



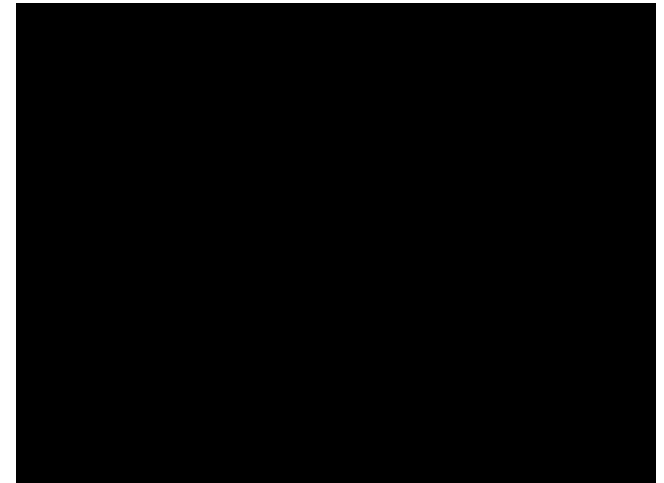
# Personal Analytics with Augmented Reality



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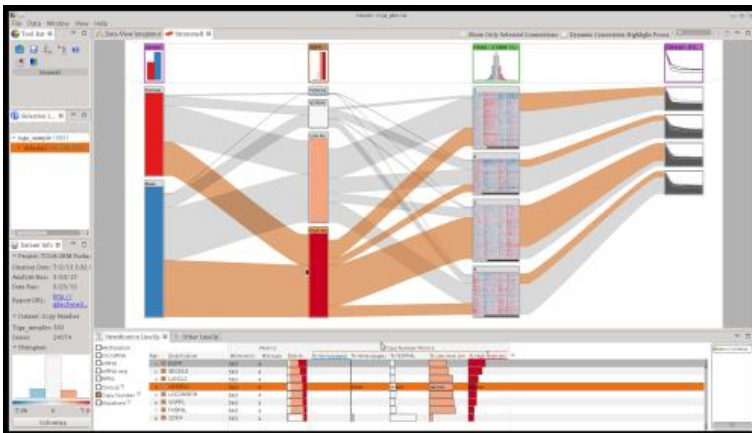
# Motivation

- Everybody knows Google glass
- Mobile personal information
- Not a desktop replacement

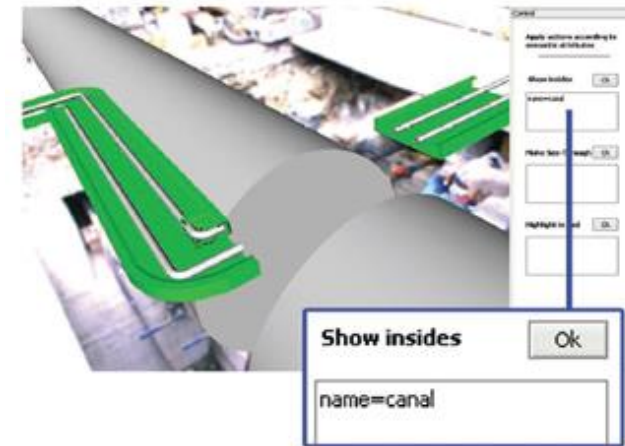


# Desktop vs. mobile computing

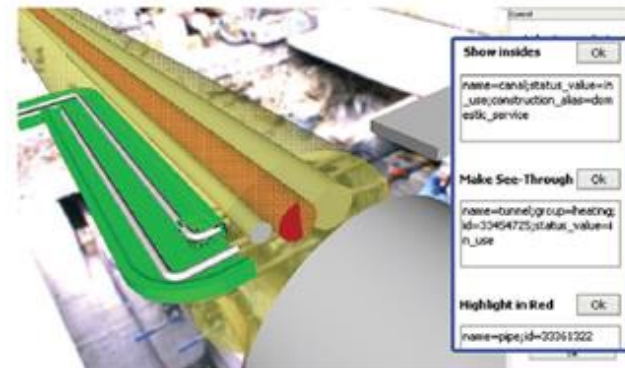
- Visual *analytics*
- Full user attention
- Ergonomic tools
- Visualization *in situ*
- Calm computing
- Divided attention
- Limited input
- *Augmented Reality*



# Underground Infrastructure Visualization

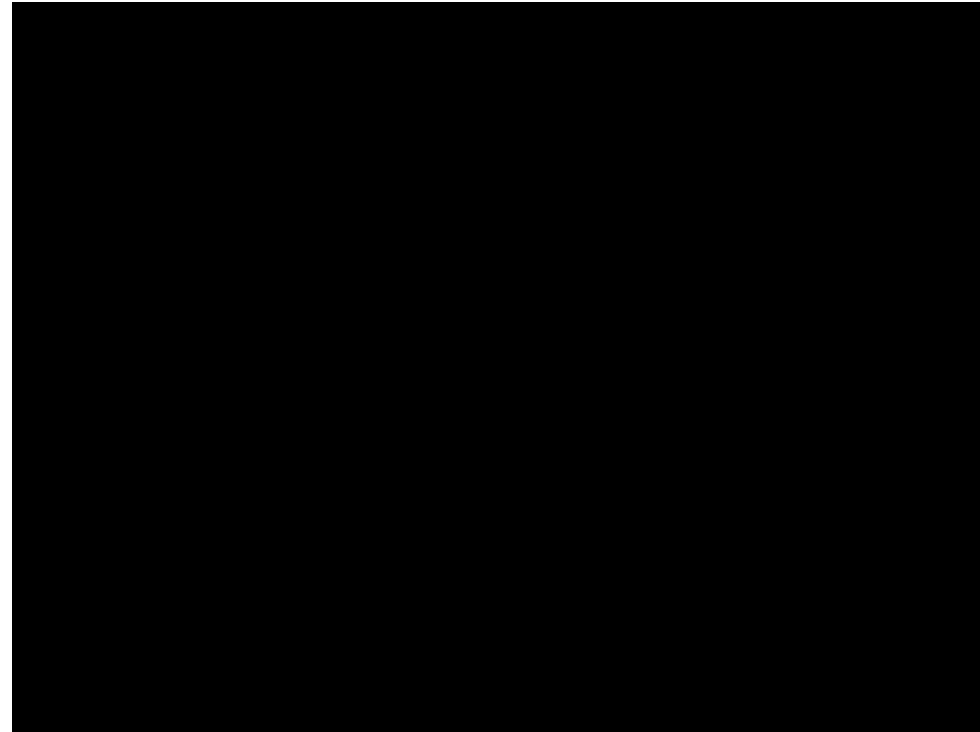


(b)



# Building Acceptance

- Compare as-planned with as-built
- Large CAD models
- Lots of expert knowledge required





# Repair and Maintenance

- Replace repair manual with interactive instructions





# Challenge 1

- Real time localization and recognition

## Wide-Area Localization of SLAM Maps

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Dieter Schmalstieg



# Challenge 2: Show real that cannot be seen

## Making the invisible not just visible, but comprehensible





## Discussion

- Calm interfaces for visual analytics?
- Machine learning etc.  $\leftrightarrow$  user interface
- Not just simple, but also powerful!
  - E.g. point to a machine part and get instructions on tablet
  - E.g. determine state of machine from visual inspection and telemetry



Google Now