



Exploring Axisymmetric Shape-Change's Purposes and Allure for Ambient Display: 16 Potential Use Cases and a Two-Month Preliminary Study on Daily Notifications

Maxime Daniel, Guillaume Rivière

► To cite this version:

Maxime Daniel, Guillaume Rivière. Exploring Axisymmetric Shape-Change's Purposes and Allure for Ambient Display: 16 Potential Use Cases and a Two-Month Preliminary Study on Daily Notifications. 15th ACM International Conference on Tangible, Embedded and Embodied Interaction, Feb 2021, Salzburg, Austria. , 2021. hal-03041113

HAL Id: hal-03041113

<https://hal.science/hal-03041113>

Submitted on 6 Jan 2021

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.

Public Domain



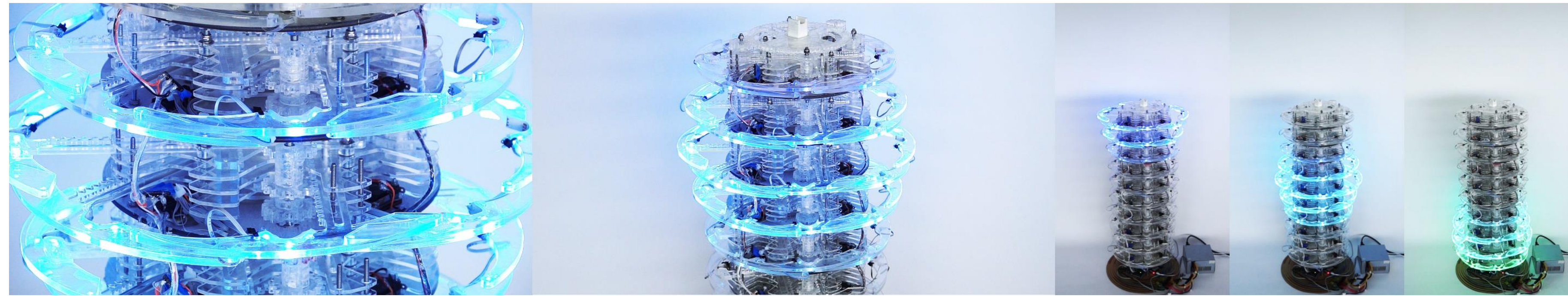
Maxime Daniel¹ and Guillaume Rivière²

¹Univ. Bordeaux, ESTIA INSTITUTE OF TECHNOLOGY, F-64210, Bidart, France

²Univ. Bordeaux, ESTIA INSTITUTE OF TECHNOLOGY, LaBRI, UMR 5800

AXISYMMETRIC SHAPE-CHANGE FOR AMBIENT DISPLAY

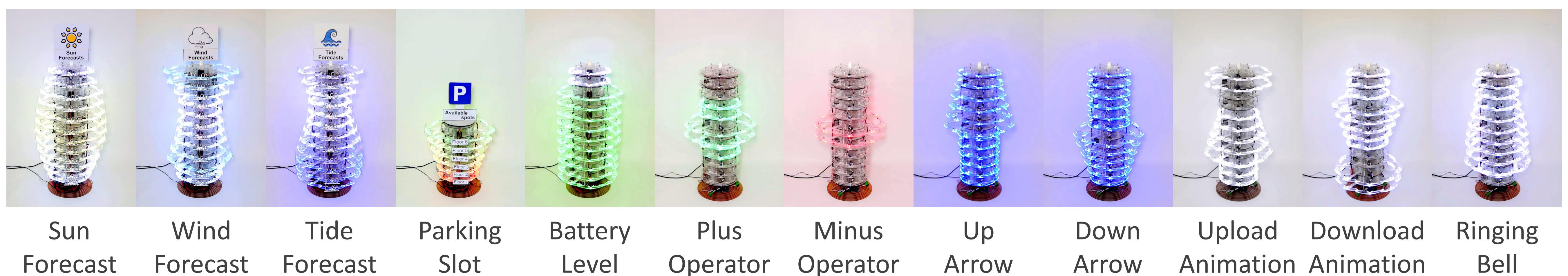
CairnFORM [Daniel et al., TEI'19] is a shape-changing display designed as a stack of expandable illuminated rings: it enables axisymmetric shape-change (e.g., it can morph from a cylindrical shape to a conical shape).



POTENTIAL APPLICATION PURPOSES

We propose 16 new use cases for axisymmetric shape displays, for four purposes [Alexander et al., CHI'18].

