

iStoppFalls: A Tutorial

CONCEPT AND PROTOTYPE

Authors:

Laura Festl, Dominik Hornung, Anke Reinschlüssel,
Oliver Stickel, Sebastian Wientzek



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1 Introduction

This concept for a tutorial for the iStoppFalls fall prevention system was part of a class about Prototyping with Axure at the University of Siegen where there were multiple similar “design challenges”. Hence, the tutorial has not been developed by iStoppFalls project members in the strict sense: The design team consisted of five grad students with very different backgrounds, ranging from cognitive science to (media) psychology up to computer science.

1.1 Goals

Since the Axure class specifically targets prototyping, it is important to stress that the main goal of this project is a consistent concept, not a final (or even implemented) system. This translates into the following sub-goals:

Rationale: Providing core principles for the structure of the tutorial.

Styleguide: Providing visual and written documentation of a consistent design language for the tutorial.

Prototype: Providing a working prototype of the tutorial (with Axure) which covers enough parts of the iStopFalls system to make it clear how it should be implemented for the whole system.

Resources: Providing graphical and textual resources for the implementation of the system.

1.2 Method and methodical limitations

The rationale and structure of the prototype was developed in countless workshops of the design team, utilizing different methods from brainstorming and ideation. The team also held regular Skype conferences in order to keep all members up to date. Task and project management was done via Teambox¹. Graphical resources were developed mostly as vectors in Adobe Illustrator in order to keep them as flexible as possible, while the prototype itself was done in Axure RP².

Unfortunately, the design team was not able to approach the concept in a very user centered sense, quite simply due to the allocated time (both overall and in relation to all the other classes and projects in our studies)³. The team constantly tried to have the target group – elderly people – in mind but this was especially hard since the team members are all in their twenties and quite tech-savvy. So no member of the team can

¹<http://www.teambox.com>

²<http://http://www.axure.com>

³Apart from that, the class would have strayed more from its Axure orientatation if the design team had diverted its resources to work with users.

really relate to fall problems and bodily limitations as well as empathize with the technology related models and problems of elderly people.

The bottom line is: It is the opinion and strong recommendation of the team that the next step *has to be participatory*: Taking the prototype out there and evaluating and developing it further *together* with the elderly people who will have to use it.

1.3 Structure

First, this documentation will cover the rationale behind the tutorial (see chap. 2), where the focus will be on the explanation of an avatar, the chunking of information and the multi-modality of explanations. Consequently, there will be a walkthrough of selected tutorial sequences (chap. 4). This walkthrough will describe every important element in detail and will also rely heavily on graphics – it can be considered a styleguide. Lastly, this documentation will focus on the Axure prototype which combines the elements of the previous chapter and brings them to life. (chap. 5).

2 Rationale

This section will focus on the underlying principles for the tutorial which also should be considered in any further evaluation, development or implementation of the tutorial.

2.1 Chunking and interaction

There are many different ways how a tutorial can be structured, ranging from huge, monolithic introductions in text, picture or video form which start before a system can be used for the first time, down to highly contextual and divided concepts.

The design team considered the target audience which does not possess a lot of IT-related skills and decided, it was prudent to approach the tutorial on a granular basis. Psychologically speaking, it makes a lot of sense to break down and group informations into tightly related, small pieces – they are usually called “chunks” and go back to Miller (1994). While the exact details (especially as to the optimal amount of chunks) are disputed, it can be considered scientific consensus that the chunking of information in memory related settings usually has beneficial impacts on learning. Chunking has also been linked to long term learning and expertise (Gobet & Simon, 1996) as well as motoric learning aspects (Sakai, Kitaguchi, & Hikosaka, 2003).

Furthermore, it was assumed that due to the relative inexperience of the target audience, it would be beneficial to give opportunities to train and try out the learned chunks within the tutorial itself, meaning it should be interactive (where prudent). These basics lead to the structure described in the next sections.

2.1.1 Tutorial on first start of iStoppFalls

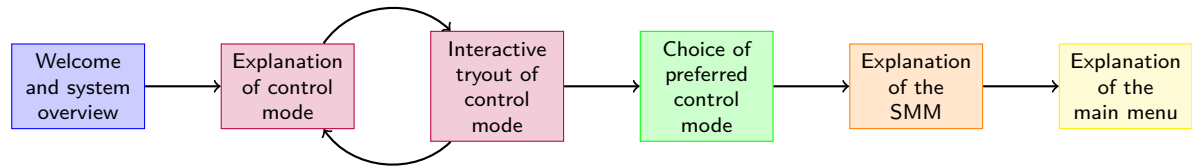


Figure 1: Tutorial on first start of iStoppFalls

The sequence shown in fig. 1 is passed through when the application starts for the first time. Every box in the figure represents a chunk, meaning a separate screen.

First, the user should be greeted and receive an overview of the iStoppFalls system. After that she needs to learn about the different control modes. Every mode of control gets its own chunk and a subsequent interactive chunk where the user can try out and train the control mode. The control modes are: The directional pad on the remote, the touchpad on the remote and gestures via the Kinect⁴. At the time of writing, it was unclear if there would also be a control option via a tablet as well as voice control. When all modes are finished, the user will have to choose the one she wishes to use. After that, the SMM and its handling will be explained and subsequently the user arrives at the main menu which will also be explained. Finally, the user is encouraged to explore iStoppFalls from there on her own. This sequence will be covered in more detail in sections 4.1.1 to 4.1.14.

2.1.2 Tutorial in later stages

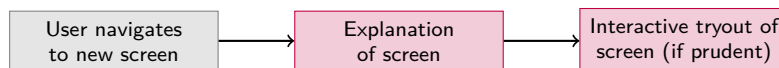


Figure 2: Tutorial, later stages

After the user has arrived at the main menu screen as described in the previous section, the tutorial becomes context-sensitive as shown in fig. 2. Whenever the user navigates to a screen where she previously has never been (i.e. into a submenu), the tutorial will activate itself and the user will receive an explanation of the screen, followed by an interactive tryout element – If applicable and prudent. More on this as well as an example can be found in section 4.2. Subsequently, the user will be free to explore the screen herself. However, the user should always be able to invoke the tutorial again, if need be.

⁴<http://www.xbox.com/kinect>

2.2 Navigation in the tutorial

The user should have control over when to finish a tutorial screen or chunk and consequently move to the next one (or to skip the tutorial). To this end, the decision was made to utilize the color-coded, freely assignable buttons on the Google TV remote. This decision is based on the assumption that almost everyone will know how to use a remote control, unlike e.g. a Kinect. It also creates a clear differentiation between the content of the tutorial and the navigation. This mode of navigation is represented through the onscreen element shown in fig. 3. It is also announced by voice whenever a tutorial screen comes to its end (it will, however, have to be tested with users if this auditory repetition gets annoying and mere visual information is sufficient).



Figure 3: Onscreen navigation representation

2.3 Interface Agent and Avatar

The design team made the decision to incorporate an animated character into the tutorial who should give all the explanations and instructions to the user. Such a character is often called an interface agent (Serenko, Bontis, & Detlor, 2007) and the agent for iStoppFalls is shown in fig. 4. The reasons for this decision will be explained in the following sections.



Figure 4: Avatar of the interface agent

2.3.1 Social aspects

It can be considered an established psychological fact that users attribute certain social qualities to computers, meaning they treat them (in certain ways) like humans (Nass & Yen, 2010). This results in the potential for interface agents to build on these social principles and to have beneficial effects on the effectiveness and trustworthiness of a

system (van Mulken, André, & Müller, 1998). Another advantage of such agents is to allow a more natural way of interacting in and with virtual environments (Salem, Earle, & Road, 2000). In order to avoid problems with the uncanny valley ("Popular Mechanics", 2010), an abstract avatar for the interface agent in the form of a cartoon-ish humanized tennis ball (as a reference to training activities) was chosen.

2.3.2 Entertainment

Interface agents and the explanations and instructions they give can have positive effects on the entertainment of the user (which is another reason for choosing a cartoon-ish avatar) and even influence the perceived ease of use of a task beneficially (van Mulken et al., 1998).

2.3.3 Abstraction level

Another important reason for an interface agent is that it provides the chance to build an additional abstraction layer on top of the content of the system: If a screen is shown and explained, the intention is to guide the user's attention to the avatar of the interface agent who will explain what's going on and what the current screen or element is for, focussing on specific elements of the screen. This is followed (if applicable) by an interactive training that is, again, introduced by the agent. Thus, an abstraction layer and the directed relations of this layer and the screen of the application are intended to ensure optimal attention paths for the user. Furthermore, the presence of this layer makes it implicitly clear to the users that they are not in the system itself but rather in the tutorial.

2.4 Multi-modal explanations

The third basic principle of the tutorial is the multi-modality of all explanations. Elderly people's visual and/or hearing abilities may be impaired, so the design team considered as much modes as possible:

Text All relevant information should be available in concise textual form. The currently relevant textual information is displayed in a speech bubble originating from the interface agent. The speech bubble is shown in fig. 5.

Voice The information is additionally read out loud. These spoken explanations and instructions can and should be a bit more detailed than the textual ones (which has only limited screen real estate). This means that the spoken texts should resemble a natural talk while the key points from the spoken informations should be displayed in text.

Graphics Relevant elements or aspects are processed graphically.

Animations To explain movements or otherwise clarify points, animations are employed.



Figure 5: Speech bubble for displaying informations

All modes should however be coordinated: While the avatar ‘speaks’, the key points or instructions should appear in textual form in sync with the voice, not at an arbitrary moment before or after. Similarly, animations should be employed timing-sensitive and with care as not to overwhelm the user.

2.5 Accessibility

A user may naturally need help in any part of the application. Consequently, it is necessary that the tutorial is accessible from everywhere. The best way to realize this is through a button in iStoppFalls’ bottom bar. An icon in this bar, displaying “Help” as well as a miniaturization of the interface agent’s avatar clarifies the button’s meaning. This is shown in fig. 6.



