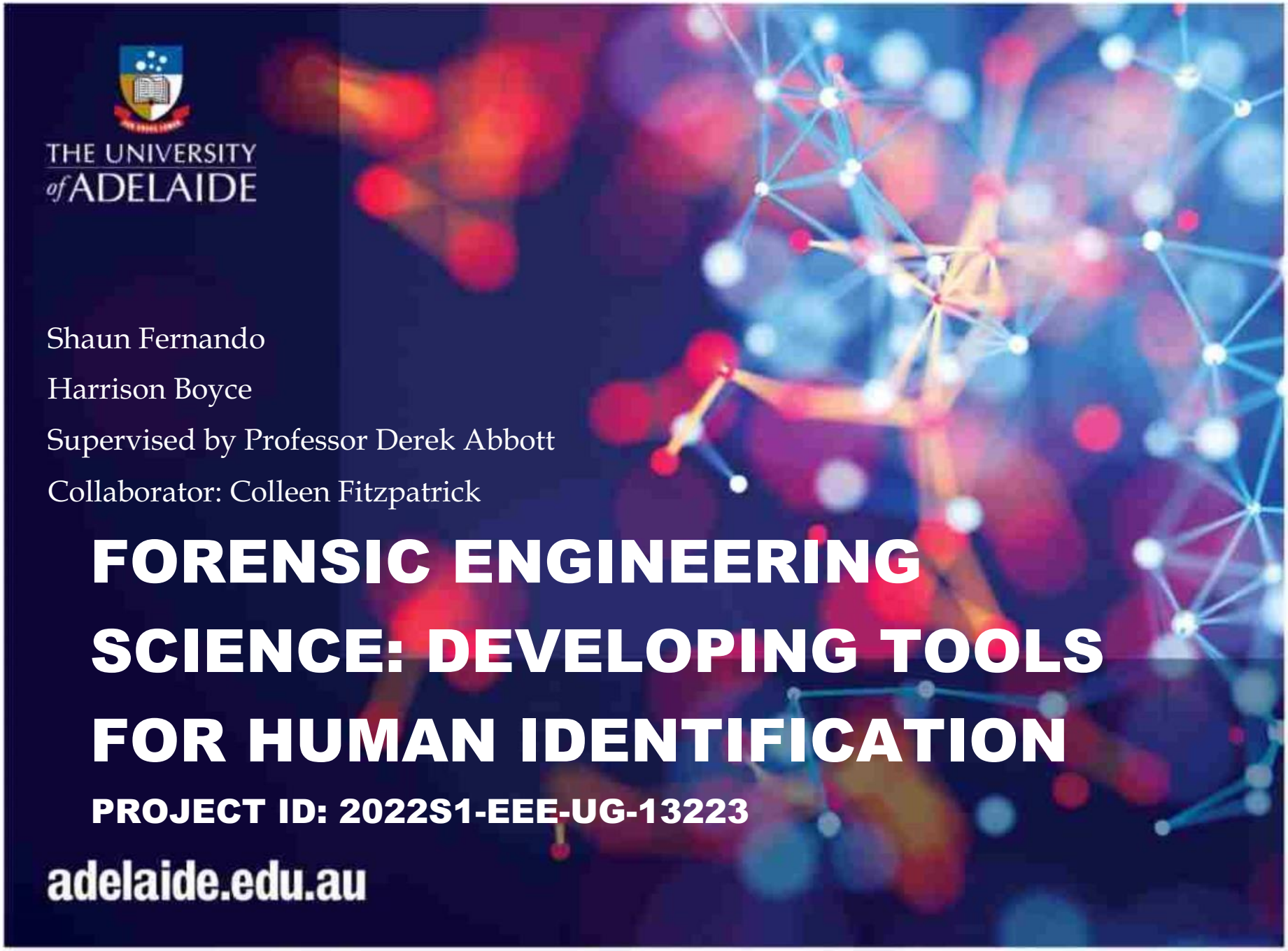

THE UNIVERSITY of ADELAIDE

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Supervised by Professor Derek Abbott

