

**DCGI**

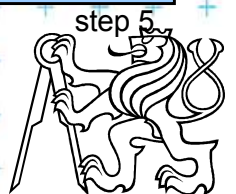
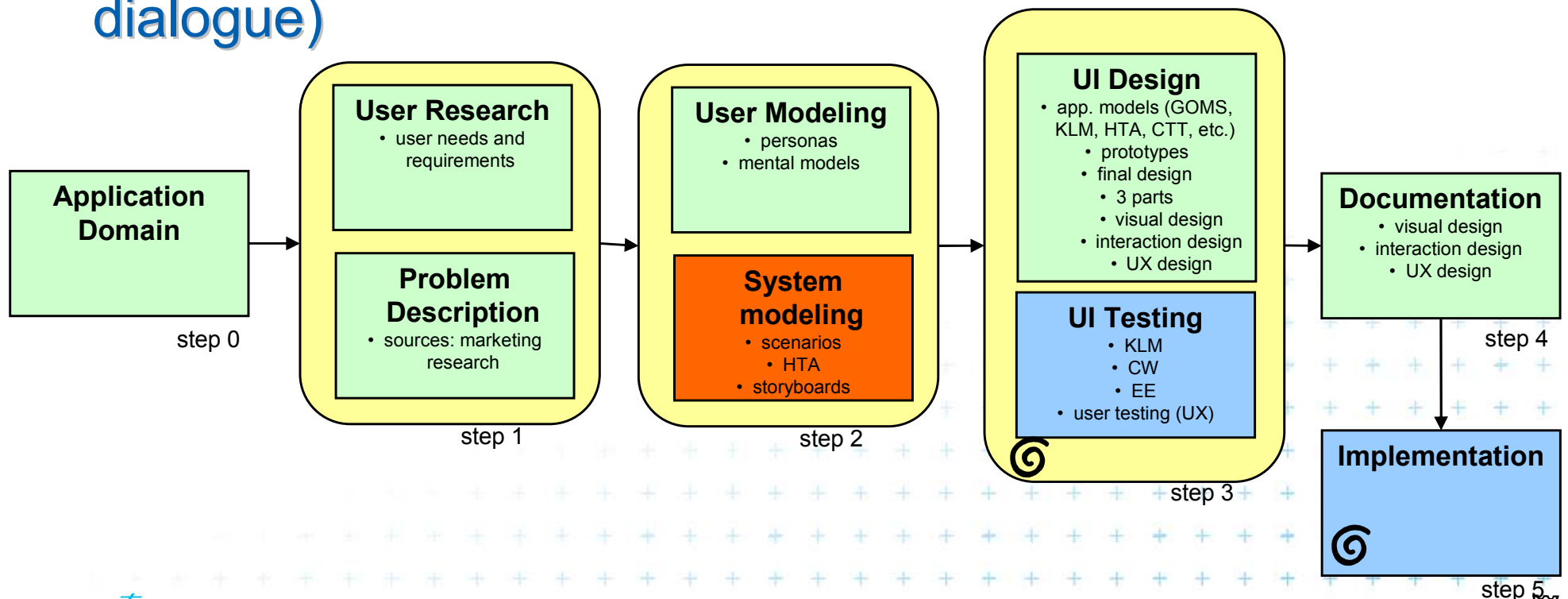
**DEPARTMENT OF COMPUTER GRAPHICS AND INTERACTION**

# **NUR- Formal description/models of user interfaces**

## **Task models**

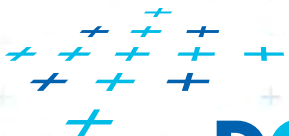
# User requirements

- Analysis of user activities (task analysis)
- Description of the course of the dialogue. The description will be used to the subsequent implementation of UI (methods of formal description of dialogue)



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# Hierarchical Task Analysis (HTA)



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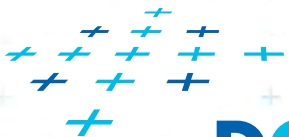
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# Task analysis

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- Important phase of the UI design is the Task analysis.
- Analysis of technical requirements is “projected” into hardware requirements
- Specification of programming tools determines performance of software created
- Task analysis determines in certain way performance of the user during execution of task

