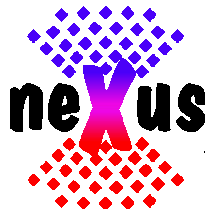


**University of Stuttgart**

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# **NEXUS – Augmented World Models for Mobile Context-aware Applications**



August 2002

Martin Bauer

# Motivation



## Wireless Networks

- WAN, LAN, PAN
- Infrastructure-based, Ad Hoc

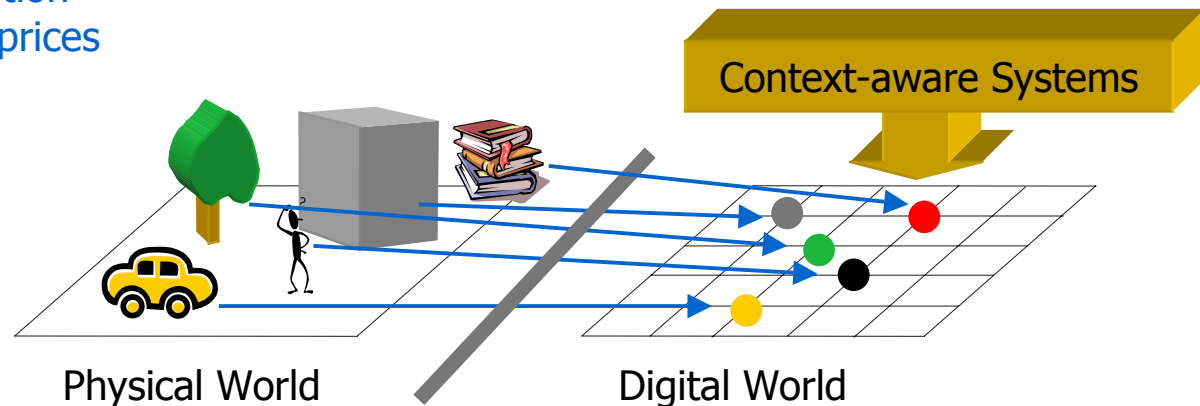
## Sensor Technology

- Identification
- Position
- State, Environment



**Mobile multi-functional Devices**  
**(Embedded) interactive Systems**  
-> „Smart Things“

Navigation  
Location-based Services  
„Sentient Computing“  
„Ubiquitous Computing“

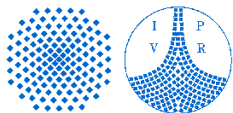
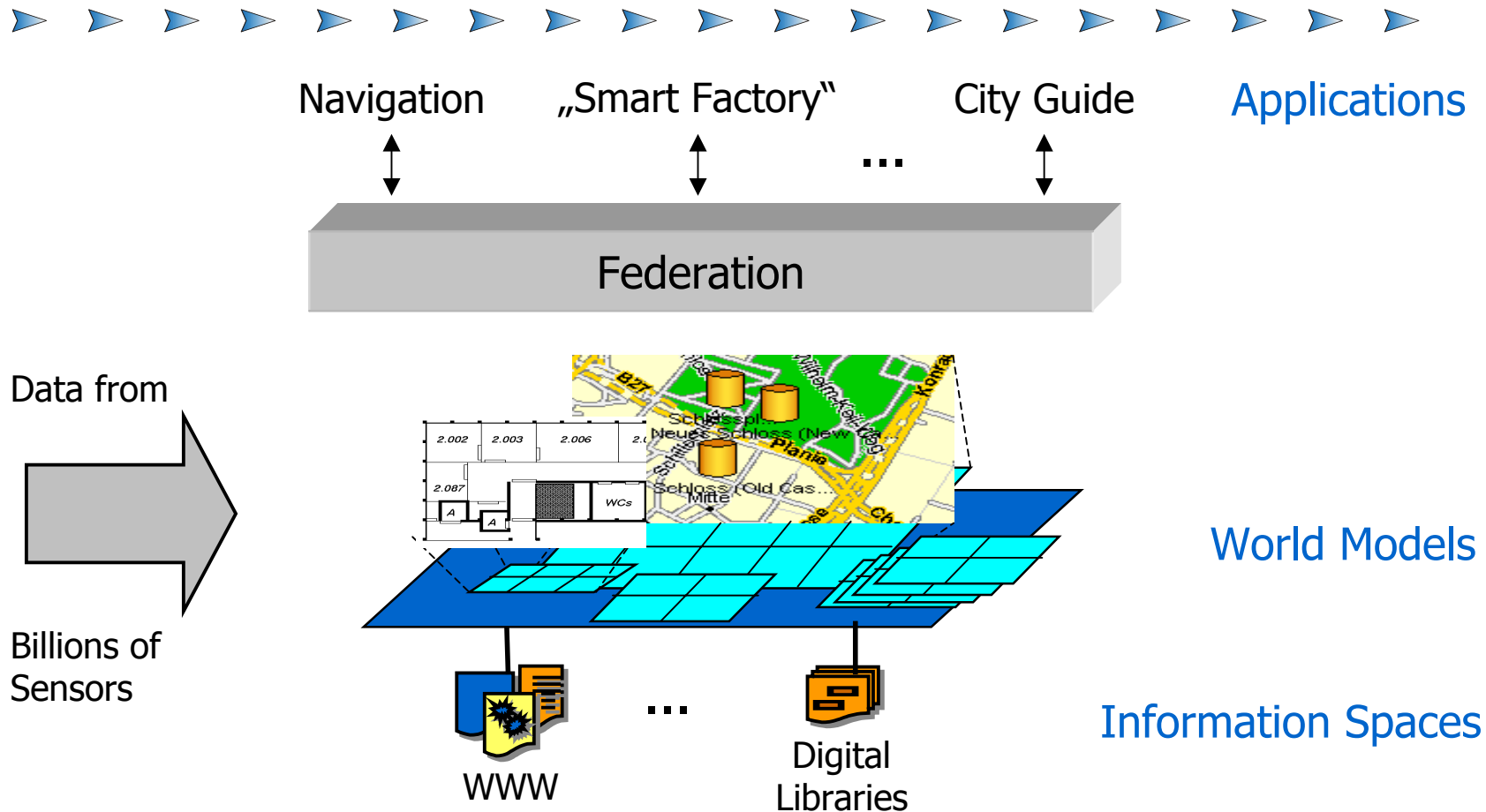


