

Microsoft
Research



Microsoft Research Asia
Faculty Summit 2010

October 18-19, 2010 Shanghai, China

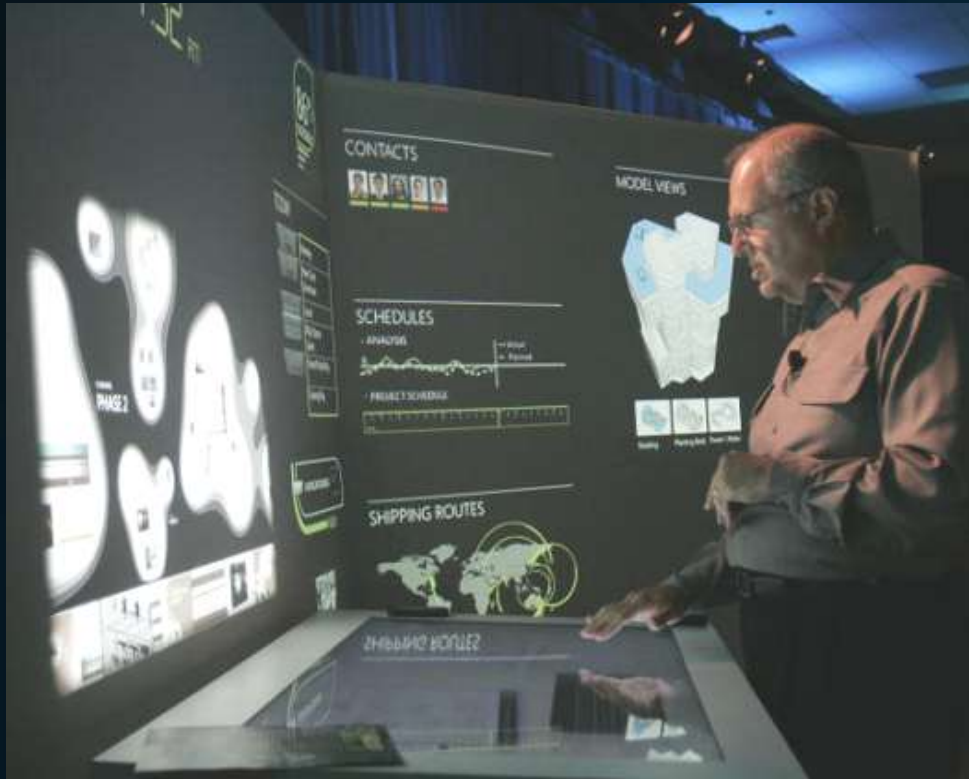




Natural User Interactions Research: NUI Opportunities for Collaboration

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Natural User Interactions Team
Microsoft Research, External Research

Realizing the NUI Vision



Microsoft Surface



Microsoft Kinect

Kinect (key enabler: Microsoft Research)

3D DEPTH SENSORS

RGB CAMERA

Kinect is NOT just about gaming.

**It's about the science that went
into making Kinect.**

**It's about rethinking the way we
do science.**

MULTI-ARRAY MIC

MOTORIZED TILT

Some Potential Surprises...

- **Microsoft Research (internal and external) provides open source tools to facilitate scientific discovery.**
- **Our goal is to bring Computer Science to bear on tough scientific research problems (e.g., a vaccine for AIDS/HIV).**

Microsoft External Research

Advancing multidisciplinary research worldwide by engaging and partnering with the academic/research community, focusing on:

- Breakthrough research and innovation
- Global participation
- Community engagement—long term change
- Broad dissemination and collaboration
- Interoperability

External Research Global Themes

Core Computer
Science



Natural User
Interactions



Earth, Energy &
Environment



Education &
Scholarly
Communication



Health &
Wellbeing



Advanced Research Tools and Services

ER NUI Research Scope

- **Rethinking of ways in which people will interact with computers of the future.**
- **Reevaluating everything from their (non-) physical design to the human needs and interaction models.**
- **Revolutionize the way we think about computers and what they can do on our behalf.**

