

SkyFoundry Insider

- Swivel - SkySpark's revolutionary new tool for visualizing, analyzing and presenting equipment data and Sparks
- Dates announced for SkyPosium 2018 in the US and EU
- The All-New SkySpark Apps (v3.0.15)

The word "SWIVEL" is written in a large, bold, blue, sans-serif font. The letters are slightly irregular and have a hand-drawn feel. The 'i' has a small dot above it. The 'W' is composed of two 'V' shapes. The 'L' is a simple vertical line with a horizontal base. The text is centered on a white background.

SkyFoundry is excited to introduce what we believe is one of the most powerful data analytics tools ever developed – Swivel – a new concept that allows you to slice and dice your data AND analytic results in virtually any way you want – **with absolutely no programming required.**

In this issue of the Insider we provide an overview of this powerful new data analytics tool. *But to really experience it you need to see a demo or work with it yourself.*

Swivel – Your Data... Your Way

SkySpark's revolutionary new tool for visualizing, analyzing and presenting equipment system data and Spark's - analytic findings

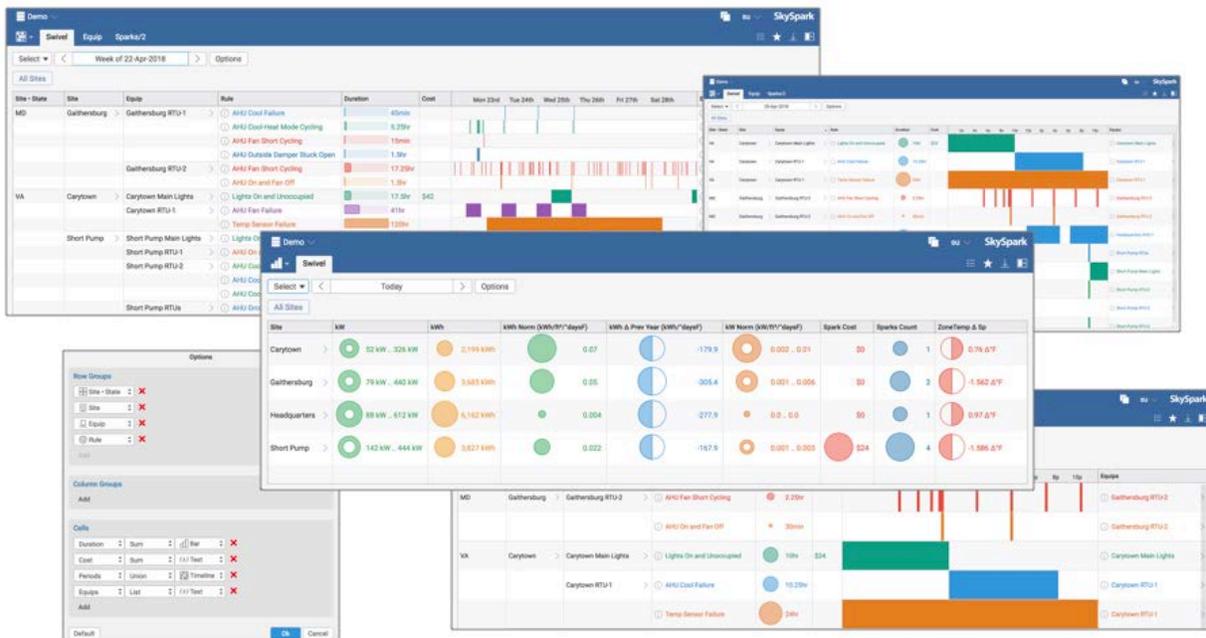
Finding patterns and transforming data may be the technological core of the SkySpark analytics platform, but to make results useful we need to present findings in visualizations that make it easy for operators to understand and act on them. Flexibility and simplicity is key to making views effective – if it's too hard, or the tools are too limited, users can't achieve the desired results.

From its earliest days, SkySpark has been designed to **automatically** generate rich, intuitive visualizations to show operators analytic findings, trends, correlations and relationships without the conventional approach of requiring assembly of graphical displays. Most recently we introduced View Builder a feature that provides users with a “point-and-click” tool to create custom views that combine multiple views into Apps, reports and views. (Find details on View Builder here: <https://skyfoundry.com/file/263/SkyFoundry-Insider-Sept-2017---View-Builder---A-Special-Issue.pdf>)

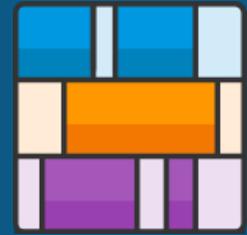
With the latest release of SkySpark (v3.0.15) we add the ability to modify the presentation of the standard SkySpark Apps with no programming required.

