

TrakSYS™ Training

Day 3



Training Overview

Training Agenda

Day 1	Day 2	Day 3	Day 4	Day 5
TrakSYS Overview	Content Pages	Performance Management	API Introduction	Production Scheduling
Setup and Installation	Values Dictionary	Content Page Functionality	Logic Service	Alerts and Notifications
Configuration Basics	Visual Pages	Batching and Storage Systems	Data Management Service	Inventory Management
Navigation Introduction	Content Parts and Features	Template Systems	TrakSYS Extensibility	Statistical Process Control
Functionality and Data	Users and Permissions	Task Configuration	Sites, Translations, and Audit	Support and Resources
Introduction Training			Advanced Training	
Comprehensive Training				

Discrete Systems and Event Configuration

Training Objectives

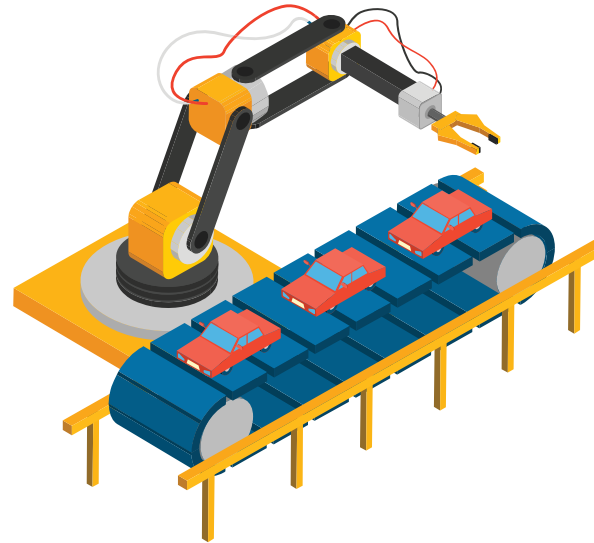


Explore in more detail the modeling and functional support for tracking complex [machine stoppage data](#).

Describe the advanced settings available in the System and Event Definition entities that allow [business rule definition](#) for monitoring multiple [Tag inputs](#) and discerning the more accurate stoppage reasons.

Discrete Systems

- Used to model Manufacturing Equipment which produce / process **Discrete** Items (Cans, Cases, Widgets, etc...)
- May represent a **Production Line (S95)**, or Work Cell (S95) / **Individual Equipment** (e.g. Packaging Line, Labeler, Caser, Sealer, etc...)
- May include **Sub-Systems** (Work Cells) to represent **smaller components** within the main System
- Contain child configuration **elements** to model Stoppages, Tasks, SPC Sampling and KPI Calculations



Discrete System Properties

- Event Split settings allow Events to be automatically End and Restart Events when specific transitions occur...
 - Day Change
 - Shift Change
 - Job Change
- Specify how Events **behave** in Display and Categorization User Interfaces
 - Allow Interaction
 - Display Delay
 - Auto Acknowledge
- Settings effect **all Event Definitions** defined within the System

OCV > Configuration > Systems > Training > Line 1

Line 1

Discrete System

General

Event Splits

Event

Job

Product

Advanced

Notes

Name

Line 1

☐ Split Event on Day Change ☐ Split Event on Shift Change

☐ Split Event on Product Change ☐ Split Event on Job Change

Apply **Save** Cancel

General

Event Splits

Event

Job

Product

Advanced

Notes

Name

Line 1

Show For Acknowledge

False

Display Delay (Seconds)

0

Acknowledge Duration (Minutes)

10

Sub-Systems

OCV > Configuration > Systems > Training > Line 1



Systems

Line 1

[Edit](#)

ID 123

Key TRAIN.L1

S95 Type Discrete

Schedule [None]

Product Set [None]

Related

[Sub-Systems](#)

[KPI Calculations](#)

[Event Definitions](#)

[Task Definitions](#)

[Sample Definitions](#)

Sub-Systems

[+ New](#)

[Reorder](#)

Filler

Discrete

Labeler

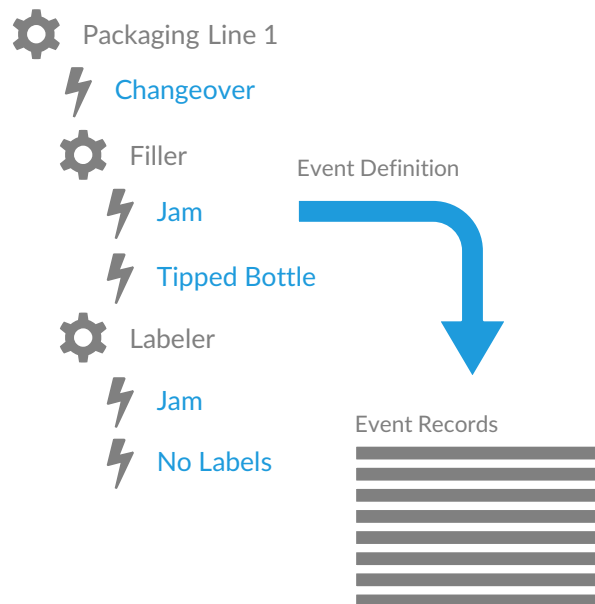
Discrete

Caser

Discrete

- Allows for **organizing and grouping Event Definitions** by smaller pieces of a larger System (Equipment on a Line)
- Settings applied at the Sub-System **override** similar settings at the System Level
- Grouping Event Definitions in Sub-Systems does **NOT** effect Triggering or Priority Logic

Event Definitions



Configuration

- Represent configurable **data entry fields** to be collected during execution of a specific Event
- An Event **represents a span of time** (typically downtime) associated with a specific asset (System)
- Configurable at the **System** OR **Sub-System** Level
- A **Discrete Trigger Tag** property indicates when an Event Starts and Ends



Execution

- Loaded and executed by the **Logic Service**
- Events contain reference to **related information** such as Job, Batch, Product, Shift, OEE Type, Category, etc...
- Only **one Event at a time** can be active for a given System *

Event Definition Properties

Event Definition

General

OEE

Split

Event

Advanced

Notes

Name

Tipped Bottle

Event Definition Group

[None]

Event Definition Type

[None]

Key

Trigger Tag

[None]

Priority

1

☐ Re-Evaluate System Event on Start ☐ Re-Evaluate System Event on End

Split

Event

Advanced

Notes

Advanced

Notes

MTBF Type

Failure

Duration (Seconds)

0

Sub-Priority

1

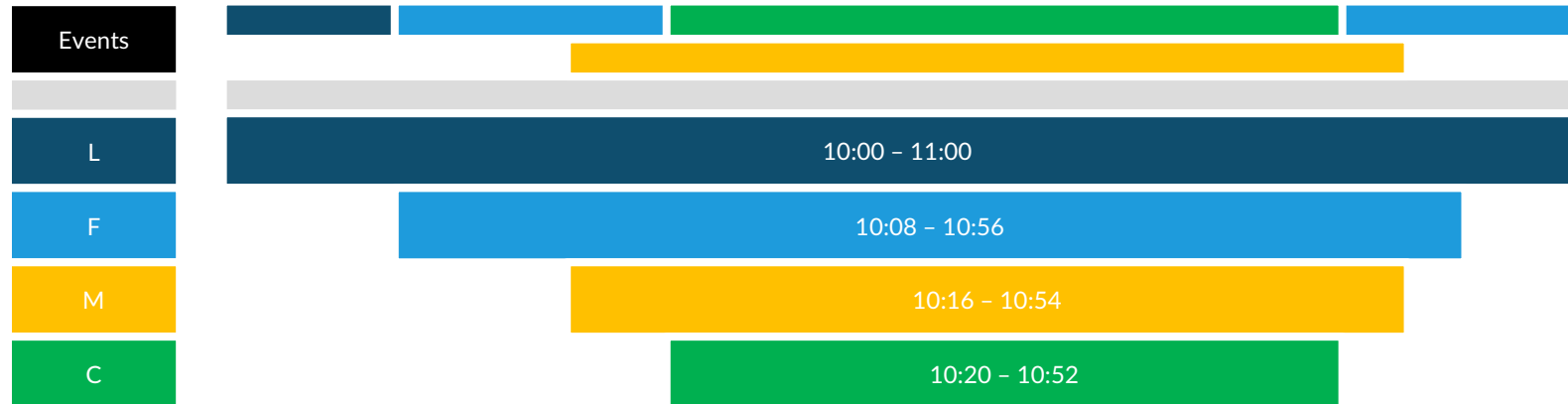
Isolation Type

Single Active Event

- By default, **only one Event Definition** is allowed to be active on a System
- Subsequent triggered Events are recorded as **Sub-Events** related to the primary active Event
- Event Definitions settings control **how the active Event is determined** when multiple Triggers are active at the same time...
 - Trigger Tag
 - Priority
 - Re-Evaluate System Event on Start/End
 - Isolation Type

Event Definition Example

Event Definition	Priority	Re-Evaluate on Start	Re-Evaluate on End	Isolation Type
Changeover (C)	2	YES	YES	Single Active
Maintenance (M)	4			Independent
Filler Stop (F)	10	YES		Single Active
Labeler Stop (L)	20			Single Active



Event Categories

- Hierarchical list (up to 10 levels) of reasons or descriptions that may be **manually assigned** to Events
- Provides details about Events that **cannot be automatically determined** from the Process Automation
- Categories can be defined to be used for **specific Event Definitions**, or can be added as **Global** (available to all Event Definitions)
- Optional **Event Codes** can be related to each Event Category allowing Events to be associated with **higher level Business Classifications**

OCV > Configuration > Categories > Event



Event Categories

Groups

+ New + Reorder

Packaging Filler Categories

Normal

Packaging Labeler Jam Categories

Normal

Packaging Labeler Bad Categories

Normal

Packaging Case Blanks Categories

Normal

Packaging Global Code Categories

Global Last

Event Categories

+ New + Reorder

Breaks

Breaks | None

Jams and Adjustments

Jams and Adjustments | None

Material Shortage

Material Shortage | None

Mechanical Failure

Mechanical Failure | None

Electrical Failure

Electrical Failure | None

Operational Failure

Operational Failure | None

Not Scheduled

Not Scheduled | System Not Scheduled

Event Category Assignment

OCV > Configuration > Systems > Packaging > Line 1 > Filler

Systems

Filler

[Edit](#)

ID 116

Key FILLER

Linked System [None]

Related

[Event Definitions](#)

[Task Definitions](#)

[Event Category Assignments](#)

[VTRs](#)

[Tags](#)

[Audit Trail](#)

Actions

[Delete](#)

Event Category Assignments

[Assign](#)

[New](#)

[Reorder](#)

Packaging Filler Categories

Packaging Event Category Scheme

- Relate **Event Category Groups** (collections of Categories) with a...
 - System
 - Sub-System
 - Event Definition
- An Event will display Event Categories from a **combination of all assignments** from its related Entities
- Global type Event Category Groups will be displayed for **every Event**

Event Script Events

- The following **transitions are monitored** by the Logic Service for Event records...
 - On Start
 - On End
 - On OEE Type Changed
- TrakSYS allows for these transitions to be used to **trigger real-time functionality** such as...
 - Email Notifications
 - Entity Script Class Events

Event Definition Notification Assignment

General

Notification Definition

[None]



Notification Target

[None]



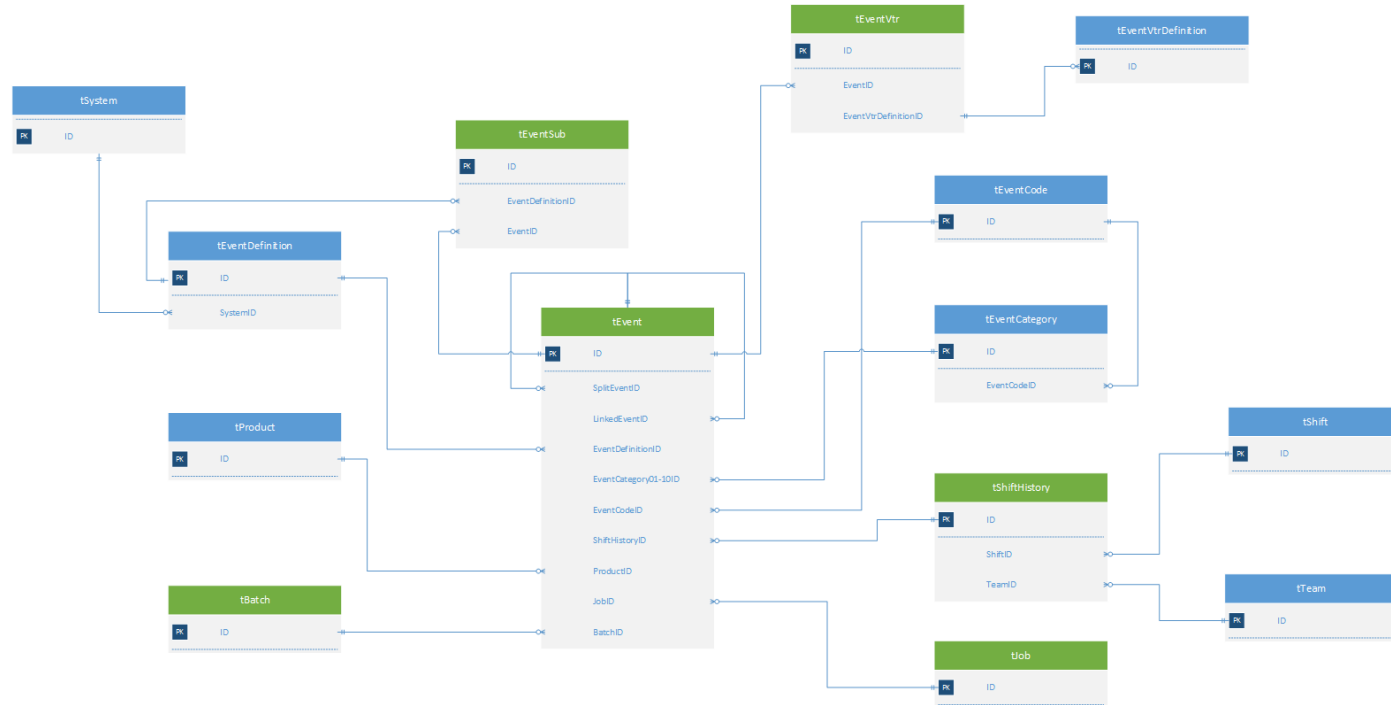
Type

On Start



Arguments

Event Data Structures



KPI Configuration

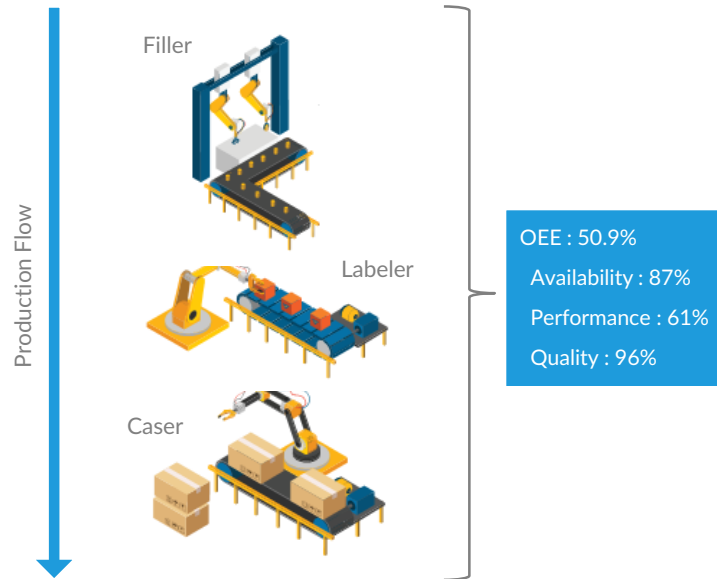
Training Objectives



Explain the features and capabilities of the KPI tracking entities in TrakSYS for **recording real-time production counts** and aggregating related Event and stoppage data.

