2026 Summer School on Telerobotics and Cyborg Technologies

User-Centred Design

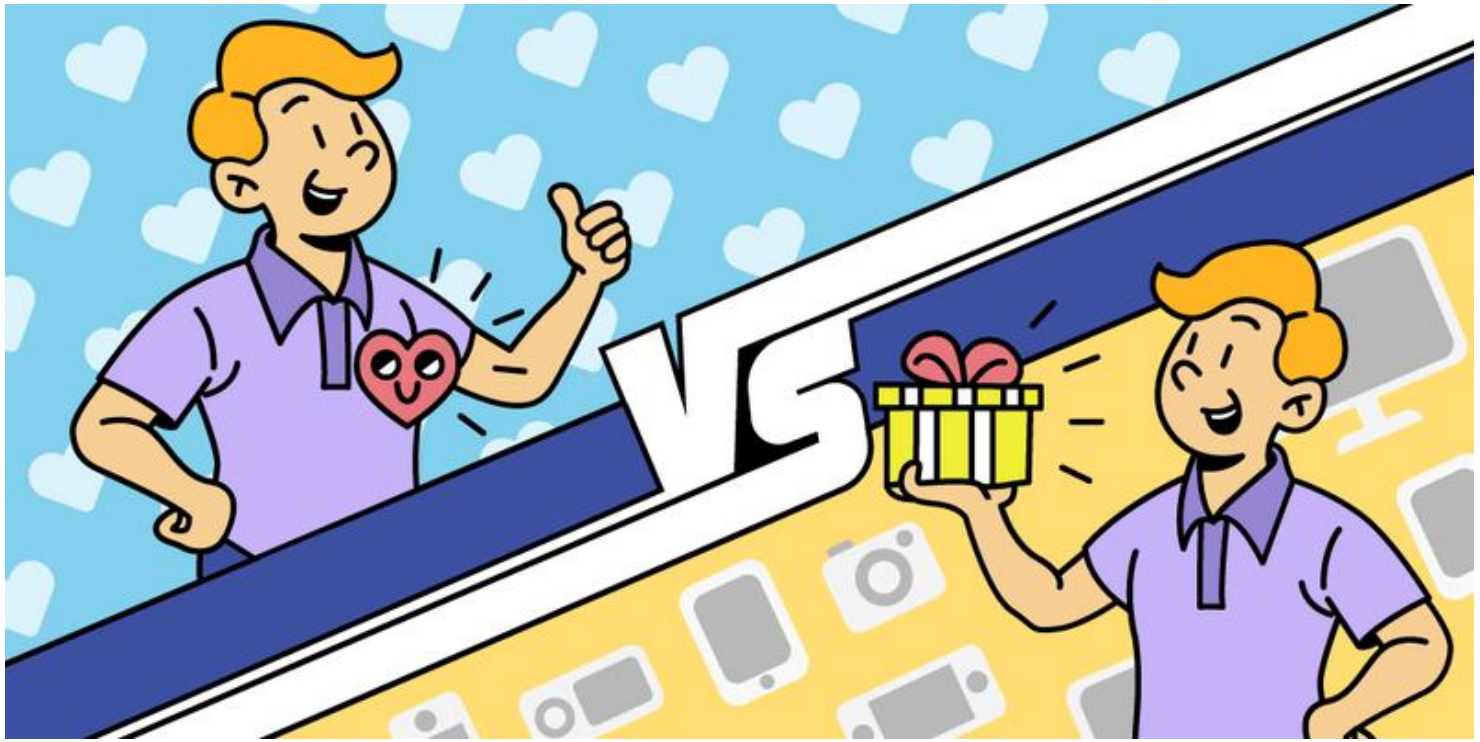
User-Centred Design

The design is centred on the designer

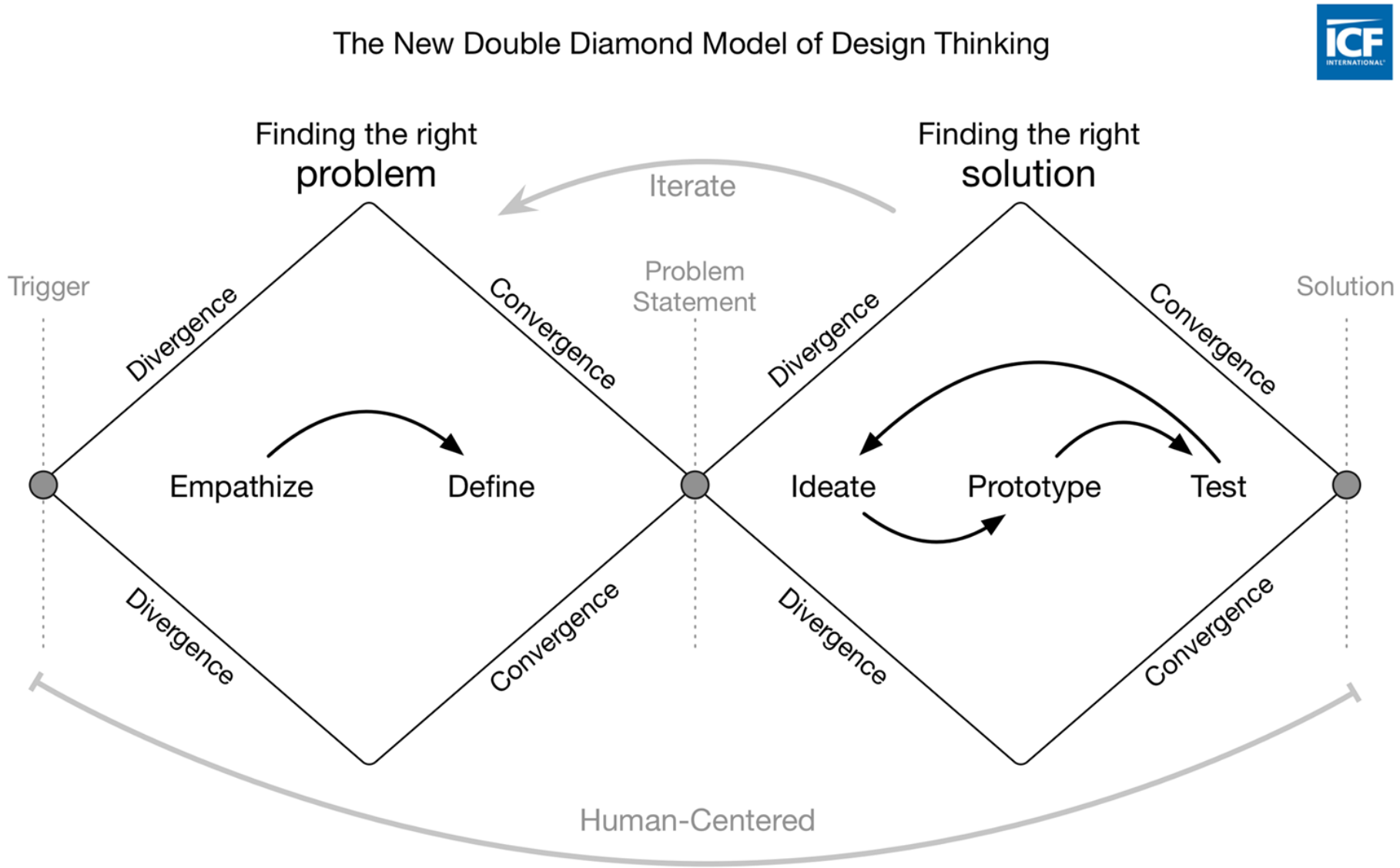
The design is centred on the user

- **User-Centered Design** is a collection of processes aimed at placing users at the center of product design and development.

- The goal is to create products that are usable, useful, and that meet users' needs.



- It involves in-depth research into users' habits, from their interactions with the product to their vision of how the product should look and behave.


The New Double Diamond Model of Design Thinking
Finding the right problem
Finding the right solution
Iterate
Trigger
Problem Statement
Solution
Divergence
Convergence
Divergence
Convergence
Empathize
Define
Ideate
Prototype
Test
Divergence
Convergence
Divergence
Convergence
Human-Centered

Who is the user?

A **user persona** is a fictional but evidence-based representation of a target user that captures their goals, behaviors, needs, and pain points. It is used in design to keep decisions focused on real user requirements rather than assumptions, helping teams build more effective and user-centered solutions.

User persona

Bio: Valentina Tereshkova is a pioneering astronaut and engineer, known as the first woman to travel into space. With a background in parachuting and mechanical systems, she combines operational discipline, technical expertise, and mission leadership.

Lifestyle: She operates and supervises mobile robotic systems in high-risk, remote environments where reliability and clarity are critical.

Core needs:

Immediate situational awareness
- Real-time video feed with minimal latency
- Critical alerts that are impossible to miss

Efficient control under pressure
- Minimal interaction steps for critical tasks

Deep system visibility
- Access to sensor data

Flexible information hierarchy
- Detailed data available on demand

Reliability and safety
- Clear feedback for every action

Pain Points

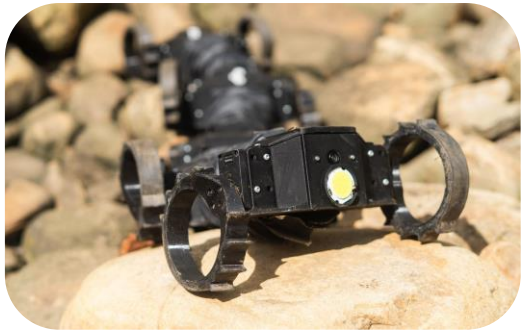
Information overload
- Too many sensor signals competing with video feed
- Difficulty identifying what is critical in the moment

Delayed or unclear feedback
- Latency in video or controls reduces trust
- Lack of confirmation after parameter changes creates uncertainty

Risk of critical errors
- Misconfiguring parameters under pressure
- Accidental inputs due to dense or cluttered UI

Fragmented interface
- Video, controls, and sensor data separated across screens
- Requires excessive navigation during time-sensitive situations

User persona



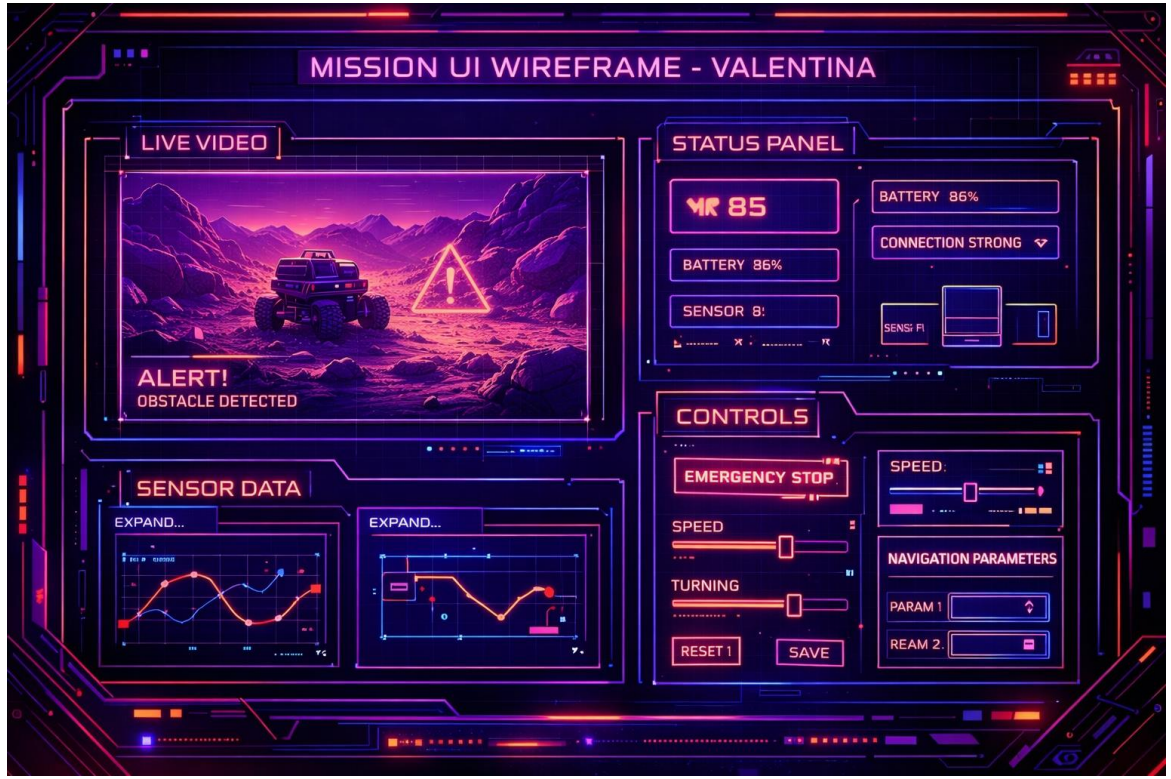
Scuttle

Scout Mini

LIMO Cobot Elephant

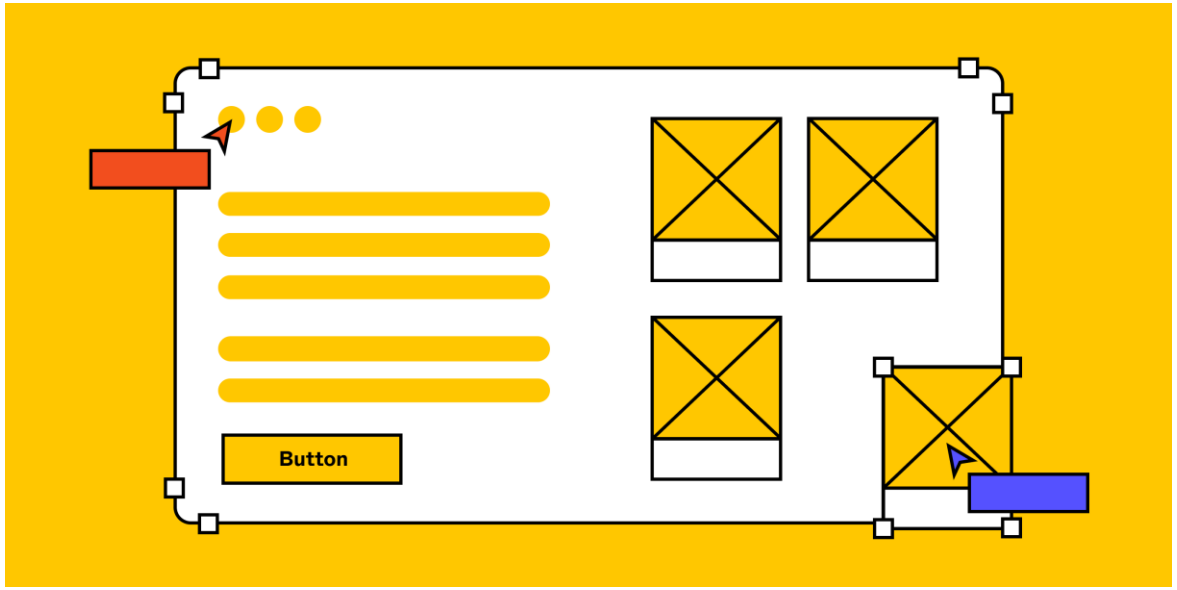
Storytelling in design is the practice of describing how a user interacts with a system over time through a realistic scenario. It helps teams understand context, user behavior, and critical moments, making design decisions more concrete, intuitive, and grounded in real use situations.

Storytelling

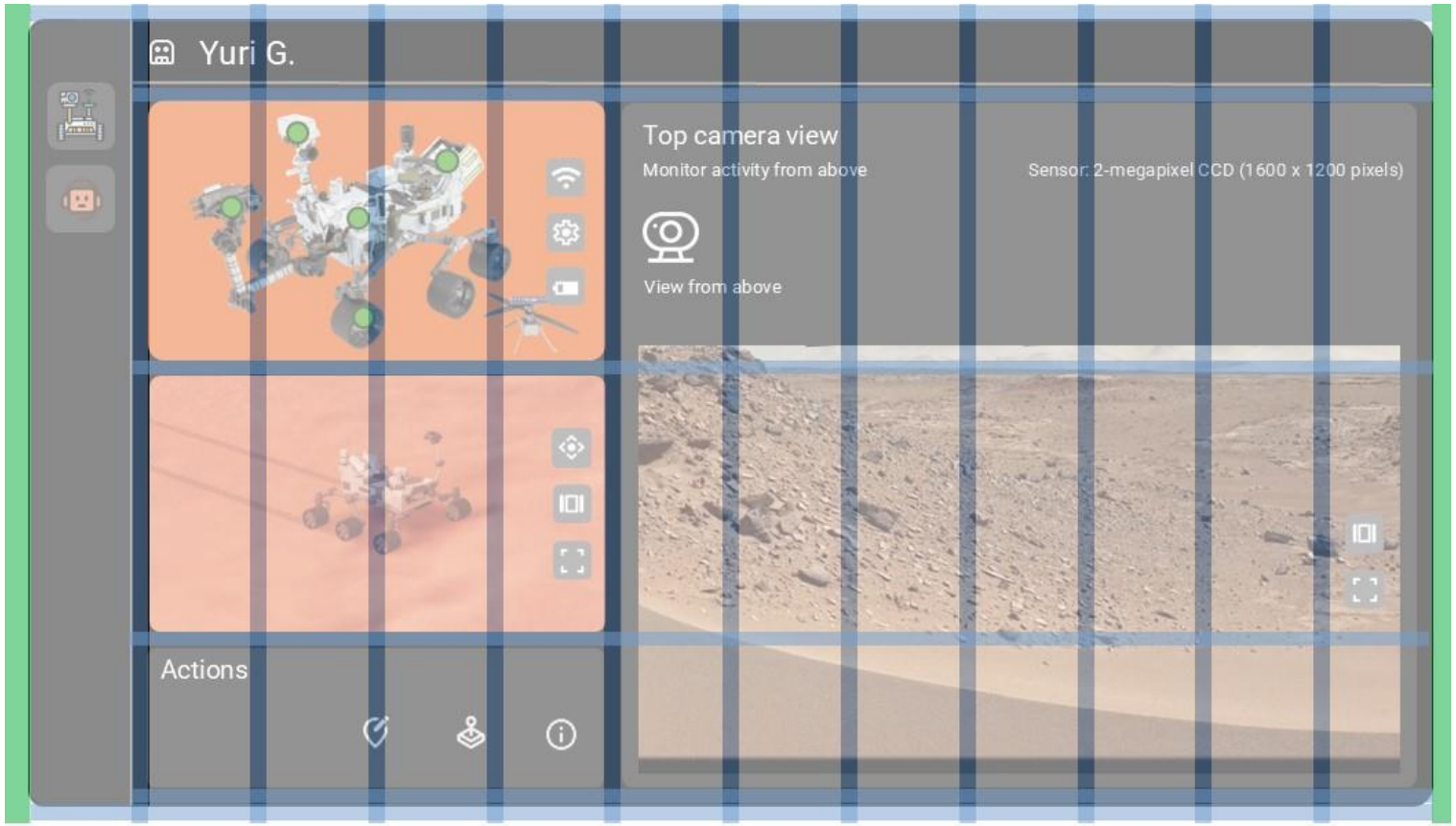


A **wireframe** is a simplified visual representation of a user interface that outlines the layout, structure, and key elements (such as buttons, panels, and content areas) without focusing on visual design details like colors or graphics. It is used early in the design process to define functionality, information hierarchy, and user interaction flow.

Wireframe



- They are an excellent communication tool between the development team and user needs.
- They serve as a guide and support for designers in their search for design alternatives, keeping us always focused on the objective.
- They allow the system to be evaluated at an early stage, facilitating the exploration of ideas for new concepts.
- They promote and improve the quality of the system's technical specifications.



Prototyping is an early design sample used to obtain feedback and to quickly experiment with new ideas.

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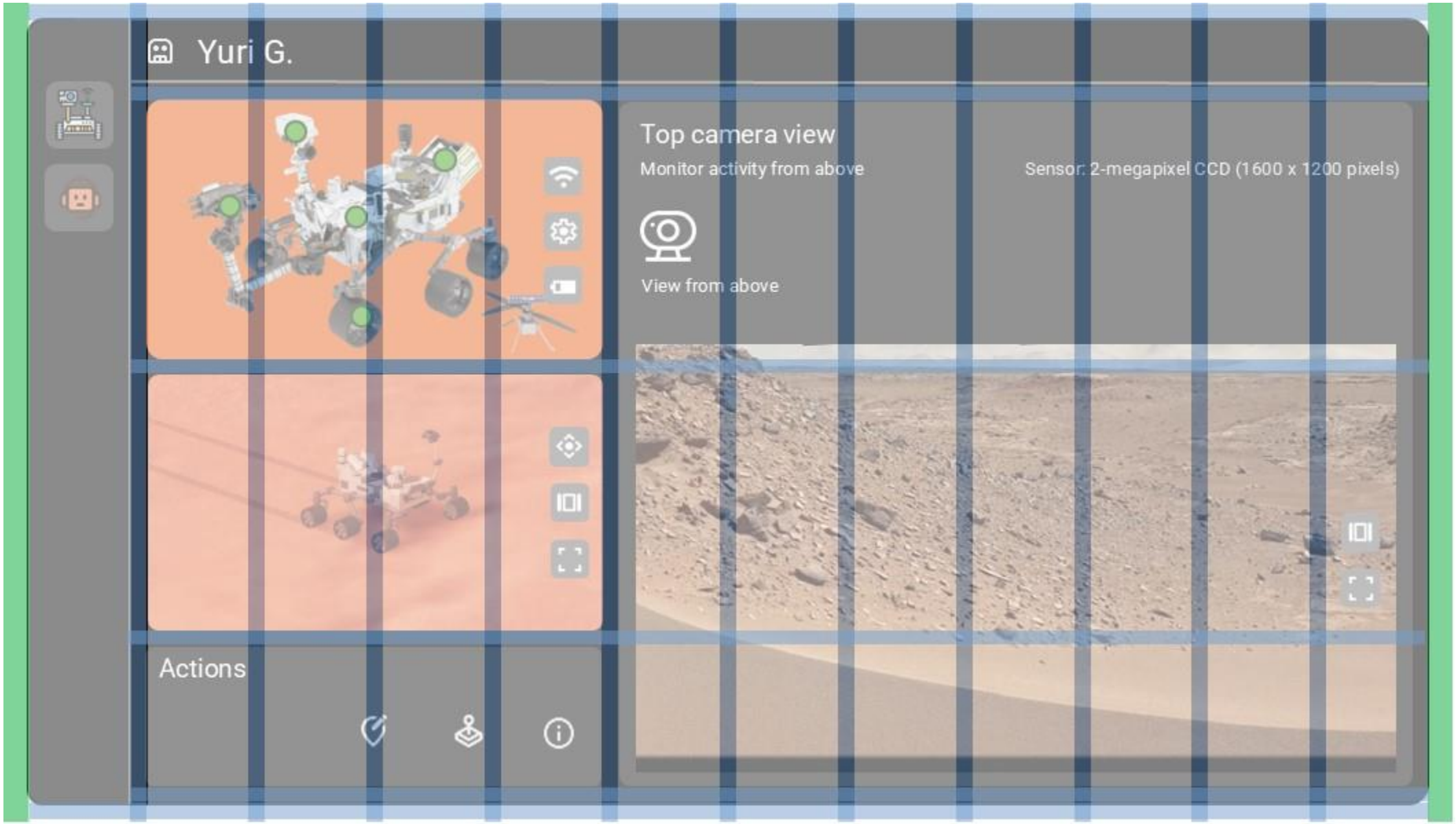
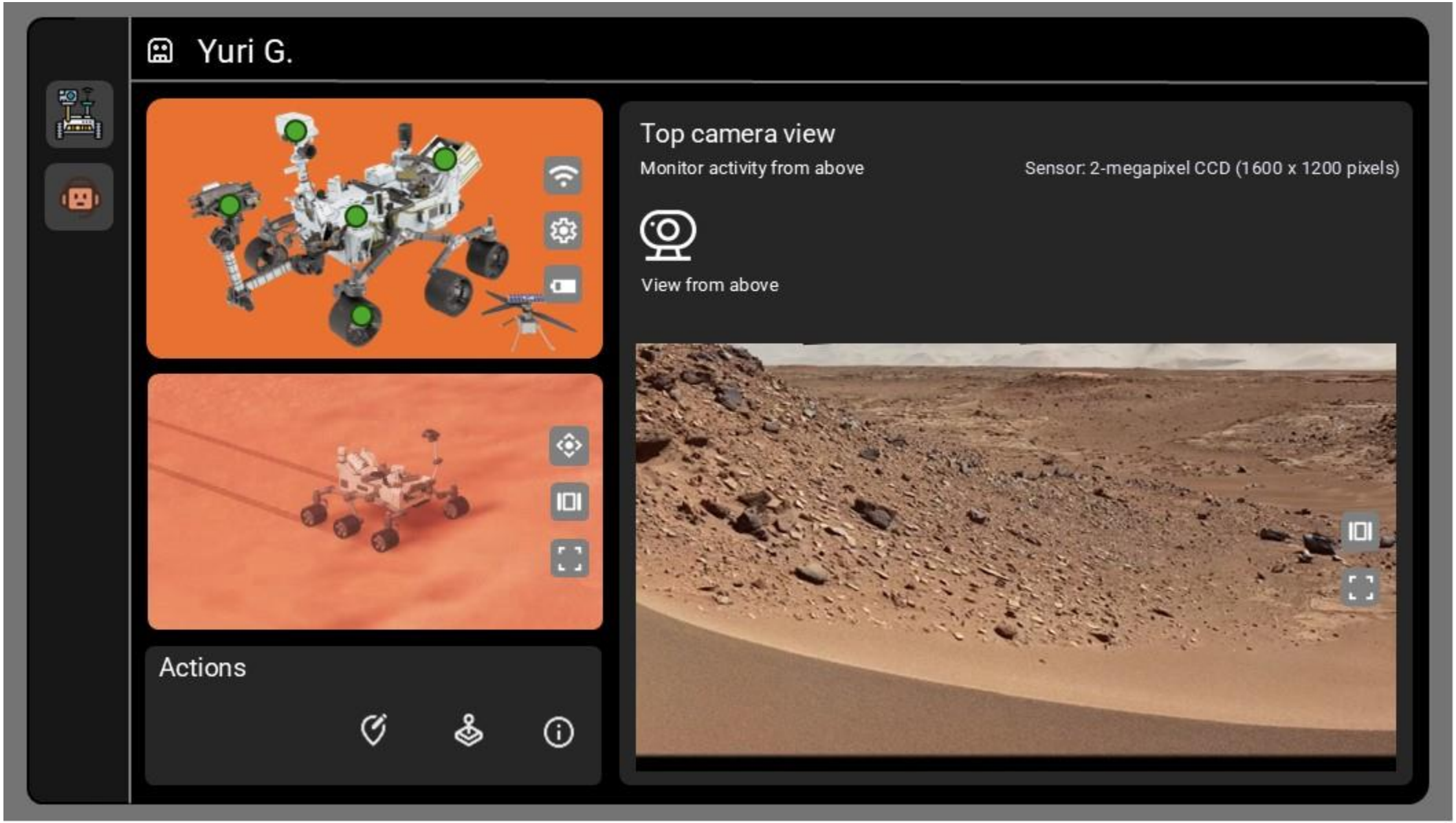
Prototype



