



# Contents

- What is evaluation?
- Pitfalls and Perils in evaluation
- How do you do evaluation studies?
- Overview of evaluation methods

What is 'evaluation'?

*Evaluation ...*

*is the act of*

***measuring or exploring properties***

*of a health information system*

*(in planning, development, implementation, or operation),*

***the result of which informs a decision to be made***

*concerning that system in a specific context*

[Ammenwerth et al. 2004]

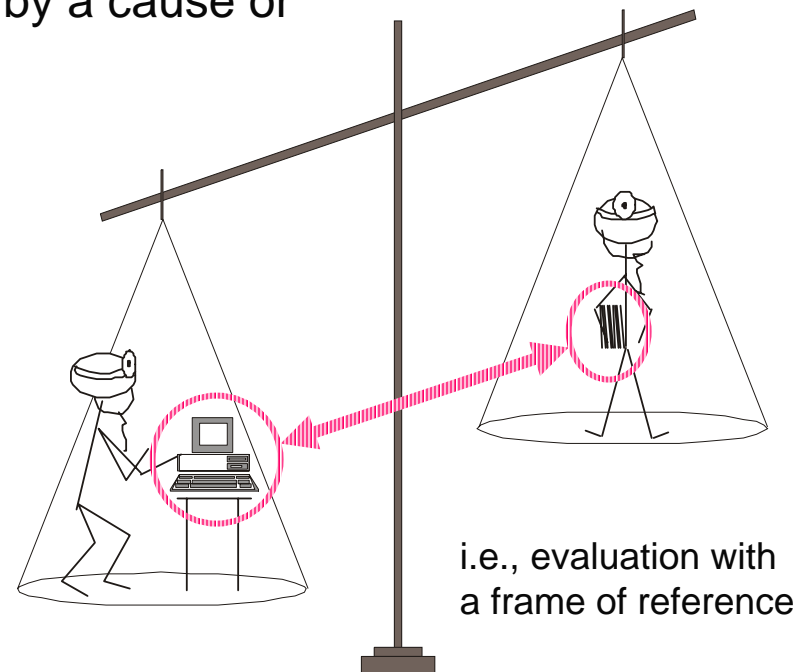
goal-free evaluation

evaluation with a  
frame of reference

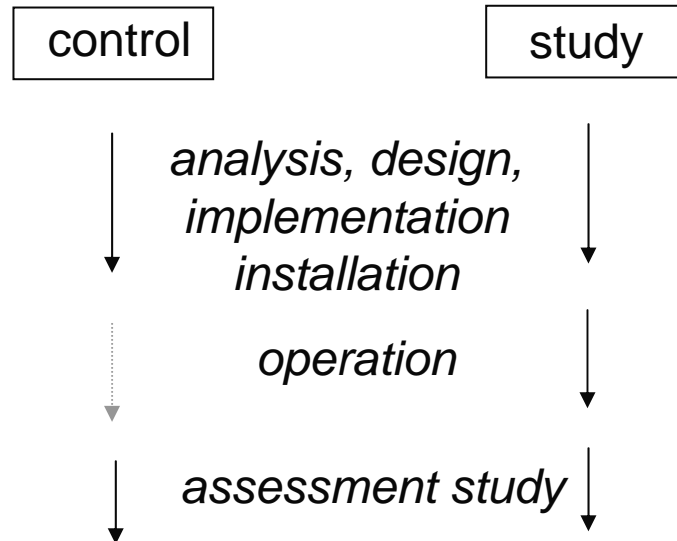
# Effect

Webster: "something that inevitably follows an antecedent (as a cause or agent)"

Collins: "something that is produced by a cause or agent"



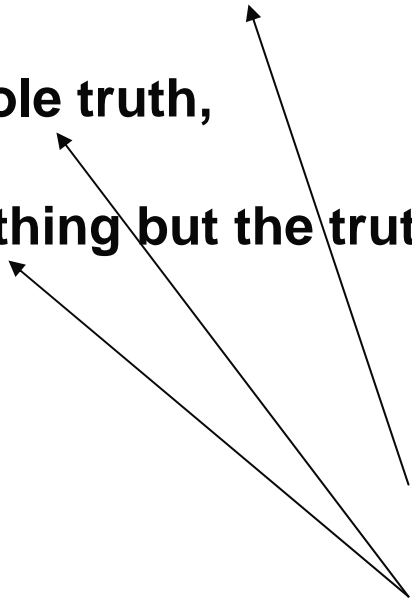
In controlled studies, it is important not to make additional efforts on the one group



