



**ISHCCO**

**International Safety & Health Construction  
Co-ordinator's Organisation**

**[www.ishcco.org](http://www.ishcco.org)**

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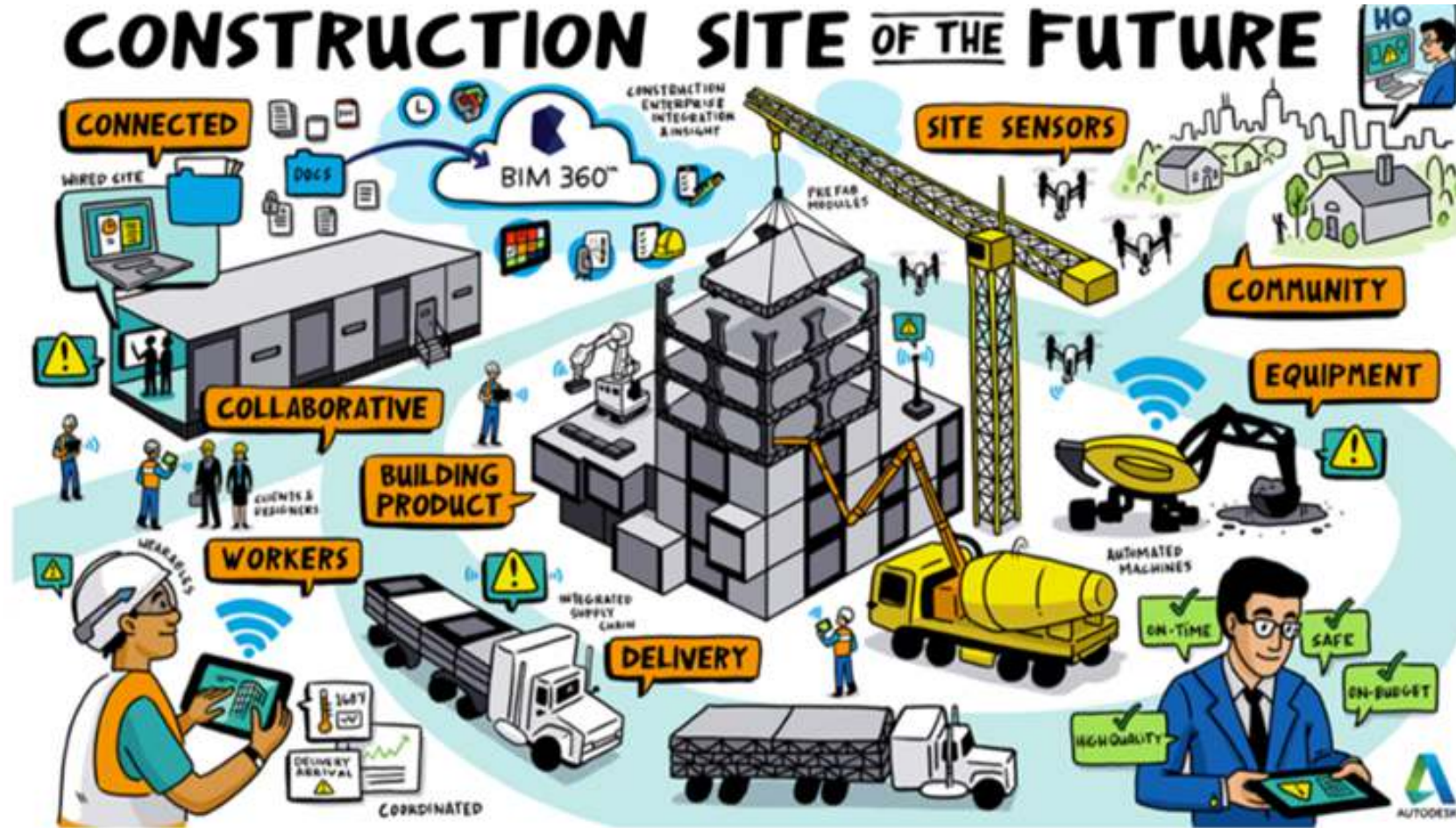
# Digital Tools to train Engineers and Workers

