Mobile and Pervasive Game Technologies

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Reading Summary!

Please answer the following questions: on a piece of paper:

*What do Ross et al. conclude about the relationship between **interactivity** and **media richness**?*
*What do they suggest needs to be maintained when retargeting a game to a **mobile platform**?*

Limitations of Mobile Devices

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What are some of the ways that mobile platforms (e.g., cell phones) are limited as media and gaming platforms?

- Screen size: needs to remain small to be mobile
- “Limited” processing power
- ~~No keyboard and mouse~~
- Varying environment

Take away message from paper:

- Richer media is harder to interactively retarget

- “Quality” of the media may be less important than <u>experience!</u>

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- Alternative inputs (touch screens, accelerometers)
- GPS -- location detection
- Cameras
- Different social uses (sharing, combining)
- Be used in variety of contexts
  - played during everyday life!

Alternative Inputs

Different inputs allow for different kinds of interactions

Example:

- Accelerometer/Gyroscope for direct physical movement

- Touchscreen can reduce mediation caused by a mouse

Alternative Inputs

http://vimeo.com/21732583

Putting the “mobile” in mobile phone!

More interesting:

capabilities that take advantage of the fact that a phone can move around

Localization

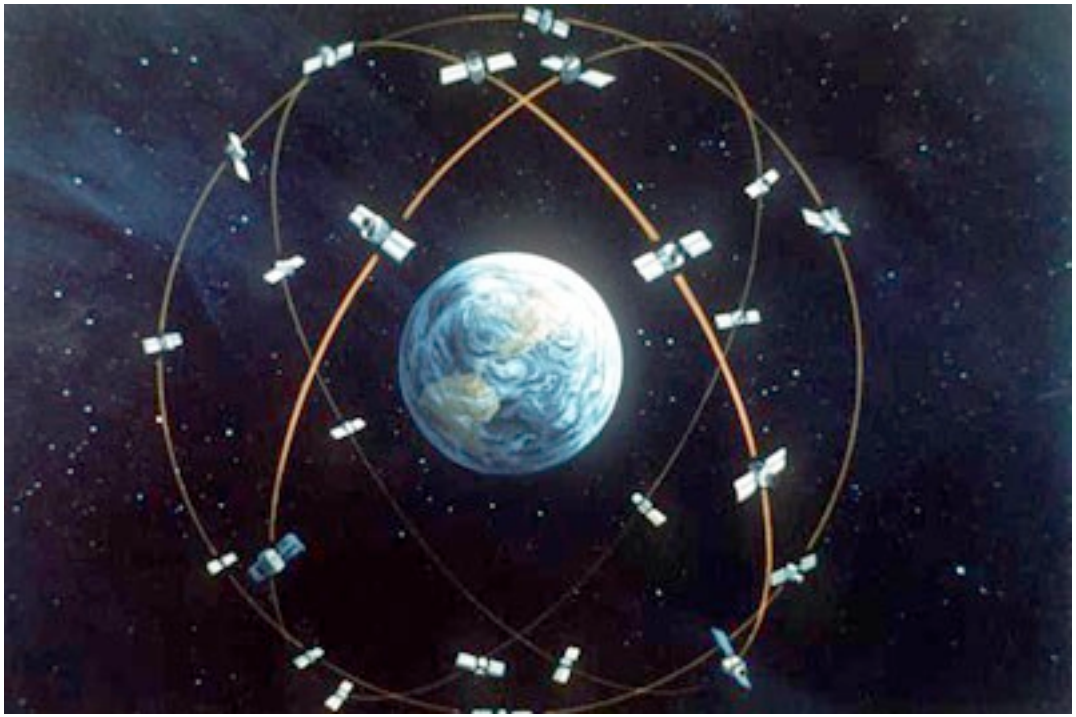
- the process of determining location

Different techniques:

- Proximity detection (Active Badges, RFID)
- Triangulation (vision detection)
- Trilateration (GSM, GPS, WiFi)