Figure 6: Bottom bar with help button

3 Concept and design process

The first step in developing the tutorial for the iStoppFalls fall prevention system was to discuss which parts of the system should be part of the tutorial – this was worked out in cooperation with the iStoppFalls project manager and contains the navigation via remote control and gestures, the SMM handling, an explanation of the exercise screen and the menu structure. After the content was defined, possible concepts and designs for the tutorial were developed. This chapter briefly displays and explains the design process.



Figure 7: First scribbles of the tutorial: The navigation via remote control (left and middle) and the explanation of the menu structure (right).

The first idea was to show a short description text and an image of the element that was described (see fig. 7). The user should learn what was explained by performing a short exercise. For this purpose images would be used. The menu should be described by putting a transparent overlay on top of the application that spared the element that is explained at the time.

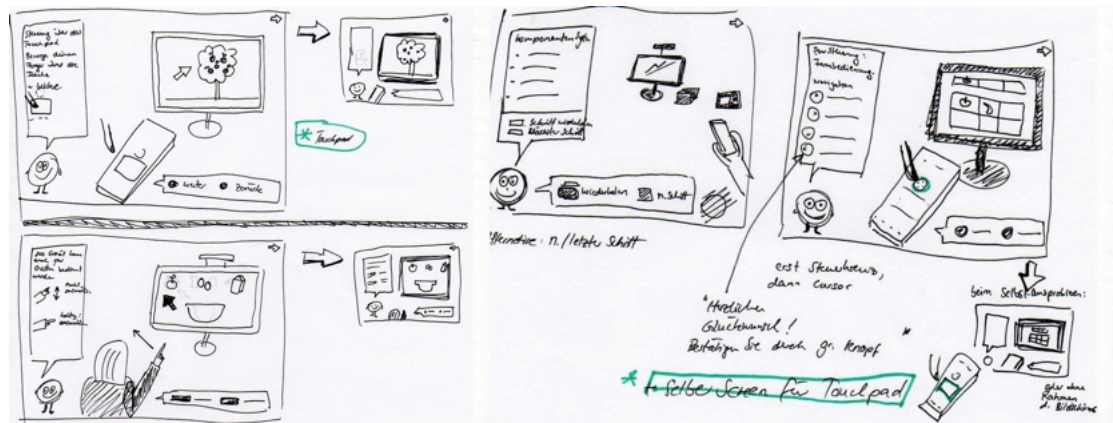


Figure 8: Scribbles showing the development of the basic design concept.

More sketching brought the project team to the basic design concept (see fig. 8): An avatar (for more details see chap. 2.3) should be visible in the lower left corner of the screen and the description text should be placed in a speech bubble above it. Another element that should be visible at all times is the navigation box that shows how to navigate the tutorial. It is placed in the lower right corner and was originally designed as a speech bubble as well. The left part of the screen should be used to graphically show the elements that are explained. At first, the exercises were designed as a game. For example, the user would have to grab apples from a tree, put ingredients for a cake into a bowl or match different fruits in a row to learn how to use the remote control. This idea was rejected later on due to several reasons – mostly for putting a focus on learning to use the system and not challenging users with other sorts of things like learning the

rules of said games. Based on these ideas, several visual layouts were considered which are shown in fig. 9. Based on discussions considering the basic requirements – simplicity, clarity and comprehensibility – the left lower approach was pursued and led to the final design which is explained in detail in chap. 4.

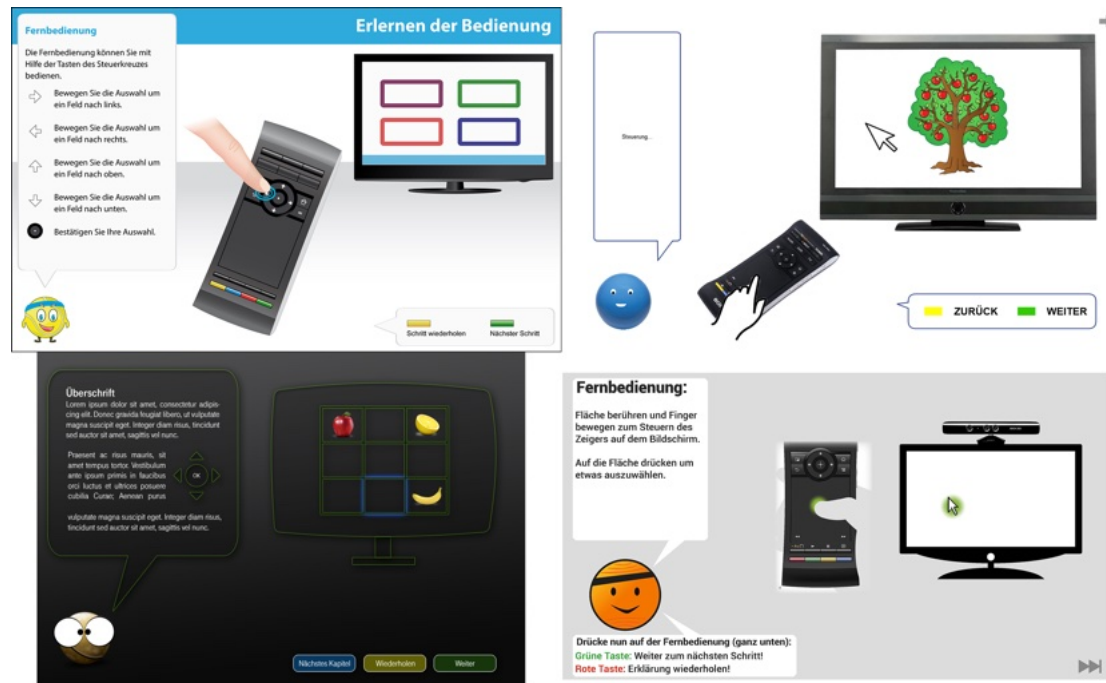


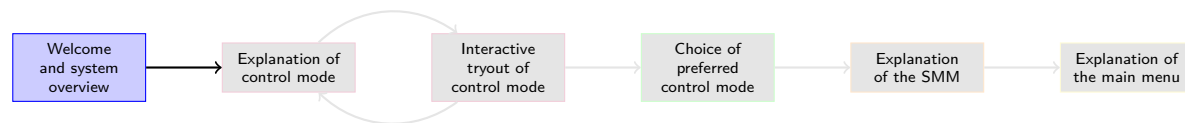
Figure 9: The visual layouts that were developed after the basic design concept was defined.

4 Walkthrough

This section will cover a more detailed, graphical walkthrough of the tutorial which also should serve as a styleguide for further work. Because it will rely heavily on big screenshots, it will be set in landscape. Since the walkthrough centers on visual aspects, the texts spoken by the avatar of the interface agent will be displayed jointly in section 4.3.

4.1 On first start

The first section of the walkthrough covers the part of the tutorial that is displayed when the user first starts iStoppFalls and that has already been explained briefly in section 2.1.1. *Note:* Some screens rely on animations and/or transitions which are hard to explain verbally. To this end, this walkthrough and the Axure prototype can compliment each other very well and should be viewed in concert.



Welcome to iStoppFalls!

I'm Billy Bounce and will guide you through this tutorial. iStoppFalls helps you to prevent falls in your daily life. This tutorial will show you how to navigate in this program.

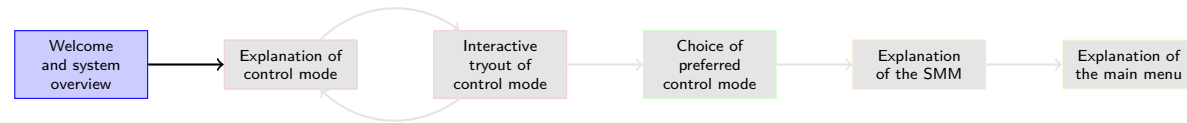


Press buttons on the remote control:

