

The logo for AWS re:Invent 2021. It features the text 'AWS' in a smaller font above 're:Invent' in a larger font. The background is dark blue with abstract geometric shapes in lighter blue and orange-red gradients. A thin orange line is visible on the left side.

AWS re:Invent

NOV. 29 – DEC. 3, 2021 | LAS VEGAS, NV

IOT317

Building digital twins using AWS services

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AWS

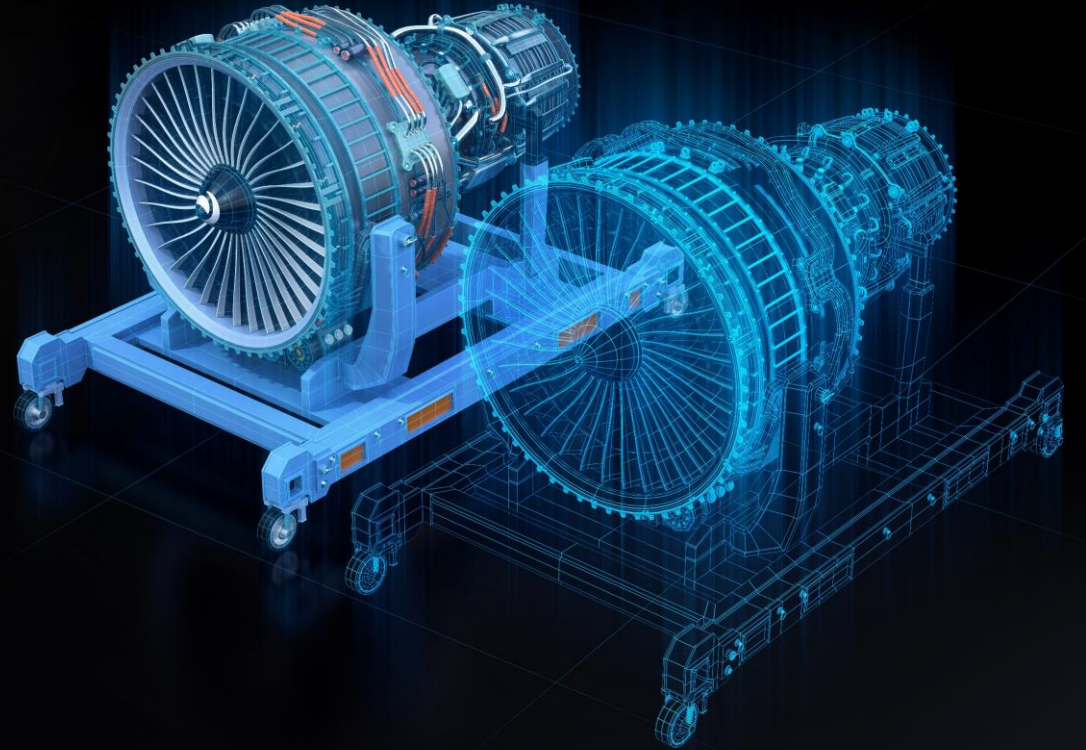


Agenda

1. What is a Digital Twin?
2. Demo
3. Overall Workflow
4. Steps to build Digital twin

What is a Digital Twin

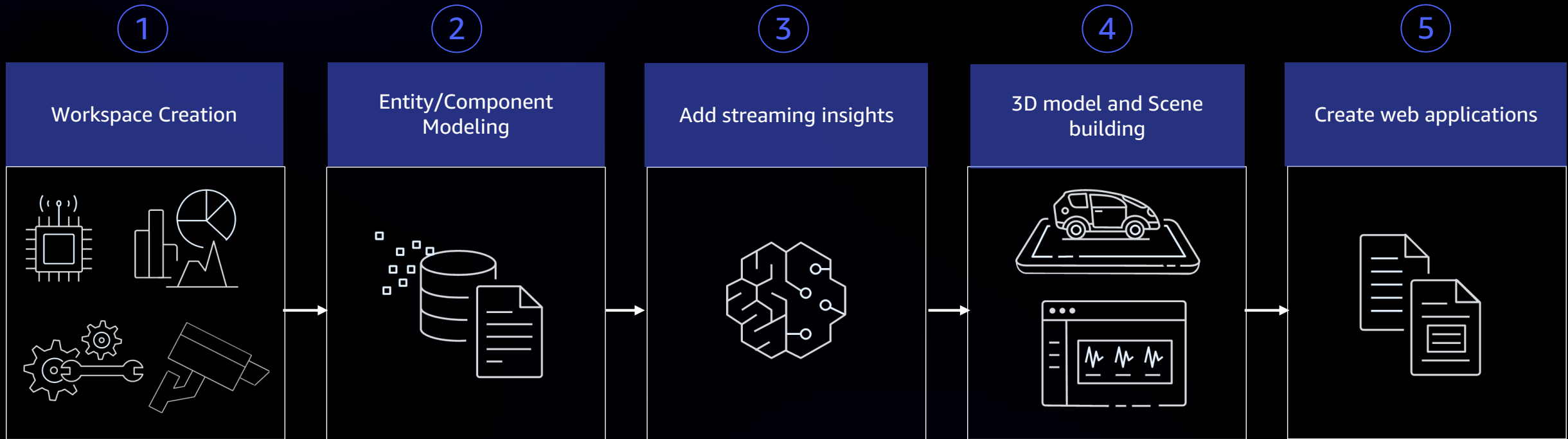
A living digital representation of a physical system that is dynamically updated with data to mimic the true structure, state and behavior of the physical system and used to drive business outcomes.



Common challenges

1. Model physical systems and express relationships between the parts
2. Bring together data from various sources without creating yet another data store
3. Add insights such as simulations using modeled data
4. Create compelling visualization using 3D
5. Publish web applications to use by operators

Workflow



Step 1: Workspace creation

Workspace holds all resources needed to create digital twins

- Model of your physical systems
- Connectors to data stores
- Streaming applications
- Resources: 2D/3D files, documents, etc.
- Tags

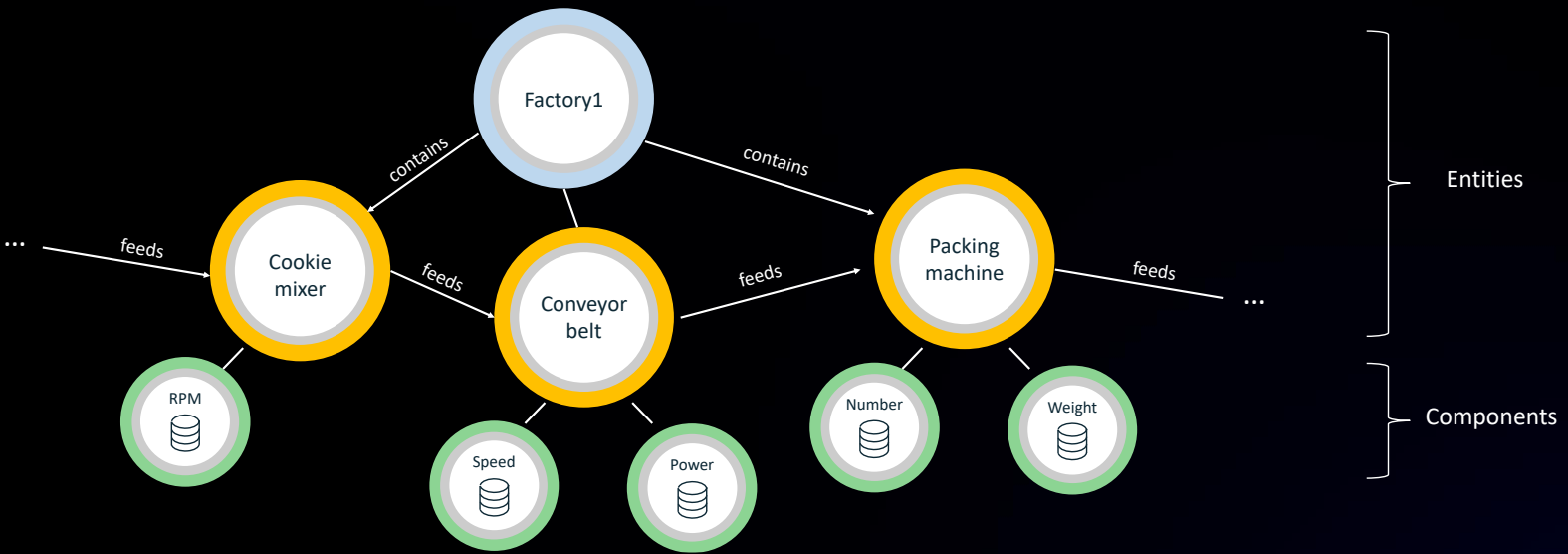
It can also serve as a security boundary