GPS - Global Positioning System

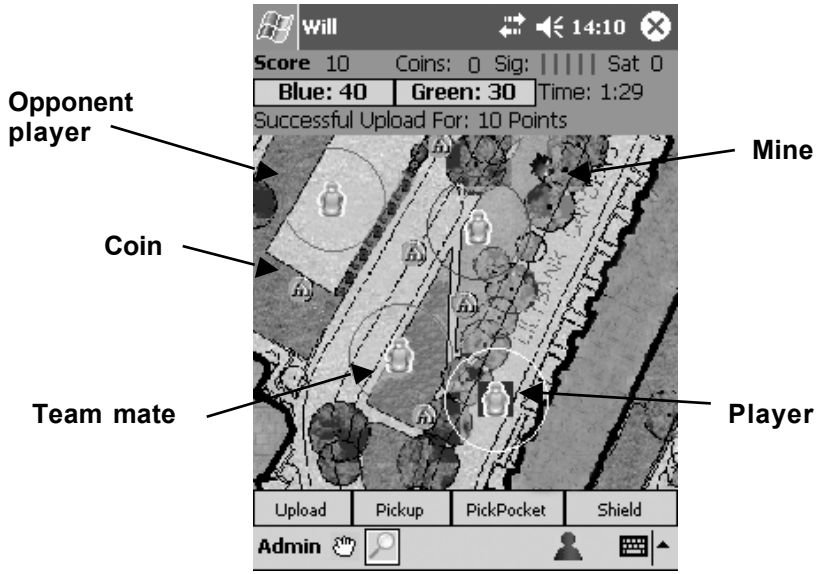
- Calculating *time-of-flight* to determine distance
- Trilaterate to determine position
- Need to (directly) see the satellites!



Location-based Games

Can You See Me Now?
(Blast Theory, 2003)

Treasure!
(Barkhuus et al. 2005)



Infrastructure

Most localization systems rely on existing ***infrastructure***

- Active Badges need proximity sensors
- GPS needs satellites (and is blocked by buildings)
- WiFi localization needs a database of routers
- (Desktop games need internet, electricity, etc.)

Mobile game technologies = device **+** *surroundings!*

Augmented Reality

Adding virtual elements to *augment* a real-world environment

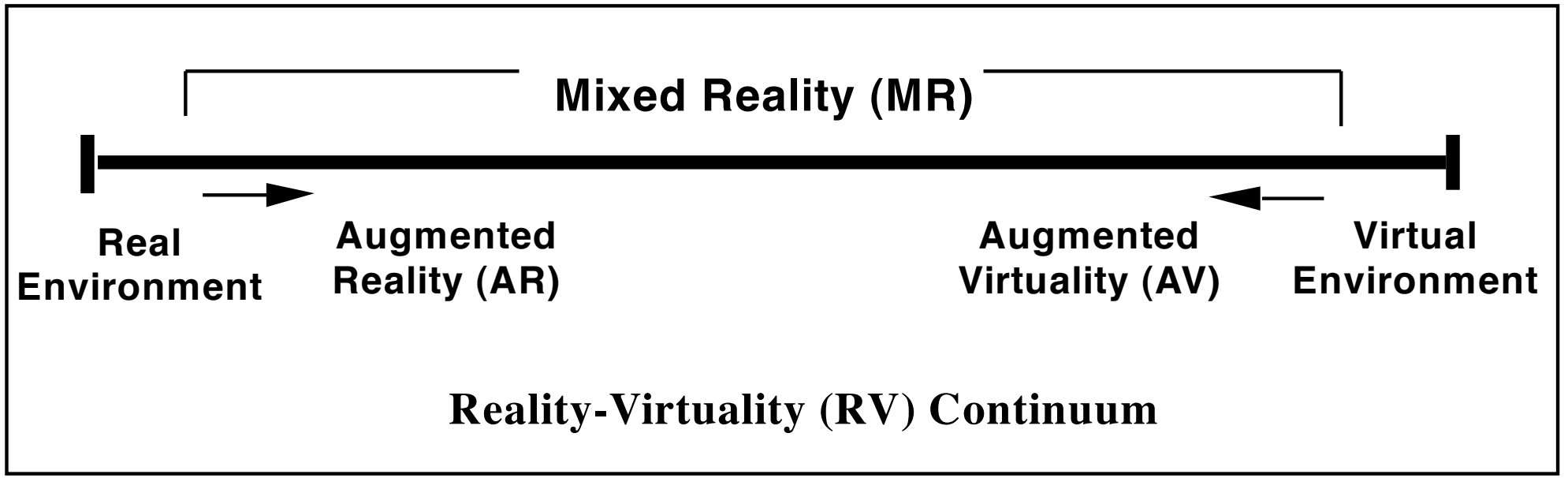
Use embedded **camera** to overlay

- Google Street View directions
- Yelp Reviews

Existing APIs

- e.g., Layar

The Mixed Reality Spectrum



Milgram, Takemura, Utsumi, Kishino (1994)

Example AR Games: ARhrrrr (2009)