Prototype


Yuri G.
Top camera view
Monitor activity from above
Sensor: 2-megapixel CCD (1600 x 1200 pixels)
View from above
Actions

User testing is a usability evaluation method that makes it possible to verify whether interfaces and interaction processes are well designed, and whether users encounter obstacles or difficulties in achieving their goals.

User pain points

- It is difficult to navigate through the interface
- The information of the actions is poor and not understandable
- The information to perform an action is not enough
- Not all actions have easily access through the menu
- Not all the actions have navigation buttons to go where I want
- Prompted information is not enough to make sure that the action has been performed correctly
- Introducing data or navigation is confusing or hard to achieve
- The actions are slow to execute
- I do not trust the interface, I do fear to damage the system
- I am worry about user information being stored in the device

Activity:
User persona

Goal: Create a user persona using the provided worksheet.

Format: Digital.

Due: Last day of the summer school.

Goal: Create a storytelling scenario using the provided worksheet.

Format: Digital or paper submission.

Due: Last day of the summer school.

Activity: Wireframing

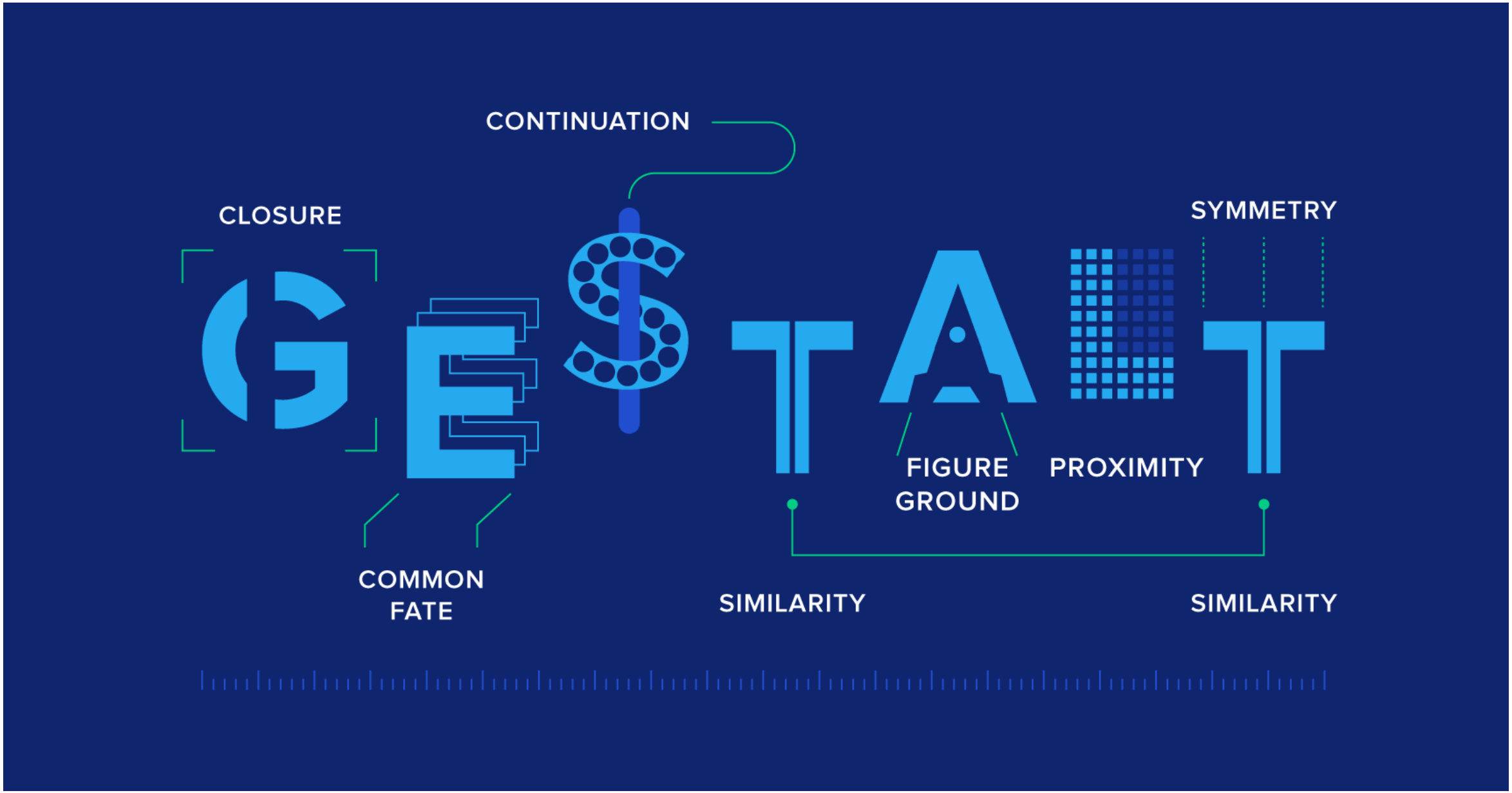
Goal: Create a wireframe or sketch using the provided worksheet.

Format: Digital or paper submission.

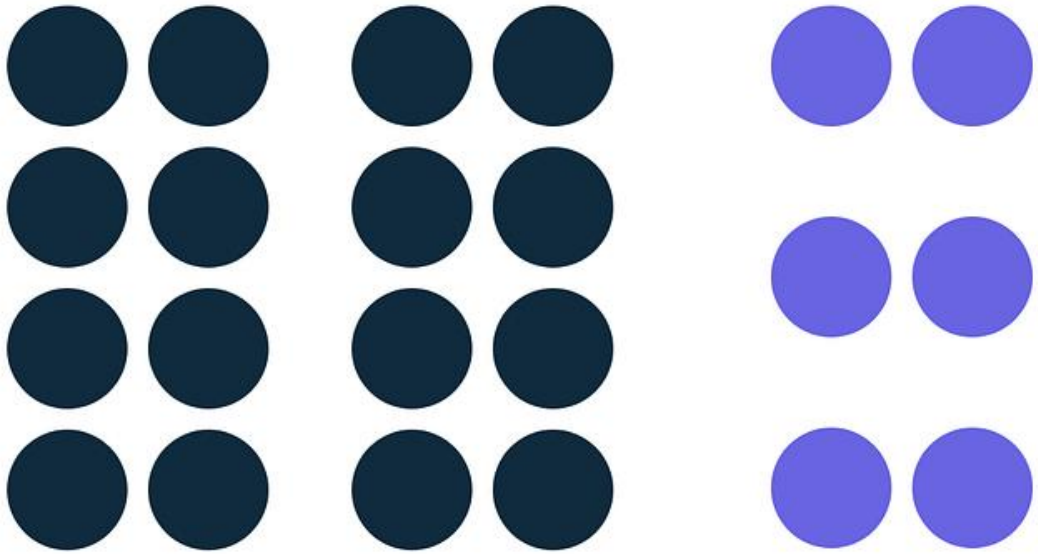
Due: Last day of the summer school.

Gestalt Principles of Design

Principles of design



Objects positioned close together are perceived as being related.



https://www.toptal.com/designers/ui/gestalt-principles-of-design

https://courseux.com/gestalt-psychology-ux-design/

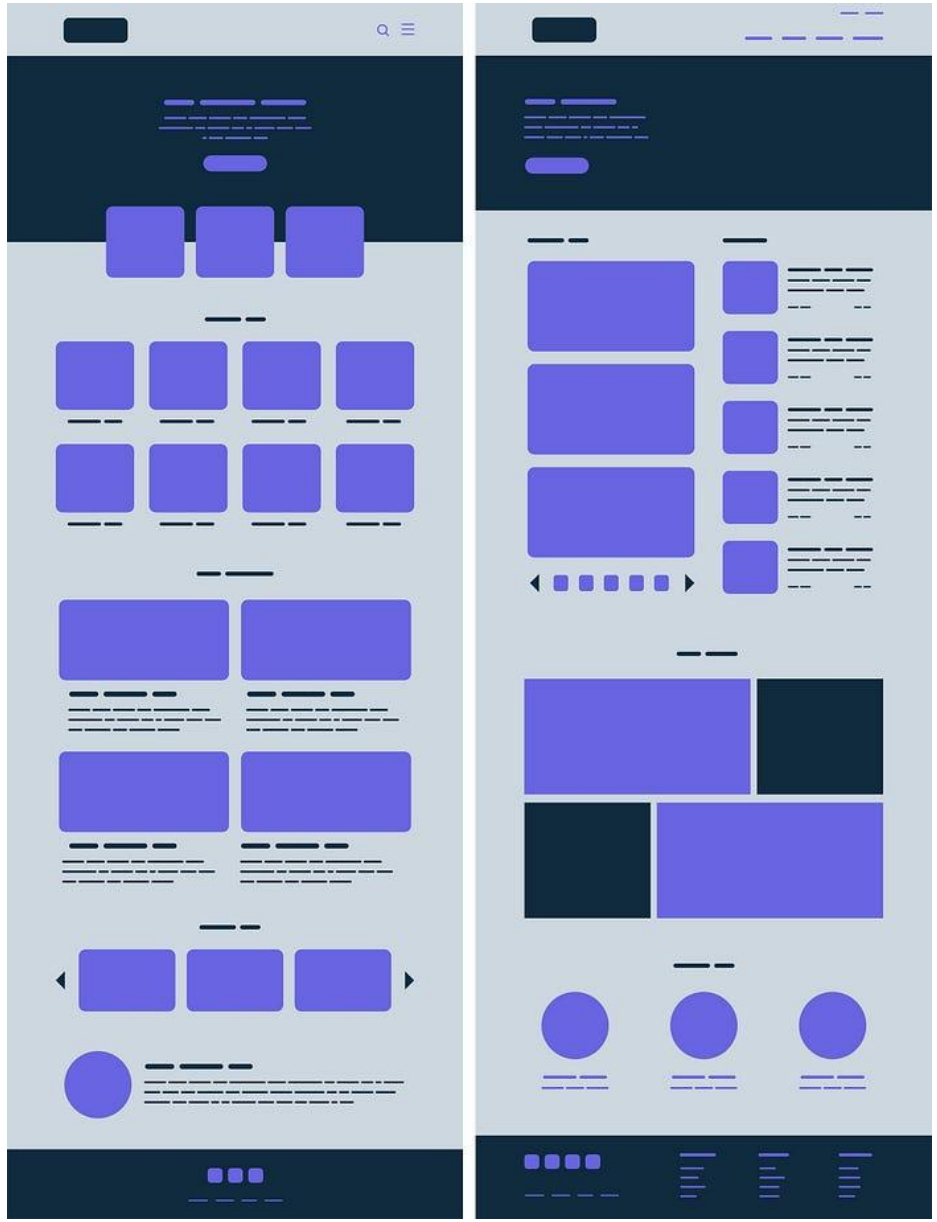
https://medium.muz.li/gestalt-principles-in-ui-design-6b75a41e9965

DO:

- Move related elements closer.
- Increase the space between different groups.
- Use a spacing hierarchy: elements within the same group → related groups → different sections.

DO NOT:

- Don't add borders or lines if proximity is enough.
- A page with the same spacing between every element.
- The brain doesn't know what goes with what and has to "decode" the structure instead of perceiving it.



Visual elements that look alike are perceived as being related.

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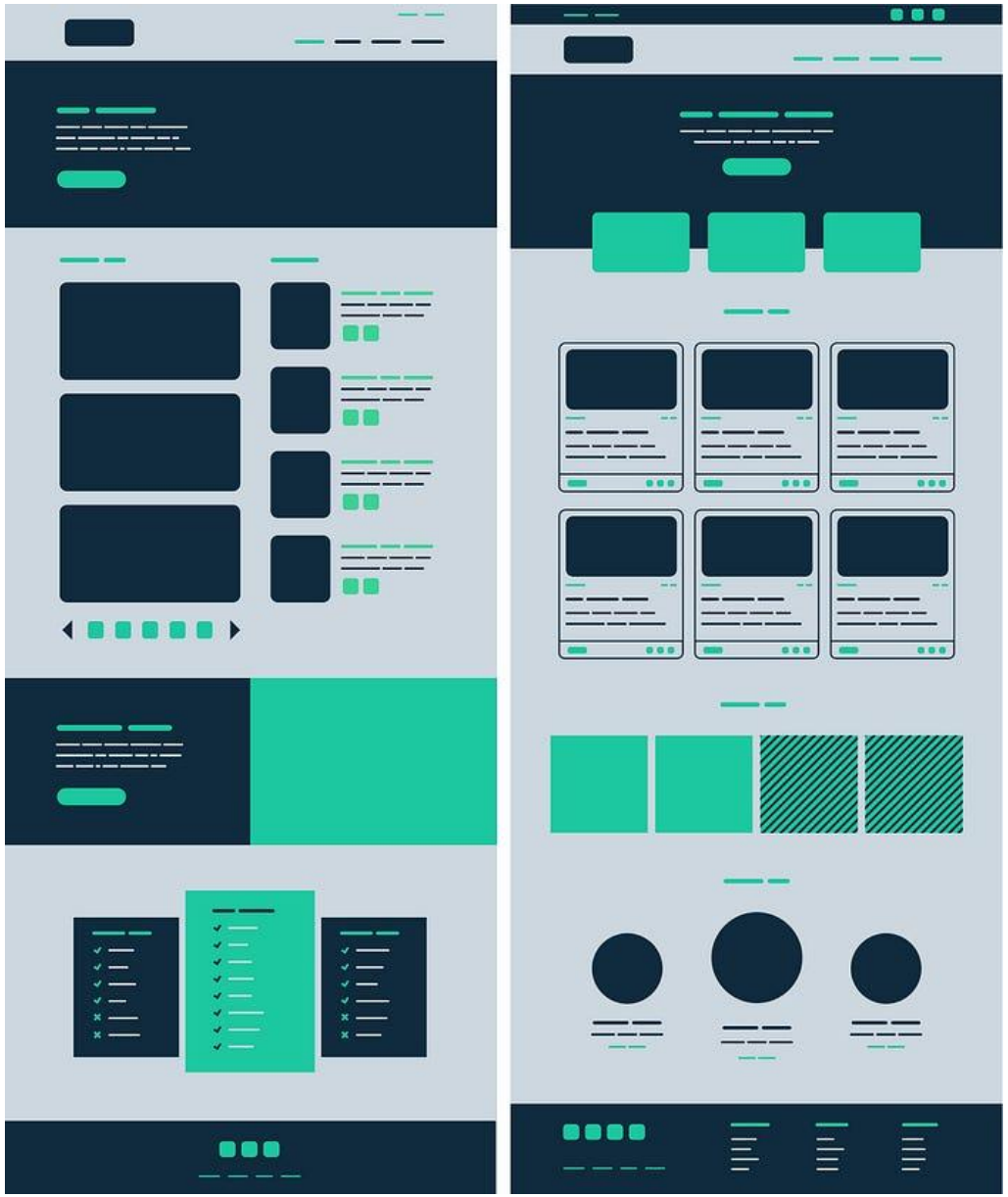
DO:

- Elements with the same function must be visually identical.
- Use color as a categorical code (status tags, warning levels, content types).
- Differentiate roles with different shapes: rectangular buttons for actions, icons for shortcuts, chips for filters.

DO NOT:

- Buttons that look alike but do different things. The user treats them as equivalent and then gets surprised by the consequences.

Similarity



The brain instinctively completes incomplete forms to create something visually coherent.

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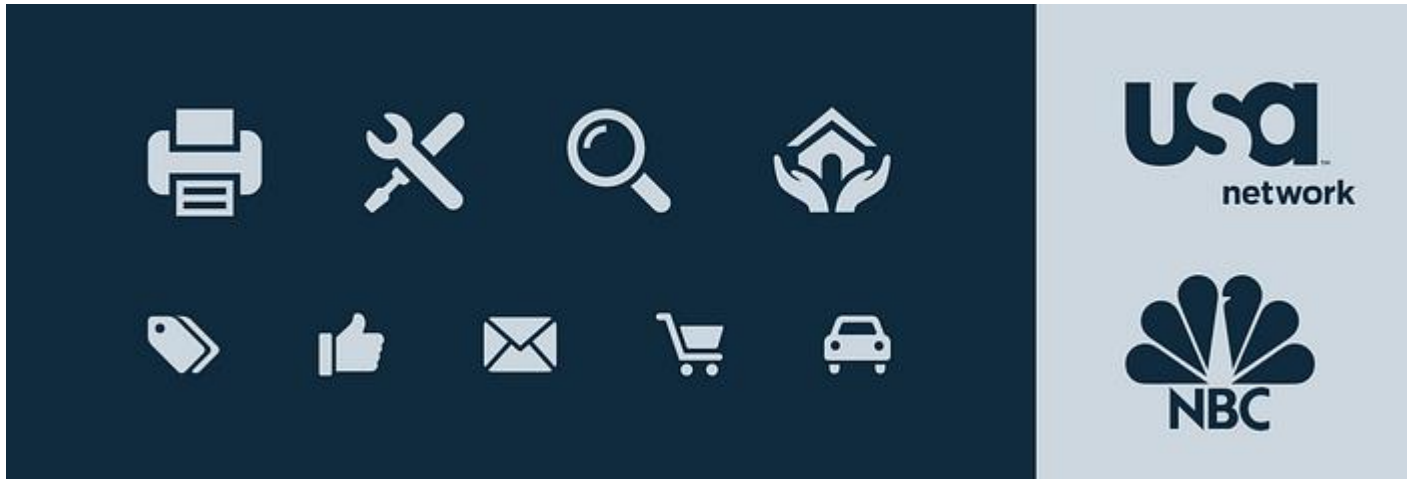
DO:

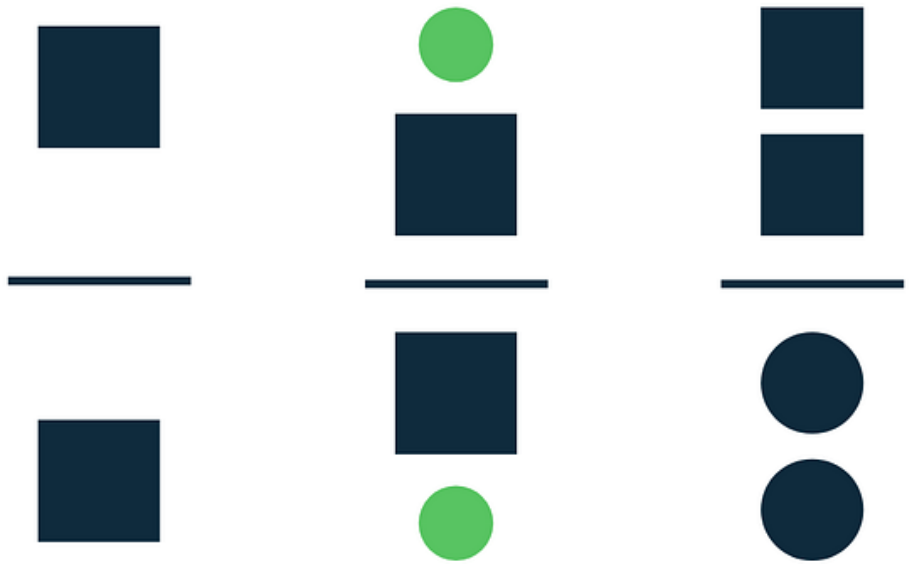
- Icons can be reduced to the essentials: the brain completes the rest.
- Circular progress indicators work because the brain "sees" the full circle even when it's just an arc.
- Minimalist illustrations are powerful because they require active engagement from the viewer.

DO NOT:

- Cramming every space with detail for the sake of "clarity." An over-detailed icon is less recognizable than a stylized one, because it floods the brain with superfluous information.


usa
network
NBC

The brain perceives ambiguous or complex forms in their simplest, most familiar interpretation.



DO:

- Use symmetrical layouts to communicate trustworthiness.
- Use controlled asymmetry to create dynamism.
- Balance the visual weight of elements even when they're not geometrically symmetrical.

DO NOT:

- Accidental asymmetry that looks like an "alignment error" instead of an intentional choice. Asymmetry only works when it's recognizable as a decision.

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Symmetry

The eye tends to follow smooth, continuous lines or paths.