repeat step exit step next step

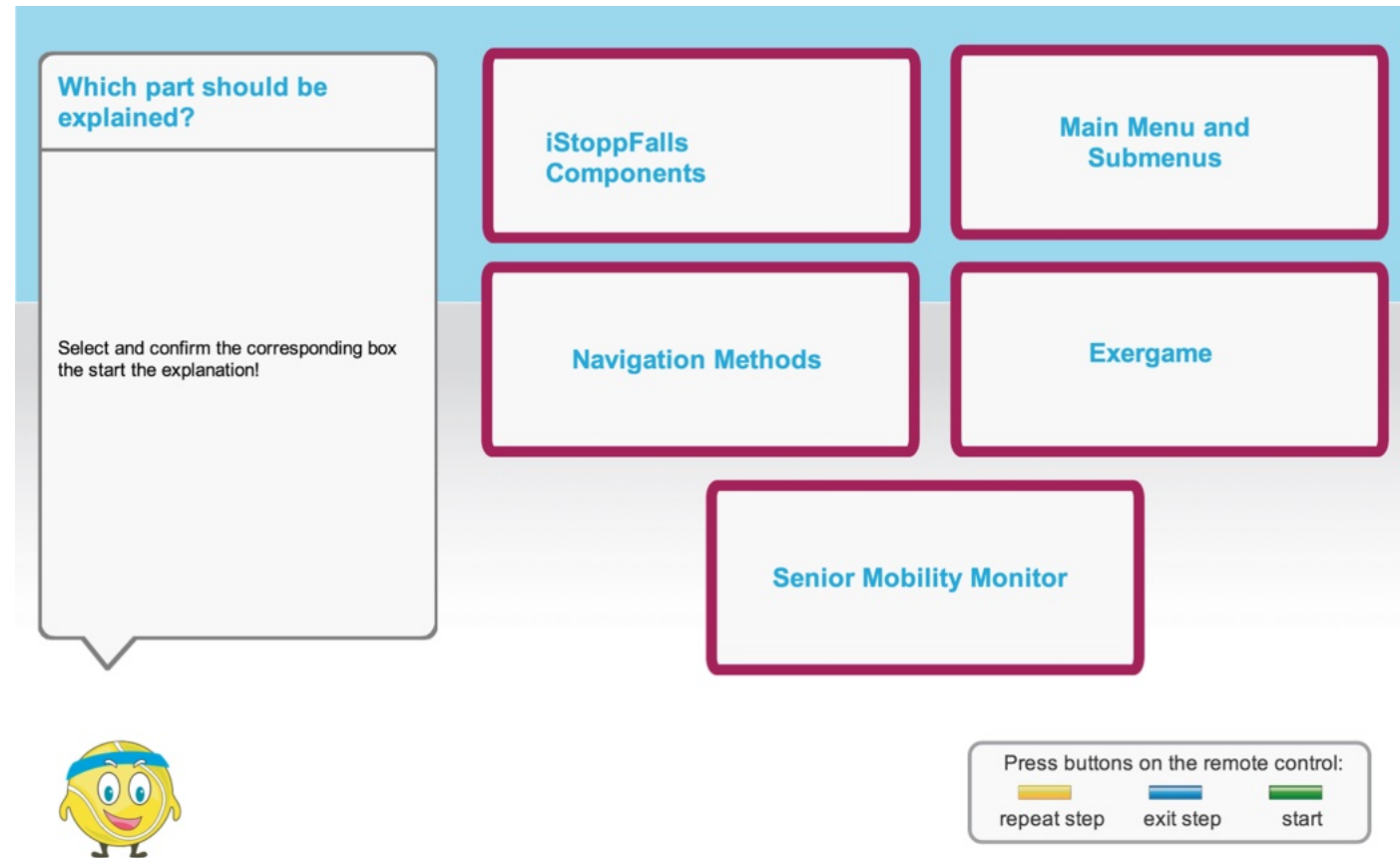
4.1.1 Welcome screen

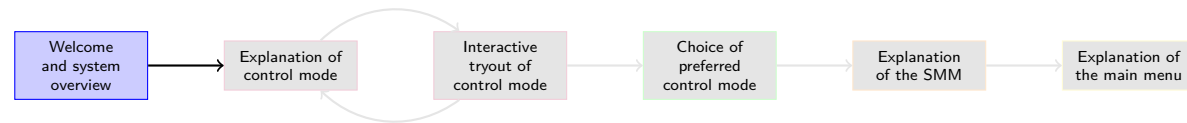
The avatar is displayed bigger than on later screens, welcomes the user to iStoppFalls and introduces himself as Billy Bounce (German: Billy der Ball).



4.1.2 Navigation screen

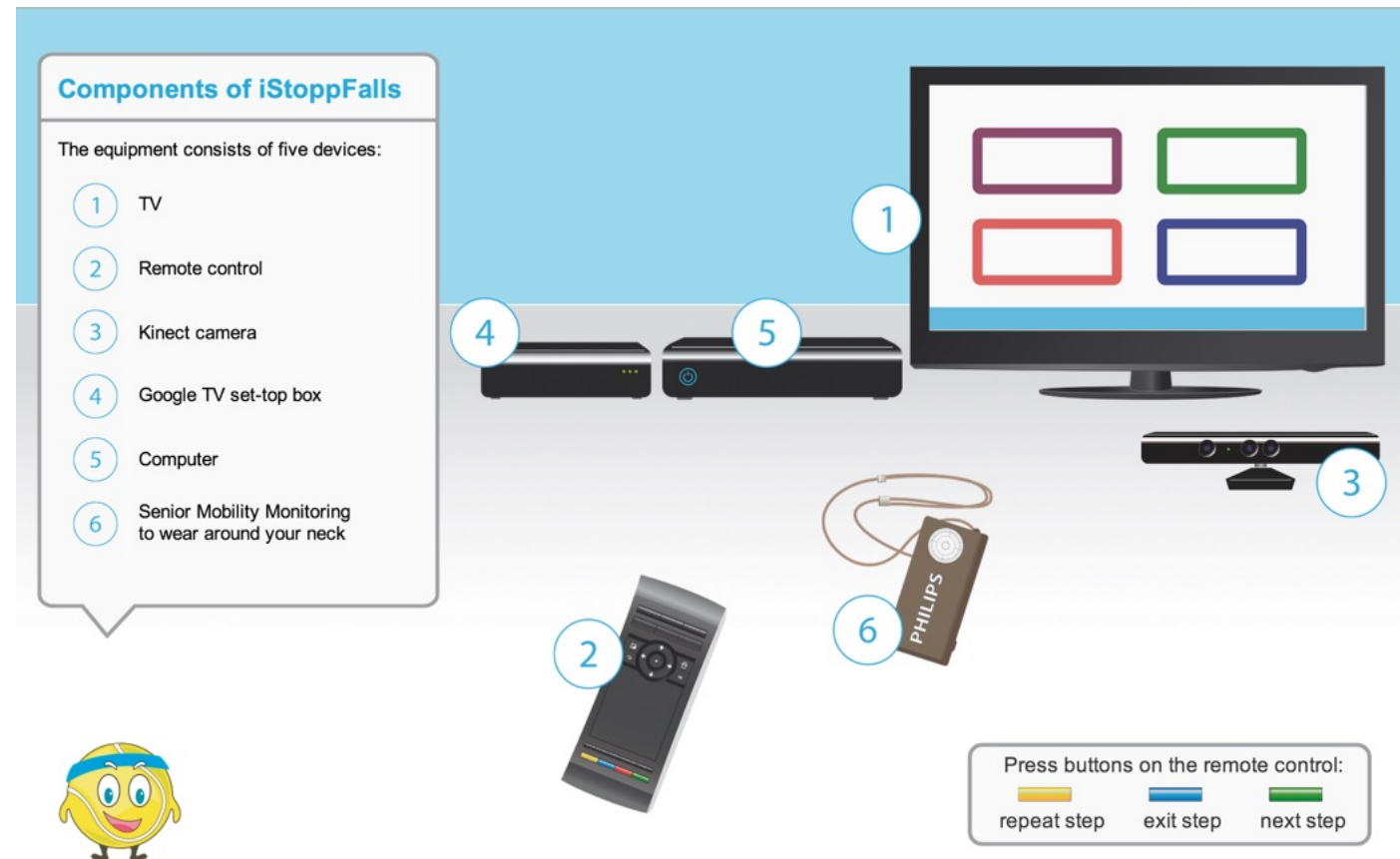
This is a possible concept for a navigational screen for jumping to specific parts of the tutorial. It has been included in the tutorial late in the design process as explicitly desired by iStoppFalls team members and was not part of the original tutorial concept. Thus, its position, logic and design should be reconsidered later.

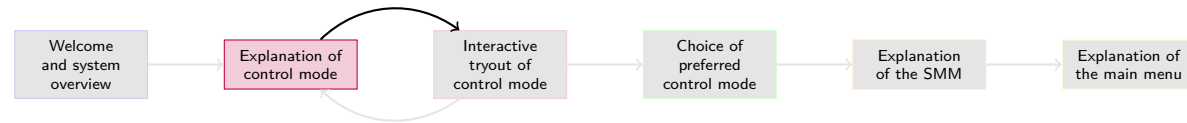




4.1.3 System overview

The avatar welcomes the user (voice) and subsequently, all elements of the iStoppFalls system are reviewed and explained. At the beginning, the right side of the screen is blank and all the elements (TV, Kinect, etc.) appear in sync with the textual and spoken informations. The user has to press the green button on the remote after each element in order to make sure she has enough time to map the onscreen pictures to the real elements in her living room.

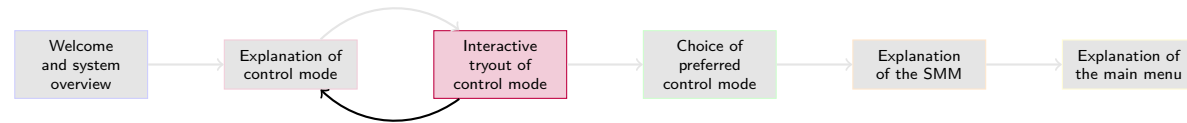




4.1.4 Remote: D-Pad

Navigation via the directional pad on the remote is introduced step by step in the order shown in the speech bubble. The finger is animated and when it pushes a button on the remote, blue circles indicate the pressure. Also, the selection of the coloured boxes on the depicted TV screen moves corresponding to the pressed direction. When the selection is confirmed via the center button, the selected box on the depicted TV screen flashes.





4.1.5 D-Pad exercise

The user is now invited to try the navigation with the D-Pad for herself. To this end, the depicted TV gets larger (animation) and the boxes display “select me” instructions. When the user has completed selecting and confirming all boxes, she can continue to the next tutorial screen.



Navigation via remote control

Navigation with the directional pad on the control.

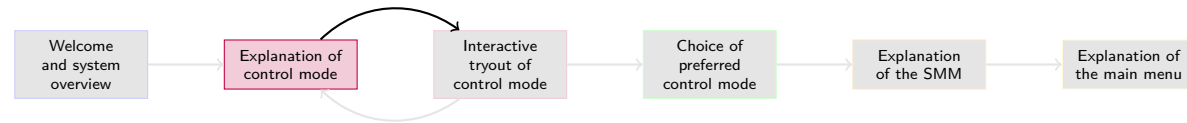
- ➡ Press right to select button to the right of the current selection.
- ➡ Press left to select button to the left of the current selection.
- ⬆ Press up to select button top of the current selection.
- ⬇ Press down to select button beneath the current selection.
- ⬤ Press button in the centre to confirm.

Now it is your turn:
Select each of the four coloured boxes.



Press buttons on the remote control:

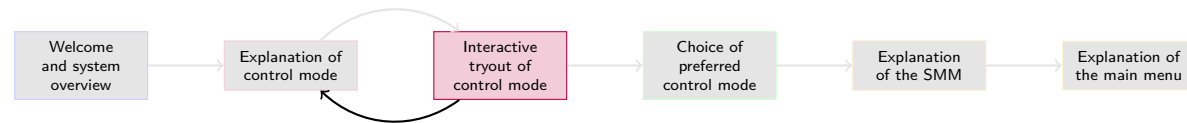
■ repeat step
 ■ exit step
 ■ next step



4.1.6 Remote: Touchpad

Navigation via the touchpad on the remote is introduced. The finger is animated and when it moves across the touchpad, the cursor on the depicted TV screen moves correspondingly. Blue circles indicate pressure / touch. The selection of the coloured boxes on the depicted TV screen changes, depending on which box the cursor currently points at. When the selection is confirmed via a click, the selected box on the depicted TV screen flashes.