Step 2: Modeling

Models have entities and components

- Entities: digital representations of physical system
- Components: Connections to the data stores



Entities

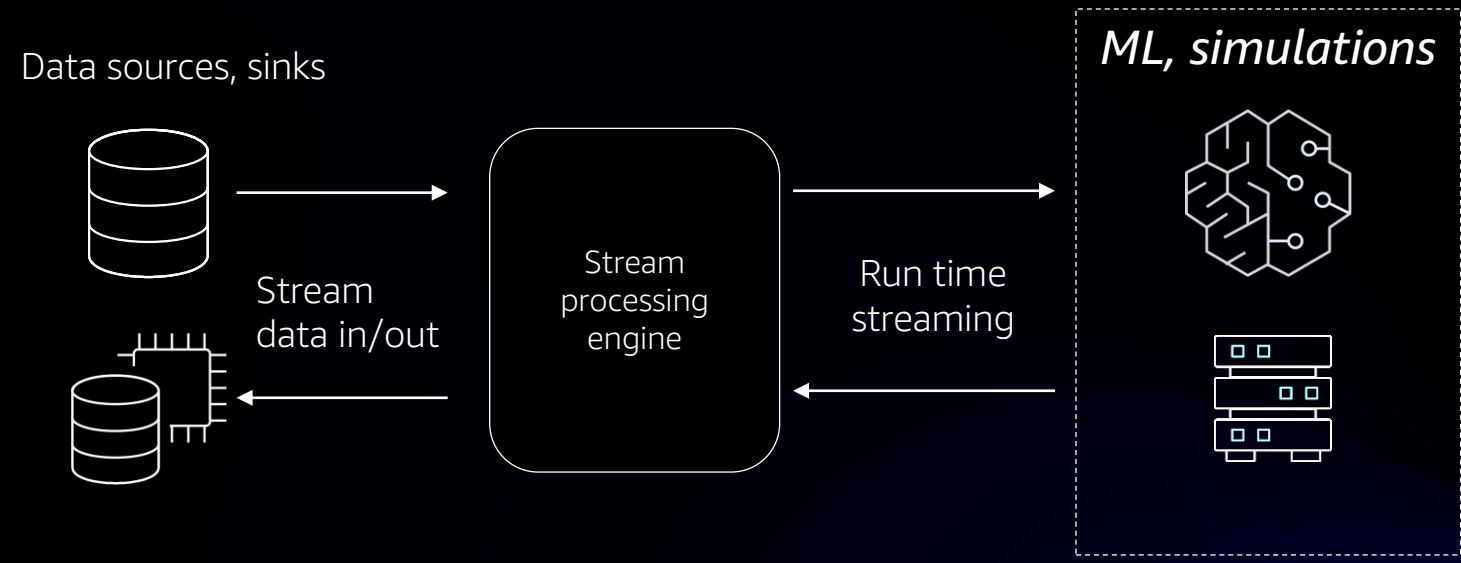
- Express custom relationships between entities
- Use components: Avoid building yet another data store
- Bring in schema from data stores as entity properties

Components

- Author your own components

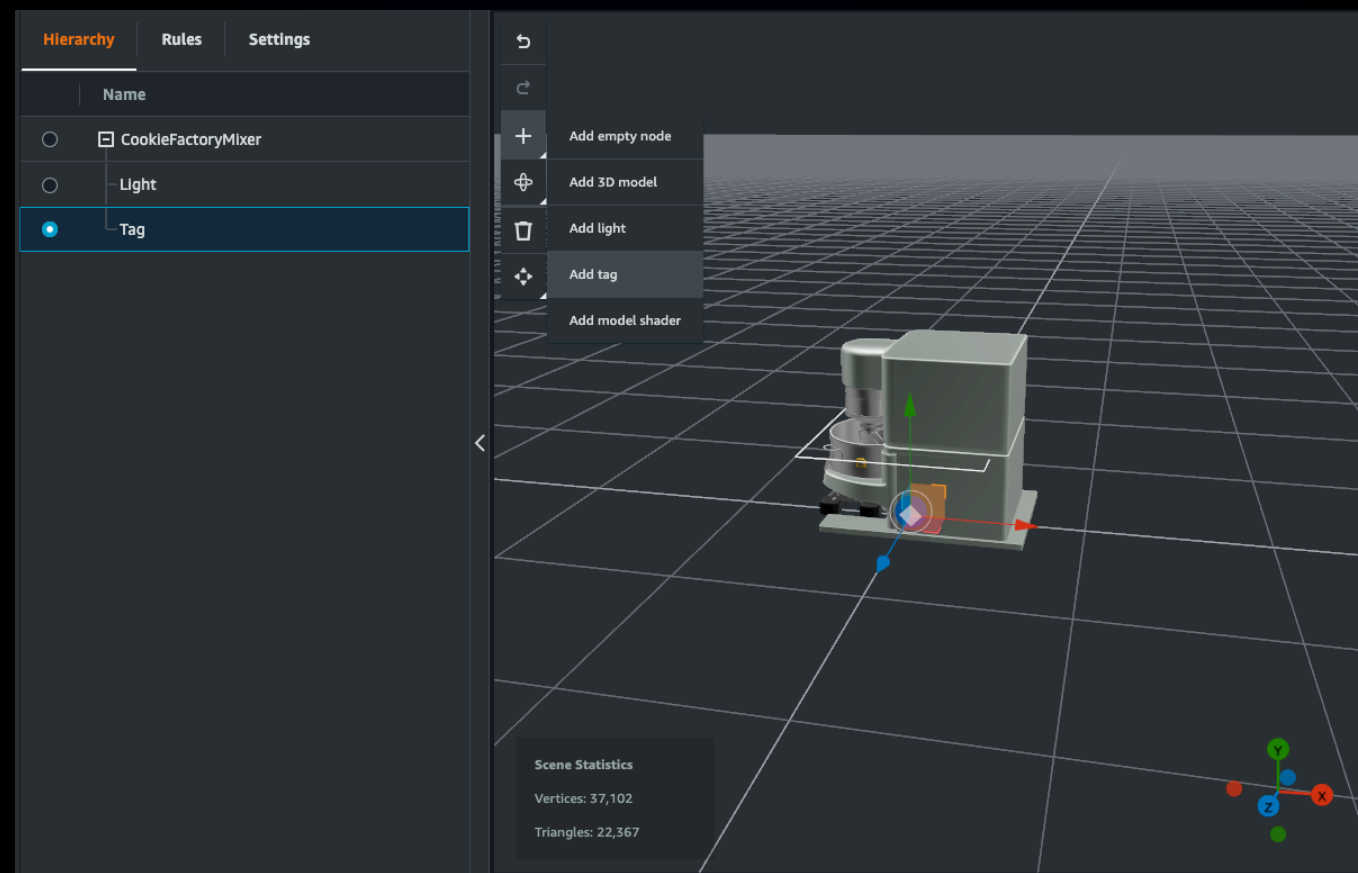
Step 3: Streaming insights

- Enrich your time series data
- Add insights using analytical engines (ML, simulations)
- Store the results back to your data store



