Australian National University

Augmented reality technology: Impacts on Urban forestry?

— an initial feasibility study

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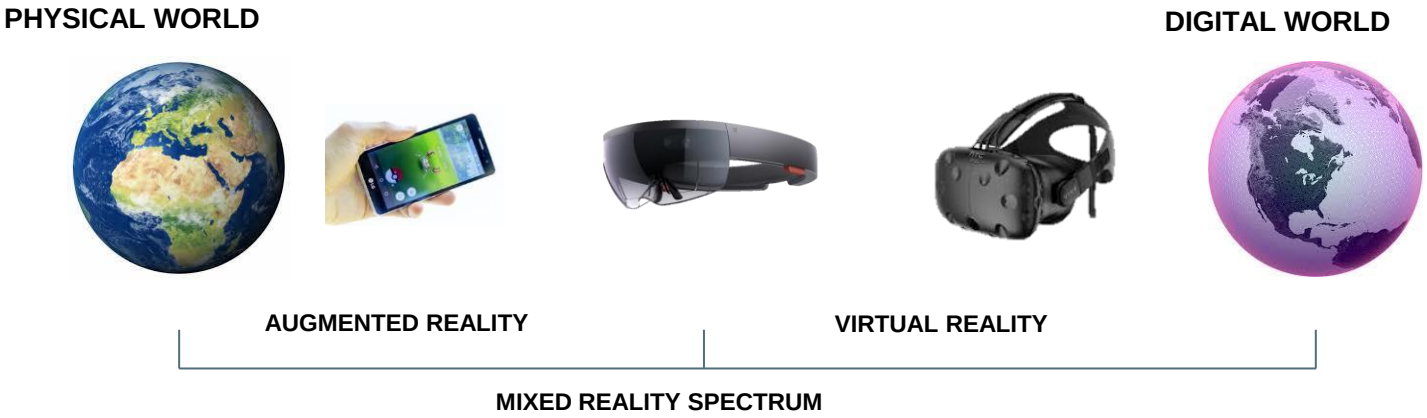
Outline

- Introduction
- Background
- Field of Applications
- Case study
- Future Steps and Conclusion

Introduction

What is AR?

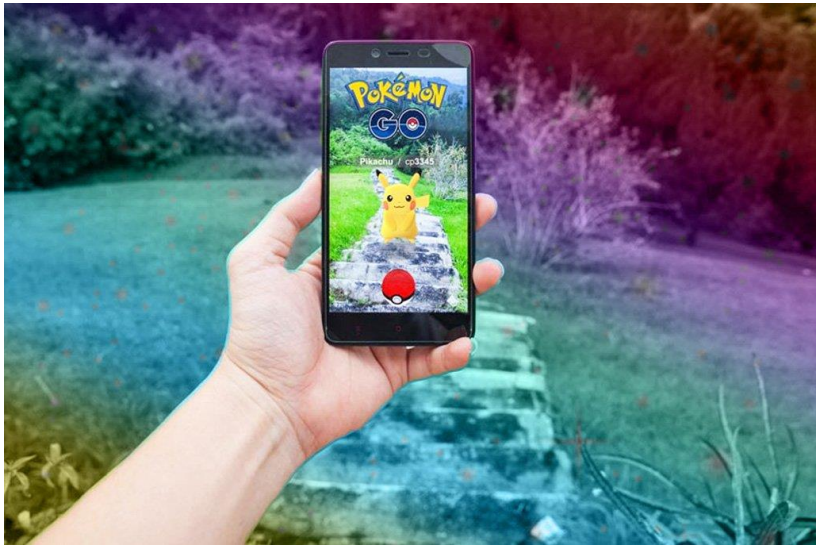
Augmented Reality (AR) technology – the computer-generated visual perception of information synchronized with objects and places in the real-world environment physically around the user.



