

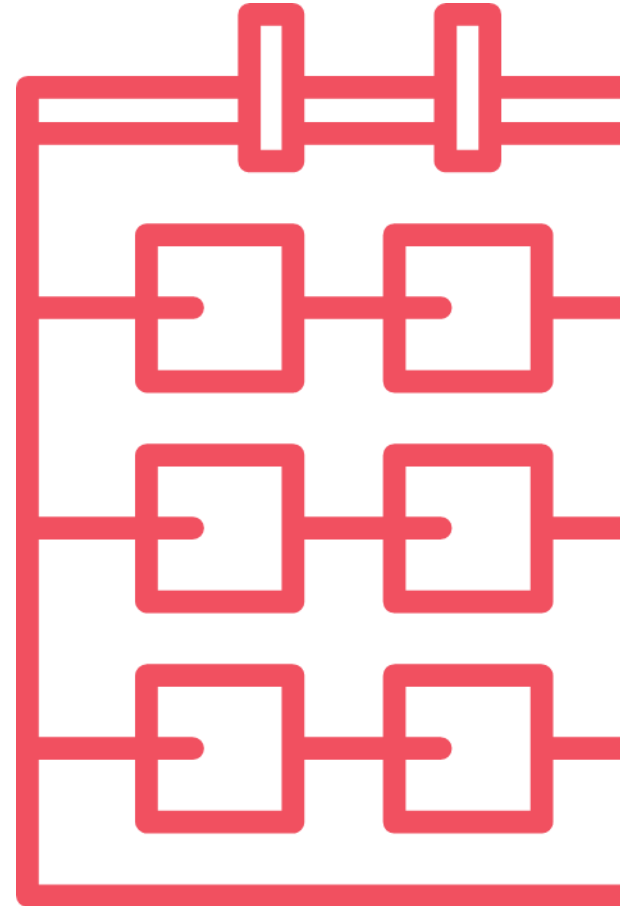
// 2023-05-31 // JUG Görlitz // Dániel Sulyok

ACCOUNT MANAGER RELOADED

A11Y

// Agenda

- 01 **what** // AM
- 02 **why** // motivation
- 03 **how** // process / challenges / learnings
- 04 **demo** // let me see...



// Who am I?

Dániel Sulyok

> ~ 2006 Web

erlebnis-stadion.de
magyarfutball.hu

> ~ 2012 IT

> Dresden -> Dortmund -> Görlitz

> 2020 Tallence



<https://www.mytoys.de/jakks-pacifico-nintendo-super-mario-its-a-me-mario-funktions-figur-36cm-19691838.html>

01

WHAT

// Rebuild Account Manager

what?

- > AM / „Login Einstellungen“ – manage usernames, credentials, 2FA, ...
- > redesign UI & flows – modern UI, better UX, T component library
- > technical renovation: split monolithic app in BE & FE
- > new FE: Angular SPA
- > Usability & **accessibility!**