Step 4: Create visual scenes

Scenes are visual representation of your physical system



Import 3D models via standard GLTF files

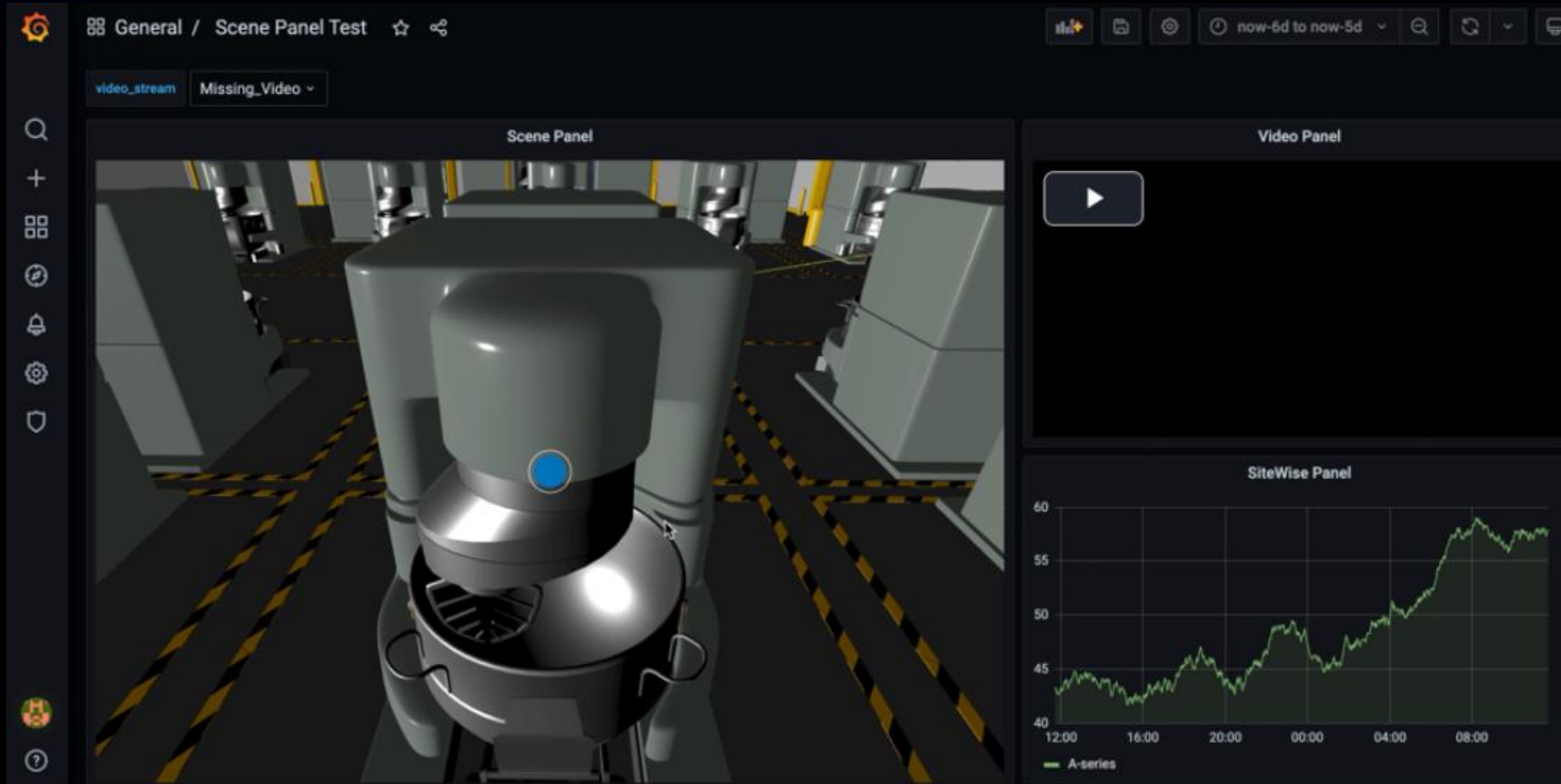
Place assets in a scene

Create bindings for dynamic instantiation, placement

Add data bound, interactive 'widgets'

Step 5: Create web applications

Create custom dashboards for your operators



Additional details

- [AWS IoT TwinMaker console](#)
- [Grafana dashboards](#)
- [Getting started sample scripts](#)

AWS IoT TwinMaker console



List workspaces

Workspace

Modeling

Insights

3D scenes

Web app

AWS IoT TwinMaker ×

Workspaces 1

- Component types
- Entities
- Resource library
- Scenes

AWS IoT TwinMaker > Workspaces

Workspaces Info

Workspaces are top-level containers for your digital twin applications. Activate a workspace to update it. 2

Available workspaces (1/2) Actions ▾ Create workspace

 < 1 > ⚙

ID ▾	ARN ▾	Created at ▾	Last modified ▾
<input type="radio"/> CookieFactory	arn:aws:lottwinmaker:us-e...	2021-11-16T23:08:26.823Z	2021-11-16T23:08:26.823Z
<input checked="" type="radio"/> CookieFactory1	arn:aws:lottwinmaker:us-e...	2021-11-19T20:28:46.467Z	2021-11-19T20:28:46.467Z

Create a new workspace

Workspace

Modeling

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Web app

AWS IoT TwinMaker ×

AWS IoT TwinMaker > Workspaces > Create a Workspace

Create a Workspace [Info](#)

Workspace Information

Name
CookieFactory2 **1**
Name must be alphanumeric, unique and fewer than 256 characters. It must start with a letter and contain no spaces.

Description - optional
Cookie Factory digital twin **2**
Description must be fewer than 256 characters.

S3 bucket
Select an S3 bucket from the list below. **3**
roci-s3bucket-0202b026-f23e-426c-9a01-7105b101873c

Execution Role
Select an IAM role with iottwinmaker trust permissions. IoT TwinMaker will use this role to access AWS services on your behalf. **4**
RociWorkspaceRole-065925d1ac3b467282af5305a44f6add

Tags
You can use tags to search and filter your resources and track your costs.

Key **Value - optional**

myTag1 × Org1 × [Remove](#)

[Add new tag](#)
You can add up to 49 more tags.

[Cancel](#) [Create Workspace](#)

List entities

Workspace

Modeling

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AWS IoT TwinMaker × AWS IoT TwinMaker > Workspace: CookieFactory1 > Entities

Entities Info

Entities represent assets in a workspace. Here you create entities, components, entity templates, and component types.

Entities for workspace "CookieFactory1" (105)

All entities are displayed by default. You can search, group and expand/collapse to customize your view.

Entities (9) Actions ▾ Create ▾ 2

Entity	EntityId
<input type="radio"/> <input type="checkbox"/> SiteWatchCameras	SiteWatchCa
<input type="radio"/> <input type="checkbox"/> Equipment	Equipment_
<input type="radio"/> <input type="checkbox"/> WaterTank	WaterTank_
<input type="radio"/> <input type="checkbox"/> <input type="checkbox"/> Mixers	Mixers_b1e0
<input type="radio"/> <input type="checkbox"/> <input type="checkbox"/> CookieLines	CookieLines
<input type="radio"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> COOKIE_LINE_1	COOKIE_LIN
<input type="radio"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> COOKIE_LINE_2	COOKIE_LIN
<input type="radio"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> COOKIE_LINE	COOKIE_LIN

Components (0) Actions ▾ Add component

Component	Connector	Status
No components. Select an entity to view available components		



Entity with components (Alarm component)

The screenshot displays the AWS IoT console interface. On the left, the 'Entities (9)' pane shows a list of entities. The 'WaterTank' entity is selected, indicated by a blue dot and a red circle labeled '1'. On the right, the 'WaterTank Components (3)' pane shows a list of components. The 'AlarmComponent' is selected, indicated by a blue dot and a red circle labeled '2'. Below the component list, the 'AlarmComponent details' pane shows the component name 'AlarmComponent', component type 'com.example.cookiefactory.alarm', and a table of properties.