Fields of applications of AR

Fields	Works
Education	Training/Learning
Medical	Surgery/Scan
Military	Simulation
Entertainment	Tour guide/Gaming
Retail	Shopping

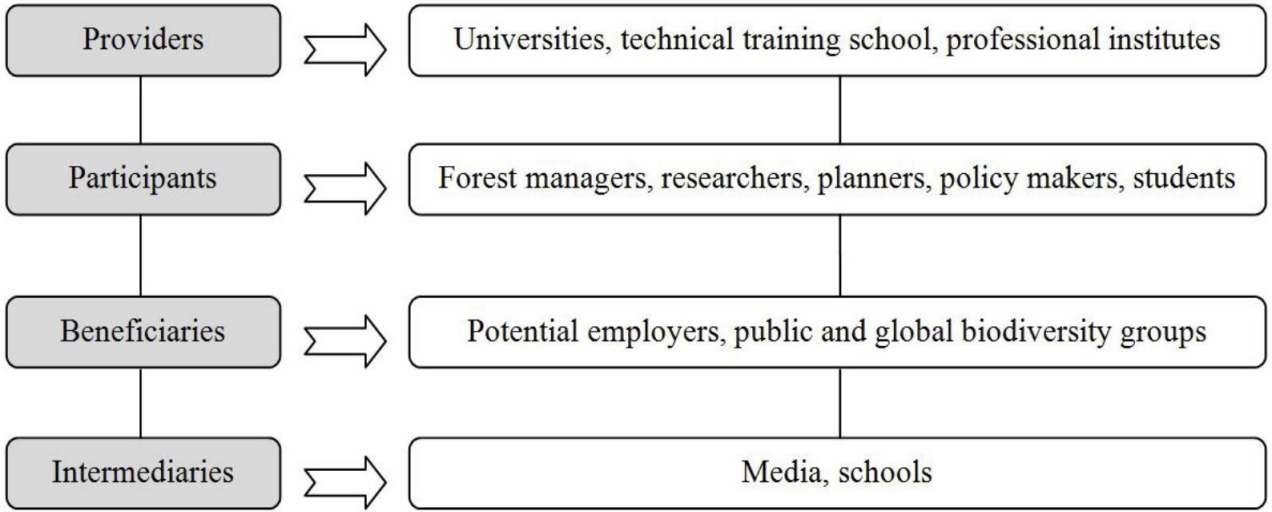
How can we use this technology in urban forestry — in particular to enhance technical skills training for forestry education?


Pokémon GO
Pikachu / cp3145

AR provides opportunity for forestry education

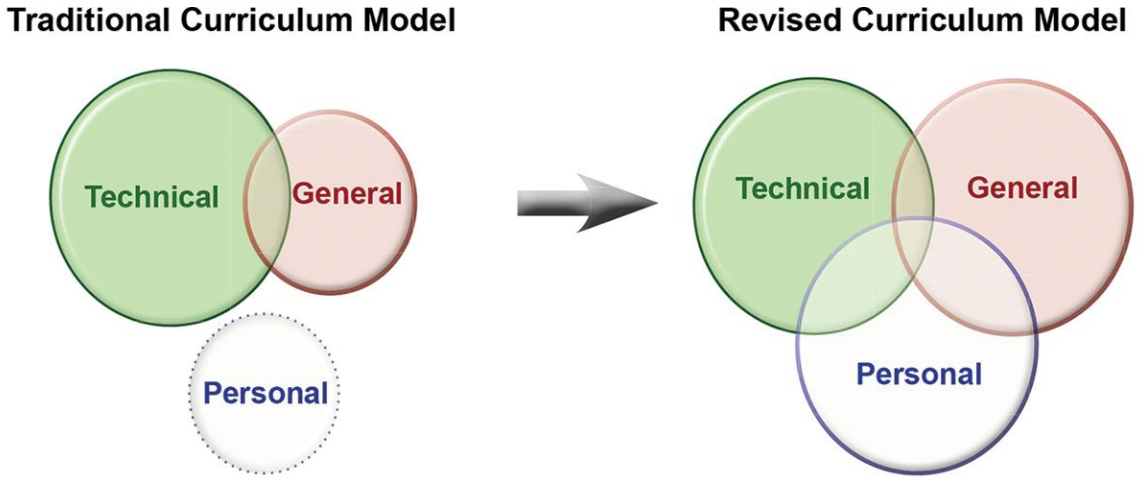
- Benefits
  - 3D visualizations for 3D structures
  - Controlled environment
- Cost and Portability
  - Reusable system
  - Different scenarios can be emulated easily and cheaply

