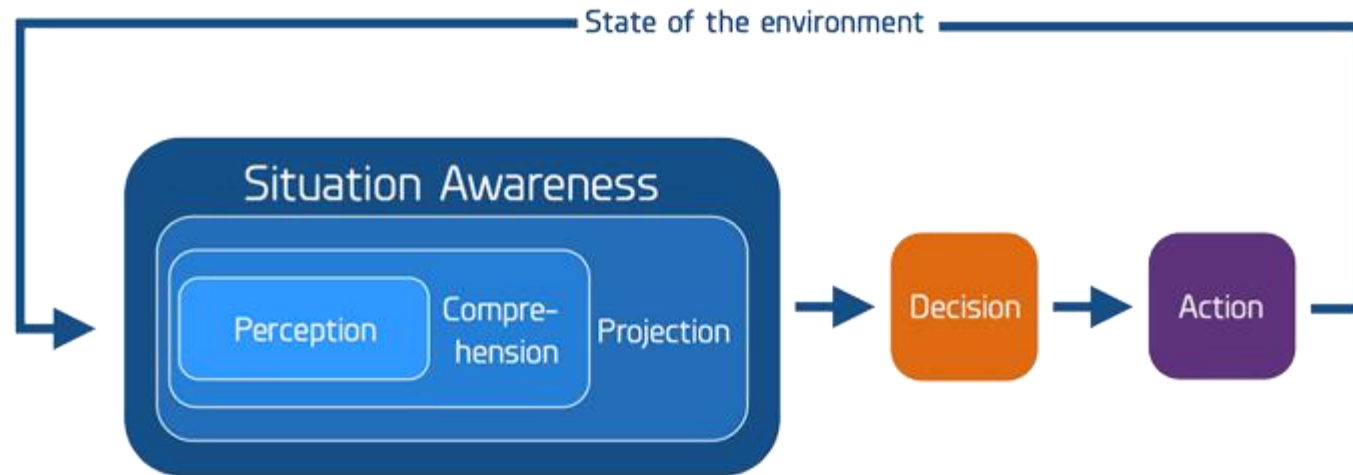




INTEGRATING INDOOR POSITIONING SYSTEMS AND BIM TO IMPROVE SITUATIONAL AWARENESS

Ana Reinbold, Olli Seppänen, Antti Peltokorpi, Vishal Singh and Erez Dror

Situational Awareness



Source: Endsley, 1995.

Situational Awareness in Construction Projects

“It is very difficult to visualize the flow of the work in progress on a construction site. This is more obvious for the interior finishing works” Sacks et al 2009



