

/signo/

Value Systems in Digital Health Technologies

Signo

Abstraction
Accessibility
Accuracy
Adaptability
Adherence
Agency
Ambiguity
Ambition
Assertiveness
Attention

Autonomy
Beauty
Belongingness
Bias
Care
Clarity
Clemency
Collaboration
Consent
Contentment

Control
Courage
Critique
Decentralisation
Delegation
Detachability
Dignity
Disconnection
Diversity
Doubt

Economy
Education
Efficacy
Efficiency
Empathy
Empowerment
Encouragement
Equity
Ethics
Evidence

Excellence
Exclusion
Experience
Explainability
Fairness
Feedback
Flexibility
Freedom
Humanisation
Humility

Imprecision
Inclusion
Incoordination
Indifference
Iniquity
Innovation
Instinct
Integrity

Intolerance
Intuitivity
Invisibility
Involvement
Inquiry
Innovation
Instinct
Integrity

Openness
Opportunity
Perception
Persistence
Personalisation
Minimisation
Neutrality

Precision
Presence
Prevention
Prioritisation
Privacy
Prosperity
Power
Practicality
Pragmatism
Responsibility
Rigour

Robustness
Security
Sensitivity
Share
Skepticism
Standardisation
Structuration
Success
Supervision
Sustainability

Synchronisation
Time
Tradition
Transparency
Trust
Understanding
Uniformity
Variability
Verification
Vulnerability

Signo is a card-based game designed to support eliciting, prioritising and mapping values when creating digital technologies. It brings diverse profiles from designers to developers, philosophers, and other stakeholders to encourage open conversations, diverse perspectives, and collaborative reflection.

Inspired by a bottom-up approach to Value-Sensitive Design, Signo provides a flexible, hands-on way to think about values during the design process. It can be played before, during and after technology development, from conceptualisation to implementation, allowing players to reflect on the values that change and adapt over time.

Signo's tangible elements and flexible dynamics facilitate a shared space for reflection and thought-provoking discussions between diverse profiles, enabling these various perspectives to design more meaningful, inclusive, and human-centred digital technology.



Signo was co-designed using a participatory approach involving Human-Computer Interaction researchers, designers, engineers, data scientists, philosophers, and healthcare professionals.

We began with an ethnographic study, conducting observations and interviews with 9 clinicians to understand how values influence clinical decision-making, patient needs, and the use of AI and digital technologies in healthcare. These findings shaped the game's scenarios and values and supported translating them into the cards.

After crafting a low-fidelity prototype of this tool, we ran two validation sessions with four Human-Centred Design experts to fine-tune the tool's structure and flow.

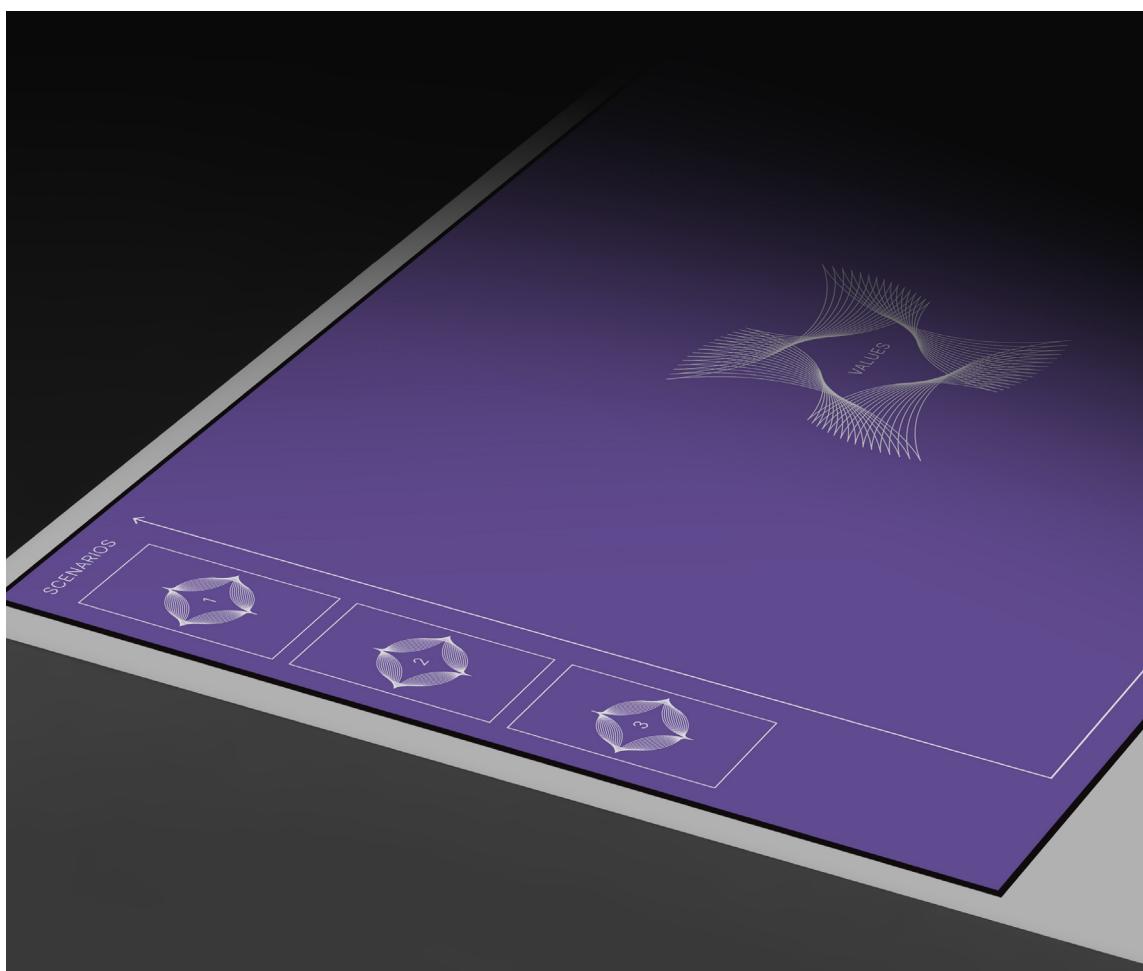
Finally, we held three workshop sessions with 14 participants from diverse fields of expertise to test Signo in practice. Across these sessions, Signo proved to be effective in supporting players to identify, prioritise, and reflect on values, encouraging collaborative and candid discussions and inclusive and ethical thinking.



We designed Signo to be adaptable and flexible, allowing players to appropriate it as they see fit. To support this, we created a booklet with play suggestions – guiding without imposing restrictions. We recommend beginning by eliciting values: players choose three value cards and explain their relevance. Next, we suggest mapping these values onto the game board based on the selected scenario card. The game board depicts two axes deliberately open to interpretation, as players can attribute different meanings.

For instance, the horizontal axes can represent a timeline of events, and the vertical axes the level of importance or relevance.

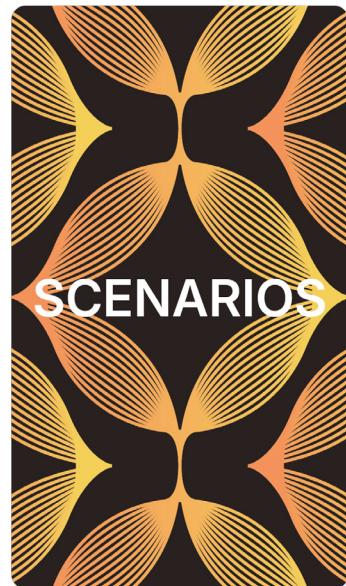
There are no right or wrong answers – players should feel free to change their minds, explore different perspectives, and engage in respectful dialogue. Moreover, during the tests we ran, we found that a large game board would be ideal to provide enough space to accommodate the abundance of elicited values during discussions.





Signo has three scenario decks, each with five scenario cards, in which players can fill in the blanks by writing and using the value cards that best fit the situation posed by that scenario. Despite these being purposefully open, players can reflect on scenarios, situations and challenges they are currently facing. Thus, each deck has extra cards for them to write down a specific scenario.

Regarding the distinction between decks, the yellow scenario cards comprise common scenarios or situations. An example could be: "When designing a digital technology, I have to consider the value of Privacy."



SCENARIOS

*When doing _____

_____,
I have to consider the
value _____.*

/signo/

SCENARIOS

*When designing _____

_____,
I have to consider the
value _____.*

/signo/

SCENARIOS

*When developing _____

_____,
I have to consider the
value _____.*

/signo/

SCENARIOS

*When interacting _____

_____,
I have to consider the
value _____.*

/signo/

SCENARIOS

*When examining _____

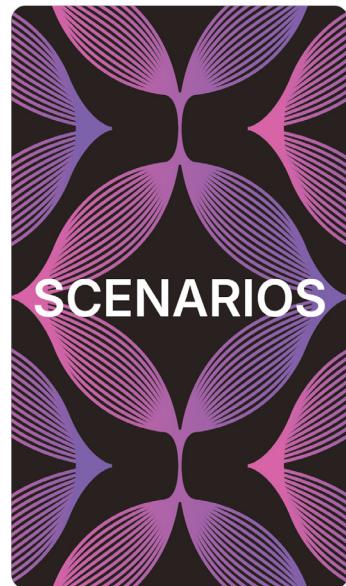
_____,
I have to consider the
value _____.*

/signo/

SCENARIOS

/signo/

The purple scenario cards contain extreme scenarios or situations. These can relate to a lack of confidence or understanding from users, reluctance to share information or collaborate, and resistance to adopting technology. An example could be: "People are not confident, so I have to reinforce the value of Empathy."



EXTREME SCENARIOS

People are not confident, so I have to reinforce value _____.

/signo/

EXTREME SCENARIOS

People are reluctant to share information, so I have to be aware about value _____.

/signo/

EXTREME SCENARIOS

People don't want to collaborate, so it's important to consider value _____.

/signo/

EXTREME SCENARIOS

People feel resistance in adopting technology, so I have to promote value _____.

/signo/

EXTREME SCENARIOS

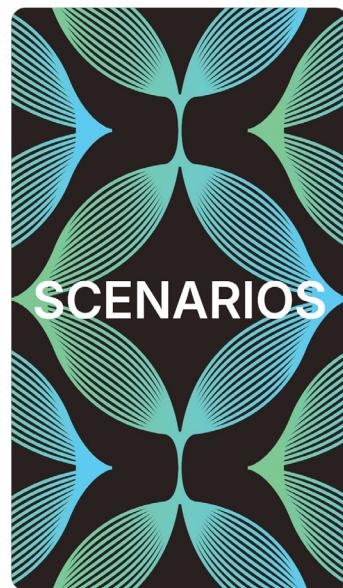
People don't understand the information, so I have to take the _____ value into account.

/signo/

EXTREME SCENARIOS

/signo/

The blue scenario cards include technology scenarios or situations. These can be about which values should be considered for users to feel supported, to adapt to their individual needs, to help there's no trust, to accommodate fully remote situations, or when technology fails. An example could be: "The value of Clarity, is crucial for people to feel supported by technology."



