

# Overview about Iterative Prototype Generations at the 5 test sites in Athens, Delft, Lund, Milan and Vienna

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## Overview

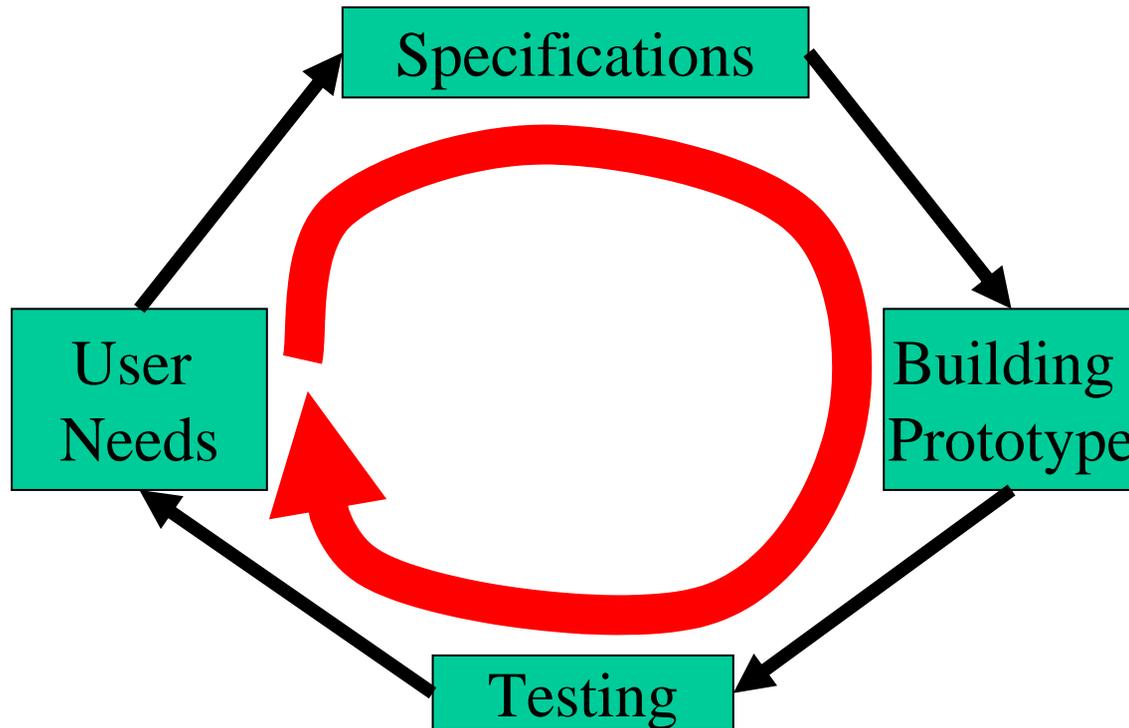
Why Iterative Prototypes? User Centred  
Iterative Design and Development