02

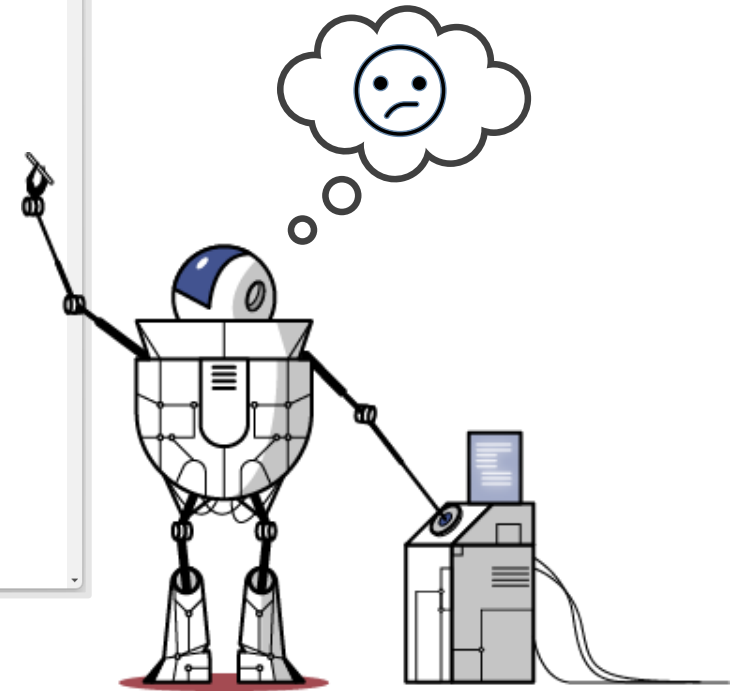
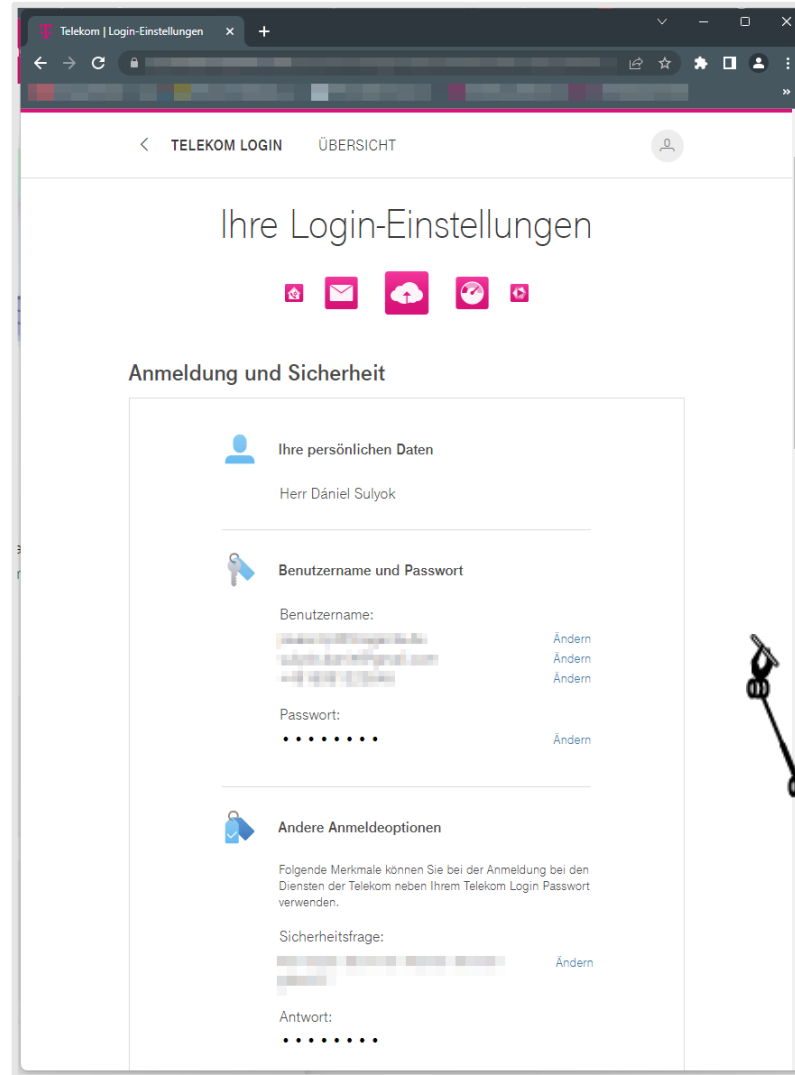
WHY

// motivation

why?

before

- > monolithic structure
- > Spring & Java Server Faces
- > outdated technologies
- > slow
- > accessibility...?



// motivation

why?

Accessibility!?

> Juckt mich nicht.



<https://twitter.com/AchimSedelmaier/status/855879141522059264>

// motivation

why?

Accessibility!

