TerraUser – Web-based User Management Project

NAU Senior Capstone Design 2001-2002

Team TerraUser

Daniel Wallace

Michelle Harr

Naoko Tsunekawa

http://www.cet.nau.edu/~dw2/terrauser/

Team Information

Team TerraUser

Michelle Harr – Leader/Communicator

Daniel Wallace - Website Coordinator

Naoko Tsunekawa - Document Coordinator/Secretary

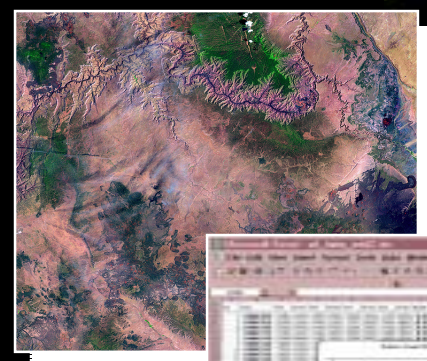
Introduction of Client

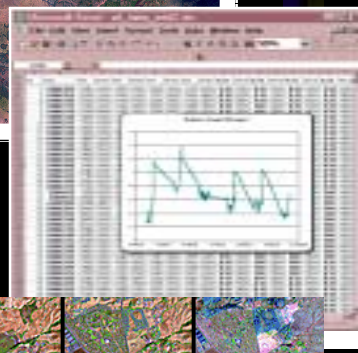
Deborah Lee Soltesz

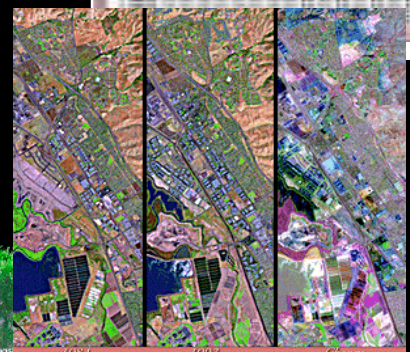
U.S. Geological Survey Flagstaff Field Center

Web Mistress

Terrestrial Remote Sensing







"Group works with satellite multispectral, airborne photos, shipborne sidescan sonar, and DEM digital images. The capabilities include geometric and radiometric calibration and corrections, digital mosaicking, multitemporal change detection, and extraction and mapping of earth science information for various applications."

http://terraweb.wr.usgs.gov/

USGS
science for a changing world

Problem Description

- Need of a secure user interface for USGS TerraWeb interactive web applications for users to be able to work with varying levels of access and permissions.
- Need of a centralized web-based user management system.

Current Situation

- Currently USGS TerraWeb applications have minimal security.
- Users are not required to login to access applications.
- No existing user management system in place.

Applications

Projects That will use TerraUser interface and user management application:

- Maui Cam
- TerraData
- Photo Archive

Applications

- Maui Cam
  - "High resolution digital camera on robotic arm connected to Linux single board computer stationed in Maui to monitor certain environmental conditions"
  - "Levels of user access are based on priority and permissions to request certain actions (e.g. boss gets top priority on positioning camera, public cannot pan down to see bikini beach)"

Applications

TerraData

- "Web-based database access"
- "Anonymous, Guests, Editors, Admin, and Super Admins"
- "Guests, Editors, and Admins need to be grouped into Unix-style groups, but with much more information associated with each group"
- http://TerraWeb.wr.usgs.gov/TerraData/