Background



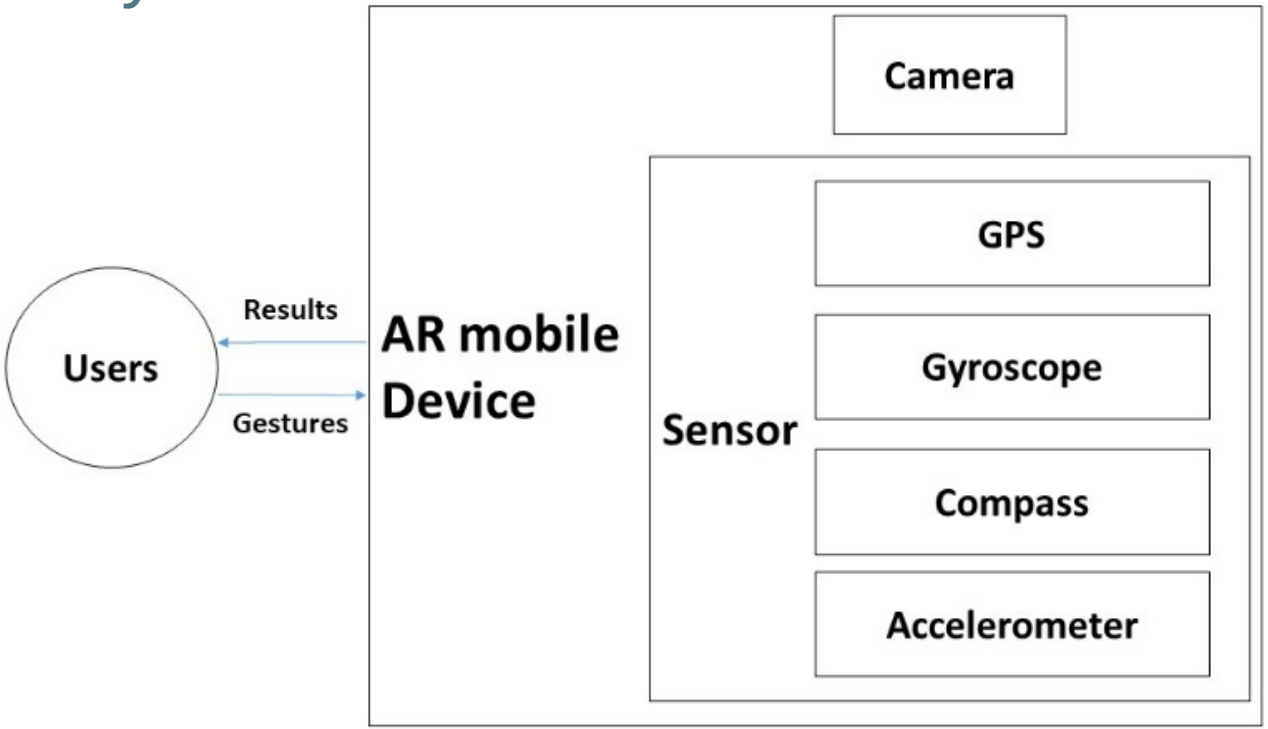
Vanclay, Jerome K. "The future of forestry education." (1996): 2-6.

Background



Sample, V. Alaric, et al. "The promise and performance of forestry education in the United States: Results of a survey of forestry employers, graduates, and educators." Journal of Forestry 113.6 (2015): 528-537.

