

Augmented Reality II

- 1. Introduction -

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April 20, 2004

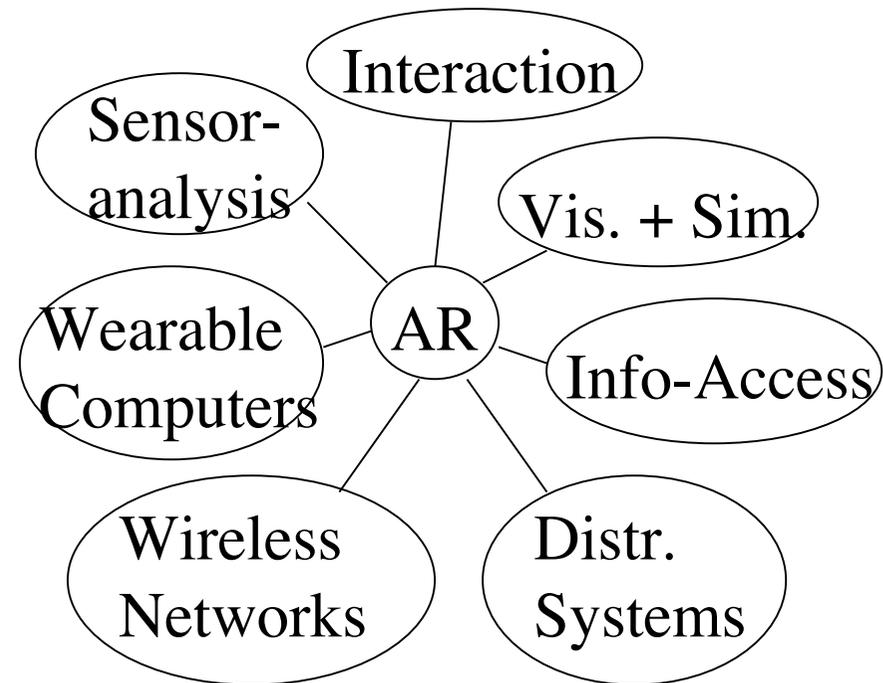
Agenda

1. Administrative Issues
2. Augmented Reality -
Definition, Different Approaches
3. Research Issues
4. Schedule and Forecast
 - Computer Vision and Photogrammetry
 - Information filtering, contexts
 - Tangible user interfaces
 - Efficient rendering

1. Administrative Issues

- Lecture: Tuesdays 9:00 - 10:30
Focussing on a few, selected topics:
 - Ubiquitous tracking
 - User interfaces
- Schein: Oral exam
- Office hours: By appointment
- Infos: www1.in.tum.de/Lehrstuhl/AugmentedRealityII/SoSe2004

2. Augmented Reality - Definition -



- Real + virtual
- Interactive in real-time
- Registered in 3 Dimensions

[Azuma 98]

2. Augmented Reality - Different Approaches -



[FhG-IGD 97]

Head-based



[Sony 98]

Hand-based



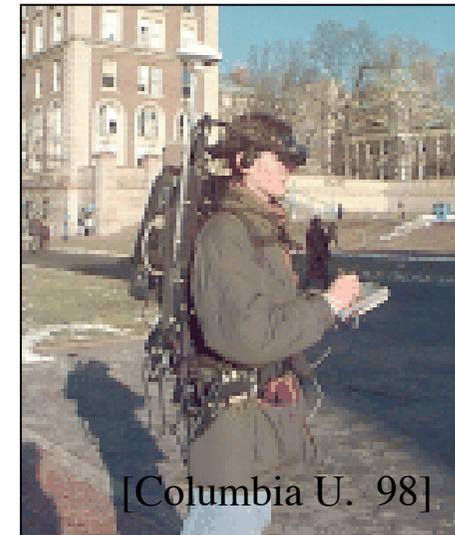
[FhG-IGD 97]

Desktop-based



NOV. [MIT 94]