Property	Data type	IsTimeSeries	Storage	Latest value
alarm_key	String	False	Internal	WaterTank_ce63b782-c85
alarm_status	String	True	External	
telemetryAssetId	String	False	Internal	WaterTank_ce63b782-c85
telemetryAssetType	String	False	Internal	Alarm

Entity with components (Amazon Timestream component)

The screenshot displays the Amazon Timestream console interface. On the left, the 'Entities (9)' panel shows a list of entities, with 'WaterTank' selected. On the right, the 'WaterTank Components (3)' panel shows a list of components, with 'WaterTank' selected. Below this, the 'WaterTank details' panel provides information about the selected component, including its name, type, and a table of properties.

Entities (9)

Entity	EntityId
<input type="radio"/> SiteWatchCameras	SiteWatchCa
<input type="radio"/> Equipment	Equipment_
<input checked="" type="radio"/> WaterTank	WaterTank_
<input type="radio"/> Mixers	Mixers_b1e0
<input type="radio"/> CookieLines	CookieLines
<input type="radio"/> COOKIE_LINE_1	COOKIE_LIN
<input type="radio"/> COOKIE_LINE_2	COOKIE_LIN
<input type="radio"/> COOKIE_LINE	COOKIE_LIN
<input type="radio"/> Spaces	Spaces_aae1

WaterTank Components (3)

Component	Connector	Status
<input type="radio"/> AlarmComponent	com.example.cookiefactory.alarm	ACTIVE
<input checked="" type="radio"/> WaterTank	com.example.cookiefactory.watertank	ACTIVE
<input type="radio"/> WaterTankVolume	Sitewise	ACTIVE

WaterTank details

Component name
WaterTank

Component type
com.example.cookiefactory.watertank

Properties

Property	Data type	isTimeSeries	Storage	Latest value
flowRate1	Double	True	External	
flowrate2	Double	True	External	
tankVolume1	Double	True	External	
tankVolume2	Double	True	External	
telemetryAssetId	String	False	Internal	WaterTank_76bff931-864
telemetryAssetType	String	False	Internal	WaterTank

Entity with components (AWS IoT SiteWise component)

The screenshot displays the AWS IoT SiteWise console interface. On the left, the 'Entities (9)' panel shows a list of entities, with 'WaterTank' selected. On the right, the 'WaterTank Components (3)' panel shows a list of components, with 'WaterTankVolume' selected. Below this, the 'WaterTankVolume details' panel provides information about the selected component, including its name, type, asset model, and asset ID. At the bottom, a 'Properties' table lists various attributes of the component.

Entities (9)

Entity	EntityId
<input type="radio"/> SiteWatchCameras	SiteWatchCa
<input type="radio"/> Equipment	Equipment_
<input checked="" type="radio"/> WaterTank	WaterTank_
<input type="radio"/> Mixers	Mixers_b1eC
<input type="radio"/> CookieLines	CookieLines
<input type="radio"/> COOKIE_LINE_1	COOKIE_LIN
<input type="radio"/> COOKIE_LINE_2	COOKIE_LIN
<input type="radio"/> COOKIE_LINE	COOKIE_LIN
<input type="radio"/> Spaces	Spaces_aae1

WaterTank Components (3)

Component	Connector	Status
<input type="radio"/> AlarmComponent	com.example.cookiefactory.alarm	ACTIVE
<input type="radio"/> WaterTank	com.example.cookiefactory.watertank	ACTIVE
<input checked="" type="radio"/> WaterTankVolume	Sitewise	ACTIVE

WaterTankVolume details

Component name
WaterTankVolume

Component type
Sitewise

Asset model
CookieFactory1__WaterTank

Asset
CookieFactory1__WaterTank_WaterTank_76bff931-8642-424b-ac5d-636a089669f4

Properties

Property	Data type	isTimeSeries	Storage	Latest value
flowRate1	Double	True	External	
flowRate2	Double	True	External	
sitewiseAssetId	String	False	Internal	99fc8d38-6cc6-45a2-8c...
sitewiseAssetModelId	String	False	Internal	4f798aba-8569-4e11-98...
tankVolume1	Double	True	External	

Create new entity

Workspace

Modeling

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Web app

Create an entity

Create a new entity. This entity will not have an associated parent entity

Entity name

 1
Name must be alphanumeric, fewer than 256 characters. It must start with a letter and contain no spaces. Name must be unique under parent.

Entity Id - optional

Id must be alphanumeric, unique and fewer than 256 characters. It must start with a letter and contain no spaces. Entity Id cannot be changed

Description - optional

 2
Description must be fewer than 256 characters.

Tags
A tag is a metadata label you can assign to an AWS IoT TwinMaker resource. Each tag consists of a key and an optional value.

Key	Value - optional
<input type="text" value="entity1"/>	<input type="text" value="org1"/>

You can add up to 49 more tags.

Add component to entity

Add component

Name: newComponent 1

Type: 2

Types of components include documents, time-series data, structured data, and unstructured data.

- com.example.cookiefactory.alarm
- com.example.cookiefactory.mixer
- com.example.cookiefactory.space
- com.example.cookiefactory.watertank
- com.example.timestream-telemetry
- com.amazon.iotsitewise.connector
- com.amazon.iotsitewise.connector.edgevideo
- com.amazon.iottwinmaker.documents
- com.amazon.iottwinmaker.parameters

List components

AWS IoT TwinMaker ×

AWS IoT TwinMaker > Workspace: CookieFactory1 > Component types

Workspaces

Component types

Entities

Resource library

Scenes

Component types [Info](#)

IoT TwinMaker provides a set of pre-defined component types to add data to entities. Custom component types can also be created to add data that is not covered in the pre-defined component types. Pre-defined component types cannot be edited or deleted, and component types that are in use by components cannot be deleted.

Component types (10)

Create component type

< 1 > ⚙

ID	Definition	Created at
com.example.cookiefactory.alarm	User-defined	2021-11-21T19:08:41.850Z
com.example.cookiefactory.mixer	User-defined	2021-11-21T19:08:42.036Z
com.example.cookiefactory.space	User-defined	2021-11-21T19:08:42.413Z
com.example.cookiefactory.watertank	User-defined	2021-11-21T19:08:42.220Z
com.example.timestream-telemetry	User-defined	2021-11-21T19:08:41.637Z
com.amazon.iotsitewise.connector	Pre-defined	2021-11-13T00:25:32.467Z
com.amazon.iotsitewise.connector.edgevideo	Pre-defined	2021-11-13T00:25:34.069Z
com.amazon.iottwinmaker.alarm.basic	Pre-defined	2021-11-13T00:25:35.967Z
com.amazon.iottwinmaker.documents	Pre-defined	2021-11-13T00:25:30.797Z
com.amazon.iottwinmaker.parameters	Pre-defined	2021-11-13T00:25:38.067Z

Create new custom component

Create component type [Info](#)

Component type information

Component type ID

Description

Must be less than 2048 characters

Request

```
1 {
2   "componentTypeId": "com.user.custom1",
3   "description": "My custom connector",
4   "functions": {
5     "dataReader": {
6       "implementedBy": {
7         "lambda": {
8           "arn": "arn:aws:lambda:us-east-1:123456789012:function:connector"
9         }
10      }
11    }
12  },
13  "propertyDefinitions": {
14    "telemetryAssetType": {
15      "dataType": {
16        "type": "STRING"
17      },
18      "isExternalId": false,
19      "isRequiredInEntity": true,
20      "isStoredExternally": false,
21      "isTimeSeries": false
22    }
23  }
24 }
```

JSON Ln 8, Col 74 Errors: 0 Warnings: 0

List resources

Workspace

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AWS IoT TwinMaker



AWS IoT TwinMaker > Workspace: CookieFactory1 > Resource Library

Workspaces

Component types

Entities

Resource library

Scenes

Resource Library Info

Library resources (4)



Delete

Add resources

Find resources

< 1 >



<input type="checkbox"/>	Name	Type	Size	Created
<input type="checkbox"/>	 CookieFactoryEnvironment.glb	GLB	20 MB	2021-11-21T19:10:09.000Z
<input type="checkbox"/>	 CookieFactoryLine.glb	GLB	17 MB	2021-11-21T19:09:41.000Z
<input type="checkbox"/>	 CookieFactoryWaterTank.glb	GLB	101 KB	2021-11-21T19:09:40.000Z
<input type="checkbox"/>	 CookieFactoryMixer.glb	GLB	876 KB	2021-11-21T19:09:39.000Z

Add resource to library

Workspace

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Resource Library Info

Library resources (4) Delete Add resources

Add resources

Any files you upload are available to use from the resource libraries

Supported file types are BIN, GLB, GLTF, PNG, PDF, JPG, JPEG, and MP4.