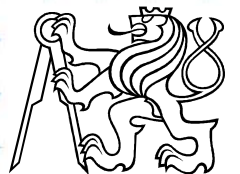


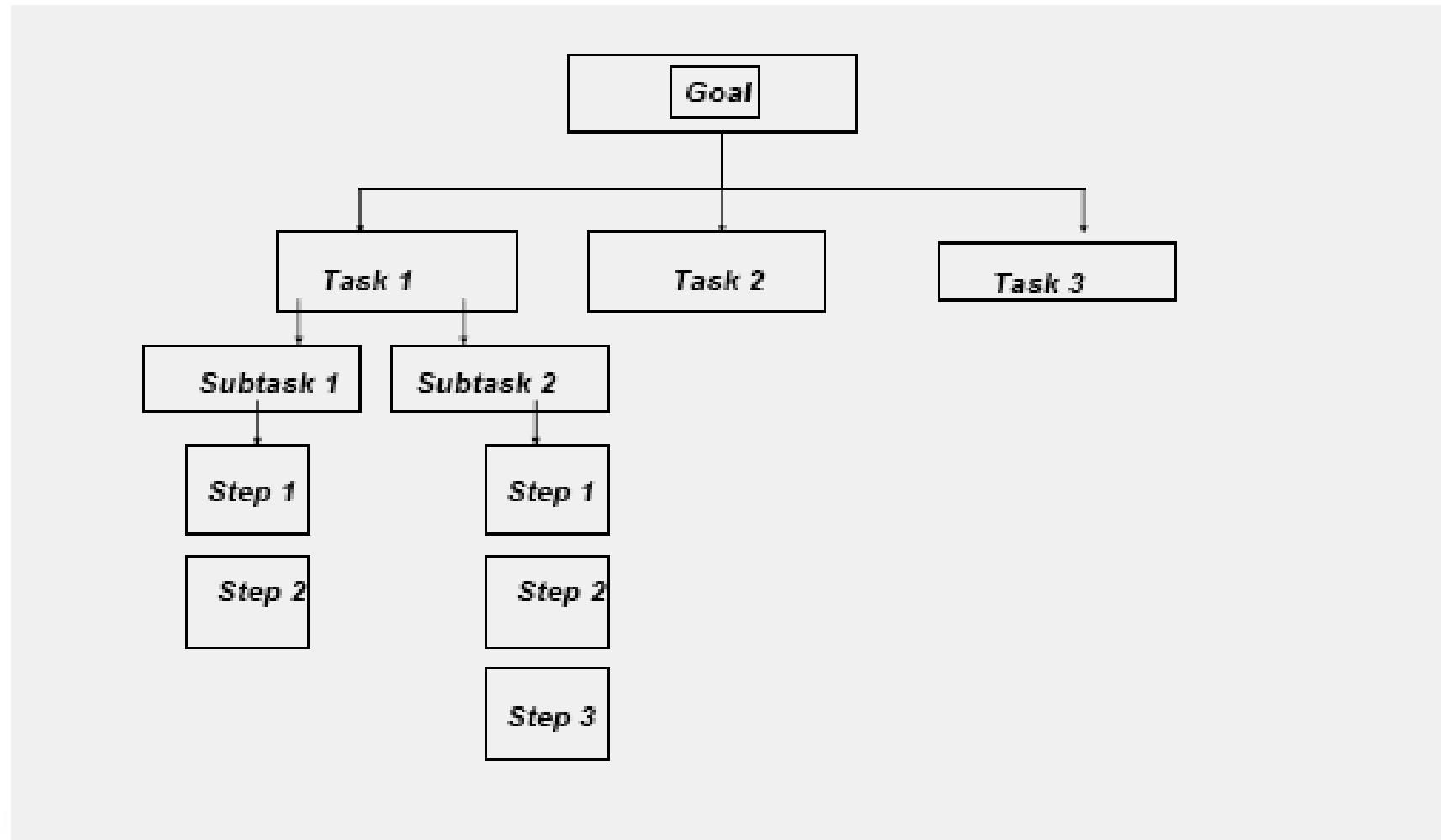
# Task analysis

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What we need to know:

- what the users are doing
  - what they need for their activity (tools etc.)
  - what they need to know
- It is necessary to divide the task into subtasks (hierarchically) and to analyze single steps
  - Method: HTA (Hierarchical Task Analysis)

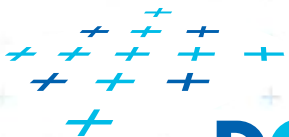




# Example: how to prepare tea

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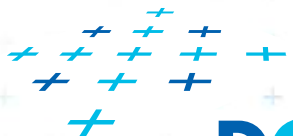
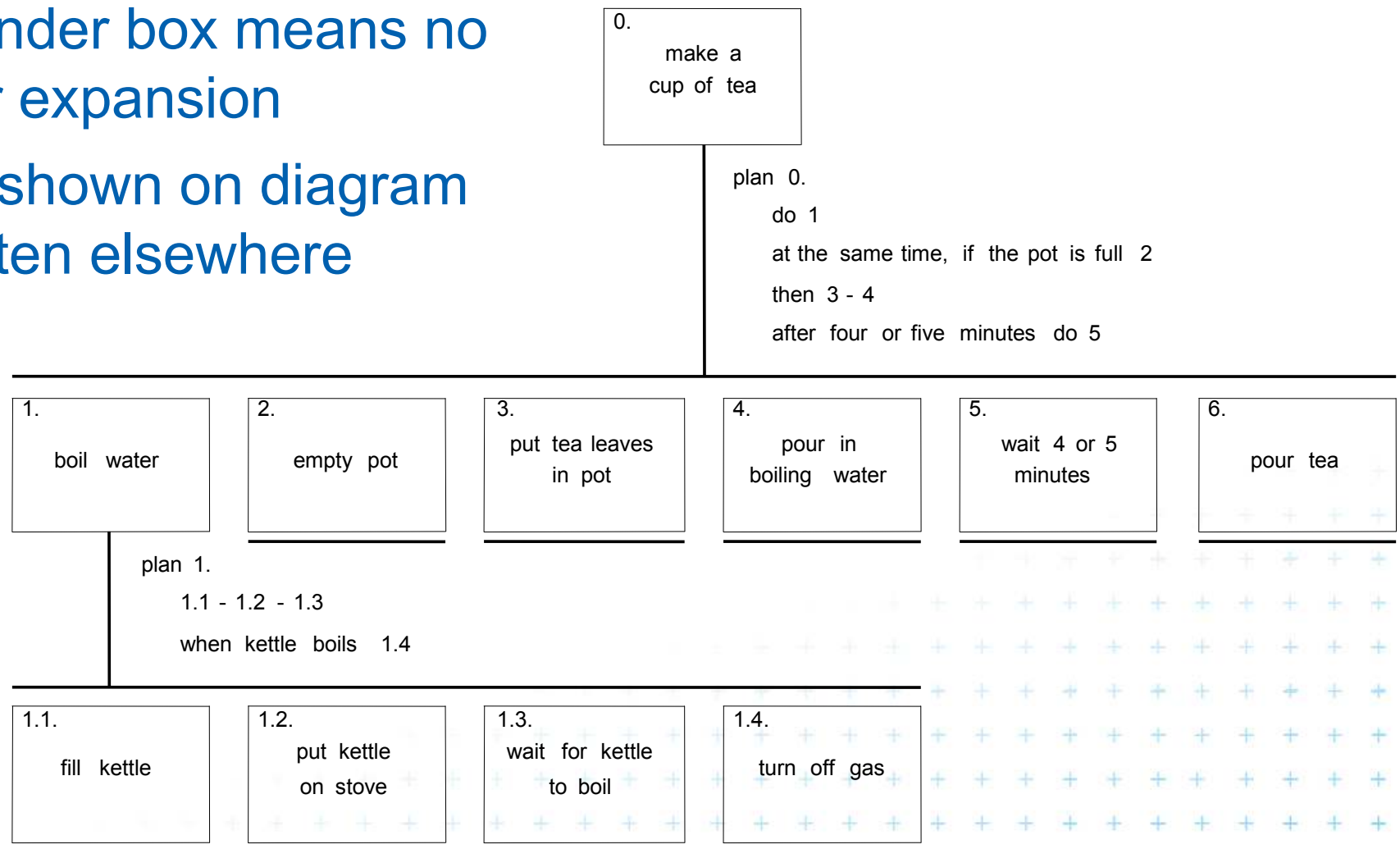
- Pay attention to the level of decomposition
- Question: can we continue in decomposition?
- Do we know in which order to execute single subtasks?
- Is it (always) important ?





# Diagrammatic HTA

- Line under box means no further expansion
- Plans shown on diagram or written elsewhere

