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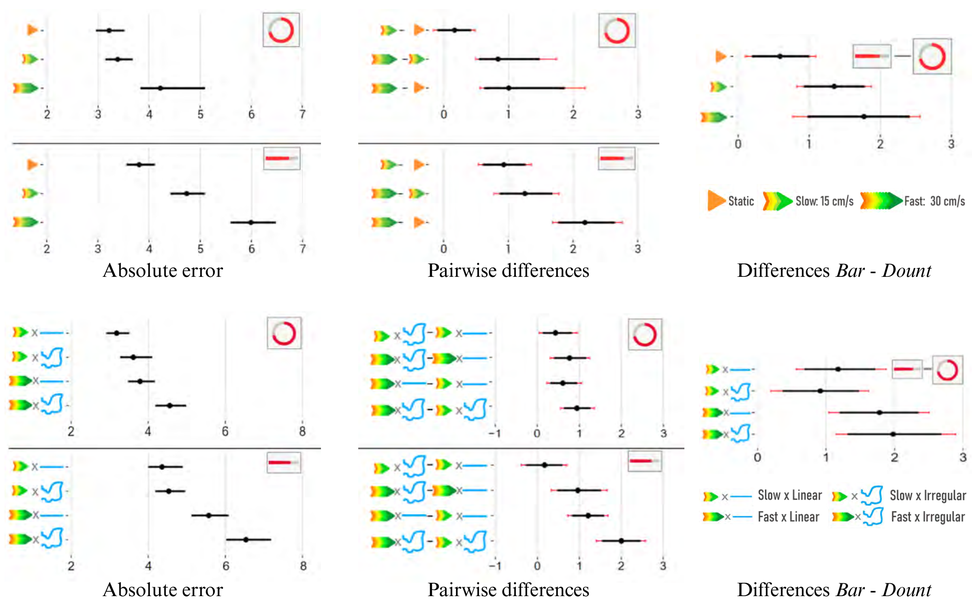
Visualization in Motion

PERCEPTION DESIGN USER EXPERIENCE

Visualizations in motion are visual data representations used in contexts that exhibit relative motion between a viewer and an entire visualization.

- Moving visualization & Stationary viewer
- Moving viewer & Stationary visualization
- Moving visualization & Moving viewer

PERCEPTION



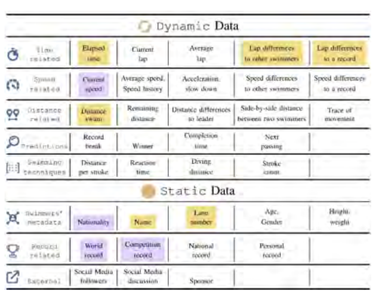
Motion Characteristics Matter
Both speed and trajectory have an impact on the readability of moving simple charts

Speed and Trajectory Impact
Higher speed and irregular trajectories generally lead to more errors

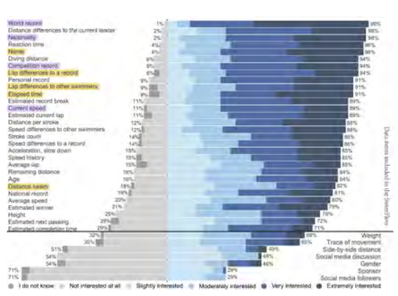
Can Get Reliable Information
People can read close to exact answers from moving charts

Donut Chart Might be A Better Choice
Participants' performance was better on donut chart