Collaborator: Colleen Fitzpatrick

FORENSIC ENGINEERING SCIENCE: DEVELOPING TOOLS FOR HUMAN IDENTIFICATION

PROJECT ID: 2022S1-EEE-UG-13223

adelaide.edu.au

Introduction

Overview

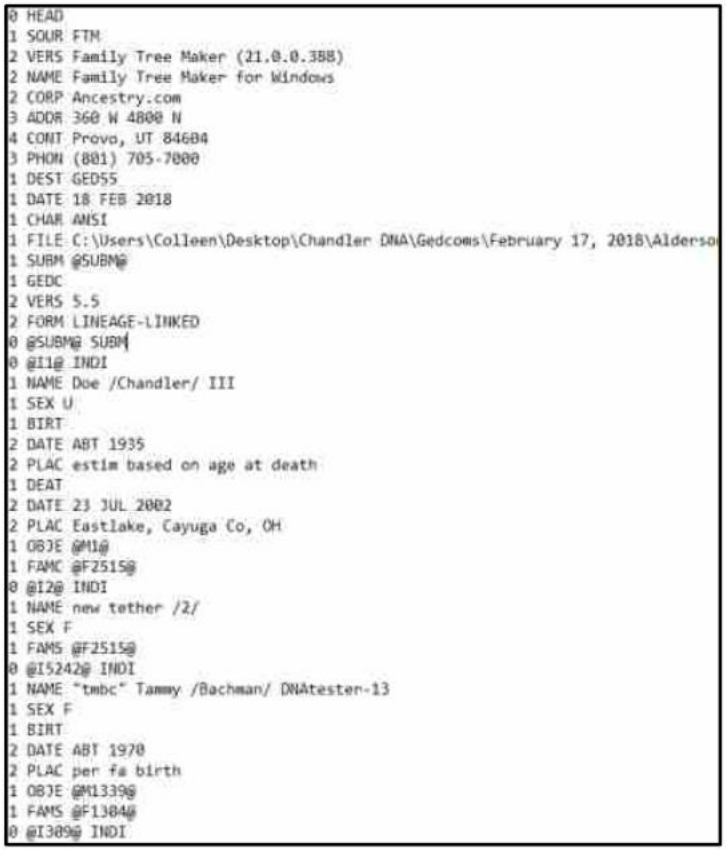
- Project Motivation and Aim
- Background
- Objectives
- Literature review
- Progress
- Results
- Completion Plan
- Conclusion
- References

Project Motivation and Aims

- DNA is only viable when the deceased is in a database.
- To better the use of genealogical information for identification of remains

ISSUES WITH THE SYSTEM NOW

- Genealogical Data Communication (GEDCOM) files are not user friendly
- Need a visual medium



```
0 HEAD
1 SOUR FTM
2 VERS Family Tree Maker (21.0.0.388)
2 NAME Family Tree Maker for Windows
2 CORP Ancestry.com
3 ADDR 360 W 4800 N
4 CONT Provo, UT 84604
3 PHON (801) 705-7000
1 DEST GED55
1 DATE 18 FEB 2018
1 CHAR ANSI
1 FILE C:\Users\Colleen\Desktop\Chandler DNA\Gedcoms\February 17, 2018\Alderso
1 SUBM @SUBM@
1 GEDC
2 VERS 5.5
2 FORM LINEAGE-LINKED
0 @SUBM@ SUBM
0 @I1@ INDI
1 NAME Doe /Chandler/ III
1 SEX U
1 BIRT
2 DATE ABT 1935
2 PLAC estim based on age at death
1 DEAT
2 DATE 23 JUL 2002
2 PLAC Eastlake, Cayuga Co, OH
1 OBJE @M1@
1 FAMC @F2515@
0 @I2@ INDI
1 NAME new tether /2/
1 SEX F
1 FAMS @F2515@
0 @I5242@ INDI
1 NAME "tmbc" Tammy /Bachman/ DNAtester-13
1 SEX F
1 BIRT
2 DATE ABT 1970
2 PLAC per fa birth
1 OBJE @M1339@
1 FAMS @F1384@
0 @I309@ INDI
```

