

La Réalité augmentée (sa réalité)

déjeuners technologiques, Lille 1

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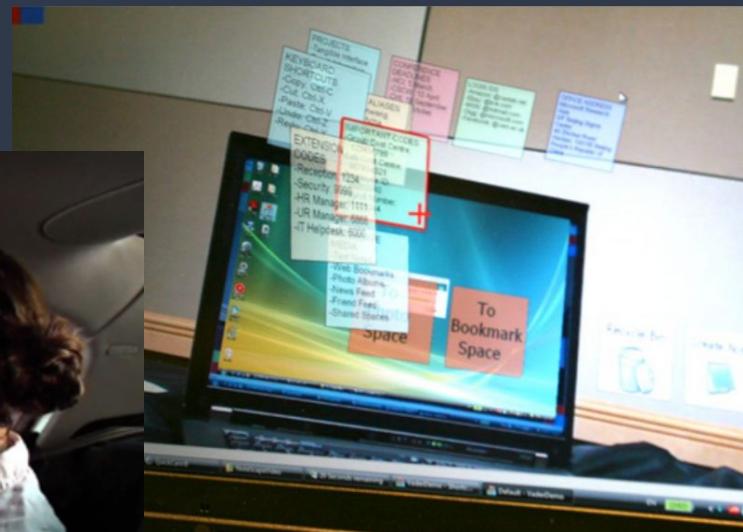
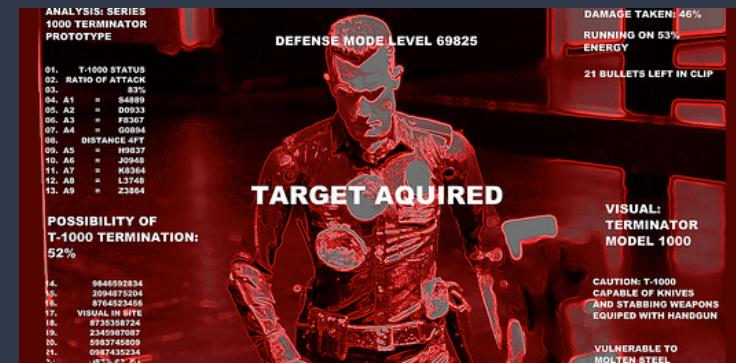
Réalité augmentée : ce que dit wikipedia

La **réalité augmentée** désigne les systèmes informatiques qui rendent possible la superposition d'un modèle virtuel 3D ou 2D à la perception que nous avons naturellement de la réalité et ceci en temps réel.



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En fait ... (Deniaud & al, AFRV 2014)

« Aujourd’hui dans les milieux scientifiques il est pratiquement impossible de concevoir l’espace autrement que physiquement et matériellement » (Wertheim, 2000)

Sujet & objet ne peuvent se penser qu’en lien avec un projet :
le sujet exerce le projet sur un objet,
l’objet est ce qui entre dans le projet



Our view of the problem

- ▶ Someone interacting with a computer achieves 3 things, at the same time:
 - ▶ **get data:** a lot through eyes, bit through ears, **roughly through hands**
 - ▶ **give data:** **mostly using hands** on keyboard/mouse (may also be through speech/sound, or eyes)
 - ▶ **think & feel :** achieve the task he intends to (not necessarily computer-centered)

- ▶ Interaction needs to be *situated*, i.e. design should take into account :
 - ▶ user intend/task,
 - ▶ user age,
 - ▶ expertise,
 - ▶ context of use,
 - ▶ ...



