



SkyFoundry Insider

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New Orleans
October 10-11

The Data – Decarbonization Connection

***Data is fundamental to address
the critical sustainability goals of
the built environment***

Data has a fundamental role in supporting society's decarbonization challenge. It starts with the simple concept that you cannot control what you do not measure.

The structures we live and work in and the systems that support them produce a vast array of data. We can utilize this data to assess and improve performance, calculate Greenhouse Gas emissions, identify opportunities to reduce energy consumption and operational costs AND automatically optimize system operation.

Acquiring the data from diverse systems is the first step and one where SkySpark excels through its support of a wide range of data acquisition solutions including: BACnet IP, Modbus TCP, Obix, Haystack, SNMP, Sedona, OPC UA, MQTT, SQL, Nest, Ecobee, CSV import, and a REST API.

Once acquired, the true challenge is to effectively manage and deliver value from data to support our decarbonization and sustainability goals.
Con't →

The Data – Decarbonization Connection

Moving from Data to Action – Acquire, Assess, Inform, Act



A wide range of data is involved in sustainability and decarbonization efforts:

- Energy meter data showing energy resource consumption and demand
- Weather data to show environmental factors driving energy use
- Equipment system data from control systems, sensors, and other devices
- Carbon-equivalent emission factors for the energy sources used and for alternatives that may be proposed as part of decarbonization projects
- Energy cost data – tariff rates, purchase agreements, other cost information
- Performance metrics, benchmarks, and goals
- Regulatory requirements and associated taxes, fees and fines

As we can see these are highly diverse types of data, which come from different sources and in different formats. This highlights the critical need to “normalize” so that it can be used effectively. This is the role of the Project-Haystack.org initiative. SkyFoundry is a founding member and active leader in Project Haystack. See *page 4* to read about “Xeto”, one of the latest developments to come from the work of the Project Haystack community.

Once data is normalized, advanced analytic techniques can be applied to identify trends and correlations across the diverse systems that make our indoor environments possible – *Pattern Recognition* techniques detect faults and deviations, *Machine Learning* can predict energy use in relation to environmental and operational factors, *Reports and Notifications* are automatically generated to inform operators, technicians, and financial managers of important issues and to support decision making, prioritization and financial analysis.

Con’t →

The Data – Decarbonization Connection

Use Cases and Impact

So how do we use data to support decarbonization and sustainability efforts? Data-driven use cases span the range from tracking and reporting for human consumption to executing automated control based on advanced software techniques. Here are just a few examples:

- Maintaining optimum efficiency of building systems through FDD, Monitoring Based Commissioning, and Monitoring and Verification (M&V)
- Calculating and reporting GhG Emissions – with SkySpark’s GhG App
- Integrating alternative energy resources into buildings including energy use forecasting and real-time energy source selection
- Integrating Electric Vehicles (EV) – EV to Building, EV to grid
- Connecting buildings to the grid to achieve “GEBS” - Grid-interactive Efficient Buildings”
- Optimizing selection of energy resources to meet cost and sustainability goals

Driving Action – Automated System Optimization

Our goal is to utilize data to support sustainability and decarbonization efforts. In some cases, this means applying advanced analytic techniques, including artificial intelligence, to directly control equipment systems to modify and optimize operation. This concept is often referred to as supervisory control, or more recently, Automated System Optimization (ASO).

Examples include changing setpoints, turning equipment on or off, switching energy sources due to cost or carbon impact, imposing limits on energy demand or usage.

While ASO can be used to address many needs, there are just as many examples where the insights derived from data need to be communicated to people to help them drive decisions to achieve our goals. Examples include tracking and reporting GhG emissions to assess the use of alternative energy sources, providing information needed to justify funding for repair or replacement of equipment systems.

The common ingredient is data—the essential element for achieving decarbonization, sustainability, and efficiency goals.



Xeto – A New Foundational Technology for Haystack Data Comes to SkySpark

The Project Haystack Organization has been busy working on a Department of Energy's (DoE) Building Technologies Office (BTO) Energy Efficient Frontiers and Innovation Technologies (BENEFIT) funded effort to create a validation and accreditation framework for semantic metadata templates and models as well as deploying an accreditation system. [Read about the DoE award for the project at this link.](#) After completing the first year of the three-year initiative, the team comprised of representatives from SkyFoundry, Clockworks Analytics, Switch Automation, and National Renewable Energy Laboratory (NREL), is proud to announce Xeto.

