Microsoft Research

Microsoft Research Asia
Faculty Summit 2012

Kinect for Windows – An Update for Researchers

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Microsoft Research Connections

Special thanks:
Prof. Patrick Baudisch, Hasso Plattner Institute
and Kinect for Windows product group

What's New in NUI

Where Are We, and Where Might We Go?

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The Kinect Effect

KINECT™
for Windows®

What's New in NUI

Where Are We, and Where Might We Go?

For me…

NUI is how we can best interact with the

increasingly ubiquitous computing world

of our present
– and future

What’s your perspective?

If you had to build an interactive system **for 1-year olds**
What would be your design objectives?

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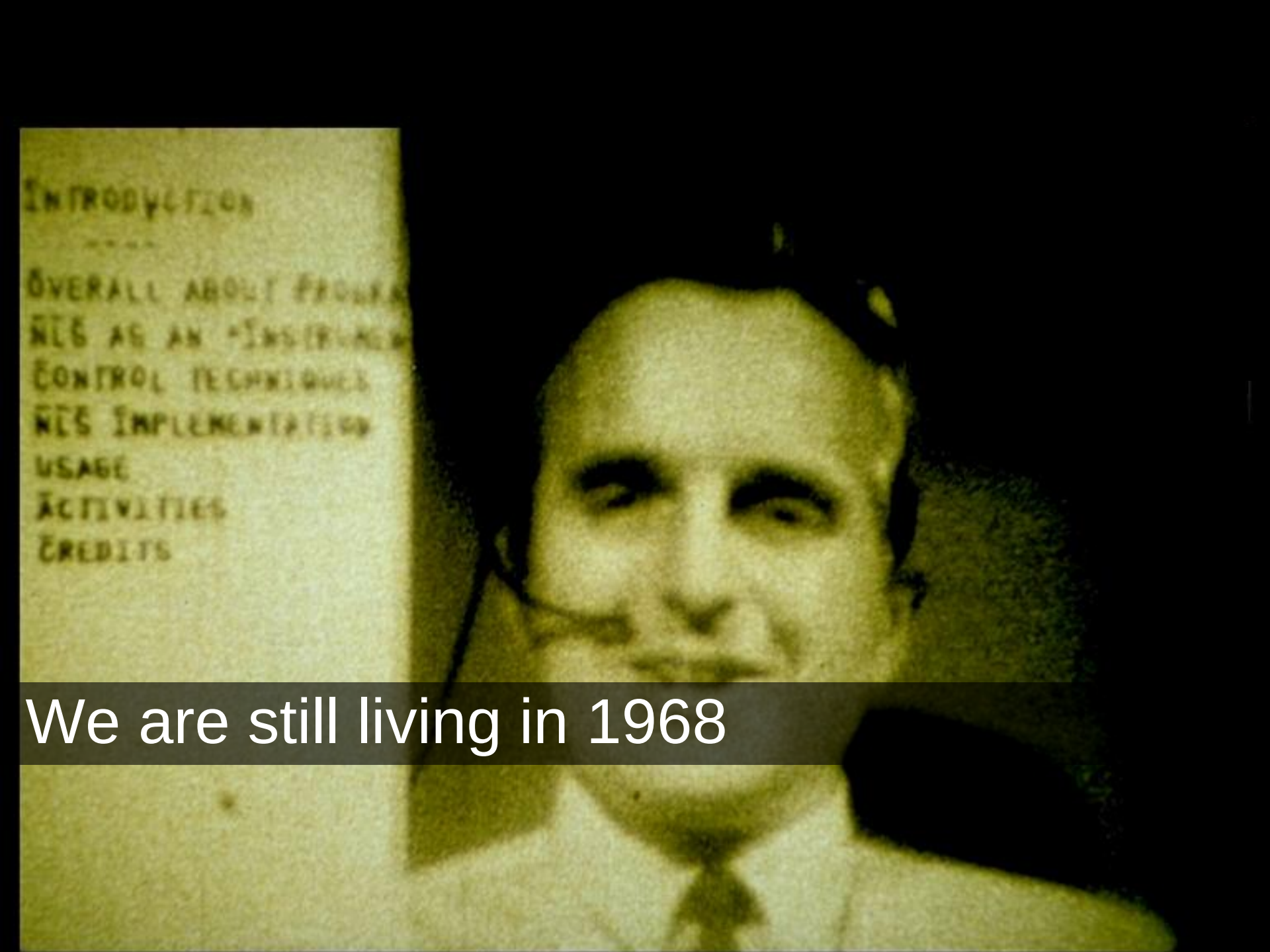
Quiz

What year is this?


