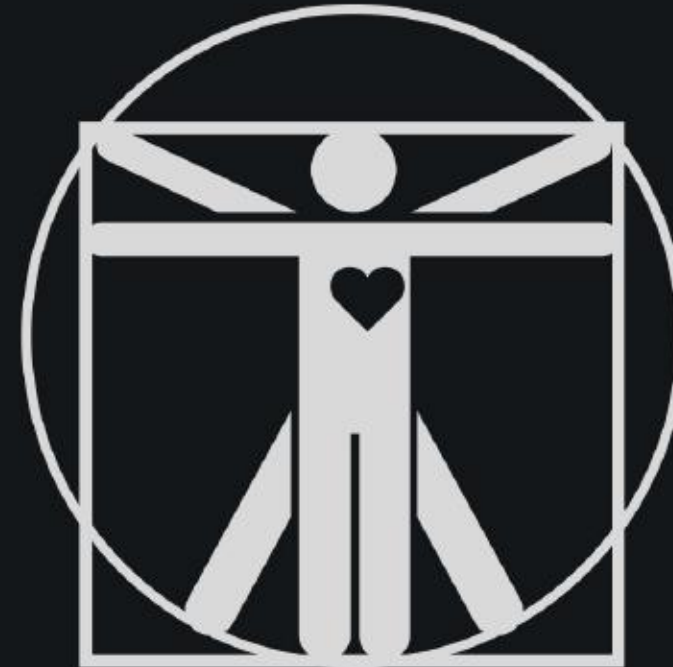


Data access ability

Stefan Barac



=



accessibility that's me:

- serious game creator
- designer & engineer
- human centered



a11y

Why and how to care...

What is accessibility

Who is it for?

Practical examples



a11y

exercise part 1:

take a picture of me using your mobile,



a11y

exercise part 1:

take a picture of me using your mobile,



part 2:

Cross your thumbs over your hands' palms and repeat!



a11y

Why care...

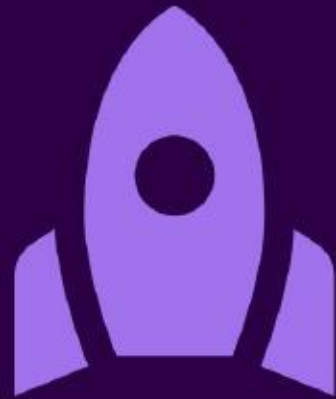
1

2

3

4

5



technology

provides solutions to existing problems

1

2

3

4

5



innovation

is providing access to technologies



The ability to **access** is
the equivalent to **turnover**!

1

2

3

4

5

experiment

data driven experience

1

2

3

4

5



experiment

data driven experience

accuracy

1

2

3

4

5



experiment

data driven experience

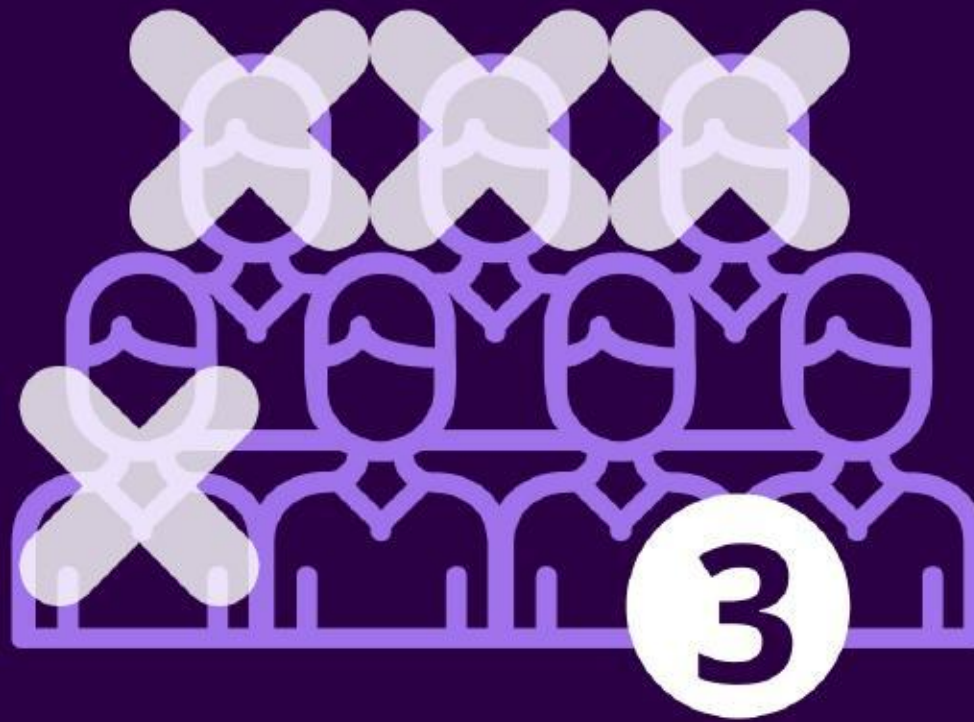
1

2

3

4

5



access

43%

-57%

experiment

data driven experience

1

2

3

4

5



use

29%

-71%

experiment

data driven experience

use

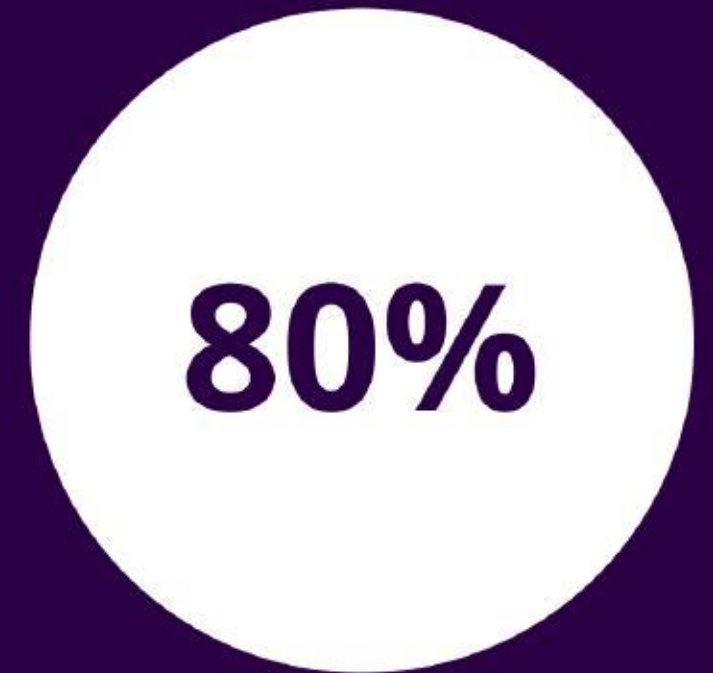
1

2

3

4

5



if that is your goal...

experiment

data driven experience

access

1

2

3

4

5



you need that much!

potential

your loss in numbers

1

2

3

4

5



The Click-Away Pound Report 2019

Revisiting the online shopping experience of customers with disabilities, and the cost to business of ignoring them.

potential

your loss in numbers

- 1
- 2
- 3
- 4
- 5

Table 1: Comparison of key findings, 2016 to 2019

Finding	2016	2019
Number of disabled people online with access needs	6.10m	7.15m
Percentage of disabled people with access needs who say they 'click away' from a site with barriers	71%	69%
Value of the 'click away' spend which went to more barrier-free sites	£11.75b	£17.1b