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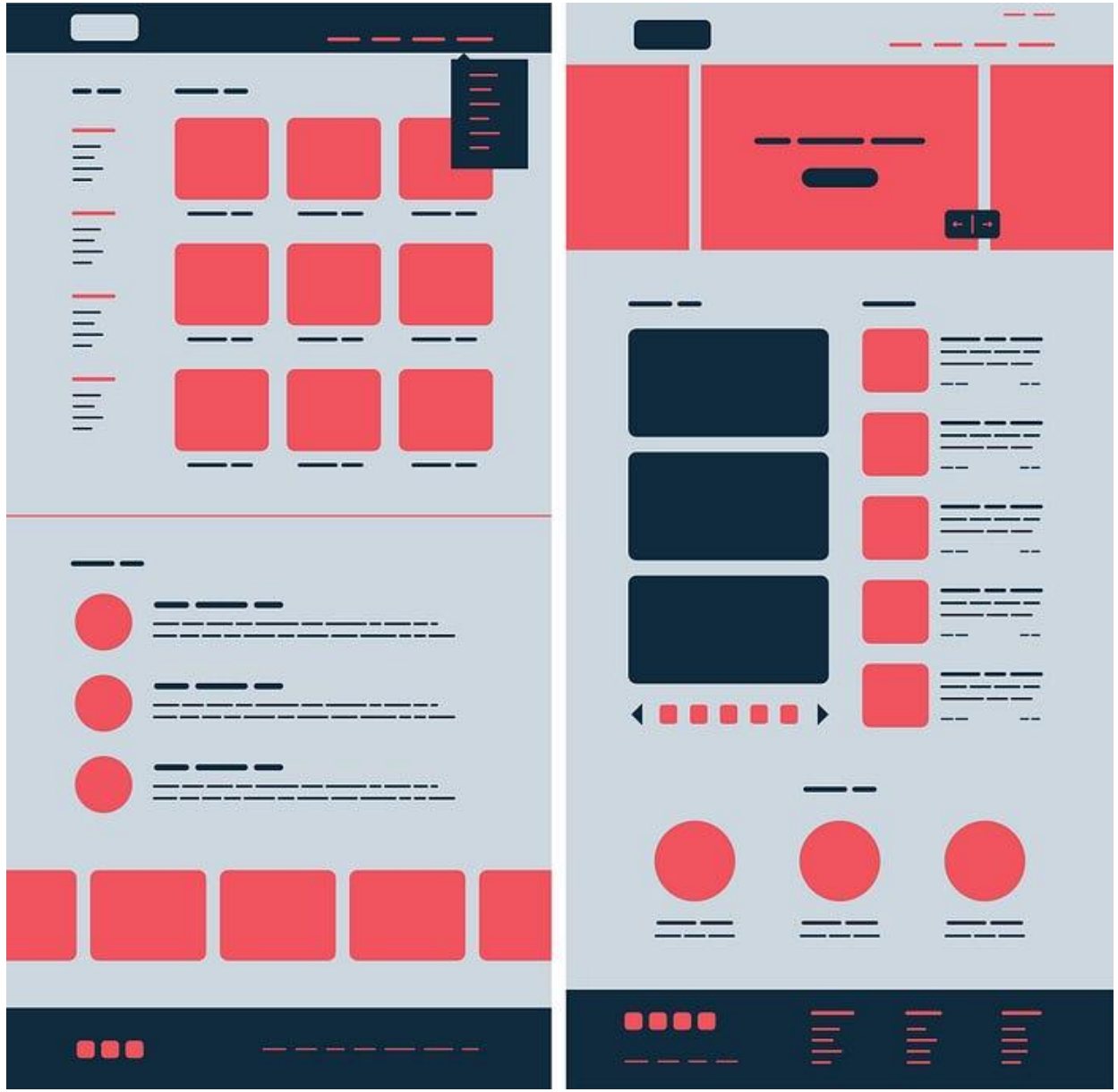
DO:

- Align elements on invisible grids to create lines of continuity.
- Use grid layouts where the brain naturally follows rows and columns.
- Lay out images in a carousel with a "peek" of the next item to suggest scrolling.

DO NOT:

- Arbitrary breaks in a layout. Elements that look "eaten" by others create unpleasant visual discontinuities.



Objects that move in the same direction are perceived as a group.

DO:

- Use synchronized animations for related elements.
- Use distinct animations for elements that need to feel separate.
- In tab switches, animate transitions together to signal "this is an alternate view of the same object“.

DO NOT:

- Chaotic animations where every element has its own timing, producing confusion instead of hierarchy.

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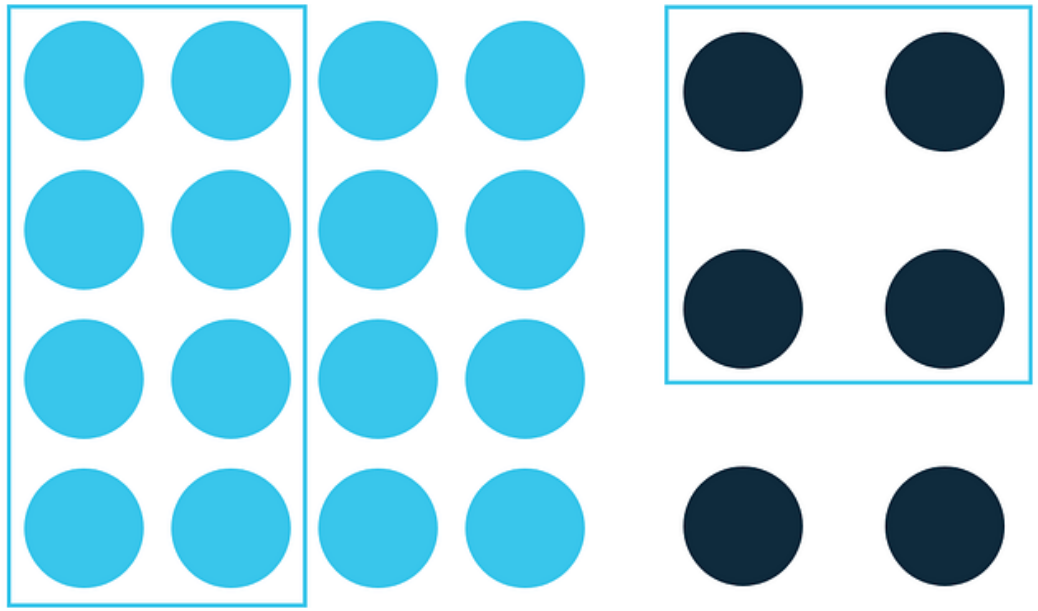
Common fate

Elements within the same bounded area are seen as related.



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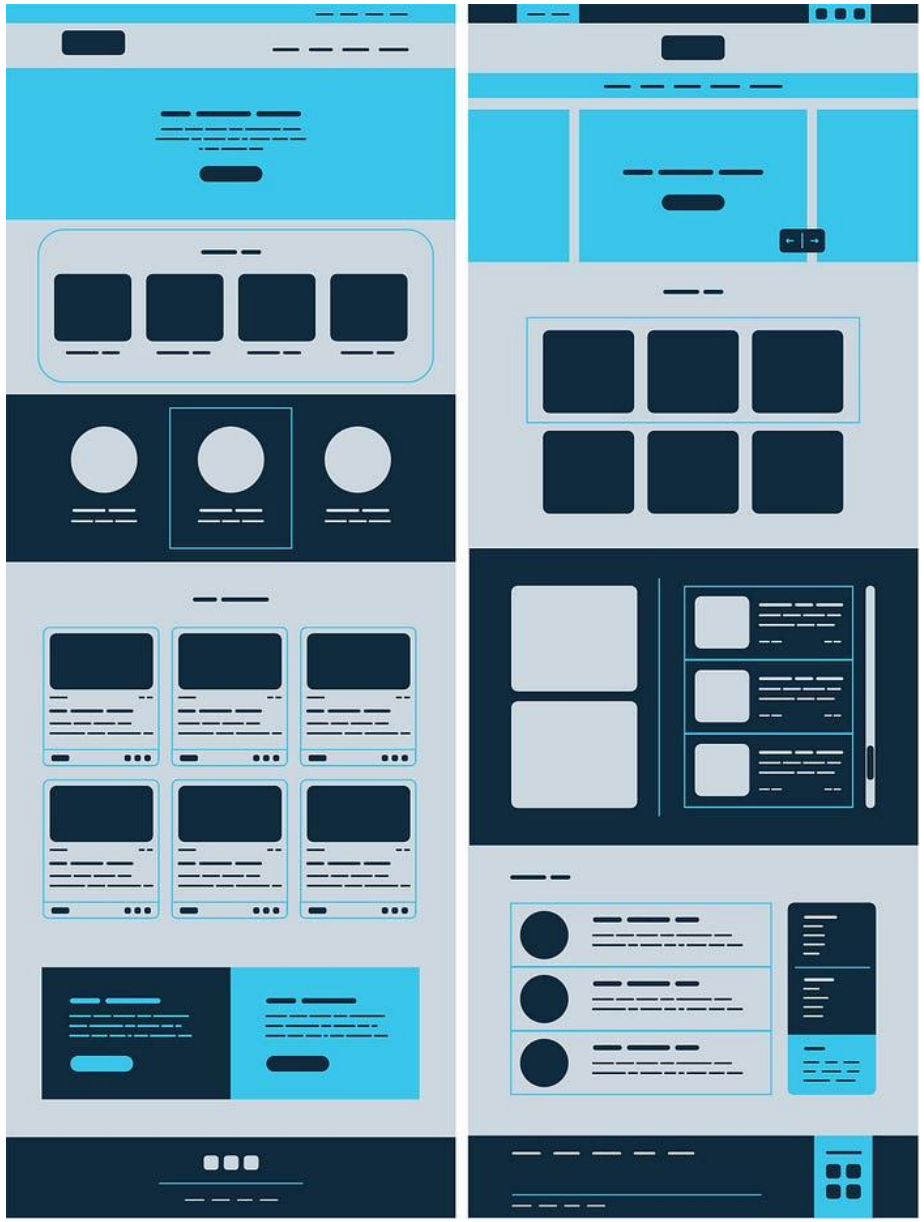
DO:

- Wrap related content in cards, panels, or sections with a distinct background or border to signal grouping immediately.
- Uniform padding and margins inside a region reinforce that the elements belong together and improve readability.
- Use slight background color changes, shadows, or outlines to distinguish one region from another without overwhelming the design.

DO NOT:

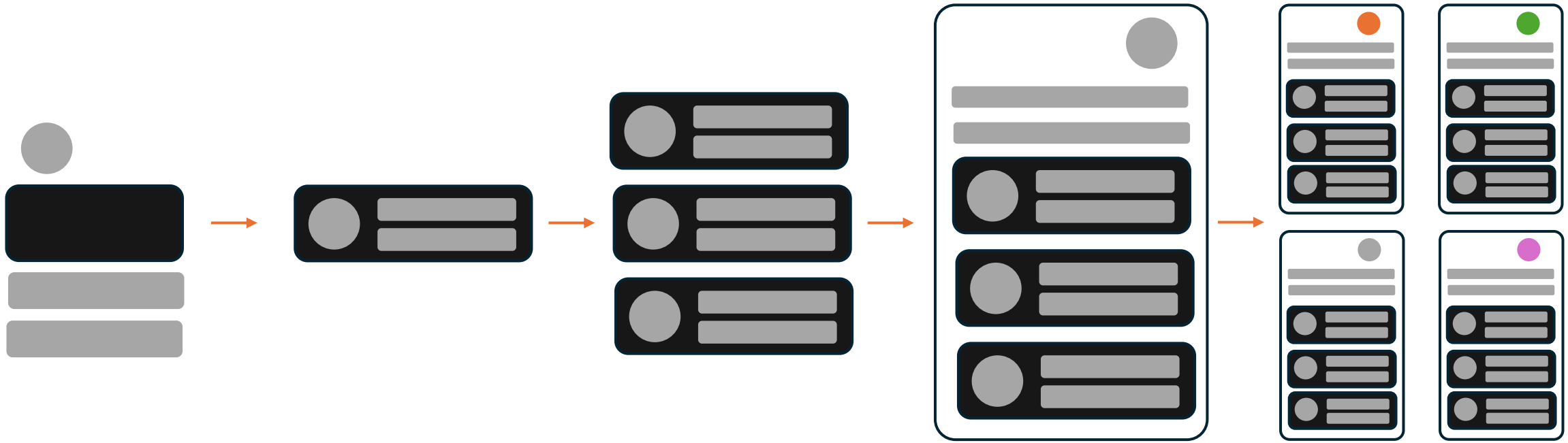
- If items overlap boundaries or the container isn't clearly defined, users won't perceive the grouping correctly—undermining the principle.

Common region

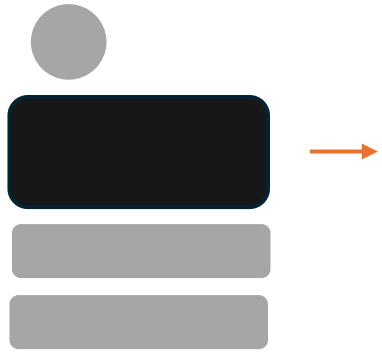


Atomic design

Atomic design



Atoms Molecules Organisms Templates Pages



Atoms

Controller gain B

Gain of the integral component (*Ki*)

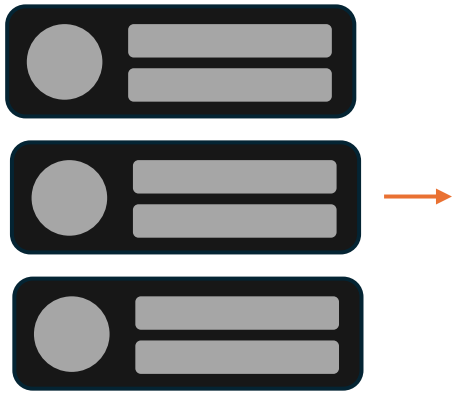
Settings for *Ki*

Controller gain B

Gain of the integral component (*Ki*)

Settings for *Ki*

Molecules



Organisms

Controller gain A

Gain of the proportional component (*Kp*)

Settings for *Kp*

Controller gain B

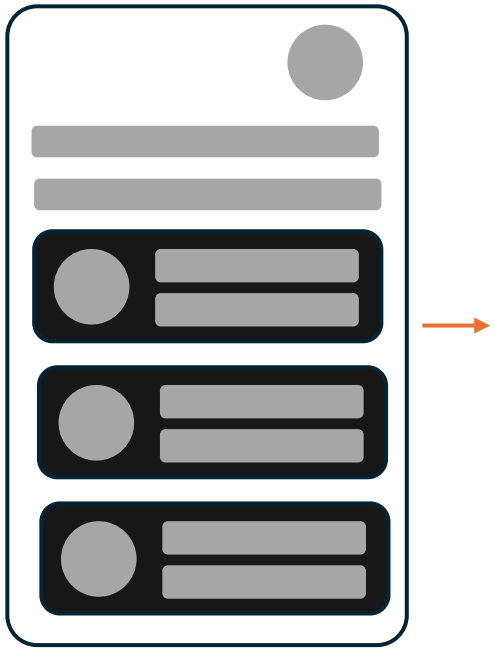
Gain of the integral component (*Ki*)

Settings for *Ki*

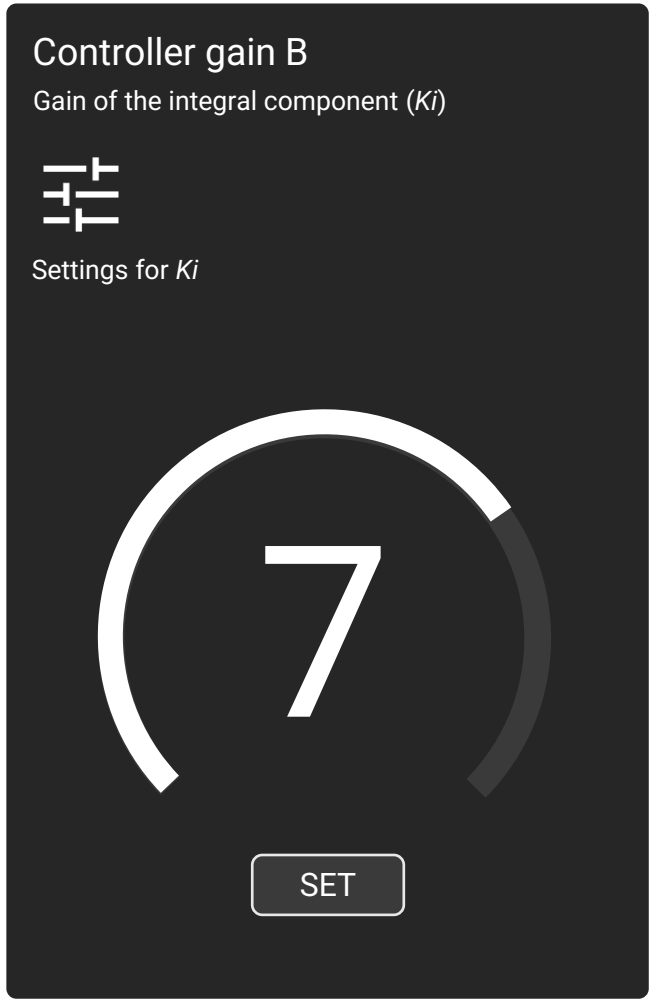
Controller gain C

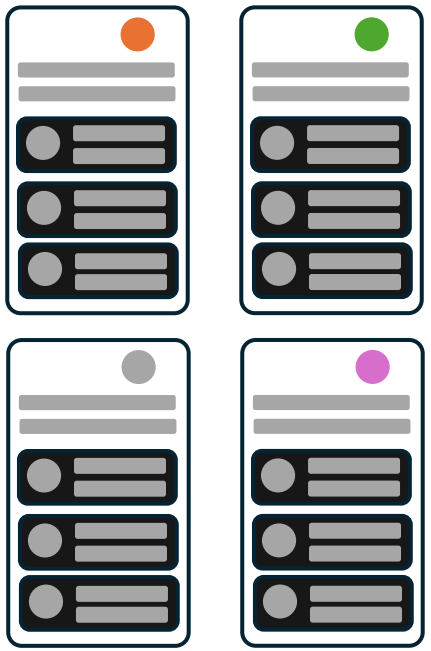
Gain of the derivative component (*Kd*)

Settings for *Kd*

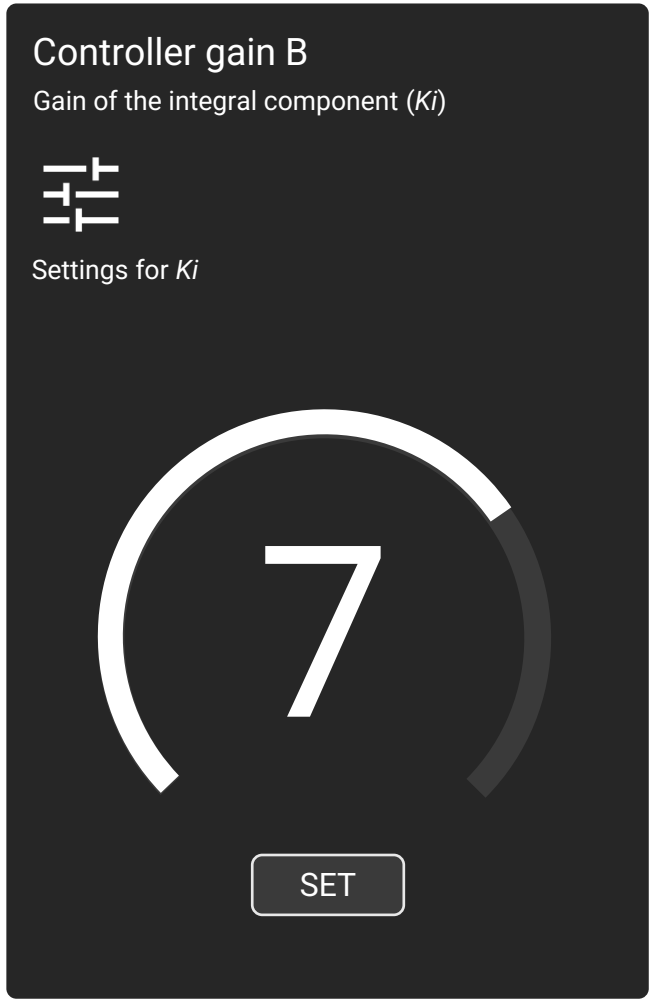


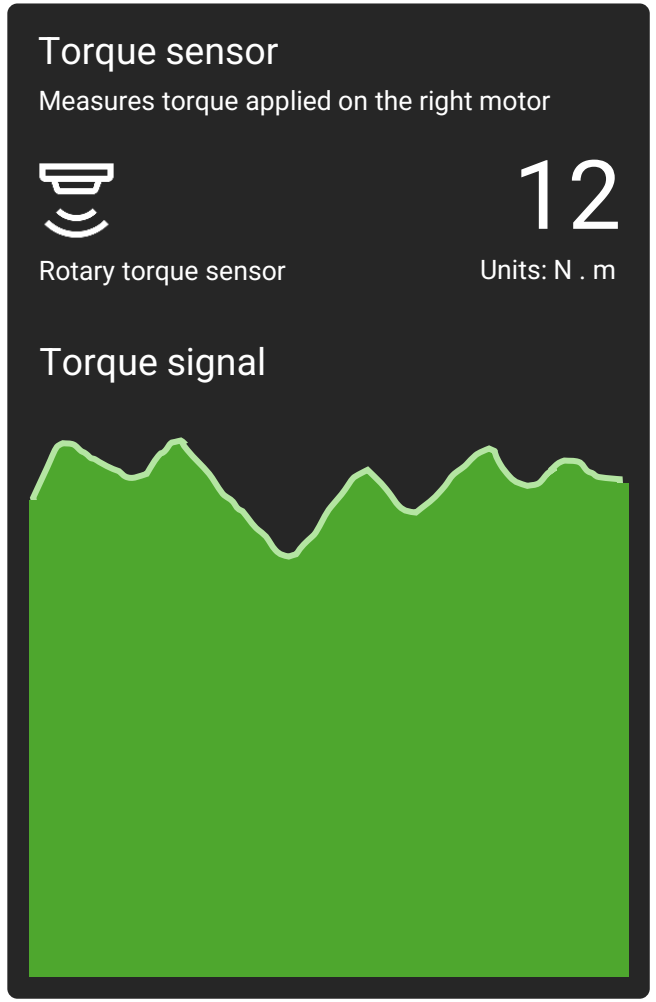
Templates


Controller gain B
Gain of the integral component (Ki)
Settings for Ki
7
SET



Pages


Controller gain B
Gain of the integral component (Ki)
Settings for Ki
7
SET


Torque sensor
Measures torque applied on the right motor
12
Rotary torque sensor
Units: N . m
Torque signal

10 Usability Heuristics for User Interface Design

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Jakob Nielsen

NN/g Nielsen Norman Group

World Leaders in Research-Based User Experience

https://www.linkedin.com/in/jakobnielsenphd/

https://www.nngroup.com

Jakob's Heuristic

1 Visibility *of* System Status

Definition The design should **always keep users informed** about what is going on, through appropriate feedback within a reasonable amount of time.

Knowing what the current system status is can help users learn the outcome of their prior interactions and determine next steps.

Predictible interactions create trust in the product as well as the brand.

Tip: Communicate *clearly* to users what the system's state is — no action with consequences to users should be taken without informing them.

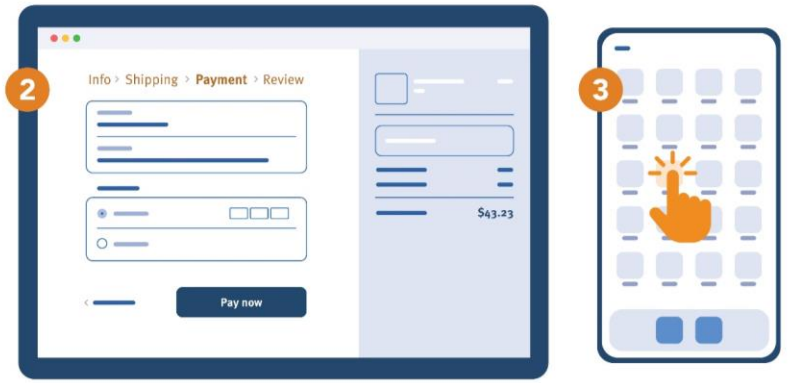
Tip: Present feedback to the user as *quickly* as possible.

