



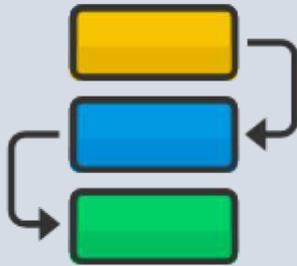
SkyFoundry Insider

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Closing the Loop from Identification to Resolution

Driving Value from Analytics with SkySpark’s All New, Fully Integrated Workflow Application

Analytics *Finds What Matters™*, but we create financial value by addressing issues. That means there is a workflow process – from issue identification, through resolution, tracking and reporting.

SkySpark has included a core set of easy-to-use workflow tools since the beginning... But people need more...

Some integrate with conventional CMMS and work order systems. They find that gets them part of the way – but its costly and complex.

Our customers tell us they need the ability to easily create workflows that fit their specific and unique project needs and **SkySpark now includes a full function workflow process system!**

Optimized for the management of data analytics results – these features take you beyond conventional asset management and workorder tools. And, as with virtually everything in SkySpark, these powerful workflow tools are fully customizable enabling you to meet your project-specific needs.

And the pricing for this major new application suite? – That’s easy - all of this functionality is included with SkySpark. **Let’s take a look! →**

Managing the Analytic Lifecycle with “arcs”

Think of the analytic lifecycle as a story – *the “arc of the story” takes us from initial issue identification to final resolution.* That’s the concept behind SkySpark’s new workflow application.

SkySpark’s new workflow features are built on a concept known as “**compound documents**” – *documents that can include text, actions, comments, state transitions, assignments, schedules, links to attachments and more.*

The Workflow system starts with three basic types of workflow documents – extensible by the user of course!

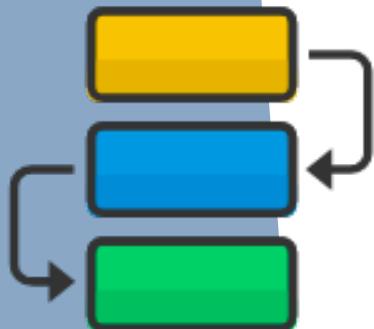
- **Notes.** A Note provides operators a method to add written documentation to issues detected by analytics, as well as add documentation to equipment system and device records. Notes are simple documents with no associated workflow steps. Notes can have attachments, and support discussion trails among users.
- **Workorders.** Workorders include all of the features of notes but additionally define a specific workflow process. They are designed for maintenance and other physical activities. Workorders include the concept of state transitions to support their status in the lifecycle workflow process.
- **Tickets.** Tickets are tailored to workflows applicable to software support type activities. Like Workorders, Tickets include the concept of state transitions, assignments and schedules to support the lifecycle process.

Those are the basics – next we will go into greater detail.
Continued on next page→



SkySpark Workflow Documents Provide:

- Full integration with SkySpark’s distributed computing architecture - clustering, replication, and SkySpark views
- Customizable workflow management – use our standard library of workflows or easily create your own
- Integrated file attachments – including external file systems Dropbox™ and Google Docs™
- Links to spark views, data, equipment or devices relevant to the Workorder



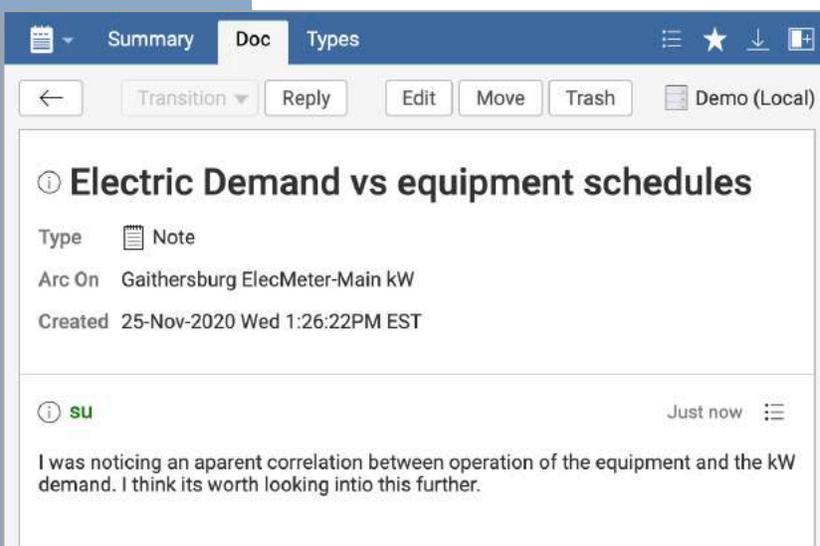
The Structure of SkySpark's Workflow Documents

SkySpark's workflow system is based on a concept known as **compound documents** that can include notes, actions, comments, state transitions, assignments, schedules, links to attachments and more. These attributes directly relate to the processes, actions and responsibilities involved in taking sparks through their lifecycle.