2024

9.3m

~70%

£ 32 000 000 000



2024 estimated calculation

potential



Swiss eCommerce in numbers

1

**2023
turn
over**

CHF

14 400 000 000

~8 300 000 people* 

2

3

4

5

* estimation based on current 93% of internet users

potential



Swiss loss in numbers

1

2

3

4

5

**2023
click
away
spend**

CHF

1 700 000 000

1 034 000 people with assistive technologies

12%

potential



Swiss loss in numbers

1

2

3

4

5

**2023
click
away
spend**

CHF

2 900 000 000

1 788 000 people with disabilities

20%

a11y

how to care

1

2

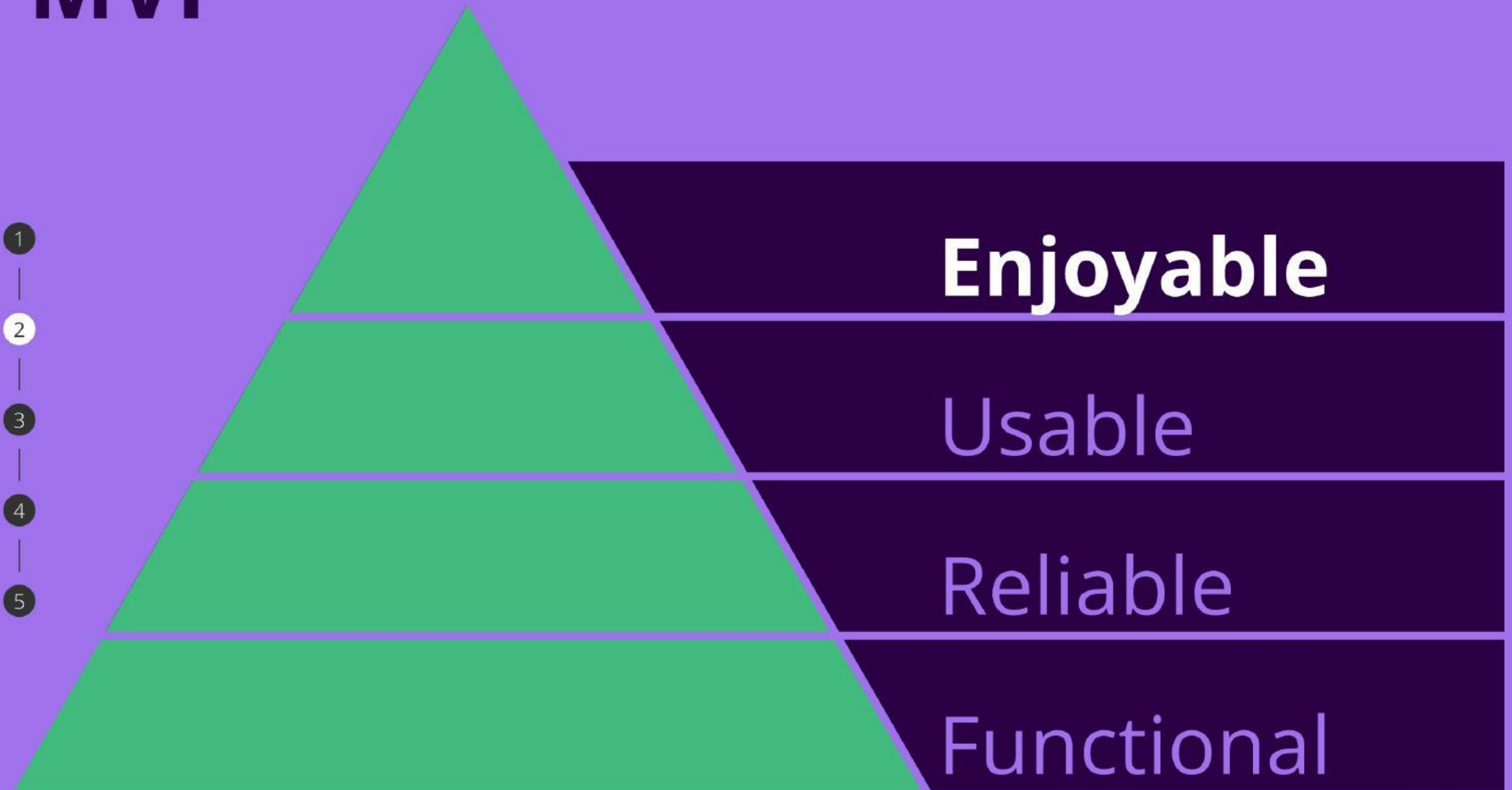
3

4

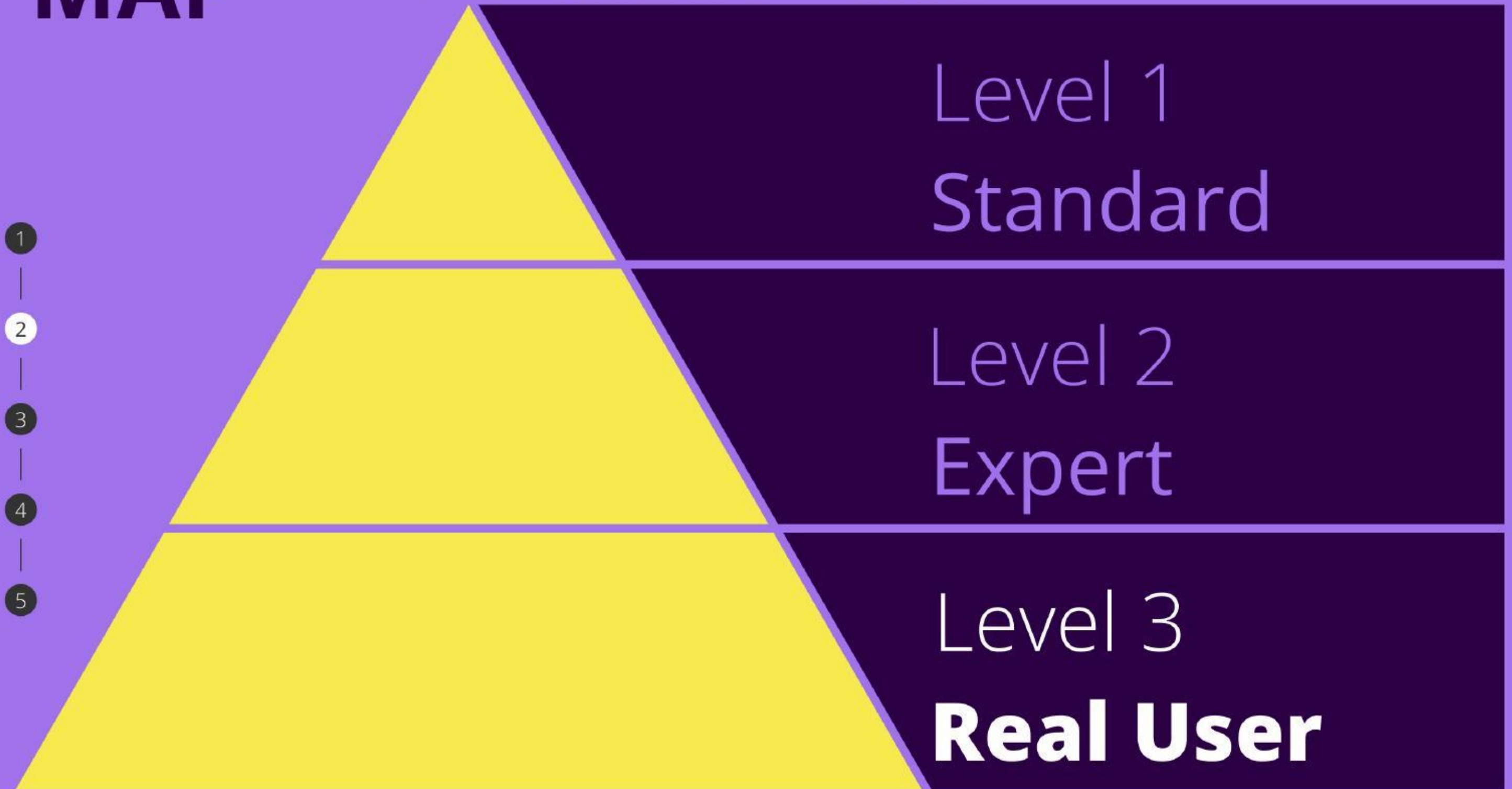
5



MVP Minimum Viable Product



MAP Minimum Accessible Product



MVP*MAP

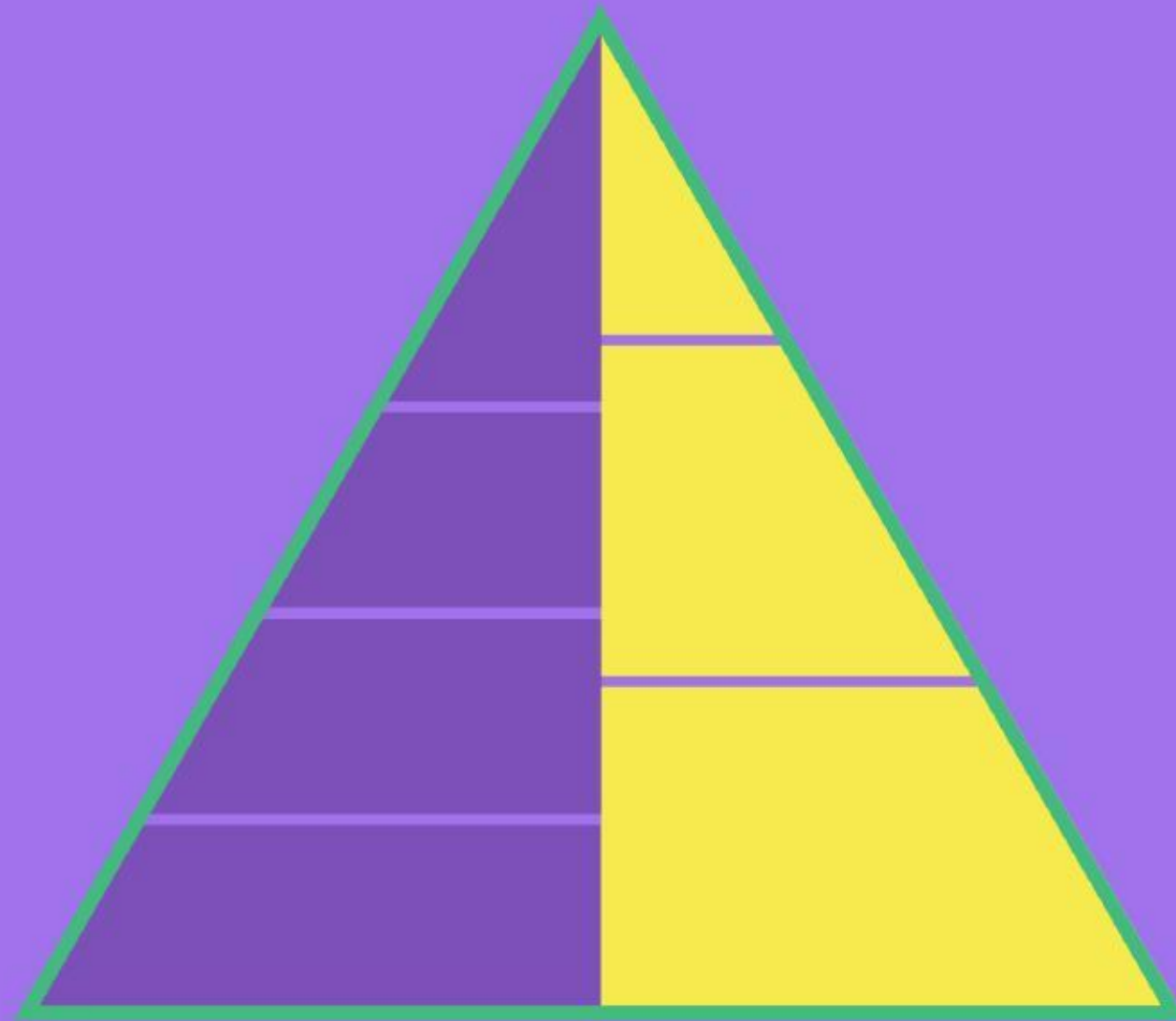
1

2

3

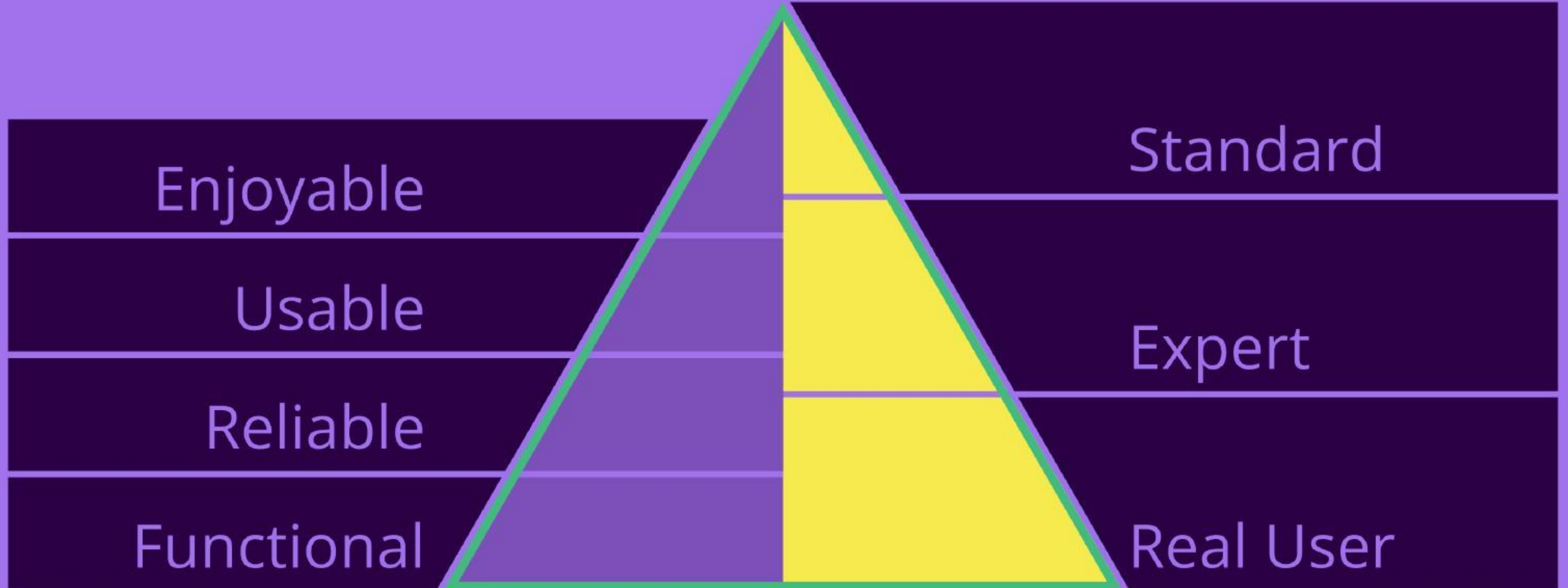
4

5



MVP*MAP

in order to fulfill the EAA



access + ability

What is accessibility?

1

2

3

4

5



a11y

human function

1

2

3

4

5



a11y

direction Ⓚ

1

2

3

4

5



a11y

sensing



1

2

3

4

5

a11y

processing



1

2

3

4

5

a11y

moving (M)



1

2

3

4

5

a11y

human function

- 1
- 2
- 3
- 4
- 5



a11y

conscious
cognitive
potential



**120
Bit**

1

2

3

4

5

a11y

conscious
cognitive
load

- 1
- 2
- 3
- 4
- 5



60
Bit

a11y

conscious
cognitive
load

- 1
- 2
- 3
- 4
- 5



a11y

usual
conscious
cognitive
potential

1

2

3

4

5

120
Bit



60
Bit

a11y