Applications

Photo Archive

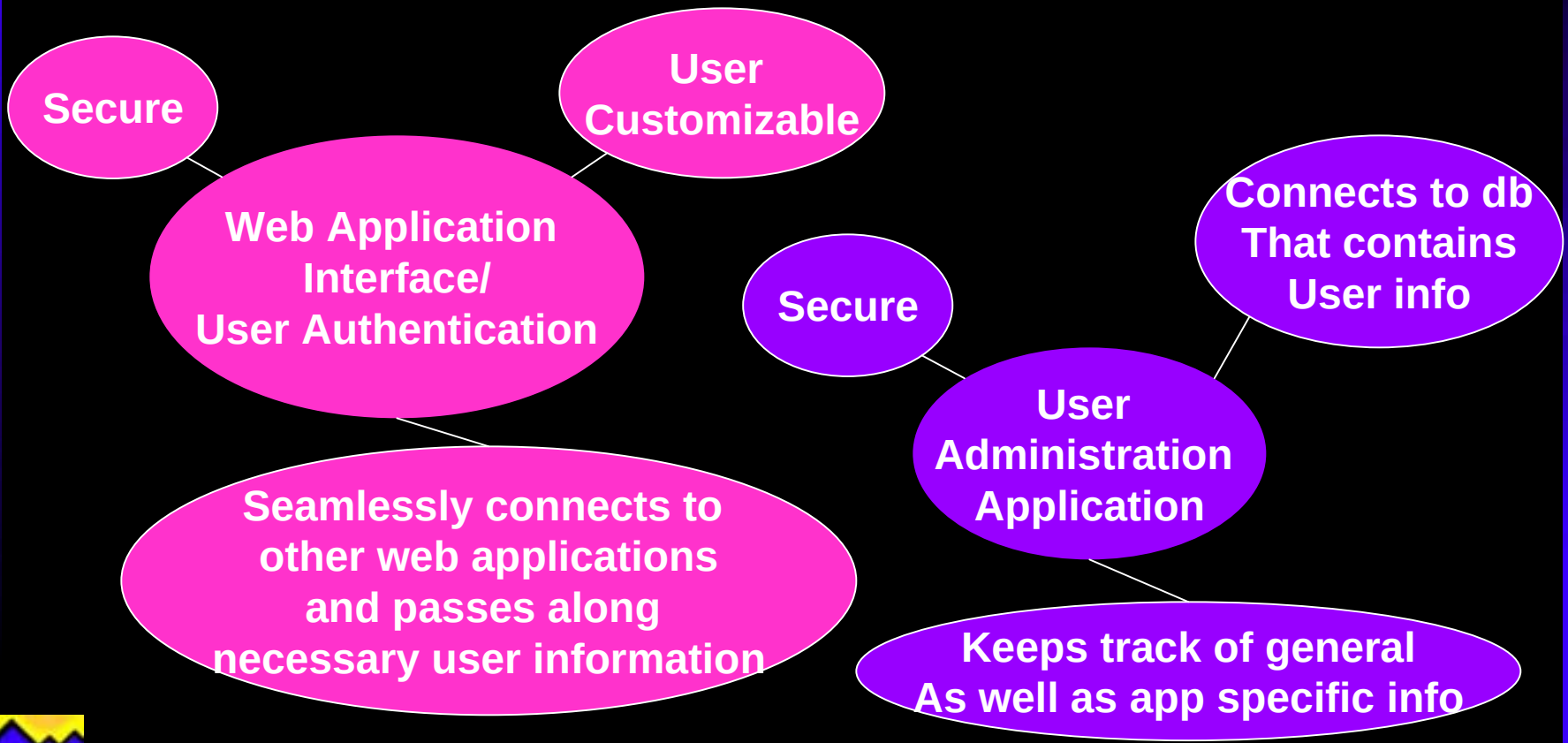
- "Database with info and pointers to every digital photo ever collected by group"
- "User needs similar to TerraData – anon, guest, editor, admins, and so forth – who can edit, who can search and what can they access?"