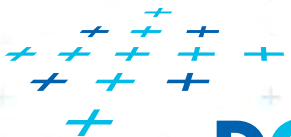




# Diagrammatic HTA

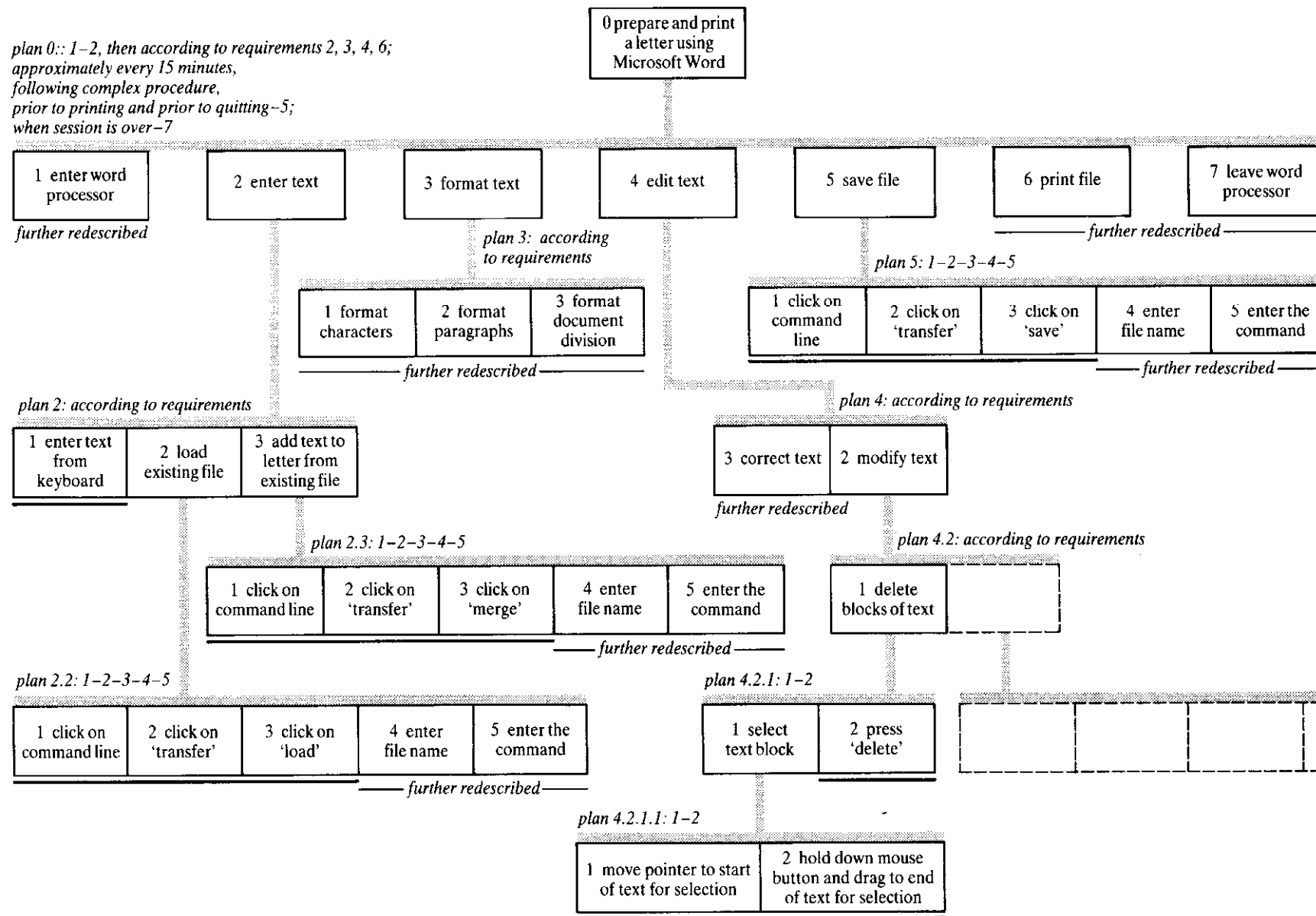
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- Decomposition: tree
- Plans: execution
- What is important on planes?
- They tell us in which order should be individual steps executed



# Example of a complex HTA - homework

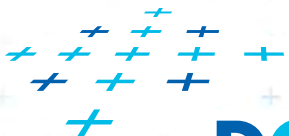
plan 0: 1-2, then according to requirements 2, 3, 4, 6;  
approximately every 15 minutes,  
following complex procedure,  
prior to printing and prior to quitting-5;  
when session is over-7



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# Answers to some questions

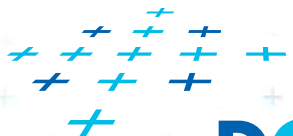
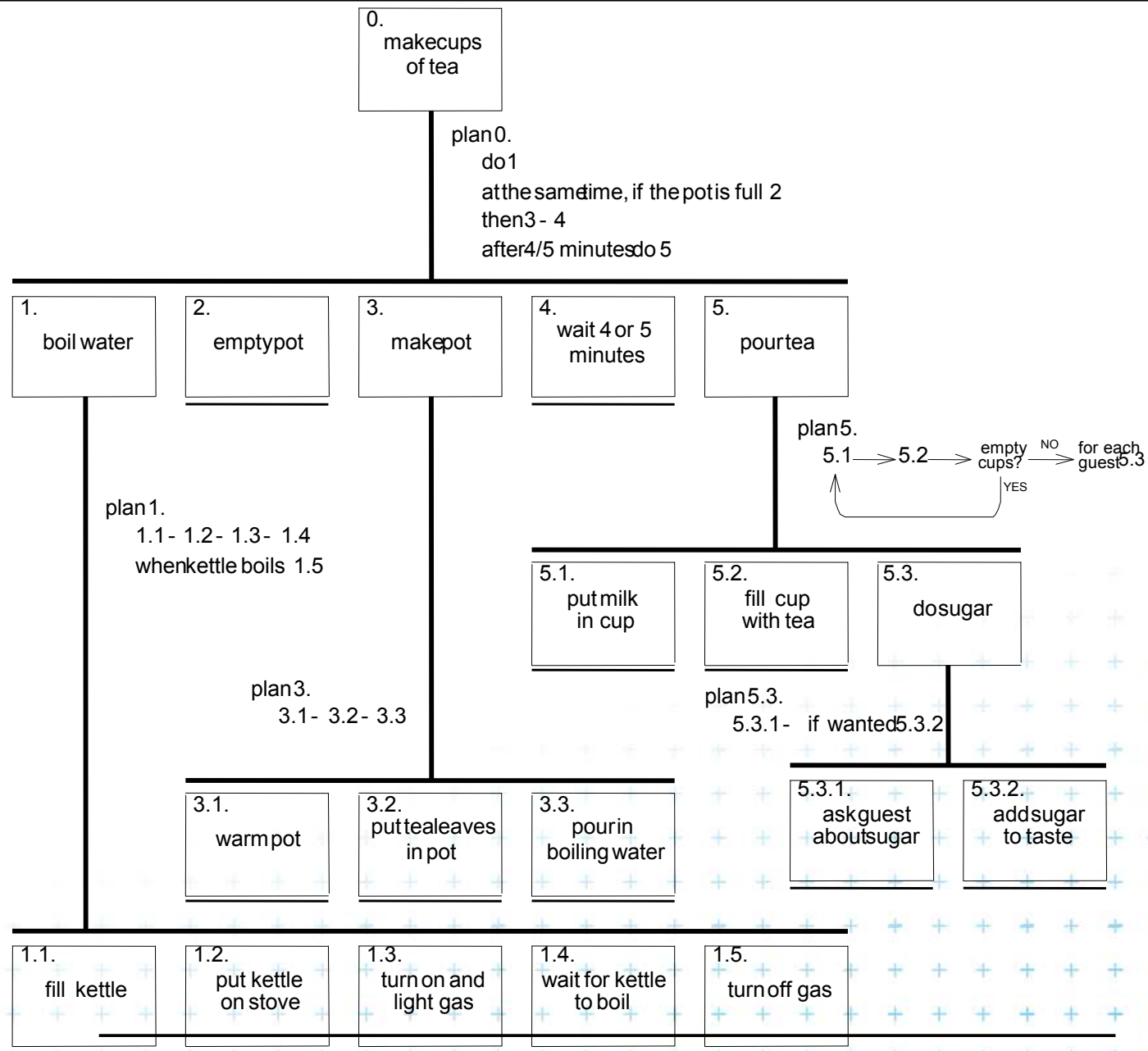
Given above



