BIOMIMICRY WORKSHEET
SHAPE CHANGE

HOW TO USE IT

- Nature as inspiration source.
- Nature as brainstorm tool for ideation: high in creativity and low in feasibility.
- Nature as understanding strategies, mechanisms, systems ,and processes, for translation into new products and services.
- Integrating nature as a partner into a design process, generative, circular, sustainable, etc.

BIOMIMICRY

Interdisciplinary design method taking nature as a model to meet the challenges of innovation development in social, environmental, and economic perspective in a sustainable way.

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BIOMIMICRY WORKSHEET
SHAPE CHANGE

In this worksheet, we will explore the concept of biomimicry through the lens of shape change in nature. By observing and understanding how organisms in nature change their shape to adapt to their environment, we will brainstorm alternative ways for existing screen interactions.

WORKSHEET OBJECTIVES
- Engage in a hands-on activity using natural shape-changing mechanisms to brainstorm new types of designs.
- Learn how to use biomimicry for brainstorm purposes.
- Encourage critical thinking in the design process.

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THINKING HOW NATURE OPERATES
NATURE AS INSPIRATION FOR IDEATION

IDEATION GOALS
- Translating functions found in nature into new ways of interaction in public space.
- Designing a new interactive experience.
- Discussing alternative possibilities for existing screen interactions.

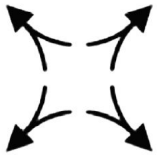KADEN DESIGN

DESIGN CHALLENGE
SHAPE CHANGE

How to integrate the function of **'shape change'** to create **future scenarios** for **new ways of interacting**, besides the existing screen interactions.
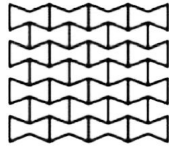
KADEN DESIGN

DESIGN CHALLENGE
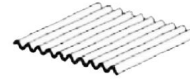## SHAPE CHANGE

Shape changes found in nature

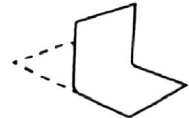| Elastomers | Auxetics | Rollable | Foldable | Inflatable | Anisotropic | Multi-stable | Shape memory |

Source: Qamar, Isabel PS, et al. 2020

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WORKSHOP SET-UP
INTERACTION

Choose a Type of Interaction

For example, Conversing: Interacting as if having a conversation.

INTERACTIONS

Conversing:	**Interacting by as if having a conversation.**
Instructing:	Issuing commands and selecting options.
Manipulating:	Interacting with objects by manipulating them.
Exploring:	Moving through a virtual environment or a physical space

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WORKSHOP SET-UP
CONTEXT

Choose the Context of a Real-World Setting.

Example: a train station where a person waiting for a delayed train has a conversation to someone (not present at the station) explaining that they are late for their meeting.

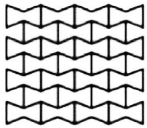- Use images to visualise the context.

WORKSHOP SET-UP
SHAPE CHANGE

Participants choose the type of shape change.
The shape change they choose is integrated into the design of an intuitive and natural conversation using any kind of (imagined) technology.
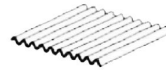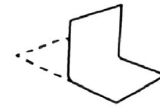

Elastomers   Auxetics   Rollable   Foldable   Inflatable   Anisotropic   Multi-stable   Shape memory

Source: Qamar, Isabel PS, et al. 2020

BRAINSTORM WORKSHOP
'CRAZY EIGHT'

1 **'Crazy Eight'**
The first step is an individual brainstorm using the technique of 'Crazy Eight'.

Instructions:
- Sketch or write down 8 ideas in 8 minutes.
- Fold the A4 paper into 8 parts.
- Everybody has to come up with 8 ideas, don't overthink the quality of the ideas, everything is good!
- Time the 8 minutes.

Materials: A4 paper and pens

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BRAINSTORM WORKSHOP
COMBINE IDEAS

2

Combine ideas
The second step is to discuss the ideas in pairs or trio to get inspired and together pick the best idea to create a future scenario together.

Instructions:
- Show and discuss the ideas to each other.
- Pick one idea based on being the most creative.
- Improve the idea together.

Materials: A4 of A3 template (on slide 13) and pens

BRAINSTORM WORKSHOP
FUTURE SCENARIOS

3

Future scenarios
The third step is to create a future scenario together.

Instructions:
- Create a conceptual future scenario in four steps.
- Time 20-30 minutes for the exercise.

Materials: A4 or A3 template (on next slide) and pens

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FUTURE SCENARIO TEMPLATE

Name of idea

BRAINSTORM WORKSHOP
PITCH & TAKEAWAYS

4 **Pitch future scenarios**
The fourth step is to share the future scenarios with all the participants.

Instructions:
- Participants pitch their scenario to all participants and discuss.
- Time 2-3 minutes for the pitch.
- Takeaways using a 'one minute paper'.

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BIOMIMICRY WORKSHEET