Proposed System



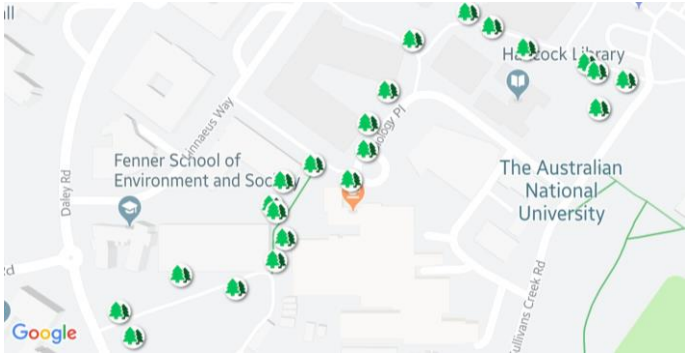
Tools

ARCore

mapbox

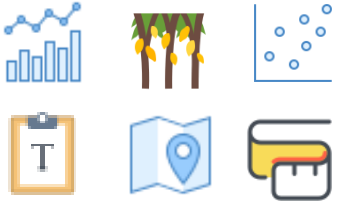
Lindsay Pryor walk

- Challenges for visualising data
- Optimising forest measurement
- Fieldwork assistance
- Urban forest planning



Challenges for visualising data

- Heterogeneous data



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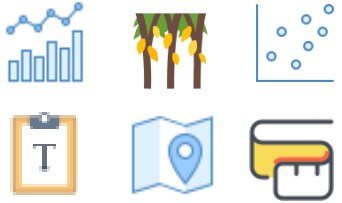
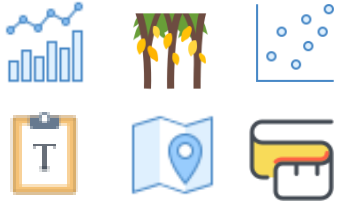