Standard Interaction devices

- ▶ D. Englebart, Augmentation Research lab, stanford, in the 60s.
- ▶ aim was to allow people to **solve problems more efficiently**
- ▶ mother of all demos, dec. 9th 1968
- ▶ tools for collaboration and information processing

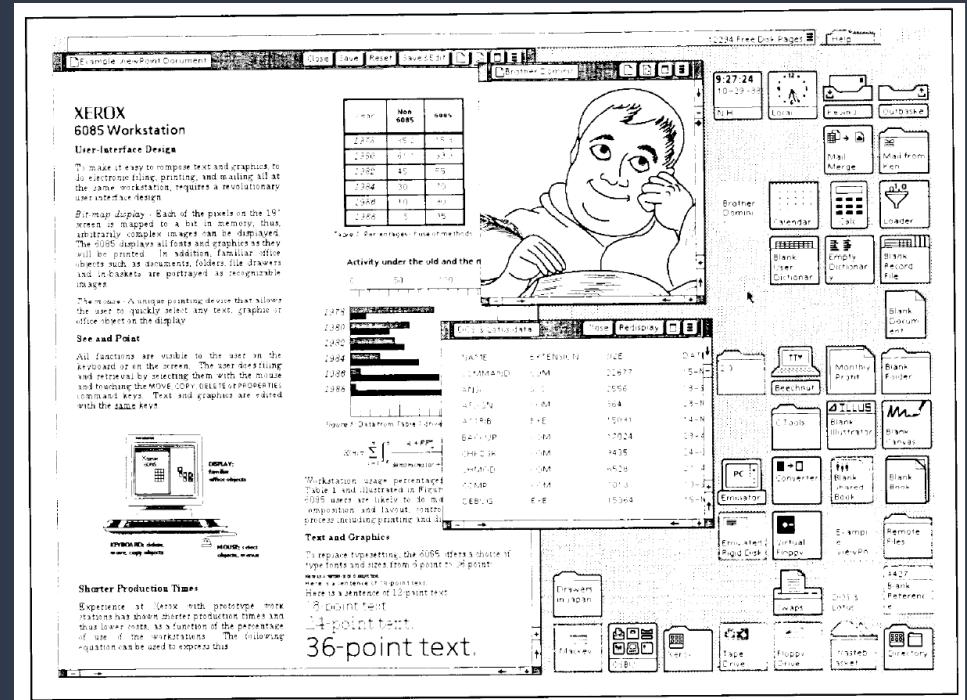


- ▶ Mouse-based interaction principles:
 - ▶ separation between DOFs
 - ▶ very accurate
 - ▶ hand movement combined with visual feedback -> control
 - ▶ independant from content



Standard Interaction schemes

- ▶ Xerox, desktop WIMP metaphor
 - ▶ strategy:
 - ▶ observe real (non-computer based) **work** situation
 - ▶ try to get the best from:
 - ▶ real world
 - ▶ computer
 - ▶ try to have computer
 - ▶ bring only advantages to the work task
 - ▶ overcome non-computer based task drawbacks



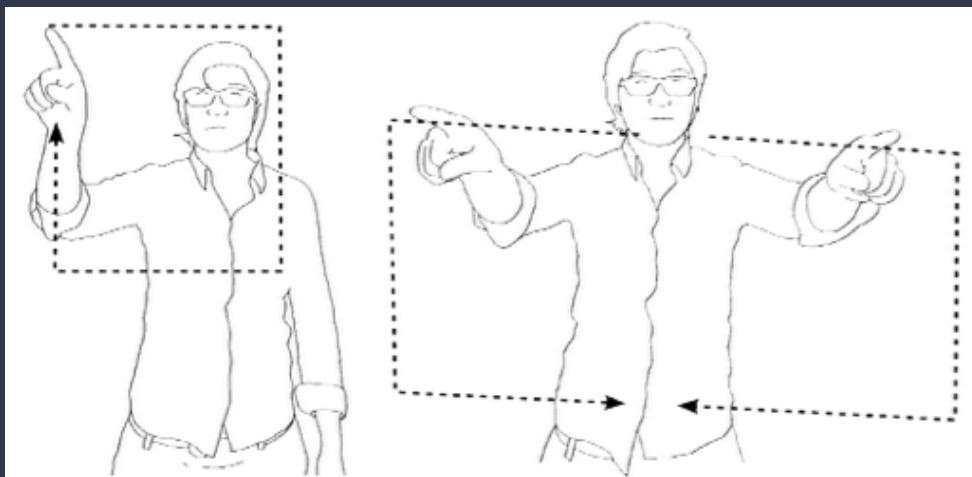
What do people do ...