- > xx % der Menschen haben Einschränkungen.
Alles **potentielle Nutzer**.

// motivation

why?

Accessibility!

- > xx % der Menschen haben Einschränkungen.
Alles potentielle Nutzer.

- > **gesetzl. Vorgaben**
bislang BITV für Behörden, ab 2025 Umsetzung EU-Richtlinie

// motivation

why?

Accessibility!

> xx % der Menschen haben Einschränkungen.

Alles potentielle Nutzer.

> gesetzl. Vorgaben

bislang BITV für Behörden, ab 2025 Umsetzung EU-Richtlinie

> **Gutes tun**

Betroffene haben es scheiße genug, lasst es uns für sie ein wenig einfacher machen, wir haben es in der Hand.

// motivation

why?

Einschränkungen



Was für Einschränkungen

- > Audio
schlecht / gar nicht
- > Visuell
schlecht / gar nicht
- > Motorisch
Maus langsam
gar nicht: Tastatur / Joystick / ...
- > Mental
einfache Sprache / langsames Verstehen / ...

// motivation

why?

Einschränkungen

Was für Einschränkungen

- > Audio
schlecht / gar nicht
- > Visuell
schlecht / gar nicht
- > Motorisch
Maus langsam
gar nicht: Tastatur / Joystick / ...
- > Mental
einfache Sprache / langsames Verstehen / ...



Auftreten

- > von Geburt an
- > zunehmend im Alter
...betrifft uns **ALLE!**
- > temporär / situativ
Arm gegipst / Maus kaputt / kein Sound /
Nachbar mäht Rasen / pralle Sonne @ Monitor



// motivation

why?

Barrieren

- > Kalender Tastatur
- > Hover-Navigation Tastatur
- > Captcha mental
- > auch Kombinationen möglich: z. B. zu schnell verschwindende Notification -> visuell, mental, ...
- > ...generell: Zeitaspekt
 - > hat der Nutzer genug Zeit um Element zu erfassen, zu interagieren?
 - > Bsp. AM: austimendes TOTP

03

HOW

3.1 Screen Reader

3.2 AM dev process

3.3 AM learnings

// Exkurs: Screen Reader

how?

- > Grundlagen

 - > virt. Cursor

 - > versch. Modi (Input/Read)

 - > Direktsprünge

 - > Demo Elementliste {NVDA+F7}

- > NVDA/JAWS & Voice Over

- > Referenzen: youtube, Cheat Sheets @ <https://dequeuniversity.com/screenreaders/>

// Exkurs: Screen Reader

how?

ARIA – Accessible Rich Internet Applications

- > MDN <https://developer.mozilla.org/en-US/docs/Web/Accessibility/ARIA>
- > live-region SR dynamische Updates mitteilen
- > hidden nicht relevante Elemente für SR verstecken
- > label Alternativtext für ganze Komponente (falls Unterelemente nicht relevant)
- > ARIA Rule #1: prefer HTML over ARIA roles !

// Exkurs: Screen Reader

how?

Barrieren

- > Beispiele 2.0 – SR edition
 - > Kalender
 - > Hover-Navigation
 - > Captcha

// Exkurs: Screen Reader

how?

Barrieren

> Beispiele 2.0 – SR edition

> Kalender

> Hover-Navigation

> Captcha

> **Rollentausch:** Bildschirm aus / Augen zu und versucht mal durch eure Seite zu navigieren.

03

HOW

3.1 Screen Reader

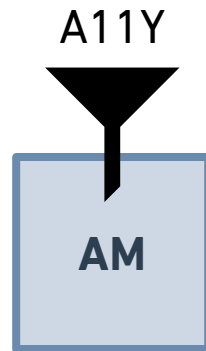
3.2 **AM dev process**

3.3 AM learnings

// process

how?

- requirement: Account Manager should be accessible



// process

how?

