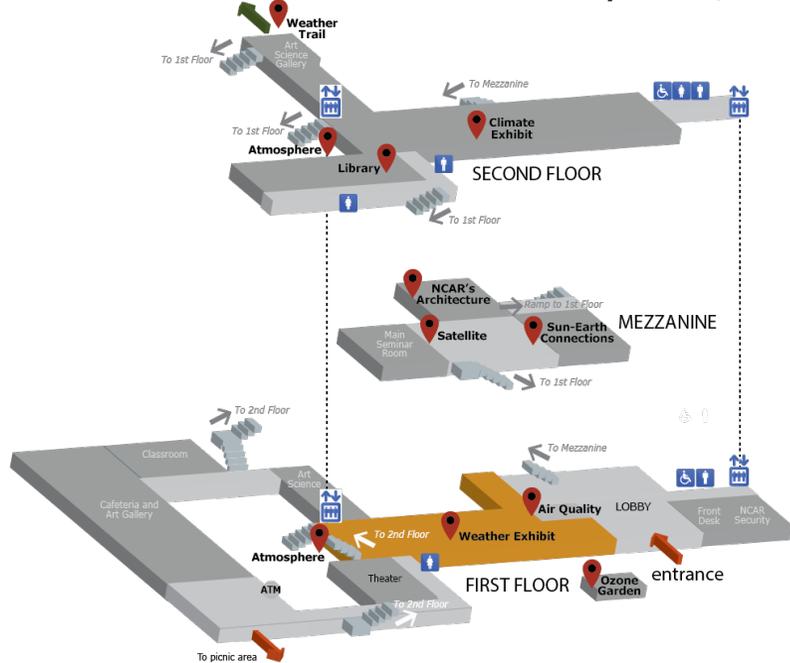


Contents

01	Title	11	Limitations
02	Contents	12	Rebuild
03	Context	13	Adapting Design
04	Problem	14	Future Objectives
05	Question	15	Takeaways
06	Significance	16	Team
07	Plan of Action	17	Acknowledgements
08	Virtual User Interviews	18	Thank you
09	Stakeholders Meetings		
10	App Mockup		

Context

- Staff from the UCAR Center for Science Education, Unidata, and the Computational & Information Systems Lab are interested in developing a new touchscreen interface that displays real-time weather data.
- This interface will be included in the exhibits at the NCAR Mesa Lab in Boulder, CO, and at the NWSC Visitor Center in Cheyenne, WY.

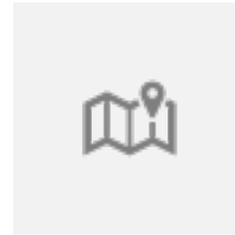
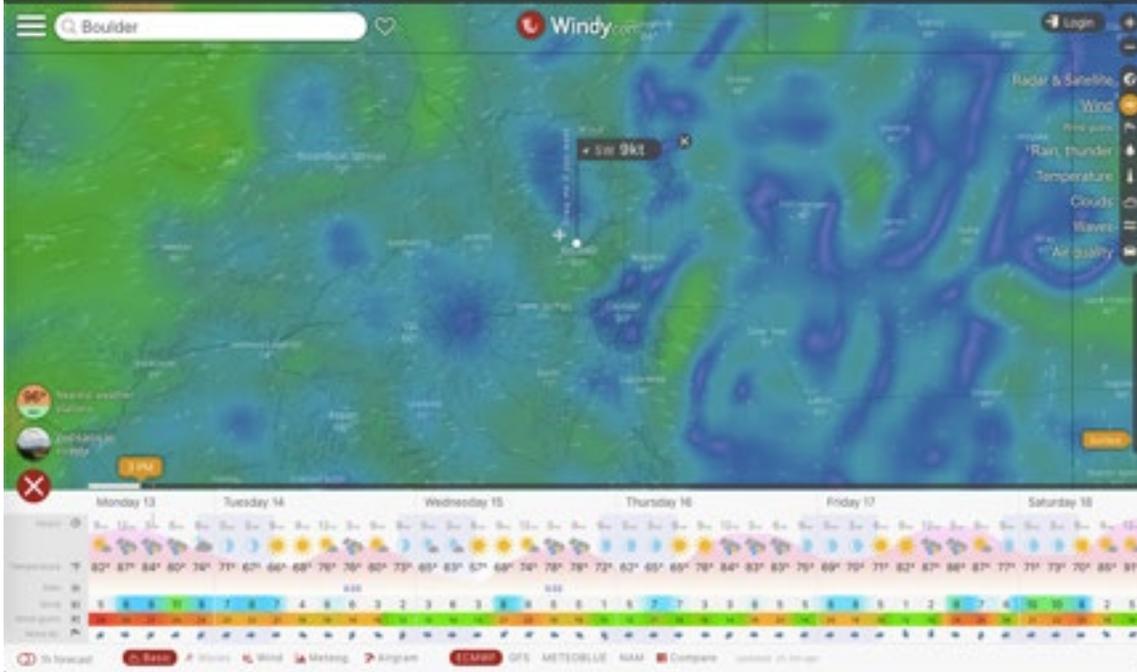