usual initial state

1

2

3

4

5



short



medium



longterm

**60
Bit**

a11y

too little sleep

1

2

3

4

5



early larch



late owl

a11y

too little sleep



1

2

3

4

5

Teenagers



early larch



late owl

a11y

too little sleep

1

2

3

4

5

achronotypical neuro cognitive deficiency



early lark



late owl

a11y

Who is it for?



Accessibility is about including people, who have it harder than the «biologically perfect» 20 - 30 year-old to participate in public life.

1

2

3

4

5



a11y

real Jane & real Joe

Accessibility is biological.

Everyone is impaired somehow.

And by that potentially excluded.
Let's change that!

a11y

~9 Million people

1

2

3

4

5



a11y

~9 Million people

1

2

3

4

5



78 %



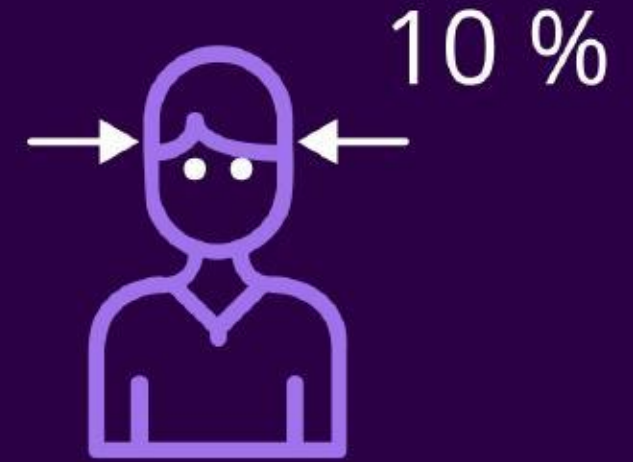
82 %

a11y

~9 Million people



78 %



82 %

1

2

3

4

5

a11y

~9 Million people

1

2

3

4

5



a11y

~9 Million people

1

2

3

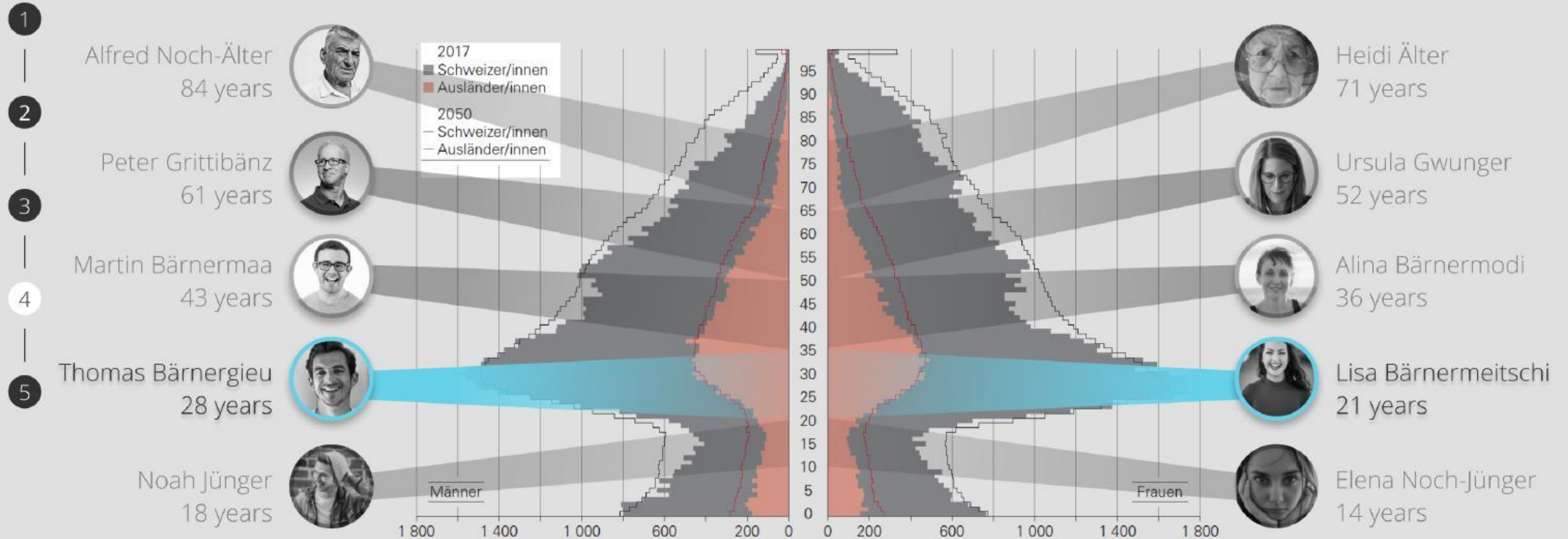
4

5



a11y

Sensing / Processing / Moving



a11y

Sensing

1

|

2

|

3

|

4

|

5



Thomas Bärnergieu
28 years



Lisa Bärnermeitschi
21 years

Internal Factors:	Near-Sightedness ~45%	👁️	~40% Far-Sightedness
	Astigmatism ~15%		~10% Astigmatism
	Color Weakness ~10%		~15% Neurodivergence
External Factors:	Hearing Loss ~10%	👂	~5% Hearing Loss
	Irregular Light ~10%	👁️	~10% Irregular Light
	Nyctalopia ~20%		~20% Nyctalopia
	Noise ~30%	👂	~30% Noise

