

Research in the Central Appalachian Region: Current Initiatives and Future Outlook

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Major Funding Entities

- Alpha Foundation (<http://www.alpha-foundation.org/>)
- ARIES (<http://www.ariesenviro.org/>)
- NIOSH / CDC (<http://www.cdc.gov/niosh/>)
- DOE/National Energy Technology Laboratory



Other Funding Agencies

- NSF
- Industry
- Private Companies



Alpha Foundation



- Improvement of mine health and safety through funding research and development projects in areas of;
 - Health & Safety Interventions
 - Mine Escape & Rescue Training
 - Safety Management & Training
 - Injury & Disease Exposure Risk Factors
- To provide future miners with safer working environments through the implementation of results of Foundation funded projects.
- Solicitations have been and will continue to be released annually.



Alpha Foundation Projects

1. Application of Dust Scrubbers to Longwall Mining
2. Dust characteristics and their effect on miner health
3. Numerical methodologies for assessing the burst potential of coal
4. Safety hazard predictor for preventative ventilation management
5. Determination of rockbolt performance in underground mining
6. Enhanced ground control assessment tools for underground mine design
7. ... and many more



Appalachian Research Initiative for Environmental Science

- For the past 15 years has addresses the environmental impacts with respect to the discovery, development, production, and use of energy resources in Appalachia.
- Provides transdisciplinary research the areas of;
 1. Stream protection and restoration
 2. Materials characterization and handling
 3. Environmental impacts and mitigation of energy production
 4. Community health and well-being in energy production areas
- Has supported over 75 researchers from 30 different departments and more than 90 student researchers producing more than 90 peer-reviewed publications.

ARIES



ARIES Projects

1. Downstream Impacts of Selenium and Total Dissolved Solids (TDS)
2. Pond Treatment and Reclamation: Downstream impacts and unintended consequences
3. CCB Characterization and Management
4. Barrier Pillars and Water Management
5. Environmental Control of Surface Blasting Impacts
6. Coal Mining and Appalachian Economic Impacts
7. ... and many more



NIOSH Capacity Building



- The solicited proposals focused on conducting research on the development, testing, and/or evaluation of new innovations and technologies to improve health and/or safety in the mining industry in the areas of;
 1. Reparatory Diseases
 2. Hearing Loss
 3. Cumulative Injuries
 4. Mine Disasters
 5. Ground Control
 6. Surveillance and Training
- During the 1st solicitation 8 projects were funded over the course of 5 years. A second solicitation has been released for the funding of 4 projects.



NIOSH Capacity Building Projects – Round 1

1. Improvement and Extension of the LaModel Program
2. Coal Mine Dust Mitigation through Scrubber Development and Numerical Modeling
3. Computational Fluid Dynamics Modeling for Underground Mines
4. Instrumentation of Roof Bolt Drill for Ground Characterization, Mapping, and Support Design
5. Generation of Geomechanical and Time-dependend Properties of Coal and Coal Measure Rocks
6. Investigation of Reduced Order Fire Modeling for Improved Safety and Response in Underground Coal Mines



NIOSH Capacity Building Projects – Round 2

- Solicitation was closed about a month ago
- Four projects are expected to be awarded in the ground control area
- Projected starting date: Sept 1, 2016



NETL



- The National Energy Technology Laboratory (NETL) is owned and operated by the Department of Energy (DOE) and therefore supports the DOE mission to advance the energy security of the United States.
- NETL conducts a broad spectrum of energy and environmental research and development in the areas of;
 - Enabling domestic coal, natural gas, and oil to economically power our homes industries, businesses, and transportation.
 - Protecting our environment and enhancing our energy independence.



NETL Projects

- Adoption of Carbon Use/Reuse Technologies for Power Generation
- Coal to Liquids Technologies with Inherent Carbon Emission Reduction
- Addressing Risk and Uncertainty in the Future Power System
- Technologies for High Value, High Carbon By-Products from Coal
- Technologies to Recover Rare Earth Elements from Domestic Coal and Coal By-Products
- Application for Technologies Directed at Capturing Carbon Dioxide from Low Concentration Sources to Support the Coal Industry



European Paradigm – What not to do!

- Mining was a forbidden word in Europe for many years
- No mining research was directly funded out of general funds – some research money was available through the Coal and Steel Consortium
- Mining schools shut down
 - No mining schools in France
 - All but one in England
- Coal Mines in England shut down
- Germany is shutting down all its hard coal production by 2018



Then in 2007...