SWIVEL

Swivel is a feature built in to the new Spark App, KPI App and Energy App that takes the power of SkySpark's automatic Apps to a new level by allowing you to easily modify the analysis and presentation of data to fit your needs.

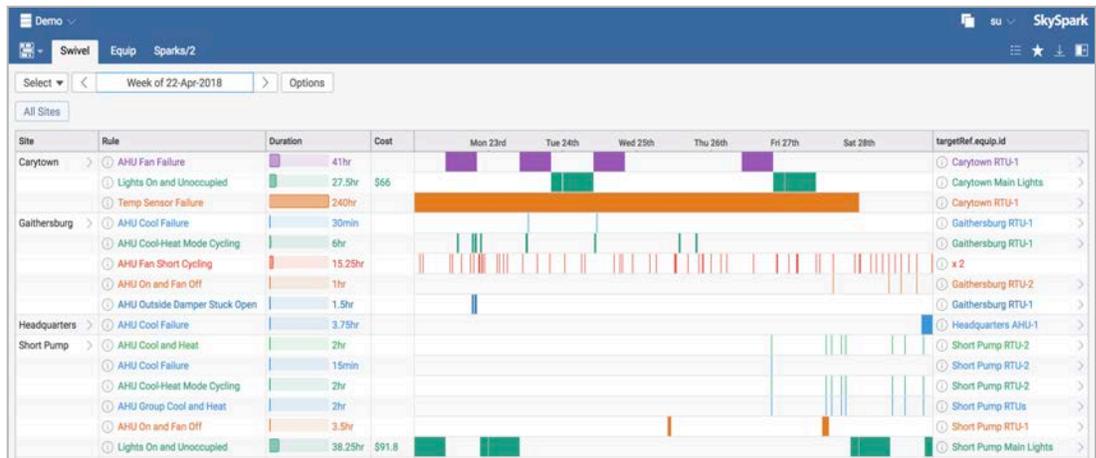


Swivel Your Sparks



The App that presents “Sparks” – your analytic results – is considered the focal point of SkySpark for most users. That App has always provided users with clear, intuitive views of analytic findings. The new Swivel tool now allows users to quickly modify the presentation of Sparks and their attributes (meta data). Let’s walk through a simple example:

The default view shows us the key attributes of our Sparks: Site, Rule, Duration, Cost and “sparklines” that show the exact pattern found in the data →

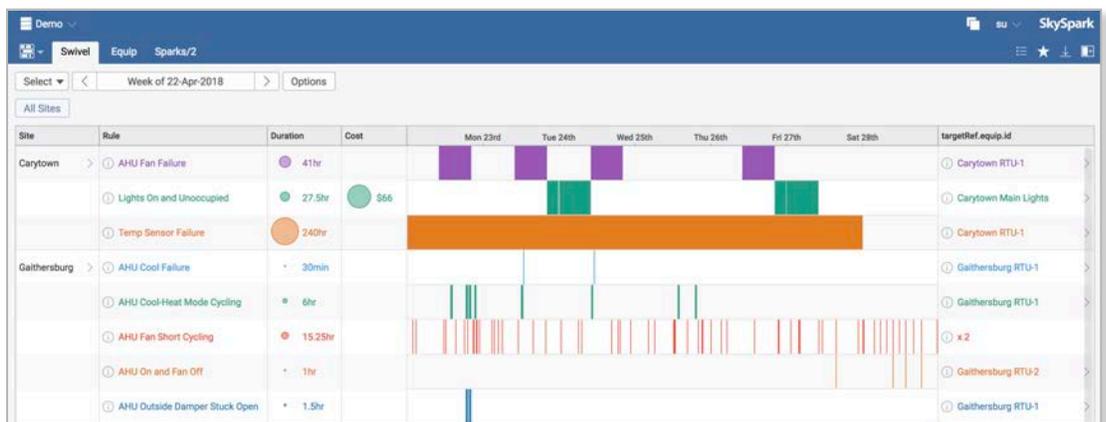


Cells

Duration	Sum	<input type="radio"/> Bubble	✕
Cost	Sum	<input type="radio"/> Bubble	✕
Periods	Union	<input type="radio"/> Timeline	✕
Equips	List	<input type="radio"/> (x) Text	✕

