

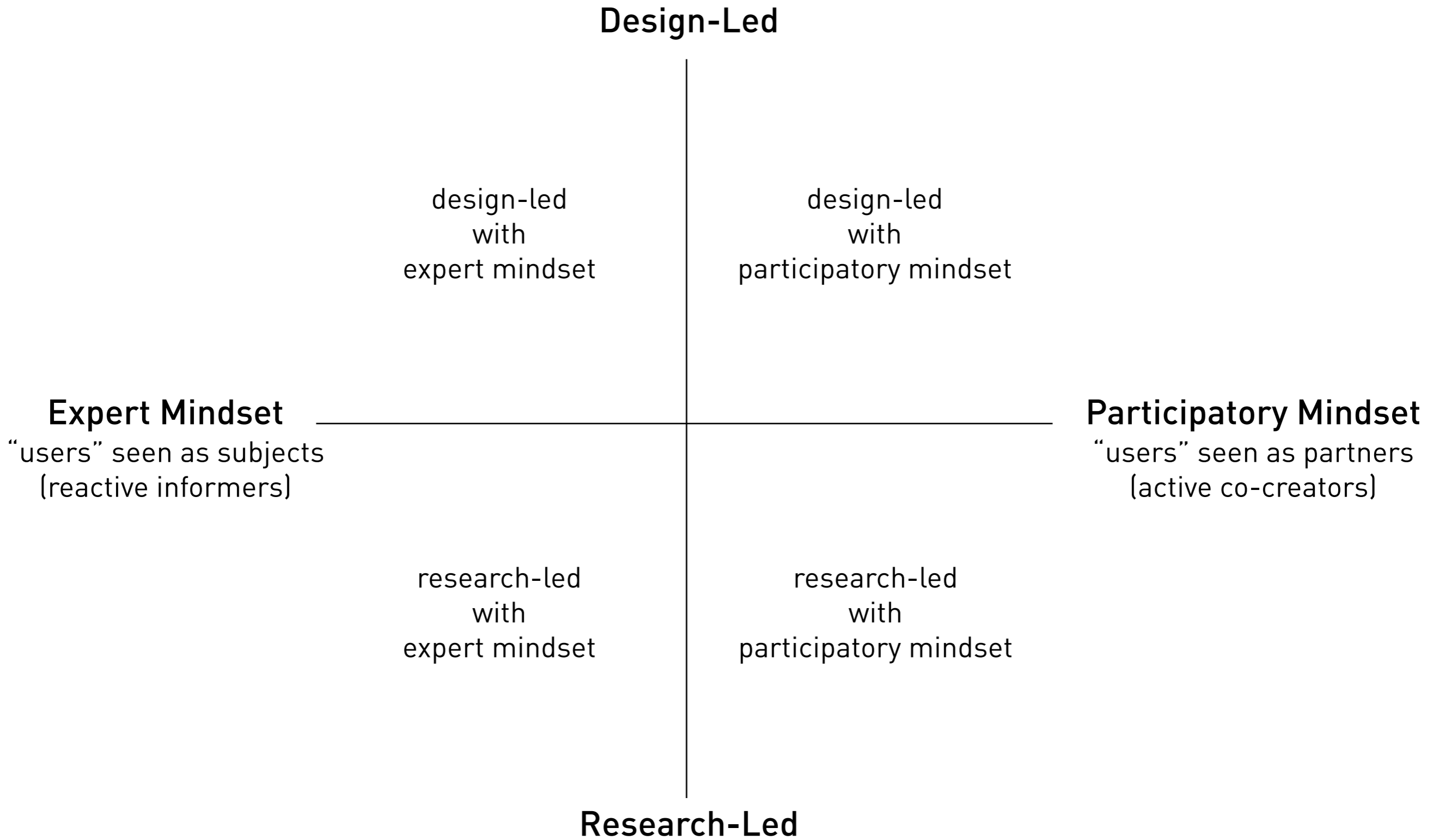
Interaction Design

Chapter 3 (May 02, 2012, 9am-12pm):
Approaches to IxD

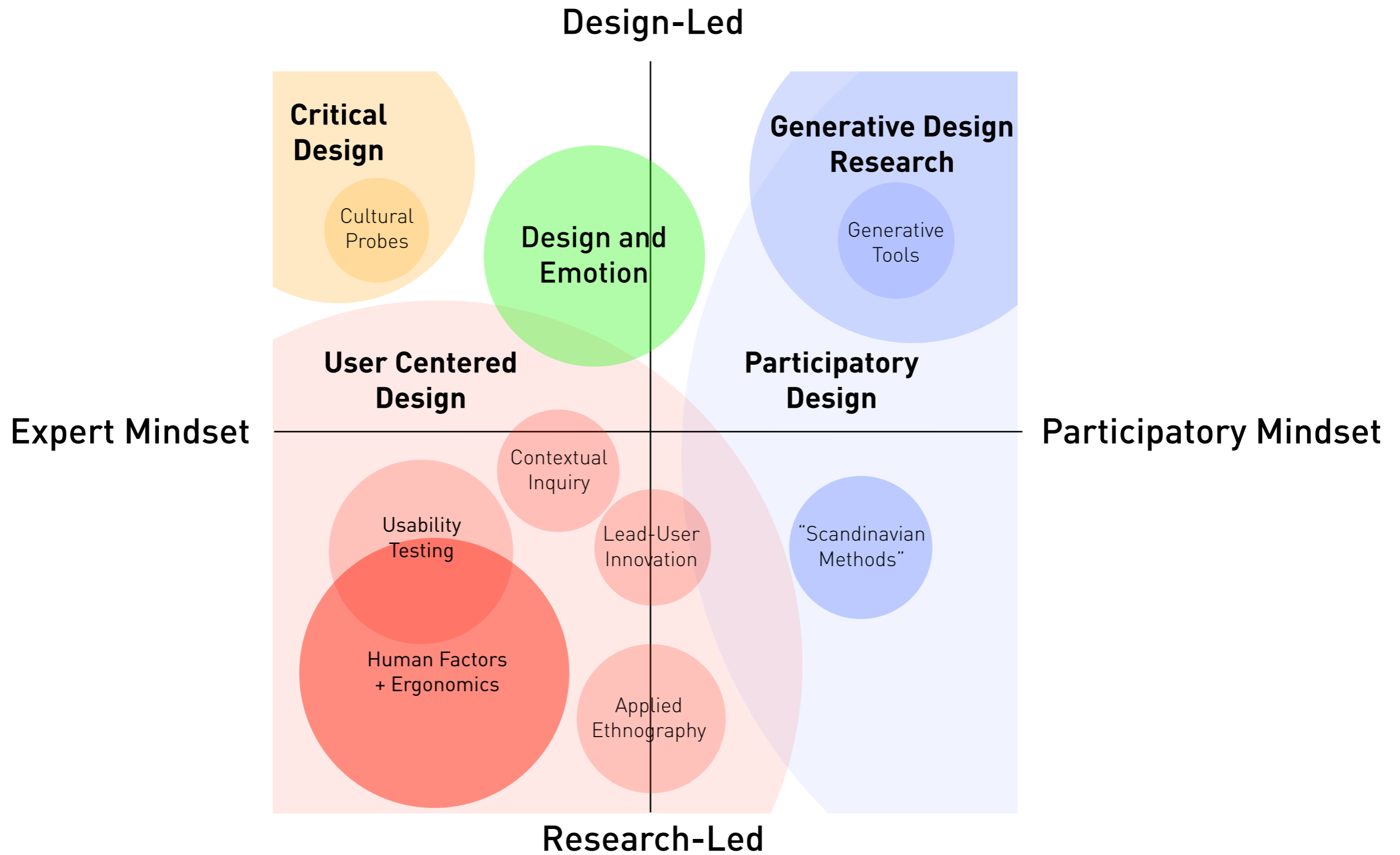
Approaches to Interaction Design

- The Purpose of Different Approaches
- Four Main Approaches
- User Centered Design (UCD)
- Activity Centered Design
- Systems Design
- Genius Design

