

# Investigate the use of ArcGIS Online and Collector App for Asset management

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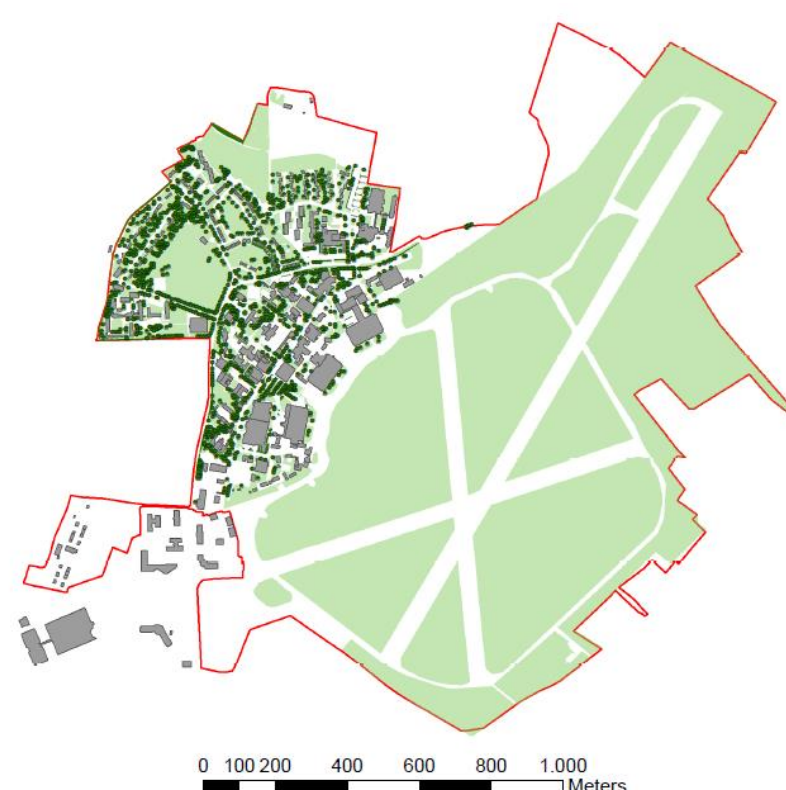
## 1. Introduction

### Asset management

- Traditionally used paper maps, simple schemas and lately has been incorporated into CAD environments
- GIS based systems as well as GPS technology are now commonly being used for spatially related asset management

### Study Area

- Cranfield University campus, Bedfordshire
- Clearly differentiated areas
- Accommodation buildings, houses, laboratories, lectures rooms, library, facilities buildings, sports facilities
- Existing data hold as CAD plans, GIS and within databases



## 2. Aim and Objectives

### Aim

- Investigate the use of ArcGIS Online and the Collector App to manage assets within a University campus

### Objectives

- Investigate the use of ArcGIS Online for asset management
- Compare the use of GPS technology vs the Collector App for data capture
- Evaluate comparative data collection times between the methods used
- Calculate an accuracy assessment comparing the performance of the devices
- Evaluate which system would be most appropriate for operational use in the estate management context