COMMUNICATE INFORMATION



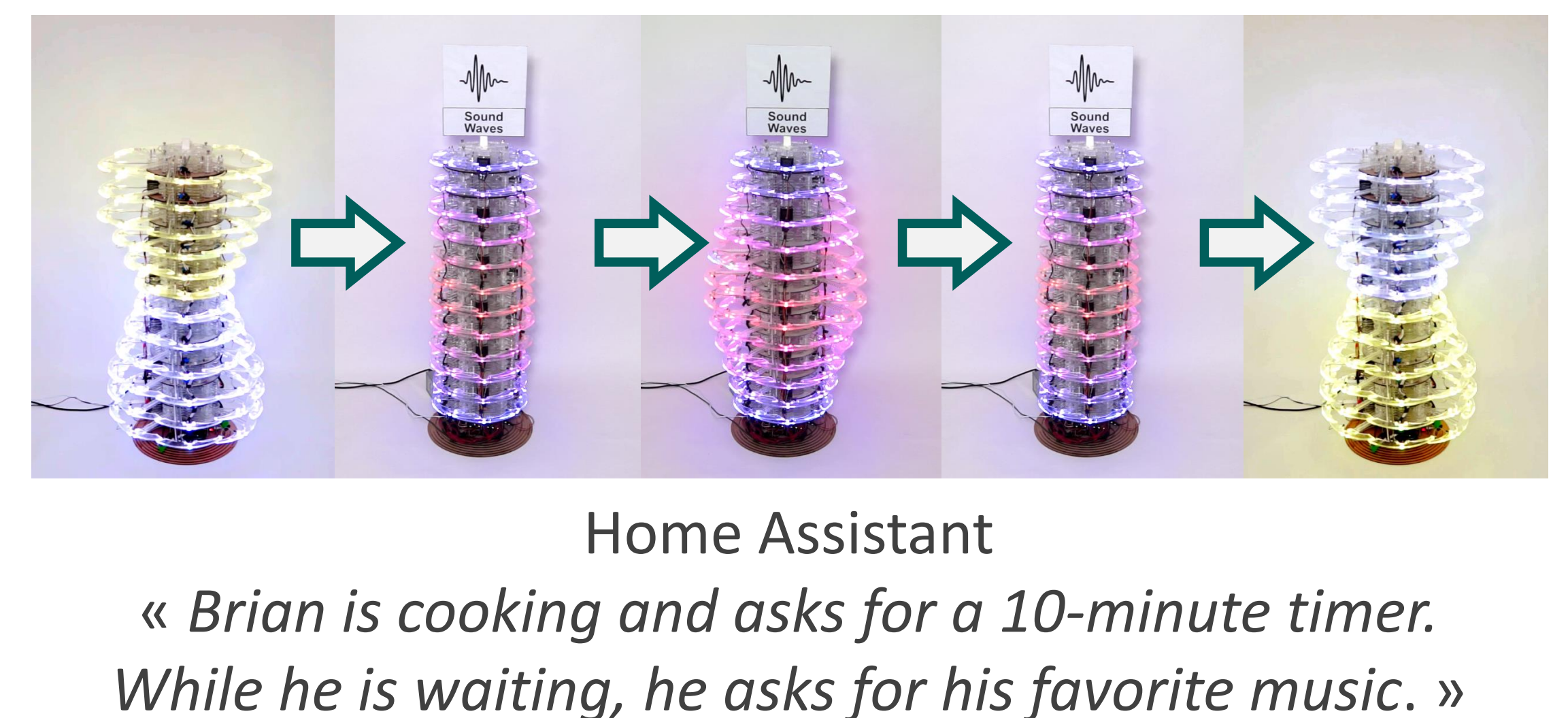
SIMULATE OBJECTS



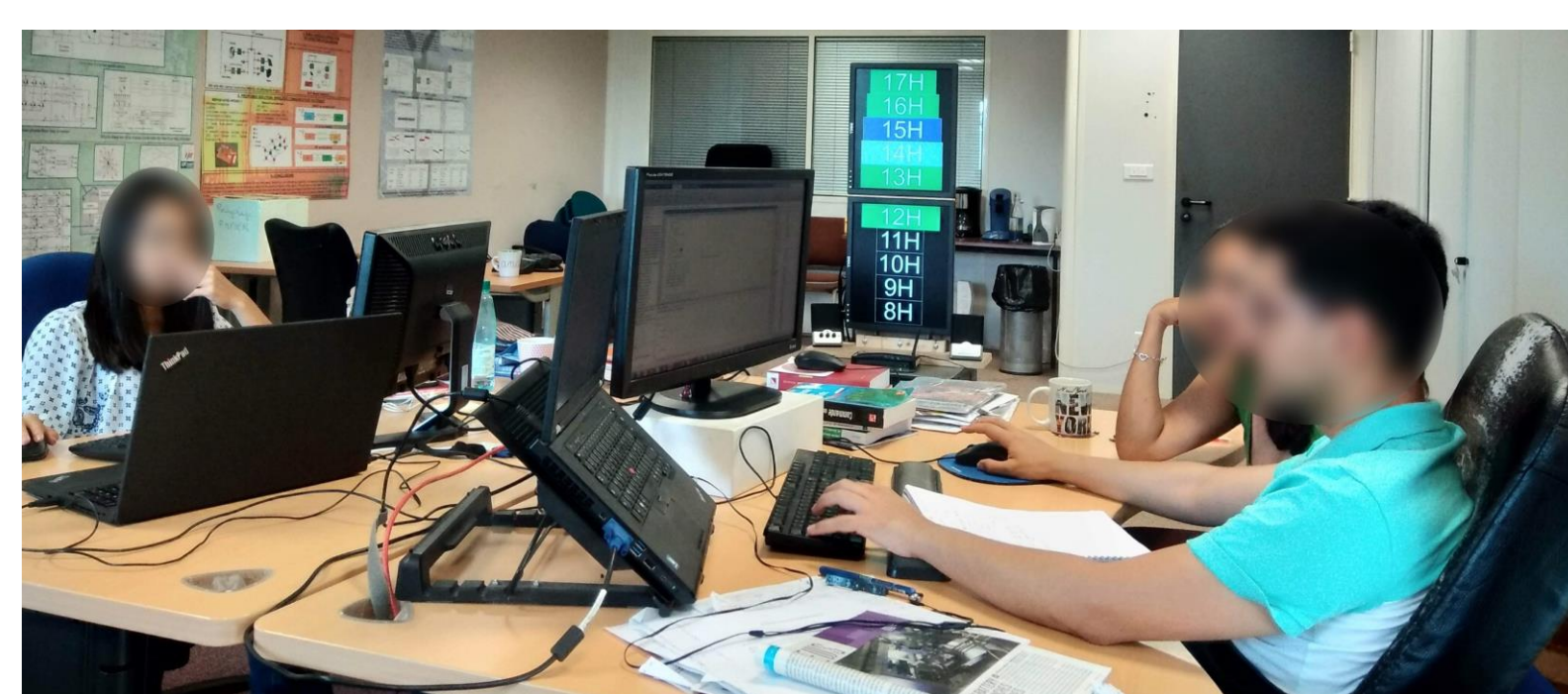
SYMBOLIC AND HEDONIC PURPOSES