Tip: Build *trust* through open and continuous communication.

1 ***"You Are Here" maps***
Interactive mall maps have to show people where they currently are, to help them understand where to go next.

2 ***Checkout flow***
Multistep processes show users which steps they've completed, they're currently working on, and what comes next.

3 ***Phone tap***
Touchscreen UIs need to reassure users that their taps have an effect — often through visual change or haptic feedback.



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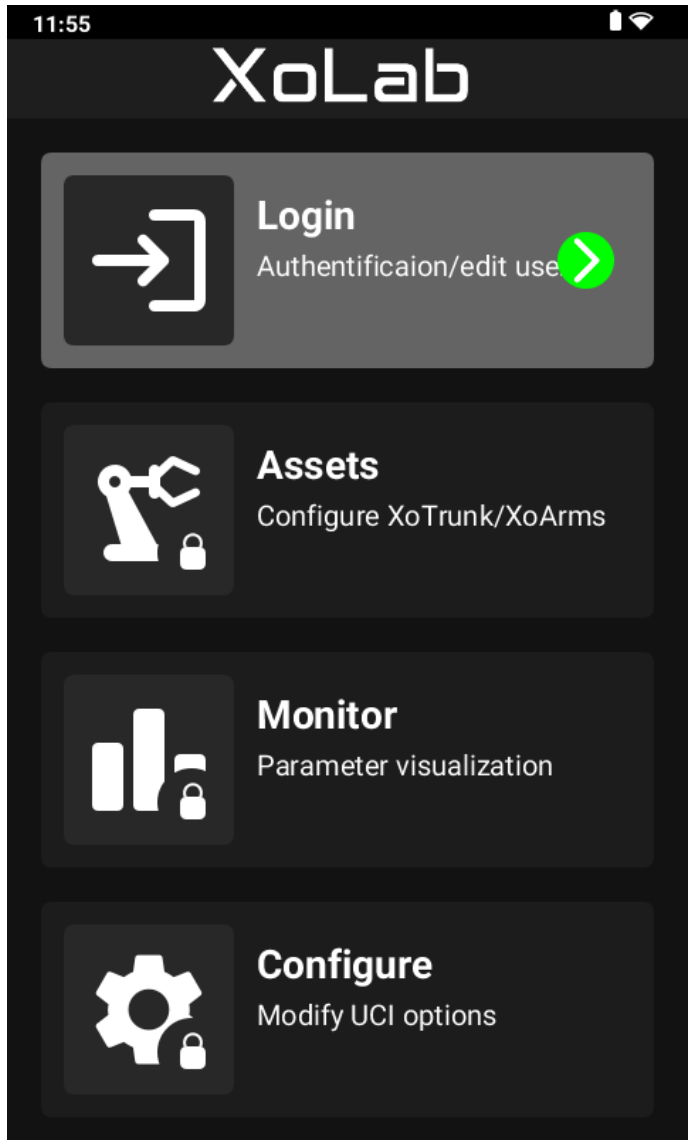
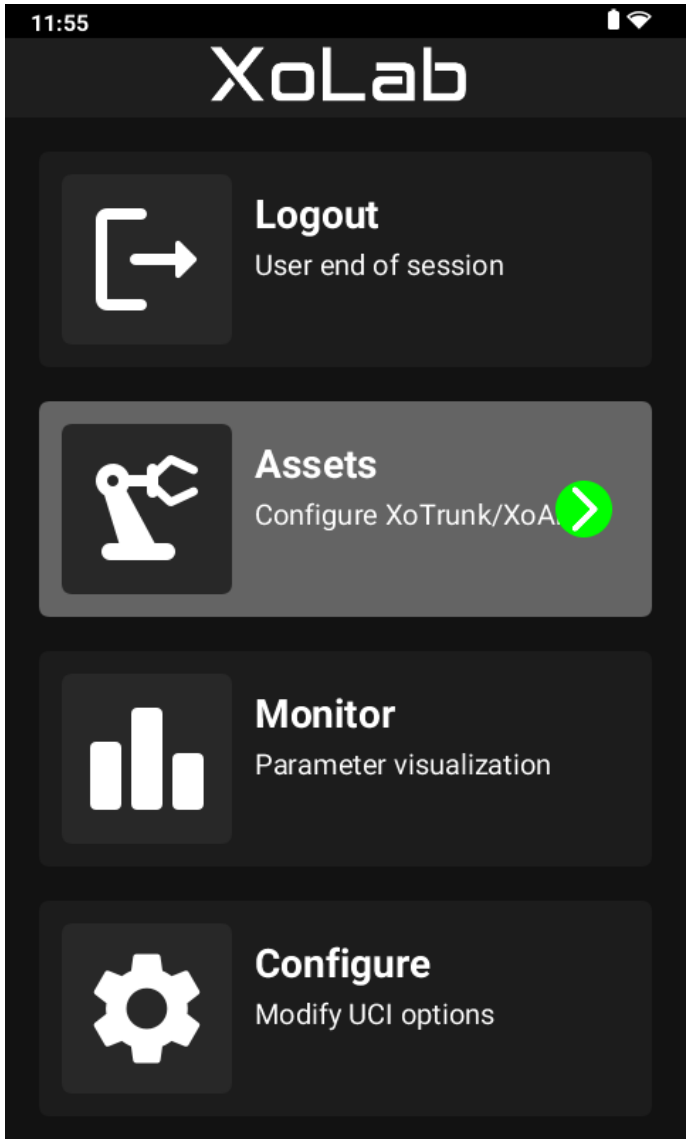
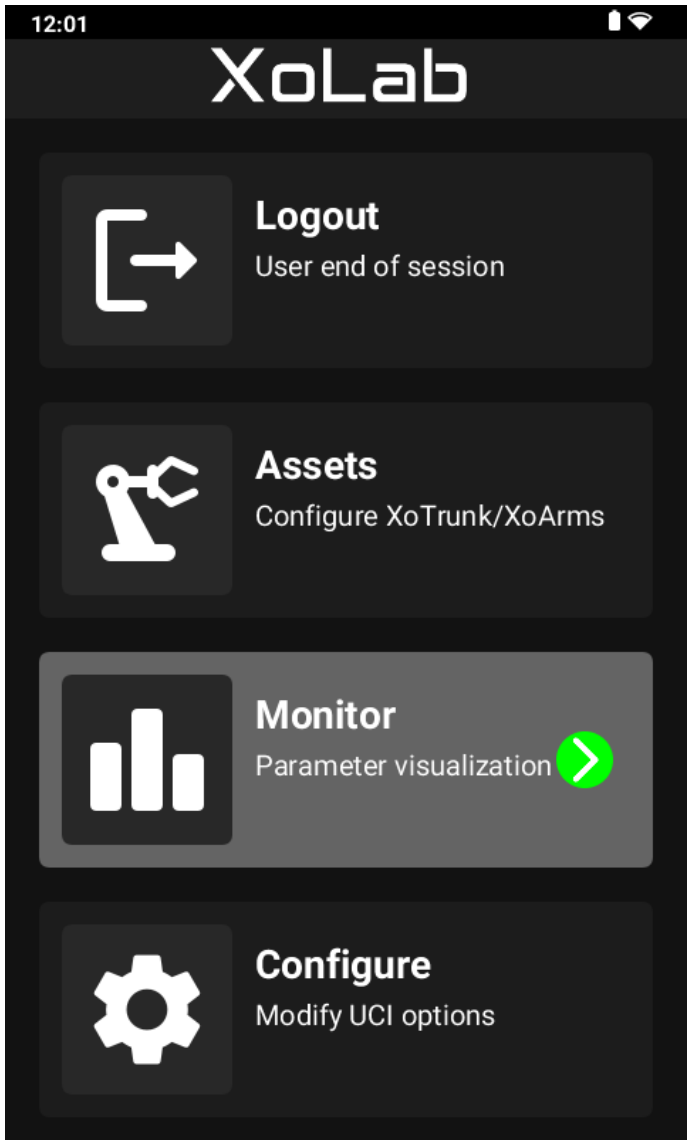
www.nngroup.com/articles/visibility-system-status/

1 Visibility of system status







Jakob's Heuristic

2 Match between System *and* the Real World

Definition The design should speak the users' language. Use words, phrases, and concepts **familiar to the user,** rather than internal jargon. Follow real-world conventions, making information appear in a natural and logical order.

The language you should use depends very much on your specific users.

Tip: Ensure users can *understand* meaning without having to go look up a word's definition.

Tip: Never *assume* your understanding of words or concepts will match those of your users.

Tip: User research will help you uncover your users' familiar terminology, as well as their mental models around important concepts.

1 ***Stovetop controls***
When stovetop controls match the layout of heating elements, users can quickly understand which control maps to each heating element.

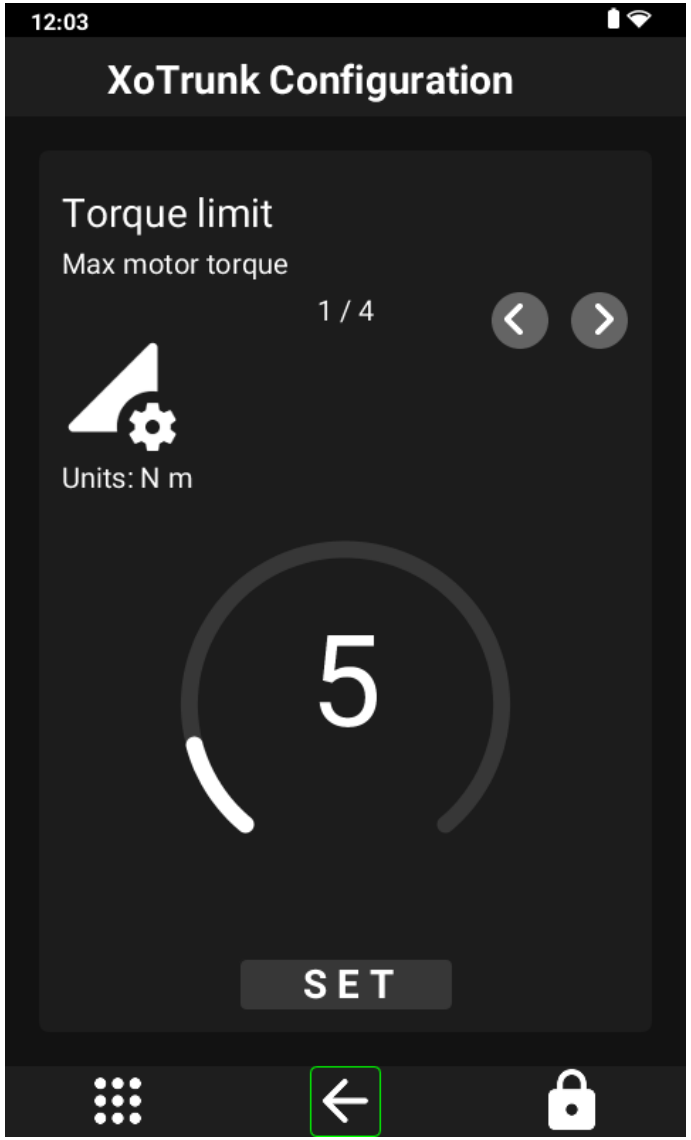
2 ***"Car" vs. "automobile"***
If users think about this object as a "car," use that as the label instead.

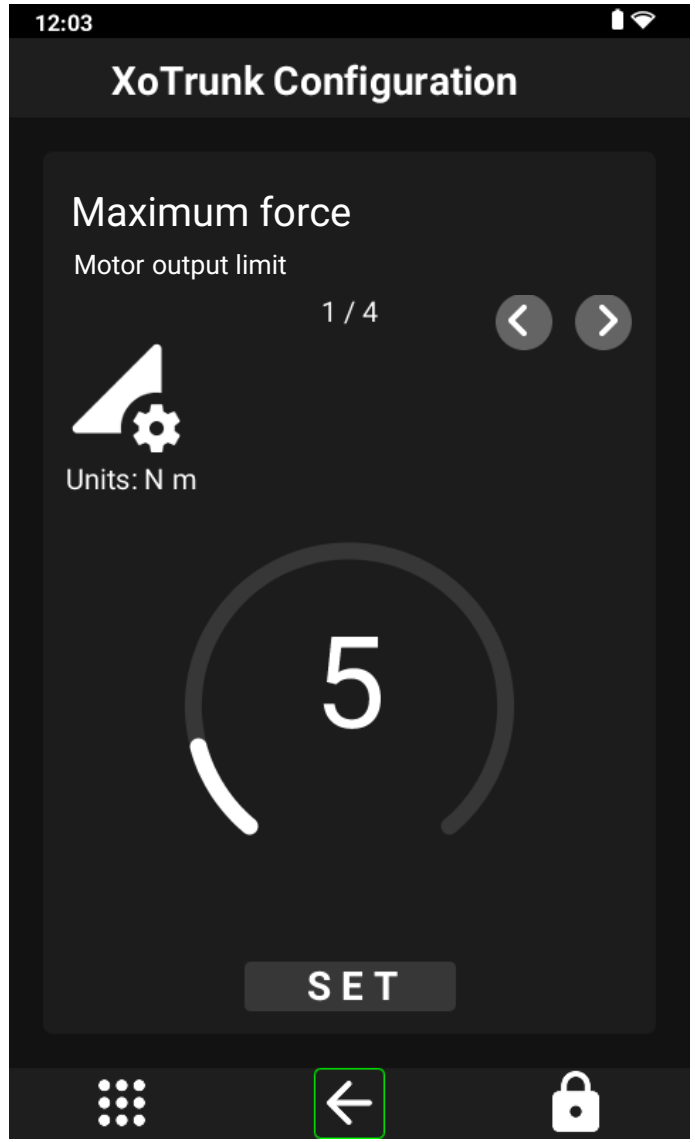
3 ***Shopping cart icon***
A shopping cart icon is easily recognizable because that feature serves the same purpose as its real-life counterpart.

NN/g

www.nngroup.com/articles/match-system-real-world/

2 Match system vs real world





Jakob's Heuristic

3 User Control *and* Freedom

Definition Users often perform actions by mistake. They **need a clearly marked "emergency exit"** to leave the unwanted action without having to go through an extended process.

When it's easy for people to back out of a process or undo an action, it fosters a sense of freedom and confidence.

Exits allow users to remain in control of the system and avoid getting stuck and feeling frustrated.

Tip: Support *Undo* and *Redo*.

Tip: Show a clear way to *exit* the current interaction, like a "Cancel" button.

Tip: Make sure the exit is clearly *labeled* and discoverable.

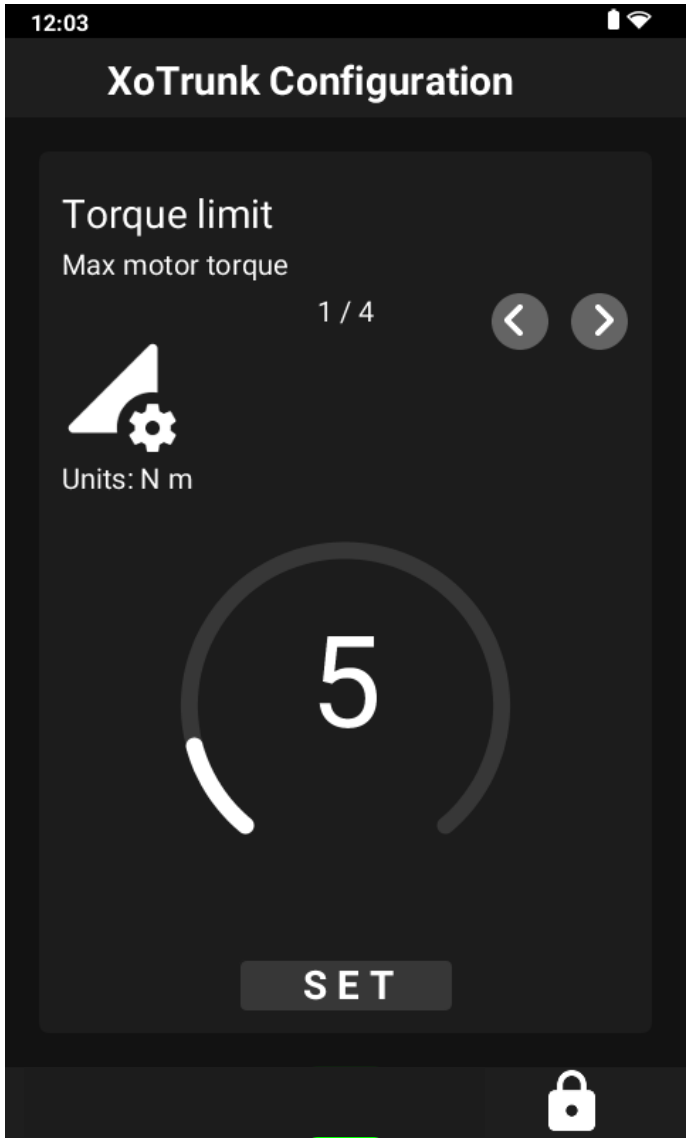
1 ***Exit sign***
Digital spaces need quick "emergency" exits, just like physical spaces do.

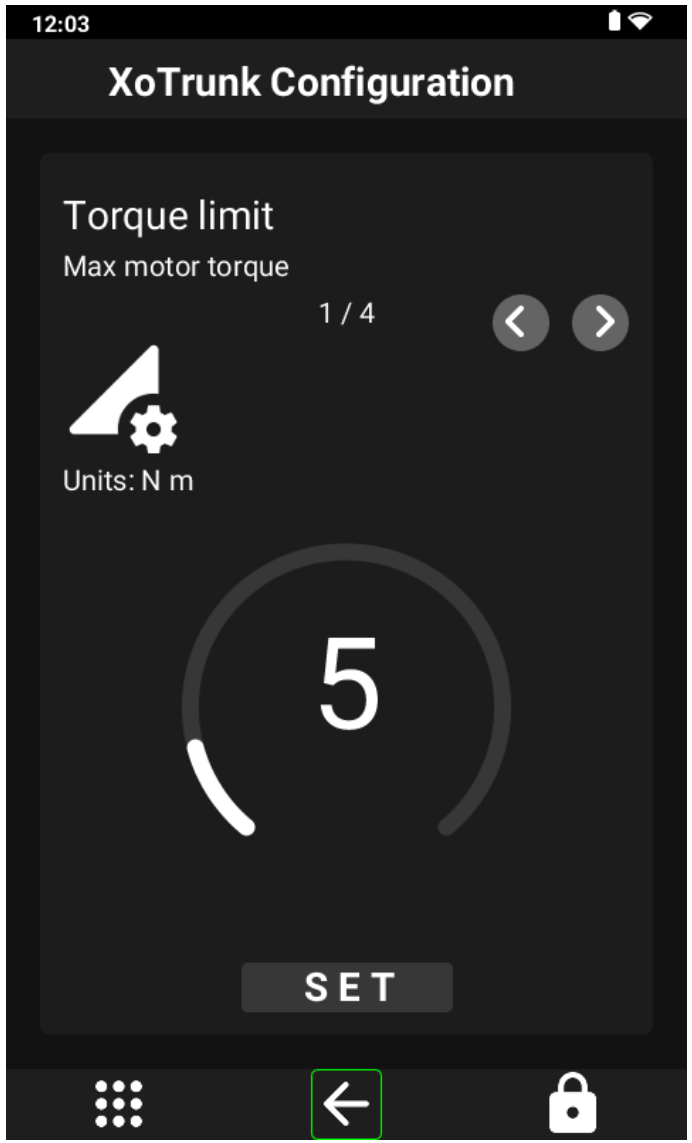
2 ***Undo and redo***
These functions give users freedom because they don't have worry about their actions — everything is easily reversible.

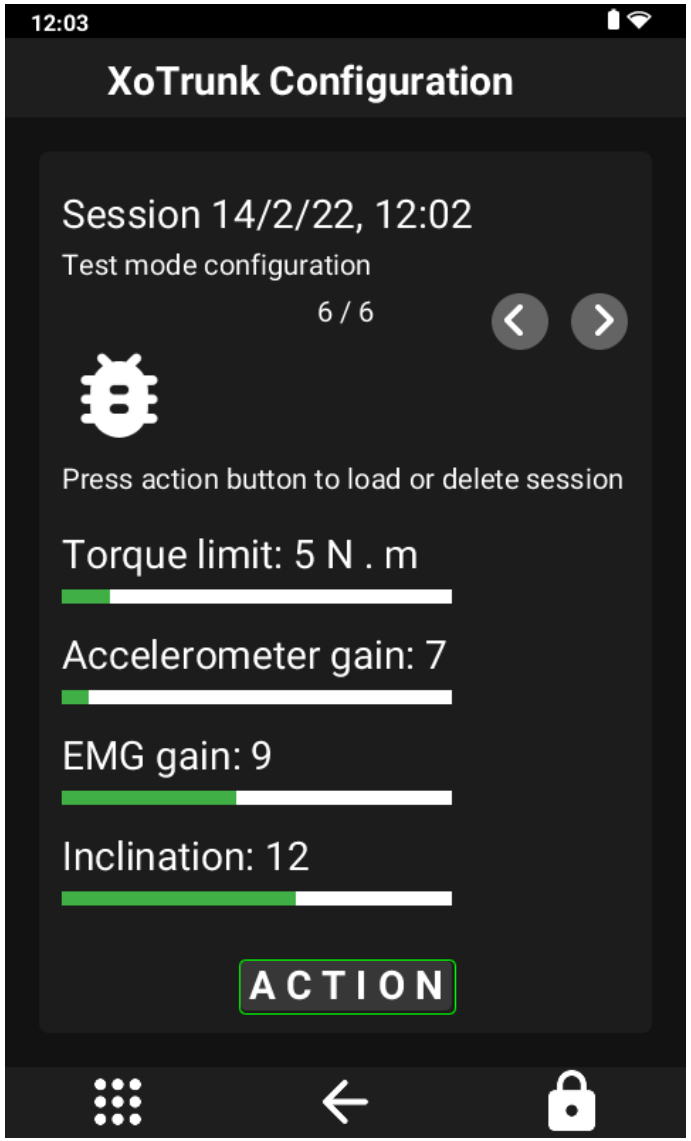
3 ***Cancel button***
Users shouldn't have to commit to a process once it's started — they should be able to easily cancel and abandon.