Notes

A Note provides operators a method to add written documentation to issues detected by analytics, as well as add documentation to equipment system and device records. Notes are simple documents with no associated workflow steps.

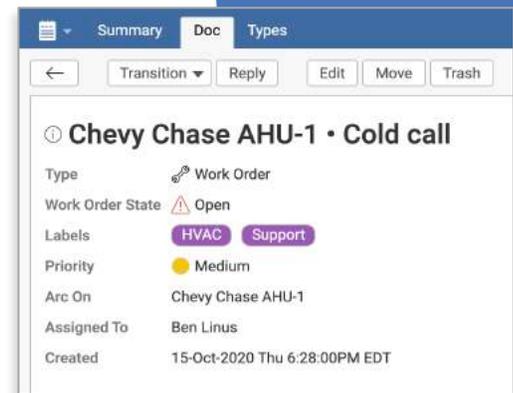
- **Display name** – a text field providing a description of the Note
- **Creation time**
- **Created by**
- Formattable text for body of note
- **Replies** with identification of the user providing the reply
- Ability to add attachments including attachments in replies
- **View link** – a link to a view of data, equipment or devices relevant to the Note
- **Attachments** to supporting documents



Workorders

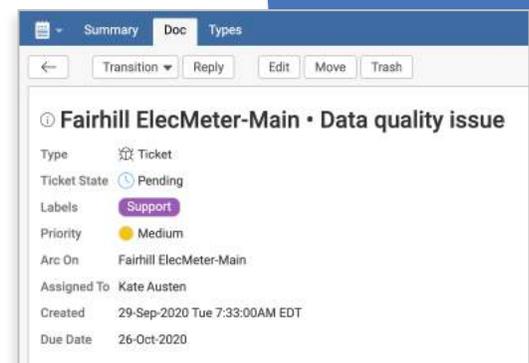
Workorders include all of the features of Notes and additionally define a specific workflow process, including assignments, schedules and other attributes as shown below. They are designed for maintenance and other physical activities. Workorders include the concept of state transitions to support their status in the lifecycle workflow process.

- Display name – a text field providing a description of the Workorder
- Creation time
- Created by
- Formattable text for the body of the Workorder
- Replies with identification of the user providing the reply
- Ability to add attachments including attachments in replies
- View link – a link to a view of data, equipment or devices relevant to the Workorder
- Workorder State; i.e., New, Open, Resolved, Cancelled – note that these can be extended and customized.
- Priority Level with Critical, High, Medium and Low as minimum selections
- Subject of the Workorder (i.e., equipment, device or sensor)
- Assignee – a person
- Due Date
- Labels including the following as a minimum: Breakdown, Damage, Electrical, HVAC, Inspection, Maintenance, Plumbing, Safety, Support, Wish list. The system shall allow for the creation of custom labels beyond the minimum required labels.



Tickets

- Display name – a text field description of the Ticket
- Creation time
- Created by
- Formattable text for body of Ticket
- Replies with identification of the user providing the reply
- Ability to add attachments including attachments in replies
- View link – a link to a view of data, equipment or devices relevant to the Ticket
- Ticket State; New, Open, Resolved, Cancelled. Allows for the creation of custom states.
- Priority Level with Critical, High, Medium and Low as a minimum
- Subject of the Ticket (i.e., equipment, device or sensor)
- Assignee – a person
- Due Date
- Labels, for example: Bug, Enhancement, Maintenance,



The Arc App – Quick and Easy Creation, Assignment, Viewing, Filtering, Updating, and Lifecycle Management of Arc Workflows



The “Arc” App is where all the power and flexibility of the SkySpark workflow system come together for the user.

The application provides a graphical, point and click user interface for the entire workflow process including the creation of arc documents, assignment to users, management of their status and control of state transitions as well as viewing, filtering, reporting and sharing among users.

And all of these features are full integrated with SkySpark’s highly flexible user access privilege system.