	Created
	2021-11-21T19:10:09.000Z
	2021-11-21T19:09:41.000Z
	2021-11-21T19:09:40.000Z
<input type="checkbox"/> 	2021-11-21T19:09:39.000Z

CookieFactoryMixer.glb GLB 876 KB

List scenes

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AWS IoT TwinMaker



AWS IoT TwinMaker > Workspace: CookieFactory1 > Scenes

Workspaces

Component types

Entities

Resource library

Scenes

Scenes Info

Scenes are visual representations of your data in IoT TwinMaker.

Scenes (2)

Actions ▼

Create scene

Search

< 1 > ⚙

Scene ID ▼	Description	Last modified ▼
<input type="radio"/>	CookieFactory	2021-11-21T19:09:05.332Z
<input type="radio"/>	myScene	2021-11-21T20:32:07.061Z

Create new scene

Workspace

Modeling

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3D scenes

Web app

AWS IoT TwinMaker > Workspace: CookieFactory1 > Scenes

Scenes Info

Scenes are visual representations of your data in IoT TwinMaker.

Scenes (2) Actions ▾ Create scene

Search:

Create a new scene ✕

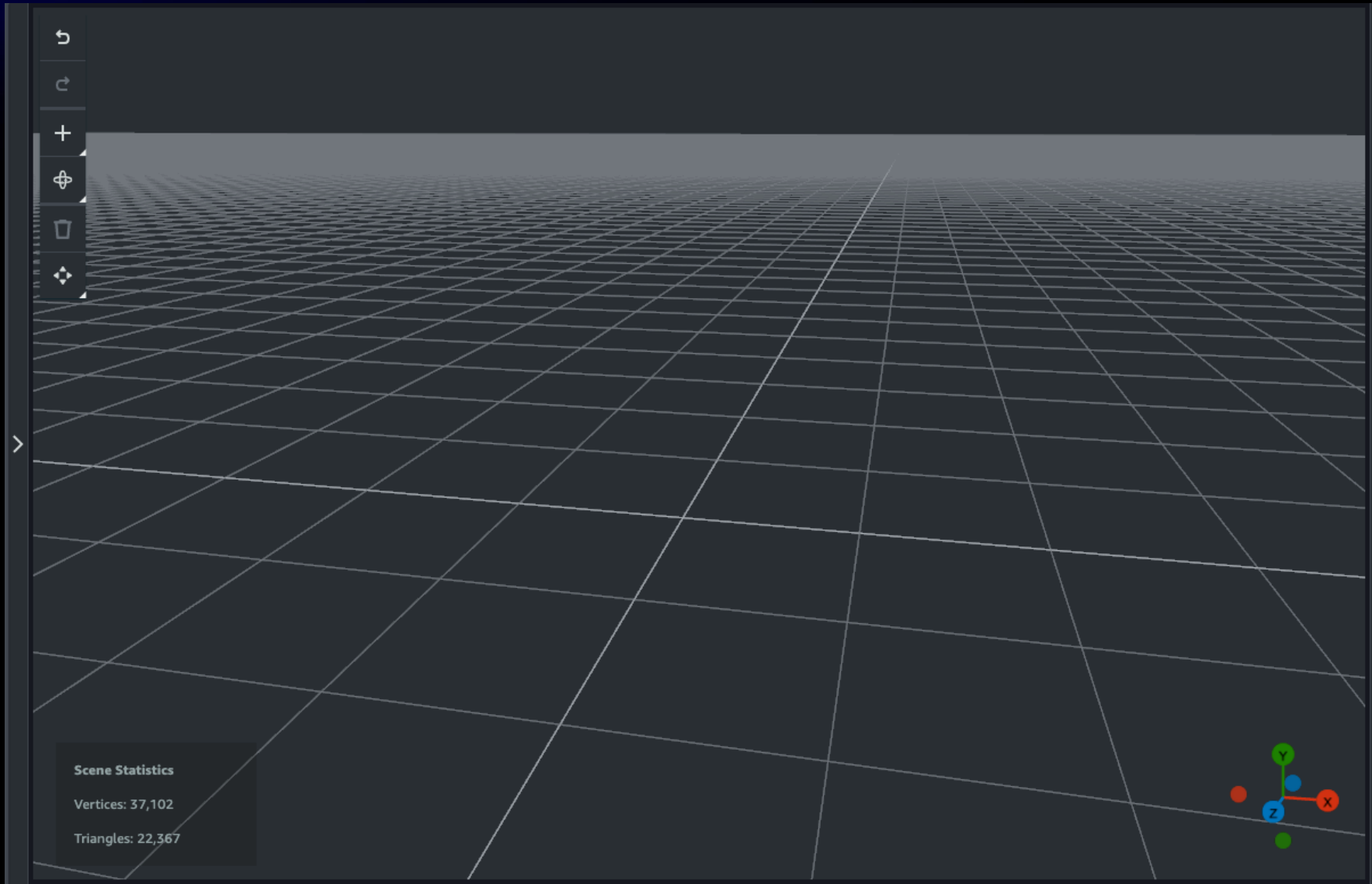
ID

Description

Cancel Create scene

Last modified
2021-11-21T19:09:05.332Z
2021-11-21T20:32:07.061Z

Blank scene



Inspector

▼ Properties

No node selected.

Add elements to scene

The screenshot displays a 3D scene editor interface. The main view is a perspective view of a dark gray grid floor extending into the distance. On the left side, there is a vertical toolbar with several icons. A dropdown menu is open from the '+' icon, listing the following options: 'Add empty node', 'Add 3D model', 'Add light', 'Add tag', and 'Add model shader'. In the bottom-left corner, a 'Scene Statistics' panel shows 'Vertices: 0' and 'Triangles: 0'. In the bottom-right corner, a 3D coordinate system is visible with X, Y, and Z axes. On the right side, there is an 'Inspector' panel with a 'Properties' section that currently displays 'No node selected.'

Add 3D model

Add resource from resource library

Find resources

	Name	Type	Size	Created
<input type="radio"/>	CookieFactoryEnvironment.glb	GLB	20 MB	2021-11-21T19:10:09.000Z
<input type="radio"/>	CookieFactoryLine.glb	GLB	17 MB	2021-11-21T19:09:41.000Z
<input type="radio"/>	CookieFactoryWaterTank.glb	GLB	101 KB	2021-11-21T19:09:40.000Z
<input checked="" type="radio"/>	CookieFactoryMixer.glb	GLB	876 KB	2021-11-21T19:09:39.000Z

Cancel Add

Scene Statistics
Vertices: 0
Triangles: 0

Inspector
Properties
No node selected.

