Essentials Edition

Version: 1.0

Planon Workplace Insights

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About Planon Workplace Insights

Planon Workplace Insights (PWI) enables you to measure the actual occupancy, density, utilization and environmental variables of workspaces, meeting rooms, in general referred to as locations in this document. Measuring the occupancy of locations serves a twofold purpose:

- Enabling your staff to find available locations (a workspace, meeting room) based on real-time occupancy data.

- Enabling business intelligence analyses of locations (are there sufficient locations available, are the locations sufficiently large to accommodate staff). This will allow your organization to improve efficiency in location supply.

    Planon Workplace Insights consists of a set of components that collaborate dynamically:

- **Sensoring system**: A set of measurement devices providing real-time sensor data displaying the actual location occupancy. Sensors can be any kind of measurement equipment, see also Sensors.

- **Data Engine system**: Planon Workplace Insights module receiving data from the sensoring system.

- **Connector**: A reference to the Sensoring System web service (Planon managed) or Platform app (Custom managed) that provides sensor data to the data engine system. The connector is an interface between the sensoring system and the data engine system.

    The following image depicts the Planon Workplace Insights components and how they interact.
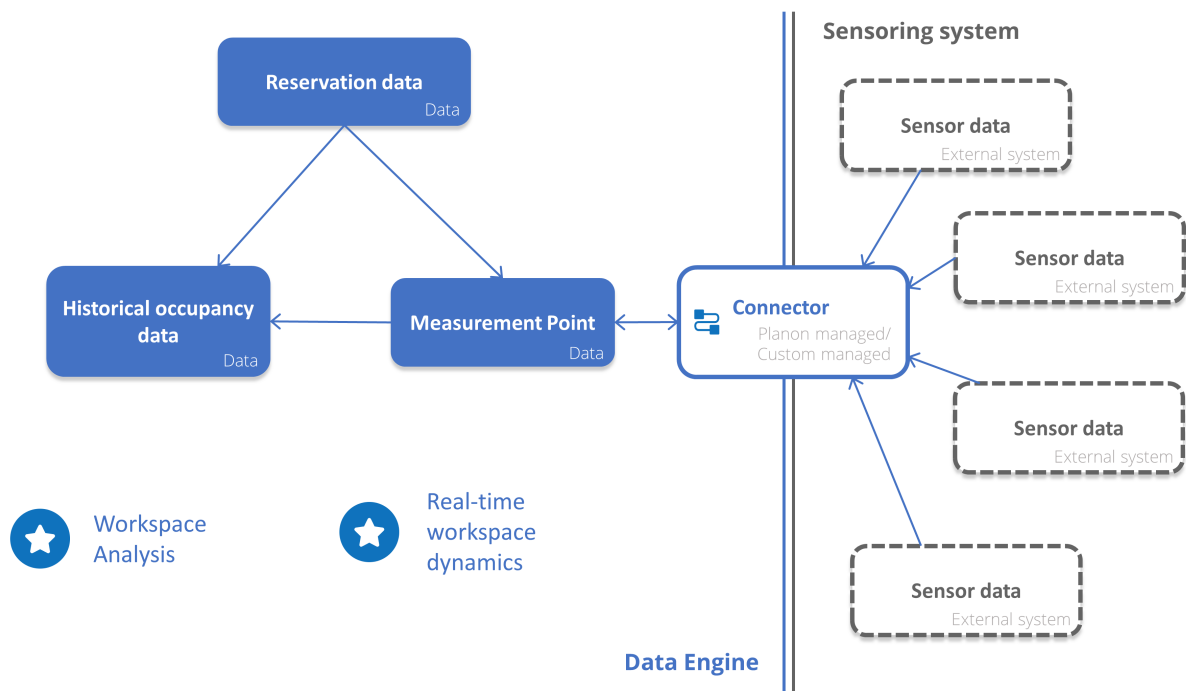
> 💡 The term *locations* in this document refers to a location to which a measurement point is linked.

You need a Planon Workspace Insights License to use these functionalities.

Dashboards and Reports

There are various dashboards and reports available for Planon Workplace Insights.

The various dashboards and reports graphically represent the business analytics side of Planon Workplace Insights.

> 💡 You need a Planon Workspace Insights License to use these functionalities.

Planon Workplace Insights Dashboards

Planon Workplace Insights provides Dashboards for the following attributes:

- Occupancy
- Density
- Utilization
- Environment

> 💡 You need a Planon Workspace Insights License to use these functionalities.

Workplace Insights

Workplace Insights shows information on the different attributes provided by Planon Workplace Insights.

After Selecting a Location, Planon Workplace Insights will show summarized data for the selected floor/property.

You can switch between the Dashboards for the different attributes on the Navigation Bar.

> 💡 You need a Planon Workspace Insights License to use these functionalities.

Occupancy Dashboard

This Dashboard shows data of the occupancy levels of the selected location.

Occupancy calculation

- Occupancy is calculated by measuring the number minutes in an hour that a location was occupied (status 3, 4)
- Divided by the number of minutes a location was valid (status 1, 2, 3, 4)

  Example

Occupancy				
Minutes in status 3, 4 / Minutes in status 1, 2, 3, 4	34 / 60	*100	=	56,67%

The X-axis shows the time windows (labels can be configured to show the date-time windows).

The Y-axis shows the occupancy percentage.

Occupancy over time

This chart shows you the average occupied spaces in your building/floor or space.
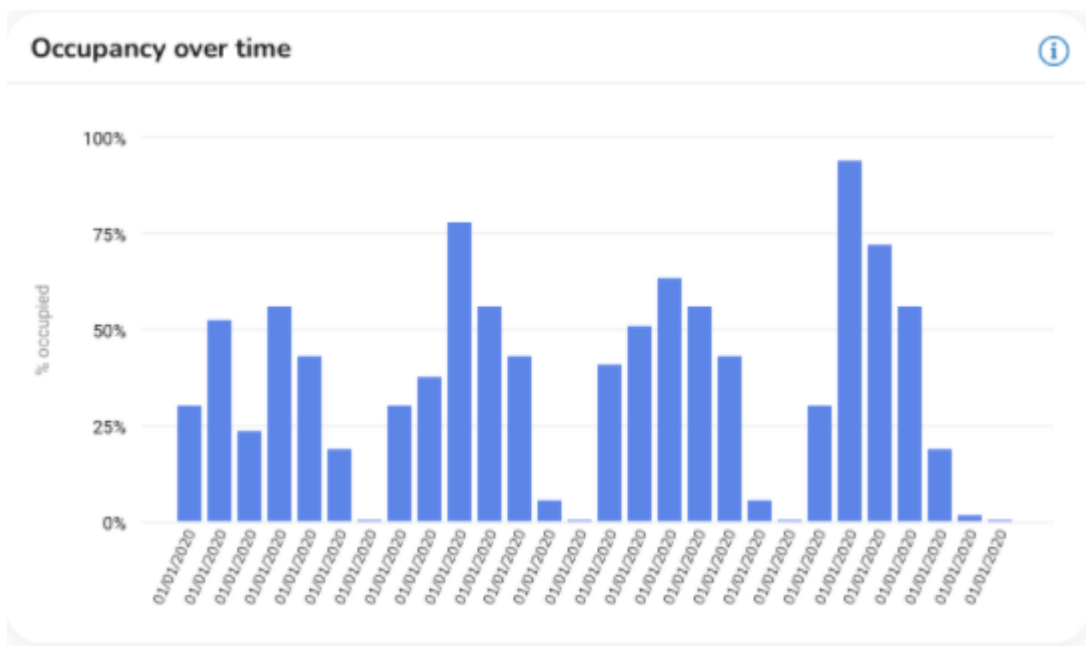
Tooltip: The time intervalls of the chart depend on your selected period.

Seleced Period	Occupancy
For Day	Per Hour
For Week	Per Day
For Month	per Day

Occupancy by space category and type

Planon Workplace Insights provides 4 space categories with each 4 types, that can be named by your needs. You can change between Live or History view. The charts can show data for properties, floors or spaces.

Live view

If you select a property or floor in the live view, the information will be given in number of occupied spaces in relation to the total number of spaces.

When a single space is selected, the category doughnut shows if a space is occupied or not occupied.

History view

In the History view the information is given in percentage occupied over the selected time period (1 day, 1 week or 1 month) . The occupancy chart shows per category and type what percentage of time the space was occupied.

Density Dashboard

Density is the number that indicates the occupancy of reservable spaces (meeting rooms) that can hold multiple persons. The density percentage can be used to indicate the effectiveness of a meeting room.