4.1.7 Touchpad exercise

The user is now invited to try the navigation with the touchpad for herself. To this end, the depicted TV gets larger (animation) and the boxes display “select me” instructions. The user now has to move the onscreen cursor to every box and confirm by clicking. When she has clicked on all boxes, she can continue to the next tutorial screen.

Navigation via remote control

Navigation is also possible with the touch pad on the remote control.

Move your finger to move the cursor on the screen in the same direction

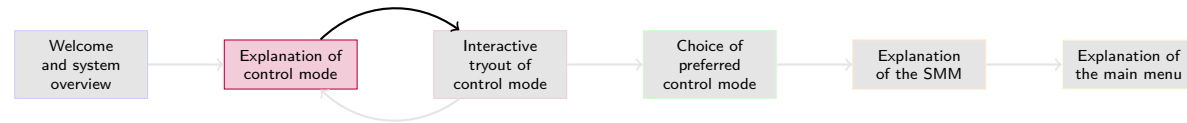
To confirm, press on the touchpad

**Now it is your turn:
Select each of the four coloured boxes.**

Press buttons on the remote control:

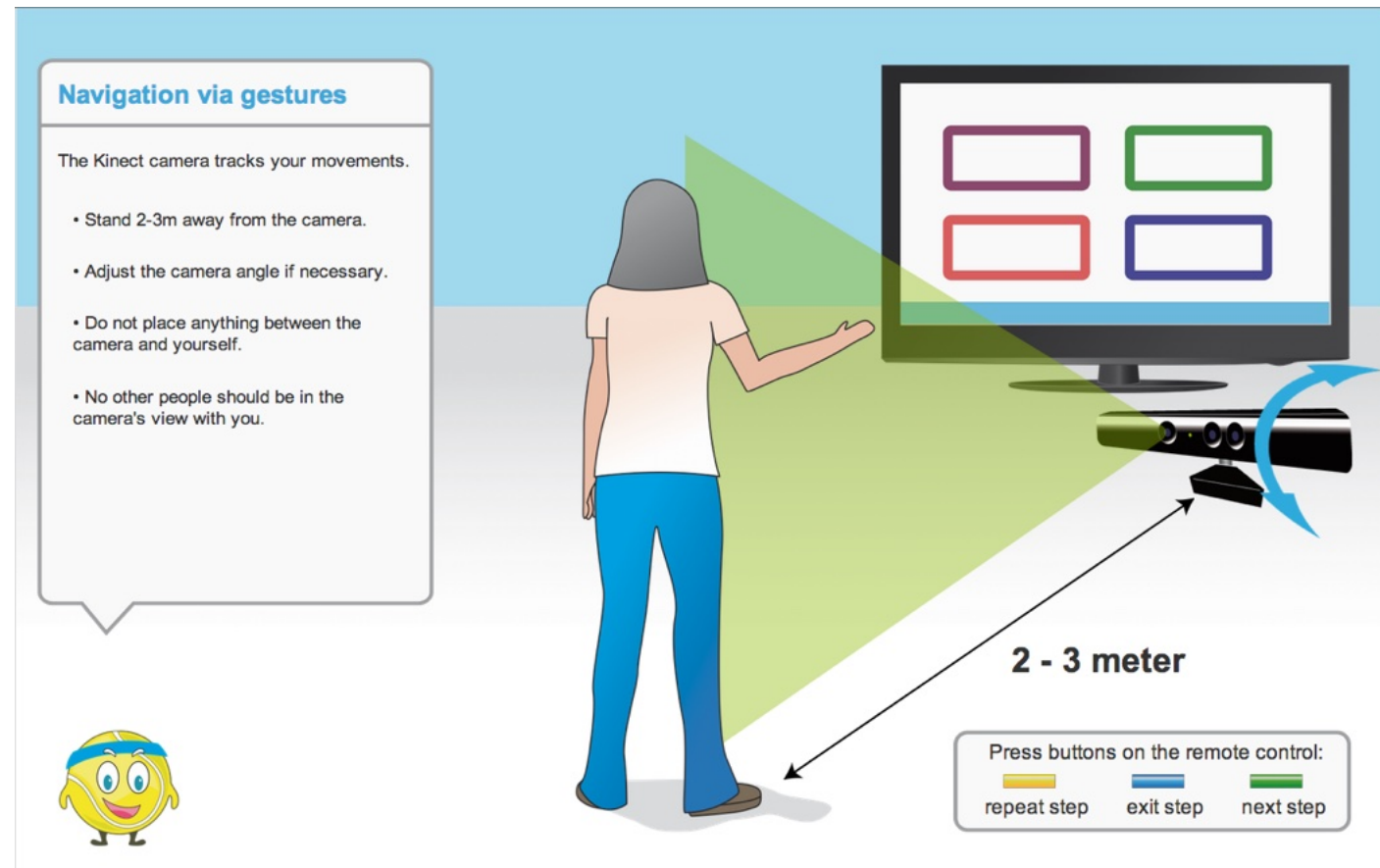
- repeat step
- exit step
- next step

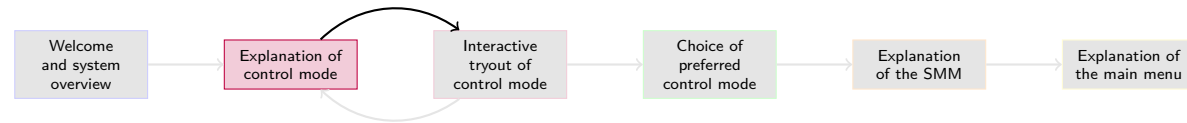
The screenshot shows a tutorial screen titled 'Navigation via remote control'. It contains instructions on how to use the touchpad on the remote control to move a cursor and confirm selections. A cartoon character is visible in the bottom left corner. The main part of the screen shows a television displaying four colored boxes (purple, green, red, and blue) for the user to select. A legend at the bottom right explains the remote control buttons: a yellow button for 'repeat step', a blue button for 'exit step', and a green button for 'next step'.



4.1.8 Kinect explanation

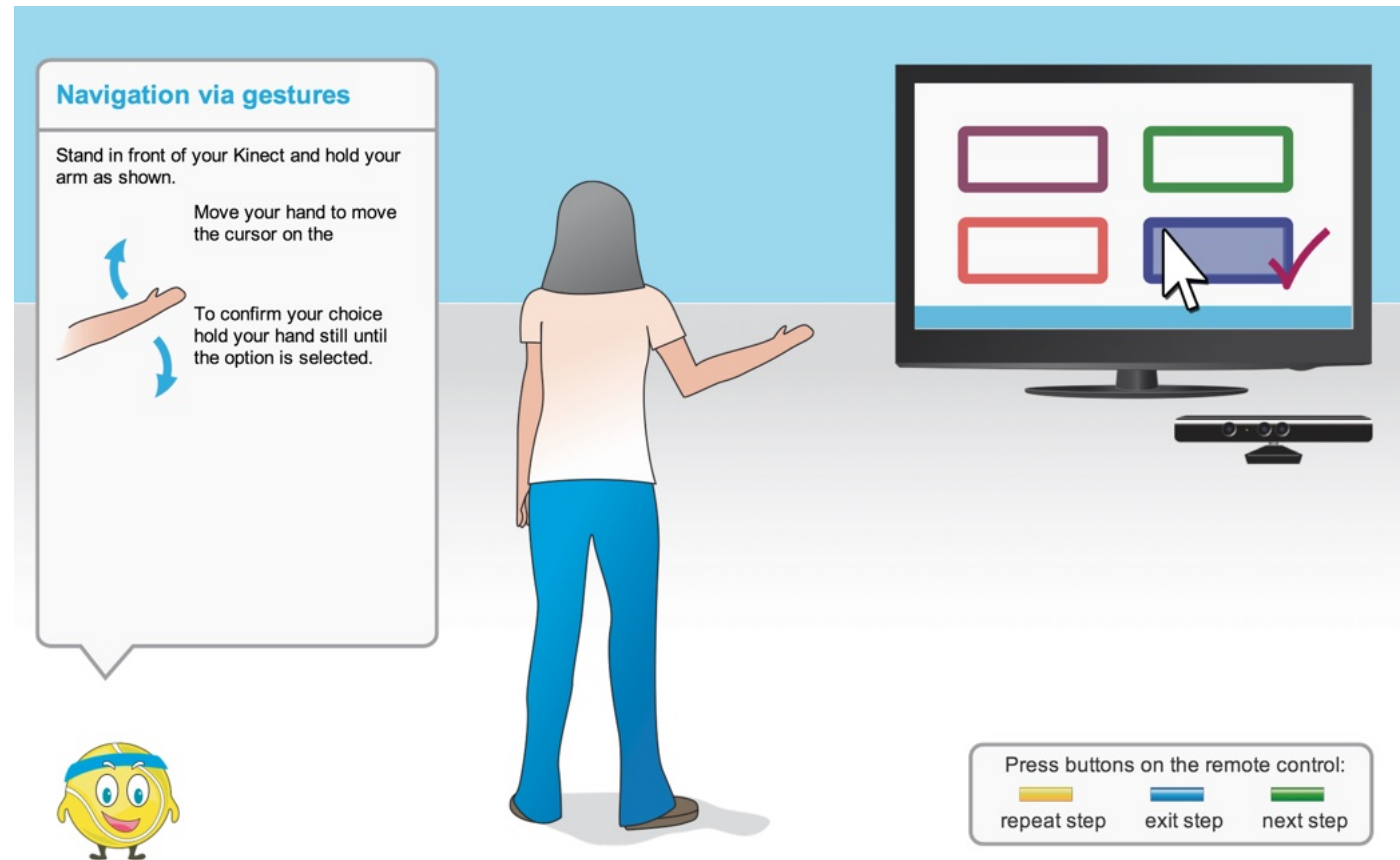
Before the gesture control can be explained, the Kinect has to be introduced since it is presumably less well known than a remote control. All relevant informations (distance, angle, obstructions) are displayed and visualized sequentially.