- ▶ with a computer-based application: **work**, but also
 - ▶ game,
 - ▶ learn/teach
 - ▶ buy/sell,
 - ▶ social interaction,
 - ▶ video viewing,
 - ▶ casual interaction
 - ▶ ...
- ▶ anywhere, anytime:
 - ▶ achieve our task
 - ▶ learn, teach, think
 - ▶ interact with people
 - ▶ interact with objects
 - ▶ construct things
 - ▶ use tools
 - ▶ ...

What do computer scientists do with a computer?

- ▶ all that users do, including **using** tools
- ▶ but also **make** tools, **imagine** tools, **adapt** tools... which standard user can not do (except imagining)

generic trend : enactment for gestural interaction



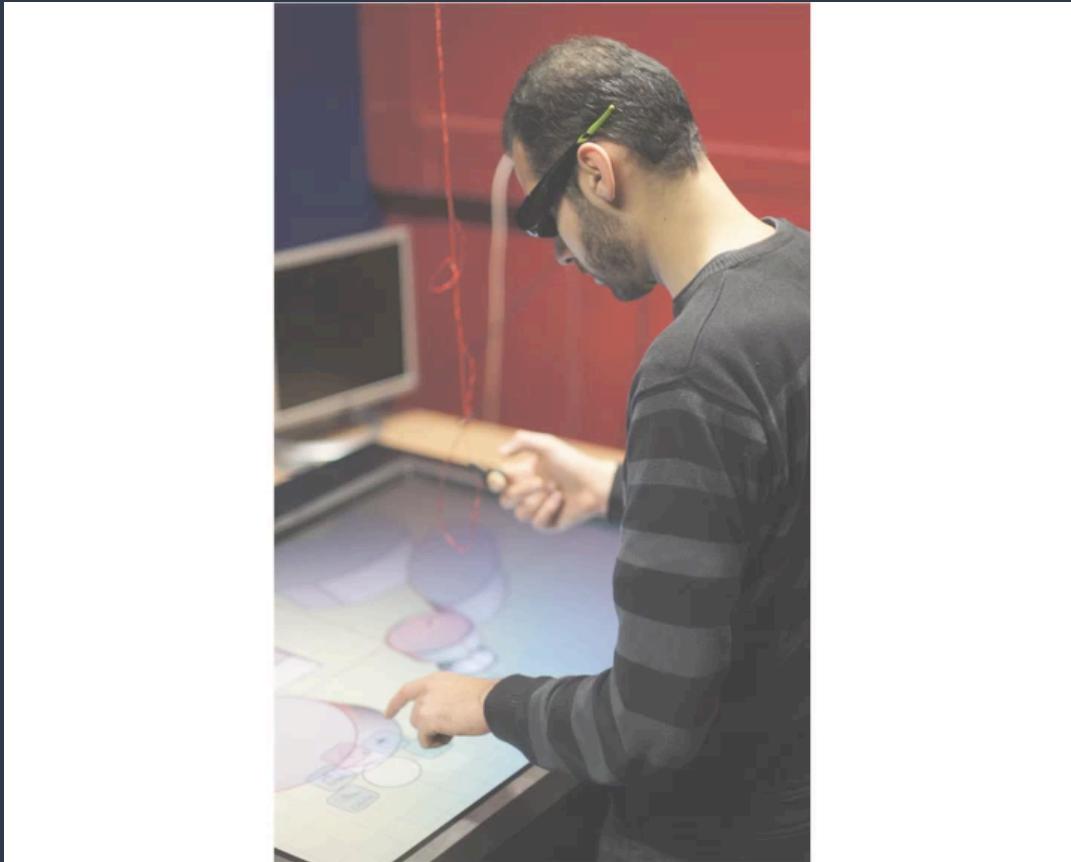
- ▶ good acceptability
- ▶ algorithmically reachable
- ▶ large design space

potential applications to :
co-located collaborations
tangible interaction

Mimetic Interaction spaces,
Rateau, Grisoni, De Araujo (IUI 2014)