Requirements

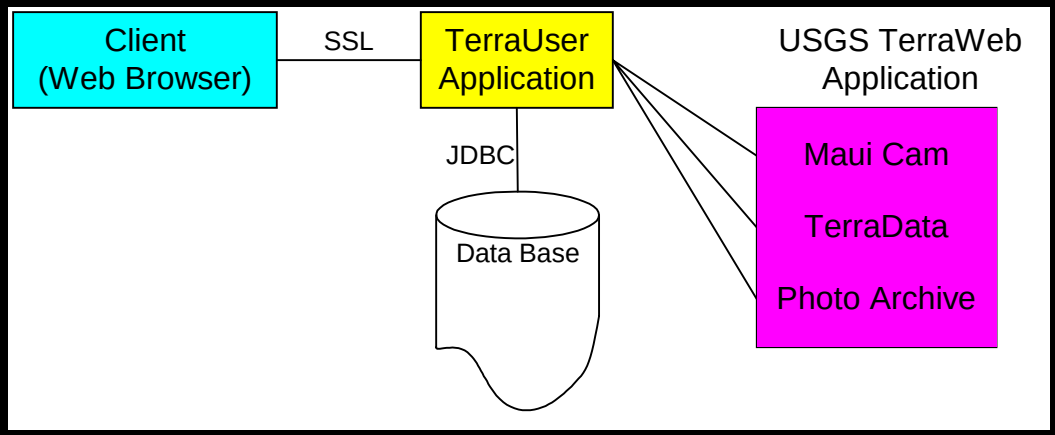
- This application will provide a means for user login (centralized authentication), account management, security, and interface customization.
- There are two parts to this TerraUser interactive web application: a stand-alone part for administrators to manage users and permissions, and an invisible application that lets other applications to connect to get specific user information. There will be a variety of information that will be stored about the user including but not limited to:
    - Who the user is
    - What the user's personal preferences are (look and feel of application)
    - What team user belongs to
    - Priority level for running processes
    - Applications the user has access to
    - Level of access

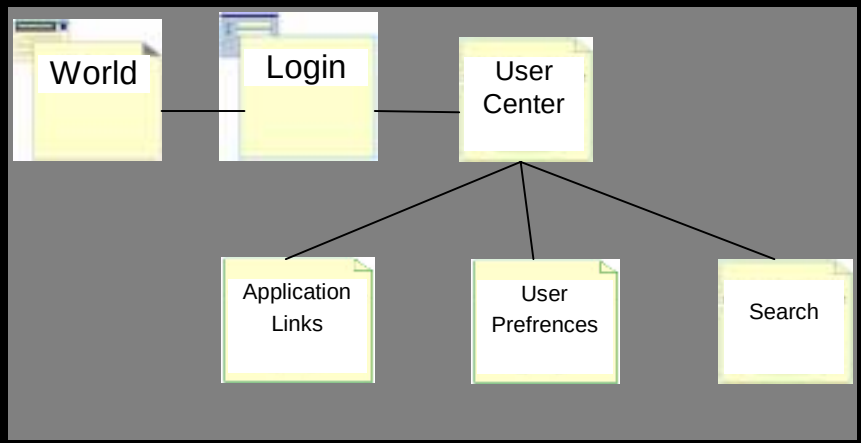
Requirements

- Application as well as record access is based on such things as user, team, and priority.



Architecture





Solution Analysis

Tools/Languages

Category	*Product / tool using*
Operating System	SuSE Linux
Web Server	Apache
Java Server	Apache Tomcat
Server Side Interfacing	Java, JDBC, JSP, Java Script
Database	MySQL
User Interface	HTML 4.0 minimum
Security	SSL

Main Challenges/Risks

Challenges:

- Interfacing to other web applications
- Data Management (i.e. different TerraWeb apps might need TerraUser to keep track of some unique piece of information)

Risks:

Business Risks:

- Changes in technology
- Product might exist already

Project Risks:

- Time management
- Hardware issues
- Requirements change

Product Risks:

- Security issues with bugs, viruses, and hackers
- Compatibility issues on web server, OS, browser, and database
- Interfacing to a variety of USGS TerraWeb applications

Project Implementation Schedule Fall01

- Phase 1: Team Formation and Initial Client interaction (Team Inventory, Team Standards, Team Website, Team Notebook, Setup Development Box)
- Phase 2: Requirements Proposal and Early Design (Feasibility Study, Requirements Acquisition, Requirements Document, Project Proposal)
- Phase 3: Functional Specification and Implementation Plan (Functional Specification, Architecture and Implementation Plan, Planning for Spring 2002…)