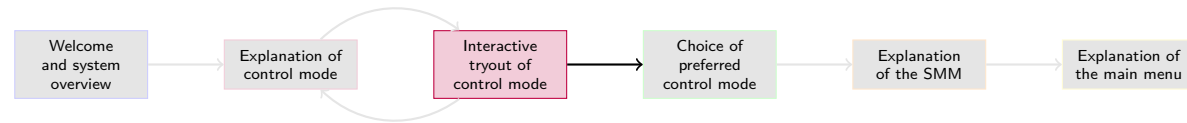




4.1.9 Gesture control

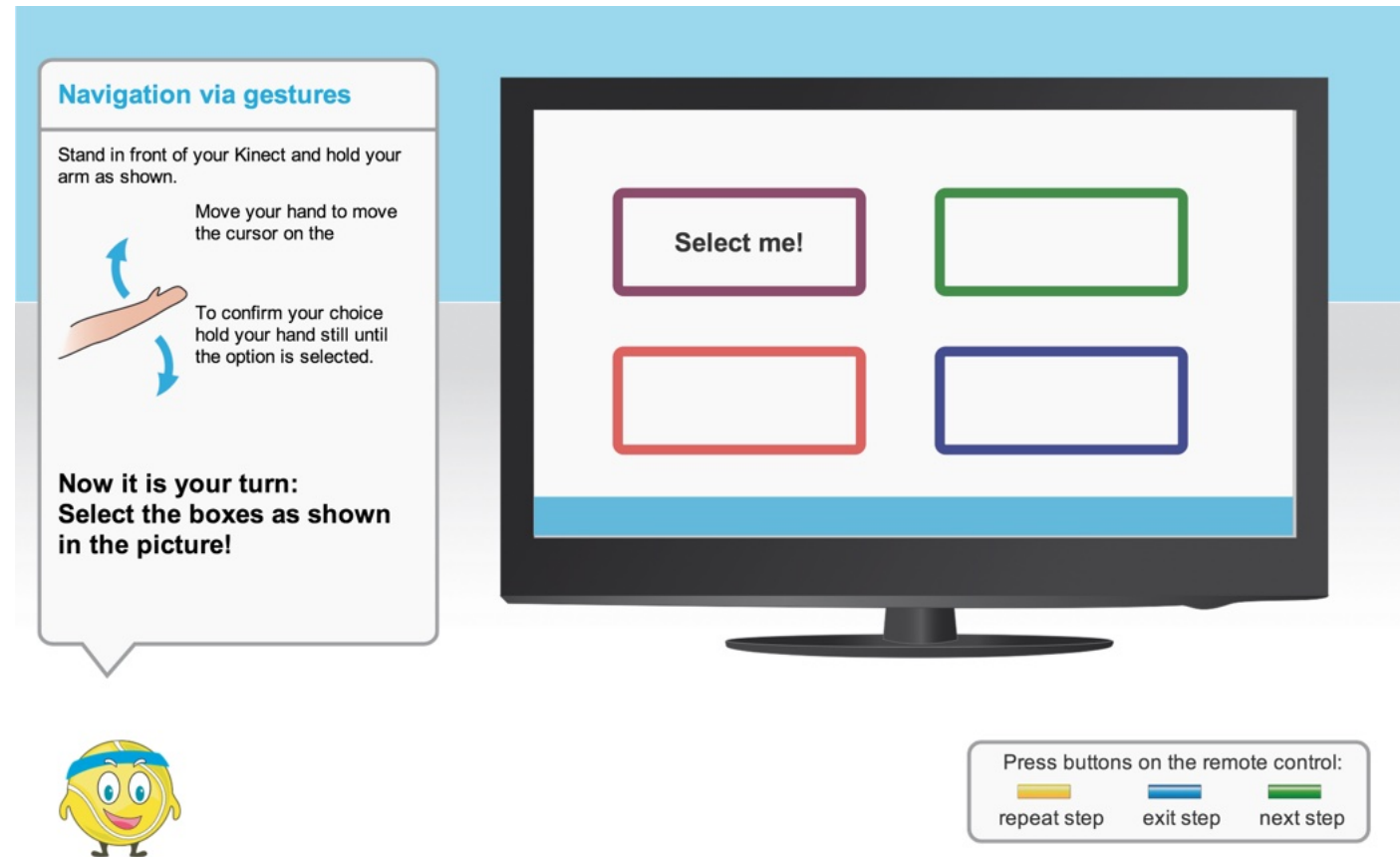
Navigation via gestures and the Kinect is introduced. To this end, a view of a woman standing in front of a TV with a Kinect is displayed. When the avatar has explained that the onscreen cursor will follow the hand movement of the user and any element will be selected by holding the cursor over it for a certain time, the depicted woman will do exactly that: Arrows indicate arm movement and a cursor on the TV follows the movement, selecting and finally confirming coloured boxes (visualized again by flashing of said boxes).

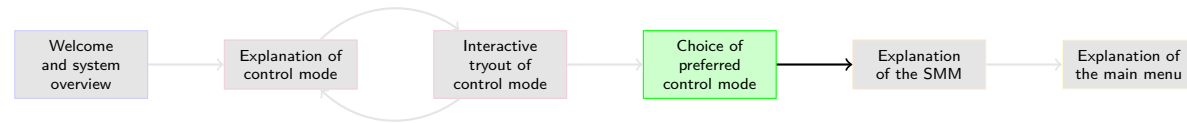




4.1.10 Gestures exercise

The user is now invited to try the navigation with the Kinect for herself. To this end, the depicted TV gets larger (animation) and the boxes display “select me” instructions. The user now has to move the onscreen cursor by using the gesture control to every box and confirm by holding the cursor on the box. When she has selected all boxes, she can continue to the next tutorial screen.





4.1.11 Choice of control mode

The user has to choose the control mode she wishes to use because if a user wants to use the remote and the Kinect is active at the same time, it will interfere with the onscreen cursor whenever the user moves. The choice can be made through the D-pad on the remote, because it is presumed to be the “safest” mode of navigation (in that almost every remote has a D-pad and the users should be familiar with remotes in general). All possible navigational methods are depicted in order to make the choice as substantial as possible. If and how tablet navigation would be implemented in iStoppFalls wasn’t clear at the time of writing.

Choose your favorite navigation method


Now please select a way to navigate through the tutorial and the program.

You can change your choice later again.

Use the directional pad to select and confirm your choice now.

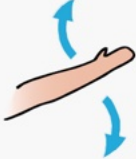
1

Navigation via remote control




2


Navigation via gestures




3

Navigation via tablet







Press buttons on the remote control:



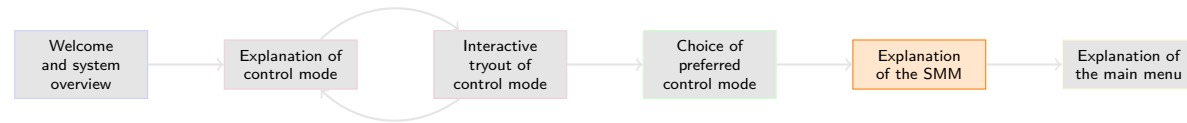
repeat step



exit step

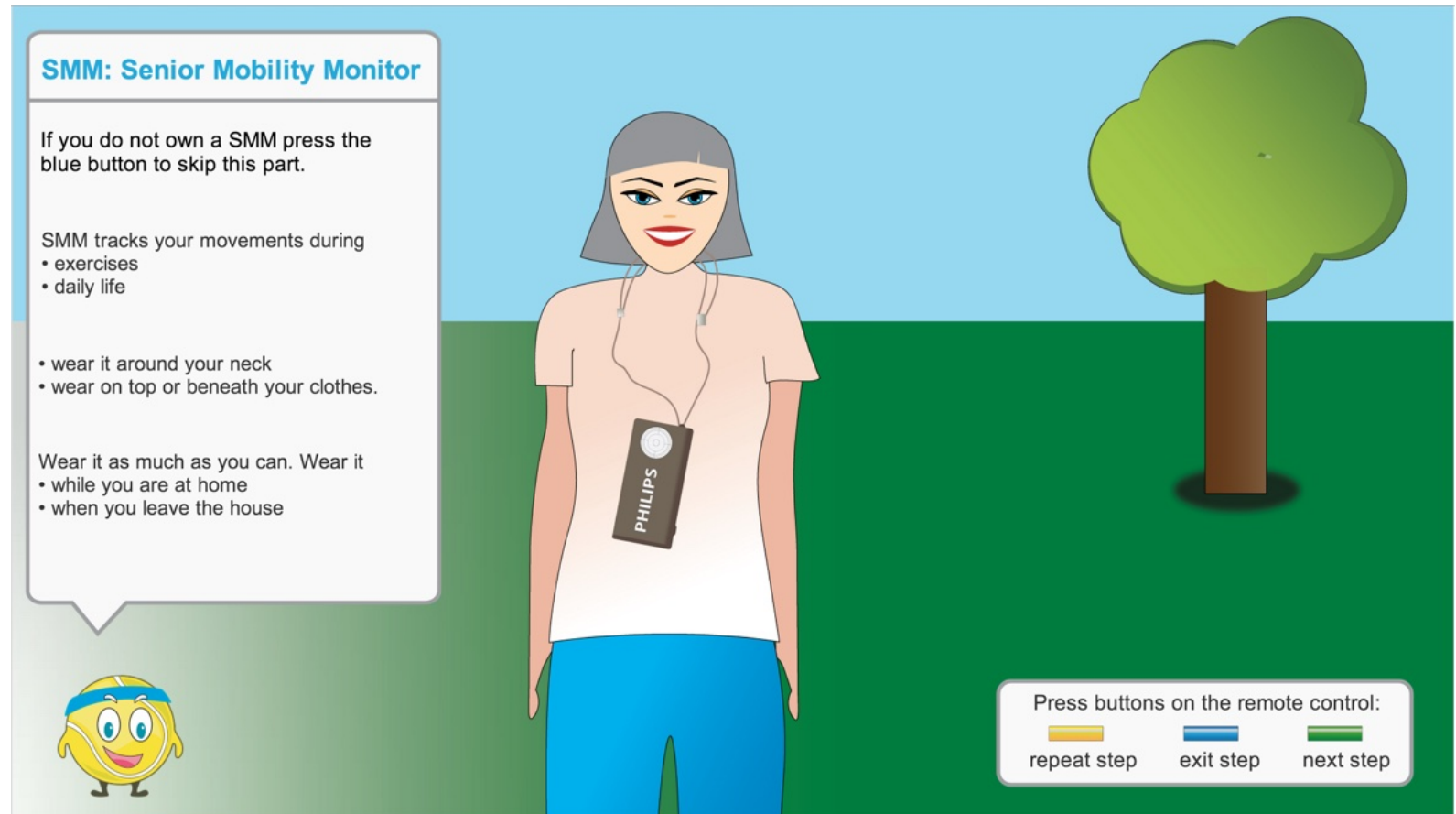


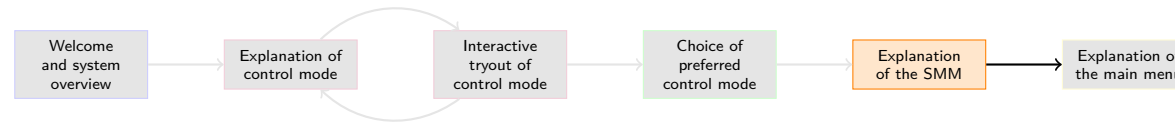
next step



4.1.12 SMM: Introduction

The SMM is introduced, its functionality is explained and a woman wearing the SMM around her neck is displayed. In order to stress the importance of wearing the SMM whenever possible and not only at home, the screen is animated: The background slides away to the left and thus, gradually changes from an indoor setting with a TV to an outdoor setting with a tree in the background.





4.1.13 SMM: Handling

The handling of the SMM is explained on a separate screen. Here, the focus is set on a SMM which has been connected via USB to the PC of an iStoppFalls system. The avatar explains that this has to be done every night in order to keep the SMM charged and to transfer the data.

SMM - Handling




The battery within the SMM needs to be charged every day. To charge it, connect it to the computer.

Put the cable in the SMM like shown in the picture.

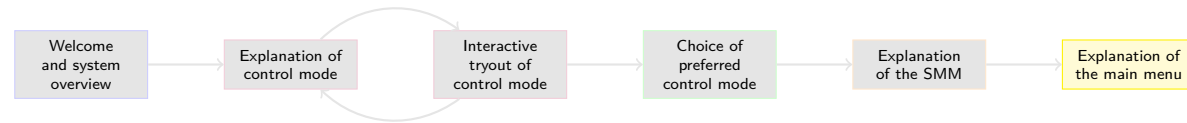
The transfer of the collected data to the iStoppFalls application happens now automatically while it's connected via

You can also transfer the data without a cable by pressing the button. You need to press the button before the exercises as well.

Press buttons on the remote control:

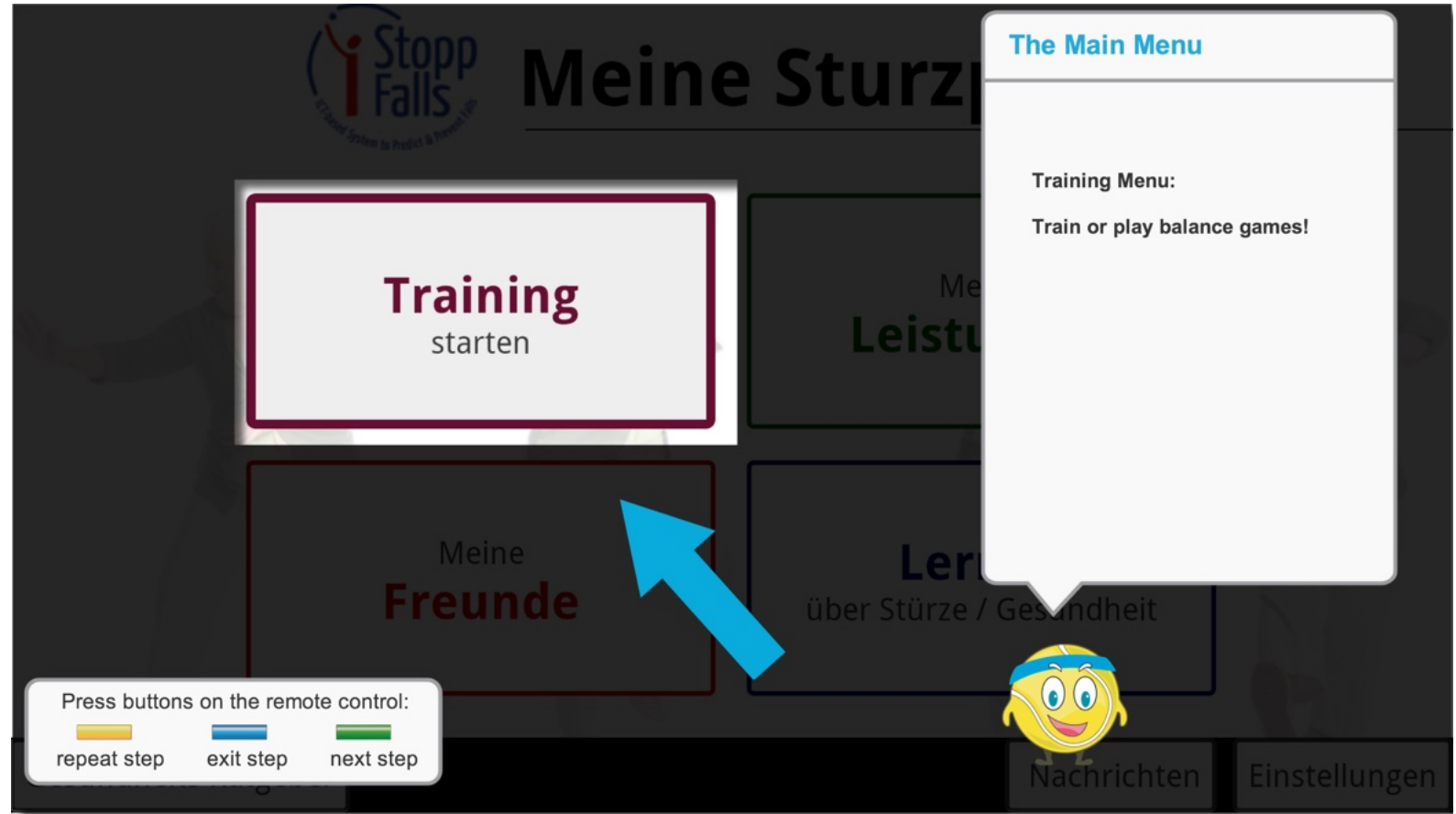
 repeat step  exit step  next step



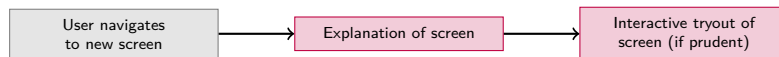


4.1.14 Main Menu

The user has now arrived in the main menu. Here, a semi-transparent gray layer is displayed over everything except the object that is currently being explained. On the screenshot to the right, this would be the training section, but the same procedure is applied to all other elements on screen, namely the four big buttons as well as the persistent bottom bar. The first view (where the avatar introduces the menu itself) does not have this layer in order to allow the user to see the complete screen for a few seconds. The blue arrow is animated and points towards the current object as an additional visual pointer. After all elements have been explained, the user can explore iStopp-Falls on her own.



4.2 Later stages



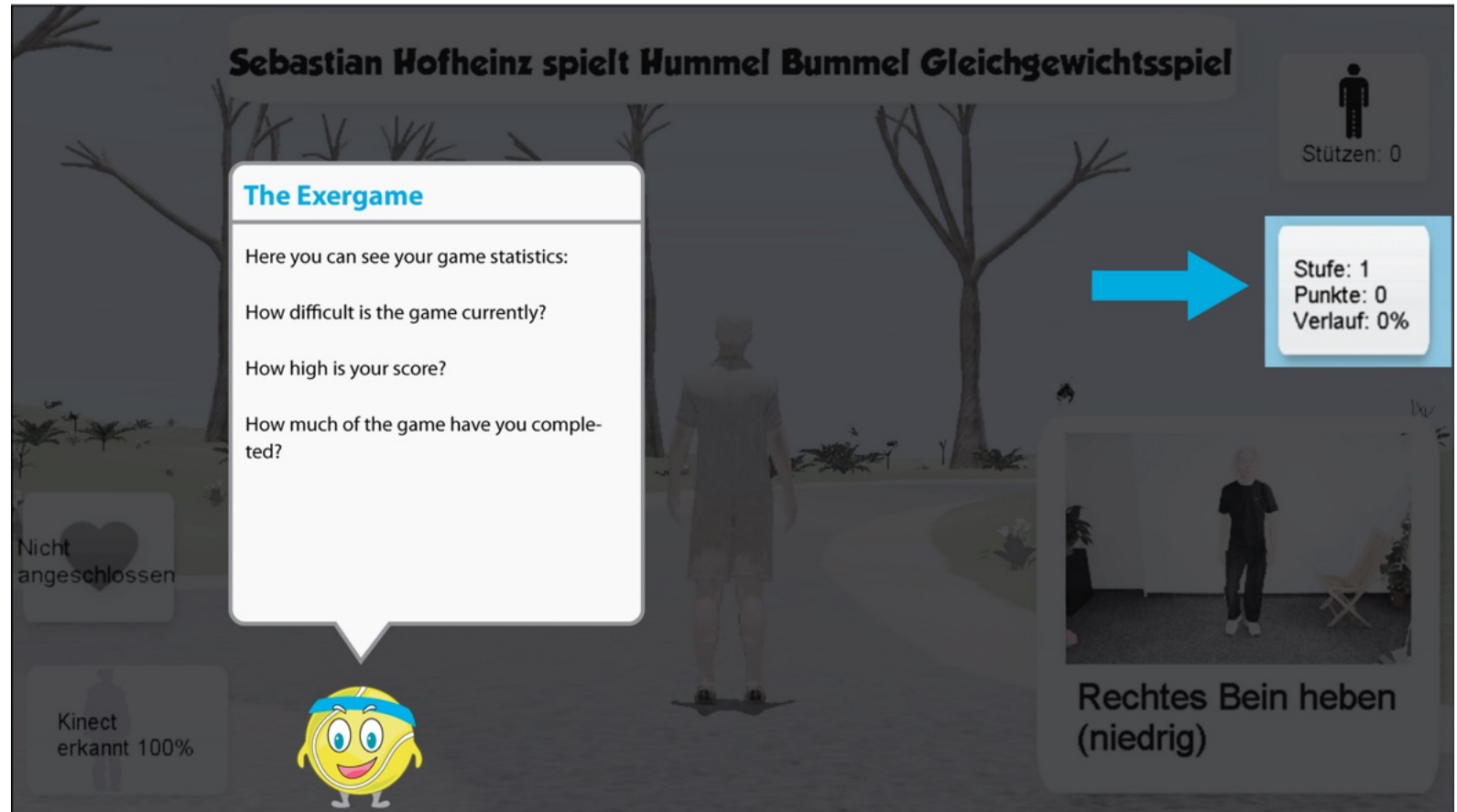
As stated in section 2.1.2, after the user has reached the main menu, the tutorial becomes context-sensitive and only initiates itself again whenever the user navigates to a screen she has not reached before in order to explain this screen.