- Commission Vice President Günter Verheugen, responsible for enterprise and industry policy, said: *"European industries need predictability in the flow of raw materials and stable prices to remain competitive. We are committed to improve the conditions of access to raw materials, be it within Europe or by creating a level playing field in accessing such materials from abroad."*
- The non-energy extractive industry is providing a wide range of different minerals, including metallic ores, clays and aggregates which are mined or quarried to produce roads, homes, schools and hospitals and many products such as computers, cars and household appliances which are often taken for granted in a modern economy. The present situation calls for an integrated approach through which relevant EU policies and instruments work in concert with the aim of ensuring availability of essential raw materials, and sustainability in their extraction and use.

http://europa.eu/rapid/press-release_IP-07-767_en.htm?locale=en



In the Horizon 2020 Framework package

- There is 1 Billion Euros (1.1 Billion Dollars) for mining and minerals related research
- However some or much of the expertise is lost
- Schools have shut down – difficult to restart programs
-

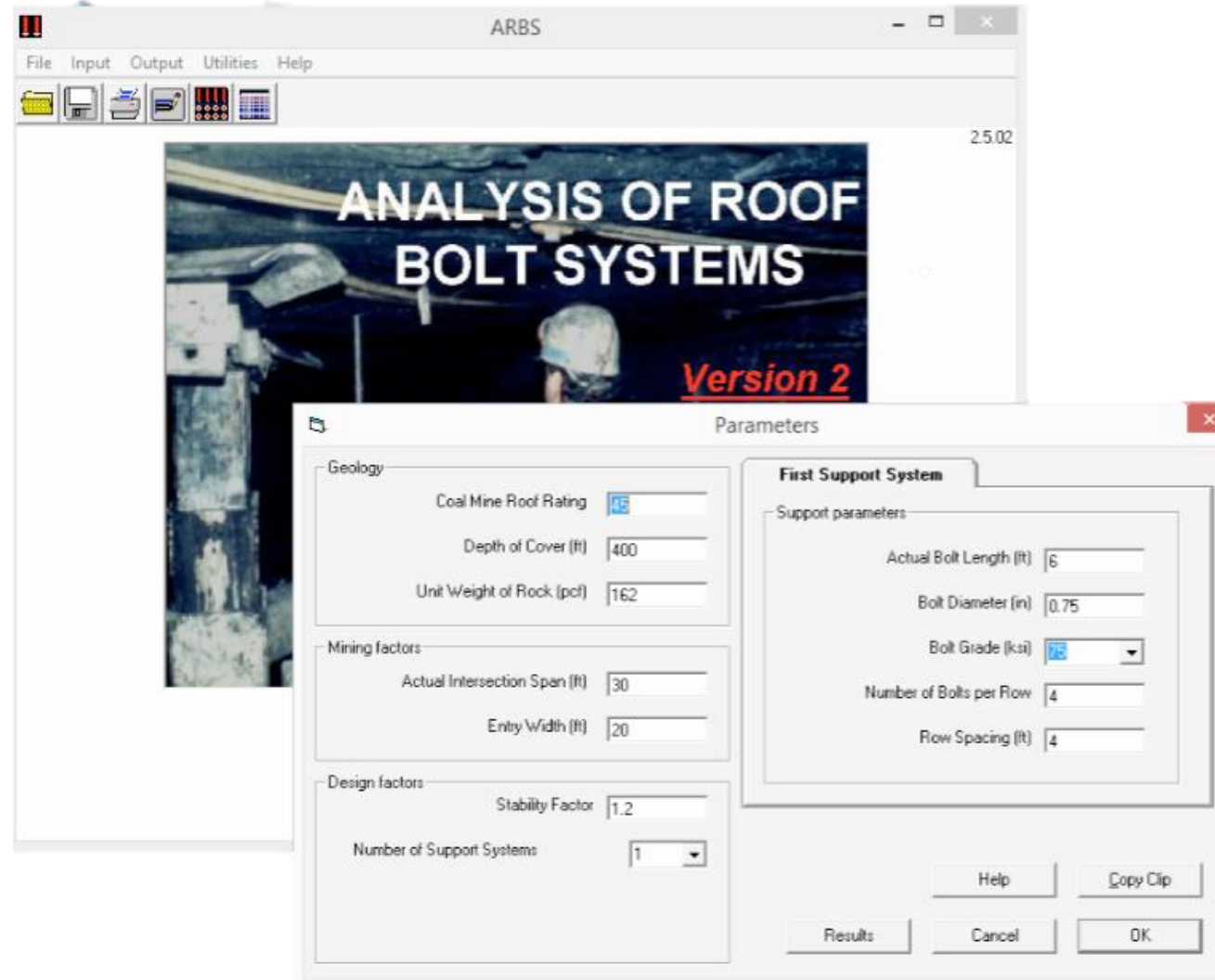


Current Research at UK

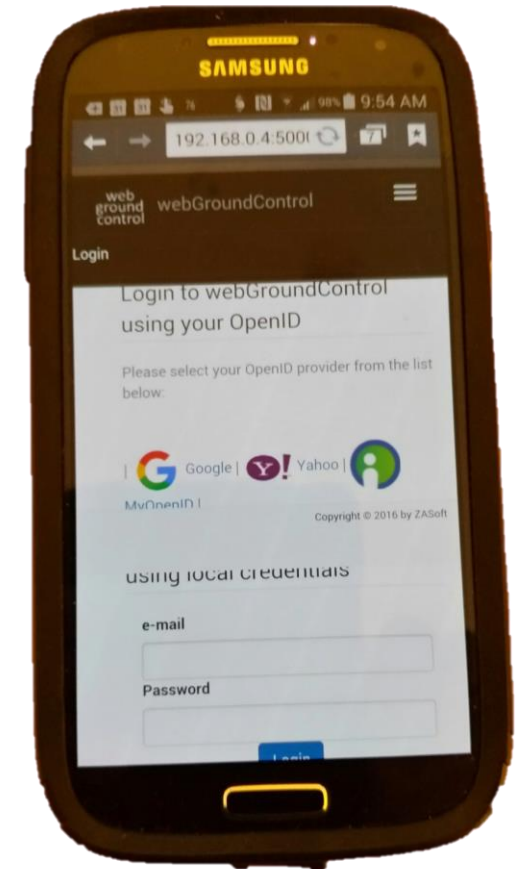
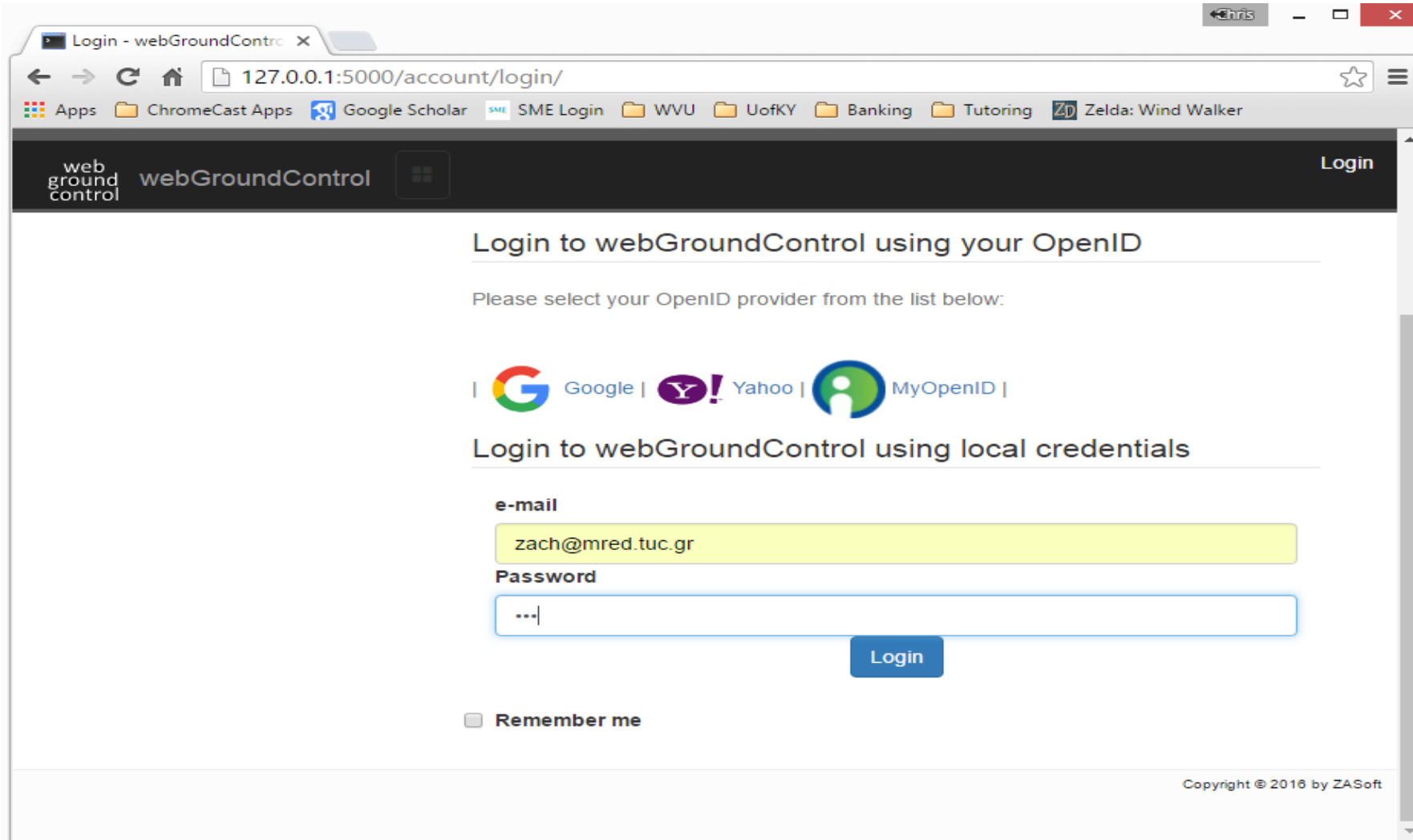
- Longwall Scrubber Project
- Continuous Miner Project
- Refuge Chamber Project
- Polycarbonate Wall Refuge Chamber Project
- Development of Cloud-Based Apps for Ground Control Evaluations