**“... to tell the truth,  
the whole truth,  
and nothing but the truth”**

evaluation is a piece of cake

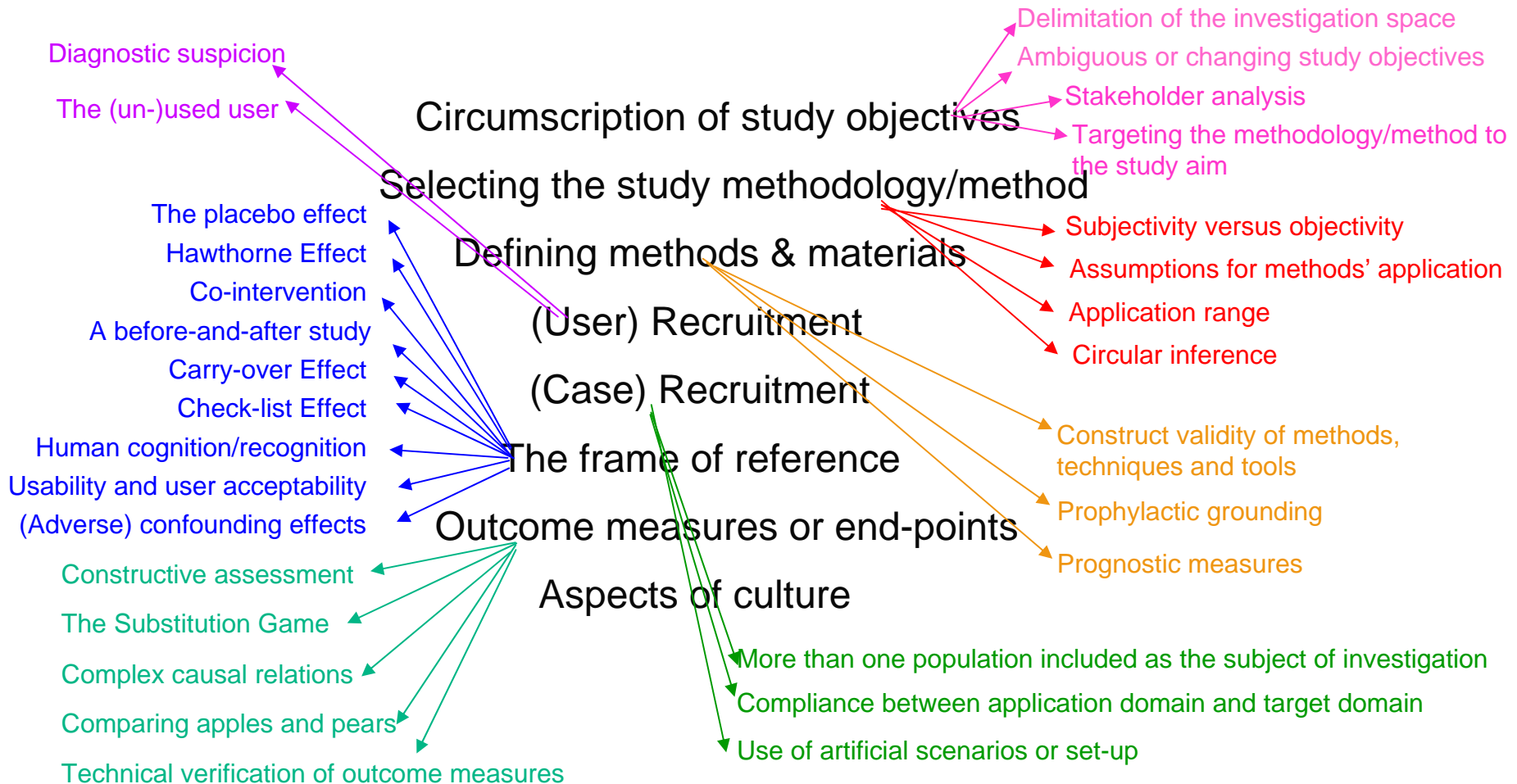