Source: <https://ncep.noaa.gov>

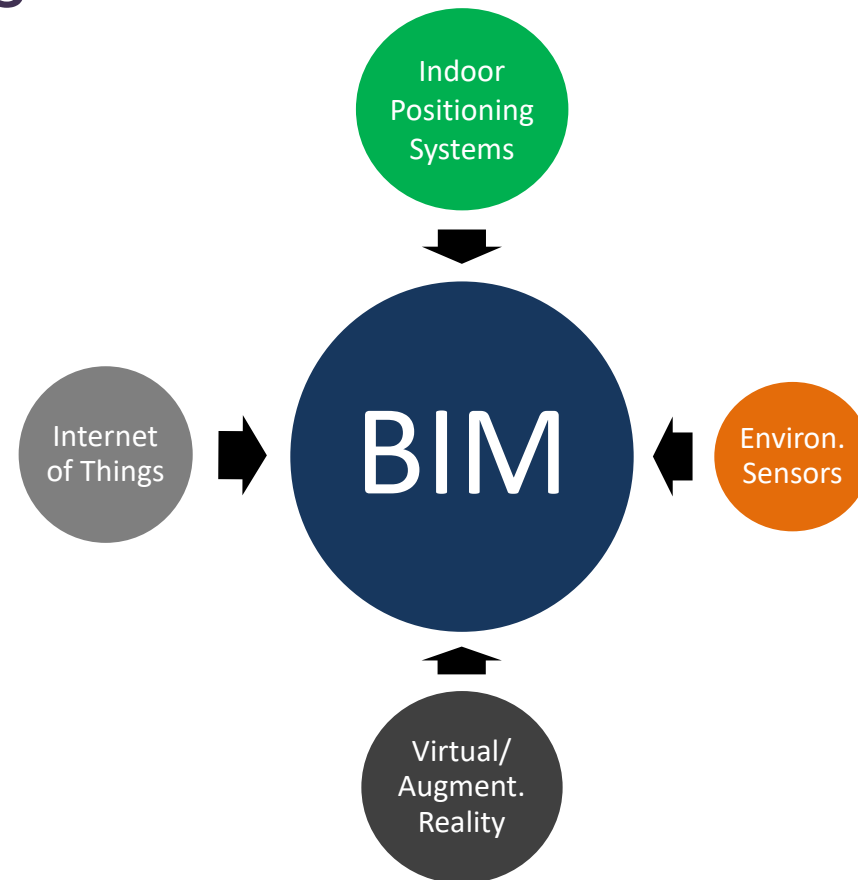


Source: <https://bodaiju-residences.com>

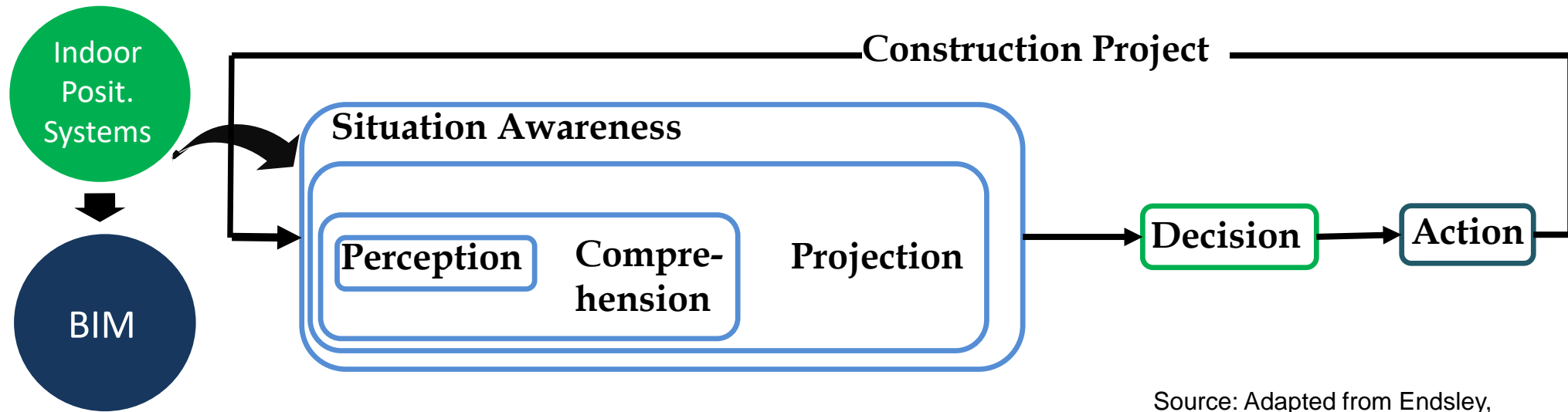
BIM and Situational Awareness

Increased Situational Awareness through:

- Information Cluster (consistency)
- Construction Digitalization
- Flows visualization
- Waste identification



Integrating Indoor Positioning Systems and BIM



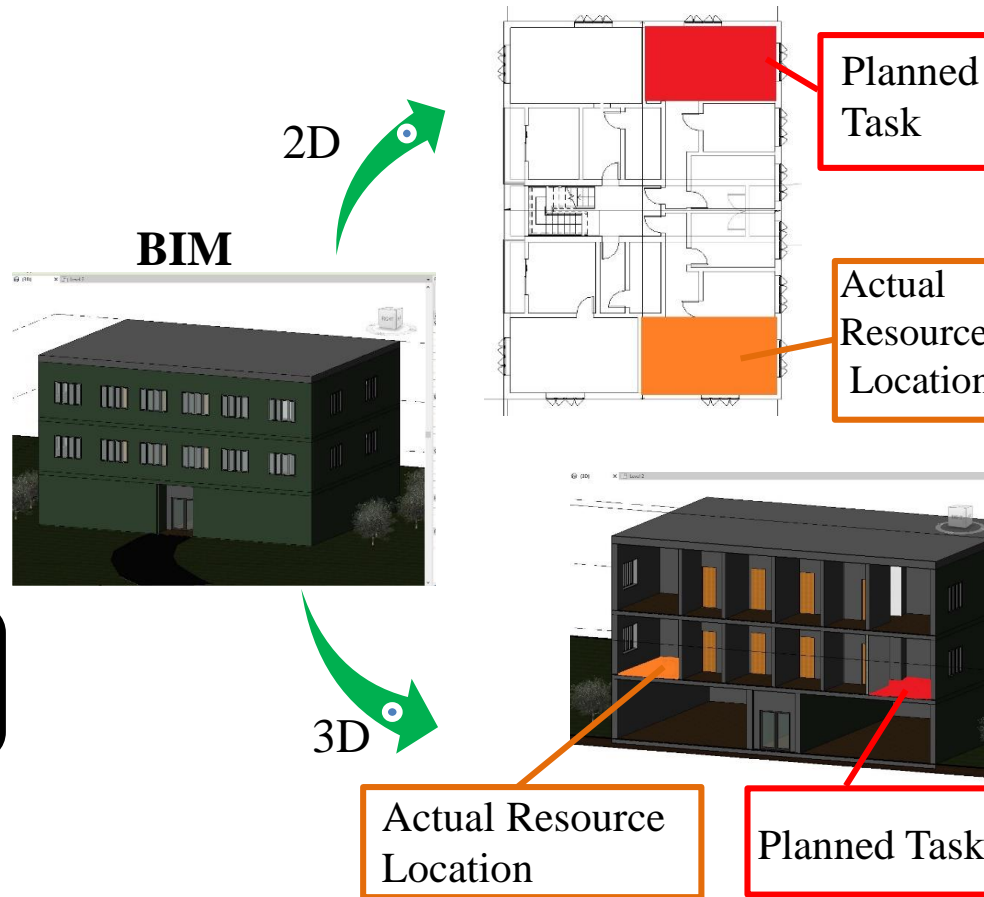
Source: Adapted from Endsley, 1995.

BIM and IPS Concept Map

Resources Planning

- Carpenter 01 (beacon 40)
- Pilars (gateway 37)
- Beams (gateway 37)
- Pilars (gateway 42)
- Beams (gateway 42)

Indoor Positioning System (IPS)



Next Steps

- **Integration of BIM and IPS**
 - Definition of interface, mockups and usability questionnaires
- **Interface development and Pilot Project**
 - Analysis of Pilot Project outcomes, improvements, further implementation
 - Investigation of impact in situational awareness and decision making



Thank you!

ana.reinbold@aalto.fi