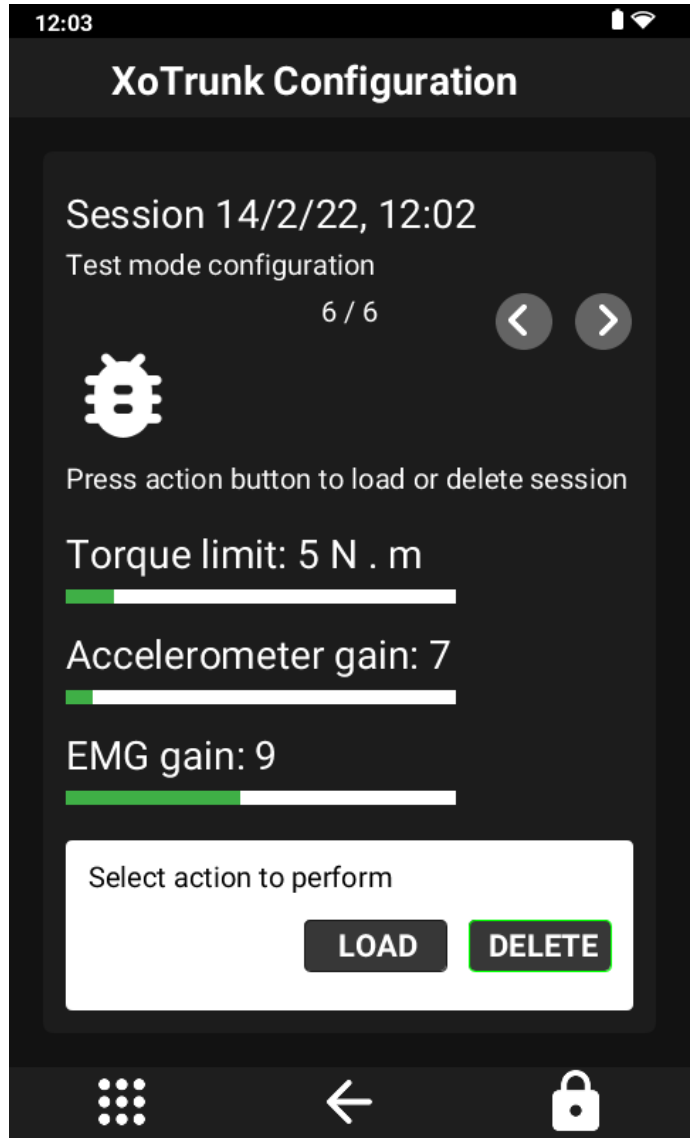
NN/g

www.nngroup.com/articles/user-control-and-freedom


12:03
XoTrunk Configuration
Torque limit
Max motor torque
1 / 4
Units: N m
5
SET


12:03
XoTrunk Configuration
Torque limit
Max motor torque
1 / 4
Units: N m
5
SET


12:03
XoTrunk Configuration
Session 14/2/22, 12:02
Test mode configuration
6 / 6
Press action button to load or delete session
Torque limit: 5 N . m
Accelerometer gain: 7
EMG gain: 9
Inclination: 12
ACTION


12:03
XoTrunk Configuration
Session 14/2/22, 12:02
Test mode configuration
6 / 6
Press action button to load or delete session
Torque limit: 5 N . m
Accelerometer gain: 7
EMG gain: 9
Select action to perform
LOAD
DELETE

Jakob's Heuristic

4 Consistency *and* Standards

Definition Users should not have to wonder whether different words, situations, or actions mean the same thing. **Follow platform and industry conventions.**

Jakob's Law states that people spend most of their time on products other than yours. Failing to maintain consistency may increase the users' cognitive load by forcing them to learn something new.

Tip: Improve learnability by maintaining *both* types of consistency: internal and external.

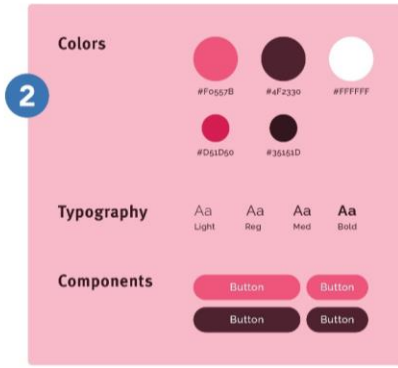
Tip: Maintain consistency within a single product or a family of products (*internal* consistency).

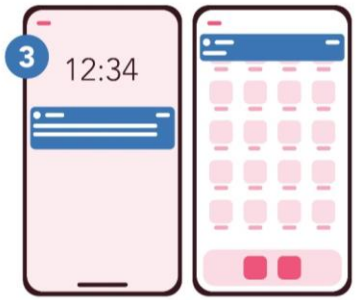
Tip: Follow established industry conventions (*external* consistency).

1 ***Check-in counter***
Check-in counters are usually located at the front of hotels. This consistency meets customers' expectations.

2 ***Design system***
Using elements from the same design system across the product lines lowers the learning curve of users.

3 ***Notifications***
A standardized notification design provides a similar but distinguishable look and feel for different app pop-ups.





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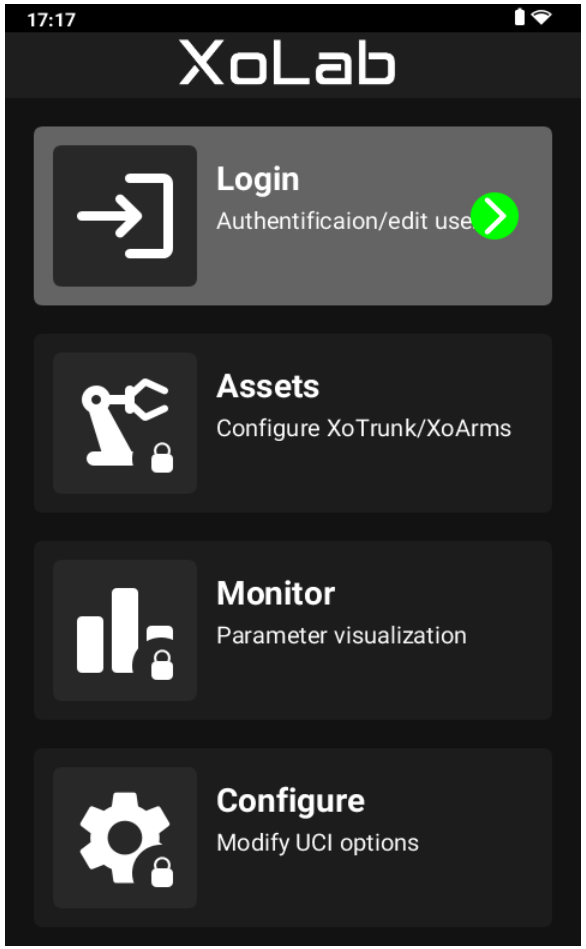
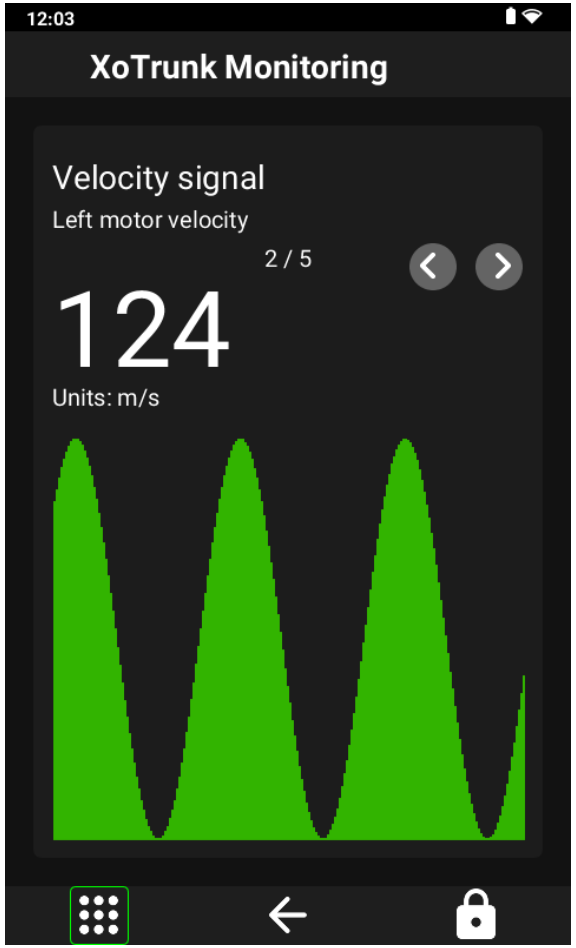
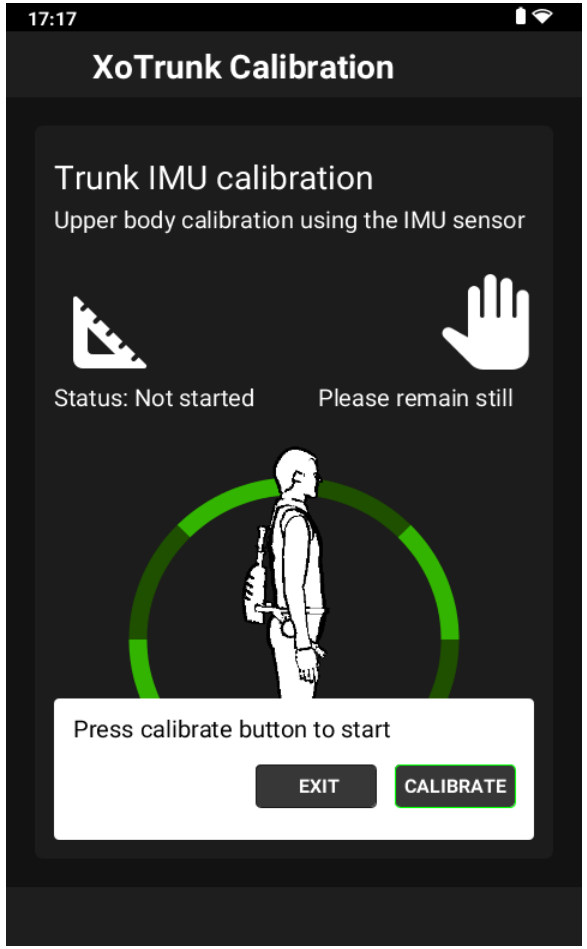
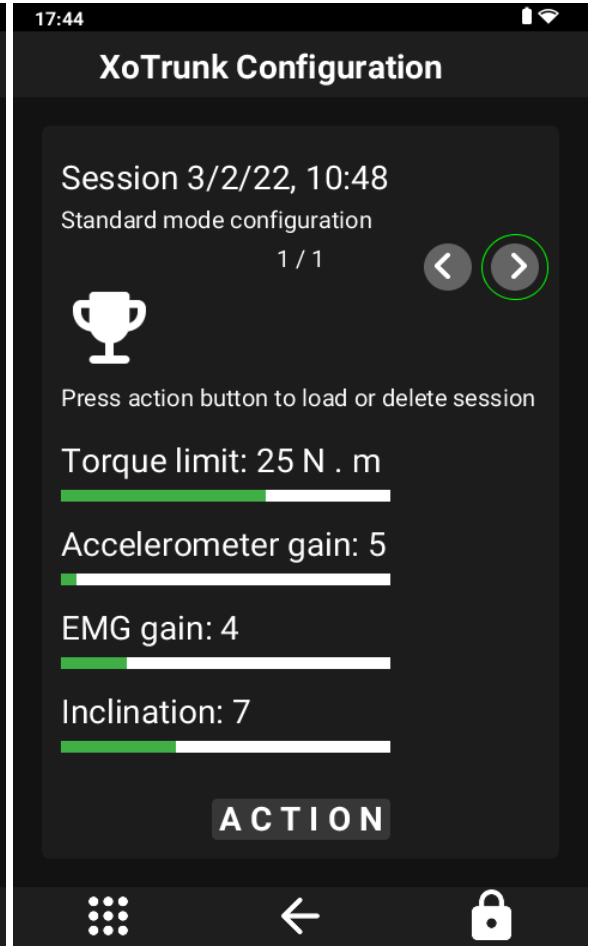
www.nngroup.com/articles/consistency-and-standards/


17:17
XoLab
Login
Authentificaion/edit use
Assets
Configure XoTrunk/XoArms
Monitor
Parameter visualization
Configure
Modify UCI options


12:03
XoTrunk Monitoring
Velocity signal
Left motor velocity
2 / 5
124
Units: m/s


17:17
XoTrunk Calibration
Trunk IMU calibration
Upper body calibration using the IMU sensor
Status: Not started
Please remain still
Press calibrate button to start
EXIT
CALIBRATE


17:44
XoTrunk Configuration
Session 3/2/22, 10:48
Standard mode configuration
1 / 1
Press action button to load or delete session
Torque limit: 25 N . m
Accelerometer gain: 5
EMG gain: 4
Inclination: 7
ACTION

Jakob's Heuristic

5 Error Prevention

Definition Good error messages are important, but the best designs **carefully prevent problems** from occuring in the first place. Either eliminate error-prone conditions, or check for them and present users with a confirmation option before they commit to the action.

There are two types of errors: slips and mistakes.

Slips are unconscious errors caused by inattention.

Mistakes are conscious errors based on a mismatch between the user's mental model and the design.

Tip: *Prioritize* your effort: Prevent high-cost errors first, then little frustrations.

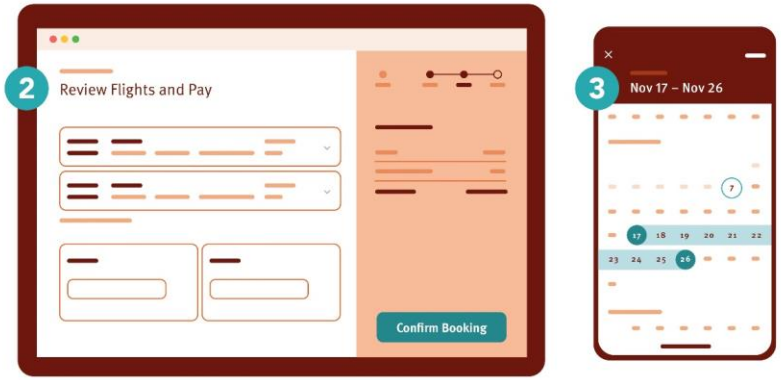
Tip: Avoid slips by providing helpful *constraints* and good defaults.

Tip: Prevent *mistakes* by removing memory burdens, supporting undo, and warning your users.

1 ***Guard rails***
Guard rails on curvy mountain roads prevent drivers from falling off of cliffs.

2 ***Airline confirmation***
The confirmation page before checking out on airline websites gives users another chance to review the flight details.

3 ***Date selection on calendar***
Offer good defaults and set boundaries when people book services by dates. Grey out unavailable options.



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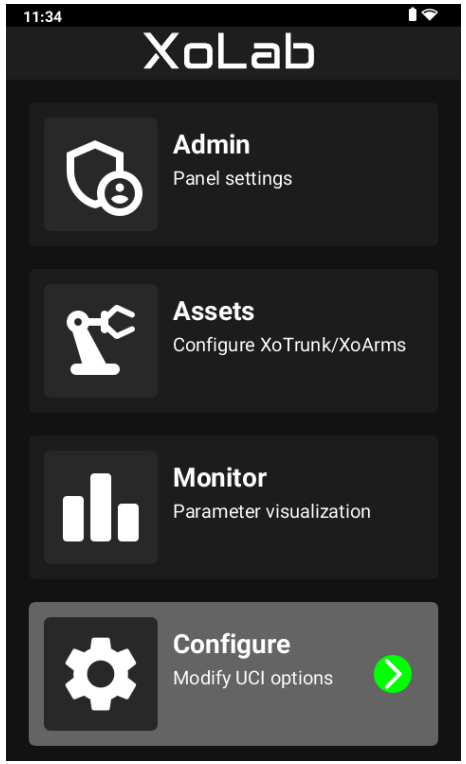
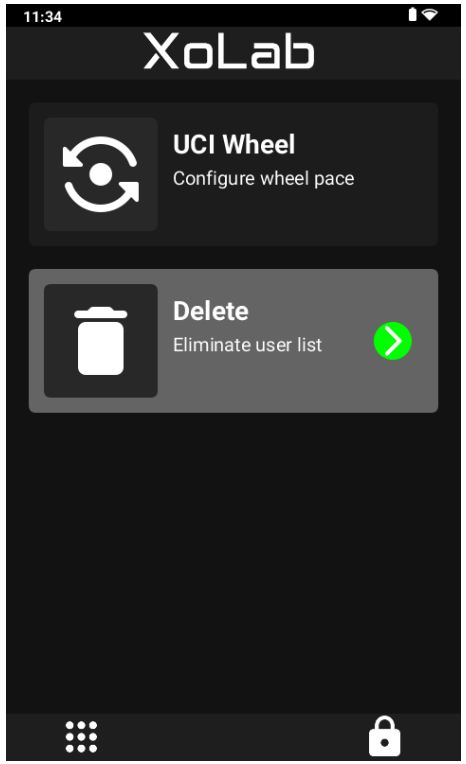
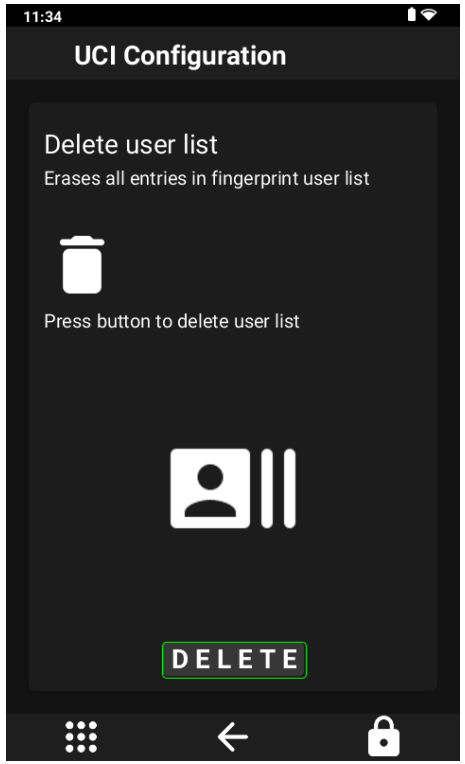
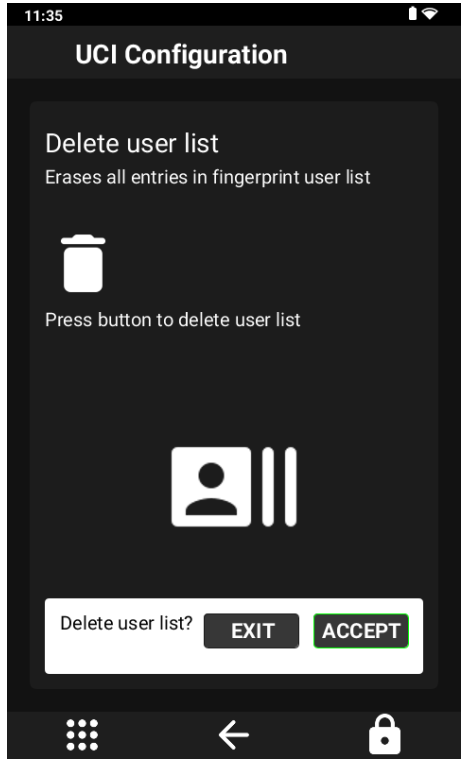
www.nngroup.com/articles/slips/

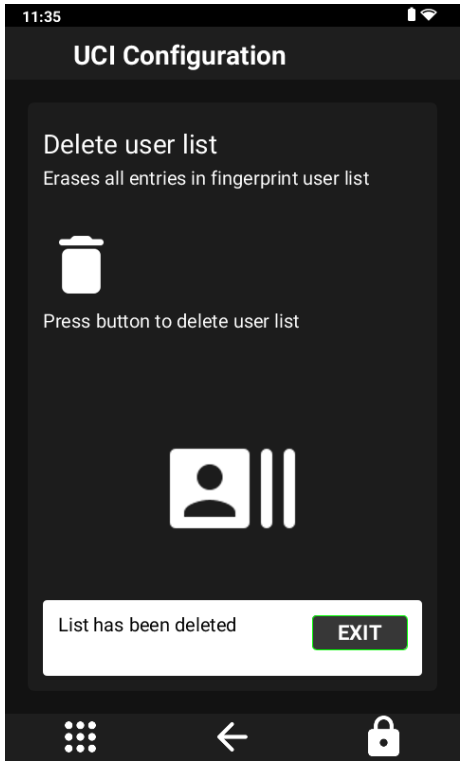
5 Error prevention







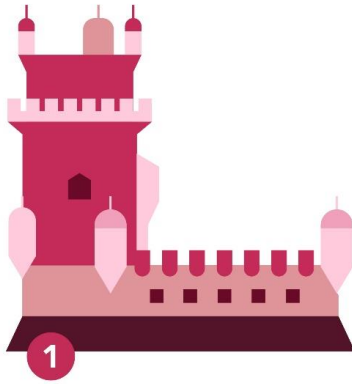




Jakob's Heuristic

6 Recognition Rather Than Recall

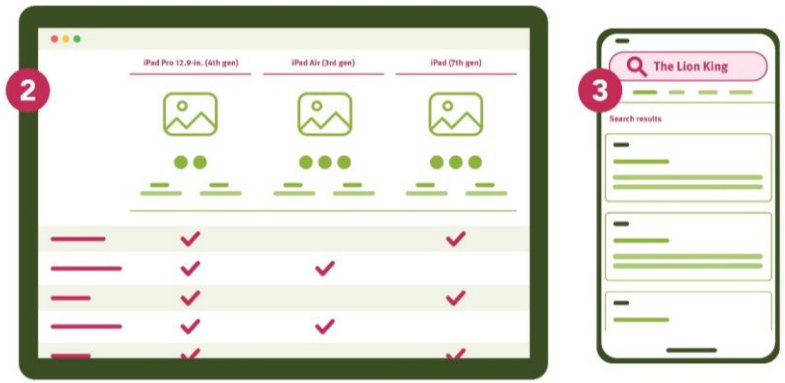
Definition Minimize the user's memory load by making elements, actions, and options visible. The user should **not have to remember information** from one part of the interface to another. Information required to use the design should be visible or easily retrievable when needed.



Humans have limited short-term memories. Interfaces that promote recognition reduce the amount of cognitive effort required from users.

- **Tip:** Let people *recognize* information in the interface, rather than having to remember ("recall") it.
- **Tip:** Offer help *in-context*, instead of giving users a long tutorial to memorize.
- **Tip:** *Reduce* the information that users have to remember.

1. ***Lisbon***
   People are more likely to correctly answer the question "Is Lisbon the capital of Portugal?" rather than "What's the capital of Portugal?"
2. ***Comparison table***
   Comparison tables list key differences so that users don't need to remember them to make comparisons.
3. ***Search***
   Search queries are presented together with the results as a reference.



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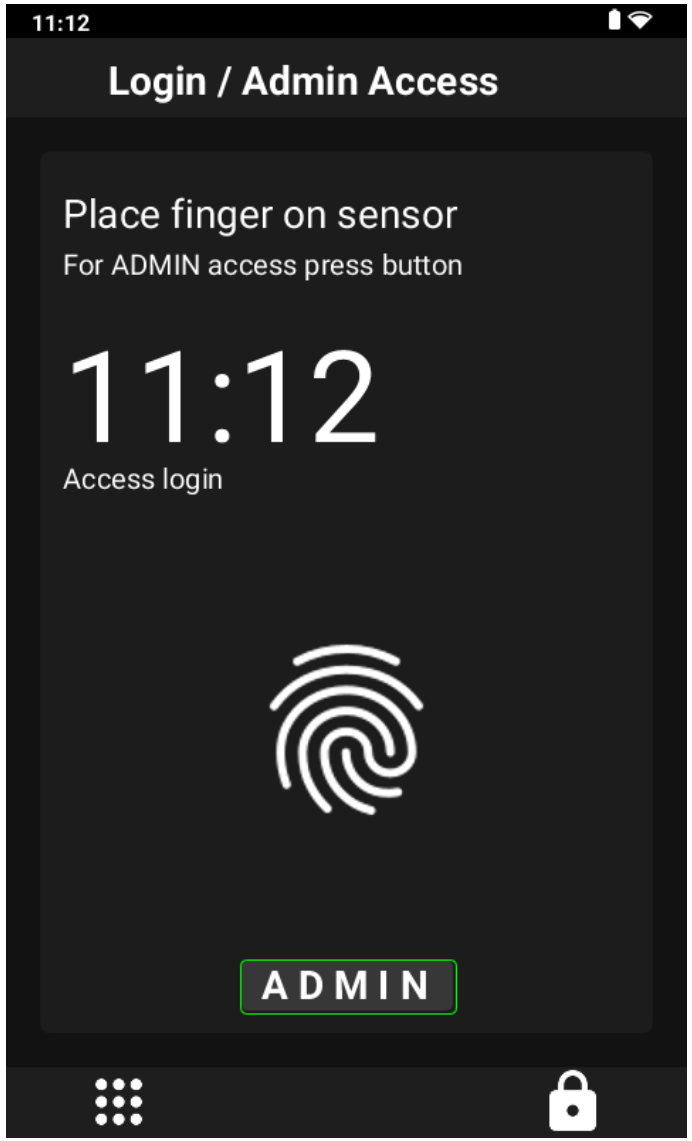
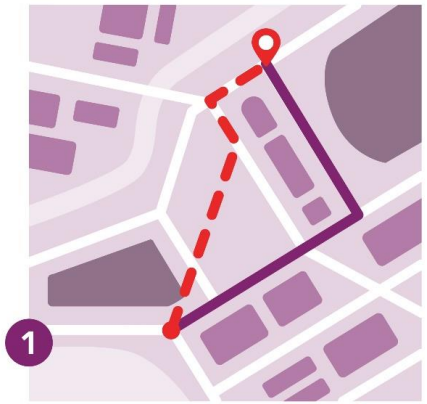
www.nngroup.com/articles/recognition-and-recall/


11:12
Login / Admin Access
Place finger on sensor
For ADMIN access press button
11:12
Access login
ADMIN

Jakob's Heuristic

7 Flexibility *and* Efficiency of Use

Definition Shortcuts — hidden from novice users — may speed up the interaction for the expert user such that the design can **cater to both inexperienced and experienced users.** Allow users to tailor frequent actions.