evaluation is utterly complex



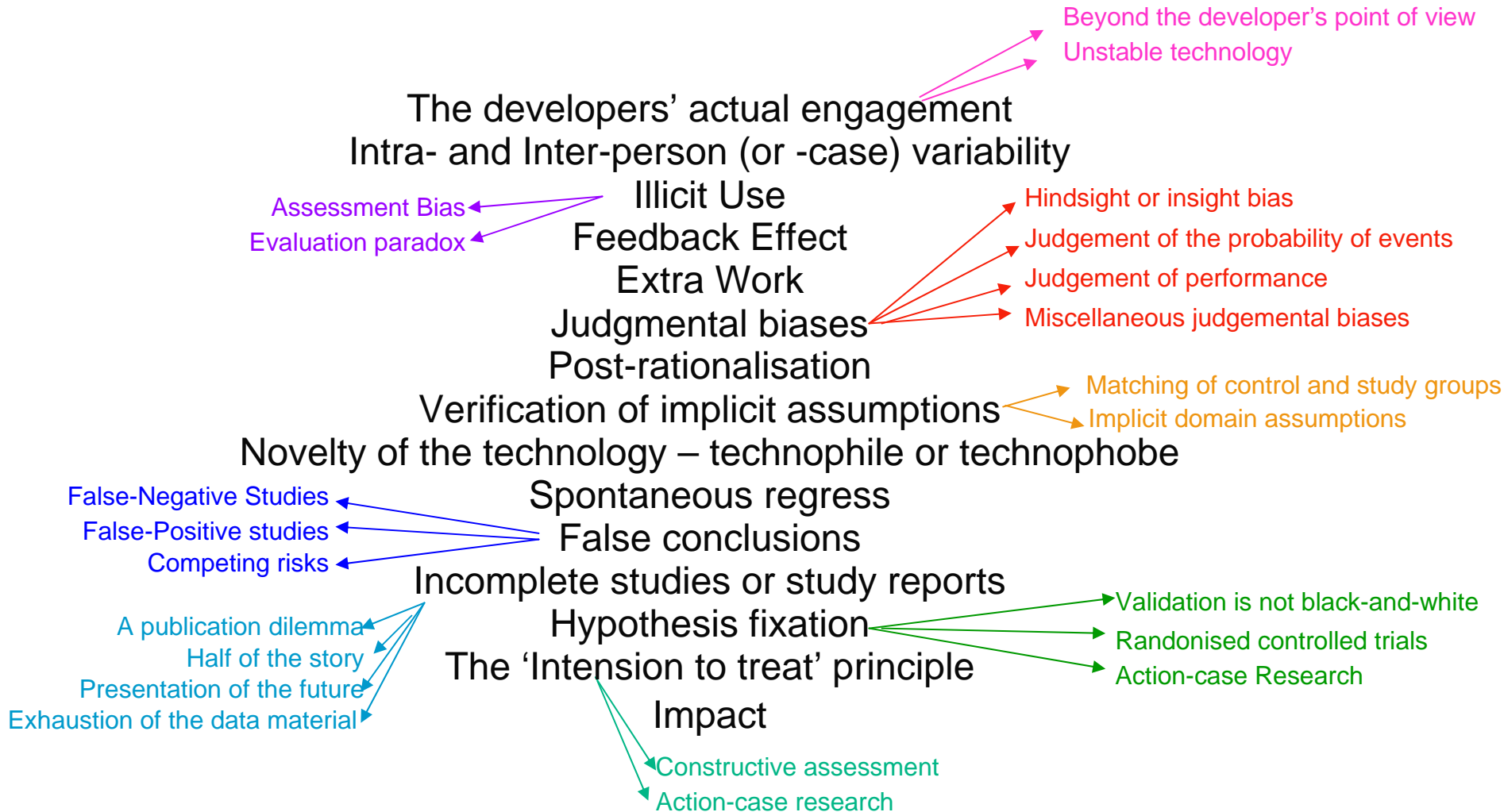
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# Study design biases