Density calculation

- The actual occupancy data is collected per minute.

- This number is divided by the number of minutes during which a location was valid (in status 3,4) multiplied by the number of persons the location can hold (capacity).

- The result is a list of data per minute, which is aggregated per hour:

Time	Occupancy
11:00	0
11:01	0
11:02	0
11:03	0
11:04	0
11:05	0
11:06	2
11:07	4
11:08	4
11:09	5
11:10	8
11:11	8
11:12	8
Total: 13 minutes	39 cumulative occupancy

Example

The density is calculated as the cumulative occupancy (39) divided by the number of minutes during which the location was occupied (7) times the maximum capacity of the location (8). The outcome of this calculation is multiplied by 100 and the result is the density (expressed in a percentage):

Density				
Cumulative occupancy / Minutes in status: 3, 4	39 / (7*8)	* 100	=	69,6%

> Including only valid measurements ensures that the focus remains on actual reservations and that it is possible to compare data over time.

Live density

This chart will show you the density for today in short time intervalls.

Utilization Dashboard

Utilization is a tool to evaluate the relevancy and value of your location.

This Dashboard shows data on recent occupancy levels, when and how much a location is used.

Utilization per weekday

This bar chart shows the shows the recent daily averages of utilization for the selected location.

Utilization over time

This chart shows the average number of people and the utilization percentage per month of the selected location.

Environment Dashboard

The Enviroment Dashboard presents summarized environmental values for your selection.

The environment module has an additional selection ribbon where you select the data that should be shown. If a particular environmental value is not available / measured, it is greyed out.

Environmental Values:

Value	Unit of Measurement
Temperature	degrees°
Air quality CO2	ppm
Humidity	%RH
Light	lx
Sound	dbA
VOCs (Volatile organic compounds)	ppb
Radon	pCi/L

Environment over time

This Dashboard shows four charts that analyze the data for Temperature, Humidtiy, Light and CO2 per month of the selected location.

Floor plan

The Floor Plan is a digital map of the selected floor and presents an overview of all spaces in that floor.

The Floor plan is only shown, when there is a floor available to show. If a property is selected, the placeholder "Select Floor" is shown.

You can display various data on the floor plan, for example occupancy, temperature or air quality.

If you want to go into more detail, you can analyze a specific space by clicking on it.

Floorplan gradient scale

The floorplan gradient for environmental profiles is depending on the target values that are configured in "ProCenter Esentials > Base Data > Environmental targets".

An environmental profile can be linked to a property. In those profiles for each unit of measurement a **High** and a **Low** can be configured.

Scope block

The scope block reflects the measured spaces (scope) of the analyzed data (property, floor, space, space category or space type) for a LIVE or History (day, week, month) view. The scope block is only visible for the Occupancy, Utilization and Environment modules of the Planon Workplace Insights app. The reflected situation is Life cycle aware.

Example of a Scope block:
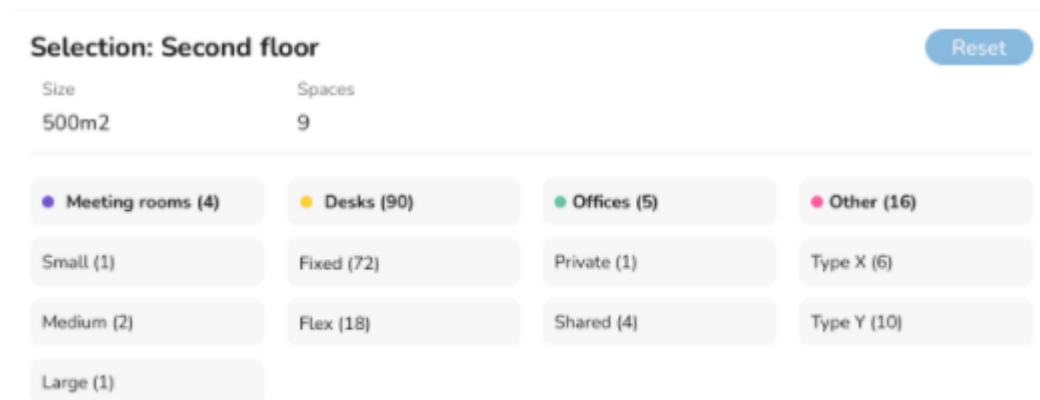
Planon Workplace Insights system reports

The system reports available on the **Measurement points** tab enable you to interpret occupancy data. You can use this information to set up a space and workspace policy for your company.

The reports take into account the selected measurement points, independent of their status, type, etc. and they are based on summarized historical readings. The data contains occupancy and reservation information of measurement points during office hours. Some report parameters are configurable per system report (see Planon Workplace Insights report settings).

> 💡 To ensure a valid interpretation, make sure that your measurements are comparable. For example, your source data should not contain a mix of periods and office hours. If your data collection includes measurement points that have contributed to the data set for a longer period of time, this will affect (the validity of) the results.

> 💡 You need a Planon Workspace Insights License to use these functionalities.

Planon Workplace Insights report settings

The following report settings are available when you click **Edit report settings**.

Field	Description
Start date	Enter the report start date. The data collection will include the summarized historical readings from this day onward.
End date	Enter the report end date. If there is data missing during this whole period, only the available data will be included.
Number of rows to show	Enter the number of rows to be displayed in the (Peak values) report.

System report - summarized data

The **Measurement points** > **Report** features a system report that provides a graphical view of the following indicators:

- **Occupancy (%)**

  The data is shown as a percentage.

- **Capacity usage (%)**

  The data is shown as a percentage.

- **Events (#)**The data is shown as the number of events.

> • Before running this report, make sure to run the summarization action for the selected measurement point(s). If there is no summarized data, the report will have no data to show.
> • You can run the report for a single measurement point or for a selection of measurement points.

Peak values

The Peak values report provides an overview of the highest occupancy percentages by unit of time. The results are listed in descending mode (highest on top).

The report is instrumental in gaining insight into the usage of your workspaces and reservation units. The calculation is based on the available time during office hours.

Example

Field	Description
Office hours	08:00-18:00 (10 hours / 600 minutes)
Valid readings	600 minutes
Occupied	395 minutes
Occupancy percentage	395 / 600 * 100 = 65,8%

Report overview

The report displays the following information:

- Highest occupancy peaks (by month/week/day/hour)

  Displays the highest peaks by time unit for the selected measurement points and period. The data is displayed in columns (see Report columns).

- Highest occupancy by measurement point (by month/week/day/hour)

  Displays the highest occupancy peak by measurement point and time unit. The data is displayed in columns (see Report columns).

Peak values   overview   PLANON UNIVERSE

<us er name>   08-Jan-2000   16-Jan-2020

Highest occupancy - hour

Percent occupied	Percent reserved	Hour	Start date time	End date time	Minute readings	Percentage of valid
72.3 %	4.1 %	12	21-Dec-2017 12:00:00	21-Dec-2017 12:59:59	22380.0	88.7 %
71.4 %	2.1 %	12	03-Apr-2017 12:00:00	03-Apr-2017 12:59:59	21900.0	90.1 %
69.2 %	1.7 %	12	13-Feb-2017 12:00:00	13-Feb-2017 12:59:59	21840.0	97.8 %
68.6 %	2.3 %	12	13-Mar-2017 12:00:00	13-Mar-2017 12:59:59	21840.0	90.1 %
68.4 %	1.8 %	12	09-Oct-2017 12:00:00	09-Oct-2017 12:59:59	22440.0	89.0 %
67.7 %	2.9 %	12	27-Nov-2017 12:00:00	27-Nov-2017 12:59:59	22380.0	100.0 %
67.1 %	1.0 %	12	08-May-2017 12:00:00	08-May-2017 12:59:59	21898.0	90.1 %
66.9 %	2.4 %	12	18-Dec-2017 12:00:00	18-Dec-2017 12:59:59	22380.0	88.6 %
66.2 %	1.9 %	12	10-Apr-2017 12:00:00	10-Apr-2017 12:59:59	21900.0	89.9 %
66.1 %	1.8 %	12	09-Jan-2017 12:00:00	09-Jan-2017 12:59:59	21840.0	99.7 %

Report columns

Column	Description
Percentage occupied	Percentage of occupancy during the report period.
Percentage reserved	Percentage of valid reservations during the report period.
Period	Hour/day/week/month.
Minute readings	Number of valid minute readings used for the percentage occupied/ reserved calculation.
Percentage of valid readings	Average percentage of minute readings of all available minutes within the period (the reading is excluded if it is less than 80%).