What is Xeto?

Xeto provides a new tool in the Project Haystack toolbox for building and validating sophisticated models of the built environment. Xeto allows the community to define templates for Haystack data using a new concept call "Specs." Specs can be used to create templates of unitary equipment to streamline building digital twin models. Specs can also be used to define application requirements to validate Haystack models.

Xeto is Available

A beta version of the new Xeto tools has been incorporated into the latest versions (3.1.8) of SkySpark® and Haxall®.

To Learn More About Xeto

For those interested in learning more about Xeto we encourage you to view Brian Frank's [Xeto Deep Dive](#) presentation on YouTube.

What to Expect in the Future

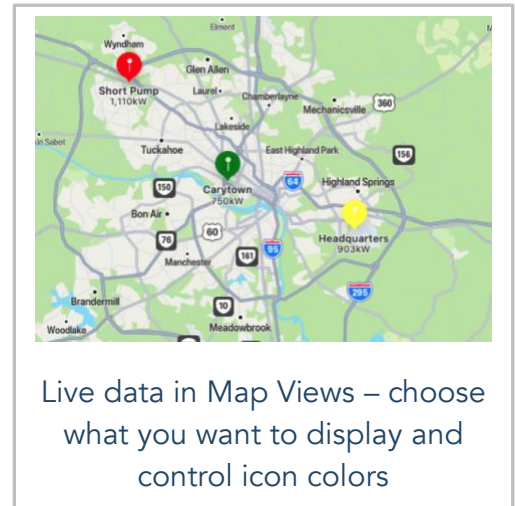
Now that the Year One objective(s) of understanding requirements and developing a command line tool have been completed, the team is working on the next phase of the project. Year Two objectives include deploying a set of public tools and a public library to serve as a repository system that building owners, OEMs, and system integrators can access and share templates. A new website is planned, which will provide documentation tools, integration with GitHub, and a central cloud repository for community development of Xeto libraries. Year 3 will focus on early-stage commercialization & developing a validation and accreditation process.

SkySpark Tech Corner: A Quick Update on Major New Features and Capabilities

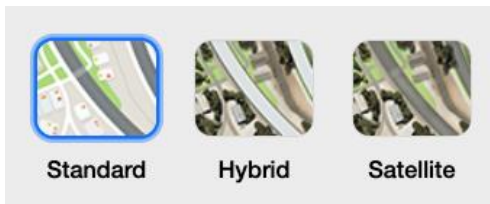
SkySpark continues to add important new features and capabilities.

Map View Enhancements

SkySpark’s Map View allow users to navigate all the information in their facility portfolio using simple, familiar geographic maps. The latest enhancements add the ability to display live, real-time data on maps and control the color of the site icon (called a glyph) based on values of the live data and programmatic logic. For example, changing from green to yellow to red in relation to setpoints, or limits.



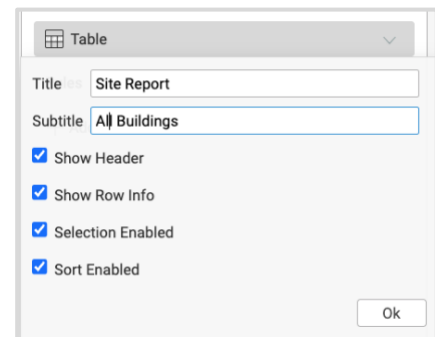
Live data in Map Views – choose what you want to display and control icon colors



← Toggle between different views – street map, terrain map or hybrid

Now You Can Add Titles and Subtitles to Tables

Tables, featuring static data, calculated values and live data are one of the valuable tools provided by SkySpark. This new feature makes it easy to add descriptive information to tables. Titles can be added through our simple point and click tools or defined programmatically.



Site Report							
All Buildings							
dis	geoAddr	geoCity	geoCoord	geoCountry	geoPostalCode	geoState	geoStreet
Carytown	3504 W Cary St, Richmond, VA	Richmond	C(37.555385,-77.486903)	US	23221	VA	3504 W Cary St
Gaithersburg	18212 Montgomery Village Ave, Gaithersburg, MD	Gaithersburg	C(39.154824,-77.209002)	US	20879	MD	18212 Montgomery Village Ave
Headquarters	600 W Main St, Richmond, VA	Richmond	C(37.508241,-77.332605)	US	23220	VA	600 W Main St
Short Pump	11282 W Broad St, Richmond, VA	Glen Allen	C(37.650338,-77.606105)	US	23060	VA	11282 W Broad St

Proven Results from Applying Data Analytics to Building Systems – MBCx

The concept of Monitoring Based Commissioning (MBCx) is to continuously analyze equipment system operation to detect drift, faults, and performance anomalies. With almost **2 billion square feet of facilities using SkySpark around the world** (yes that billion with a B) – SkyFoundry can provide a wealth of examples showing the successful application of data analytics to support Monitoring-based Commissioning (MBCx).

