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Grid Game: Developing a Java/Android version for increased accessibility and usability

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Grid Game
Developing a Java/Android version for increased accessibility and usability

Abstract
• Recreate the LabView based Grid Game in a Java based web-browser / mobile format.
• Implement a Android mobile version.
• Browser/mobile format allows universities, companies, and individuals to use the game without overhead.
• Java is a more popular format than LabView, increasing opportunities for future developers to expand and improve upon our design.
• Thanks to Michael Guryan and IRON (Idaho Regional Optical Networks) for the supporting infrastructure and repositories making the multiplayer functionality possible.

Gameplay
• Main objective of the Grid Game is to keep the frequency of the grid, governed by the Swing Equation, near 60 Hz for the entire duration of the game.
• The player can buy more generators, which generates more power for your grid.
• The player can buy more customers, which increases the load upon the system.
• The battery allows the user to keep their grid balanced even if the power generation and load are not.
• Players can draw power from the battery or add excess power to it.
• Automatic controls will draw and add power to the battery as needed to keep the grid at 60 Hz.
• Time based events that can occur that may either help or harm the player.
• Events include generators breaking down, a large influx of customers to your area, the loss of automatic controls, and more. All of these serve to make the game more challenging and different every round.
• Scoreboard functionality to allow players to see how they rank against others.

Future Possibilities
• Multiplayer functionality with energy trading and cyber attacks
• Clean energy generators
• Dynamic weather based changes to the grid
  • Wind generators produce more on windy days
  • Solar panels are less effective on cloudy days

User Experience
• User interface / user experience for the Grid Game needed to be intuitive
• UI designed to promote an environment for learning and constant player feedback
• Required separate layouts for both desktop (and web) application and the Android app
• Limited screen size on Android devices prevents displaying as much information to the player
• Delegated certain elements of the desktop application UI to a tabular setup in the Android app
• Player still has available all information available to them via the desktop application in a more compact environment