Calculations

The Peak values report contains data that is calculated. This section explains these calculations.

Measurements are limited to values measured during office hours (in the following examples, the office hours are from 08:00-18:00 = 600 minutes).

Percentage valid readings

Percentage valid readings

Valid readings / Office hours in minutes	525 / 600	*100	=	87,5%

> 💡 A reading is valid if the measurement point is not in the **Immeasurable** status.

Percentage occupied

Percentage occupied (measurement point)

Number of minutes in status **Occupied** or **Idle** / Valid readings in minutes	350 / 600	*100	=	58,3%

Percentage reserved

Percentage reserved (measurement point)

Number of minutes with valid reservations linked to MP / Valid readings in minutes	485 / 600	*100	=	80,8%

> 💡 MP stands for measurement point.

The occupancy and reservation calculations are based on the office hours in minutes. If the result is 50 % this means that the workspace was occupied or reserved during 50% of the office hours.

To ensure valid calculations, only those results are taken into account if the readings cover at least 80% of the available period. This filter is especially meaningful for individual measurement points.

Planon Workplace Insights - Concepts

This section describes Planon Workplace Insights concepts and how they interact. The following concepts apply to Planon Workplace Insights:

- Account List
- Availability
- API
- CAD Integrator
- CAD Import
- Connector
  - Planon managed
  - Custom managed
- Data engine
- Data Onboarding
- Events
- Location
- Mapping
- Measurement point
- Measurement point definition
- Measurement point role
- Occupancy
- Polling
- Privacy
- Sensor
- Sensoring system
- Spaces and Workspaces
- Summarization

> 💡 You need a Planon Workspace Insights License to use these functionalities.

Availability

Availability indicates whether a location is actually available for use/reservable. The availability is based on comparing the physical occupancy status and the reservation status.

Example

Consider the following situations:

	Occupied	Reserved
Location A	No	Yes
Location B	No	No
Location C	Yes	Yes
Location D	Yes	No

Location A (checked for No Show and Early Departure)	Not occupied, reserved	During the specified idle time, the location remains unavailable. After the idle time, the room is made available again.
Location B	Not reserved, not occupied	Available
Location C	Occupied, reserved	Not available
Location D	Occupied, not reserved	Not available

API

A web service, published by the sensoring system and used for data exchange between the sensoring system and the Planon data engine.

The API version should be supported by Planon.

- Version 3 can handle the exchange of changed data only and it includes synchronization and polling with multiple systems.

- Version 4 is similar to Version 3, except that it has a specific field for storing the person count. This **Person count** field is only filled if occupancy is actually measured by the sensoring system. The data of this field will be used to populate the Density chart, because of which this chart displays clear data.

The Planon IoT platform only supports API version 3. For API version 4, Planon requires the support of third-party sensoring systems such as SWYCS, but using other vendors is possible.

Connector

The Planon Workplace Insights connector configures the sensoring system API or Platform app in Planon.

Connectors can be made available for different types of sensoring systems.

If the sensoring system publish the Planon (REST) API, a 'Planon managed connector' must be added manually.

If a Planon Workplace Insights Platform app is used, a 'custom managed connector' is required. (Most of the Planon Workplace Insights Platform apps will add this connector type automatically).

Connector statuses

A connector has different statuses that indicate whether it is available. These statuses must be set manually.

The following list is an overview of the available connector statuses:

Status	Description
Active	In this status, the data engine system connects to the sensoring system.
Inactive	In this status, the data engine does not connect to the sensoring system. This is the default status (manually set).
Immeasurable	This status is assigned if the connector has a connection problem (system set).
	If a connection with the API fails, the Connector will retry polling twice. If this still fails, the status is set to immeasurable. This rules out unrelated temporary disturbances such as internet connection issues.
	When this happens, the administrators (email list) are notified about this issue.

See also

See also Adding a connector

Planon managed vs. Custom managed

An Planon Workplace Insights connector defines and configures the connection with an external sensoring system.

Planon distinguishes two types of connectors:

- Planon managed connector
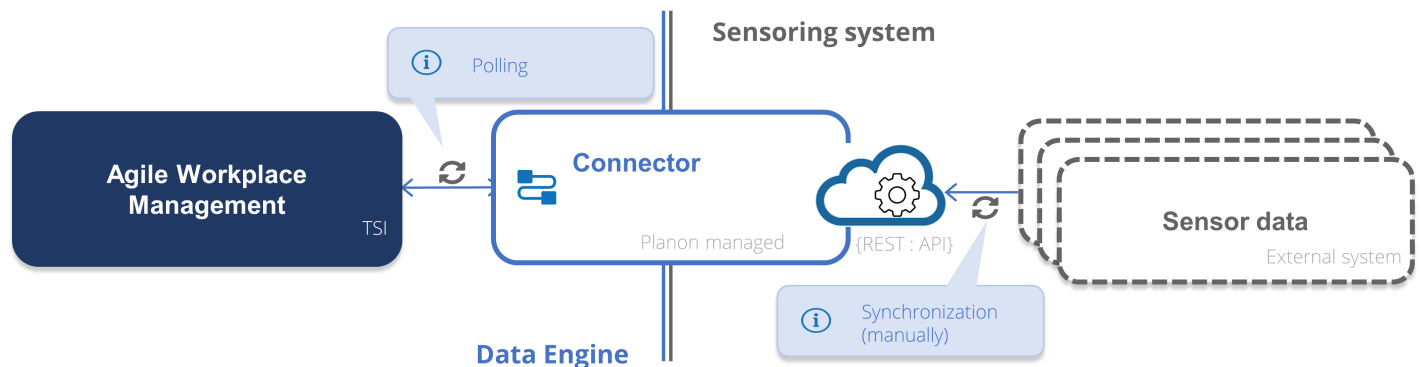
- Custom managed connector

Planon managed

For a Planon managed connector, the partner sensoring system must publish a (Restful) API based on Planon specifications.

The Planon SWI system sends requests to this API in a time interval (polling, default every 60 seconds).

> 💡 To retrieve data, a Planon managed connector uses polling.

There are two possible requests to the API:

- Synchronization

  During synchronization, the whole list with measurement points and related sensors is published to the sensoring system. This synchronization is only required if something has changed in the measurement point and/or sensors.

> 💡 This could be newly added measurement points or sensors, but also changes in the measurement point ID or sensor IDs. The same is true when measurement points or sensors are deleted.

  During synchronization, all measurement points that have a valid sensor linked will be published. It does not matter if the sensor is **Active** or not. Triggering synchronization is a manual process started at the **Connector** tab. If this event is triggered, the connector is flagged for synchronization.

> 💡 The actual synchronization will take place at the next polling.

- Measurement update

  During a measurement update, a request is sent for all active measurement points. If there is new measurement data, this will be routed to Planon for further processing.

> 💡 Most of the fields that need to be filled in are related to the identification and authentication of the external API.

Custom managed

For a custom managed connector, a dedicated Planon Workplace Insights Platform app takes care of the communication and processing of the external data.

The Planon Workplace Insights Platform app is a Planon embedded application that is developed for a specific task (e.g. communication with a partner sensoring system).

> To retrieve data, a custom managed connector uses either a pull or a push method (via a webhook or websocket protocol).

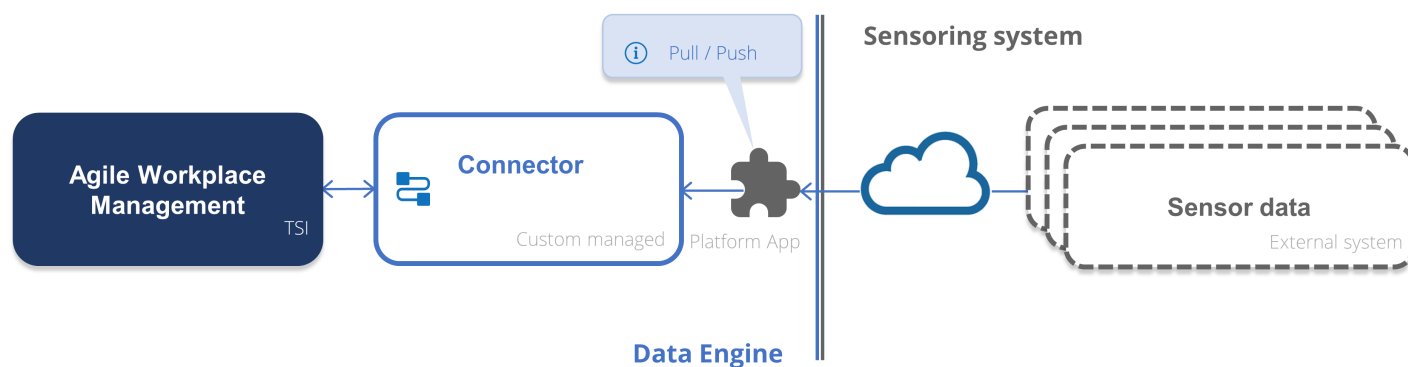The relation of this Platform app is based on the Connector code. You can add this type of connector manually, but the app can also automatically add a connector at activation.