TECHNOLOGY SCENARIOS

*The value _____
is crucial for people
to feel supported by
technology.*

/signo/

TECHNOLOGY SCENARIOS

*The value _____
is essential for the
technology to adapt
to each person's
individual needs.*

/signo/

TECHNOLOGY SCENARIOS

*The value _____
is crucial at a time
when human contact
has gone completely
digital.*

/signo/

TECHNOLOGY SCENARIOS

*The value _____
is important when
technology has
damaged people's
trust.*

/signo/

TECHNOLOGY SCENARIOS

*The value _____
is fundamental
when technology
fails.*

/signo/

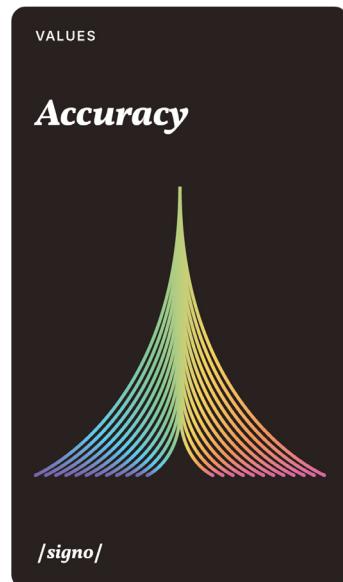
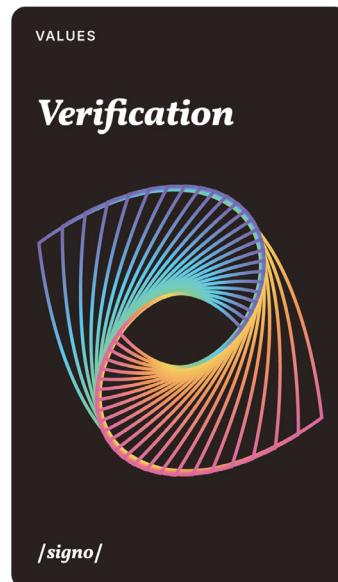
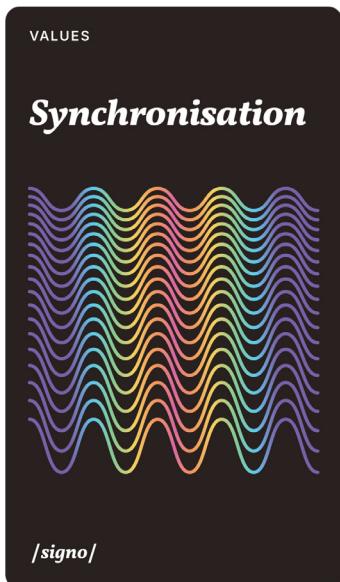
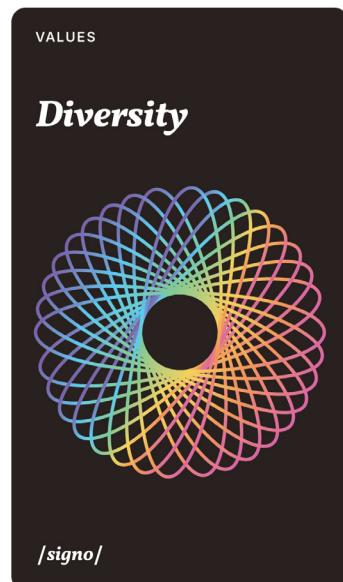
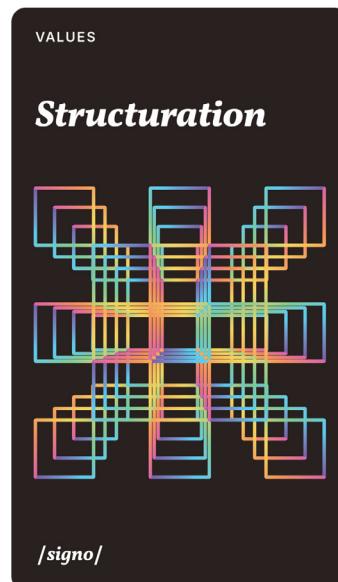
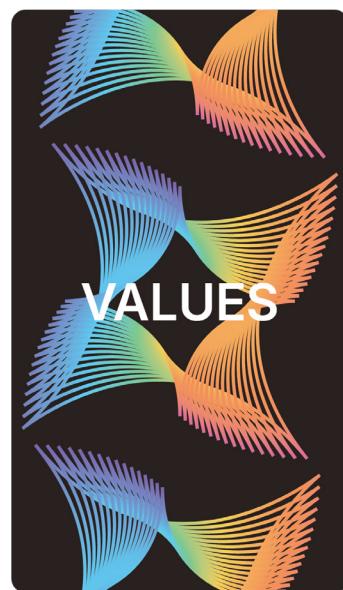
TECHNOLOGY SCENARIOS

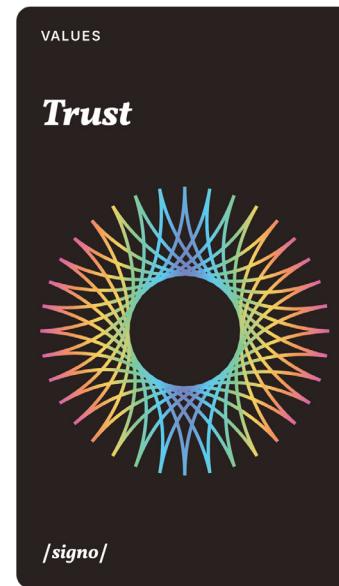
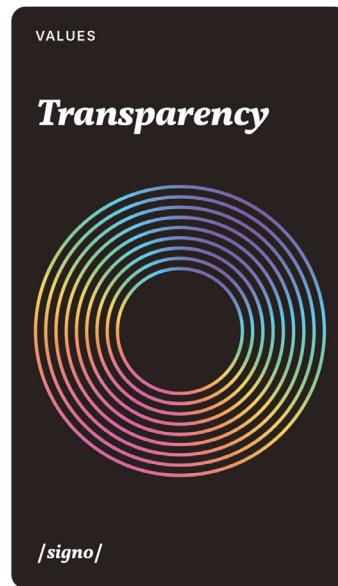
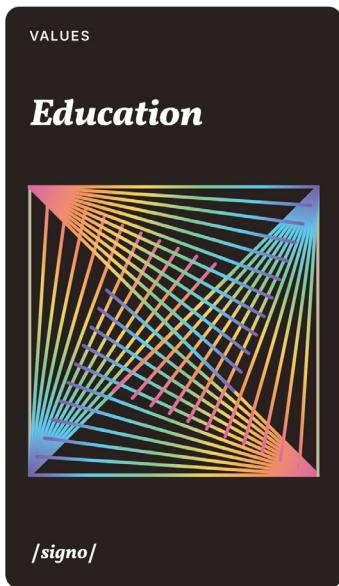
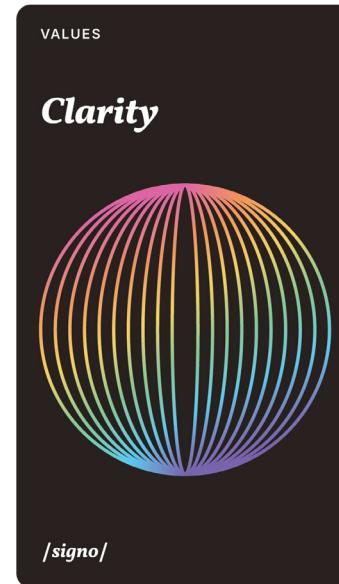
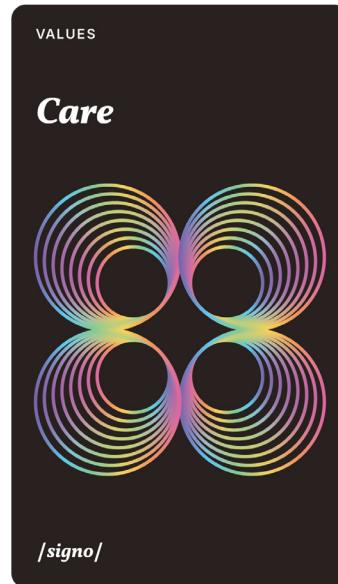
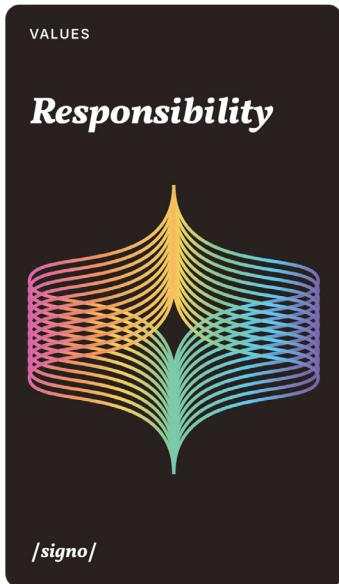
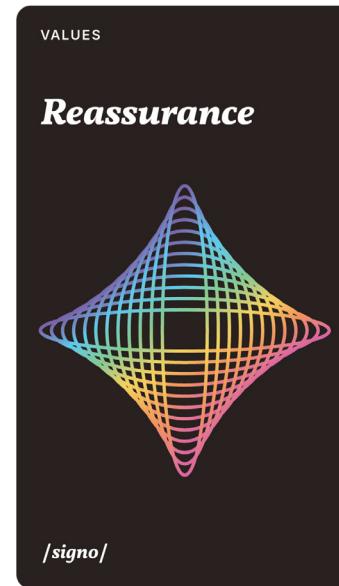
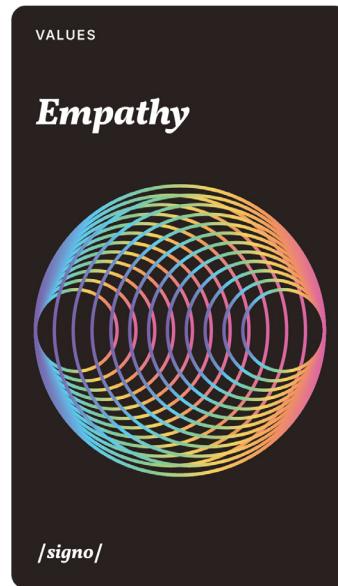
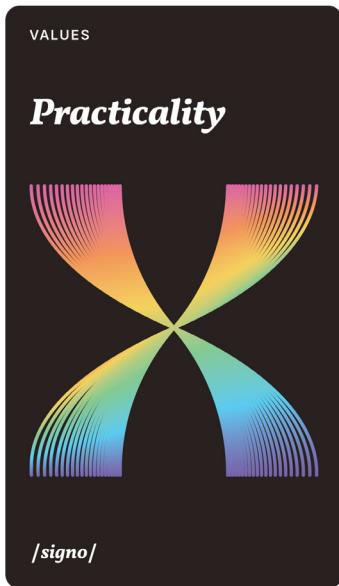
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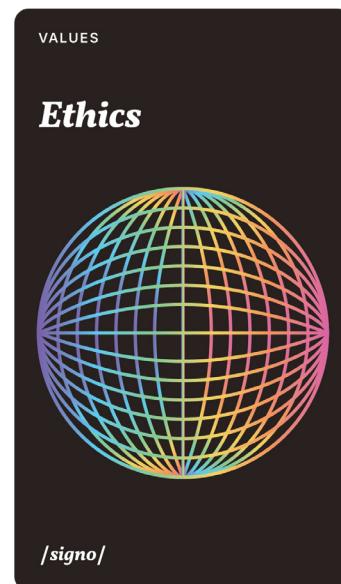
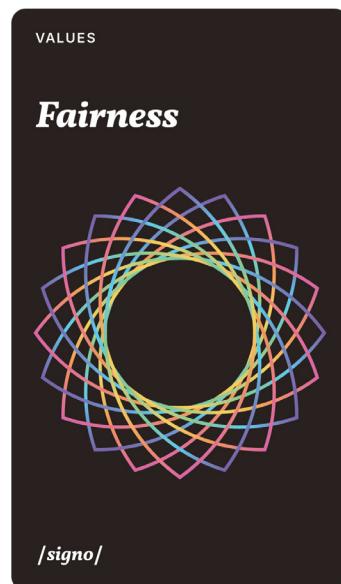
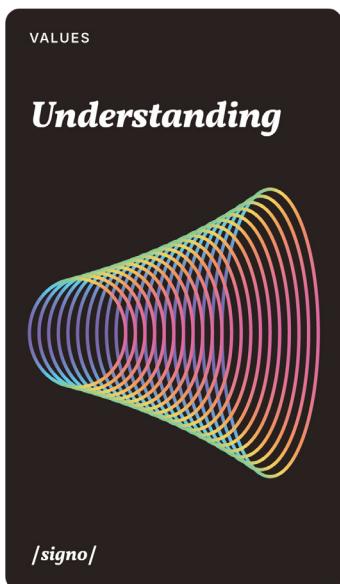
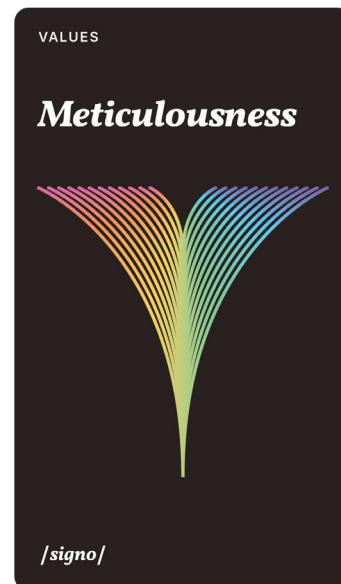
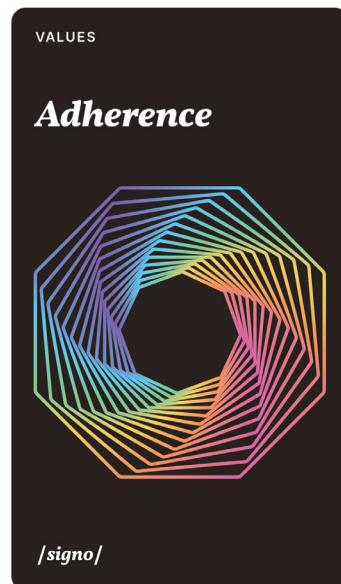
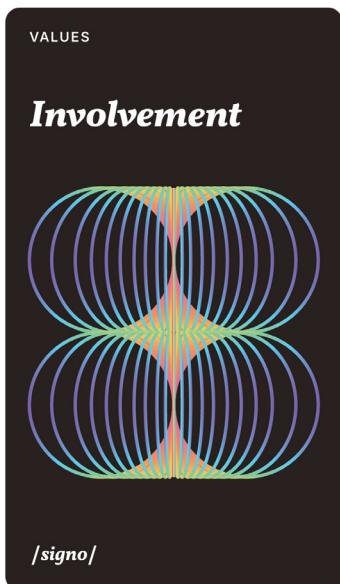
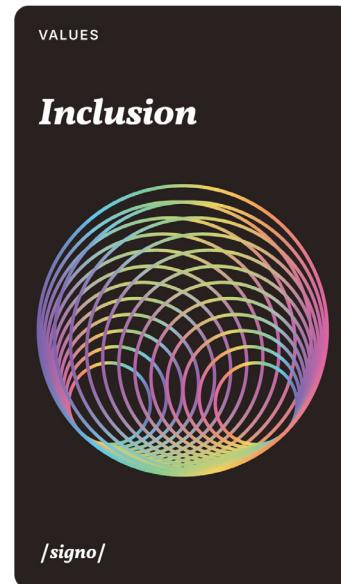
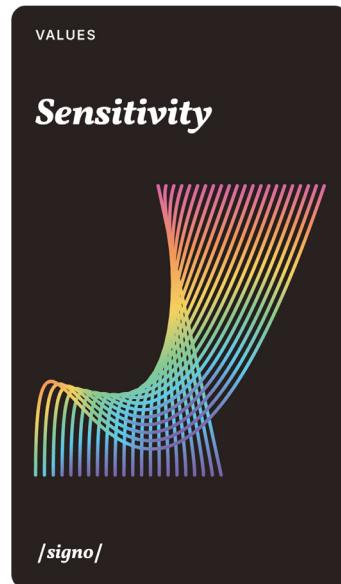
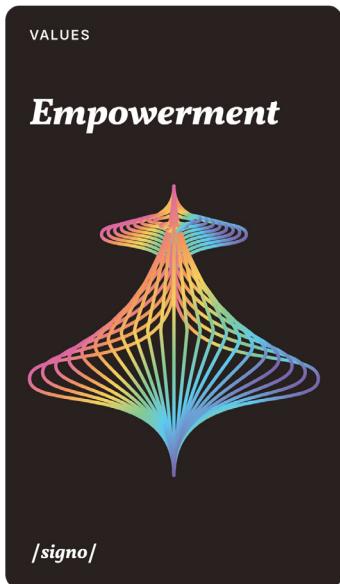


