as a result of development of uncertainty

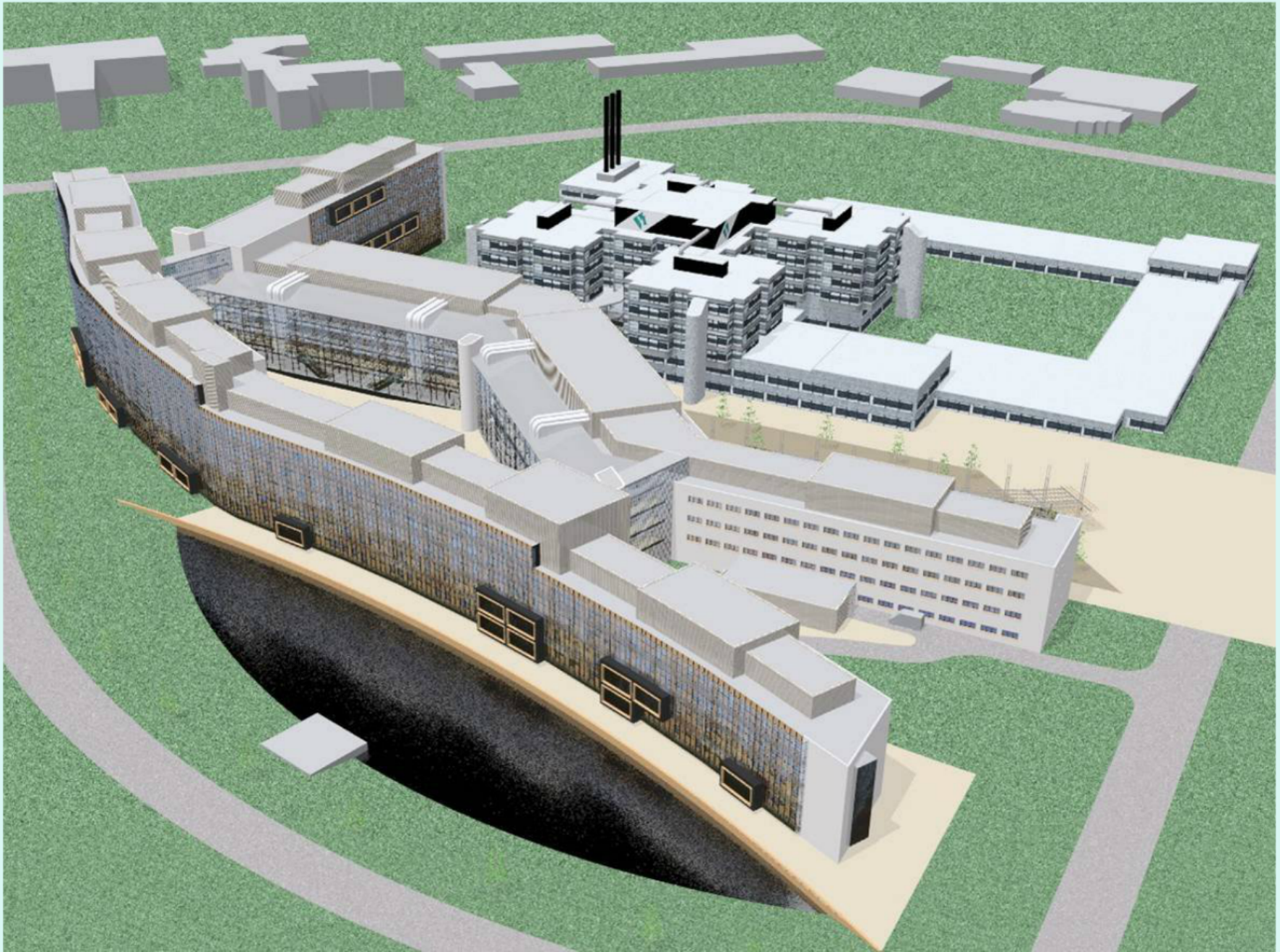
Consequence of activity



# Types of real options

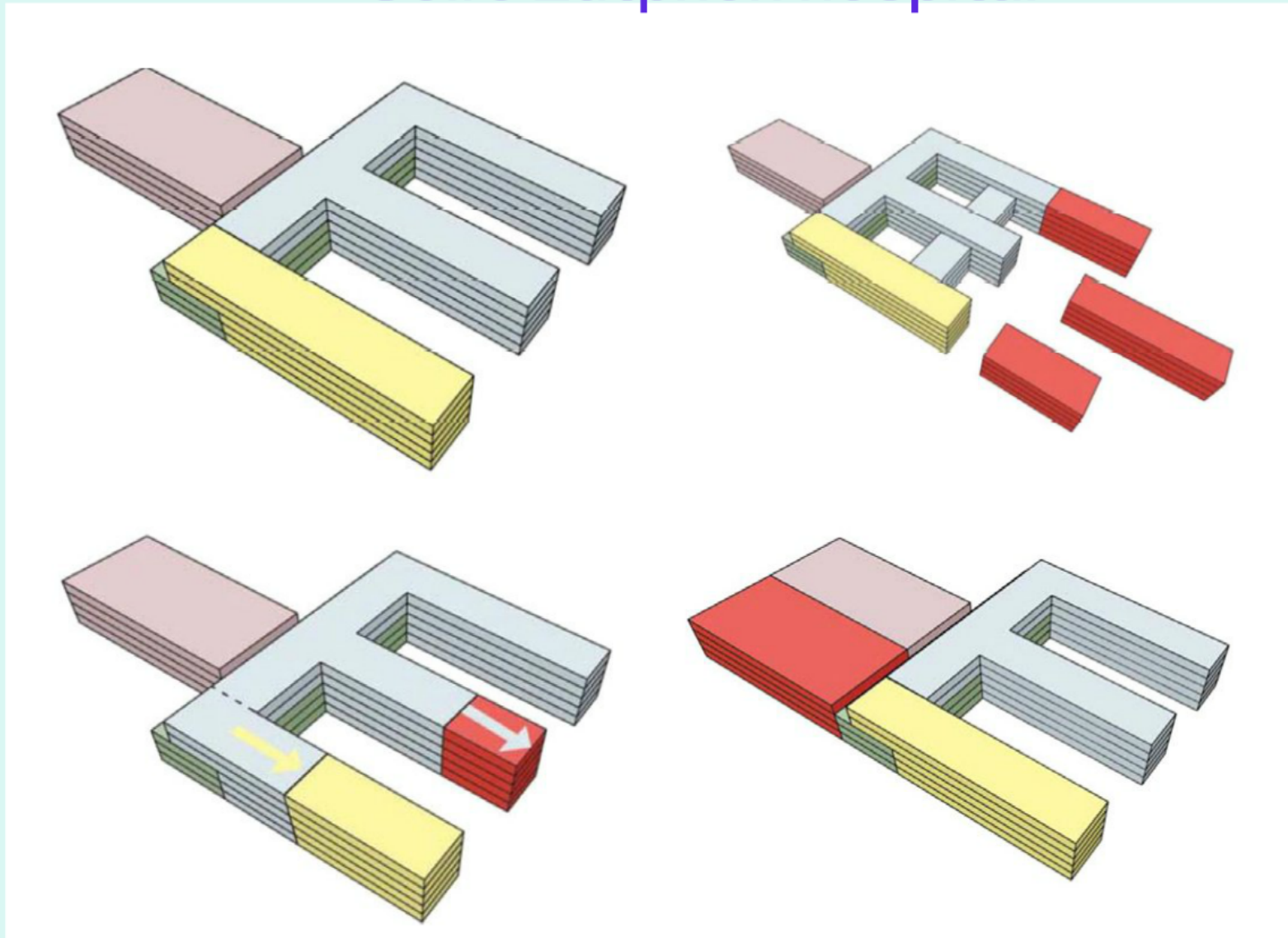
Types of flexibility	Real options
'on' the project	Defer
	Abandon
	Stage
	Select
'in' the project	Grow
	Switch function
	Scale up/down