- ▶ reflexive interactive systems?

generic trend : Gestural collocated interaction

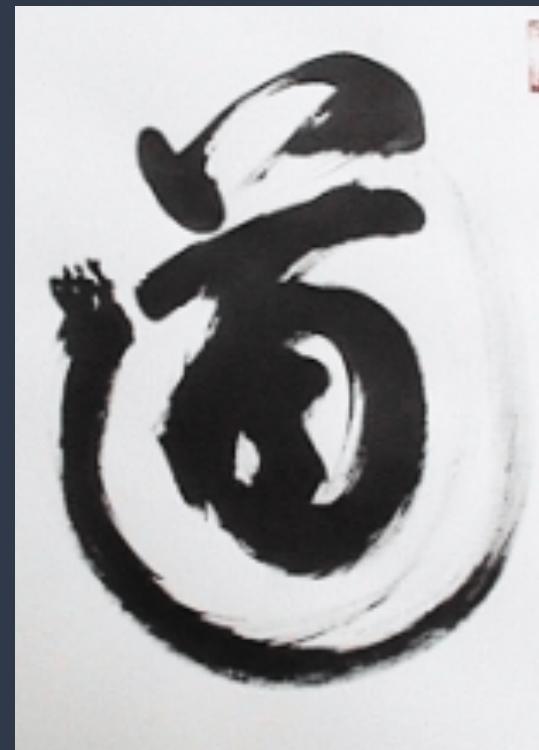


making CAD systems to allow user to take the best of mental representation of shape, by combining:
accurate modeling
sketching

B. De Araujo, G. Casiez, J. Jorge,
Graphics Interface'2012

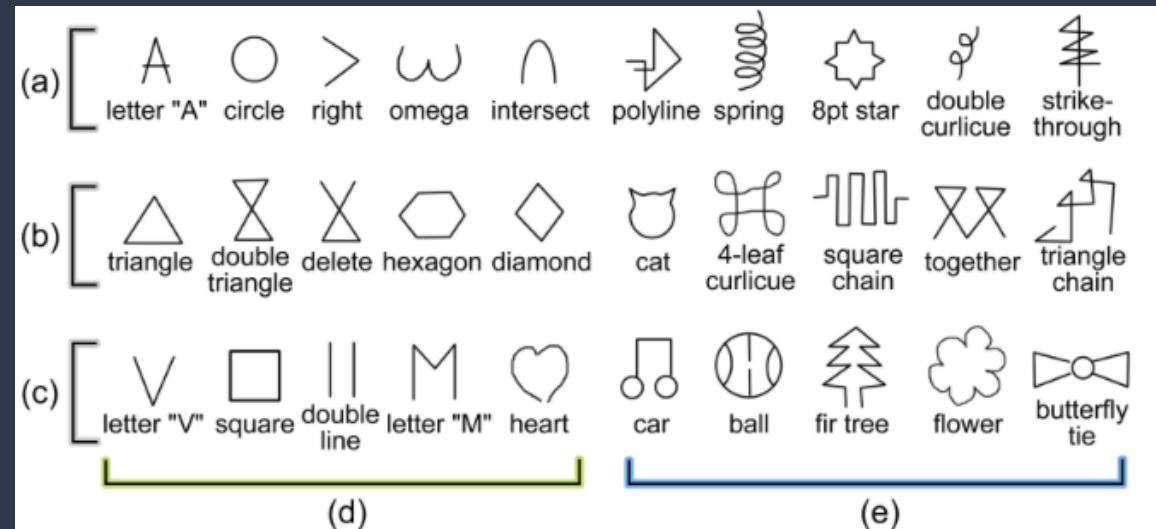
**generic trend: From signal to symbol
gesture for command:
Understanding gesture variability**

interaction gesture is much more than
a trajectory



Understanding gesture variability

However in practice most research papers target :