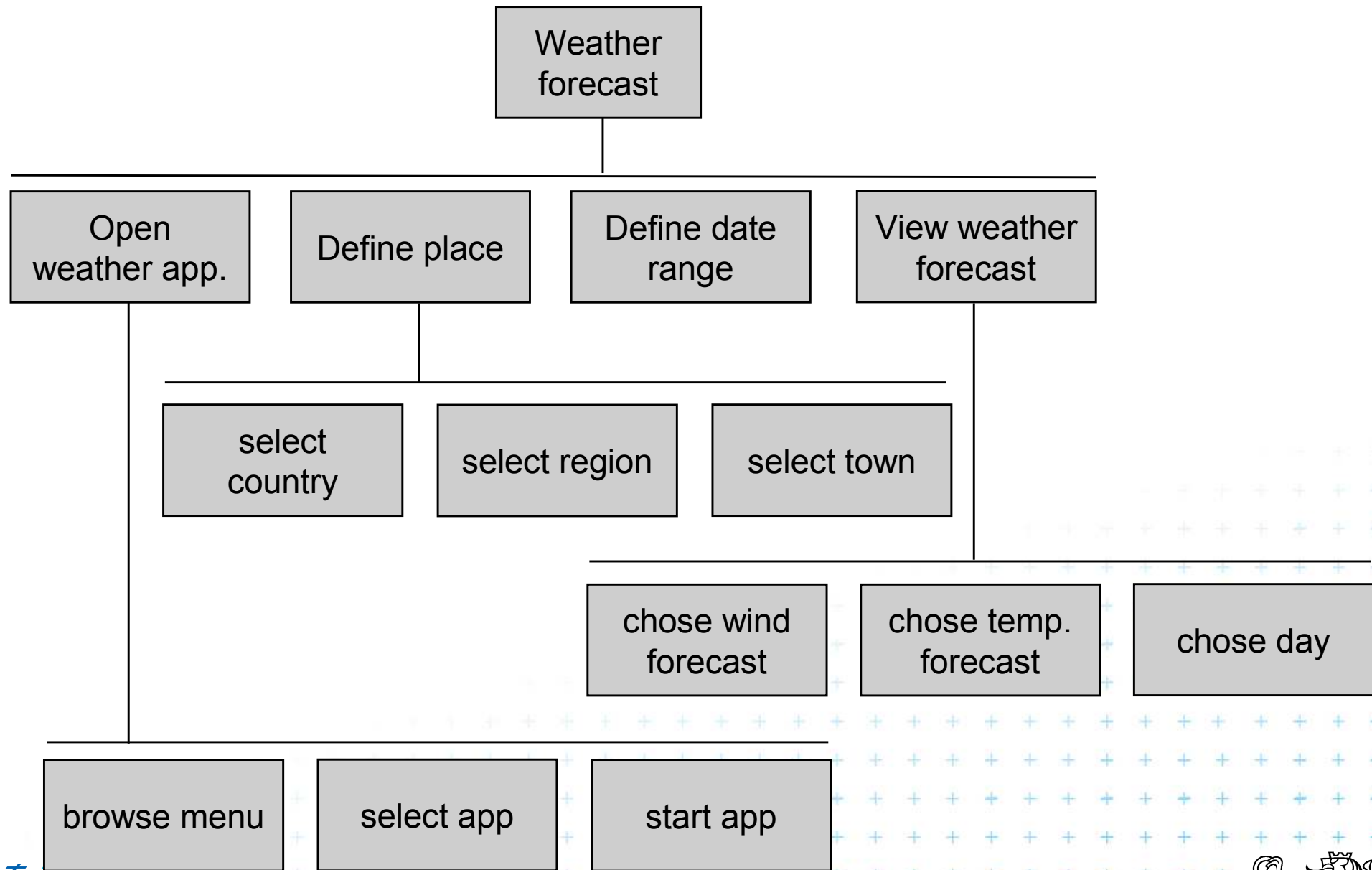
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# Redefined HTA For Making Tea



# Weather forecast HTA



# HTA – what we have gained when using it

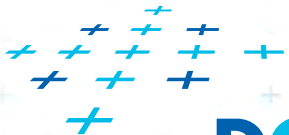
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- We have some idea about the sequence of individual steps that bring us to the desired goal (e.g. tea ready for drinking, letter written, ...)



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# Concurrent Task Tree (CTT)



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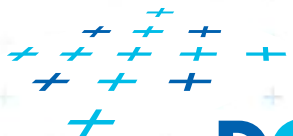
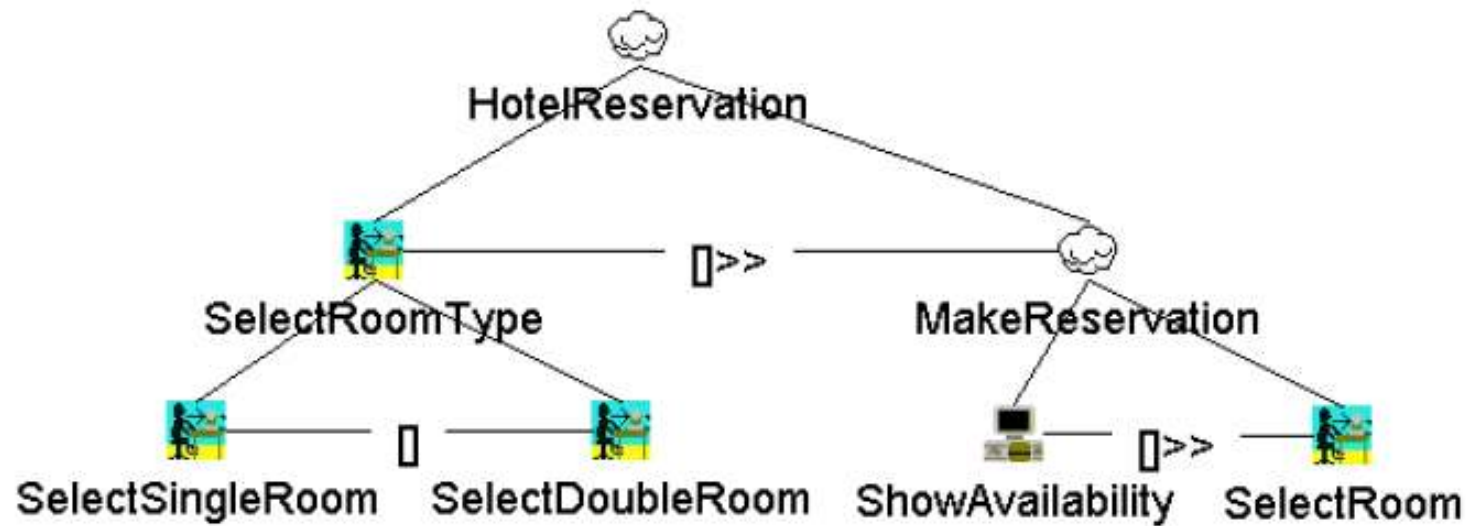
# CTT – operators used