# Martini hospital Groningen





# Gelre Zutphen hospital



# Application of real options: valuing flexibility quantitative

- Drawbacks: too complex calculations
- Valuation is black box
- Only one or few uncertainties considered
- A real uncertainty cannot be calculated
- Only valuation in monetary terms
- Advantage: a fixed number provides security



# Application 2:

## As a way of thinking

- Drawback: no security of numbers
- Advantage: sensemaking on flexibility strategies
- More uncertainties considered
- Supports decisionmaking
- Valuation of effects on other interests

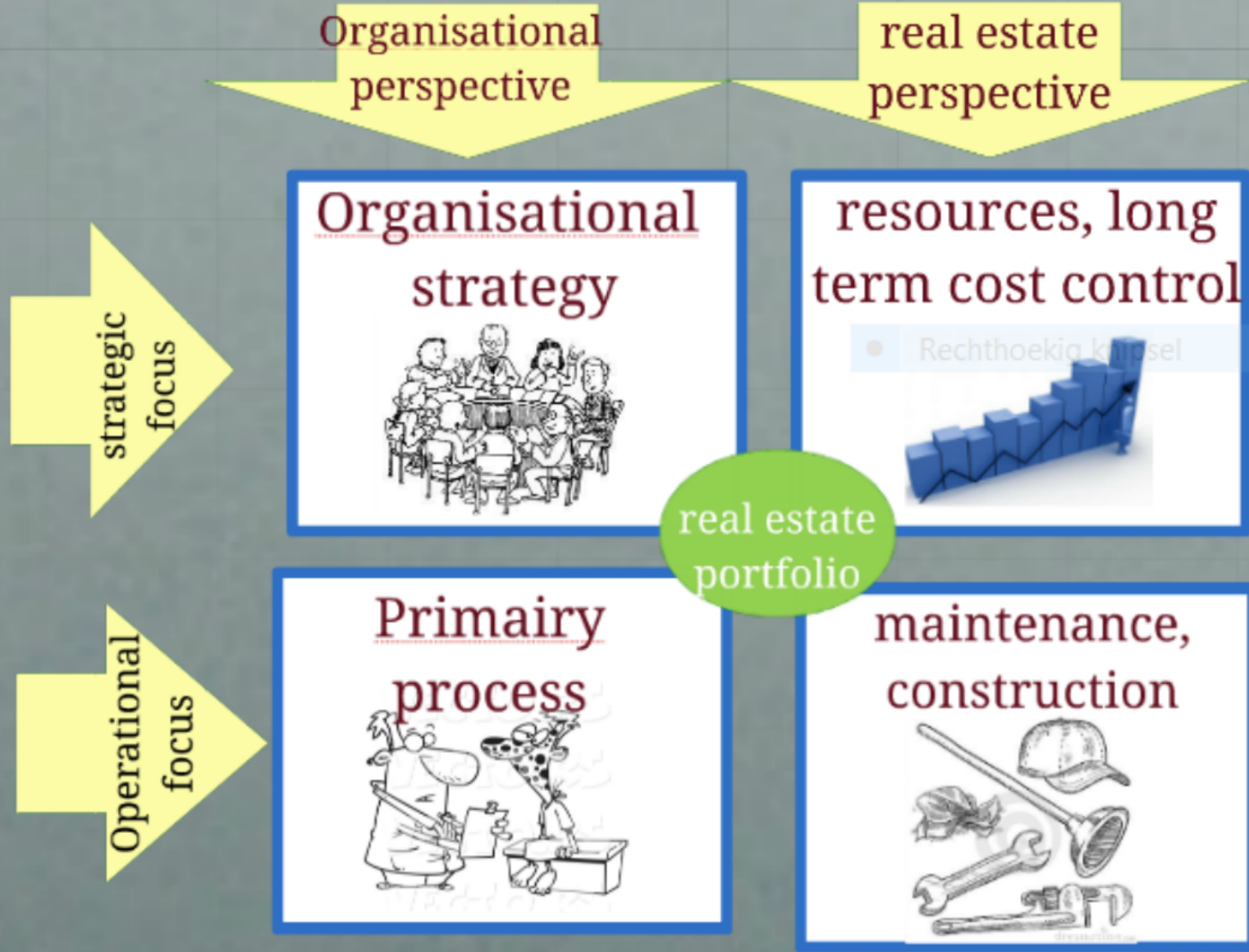
# Structure of a real option

Option to select in Utopia case	
Uncertain performance measure	Space needed in future
Driver of performance uncertainty	Vision of organization on expansion
Reference strategy	Sell land
Alternative strategy	Keep land
Signal for changing strategy (investing in option)	Decisions made on expansion
Conditions for strategy change (investing in option)	having land in ownership
Actions required (option premium)	Retain land; maintenance costs is option premium
Actions required to exercise option	Develop terrain
Decision rule for investing option	IF (the demand for care or income) > (investments in developing area) THEN (expand real estate) ELSE (sell area)
Expiration of real option	If there is no demand for expansion

## ...VARIOUS CONSEQUENCES

- Negative (**option premiums**)
- Positive (**option value**)