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# Vision: Federated World Models



# Vision: Nexus-Platform

## Connects Physical and Digital World

### Federated World Models

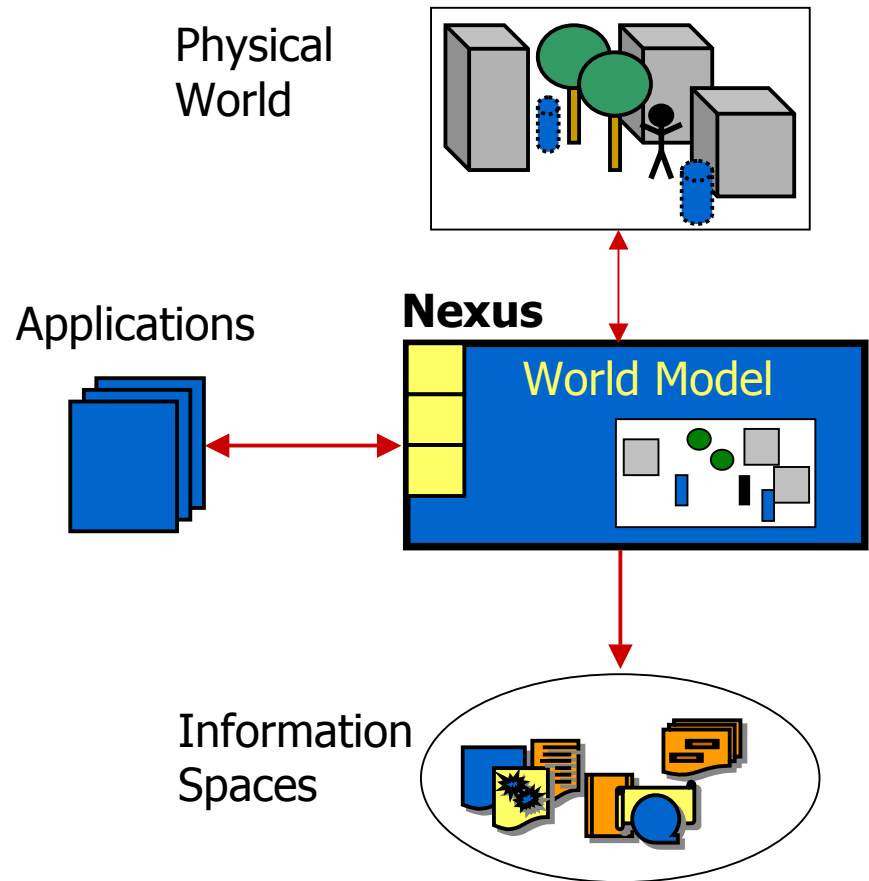
- Sensor Integration, Consistency
- Metaphors for Linking Information
- Temporal Concepts