Understand **Overall Equipment Effectiveness** (OEE) and other key performance indicators to better understand the productivity of manufacturing processes.

KPI Calculations



Configuration

- Allows the collection of real-time **production counts and event information** to record **Interval** records in the TrakSYS Database
- An Interval contains raw data over a period of time (typically 30 to 60 minutes) that can be used to calculate **Key Performance Indicators** (KPIs)
- Configurable at the **System** Level



Common KPIs

- **OEE** : An **industry standard calculation** for measuring Asset Effectiveness [$OEE = A * P * Q$]
 - **Availability** : % of time a process is **available for Production**
 - **Performance** : Ratio of **Total Units vs. Theoretical** over Available Time
 - **Quality** : Ratio of **Good vs. Total** Production
- **TEEP** : A variation of OEE that **re-interprets un-scheduled time** as Availability Losses

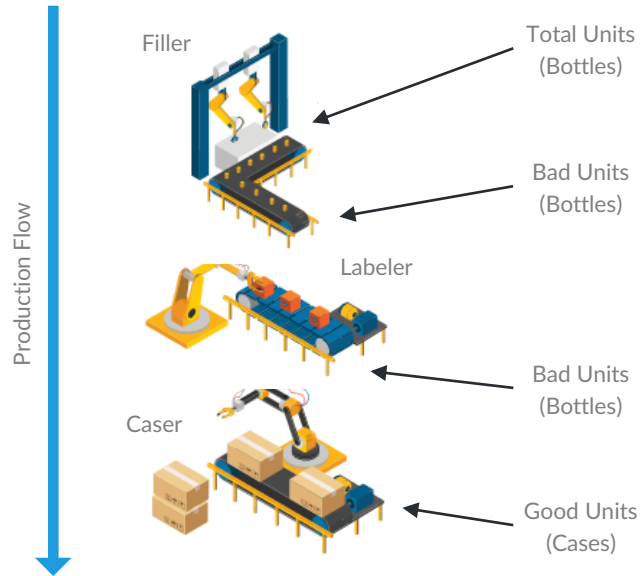
KPI Calculation Properties

KPI Calculation

KPI Calculation	
General	Name OEE
Rates	KPI Calculation Type [None]
Target	Key OEE
Advanced	Interval Duration (Minutes) 60
Notes	Derived Input Total
	Calculation Units Bottles
General	Name OEE
Rates	Theoretical Rate (Total Units / Minute) OCV.PACK.PL1.THEORETICAL
Target	Target Rate (Good Units) Calculated

- Interval Duration**
 A raw KPI data record is **recorded every Interval Duration** (minutes).
- Theoretical Rate**
Maximum Calculation Units per minute the measured asset can be operated.
- Target Rate**
Ideal Calculation Units per minute the measured asset should be operated.
- Derived Input**
One of the three Inputs that should be calculated based on the other two.
- Calculation Units**
 Unit of measure for the **smallest counted piece** on produced on the System

KPI Counters



Configuration

- Allows the real-time accumulation of automated counters (Tags) to record **Production Count** data in the TrakSYS Database
- Counters are characterized as **Total**, **Good**, or **Bad**
- Multipliers can be configured to **allow conversion** of Raw Units to Calculation Units (Cases to Bottles)



Execution

- Loaded and executed by the **Logic Service**
- Counters must move **Forward Only** with the exception of being Reset to Zero
- Counter Tags are polled on **every scan** (~1 second) and the difference is **Accumulated**

KPI Counter Properties

KPI Counter

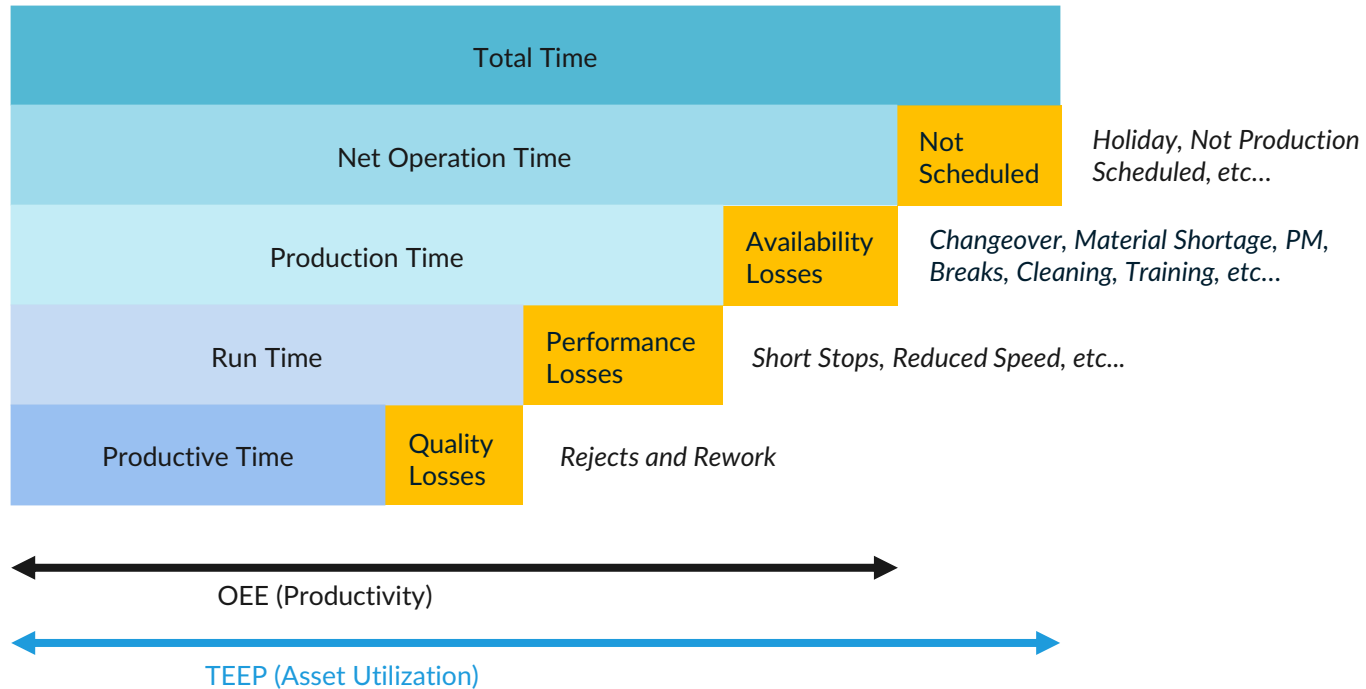
KPI Counter	
General	Name Cases
Flow	
Advanced	Counter OCV.PACK.PL1.COUNTER.GOOD.CASES
Notes	
	Counter Units to Input Units Multiplier 123 1
	Maximum Increment per Scan 123 0
General	Name Cases
Flow	
Advanced	Rollover 123 0
Notes	

- Counter**
 The **automation Tag** to be monitored and accumulated.
- Counter to Input Units Multiplier**
 Multiplication **factor to convert** the raw Counter Units to Input/Calculation Units (Cases to Bottles).
- Maximum Increment per Scan**
 Counter Tag movement that exceeds this setting (within 1 Logic Service Scan – typically 1 second) **will be ignored**.
- Rollover**
 This setting indicates a fixed value where the Counter Tag is **expected to rollover back to zero** (a setting of 0 indicates that the rollover point is unknown).

KPI Counter Example

Bad Bottles - Filler		Rollover	100	Maximum Increment per Scan		5
Time Stamp	Tag Value	Tag Increment	Counter Value		Reason	
11:00:00	0	0	0	0		
11:00:01	3	[+3]	3	[+3]		
11:00:02	5	[+2]	5	[+2]		
11:00:03	8	[+3]	8	[+3]		
11:00:04	90	[+82]	8	[+0]	Max increment value Exceeded	
11:00:05	94	[+4]	12	[+4]		
11:00:06	97	[+3]	15	[+3]		
11:00:07	1	[+1]	19	[+4]	Rollover value Exceeded	
11:00:08	4	[+3]	22	[+3]		
		104	22			

OEE



OEE

Availability

$$\frac{\text{Production Time}}{\text{Net Operation Time}}$$

Performance

$$\frac{\text{Total Units}}{\text{Th. Rate} * \text{Production Time}}$$

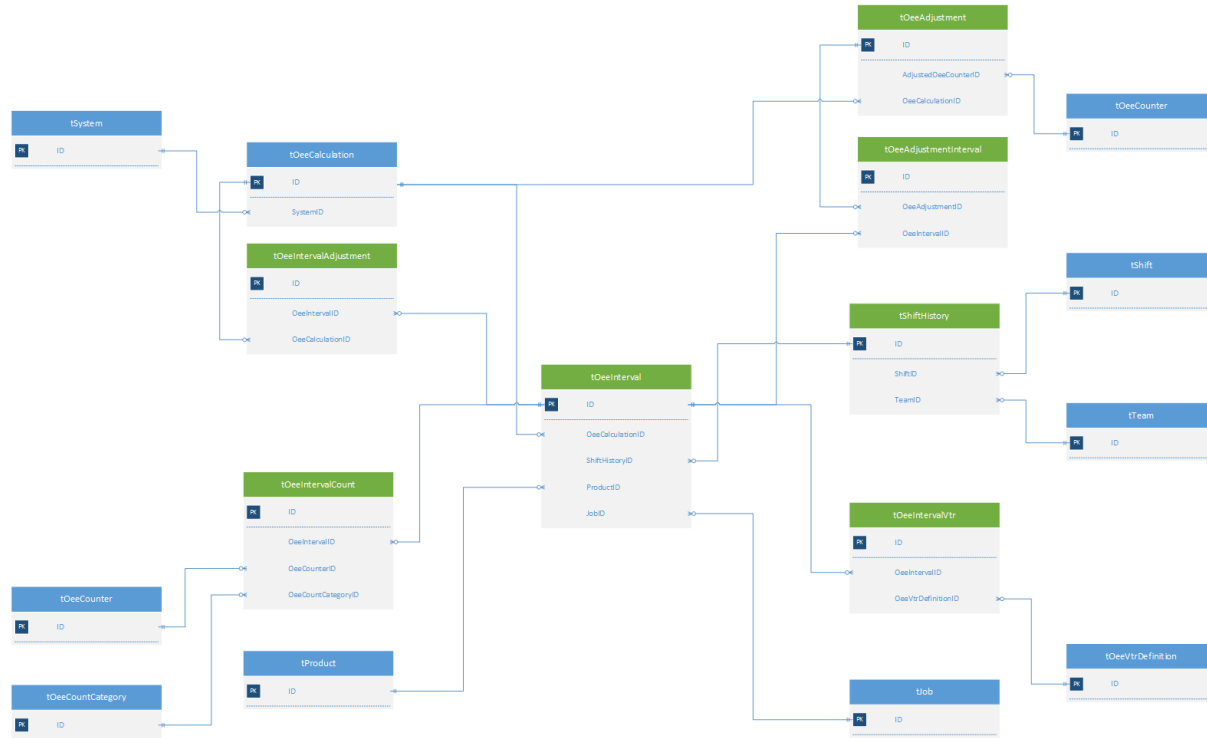
Quality

$$\frac{\text{Good Units}}{\text{Total Units}}$$

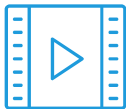
OEE

$$\text{Availability} * \text{Performance} * \text{Quality}$$

KPI Data Structures



Demonstration



- Show System Properties
 - Split
 - Event
- Show Sub-System Properties
 - Event
- Show Event Definition Properties
 - Trigger Tag
 - Priority
 - Re-Evaluate
 - Event
- Configure Event Categories
- Assign Event Categories to System
- Configure a KPI Calculation
- Configure KPI Counters

Lab 9



Performance User Interfaces



Training Objectives



Learn about the various [standard Content Pages](#) available within TrakSYS to quickly configure and build a Performance Management operator user interface.

Explore the techniques for [integrating a custom Page](#) to be called from a link in a standard Content Page.

Standard Content Pages Review



Content Page (out-of-the-box)

Content **built into the TrakSYS product**. These Pages cannot be altered (other than what is exposed via Parameters and configuration settings).

Visual

Pages that are constructed by assembling Content Parts using a grid based visual editor. The behavior of the Visual Page is primarily manipulated by setting properties through user friendly form based interfaces. For more advanced needs, the server side behavior of the page can be controlled using ASP.NET script.

Open

Pages built by hand-coding the user interface portion (HTML, CSS and JavaScript), and the server side code (ASP.NET). While these types of pages are more complex to create, there are no limitations or restrictions as to the functionality and layout that can be created.

Planned Jobs for Line 1

New

Name	Product	Planned	Planned Qty	Overview	Start
P.5826	Adrafil 500 [ADRA.500]	Feb 24 11:20 AM	15,000 Bottles	Overview	Start
P.5830	Adrafil 500 [ADRA.500]	Feb 25 07:10 AM	50,000 Bottles	Overview	Start

Tabular Visual

P.5830

Overview Start

Name: P.5830

Product: Adrafil 500 [ADRA.500]

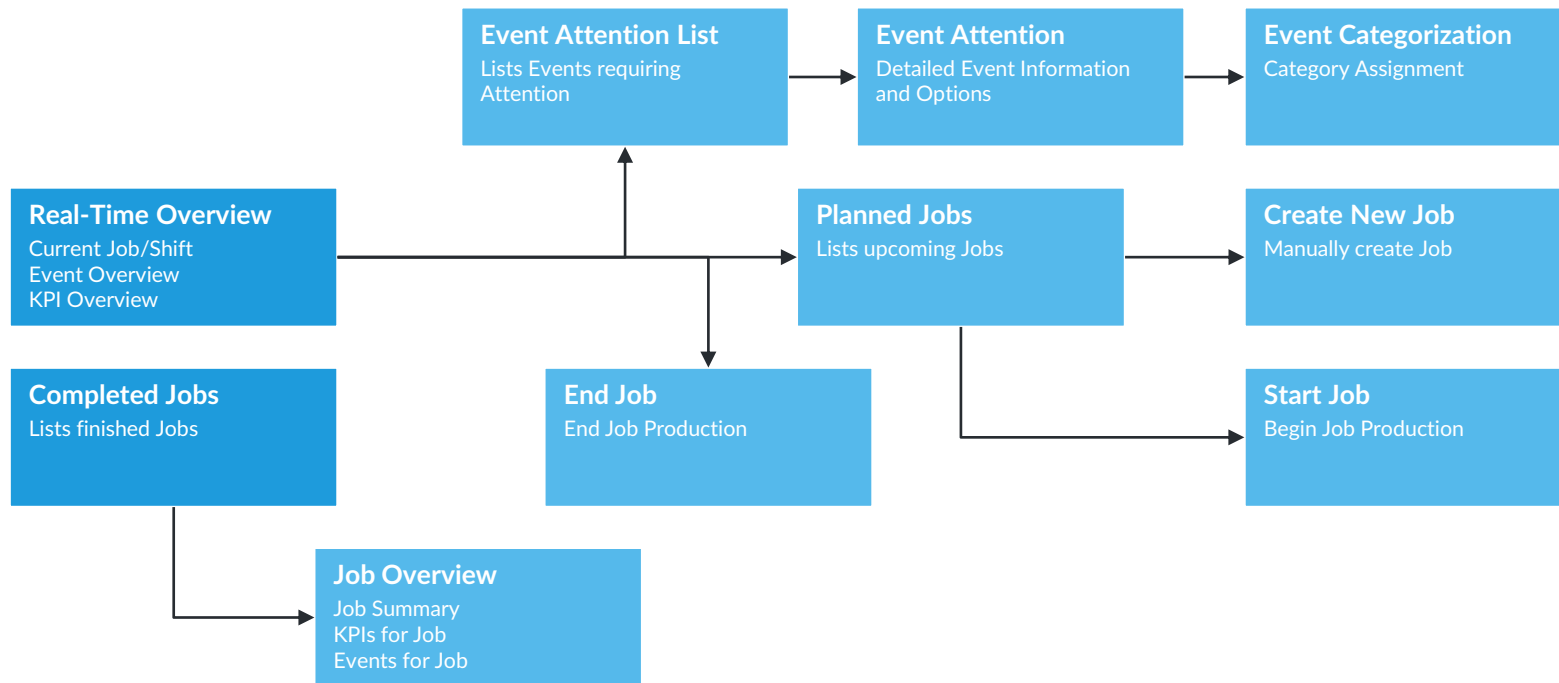
Planned Start: Feb 25 07:10 AM

Planned End: Feb 25 11:20 AM

Planned Duration: 4.1 Hour(s)