# Corporate Real Estate Management



Organisational  
perspective

real estate  
perspective

Strategic  
focus

policy makers



Controllers



real estate  
portfolio

Operational  
focus

users



Facility  
management



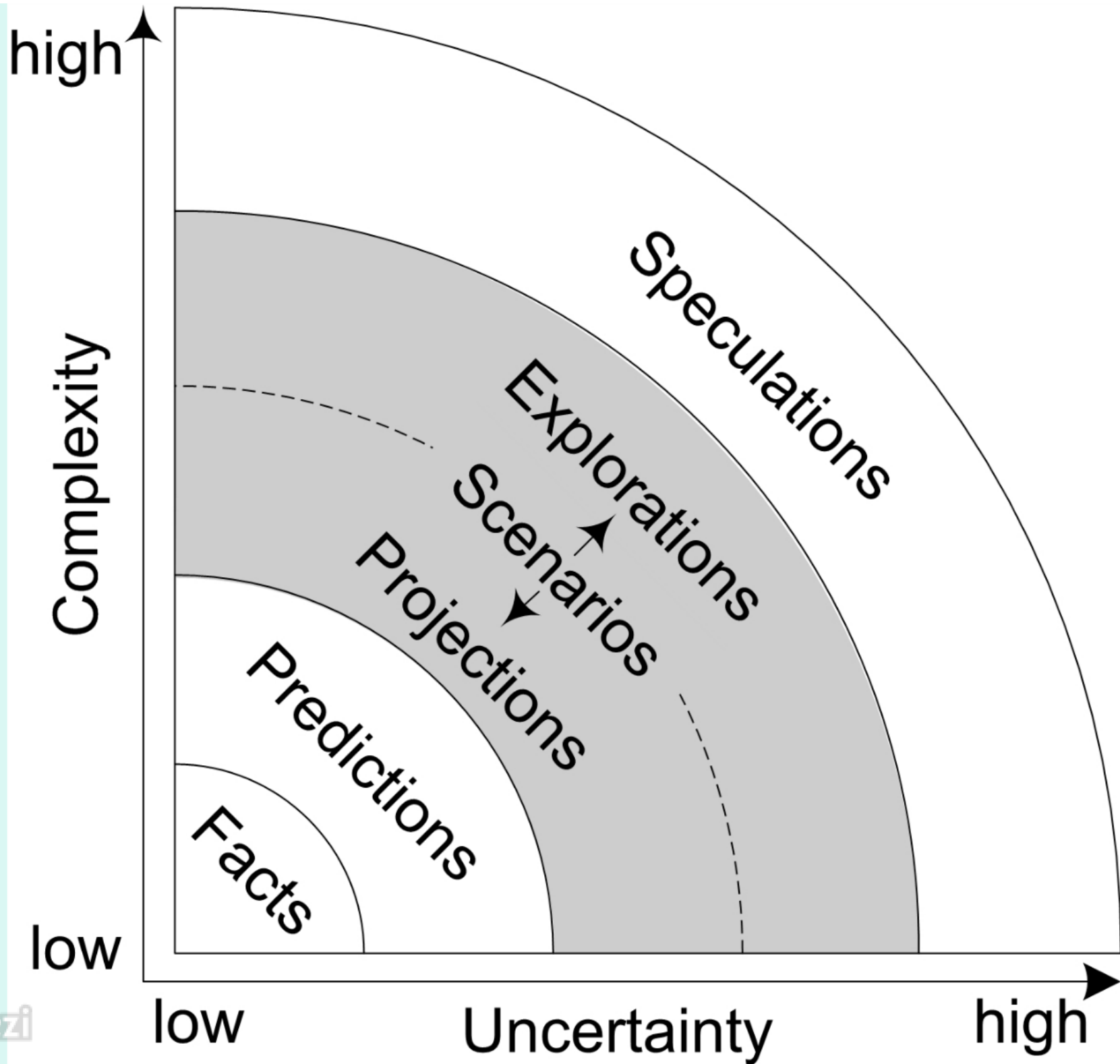
# Scenarios

- Scenarios  $\neq$  predictions
- To stimulate discussion
- To guide and structure thinking on future uncertainties