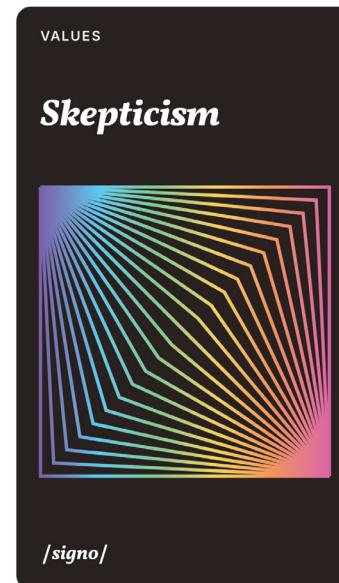
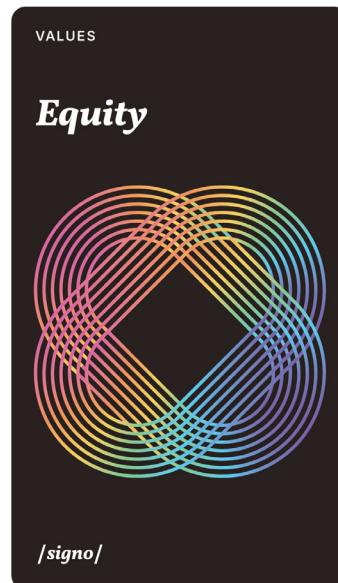
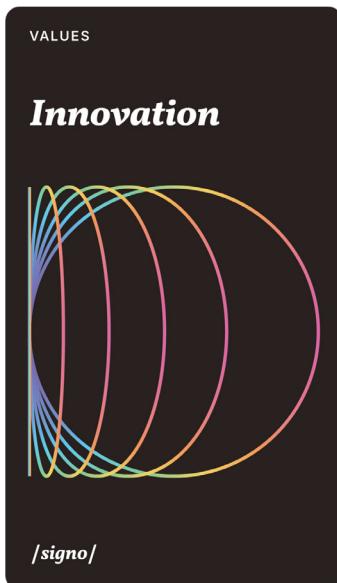
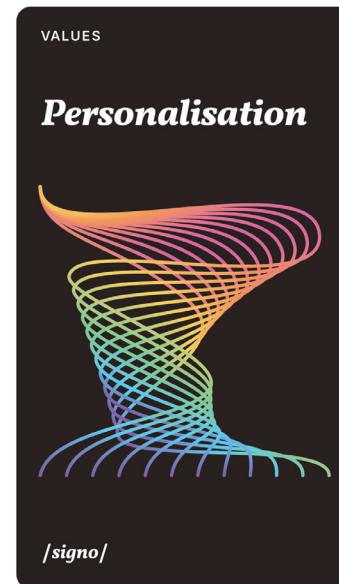
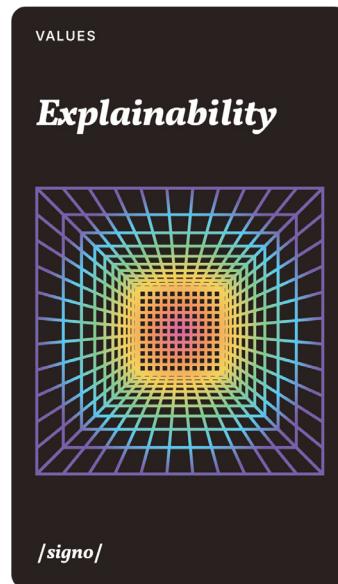
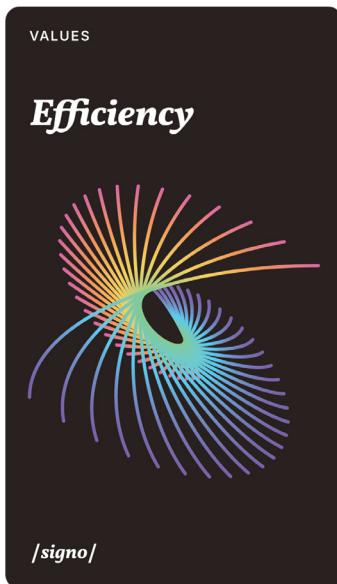
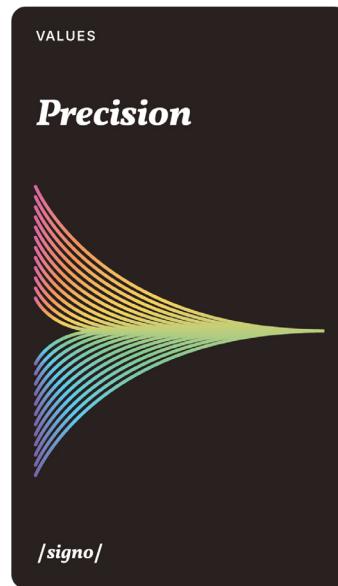
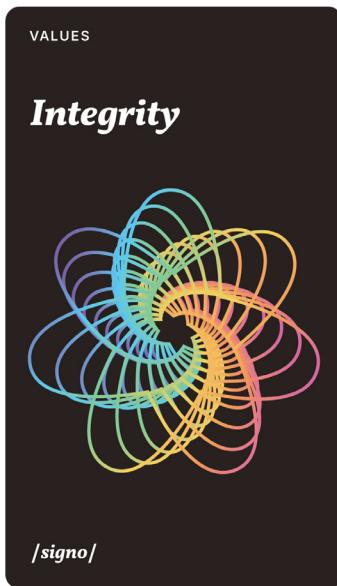
Signo has 110 value cards, each with a different abstract and evocative illustration, allowing values to be open to interpretation. Players can use these cards separately or place them on the game board. They can start by eliciting the values they most identify with and then map and prioritise these by placing them on the game board according to the meaning attributed to the axes and the scenario cards they are playing with.

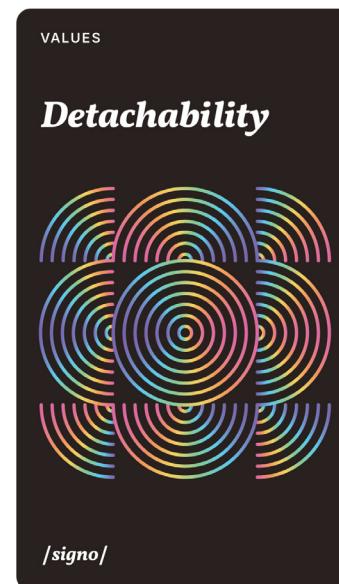
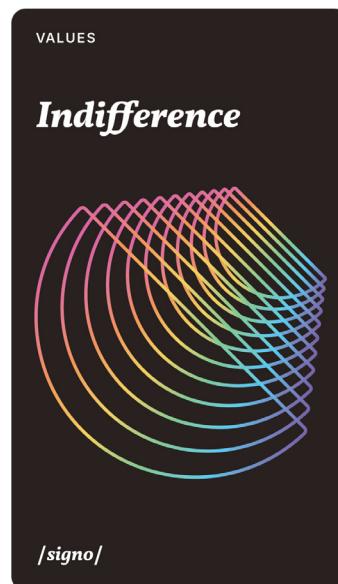
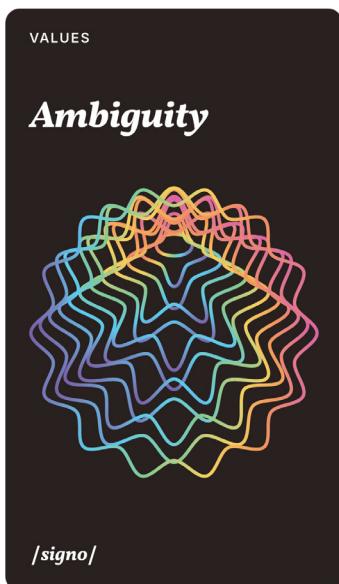
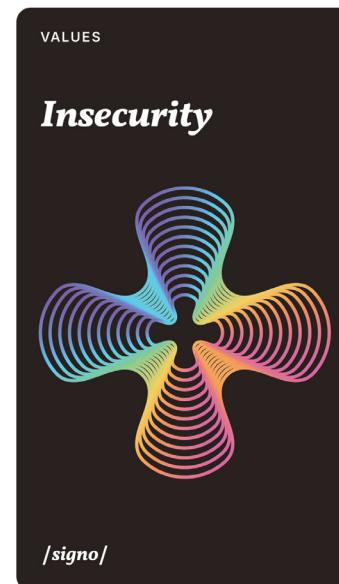
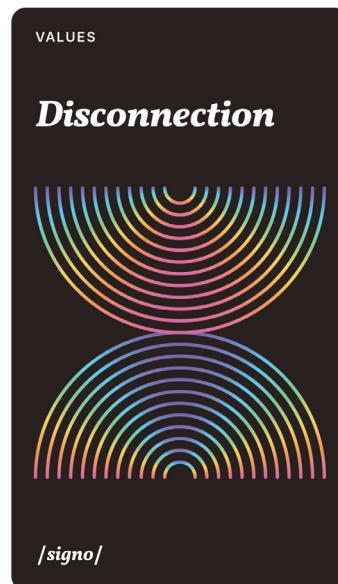
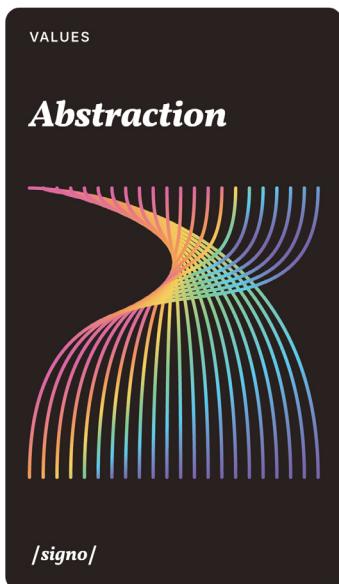
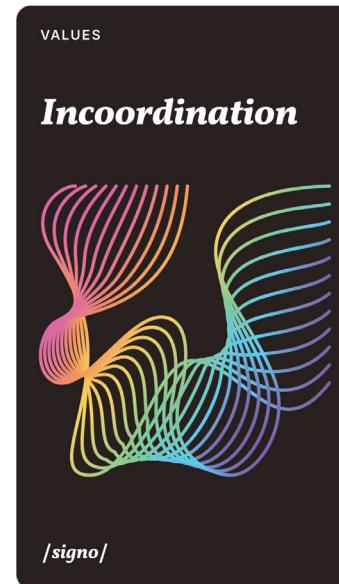
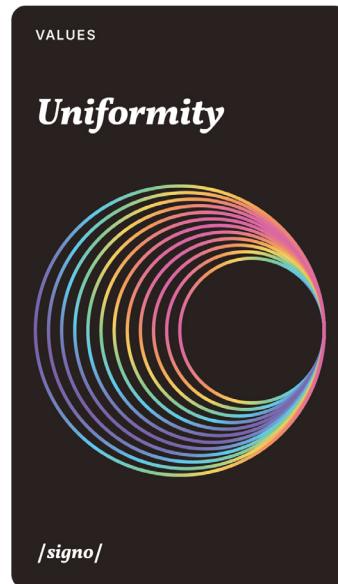
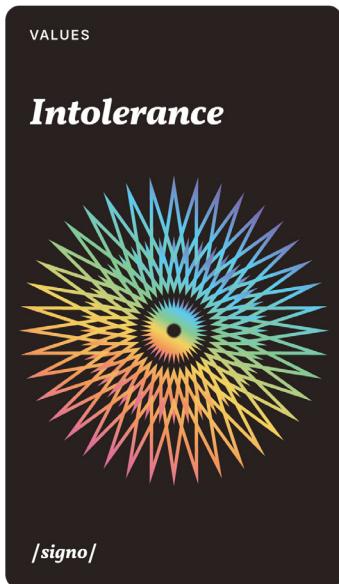
Signo also contains extra blank cards to allow players to add more values not included in this deck.