Position 3D model

Workspace

Modeling

Insights

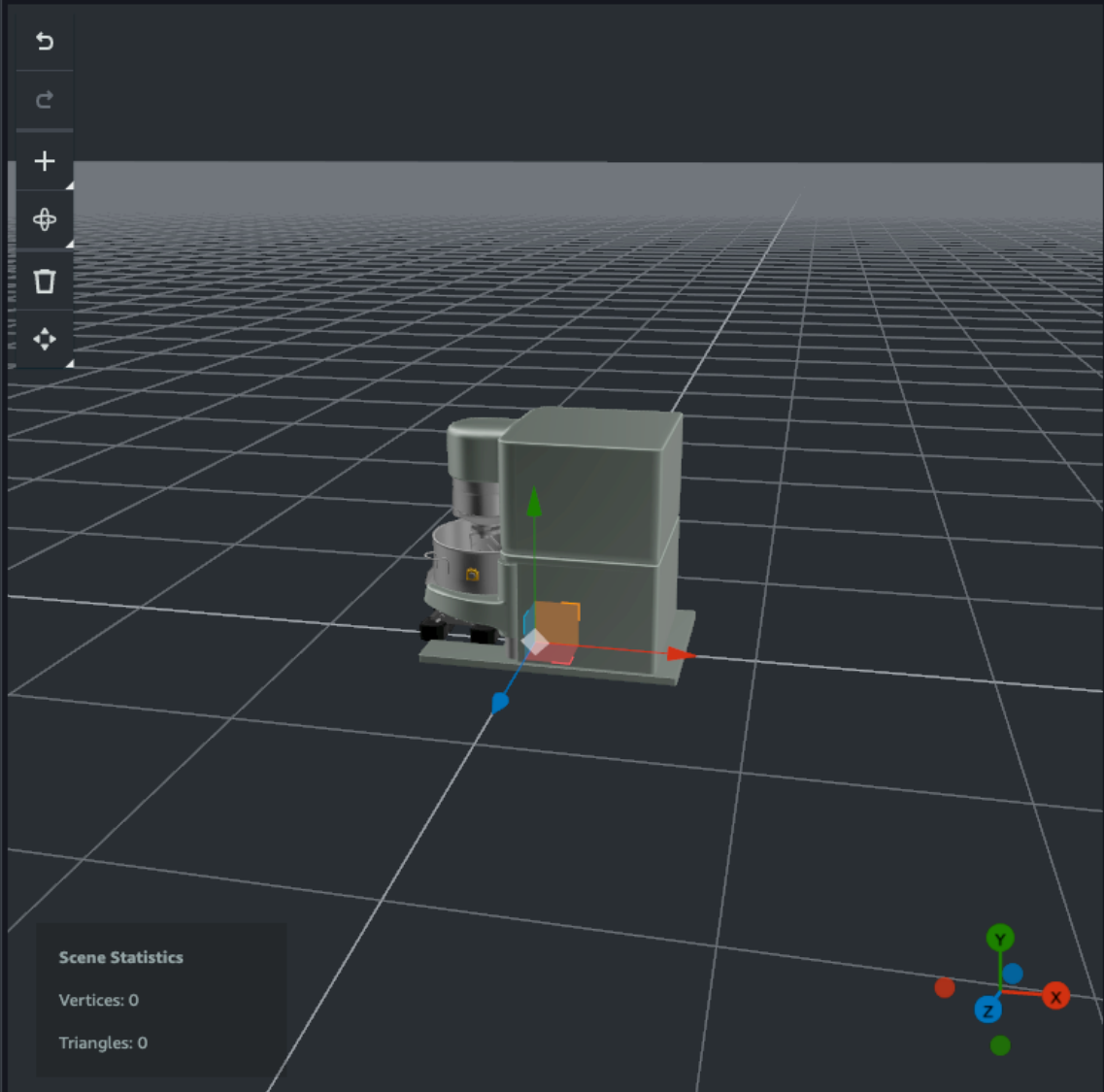
3D scenes

app

Hierarchy | Rules | Settings

Name

- CookieFactoryMixer



Scene Statistics

Vertices: 0

Triangles: 0

Inspector

▼ Properties

Name

CookieFactoryMixer

▼ Transform

Position

X 0.000 Y 0.000 Z 0.000

Rotation

X 0.000 Y 0.000 Z 0.000

Scale

X 1.000 Y 1.000 Z 1.000

Constraints

Snap to floor

▼ ModelRef

Model Type

GLB

Model Path

s3://roci-workspace-cookiefactory1-276207646963/

Shadow Settings

Cast Shadow

Receive Shadow

Unit of Measure



Add lighting to scene

The screenshot displays a 3D modeling application interface. On the left, the Hierarchy panel shows a tree structure with 'CookieFactoryMixer' as the parent and 'Light' as a child. The central 3D viewport shows a grey mixer model on a grid floor with a newly added light source, indicated by a blue arrow and a small orange cube. A context menu is open over the scene, listing options: 'Add empty node', 'Add 3D model', 'Add light', 'Add tag', and 'Add model shader'. The right-hand Inspector panel is active, showing the properties for the selected 'Light' object. Under the 'Light' section, the 'Light Type' is set to 'Directional', and the 'Color' is shown as a red gradient. The 'Transform' section shows position, rotation, and scale values all set to 0.000 or 1.000. The 'Scene Statistics' panel at the bottom left of the viewport shows 'Vertices: 36,426' and 'Triangles: 22,083'.

Hierarchy | Rules | Settings

Name

- CookieFactoryMixer
 - Light

Scene Statistics

Vertices: 36,426

Triangles: 22,083

Inspector

▼ Properties

Name

Light

▼ Transform

Position

X 0.000 Y 0.000 Z 0.000

Rotation

X 0.000 Y 0.000 Z 0.000

Scale

X 1.000 Y 1.000 Z 1.000

▼ Light

Light Type

Directional

Color

Add tag to entity (for data binding)

Workspace

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3D scenes

app

The screenshot displays a 3D modeling application interface. On the left, the **Hierarchy** panel shows a tree structure with 'CookieFactoryMixer' as the parent and 'Light' and 'Tag' as children. The 'Tag' entity is selected. In the center, a 3D scene shows a grey mixer model on a grid floor. A context menu is open over the model, listing options: 'Add empty node', 'Add 3D model', 'Add light', 'Add tag', and 'Add model shader'. The 'Add tag' option is highlighted. On the right, the **Inspector** panel shows the properties of the selected 'Tag' entity. The 'Name' field contains 'Tag'. The 'Transform' section shows Position (X: 0.000, Y: 0.000, Z: 0.000), Rotation (X: 0.000, Y: 0.000, Z: 0.000), and Scale (X: 1.000, Y: 1.000, Z: 1.000). The 'Tag' section includes 'Default Icon' (Info), 'EntityId' (Mixer_0), 'ComponentName' (MixerComponent), 'PropertyName' (RPM), and 'Rule Id'.

Hierarchy Rules Settings

Name

- CookieFactoryMixer
 - Light
 - Tag

Scene Statistics

Vertices: 37,102

Triangles: 22,367

Inspector

▼ Properties

Name

Tag

▼ Transform

Position

X 0.000 Y 0.000 Z 0.000

Rotation

X 0.000 Y 0.000 Z 0.000

Scale

X 1.000 Y 1.000 Z 1.000

▼ Tag

Default Icon

Info

EntityId

Mixer_0

ComponentName

MixerComponent

PropertyName

RPM

Rule Id

Add model shader (color entity)

The screenshot displays a 3D modeling application interface. On the left, a 'Hierarchy' panel shows a tree structure with 'CookieFactoryMixer' selected, containing sub-items 'Light' and 'Tag'. The central 3D view shows a grey mixer model on a grid floor with a coordinate system (X, Y, Z). A context menu is open over the model, listing options: 'Add empty node', 'Add 3D model', 'Add light', 'Add tag', and 'Add model shader'. The right-hand 'Settings' panel is expanded to the 'ModelShader' section, showing the following configuration:

- EntityId:** Mixer_0
- ComponentName:** AlarmComponent
- PropertyName:** alarm_status
- Rule Id:** sampleAlarmIconRule

Other settings visible in the 'ModelRef' section include 'Model Type' (GLB), 'Model Path' (s3://roci-workspace-cookiefactory1-276207646963/), and 'Shadow Settings' (Cast Shadow and Receive Shadow are unchecked). A 'Remove' button is located at the bottom of the ModelShader settings.