We are still living in 1968



We are still living in 1968


We are still living in 1968

But the world is **changing…**

"NUI"

Computers seeing & hearing us,
as we see & hear,
via: **cameras, mics**

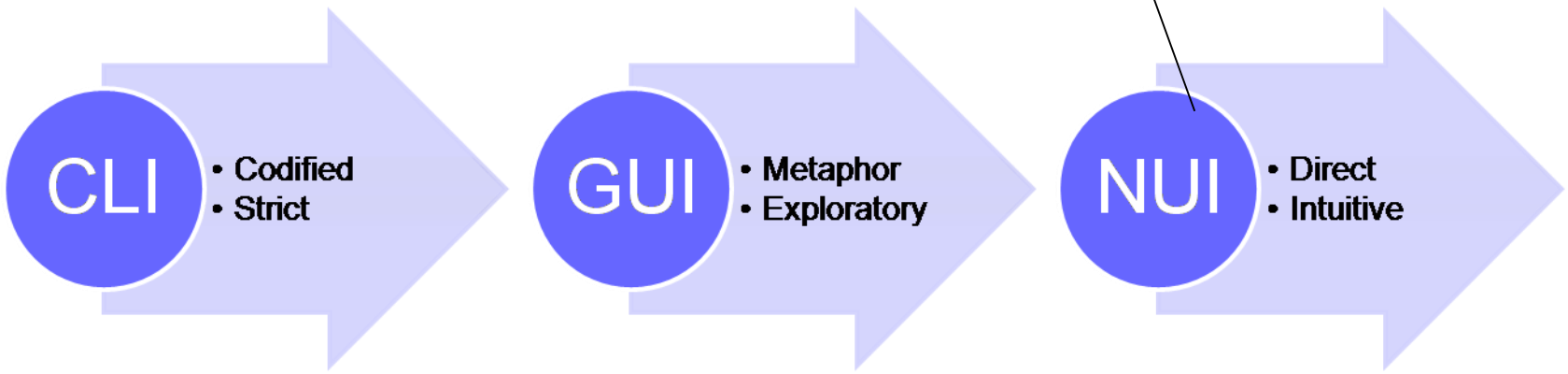
[image: benko wilson]

Design Influences

don’t so much come from the workplace today, but from…

film,
animation,
games,
...

Steve Mann:
"metaphor-free computing"



[wikipedia]