ER NUI Theme Goal

Help enable a vibrant research community centered on achieving human-computer interactions that are:

- Effective
- Productive
- Supportive
- Personal
- Adaptive
- Fun

Share the research assets of Microsoft Research, Microsoft products and our academic partners

Three Investment Areas

- **Human Computer Interaction and Modeling**
 - Acceptable interaction levels (with contextual info)
 - Multi-modal input modeling (touch, ink, gesture, ...)
 - ...
- **Software Enabled Natural User Interactions**
 - Machine Translation
 - Speech recognition
 - ...
- **Hardware Enabled Natural User Interactions**
 - Kinect
 - Surface Computing
 - ...



Why

Natural User Interactions
instead of
Natural User Interfaces ?

According to the academics and scientists we have talked with it's all about user interactions not the interface to the computer.

It's the "me" and "we", not the "it".

MSR Faculty Summit 2010 – first NUI track

Microsoft Research
Faculty Summit 2010

- Annual Microsoft Research Faculty Summit brings together more than 400 thought leaders from academia, government, and Microsoft
- Purpose: to reflect on how current computing disciplines open new opportunities for research and development
- The 11th Summit discussed current research topics such as **Natural User Interaction**, Architectures of the Future, Future Web/Web 4.0, and Accelerating Science

NUI Track – 2 full days, our first at this scale

3 Keynotes

- **Kinect for Xbox 360 – The Innovative Journey** – Andrew Fitzgibbon, Kudo Tsunoda
- **Design Mind + Engineering Mind: Secrets to Designing Compelling Product Experiences** – Surya Vanka
- **The Making of Avatar: Magnificent Graphics, Multitudinous Files, Massive Storage** – Richard Baneham, Yuri Bartoli, Tim Bicio, Nadine Kano, Matt Madden

5 Sessions (90 mins each)

- **Visualization and Interaction Today – Selected Perspectives**
 - Session Chair: Mary Czerwinski
 - Rob Deline, Steven Drucker, Danyel Fisher, Jeffrey Heer, George Robertson,
- **Beneath the Surface**
 - Introduction—Daniel Wigdor
 - Projects—Mark Bolas, Steve Feiner
- **A Whole NUI World: A New Fantastic Point of View**
 - Session Chair: Desney Tan
 - Scott Hudson, Johnny Lee, Michael Medlock, Dan Morris, Daniel Wigdor
- **The Future of Direct Input and Interaction – Selected Perspectives**
 - Session Co-Chairs: Ken Hinckley, Andy Wilson
 - Patrick Baudisch, Saul Greenberg, Andy Van Dam
- **Natural Language Interaction Today – Selected Perspectives**
 - Alex Acero, Alexander I Rudnicky

Faculty Summit 2010 – NUI BoF

- **9:00 – 9:10am** **Welcome, Overview & Logistics**
– Kristin Tolle/Stewart Tansley, Microsoft External Research
- **9:10 – 9:45am** **Keynote: “The Research Community and Microsoft’s Future of Natural User Interfaces – An Opportunity”**
– Daniel Wigdor, Microsoft Research
- **10:00 – 11:00am** **Feedback Discussion on NUI track presentations and demos at the Summit**
– All, in breakout groups
- **11:00 – Noon** **Research Agenda Discussion on way forward for NUI Community & Next Steps**
– All, group presentations
- **12 Noon** **Lunch (1hr)**

NUI BoF (Birds of a Feather)