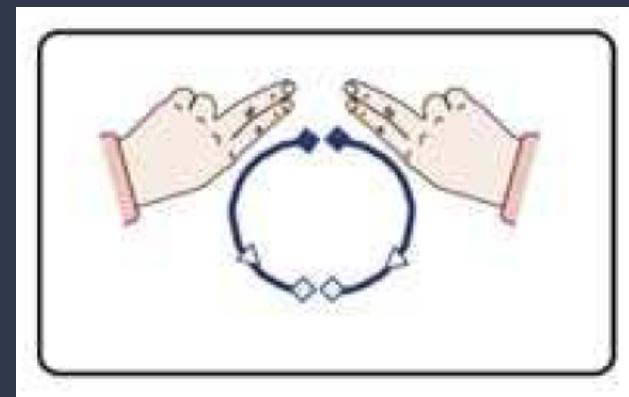


Whereas there is an infinity of different ways to make a single line segment.

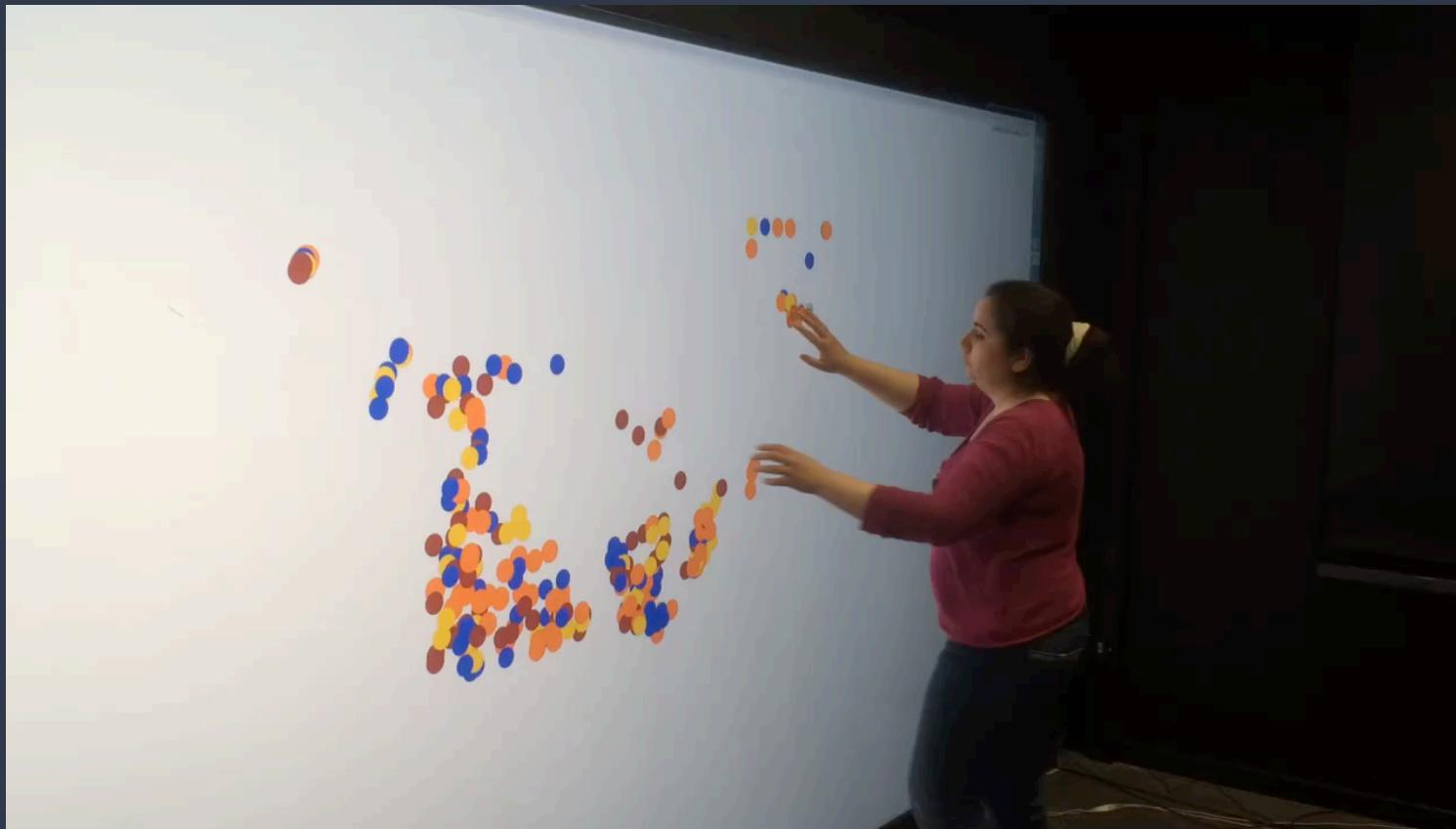
Understanding gesture variability

MT gesture variability:

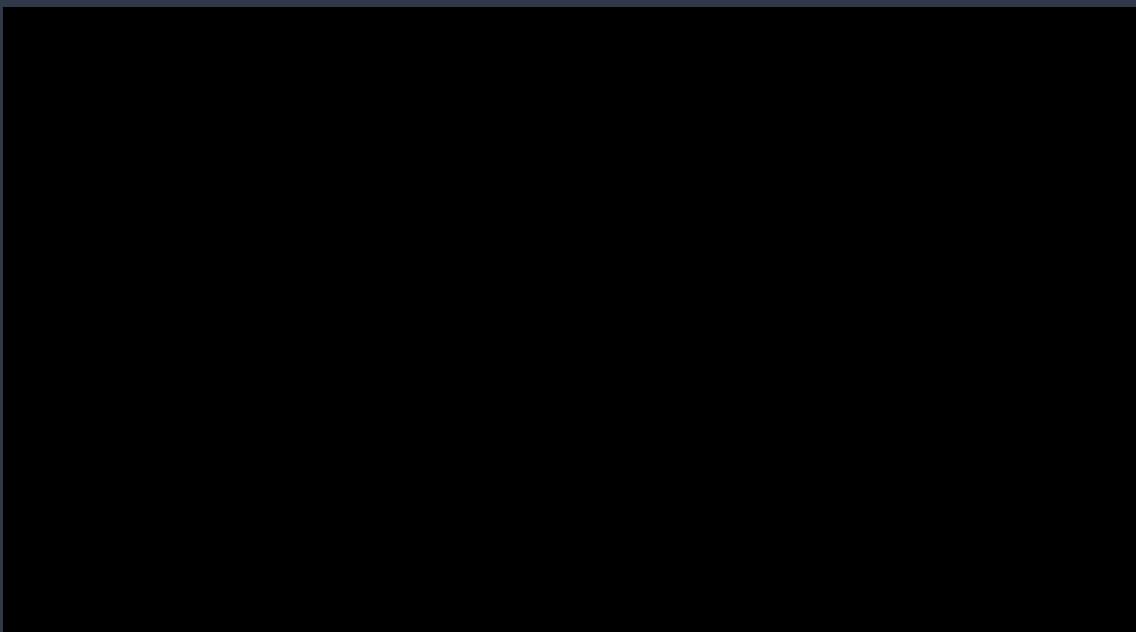
- Rekik, Grisoni, Roussel, Interact 2013
- Rekik, Grisoni, Vatavu, AVI 2014
- Rekik, Vatavu, Grisoni, ICMI 2014



Understanding gesture variability



MINT interactive art trials: Damassama (L. Mercier, 2011)



Microsoft TechDays (feb 2012), Brussel Music Instrument Museum (Feb 2012), Mons music festival 2012, Metz Pompidou Center (2014), Roma art exhibition (july 2014)

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Become the director of your own orchestra with Damassama

By: Fabien Petitcolas , Director for Innovation, Europe
Tags: innovation, Kinect, Partnerships, technology

19 April 2013

It took a year for the artist Léonore Mercier to create [Damassama](#), a unique installation of its kind. Trained for a year at the national studio of contemporary art [Le Fresnoy](#), the young woman has managed to transcend tradition and modernity in her creation.