Examples of iterative design activities in  
FRR project

The 5 different test sites and their  
individual focus and prototypes

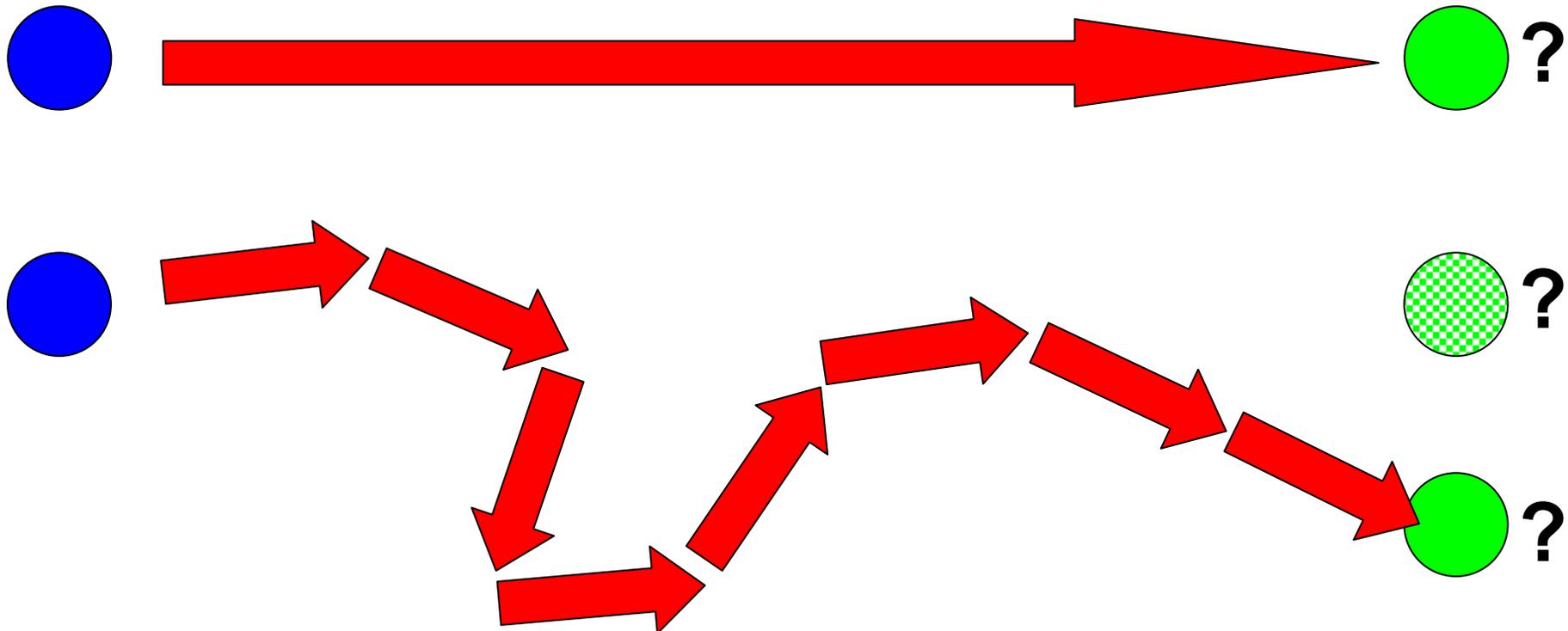
## Iterative Cycles

User needs -> Specification -> building prototype -> testing prototype -> revision of specification -> building improved prototype and so on



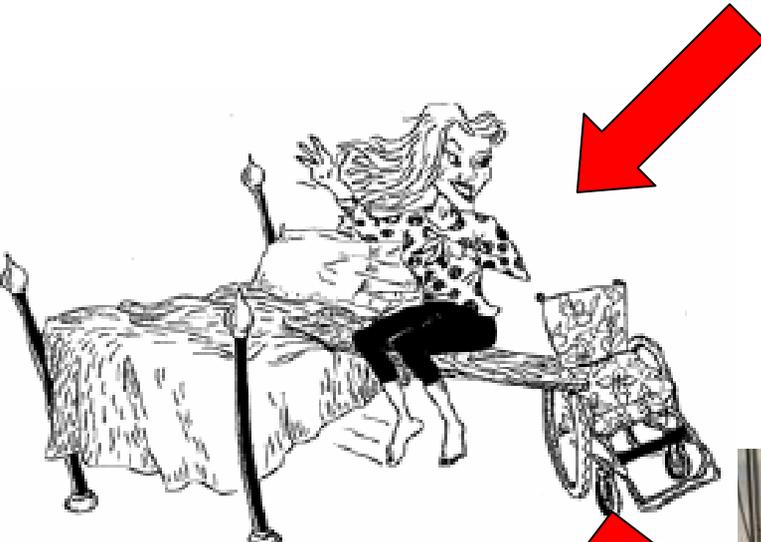
**Design**

is a process and  
 is far from being linear  
 the target may be adapted during the  
 process due to new knowledge



# New Type of Seat

a first vague idea was presented during kick of meeting (03/2002):  
 “sitting board” from the Middle Ages might be good for improving stability



Usage for transfer  
 (Hultling and Levi, 1995)