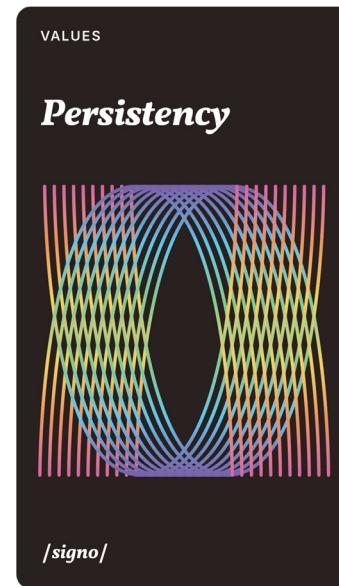
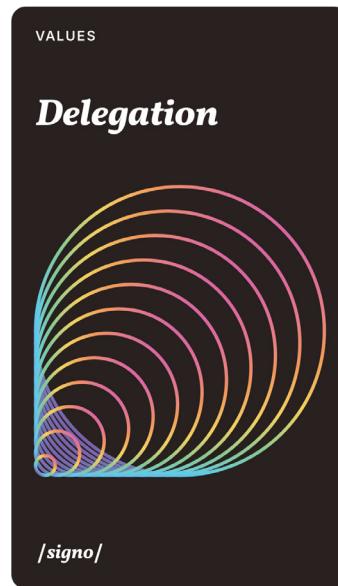
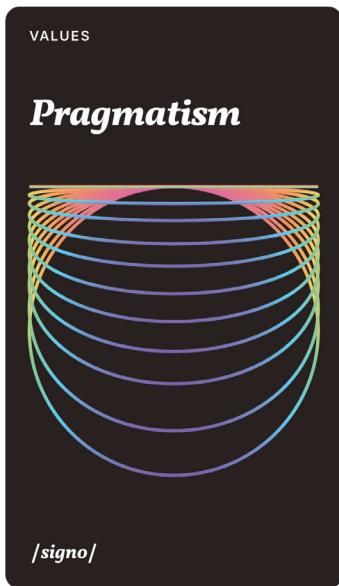
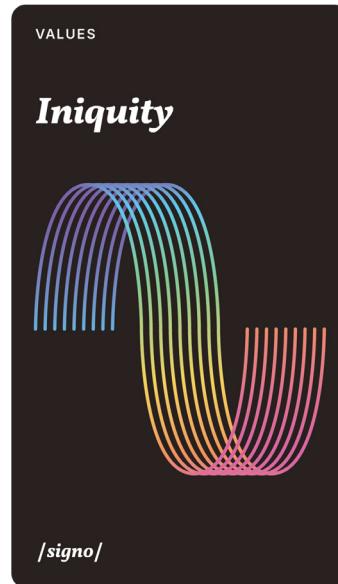
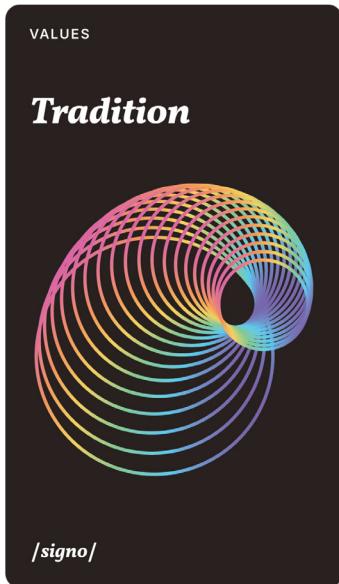
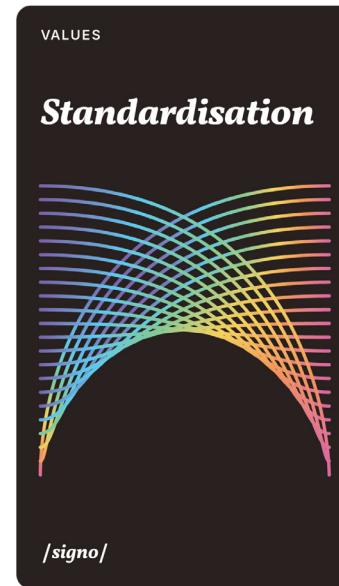
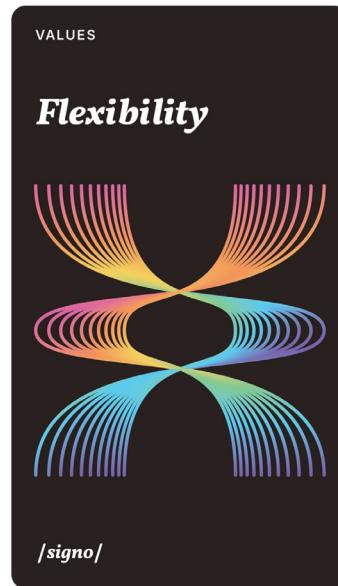
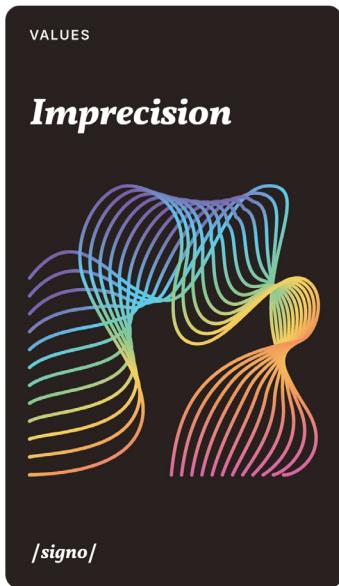


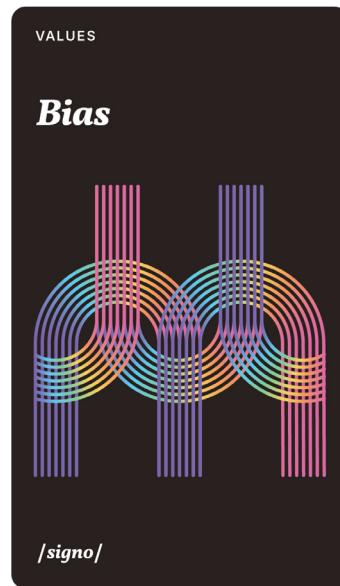
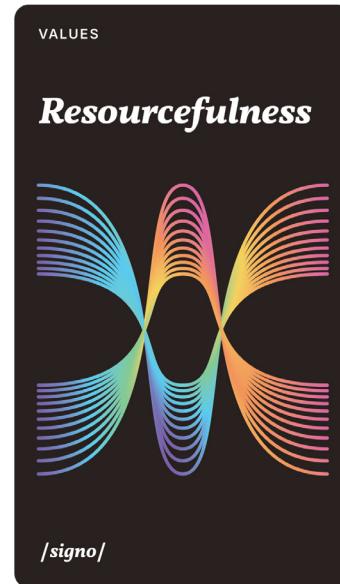
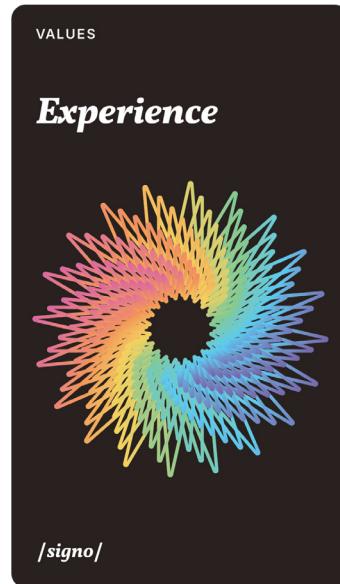
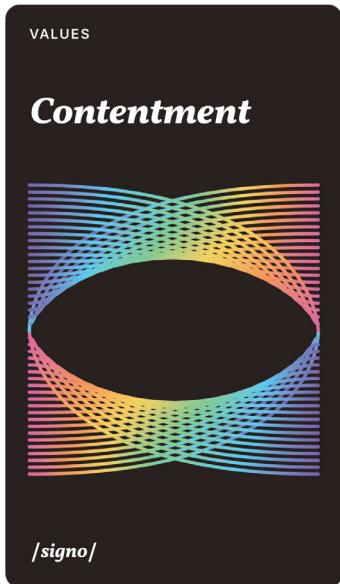
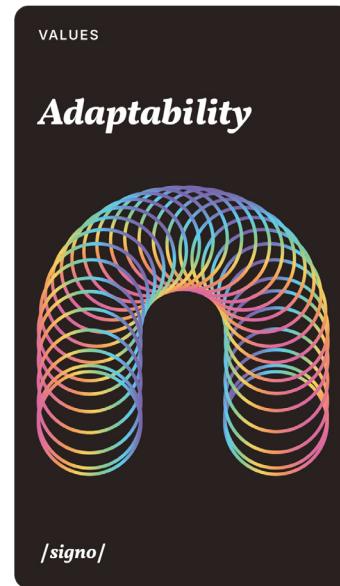
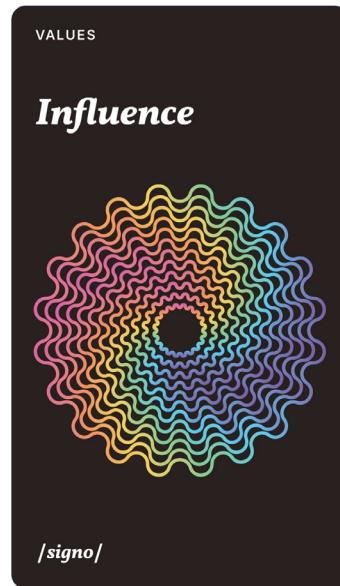
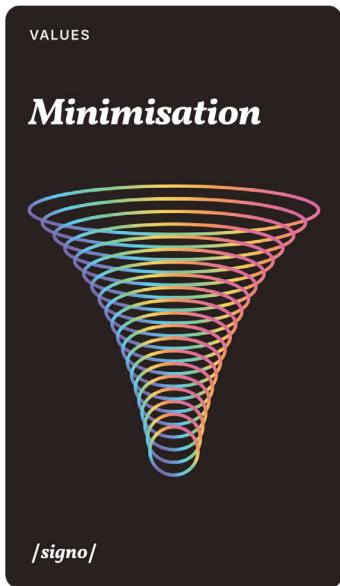