Type	Ticket State	Labels	Priority	Arc On	Assigned To	Created
Work Order	New	HVAC, Plumbing	Medium	Carytown RTU-1		30-Sep-2020
Work Order	Reached	Breakdown, Critical	High	Carytown RTU-1	su	25-Oct-2020 2:40p
Work Order	Reached	HVAC, Support	Medium	Carytown RTU-1	Ben Linus	3-Oct-2020 22:0k
Work Order	New	HVAC, Safety	Critical	Carytown RTU-1		17-Oct-2020
Work Order	New	HVAC, Inspection	Medium	Carytown RTU-1		27-Oct-2020
Work Order	Resolved	HVAC	Medium	Carytown RTU-1	Kate Austen	4-Nov-2020
Work Order	Pending	HVAC	Medium	Carytown RTU-1	su	10-Nov-2020 14:4k
Work Order	Cancelled	HVAC, Inspection	Medium	Chevy Chase AHU-1 MixedTemp	Kate Austen	19-Nov-2020 16:0k
Work Order	New	HVAC, Inspection	Medium	Chevy Chase AHU-1 ZoneTemp		28-Sep-2020
Work Order	Open	HVAC, Support	Medium	Chevy Chase AHU-1	Ben Linus	15-Oct-2020
Work Order	New	HVAC, Support	Medium	Chevy Chase AHU-1		7-Oct-2020
Work Order	New	HVAC, Safety	Medium	Chevy Chase AHU-1		4-Nov-2020
Work Order	Cancelled	HVAC, Support	Medium	Chevy Chase AHU-1		19-Nov-2020
Work Order	Cancelled	HVAC, Support	Medium	Chevy Chase AHU-1	Kate Austen	3-Oct-2020 8:00k
Work Order	New	HVAC, Safety	Critical	Chevy Chase AHU-1	su	4-Oct-2020 21:0k
Work Order	Cancelled	HVAC, Safety	Critical	Chevy Chase AHU-1	Kate Austen	11-Oct-2020
Work Order	Cancelled	HVAC, Safety	Critical	Chevy Chase AHU-1	Kate Austen	28-Oct-2020 20:4k
Work Order	Open	Insulation, Critical	High	Chevy Chase AHU-1	Ben Linus	24-Sep-2020 30:0k

Edit

Display: Chevy Chase AHU-1 - Inadequate ventilation

Type: Work Order

Labels: HVAC, Safety

Priority: Critical

State: New

Arc On: Chevy Chase AHU-1

Assigned To: null

Due Date: Nov 25, 2020

Labels to select from: Breakdown, Damage, Electrical, HVAC, Inspection, Maintenance, Plumbing, Safety, Support, Wash

Filter

Type: Any

State: Enum

Labels: Any

Priority: Enum

Arc On: Under null

Assigned To: Equals null

Created: Before Nov 25, 2020

Due Date: Before Nov 25, 2020

Filter arcs on any or all attributes

Attachments and Integration with Standard File Systems

The Workflow application provides the ability to attach files to Notes, Workorders and Tickets and includes the ability to work with file attachments stored on external file systems including **Dropbox™** and **Google Docs™**.

This means there is virtually no limit on the size of number of files that can be used as attachments a key benefit when using the Workflow features with small edge nodes that may have limited onboard storage!



Customization of Workflow Documents

This is where the extensibility and flexibility of the SkySpark Workflow engine really comes into play. The structure and attributes of Workflow Documents are fully customizable to allow creation of customized Notes, Workorders, Tickets with their own workflow process, state transitions, user permissions and other relevant attributes.

SkySpark provides a default set of standard document types (the Notes, Tickets, & Workorders described in this newsletter) that fit most applications **without requiring any additional effort**, but you always have the ability to extend and enhance your workflows to meet the exact needs of your application.

SkySpark's Arc workflow system provides users with a fully integrated solution to managing analytic results – from identification to resolution.