- Preparation on future
- Plausible images of the future, based on (autonomous) trends and developments



# Types of scenarios

- Predictive
  - Forecasts
  - What-if
- Exploratory scenarios
  - What might happen
- Normative
  - Desired endstate
  - backcasting

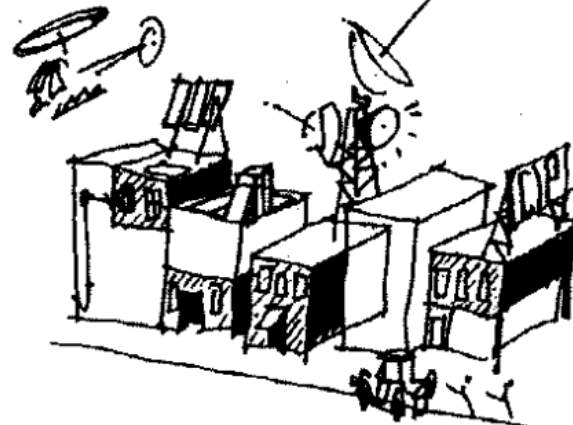
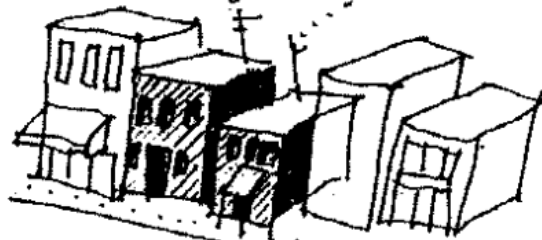