combined probability:

~20%

~19%

a11y

Sensing

1

2

3

4

5



Thomas Bärnergieu
28 years



Lisa Bärnermeitschi
21 years

single impediment probability

~45%

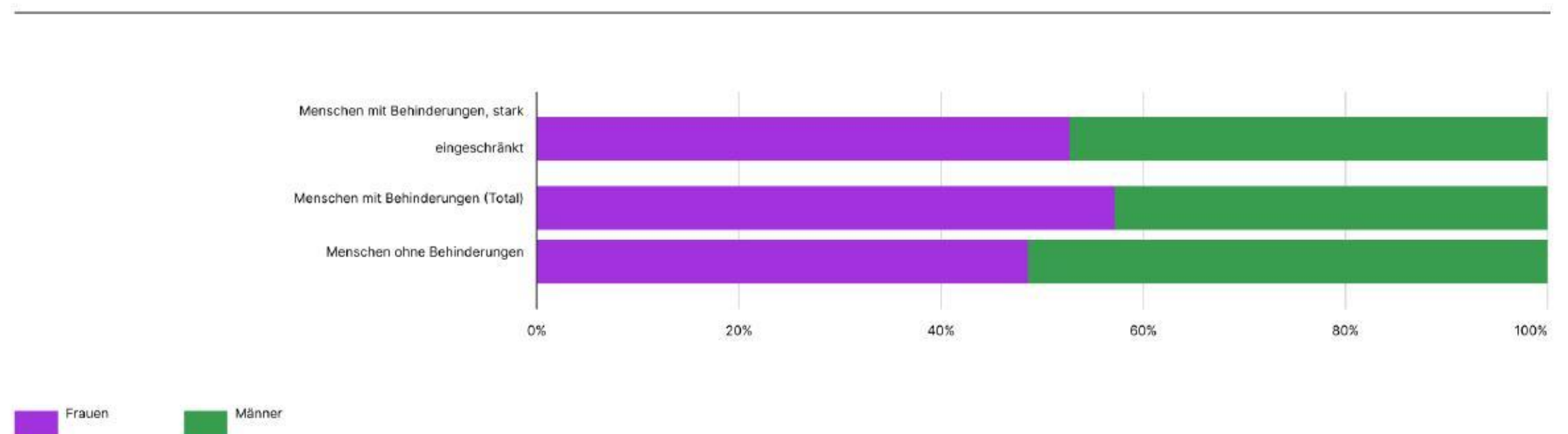
~40%





Menschen mit und ohne Behinderungen nach Geschlecht, 2021

Bevölkerung im Alter von 16 bis 64 Jahren in Privathaushalten



a11y

Statistics

1

2

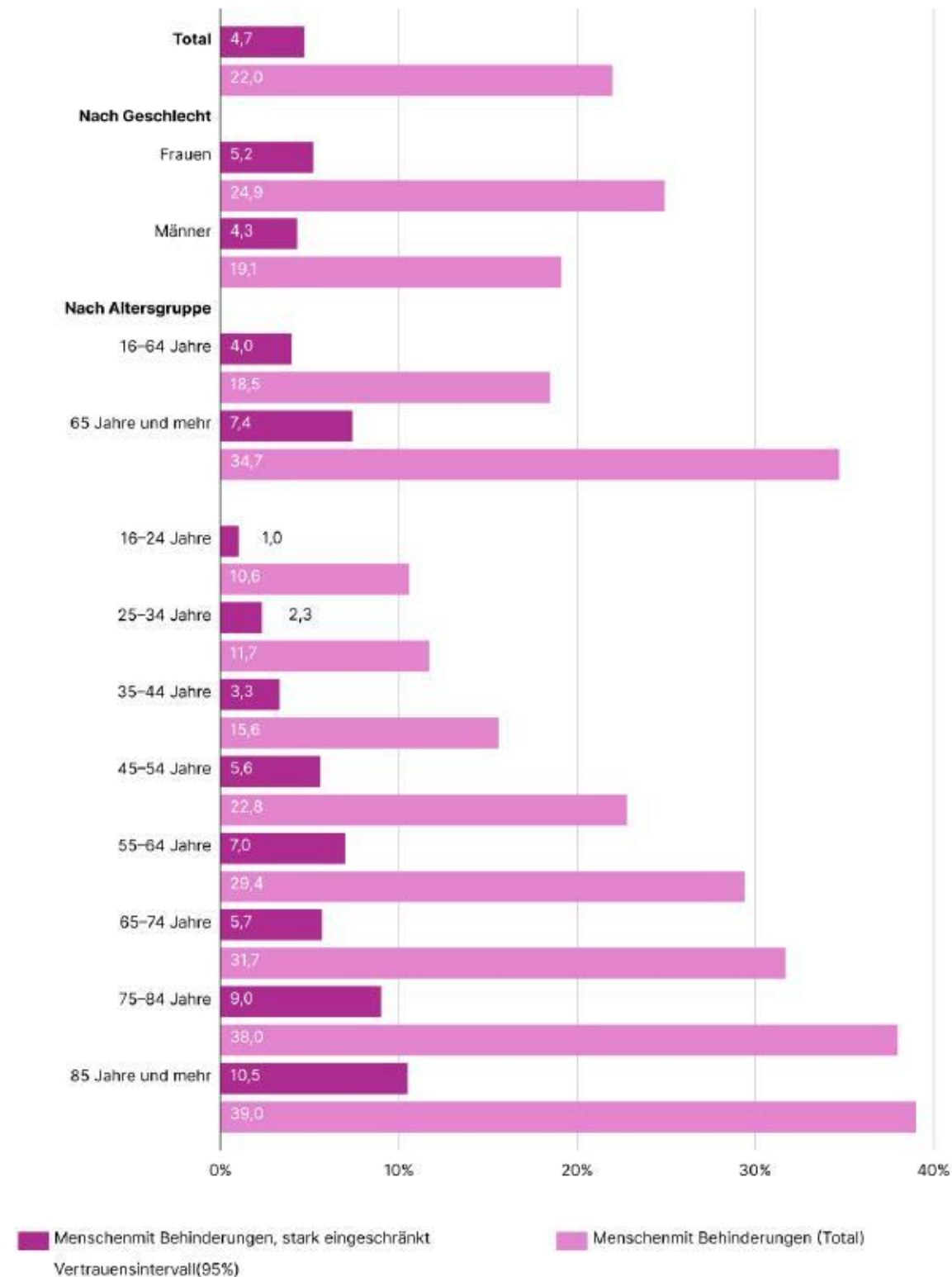
3

4

5

Anteil von Menschen mit Behinderungen nach Geschlecht und Alter, 2021

Bevölkerung ab 16 Jahren in Privathaushalten



female

25%

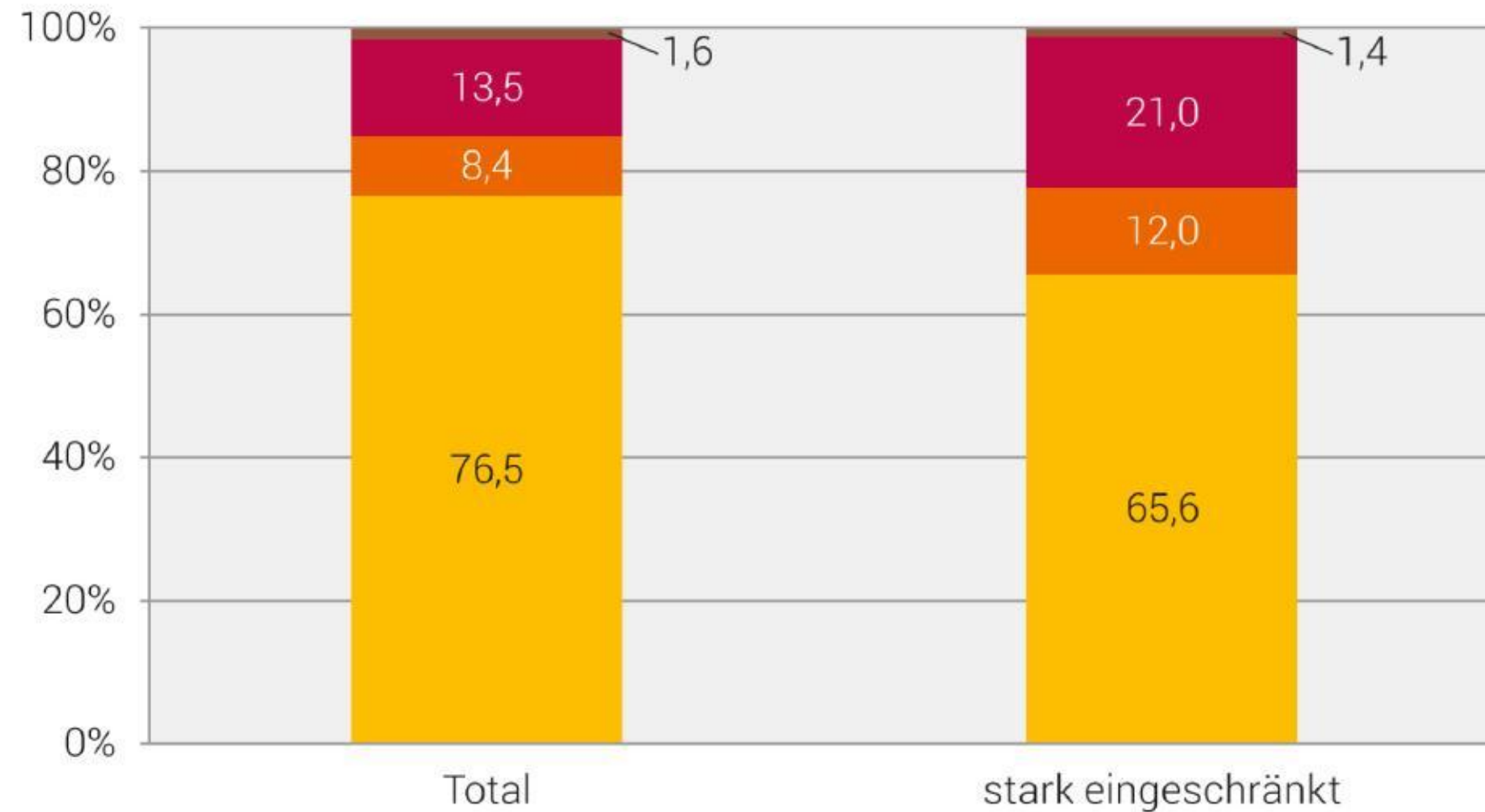
19%

male

Art der Behinderung, 2017

Bevölkerung ab 15 Jahren in Privathaushalten

Menschen mit Behinderungen¹



- körperlich bedingt
- psychisch oder geistig bedingt
- beides (körperlich und psychisch/geistig)
- weder körperlich noch psychisch/geistig

¹ Personen, die ein dauerhaftes Gesundheitsproblem haben und die bei Tätigkeiten des normalen Alltagslebens (stark oder etwas) eingeschränkt sind.