Planned Qty: 50,000 Bottles

Performance Related Pages

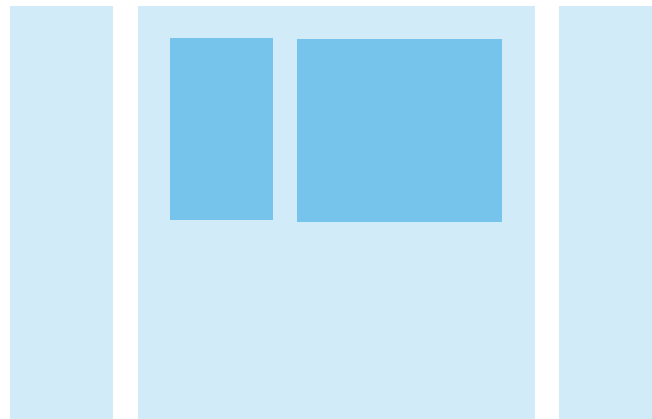


System Real-Time Overview Properties

Page Definition

General	Name		
Visibility	Main		
Properties	System	-1	 SystemID
Content	KPI Calculation	-1	 OeeCalculationID
Format	System Data Mode	Job	
Links	Column Widths		
Charts	Left	1-12 2	
Notes	Center	1-12 8	
	Right	1-12 2	
	Tile	1-12 4	
	Chart	1-12 8	

- System and KPI Calculation IDs are **Required**



System Real-Time Overview

Line 1

Job

Overview End

Name P.5826
 Product Adravil 500 [ADRA.500]
 Planned Start Jun 13 07:10 AM
 Planned End Jun 13 08:25 AM
 Planned Duration 1.2 Hour(s)
 Start Jun 13 10:12 AM
 Duration 2.0 Hour(s)

Shift

Shift Day
 Start Jun 13 08:00 AM
 End Jun 13 07:00 PM
 Duration 11.0 Hour(s)

Range

Job P.5826
 Start Jun 13 10:12 AM
 End Jun 13 12:15 PM
 Duration 2.0 Hour(s)

Events

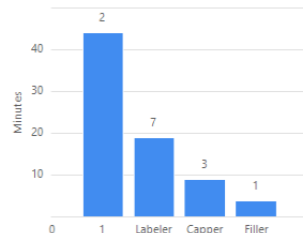
Active

No Tablets
 3.8 Minute(s) ↓

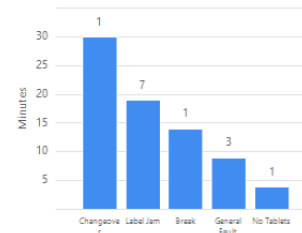
Attention

Acknowledge
 2 Event(s) ⚠

By Sub-System [Top 5]



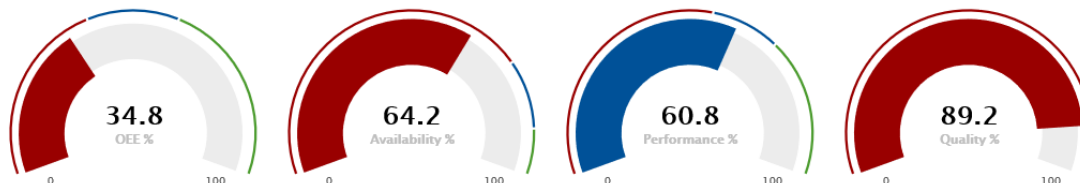
By Definition [Top 5]



Production State



KPIs



Tasks [Top 6]

- ☐ Stage Materials
Due : 1.8 Hour(s) Ago
- ☐ Prepare Forms
Due : 1.8 Hour(s) Ago
- ☐ Quality Control
Due : 1.5 Hour(s) Ago
- ☐ Hourly HACCP Checks
Due : 45.9 Minute(s) Ago
- ☐ Hourly Fill Weight Check
Due : 45.9 Minute(s) Ago
- ☐ Bottle Inspection Check
Due : 45.9 Minute(s) Ago

Journal [Last 5]

+ New

- ☐ General
Jun 13 12:07 PM
- ☐ Changeover
Jun 13 10:14 AM
- ☐ End of Shift
Jun 13 10:07 AM

Job List Pages

- Planned Jobs**
 Lists Jobs assigned to the System that have **yet to begin**.
- Completed Jobs**
 Lists Jobs assigned to the System that have **ended**.
- Allow **filtering** by Date Range and Product
- Support **common** Actions

Planned Jobs

Filters

Start Date
2016-06-13

End Date
2016-06-23

Product
[All]

Refresh

Planned Jobs for Line 1

+ New

Tabular Visual

Name	Product	Planned	Planned Qty	
P.5826	Adravil 500 [ADRA.500]	Jun 13 07:10 AM	15,000 Bottles	▶ Start
P.5829	Adravil 500 [ADRA.500]	Jun 13 04:45 PM	6,500 Bottles	▶ Start
P.5830	Adravil 500 [ADRA.500]	Jun 14 03:00 AM	50,000 Bottles	▶ Start
P.5832	Adravil 500 [ADRA.500]	Jun 14 05:20 AM	22,000 Bottles	▶ Start

P.5826
▶ Start

Name
P.5826

Product
Adravil 500 [ADRA.500]

Planned Start
Jun 13 07:10 AM

Planned End
Jun 13 08:25 AM

Planned Duration
1.2 Hour(s)

Completed Jobs (Standard)

Filters

Start Date
2016-01-01

End Date
2016-06-13

Product
[All]

Refresh

Completed Jobs for Line 1

Name	Product	Planned	Start	End	Planned Qty	
P.3612	Adravil 500 [ADRA.500]	Jan 04 08:00 AM	Jan 04 08:00 AM	Jan 04 07:00 PM	132,000 Bottles	Overview
P.3613	Adravil 500 [ADRA.500]	Jan 04 09:00 PM	Jan 04 09:00 PM	Jan 05 05:00 AM	96,000 Bottles	Overview
P.3614	Adravil 500 [ADRA.500]	Jan 05 08:00 AM	Jan 05 08:00 AM	Jan 05 07:00 PM	132,000 Bottles	Overview
P.3615	Adravil 500 [ADRA.500]	Jan 05 07:00 PM	Jan 05 07:00 PM	Jan 06 06:00 AM	132,000 Bottles	Overview
P.3616	Adravil 500 [ADRA.500]	Jan 06 10:00 AM	Jan 06 10:00 AM	Jan 06 06:00 PM	96,000 Bottles	Overview
P.3617	Adravil 500 [ADRA.500]	Jan 06 09:00 PM	Jan 06 09:00 PM	Jan 07 05:00 AM	96,000 Bottles	Overview

P.3612
Overview

Name
P.3612

Product
Adravil 500 [ADRA.500]

Planned Start
Jan 04 08:00 AM

Planned End
Jan 04 07:00 PM

Planned Duration
11.0 Hour(s)

Job Action Pages

Start Job

Job Details

Name
P.5826

Product
Adravil 500 [ADRA.500]

End Job

Job Details

Name
P.5826

Product
Adravil 500 [ADRA.500]

Planned Start
Jun 13 07:10 AM

Planned End
Jun 13 08:25 AM

Planned Duration
1.2 Hour(s)

Start
Jun 13 10:12 AM

Duration
2.0 Hour(s)

Confirm Job Start

Are you sure you would like to start the Job **P.5826** on **Line 1**?

Start

Cancel

Confirm Job End

Are you sure you would like to end the Job **P.5826** on **Line 1**?

End

Cancel

- **Start Job**
Confirmation and execution. Sets Job and Product Tags based on System configuration.
- **End Job**
Confirmation and execution. Clears Job and Product Tags based on System configuration.
- Redirects to [System Overview](#)

Real-Time Event List

- Contains Events for the System which have been configured to display for **Categorization** and/or **Acknowledgement**
- Displays **Active** and **Ended** Events
- Can show Events for **multiple Systems**
- Supports **common** Actions

⚙️ Events Requiring Attention

⚙️ Systems

Line 1
3 Event(s)

⚠️ Events

Area	Sub-System	Event Definition	Event Category	Start	Duration	
Packaging	Labeler	No Labels	Material Shortage	Sep 07 07:20 PM	00:00:09	🔴 Acknowledge
Packaging	Filler	No Tablets	No Tablets	Sep 07 07:20 PM	00:00:34	🔵 Acknowledge
Packaging	Filler	Tipped Bottle	Conveyor Stopped	Sep 07 07:20 PM	00:00:07	🔵 Acknowledge

Close

i Detail

Start
Sep 07 07:20 PM
End
Sep 07 07:21 PM
Duration
9 Second(s)
Area
Packaging
System
Line 1
Sub-System
Labeler
Event Definition
No Labels
Event Category
Material Shortage
Event Code
Material Shortage
OEE Event Type
Performance Loss
Notes

Event Attention

- Displays details for a selected Event
- Offers Options
 - Change Event [Definition](#)
 - Change Event [Category](#)
 - Edit [Notes](#)
 - [Split](#)
- Acknowledge [clears](#) Event from the Attention List

✦ Event Attention

⚠ Event Details

Start
Sep 07 07:20 PM

End
Sep 07 07:20 PM

Duration
34 Second(s)

Area
Packaging

System
Line 1

Sub-System
Filler

Event Definition
No Tablets

Event Category
No Tablets

Event Code
Material Shortage

OOE Event Type
Performance Loss

Notes

↓ Definition

No Tablets



≡ Category

No Tablets
Material Shortage



🗨 Notes



Split by Percent

Acknowledge

Close

Event Categorization

- Displays Event Category Hierarchy **based on Configuration**
- Selecting a Category with children **drills down** to the next level of Event Categories
- Saving **applies** the Category to the Event

✧ Event Category Assignment

⚠ Event Details

Start
Sep 07 07:20 PM

End
Sep 07 07:20 PM

Duration
34 Second(s)

Area
Packaging

System
Line 1

Sub-System
Filler

Event Definition
No Tablets

Event Category
No Tablets

Event Code
Material Shortage

OOE Event Type
Performance Loss

Notes

☰ Event Categories

Conveyor Stopped
Jams and Adjustments



No Product
Material Shortage



Breaks
Breaks

Jams and Adjustme...
Jams and Adjustments

Material Shortage
Material Shortage

Mechanical Failure
Mechanical Failure

Electrical Failure
Electrical Failure

Operational Failure
Operational Failure

Not Scheduled
Not Scheduled
System Not Scheduled

Save

Cancel

Content Page Navigation

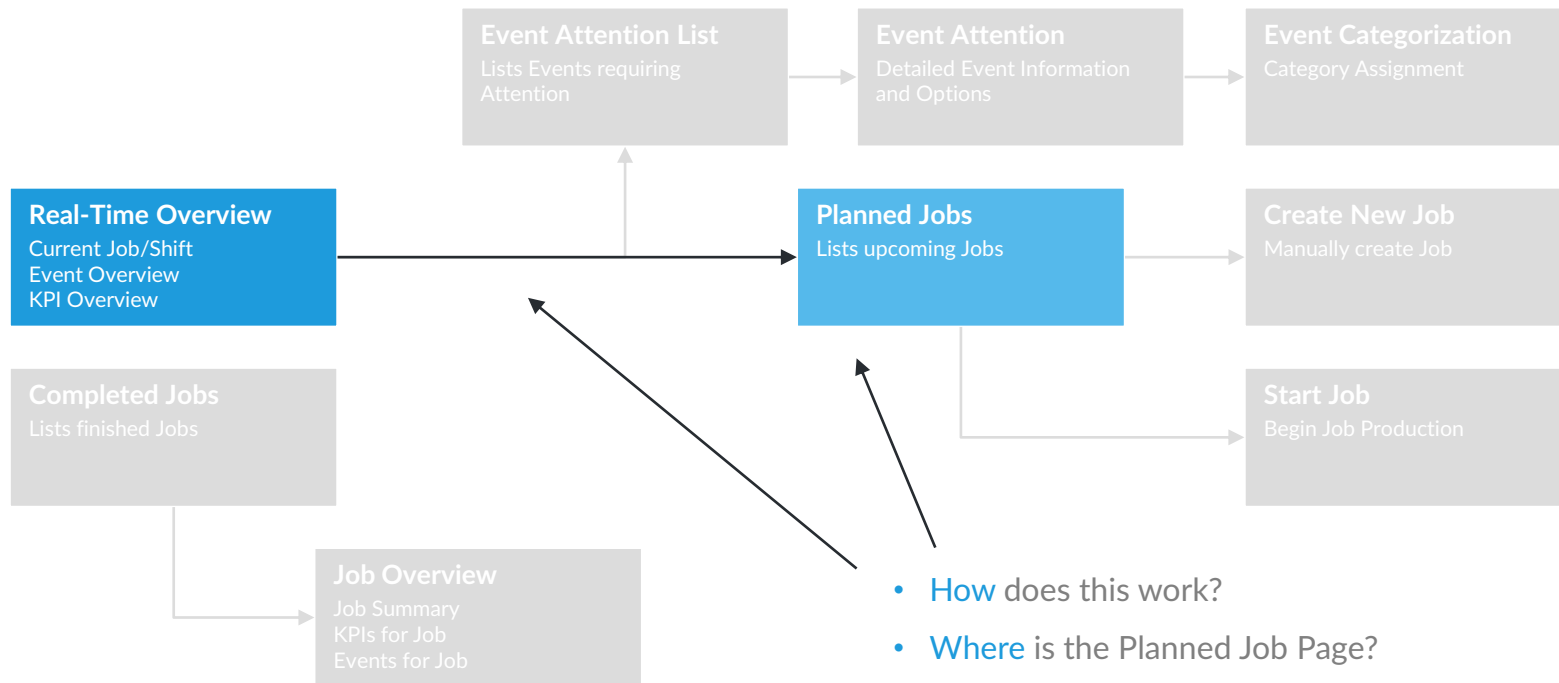
Training Objectives



Explore the mechanism used by standard Content Pages to **interconnect and navigate** between each other.

Discover how solution-specific Visual Page Definitions or specifically defined Content Pages can be **inserted into the navigation chain** to allow standard and custom Content Pages to be used in combinations.