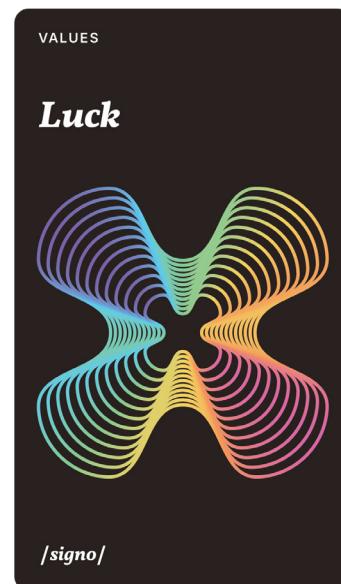
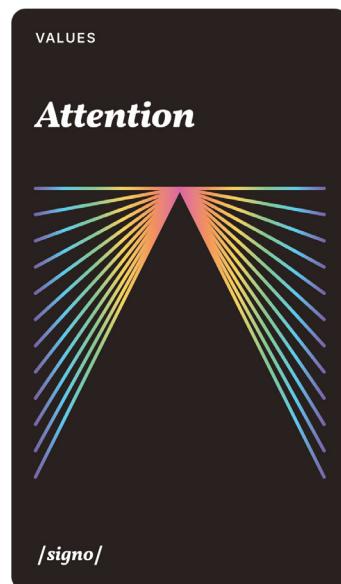
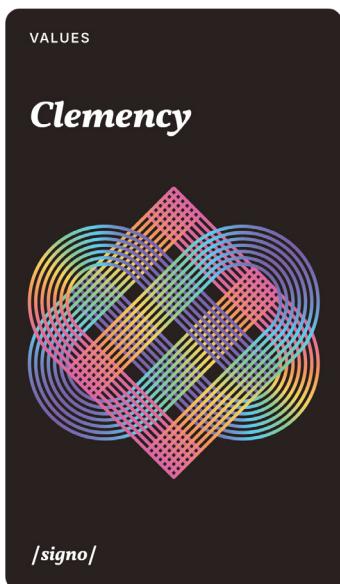
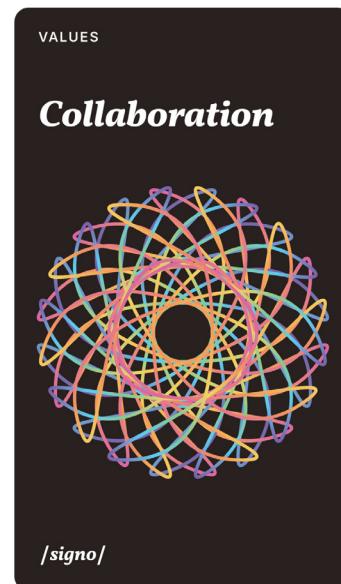
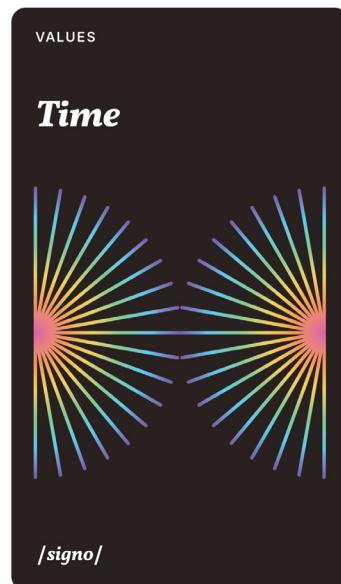
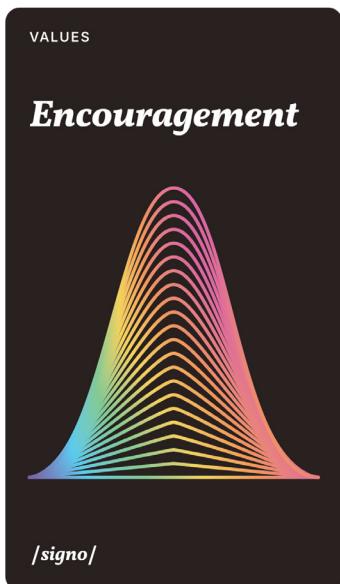
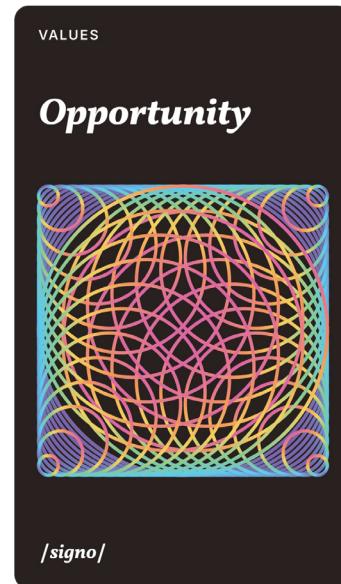
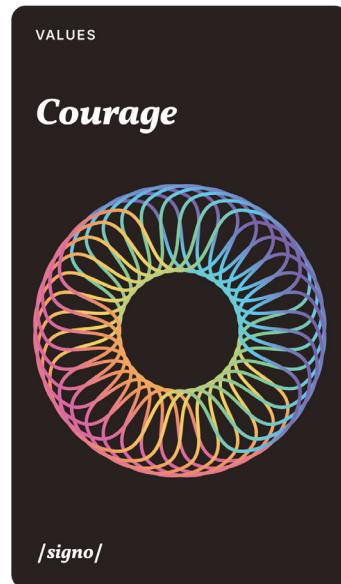
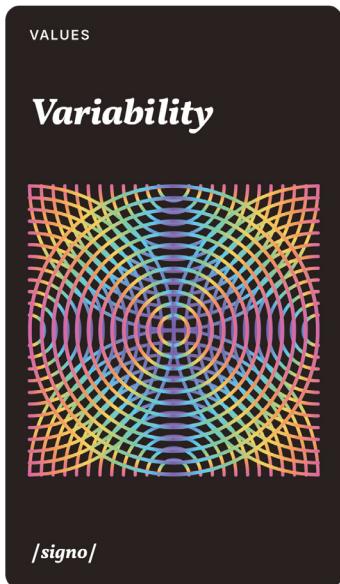


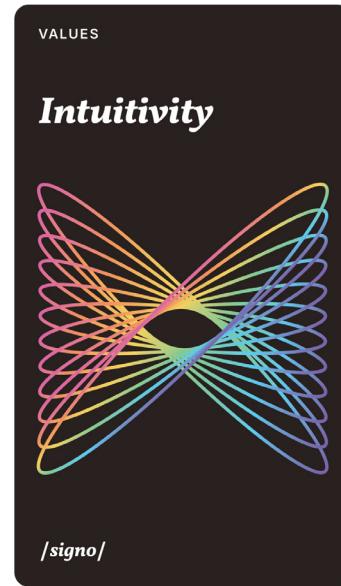
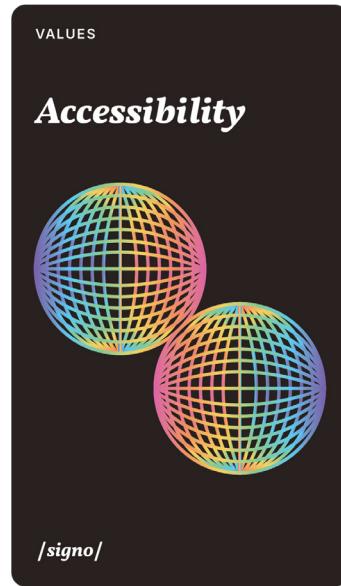
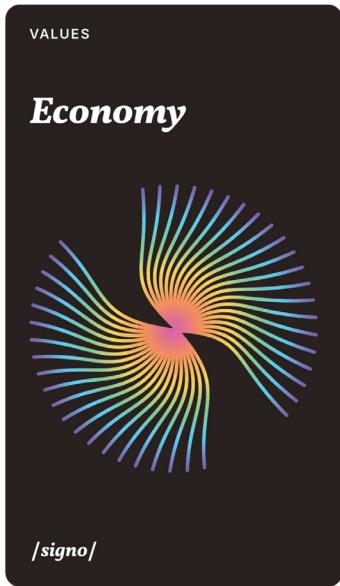
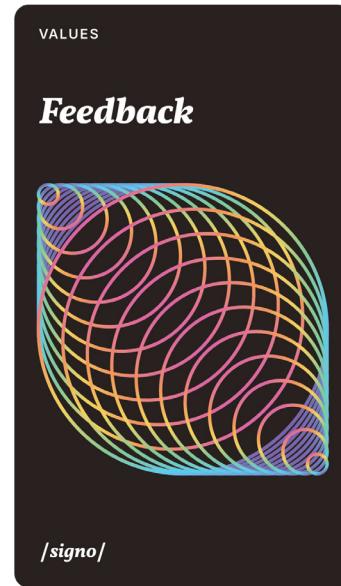
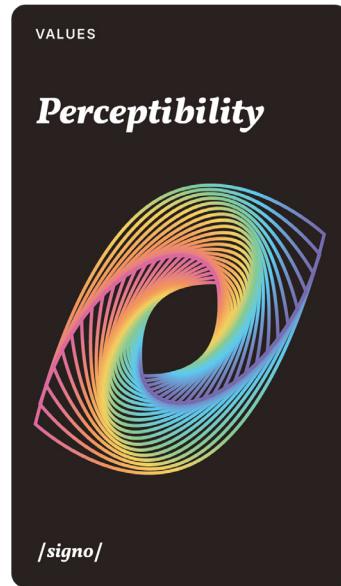
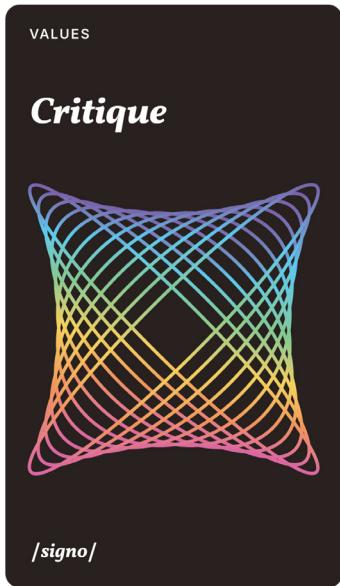
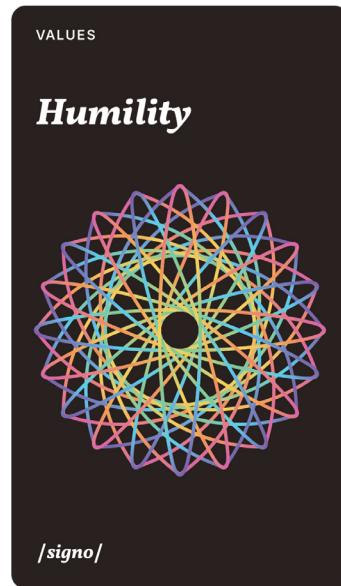
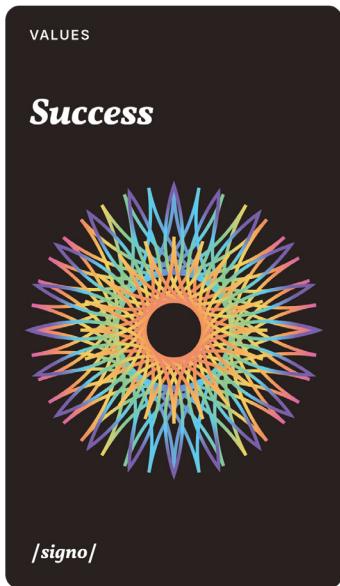