Planon distinguishes two types of custom managed connectors, based on its strategy:

- **Pull**

  A custom managed connector that **pulls** the data from the external system at a specific interval, similar to the Planon managed connectors.

  In this case, the **Class name** field at the Planon Workplace Insights Connector needs to be filled in to identify the process:

Field	Description
Class name	Select one of the available classes, installed by apps, that performs the polling.
App name	The value in this read-only field is filled in automatically based on the selected class.
App module name	The value in this read-only field is filled in automatically based on the selected class.
Partner identifier	The value in this read-only field is filled in automatically based on the selected class.

- **Push**

  A custom managed connector that works with events that **push** the data from the external system to Planon. When the sensoring system publishes a new measurement, it will be updated at the

measurement point. All available functions depend on the Planon Workplace Insights Platform app related to the connector.

> When using the Push method, note that the **Class name** field should be left empty.

Data engine

The Planon Workplace Insights component that drives the data exchange and data processing. On the **Data engine** level you can specify the polling interval.

The connector communicates with the sensoring system to retrieve the occupancy data for a selected set of locations. There are two methods available for retrieving data: pull- or push strategy.

See also

See also Adding a data engine

Events

If the location is defined as a reservation unit, based on the occupancy of the location, the following two types of events can be determined:

* **No show** - This event occurs if a location is reserved, but the attendees did not arrive (on time). Depending on the allowed idle time, the unit becomes available again.

* **Early departure** – This event occurs if a location is reserved, and the attendees leave before the reservation end time. Depending on the idle time, the location becomes available again.

Location

Any type of space or room whose occupancy can be detected by using sensors (reservable/available). The following locations are currently available:

* Reservation unit (workspace or room)

* Non-reservable workspace

* Non-reservable room

* Non-reservable zone

* Non-reservable floor

* Non-reservable building

* Non-reservable rentable unit

Mapping

The process of maintaining data between the sensoring system and the data engine.

The sensoring system maintains a configuration table mapping locations (related measurement point IDs) and sensor IDs. This data can be stored in Planon Software Suite and is published to the sensoring system. To enable this, the **Sensors** business object is available, which is date-aware. Consequently, if you want to change or add locations and/or sensors, you do not require access to the sensoring system, but can simply update these in Planon Software Suite. Subsequently, the sensoring system will process these changes by updating and synchronizing the configuration table.

> For more information, see Synchronization.

Measurement point

A representation of a location for which you want to measure and maintain occupancy data and, if applicable, environmental values. Planon Workplace Insights only processes locations to which a measurement point is linked.
Measurement points can be linked to any of the locations defined in Planon. A location can be a space, a reservation unit, a rentable unit, a workspace, a property, a property zone or a floor.

A measurement point can have an Inactive or Active status and these can be set manually. Planon Workplace Insights only processes measurement points in the Active status.

Measurement point definition

The measurement point definition allows you to define the settings for all the related locations.

Consider, for example, an organization that has multiple properties and uses various methods for measuring occupancy. By using a measurement point definition you can set up profiles for each property and group all its locations.

Measurement point role

In the Planon application, a measurement point is distinguished by its role.

A measurement point can be either of the following roles:

- Primary measurement point

  This is the main measurement point for collecting data (data of all *subordinate* measurement points is aggregated to this measurement point).

  A primary measurement point can be used to display availability (in Kiosk, CAD viewer, apps):

  - **Primary A**: the readings of the measurement point are used to determine the location's availability. Environmental readings of supplementary measurement points will be stored here for display in Kiosk or apps.

    The **Display availability** field will be set to **Yes**.

- ◦ **Primary B**: the reservation for a location rather than the measurement point reading is leading in determining its availability. Environmental readings of supplementary measurement points will be stored here for display in Kiosk or apps.

  The **Display availability** field will be set to **No**.

- Supplementary measurement point

  This type of measurement point is introduced to process data correctly when using multiple connectors per location. When doing so, it is important to ensure that data of one connector is not blocking the data of another connector. This is achieved by using supplementary measurement points. Its data is passed on to the primary measurement point (A or B).

  Supplementary measurement points are not used to record occupancy, but a set of environmental data:

  - ◦ Carbon dioxide
  - ◦ Humidity
  - ◦ Light
  - ◦ Noise
  - ◦ Power level
  - ◦ Temperature

  In order to know which data should be copied, you must link the data fields to the respective supplementary measurement point.

  > For more information, see Linking fields to supplementary measurement points.

  The readings of supplementary measurement points are stored at the primary measurement point. They are not stored on the supplementary measurement points themselves to ensure system performance.

- Secondary measurement point

  Rather than occupancy, this type of measurement point is meant for providing auxiliary information, such as whether the waste bin is full or for testing new sensors. Consequently, its data is not collected and aggregated to the primary measurement point.
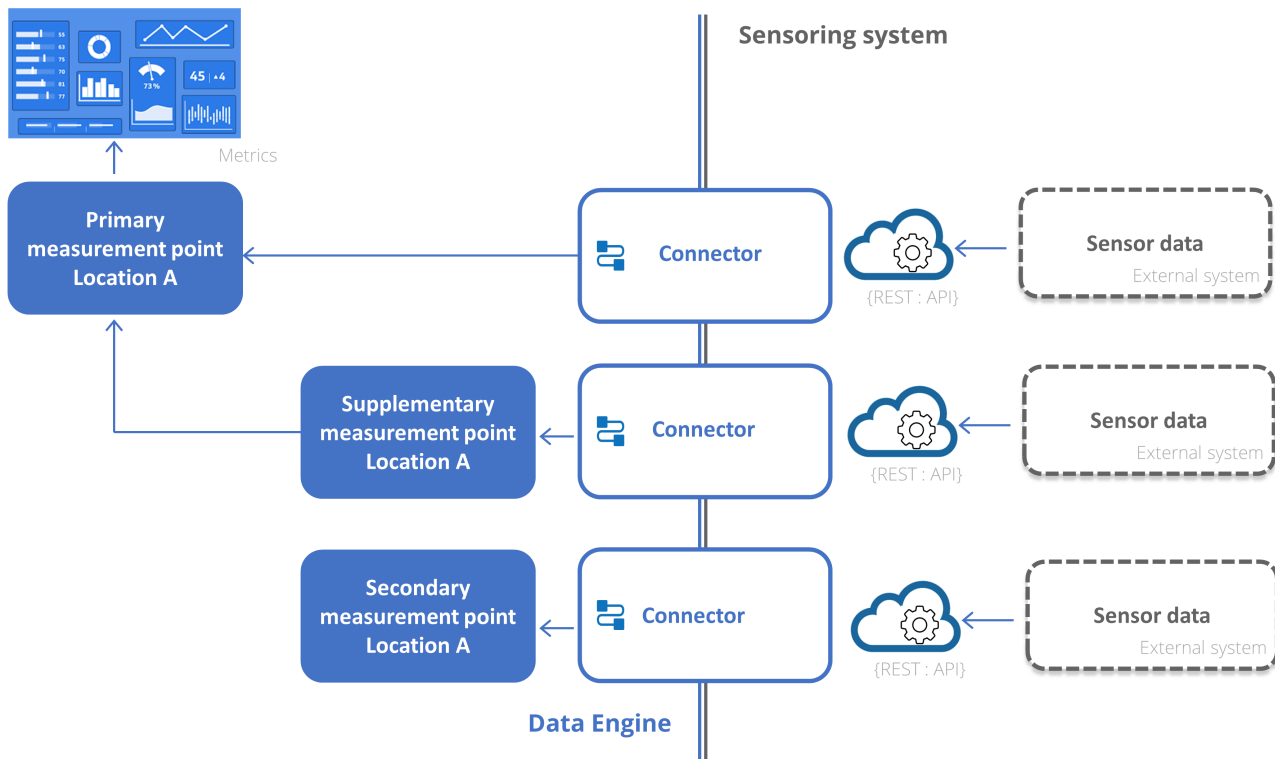
See also

Measurement point - fields

Occupancy

Occupancy is used to indicate whether a location is actually in use (physically).