Related Content Pages



“C Equals”

.../ocv/packaging/linehub/

Real-Time Overview

Current Job/Shift
Event Overview
KPI Overview

Planned Jobs

Lists upcoming Jobs

New Page Definition

+ Expand All - Collapse All

Content Page Visual Open

- › Diagnostics
- › Services
- › Settings
- ▼ Application
 - › Event
 - › Historian
- ▼ Job
 - Discrete Job Delete
 - Discrete Job End
 - Discrete Job List for System Completed
 - Discrete Job List for System Planned**
 - Discrete Job New/Edit
 - Discrete Job Overview
 - Discrete Job Start

Discrete Job List for System Planned

Name Discrete Job List for System Planned

Key ETS.Application.Job.JobDiscreteListForSystemPlanned

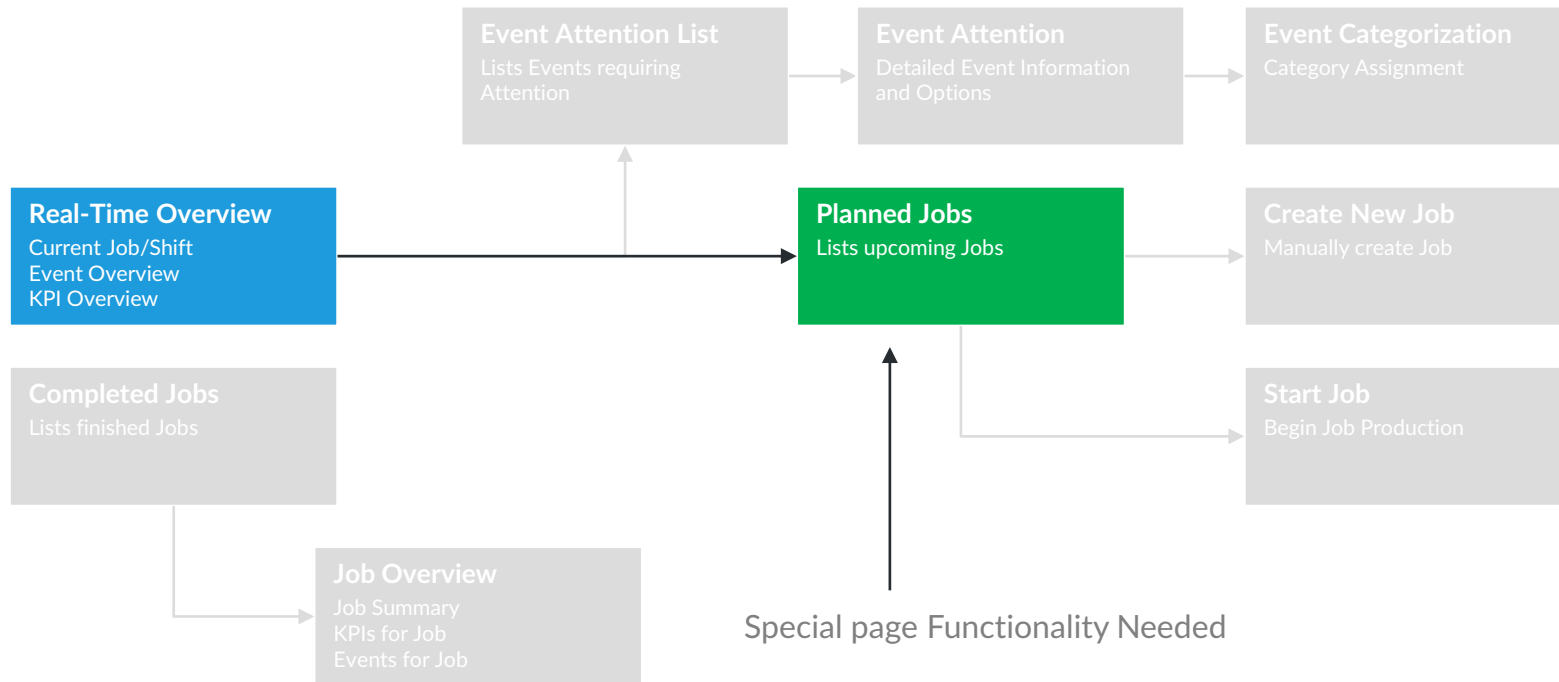
Description

This page lists planned Discrete Jobs for the specified System.

.../ocv/packaging/linehub/?c=ETS.Application.Job.JobDiscreteListForSystemPlanned

(programmatic identifier for Content Page)

Integrating a Custom Page



Integrating a Custom Page

- Navigation in standard Content Pages may be **Overridden**
- Provide a **Relative** URL
 - Visual or standard Content Page
 - Any other URL
- Parameters may be Passed (as available)
- Page Key on same Hierarchy Level
 - **JobListSpecial** ? SystemID = {SystemID}
- Page Key back one Hierarchy Level
 - **../JobListSpecial** ? SystemID = {SystemID}

Page Definition

General	Name
Visibility	Line 1
Properties	Job Overview
Content	Job End
Format	Job Planned
Links	JobListSpecial?SystemID={SystemID}
Charts	Shift History Overview
Notes	Event Active
	Event Attention
	Task Overview
	Task New
	Task Edit

Page Values and Instances

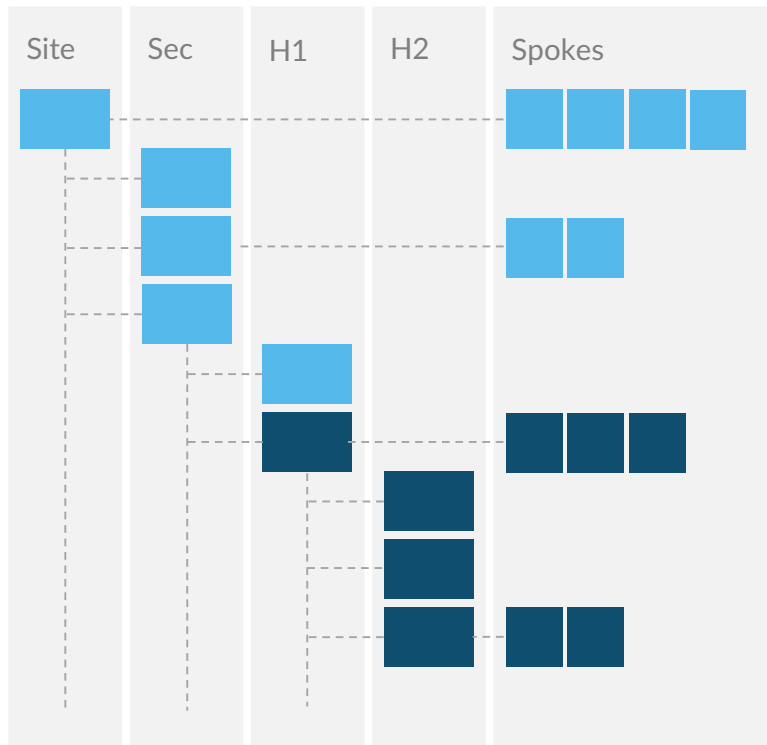
Training Objectives



Understand how to **programmatically set items to the Values Dictionary** for a single Page, or across an entire section of the Page hierarchy.

Explore the capability to create a single Page Definition, that is **rendered multiple times in the navigation** infrastructure based on a configurable set of entities.

Page Values



- Allows programmatic setting of items to the Values Dictionary **for a Page and all of its Children** (Hubs and/or Spokes)
- Values set via **.NET script Editor**
 - Retrieve data from TrakSYS
 - **API** is Available
 - Add to **Values Dictionary**
 - Occurs **before Page Class** Script is Executed

Page Values Script

Values

[Edit](#)

ID 230

Key Values

Page Level Type Hub2

Page Title [None]

Navigation Title [None]

Content Mode Visual

Related

[Spokes](#)
[Audit Trail](#)

Actions

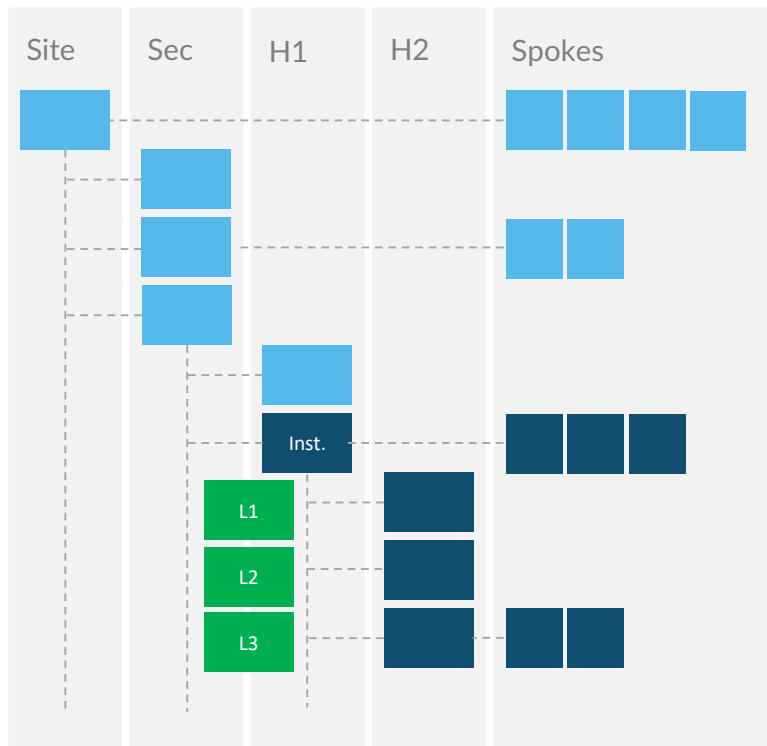
[Grid](#)
[Parts](#)
[Script](#)
[JS](#)
[CSS](#)
[Instances](#)
[Values](#)
[Shared JS](#)
[Shared CSS](#)
[Delete](#)

```

1  /*
2
3  The code in this editor represents the body of the following method...
4  Result<bool> LoadEtsValues(DbPageDefinition pdef, string instanceKey, int instanceID, PageDefinitionValues values)
5
6  The parameters are defined as follows...
7
8  DbPageDefinition pdef
9  Model object representing the Page Definition where this script is defined.
10
11  string instanceKey
12  If this Page Definition is an "instance", contains the Instance Key as defined by the Instance script.  Otherwise <empty string>.
13
14  int instanceID
15  If this Page Definition is an "instance", contains the Instance ID as defined by the Instance script.  Otherwise -1.
16
17  PageDefinitionValue values
18  A dictionary object used to add values to the real Ets.Values dictionary.  This is NOT the real Ets.Values dictionary.
19
20  The API object is also available within this editor by using this.Api.
21
22  */
23
24  // add a single value to the values collection
25  values["SystemID"] = 123;
26
27  // add from custom properties (System with ID = 123)
28  values.AddFromCustomProperty<DbSystem>(123);
29
30  // add from sql
31  string sql = "SELECT TemplateTagPrefix FROM tSystem WHERE ID = 123";
32  int cacheTimeoutSeconds = -1; // no cache
33  values.AddFromSql(sql, cacheTimeoutSeconds);
34
35  // return
36  return Result<bool>.ReturnSuccessfulResult(true);

```


Page Instances



- Allows a single Page Definition to be rendered multiple times in the User Interface
- Instances based on one of three modes:
 - Custom Script: Use API and SQL to build a list of Instances
 - Page Definition Instance: Configure instances with IDs and Keys
 - System by Area Key: Get one Instance per System in an Area
- Instances set via [.NET script Editor](#)
 - Retrieve data from TrakSYS
 - [API](#) is Available
 - Add to [Instances List](#)
 - Occurs [before Values Script](#) is Executed

Page Instances Custom Script

Instances and Values

[Edit](#)

ID 229

Key InstancesAndValues

Page Level Type Hub2

Page Title [None]

Navigation Title [None]

Content Mode Visual

Related

[Spokes](#)

[Audit Trail](#)

Actions

[Grid](#)

[Parts](#)

[Script](#)

[JS](#)

[CSS](#)

[Instances](#)

[Values](#)

[Shared JS](#)

[Shared CSS](#)

[Delete](#)

```

1  /*
2
3  The code in this editor represents the body of the following method...
4  Result<bool> GetPageInstances(DbPageDefinition pdf, string parentInstanceKey, PageInstanceList instances)
5
6  The parameters are defined as follows...
7
8  DbPageDefinition pdf
9  Model object representing the Page Definition where this script is defined.
10
11  string parentInstanceKey
12  If the PARENT of this Page Definition is an "instance", contains the PARENT Instance Key. Otherwise <empty string>.
13
14  PageInstanceList instances
15  A dictionary object used to add instances to be generated for this Page Definition.
16
17  The API object is also available within this editor by using this.Api.
18
19  */
20
21  // add from sql (all Systems)
22  string sql = @"
23  SELECT
24      s.ID AS InstanceID,
25      s.[Key] AS InstanceKey,
26      s.Name AS NavigationTitle,
27      s.Name AS PageTitle
28  FROM tSystem s
29  ORDER BY s.Name
30  ";
31  instances.AddFromSql(sql, -1);
32
33  // add single
34  instances.Add(new PageInstance(
35      instanceKey : "m1",
36      instanceID : -999,
37      navigationTitle : "Manual",
38      pageTitle : "Manual"
39  ));
40
41  // return
42  return Result<bool>.ReturnSuccessfulResult(true);

```

Page Instances | Values Script

Instances and Values

[Edit](#)

ID 229

Key InstancesAndValues

Page Level Type Hub2

Page Title [None]

Navigation Title [None]

Content Mode Visual

Related

[Spokes](#)
[Audit Trail](#)

Actions

[Grid](#)
[Parts](#)
[Script](#)
[JS](#)
[CSS](#)
[Instances](#)
[Values](#)
[Shared JS](#)
[Shared CSS](#)
[Delete](#)

```

1  /*
2
3  The code in this editor represents the body of the following method...
4  Result<bool> LoadEtsValues(DbPageDefinition pdef, string instanceKey, int instanceID, PageDefinitionValues values)
5
6  The parameters are defined as follows...
7
8  DbPageDefinition pdef
9  Model object representing the Page Definition where this script is defined.
10
11  string instanceKey
12  If this Page Definition is an "instance", contains the Instance Key as defined by the Instance script. Otherwise <empty string>.
13
14  int instanceID
15  If this Page Definition is an "instance", contains the Instance ID as defined by the Instance script. Otherwise -1.
16
17  PageDefinitionValue values
18  A dictionary object used to add values to the real Ets.Values dictionary. This is NOT the real Ets.Values dictionary.
19
20  The API object is also available within this editor by using this.Api.
21
22  */
23
24  // add a single value to the values collection
25  values["SystemID"] = instanceID;
26
27  // add from custom properties (System with ID = instanceID)
28  values.AddFromCustomProperty<DbSystem>(instanceID);
29
30  // add from sql
31  string sql = "SELECT TemplateTagPrefix FROM tSystem WHERE ID = {0}".FormatWith(instanceID);
32  int cacheTimeoutSeconds = -1; // no cache
33  values.AddFromSql(sql, cacheTimeoutSeconds);
34
35  // return
36  return Result<bool>.ReturnSuccessfulResult(true);

```

Page Instance URLs by Key

Base Pages URL

`http://servername/ts/pages/`

`http://servername/ts/pages/site`

`http://servername/ts/pages/ocv`

`http://servername/ts/pages/site/section`

`http://servername/ts/pages/ocv/packaging`

`http://servername/ts/pages/site/section/hub1$instancekey`

`http://servername/ts/pages/ocv/packaging/line$L1`

`http://servername/ts/pages/site/section/hub1$instancekey`

`http://servername/ts/pages/ocv/packaging/line$L2`

Page Definition

General

Visibility

Notes

Name

Key

Navigation Title

Page Title

Refresh Seconds

Refresh Keys

Preview URL

Page Level Type

Spoke

Content Key

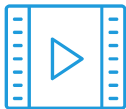
[None]

Apply

Save

Cancel

Demonstration



- Show a single Page Values Script
- Show an Instances Script
 - List all Systems
- Show an Instances Values Script
 - Based on Instance Data
- Walk through the Standard Performance Content Pages
 - System Real-Time
 - Job Pages
 - Event Pages
- Create a custom End Job Page
 - Visual Page Definition
 - Link to System Real-Time

Lab 10



Batching Configuration

Training Objectives

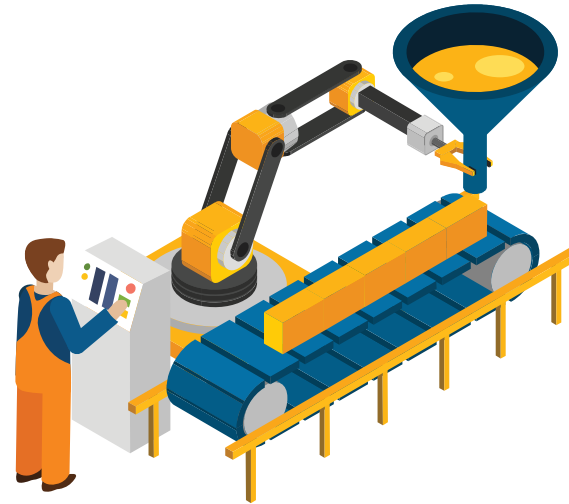


Explore in more detail the [Batch System](#) and [Batch Recipe Management](#) features within TrakSYS.