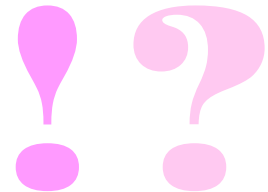


# Biases related to data collection, analysis and interpretation





Very few evaluation studies for  
IT-based solutions within the  
healthcare sector  
succeed to avoid even the  
simplest pitfalls and perils



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## **It is important ...**

**... that the conditions and constraints of the organisation is known and respected**

**... that there is full compliance between the objective, the approach and the exploitation of the results**

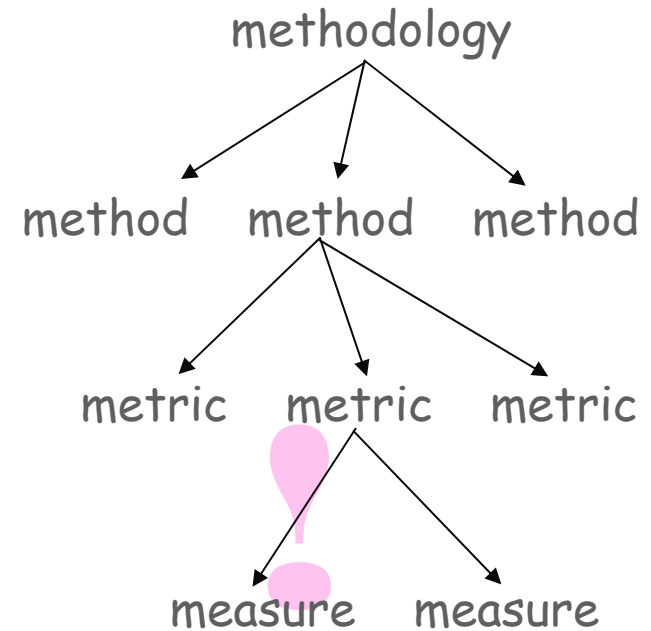
***Analysis of objectives, conditions/constraints and policy (incl. value norms and preferences), to establish a strategy and guidelines for accomplishment of a solution/task, including overall selection of methods***



## **What and how do you do?**

- ? Where in the life-cycle is the system
- ? Which question do you want an answer for
- ? What – precisely – is the answer going to be used for
- ? Who is the target group for the generated information
- ? What is the context of the study
  - ? Vision and mission of the organisation
  - ? Its policy
  - ? .....
- ? What are the conditions and constraints
  - ? The available resources
  - ? Relevant baseline material

Analysis of objectives, conditions/constraints and policy (incl. value norms and preferences), to establish a **strategy and guidelines** for accomplishment of a solution/task, including overall **selection of methods**



**Then !**

! Choose evaluation methodology

! Define policy for the study

! Value norms and perspectives

! Principles for user involvement

! Communication model

! ....

! Outline preferred method(s), check for pitfalls and assumptions

! Outline preferred metrics and measures

! Identify the frame of reference

! Define strategy, guidelines and plans, and finally prescriptions and timetables, etc.

# Clinical / diagnostic performance

## Functionality

- ergonomomy
- cognitive aspects

## Robustness

- time
- variance
  - analytical
  - day-to-day biological
  - nosographic

## Applicability

- assumptions
- perspectives and culture
- ethnic aspects

Medical knowledge

## Correctness

- sensitivity
- specificity
- PV(+)
- ....