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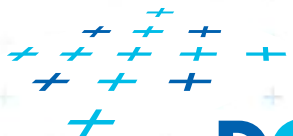
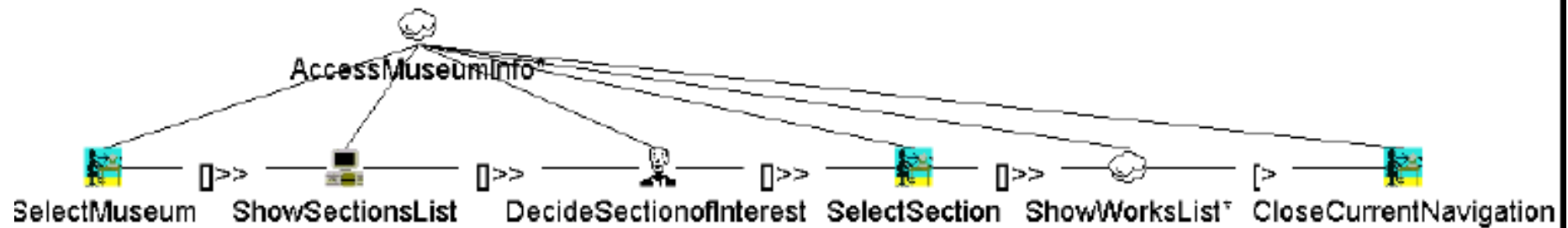
Enabling	$T1 \gg T2$ or $T1 [] \gg T2$
Disabling	$T1 [ > T2$
Interruption	$T1   > T2$
Choice	$T1 [] T2$
Iteration	$T1^*$ or $T1_{\{n\}}$
Concurrency	$T1     T2$ $T1  []  T2$
Optionality	$[T]$



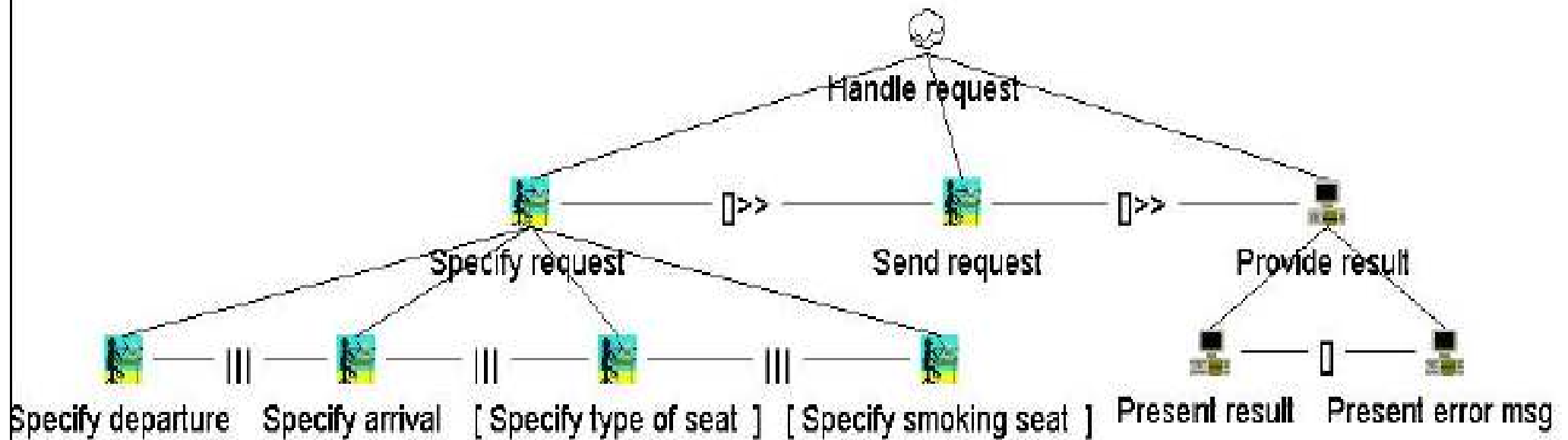
# CTT example



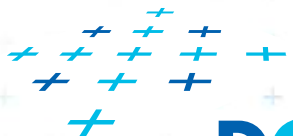
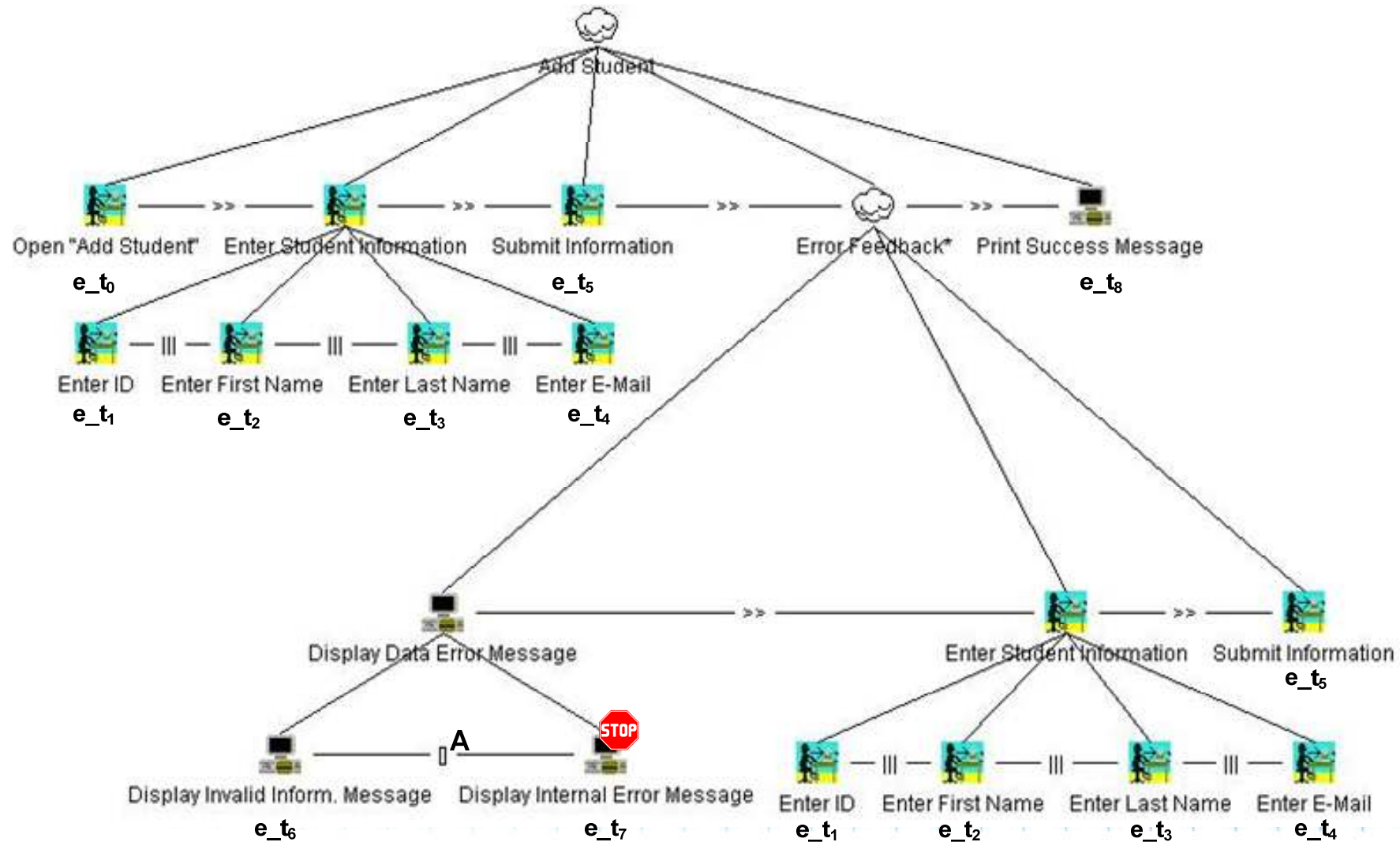
# Another CTT example