Describe the settings available in the System, Function Definition, Product and Recipe entities that allow the [setup](#) and [systematic execution](#) of a Batch System and Batch Recipe respectively.

Batch Systems

- Used to model Manufacturing Equipment which produce / process **Batch** or Volumes of Material (Process Cells (S95) / Batching Lines)
- Contain one or more **Sub-Systems** or Units (e.g. Blender, Mixer, Granulator, and Dryer)
- Contain child configuration **elements** to model Batch Steps, Events, Tasks, and SPC Sampling



Batch System Properties

- Similar to **Discrete** Systems
- **Product Set**
Identifies the set of Products that may be stored within the System (if applicable)
- **Event Split**
Settings allow Events to be automatically End and Restart Events when specific transitions occur...
 - Day Change
 - Shift Change
 - Batch Change
- **Batch Size (Planned and Actual)**
Can be defined dynamically for a Batch System using Tags

General	Name Line 1
Event Splits	Area Batching
Event	Schedule Main
Job	Product Set Batching
Advanced	
Notes	

General	Name Line 1
Event Splits	<input type="checkbox"/> Split Event on Day Change <input type="checkbox"/> Split Event on Shift Change
Event	<input type="checkbox"/> Split Event on Product Change <input type="checkbox"/> Split Event on Job Change
Job	<input type="checkbox"/> Split Event on Batch Change
Advanced	
Notes	

General	Name Line 1
Event Splits	
Event	Planned Size Tag OCV.BATCH.BL1.RUN.PLANNED_SIZE
Job	Actual Size Tag OCV.BATCH.BL1.RUN.ACTUAL_SIZE
Advanced	
Notes	

Batch Sub-Systems

OCV > Configuration > Systems > Batching > Line 1

Systems

Line 1

[Edit](#)

ID 108

Key BL1

S95 Type Batch

Schedule Main

Product Set Batching

Refresh Key BL1

Related

[Sub-Systems](#)

[Event Category Assignments](#)

[Step Category Assignments](#)

[Notifications](#)

[VTRs](#)

[Tags](#)

[Audit Trail](#)

Actions

[Set Job Capture Scheme](#)

[Create Template Parent System](#)

[Move](#)

[Delete](#)

Sub-Systems

[New](#)

[Reorder](#)

Start

Batch

Scale

Batch

Blender

Batch

Granulator

Batch

Dryer

Batch

Mill

Batch

End

Batch

- Allows for the **creation of all Data Definitions** (Function, Event, Task, Sample).
- All **data definitions** are executed at the **sub-system level**, not at the system level.
- **Sub-systems** model the actual process options available for the **Batch** system.

Sub-System Properties

- Job and Batch Tags are configured at the **Sub-System level** in Batch Systems
- A Batch System must have **at least one** Sub-System
- The **Job Tag** should contain a unique identifier for the **current Job** running on the Sub-System
- The **Batch Tag** should contain a unique identifier for the **current Batch** running on the Sub-System
- TrakSYS **creates new Job and Batch** records for a System when the **Job and Batch Tags change** Values

Batch Sub-System

General

Event

Product

Advanced

Notes

Name

Blender

System Type

[None]

Key

BLENDER

Job Tag

OCV.BATCH.BL1.RUN.JOB

Batch Tag

OCV.BATCH.BL1.RUN.BATCH

☒ Show In Reports

☒ Enabled

Color



#FFFFFF

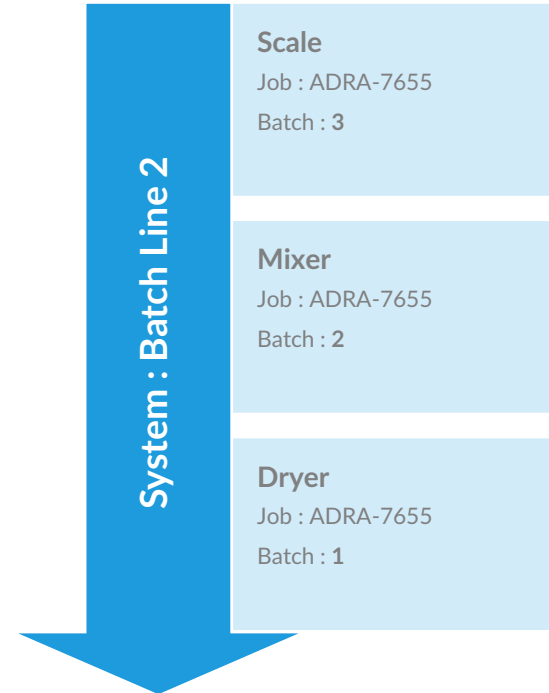
Apply

Save

Cancel

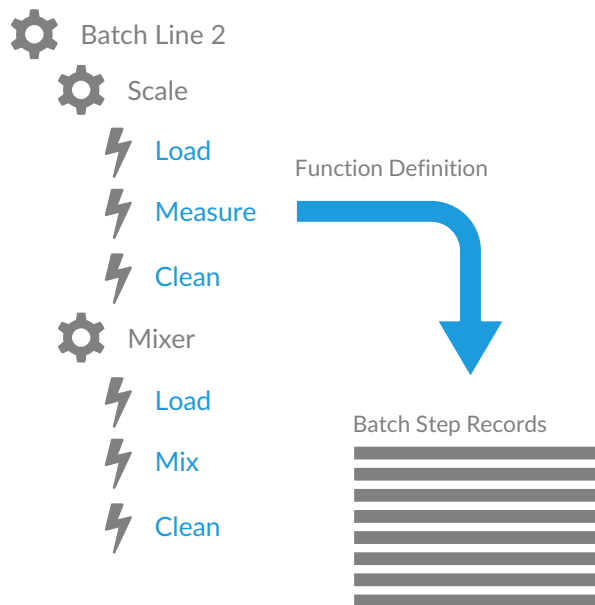
Batches

- Batches are **smaller sub-sets of production** within a Job
- Batches apply only to **Batch type Systems**
- A single Batch Job may contain **one or more** Batches
- A **single Batch System** (containing many Batch Sub-Systems) may be processing **more than one Batch** Simultaneously
- Each **Batch Sub-System** may only be operating on **one Batch** Simultaneously



Function Definitions

Batch Systems Only



Configuration

- Allows the real-time examination of an [input condition](#) to record instances of [Batch Step](#) records in the TrakSYS Database
- A Batch Step [represents a span of time](#) that a Batch System is engaged in a specific activity (Step)
- Configurable at the [Sub-System Level Only](#)
- A [Discrete Trigger Tag](#) property indicates when a Batch Step Starts and Ends



Execution

- Loaded and executed by the [Logic Service](#)
- Batch Steps contain reference to [related information](#) such as Job, Batch, Product, Shift, etc...
- It is possible for [multiple Batch Steps in a single Sub-System](#) to be simultaneously active, with each [Batch Step](#) having a corresponding [Batch Step Record](#)

Function Definition Properties

Function Definition

General
Advanced
Notes

Name
Blend

Function Definition Group
[None]

Function Definition Type
[None]

Key

Trigger Tag
OCV.BATCH.BLT1.BLENDER.BLEND

Default Overage Step Category
[None]

Step Overage OEE Type
N/A

☒ Enabled

Color
 #FFFFFF

Apply Save Cancel

- Batch-specific data definition used to model potential operations or actions that a Batch Sub-System (Unit) can perform
- [Trigger Tags](#) are used to record Function data in TrakSYS™
- [Step Categories](#) can be used to assign reasons to functions the execute longer than their planned duration
- The actual sequence and duration of [Function Definitions](#) required to complete a Batch is defined as a [Recipe](#) in the [Product](#) configuration

Product Materials

OCV > Configuration > Products > Batching > Adravil

Products

Adravil

[Edit](#) [Special Edit](#)

ID 6648

Product Code ADRA

Material Produced Adravil Compound

Version 1

Related

[Materials](#)

[Recipes](#)

[Audit Trail](#)

Actions

[Duplicate](#)

[Delete](#)

Materials

[+ New](#) [Reorder](#)

Malto-Dextrin

10 | KGs

Micro-Crystalline Cellulose

15 | KGs

Fish Oil

10 | Liters

Vitamin A

60 | KGs

Iron [Grade A]

5 | KGs

- Represent a **physical material** that is **consumed** or **produced** by a manufacturing process
 - May be used for all **System** types
 - Does not require the TrakSYS™ batching feature line
- May be simple **ingredients** or **compounds** of other materials defined in the configuration
- May be associated with a product in a configured **Product Set** to define a **Bill of Material** for a product

Product Recipe

OCV > Configuration > Products > Batching > Adravil

Products

Adravil

[Edit](#) [Special Edit](#)

ID 6648

Product Code ADRA

Material Produced Adravil Compound

Version 1

Related

[Materials](#)

[Recipes](#)

[Audit Trail](#)

Actions

[Duplicate](#)

[Delete](#)

Recipes


[+ New](#)

ADRA Recipe

v 1 | Active

- A **Recipe** is a formula or a set of production directions for a specific **Product** on a specific **Batch System**
 - **Product** and **System** must exist prior to **Recipe** creation
 - May be assigned to a **System Template**
- Defines the **size** and **overall duration** for a single run of the **Recipe**
- **Recipes** may be **versioned** with their associated **Products**
- A **Recipe** is made up of one or more **Recipe Step Definitions**

Recipe Properties

General	Name	<input type="text" value="ADRA Recipe"/>	
Planned	External ID	<input type="text" value="ADRA"/>	
Notes	Recipe Type	<input type="text" value="[None]"/>	
	System	<input type="text" value="Line 1"/>	
			
General	Name	<input type="text" value="ADRA Recipe"/>	
Planned	Planned Number of Batches	Planned Batch Size	
Notes	<input type="text" value="1"/>	<input type="text" value="100"/>	
	Planned Batch Size Units	Planned Batch Duration (Minutes)	
	<input type="text" value="kgs"/>	<input type="text" value="240"/>	

- A product [Recipe](#) is created and assigned to the [Line 1 Batch System](#)
- Support for different [planned durations](#) based on “multiples” of the [Recipes Planned Batch Size](#)
- Recipes have [versioning](#) where the most recent version (version X) is the active [Recipe](#) for this combination of [Product](#) and [System](#)

Recipe Step Definitions

OCV > Configuration > Products > Batching > Adravil > ADRA Recipe (Recipe)

Products

ADRA Recipe

[Edit](#)

ID 3

Product Adravil

Version 1

Version State Active

Planned Number of Batches 1

Planned Batch Size 100.0

Planned Batch Size Units kgs

Related

[Recipe Step Definitions](#)

[Parameters](#)

[Duration By Batch Size](#)

[Audit Trail](#)

Actions

[Duplicate](#)

[Delete](#)

Recipe Step Definitions

[+ New](#)

[Start] Setup

1 | 1 | 30 (Seconds)

[Scale] Measure and Weigh

2 | 2 | 600 (Seconds)

[Blender] Load Blender

3 | 3 | 720 (Seconds)

[Blender] Blend

4 | 4 | 3600 (Seconds)

[Blender] Load Blender

5 | 5 | 300 (Seconds)

[Blender] Blend

6 | 6 | 900 (Seconds)

[Granulator] Load Granulator

7 | 7 | 600 (Seconds)

- Define the **sequence** and **duration** of steps required for the completion of a batch
 - Assigned to an existing **Function Definition** from a subsystem
 - Steps may be executed in **parallel** or **sequentially**
 - Does not support complex workflow structures (repeat until, conditional branching, etc.)
- A **Recipe** step is automatically started when its associated **Function Definition** becomes active based on its **Trigger Tag** logic

Recipe Step Materials

OCV > Configuration > Products > Batching > Advavil > ADRA Recipe (Recipe)

Products

Load Blender

[Edit](#)

ID 6

Sub-System **Blender**

Start Sequence 3

End Sequence 3

Planned Duration (Seconds) 720

Related

[Parameters](#)

[Materials](#)

[Duration By Batch Size](#)

[Audit Trail](#)

Actions

[Delete](#)

Materials

[+ New](#) [↕ Reorder](#)

Iron [Grade A]

5.000 KGs | 100.000 % | 0.000 KGs (Remaining)

Malto-Dextrin

7.500 KGs | 75.000 % | 0.000 KGs (Remaining)

Micro-Crystalline Cellulose

10.000 KGs | 66.667 % | 0.000 KGs (Remaining)

Fish Oil

10.000 Liters | 100.000 % | 0.000 Liters (Remaining)

Vitamin A

60.000 KGs | 100.000 % | 0.000 KGs (Remaining)

- List of **Materials** can be added to individual **Recipe Steps** in order to track accurate batch records
- **Materials** are assigned **quantities** that represent **percentages** of the entire Batch size specified
- Materials are **consumed** by the **Batch process** at each specific **Recipe Step Definition**

Batching Data

Training Objectives



Explore the data records associated with **Batching** processes.

Understand how **Batch Step** and **Material Use Planned** records are created, and how **Batch Step Overages** and **Material Use Actual** records are related.

