

DEPARTMENT:

Business

FACULTY SPONSOR:

Professor Snyder

STUDENT(S):

Nathan Bowen
Matthew Meisinger
Nectaria Hanning
Bailey Kleespies

Aaron Thompson
Damien Ontiveros
Christopher Nenne
Tammi Jacobs

PROJECT TITLE:

FIRS Database Reengineering: Keeping it Simple



DATABASE RE-ENGINEERING

FORENSIC INVESTIGATION RESEARCH STATION(FIRS)

DATABASE NORMALIZATION AND SIMPLIFICATION

TEAM

- Nathan Bowen
- Aaron Thompson
- Matthew Meisinger
- Tammi Jacobs

Bailey Kleespies

Nectaria Hanning

Damian Ontiveros

Christopher Nenne

THE CLIENT

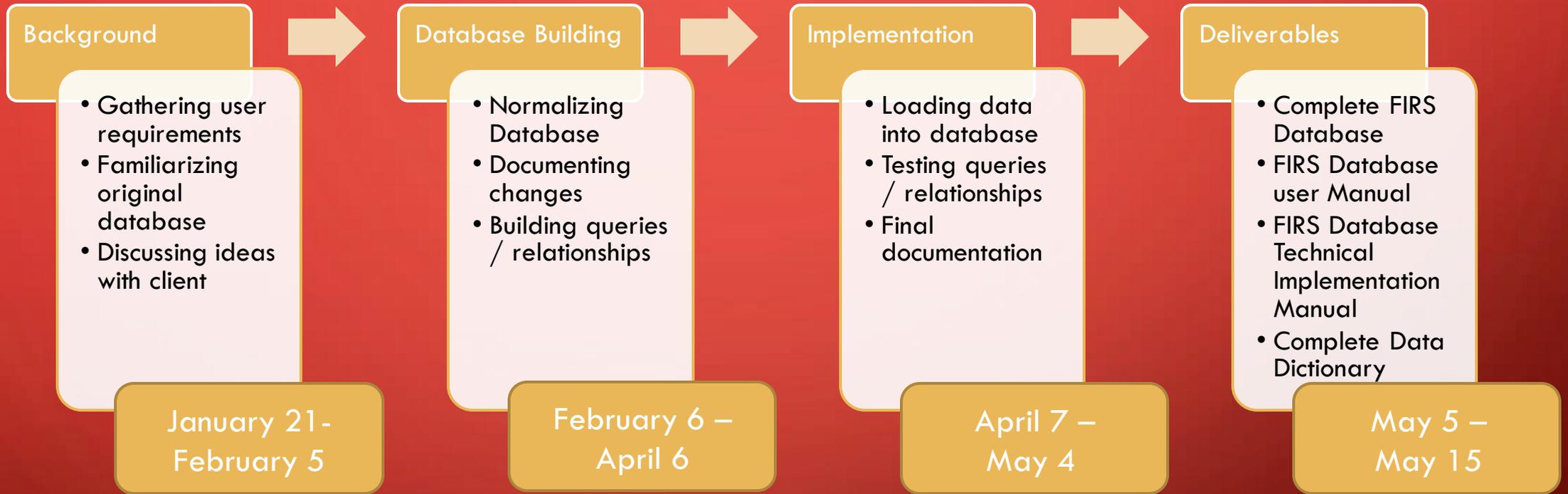
- Colorado Mesa University Forensic Investigation Research Station (FIRS)
- a.k.a Body Farm
- Represented by : Dr. Eriek Hanson and Alex Smith



PROJECT SCOPE OVERVIEW

- To create a database that would meet the client's need for data collection and analysis
 - Working queries, forms, and reports through Microsoft Access
- To create a set of manuals and instructional material that was relevant to the database itself
 - Technical/Implementation Manual (administrative)
 - User Manual (general)