a11y

Statistics

1

2

3

4

5

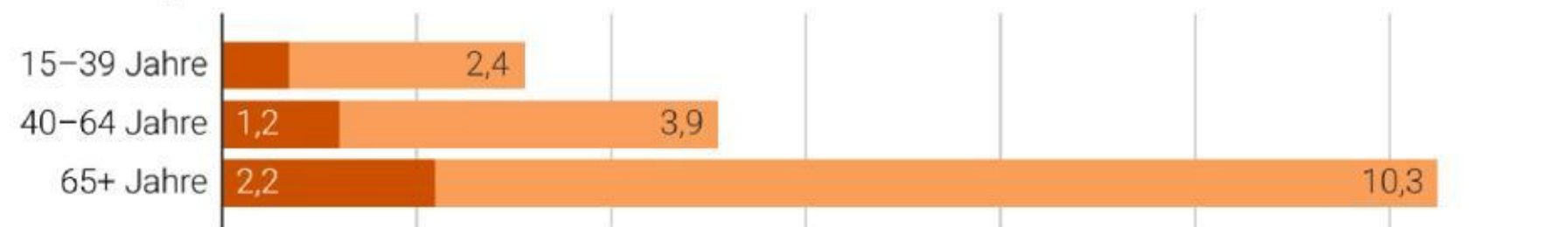
Funktionelle Einschränkungen, 2022

Bevölkerung ab 15 Jahren in Privathaushalten

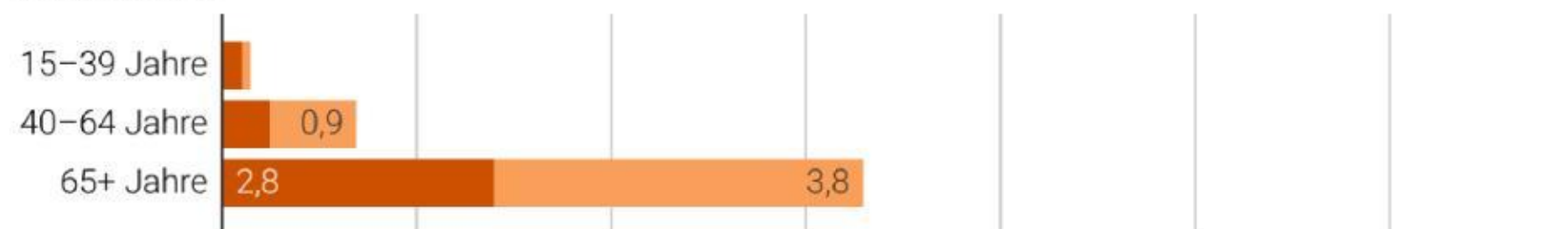
Sehvermögen



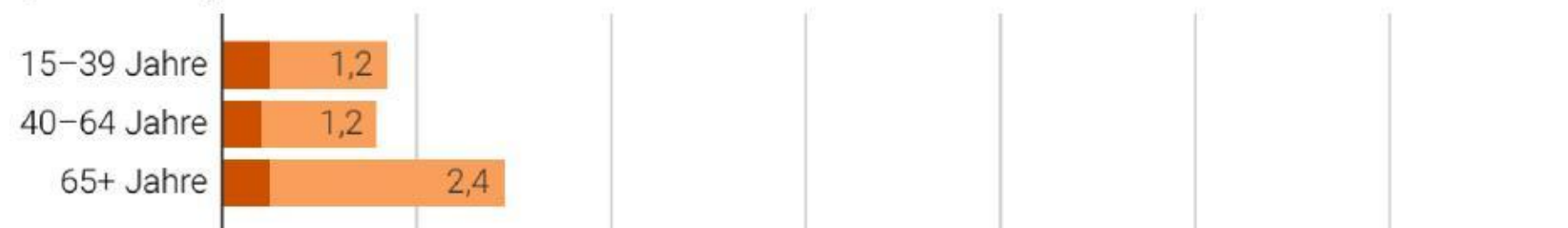
Hörvermögen



Gehvermögen



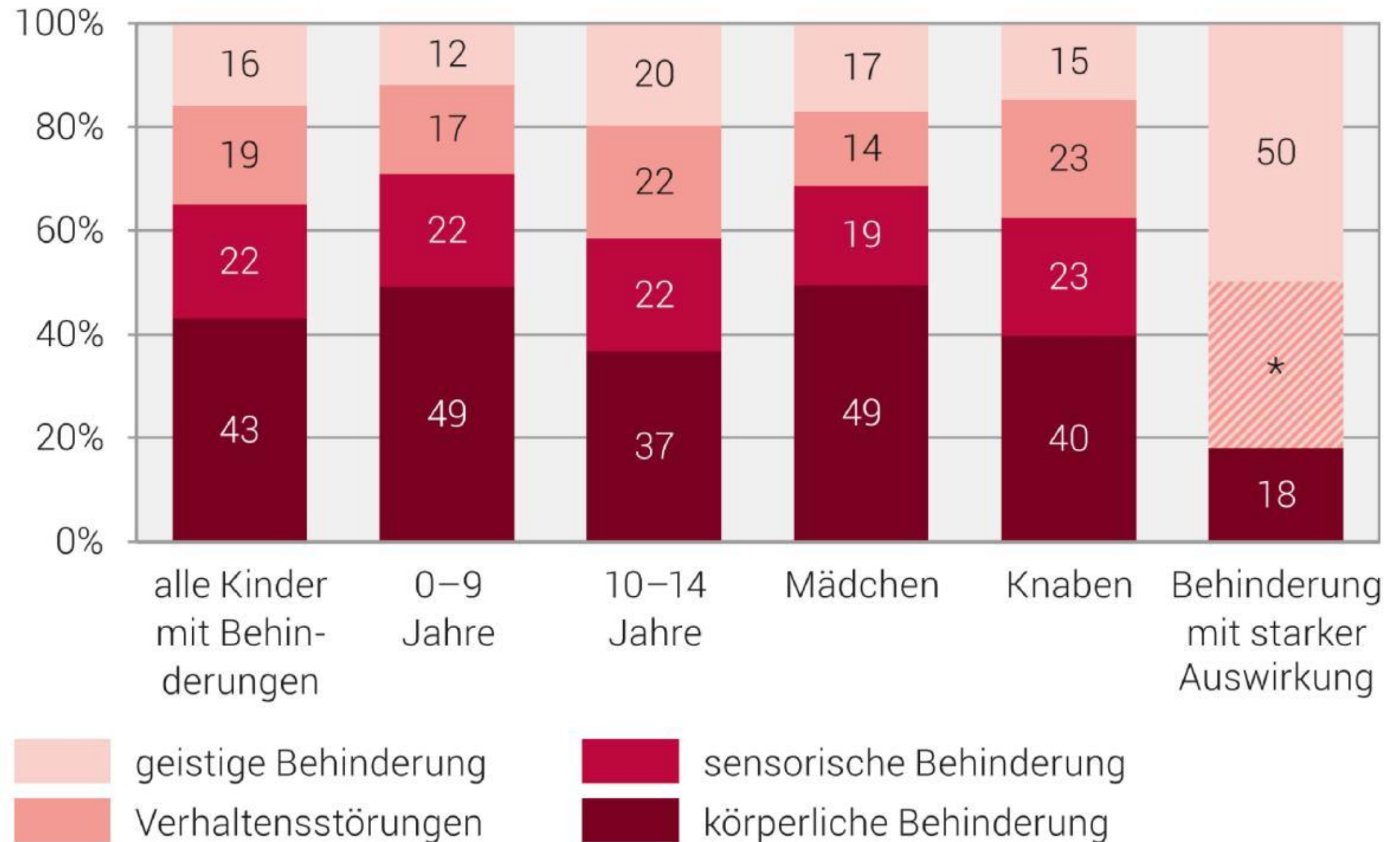
Sprechvermögen



0% 2% 4% 6% 8% 10% 12% 14%

starke oder vollständige Einschränkung leichte Einschränkung

Hauptursache der Behinderung bei Kindern (0 – 14 Jahre) in Privathaushalten, 2017