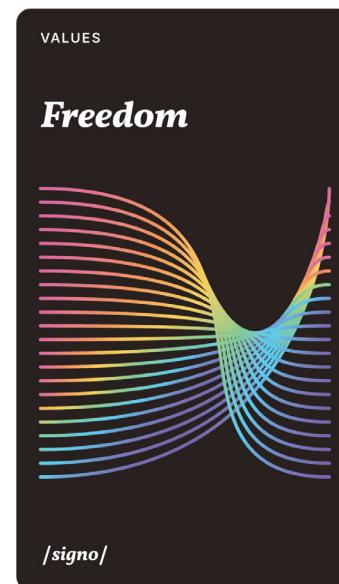
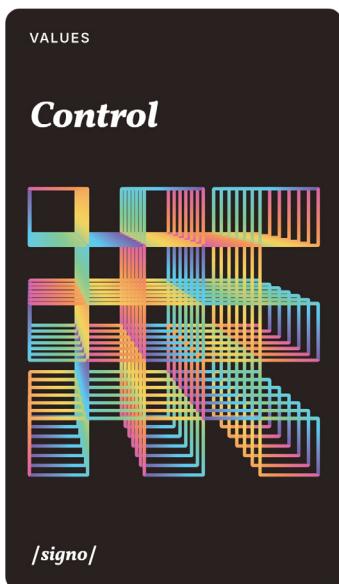
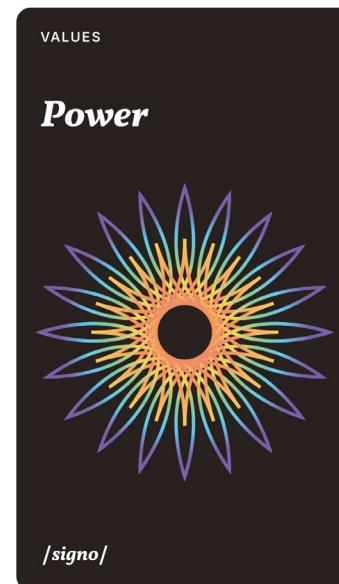
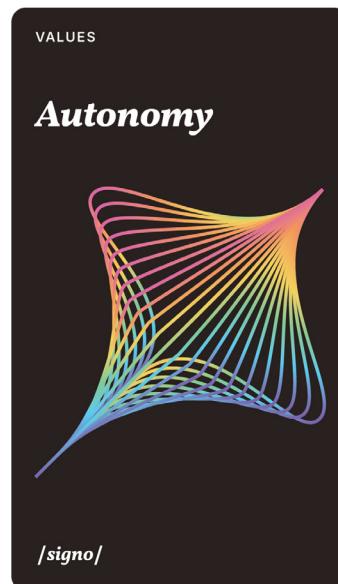
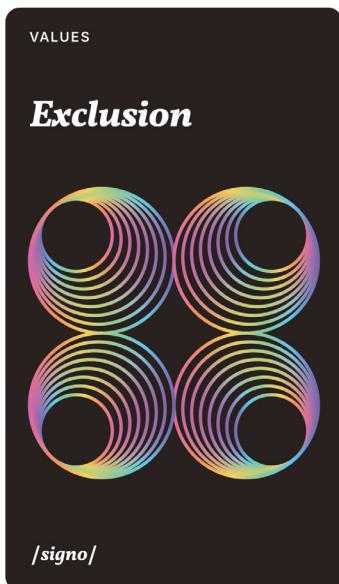
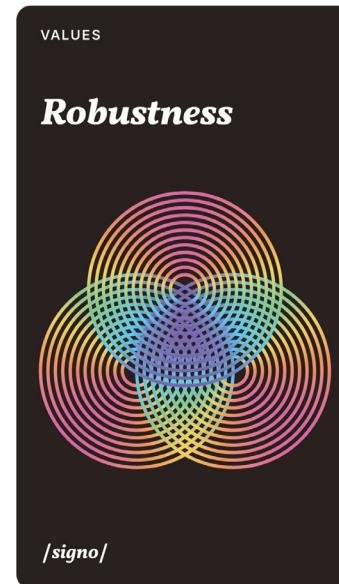
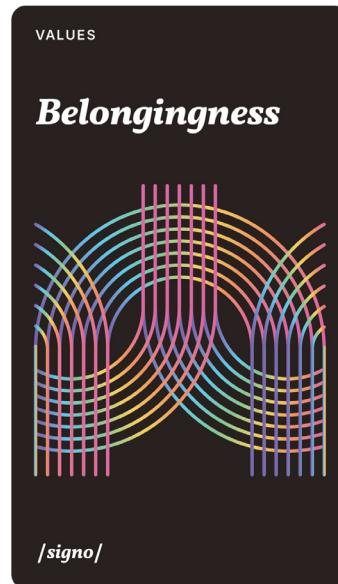
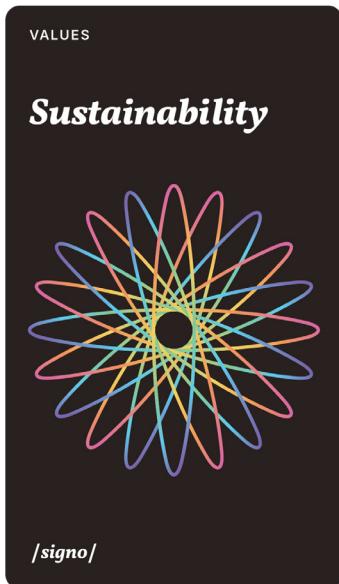


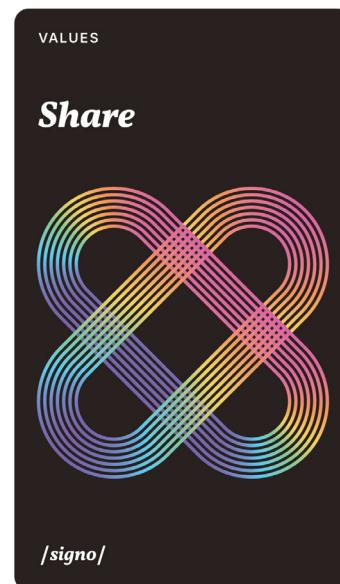
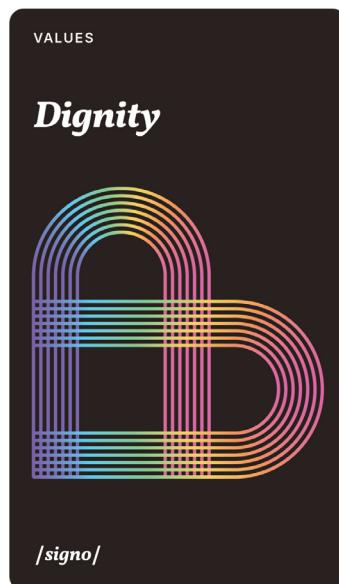
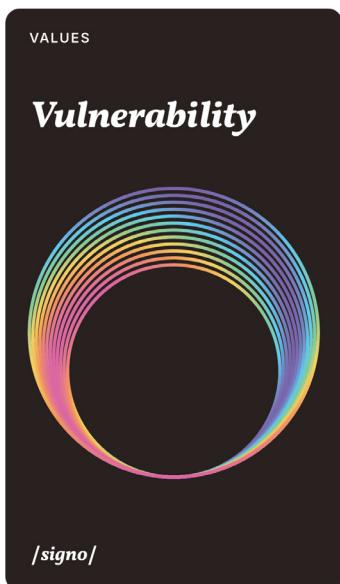
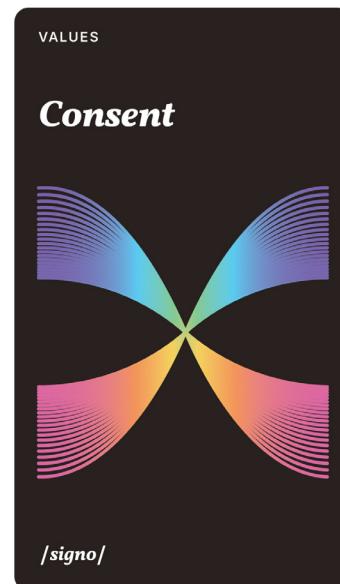
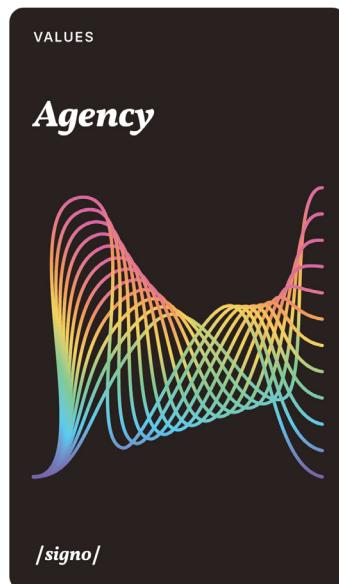
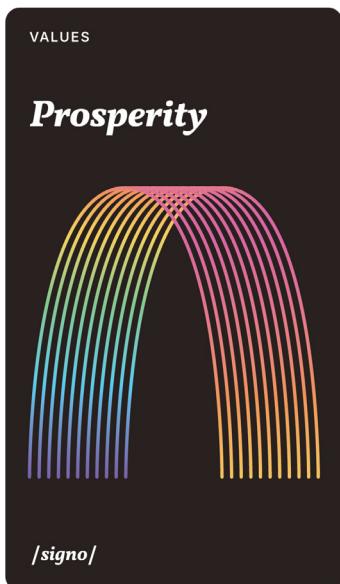
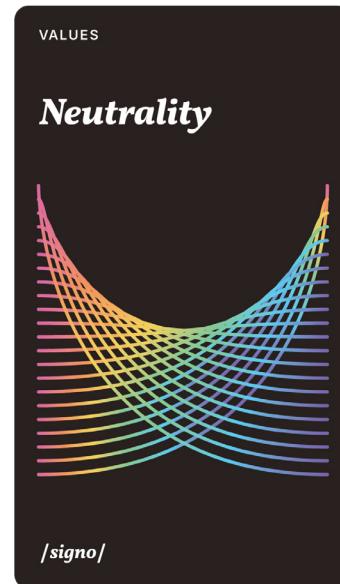
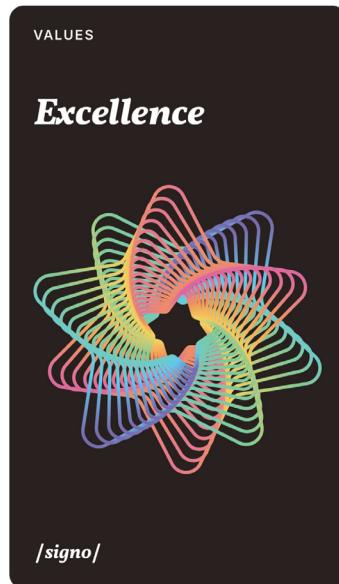
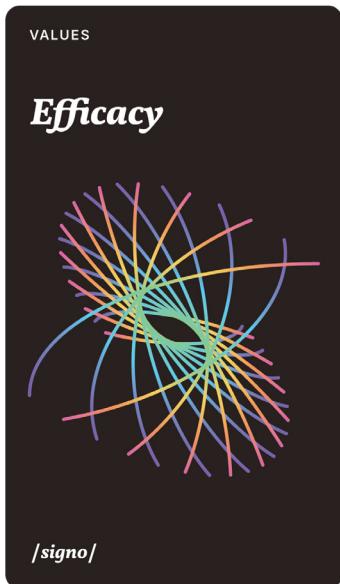