# CTT example – what task is it?

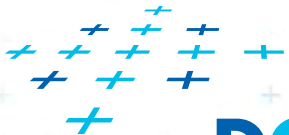


# CCT – “KOS – like” example



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# Storyboard



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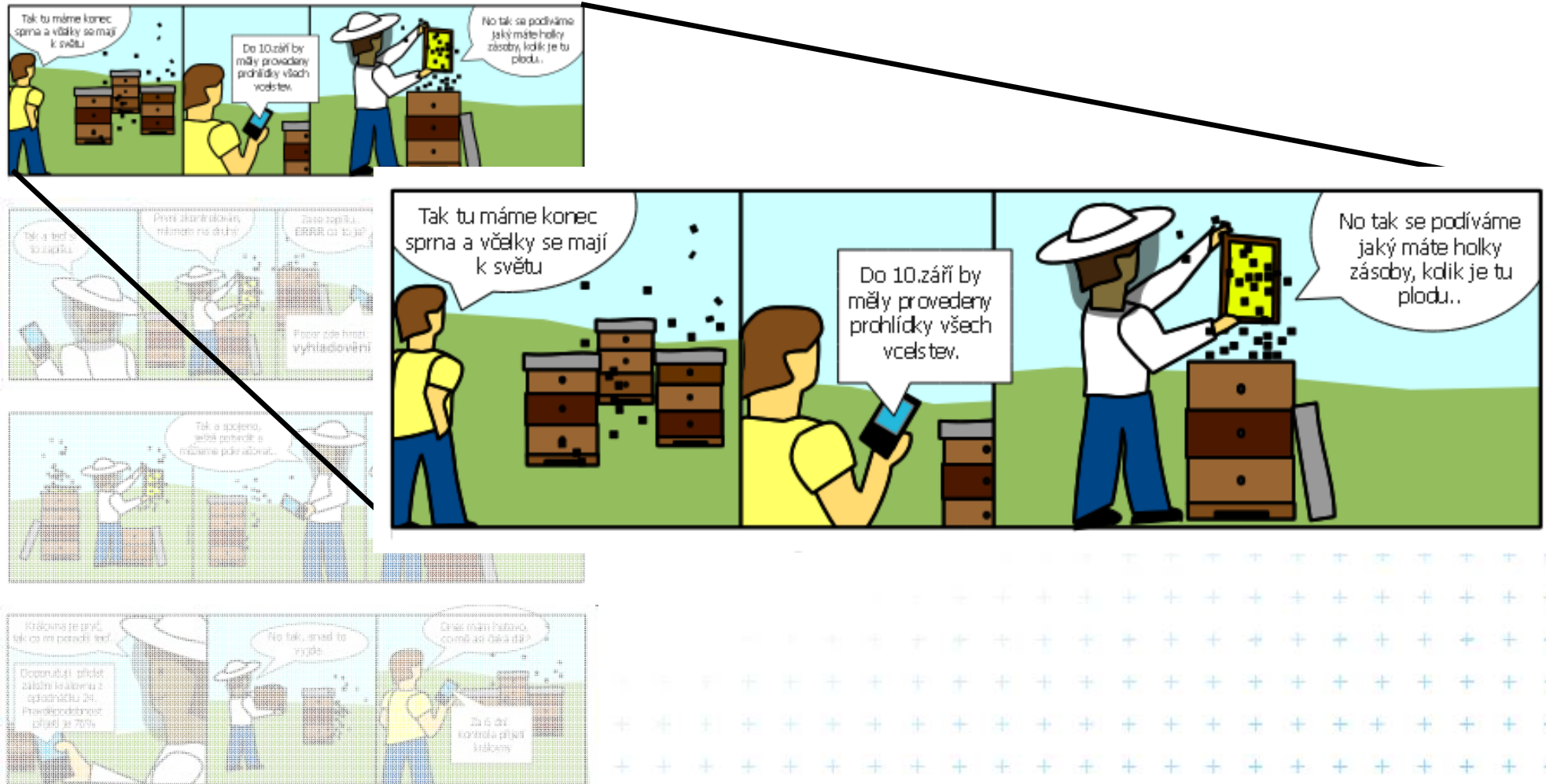
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# Storyboard example - BEEPER