A location's occupancy is detected by using sensors.
In Planon Software Suite, a location's occupancy (to which an active measurement point is linked) is represented by an Occupancy status and a Reading value (displaying the number of people, in API 3).

> 💡 Reading value in API 3 displays the number of people. In API 4, the value can be 0 or 1, for the actual number of people a different field is assigned).

Occupancy statuses

The data engine continuously updates occupancy statuses into Planon Software Suite. For calculating an occupancy status, the readings of the sensoring system and the previous occupancy status are taken into account.

The following occupancy statuses are updated by the data engine:

- Occupied
- Non-occupied
- Reservation imminent

- Idle

- Inactive

- Immeasurable

- Pause

Occupancy measurement

The type of sensor in a sensoring system determines how occupancy is measured.

A sensoring system can either:

- Detect occupancy (returns 0 or 1, the equivalent of no/yes)

- Count occupancy (returns a digit or a number)

This information, when returned by the connector, is stored in the Planon application. The API version determines how and where this information is stored in the Planon application.

API Version 3

Field	Value	Remark
Occupancy value	0, 1 or a number	0 = not occupied 1 or a number = the actual count of persons
Person count	0, 1 or a number	This field mirrors only the value of the **Occupancy value** field. It is not actively filled as this field is mainly used by API version 4

API Version 4

Field	Value	Remark
Occupancy value	0 or 1	0 = not occupied 1 = occupied
Person count	Empty, a digit / number	Empty: The sensoring system cannot count occupancy. A digit or a number: The actual count of occupancy.

> See also Measurement point - fields.

Polling

Periodically sampling the occupancy status of a set of locations by the data engine based on the date of the previous polling cycle.

The polling capabilities are determined by the API version of the connector:

- API Version 3-4: all changed data is returned based on the time stamp that is given to the sensoring system.

> Polling from multiple Planon environments (for example for DTAP) is supported.

During polling, two actions can be performed:

- Synchronization: needs to be done manually.
- Data update (occupancy status): this is always done during polling.

See also

Reading (polling) cycle

Privacy

Planon uses sensors to determine whether a location is occupied.

Continuously, newer generations of sensors are being developed and put on the market. The sophistication, the quality and the range of sensors changes invariably. While this technological innovation is going on, both the thinking and the legislation around privacy is affected.

Planon does not store personal information nor does the Planon application track people by using sensors. Instead, Planon uses sensors to gain insight into workspace occupancy. In any case, Planon is held by and complies with GDPR legislation.

Processing cycles

The processing of all measurement data and of the execution of Planon logic is performed in two different cycles.

Cycle 1 - Processing of measurement data

For a Planon managed connector AND for a Custom managed connector, this is performed each time interval after polling the external API. (For Custom managed connector, only when the method is pull).

For a Custom managed connector, this is performed when the SWI Platform app receives the measurements and processes it in **Agile Workplace Management**.

Cycle 2 - Execution of Planon logic

For both types of connectors, this is performed each time interval. It executes Planon logic such as the no-show/ early departure check, but also populates fields with information about reservations (time, etc.).

Sensor

A device that is linked to a location and measures its occupancy as well as environmental values, if applicable.

Sensors can use various measurement techniques, for example:

- Motion - occupancy is detected by motion.

- Heat - occupancy is detected based on body heat.

- Video - occupancy is detected by video interpretation.

> More advanced sensors can support a combination of these methods/ and/or other methods (laser techniques, etc.).

Sensoring system

A network of sensors that communicates with the Data engine. When requested by the data engine, the sensoring system provides occupancy information on its locations, based on the sensor data. In order to provide meaningful data to the data engine, the sensoring system maintains a configuration table mapping locations and sensors.

Summarization

The process of compressing data into smaller time components: hours, days and months, decreasing the number of historical data. By continuously retrieving and storing data from the data engine, data storage and analysis may become an issue. By compressing this data, less storage is needed and analyses are easier to perform.

> - Almost all Planon Workplace Insights analytics are based on summarized data.
> - Not all measurement fields are included in the summarization process. Only numerical fields can be summarized.

> You need a Planon Workspace Insights License to use these functionalities.

See also

Configuration

Working with Planon Workplace Insights

This section describes the steps that need to be performed in **Planon Workplace Insights** in order to configure your setup.

> 💡 It is assumed that locations have already been specified at this point.

See the links below for more information:

- Adding a PWIDATAENGINEADMIN
- Adding a data engine
- Adding a connector
- Adding measurement point definitions
- Monitoring notifications
- Linking reservation statuses
- Automatic onboarding of measurement points
- Linking fields to supplementary measurement points
- Configuring different reservation event settings
- Adding measurement points
- Adding sensors
- Viewing historical readings and summarized data
- Deleting measurement point(s)
- Selecting a location

> 💡 You need a Planon Workspace Insights License to use these functionalities.

Adding an PWIDATAENGINEADMIN user

The PWIDATAENGINEADMIN user performs all the Planon Workplace Insights processes, initialized by the Planon Workplace Insights data engine. Therefore, this user must be available and must have sufficient authorizations and must be linked to the correct product definitions and property set.

> 💡 Per Planon installation you can only have one PWIDATAENGINEADMIN user. Consequently, you can set up SWI for one property set.

> ⚠️ The PWIDATAENGINEADMIN user should be used as a system user. Do not use this account for manually logging in to Planon.

1. Create the PWIDATAENGINEADMIN user. The name of this user is case sensitive.
2. Select the check box **Password never expires** for this user. If this is not selected, the data engine may be unavailable because the user's password has expired.
3. Link this user to a user group with 'full functionality'.
4. Link to this user to the 'PWIDataEngine' product definition.
5. Link this user to the property set in which the Planon Workplace Insights TSI is configured.

> ⚠️ If the PWIDATAENGINEADMIN user is not linked to the correct property set, the data engine will not work.

See also

PWIDATAENGINEADMIN user

Adding a data engine

Specify the details of your data engine. Here, you specify and maintain the data engine's schedule for polling the sensoring system.

1. Go to **Data engines** > **Data engines** step.
2. On the action menu, click **Add**.
3. Complete the fields in the data section.

   For an overview of the available fields, refer to Data engine - fields.

4. Click **Save**. A new data engine is added to Planon Workplace Insights in Planon Software Suite. You can continue to add a connector to this data engine.

   Currently it is only possible to add a single data engine.

See also

Data engine

Adding a connector

Based on configuration, a connection is established between the data engine and the sensoring system.

Specify the details of the sensoring system connector. You can choose to add two different types of connectors:

- **Planon managed connector**

The sensoring system has a Restful API to which the Planon Workplace Insights Connector interfaces. This connector is system-specific. In order to update the occupancy information, Planon regularly polls the sensoring system for updates.

- **Custom managed connector**

   The connection with the sensoring system is handled via Event Connector, a generic gateway between third-party applications and Planon. A great many configuration details (connection, transformation of raw messages into messages) is handled by a Platform app. Unlike the Planon managed connector, the custom managed connector receives the data as soon as it is available (real time).

> 💡 Currently, Planon Workplace Insights can only process inbound messages.

Planon Workplace Insights can have multiple connectors for different kinds of sensoring systems.

Procedure

1. Go to **Connectors** > **Connectors**.
2. On the action menu, click **Add**.

   Select the type of connector that you want to add.

3. Complete the fields in the data section.

   For a description of these fields, refer to Connectors - fields.

4. Click **Save**.
   A new connector is added to Planon Workplace Insights in Planon Software Suite. You can now add measurement point definitions to this connector.

See also

Connector

Enabling monitoring mode

It is possible to enable monitoring mode of connectors. By enabling monitoring mode, all API requests, response and communication is added to the connector's event log.

By being able to check the issues that are logged, it is easier to troubleshoot errors.

Procedure

1. Go to **Connectors** selection level.
2. On the action panel, click **Monitor communication**.

   A warning message appears, informing you that an event log will be created at the next polling.

3. Click **Proceed** to complete the setting.

   The field **Monitoring mode activated?** will be set to **Yes**: monitoring mode has been enabled.

   At the next polling, a record is added to the **Configurations & logging** step. This record will make it possible to troubleshoot errors that the Connector(s) encountered (debug).

   Also, when the connector is *Immeasurable*, this action is launched and a record is added to the event log.