Tutorials for all following screens of iStoppFalls can be developed with the style, logic and graphical elements introduced up to this point. Since the goal of the Axure class was to create a concept and especially a *prototype*, not all screens of iStoppFalls are covered within this document. As an example of how another screen can be explained within a tutorial, the design team has also created an exemplary screen for the exergame which can be found on the next page.



4.2.1 Exergame

The tutorial for the exergame is initialized whenever the user first starts the game. Its purpose is not to explain how the game itself works because iStoppFalls already has tutorials built in for that. This tutorial screen is centered on explaining the general game interface. To this end, a semi-transparent layer as well as an animated arrow like in the tutorial for the main menu is utilized to sequentially highlight and explain all important interface elements. The first view (where the avatar introduces the exergame itself) does not have this layer in order to allow the user to see the complete screen for a few seconds.



4.3 Spoken word

This section covers the texts that are spoken by the avatar on every screen. Because the design team is German, the texts were originally written in German and since the eventual tutorial will be multilingual, the German versions are included as well. Text in bold should be displayed textually as well as spoken by the avatar.

4.3.1 Welcome screen

Welcome! Welcome to iStoppFalls! I'm Billy Bounce and will guide you through this tutorial. iStoppFalls helps you to prevent falls in your daily life. This tutorial will show you how to navigate in this program. Now press the yellow button on the remote control to repeat this section, the blue one to skip the tutorial or the green one to go on.

Willkommen! Willkommen zu iStoppFalls! Ich bin Billy der Ball und werde Sie durch diese Einführung begleiten. iStoppFalls unterstützt Sie bei der Sturzprävention im Alltag. Diese Einführung wird Ihnen die Bedienung des Programms erklären. Drücken Sie nun entweder den gelben Knopf um die Erklärung zu wiederholen, den blauen um die Einführung zu überspringen oder den grünen um fortzufahren.

4.3.2 System overview

Components of iStoppFalls The equipment **consists** of the following six devices: First of all, your **TV and the remote control**. Press the green button on the remote to continue. Next the **Kinect camera. It tracks your movements**. Press the green button to go on. Next the **Google TV set-top box**. Press the green button to continue. And **the computer**. You may also own a **SMM, a “Senior Mobility Monitor” to wear around your neck**. Press the yellow button to repeat this section, the blue one to skip the tutorial or the green one to go on.

Bestandteile von iStoppFalls Die folgenden **sechs Geräte** sind Bestandteil ihres Sturzpräventions-Systems und sollten nun bereit stehen: Zunächst natürlich Ihr **Fernseher und die Fernbedienung**. Drücken Sie den grünen Knopf Ihrer Fernbedienung um fortzufahren. Als nächstes die **Kinect Kamera**. Sie zeichnet Ihre Bewegungen auf. Drücken Sie den grünen Knopf um fortzufahren. Ein weiteres Gerät ist die **Google TV Box**. Drücken Sie den grünen Knopf um fortzufahren. Außerdem gibt es einen **Computer** und eventuell besitzen Sie einen **SMM, einen Senior Mobilitätsmonitor, der um den Hals getragen wird**. Drücken Sie nun entweder den gelben Knopf um die Erklärung zu wiederholen, den blauen um die Einführung zu überspringen oder den grünen um fortzufahren.

4.3.3 Remote: D-Pad

Navigating via remote control Navigating within iStoppFalls is possible **with** the directional pad on the remote. **Press left to select the button to the left of the current selection. Press up to select the button top of the current selection. Press right to select the button to the right of the current selection. Press down to select the button beneath the current selection. Press the button in the centre to confirm your choice.** Press the yellow button on your remote to repeat this section, the blue one to skip the tutorial or the green one to go on. **Now it's your turn! Select each of the four coloured boxes shown on the screen.** Press the yellow button to repeat this section, the blue one to skip the tutorial or the green one to go on.

Steuerung mit der Fernbedienung Die Steuerung innerhalb von iStoppFalls ist mit dem Steuerkreuz der Fernbedienung möglich. **Drücken Sie nach links um die Box links der aktuellen Auswahl auszuwählen. Drücken Sie nach oben um die Box oberhalb der aktuellen Auswahl auszuwählen. Drücken Sie nach rechts um die Box rechts der aktuellen Auswahl auszuwählen. Drücken Sie nach unten um die Box unterhalb der aktuellen Auswahl auszuwählen. Drücken Sie in der Mitte des Steuerkreuzes um Ihre Wahl zu bestätigen.** Drücken Sie nun entweder den gelben Knopf um die Erklärung zu wiederholen, den blauen um die Einführung zu überspringen oder den grünen um fortzufahren. **Nun sind Sie an der Reihe! Wählen Sie jede der angezeigten Boxen einmal aus.** Drücken Sie nun entweder den gelben Knopf um die Erklärung zu wiederholen, den blauen um die Einführung zu überspringen oder den grünen um fortzufahren.

4.3.4 Remote: Touchpad

Navigating via remote control Navigating within iStoppFalls is possible **with** the touch pad on the remote. **Move your hand to move the cursor on the screen in the same direction. Move the cursor on a box to select it. To confirm your choice press on the touch pad.** Press the yellow button on the remote to repeat this section, the blue one to skip the tutorial or the green one to go on. **Now it's your turn! Select each of the four coloured boxes shown on the screen.** Press the yellow button to repeat this section, the blue one to skip the tutorial or the green one to go on.

Steuerung mit der Fernbedienung Die Steuerung innerhalb von iStoppFalls ist ebenfalls mit dem Touchpad der Fernbedienung möglich. Sie steuern den **Cursor auf dem Fernseher** indem Sie Ihren **Finger auf dem Touchpad in die entsprechende Richtung bewegen. Bewegen Sie den Cursor über die gewünschte Box und bestätigen Sie Ihre Auswahl** indem sie auf das **Touchpad drücken.** Drücken Sie nun entweder den gelben Knopf um die Erklärung zu wiederholen, den blauen um die Einführung zu überspringen und den grünen um fortzufahren. **Nun sind Sie an der Reihe! Wählen Sie jede der angezeigten Boxen einmal aus!** Drücken Sie nun

entweder den gelben Knopf um die Erklärung zu wiederholen, den blauen um die Einführung zu überspringen oder den grünen um fortzufahren.

4.3.5 Gesture control

Navigating via gestures Navigation is possible with gestures. Stand in front of your kinect and hold your arm as shown in the picture. Move your hand to move the cursor on the screen in the same direction. Move the cursor on a box to select it. To confirm your choice hold your hand in the current position until the option is chosen. Press the yellow button to repeat this section, the blue one to skip the tutorial or the green one to go on. **Now it's your turn! Select each of the four coloured boxes shown on the screen.** Press the yellow button to repeat this section, the blue one to skip the tutorial or the green one to go on.

Steuerung mit Gesten Die Steuerung innerhalb von iStoppFalls ist auch mit Gesten möglich. Stellen Sie sich dazu vor Ihren Fernseher und die Kinect Kamera wie hier gezeigt wird. **Bewegen Sie Ihre Hand um den Cursor auf dem Bildschirm zu bewegen.** Bewegen Sie Ihre Hand so, dass der **Cursor auf einer Box ist.** **Halten Sie Ihre Hand** in dieser Position bis Ihre **Auswahl bestätigt** wurde. Drücken Sie nun entweder den gelben Knopf um die Erklärung zu wiederholen, den blauen um die Einführung zu überspringen und den grünen um fortzufahren. **Nun sind Sie an der Reihe! Wählen Sie jede der angezeigten Boxen einmal aus.** Drücken Sie nun entweder den gelben Knopf um die Erklärung zu wiederholen, den blauen um die Einführung zu überspringen oder den grünen um fortzufahren.

4.3.6 Choice of control mode

Choose your favourite navigation method Now please select a way to navigate through the tutorial and the program. **You can change your choice later again if you wish. Use the directional pad to select and confirm your choice now.**

You chose the remote control. Press the yellow button to go back one step in this section, the blue one to skip the tutorial or the green one to go on.

Wahl der Steuerungs-Art Nun, da Sie die verschiedenen Arten der Navigation kennen gelernt haben, entscheiden Sie sich bitte für eine, die Sie ab jetzt verwenden möchten. Sie können diese Wahl **jederzeit nachträglich** im Menü **ändern**, wenn Sie möchten. Nutzen Sie das **Steuerkreuz**, um eine **Navigationsart auszuwählen und zu bestätigen.**

Sie haben sich für die **Fernbedienung** entschieden. Drücken Sie nun entweder den gelben Knopf, um die Erklärung zu wiederholen, den blauen, um die Einführung zu überspringen oder den grünen, um fortzufahren.

4.3.7 SMM: Introduction

The SMM – Senior Mobility Monitor If you don't own a SMM press the blue button to skip this part. The SMM tracks your movements during the exercises and your daily life. You wear it around your neck as shown in the picture. It can be worn on top or beneath your clothes. Wear it as much as you can. Wear it while you're at home or when you leave the house for a walk or shopping or something else. Press the yellow button to repeat this section, the blue one to skip the tutorial or the green one to go on.