 **Ticket**

Ticket tracks a software or help case

Tags

- Dis: ⓘ Display name for an entity
- Ticket State: ⓘ Workflow state for a ticket
- Priority: ⓘ Priority level of the document
- Arc On: ⓘ Subject of the document
- Assigned To: ⓘ Person who is currently responsible for the workflow task
- Created: ⓘ The timestamp of when an entity was created
- Due Date: ⓘ Date expected for completion of the workflow task
- Link: ⓘ View name and state for linking to a saved view

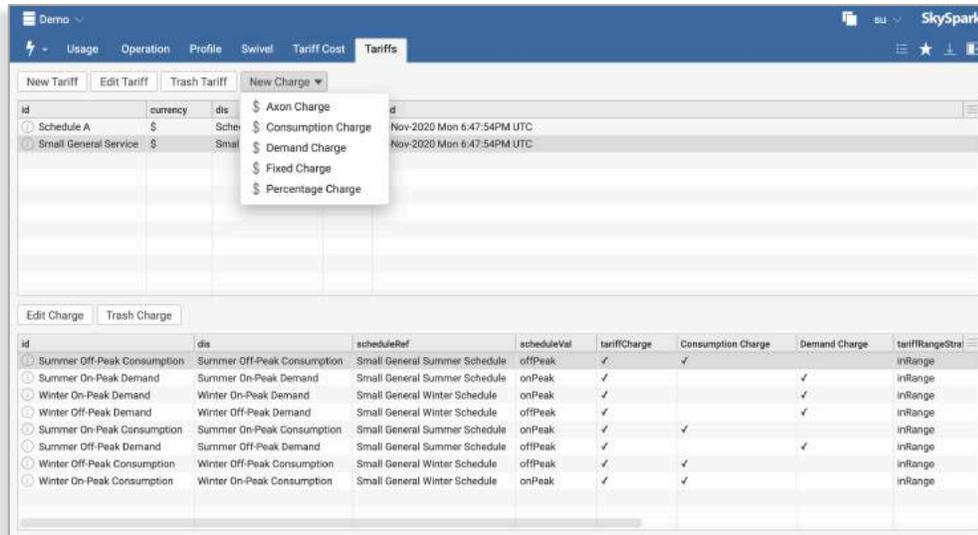
Labels

- Bug ⓘ Software defect causing improper behavior
- Enhancement ⓘ Software request to add new functionality
- Maintenance ⓘ Preventative or scheduled maintenance task
- Support ⓘ Assistance required
- Wish ⓘ Wish list for future enhancement

More Exciting New SkySpark Features – Point and Click Tariff Entry!!



The newest addition to the SkySpark Energy Suite is a view that allows users to easily create new energy tariff rates and define all of their associated charges.



In order to address the need to calculate energy costs based on real world, complex energy rates SkySpark includes a Rate Modeler and Tariff Engine. This capability allows you to calculate the actual costs associated with electrical energy (and other metered resources) and apply those costs to analytic results – “sparks” - identified by SkySpark rules.

This new addition to the Energy App makes it easy to define rates and their charges – *with no programming required!* One very cool feature of the new Tariff View is that it is available to operators to view the structure of the tariffs which is really helpful for energy analysts.

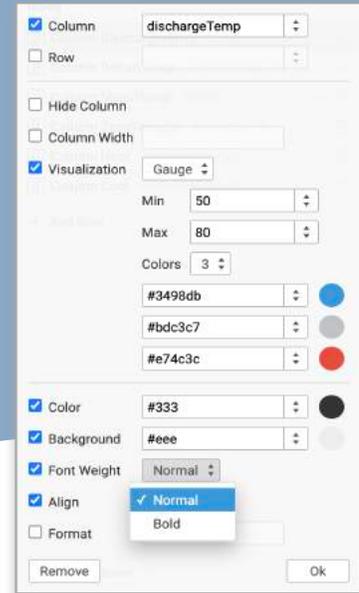
SkySpark’s Rate Modeler and Tariff Engine have been tested with rates from around the world and is extremely flexible to address unique charges and structures. And, it supports rates where charges change over time by tracking charges as a history record and can also be used in conjunction with SkySpark’s scheduling features to create schedule-aware tariffs that take into account Time of Day, and Monthly and seasonal tariff elements.

In addition, SkySpark’s open API allows for direct integration with Tariff Rate services and databases offered by third party providers.



Just Point and Click – SkySpark Tables are Now Customizable!

Easily create customized tabular information presentations to meet user needs



Tables Now Offer a Wide Range of Customization Options

With SkySpark’s latest release you can now easily customize the presentation of tabular information views. Tables are customized using simple “styling rules” that are defined with a few mouse clicks (see image above right).

The table customization features allow you to control text and background colors, use bold text, fill cells, columns and rows with colors, define column widths **AND** choose from a range of graphical display widgets. And, tables export to pdf documents with all of their customizations.