* Resultate, die auf weniger als 10 Fälle in der Stichprobe beruhen, werden nicht dargestellt.

a11y

Dummy example 2
«Trip to a 🎵 concert»

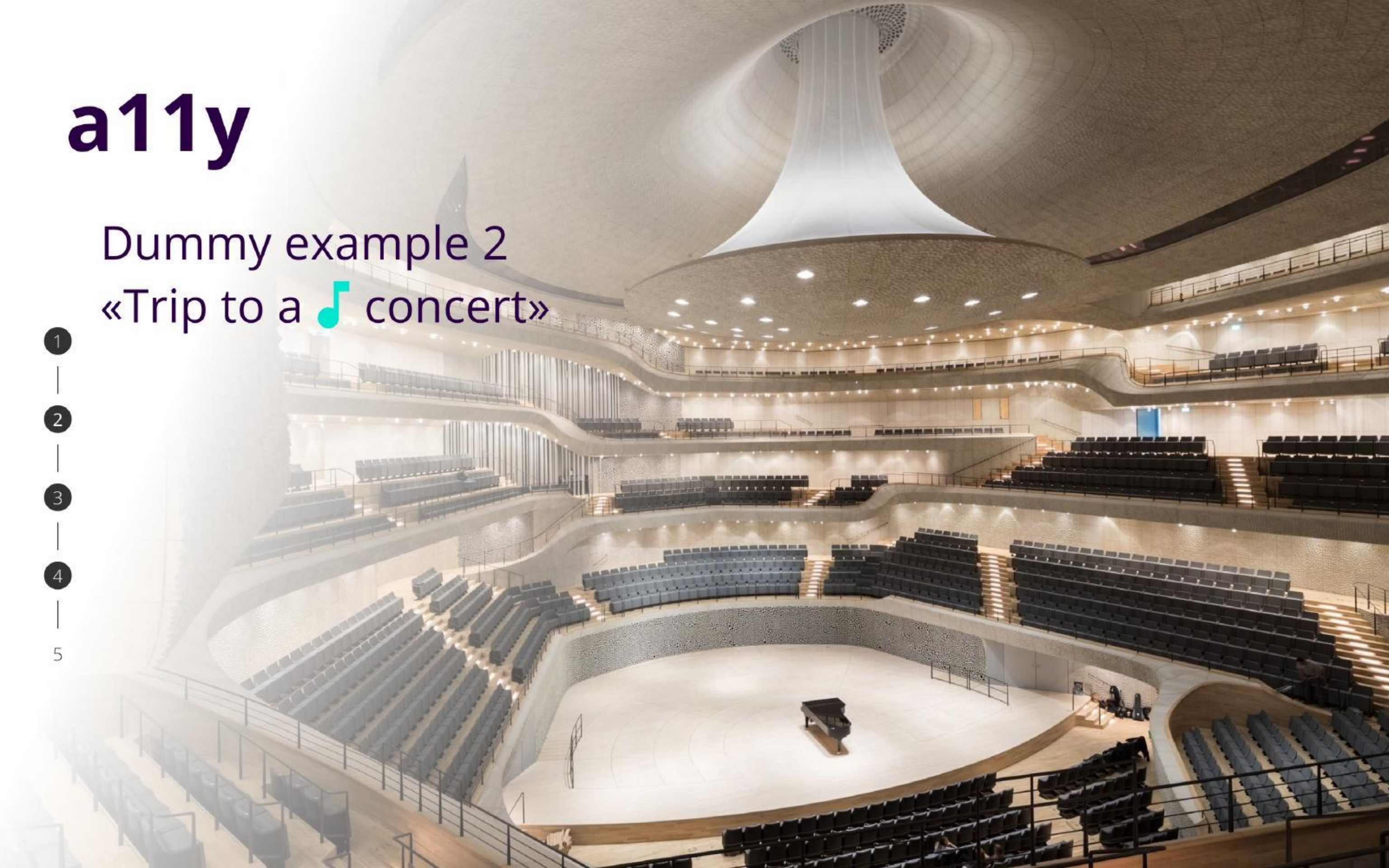
1

2

3

4

5



a11y

Dummy user 2:

Rudy Runner

1m81 tall

49 years

ultra marathon
runner

1

2

3

4

5



a11y

Dummy user 2:

Rudy Runner

1 stroke later

glaucoma

20% vision

1

2

3

4

5



a11y

Dummy user 2:
Rudy Runner
ready for solutions

1

2

3

4

5



a11y

blind navigation: mental overload



1

2

3

4

5



a11y

service:
filtering for no vision

?