UCAR  CENTER FOR SCIENCE EDUCATION

NCAR UCAR  CISL
Computational & Information Systems Lab

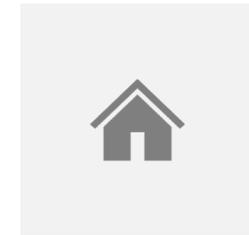
UCAR COMMUNITY PROGRAMS  unidata
Data Services and Tools for Geoscience

NWSC NCAR-Wyoming Supercomputing Center



Windy.com

External to NCAR, so we lack control over their future plans (e.g. - ads like Wundermap).



Preselected Functionality

Unable to display educational information and feature weather prediction tools built at UCAR.

Problem

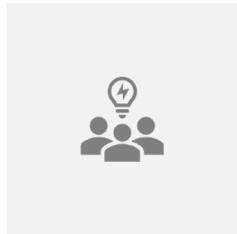
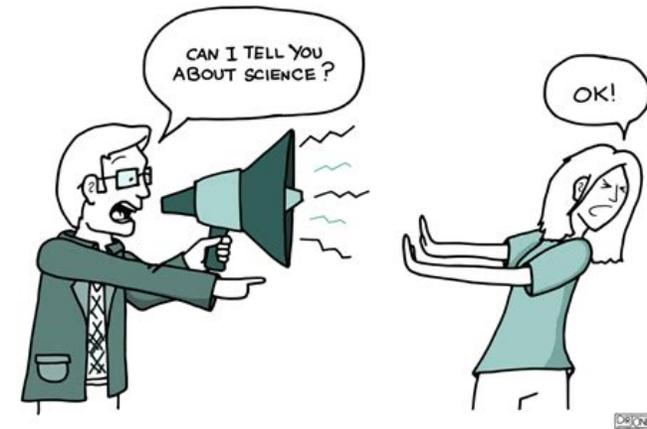
The current exhibit points to Windy.com and is limited to the functionality already built into the website.

Question

How can we use UCAR sponsored tools to develop a new touchscreen interface that displays real-time weather data?

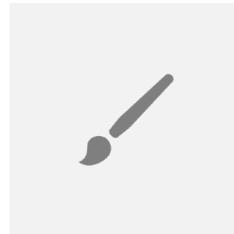
Significance

There is an opportunity for development of a new design



Communication

Effectively disseminating scientific findings amplifies the benefits of the work performed by the scientific community.