Approaches to Interaction Design and the Role of the **Users**

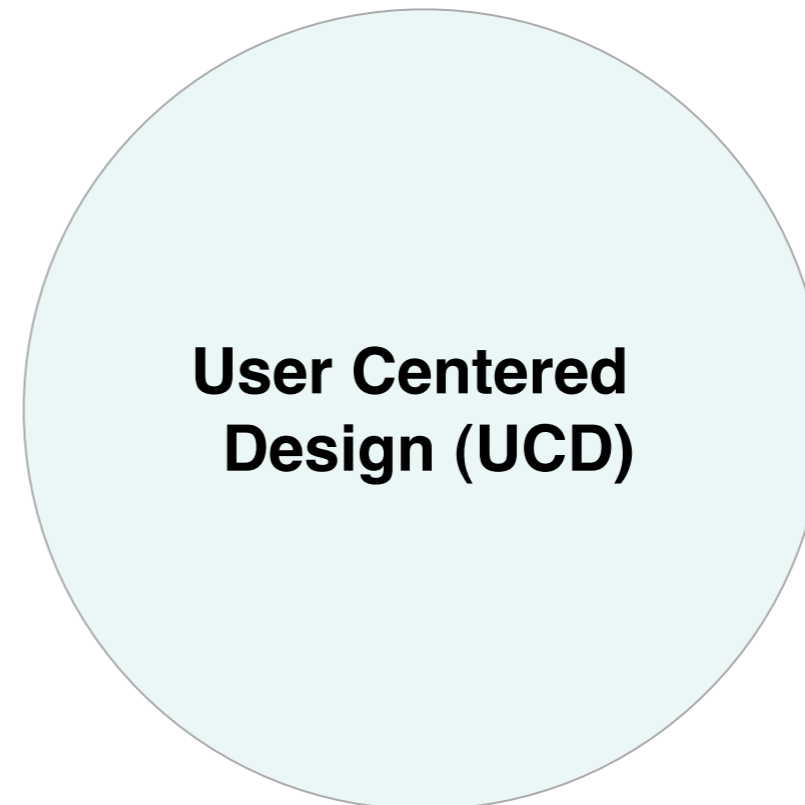
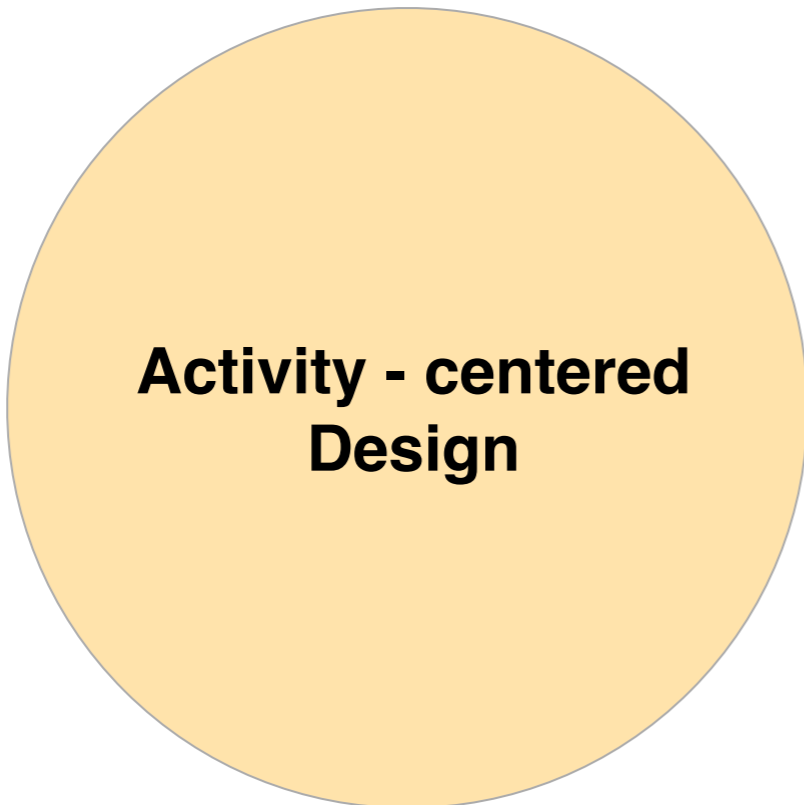
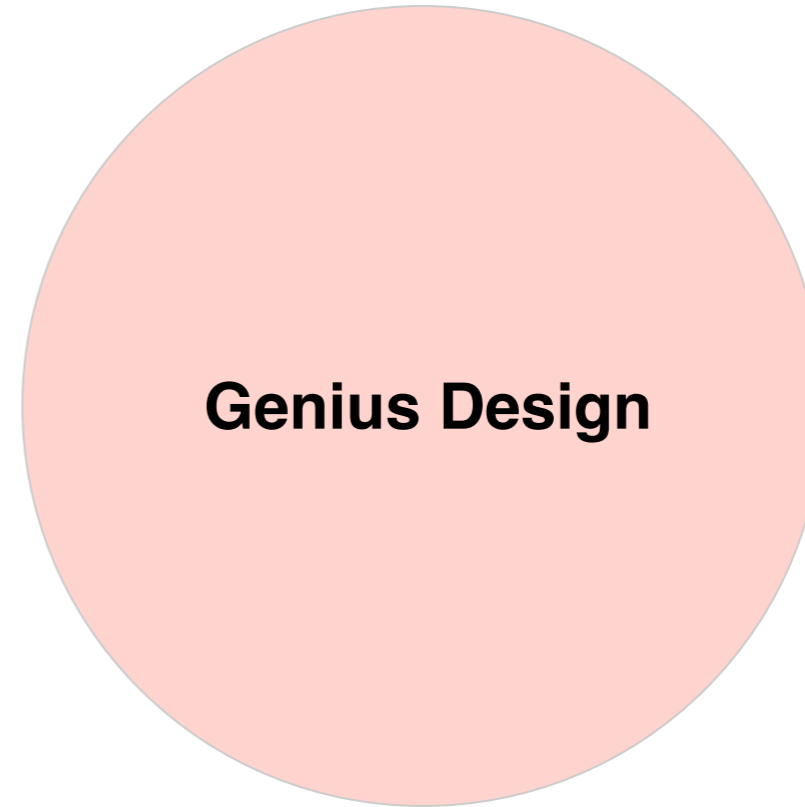
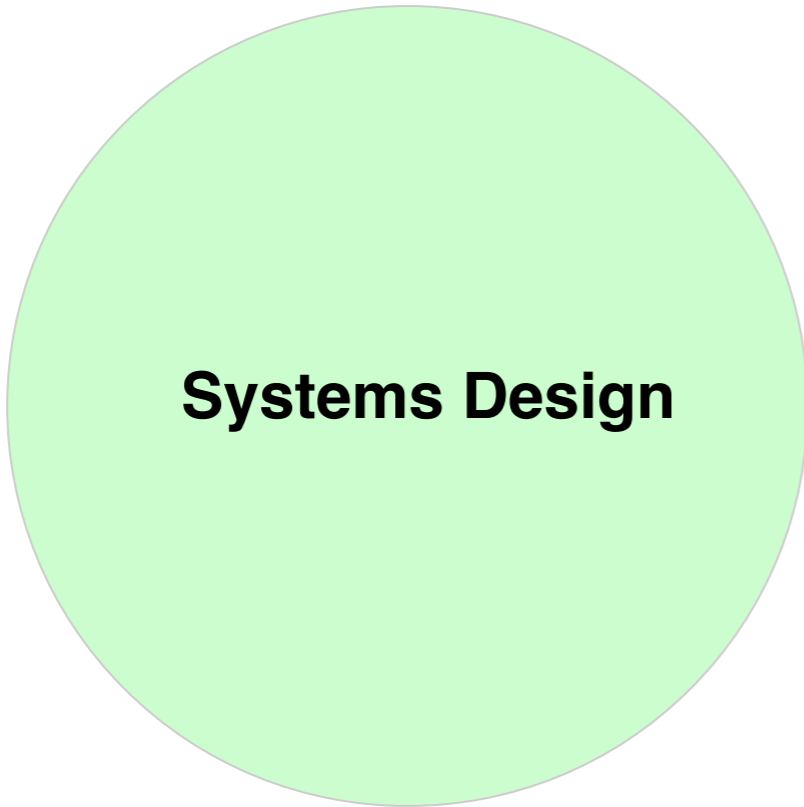


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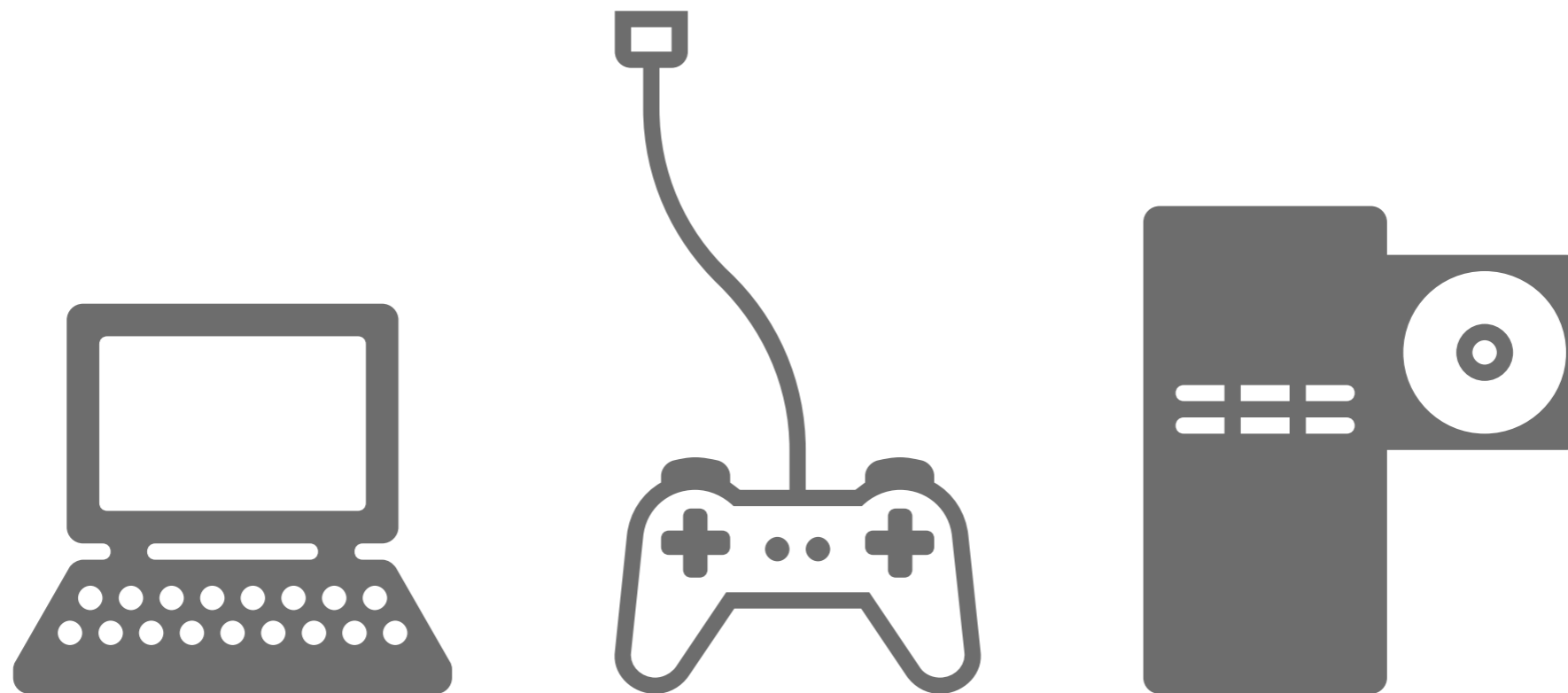
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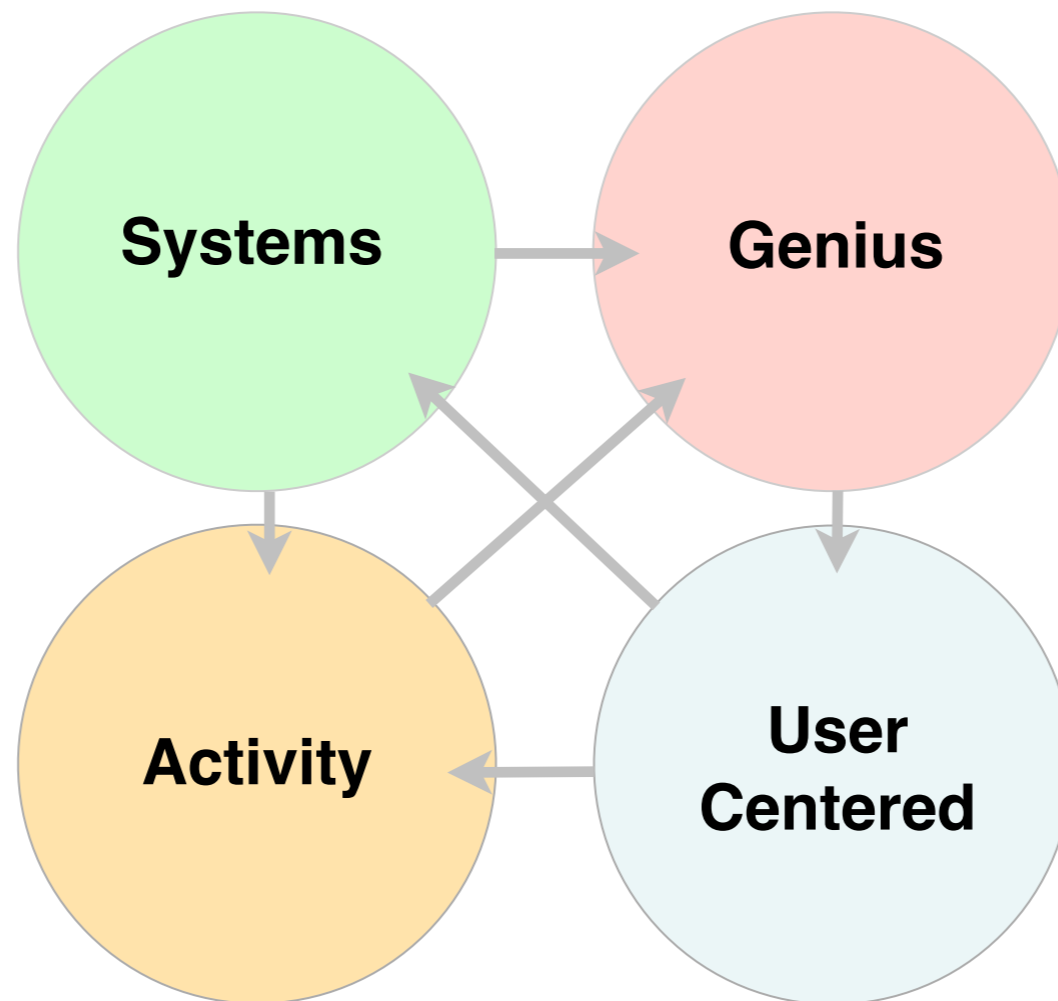
source: [5]

