

Ergonomic evaluation of domothic products and tools for motor disability



Licent laboratory

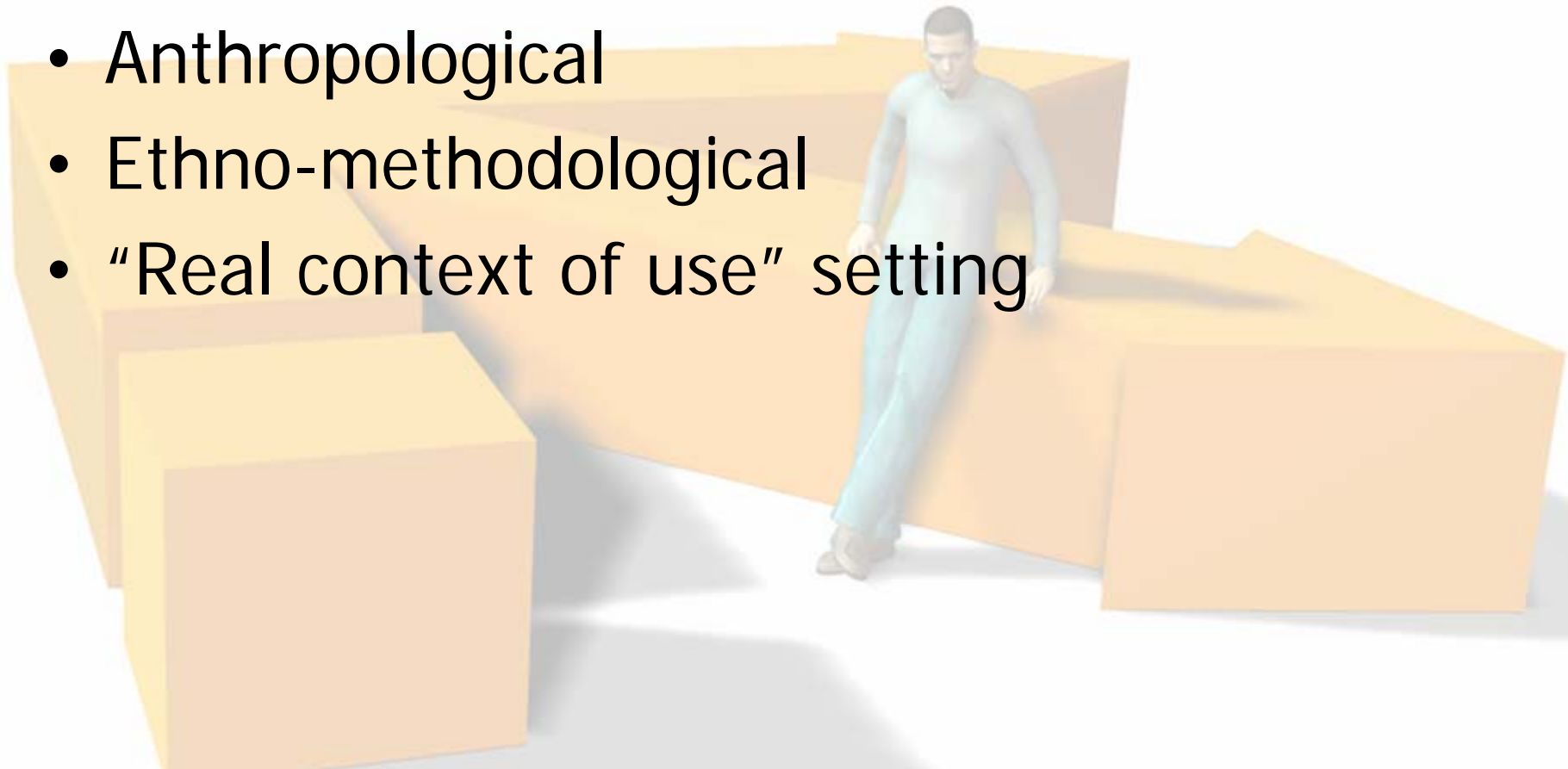
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Part of the “**Domus**” project, in the framework of the focus on disability regional program” (local council deliberation n.977/2003 of tuscan region)

In particular, the project was part of the “**Sempre con Noi**” intervention program promoted by **Zenit** association, in cooperation with **I+** association