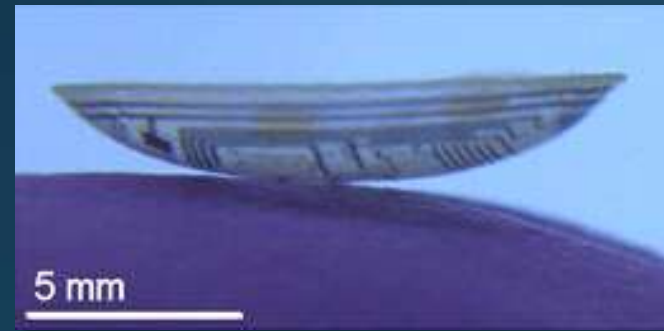
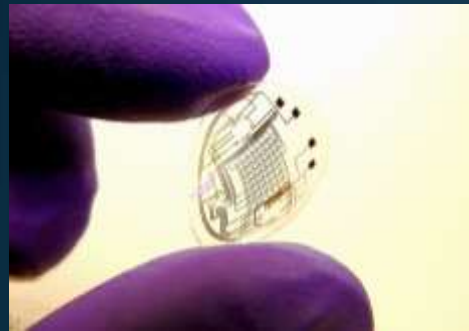
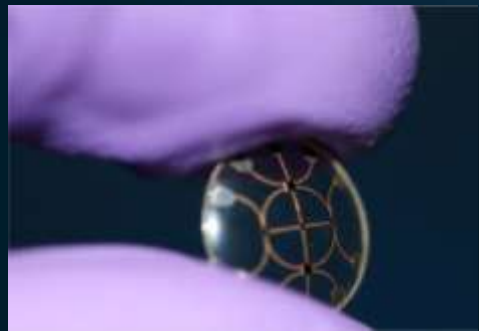
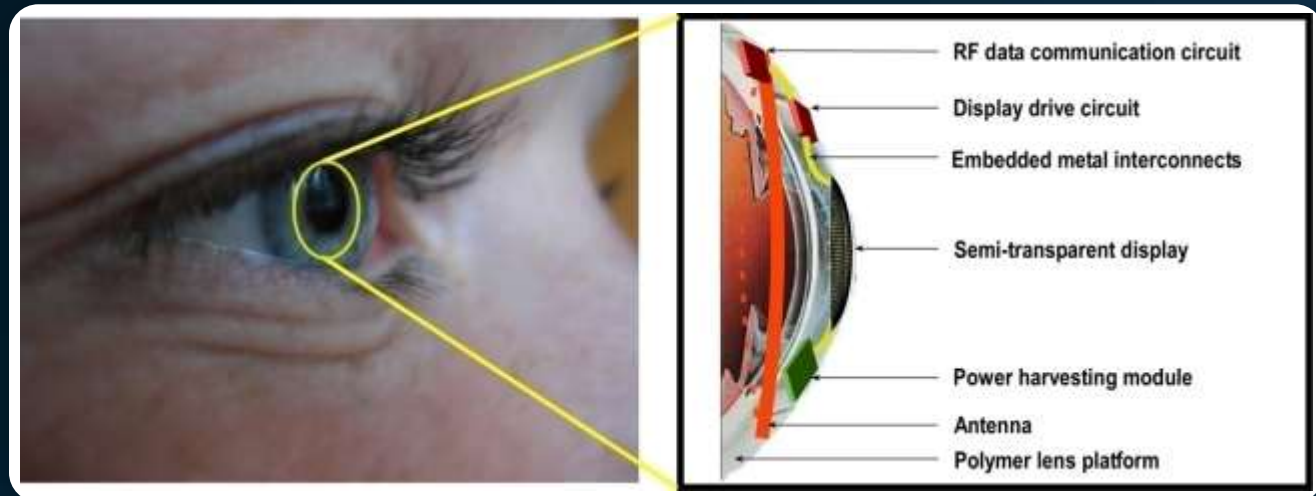
● Feedback discussion

- What was the most interesting idea, technology, comment, question/answer you heard?
- What were some others that stood out for you?
- What are the implications on the NUI research agenda for the community?

● Research agenda discussion

- Where do we go from here
- One community, or several
- Building and maintaining momentum
- Venues – virtual and real
- Research priorities and goals
- Research challenges and barriers
- Grand challenges
- Platforms