- can be used in many different situations to create vastly different products and services,
- e.g. Web sites, consumer electronics or nondigital services.



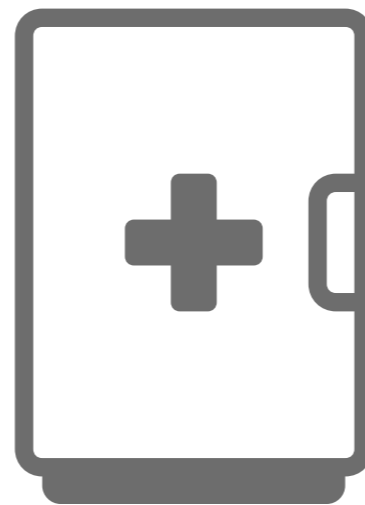
source: [5]

- move between approaches, applying the best approach to the right context
- sometimes applying multiple approaches even within a single project.



source: [5]

- problematic situations can be improved by developing at least one of these approaches



Four Approaches to Design

<i>Approach</i>	<i>Overview</i>	<i>Users</i>	<i>Designer</i>
User-Centered Design	Focuses on user needs and goals	Guide the design	Translates user needs and goals
Activity-Centered Design	Focuses on the tasks and activities that need to be accomplished	Perform the activities	Creates tools for actions
Systems Design	Focuses on the components of a system	Set the goals of the system	Makes sure all the parts of the system are in place
Genius Design	Relies on the skill and wisdom of designers used to make products	Source of validation	Is the source of inspiration

source: [5]

Approaches to Interaction Design

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Case Study:

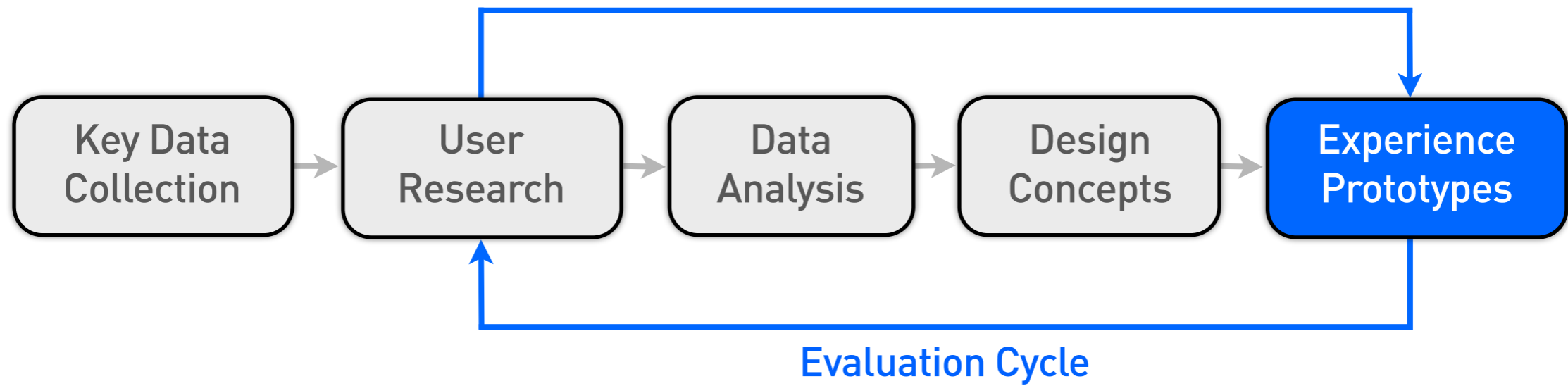
Paul Bradly

- designed the “Microsoft Mouse”
- followed an established “User-Centered Design Process” (UCD)
- helps Interaction Designers at IDEO developing their prototypes





Looking back...



User Centered Design (UCD)

Philosophy: Users know best

- People who will be using a product or service know what their **needs, goals** and preferences are
- Designers aren't the users.
- Participation from users at every stage of the design process.
- Roots in industrial design and ergonomics:
Industrial designer Henry Dreyfuss (Bell) popularized the method with his 1955 book "Designing for People".
- Software designers were long time unaware of the method

source: [5]

- With increased memory and processor powers and color monitors different forms of interfaces were now possible
- In the early 1980's a movement began **focusing on the users** not on computers.



source: [5]

What is a user-centered approach?

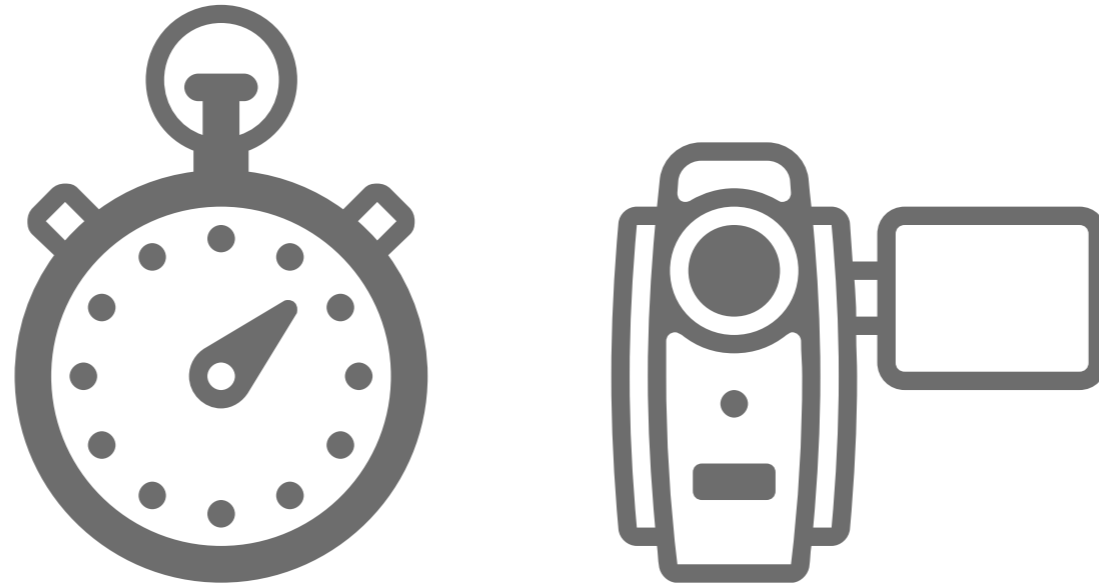
- User-centered approach is based on:
 - **Early focus** on users and tasks: directly studying cognitive, behavioral, anthropomorphic & attitudinal characteristics



source: [4]

What is a user-centered approach?

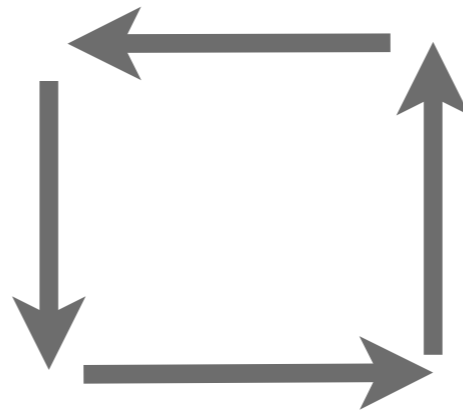
- User-centered approach is based on:
 - **Early focus** on users and tasks: directly studying cognitive, behavioral, anthropomorphic & attitudinal characteristics
 - **Empirical measurement:** users' reactions and performance to scenarios, manuals, simulations & prototypes are observed, recorded and analyzed



source: [4]

What is a user-centered approach?