Batch Steps

- Batch Steps are created when a Batch is started
- Batch Steps have an expected Start and End Sequence, as well as an expected duration
- The Start and End timestamp for each Batch Step is based upon the associated Function Definition's Trigger tag
- Multiple Batch Steps can occur at the same time

Recipe Definition

Scale: Measure and Weigh
Start 1 | End 1

Scale: Measure and Weigh
Start 2 | End 3

Scale: Clean
Start 4 | End 16

Mixer: Load
Start 2 | End 2

Mixer: Mix
Start 3 | End 3

Mixer: Load
Start 4 | End 4

Mixer: Mix
Start 5 | End 5

Mixer: Clean
Start 6 | End 16

Batch Step Overages

Process Overview

Job Details

Name
 B.4615
Product
 Drispolin Compound DRIS
Planned Start
 May-27 19:30 PM
Planned End
 May-28 05:45 AM
Planned Duration
 10.2 Hour(s)
Planned Batches
 3 Batches
Planned Size
 51 KGs
Start
 May-27 19:43 PM
End
 May-28 05:38 AM
Duration
 9.9 Hour(s)
Batches
 3 Batches
Size
 49.924 KGs

Duration

Avg. by Batch

Target 4.0 Hour(s)
 3.9 Hour(s)

Step Overages

Total Across Batches

4 Overage Steps
 1.5 Hour(s)

Batches

All Batches

11.9 Hour(s) (1.5 Hour(s) overage)

B.4615-1

3.8 Hour(s) (24.8 Minute(s) overage)

B.4615-2

4.2 Hour(s) (45.9 Minute(s) overage)

B.4615-3

3.9 Hour(s) (23.4 Minute(s) overage)

- When a Function Definition's **Trigger Tag** is active, a Batch Step will start for that Function on that System
- Batch Steps have an expected duration and sequence based upon the Recipe configuration
- If step occurs out of sequence, it will be marked as **Unexpected** and have a duration of 0 seconds
- A **Batch Step Overage** is created any time a Batch Step exceeds its expected duration
- Batch Step Overages can be assigned **Step Categories** to assist with reporting

Material Use Planned/Actual

Batching

Material Consumption

14 Record(s)

6 User(s)
6 Material(s)
1 Alternate(s)

3 KGs of Micro-Crystalline Cellulose

Lot: a76tl c000-h9j
By charvey @ 01/01 8:34 AM

[Trace](#)

1 KGs of Iron [Grade A]

Lot: 24ety
By charvey @ 01/01 8:34 AM

[Trace](#)

15 KGs of Vitamin A

Lot: du3d-o3
By rbeoulve @ 01/01 8:35 AM

[Trace](#)

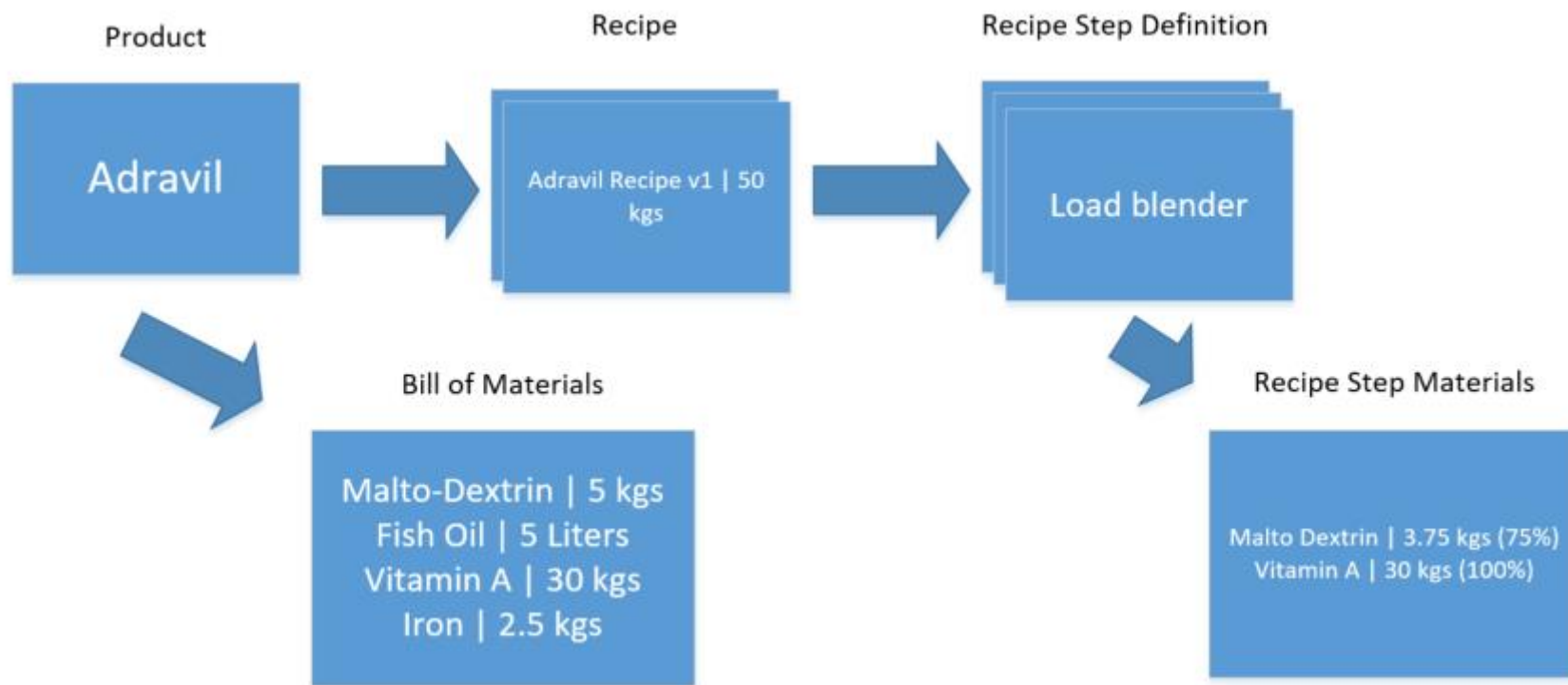
2 KGs of Malto-Dextrin

Lot: de985
By liring @ 01/01 8:35 AM

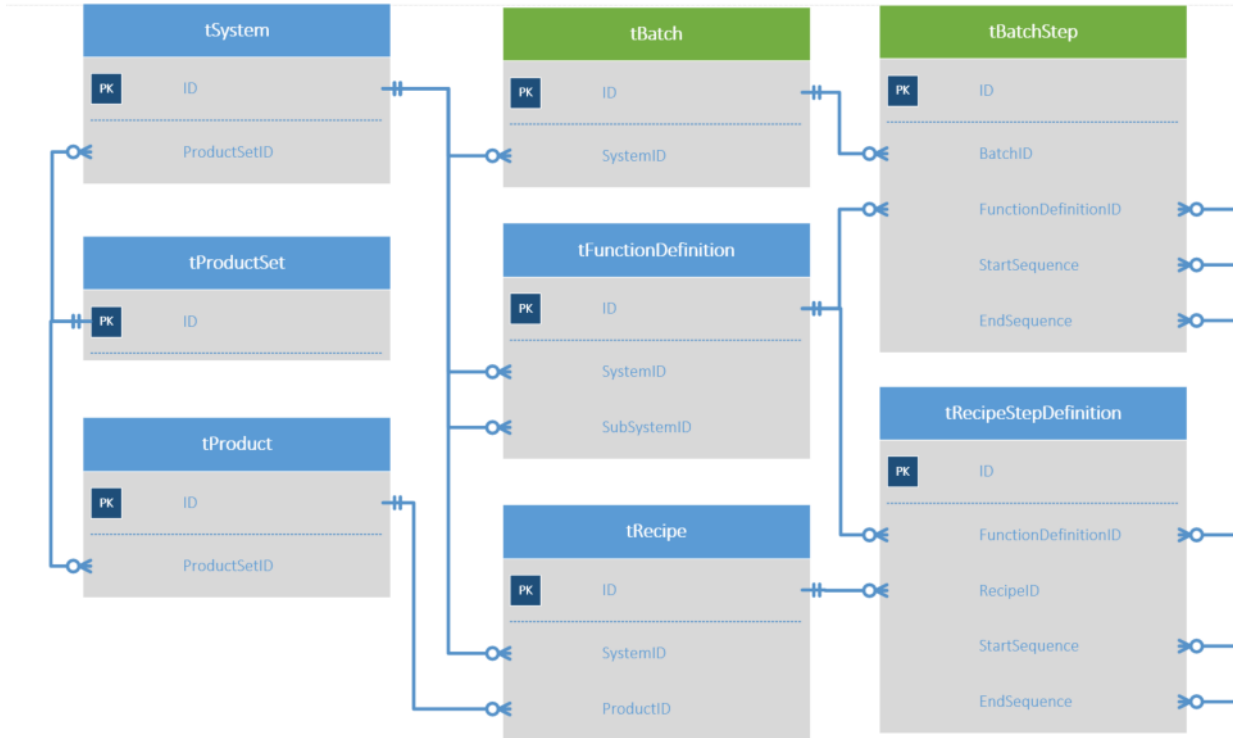
[Trace](#)

- [Material Use Planned](#) Records are created when the [Batch](#) first starts
- The expected quantity of materials is based off the combination of [Product](#) and [Recipe](#) configuration, as well as the planned [Batch](#)
- Actual material consumption can be recorded as [Material Use Actual](#) records
- Planned and Actual records are related [Job](#) and [BatchStep](#) records

Batch Product Configuration Hierarchy



Batching Data Structures



Storage Systems and Transfers

Training Objectives



Explore in more detail the modeling and functional support for **tracking material** and **storage** equipment status within TrakSYS.

Describe the settings available in the System and Transfer Definition entities that allow the **capture of material movements** to and from storage type equipment (Silos, Tanks, etc...)

Storage Systems

- Used to model Manufacturing Equipment which store a Quantity of Material ([Storage Zones \(S95\)](#))
- Facilitate Inventory and [Material Management](#) Solutions
- Contain child configuration [elements](#) to model Material Transfers , Events, Tasks, and SPC Sampling



Storage System Properties

- Similar to **Discrete** Systems
- **Product Set**
Identifies the set of Products that may be stored within the System (if applicable)
- **Storage Units**
String description for the unit of measure stored within the System
- **Maximum Capacity**
Maximum quantity that may be stored within the System

OCV > Configuration > Systems > Packaging > Silo



Storage System

General

Event Splits

Event

Storage

Advanced

Notes

Name

Product Set

Bulk Materials

Storage Units

Maximum Capacity

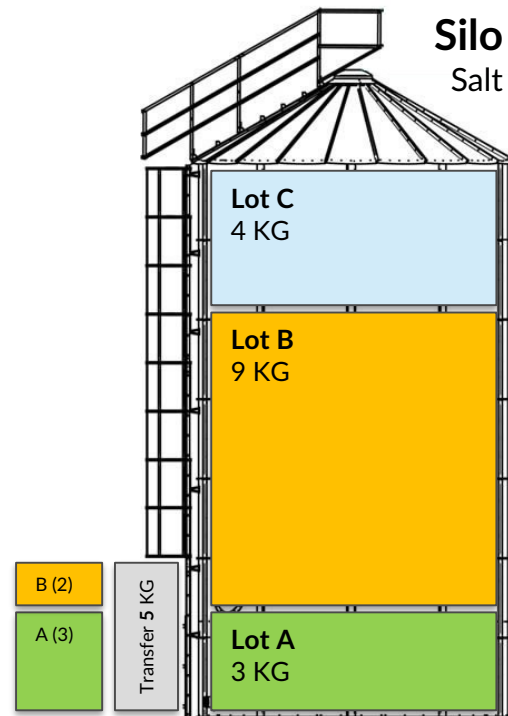
Apply

Save

Cancel

Storage System **Layers**

- Storage System contents may be recorded in **Layers**
- Each Layer identifies...
 - Product, Material
 - Lot, Sub-Lot
 - Quantity
- **Transfer Definitions** enable tracking of content movement in and out of the Storage System
- A transfer (out) may draw from **multiple** Layers



Transfer Definitions

Storage Systems Only



Storage Silo 3



In from WH

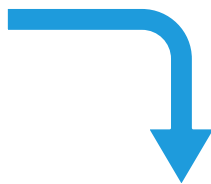


Out to Mixer



Clear

Transfer Definition



Transfer Records



Configuration

- Allows the real-time examination of an [input condition](#) to record instances of [Transfer](#) records in the TrakSYS Database
- A Transfer [represents a movement of a specific Material](#) to or from a Storage System
- Configurable at the [System Level Only](#)
- A [Discrete Trigger Tag](#) property indicates when a Transfer Starts and Ends



Execution

- Loaded and executed by the [Logic Service](#)
- Transfers contain reference to [related information](#) such as Job, Batch, Product, Shift, etc...
- Data records include captured information such as the [Material Code](#) and [Quantity](#) that is Transferred

Transfer Definition Properties

Transfer Definition

General

Quantity

Capture

Advanced

Notes

Name

Fill Silo

Transfer Definition Group

[None]

Transfer Definition Type

[None]

Key

Trigger Tag

[None]

Transfer Direction

In

End Point System

[None]

☒ Enabled

Color

#FFFFFF

Apply

Save

Cancel

- **Trigger Tag**

A Discrete Tag indicating when the Transfer **starts and ends**.

A value of 1 = transferring. Transfers have duration.

- **Transfer Direction**

Describes the **type** of Transfer...



- In : **Adding** material to the System
- Out : **Removing** material from the System
- Set : **Adjusting/correcting** the quantity in the System

- **End Point System**






A reference to a System where the material being transferred is coming **from**, or moving **to**.

Transfer Definition Properties

Transfer Definition

General	Name	<input type="text" value="Fill Silo"/>
Quantity	Quantity Tag	[None] 
Capture	Capture Quantity On	Transfer Start 
Advanced		
Notes		

Transfer Definition

General	Name	<input type="text" value="Fill Silo"/>
Quantity		
Capture	Job Tag	[None] 
Advanced	Batch Tag	[None] 
Notes	Product Tag	[None] 
	Material Tag	[None] 
	Lot Tag	[None] 

- Quantity Tag**

A Tag storing a quantity to be **transferred in or out** of the System. The Tag value must be accurate at the moment the Transfer starts or ends.

- Capture Quantity On**

Indicates **when** the Quantity Tag should be **captured** and recorded in the Transfer record (Start or End).

- Capture Tags**

These Tags hold TrakSYS production entity Codes or Names (Job, Batch, Product, Material, etc...). When a Transfer **begins**, the associated **entity ID is captured and stored** with the record.

Transfers by User Interface

- Standard [Content Parts](#)
- Visual Page Definition Forms for [solution-specific](#) User Interfaces
- Scripting / API
 - Transfer / tTransfer
Historical [record of material movement](#)
in/out of the Storage System
 - SystemStorage / tSystemStorage
Real-time [contents of the Storage System](#) with one record per Layer.

OCV > Training > Day 5 > Storage and Transfers



Transfer In

General

Material

Select Material to Transfer In

Material A



Quantity

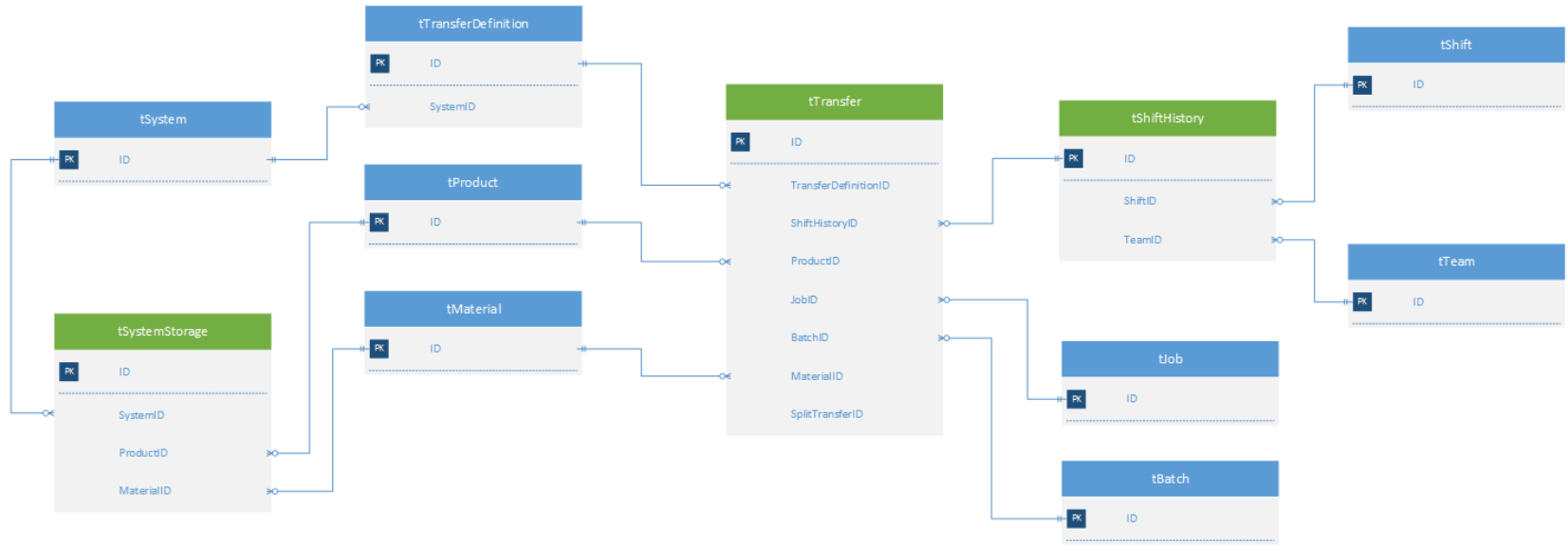
Enter Quantity to Transfer In

0

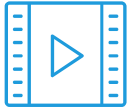
OK

Cancel

Transfer and Storage Data Structures



Demonstration



- Configure a Batch System
- Configure a Batch Sub-System
- Configure a Function Definition
- Configure Material
- Configure Recipe
- Configure Recipe Step Definition
- Configure a Storage System
- Configure a Transfer Definition

Lab 11



Template Systems

Training Objectives

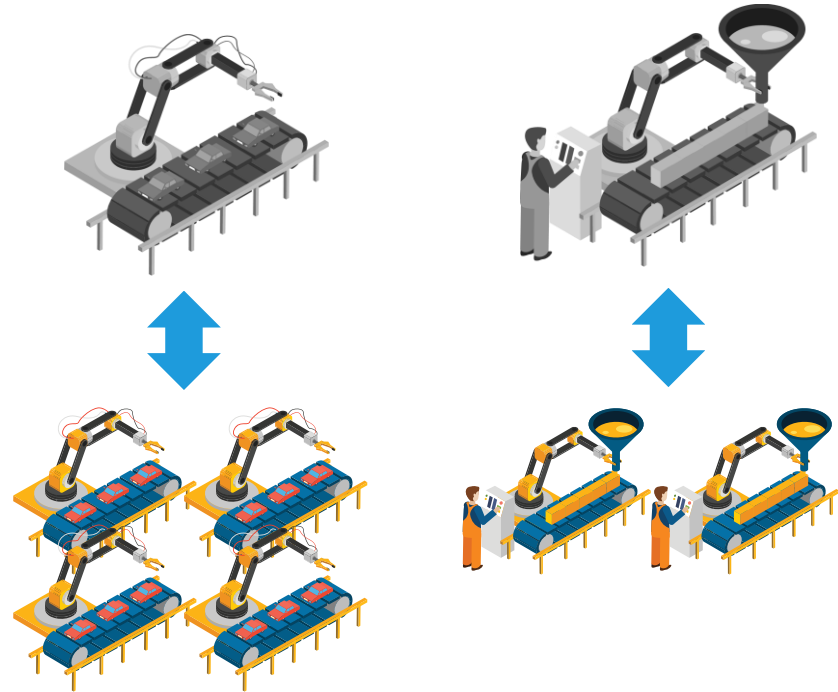


Understand how **Template Systems** are created and the differences between them and their non-template counterparts.