Flexible processes can be carried out in different ways, so that people can pick whichever method works for them.

- **Tip:** Provide *accelerators* like keyboard shortcuts and touch gestures.
- **Tip:** Provide *personalization* by tailoring content and functionality for individual users.
- **Tip:** Allow for *customization*, so users can make selections about how they want the product to work.

1. ***Shortcuts***
   Regular routes are listed on maps, but locals with more knowledge of the area can take shortcuts.
2. ***Keyboard shortcut***
   Keyboard shortcuts for complex products can help expert users finish their tasks more efficiently.
3. ***Tap to like***
   Social apps allow two ways to like posts. Experienced users can tap to like because it speeds up their browsing.

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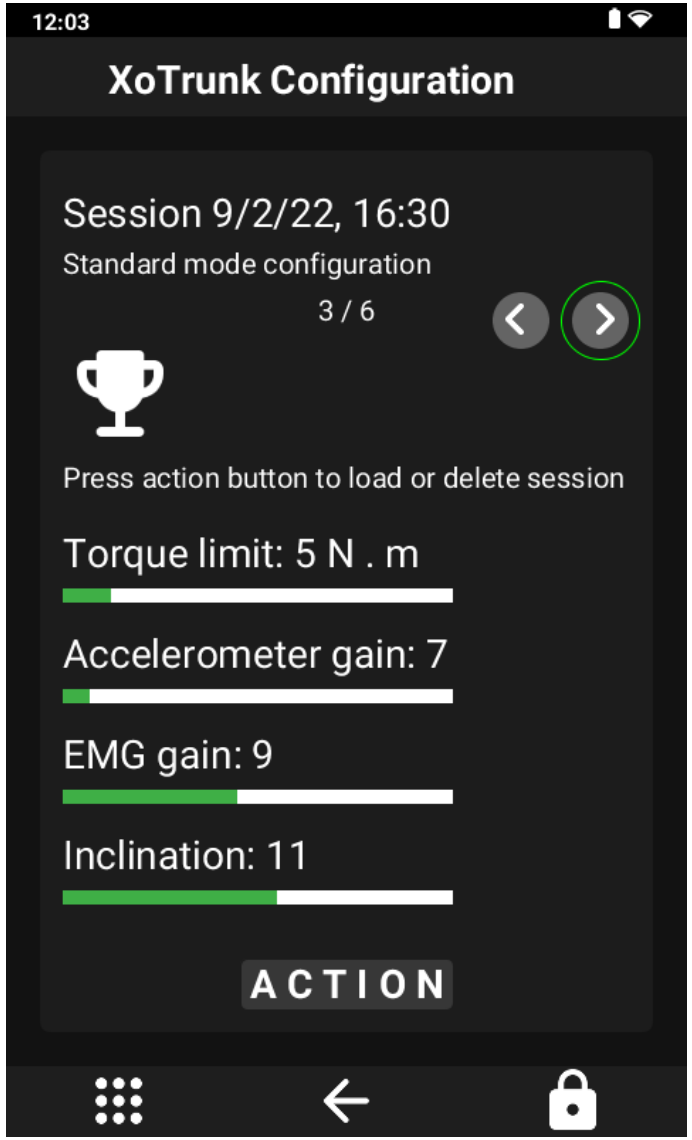
www.nngroup.com/articles/flexibility-efficiency-heuristic


12:03
XoTrunk Configuration
Session 9/2/22, 16:30
Standard mode configuration
3 / 6
Press action button to load or delete session
Torque limit: 5 N . m
Accelerometer gain: 7
EMG gain: 9
Inclination: 11
ACTION

Jakob's Heuristic

8 Aesthetic *and* Minimalist Design

Definition Interfaces should not contain information which is irrelevant or rarely needed. Every extra unit of information in an interface **competes** with the relevant units of information and diminishes their relative visibility.

This doesn't mean you have to use a flat design — it's about making sure you're keeping the content and visual design focused on the essentials. Ensure that the visual elements of the UI support the user's primary goals.

- **Tip:** Keep the content and visual design of UI focus on the *essentials*.
- **Tip:** Don't let unnecessary elements distract users from the information they really need.
- **Tip:** *Prioritize* the content and features to support primary goals.

1. ***Ornate vs. simple teapot***
   Excessive decorative elements can interfere with usability.
2. ***Communicate, don't decorate***
   Over-decoration can cause distraction and make it harder for people to get the core information they need.
3. ***Messy vs organized UI***
   Messy UI increases the interaction cost for users to find their desired content; Organized UI lowers the cost.

2

COMMUNICATE, DON'T DECORATE

One of our favorite slogans

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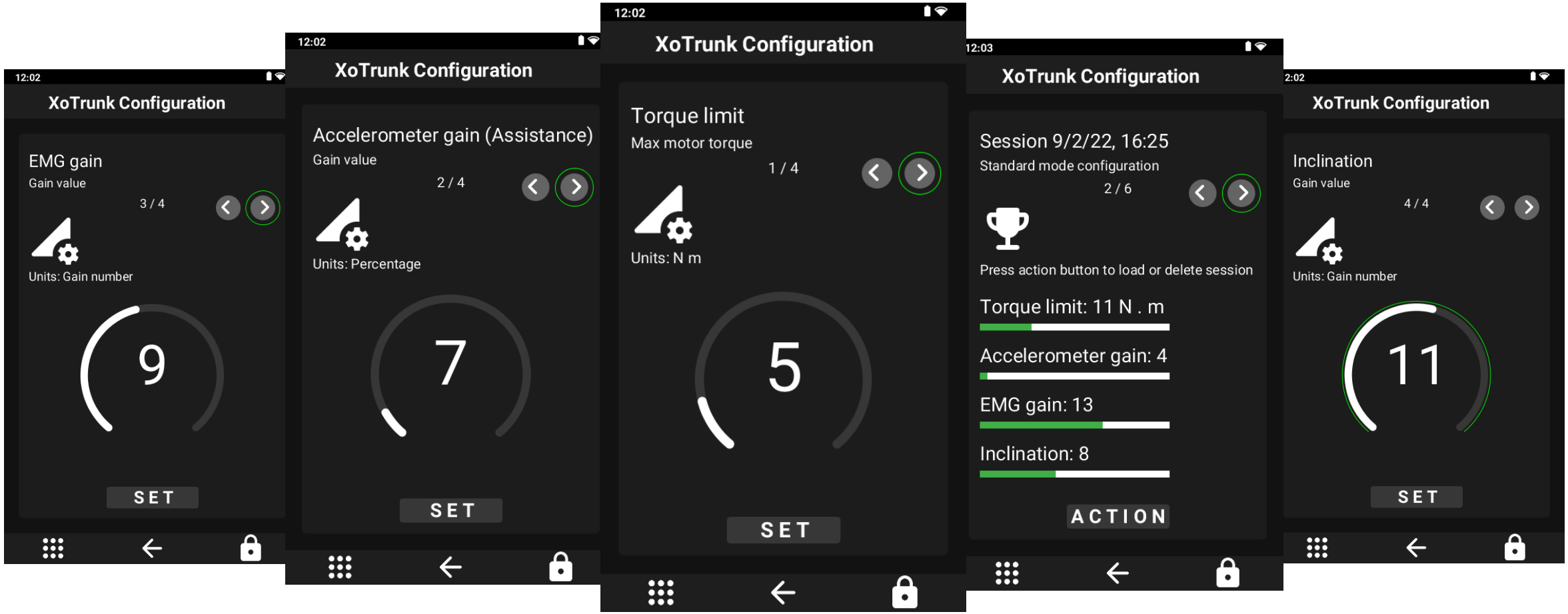
www.nngroup.com/articles/aesthetic-and-minimalist-design/

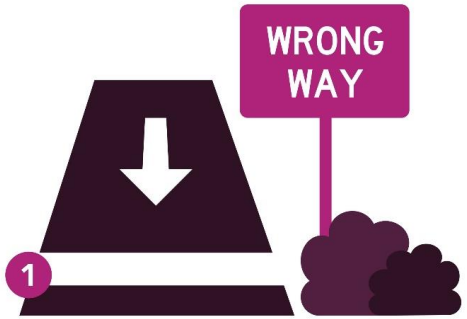
8 Aesthetic and minimalistic design



Jakob's Heuristic

9 Help Users Recognize, Diagnose, and Recover from Errors

Definition Error messages should be expressed in **plain language** (no error codes), precisely indicate the problem, and constructively suggest a solution.



Error messages should be presented with visual treatments that will help users notice and recognize them.

- **Tip:** Use *traditional* error message visuals, like bold, red text.
- **Tip:** Tell users what went wrong in language they will *understand* — avoid technical jargon.
- **Tip:** Offer users a *solution*, like a shortcut that can solve the error immediately.

1. ***Wrong way sign***
   Wrong-way signs on the road remind drivers that they are heading in the wrong direction and ask them to stop.
2. ***Internet connection error***
   Good internet connection error pages show what happened and constructively instruct users on how to fix the problem.
3. ***No search results***
   Provide useful help when people encounter search-result pages returning zero results, such as popular topics.

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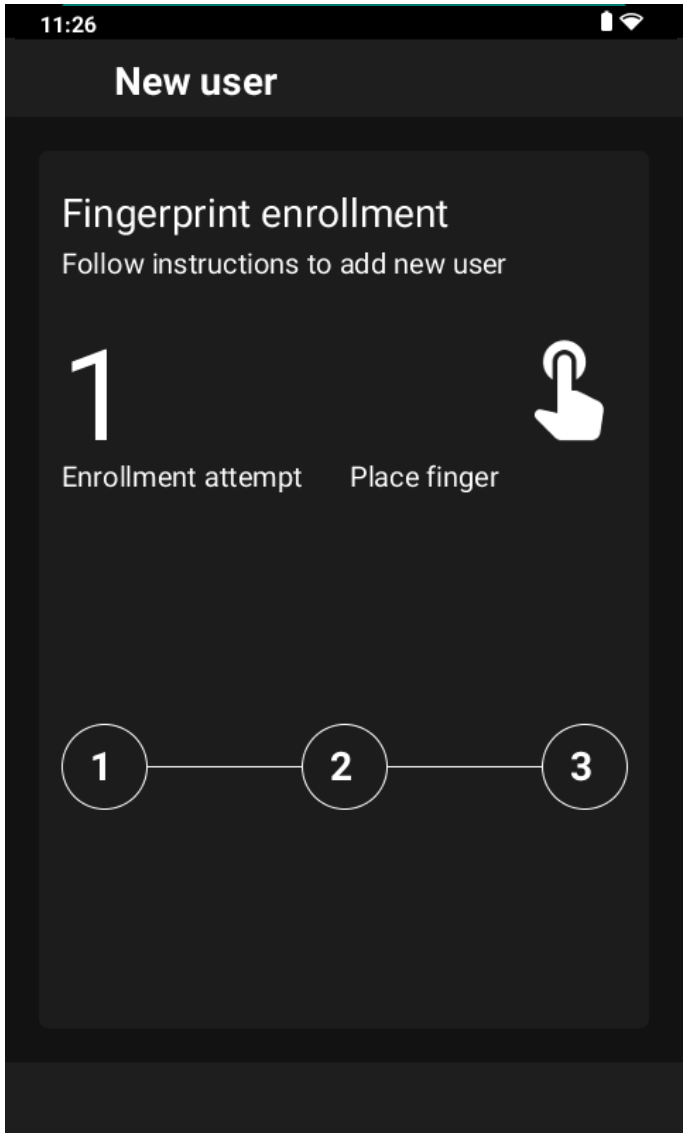
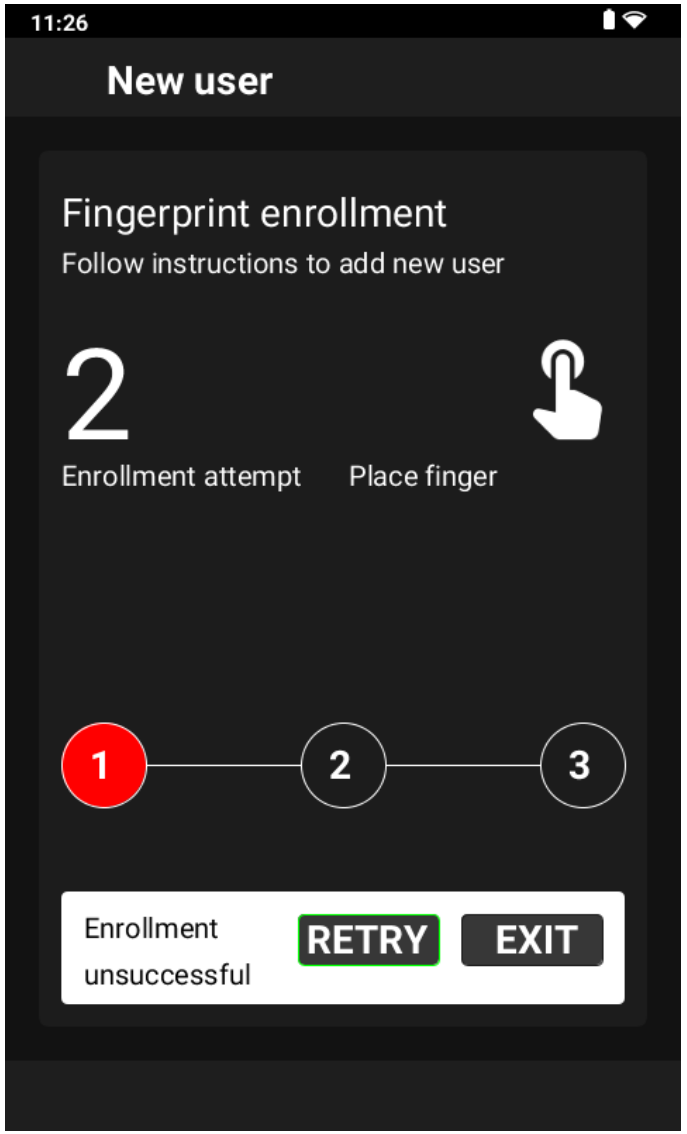
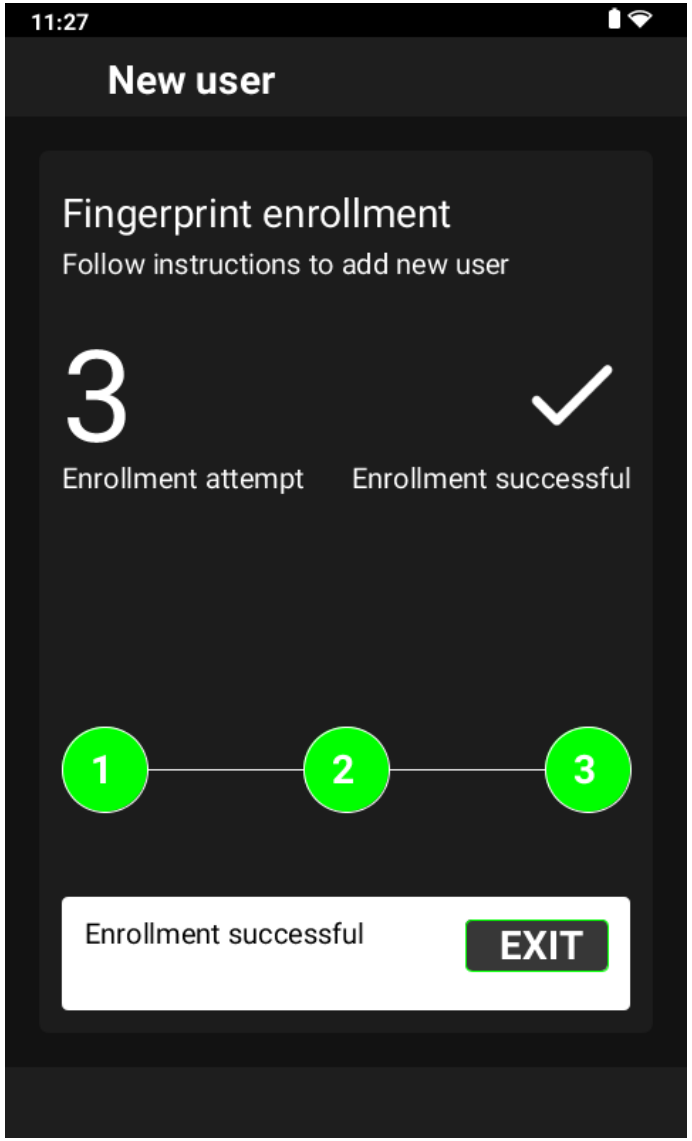
www.nngroup.com/articles/error-message-guidelines/


11:26
New user
Fingerprint enrollment
Follow instructions to add new user
1
Enrollment attempt
Place finger
1
2
3


11:26
New user
Fingerprint enrollment
Follow instructions to add new user
2
Enrollment attempt
Place finger
1
2
3
Enrollment unsuccessful
RETRY
EXIT


11:27
New user
Fingerprint enrollment
Follow instructions to add new user
3
Enrollment attempt
Enrollment successful
1
2
3
Enrollment successful
EXIT

Jakob's Heuristic

10 Help *and* Documentation

Definition It's best if the design **doesn't need** any additional explanation. However, it may be necessary to provide documentation to help users understand how to complete their tasks.

Help and documentation content should be easy to search and focused on the user's task. Keep it concise, and list concrete steps that need to be carried out.

- **Tip:** Ensure that the help documentation is *easy* to search.
- **Tip:** Whenever possible, present the documentation in-context right at the moment that the user requires it.
- **Tip:** List *concrete* steps to be carried out.

1. ***Airport information center***
   Information kiosks at airports are easily recognizable and solve customers' problems in context and immediately.
2. ***Frequently asked questions***
   Good frequently-asked-question pages anticipate and provide the helpful information that users might need.
3. ***Information icon***
   Information icons reveal tooltips to explain jargon when users touch or hover over them, which provides contextual help.

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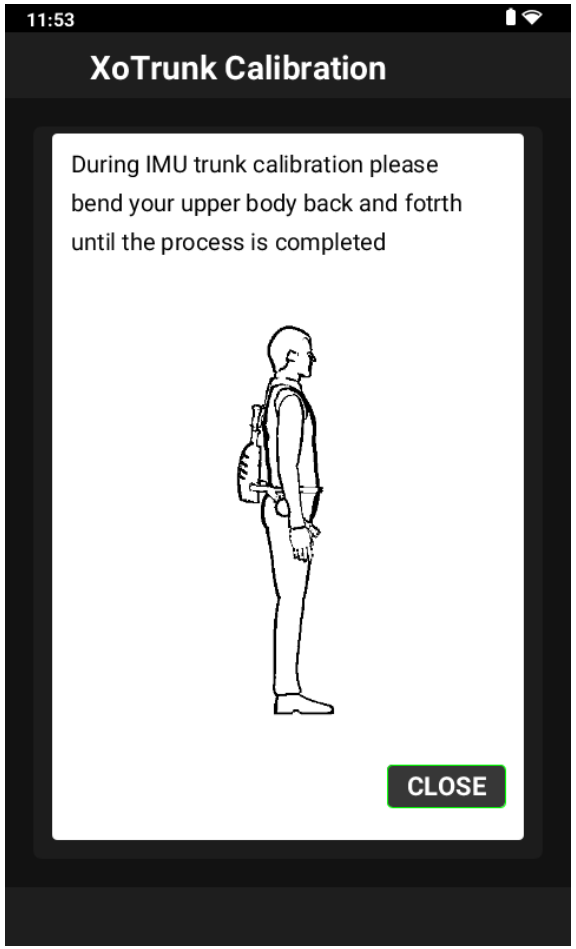
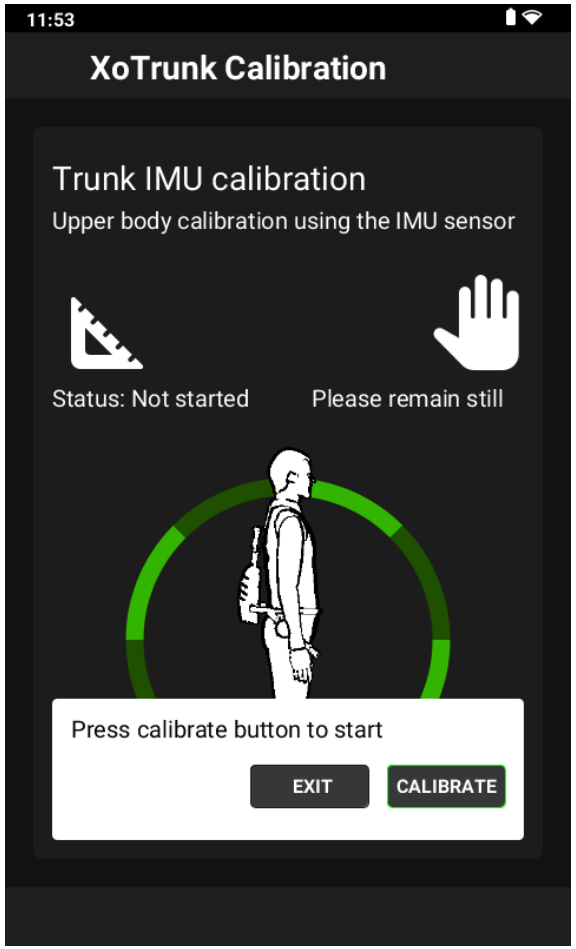
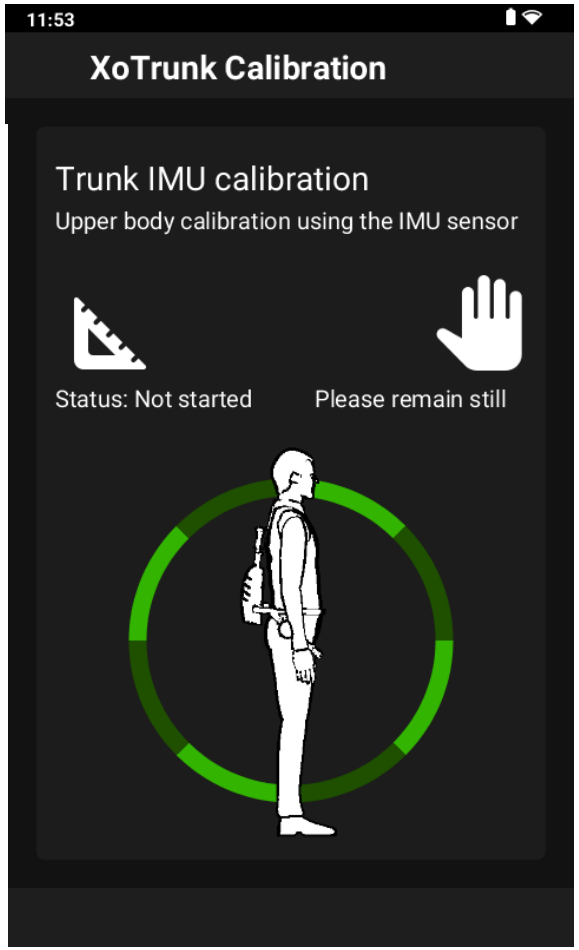
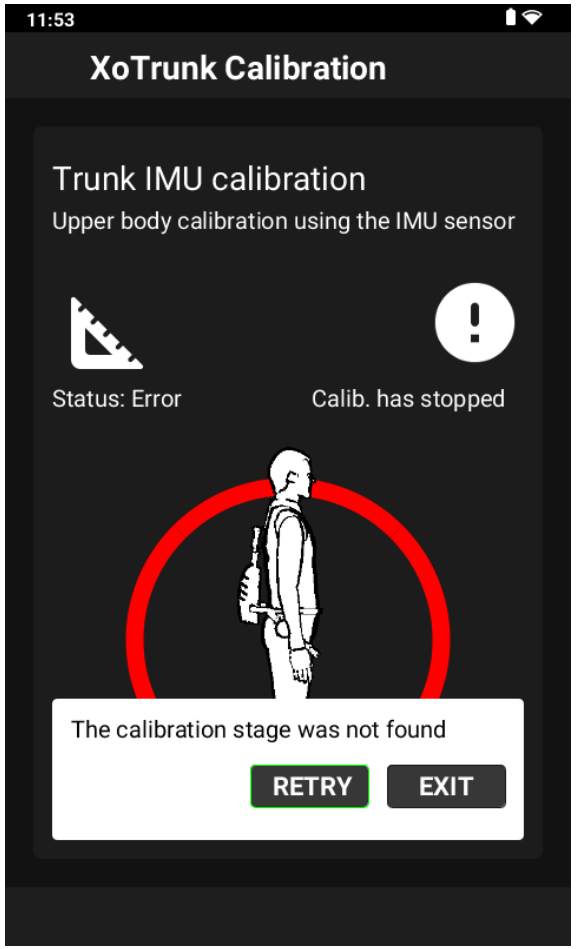
www.nngroup.com/articles/help-and-documentation/


11:53
XoTrunk Calibration
During IMU trunk calibration please bend your upper body back and fotrth until the process is completed
CLOSE


11:53
XoTrunk Calibration
Trunk IMU calibration
Upper body calibration using the IMU sensor
Status: Not started
Please remain still
Press calibrate button to start
EXIT
CALIBRATE


11:53
XoTrunk Calibration
Trunk IMU calibration
Upper body calibration using the IMU sensor
Status: Not started
Please remain still


11:53
XoTrunk Calibration
Trunk IMU calibration
Upper body calibration using the IMU sensor
Status: Error
Calib. has stopped
The calibration stage was not found
RETRY
EXIT

VICARIOS LAB

iit ADVR ISTITUTO ITALIANO DI TECNOLOGIA ADVANCED ROBOTICS

INAIL ISTITUTO NAZIONALE PER L'ASSICURAZIONE CONTRO GLI INFORTUNI SUL LAVORO

IEEE Telepresence

Usability heuristics for UI

Nielsen Norman Group

Jakob's Ten Usability Heuristics

1 Visibility *of* System Status

Designs should *keep users informed* about what is going on, through appropriate, timely feedback.