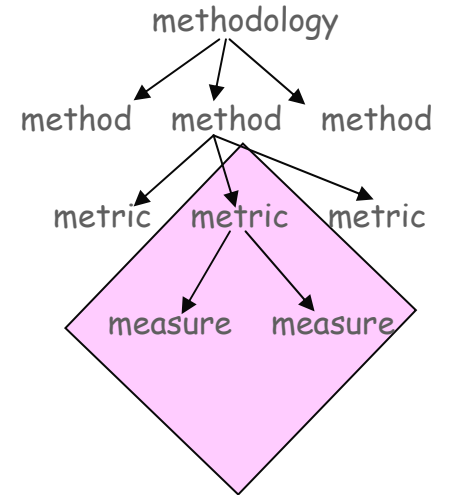
## Construct validity

## Transferability/generalisability

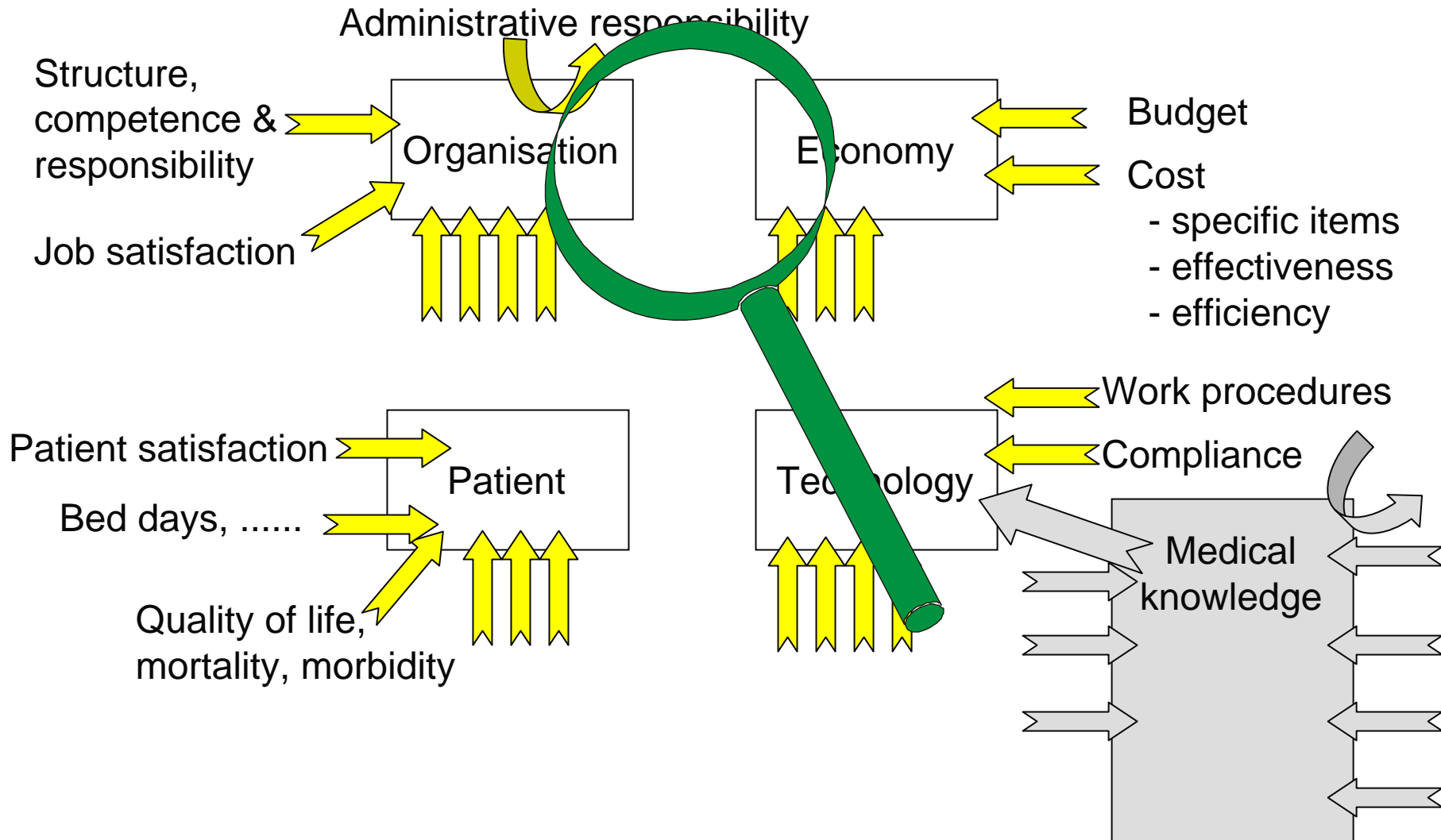
- organisational context
- content
  - compliance with local practice

## Comprehensibility

## Coverage of patient stream and patient



# Effect assessment



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O - R

S - V

**Definition purpose**

...ent of relations between elements in an  
...ation, influencing acceptance and use of future  
...ions