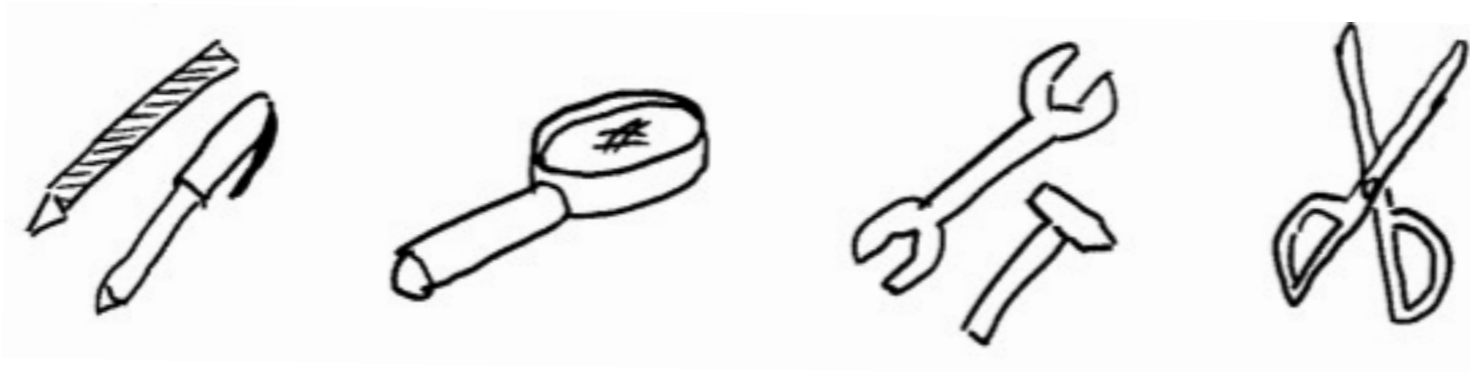
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 - **Early focus** on users and tasks: directly studying cognitive, behavioral, anthropomorphic & attitudinal characteristics
 - **Empirical measurement:** users' reactions and performance to scenarios, manuals, simulations & prototypes are observed, recorded and analyzed
 - **Iterative design:** when problems are found in user testing, fix them and carry out more tests



source: [4]

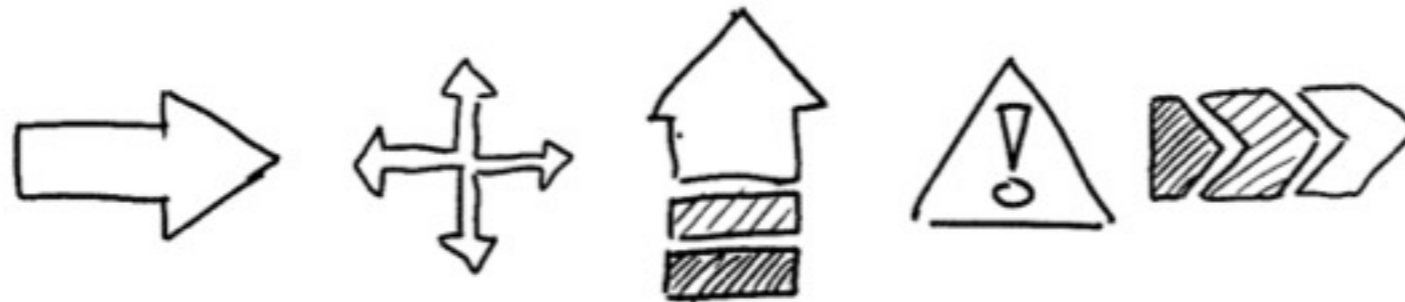
Four basic activities

- Identifying needs and establishing requirements



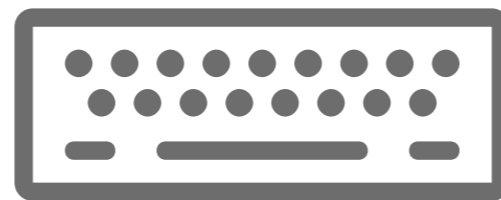
Four basic activities

- Identifying needs and establishing requirements
- Developing alternative designs



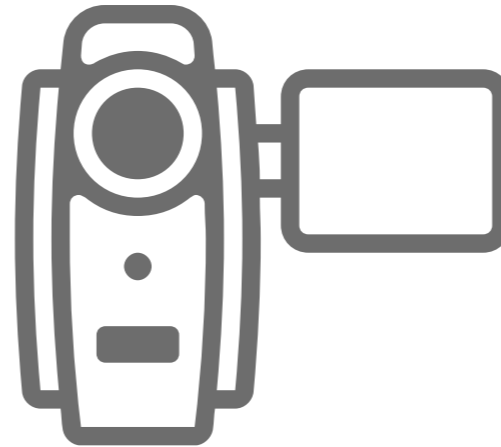
Four basic activities

- **Identifying needs and establishing requirements**
- **Developing alternative designs**
- **Building interactive versions of the designs**



Four basic activities

- **Identifying needs and establishing requirements**
- **Developing alternative designs**
- **Building interactive versions of the designs**
- **Evaluating designs**



Summary:

- **Goals** are important in UCD -> interaction designer focus on what the user ultimately wants to accomplish.
- Interaction designer determines the user's task and means necessary to achieve those goals -> always with the users needs and preferences in mind
- Interaction designers involve users at every stage of the process
- Users are consulted of the very beginning of a new project
- Interaction designers conduct extensive research (Chapter 4) up front to determine what the users goals are in the current situation
- Interaction Designers test and try prototypes of a system with users
- **User data is a determining factor throughout the project when making decisions**



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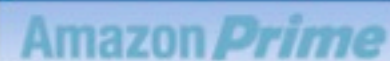
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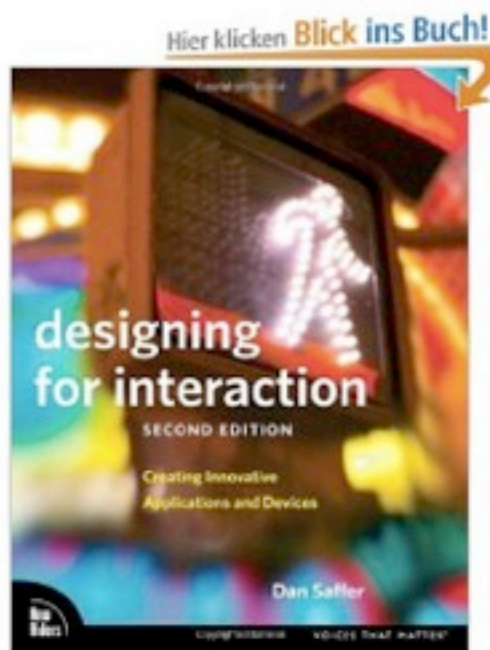
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Approaches to Interaction Design

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Case Study:

Jeff Hawkins

- worked with the team that developed the first laptop, the Compass by GRID
- developed the first tablet PC, the GRIDpad
- started PALM computing

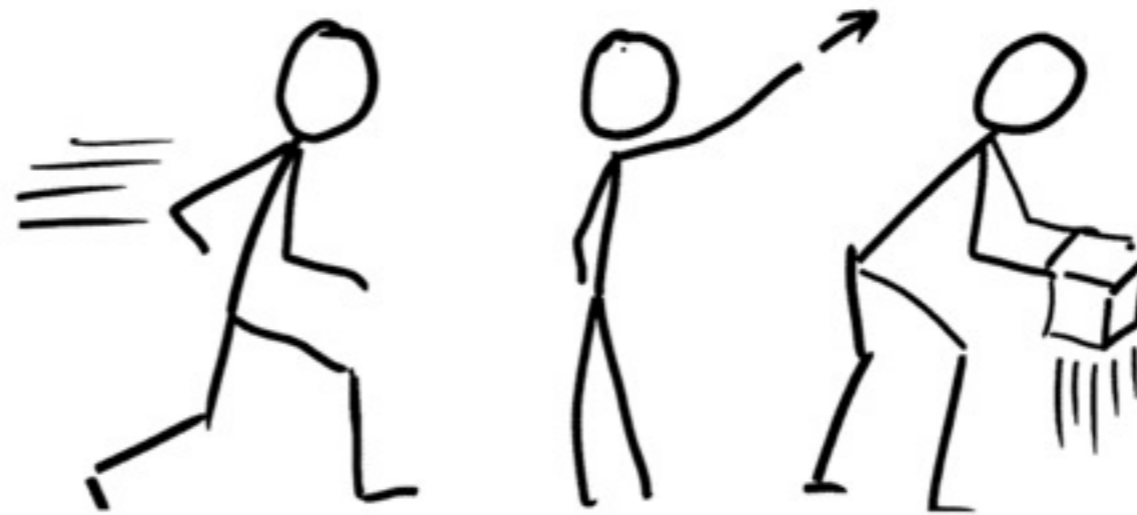




Looking back...

Activity Centered Design

- Philosophy: Activities as the main design focus
- Activities are a **cluster of actions and decisions** that are done for a purpose (**tasks**)
- The purpose of an activity is not necessarily a goal
- Purposes are more focused and tangible than goals



GAME

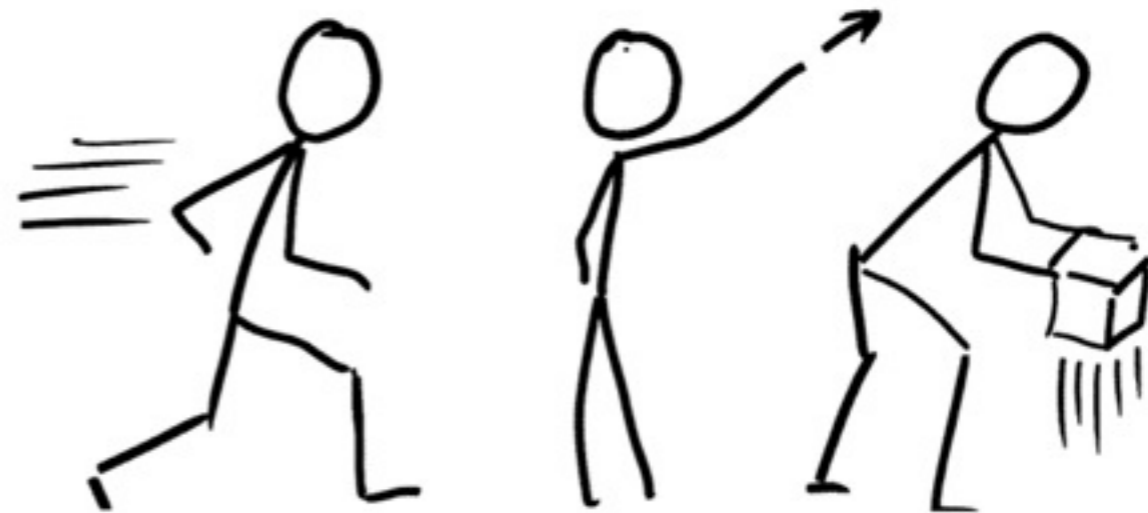


Game Store

<http://stillcoolas.com/wp-content/uploads/2011/11/GAME-store.jpg>

Example: Activity of buying a new computer game:

- > Decide to buy a new game
- > Decide what game to buy
- > Decide where to buy it
- > Get directions to store if necessary
- > Go to store
- > Enter store
- > Find a game in store
- > Buy game
- > Leave store
- > Go home



source: [5]



Traveling with an Airline

<http://www.tropicalisland.de/CPT%20Cape%20Town%20International%20Airport%20South%20African%20Airways%20B747-400%20aircraft%20b.jpg>

1998

go to travel agent



receive tickets by mail



go to the check in desk



receive boarding pass



check in bags



board plane

Today

go to airlines website



receive mobile boarding pass



drop bags at self check in



board plane

Summary:

- The difference between a task and an activity can be fairly minor
- Some tasks have enough parts to them to be considered sub activities themselves
- Like UCD, activity centered design relies on research as the basis for its insights, albeit not as heavily
- Interaction designers catalog users' activities and tasks which leads to a specific design solution to help users accomplish the task, not achieve a goal per se
- The **activity**, not the people doing the activity **guides the design process**

A danger in **activity-centered design**
is that designers might not look for solutions for the
problem as a “whole”
(Not see the forrest for the trees)

source: [5]

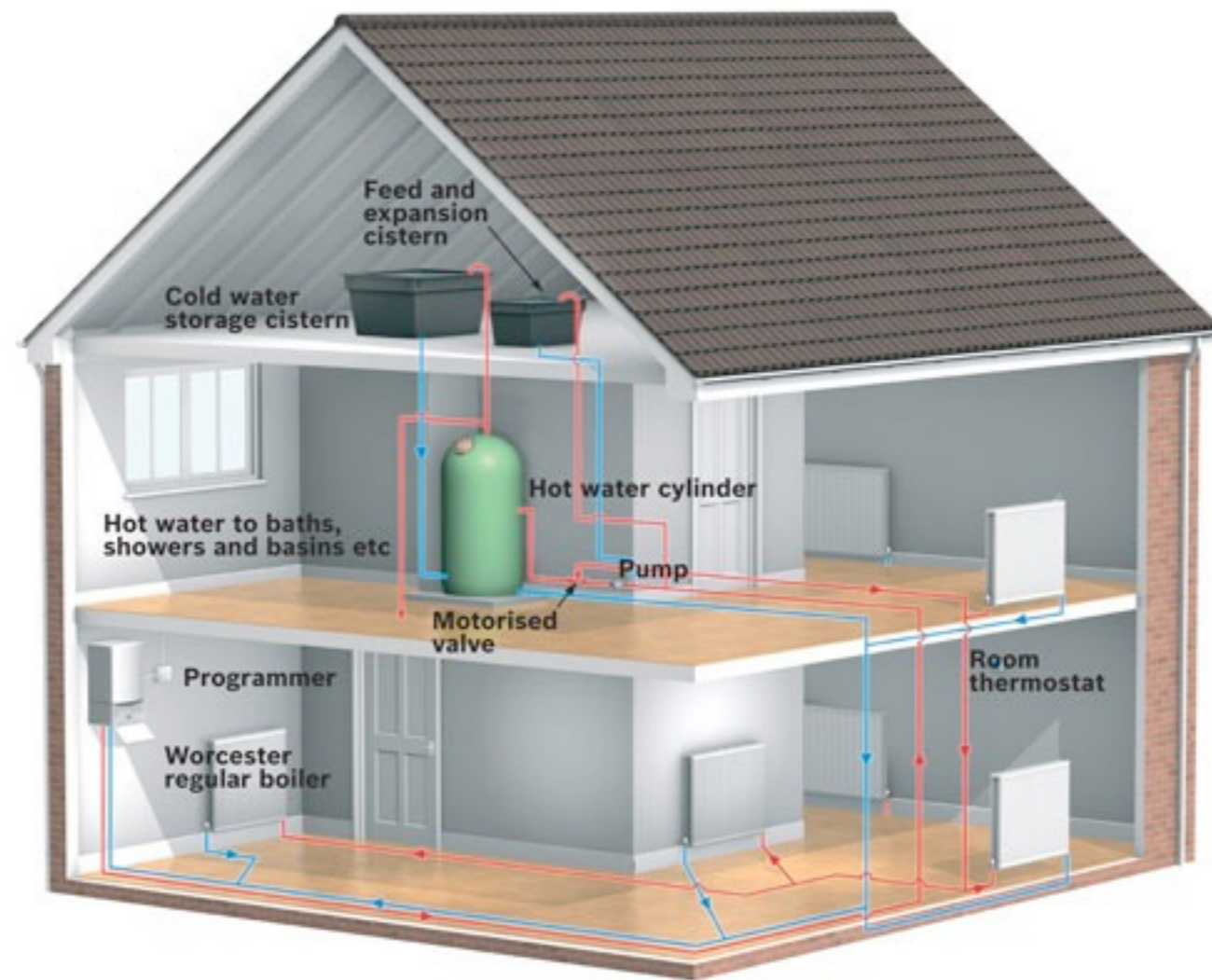
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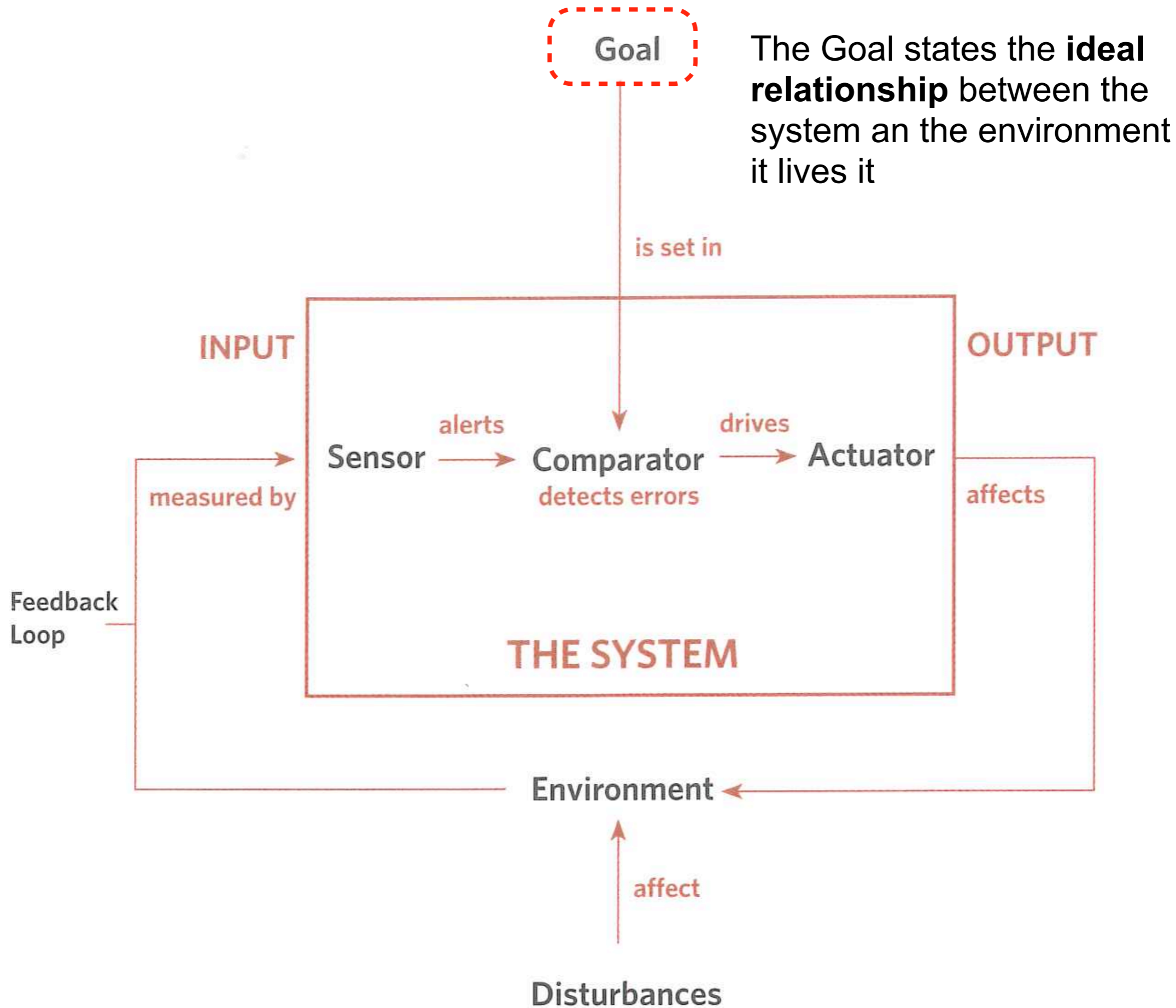
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Systems Design

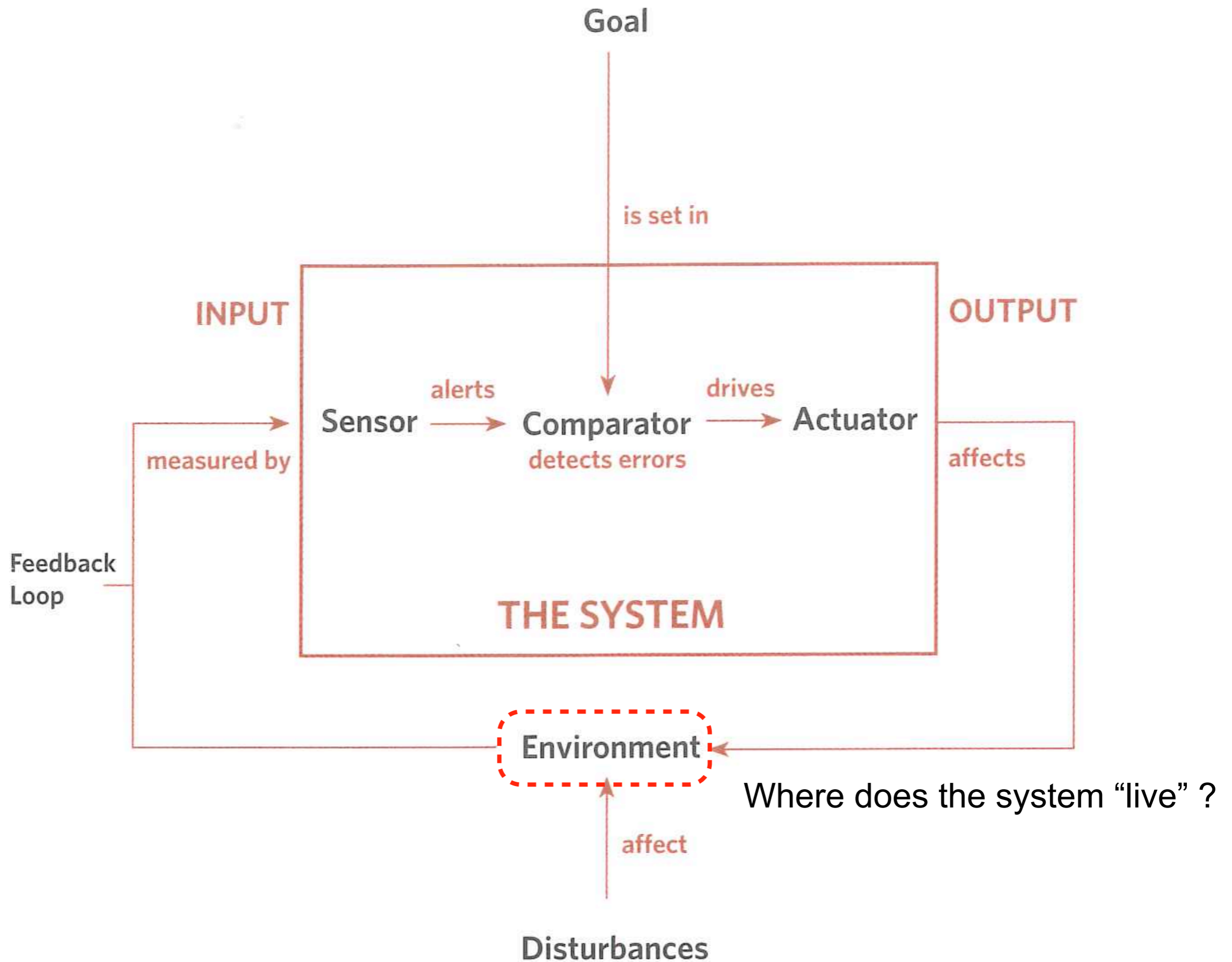
- Analytical method of approaching design problems
- A set of entities that act upon each other is center of the design process
- Systems can range from simple (heating system in a house) to the enormously complex (power-plant)
- Systems design is a structured, rigorous design methodology
- Excellent for tackling complex problems
- Holistic design approach (focus on the context of use)
- Systems design outlines the components that systems should have:
A **goal**, a **sensor**, a **comparator** and an **actuator** (these parts are shaped by the interaction designer)
- Compared to other approaches systems design provides a clear roadmap for designers to follow

source: [5]