Adaptable

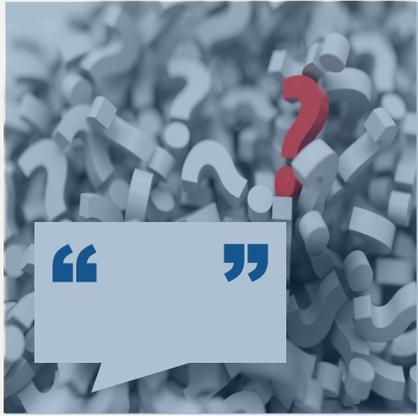
An application developed within NCAR can be adapted to the needs of the community and is easier to maintain.



Educational

The application would also allow for educational content about weather map features to be displayed.

Plan of Action



User Interviews

- Virtual interviews
- Phone Interviews



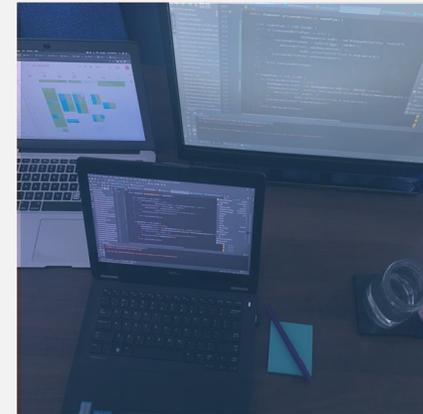
Stakeholders

- NWSC
- Mesa Lab



App Mockup

- Visual Guide
- Interaction Design



Development

- Select a tool
- Code/Build



Testing

- Software tests
- User tests

Virtual User Interviews

“ Some type of timeline feature that you can scroll to see forecasts for regions over time would be a nice feature.”

SBS, Computer Science Student

“ I love when it's a simple interface with clear back and next buttons.”

NK, Undergraduate Student

“ Historical weather data (record high temperatures, record high snowfall) for a given geographical location might be of interest.”

EU, Software Dev

“ It would be very cool if the app had a feature that could display the weather for the day for the next 24 hours as a time lapse.”

DU, Program Manager

“ My favorite weather app tells me the weather at the moment. I like to know temp, humidity, and wind.”

CH, Project Engineer

“ Adding graphics and sound would be something that would enhance the learning experience.”

RT, Undergraduate Student

Stakeholders Meetings

“ ”

Weather by location or region, and if possible, add the ability to select a specific weather event!

Tim Barnes, Educ Specialist • SciEd

“ ”

Layers like Windstream on Windy.com or multiple screens to compare different layers of the same region.

Marc Mueller, Educ Specialist • SciEd

“ ”

The NWSC could use more content for kids - having more visuals than text would help.

Summer Wasson, Education and Multimedia Specialist • COSSEC

Application Mockup

Blueprint for each screen

Home screen

- Globe View
 - Future Projection
- Region View
 - Zoom in/out to state level
 - Educational Content on layer
- Major Events
 - Past Projection
 - Educational Content on events



Limitations

Unforeseen challenges and complexity



Planning

Decisions made at the nascent stages of a project determine stability and ease of development.



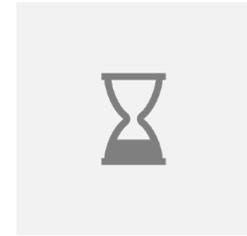
Adapting

Migrating from an existing application to a new touch display presents challenges due to dependencies.