in the 70s, it seemed **fair to assume** that users had worked in an office

2012: the office assumption has **failed**

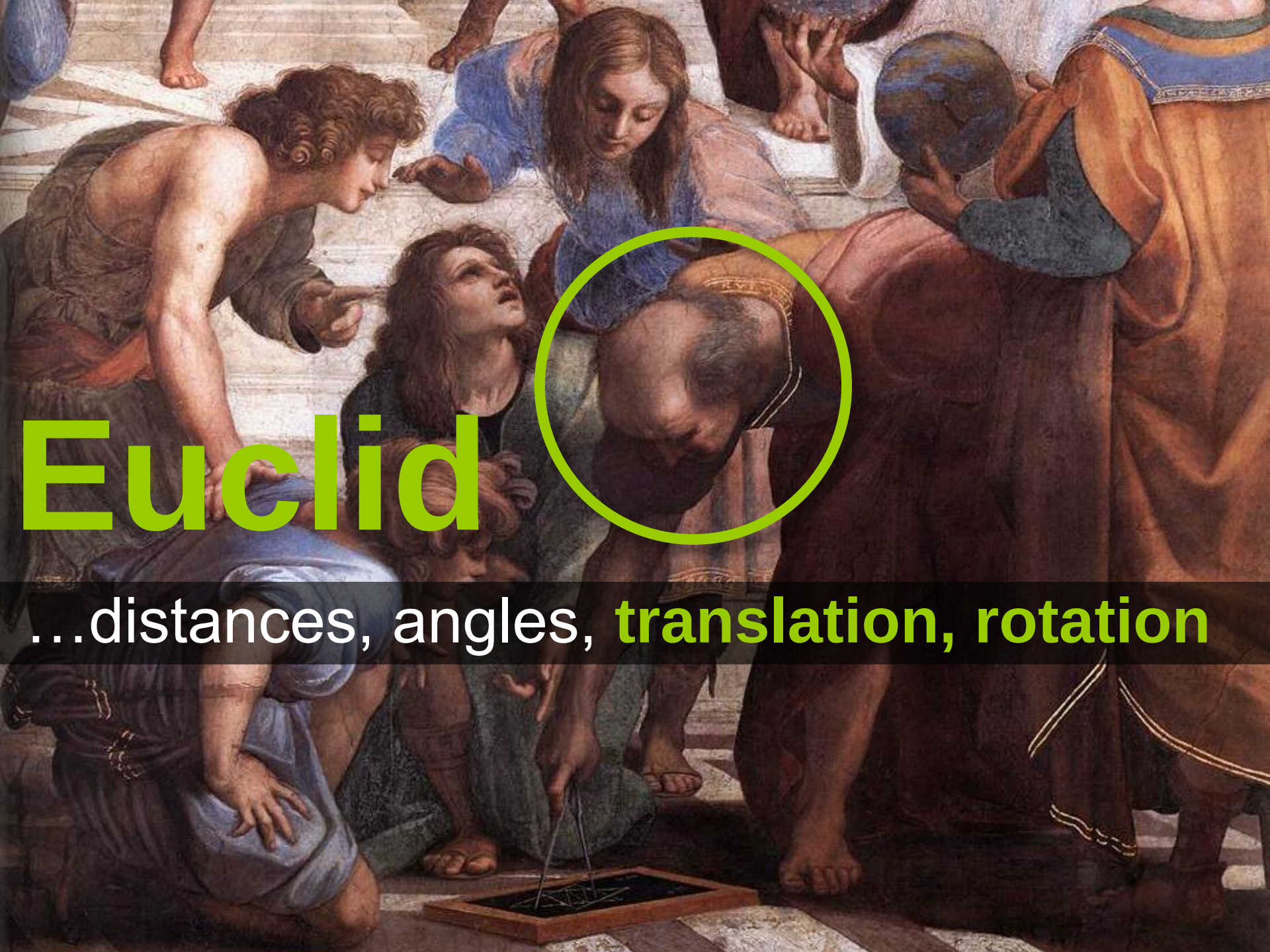
800 million PCs

5 billion
mobile devices

So what can we rely on **her knowing?**

The **physical world** around us

…touching, pointing, distances
inertia, spatial memory ballistics
= very few rules & highly consistent


Euclid
…distances, angles, translation, rotation

Newton

1. objects **stay** at rest / in motion
2. objects **accelerate** when you apply force
3. you can **bump stuff…**

#1 NUI: *(good)*

An interface a **"1-year-old"** can operate

#2 NUI: *(better)*

An interface that a user can operate
who only knows **Euclid & Newton**


The screen connects virtual with physical

Natural = user and objects form **one space**

#3 NUI: *(best?)*

(ideally) a single Euclidian/Newtonian space that includes **display(s) and user**

Basic NUI principles:

- NUI brings together the physical and the virtual
- To facilitate a seamless, transparent experience
- People-centric, not the computer – **and not the interface**

What's New in NUI

Where Are We, and Where Might We Go?