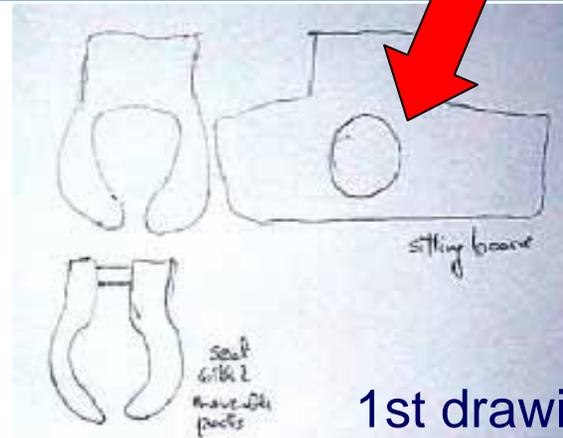
1st demonstrations



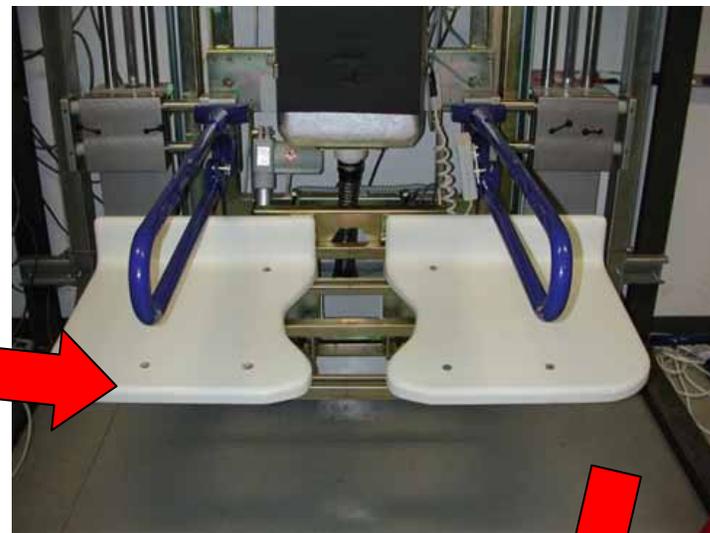
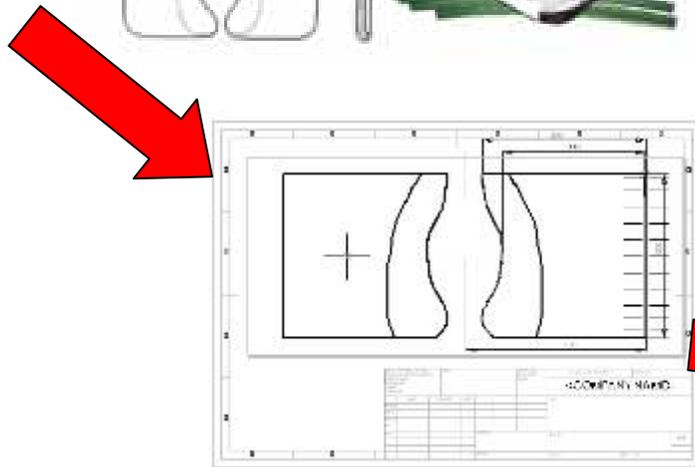
# New Type of Seat

'Transfer'

1st design drawings



1st drawings



1st wooden models

# New Type of Seat - Implementations

User tests - Space for personal belongings (top view)



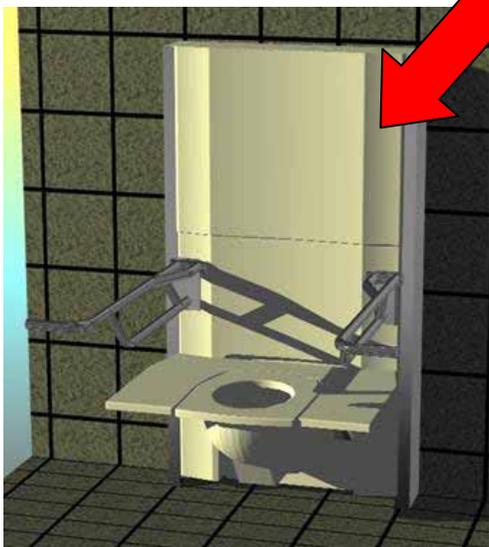
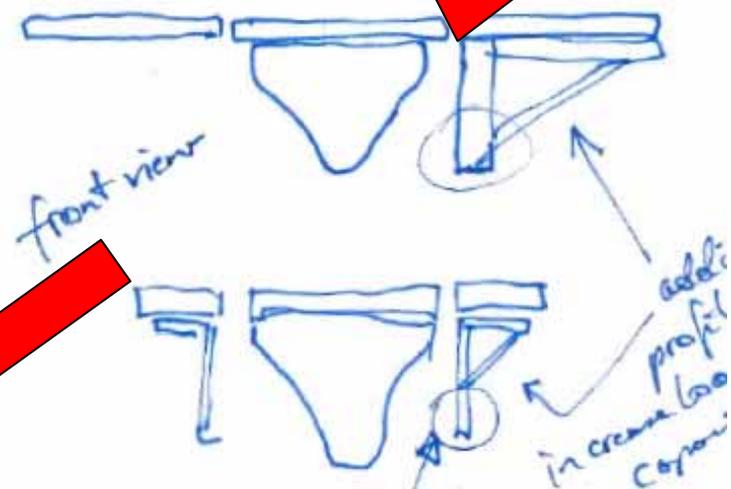
Rethinking width of seat