Assessment of who to involve

...sis

SWC

Situation analysis

Technical  
Verification

Systematic assessment of fulfilment as part of  
an a

Think Aloud

Usability

...nomic

User Acceptance  
and Satisfaction

Asses... perceptions

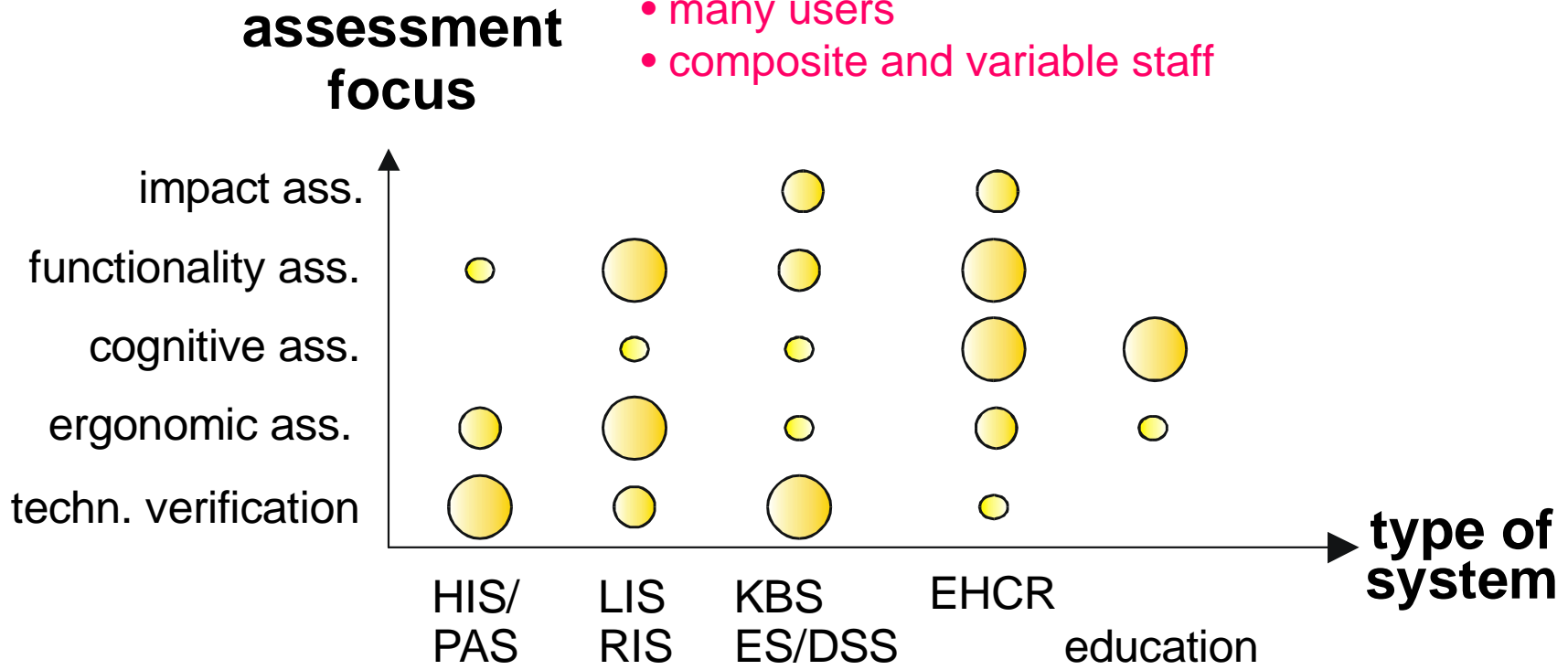
Video Recording

- An... of complex patterns of interaction
- Data acquisition and documentation in general

*There are plenty of methods and frameworks, and a fair number of methodologies to address users' need for evaluation*

**Summative  
vs  
constructive  
evaluation**

- complex tasks within a dynamically changing context
- unique cases
- decision support
- many users
- composite and variable staff



# Note,

the purpose  
– and hence benefit –  
of evaluating  
throughout the implementation of an EHR  
is to :

- maximize success and
- minimize failure aspects