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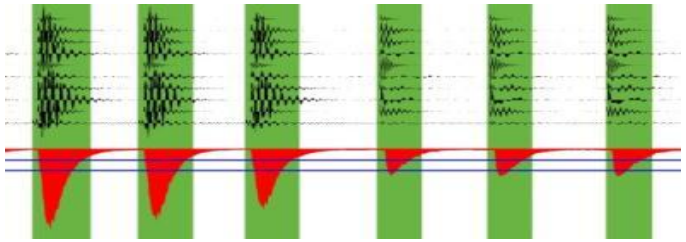
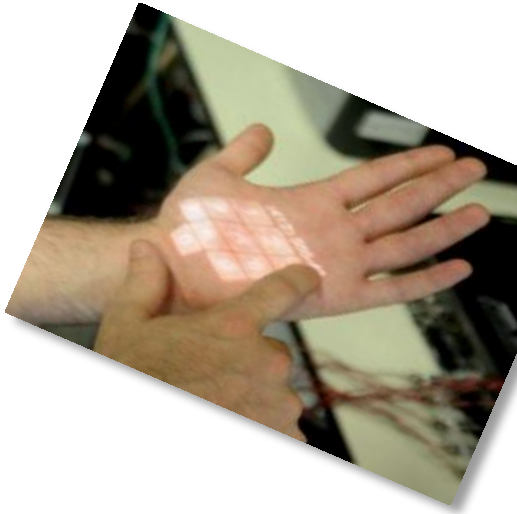
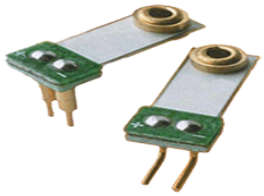
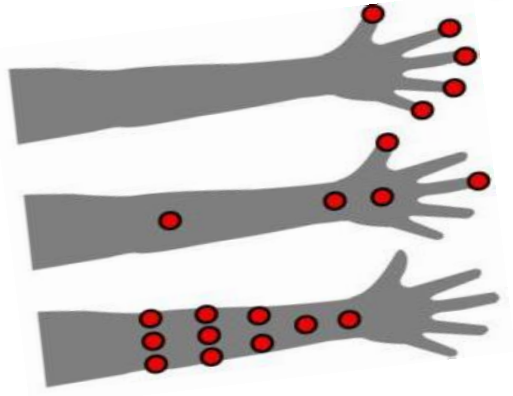
Skinput Project