Add

But let’s say I want to show duration and [other attributes] in a different graphical format. With a simple click on “Options” I can choose different display options. In this case I will show **Duration** and **Cost** as “bubbles”. (Options include bubble, bar timelines and text)



But wait there’s more... (Con’t on next page)

SWIVEL Your Sparks

Con't from page 2

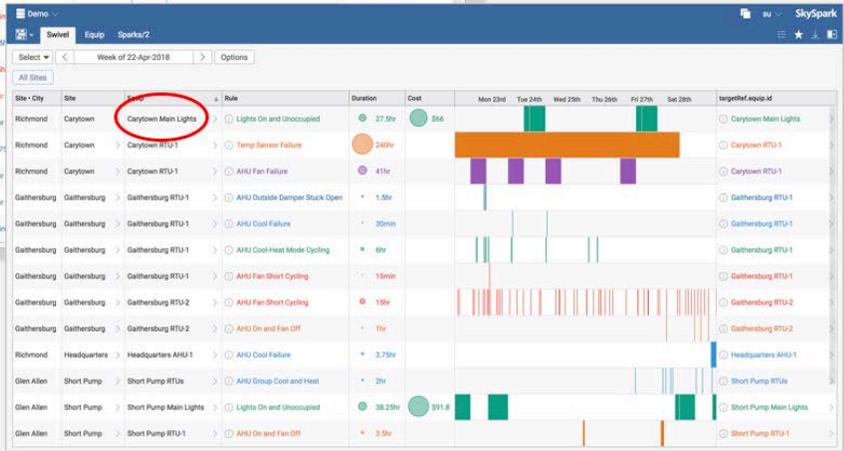
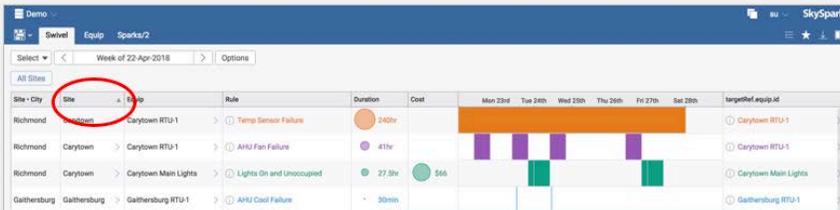
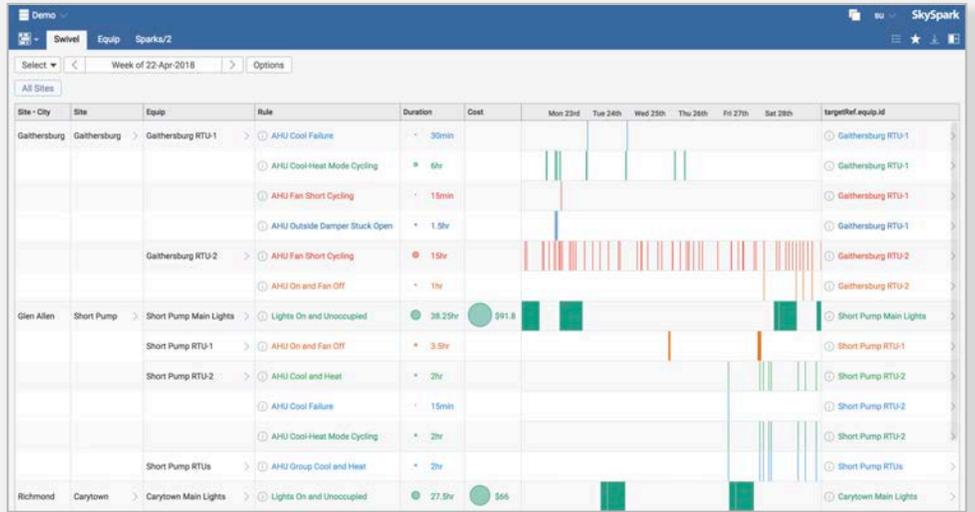
Row Groups

Site • City
 Site
 Equip
 Rule
 Add

AND all of the columns allow for easy sorting by simply clicking on a column name.

And any Swivel-based view can be directly used in customized View Builder views with no coding!