- requirement: Account Manager should be accessible



<https://tenor.com/de/view/mmmkay-mr-mackey-south-park-alright-okay-gif-19580399>

- ...but how...?

// process

how?

WCAG – Web Content Accessibility Guidelines

4 Prinzipien für Inhalte:

- wahrnehmbar
- bedienbar
- verständlich
- robust

The screenshot shows a document interface with a vertical sidebar on the left containing a 'TABLE OF CONTENTS' for WCAG 2.1. The sidebar lists sections from 'Abstract' to '1.4.12 Text Spacing'. The main content area displays 'Success Criterion 1.4.11 Non-text Contrast' at Level AA. It includes a note about 320 CSS pixels, a 'NOTE' about two-dimensional layout, and a list of user interface components and graphical objects. A small box on the right contains links for 'Understanding Non-text Contrast' and 'How to Meet Non-text Contrast'.

W3C Recommendation

TABLE OF CONTENTS

- Abstract**
- Status of This Document**
- Introduction**
 - 0.1 Background on WCAG 2
 - 0.2 WCAG 2 Layers of Guidance
 - 0.3 WCAG 2.1 Supporting Documents
 - 0.4 Requirements for WCAG 2.1
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 - 0.5.1 New Features in WCAG 2.1
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 - 0.5.3 Conformance to WCAG 2.1
 - 0.6 Later Versions of Accessibility Guidelines
- 1. Perceivable**
 - 1.1 Text Alternatives
 - 1.1.1 Non-text Content
 - 1.2 Time-based Media
 - 1.2.1 Audio-only and Video-only (Prerecorded)
 - 1.2.2 Captions (Prerecorded)
 - 1.2.3 Audio Description or Media Alternative (Prerecorded)
 - 1.2.4 Captions (Live)
 - 1.2.5 Audio Description (Prerecorded)
 - 1.2.6 Sign Language (Prerecorded)
 - 1.2.7 Extended Audio Description (Prerecorded)
 - 1.2.8 Media Alternative (Prerecorded)
 - 1.2.9 Audio-only (Live)
 - 1.3 Adaptable
 - 1.3.1 Info and Relationships
 - 1.3.2 Meaningful Sequence
 - 1.3.3 Sensory Characteristics
 - 1.3.4 Orientation
 - 1.3.5 Identify Input Purpose
 - 1.3.6 Identify Purpose
 - 1.4 Distinguishable
 - 1.4.1 Use of Color
 - 1.4.2 Audio Control
 - 1.4.3 Contrast (Minimum)
 - 1.4.4 Resize text
 - 1.4.5 Images of Text
 - 1.4.6 Contrast (Enhanced)
 - 1.4.7 Low or No Background Audio
 - 1.4.8 Visual Presentation
 - 1.4.9 Images of Text (No Exception)
 - 1.4.10 Reflow
 - 1.4.11 Non-text Contrast
 - 1.4.12 Text Spacing

Note: 320 CSS pixels is equivalent to a starting viewport width of 1280 CSS pixels wide at 400% zoom. For web content which are designed to scroll horizontally (e.g. with vertical text), the 256 CSS pixels is equivalent to a starting viewport height of 1024px at 400% zoom.

NOTE

Examples of content which require two-dimensional layout are images, maps, diagrams, video, games, presentations, data tables, and interfaces where it is necessary to keep toolbars in view while manipulating content.

Success Criterion 1.4.11 Non-text Contrast §

(Level AA) [Understanding Non-text Contrast](#)
[How to Meet Non-text Contrast](#)

The visual [presentation](#) of the following have a [contrast ratio](#) of at least 3:1 against adjacent color(s):

- **User Interface Components:** Visual information required to identify [user interface components](#) and [states](#), except for inactive components or where the appearance of the component is determined by the user agent and not modified by the author;
- **Graphical Objects:** Parts of graphics required to understand the content, except when a particular presentation of graphics is [essential](#) to the information being conveyed.