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ISHCCO Vice-President, University Porto  
A+A Congress, Dusseldorf, 7Nov19

# Training as Zero Vision mechanism

- ✓ Worker
  - Aware of risks
- ✓ Engineer
  - Implementation of measures
- ✓ Safety coordinator
  - Design of prevention
- ✓ Construction owner
  - Pay for prevention

# Digital Tools -BIM





# Digital Tools Mobile Devices



# Digital Tools 3D Glasses





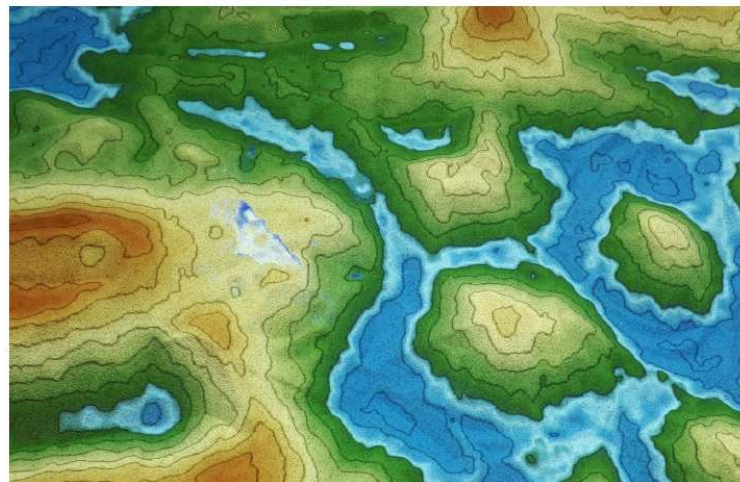
# Digital Tools AR/VR/IR



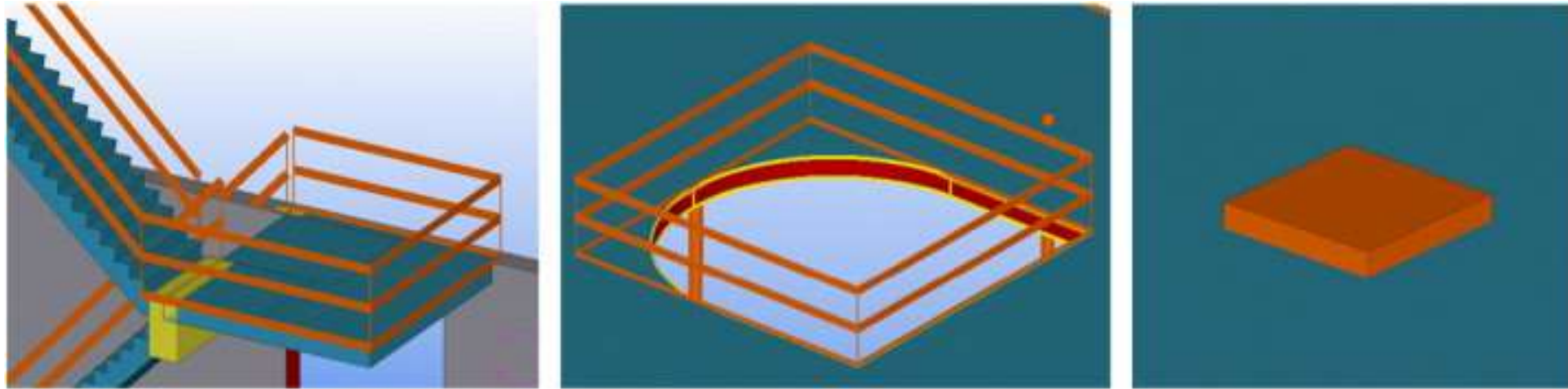
Educational Lab – Big Machine – “ELBigMAC