MARKET TURBULENCE

STABLE

FLUCTUATING

SMALL

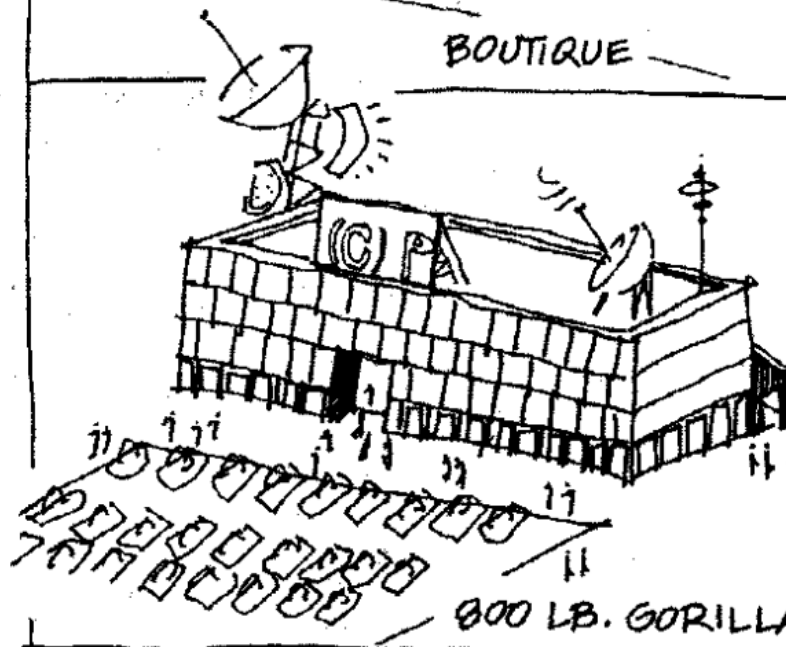


BOUTIQUE

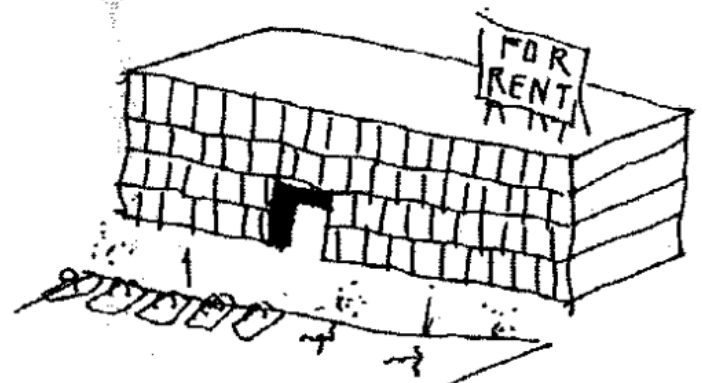
ART COMMANDOS

COMPANY SIZE

LARGE

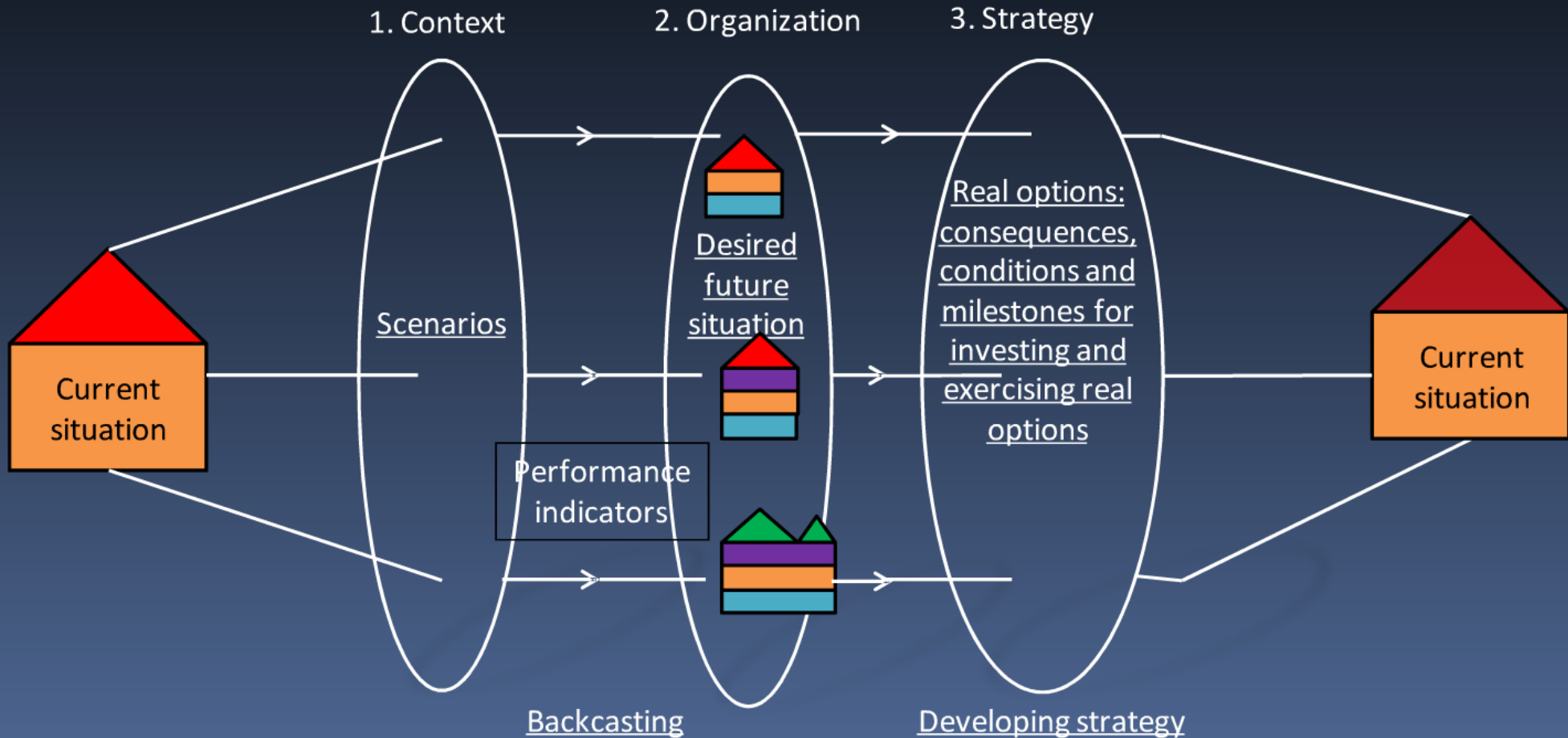


800 LB. GORILLA



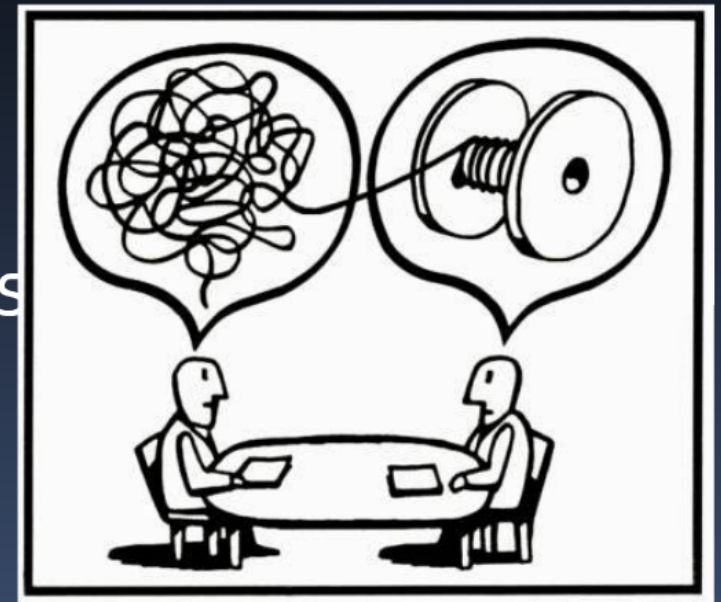
SPANISH ARMADA

# The tool



# Sensemaking tested in workshops

- 'Sensemaking is a social process during which members of an organization interpret their environment in and through interactions with others, thus constructing observations that allow them to comprehend the world around them and to act collectively' (Weick, 1993)



# Scenario development

Society

Social

Consequences for:

- Financing of real estate
- Demand healthcare
- Construction sector
- Ways of delivering healthcare
- Technologies
- Real estate market

Structure of market

Regulated, centralised healthcare market

No regulated, decentralised healthcare market

Scenario 1

Scenario 2

Individual

# Backcasting and real options

Desired options		Scenario 1		Scenario 2	
		Consequences without option	Consequences with option	Consequences without option	Consequences with option
Options 'in' the project	Growth				
	Scale				
	Switch function				
Options 'on' the project	Abandon				
	Accelerate				
	Abandon				
	Defer				