Success Criterion 1.4.12 Text Spacing §

(Level AA) [Understanding Text Spacing](#)
[How to Meet Text Spacing](#)

In content implemented using markup languages that support the following [text style properties](#), no loss of content or functionality occurs by setting all of the following and by changing no other style property:

- Line height (line spacing) to at least 1.5 times the font size;
- Spacing following paragraphs to at least 2 times the font size;
- Letter spacing (tracking) to at least 0.12 times the font size;
- Word spacing to at least 0.16 times the font size.

Exception: Human languages and scripts that do not make use of one or more of these text style properties in written text can conform using only the properties that exist for that combination of language and script.

Success Criterion 1.4.13 Content on Hover or Focus §

(Level AA) [Understanding Content on Hover or Focus](#)
[How to Meet Content on Hover or Focus](#)

Where receiving and then removing pointer hover or keyboard focus triggers additional content to become visible and then hidden, the following are true:

- **Dismissable:** A [mechanism](#) is available to dismiss the additional content without moving pointer hover or keyboard focus, unless the additional content communicates an [input error](#) or does not obscure or replace other content;
- **Hoverable:** If pointer hover can trigger the additional content, then the pointer can be moved over the additional content without the additional content disappearing;
- **Persistent:** The additional content remains visible until the hover or focus trigger is removed, the user

// process

how?

WCAG – Web Content Accessibility Guidelines

4 Prinzipien für Inhalte

- > 13 Richtlinien

- > jeweils Erfolgskriterien (EK)

- > Understanding (EK)...

- > How To Meet (EK)...

Perceivable

- Provide **text alternatives** for non-text content.
- Provide **captions and other alternatives** for multimedia.
- Create content that can be **presented in different ways**, including by assistive technologies, without losing meaning.
- Make it easier for users to **see and hear content**.

Operable

- Make all functionality available from a **keyboard**.
- Give users **enough time** to read and use content.
- Do not use content that causes **seizures** or physical reactions.
- Help users **navigate and find content**.
- Make it easier to use **inputs other than keyboard**.

Understandable

- Make text **readable and understandable**.
- Make content appear and operate in **predictable** ways.
- Help users **avoid and correct mistakes**.

Robust

- Maximize **compatibility** with current and future user tools.

<https://www.w3.org/WAI/standards-guidelines/wcag/glance/>

// process

how?

WCAG – Web Content Accessibility Guidelines

- “cherry pick” what is relevant
- make sure dev, design & stakeholders understand what & why

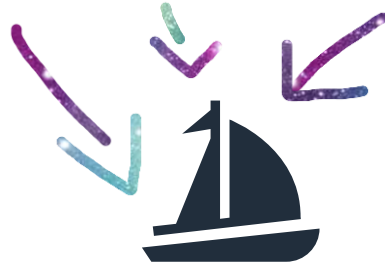


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- **Persistent:** The additional content remains visible until the hover or focus trigger is removed, the user

// process

how?

WCAG – Web Content Accessibility Guidelines

- “cherry pick” what is relevant
- make sure dev, design & stakeholders understand what & why
 - not necessarily on same level
 - define general rules in design document
eg. *Enrich link titles for SR with context.*
"E-Mail-Adresse als Benutzername ändern"
 - mark exceptions/customizations

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- **Graphical Objects:** Parts of graphics required to understand the content, except when a particular presentation of graphics is essential to the information being conveyed.

Success Criterion 1.4.12 Text Spacing

Login-Daten

Benutzerdaten | Anmeldeoptionen | Weitere Passwörter

Die Benutzerdaten für Ihren Telekom Login bestehen aus Benutzername und Passwort. Sie können sich damit bei allen Diensten der Telekom anmelden.

Benutzernamen

Sie können bis zu drei Benutzernamen hinterlegen.