- Large/complex field

Challenges for visualising data

- Heterogeneous data



- Large/complex field

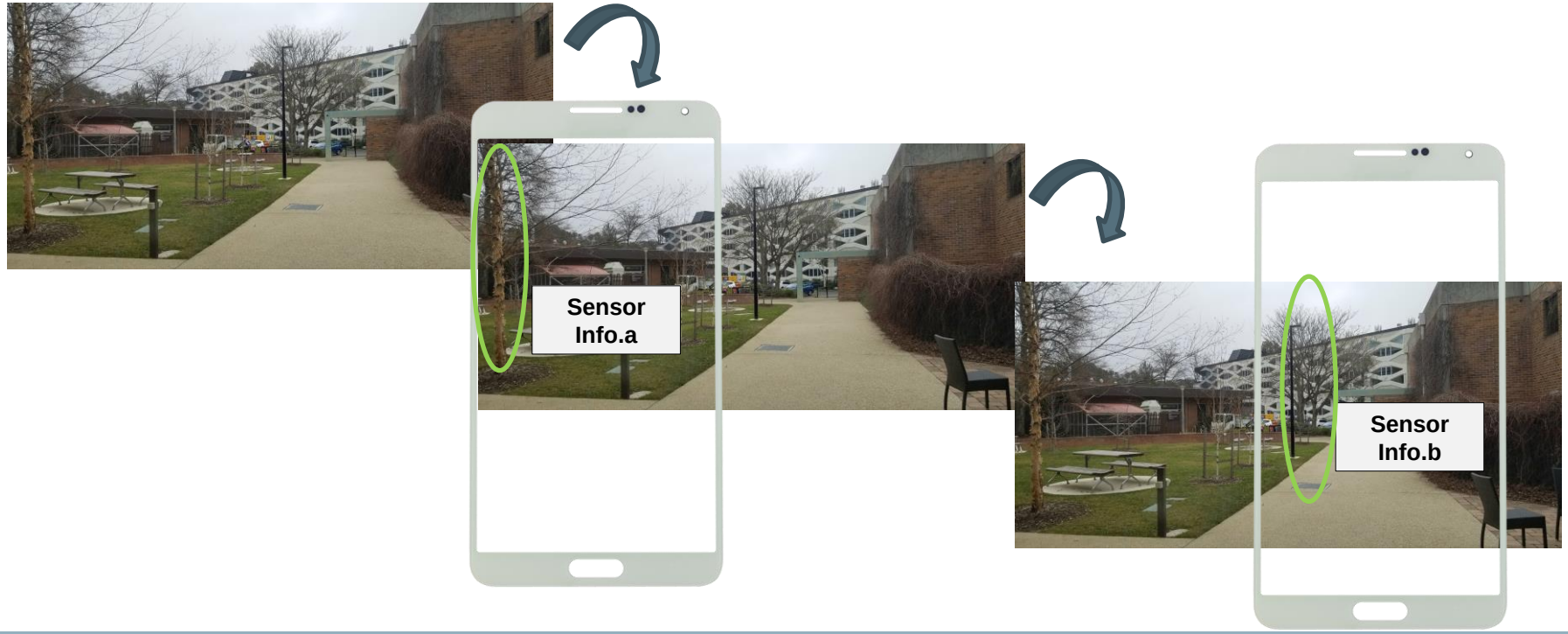
- Diverse users

Student Decision Maker Forester

Optimising forest measurement

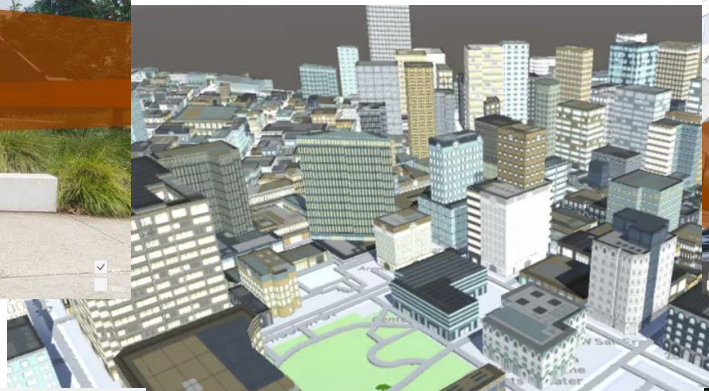
ARuler App, Available at: https://play.google.com/store/apps/details?id=com.grymala.aruler&hl=en_US

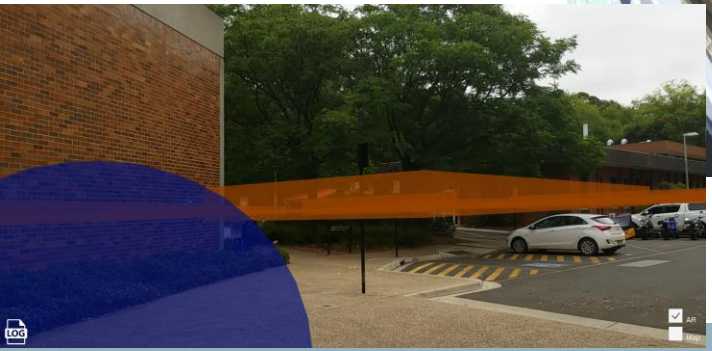
Fieldwork assistance



Fieldwork assistance

Urban forest planning

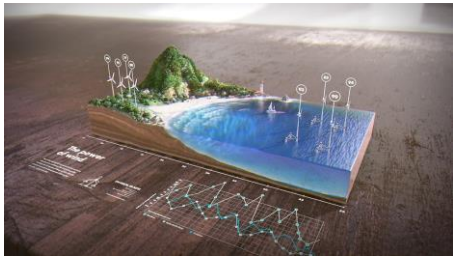




Future steps

Capture

- SLAM
- Tof camera
- Point cloud



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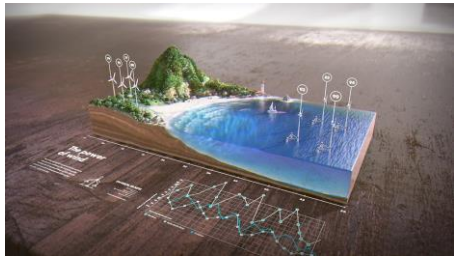
User Interface
- Buttons/Menu
- Gestures
- Degree of guidance



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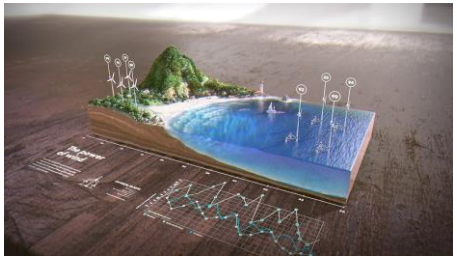
Devices
- Hololens 2
- Magic Leap Lightwear
- Google glass



Conclusion

- Deliver situated learning opportunities and also facilitate the perception of complex situations in forestry education
- Promising preliminary evaluation
- Rich feedback by users for future development

Thank you!