ID	Task Name	Start	End	Duration
1	**Phase 1: Team Formation and Initial Client Interaction**	10/25/2001	11/6/2001	8d
2	Team Inventory	10/25/2001	11/6/2001	8d
3	Team Standards	10/25/2001	11/6/2001	8d
4	Team Website	10/25/2001	12/17/2001	38d
5	Team Notebook	10/25/2001	12/17/2001	38d
6	Set up Development Box	11/12/2001	11/26/2001	11d
7	**Phase 2: Requirements, Proposal and Early Design**	11/6/2001	11/29/2001	16d
8	Feasibility Study	11/6/2001	11/15/2001	6d
9	Requirements Aquisition	11/6/2001	11/29/2001	16d
10	Requirements Document	11/15/2001	11/29/2001	11d
11	Project Proposal	11/15/2001	11/29/2001	11d
12	**Phase 3: Functional Specification and Implementation Plan**	11/26/2001	12/14/2001	15d
13	Functional Specification	11/26/2001	12/6/2001	9d
14	Architecture and Implementation Plan	11/29/2001	12/18/2001	14d
15	Planning for Srping 2002	12/6/2001	12/13/2001	6d

Rough Project Schedule Spring02

- Data Base Setup
- Data Base Interface
- Session Management
- User Information Management
- Web-Interface Integration
- Security Integration
- System Integration

Rough Schedule of Events

1st week of November	Initial sponsor contact
2nd week of November	Problem definitions/statements
Mid. November	Initial requirements acquisition, requirements document
End of November	Draft proposal
Early December	Complete specifications
Jan. - Feb., 2002	Development architecture / Implementation
March, 2002	Testing / Integration
April 26, 2002	Capstone Project Conference; As-built report


November 2001
Sunday
Monday
Tuesday
Wednesday
Thursday
Friday
Saturday
WEEK 10
Software Engineering Lecture
-- Weekly Team Meeting 2:00-2:45PM @NAU!
Team Bylaws, Team Inventory and team website due!
Team Inventory, Team Standads, Team Website
WEEK 11
Software Engineering Lecture
Development of Architecture and Implementation Plan
First Official Meeting W/ sponsor 3:30-5:00 @USGS!
5 min Status Report!
-- Weekly Team Meeting 2:00-2:45PM @NAU!
WEEK 12
Development of Architecture and Implementation Plan
Group Meeting to set up Linux Box 1:00PM!
NAU Holiday Vetran's Day!
20 min Project Presentation!
-- Weekly Team Meeting 2:00-2:45PM @NAU!
Feasibility Study
WEEK 13
Development of Architecture and Implementation Plan
Thanksgiving Holiday!
NAU Holiday Day After Thanksgiving!
Requirements Acquisition
WEEK 14
Development of Architecture and Implementation Plan
-- Weekly Team Meeting 2:00-2:45PM @NAU!
Requirements Document, Project Proposal