Scene Statistics:
Vertices: 37,102
Triangles: 22,367

Grafana dashboards

Grafana

The screenshot shows the Grafana web interface. At the top left, there is a navigation sidebar with icons for search, home, dashboards, alerts, settings, and help. The main header area includes the text "General / Home" and "Welcome to Grafana". To the right of the welcome message are links for "Need help?" leading to "Documentation", "Tutorials", "Community", and "Public Slack". Below the welcome message is a "Basic" section with a description: "The steps below will guide you to quickly finish setting up your Grafana installation." To the right of this are three tutorial cards. The first is titled "Grafana fundamentals" and is labeled "TUTORIAL DATA SOURCE AND DASHBOARDS". The second is "Add your first data source" and is labeled "COMPLETE". The third is "Create your first dashboard" and is also labeled "COMPLETE". Each card has a "Learn how in the docs" link. Below the tutorial cards are two main sections: "Dashboards" and "Latest from the blog". The "Dashboards" section shows "Starred dashboards" (none) and "Recently viewed dashboards" (two "AWS IoT TwinMaker Alarm Dashboard" entries). The "Latest from the blog" section features two articles: one from Nov 18 titled "A 3-step guide to troubleshooting and visualizing Kubernetes with Grafana Cloud" and one from Nov 17 titled "Video: The new simple, scalable deployment for Grafana Loki and Grafana Enterprise Logs".

General / Home

Welcome to Grafana

Need help? [Documentation](#) [Tutorials](#) [Community](#) [Public Slack](#)

Remove this panel

Basic

The steps below will guide you to quickly finish setting up your Grafana installation.

TUTORIAL
DATA SOURCE AND DASHBOARDS

Grafana fundamentals

Set up and understand Grafana if you have no prior experience. This tutorial guides you through the entire process and covers the "Data source" and "Dashboards" steps to the right.

COMPLETE

Add your first data source

Learn how in the docs

COMPLETE

Create your first dashboard

Learn how in the docs

Dashboards

Starred dashboards

Recently viewed dashboards

- 0 AWS IoT TwinMaker Alarm Dashboard - reinvent - main
- AWS IoT TwinMaker Alarm Dashboard

Latest from the blog

Nov 18

A 3-step guide to troubleshooting and visualizing Kubernetes with Grafana Cloud

Back in May, we announced the Kubernetes integration to help users easily monitor and alert on core Kubernetes cluster metrics using the Grafana Agent, our lightweight observability data collector optimized for sending metric, log, and trace data to Grafana Cloud. Since then, we've made some improvements to help our customers go even further. This guide will show how easy it is to use Grafana Cloud to troubleshoot and alert on your Kubernetes cluster.

Nov 17

Video: The new simple, scalable deployment for Grafana Loki and Grafana Enterprise Logs

With the recent release of Loki 2.4 and Grafana Enterprise Logs 1.2, we're excited to introduce a new deployment architecture. Previously, if you wanted to scale a Loki installation, your options were: 1) run multiple instances of a single binary (not recommended), or 2) run Loki as microservices. The first option was easy, but it led to brittle environments where a heavy query load could take down data ingestion and problems were often difficult to debug.

Add TwinMaker as datasource

Workspace

Modeling

Insights

3D scenes

Web app

The screenshot displays the AWS IoT TwinMaker Configuration interface. At the top, it shows 'Configuration' for 'Organization: Main Org.'. Below this, there are navigation tabs for 'Data sources', 'Users', 'Teams', 'Plugins', 'Preferences', and 'API keys'. The 'Data sources' tab is active, showing a search bar with the placeholder text 'Search by name or type' and an 'Add data source' button. A single data source is listed: 'AWS IoT TwinMaker Datasource', which is associated with 'AWS IoT TwinMaker' and is marked as 'default'.

Add TwinMaker as datasource


Workspace

Modeling

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3D scenes



Web app


 **Data Sources / AWS IoT TwinMaker Datasource**
Type: AWS IoT TwinMaker

Settings Dashboards

Name Default



Connection Details

Authentication Provider	<input type="text" value="Access & secret key"/>
Access Key ID	<input type="text" value="Configured"/> 
Secret Access Key	<input type="text" value="Configured"/> 
Assume Role ARN	<input type="text" value="arn:aws:iam:*"/>
External ID	<input type="text" value="External ID"/>
Endpoint	<input type="text" value="https://{service}.{region}.amazonaws.com"/>
Default Region	<input type="text" value="us-east-1"/>

 **Assume Role ARN**

This datasource will use the credentials directly from your authentication provider which may be a security risk. Specify an IAM role to narrow the permission scope of this datasource. Follow the documentation [here](#) to create policies and a role with minimal permissions for your TwinMaker workspace.

TwinMaker settings

Workspace  

List dashboards

Workspace

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The screenshot shows the AWS IoT TwinMaker Dashboards management interface. At the top left, there is a 'Dashboards' header with a sub-header 'Manage dashboards and folders'. Below this, there are navigation tabs for 'Manage', 'Playlists', 'Snapshots', and 'Library panels'. The 'Manage' tab is active. A search bar is present with the placeholder text 'Search dashboards by name'. To the right of the search bar are three buttons: 'New Dashboard', 'New Folder', and 'Import'. Below the search bar, there are controls for sorting and filtering. A 'Sort (Default A-Z)' dropdown menu is visible, along with a 'Filter by starred' checkbox and a 'Filter by tag' dropdown menu. The main content area displays a list of dashboards under a 'General' folder. The list contains four items:

- 0 AWS IoT TwinMaker Alarm Dashboard - reinvent - main
- 1 AWS IoT TwinMaker Alarm Dashboard - reinvent - mixers2
- 2 AWS IoT TwinMaker Alarm Dashboard - reinvent - watertank
- AWS IoT TwinMaker Alarm Dashboard

Grafana dashboard (with 3D scene, data, alarms)