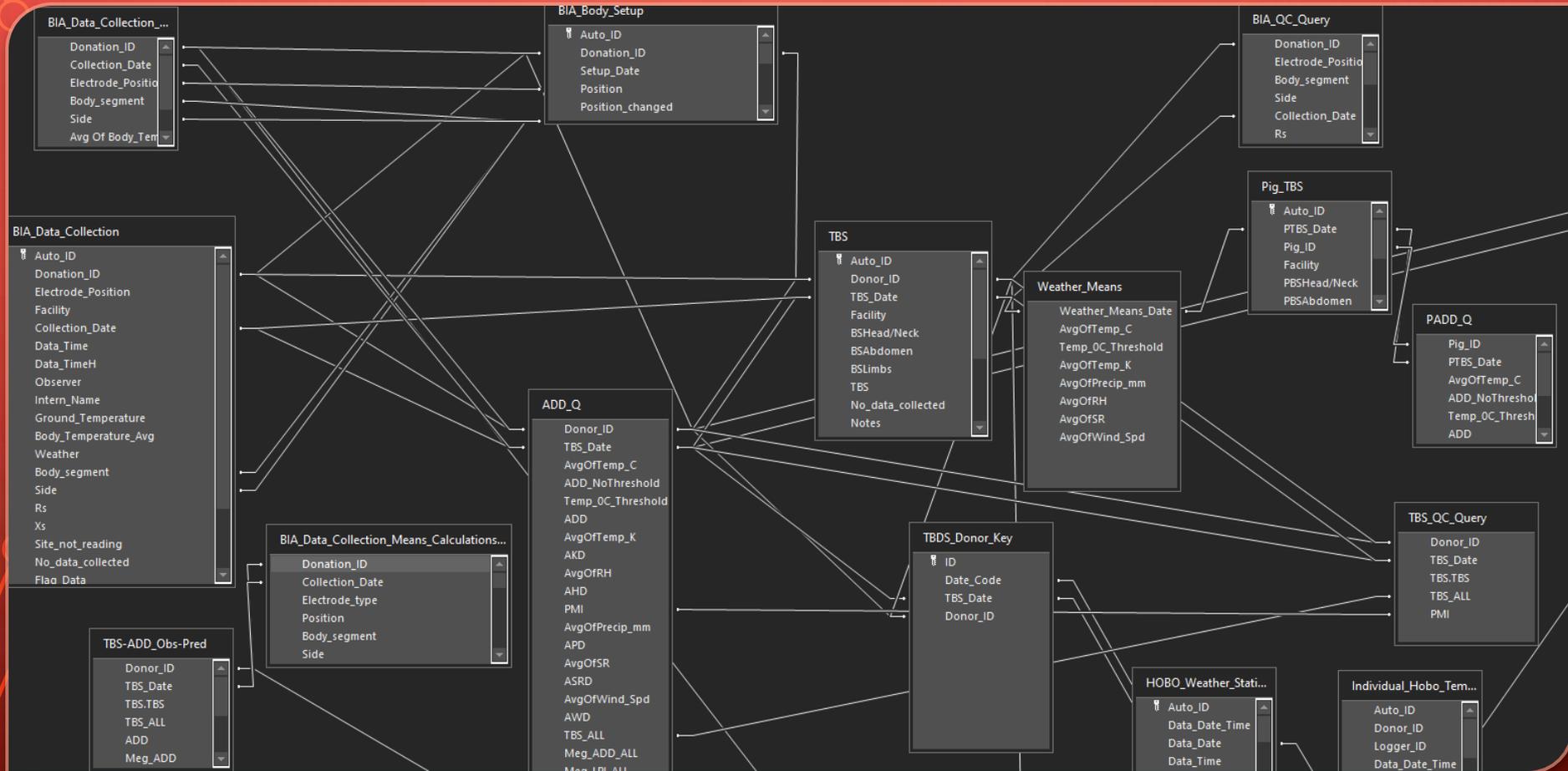
PROJECT SCOPE



CONSTRAINTS

- We had 16 weeks to complete this project in our last semester
- We worked with the previous CISB 471 team's unimplemented database file from 2 years ago with fake data in it
- The client wanted a security user level access feature, but we are unable to do this because of higher priority feature deliverables
 - The "mdb" file type does not allow for calculated fields which is a need for the client to do calculations as part of the body farm