Active Contact Lenses

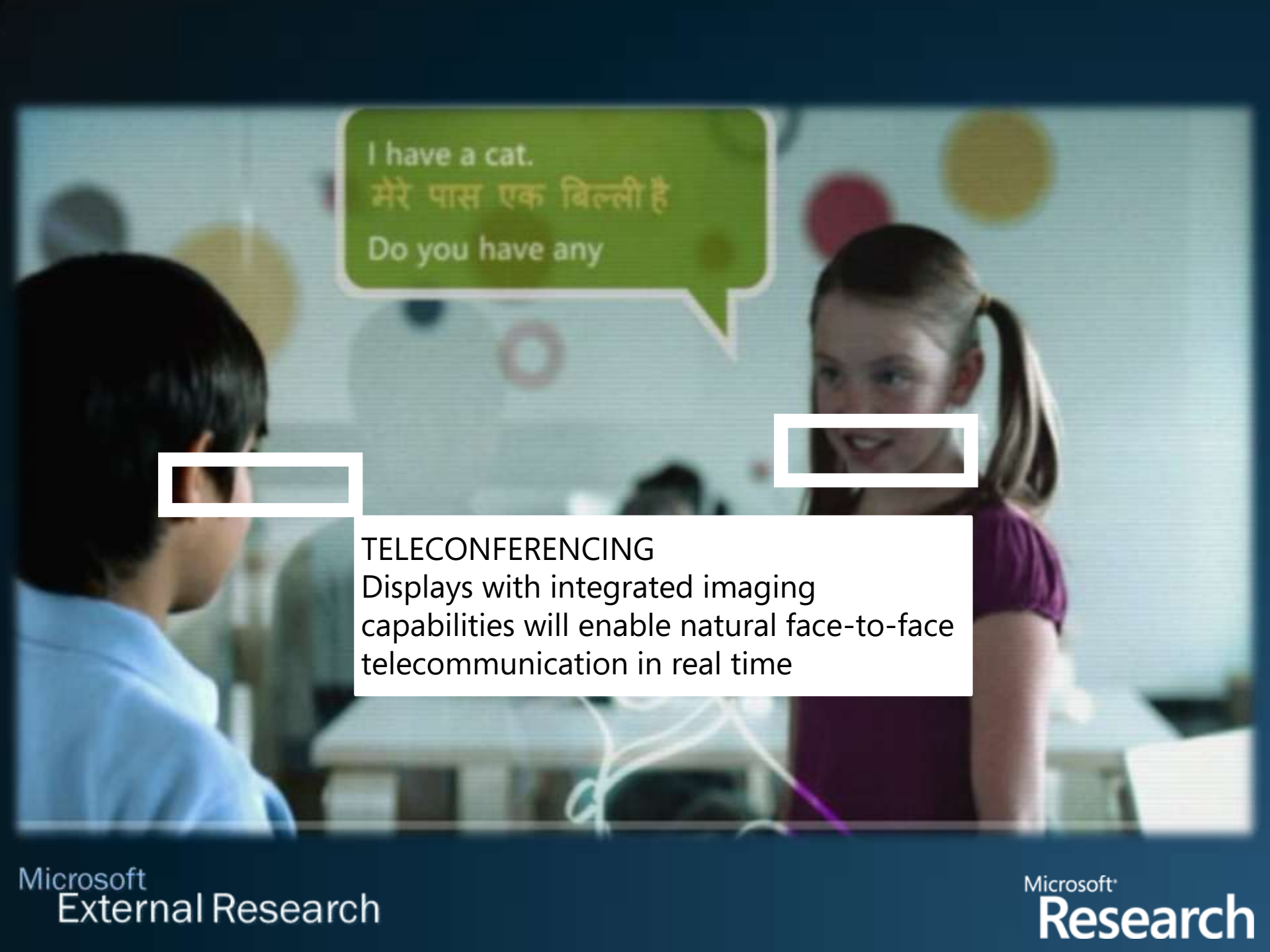


Display-on-a-Lens



The Body as an Input Surface





I have a cat.
मेरे पास एक बिल्ली है
Do you have any

TELECONFERENCING
Displays with integrated imaging capabilities will enable natural face-to-face telecommunication in real time

नहीं
No.

DID YOU KNOW

In India cats are
considered bad luck?