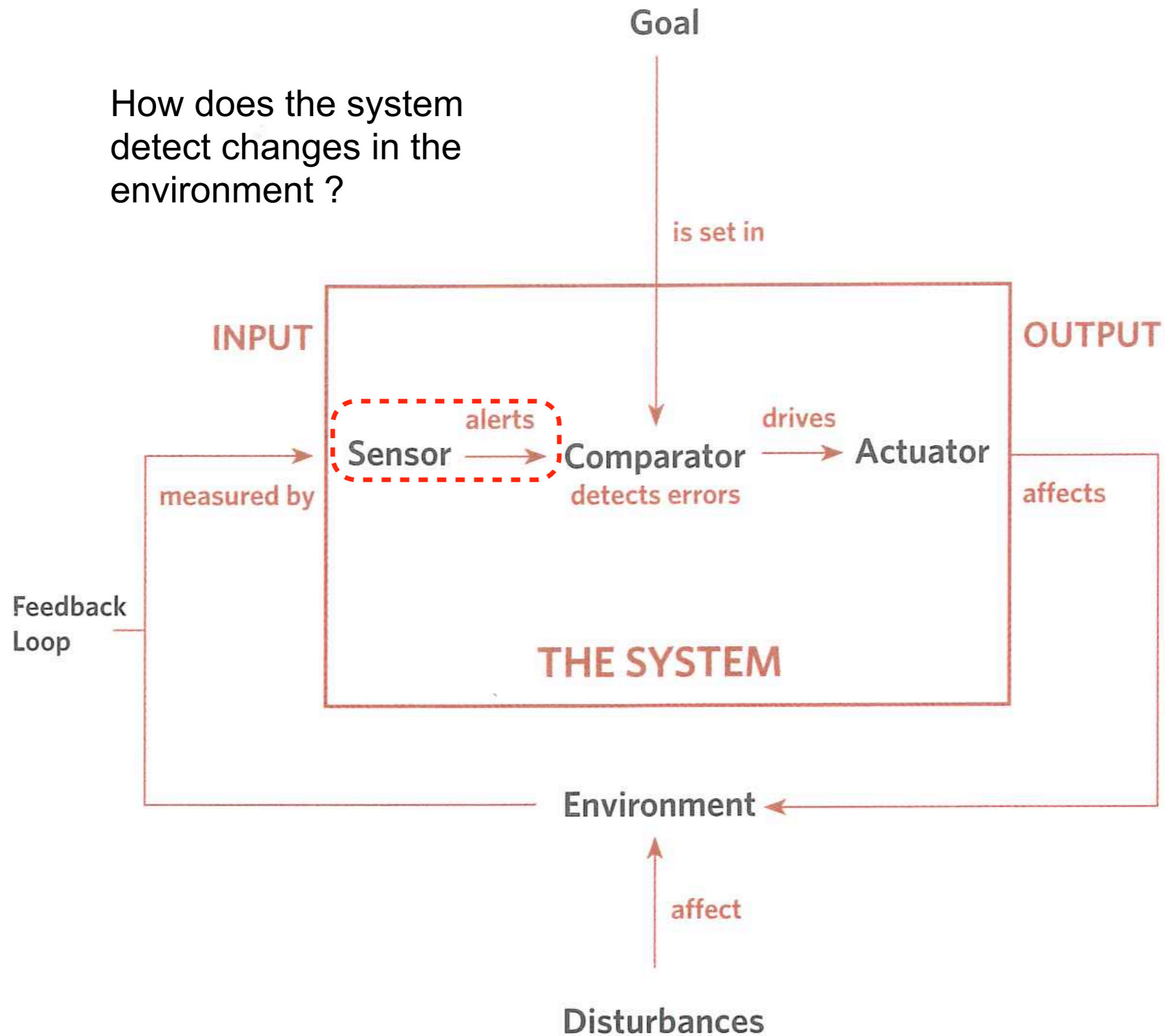


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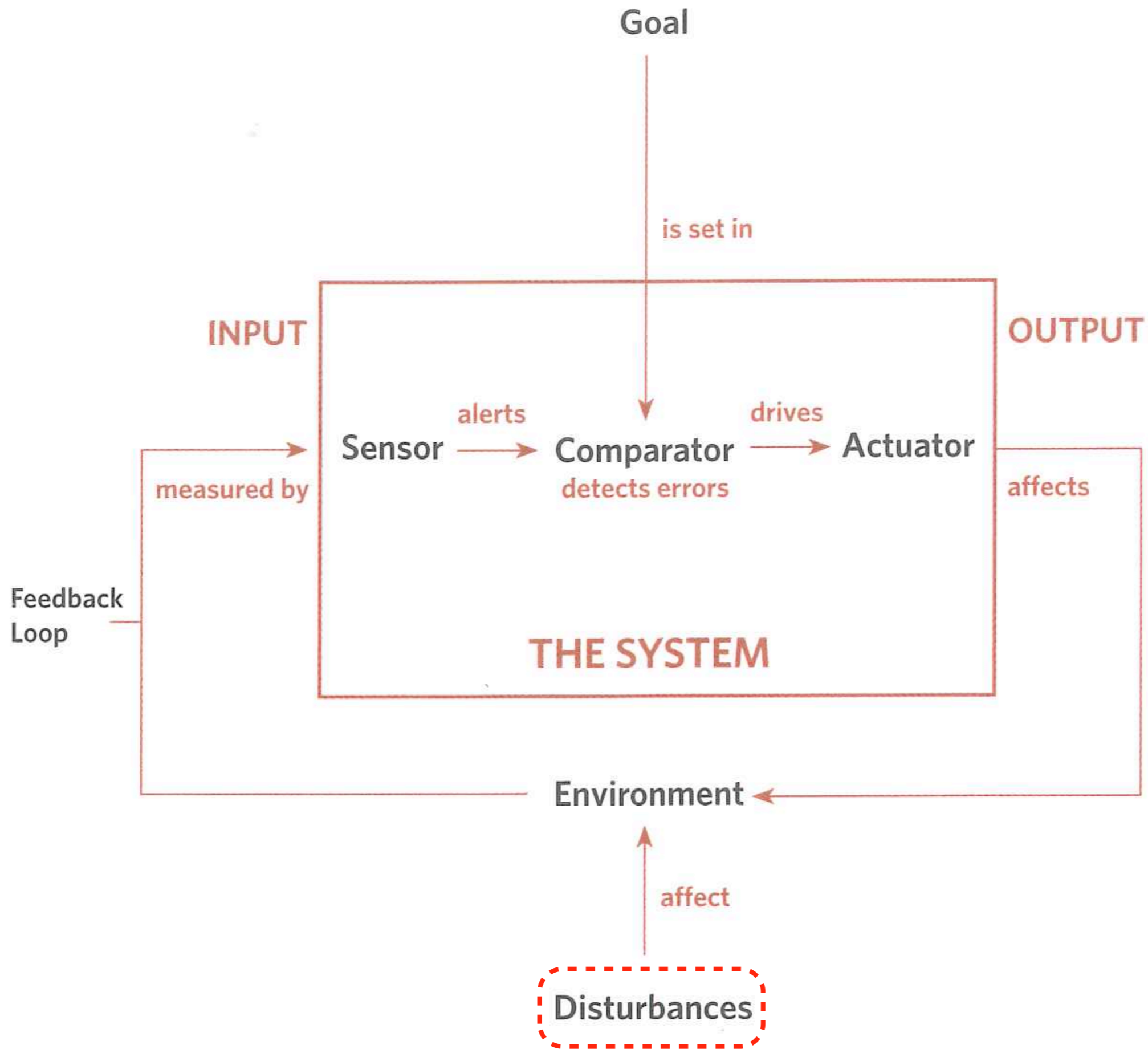