The beginning of a GEDCOM file

Background

Genealogical Science Cases

- Northwest Flight 4422 crash in Alaska 1948
- The Canal Killer
- Golden State Killer

Objectives

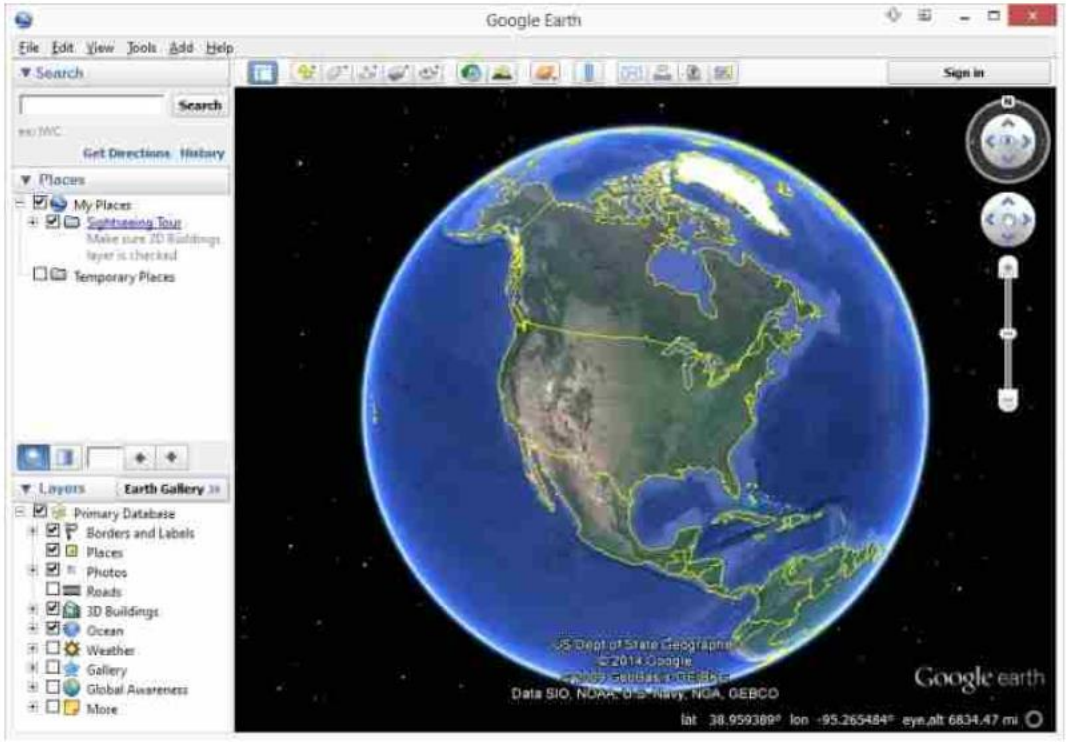
- **Objective 1**
  - GEDCOM to .csv converter
- **Objective 2**
  - Get coordinates from location name
- **Objective 3**
  - KML file creation from .csv
- **Objective 4**
  - Display of information in visual medium