> 💡 After creating the event log, the **Monitoring mode activated?** field is set to **No** again.

> 💡 After a successful run, the application switches off the **Monitoring mode activated?** and **Synchronize** fields automatically. However, if encountering issues, the application will continue to try and do this for some time, clogging the process. To overcome this situation, you can inactivate the connector. By inactivating the connector, the **Monitoring mode activated?** and **Synchronize** fields will be switched off and the process is reset. After activating the connector again, you can manually enable these fields.

Adding measurement point definitions

A measurement point definition defines settings for a group of measurement points and links them to a connector.

Complete the following steps to add a new measurement point definition.

Procedure

1. Go to **Configurations & logging** > **Definitions**.
2. On the action menu, click **Add**.
3. Complete the fields in the data section.

   For a description of these fields, refer to Configurations & logging - fields.

4. Click **Save**.

   A new measurement point definition is added. Now, you can add measurement points to this definition. SWI can contain multiple measurement point definitions simultaneously.

Monitoring notifications

A sensoring system and data engine consist of many different components that rely on "communication".

If the *communication* in this intricate system of connectors and measurement point definitions stalls, it is important to be informed as soon as possible.

For measurement point definitions and connectors in Planon, you can set up notifications in two ways:

- **Planon Workplace Insights** notification options.

  ◦ By using the available notification options for *measurement point definitions* and *connectors*, a specified list of persons can be informed if an error situation occurs.

    The notification is a quick-and-dirty solution that consist of a system message, lacking formatting. The notification is based on the fields **Email address for notification** and **Email address(es)** on measurement point definitions and connectors.

  ◦ By enabling the monitoring mode for *connectors.*

- Planon **Alerts** notification options.

  By using Alerts, recipients can be notified or alerted when a specific condition is met. The notifications can be customized using email templates. For more information, see Alerts.

Linking reservation statuses

When a measurement point is part of a reservation unit, the statuses of the reservation (user-defined) can be linked to its measurement point definition.
This enables you to apply the status transitions of user-defined reservations to the measurement point. When **Early departure**/**No show**/**No reservation** events occur, these statuses will be applied.

> For more information on reservation statuses, refer to *Reservations*.

Linking early departure statuses

When reserved, locations remain in this status until the reservation end time is reached. In daily practice, meetings may sometimes end ahead of schedule. Based on the availability information, Planon Workplace Insights can check for early departure, and make a reserved location available for use.

> To make a reserved location available, the idle time must have been reached first.

Complete the following steps to link user-defined reservation statuses to the measurement point definition. When **Early departure** events occur, these statuses will be applied (*Canceled, Made, Administratively completed*).

> If you do not link an early departure status, it will not be possible to set a status transition. In such a case, the room reservation status remains unchanged, but it will still be possible to change the reservation end time based on the **Change reservation end time (early departure event)** field.

 Procedure

1. Go to **Configurations & logging** > **Definitions**.
2. Select a Measurement point definition to which you want to link the Reservation status(es) for the early departure completion event.
3. On the action menu, click **Link early departure statuses**.
4. In the dialog box, move the user defined reservation status(es) to **In use**.
5. Click **OK.**

   The linked status(es) is/are displayed in the **Early departure statuses** section. When an early departure event occurs and checking has been enabled, the reservation status will change to the corresponding status configured.

Linking no-show statuses

When reserved, locations remain in the 'Reservation imminent' status until the 'Allowed delay' time is reached. In daily practice, meetings are sometimes skipped. Based on the availability information, Planon Workplace Insights checks for non-attendance (no show), and makes a reserved location available for use when this occurs.

Complete the following steps to link user-defined reservation statuses to a measurement point definition. When **No-show** events occur, these statuses will be applied (*Canceled*, *Made*, *Administratively completed*).

Procedure

1. Go to **Configurations & logging** > **Definitions**.
2. Select the Measurement point definition to which you want to link the Reservation status(es) for the No-show event.
3. On the action menu, click **Link no-show statuses**.
4. In the dialog box, move the user-defined reservation status(es) to **In use**.
5. Click **OK.**

   The linked status(es) is/are displayed in the **No-show statuses** section. When a no-show event occurs and checking has been enabled, the reservation status will change to the corresponding status configured.

Linking no-check statuses

In specific cases you want to temporarily stop the system from checking the availability of locations, e.g. when doing maintenance on a location. By switching the status of the location to a 'no check' status, this effectively excludes the location from being checked.

Complete the following steps to link user-defined reservation statuses to the measurement point definition. When **No-check** events occur, these statuses will be applied.

Procedure

1. Go to **Configurations & logging** > **Definitions**.
2. Select the Measurement point definition to which you want to link the Reservation status(es) for the no-check event.
3. On the action menu, click **Link no-check statuses**.
4. In the dialog box, move the user-defined reservation status(es) to **In use**.
5. Click **OK**.

   The linked status(es) will be displayed in the **No-check statuses** section.

Automatic onboarding of measurement points

You can manually add measurement points in Agile Workplace Management, but it is also possible to automatically onboard measurement points in bulk.

> 💡 Automatically onboarding measurement points only works for custom-managed connectors; consequently, it requires an app to communicate with the sensoring system.

Data preparation

The data in the Planon application is mapped to the data of the sensoring system. A mapping table ensures that both parties can identify their components uniquely. This unique ID, known as an external ID, is used to identify the stored objects.

Onboarding app

A 'Connector app' that communicates with an IoT vendor system. This app offers a class for polling data (IPWIPollingTask) and, optionally, a class for onboarding (IPWIOnboardingTask). Developing an app is part of the Planon as a Platform solution.

Subsequently, this app needs to be installed in the AppCenter.

Planon Workplace Insights

On **Connectors**/**Onboarding** step, you can select your onboarding app and specify its settings.

To continue the process, proceed with Onboarding of measurement points.

Onboarding of measurement points

Complete the following steps to start onboarding.

> 💡 Make sure the (custom managed) connector is set to **Inactive**.

Procedure

1. Go to **Connectors** > **Onboarding** step, and click **Add** to add an onboarding BO and select the required **Onboarding class**.

   This is the reference to the app's onboarding task for onboarding measurement points. Depending on the class you select, it is possible that you can specify settings for onboarding (these settings are app-dependent).

2. Go back to **Connectors** step and select your **Onboarding reference** (the reference to the BO you have created in Step 1).

3. On the action panel, click **Onboard**.

   This action is only available if the connector is inactive.

   The onboarding processing is started: **Raw inbound messages** > **Inbound messages** > **Processed messages**.

Once the process is completed, the measurement points appear on **Measurement points** level.

4. After verifying the data, you can activate the connector.

> - You can use this process to add new measurement points.
> - Existing measurement points will not be updated (to prevent overwriting settings).
> - If a measurement point is deleted and you click **Onboard** again, it will reappear.

Linking fields to supplementary measurement points

Supplementary measurement points are used to capture data that is not related to occupancy.

In the interplay of measurement point roles, reading data of supplementary measurement points is copied to the primary measurement point.

In order to know which data should be copied, you must link the data fields to the respective supplementary measurement point.

Procedure

1. Go to **Configurations & logging** > **Definitions** level and select or create the definition you want to use for capturing environmental data, such as humidity, noise levels, etc.
2. On the action panel, click **Link supplementary measurement point**. Here, you can move the required fields to **In use**.
3. Click **OK** to confirm and close the dialog box.

    When activated, the data of the supplementary measurement point will be copied to the primary measurement point, the collection point of all related readings.

Configuring different reservation event settings

For reservations, the (reservation event) settings of the definition linked to the measurement point are applied. To facilitate more flexibility, you can now also create a definition and link it to a reservation (based on a standard order whose order group is linked to *Meeting Services*).

This makes it possible to create various reservation types and specify settings accordingly.

Procedure

1. In **Layouts**, add the **Measurement point definition** (MeasurementPointDefinitionRef) to

    ◦ Standard order

    ◦ Reservations (used for meeting rooms)

    By having this reference field available, you can create a standard order and reference that from the reservation.

2. Go to **SWI** > **Configurations & Logging** > **Definitions** level, create a definition and specify its settings.
3. Create a standard order, specify its details and link the definition was created in step 2.
4. In **Reservations**, you can now add a reservation and link the definition that was created in step 2.

Typically, what would happen is that a reservation is created and the settings of the definition linked to the measurement point would be applied. However, now, *for the duration of the reservation*, this mechanism is overruled by the settings of the newly linked definition.

Similarly, you can also select the standard order in the reservation. When you do that, the settings of the standard order will be applied and the respective fields in the reservation will be autopopulated and the settings of the linked definition will be applied.