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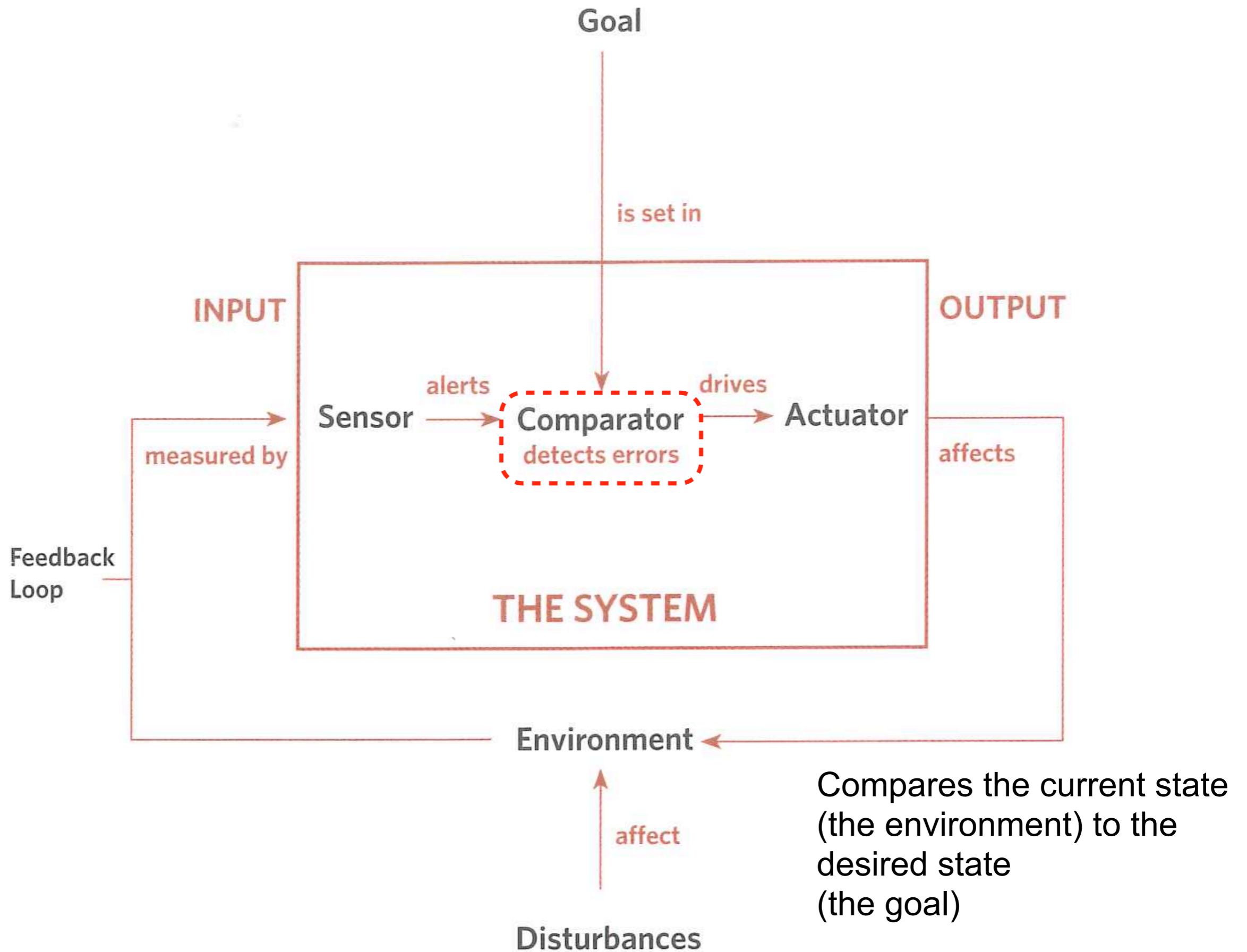
How does the system detect changes in the environment ?



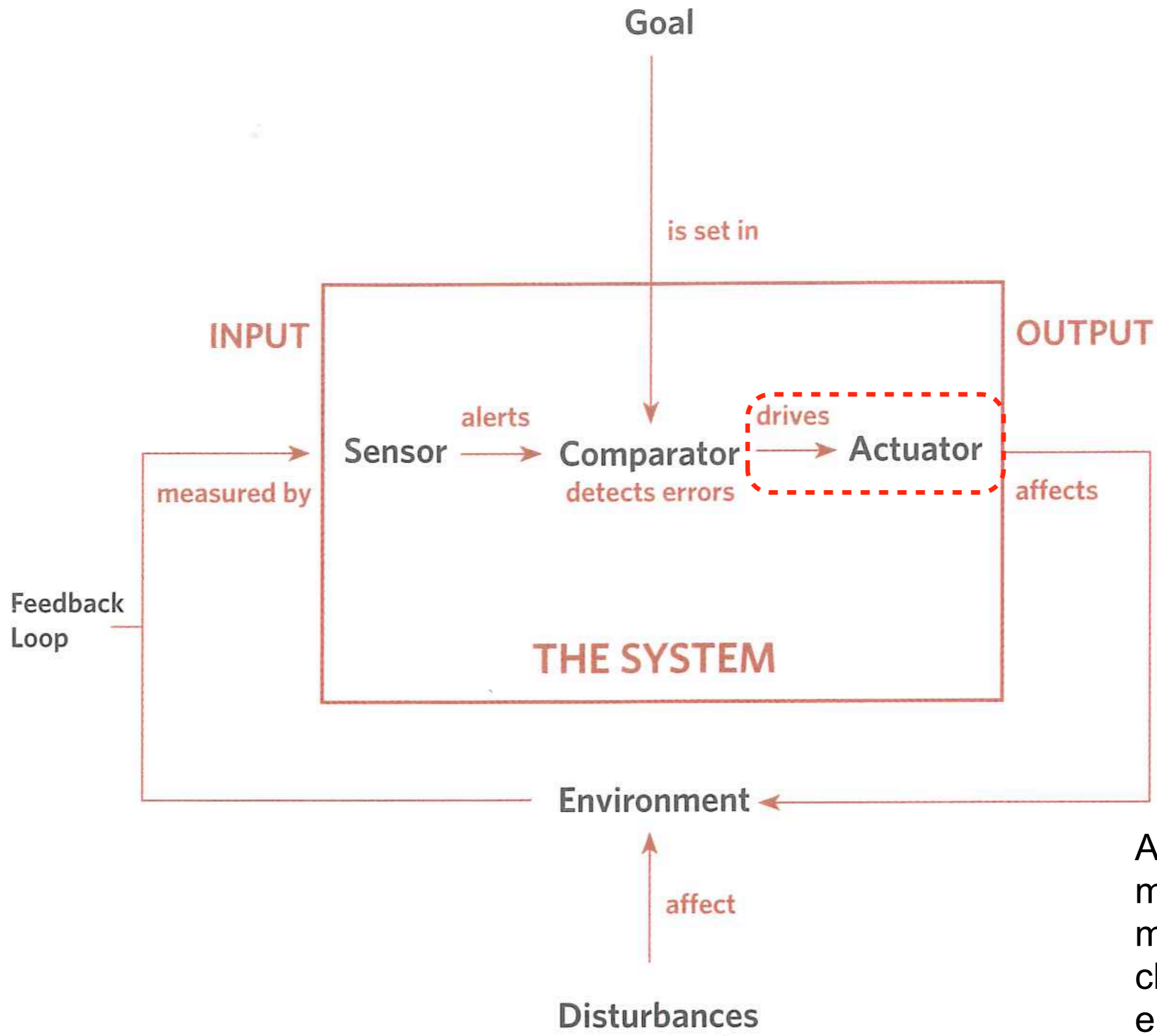
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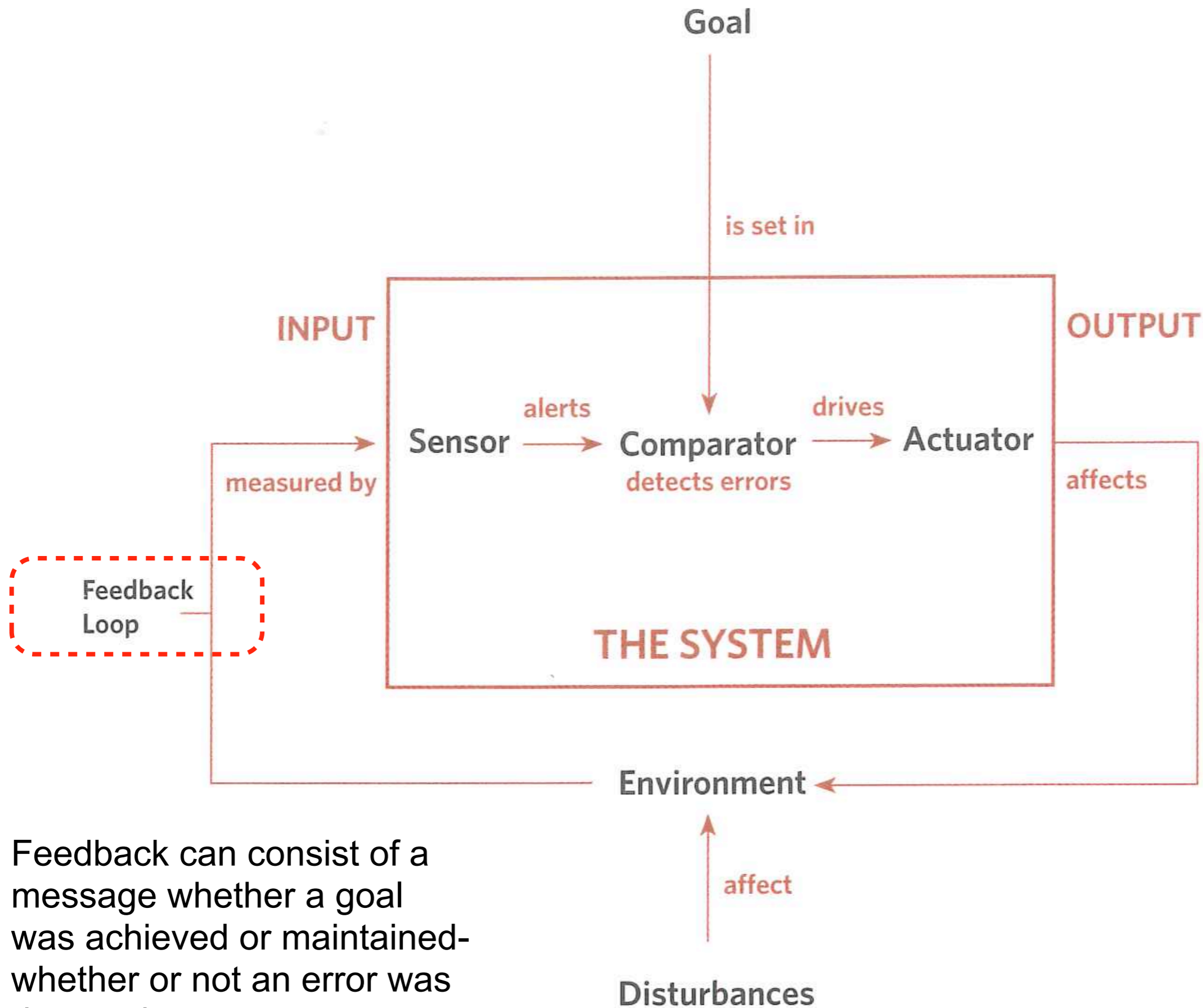


source: [5]



Actuators are means of making changes to the environment

source: [5]



Feedback can consist of a message whether a goal was achieved or maintained- whether or not an error was detected

source: [5]

Unexpected disturbances

- things that fall outside of the expected range of input
- to make unexpected disturbances expected (and thus make the system more stable), systems need what's called ***requisite variety***
- the system needs an assortment of responses to deal with a range of situations to prevent the system from failing
- systems without requisite variety can crash



By focusing on the broad context of use and the interplay of the components, interaction designers gain a **better understanding** of a product or a service