## 3. Methodology

Test the Software

Database Design

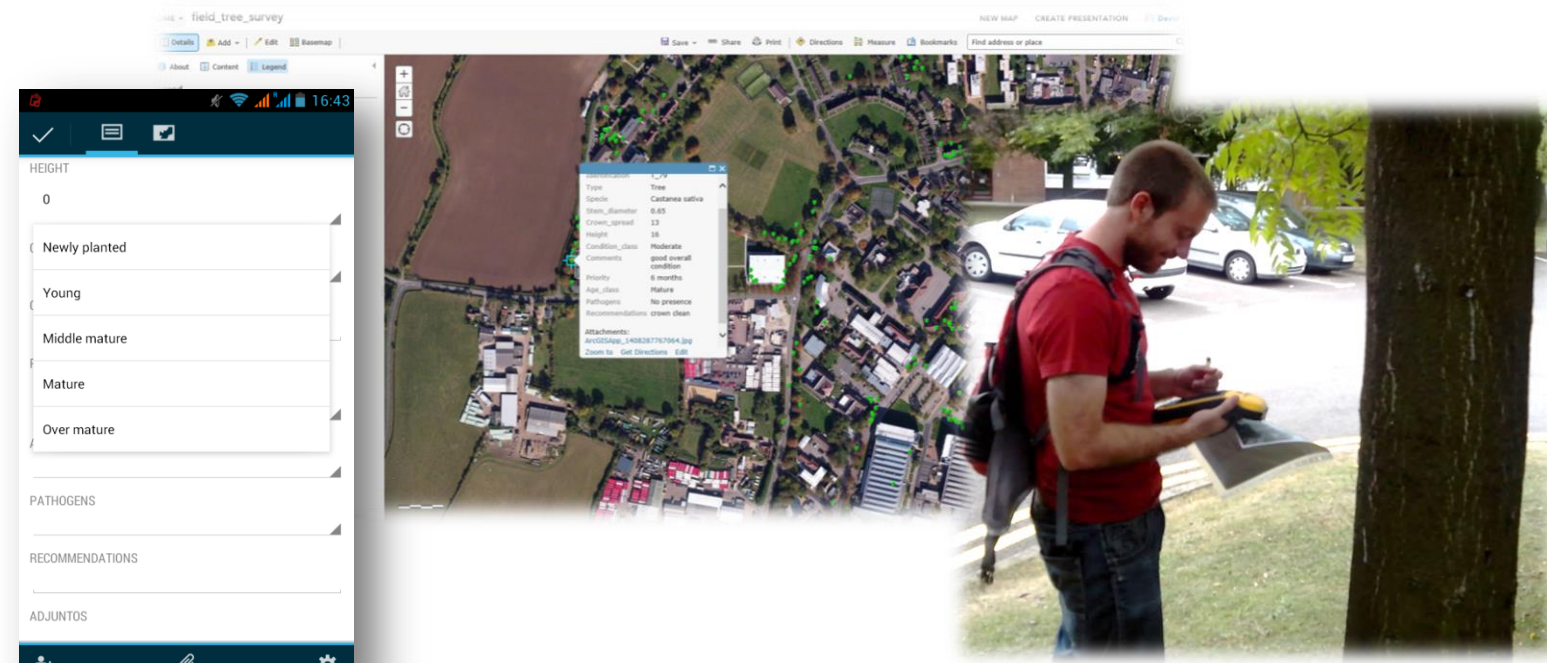
Data Collection

Data Analysis

Results

Familiarization with existing information held by Cranfield University Estates

- Identify the existing approaches that are already available to manage assets
- Asses the state of the existing data and the needs of the Estates department of Cranfield University
- Review the capability of ArcGIS Online and the new possibilities that offers
- Design a database in accordance with the needs of the user for data collection



### Data processing

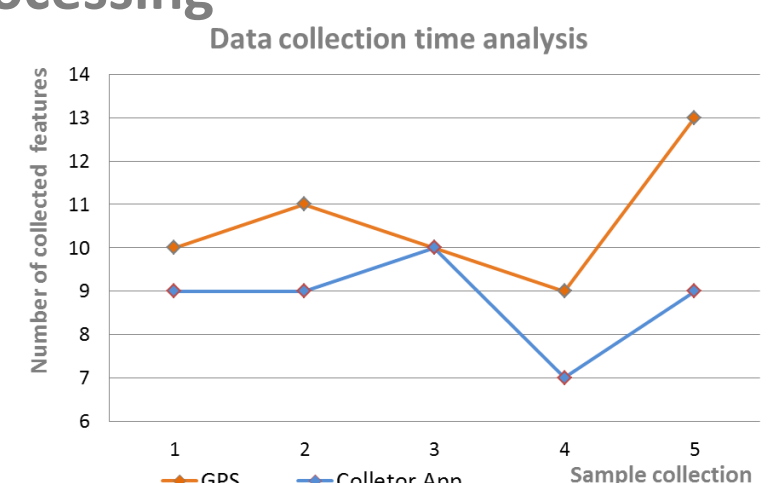
- Setting up the equipment for the data collection
- Collect the data using a GPS device and the Collector App tool (GPS positioning and on screen)
- Data analysis design
- Data correction and processing
- Perform the statistical analysis identifying patterns and problems