Maintaining

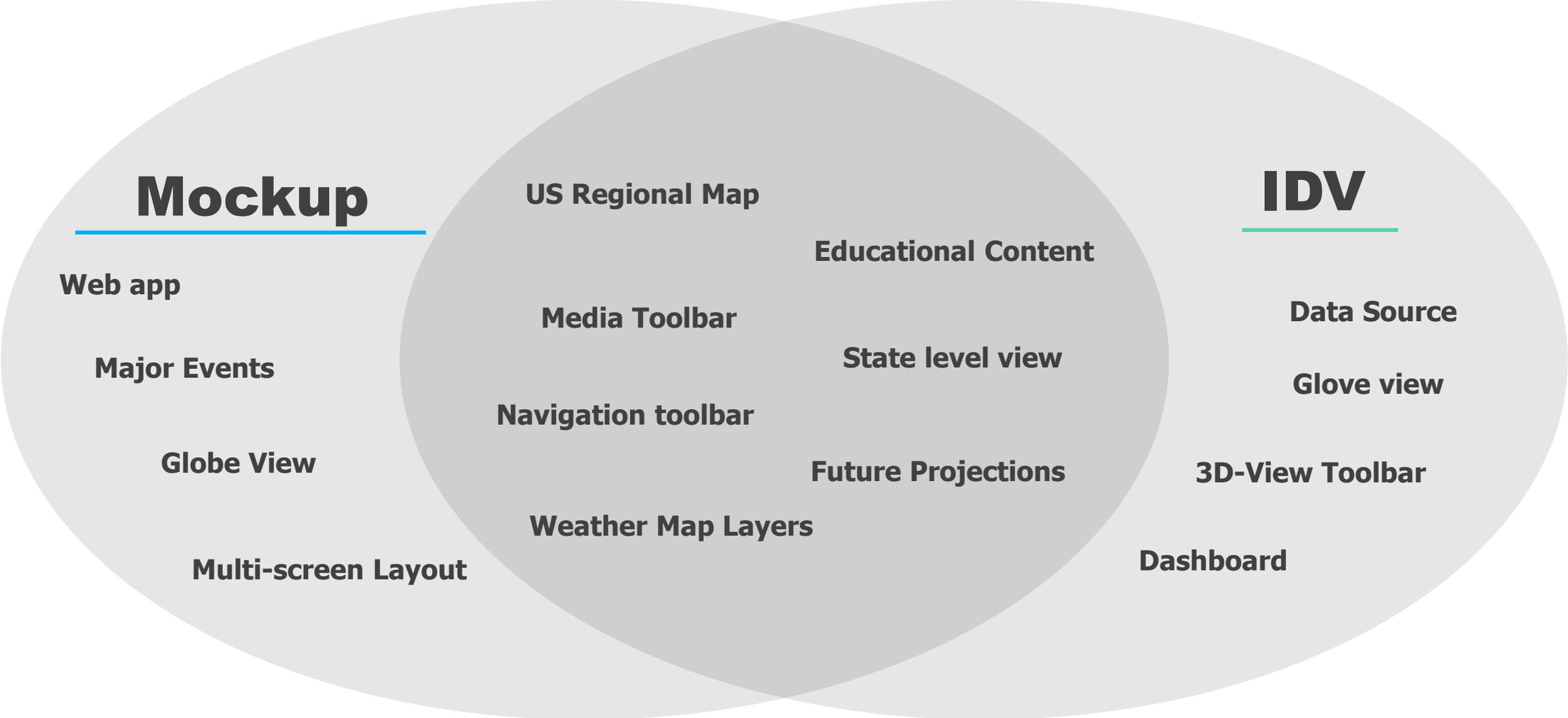
Changes made to fit the new application might not be simple to maintain or implement.