Now let's say I want to organize the Sparks based on different attributes. In this case I will **group** my Sparks first by City, then Site, then Equip and finally by Rule:



The new swivel-based Apps are completely scalable SVG graphics. Just pick them from a list to build a view that includes a combination of SkySpark Apps! See page 7 for an example of a multi-tiled View Builder view.

Swivel Data Across Distributed Systems

In 2017 SkyFoundry released the SkySpark Everywhere distributed architecture allowing SkySpark nodes to be deployed across multiple servers – large and small. All of the new Swivel-enabled Apps are fully “**cluster aware**” meaning that you can seamlessly navigate and view results across highly distributed systems of multiple SkySpark nodes and projects.

And remember the entire SkySpark feature set - including Swivel and View Builder - runs in small, low cost IoT devices, PC's, servers and cloud-hosted platforms. SkySpark provides a completely unified platform from the edge to the cloud.

Now with **Swivel** you can easily combine data from across clusters into views with a couple of clicks.



In this architecture SkySpark is installed on small “edge computing” platforms (IoT gateways and OEM controller products) that directly control, manage and analyze data from equipment systems, smart devices or sensors. Every node can provide local user access to all of the capabilities and Apps of SkySpark.

- All Sites +
- Carytown +
- Chevy Chase +
- Fairhill +
- Gaithersburg +
- Headquarters +
- Rittenhouse +
- Short Pump +
- Woodly Park +

In the view below we compare Spark activity across a distributed system viewed as a table of bar charts showing duration of each Spark

Rule	AHU Cool and Econ	AHU Cool and Heat	AHU Cool Failure	AHU Cool-Heat Mode Cycling	AHU Fan Failure	AHU Fan Short Cycling	AHU Group Cool and Heat	AHU Heat and Econ	AHU On and Fan Off
AHU Cool and Econ	2.25hr								
AHU Cool and Heat		10.75hr							
AHU Cool Failure			99.25hr						
AHU Cool-Heat Mode Cycling				33.5hr					
AHU Fan Failure					184.5hr				
AHU Fan Short Cycling						149.5hr			
AHU Group Cool and Heat							10.75hr		
AHU Heat and Econ								30min	
AHU On and Fan Off									15.5



Your Energy Data Too !



New Energy App

Swivel is a key feature of the new Energy App as well. First, let's take a look at the all-new Energy App.

Tariff data (shown as bars) can now be combined with consumption and demand data (shown as lines) for clear insight into cost impacts of energy use and load profiles →

The **Swivel** feature allows for custom grouping and navigation and choice of charting (bubble, bar, or text) →

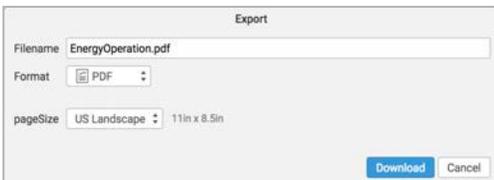
All of the Energy App views now use the latest visualization features and widgets and are fully **"cluster aware"** providing a seamless experience across highly distributed systems. →

Split screen



Split Screen and responsive auto-scaling **SVG** graphics allows for easy combination of views with a click →

And every view can be quickly exported as a PDF report along with other formats:



Options

Row Groups

- Site - State
- Site - City
- Site

Column Groups

Cells

Elec Power

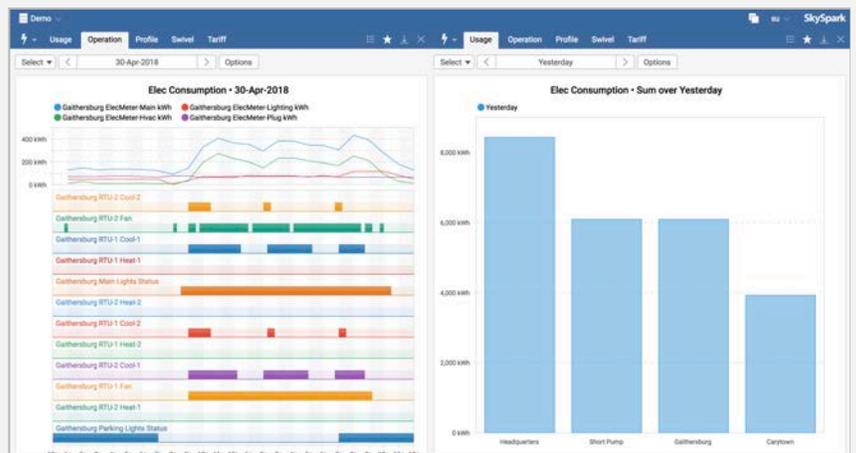
Sum

Bar

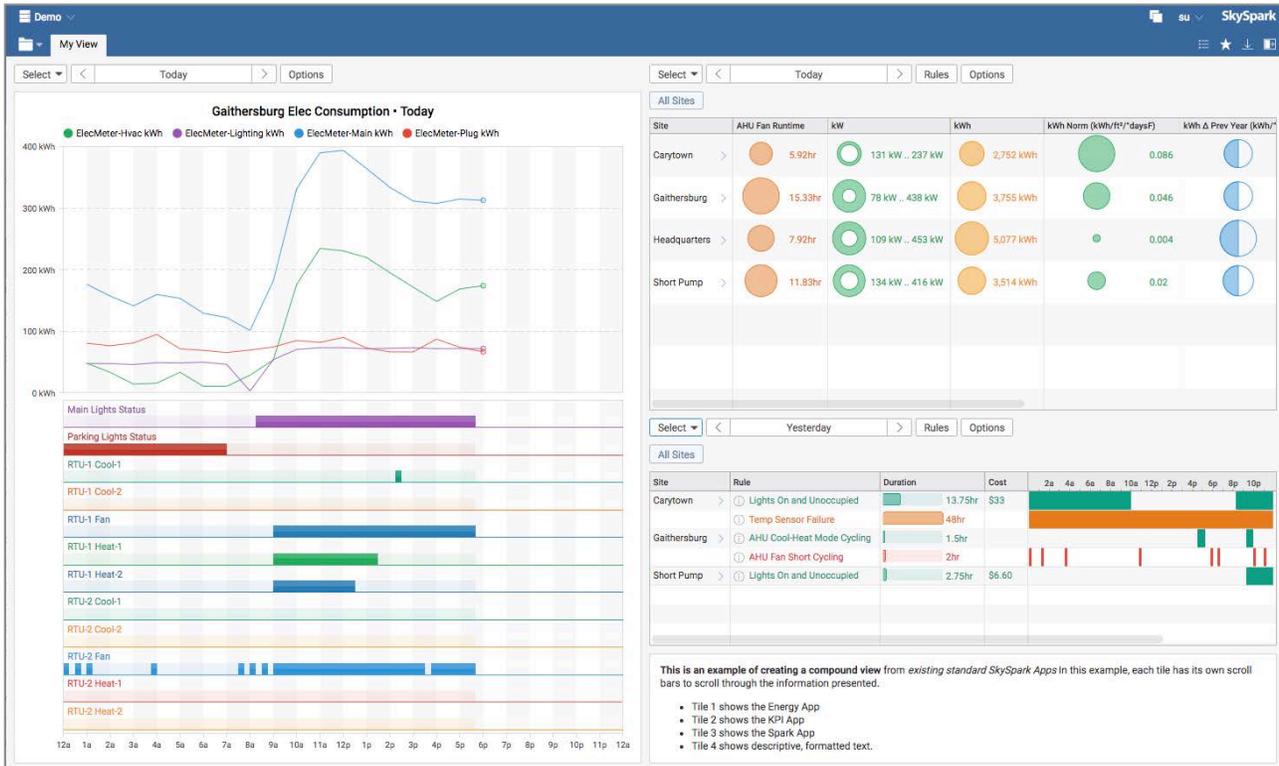
Default

Ok Cancel

Site - State	Site - City	Site	Elec Power
MD	Gaithersburg	Gaithersburg	472 kW
VA	Glen Allen	Short Pump	444 kW
	Richmond	Carytown	326 kW
		Headquarters	612 kW