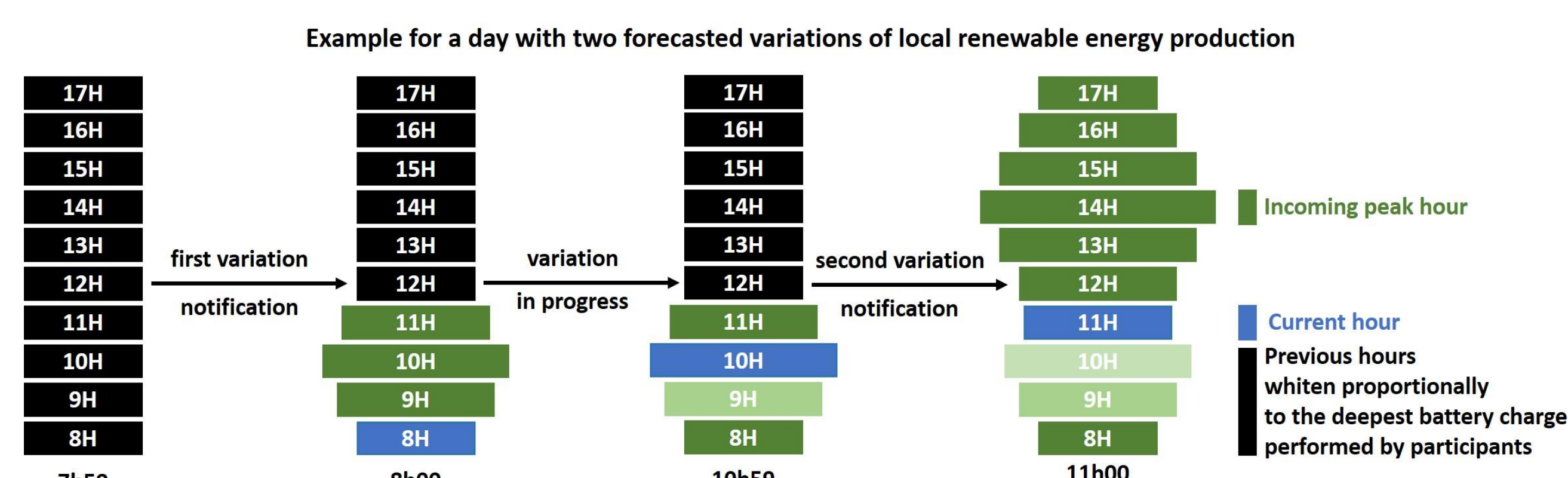
ADAPTIVE AFFORDANCE



PRELIMINARY TWO-MONTH FIELD STUDY

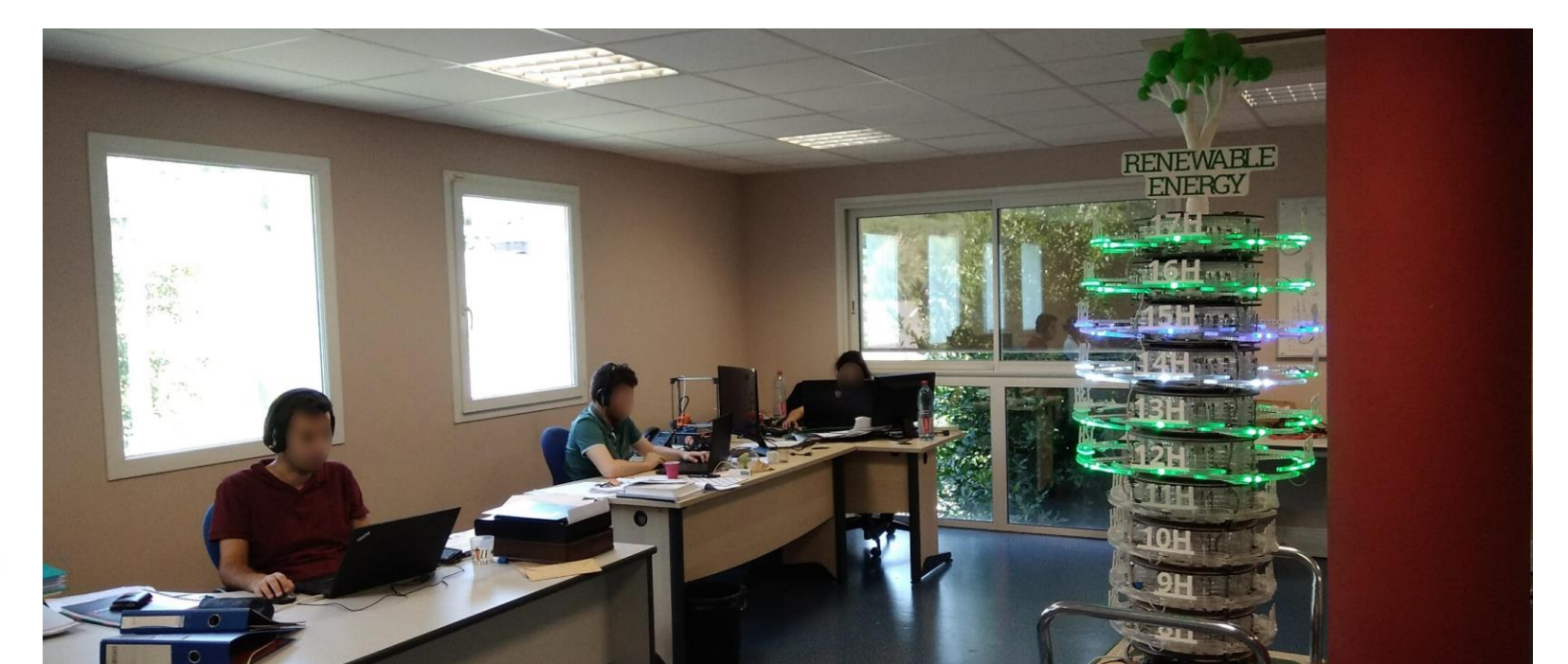


Flat Display in office 1
3 participants for two months



Both displays show a vertical histogram visualizing 10-hour forecasts of local renewable energy production