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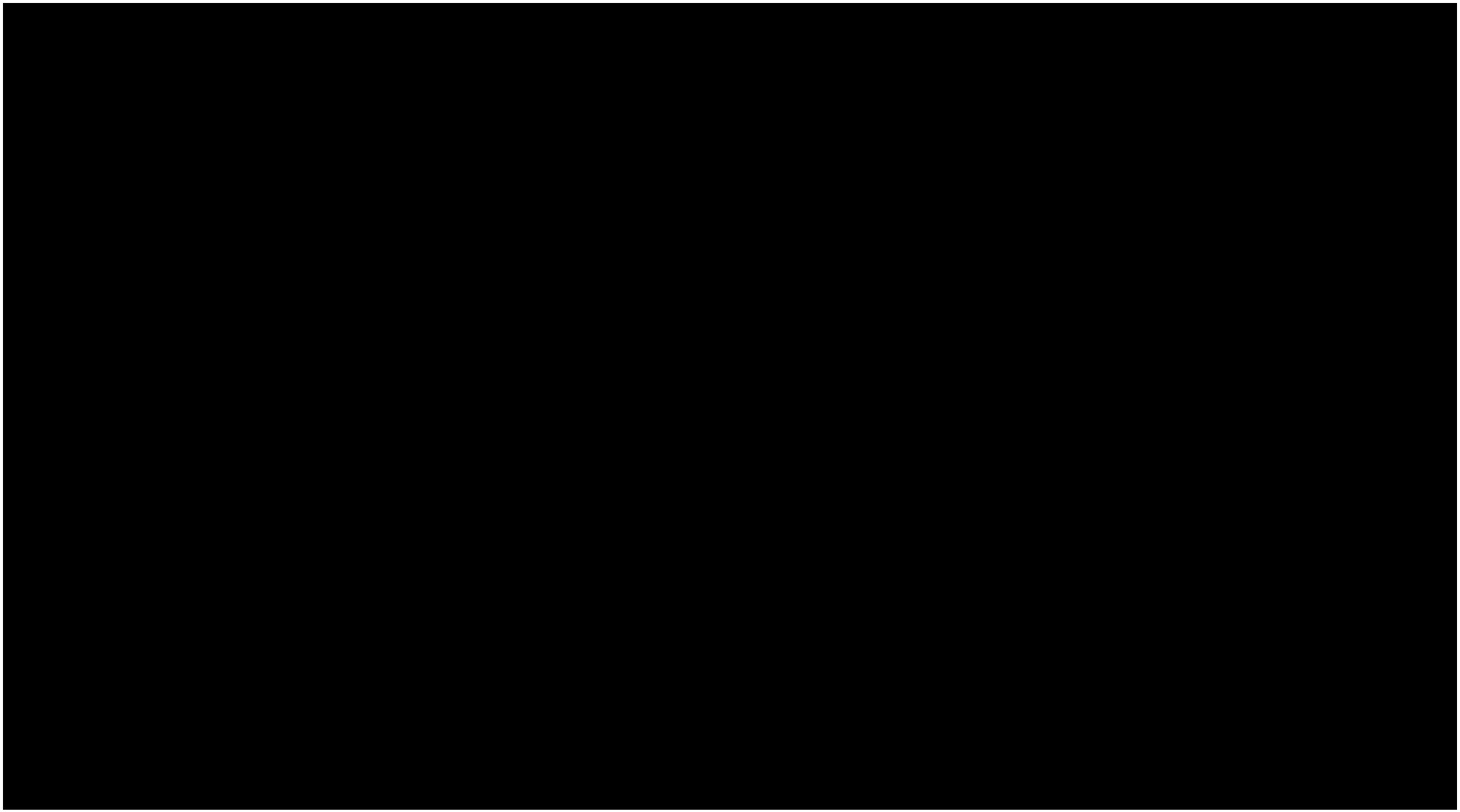

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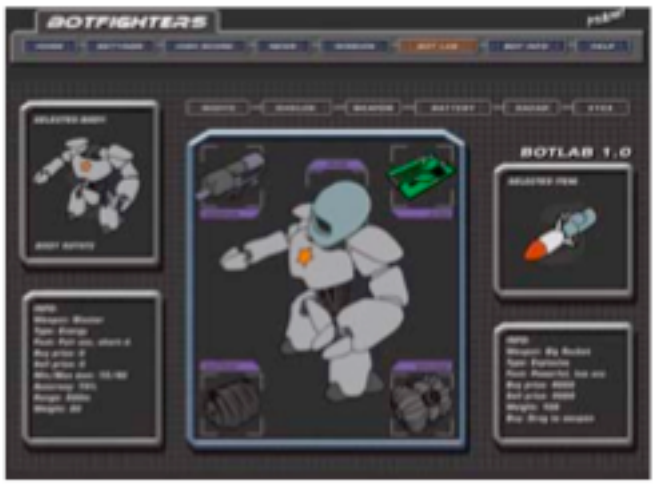
Pervasive Games

Pervasive Games *are games that are interwoven with everyday life*

Botfighters (It's Alive!, 2001)



Pervasive Games

Pervasive Games *are games that are interwoven with everyday life*

- Games that are played in non-gaming contexts
- Games that integrate the physical/social world
- Games that are expanded spatially, temporally, or socially

a.k.a: ubiquitous games, appropriative games

Alternate Reality Games (ARGs)

ARGs distribute narrative elements across a variety of platforms, expanding the frame for the game beyond the screen to effectively make the entire world the "game board."