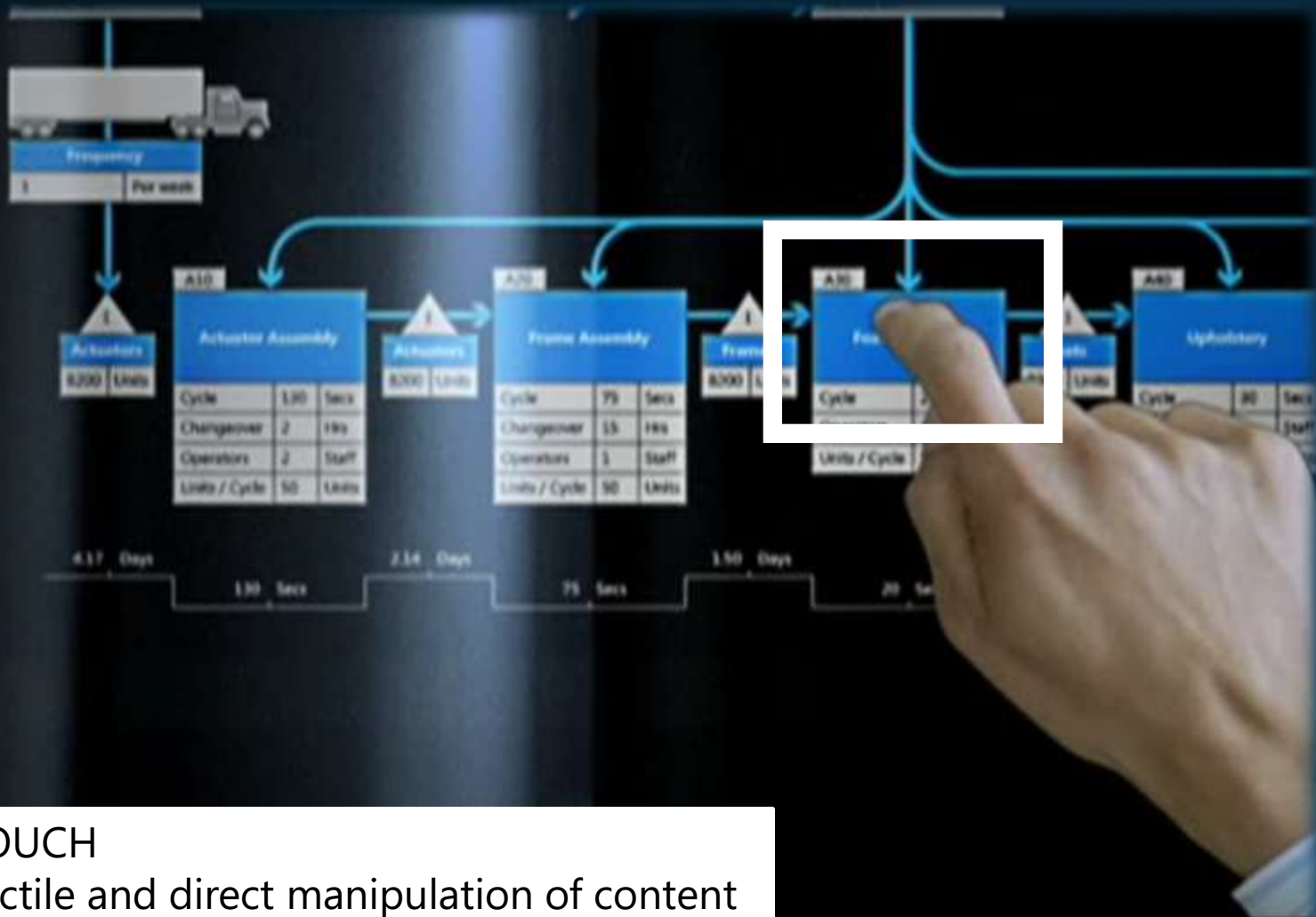
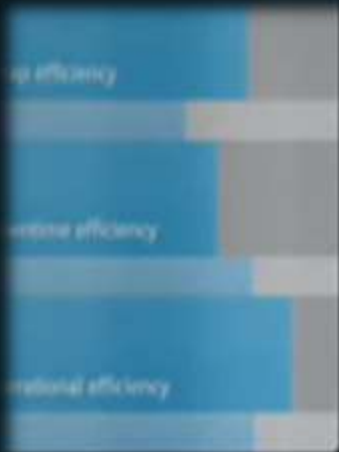
CULTURAL TRANSLATION

Contextually relevant cultural information
can be provided to aid understanding.