1

2

3

4

5

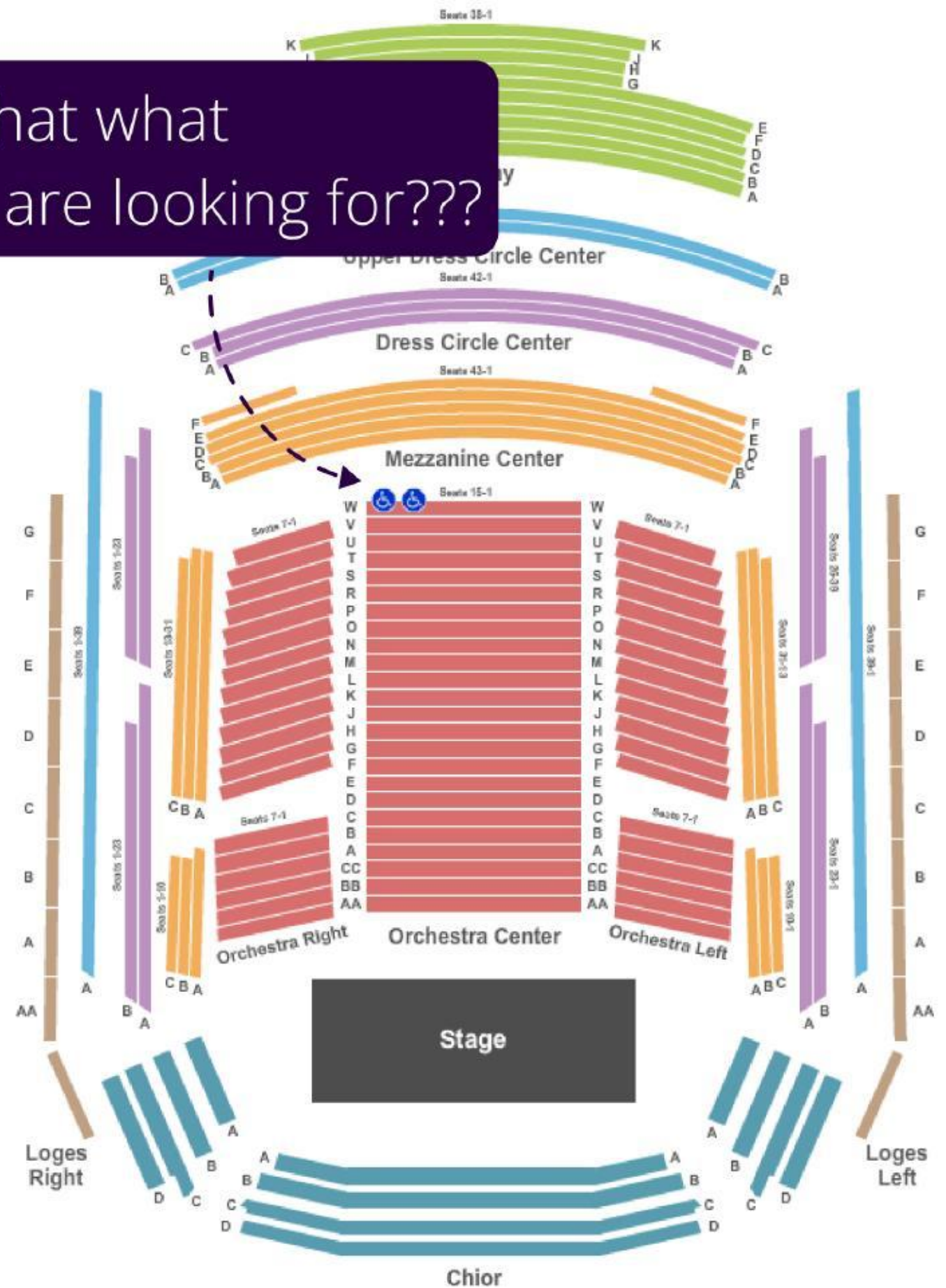


a11y

service:
display floor plan

?

is that what
we are looking for???



a11y

service:
plane seat map

?

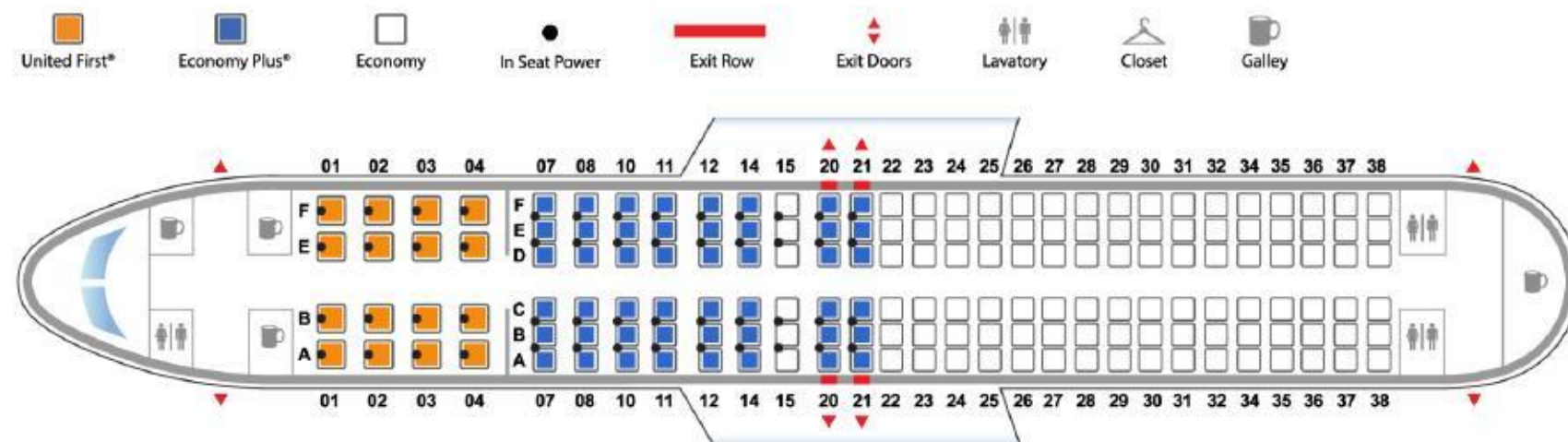
1

2

3

4

5



a11y

service: train seat map

?

1

2

3

4

5



Wagen 23

→ Fahrtrichtung

55 Sitzplätze verfügbar



Sitzplatz für 1 Reisende(n) wählen

Auswahl Bestätigen

Service

Assistenzhund-Sitz, großzügige Gepäckracks, Ruhezone: Wir bitten Sie, sich im Sinne der Mitreisenden ruhig zu verhalten, eine Steckdose pro Doppelsitzplatz, WC, WLAN & Serviceportal

Legende

- Freier Sitzplatz
- Ausgewählter Sitzplatz
- Belegter Sitzplatz
- Ruhezone
- Familienzone
- Fahrradzone

[Vollständige Legende anzeigen](#)

a11y

service:
speed or ...

?

1

2

3

4

5



a11y

service:
start again

?

1

2

3

4

5



Session Timeout



a11y

service:
start again

?

1

2

3

4

5

how about those who
have access needs?



a11y

service:

How can technology
🔔 and AI help...

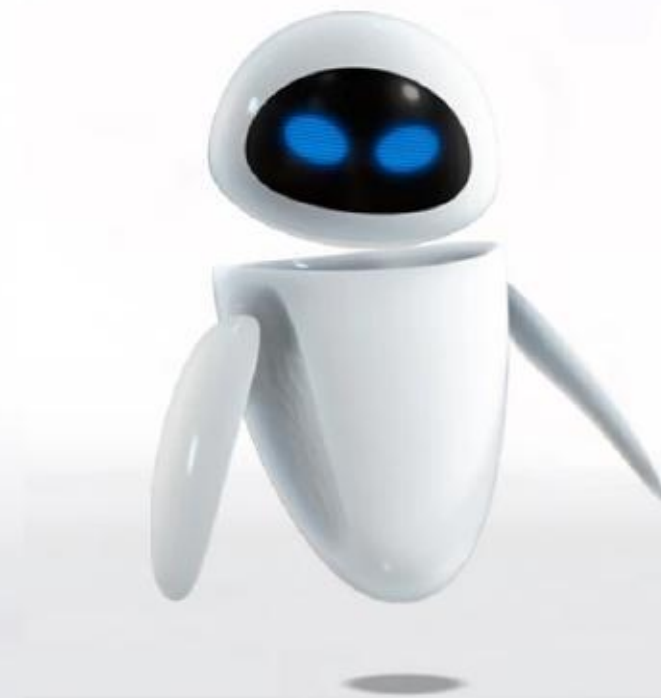
1

2

3

4

5



a11y

service:

How can technology
🔔 and AI help...

1

2

3

4

5

Sugar Honey Ice Tea **in = out**

1. higher quality of data
 - a. statistics
 - b. linear experiments

a11y overlays don't work!

1. clean code
2. less is more
3. alternative interaction

a11y

data collectors
we have no clue!
yet...