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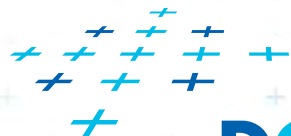
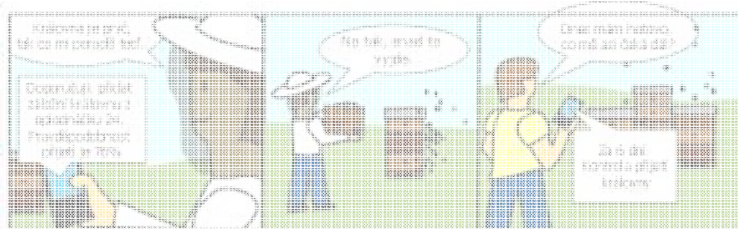
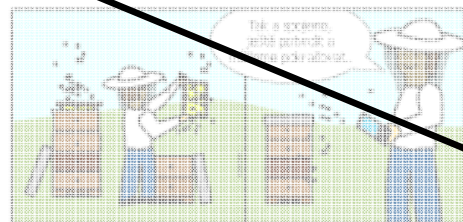
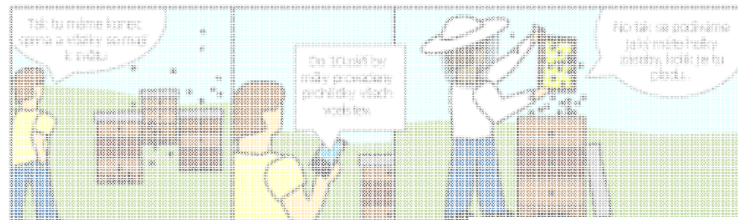
Source: Ondřej Mandík, CTU student



NUR - Formal description/models of user interfaces



# Storyboard example - BEEPER



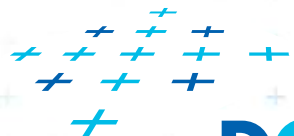
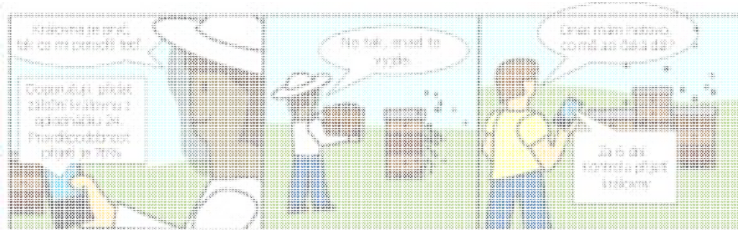
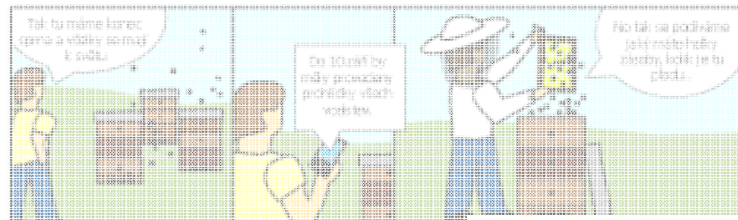
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NUR - Formal description/models of user interfaces

Source: Ondřej Mandík, CTU student



# Storyboard example - BEEPER

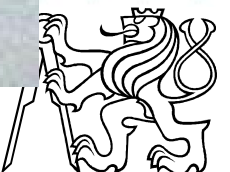
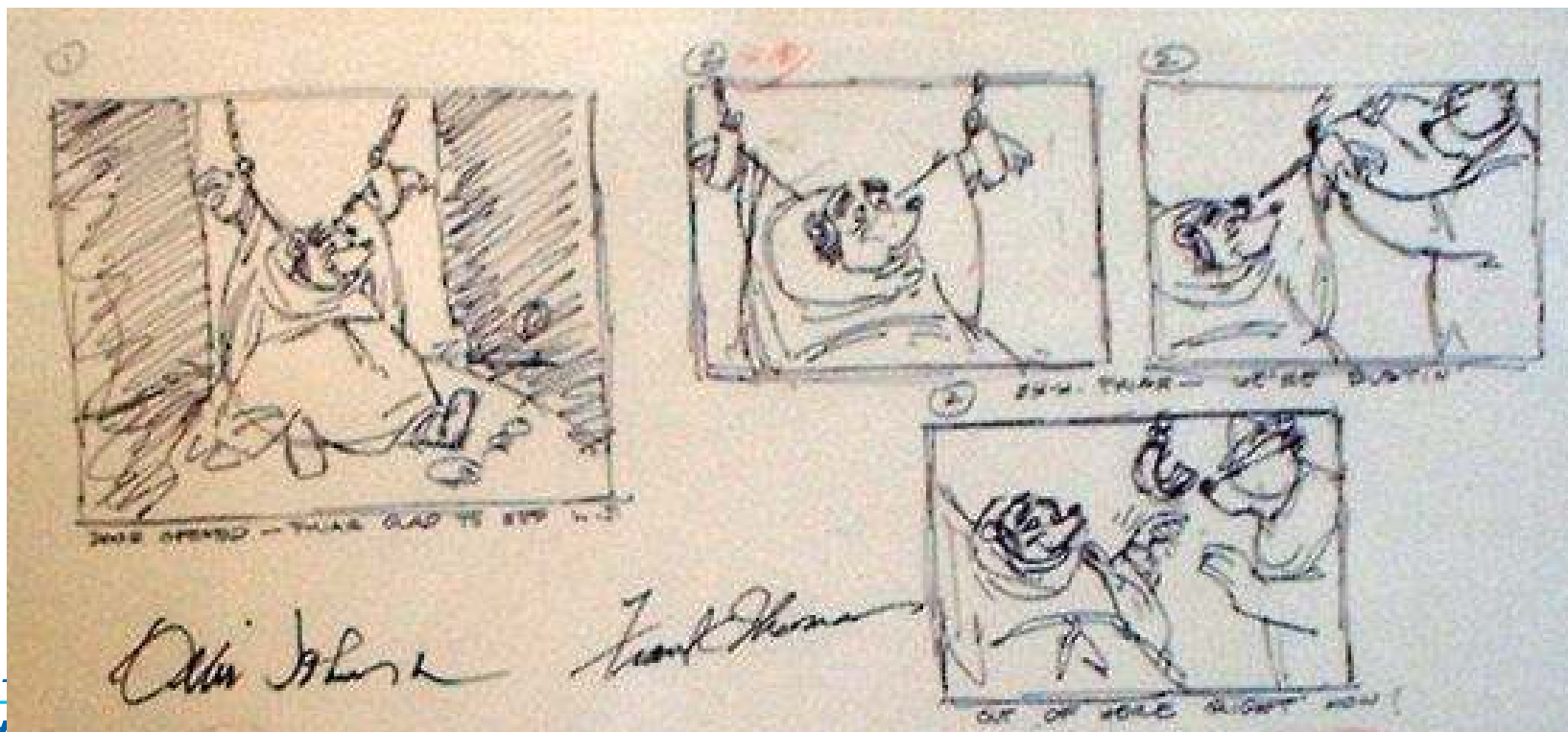