Example: *I Love Bees* (http://ilovebees.com)

Use existing "technologies":

- e.g., web pages, phone booths, fax, postal mail

Blur the boundary of "what is a game"

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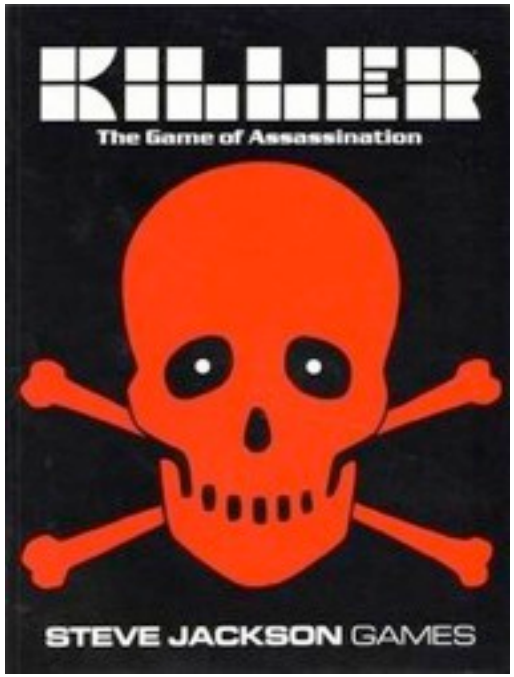
More Pervasive Games



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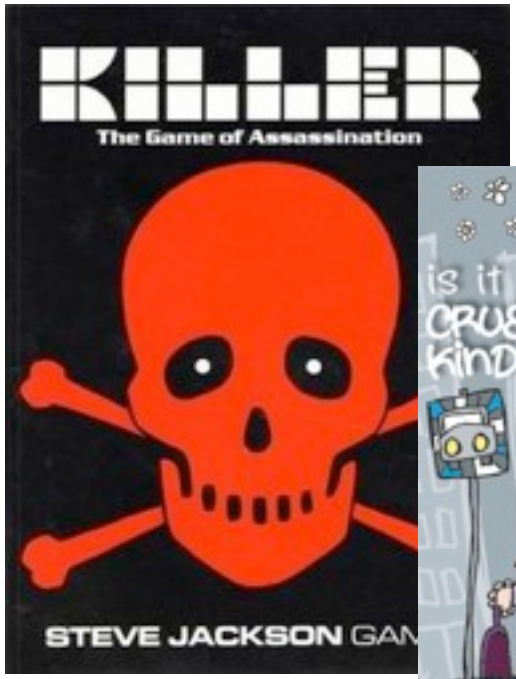

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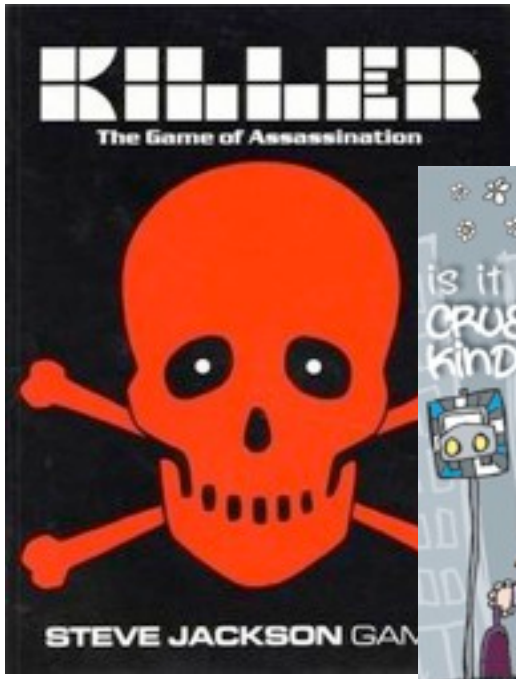

Urban Games

where's the tech?!

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The Question:

Do we really need complex or advanced technology for pervasive games? For *any* game?

What do we get from using new, advanced tech?
What do we lose?

The Moral:

Think about the experience you want people to have, ***then*** decide on the technologies that can best support that experience!

Plug

If you want to talk more about games as experience or the line between games and non-games...

ICS 60: Computer Games and Society

Summer Session 2

If you want to talk more about reliance on social and technical infrastructures...

ICS 5: Environmental Issues in Information Technology

Summer Session 1