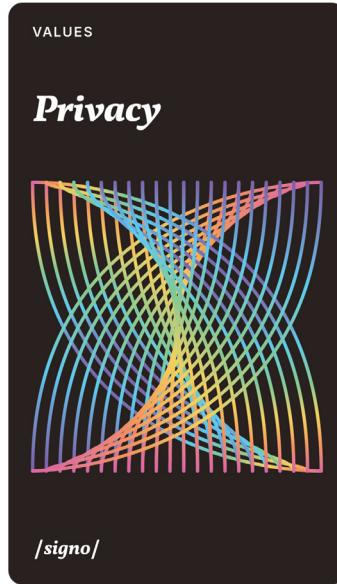
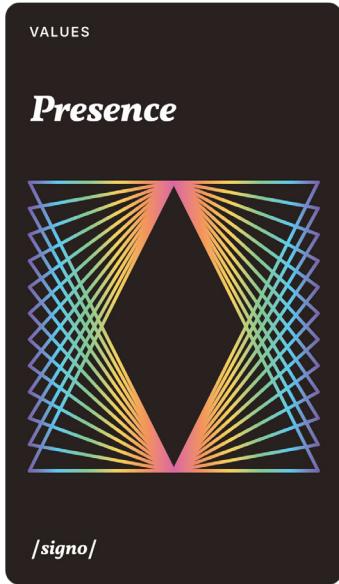
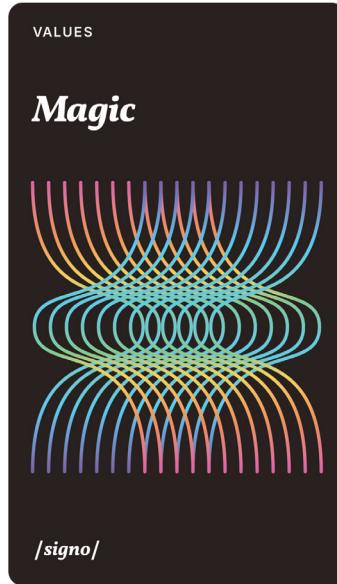
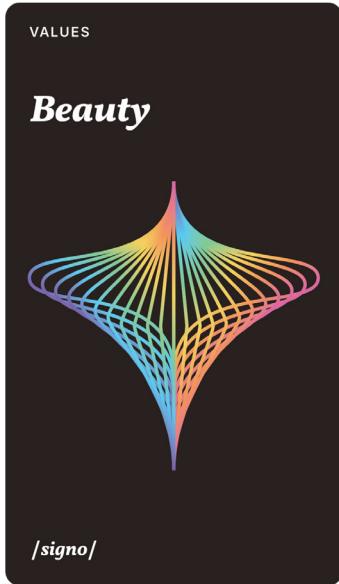
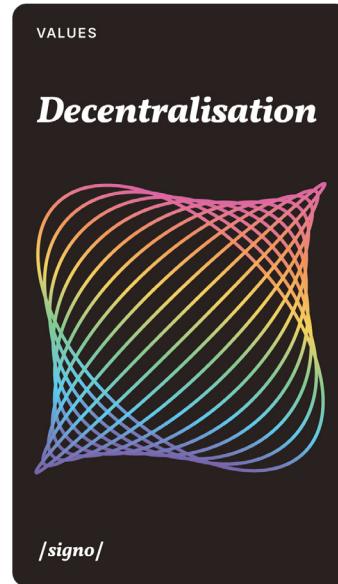
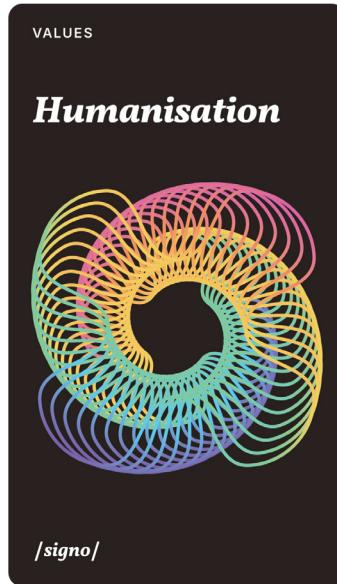
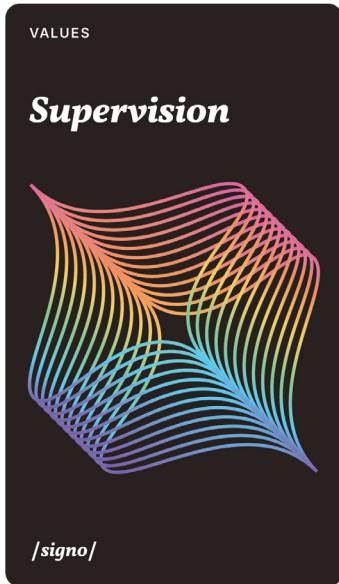


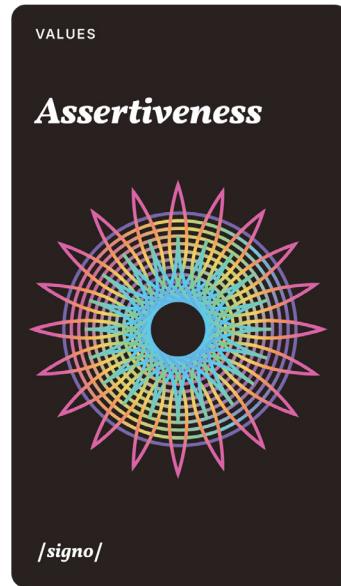
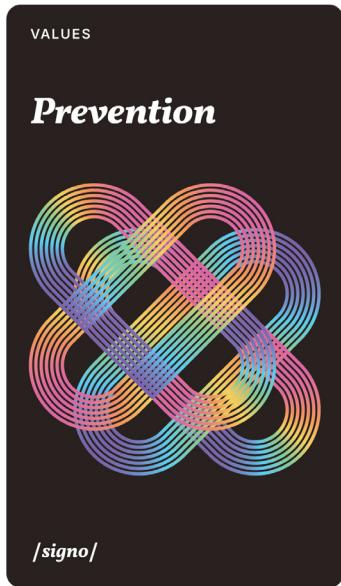
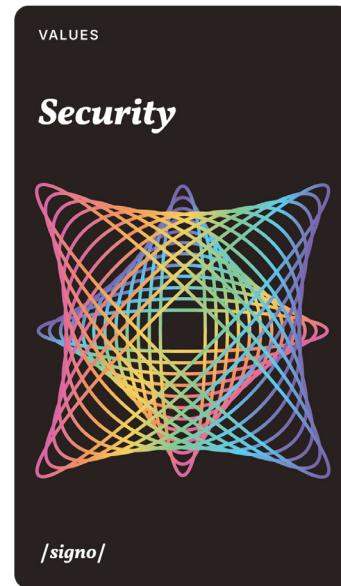
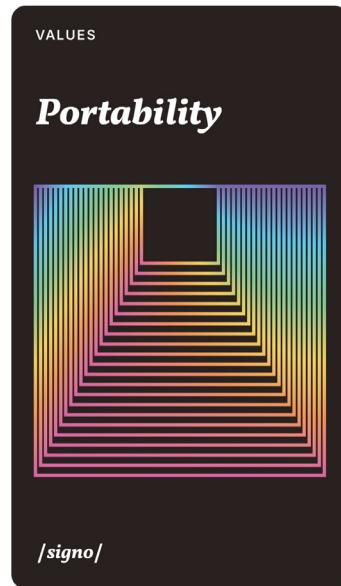
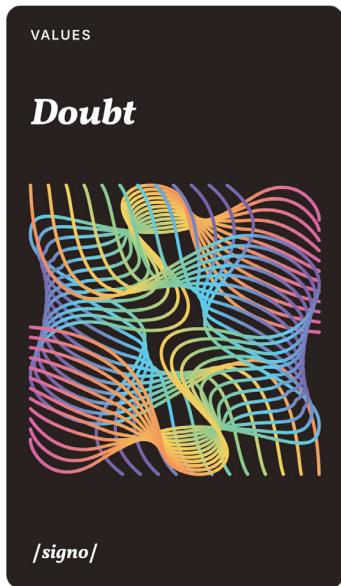