- E-Mail-Adresse**
foo@bar.de
Ändern
- Telekom E-Mail-Adresse**
knusper@magenta.de
[Im E-Mail Center ändern](#)
- +** Telekom Mobilfunk-Nummer hinzufügen

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- If the additional content is presented in a way that requires pointer hover to be visible, then removing pointer hover or keyboard focus triggers additional content to become visible.
- If the additional content is presented in a way that requires keyboard focus to be visible, then removing keyboard focus triggers additional content to become visible.

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If the additional content is presented in a way that requires pointer hover to be visible, then removing pointer hover or keyboard focus triggers additional content to become visible.

If the additional content is presented in a way that requires keyboard focus to be visible, then removing keyboard focus triggers additional content to become visible.



// process

how?

Scale Design Framework

- T component library
- stable components: level AA



code: <https://github.com/telekom/scale/>
docs/demo: <https://telekom.github.io/scale>

// process

how?

Scale Design Framework

- T component library
- stable components: level AA
- make components work **together**
page structure, interaction, flows, dynamic content
- encapsulation -> make your own accessible components
don't reinvent the wheel!



code: <https://github.com/telekom/scale/>
docs/demo: <https://telekom.github.io/scale>

// process

how?



test with real users during development

- understand how they interact
- understand their problems
- direct feedback

why

// process

how?

- **disabilities:** visual (reduced sight, blind), cognitive, motoric, ...
- **devices:** keyboard, joystick-mouse, trackball, magnifying glass, spoon(!), ...

test with real users during development

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// process

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test with real users during development

why

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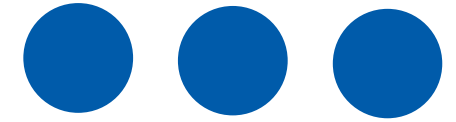
how

- multiple rounds of tests
- internal & external users
- **test & retest (!)** different use cases of the application
...did our modifications help?

// process

how?

- **disabilities:** visual (reduced sight, blind), cognitive, motoric, ...
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test with real users during development

why

- understand how they interact
- understand their problems
- direct feedback

how

- multiple rounds of tests
- internal & external users
- **test & retest (!)** different use cases of the application
...did our modifications help?

workshop afterwards

- discuss results & decide what to change/leave
- huge variety of users, tools & preferences -> is remark relevant or not?
- consequence of changes? Are other users affected? Really an improvement for all?

03

HOW

3.1 Screen Reader

3.2 AM dev process

3.3 AM learnings

// lessons learned

- > **general learnings**

- > try to make visible & non-visible experience consistent
- every exception/customization for SR is a possible bug resource, hard to identify recognize non-visible bugs

// lessons learned

> **general learnings**

- > try to make visible & non-visible experience consistent
every exception/customization for SR is a possible bug resource, hard to identify recognize non-visible bugs

- > users are creative!
 - > blind users can interact with QR codes
just make sure they are visible on screen

 - > manual typing a problem?
copy & paste from iphone to macbook -> no manual typing is needed (UX-Test 2.2)

// lessons learned

> **general learnings**

- > try to make visible & non-visible experience consistent
every exception/customization for SR is a possible bug resource, hard to identify recognize non-visible bugs
- > users are creative!
 - > blind users can interact with QR codes
just make sure they are visible on screen
 - > manual typing a problem?
copy & paste from iphone to macbook -> no manual typing is needed (UX-Test 2.2)
- > constant improvement: collect issues & address them in future releases

// lessons learned

> **expensive: cost / time**

development

coordination

test

regression

generic solution

dev, experts, end users, design, requirements

keyboard, NVDA, JAWS, end user

non-visible bugs

vs customized solutions, where not possible

// lessons learned

> **expensive: cost / time**

development

coordination

dev, experts, end users, design, requirements

test

keyboard, NVDA, JAWS, end user

regression

non-visible bugs

generic solution

vs customized solutions, where not possible

> **documentation**

define **EVERY** element's behaviour

> visible?

> ALT-text?

> focusable? by user / via script? focus-order?

> non-visible alternative for screen readers?