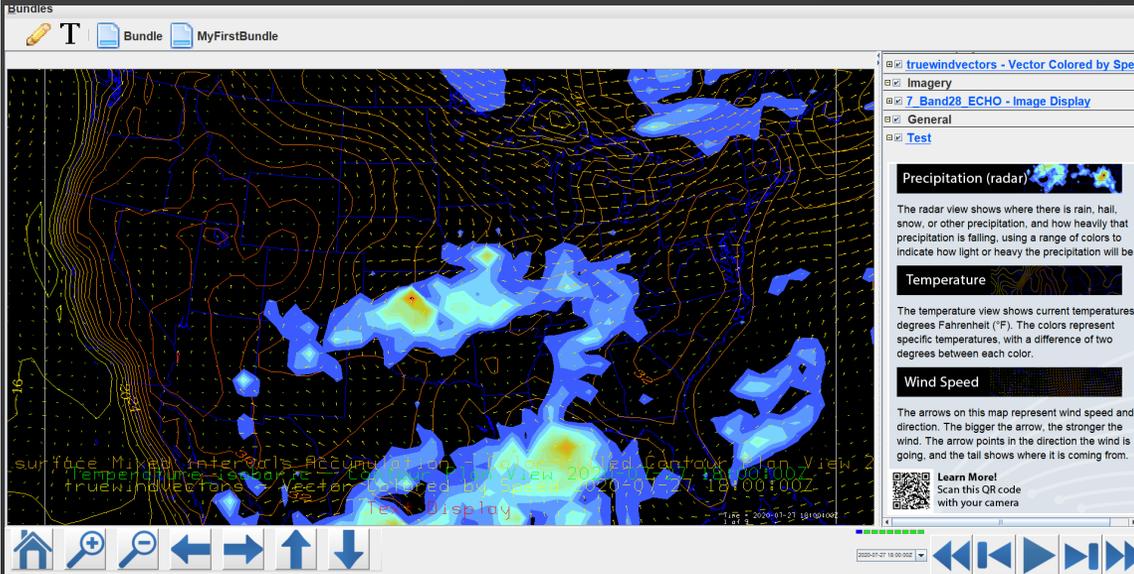


Time

Adapting existing software in a limited amount of time, while keeping development goals in mind, is challenging.

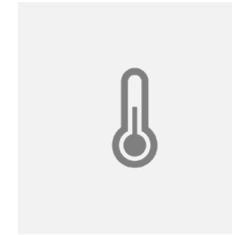
Adapting Design around IDV





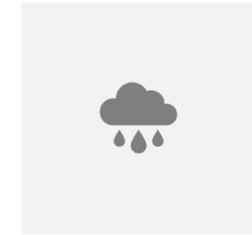
Application

The map view is supported by an educational panel explaining the visible weather layers, and the media and navigation toolbars provide the user with an interactive experience.



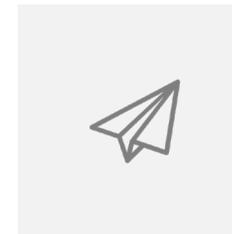
Temperature

- Colors for temp
- Isotherms



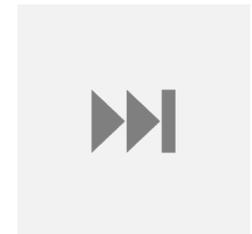
Precipitation

- Future projections



Wind Speed

- Wind direction
- Wind strength



Other features

- Navigation / Media
- Map View

Future Objectives

Plan to continue developing the application

Future Wishlist

- Incorporate globe view
- Update skin theme
- Adding/Removing Layers
- Multiple screens

User Testing

- Witness real-user experience with the application
- Discover ways to improve design through feedback
- Usability testing by analyzing app performance