Literauture Review

Literature Review

Existing Technologies

- GEDCOM to .csv converters
- EarthPoint



An empty map on EarthPoint

Literature Review

DNA and genealogy

Types of information in DNA

- Y-chromosomal DNA
- Mitochondrial DNA
- Autosomal DNA

Progress

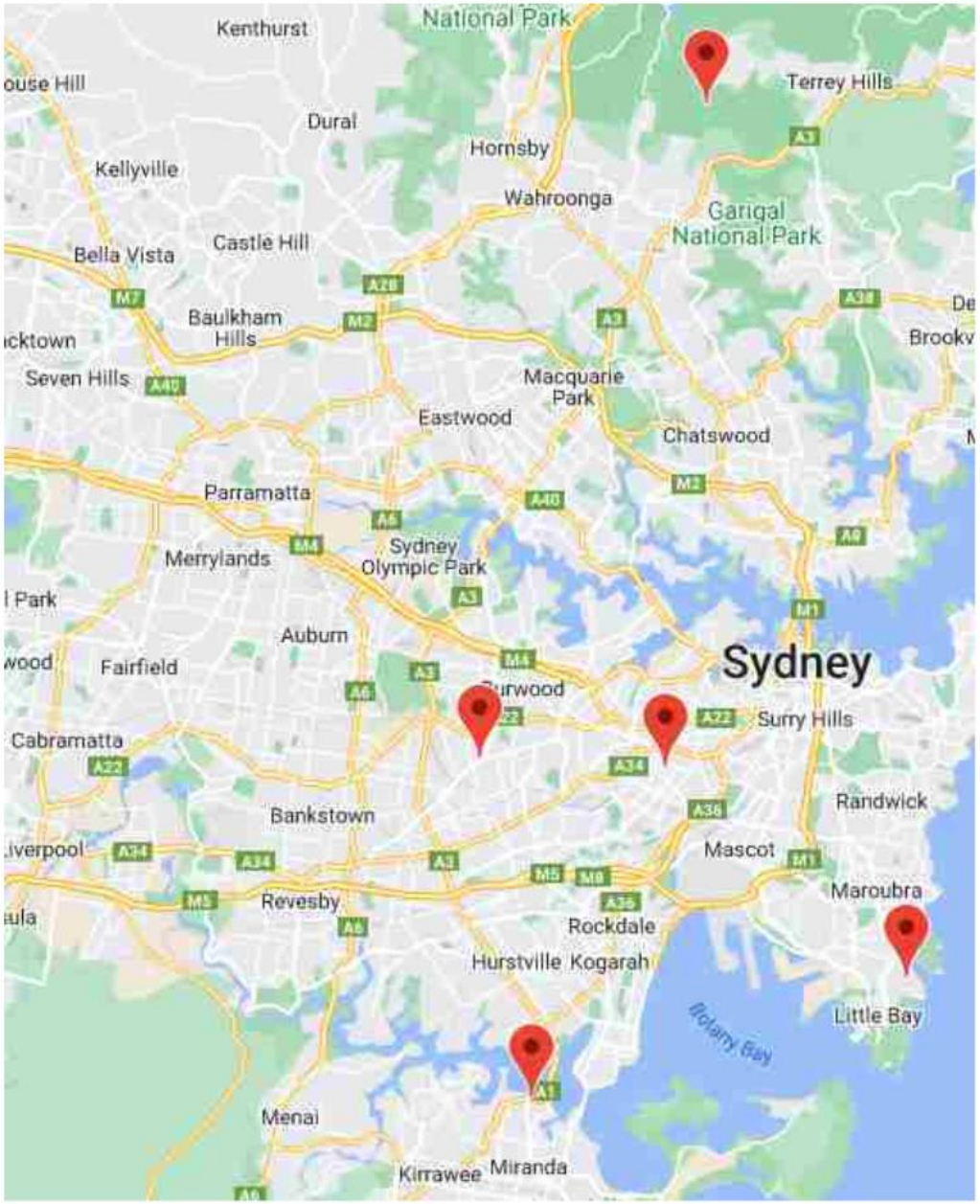
Progress

Progress

Results

- **Results**
  - **Google Earth editor**

- **Results**
  - **Google mymaps editor**



Completion Plan

Completion Plan

Objective 1- GEDCOM to Comma-Seperated Values (CSV) file Parser

- Week 2 – finish making parser
- Week 4- finish testing for the parser