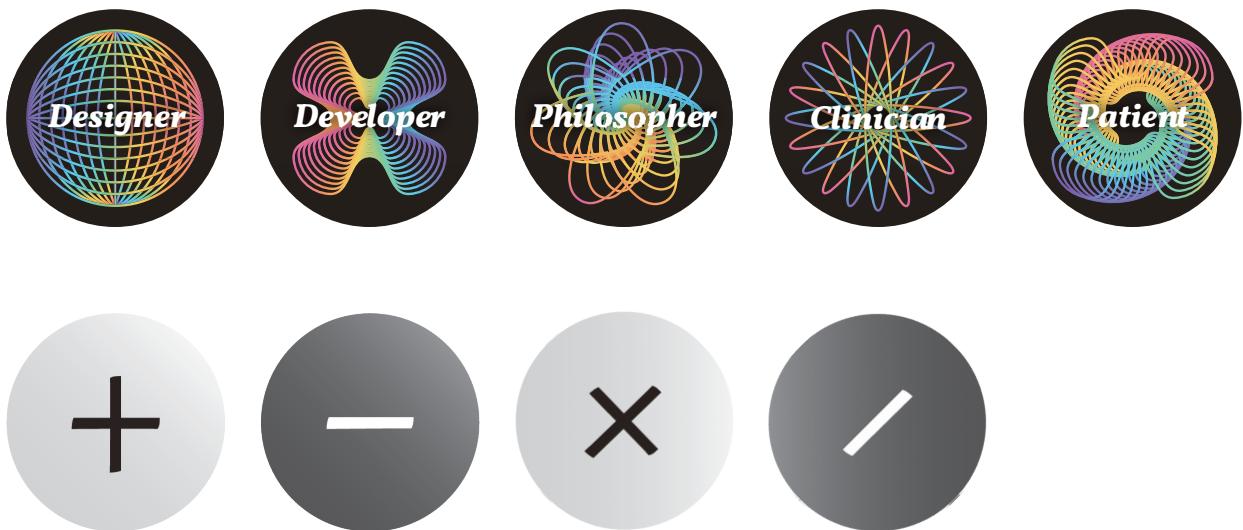


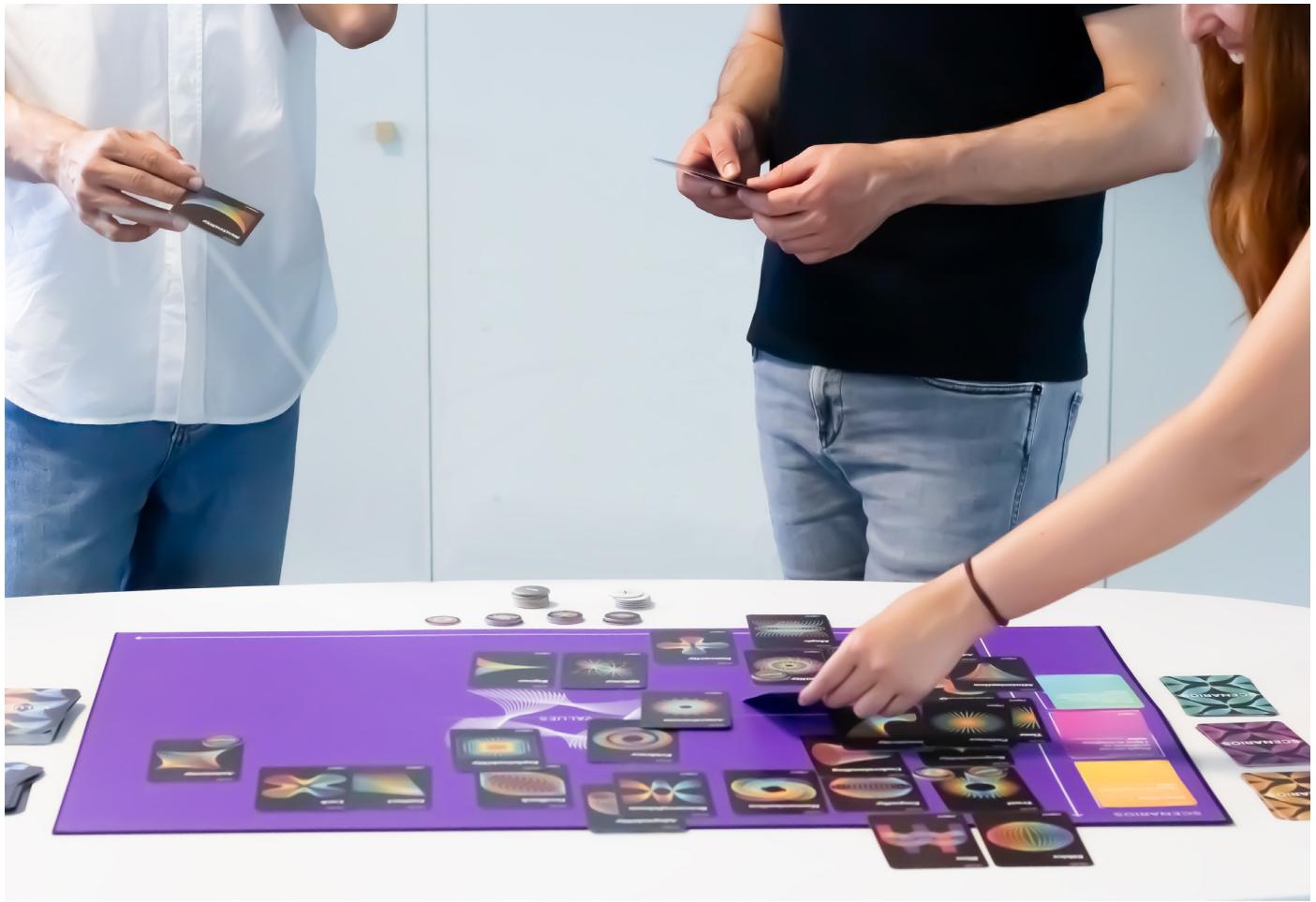


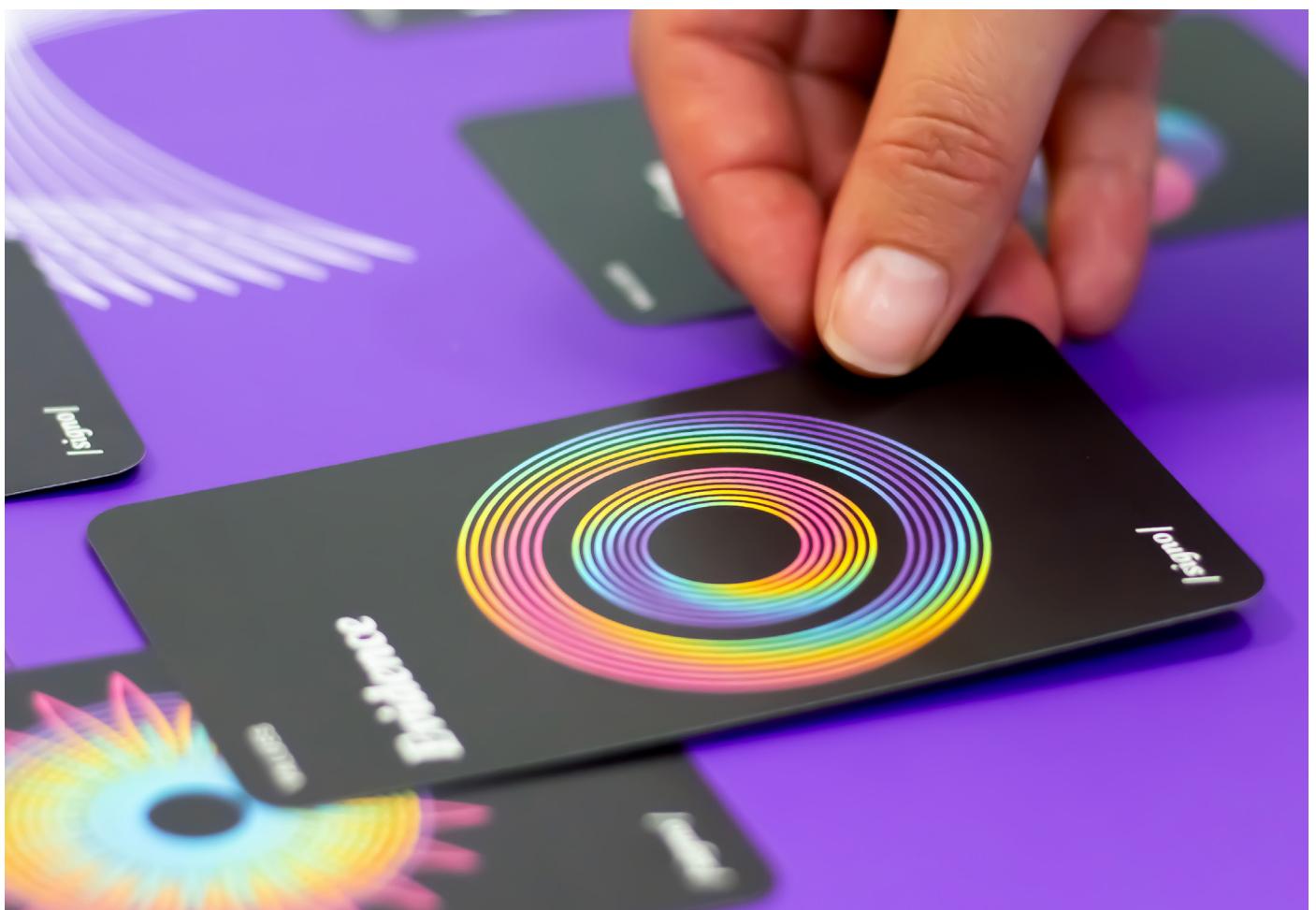


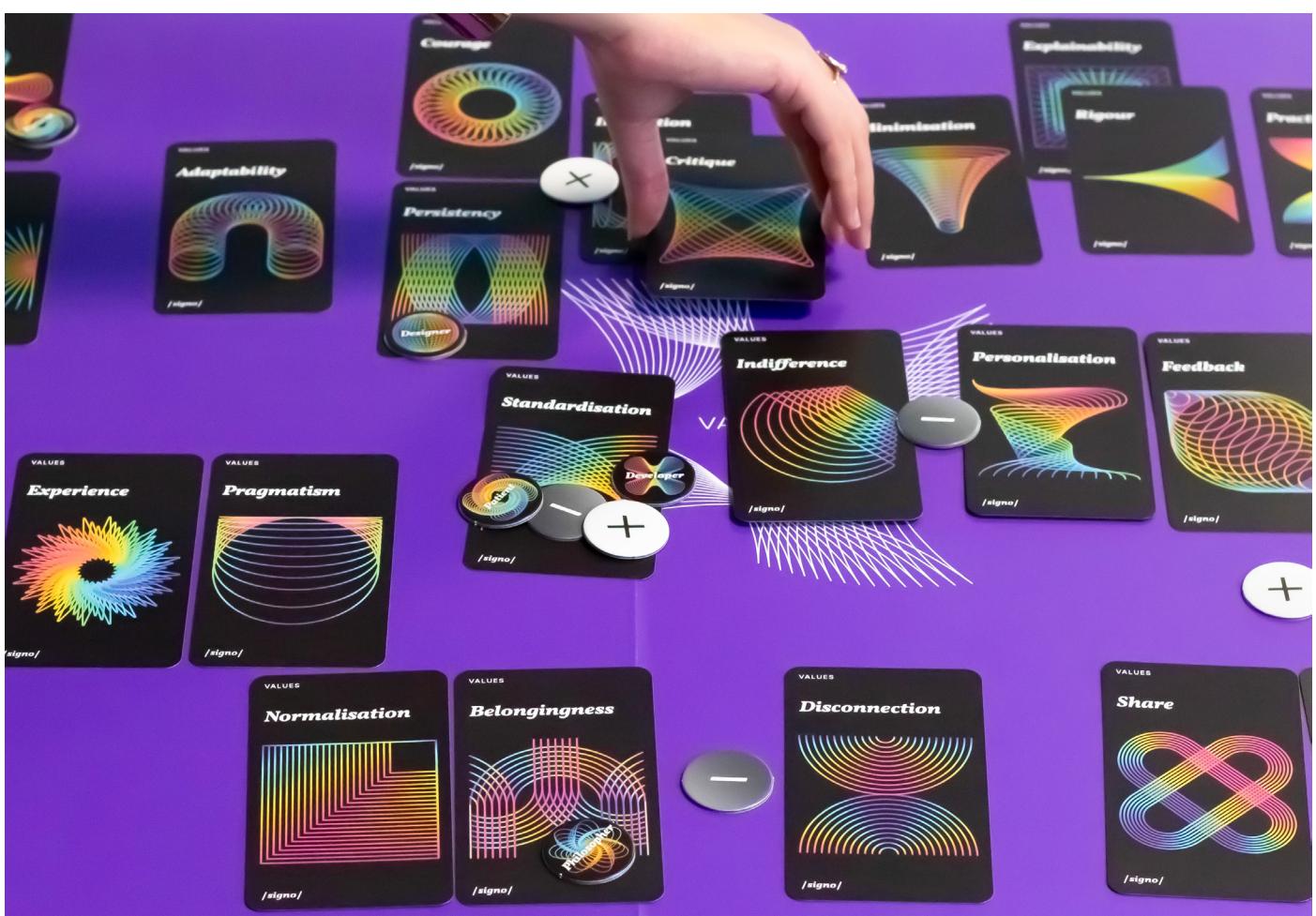
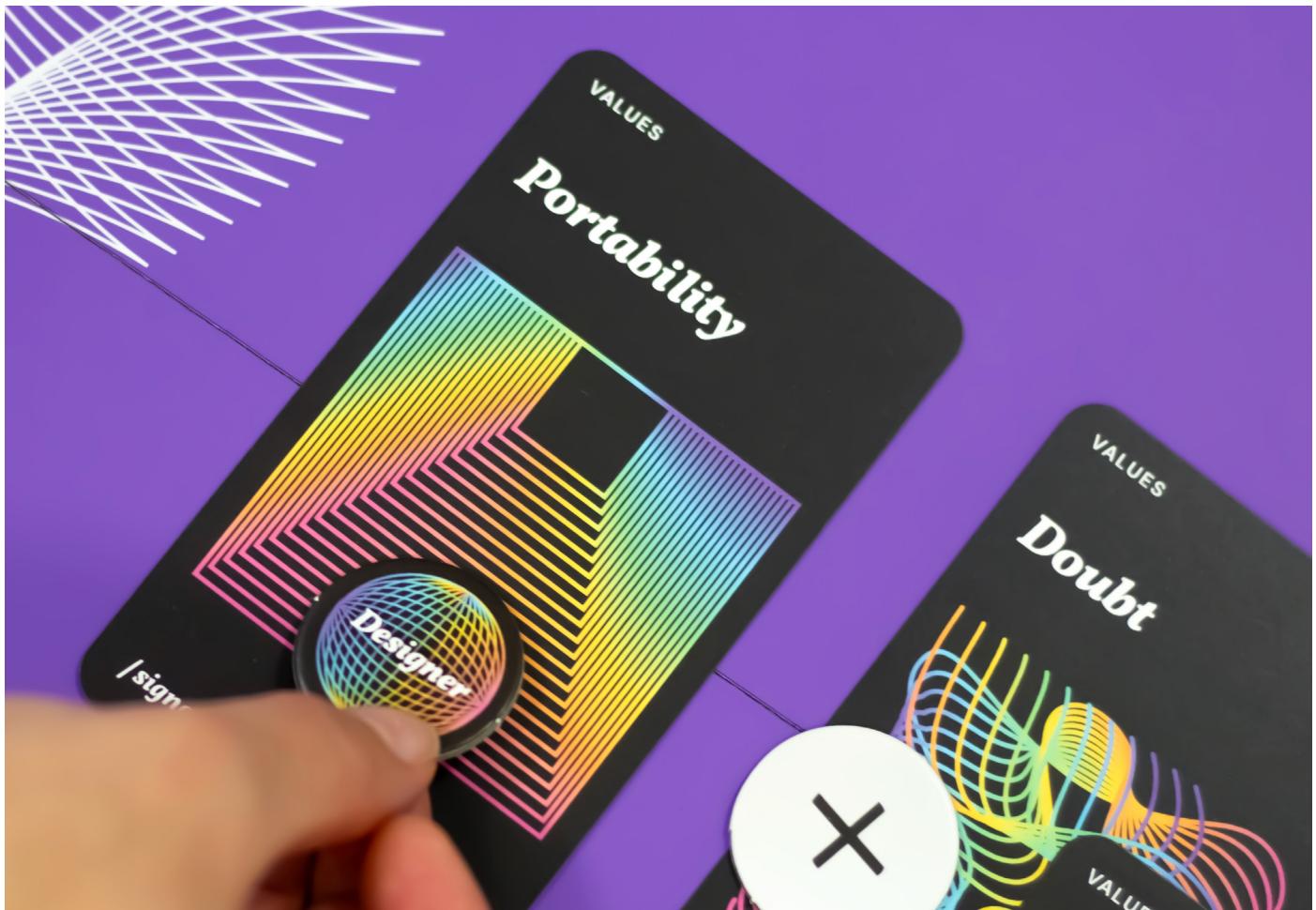
Signo has two types of tokens that players can place on the top of the value cards. The profile tokens represent six different archetypes of profiles that affect or are affected by technology. These can be designers, developers, philosophers, clinicians and patients. Since each profile can consider different values when designing technology, players can use these tokens to highlight the values different profiles should account for. Nonetheless, these are suggestions, and players can attribute different meanings according to their needs.

For instance, the "developer" token can represent the "technology", and the "patient" token can represent the "user" of that technology. Players can also use the polar tokens to highlight value cards according to a positive or negative perspective, depending on their context. Additionally, players can use these tokens to make arithmetic connections between values. For instance, adding, subtracting, multiplying or dividing values near each other.









/s/

Partners

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