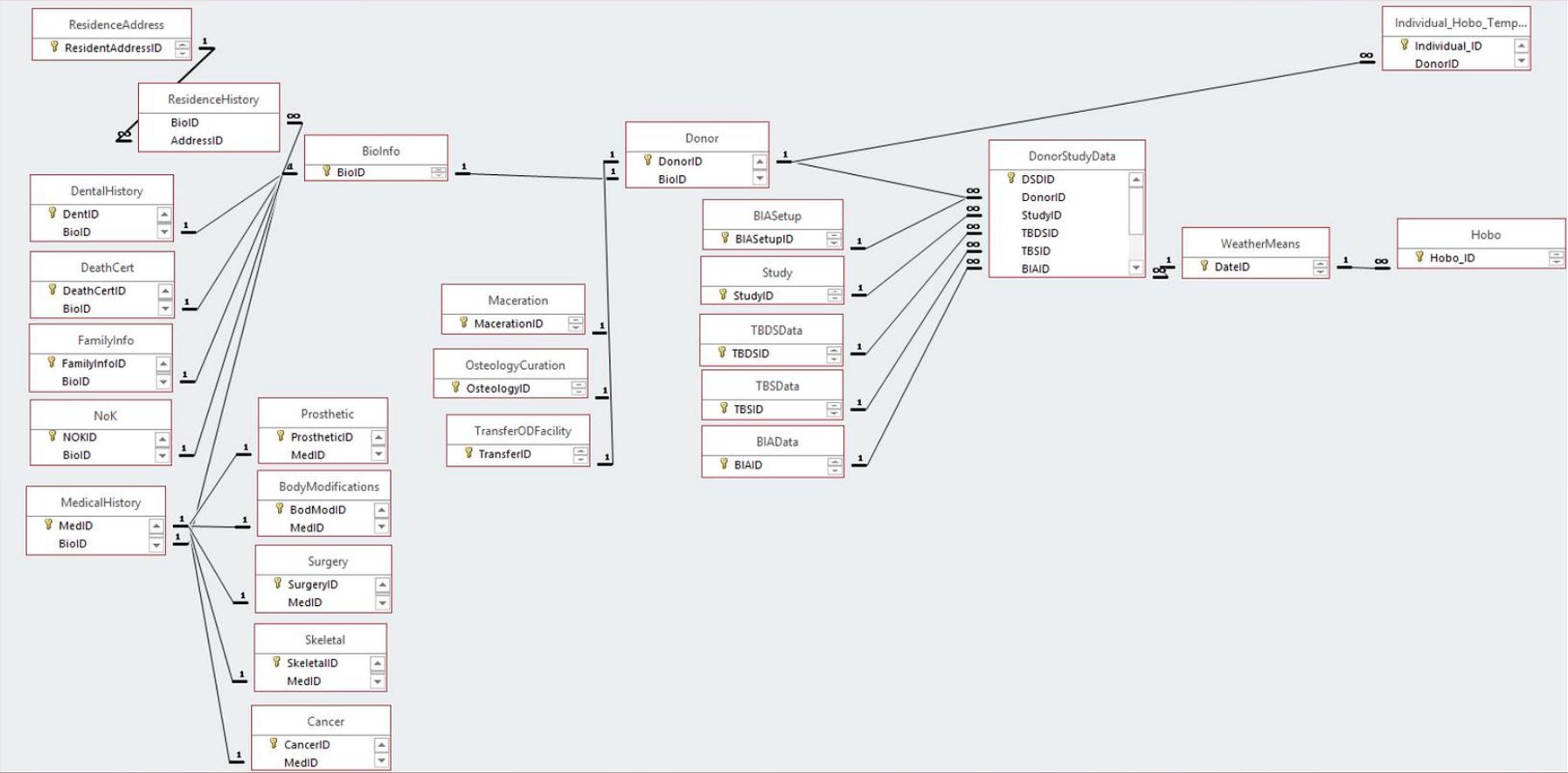
IN USE DATABASE RELATIONSHIPS



BACKGROUND

- The client was functioning off an old database that was built in a haphazard way to try to address needs as they came up.
- They had received a database from a prior team that they could not figure out how to use.
- The initial idea was to modify the new database to make it usable.
- Eriek and Alex presented the problem to the CISB 471 class as a capstone project.

UNIMPLEMENTED DATABASE RELATIONSHIPS



CHALLENGES

- Identifying why the unimplemented database was not working for them
 - The previous, database leaned too far the other direction; over-normalizing and making an unusable database.
 - Over normalization created issues with entering data and accurately querying the data that was already in the database.
 - Notably absent from the unimplemented database were necessary fields and relationships that no longer existed.
 - Because there was very little meaningful documentation from the prior team and the database was not useful, we decided to start with the database that they were currently using.