### Supports Model Interaction

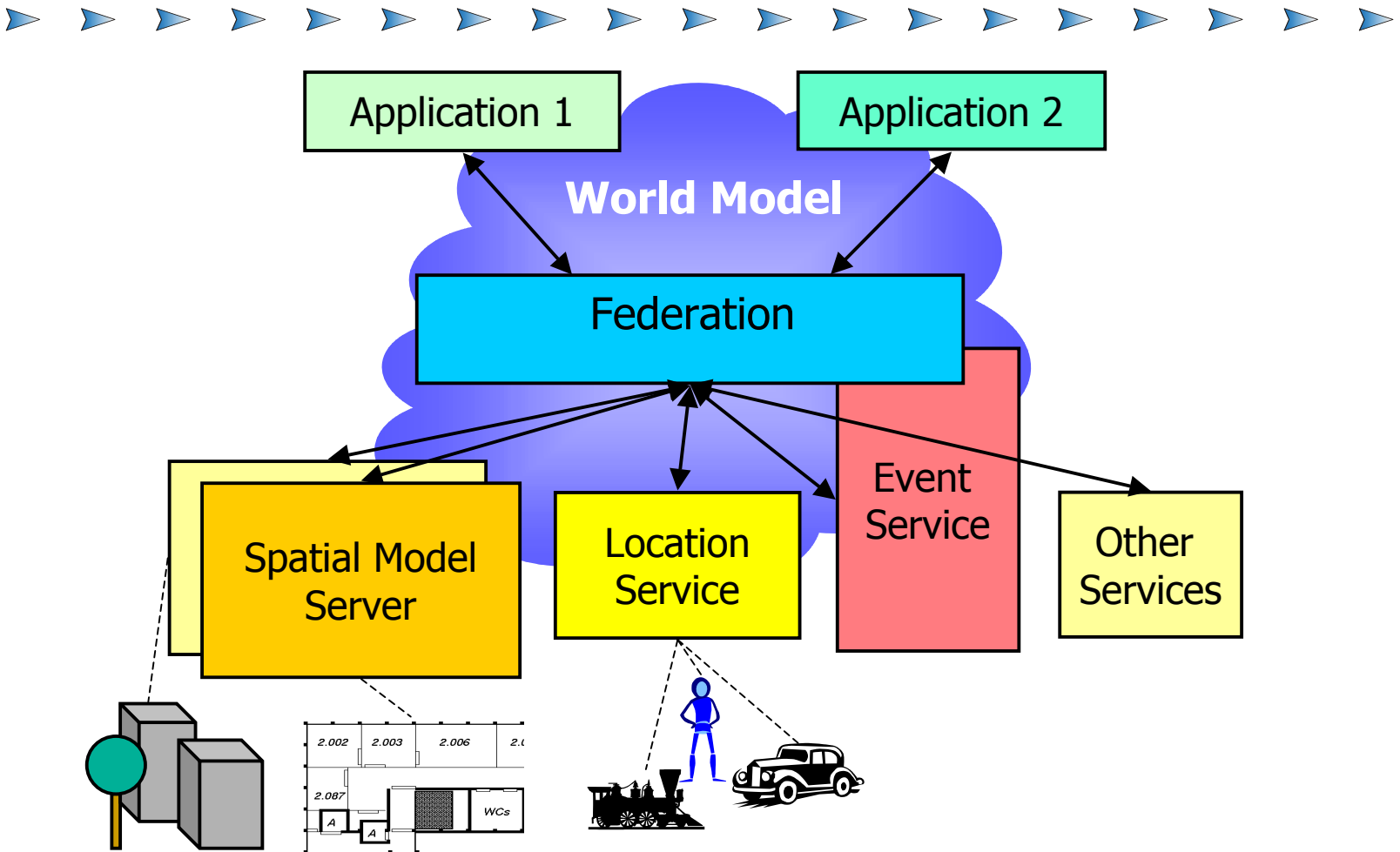
- Synchronous: Spatial Queries
- Asynchronous: Spatial Predicates/Events
- Visualization

### Supports

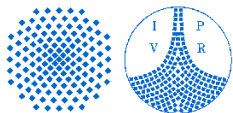
- infrastructure-based
- infrastructureless, hybrid Systems



# General Architecture



# (Almost) Automatically Generated Model



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# Spatial Events



Meeting Event



Enter Area Event

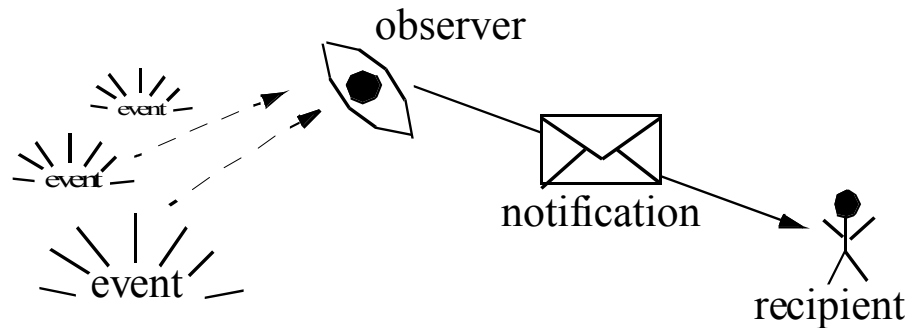


- Proactivity is important in mobile, location-aware computing
- Can be supported by event observation/notification mechanism

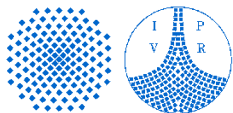


# Event Service: Research Goals

**Overall goal: Investigate architectures and mechanisms for Internet-scale event management**



- Distributed observation of complex events
  - ◆ Specification of distributed events
  - ◆ Parameters for describing semantic aspects: event consumption policy, time issues
  - ◆ Framework for distributed observation
  - ◆ Optimal distribution of observation
- Delivery of event notifications



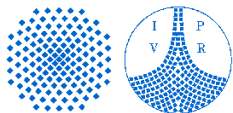




Thank you very much for your attention!

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