Adding measurement points

Measurement points are added to their location to be able to store actual reading data received from the connector. A measurement point also displays its occupancy status.

Complete the following steps to add a new measurement point.

Procedure

1. Go to **Measurement points** > **Measurement points**.
2. On the action menu, click **Add**.
3. Complete the fields in the data section.

   For a description of these fields, refer to Measurement point - fields.

4. Click **Save**.

   A new measurement point is added. Now, the actual readings from the data engine can be analyzed. The measurement point readings store the actual readings from the sensoring system.

   For information on measurement point reading fields, refer to Sensor - fields.

Adding sensors

Sensors are referring to the real measuring equipment that can be used to measure occupancy. A sensor is always linked to its corresponding measurement point. More than one sensor can be linked to a measurement point. The sensors are identified by their IDs. The sensor IDs can be used to publish to the sensoring system, this process is called synchronization.

Complete the following steps to add a new measurement point sensor.

Procedure

1. Go to **Details** > **Sensors**.
2. On the action menu, click **Add**.
3. Complete the fields in the data section.

   For a description of these fields, refer to Sensor - fields.

4. Click **Save**.

A new sensor is added.

Viewing historical readings and summarized data

After setting up the connection to the sensoring system and configuring the data engine, operational data will be collected and stored. On the **Details** level it is possible to view this data for further analysis.

> For a description of the fields available on this level, see Details - fields.
> For more details on summarized data, refer to Summarization update process and Starting summarization.
> For more details on analyzing data, refer to Planon Workplace Insights dashboards.

Deleting measurement point(s)

If you want to delete measurement points when maintaining your Planon Workplace Insights setup, these may still have linked readings and sensors. Take a hierarchical approach in order to fine-tune your selection.

> Deleting data is irreversible, make sure your selection is correct before you delete data.

1. Go to **Connectors** level and select the connector for which you want to delete measurement points.
2. On the **Configurations & logging** > **Definitions** step, select the definition for which you want to delete measurement points.
3. On the **Measurement points**, select the measurement points that you want to delete.
4. On the **Details** step, delete your reading, summarized readings and your sensors (by using **Action on selection**).
5. Go back to **Measurement points** level and set the measurement points to **Inactive**.

   You can now delete the measurement points.

6. Go back to **Connectors** level and synchronize your system to let the sensoring system know that these measurement points are no longer used.

Selecting a location

1. Click on the burger menu icon in the top left of the application, the property/floors list will open
2. Select a property or floor from the list
3. When you select a location or press the X, the menu will close
4. If you want to select a space, you can select it directly on your floormap

Planon Workplace Insights - Field Descriptions

> 💡 You need a Planon Workspace Insights License to use these functionalities.

Data engine - fields

Field	Description
Code	Enter a code (alphanumeric) to identify the data engine.
Name	Enter a meaningful name.
Comment	Enter remarks as a note for system administrators.
Polling interval (sec)	Specify the time interval for polling the sensoring system (in seconds). The default setting is 60 seconds.
Last response date	The value in this field is used to determine whether the Data Engine is still polling. The engine is updated every 10 minutes (fixed time interval). If this time stamp has not been updated for more than 10 minutes, this indicates that the engine is down and action is required to revive it. > 💡 • If Planon Workplace Insights is critical to your business process, we recommend to closely monitor this field, for example by specifying an alert for it. > • Keep in mind that the Data Engine runs on server time. If the web server runs in the Cloud, the time zone is UTC+0. A notification is based on the user's time zone, take this into account when setting a notification schedule.

Connector - fields

> 💡 The following **Connector** fields are available in the Planon application. These fields apply to all connector types, but the ones without an asterisk (*) are available only for Planon managed connectors.

Field	Description
Code*	Enter a unique code for the connector.
Name*	Enter a description for the connector.
Comment*	Enter notes (optional). The notes that you enter will be visible to the Planon administrator only.
Data engine*	Select the data engine to which you want to link the connector.
URL	Enter the URL of the web service published by the sensoring system.
Login ID	Enter the login ID of the web service (connector) to connect to the data engine.
Password	Enter the password for the login ID.
API version	Indicate the API version to be used for communication between the Data Engine and the sensoring system. The following options are available: • Version 3-4 This version is based on the REST protocol and can handle full data return and changed data returns. It includes Synchronization and Polling with multiple systems.
LoRa AppEUI	A hexadecimal identifier for the LoRa gateway. Only applicable when using a LoRa connection. The value in this field must comply with hexadecimal format and length. You can only change the value in this field if the connector is **Inactive**.
System status*	Indicates the connector status: **Active** – the connector is operational. **Inactive** – the connector is not operational. **Immeasurable** – the status of the connector cannot be resolved. The cause of the error (going from Active to Immeasurable) is printed in the event log.
Synchronize	Indicate whether the selected connector should be included in the synchronization process. When set to **Yes**, a sync will happen during the next polling cycle. After a successful run, the application switches off the **Monitoring mode activated?** and **Synchronize** fields automatically. However, if encountering issues, the application will continue to try and do this for some time, clogging the process. To overcome this situation, you can

Field	Description
	inactivate the connector. By inactivating the connector, the **Monitoring mode activated?** and **Synchronize** fields will be switched off and the process is reset. After activating the connector again, you can manually enable these fields.
Latest synchronization	Displays the date and time that the connector last synchronized with the sensoring system.
Person*	Indicate the field of BO **Person** to be used as lookup field by the sensoring system. This field will be used to display the person occupying the location.
	• Measuring person data is not mandatory and can violate privacy laws. • The sensoring system determines whether measuring persons is actually possible. (See also Occupancy calculation).
Monitoring mode activated?	When set to **Yes**, a record will be added to the event log at the next polling. You can activate monitoring mode by clicking **Monitor communication** on the action panel. See also, Enabling monitoring mode.
	After a successful run, the application switches off the **Monitoring mode activated?** and **Synchronize** fields automatically. However, if encountering issues, the application will continue to try and do this for some time, clogging the process. To overcome this situation, you can inactivate the connector. By inactivating the connector, the **Monitoring mode activated?** and **Synchronize** fields will be switched off and the process is reset. After activating the connector again, you can manually enable these fields.
Email address for notification*	When set to **Yes**, an email will be sent to the members of the **Email address(es)** (AlertEmailList) if the measurement point/connector is set to *Immeasurable*.
Email address(es)*	Enter the email address of the person(s) who should receive an email alert when the connector is set to **Immeasurable**. To enter multiple email addresses, use a comma (,) or semi-colon (;) as separator.
Custom managed connector only	
Class name	Select one of the available classes, installed by apps, that performs the polling.

Field	Description
App name	The value in this read-only field is filled in automatically based on the selected class.
App module name	The value in this read-only field is filled in automatically based on the selected class.
Partner identifier	The value in this read-only field is filled in automatically based on the selected class.
Onboarding class	Specify the app's class for onboarding (optional). See also Automatic onboarding of measurement points.
Polling class	Specify the app's class that collects the data for the measurement point (optional).

Configurations & logging - fields

The **Configurations & logging** level contains three steps:

- Definitions step
- Measurement point types step
- Event logs step

Definitions step

Field	Description
Code	Enter a code for the measurement point definition.
Name	Enter a description for the measurement point definition.
Connector	Select a connector from the list to which the measurement point definition should be linked.
Dimension	The unit of occupancy. Currently, the default value is always **PP, Per person**.
Comment	Enter notes (optional). The notes that you enter will be visible to the Planon administrator only.
Pre-reservation time (min)	Specify a time in minutes that denotes the pre-reservation time. Here, the status of the reservation unit is changed to 'Reservation imminent' before the start of actual reservation time. The purpose of this setting is to ensure that the location is not claimed shortly before a reservation starts.
Allowed delay reservation time	Specify a time in minutes that denotes the allowed delay in reservation time. During this time window, the location remains unavailable for reservation even though the reservation unit may be vacant.