http://research.microsoft.com/en-us/um/redmond/groups/cue/skinput/





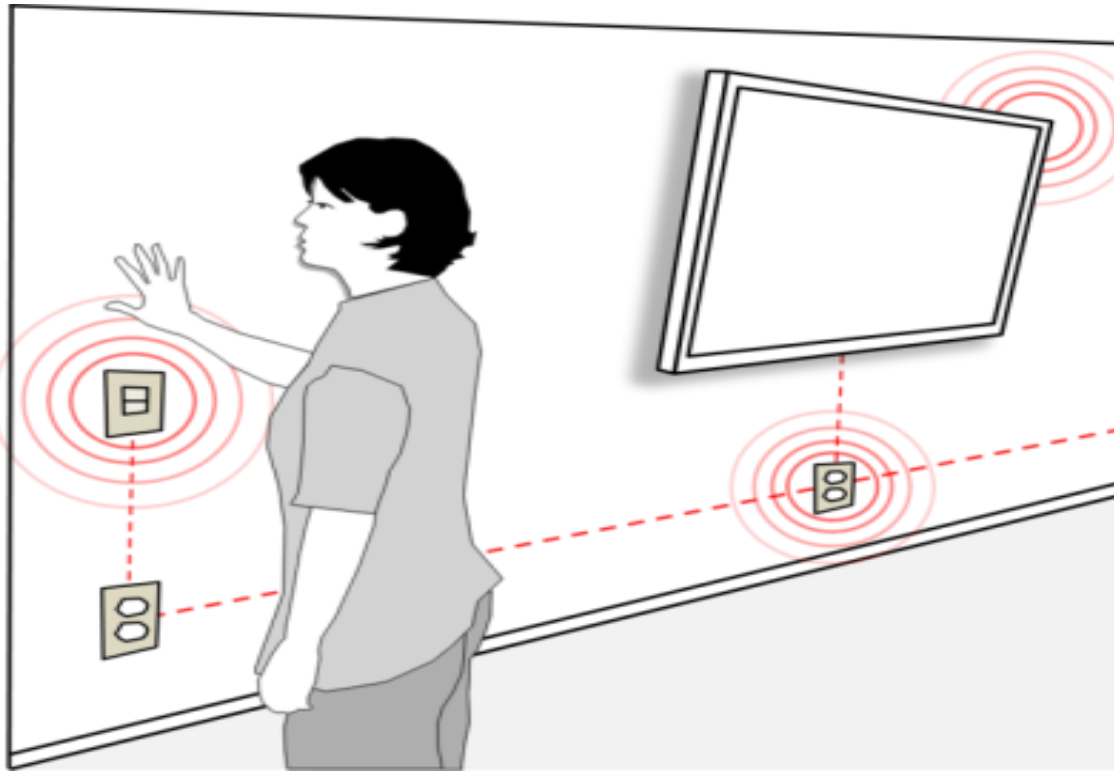




Joint work with CMU

Humantenna Project

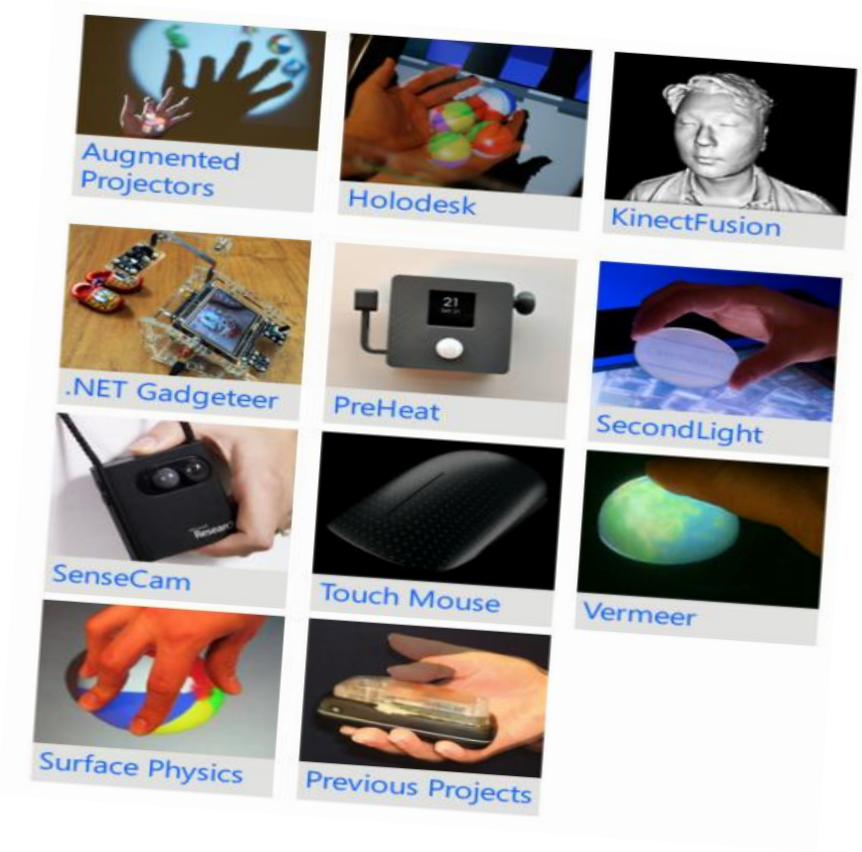
http://research.microsoft.com/en-us/um/redmond/groups/cue/humantenna/



Joint work with UW

Sensors & Devices Group

http://research.microsoft.com/en-us/groups/sendev/



Joint work with (multiple, EU)

Natural Interaction Group

http://research.microsoft.com/en-us/groups/natural/

Joint work with (multiple, e.g. CMU, UMD, Cornell, UIUC, UCLA, TU Lisbon, RWTH Aachen, HPI, Newcastle…)

Computer Vision Group

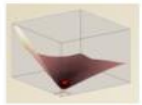
http://research.microsoft.com/en-us/groups/vision/

Medical image analysis

i2i: 3D visual communicatio

Image and video editing

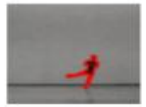
Object class recognition



Discrete optimization in vision

C-Slate for remote collaborat

Geometric modelling from images



Visual tracking

Joint work with (multiple, EU)

What's New in NUI

Where Are We, and Where Might We Go?

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开发

下载 SDK 和工具包
以及访问资源，以
帮助开发 Kinect for Windows
应用程序。

下载 SDK

探索

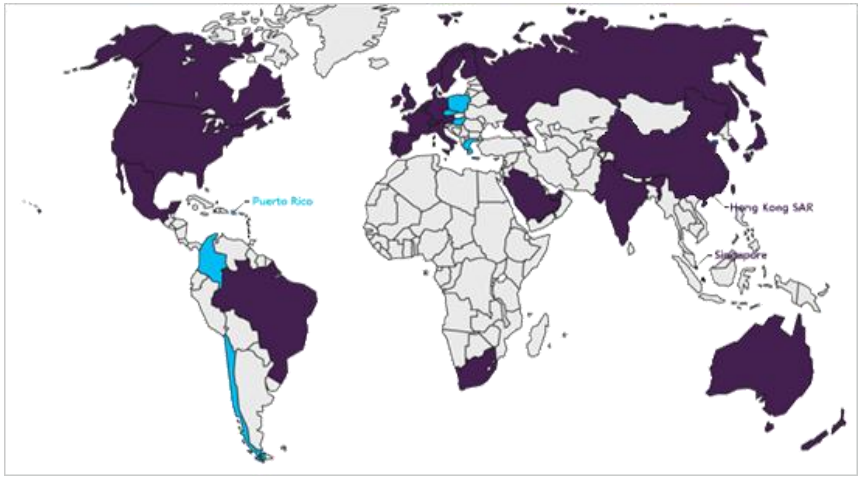
Kinect for Windows 有哪些功能？
了解如何将 Kinect 应用于
游戏以外的领域。