Instructions for the development of the

**Augmented Reality Sandbox**



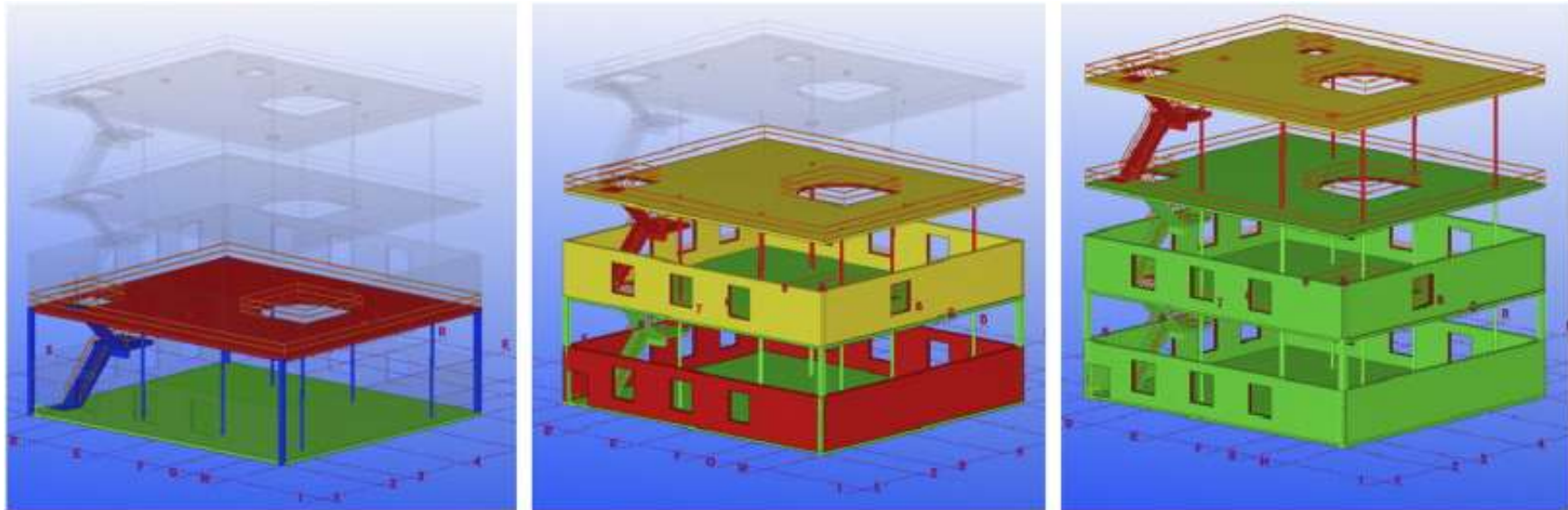
# Combination training and digital - Static



Examples of protective equipment for staircases, slab edges, and slab openings with different shapes/dimensions.



# Combination Training and digital - Dynamic



4D simulation (orange required safety equipment; green is completed; blue in progress; red in 1 week; yellow in 2 weeks).



# Combination training and digital - Interactive

- [SAFEWORK NSW Australia](#)

The screenshot shows a web browser window with several tabs open. The active tab is titled '417043\_Safework\_findHazards...'. The address bar shows the URL 'https://indd.adobe.com/view/d358a814-b02c-4686-9f61-104164337365'. The main content area displays a colorful illustration of a construction site with the text 'How many hazards can you find?' overlaid. The illustration depicts various safety hazards such as workers on ladders, a crane, and workers using tools. At the bottom of the illustration, there is a 'CLEAR ALL' button and a call to action: 'Visit [www.safework.nsw.gov.au](http://www.safework.nsw.gov.au) for more information or call Customer Experience on 13 10 50'. The NSW Government logo is also present. The Windows taskbar at the bottom shows the time as 10:32 AM on 27-Oct-19.

# Methodology

- Construction tasks addressed at any time
- Risks associated from planning and statistics
- Visualization of environment
- Static, dynamic or interactive participation
- Learning/training induced by knowledge
- Generic in terms of users

# Case study

- Project financed by Erasmus+
- Construction Safety Education and Training using Immersive Reality
- 4 universities and one construction company
- 3 years
- Half million Euros
- ISHCCO, AECEF, ENETOSH and others invited to validate and tune up

# Conclusions

- Simulation as training and education facilitator
- Possible use in certification
- Adjusted to each situation
- Standardising of training possible
- Adjustable to existing budget
- Use on site or on training facility
- Possibilities are immense

**Thank you for your attention.**

**Questions?  
Suggestions!**

**ISHCCO**