Use Visualization Widgets in Tables

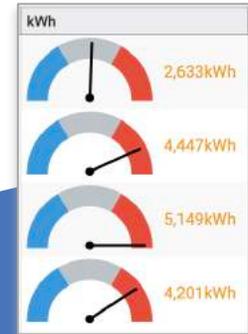
Select from bubbles, gauges, bars, and heat maps (with selectable colors and number of color transitions)

Here is a great example – customizing the presentation of the **Monitor App** provides a super easy way to view **real time** data flowing from sensors and equipment.

ID	Cool	Cool1	Cool2	DischargePressure	DischargeTemp	Fan	Heat	Heat1	Heat2	ReturnTemp	ZoneTemp	ZoneT2	
Carpool RTU-1		On	On	1.956H ₂ O	79.02°F	Off		Off	On	7.344%	68.72°F	79.21°F	73°F
Gatthersburg RTU-1		On	On	0.318H ₂ O	79.78°F	Off		On	On	43.73%	50.37°F	79.54°F	73°F
Gatthersburg RTU-2		Off	On	1.961H ₂ O	75.33°F	Off		Off	Off	0.599%	79.89°F	79.33°F	73°F
Headquarters AHU-1		On	On	0.105H ₂ O	71.76°F	Off		Off	Off	52.87%	52.66°F	67.98°F	72°F
Short Pump RTU-1		On	Off	1.326H ₂ O	78.93°F	On		On	On	40.45%	80.0°F	79.89°F	73°F
Short Pump RTU-2	17.4%			1.288H ₂ O	73.06°F	On	71.01%			87.6%	79.77°F	70.0°F	73°F

Customize Tables in SkySpark Apps and Tables Generated from Custom Queries

SkySpark’s new table customization features work in virtually all tabular presentations in the product. Want your KPI’s to display as gauges with selectable colors and transitions? It’s easy with just a couple of clicks.



Customizing Tables Generated from Axon Queries

This example, from the Tools App shows a query for the list of Sites modified to show:

- The Site ID Name in bold type with a grey background
- The cell showing the Carytown Area tag displayed with white text on a red background
- The first row of the table highlighted with a green background
- The column showing the name of the city displayed with purple text

id	area	dis	geoAddr	geoCity	geoCountry	geoPostalCode	geoState	geoStreet	occupiedEnd	occupiedStart	primaryFunction	weatherStationRef	yearBuilt
Headquarters	140,797ft²	Headquarters	600 W Main St, Richmond, VA	Richmond	US	23220	VA	600 W Main St	6:00PM	9:00AM	Office	Richmond, VA	1,969
Gaithersburg	8,013ft²	Gaithersburg	18212 Montgomery Village Ave, Gaithersburg, MD	Gaithersburg	US	20879	MD	18212 Montgomery Village Ave	9:00PM	9:00AM	Retail Store	Washington, DC	2,001
Carytown	3,149ft²	Carytown	3504 W Cary St, Richmond, VA	Richmond	US	23221	VA	3504 W Cary St	8:00PM	10:00AM	Retail Store	Richmond, VA	1,896
Short Pump	17,122ft²	Short Pump	11282 W Broad St, Richmond, VA	Glen Allen	US	23060	VA	11282 W Broad St	9:00PM	10:00AM	Retail Store	Richmond, VA	1,999

And when exported, the PDF document retains all of the customizations

id	area	dis	geoAddr	geoCity	geoCountry	geoPostalCode	geoState	geoStreet	occupiedEnd	occupiedStart	primaryFunction	weatherStationRef	yearBuilt
Headquarters	140,797ft²	Headquarters	600 W Main St, Richmond, VA	Richmond	US	23220	VA	600 W Main St	6:00PM	9:00AM	Office	Richmond, VA	1,969
Gaithersburg	8,013ft²	Gaithersburg	18212 Montgomery Village Ave, Gaithersburg, MD	Gaithersburg	US	20879	MD	18212 Montgomery Village Ave	9:00PM	9:00AM	Retail Store	Washington, DC	2,001
Carytown	3,149ft²	Carytown	3504 W Cary St, Richmond, VA	Richmond	US	23221	VA	3504 W Cary St	8:00PM	10:00AM	Retail Store	Richmond, VA	1,896
Short Pump	17,122ft²	Short Pump	11282 W Broad St, Richmond, VA	Glen Allen	US	23060	VA	11282 W Broad St	9:00PM	10:00AM	Retail Store	Richmond, VA	1,999

As you can see, the new table customization features dramatically expand the range of visualizations SkySpark offers to the user.



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.

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

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

Or contact us at: info@skyfoundry.com