浏览库

Kinect for Windows v1.6

- Released October 8, 2012

- Wider availability
  - **China!**
  - Next: Chile, Colombia, Czech Republic, Greece, Hungary, Poland, Puerto Rico
  - 38 markets by end of year



- New features:
  - Extended sensor data access
  - Improved developer tools
  - Greater support for operating systems

Kinect for Windows v1.6 Features - 1

Extended sensor data access

- Data from sensor's 3-axis accelerometer now exposed
  - Enables detection of sensor's orientation
- Extended-range depth data beyond 4m
  - Lower accuracy, but extends usage scenarios
- Color camera settings
  - Brightness and exposure, to tune sensor to environment
- Infrared stream now exposed
  - Many scenarios, such as calibrating other color cameras to the depth sensor or capturing grayscale images in low-light
- Faster toggling of IR to support multiple overlapping sensors

Kinect for Windows v1.6 Features - 2

Improved developer tools

- Kinect Studio updated to support all new sensor data features
- German speech recognition language pack
- Skeletal tracking now supported on multiple sensors within a single application
- New samples
  - How to use all the new SDK features
  - New sample demonstrates a best-in-class UI based on the Kinect for Windows Human Interface Guidelines
  - "Basic Interactions – WPF sample"

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Kinect for Windows v1.6 Features - 3

Greater support for operating systems

- Windows 8 desktop compatibility
- Development with Visual Studio 2012 and Microsoft .NET Framework 4.5
- Virtual Machine support
  - Works on Windows running in a VM
  - Tested: Microsoft Hyper-V, VMWare, Parallels

- Remember: all new features are supported on the **Kinect for Windows sensor**
  - ***Not the Xbox 360 sensor!***
  - See www.kinectforwindows.com for availability

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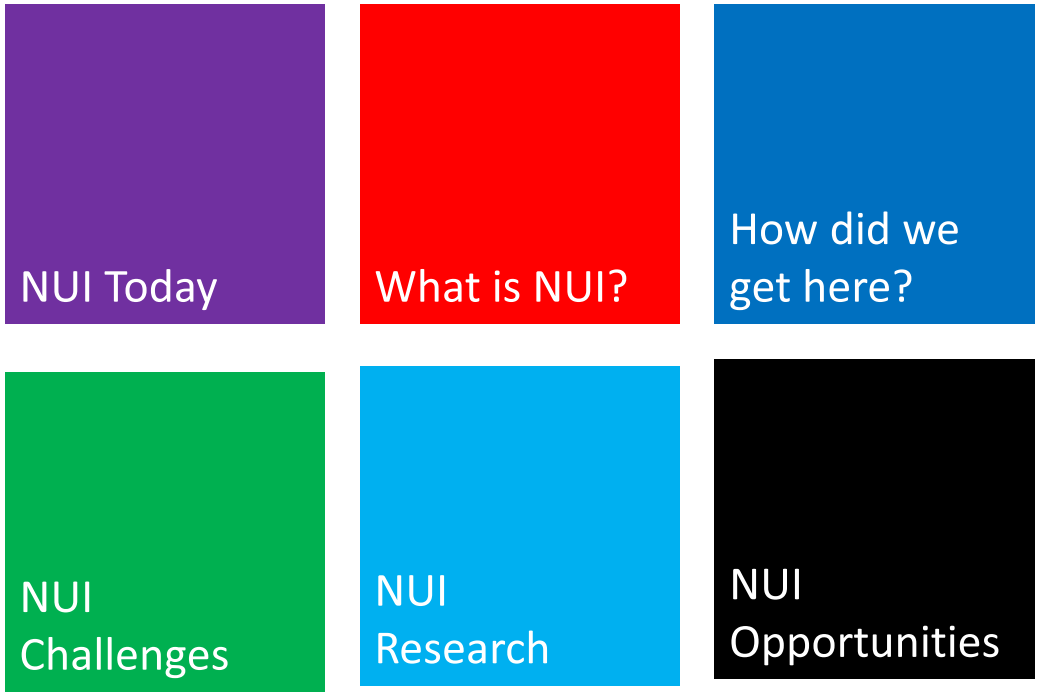