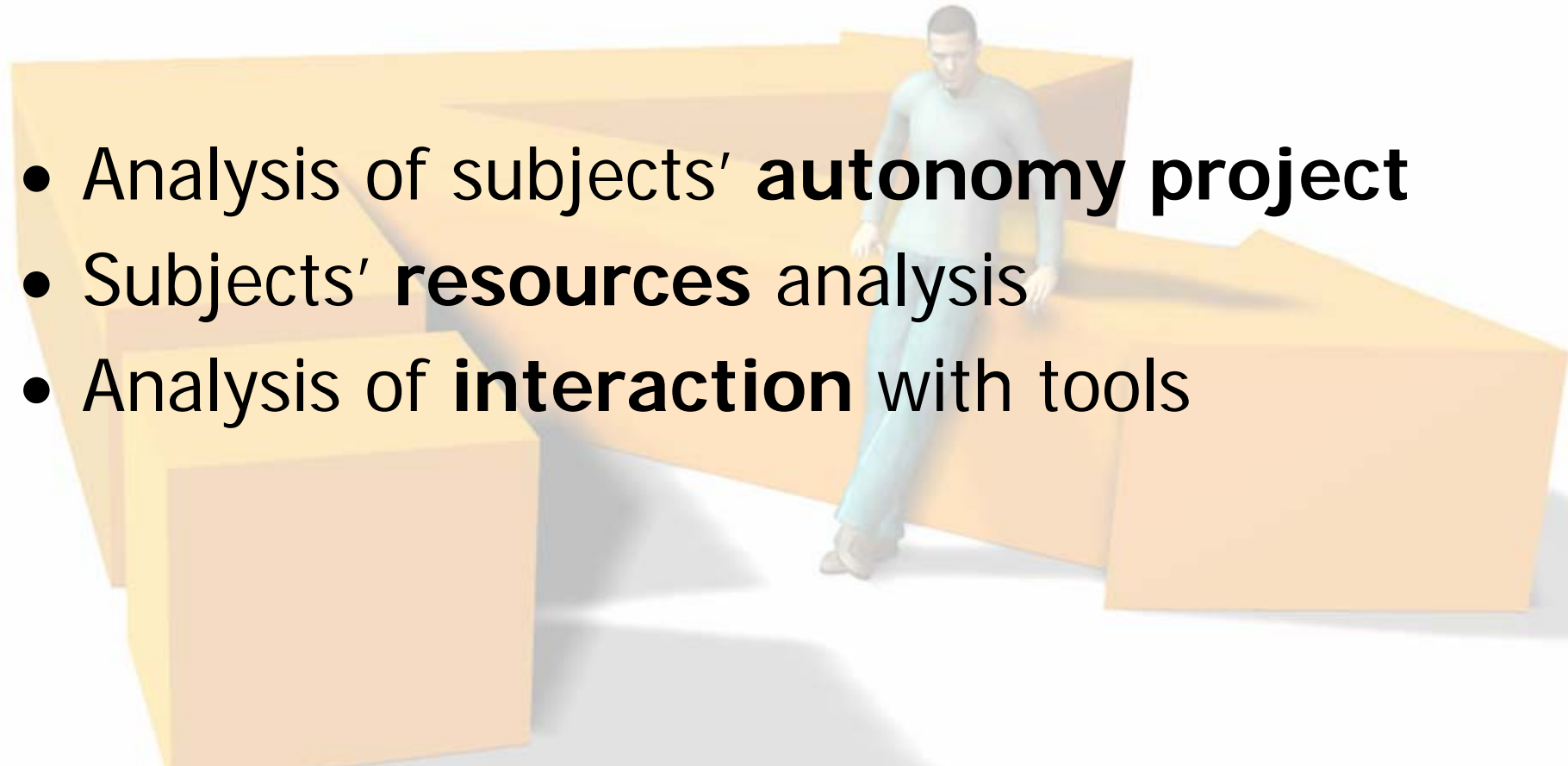
- Anthropological
- Ethno-methodological
- “Real context of use” setting



- To individuate a **methodology** based on qualitative analysis for ergonomic interaction evaluation
- To design **instruments** for the definition and evaluation of technological solutions
- To **analyse data** produced which examined technological tools based upon interface benefits/limits

Operative Goals

- Analysis of subjects' **autonomy project**
- Subjects' **resources** analysis
- Analysis of **interaction** with tools



Methods

- Constructive interaction
- Thinking aloud
- Participant observation
- Semi-structured interview
- Questionnaire (ICF)

Instruments

- Transcriptions of constructive interaction and observations
- Interviews' audio-recordings
- Constructive interaction video-recordings



6-weeks co-presence of 2 impaired subjects in the laboratory-house

Each week structured as follows:

– *First day*

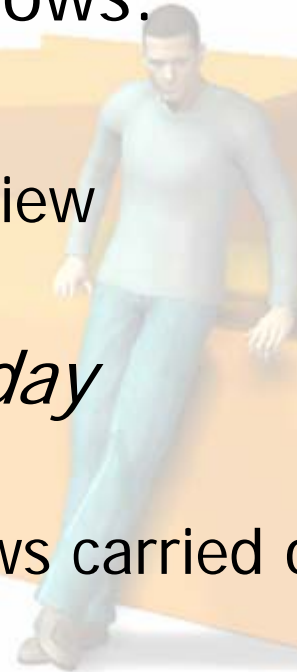
- Individual opening interview
- Constructive interaction

– *From second to fourth day*

- Participant observation
- Semi-structured interviews carried out at the end of the day, in couple

– *Fifth day*

- Individual closing interview



A short movie



SUBJECT		1	2	3	4
PROBLEM AREA		a-c-d-e	a-b-c-d-f	d-e	a-d-c
TOOL	Drawer				
	Remote control				
	Pensile				
	Cooking plan				
	Wardrobe				
	Shower cabin				

Legenda

a = fine handling


b = upper body strength

c = coordination of two hands

d = reaching aloft locations

e = moving

f = balance

 Resources

 Difficulties

Two complementary **perspectives**:

- **Subjects**
- **Objects**



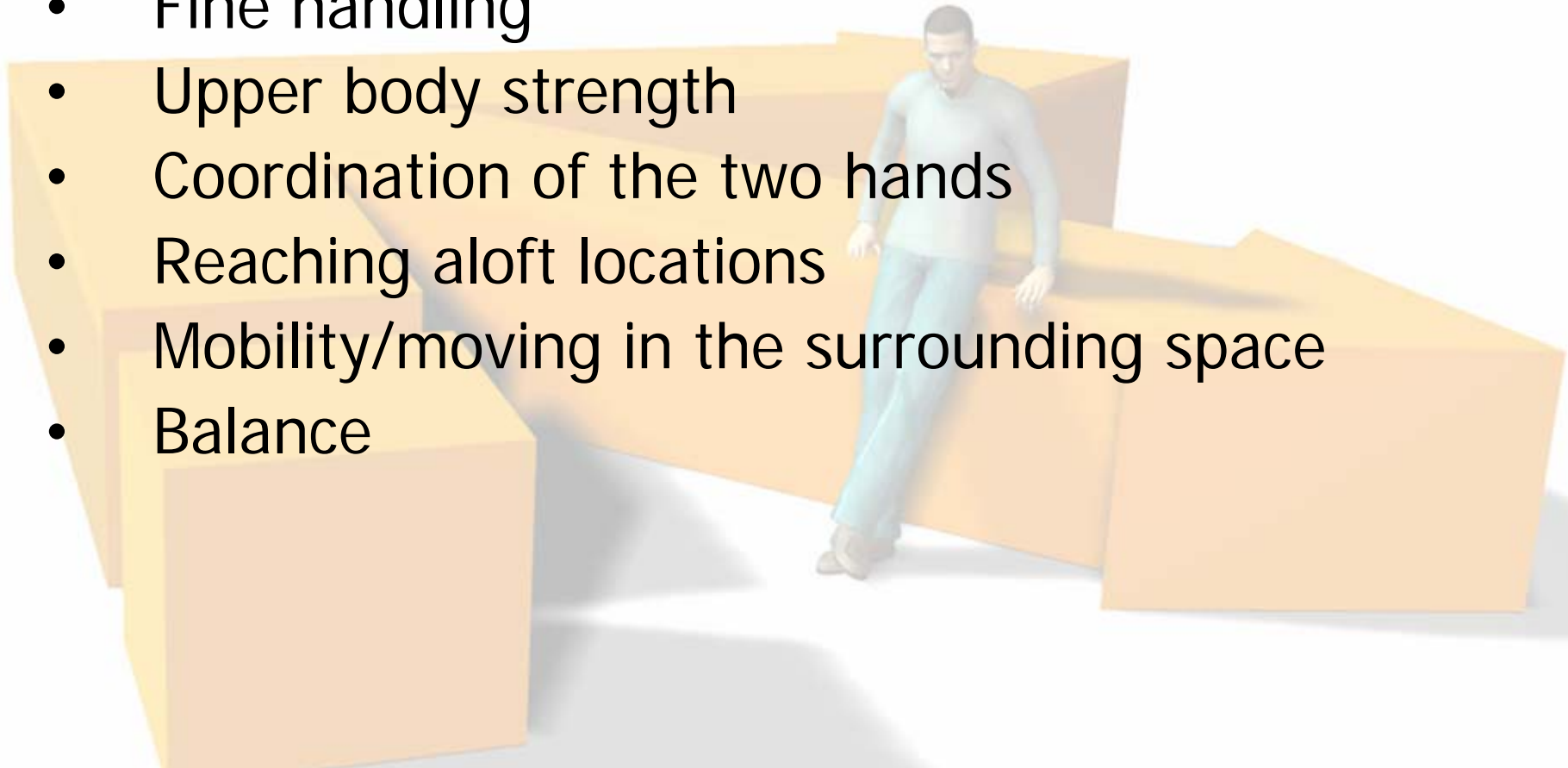
Sample analysis:

- **Personal record**
 - Physical and physiological conditions
 - Activities
 - Environmental factors
- **Perceived difficulties**
 - Activities
 - Objects
- **Expectations**
 - General
 - Improvement areas



Critical areas emerged from tools' use:

- Fine handling
- Upper body strength
- Coordination of the two hands
- Reaching aloft locations
- Mobility/moving in the surrounding space
- Balance



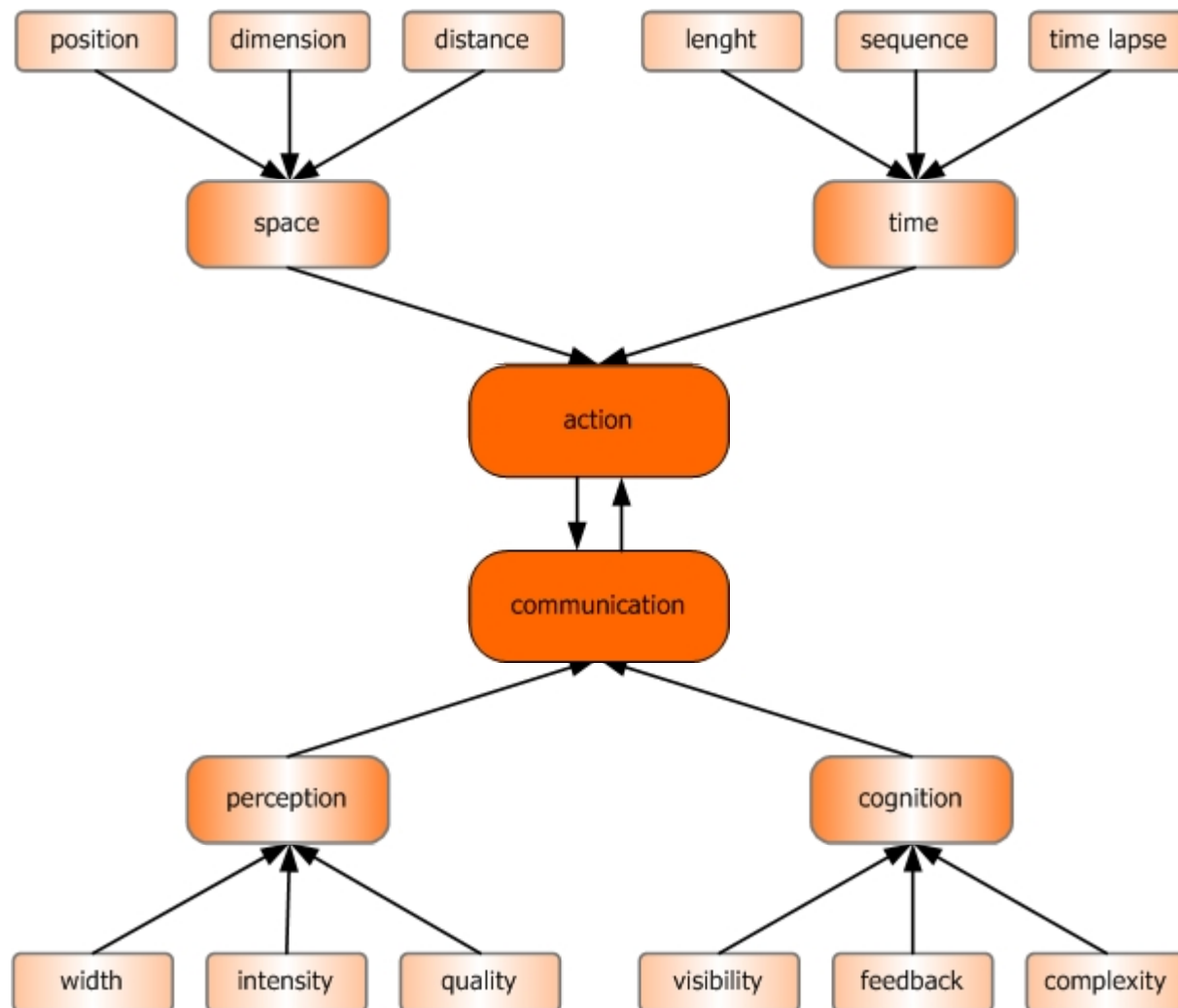
Investigated areas for each tool:

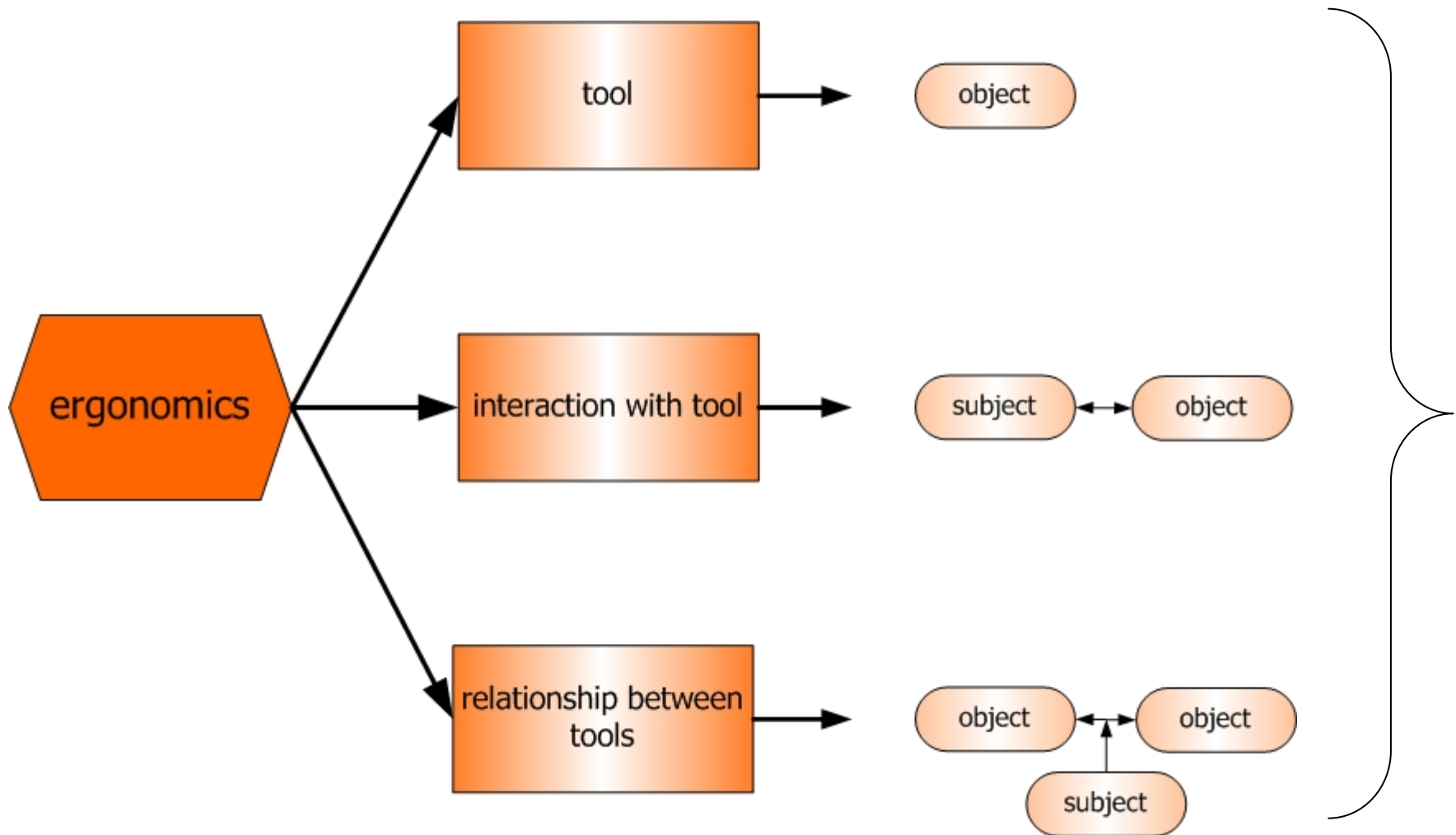
- Observed **Use**
- Perceived and observed **difficulties**
- Subject's **resources**
- Subjective **perception** of interaction
- Subjects' **suggestions**



Aim of the analysis:

- **Tool evaluation**
 - Characteristics compensating disability
 - Implementation flaws perceived utility
- **To propose**
 - Implemented tool improvements
 - New tools' developement





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Thank you



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Subject → Object



Object → Object

