Promises in concrete

Unfixing working principles in interactive structured design

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1. Wageningen UR Greenhouse Horticulture
2. Wageningen UR Livestock Research

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- How come design projects for system innovation often end up excluding stakeholders?
- And how can we overcome this?

Reflection and analysis from designers/ project leaders involved

Content

- Introduction
- Cases: Cucumber, Chrysanthemum and Cows
- Comparison of cases
- Observations
- Conclusions

Introduction

- Issues that require system innovation exist (and have been worked on) for decennia,

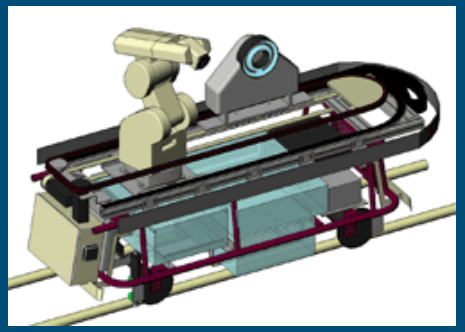
  .... but projects have a scope of a few years

- Complex innovations require a structured approach that conduces stakeholder engagement and involves a diversity of experts and users

- Design processes include a *Promise, basic working principles* and a *concrete description*:
  - Promise
    - Set of technologies *expected* to attain considerable improvement in the incumbent sociotechnical system
  - Working Principles
    - Basic principles of the system that would deliver the result
  - Promise in concrete
    - Rough description of system
  - Further choice of materials, sizes and technical details

Case Cucumbers

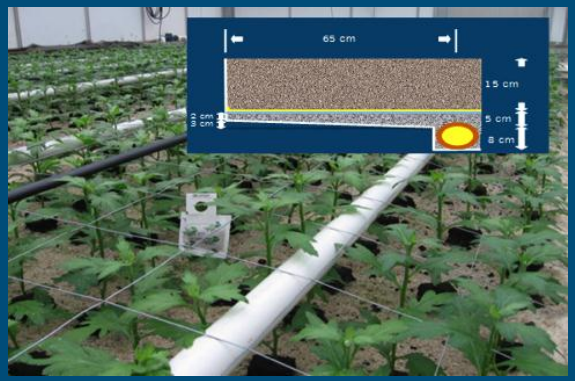
- GM-Robots delivered – so also robots in horticulture
- Robots can do repetitive work accurately
- “a horticulture-robots look like this:”
  - robotic arm
  - vehicle
  - camera
  - on board computer



- Conflicts:
  - High-tech design approach excluded growers
  - First results were below growers’ expectation (76% success)
  - Disbelief in the promise: “we’ll come back to it in 10 years”

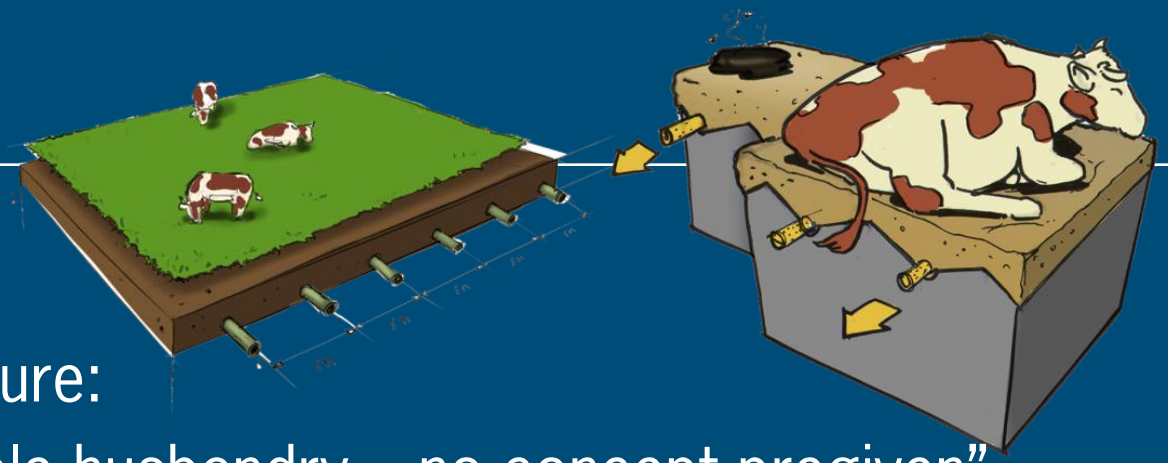
Case Chrysanthemum

- Soilless culture is more sustainable than soil bound
- Soilless culture delivers because of the better use of nutrients
- Funding for developing and testing a 'sand bed'



- But: experts and growers wanted to talk alternative systems
  - => so we did, within the scope of soilless culture
- And: growers were sceptical of soilless culture and feared obligatory implementation
  - => so we included economic goals

Case Dairy Cows



- Phase I
  - Ministry of agriculture:
    "develop sustainable husbandry – no concept pregiven"
  - Development of theoretical principles … one being: keep faeces and urine separated
  - Several concrete concepts according to the principle, but none tested
- Phase II
  - Farmer sees opportunities in the principle
  - Farmer initiates design process with suppliers
  - Leading to a new concept not envisioned in phase 1

Comparison of the cases

1. Robots: fixed conceptual form that limits the solution space

2. Chrystanhemum: fixed conceptual form, but project leader able to stretch the assignment while holding on to the working principle

3. Cows: new, theoretical working principles. Freedom to develop new concrete forms

Observations

- Including experts and users required:
  - Creativity by (re-)doing the design process – with changes of different outcome
  - Use design tools that include stakeholders
  - Engaging the financers in not delivering the original ‘concrete’, but the promise in different form

= Unfixing working principles from concrete representation to better the design process

- Including non-believers of the promise required:
  - Presentation of the working principles involved
  - Inclusion of stakeholders in decision making
  - Prepared to incorporate new goals and ambitions
  - Political approach of interacting

= Unfixing the promise from the goal and opening up to redefined goals to obtain stakeholder engagement

Conclusions

- Reflections at start of design project:
  - Possible institutional of experts'preferences or fixations
  - Stakeholder inclusion
- Financiers should create room for redirection within the project
  - deliverables on levels of system development: conceptual design, test system, demo in practice
- In case of conflict, move up an abstraction level:
  - concrete representations → working principles → promise → goals

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Thank you for your attention

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