// lessons learned

- > understanding & skillz ++ for users, guidelines, technologies & tooling
- > how to **structure content**
 - > sequential (audio) vs parallel information (visually)
 - > amount of transmittable / receivable information
 - > context not visible!?! content has to be understandable on its own

// lessons learned

> understanding & skillz ++ for users, guidelines, technologies & tooling

> how to **structure content**

> sequential (audio) vs parallel information (visually)

> amount of transmittable / receivable information

> context not visible!?! content has to be understandable on its own



> **TL;DR - no one** reads (listens to) long texts!

SR often set up to multiple-X speed -> important to have recognizable **keywords**

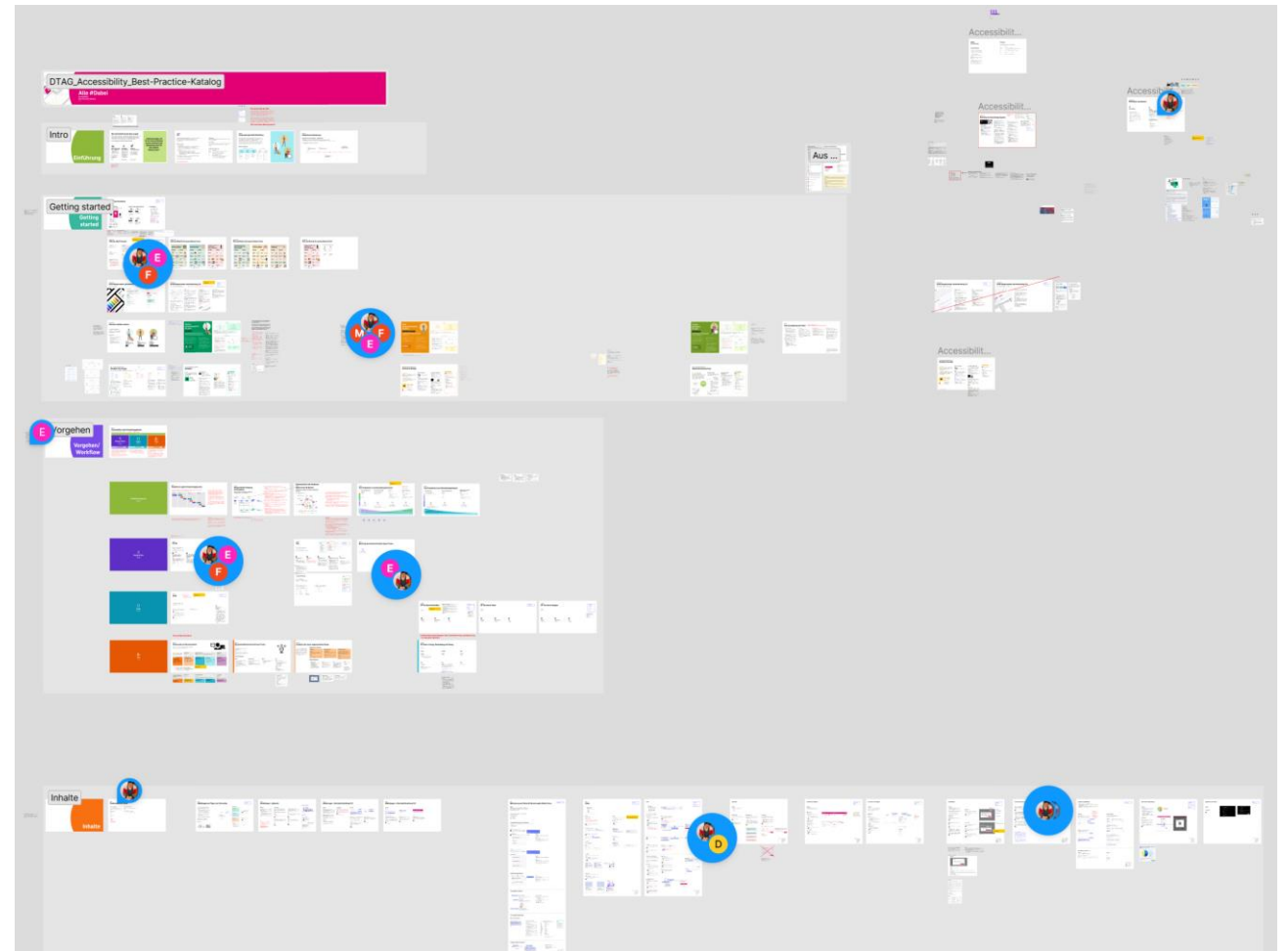
> Provide **alternative paths** to achieve goal.