Explore the **Template Tag Mapping** capabilities and **common patterns** used with Template Systems.

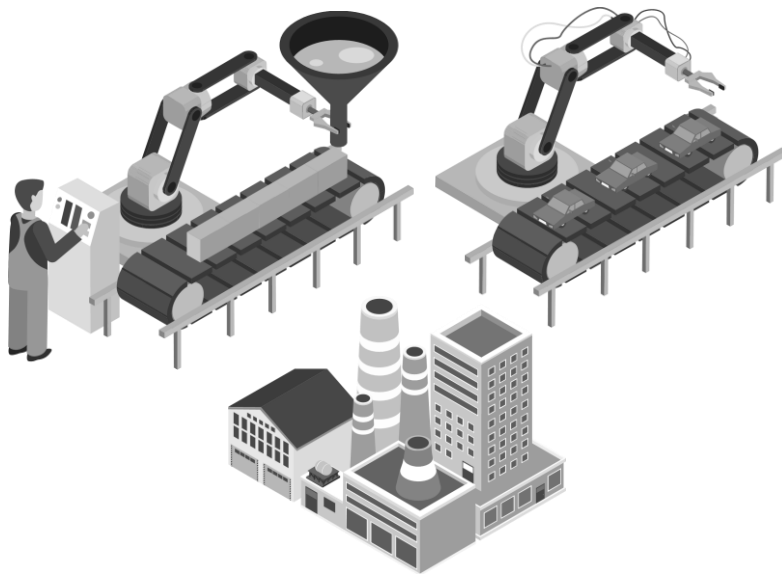
Template Systems

- Used to facilitate rapid modeling of Manufacturing Equipment that produce/process similar products and have similar tracking requirements
- Can be created for each type of System (Batch, Discrete, and Storage)
- Contain child configuration elements based upon the System type for the template
- Provides a way to map configuration from the Parent to the Children Systems



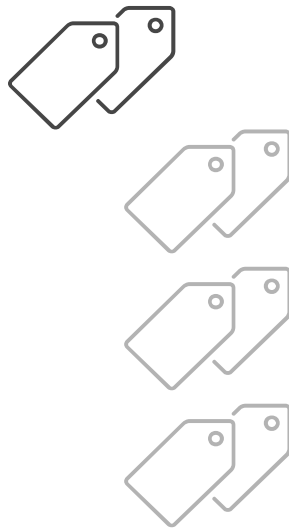
Template System Properties

- Can be created from an existing parent-less system
- Available properties will be the same as a normal system of the same type
- The same children elements will be available
- The same properties will be available on the children elements
- All Tag properties will expect Template Tags
- Most properties on Children Systems are disabled and must be configured through the Parent System.

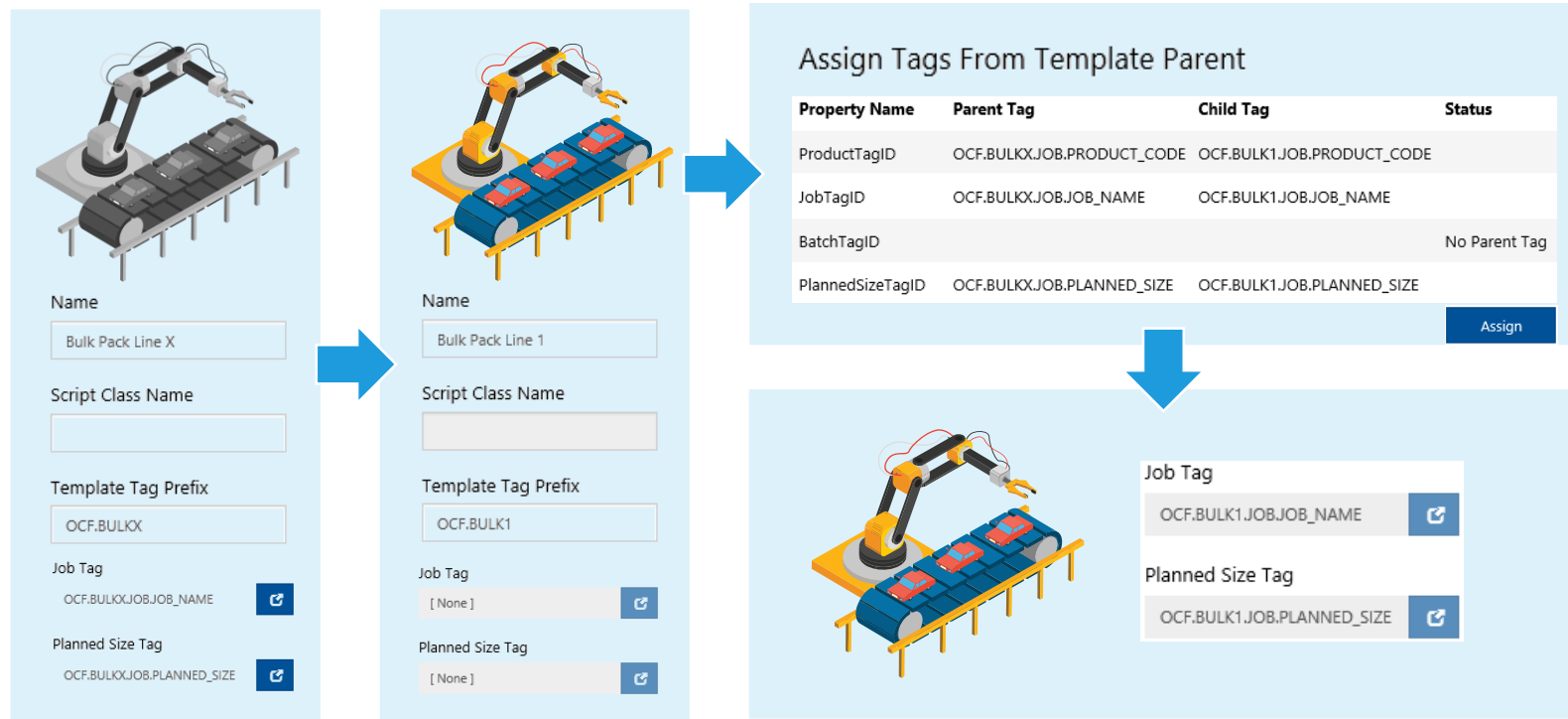


Template Tag Mapping

- Template Parent Systems will use Template Tags for all tag-based properties
- Template Children Systems can use any tag type for tag-based properties
- Template Children cannot have tags directly assigned to them through their configuration. They must use one of the [Assign Tags](#) actions.
- Template tag prefix is required for the mapping to take place
- [Tag Duplication](#) can be utilized to quickly prepare tags for new template children

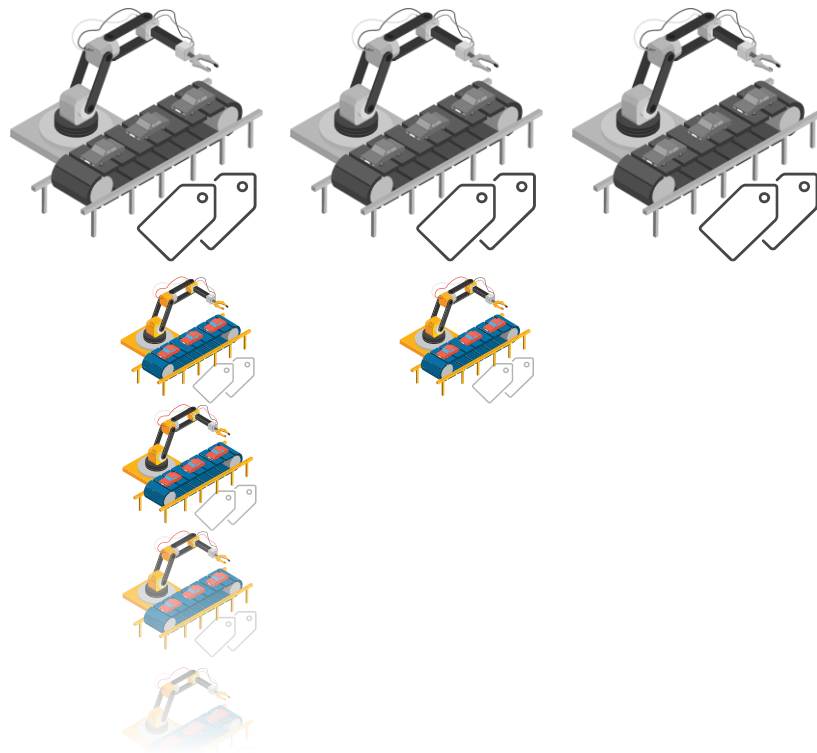


Mapping Example



Template Tips

- Existing Systems can be turned into Template Systems. The new Template Parent System will have a set of Template Tags created and assigned to it.
- Tag Duplication** can be utilized to quickly prepare tags for new template children. Tags can be duplicated with new Prefixes through the Tag Configuration options.
- A Template can be detached from a Parent, but cannot be reattached.
- A Parent Template System does not need to have any Children Template Systems



Task Configuration

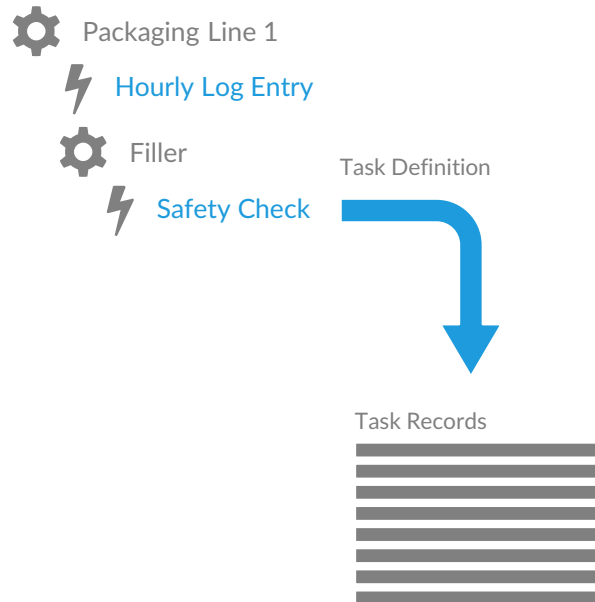
Training Objectives



Explore the capabilities of the TrakSYS **Task Management** entities and functions to enable periodic quality checks and operator log entries.

Understand the **Task Definition** and **Task Form Item** entities and their key properties.

Task Definitions



Configuration

- Allows the real-time examination of an [input condition](#) to record instances of [Task](#) records in the TrakSYS Database
- A Task [represents a request with pre-defined user inputs required \(a form\)](#) associated with a specific asset (System)
- Task Definitions are configured to [require 1 or more user input fields](#) (Task Form Items)
- Configurable at the [System](#) OR [Sub-System](#) Level
- A [Discrete Trigger Tag](#) property indicates when a Task is Generated



Execution

- Loaded and executed by the [Logic Service](#)
- Tasks contain reference to [related information](#) such as Job, Batch, Product, Shift, etc...
- Task Forms are implemented and completed in the [TS Web User Interface](#)

Task Definition Properties

Task Definition

General

Advanced

Notes

Name

Hourly HACCP Checks

Task Definition Group

[None]

Task Definition Type

[None]

Key

PACKHACCP

Trigger Tag

[None]

Task Completion (Seconds)



1800

- **Trigger Tag**

A discrete condition that determines **when a Task record is created**. A Task is created when the Trigger goes from **0 to 1**.

- A Trigger Tag is **NOT** Required (manual or script based Task creation)

- **Task Completion Seconds**

Drives logic that determines when a **Task is considered late** (optional). This can drive scripted business rules and Notifications.

Task Form Items



Configuration

- Represents configurable **data entry fields** to be collected during completion of a specific Task
- Task Form Items are organized into groups called **Task Form Item Groups**
- One or more Task Form Item Groups are **assigned to a Task Definition** defining the fields to be captured in the UI Form



Execution

- Task Forms in the TS Web UI render the defined Task Form Items as **form input fields**...
 - Text Boxes
 - Dropdown Lists
 - Check Boxes
- Support **basic validation** (min, max, required)

[illegible]

Task Form Item

Task Form Item Group

Task Form Item Groups

- **Task Form Item Group Group**
An [organizational only](#) level of grouping to help manage large numbers of Task Form Item Groups
- **Task Form Item Group**
A collection of [Task Form Items](#) that can be assigned to a Task Definition. They can be assigned to [multiple](#) Task Definitions

✧ Task Form Items

Groups

[+ New Group](#) [↕ Reorder Groups](#) [+ New](#) [↕ Reorder](#)

▼ Packaging Forms

Quality Check Entry
QC

Job Start Data
JS

➤ Batching Forms

➤ Other Forms

Task Form Items

[+ New](#) [↕ Reorder](#)

Width
W | String

Height
H | String

Task Form Item Properties

Task Form Item

General

Notes

Name

Net Weight

Key

WEIGHT

Data Type

Float

Prompt

Width

6

Default Value

0

Validate Minimum

0

Validate Maximum

500

☐ Require Change

- **Data Type**

Drives the displayed form [input type](#) and [validation](#) in standard Pages and Parts.

- **Prompt**

An [alternate label](#) displayed on standard Pages and Parts.

- **Default Value**

The value of the item [when the Task is created](#) and before it is edited by a User.

- **Minimum/Maximum**

Used for [automatic validation](#) in standard Pages and Parts.

- **Require Change**

If checked, a [User must change the item's value](#) to something different than the Default Value.