Production of improved seats for lab prototypes

## New Type of Seat

Discussion with experts in Austria  
 – idea: smaller version of seat



Design of smaller seat

Combining seat with another FRR module: the vertical bars

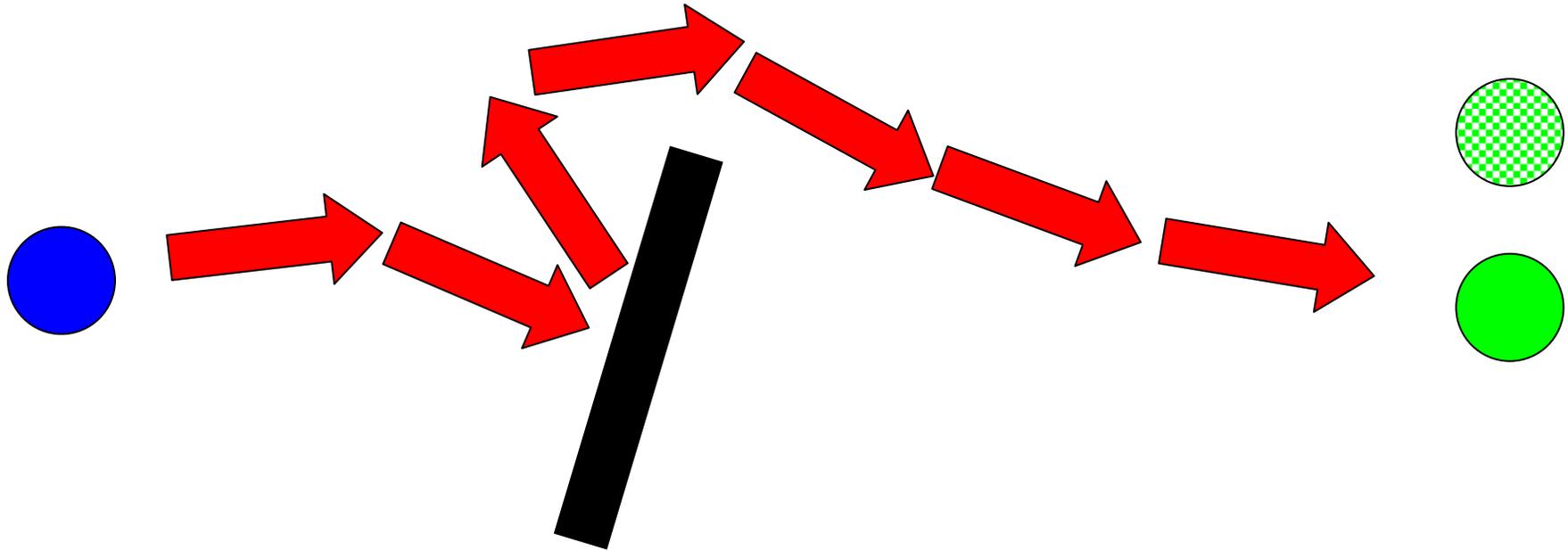
## Summary

Several prototypes of the new seat were designed and fabricated and each step was tested by users

Doing this several new ideas have come up and were added

This enabled the consortium to come up with flexible solutions which also take into account different user needs and existing external limitations (lack of space in toilet room) in this way increasing the exploitability of the project's outcome