Interactive mall maps have to show people where they currently are, to help them understand where to go next.

2 Match between System and the Real World

The design should speak the users' language. Use words, phrases, and concepts *familiar to the user*, rather than internal jargon.

Users can quickly understand which stovetop control maps to each heating element.

3 User Control *and* Freedom

Users often perform actions by mistake. They *need a clearly marked "emergency exit"* to leave the unwanted action.

Just like physical spaces, digital spaces need quick "emergency" exits too.

4 Consistency *and* Standards

Users should not have to wonder whether different words, situations, or actions mean the same thing. *Follow platform conventions.*

Check-in counters are usually located at the front of hotels, which meets expectations.

5 Error Prevention

Good error messages are important, but the best designs carefully *prevent problems* from occurring in the first place.

Guard rails on curvy mountain roads prevent drivers from falling off cliffs.

6 Recognition Rather Than Recall

***Minimize the user's memory load* by making elements, actions, and options visible. Avoid making users remember information.**

People are likely to correctly answer "Is Lisbon the capital of Portugal?".

7 Flexibility *and* Efficiency of Use

Shortcuts — hidden from novice users — may *speed up the interaction* for the expert user.

Regular routes are listed on maps, but locals with more knowledge of the area can take shortcuts.

8 Aesthetic *and* Minimalist Design

Interfaces should not contain information which is irrelevant. Every extra unit of information in an interface *competes* with the relevant units of information.

A minimalist three-legged stool is still a place to sit.

9 Recognize, Diagnose, *and* Recover from Errors

Error messages should be expressed in plain language (no error codes), precisely indicate the problem, and constructively suggest a solution.

Wrong-way signs on the road remind drivers that they are heading in the wrong direction.

10 Help *and* Documentation

It's best if the design *doesn't need* any additional explanation. However, it may be necessary to provide documentation to help users complete their tasks.

Information kiosks at airports are easily recognizable and solve customers' problems in context and immediately.

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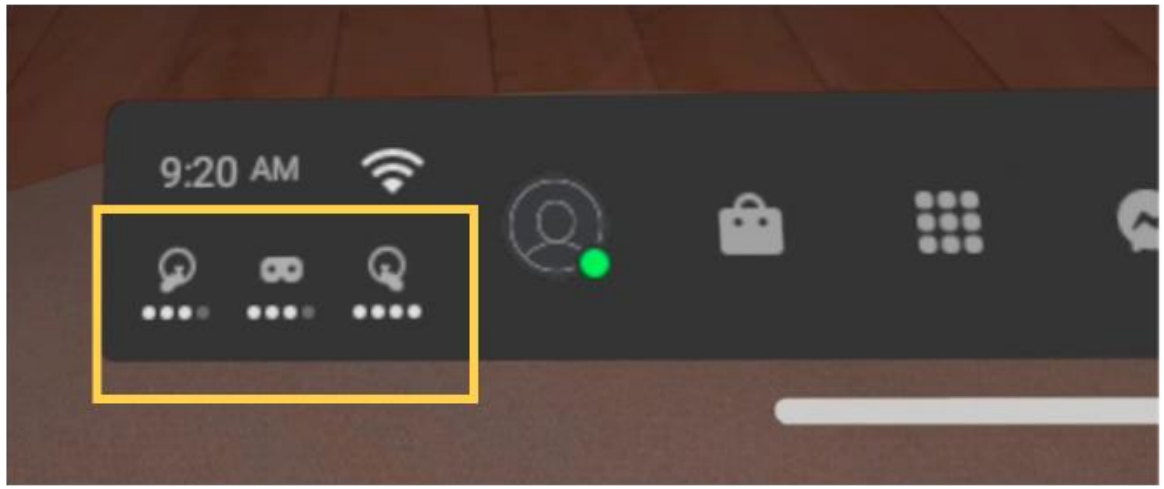
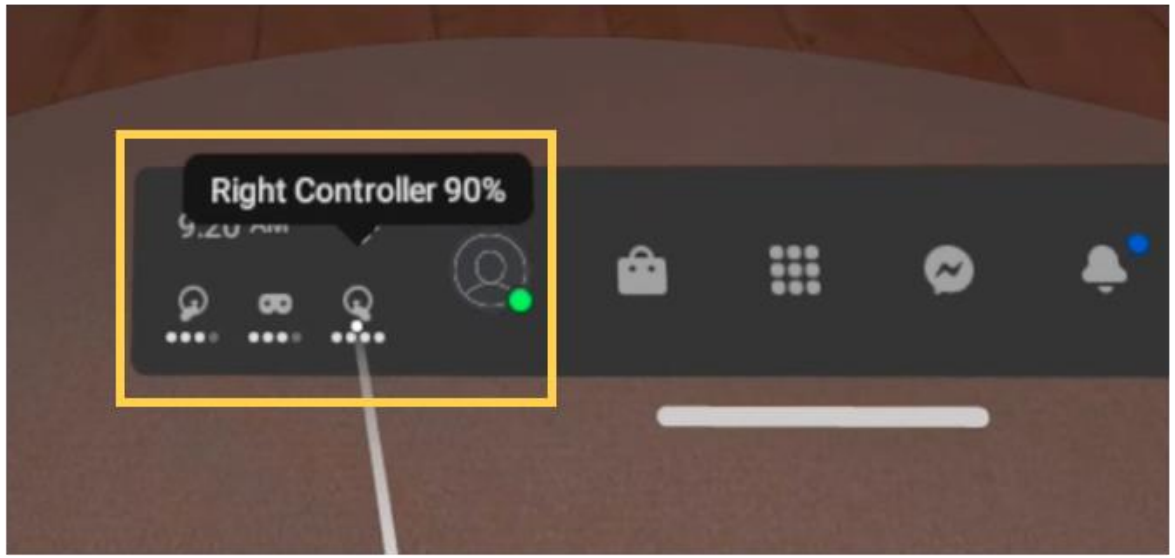
10 Usability heuristics for VR

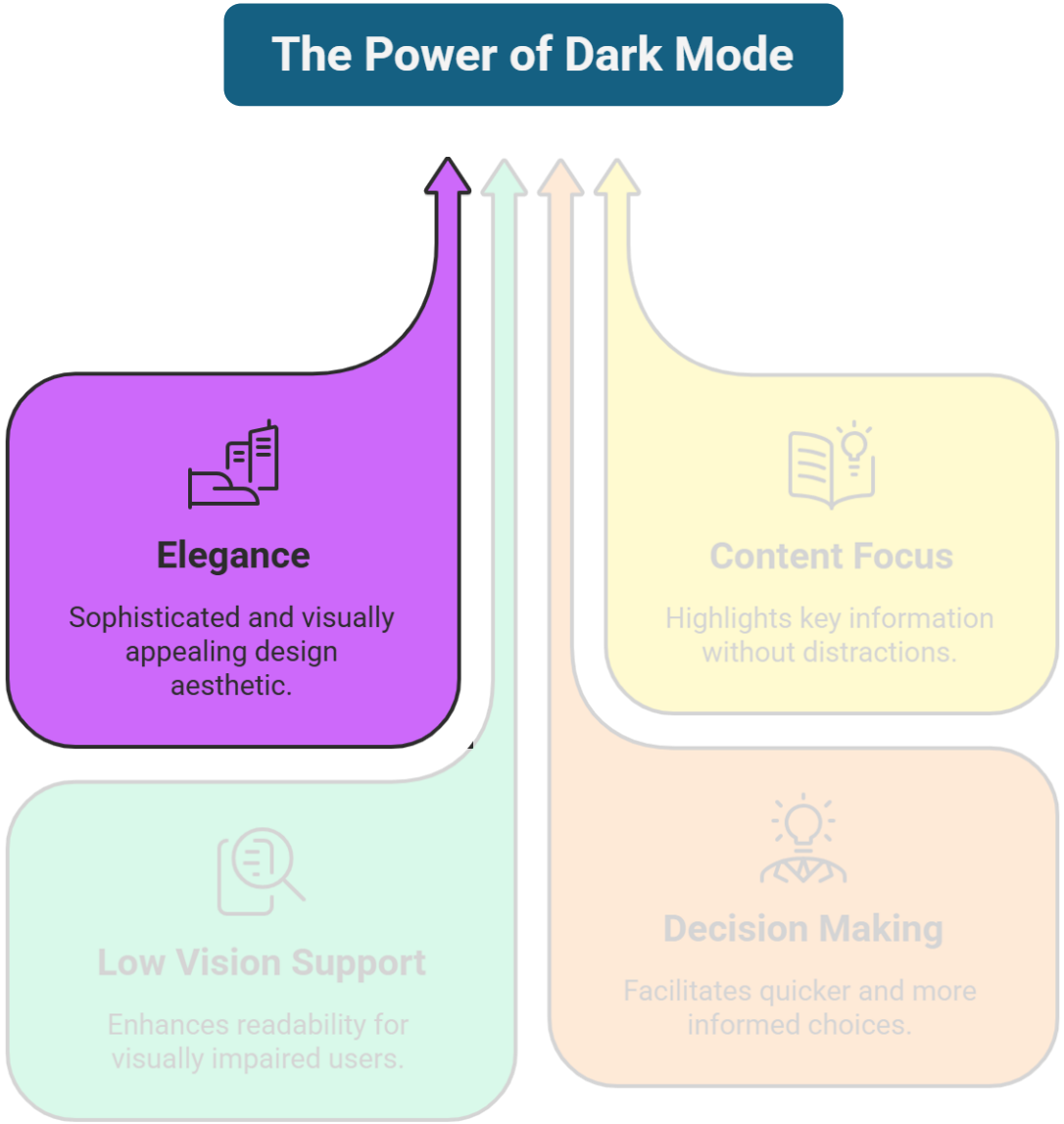




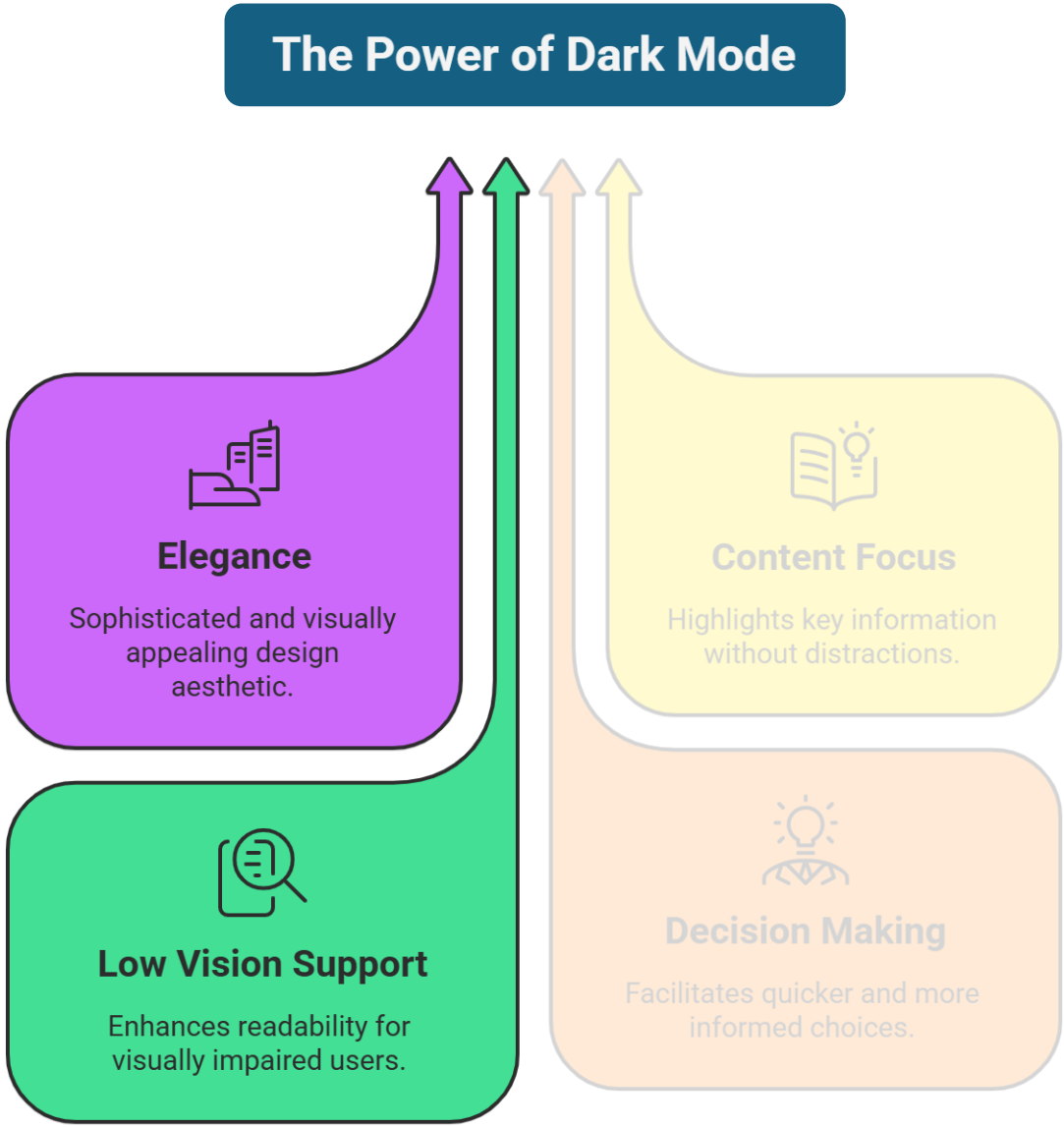
https://www.nngroup.com/articles/usability-heuristics-virtual-reality/


Dark mode
design

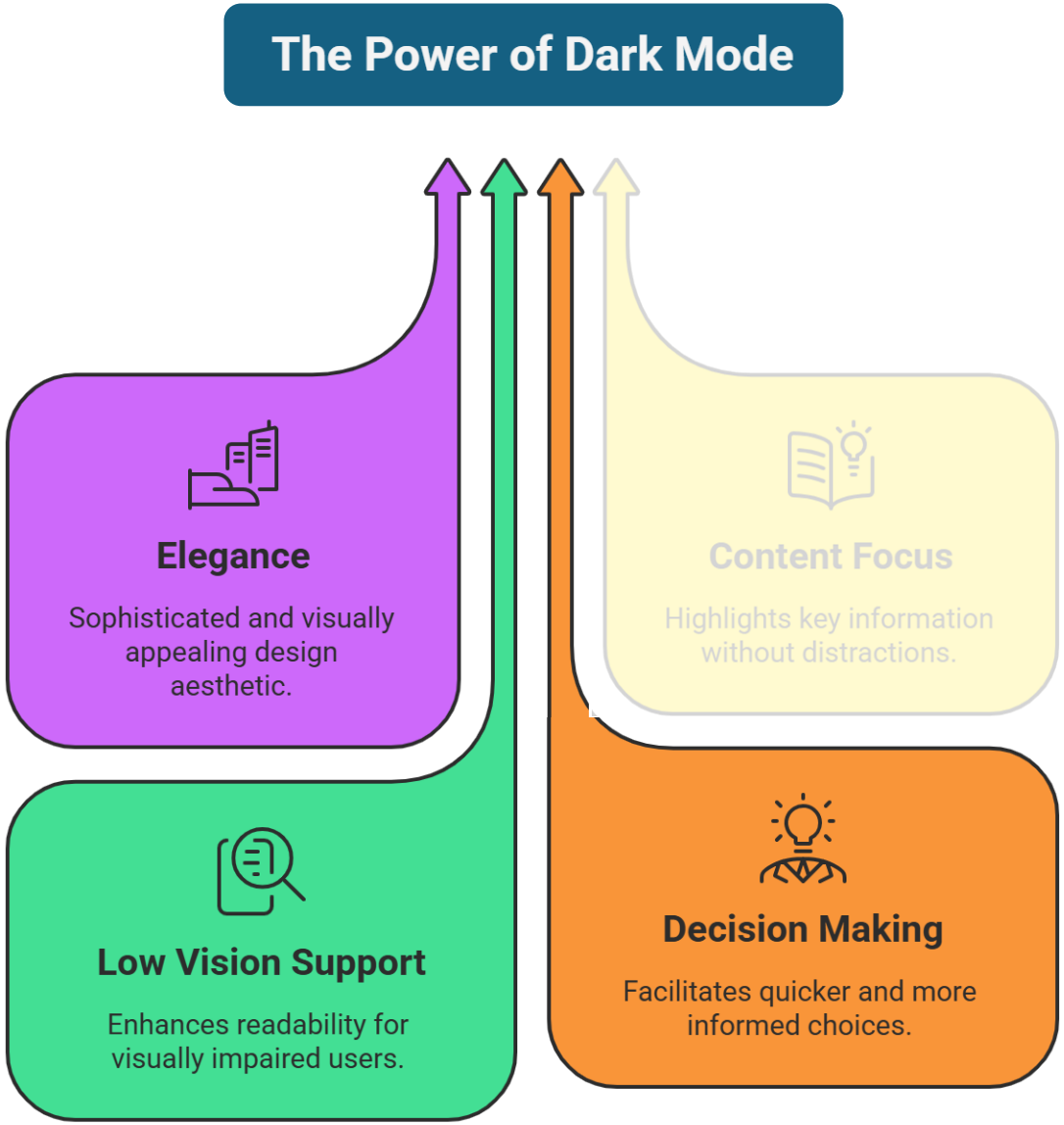
First UI's

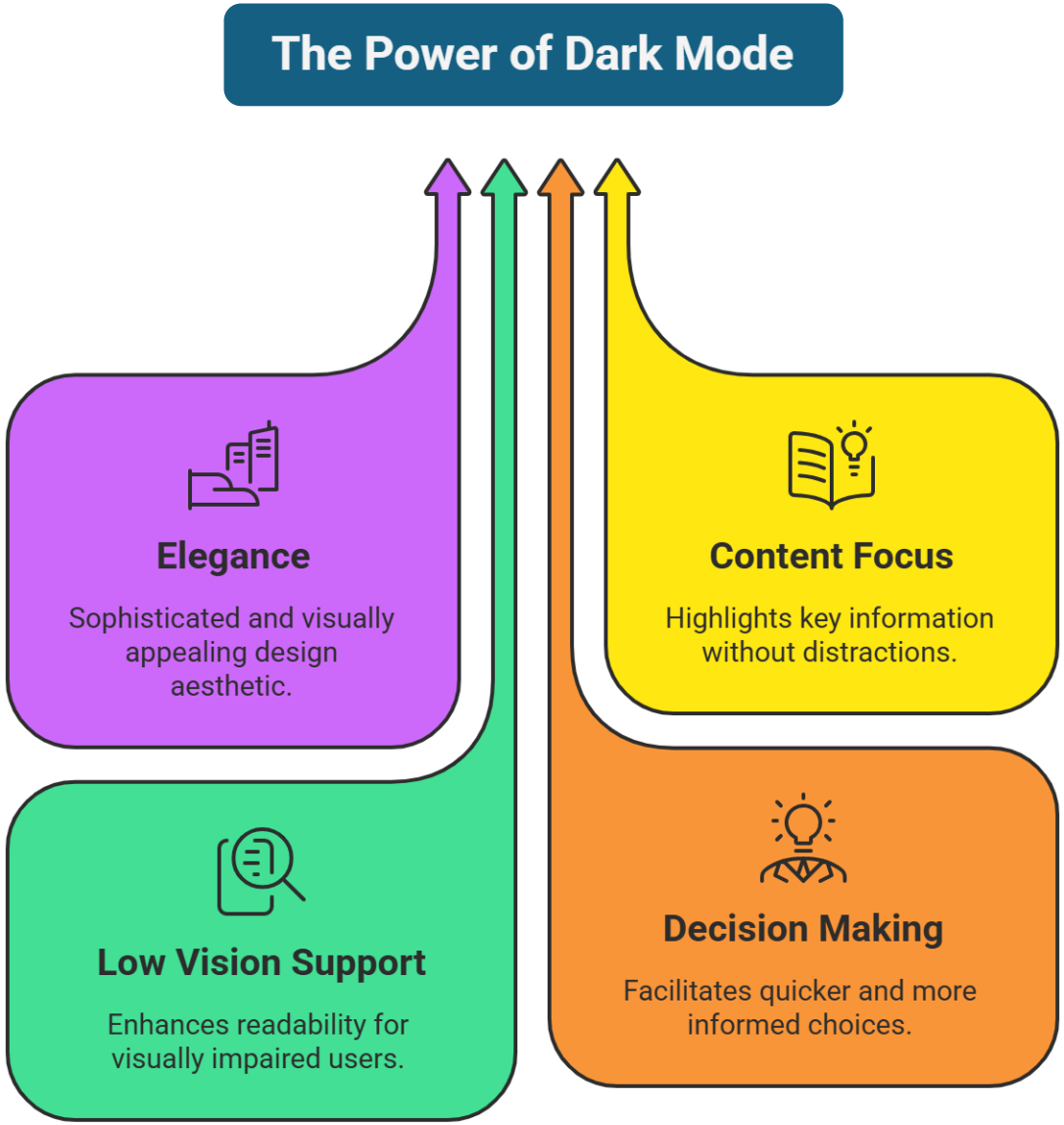

The Power of Dark Mode
Elegance
Sophisticated and visually appealing design aesthetic.
Content Focus
Highlights key information without distractions.
Low Vision Support
Enhances readability for visually impaired users.
Decision Making
Facilitates quicker and more informed choices.
Made with Napkin