SMM – Senior Mobility Monitor Falls Sie kein SMM besitzen, drücken Sie den blauen Knopf und überspringen Sie diesen Teil. Das SMM zeichnet Ihre Bewegungen während der Übungen und Ihres Alltags auf. Tragen Sie es um Ihren Hals, wie in dem Bild zu sehen. Sie können es sowohl über, als auch unter Ihrer Kleidung tragen. Sie sollten das SMM so oft wie möglich tragen, ob zu Hause oder zum Spazieren oder Einkaufen gehen. Drücken Sie nun entweder den gelben Knopf, um die Erklärung zu wiederholen, den blauen, um die Einführung zu überspringen oder den grünen, um fortzufahren.

4.3.8 SMM: Handling

SMM – Handling The battery within the SMM needs to be charged every day. To charge it, connect it with the computer. Put the cable in the SMM like shown in the picture. The transfer of the collected data to the iStoppFalls application happens now automatically while it's connected via cable. You can also transfer the data wireless by pressing the button. Press the yellow button to repeat this section, the blue one to skip the tutorial or the green one to go on.

Umgang mit dem SMM Die Batterie im SMM muss jeden Tag geladen werden. Um das zu tun schließen Sie das SMM an den Computer an. Stecken Sie dazu das Kabel in das SMM, wie auf dem Bild zu sehen. Die gesammelten Daten werden automatisch zu der iStoppFalls-Applikation gesendet, sobald das Gerät angeschlossen wurde. Sie können die Daten ebenfalls mit einem Druck auf den Knopf des SMM an die iStoppFalls-Applikation übertragen. Drücken Sie nun entweder den gelben Knopf, um die Erklärung zu wiederholen, den blauen, um die Einführung zu überspringen oder den grünen, um fortzufahren.

4.3.9 Main Menu

Main Menu This is the main menu. This is the central point to start everything.

This is the training section. Select this section if you want to exercise and play the balance games.

This is the results section. You can select this section if you wish to see an overview of your training results.

This is the friends section. Here you can communicate with other people who use the iStoppFalls system.

This is the learning section. There are many risks of falling in your environment. Have a look at this section to learn something about health and falls.

Select and confirm the corresponding boxes to start your training, open your results, open the friends section and learn something about health and falls. On the bottom edge of the screen you can open the “Gesundheitsratgeber”, look into your messages, get help with iStoppFalls and open the settings. Now select and confirm “Training” to see what you can do. If you want to repeat the section, press the yellow button. To skip the tutorial, press the blue button.

Das Hauptmenü Dies ist das **Hauptmenü**. Von hier aus gelangen Sie zu den verschiedenen Funktionen.

Das hier ist das Trainingsmenü. Wählen Sie dieses aus, wenn Sie trainieren oder die Gleichgewichtsspiele spielen wollen.

Dies ist das Ergebnismenü. Hier erhalten Sie einen Überblick über Ihre Trainingsergebnisse.

Dies hier ist das Freunde-Menü. Hier können Sie mit anderen iStoppFalls-Nutzern in Kontakt treten.

Die ist der Bereich um etwas über Gesundheit und Stürze zu lernen.

Selektieren und bestätigen Sie die entsprechende Box, um das Training zu starten, Ihre Ergebnisse zu sehen, den Freunde-Bereich zu betreten oder etwas über Gesundheit und Stürze zu lernen. Am unteren Bildschirmrand finden Sie den Gesundheitsratgeber, Ihre Nachrichten, Hilfe für iStoppFalls und Einstellungen. Wählen Sie nun das Training aus, um zu sehen was Sie tun können. Wenn Sie diesen Abschnitt wiederholen möchten, drücken Sie den gelben Knopf. Um die Einführung zu überspringen, drücken Sie den blauen Knopf.

4.3.10 Training Menu

Introduction: Training Menu This is the training menu. **Select and confirm the corresponding boxes to start the balance games, the strength training or determine your risk to fall. By selecting and confirming the arrow on the top-left edge of the screen you (to) go back to the main menu.** By choosing what you want to do now, you end the tutorial. Press the yellow button to repeat the explanation. To start the tutorial again, choose settings and then “Tutorial”. Goodbye and enjoy iStoppFalls!

Das Trainings-Menü Dies ist das **Trainings-Menü**. **Selektieren und bestätigen Sie die entsprechende Box, um die Balance-Spiele oder das Krafttraining zu starten oder um Ihr Sturzrisiko zu bestimmen.** Wählen und bestätigen Sie den **Pfeil** in der **oberen linken Ecke des Bildschirms**, um wieder zum **Hauptmenü** zurück zu

kehren. Wenn Sie ausgewählt haben, was Sie jetzt tun möchten, **beenden Sie die Einführung.** Drücken Sie den gelben Knopf, um die Erklärung zu wiederholen. Um die Einführung zu wiederholen, wählen Sie “Einstellungen”, dann “Einführung”. Auf Wiedersehen und viel Spaß mit iStoppFalls!

4.3.11 Exergame

The Exergame This is the Exergame. It’s meant to train you but also provide fun while doing so. The interface is a bit complicated, so let me break it down for you: You can see your **vital data**. The field below tells you **how well the camera can track you. Try to keep it at 100% by changing your position.** On the right side of the screen, the uppermost box tells you **how much you rely on support right now.** Below, you can see another box with your **game statistics: How difficult** is the game currently? How high is **your score**? And **how much of the game have you completed?** The last box on the right side provides you with **visual instructions** of what you should do next. Last but not least, there is **your “avatar”** which is short for the **figure you control** with your movement.

Now it’s your turn: Press the green button on your remote to end this tutorial and to start the game for real or press the yellow button to repeat this tutorial.

Das Exergame Dies ist das **Exergame**. Es soll beim Training helfen, aber gleichzeitig auch Spaß machen! Die Benutzeroberfläche ist etwas kompliziert, deshalb erkläre ich sie Ihnen Schritt für Schritt: Ganz links können Sie Ihre **Herzrate** sehen. Darunter ist eine Anzeige, die anzeigt, **wie gut die Kamera Sie erkennen kann.** Versuchen Sie, diese bei **100%** zu halten, indem Sie sich ggf. etwas **im Raum bewegen**. Die oberste Box auf der rechten Seite des Fernsehers zeigt Ihnen, **wie sehr Sie sich gerade abstützen.** Darunterliegend können Sie Ihre **Spiel-Statistiken** einsehen: **Wie schwer ist das Spiel gerade?** Wie ist Ihr **Punktestand**? Und **wieviele des Spiels haben Sie abgeschlossen?** Die letzte Box ganz unten auf der rechten Seite stellt **bildliche Anleitungen** dessen dar, was Sie als nächstes tun sollten. Ganz in der Mitte des Bildschirms sehen Sie Ihren **“Avatar”**, also die **Figur**, die Sie mit Ihren Körperbewegungen **steuern** können. Nun sind Sie an der Reihe: Drücken Sie die grüne Taste auf Ihrer Fernbedienung um diese Einführung zu beenden und das Spiel zu starten oder drücken Sie die gelbe Taste um die Einführung noch einmal zu hören.

5 The prototype

The following section will introduce the tool *Axure* and describe its possibilities and limitations regarding the creation of the present prototype.

Note: The graphical resources that comprise the prototype and which can be used in the implementation of the tutorial within the iStoppFalls system are available through project team member Laura Festl who will write her master's thesis about iStoppFall's tutorial.

5.1 Axure

Axure RP is a prototyping tool which can create rapid wireframes as well as hi-fi interactive prototypes on the basis of HTML, mainly for websites and mobile but also suitable for desktop applications. Most of the work can be done by dragging and dropping elements and manipulating them directly. The prototypes can be enriched by adding conditions, states and animations to create a complete user experience for testing and evaluation.

Axure generates standalone HTML-projects that can hardly be integrated in existing applications and projects. A browser is required to execute the projects. A huge disadvantage is the limitation of the resolution. It has to be determined in advance and can not be changed afterwards, which means that one prototype has to be created for every device and resolution that needs to be tested. This leads to a higher effort especially for webapps which can be displayed on several different devices such as smartphones, tablets and desktop computers. Therefore it is important to consider in advance which resolutions and devices have to be tested.

5.2 Description

The underlying prototype of this project contains the following special elements and features of Axure:

- **Master:** A master element is used to create objects which appear repeatedly on the whole project, e.g. a navigation bar or the general layout. If a master is edited, it changes automatically on every page containing this master. In this project master elements are for example the avatar, its speech bubble, the background and the four-button-navigation. These objects appear on almost every single page of the prototype.
- **Dynamic panels:** To display dynamically changing content on a single page, dynamic panels are used in Axure. They are a placeholder for the actual content and contain for example several pictures for a slideshow. Thus it is not necessary to create a page for every single element and link it statically to the next page. Dynamic panels were used in this prototype to represent the displayed texts in

the speech bubble, the separately appearing elements in the components screen (section 4.1.3) and the choice of control mode (section 4.1.11).

- **Animations:** Axure provides a feature to create simple animations for moving, transforming or appearing and disappearing objects. These animations are rather limited so it was impossible to animate the arm of the person in the explanation of the gesture control mode (see section 4.1.9) in a natural way. It is only possible to move objects in the direction of the x and y axis, the animation of the arm would have required a circular movement around the center of the elbow. As an alternative, a moving arrow with a fade-in and -out animation was used to create a somewhat smooth appearance.

Altogether the implementation of this prototype was quite possible in Axure but there were several limitations and problems which challenge the choice of the tool retrospectively. The representation of changing elements and dynamic content was rather easy to do but the urgently needed interactivity, nontrivial animations, a fixed resolution and the lacking integration of existing systems (in this case for example the exergame) lead to several problems which and complicated the whole process of implementation. However, while the problem of creating a tutorial might not have been the best match for Axure as a tool, the project team believes that the prototype and this documentation can be used as a well-founded basis for the integration of a tutorial in iStoppFalls.

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