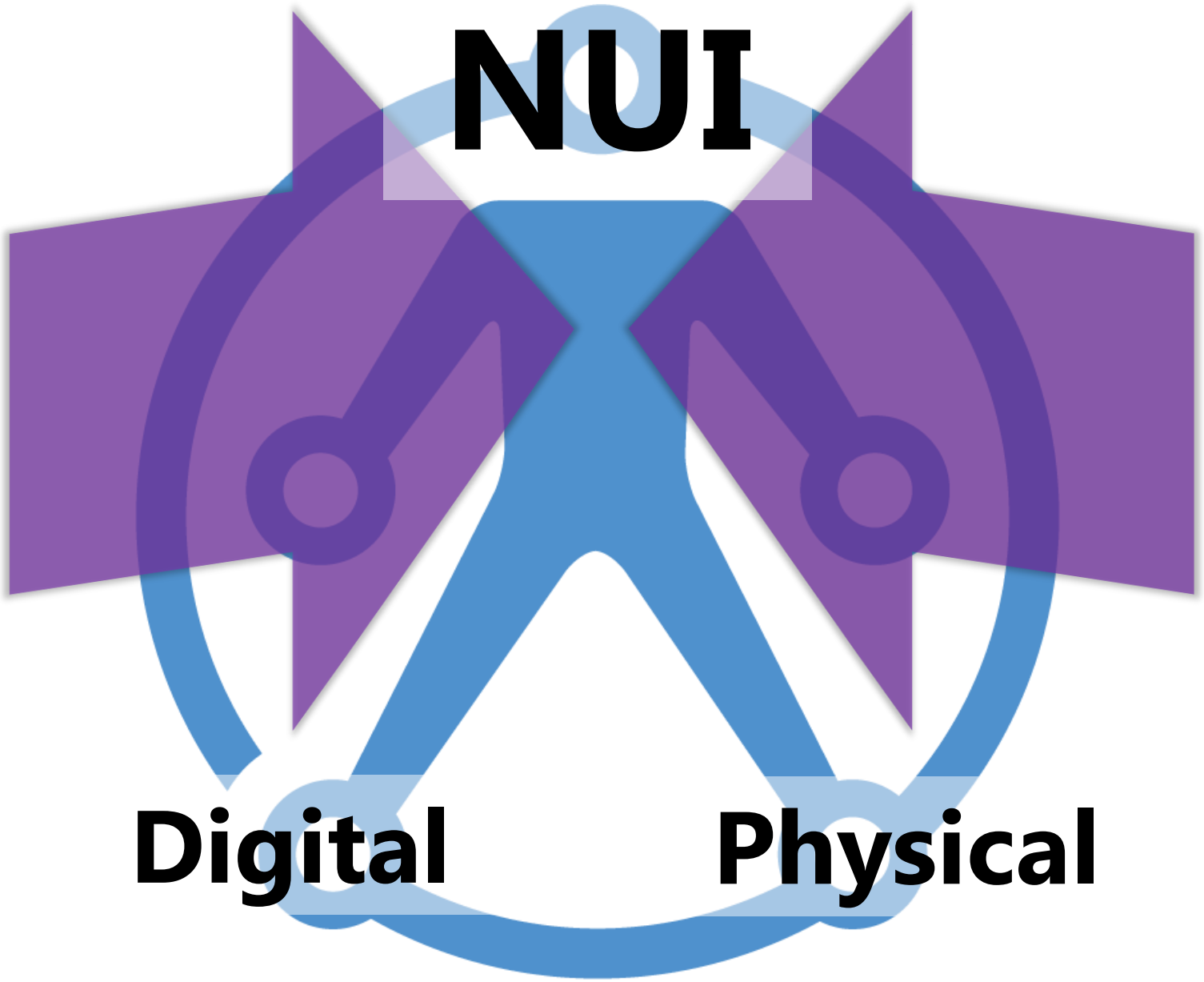
NUI
Digital
Physical

Resources

http://microsoft.com/next/

http://kinectforwindows.com

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