Dark mode design



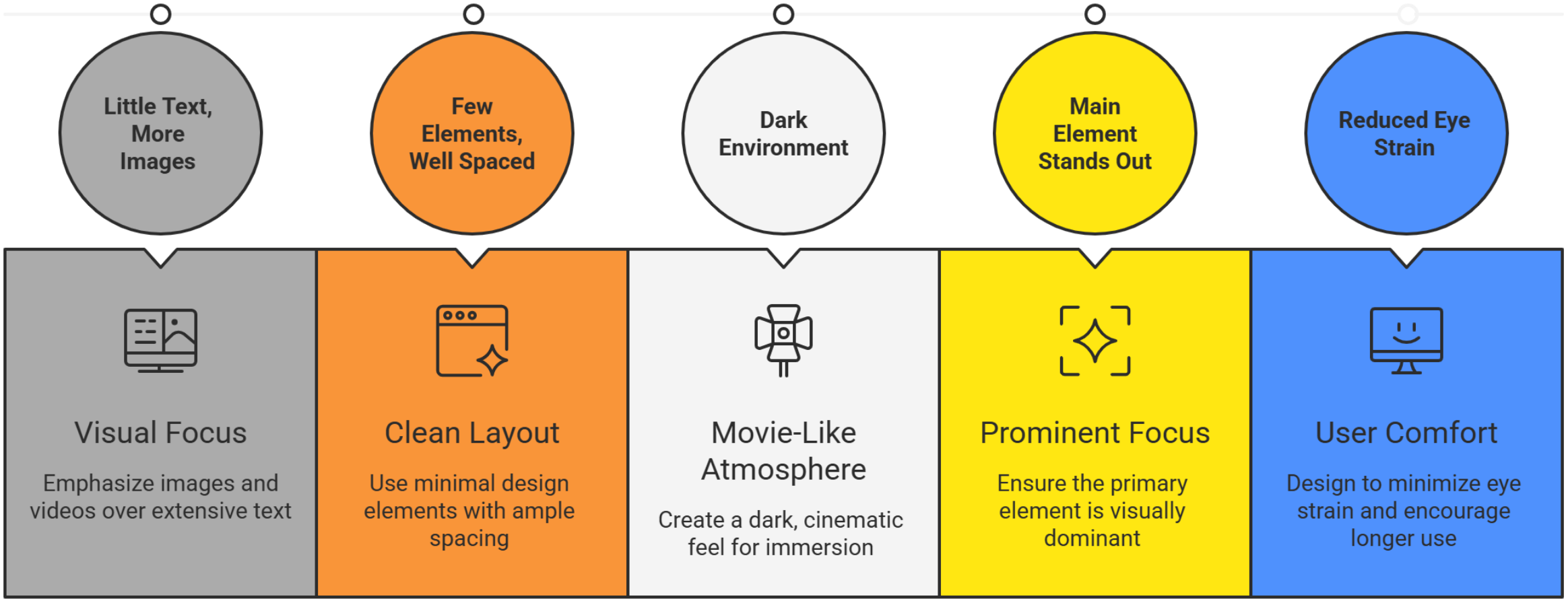
Dark mode design




The Power of Dark Mode
Elegance
Sophisticated and visually appealing design aesthetic.
Content Focus
Highlights key information without distractions.
Low Vision Support
Enhances readability for visually impaired users.
Decision Making
Facilitates quicker and more informed choices.
Made with Napkin

When to use dark mode

Key Design Principles for Dark Environment



When to use light mode

Visual Focus

Little text, more images or videos.

Minimalist Design

Few elements, well spaced out.

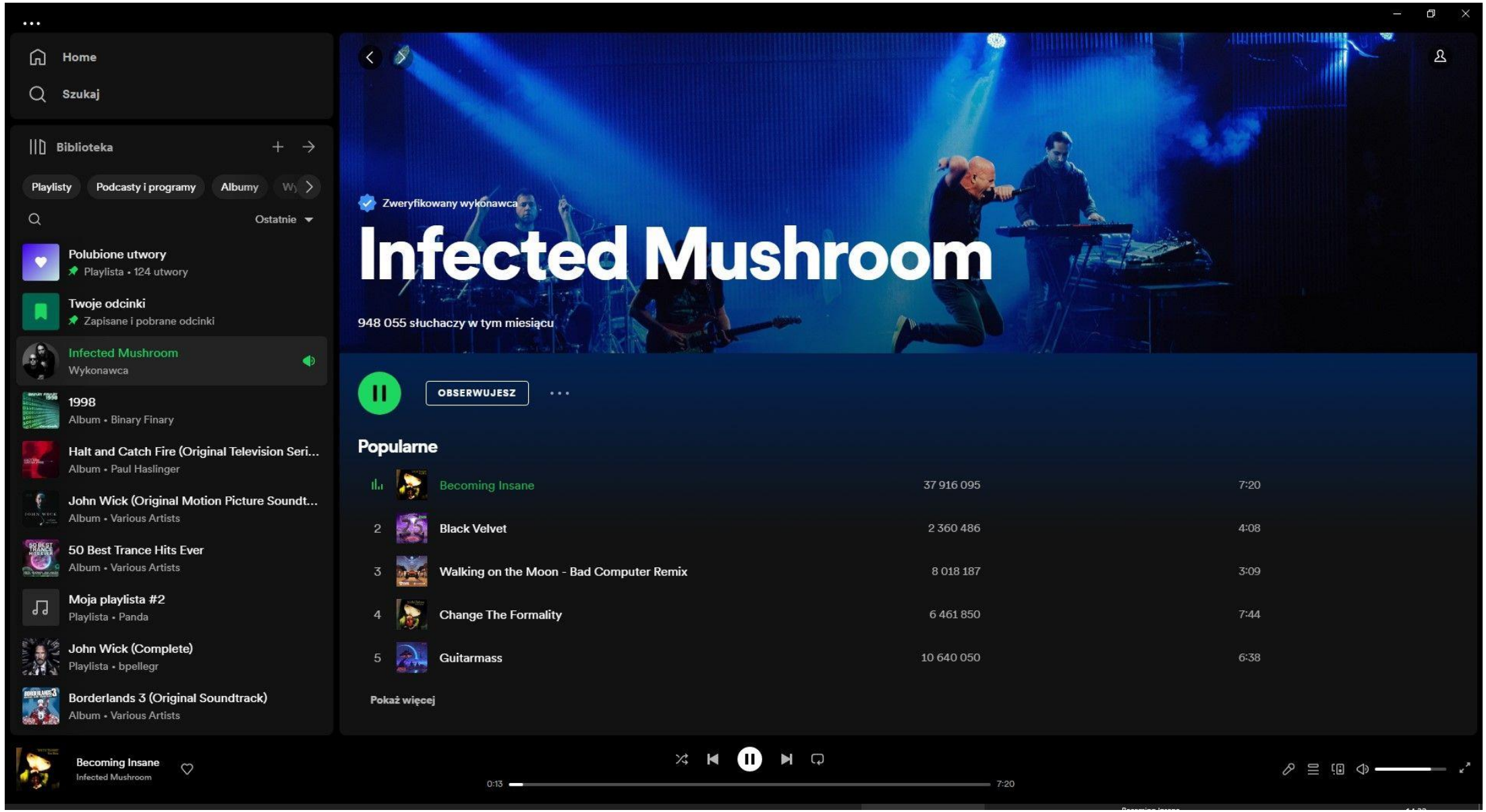
Cluttered Design

Many elements on the screen.

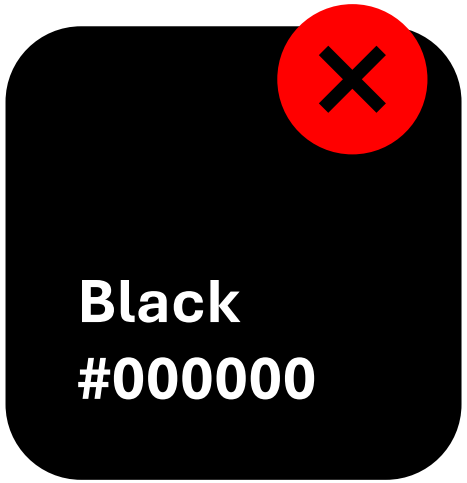
Color Usage

Use different colored elements.

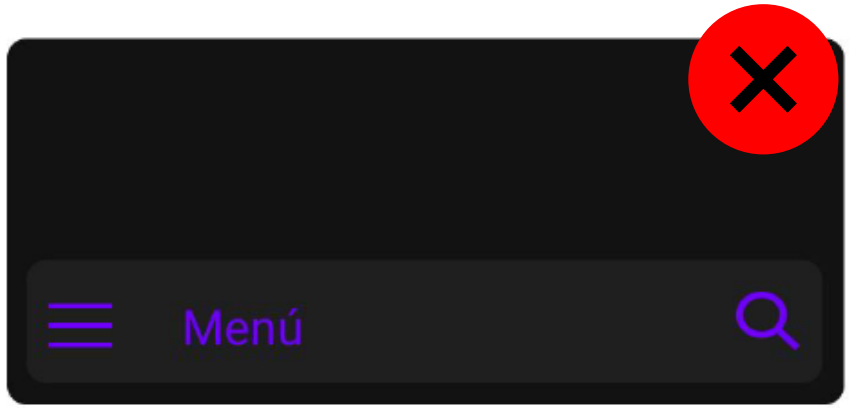
Spotify UI

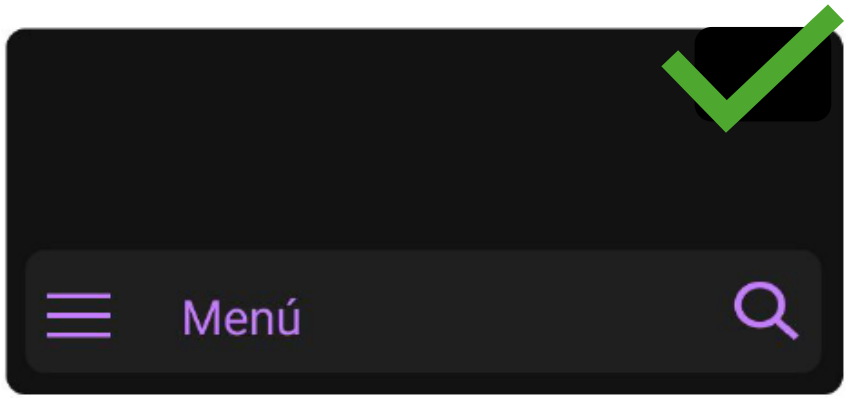

Home
Szukaj
Biblioteka
Playlisty
Podcasty i programy
Albumy
Ostatnie
Polubione utwory
Playlista • 124 utwory
Twoje odcinki
Zapisane i pobrane odcinki
Infected Mushroom
Wykonawca
1998
Album • Binary Finary
Halt and Catch Fire (Original Television Seri...
Album • Paul Haslinger
John Wick (Original Motion Picture Soundt...
Album • Various Artists
50 Best Trance Hits Ever
Album • Various Artists
Moja playlista #2
Playlista • Panda
John Wick (Complete)
Playlista • bpellegr
Borderlands 3 (Original Soundtrack)
Album • Various Artists
Zweryfikowany wykonawca
Infected Mushroom
948 055 słuchaczy w tym miesiącu
OBSERWUJESZ
Popularne
Becoming Insane 37 916 095 7:20
2 Black Velvet 2 360 486 4:08
3 Walking on the Moon - Bad Computer Remix 8 018 187 3:09
4 Change The Formality 6 461 850 7:44
5 Guitarmass 10 640 050 6:38
Pokaż więcej
Becoming Insane
Infected Mushroom
0:13
7:20

Avoid black and white contrast

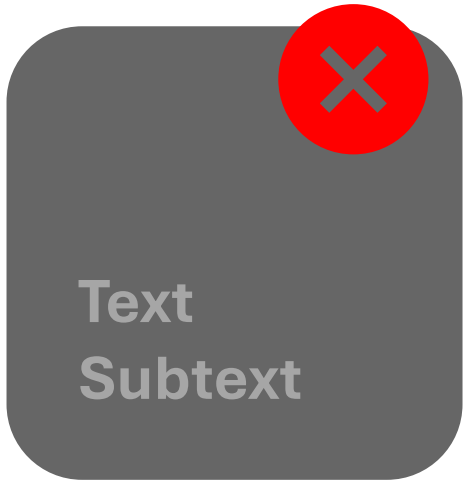


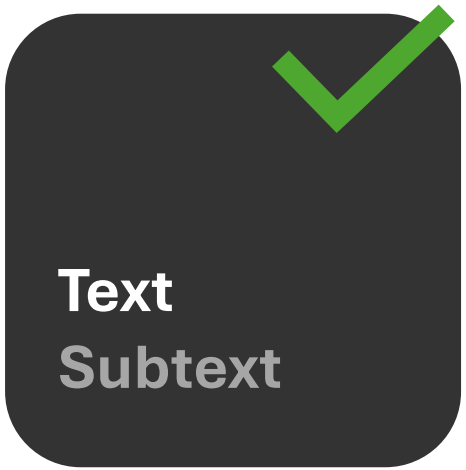
Avoid saturated colours



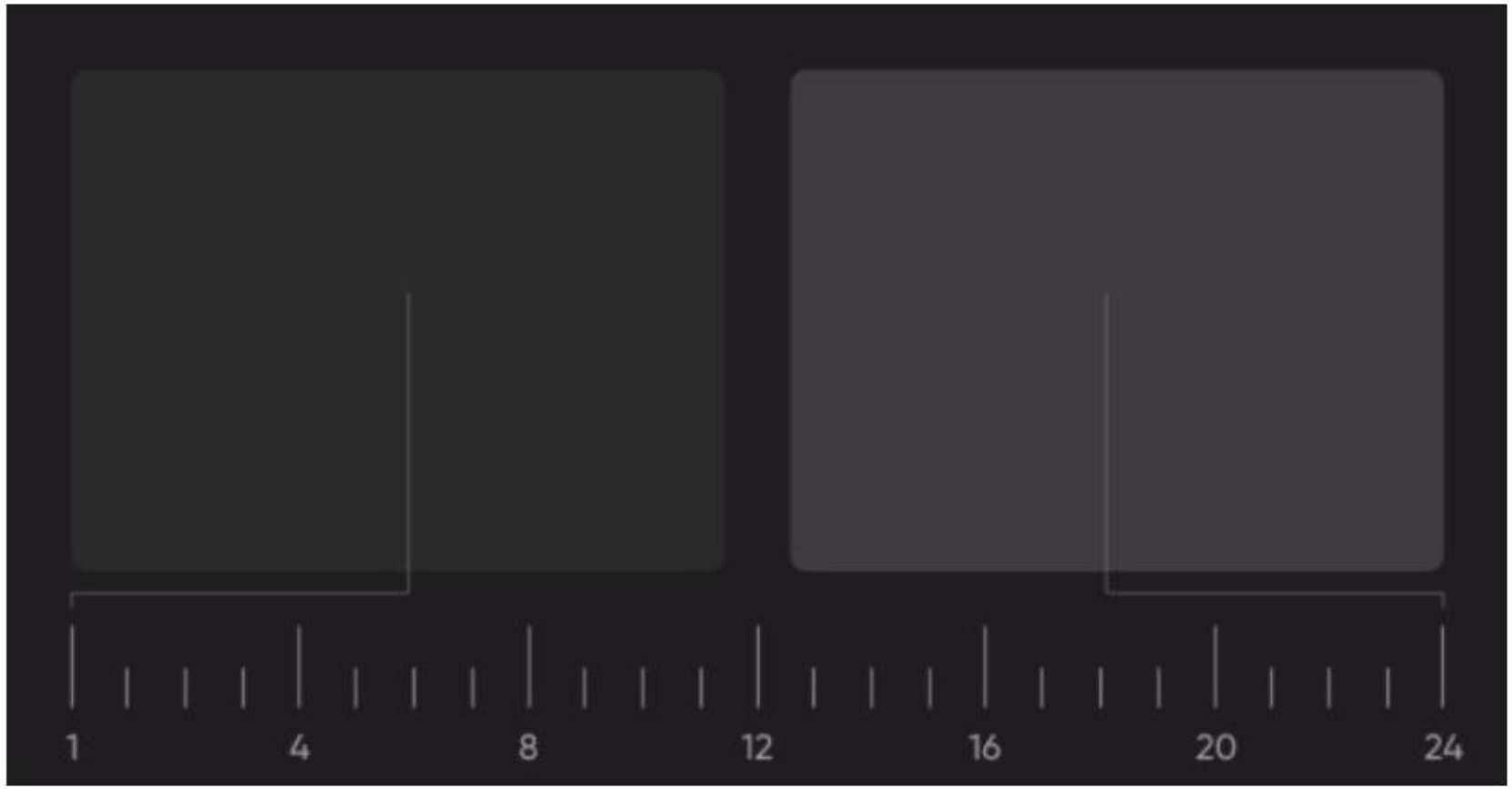


Check text contrast





Dark mode is about depth



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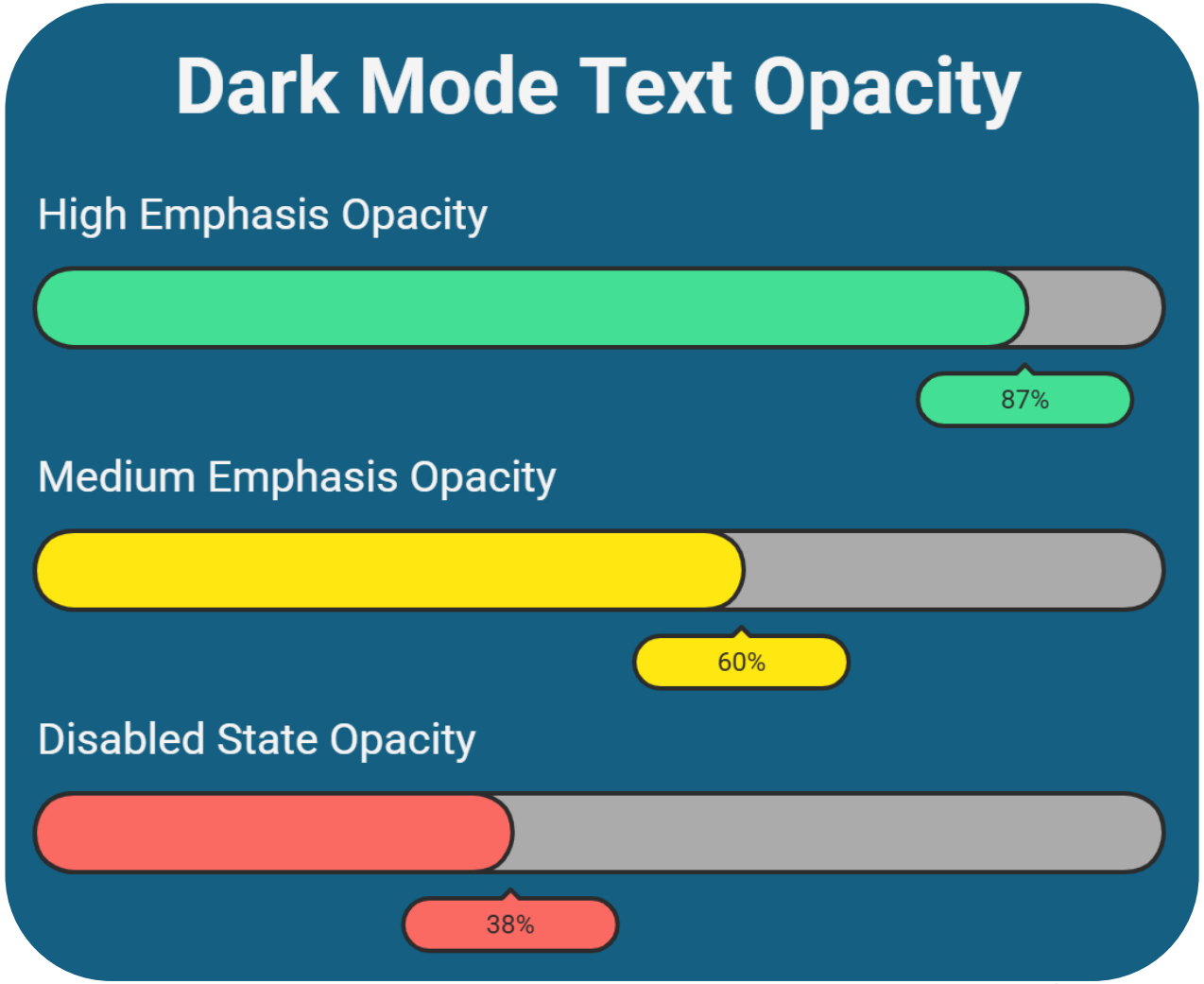
ISTITUTO NAZIONALE PER L'ASSICURAZIONE CONTRO GLI INFORTUNI SUL LAVORO

IEEE Telepresence

Dark mode is about depth



High

Medium

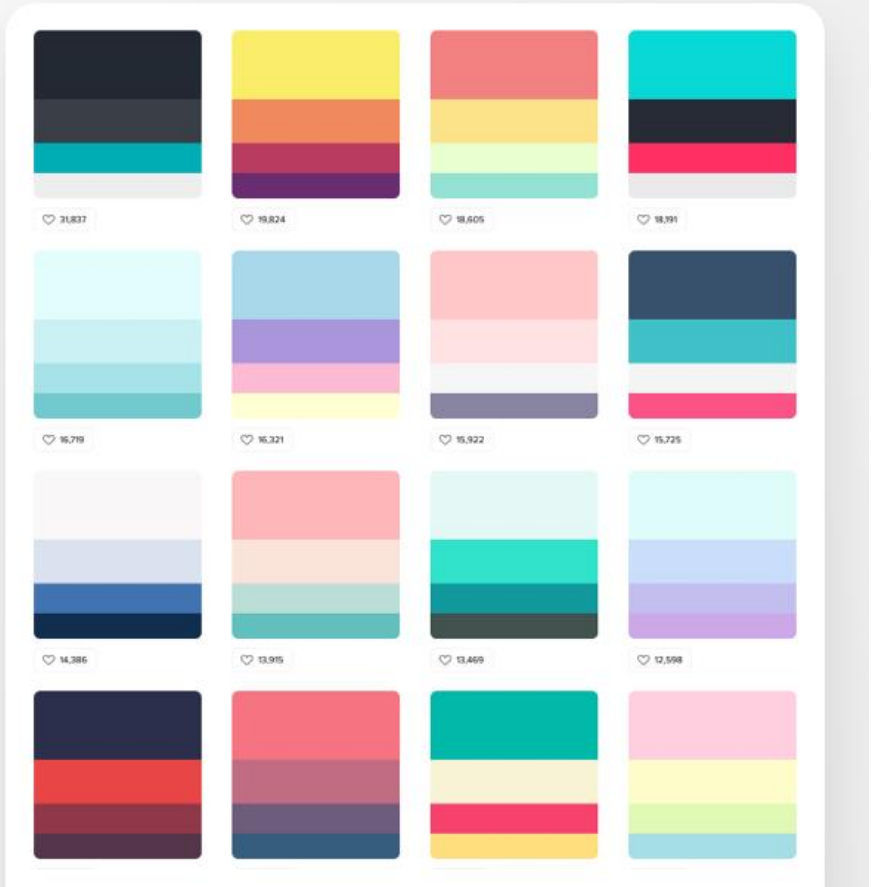
Disable

Eisfeld, Henriette, and Felix Kristallovich. "The rise of dark mode: a qualitative study of an emerging user interface design trend." (2020).

Tools


Figma
https://www.figma.com/

https://colorhunt.co



https://fonts.google.com/icons

https://storytribeapp.com