## 4. Results

A sample of trees were collected to perform the analyses

### Time analysis

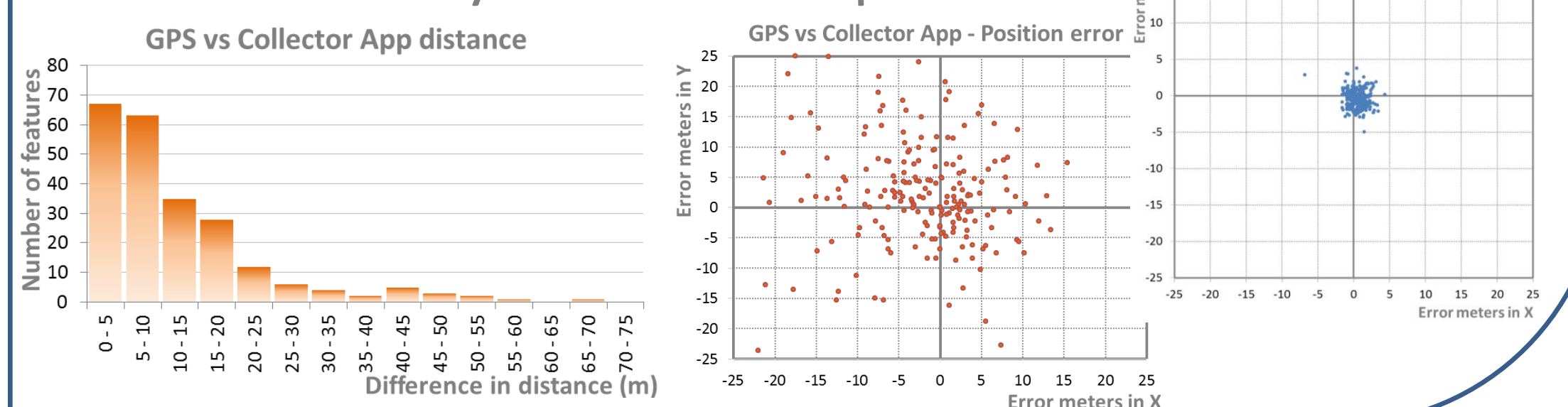
- Database preparation
  - Equivalences in the time needed to prepare the systems to collect data
  - Similarities found during the data base construction process, differences in needs of data pre-processing or data post-processing
- Collecting data process
  - 84 seconds per feature using GPS vs 102 seconds using the Collector App
  - Differences due to the updating data delays



### Accuracy assessment

	Distance m	RMSE <sub>x</sub> m	RMSE <sub>y</sub> m	RMSE <sub>h</sub> m
GPS vs On screen	1.51	1.30	1.27	1.82
GPS vs Collector App	11.06	9.56	12.81	15.98
Collector App vs On Screen	11.19	9.80	12.91	16.21

- Accuracy is directly related with the data collection methodology followed
- The results are independent of the characteristics of the view of the sky at the observation position



## 5. Conclusions

### Accuracy

- Collector App provides different solutions to locate the features
- On screen collection of data improves Collector App accuracy
- The accuracy results will improve with the new generation of Smartphones

### Opportunities

- Collector App and ArcGIS Online offer new possibilities in data acquisition process
- Allow to have real time access to the field updates from the office
- Depending on the accuracy requirements Collector App and ArcGIS Online can replace GPS data collection based methods for assets management