# Examples where we had to try again



## Examples where we had to try again

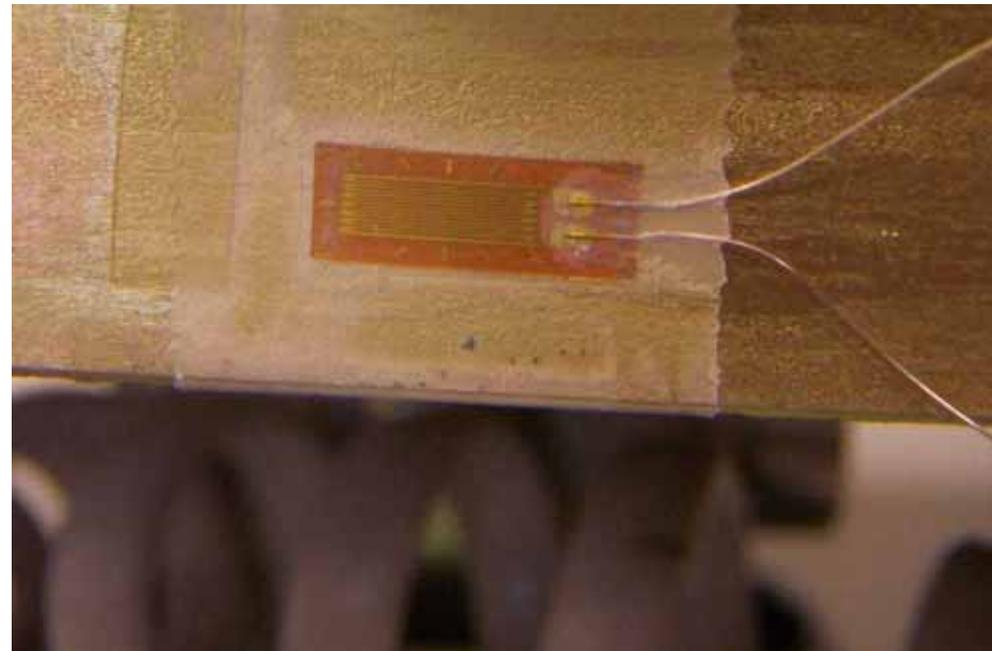
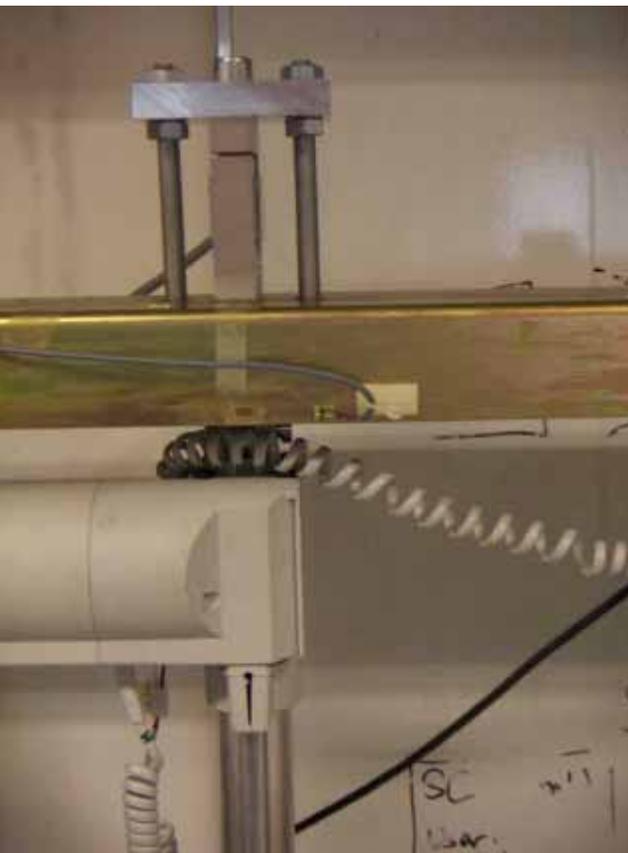
A new type of a „wall mounted body support bar“ was developed intending to provide some type of guidance for the fragile users. It failed the user tests as a power grip around the bar was not fully possible (right side of right picture shows the improved well working version tested in the end of the project)



## Examples where we had to try again

Some types of sensors for measuring user's activities needed to be replaced due to too high costs

Expensive load cells (left) were replaced by much smaller and cheap strain gauge sensors (right)



## Test Sites of FRR Project

- Athens, GR
- Delft, NL
- Lund, SE
- Milan, IT
- Vienna, AT



## Test Sites and FRR Components

According to the  
expertise,  
resources and  
available local user groups

Each FRR test site has focussed on  
specific topics.

Not all FRR components were tested at  
all sites

An overall coordination ensured that the  
outcomes fit together

## Different Test Environments and Settings

### Different Environments (Examples):

With water // without water

booth in lab // Container // Complete toilet room // Field test in Real Life

Prototypes with many features in laboratory // prototypes with fewer features in real life