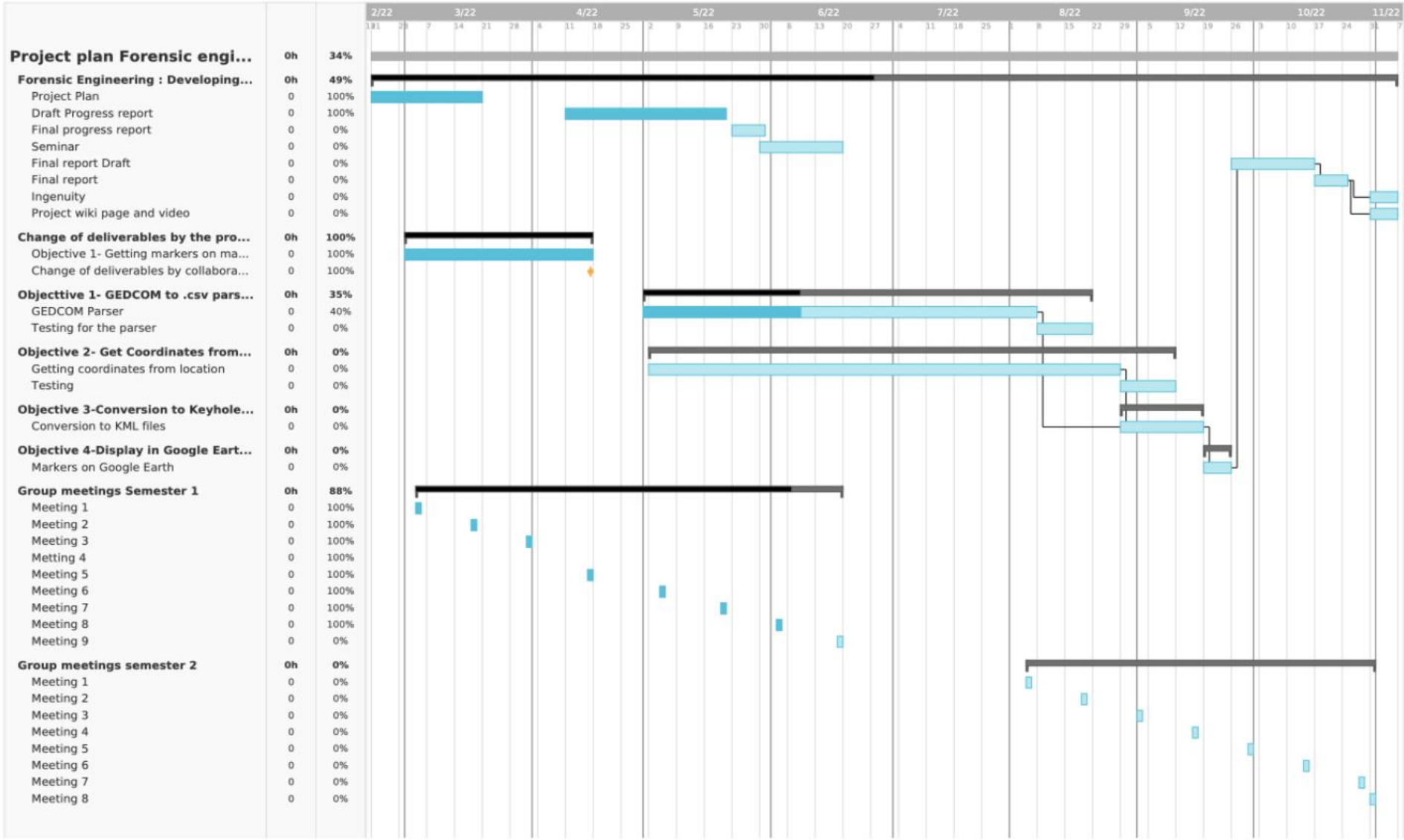
Objective 1

Completion Plan

Objective 3 and 4- Conversion to Keyhole Markup Language (KML) and Display in Google Earth

- Week 8 – finish both objectives

Completion Plan (Gannt Chart summary)



Conclusion

Conclusion

- Finishing whole program
- Future work

References

References

- E. Greytak, C. Moore and S. Armentrout, "Genetic genealogy for cold case and active investigations", Forensic Science International, vol. 299, pp. 103-113, 2019. Available: 10.1016/j.forsciint.2019.03.039.

Any Questions?

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