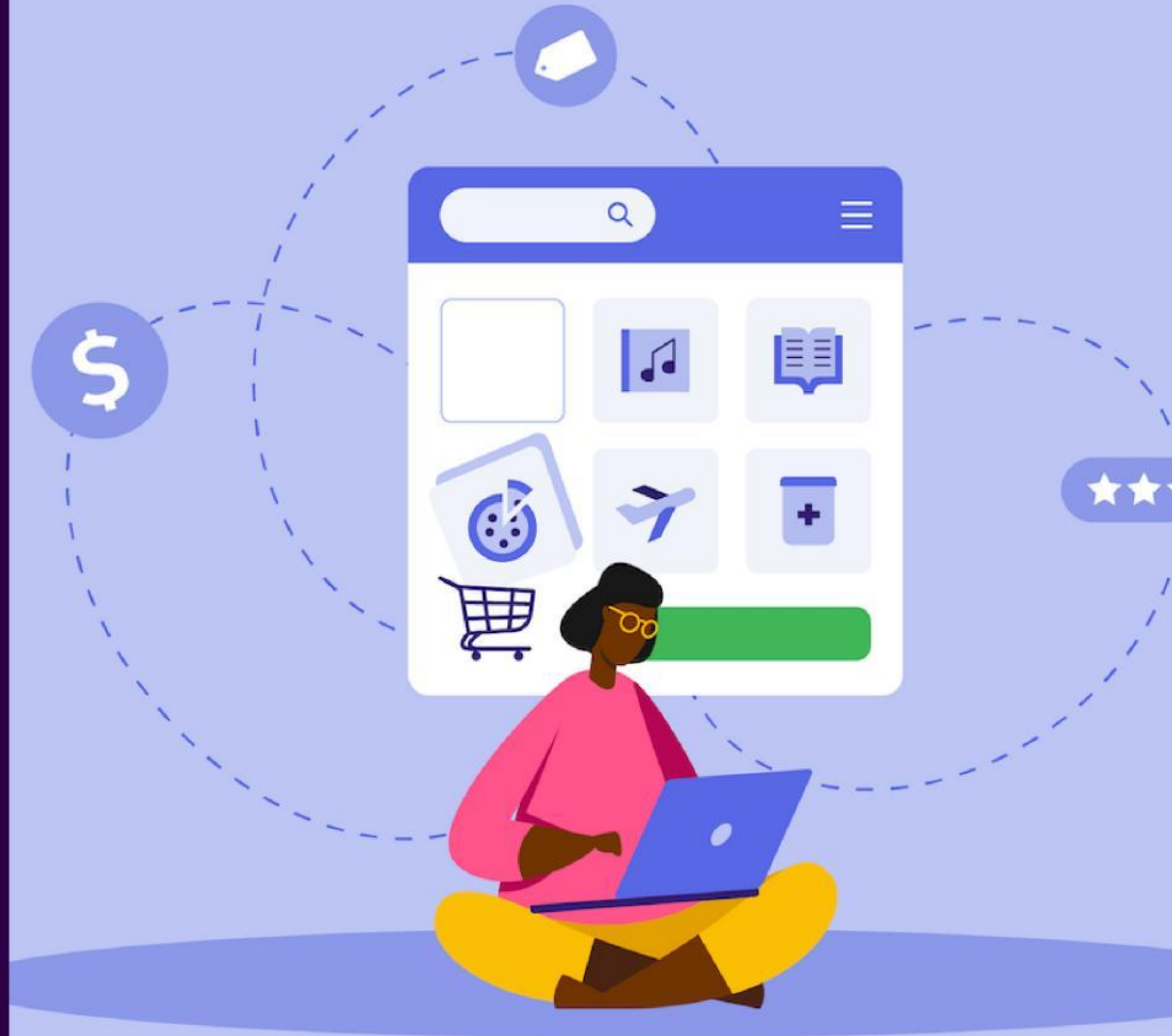
1

2

3

4

5



a11y standards



Web
Content
Accessibility
Guidelines



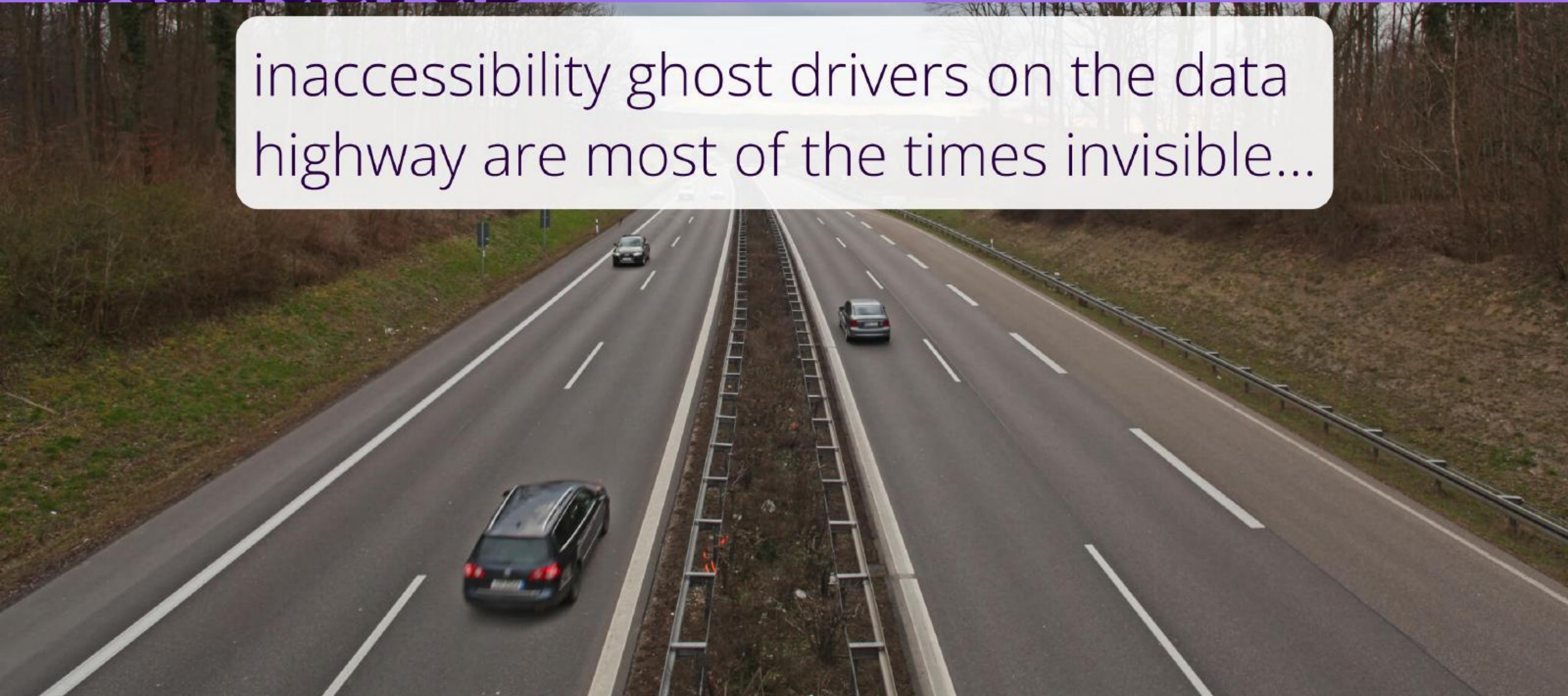
ISO 9241



European
Accessibility
Act

a11y standards

inaccessibility ghost drivers on the data
highway are most of the times invisible...



a11y standards

One of the remedies for their damaging effects is testing with actual people with disabilities!



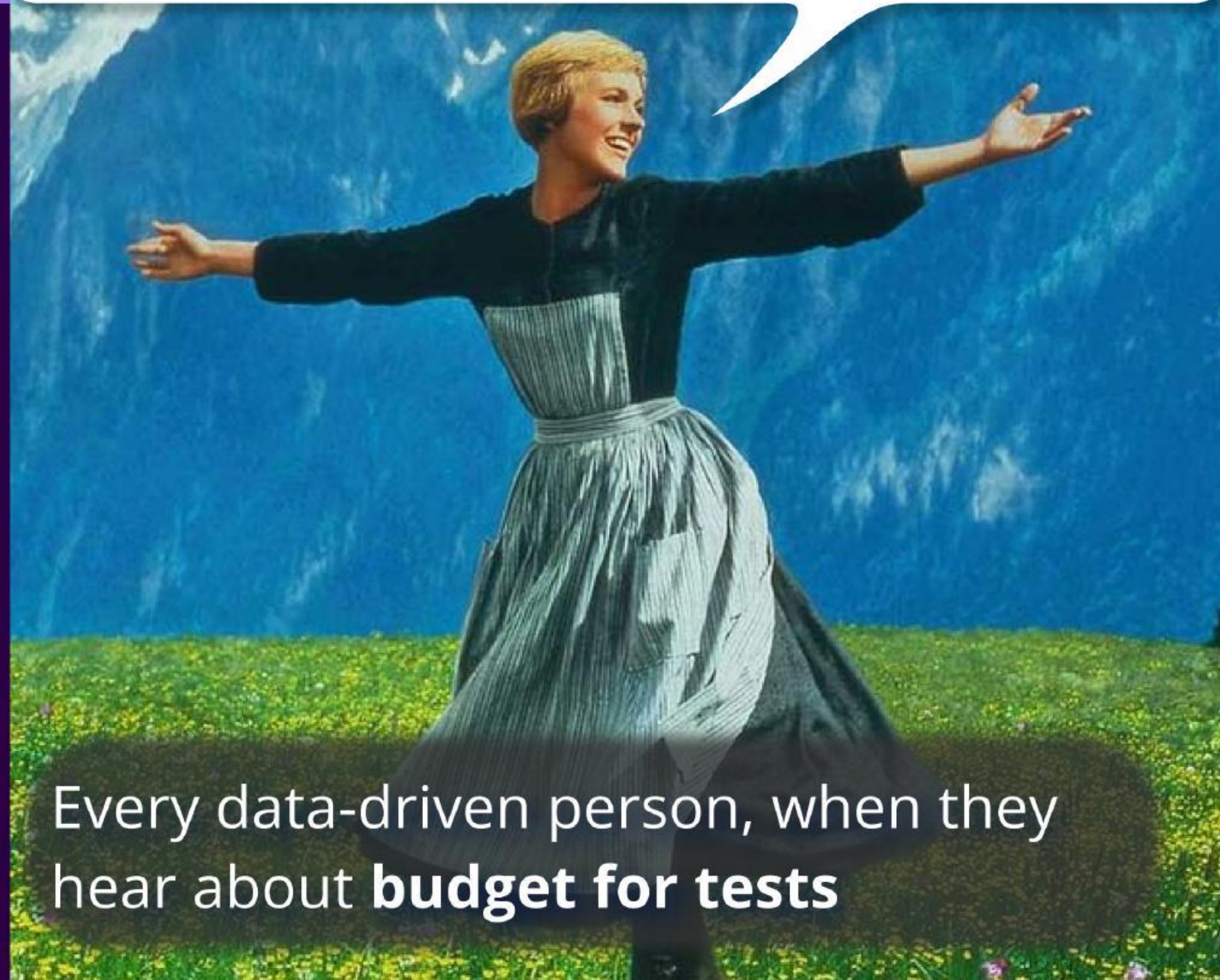
a11y proof

manual

quantitative



The hills are alive with
the sound of TESTING!



Every data-driven person, when they
hear about **budget for tests**

Dataa11y



clickaway pound report



stefan@strategica11y.com

Stefan Barac



BFS people with disabilities
in Switzerland