Wall-based



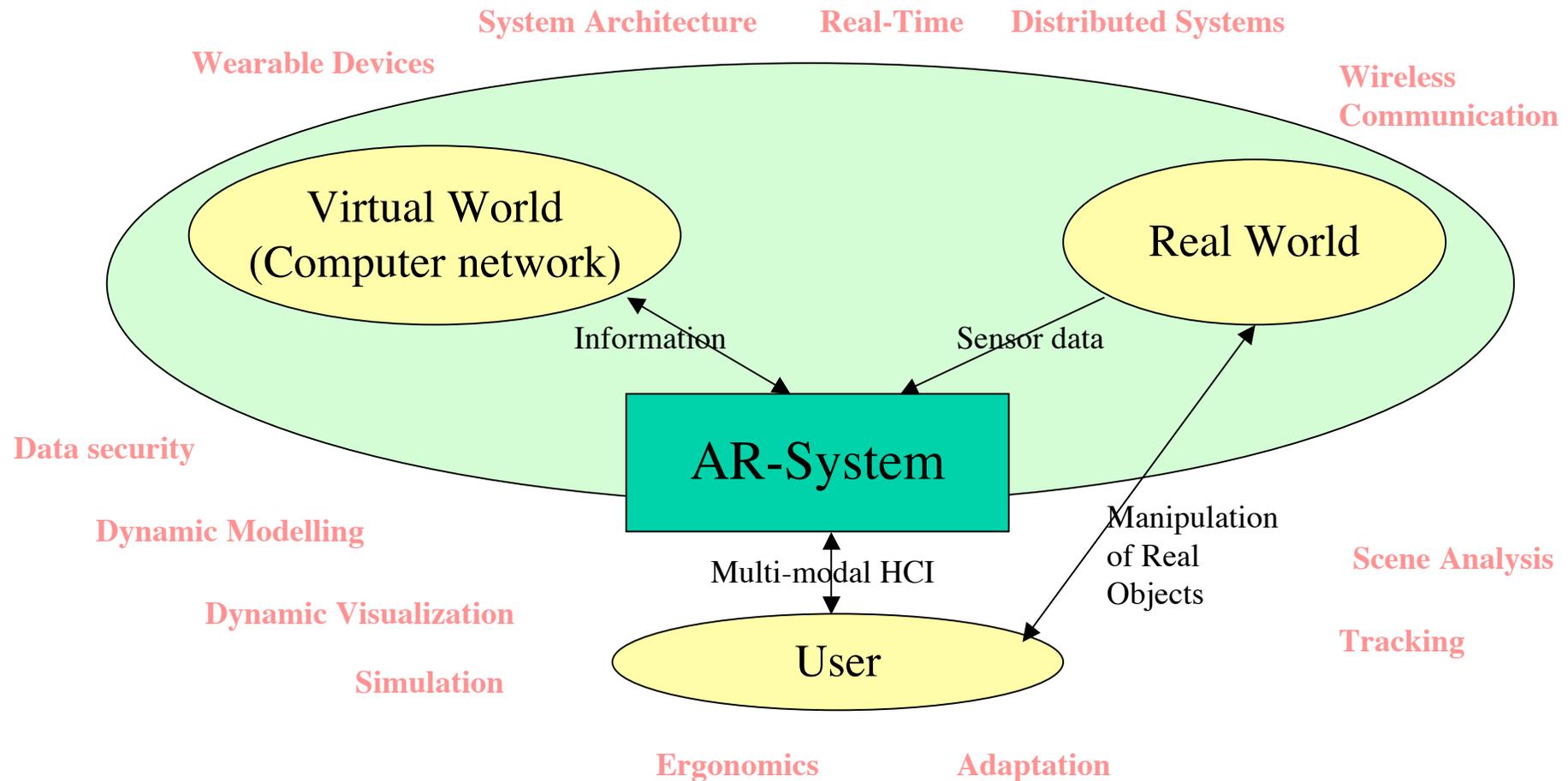
[Columbia U. 98]

Hybrid

3. Research Issues

- **Sensor Analysis** (user tracking, scene modeling)
- **Information Presentation** (Multi-media data; storage, access, data security, visualization)
- **Information Access** (Information filtering, context)
- **Mobile Communication** (distributed systems)
- **Wearable Devices** (Hardware), **Ergonomics**
- **HCI** (multi-modal interaction)
- **Efficient Algorithms** (real-time)
- **Software Engineering** (extendable, scalable, efficient system)

Multimedia Combination of Reality und „Virtuality“



4. Schedule

- Apr. 20 Introduction
- Apr. 27 Projective geometry
- May 4 ... no class ...
- May 11 Camera calibration
- May 18 Sensor fusion (multiple cameras)
- May 25 Sensor fusion (Kalman filtering)
- June 1 ... no class (pentacost) ...
- June 8 Ubiquitous tracking
- June 15 Designing user interfaces: human factors, theories, principles and guidelines
- June 22 Direct manipulation systems, virtual environments
- June 29 Information search and visualization
- June 6 User interfaces for AR: Wearable, multimodal
- July 13 User interfaces for AR: Tangible
- July 20 Conclusions, discussion, demos