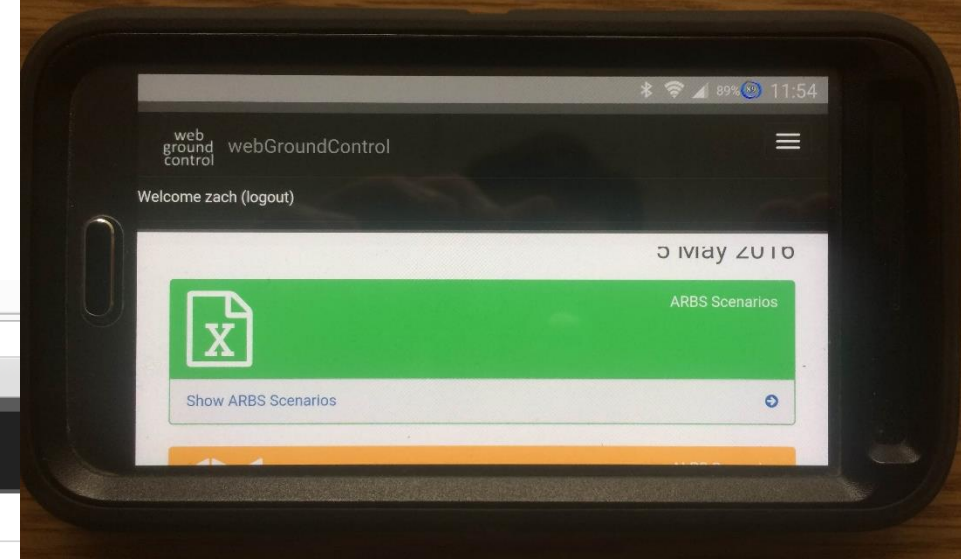
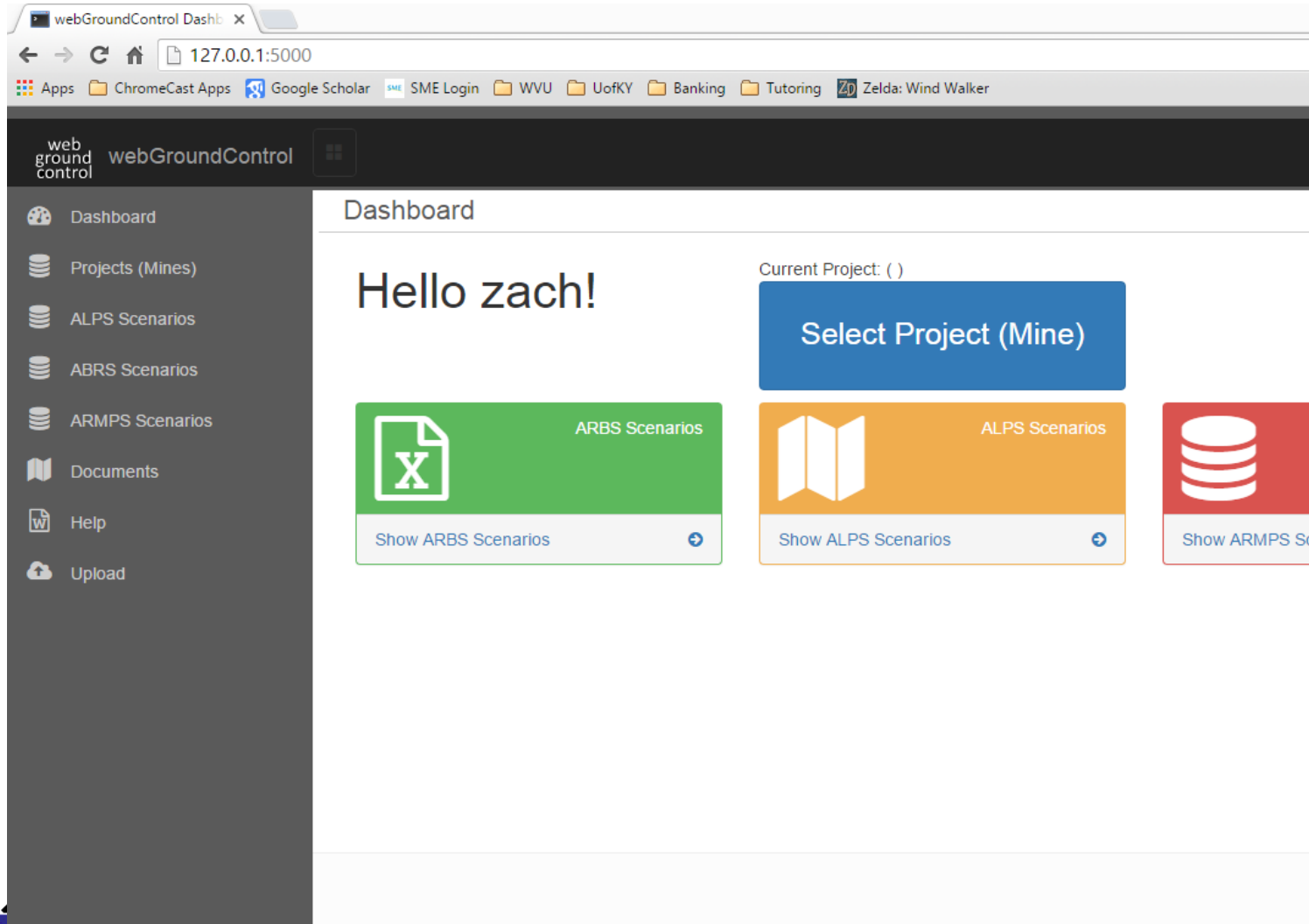
NIOSH Ground Control Software - ARBS



