Project 2: A Mobile App to Enhance Sustainability Awareness and Influence Student Behavior

Title: A Mobile App to Enhance Sustainability Awareness and Influence Student Behavior

willow Willow: The new way to manage buildings	OP Ravi, Director of Product, Energy Transformation opravi@willowinc.com

Project Overview:

In the US, buildings consume 76% of all electricity and account for 40% of total CO2e emissions[1]. According to the UN's Global Status Report for Buildings and Construction, the buildings sector is not on track to achieve decarbonization by 2050, with the gap between actual climate performance and the decarbonization pathway continuing to widen.

We are committed to building a sustainable future by creating environments that adapt in real time to economic, ecological, and operational demands. To achieve this, we aim to develop a new mobile app or enhance the NAUgo mobile app with Willow's data and insights.

The new functionality will provide near real-time insights and notifications based on datasets such as grid emissions, energy pricing, and energy load data. It will enable app users—including students and NAU staff—to stay informed and take action.

Additionally, users can be grouped by departments, dorms, or other categories to track collective actions and their impact. A scoring system could rank groups, gamifying the experience to drive engagement.

The user flow will include:
- Displaying current and forecasted trends for energy prices, emissions, and consumption for assigned buildings.
- Sending alerts when a building approaches peak consumption or emissions, along with recommended actions to reduce energy usage.
- Measuring energy consumption at the meter and submeter levels, correlating user actions with overall impact.
- Rewarding users and groups with scores based on energy savings (kWh) and emissions reduction (CO_2e).

By empowering users with real-time insights and actionable recommendations, this solution will increase awareness, drive behavioral change, and contribute to a more sustainable future while also reducing NAU's energy costs.

Refer to the image below for a high-level data flow and various components of Willow solution. The mobile app will integrate with Willow's Knowledge Graph via APIs. The Willow platform has built-in insights library and we should be able to leverage some of them in the app. During the project scoping and feasibility phases, we will finalize the key scenarios for the first MVP release.

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[1] Chapter 5: Increasing Efficiency of Building Systems and Technologies (energy.gov)
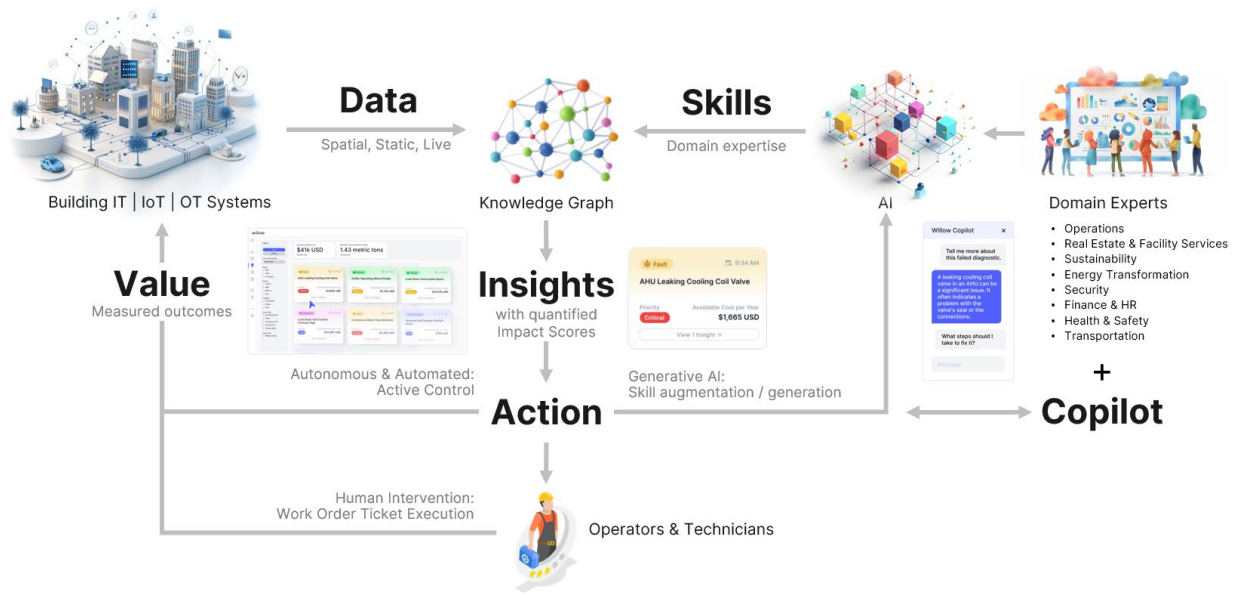
Willow is the leading AI-driven platform revolutionizing the built world. Leveraging cutting-edge digital twin technology, static, spatial and live data. Willow empowers organizations to reduce operational costs of buildings, improve sustainability outcomes and dynamically optimize asset performance at scale. Willow is changing the way the world manages buildings for a more sustainable future by enabling every building to respond to the people, purpose and environments they serve. Trusted by global leaders in education, healthcare, retail, transportation and commercial real estate, Willow is redefining how the world manages and interacts with the built environment. Visit www.willowinc.com to learn more.

The successful completion of the project will have multiple impacts, including:

- **Enhanced Visibility & Awareness**: Improve understanding of energy and emissions patterns.
- **Lower Energy Costs**: Achieve significant savings on energy bills during event days and peak hours.
- **GHG/CO2e Reduction**: Support climate goals by increasing the use of carbon-free energy.

Knowledge, skills, and expertise required for this project:

- Willow platform (documentation and training will be provided)
- Knowledge and awareness of energy and emissions
- Database concepts and technologies: graph database, time-series,
- Programming skills in C#, REST API is useful
- Mobile development experience

Equipment Requirements:

- A work laptop or desktop
- There should be no specific H/W or software required other than a development platform and software/tools
- Personal mobile phone can be used to test the app.

Software and other Deliverables:

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- The software mobile application code as described above, deployed and tested successfully in a typical real-world and development environment.

- Must include a complete and clear User Manual for configuring and operating the solution.
- A strong as-built report detailing the design and implementation of the product in a complete, clear and professional manner. This document should provide a strong basis for future development of the product.
- Complete professionally documented codebase delivered both as a repository in GitHub or some other version control repository.