### Different focus in User Groups (Examples):

Elderly

MS Patients

Wheelchair Users

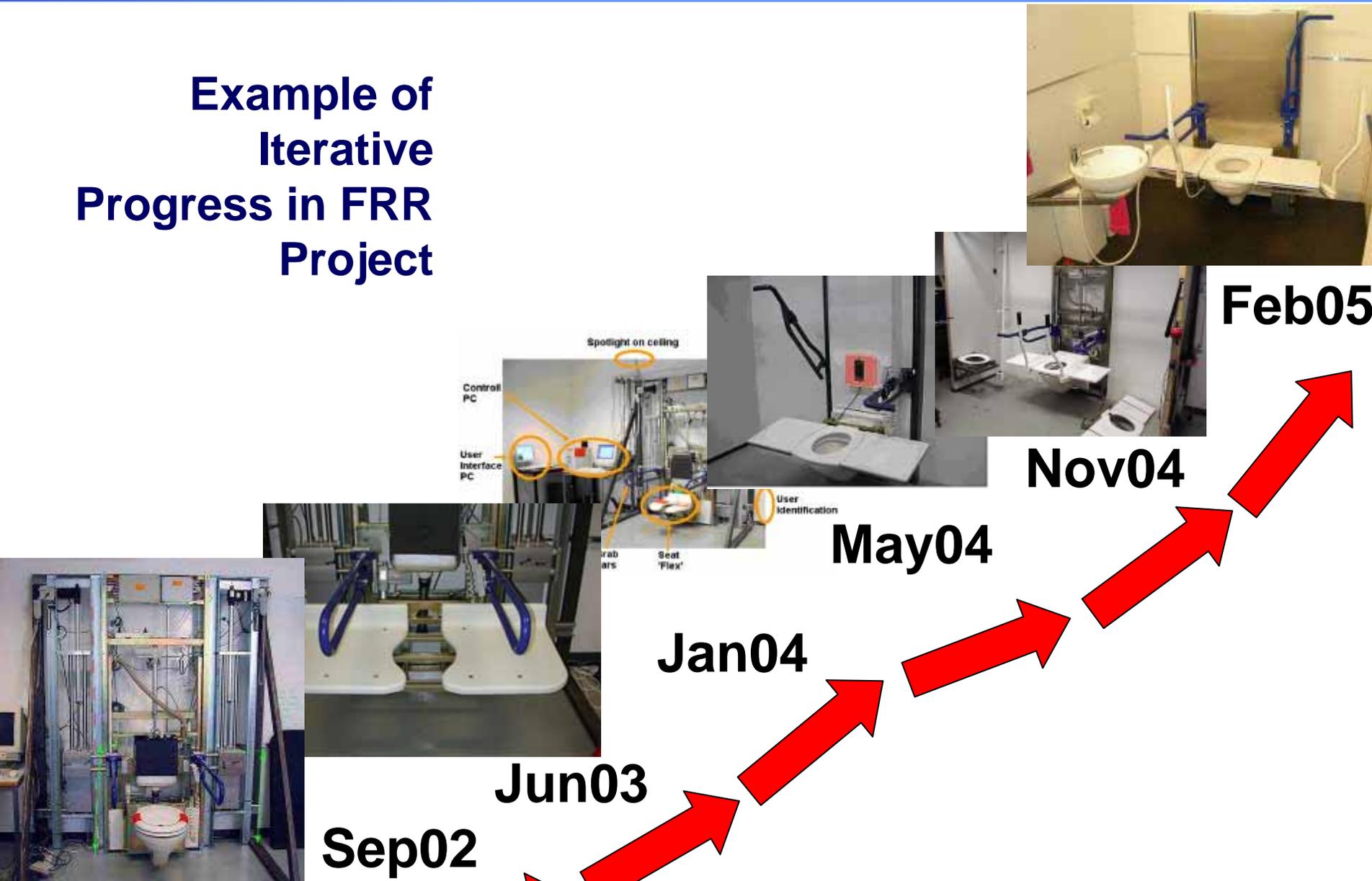
Visually Impaired

## PersonTests per Prototype Generation

Prototype Generation	AT	SE	GR	IT	NL	
<b>1st</b> (EPT)	12	12	8	-	-	<b>32</b>
<b>2nd</b> (APT)	19	14	9	-	-	<b>42</b>
<b>3rd</b> (labBPT)	5	7	-	-	-	<b>12</b>
<b>4th</b> (BPT)	12	11	10	8	15	<b>56</b>
<b>5th</b> (PPT & Field test)	41 #)	10	33	10	19	<b>113</b>
<b>PersonTests</b>	<b>89</b>	<b>54</b>	<b>60</b>	<b>18</b>	<b>34</b>	<b>255</b>

#) During field test in Vienna the 29 primary users carried out **316 toilet sessions**

# Example of Iterative Progress in FRR Project



Spotlight on ceiling

Control PC

User Interface PC

Grab bars

Seat 'Flex'

User Identification

**Thank you**