Associating Task Form Item Groups

- Standard Task Pages and Parts display inputs based on **Task Form Item Groups assigned** to the Task Definition
- One or more Task Form Item Groups **must be Assigned** (unless the Task is a simple Yes/No completion)

Hourly HACCP Checks

[Edit](#)

ID 9

Key PACK.HACCP

Trigger Tag [None]

Task Completion (Seconds) 1800

Related

 Task Form Item Groups

 Notifications

 VTRs

 Audit Trail

Actions

 Duplicate

 Delete

Description

Hourly Hazard and Critical Control Points Checks

Task Form Item Groups

[+ Assign](#)

[+ New](#)

[⇅ Reorder](#)

Packaging HACCP

PACK.HACCP

Task Entities

Task Definition



- Controls the creation and processing of task records
- Tasks hold the required inputs from users and required timestamps.
- Examples
 - HACCP Check
 - Fill Weight

Task Form Item Group



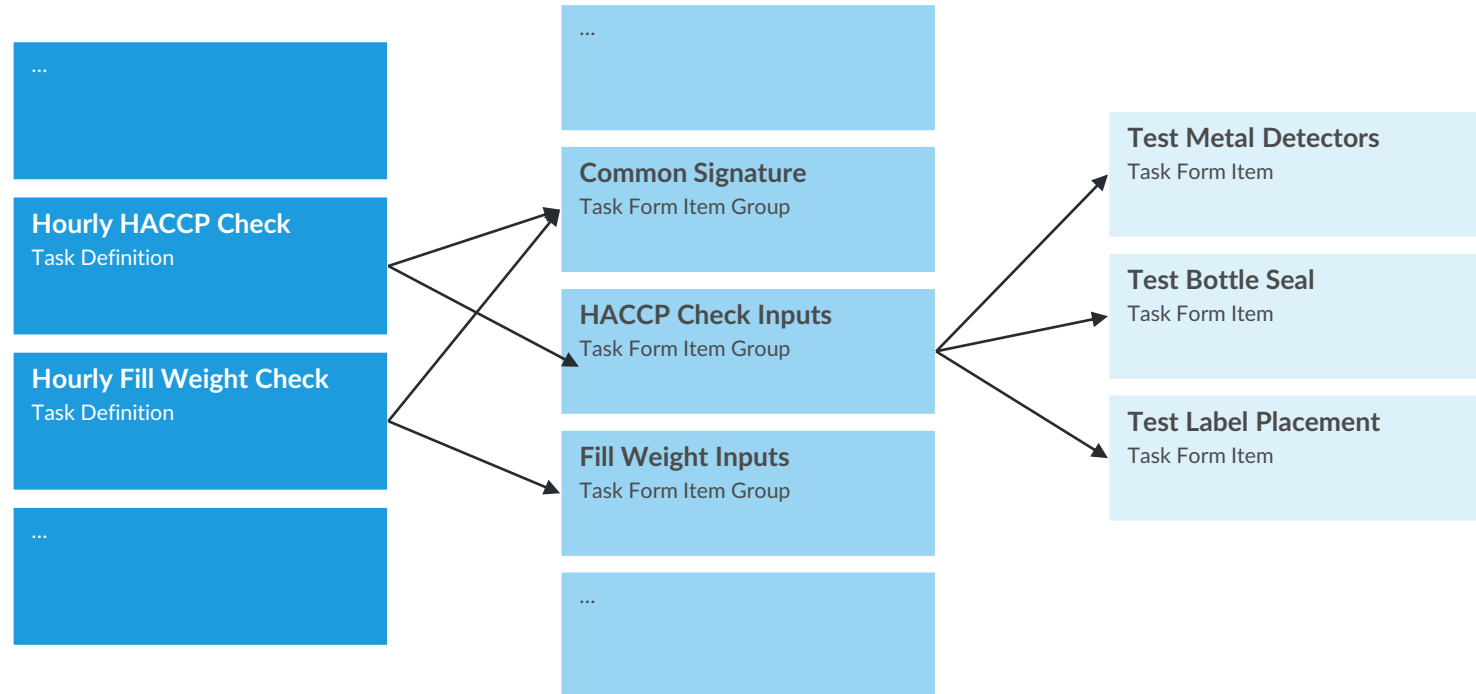
- A **grouping** mechanism that is referenced by Task Definitions.
- When the task is created, it references the Task Form Item Groups to render the inputs.
- Examples
 - Common signatures
 - Cleaning checks

Task Form Item



- Individual inputs housed in Task Form Item Groups
- Represent the actual fields found on any type of form.
- Examples
 - Name
 - Number of tablets

Task Configuration Hierarchy



Task Script Events

- The following **transitions are monitored** by the Logic Service for Task records...
 - On Create
 - On Late
 - On Complete
 - On User State Change
 - On Pass
 - On Fail
- TrakSYS allows for these transitions to be used to **trigger real-time functionality** such as...
 - Email Notifications
 - Entity Script Class Events

Task Definition Notification Assignment

General

Notification Definition

[None]



Notification Target

[None]



Type

On Late

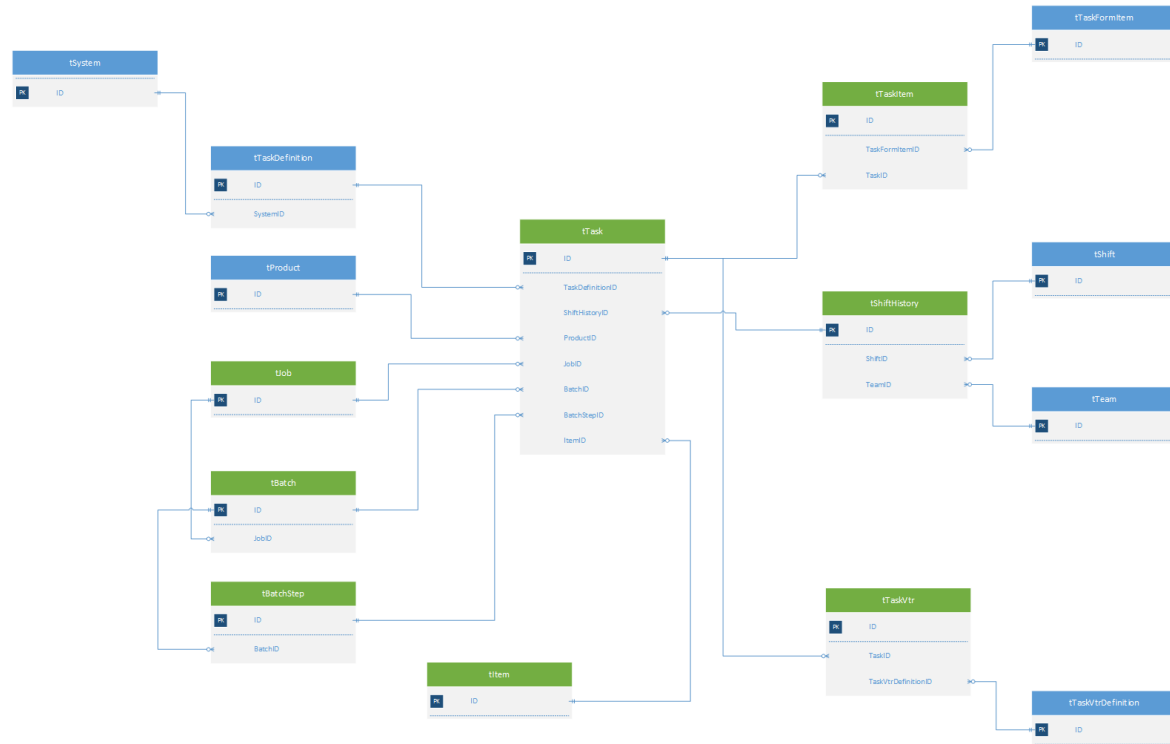


User State Value

0

Arguments

Task Data Structures



Task User Interfaces

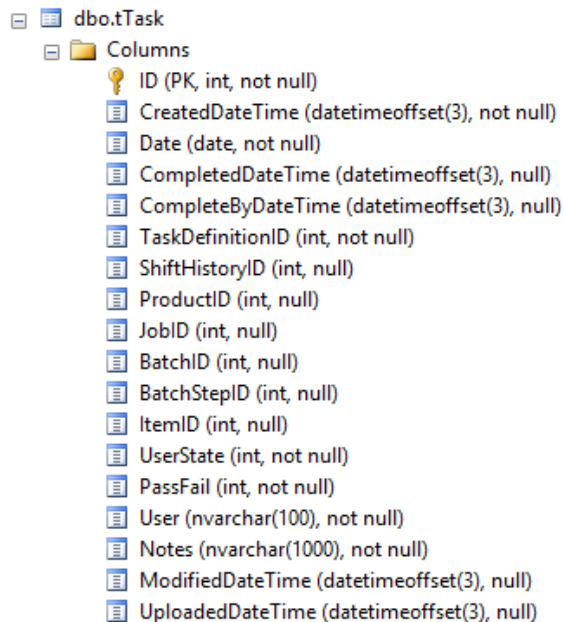
Training Objectives



Describe the out-of-the-box capabilities of the [Task Form Content Page](#) to quickly enable the creation of Task Management user interfaces.

Explain how the [Task Items Content Part](#) and Task Form Visual Page Definition Template can be used to create [extensible, solution specific](#) data capture forms.

Task Data Fields



The image shows a database schema for a table named `dbo.tTask`. The schema is displayed in a tree view with a folder icon for 'Columns'. Each column is represented by a document icon and its data type is specified in parentheses. The primary key is indicated by a key icon next to the `ID` column.

Column	Data Type
ID (PK, int, not null)	int, not null
CreatedDateTime	datetimeoffset(3), not null
Date	date, not null
CompletedDateTime	datetimeoffset(3), null
CompleteByDateTime	datetimeoffset(3), null
TaskDefinitionID	int, not null
ShiftHistoryID	int, null
ProductID	int, null
JobID	int, null
BatchID	int, null
BatchStepID	int, null
ItemID	int, null
UserState	int, not null
PassFail	int, not null
User	nvarchar(100), not null
Notes	nvarchar(1000), not null
ModifiedDateTime	datetimeoffset(3), null
UploadedDateTime	datetimeoffset(3), null

- **CreatedDateTime**
[Timestamp](#) for the Task record creation. Populated by the Logic Service or the UI (for manual Tasks).
- **CompleteByDateTime**
Calculated based on the Task Definition [TaskCompletionSeconds](#).
- **CompletedDateTime**
Actual timestamp of User [completion](#) of the Task form (Pass or Fail).
- **PassFail**
Integer [result](#) for the Task.
 - -1 = Unknown
 - 0 = Fail
 - 1 = Pass
- **User State**
A [developer-use-only](#) Integer for extensibility. Use this field to store a custom Task status or result.

Task New/Edit Content Page

- **Automatic** Task Form render based on Task Definition and Task Form Item Configuration
- Basic field **Validation** and Task **Business Rules**
- Integrated Task **Instruction** Display
- Edit Mode driven by **TaskID**
- New Mode driven by **TaskDefinitionID**
- **Zero Script** for Database/API Interaction

Hourly HACCP Checks

System
Line 1

Created Date/Time
Jun 13 11:00 AM

Shift
Day

Job
P.5826

Product
Adravil 500 [ADRA.500]

Task Data

Packaging HACCP

Test Metal Detectors

Run test metal to verify functionality.

☐

Test Label Placement

Verify label placement is accurate.

☐

Test Bottle Seal

Test seal on a random Bottle.

☐

Test RFID

Test RFID chip from a random Case.

☐

Task Footer

Result

Unknown ▼

User

Notes

Audit : Update

Save

Cancel

Instructions

Overview

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Aliquam posuere consectetur ultrices. Vestibulum blandit neque eu sem placerat tempor.

Test Metal Detector

Etiam elementum, eros id placerat venenatis, eros sem iaculis nulla, et faucibus felis dolor vitae dui.

Test Bottle Seal

Cras pretium tincidunt hendrerit. Cum sociis natoque penatibus et magnis dis parturient montes, nascetur ridiculus mus.

Test Label Placement

Quisque dictum sapien id metus suscipit elementum. Phasellus nunc dolor, auctor dapibus tristique sed, mattis mattis urna.

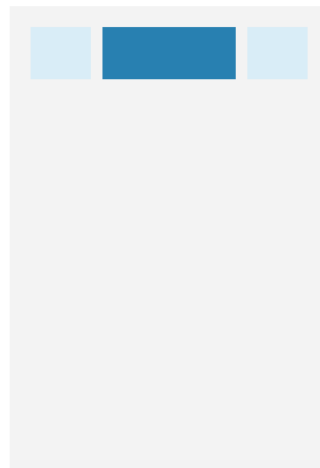
Test RFID

Nulla sed enim dui, gravida imperdiet augue. Nulla dictum, orci vel aliquam rhoncus, tellus sapien posuere augue, eu scelerisque tellus lacus a erat.

Task Items Content Part

- Allows a custom Task Form to be created using a [Visual Page Definition](#)
- Handles the [complexities](#) of the Dynamic Task Form Items
 - Configuration Driven
 - Renders
 - Populates
 - Validates
- Allows for [custom](#) Validation and Insert/Update Script using the standard Visual Page Script Editor

Task Form



Add Part

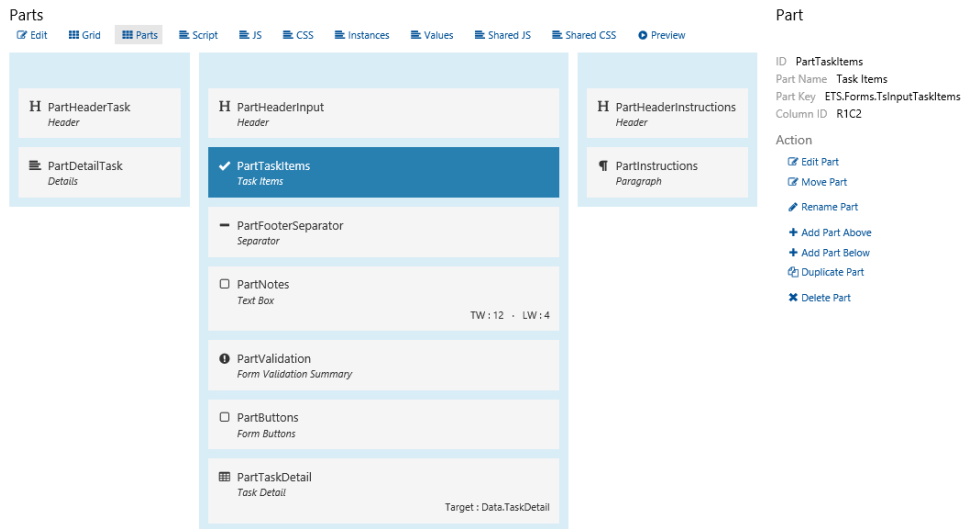
[+ Expand All](#) [- Collapse All](#)

▼ Forms

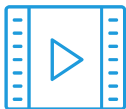
- ☐ Form Buttons
- ☐ Audit Header
- ☐ Check Box
- Date/Time
- Drop Down
- ☐ Hidden Input
- Password
- ☐ Radio Buttons
- ☒ Task Items
- ☐ Text Box
- Read Only
- Separator
- Tab Strip

Task Form Visual Page Template

- Visual Page Templates provide **pre-configured** Content Part and Script combinations for **common Patterns**
- The Task Form Template contains the Parts and Script to reproduce and **customize** the standard Task Form Content Page
 - Adjust/Add Parts to customize **Look and Feel**
 - Modify Validation and Update **Business Rules**



Demonstration



- Create a Parent Template System from an existing System
- Duplicate a Tag Group
- Create a New Child Template System
- Map Tags to the New Child Template System
- Configure a Task Definition
- Configure a Task Form Item Group
- Associate the Task Entities
- View the Task Form Content Page
- Create a Custom Task Form Page

Lab 12