APPARATUS

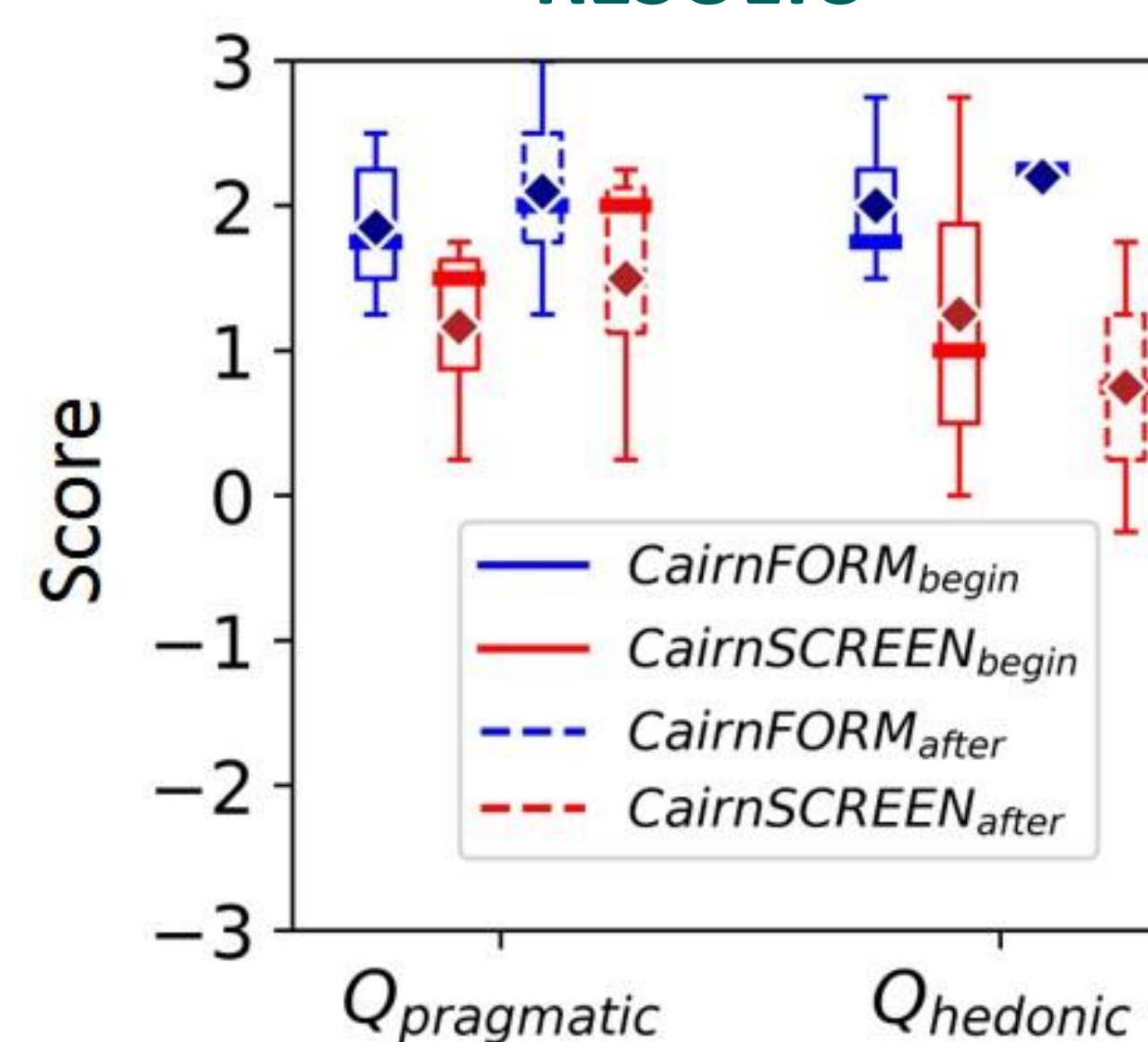


Axisymmetric Shape Display in office 2
3 participants for two months

SHIFTING LAPTOP BATTERY CHARGE

- If battery level > 50% before a peak hour then unplug laptop
- If battery level < 50% before a peak hour then plug laptop without battery
- If peak hour then plug laptop

RESULTS



Axisymmetric Shape Display is as pragmatic as Flat Display

Both displays helped participants to charge laptop batteries more often and deeper during peak hours.

Axisymmetric Shape Display is more hedonic than Flat Display

Participants stated that axisymmetric shape-change is still fascinating after two months.