



“Find what matters”™

**Analytics Software for
a World of Smart Devices**

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The Challenge – Turn Data Into Actionable Intelligence

From building automation systems to electric meters, thermostats, appliances and even individual sensors – smart devices of all types are now capable of communicating valuable information about their environment and operation.

Access to this data opens up new opportunities for the creation of value-added services to help businesses reduce energy consumption and cost, to identify opportunities to enhance operations through improved control, and to validate investments in energy savings measures.

Access to the data is just the first step in that journey, however. The new challenge is how to manage and derive value from the exploding amount of data available from these smart and connected devices. *SkyFoundry's SkySpark directly addresses this challenge.*

Analyzing Operational Data – SkySpark

How do we let busy managers and operational personnel know that something is worthy of their attention? Is it possible to make sense of operational data with minimal, or no, human intervention? Can we impart our knowledge of equipment systems to software to enable it to find issues, patterns, and faults? *SkySpark provides the solution.*

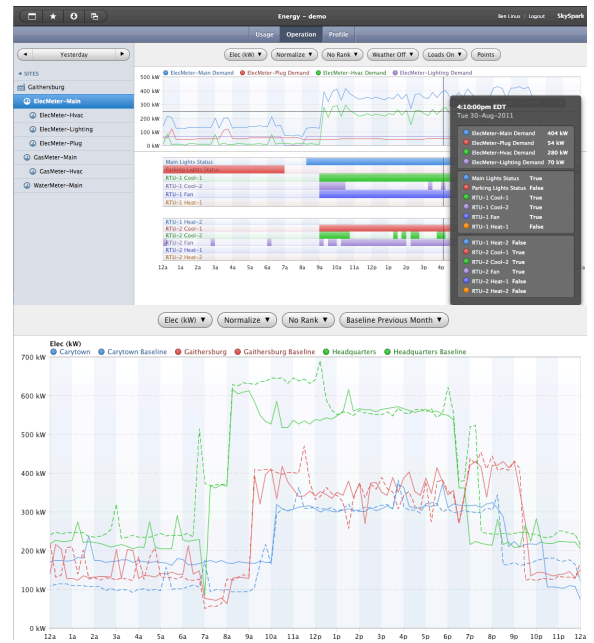
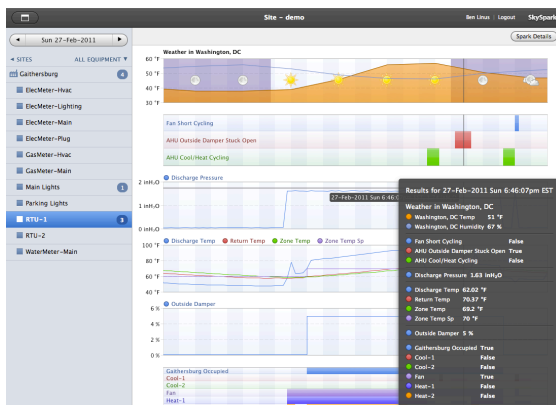
SkySpark allows domain experts to capture their knowledge in “rules” that automatically run against the data produced by smart systems. Employing “semantic tagging”, pattern recognition, functional rules processing and other techniques, SkySpark’s analytics engine provides the ability to automatically identify issues worthy of attention. The result – *the capability to tell the user what they need to know about the performance of their systems.*

SkySpark works with data of all types – whether via a live link to an automation system or smart meter, connection to an SQL database, an import of historical data from Excel files, or a web service feed from a utility – SkySpark can consume, manage and analyze your data.

We Have The Data: “Lets Find What Matters”

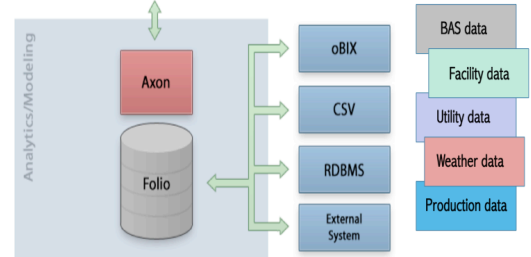
The past decade has seen dramatic advances in automation systems and smart devices. From IP connected systems employing a variety of standard protocols, to support for web services and xml data schemas, it is now possible to get the data produced by the wide range of devices in today’s buildings.

The new frontier is to efficiently manage and analyze that data to *find what matters.*



Collect – Manage – Analyze

There are three basic steps to the analytics process with SkySpark. The first is to “get your data”. One of the key issues SkySpark addresses is the fact that building data is typically in a number of different formats – data from a building automation system, utility data, facility asset information, and data that may be in Excel, CSV or other formats. SkySpark’s accepts this multi-structured data into a specialized database called Folio, which is designed specifically for working with large volumes of “time-series” data.