> Menü, Dashboard, Sitemap, Suche, FAQ, Querverweis, ...

> (TOTP: QR code vs manual Code) vs SMS-OTP

// lessons learned - - - > Best Practice-Katalog

- > gesammelte Erfahrungen
- > unterteilt nach Rollen & Phasen
 - > Projektmanagement
 - > Design
 - > Build
 - > Test
- > Positiv- & Negativ-Beispiele
- > Grundlage für zukünftige Projekte



04

SHOWTIME

// demo

> SR: virtual cursor

> Tab order

> Alt texts for SR

> Context (information overload)

> Texts / elements hidden from SR

> Live-regions

> Focus management

edit card, dashboard

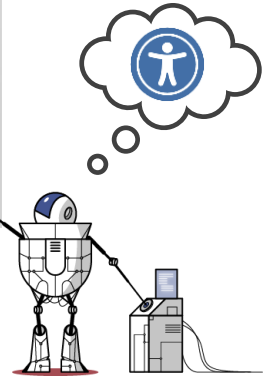
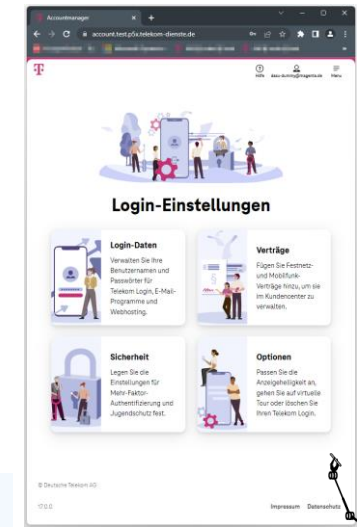
copytext (eg. user data), pw allowed chars

pw strength component

banner img / **edit card**: masked pw / decorative img

flyouts / notifications / form errors

page load SPA / form errors / OTP verification



05

RECAP

// summary / lessons learned @ JUG



> **A11Y ist...**

- > wichtig
- > Hilfe für Betroffene
- > zeitaufwendig
- > aber gar nicht so schwer

// summary / lessons learned @ JUG



- > A11Y ist [wichtig, Hilfe für Betroffene, zeitaufwendig, aber gar nicht so schwer]
- > Achtet auf **Bedienbarkeit per Maus & Tastatur**
 - > Elemente groß genug?
 - > Ansteuerbar? Fokus sichtbar?
 - > Fokus-Reihenfolge?

// summary / lessons learned @ JUG



- > A11Y ist [wichtig, Hilfe für Betroffene, zeitaufwendig, aber gar nicht so schwer]
- > Achtet auf Bedienbarkeit per Maus & Tastatur
 - > Elemente groß genug?
 - > Ansteuerbar? Fokus sichtbar?
 - > Fokus-Reihenfolge?
- > **Screenreader**
 - > Funktionsweise & Bedienung
 - > Inhalte verstecken / Alternativtexte
 - > ARIA-Attribute

// summary / lessons learned @ JUG



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 - > Elemente groß genug?
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- > Entwicklungsprozess **Account Manager**

// That's it



<https://www.pinterest.de/pin/269934571391030669/>

Bier

Pizza

Fragen