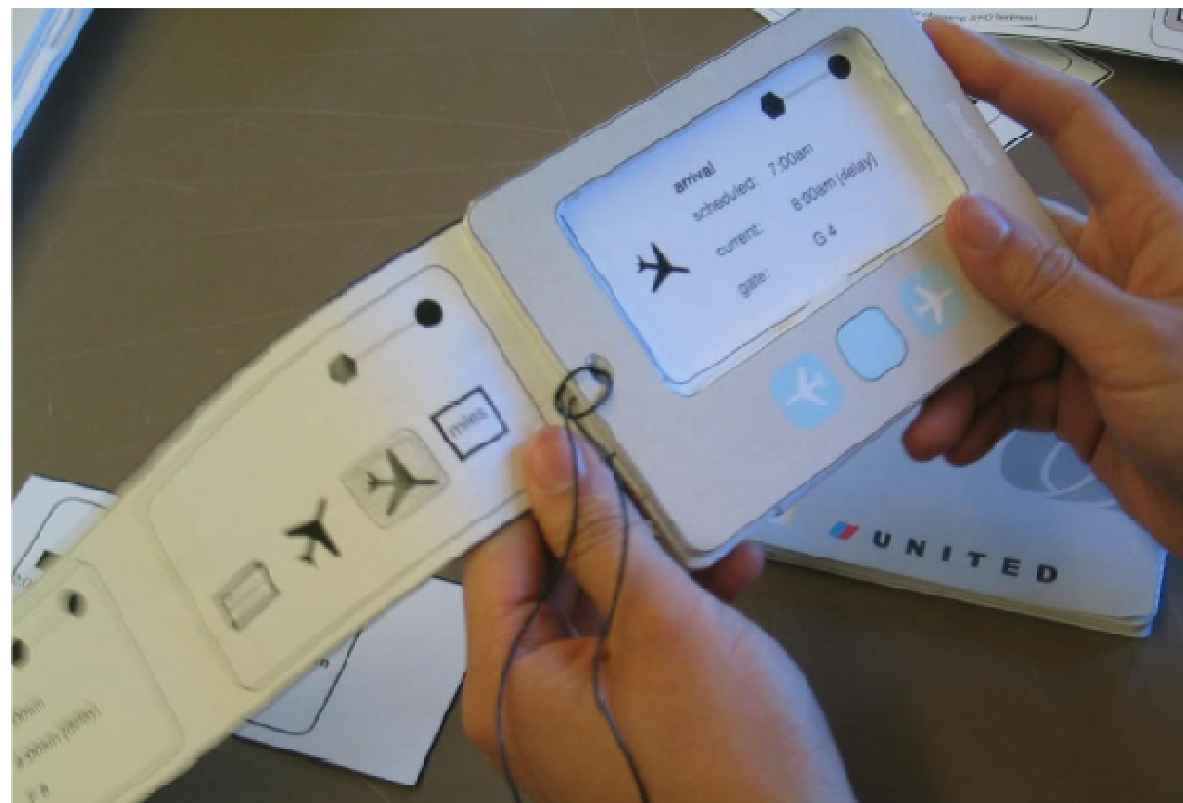
# Storyboarding

- a series of key frames as sketches
  - originally from film industry; used to get the idea of a scene
  - snapshots of the interface at particular points in the interaction
- users can evaluate quickly the direction the interface is heading

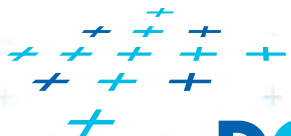


# Storyboarding

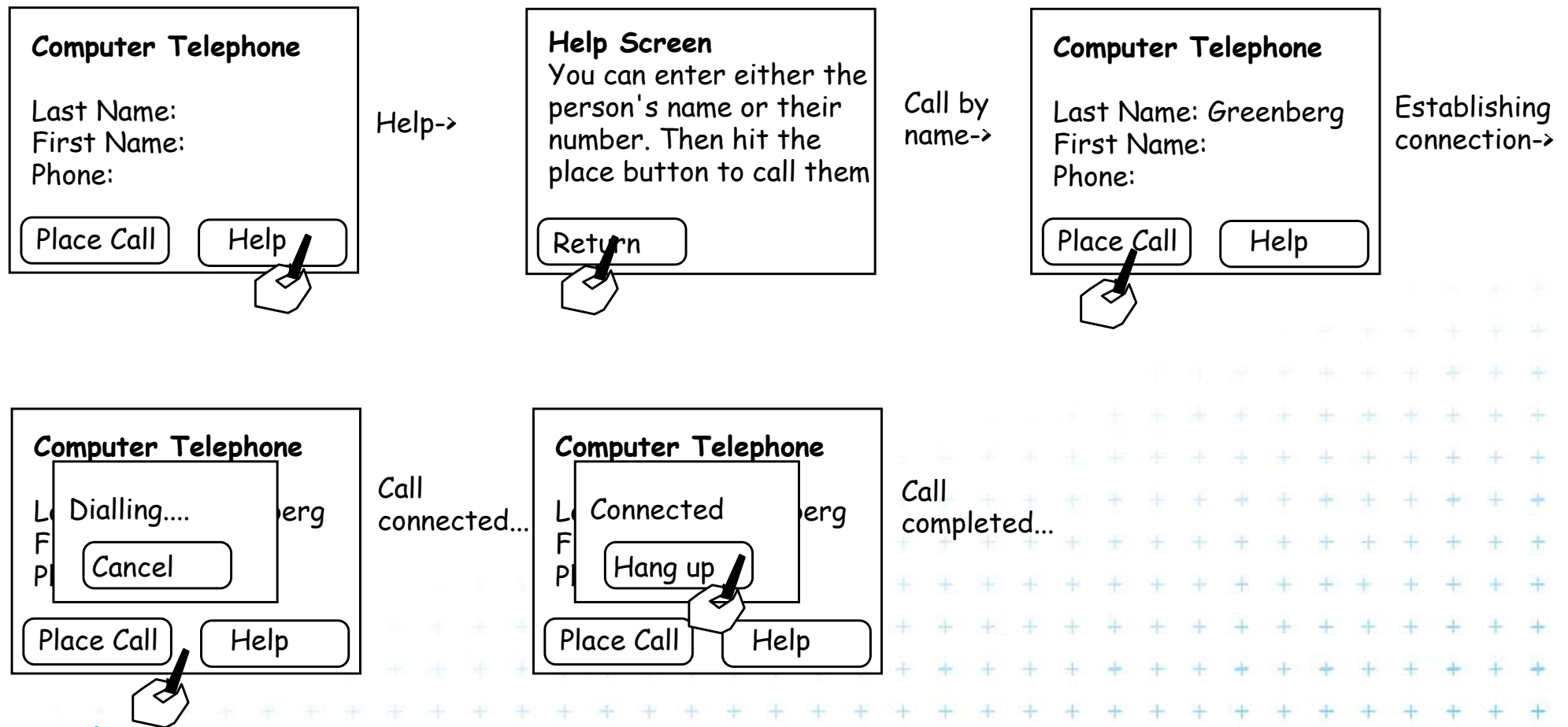
- **Spotlight: an interactive foam core and paper sketch/storyboard** Credit: Sue-Tze Tan, Dept Industrial Design, University of Washington



*From Design for the Wild, Bill Buxton  
(in press) with permission*



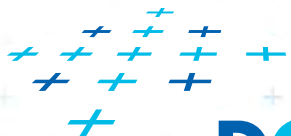
# Storyboard of a computer telephone - homework





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# Thank for your attention



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