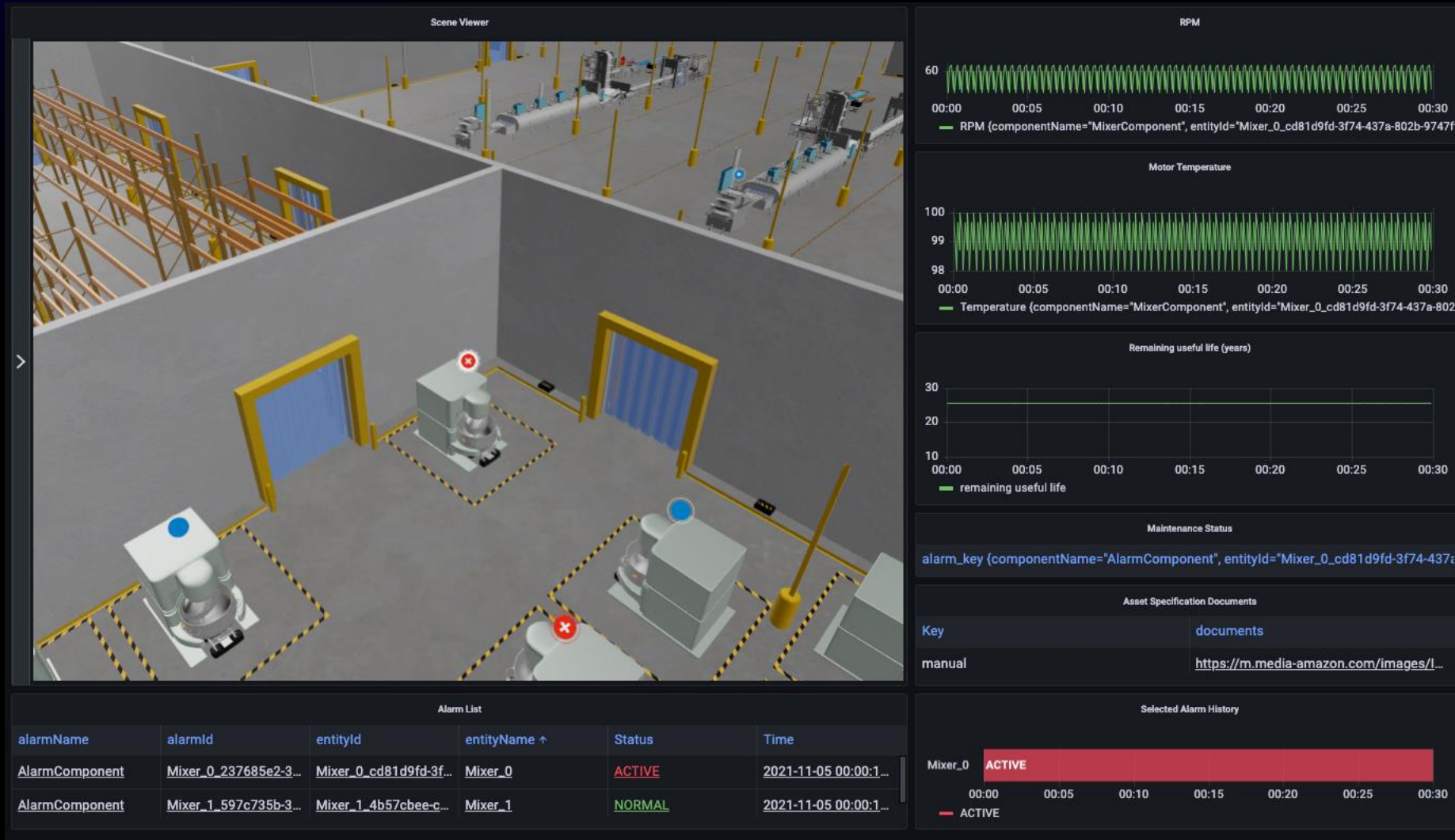
Workspace

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Web app



Grafana dashboard (with 3D scene, hierarchy)

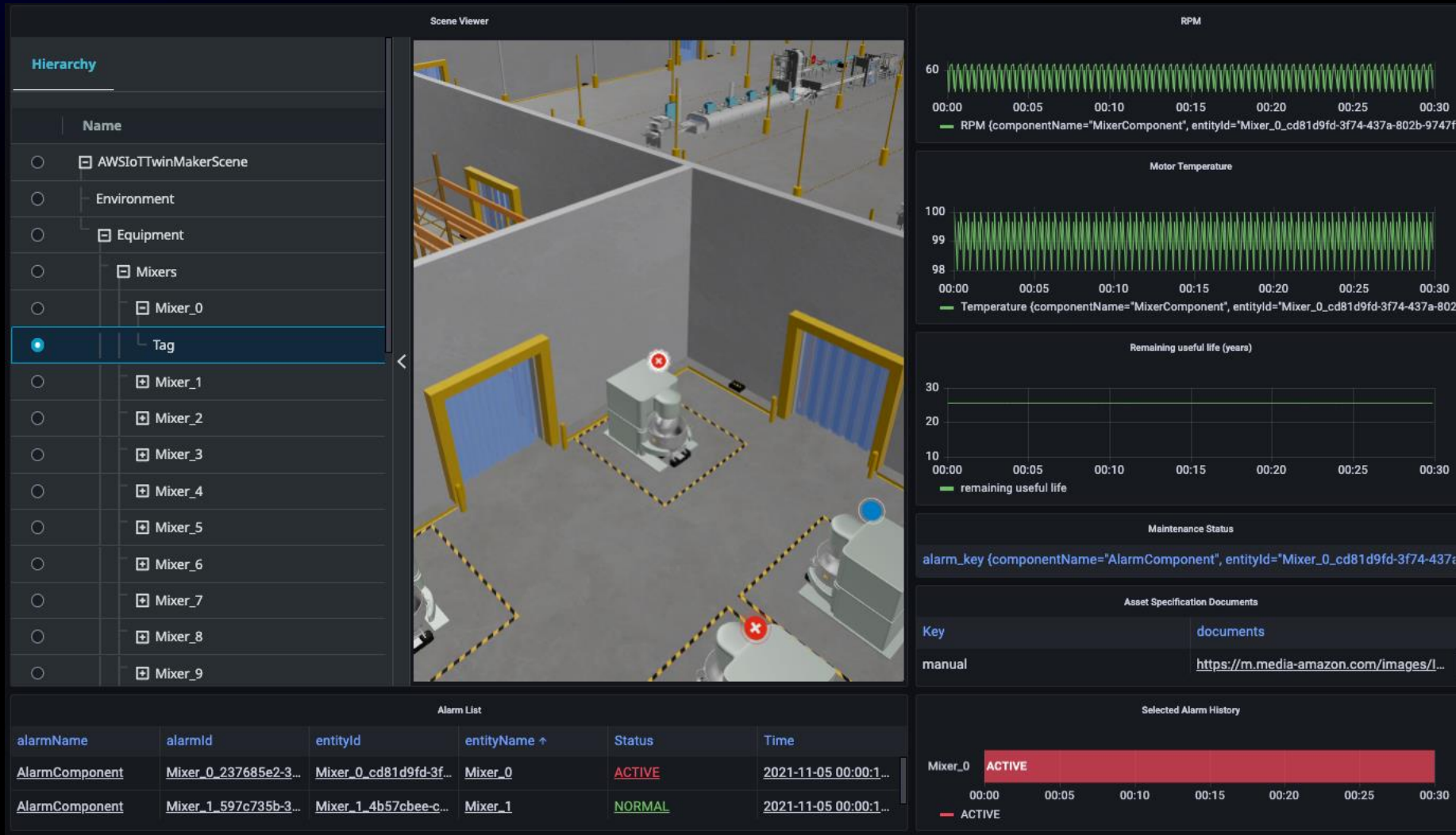
Workspace

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Getting started samples

Getting started (1/3)

<https://github.com/aws-samples/aws-iot-twinmaker-samples>

The screenshot shows the GitHub repository page for `aws-samples/aws-iot-twinmaker-samples`. The repository is public and has 12 stars and 2 forks. The main branch is selected, and there is 1 branch and 0 tags. The repository was last updated yesterday with commit `fd82434` and has 6 commits. The file list includes:

File/Folder	Description	Commit Time
docs	add CloudFormation template for workspace role creation (#11)	yesterday
src	AWS IoT TwinMaker Getting Started Samples - Initial commit.	2 days ago
.gitignore	AWS IoT TwinMaker Getting Started Samples - Initial commit.	2 days ago
CLOUD9_SETUP.md	AWS IoT TwinMaker Getting Started Samples - Initial commit.	2 days ago
CODE_OF_CONDUCT.md	AWS IoT TwinMaker Getting Started Samples - Initial commit.	2 days ago
CONTRIBUTING.md	AWS IoT TwinMaker Getting Started Samples - Initial commit.	2 days ago
DESIGN.md	AWS IoT TwinMaker Getting Started Samples - Initial commit.	2 days ago
LICENSE	AWS IoT TwinMaker Getting Started Samples - Initial commit.	2 days ago
NOTICE	AWS IoT TwinMaker Getting Started Samples - Initial commit.	2 days ago

The right sidebar shows the repository's metadata:

- About:** No description, website, or topics provided.
- Readme:** Available.
- License:** Apache-2.0 License.
- Code of conduct:** Available.
- Releases:** No releases published.
- Packages:** No packages published.



Getting started (2/3)

- This project walks you through the process of building a Cookie Factory digital twin application using AWS IoT TwinMaker
- Pre-requisites
 - AWS Command Line interface
 - Python 3
 - Node JS
 - AWS CDK (cloud development kit)
 - Docker (to run Grafana locally)

Getting started (3/3)

1. Scripts create the necessary IAM roles
2. You create the workspace in console
3. Scripts create sample data in Amazon Timestream, Amazon Kinesis Video Streams
4. Scripts create all entities needed for Cookie factory and associated components
5. Scripts will load resources for scenes and create the scenes
6. You can start Docker with a pre-built Grafana image, load the TwinMaker plug-in and import the cookie factory dashboard.
You now have a working digital twin of the cookie factory

Thank you!

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