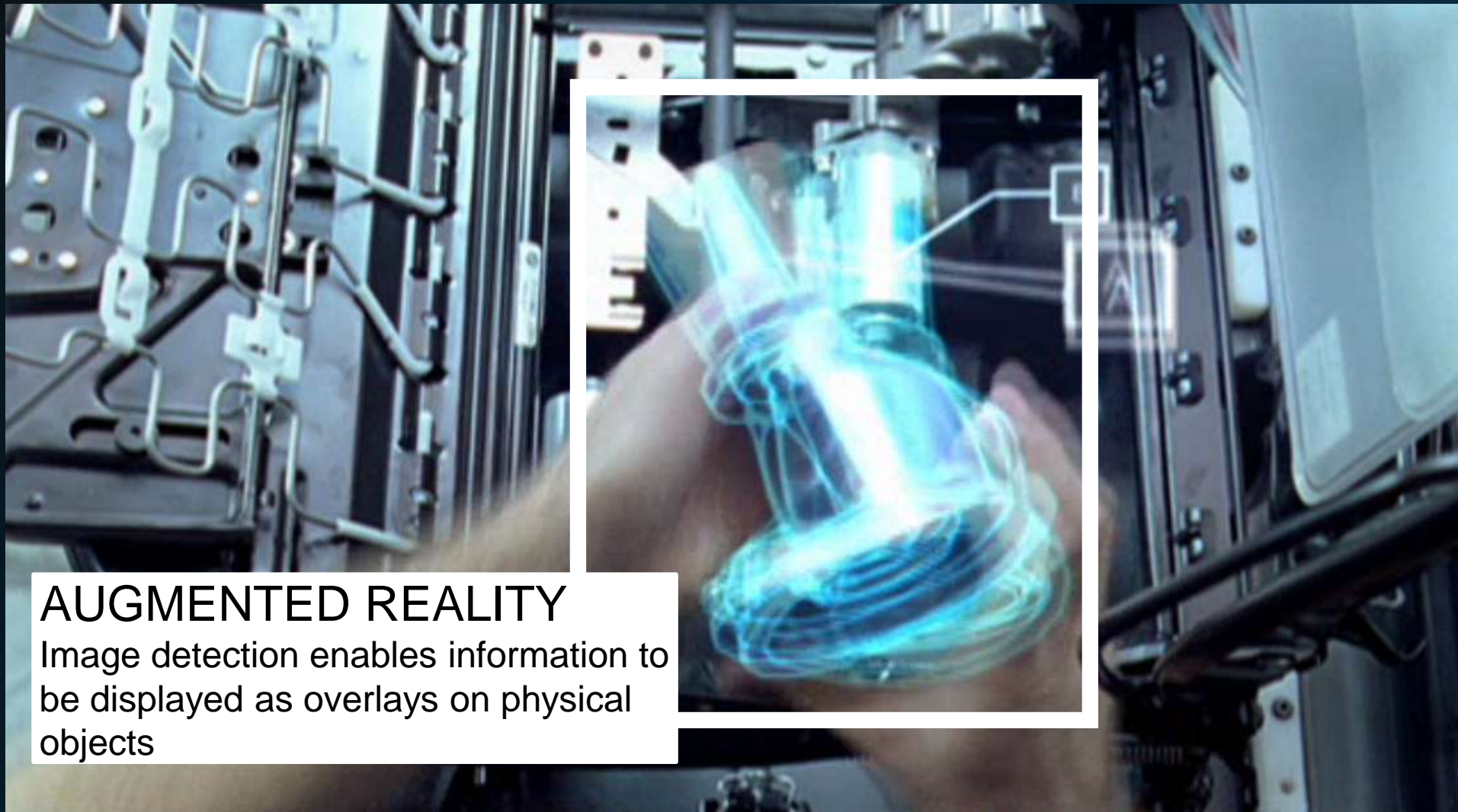
GESTURE & 3D DISPLAY

Depth sensing cameras enable gestural interactions with a 3D display.