Give Data Meaning

Instead of relying on conventional database schemas, meaning and relationships – “semantics” – is accomplished using “tags”. Tags are added to data items as needed to convey definitions and associations. For example an air handler might have tags that define the site, building and city it is located in, the fact that it is an electric load, the manufacturer, its capacity, its schedule, associated control parameters, etc. Individual data points can have as many tags as needed, and tags can be added ad hoc whenever additional meaning or relationships are needed. The tags then provide the hooks that the analytics engine uses to correlate and analyze the data.

elecMeterRef	equip	hvac	rooftop	siteRef
Gaithersburg Meter-Hvac	✓	✓	✓	Gaithersburg
Bon Air Meter-Hvac	✓	✓	✓	Bon Air
Short Pump Meter-Hvac	✓	✓	✓	Short Pump
Headquarters Meter-Hvac	✓	✓	✓	Headquarters
Va Beach Meter-Hvac	✓	✓	✓	Va Beach
Woodley Park Meter-Main	✓	✓	✓	Woodley Park
	✓	✓	✓	Bon Air

Add Column

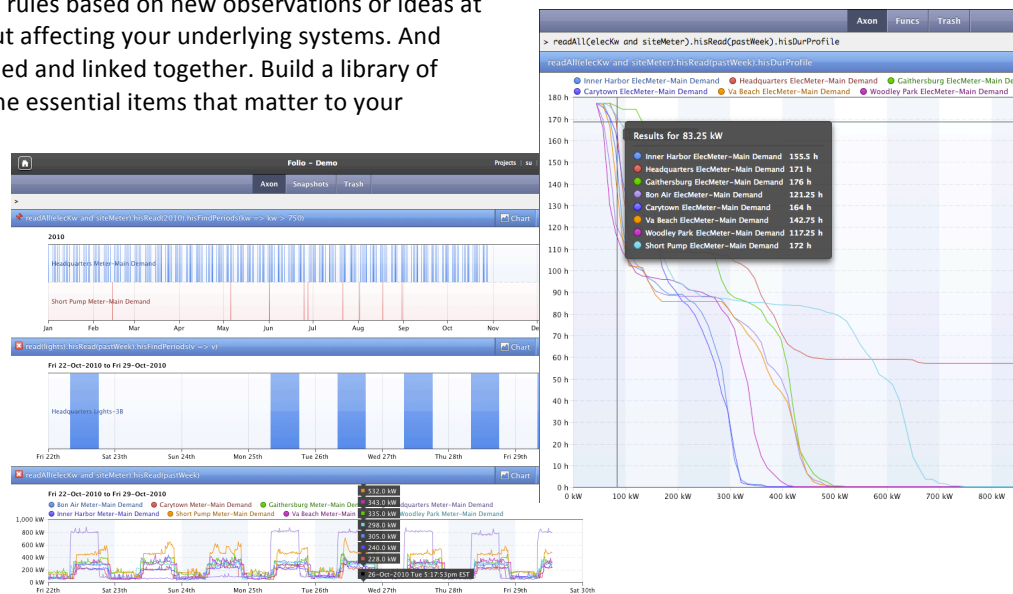
Name

Value

Analyze

Analysis is accomplished with a unique data analysis “engine” known as Axon. Axon provides a comprehensive set of functions for manipulating and analyzing data. The system implementer writes rules using the Axon Language, which are then processed by the Axon engine. Define an issue once, save it, and activate it – SkySpark will find it forever. Create new rules based on new observations or ideas at anytime – all without affecting your underlying systems. And rules can be combined and linked together. Build a library of rules that capture the essential items that matter to your application or your customer.

The value of your library continues to build with every new rule you add.