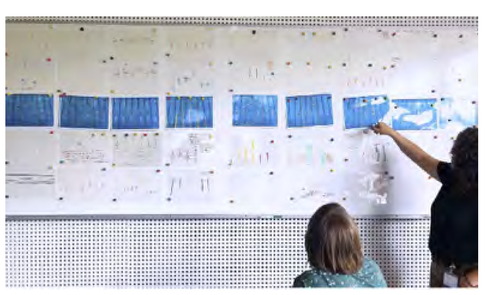
DESIGN



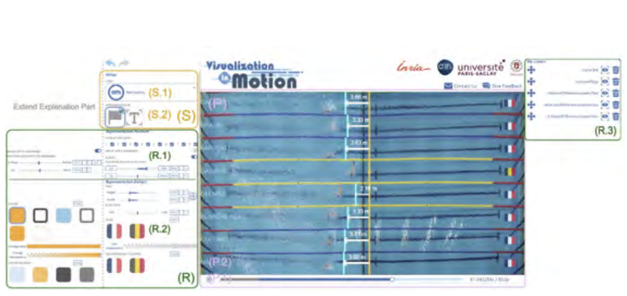
Data Matrix
To understand what data is available, whether they have been visualized, and how.



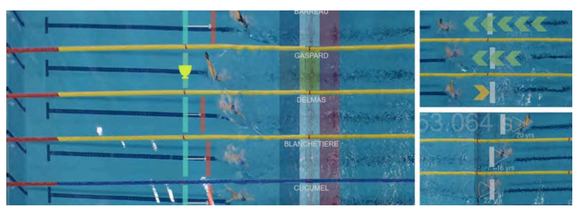
Interests Survey
To investigate what data are of real interest to see by general audiences.



Ideation Workshop
To elicit dedicated visualization designs for dynamically updating swimming data.

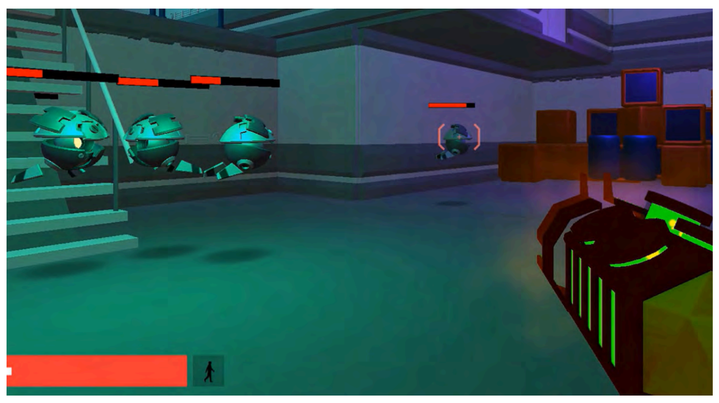


Prototype Development
To technically realize design, embed, and render visualizations in motion into swimming videos in real time.



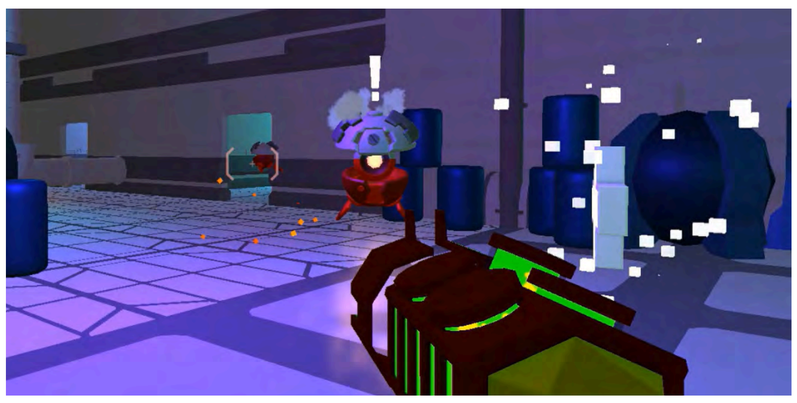
Evaluation
To assess our prototype with the professional designers and reflect on further requirements and improvements.

USER EXPERIENCE



Non-integrated Design
Strong readability, particularly under occlusion
Less immersive and aesthetically engaging

Partical-match Design
Neither strongly favored nor rejected
Moderate immersion and visually dynamic



Fully-integrated Design
Praised for its contextual integration
High visual blending, especially under motion

The work presented here was mostly done with: Inria, université PARIS-SACLAY, LISN LABORATOIRE INTERDISCIPLINAIRE DES SCIENCES DU NUMÉRIQUE, ÉCOLE CENTRALE LYON, cnrs