Arrange twenty-seven Tibetan bowls (metal bowls whose vibration is used by monks for meditation), with varied sounds, in a semicircle, each of them being connected to both a hammer and a damper. Take a step inside this circular space, within which a [Kinect](#) device is also discreetly installed. Here you are at the controls of a real symphony orchestra.

Check out the video of the project, on [Arte Creative](#):



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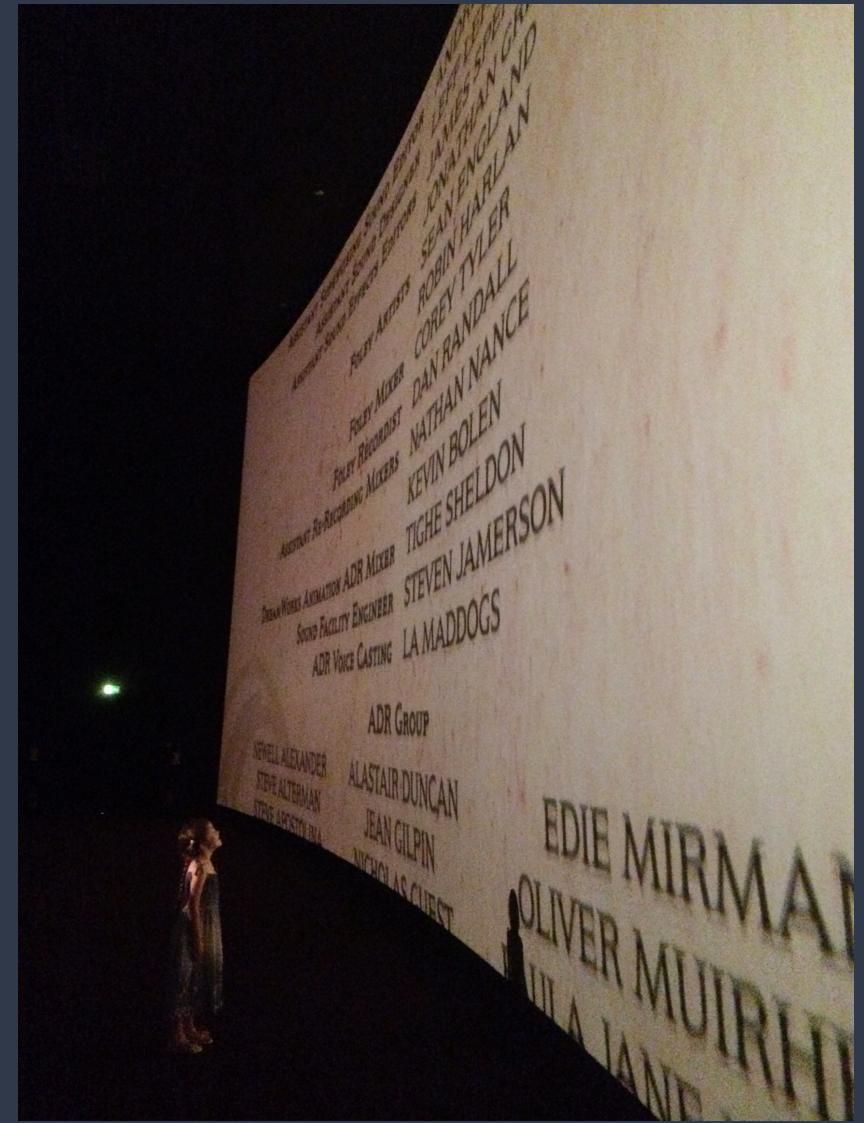
children feedback : « feel like magician »
-> human augmentation ...

MINT strategy for next years

- ▶ Interaction on large displays
- ▶ collaboration (need to understand group interaction)
- ▶ small-size, tactile feedback, devices

application strategy:

- ▶ VR: archeology, architecture, rehabilitation
- ▶ non-VR: museums, contemporary arts
- ▶ reflexive interactive systems ? (-> children)



Thank you

<http://cristal.univ-lille.fr/mint>



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