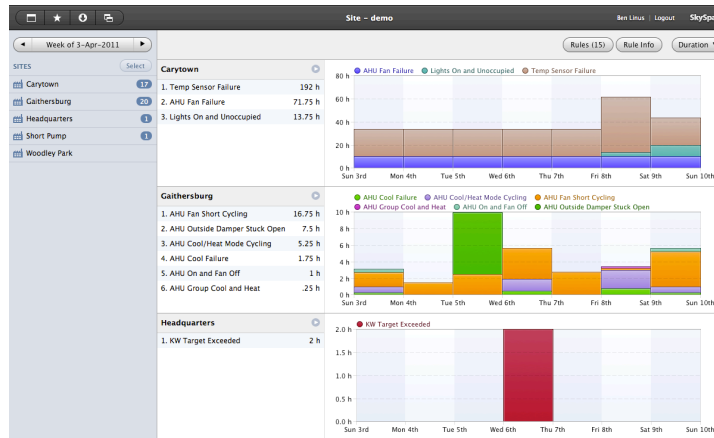
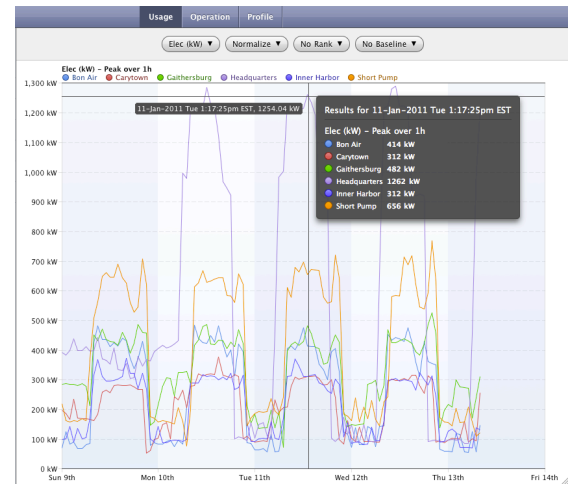
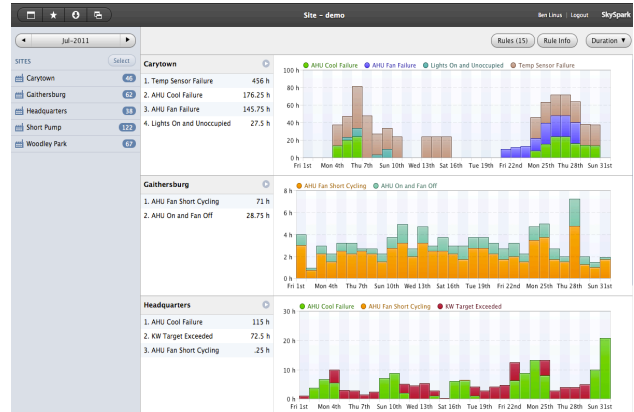


The Result

When Axon rules “hit” or find their target they create a “spark” – our term for an issue that matters. Sparks then generate notifications and displays for the user.

SkySpark includes a rich set of visualizations for data – intuitive, graphical presentations delivered to a standard web-browser using “html5” technology.

SkySpark can also send emails and alerts and output analytic results to third party applications via published API’s.



Applications

SkySpark can be used in a wide variety of applications with systems of all types. Its not tied to any one manufacturer’s products or devices. From building commissioning and equipment fault detection to energy analysis, load profiling, facility benchmarking, asset performance tracking, and carbon and greenhouse gas reporting, SkySpark’s fast, powerful and infinitely flexible analytics language can provide results not possible with other tools.

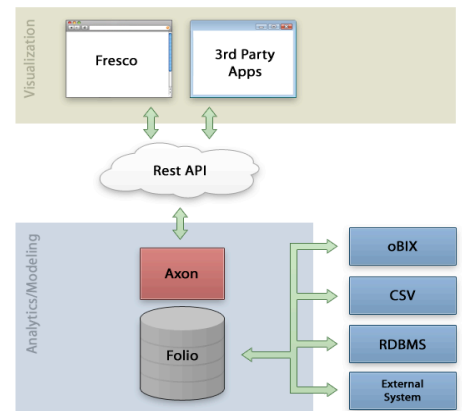
SkySpark can be deployed in a variety of configurations:

As an in-house application for facility managers. SkySpark can be used as an end-use application for facility/energy managers that are responsible for managing energy and equipment systems on a day-to-day basis. The software can be locally installed on a laptop, PC, or server or hosted and offered as a service to meet the specific needs of applications small and large.

As a tool for consultants. SkySpark is also a great tool for consultants involved in commissioning and energy analysis. They can use SkySpark to find patterns and issues based on their unique systems knowledge and then provide summary reports and design services to the building owner. SkySpark enables consultants to leverage their domain knowledge without having to build their own software platform.

As a backend for other HMIs or service offerings. Beyond directly producing displays for a user, SkySpark can also be used as an analytics backend for other HMI applications. A complete set of published API’s enables developers to integrate all of SkySpark’s functionality with third party applications providing them the ability to embed sophisticated analytics capabilities in their own presentation environment.

And, SkySpark is sold as licensed software – install it on a local PC or server, or host it on your own cloud service. SkyFoundry never has your data – you’re in control.



Value Propositions

Identify the issues that matter to your customers, tenants, and operations staff – improve operational efficiency and effectiveness.

Turn operational data into actionable issues easily and efficiently – eliminate data overload.

Turn your domain knowledge into a valuable library of analytics – build your business and organizational intelligence – create new value and enhance services offerings

Provide an automatic, ever present, virtual expert constantly watching the operation of your facilities – respond quickly and knowledgeably when issues occur.

Find What Matters!



About SkyFoundry

SkyFoundry's mission is to provide software solutions for the age of "the Internet of things". Areas of focus include:

- Building automation and facility management
- Energy management, utility data analytics
- Remote device and equipment monitoring
- Asset management

SkyFoundry products help customers derive value from their investments in smart systems.

www.skyfoundry.com