Approaches to Interaction Design

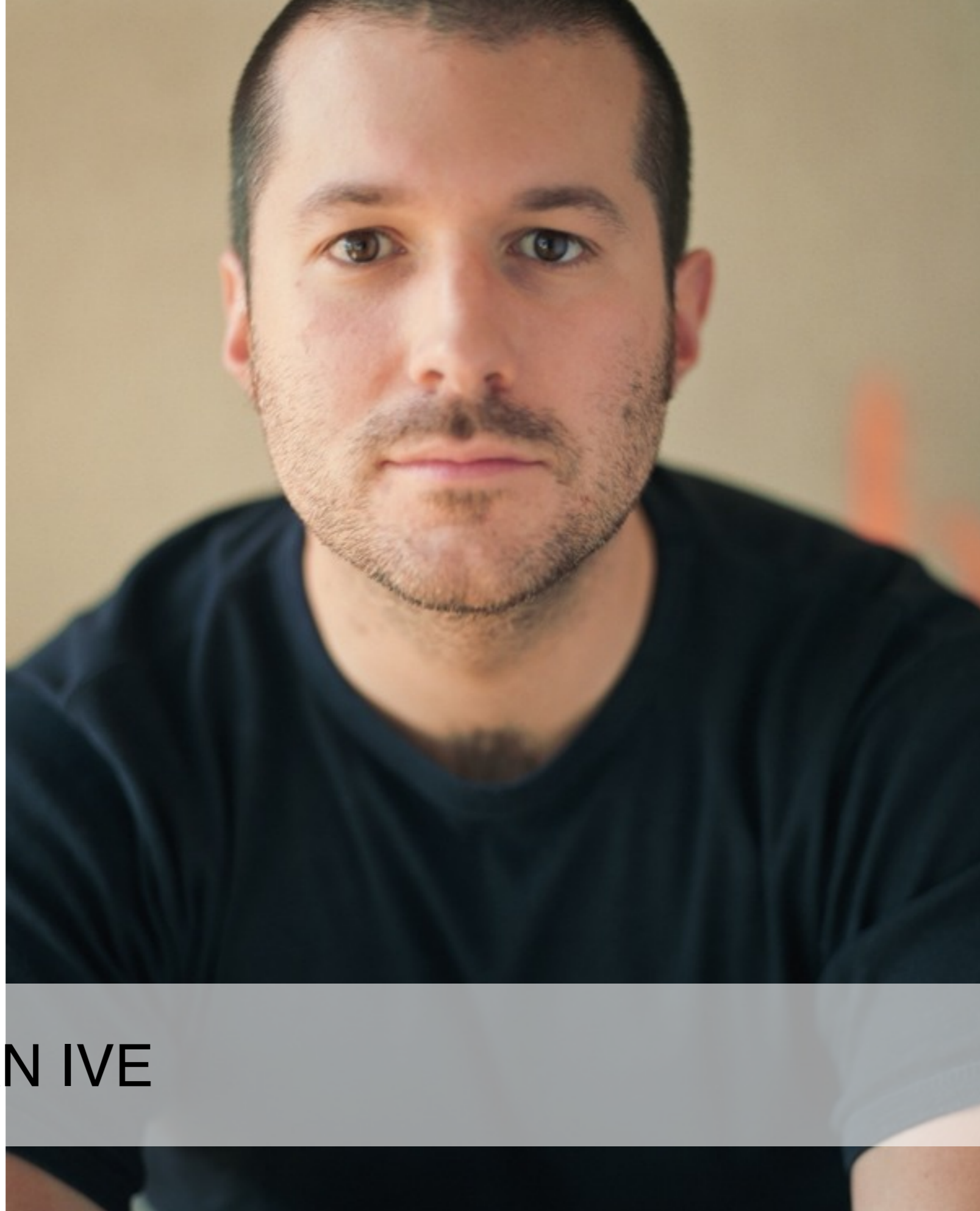
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Genius Design

- Philosophy: Design relies almost solely on the wisdom and experience of the interaction designer making the design decisions.
- User involvement (if any) comes at the end of the process
- Probably best practiced by experienced designers who have encountered several types of problems and can draw solutions from previous design issues







JONATHAN IVE

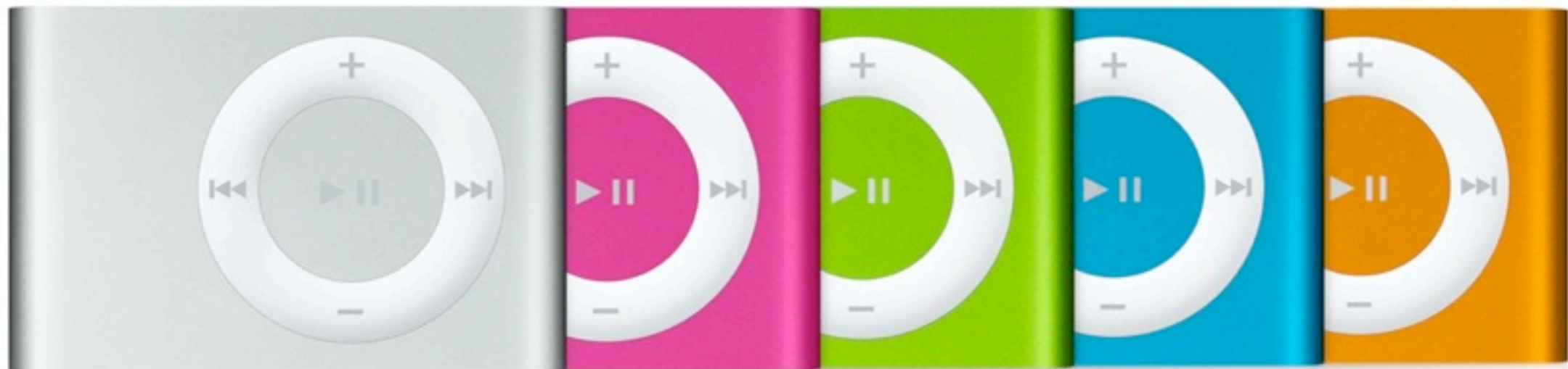
<http://www.loopinsight.com/wp-content/uploads/ive.jpg>

"Great design is as much about prospecting in the past as it is about inventing the future."

Bill Buxton



Beau Brownie Camera 1930



iPod Shuffle 2004



source: [8]

"A mobile device with a touch interface and only one physical button ?"



IBM Simon 1993



Apple iPhone 2007

source:[8]

References (Books):

- [1] Buxton, W. Sketching User Experiences, *Morgan Kaufmann 2007.*
- [2] Norman, D. The Psychology of Everyday Things, *Basic Books 1988.*
- [3] Moggridge, B. Designing Interactions, *MIT Press, 2006.*
- [4] Rogers, Y., Preece, J. & Sharp, H. Interaction Design, *Wiley & Sons 2011.*
- [5] Saffer, D. Designing for Interaction, *New Riders 2009.*

References (Papers):

- [6] Sanders, E. An Evolving Map of Design Practice and Design Research. *In ACM Interactions 15,6 2008*
- [7] Sanders, E. Stepping Stones Across the Gap. Essay in DAIM – Rehearsing the Future, *DKDS Press 2010.*

Articles:

- [8] http://www.businessweek.com/innovate/next/archives/2008/12/what_apple_lear.html

Breakoutsession

- applied methods of IxD
- questions here or every Tuesday from 15.00 – 16.00 at room 506 (Amalienstraße 17)
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 - documentation of the course
 - to be delivered at the end of the semester (at the last lecture)
 - 5% Bonus!
- feedback
 - first time in this form → please give feedback!
 - send an email to: sebastian.loehmann@ifi.lmu.de

Pictionary

- adapted rules:
 - every team gets a wordcard
 - 2 or more persons per team have to draw
 - time: 30 seconds
 - don't use letters!

 - the other teams have to guess
 - time: 90 seconds

 - if the answer is correct:
 - » 3 points for the drawing team
 - » 1 point for the guessing team

 - the team with the most points wins
 - price: fame, glory and...

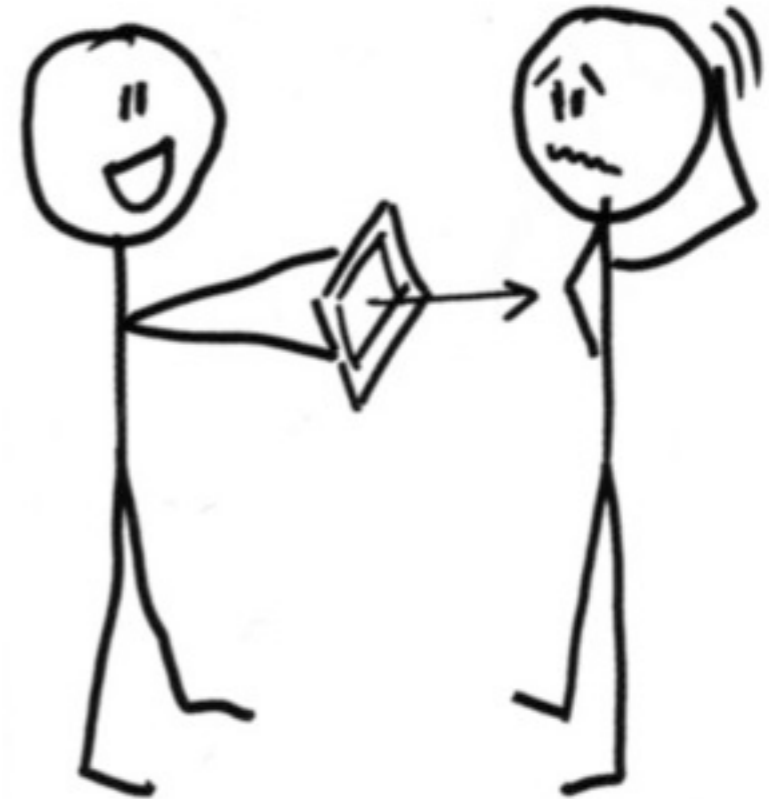
...GUMMIBÄRCHEN!!!



<http://photobucket.com/images/pictionary/>

Pictionary

- what to do next:
 - team up with your group
 - time: 5 minutes
 - discuss how to use the short amount of time efficiently
 - use sketches to communicate your ideas to the team
 - if it's hard to draw the object itself, try to use pictures that people associate with it
 - reduce to essentials



[Buxton, W. Sketching User Experiences, Morgan Kaufmann 2007](#)

Looking back... (Discussion)

What worked well, what didn't?

- » **Communicate** complex context in a simple way
- » **Quick**: making sketches in a short amount of time
- » **Minimal Detail**: abstract complex context to essential parts
- » **Teamwork** to find good solutions quickly