TOUCH
Tactile and direct manipulation of content



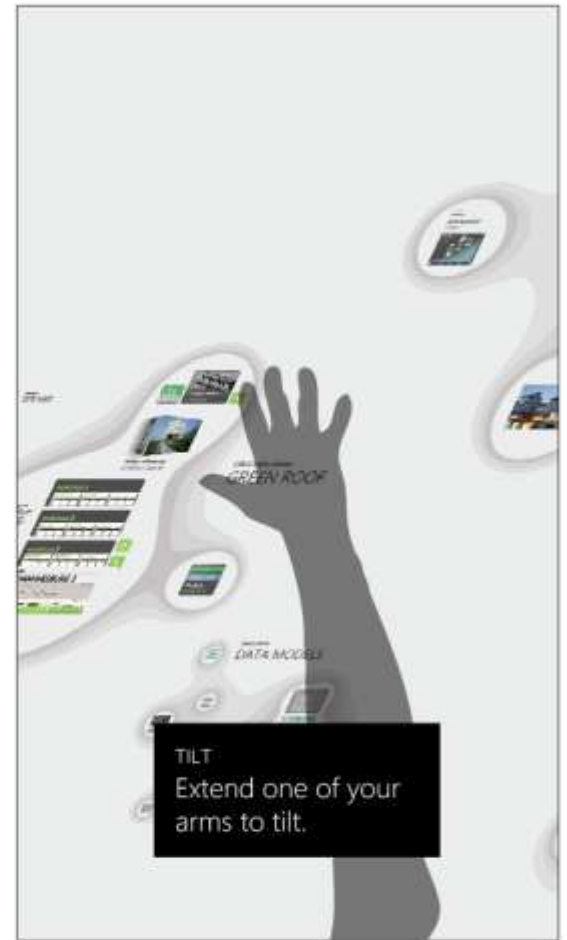
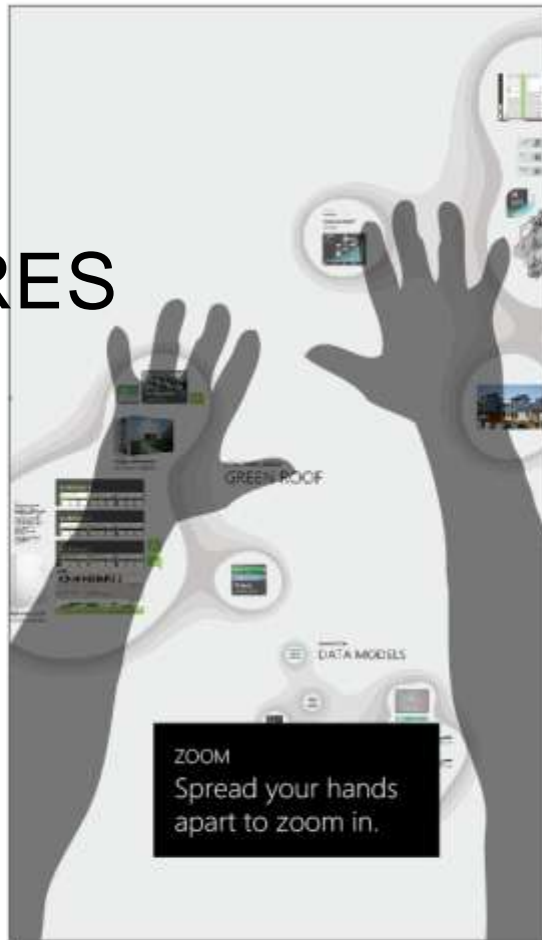
AUGMENTED REALITY

Image detection enables information to be displayed as overlays on physical objects



GESTURES
Interact with your digital objects just as you would physical objects

TRY USING THESE GESTURES





Where shall we take this field?

Together.



Questions?

Microsoft[®]

Your potential. Our passion.[®]

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