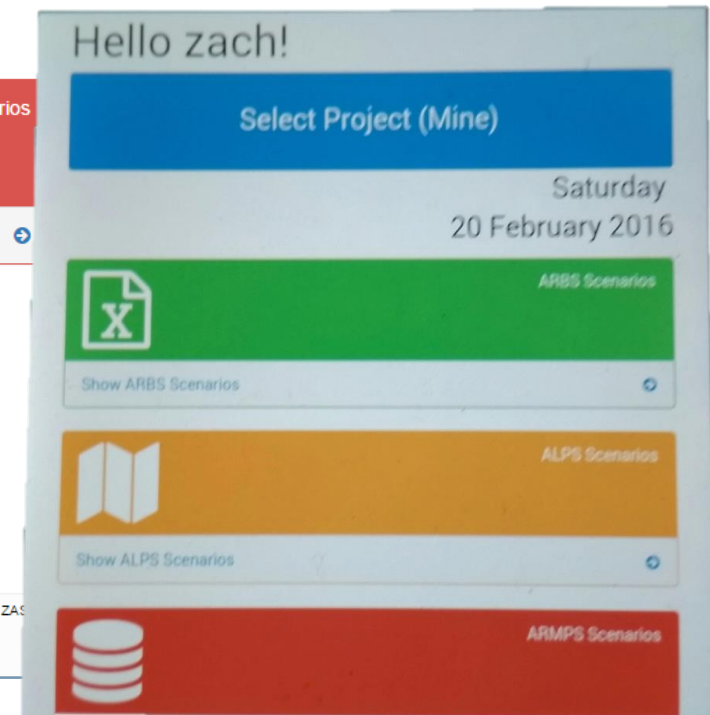
User Login - Desktop and Smartphone



User Dashboard



Wednesday
4 May 2016



Project Selection

Administration - webGrou x

127.0.0.1:5000/projects

Apps ChromeCast Apps Google Scholar SME Login WVU UofKY Banking Tutoring Zelda: Wind Walker

web ground control webGroundControl

Welcome zach (logout)

Project Administration Section

Add Project (Mine)

Id	Name	Delete	Select
3	3	Delete	Select
4	CN_Testing	Delete	Select
1	test1	Delete	Select
2	test2	Delete	Select

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Edit Project Data – Desktop and Tablet