December 2001

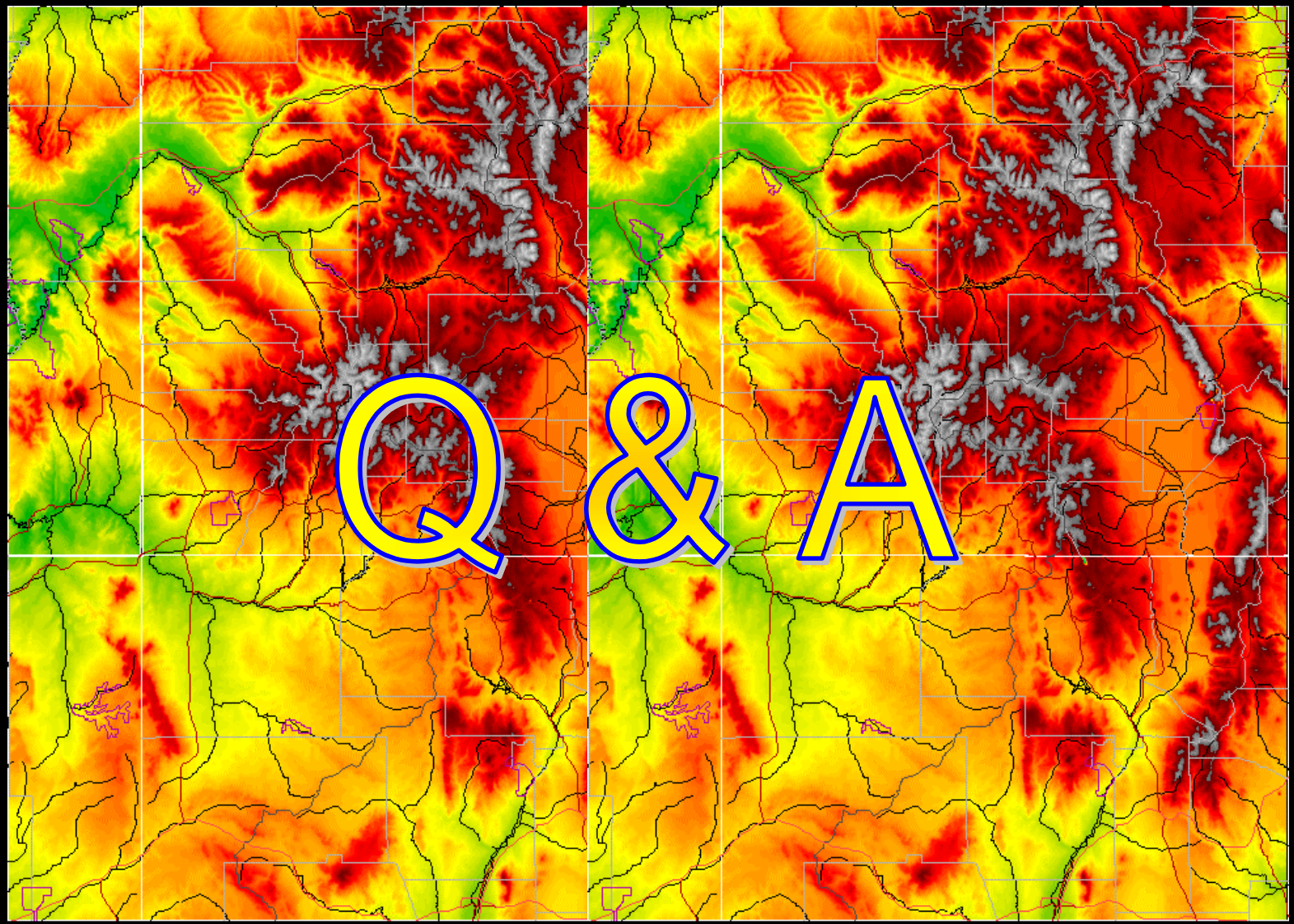
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
WEEK 14 Development of Architecture and Implementation Plan						1
WEEK 15 2 Development of Architecture and Implementation Plan	3 Functional Specification	4	5	6 -- Weekly Team Meeting 2:00-2:45PM @NAU!	7	8
WEEK 16 9 Development of Architecture and Implementation Plan	10 Architecture and Implementation Plan	11	12	13 -- Weekly Team Meeting 2:00-2:45PM @NAU!	☆ Last day of Semester! 14	15
WEEK 17 16	17 Winter Vacation!	18	19	20	21	22
WEEK 18 23	24 Winter Vacation!	25	26	27	28	29
WEEK 19 30	31 Winter Vacation!	☆ Christmas Holiday!				

Summary and Conclusions

Team TerraUser sees this project as being a valuable contribution for USGS TerraWeb applications. The business issues make sense.

We have successfully:

- Identified project objectives
- Looked at most viable solution
- Evaluated alternatives
- Focused on possible obstacles


Q&A