CHALLENGES

- Novel Coronavirus, COVID-19
- Working from remote locations
- Coordinating times to meet via Zoom
- Working on Access

SOLUTION

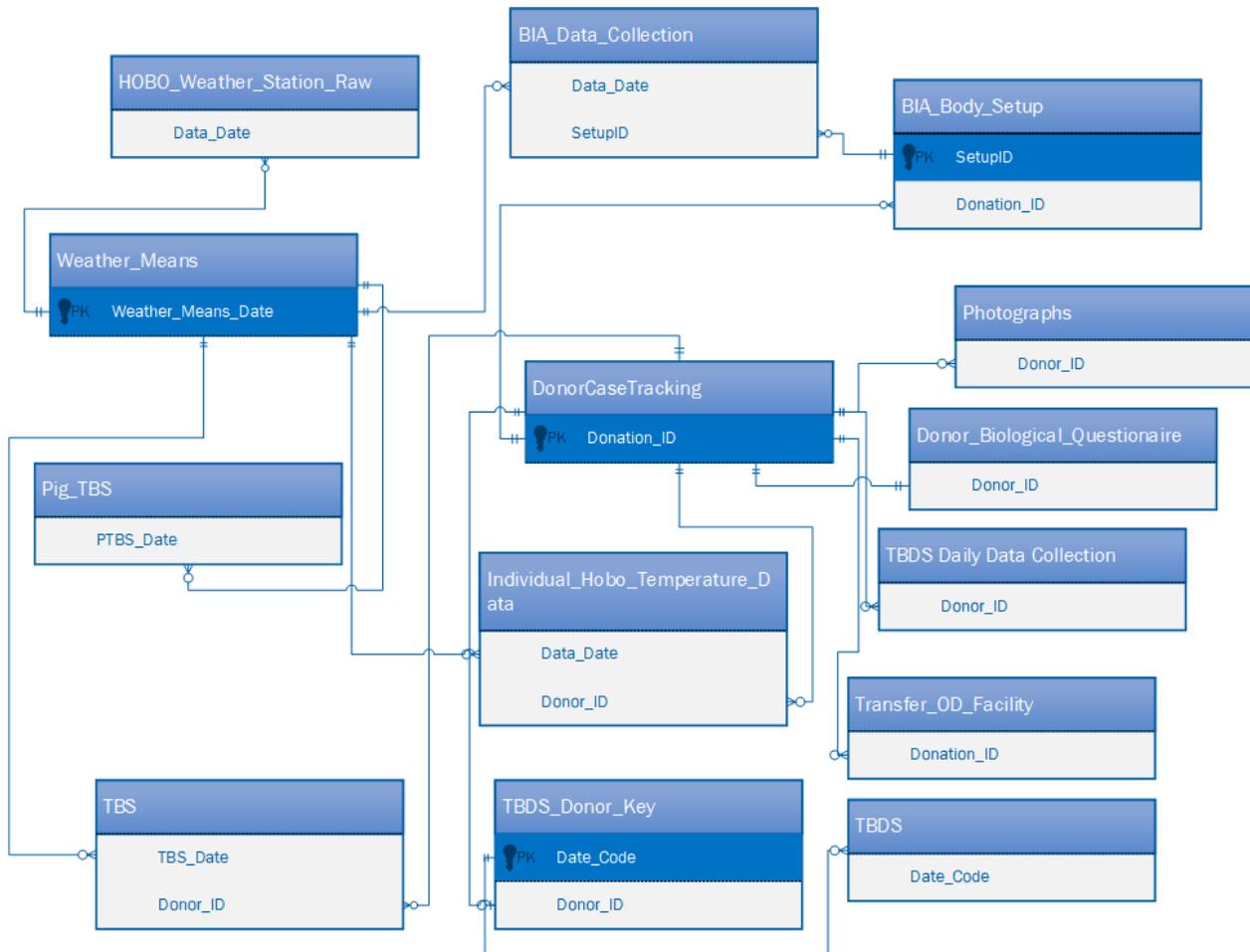
- Rebuilt the database
 - Fixed the relationships between the tables
- The database team reformatted the keys and key usage
 - Fixed the primary and foreign keys in the design

SOLUTION

- Normalized the database
 - Put it into 3rd normal form
 - More consistent
 - Able to work as the client needs it to

RESULT

- Cleaner version of the database
- Complies with normalization standards to 2NF and 3NF where applicable
- Now more user friendly
- More accurate when querying large amounts of data than the previous version was



DATABASE LAYOUT

- Only 4 primary keys
- 3 Join Tables
- 3 tables not in active use
- 1 one-to-one relationship

CONCLUSION

- Made sure calculations were added for weather data for FIRS client in Access
- More user friendly by consolidating tables together so not as many as there were before

CONCLUSION

- Tested and made sure the new queries were now running correctly in the FIRS database
- Consolidated tables with the same personal information
- Will give the client the ability to alter current tables in the future as need be as the FIRS database grows

CONCLUSION

Technical/Implementation Manual

- Focused on administrative side of the database

User Manual

- Focused on a more general use for the client