Deployment

- Software testing
- Installation in Mesa Lab and NWSC

- Hands-on exposure to technical concepts

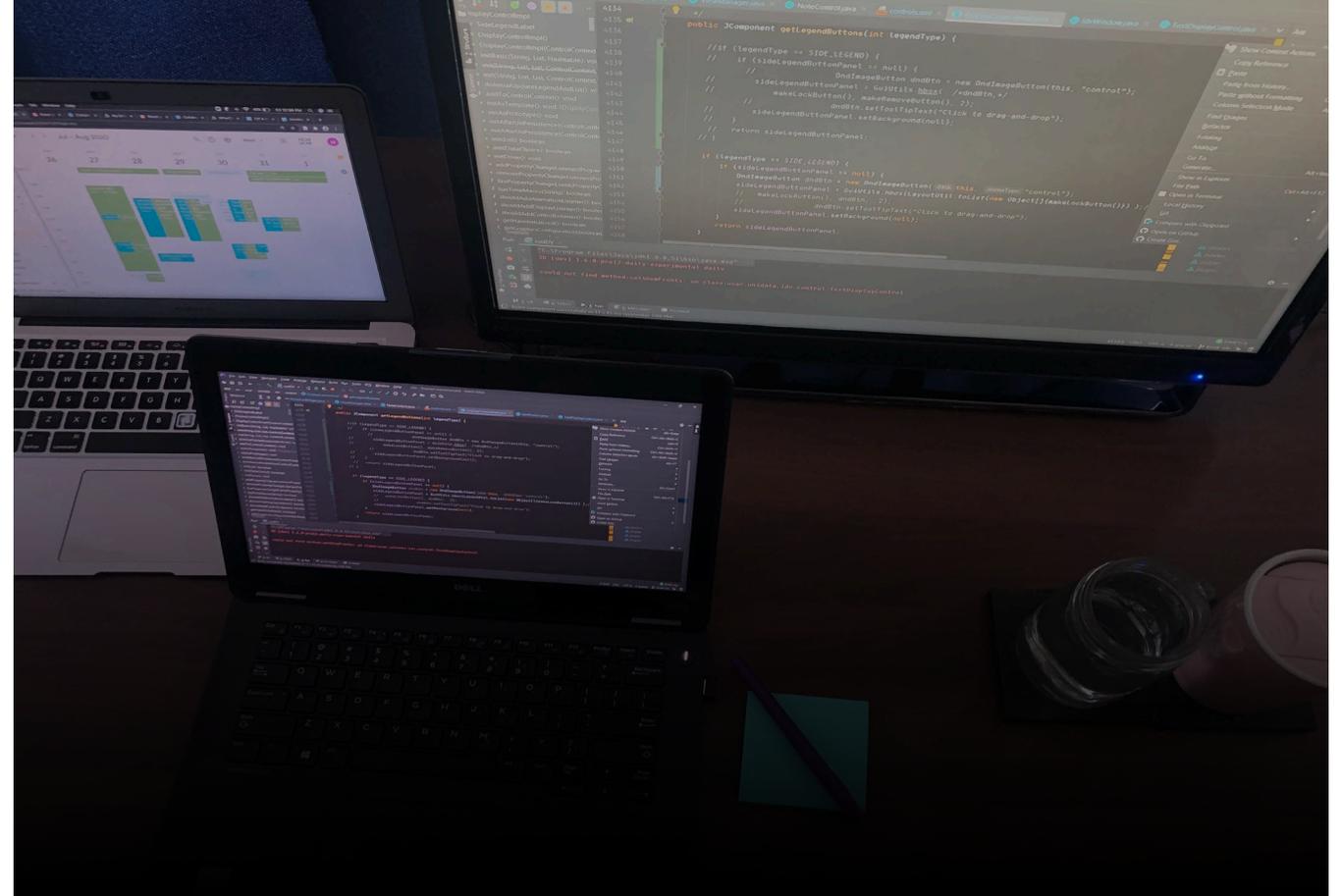
- Key Java concepts
- GitHub
- Adapting/enhancing existing software

- End-user and business objectives

- Role of software engineer
- Reaching those goals

- Teammates from various domains

- Effective communication
- Delegating tasks
- Time management



Takeaways

Lessons learned

Team



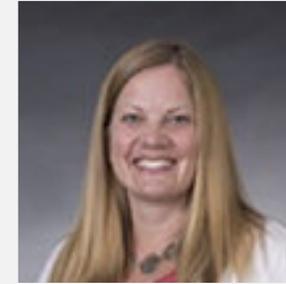
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SciEd



Elliott Foust

Educ/Instrc Desgnr I •
CODE



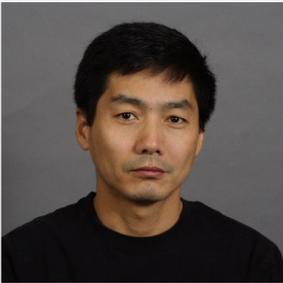
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**Summer
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Education and Multimedia
Specialist • COSSEC



Jeff Weber

Proj Mgr I •
UNIDATA

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SIParCS

- Virginia Do
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- Jess Hoopengardner
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Thank You

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