New Apps and Swivel Functionality Fully Integrated with View Builder



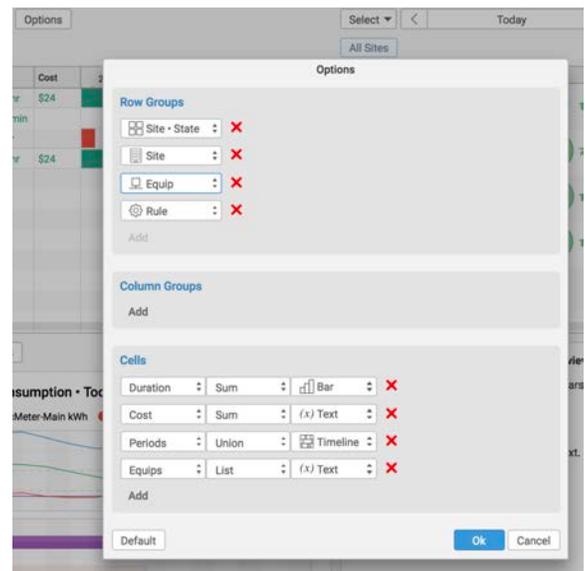
All of the new SkySpark Apps (available in version 3.0.15) and Swivel features are fully integrated with **View Builder**, SkySpark's tool that allows easy point-and-click creation of custom Apps, Views and Reports.

The image above shows a 4 Tile view displaying:

- The Energy App
- The KPI App
- The Spark App,
- and a Tile with descriptive, formatted Text.

And all of the **Swivel** options are available in each Tile view for easy customization as shown to the right →

With **View Builder**, the **all-new SkySpark Apps**, and **Swivel**, it's never been easier to create custom, fully interactive, visualizations of your equipment system data and analytic results.



SkyPosium

2018 | The Worldwide SkyFoundry Community Event

In 2017 we launched the very first “**SkyPosium**” Community Event for the SkyFoundry community. The 2017 event was a resounding success and is back by popular demand for 2018. **And we are bringing SkyPosium to Europe as well.**

SkyPosium is designed for the entire community of SkySpark users—our reseller partners, end users, engineering consultants, and SaaS providers — everyone that uses or applies SkySpark.

The US event is scheduled for Nov 13-14 in Denver CO. The EU event will be held Oct 2-3 in Amsterdam.

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.



In addition, a vendor showcase will provide attendees with the opportunity to meet with companies that offer complementary products and services to the SkyFoundry community.

Registration and the Call for Presenters is open! Find full details here on both events on the SkyPosium website: <https://skyfoundryevents.com/>

A promotional banner for SkyFoundry Events. The background is a blue-tinted image of a modern building's glass facade. At the top, the text "SkyFoundry Events" is written in white, with the tagline "Where you can meet, share ideas, learn, network and so much more!" below it. Two event cards are displayed side-by-side. The left card is yellow and labeled "USA" in a black box. It features the "SkyPosium 2018" logo and text: "The Worldwide SkyFoundry Community Event", "For All SkyFoundry Partners and Users", the SkySpark logo, and "November 13-14, 2018 | Denver Colorado, USA". The right card is light blue and labeled "EUROPE" in a black box. It features the "SkyPosium-EU 2018" logo and text: "The Worldwide SkyFoundry Community Event", "For All SkyFoundry Partners and Users", the SkySpark logo, and "October 2-3, 2018 | Amsterdam, The Netherlands".

SkySpark® – Creating Value from Device Data

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

Access to this data opens up new opportunities for the creation of value-added services to reduce energy consumption and cost and to identify opportunities to enhance overall facility operations.

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. *SkySpark directly addresses this challenge.*

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

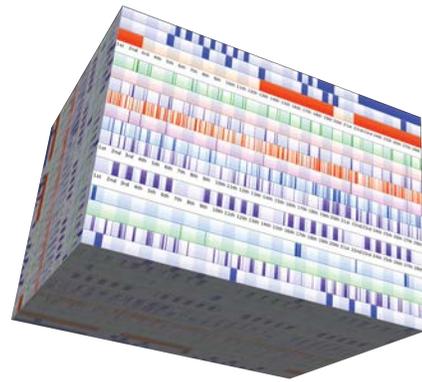
Your Data...

SkyFoundry never has your data

Your Way...

View analyze, present and report data in myriad ways with SkySpark's ready-to-go Apps and View Builder tools

You're in control with SkySpark



See SkyFoundry at these upcoming events in 2018...

IBCon/Realcomm, June 5-8, Las Vegas: <https://skyfoundry.com/forum/topic/3396>

SkyPosium Europe: October 2-3, Amsterdam, The Netherlands: <https://skyfoundryevents.com/>

SkyPosium North America: November 13- 14, Denver CO, USA: <https://skyfoundryevents.com/>

Energy Exchange, August 21-23, Cleveland OH: <https://skyfoundry.com/forum/topic/3593>



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"Find What Matters"™