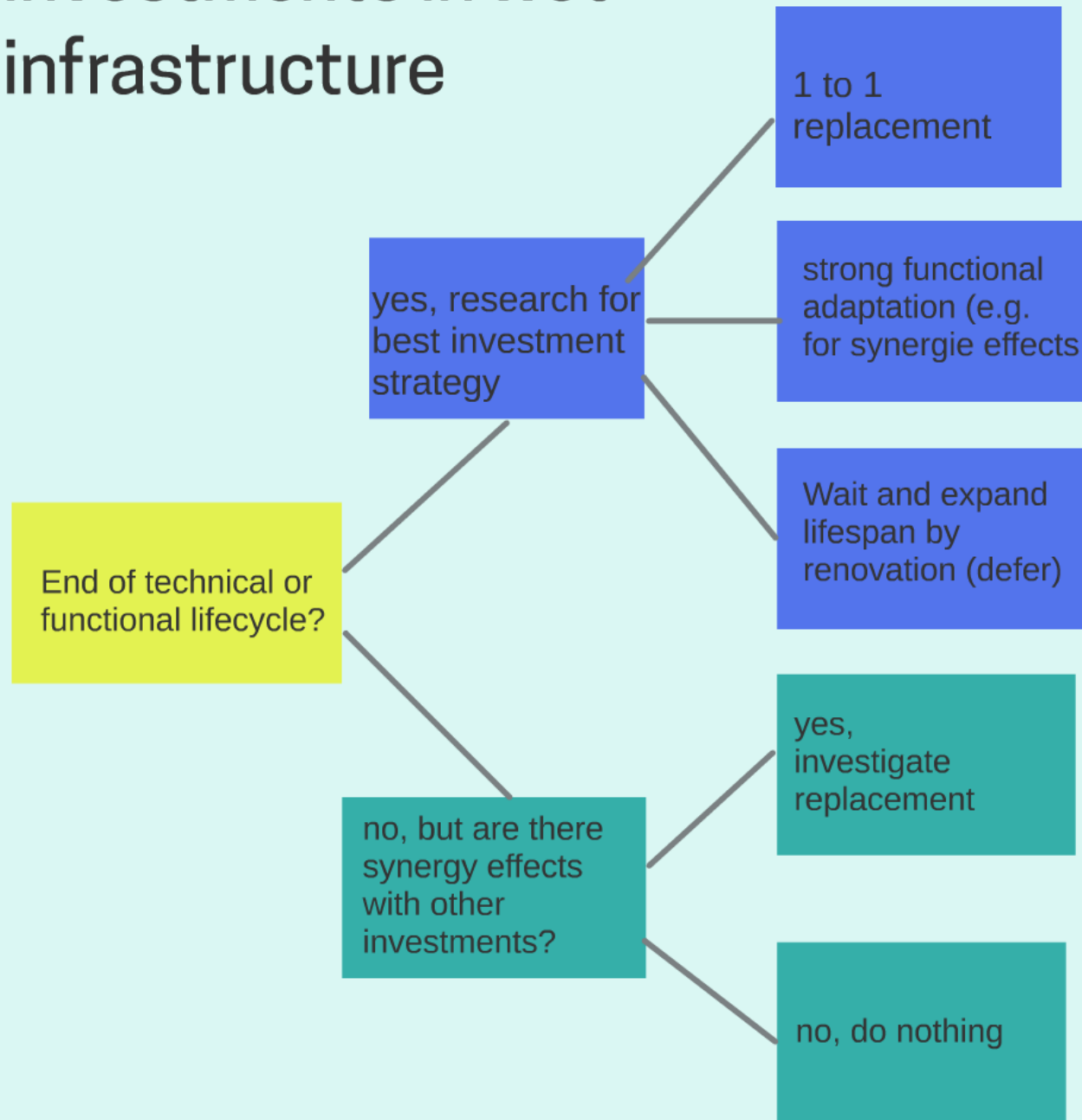
Consequences for added value real estate and interests of organisation: what is the value of the option?

# Conclusion

- Sensemaking dependent on background users and context organisation
- Gain understanding of real options concept takes time
- Mixed opinions
- Seen as useful tool for communication with other stakeholders
- Participation on both operational and strategic level desirable



# investments in wet infrastructure



# Questions?