But there is nothing more compelling than independent verification. ACEEE recently commented on the results achieved with MBCx.

Flexibility is Key. While overall principles and protocols for MBCx are uniform and well understood, implementation details vary greatly for each building. Software used to manage and automate C-M&V needs to be flexible, configurable, and programmable by the C-M&V professional. Flexibility is where SkySpark excels and why it is the leading solution used for data-driven, Monitoring Based Commissioning and M&V.

From the ability to acquire data directly from building systems via a wide range of protocols - BACnet IP, Modbus TCP, Obix, Haystack, SNMP, Sedona, OPC UA, MQTT, SQL, Nest, Ecobee, CSV import, and a REST API – to the ability to define calculate and track virtually any KPI and analytic rule conceivable, SkySpark gives today's professionals the tools needed for successful, efficient and cost effective MBCx.





BLOG POST

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Monitoring-Based Commissioning Can Cut Commercial Building Energy Use and Peak Demand

By Steven Nadel, Executive Director

Monitoring-based commissioning is a process which monitors building system operations to identify and correct inefficiencies and thereby improve building energy performance over time. The process can optimize HVAC set points and locate and address problems such as stuck ventilation dampers or systems that needlessly operate when buildings are unoccupied. Many utilities and other efficiency program implementers are looking for new ways to save large amounts of energy as savings from lighting programs decline due to the rapid adoption of LED lighting. Monitoring-based commissioning (MBCx) can help fill this gap.

[Find the full ACEEE article at this link](#)

MBCx has been a key application for SkySpark since its introduction in 2010.
[Find a wide range of MBCx and M&V case studies at this link](#)

REGISTER TODAY

SkyPosium

2023 | The Worldwide SkyFoundry
Community Event

October 10-11, 2023
New Orleans, Louisiana

Skyposium 2023, a premier event for the smart building industry, will take place from October 10-11, 2023 in New Orleans, Louisiana. SkyPosium is designed for the entire community of SkySpark users—reseller partners, end users, engineering consultants, and SaaS providers—everyone that uses or applies SkySpark. Attendees will benefit from enlightening presentations, insightful discussions and productive networking.

Data science for the built environment is one of the hottest areas of technology and there is no question that the SkyFoundry community is leading the way. SkyPosium is a unique one-of-a-kind event that brings the community together for shared learning and networking.

SkyPosium provides 2 program tracks—one for hardcore developers and the other focused on applications, with the majority of presentations provided by the community. A general session delivered by SkyFoundry opens the event to bring everyone up to speed on the latest features and capabilities and provide a preview of our roadmap. With major portions of the program delivered by community members, it's a true **community event**.

In addition, a **vendor showcase** provides attendees with the opportunity to meet with companies that offer complementary products and services to the SkyFoundry community. This is a great opportunity to showcase the latest trends and innovations in the smart building industry.

Connect with key decision-makers in the smart building industry—join us for SkyPosium 2023.

Register at www.skyfoundryevents.com



www.skyfoundryevents.com



Thank You SkyPosium Sponsors!

As of August 1, 2023





The Leading IoT Data and Analytics Platform for the Built Environment

SkySpark® Analytics automatically analyzes data from building automation, metering systems and other smart devices to identify issues, faults and opportunities for savings. Learn why SkySpark has been deployed to over 1 Billion square feet of facilities around the world for energy management, optimization, monitoring-based commissioning and fault detection.



Find What Matters™ to Improve Equipment Performance and Reduce Operational Costs.

SkyFoundry
www.skyfoundry.com

Learn More About SkySpark® and How to Apply the Industry-leading Data Analytics Solution to Your Application

Join us for a comprehensive demonstration webcast

Find our calendar of upcoming sessions and other events here: <https://skyfoundry.com/calendar>

Or contact us at: info@skyfoundry.com