Field	Description
	After the delay time has passed and the location remains vacant, the reservation status will be updated to 'No show'.
Start break 1-3	Specify the break start times (1-3).
	When idle time is detected and this coincides with a predefined break, the idle time is extended until the end of the break.
End break 1-3	Specify the break end times (1-3).
Idle time - no valid reservation (min)	Specify a time in minutes that denotes the idle time when temporarily leaving an un-reserved location. The location remains unavailable during the time frame specified.
Idle time - valid reservation (min)	Specify a time in minutes that denotes the idle time when temporarily leaving a reserved location. The location remains unavailable during the time frame specified
Check no-show events	If this value is set to **Yes** for all measurement points linked to reservation units, Planon Workplace Insights will check for no-show events and will carry out the configured actions.
Change reservation end time (no-show event)	If set to **Yes**, the reservation end time will be changed to the time of the no-show event if the following conditions apply • A no-show event occurs • Checking for no-show events has been enabled In addition, the status of the reservation is changed to the configured status (See also Linking no-show statuses). If set to **No**, only the status will be changed.
Check early departure events	If this values is set to **Yes** for all measurement points linked to reservation units, Planon Workplace Insights will check for early departure events and will carry out the configured actions.
Change reservation end time (early departure event)	If set to **Yes**, the reservation end time will be changed to the time of the early departure event if the following conditions apply • An early departure event occurs • Checking for early departure events has been enabled In addition, the status of the reservation is changed to the configured status (See also Linking no-show statuses). If set to **No**, only the status will be changed.
No-show statuses	This field lists the status that is assigned when a no-show event occurs. See also Linking no-show statuses.
Early departure statuses	This field lists the early departure status(es) linked to the definition. See also Linking early departure statuses.
No-check statuses	This field lists the status(es) in which the location should not be checked for reservation events. See also Linking no-check statuses.

Field	Description
Email address for notification*	When set to **Yes**, an email will be sent to the members of the **Email address(es)** (AlertEmailList) if the measurement point/connector is set to *Immeasurable*.
Email address(es)	Enter the email address of the person(s) who should receive an email alert when the measurement point definition is set to Immeasurable. To enter multiple email addresses, use a comma (,) or semi-colon (;) as separator. If this field is empty, the Connector's **Email address(es)** will be used instead. If both fields are empty, no notification can be sent at all.

Measurement point types step

ℹ️ Using measurement point types is optional. This feature can be used for being able to filter on specific types of measurement points in the Planon Workplace Insights Dashboard, such as: meeting rooms vs. conference rooms.

Field	Description
Code	Enter a code for the measurement point type.
Name	Enter a description for the measurement point type.

Event logs step

ℹ️ Note that events logged here are issues that are reported on the connector, not on the measurement point!

Field	Description
Application log type	Displays the type of information that is logged: • Error • Warning • Information
Source	Displays the process causing the event.
Log message	Provides an overview of the event, if possible.
Details	Displays log details.
User	Displays the name of the user on whose name the process is executed.

Field	Description
Transferred to archive?	Indicates whether this log message is archived.

Measurement point - fields

There are three types of measurement point fields:

- Read only: these are system fields that are filled by the data engine
- Configuration items: these are fields whose values can only edit when the measurement point is *Inactive*
- Free changeable fields, which do not affect the processing of data.

Field	Description
General tab	
Code	Enter an ID for the measurement point.
Name	Enter a description for the measurement point.
Measurement point definition	Select a measurement point definition from the list to which the measurement points should belong.
Measurement point type	Select the type of measurement point. The measurement point types are defined on **Configurations & logging** > **Measurement point types** step. You can differentiate between various measurement point types. Working with a predefined set of measurement point types will enable the sensoring system to better interpret measurements. 💡 For some sensoring systems, the measurement point type is mandatory, in which case it should be made mandatory on the layout in Planon.

Measurement point role	Select your measurement point's role, which is more or less synonymous with the function it is going to play.
	
	You can choose from:
	
	- Primary A
	
	  Occupancy is derived from the measurement point readings. When you select this role, the **Display availability** field on the **Configuration** tab is set to **Yes**.
	
	  💡 Data of all related measurement point roles will be aggregated at this level.

Field	Description
	• Primary B Occupancy is derived from the reservation data. When you select this role, the **Display availability** field on the **Configuration** tab is set to **No**. > 💡 Data of all related measurement point roles will be aggregated at this level. • Supplementary Role that enables you to use a different set of sensors (measuring data other than occupancy). By having this role, you can mix sensors of different vendors. When you select this role, the **Display availability** field on the **Configuration** tab is set to **No**. • Secondary Role for providing auxiliary information. When you select this role, the **Display availability** field on the **Configuration** tab is set to **No**.
Status	Indicate the measurement point status (set manually): **Active** – the measurement point is operational. **Inactive** – the measurement point is not operational.
Comment	Enter notes (optional). The notes that you enter will be visible to the Planon administrator only.
Occupancy value	Depending on the type of sensors and the API version used, the values in this field can have a different meaning. For more information, see Occupancy measurement.
Pause reason	Displays the reason why a measurement point's occupancy status is put on *Pause*. This is a read-only field that can only be set by the Data Engine. Its values can be: • Connector inactive • Update next polling/event • Outside working hours By including the Pause status, the relevant readings can also be viewed.
Person count	Depending on the type of sensors and the API version used, the values in this field can have a different meaning. For more information, see Occupancy measurement.
Reading date/time	Displays the latest reading date/time given by the sensoring system. This is the date/time given in the time zone of the sensoring system.
Normalized date/time	Displays the latest normalized reading date/time of the data engine.

Field	Description
	The normalized time is the local time calculated by the data engine based on the time zone of measurement point location. If no time zone is provided, the system time of the data engine is used.
	The occupancy status is calculated based on the normalized date and time.
Occupancy status	Displays the status of occupancy of the measurement point.
	For more information refer to, Occupancy statuses.
Previous occupancy status	Displays the previous occupancy status of the location.
Occupancy status change date-time	Displays the date/time of the last change in the occupancy status (based on normalized reading date-time).
Person	Displays the person to which the measurement point is linked. See also Linking persons.
	ℹ This field can only be filled if supported by the sensoring system. See also Occupancy measurement.
Reservation	Displays the reservation that is currently valid and was created for the location, if applicable.
Battery status (voltage)	Displays the battery indication (voltage) received from the connector. The value indicates the status of the sensor's power supply.
	If multiple sensors are linked to the measurement point, the lowest battery voltage is returned.
Light intensity (lux)	Displays the luminous intensity or lux (lx) received from the connector.
Carbon dioxide (ppm)	Displays the carbon dioxide level received from the connector. The measurement point's carbon dioxide level is given in parts per million (ppm).
Humidity (%)	Displays the humidity percentage received from the connector.
Noise (dB)	Displays the loudness level received from the connector. The measurement point's loudness level is given in decibel (dB).
Temperature (degrees)	Displays the temperature received from the connector. The measurement point's temperature is given in degrees Celsius or Fahrenheit, which is determined by the sensoring system.
Power level (kWh)	Displays the power level value received from the connector. The power level indicates the energy usage in kilowatt (kWh).
Free field 1/3 for vendor specific readings	Displays any vendor specific values collected from the sensoring system. See also Sensoring system data > free fields.
Free measurement field 1/10	Free fields made available for capturing numeric values, e.g. number of particles in a given time frame. This data must be supplied by the sensoring system. Because they are numeric values, they can be summarized and used in analysis.

Field	Description

Error tab

Error code	Displays the error code that is published by the connector when encountering an error situation for the measurement point (not applicable for API).
Monitor data	Indicate whether you want to enable monitoring logging for the selected measurement point. If you click **Yes**, the data from the sensoring system is logged in the System feedback field.
System feedback	It displays an error message if the measurement point is *Immeasurable*. When monitoring is enabled, this field displays all data exchange (response) collected by the data engine.

Configuration tab

Display availability?	Read-only field that indicates whether the measurement point should be taken into account when displaying availability in Kiosk, Room booking panel and Apps. If set to **Yes**: • The availability of the related unit will also be determined by the occupancy of the measurement point. • The data is available to Planon Apps, Room booking panel and Kiosk. When multiple measurement points are linked to the same location, only one is considered the primary measurement point (determined by setting this field **Yes**.)
Store historical readings	**Yes** is selected by default. Select **No**, if you do not want to store historical data on the **Details** level. A record will not be created in the **Measurement point readings** list.
Update during office hours only	Select **Yes** if you want to update the measurement point linked to a specific location during office hours *only*. **No** is selected by default. If you select **Yes**, the data engine continues to run, but will not record updates *outside* office hours.
Store during office hours only	Select **Yes** if you want to store the measurement point readings during office hours *only*. **No** is selected by default. If you select **Yes**, the data engine continues to run, but will not store updates *outside* office hours.
Maximum capacity (No.)	Enter the maximum occupancy capacity of the location to which you are linking the measurement point.

Field	Description
	ℹ️ This field is used for density calculations.
	⚠️ The reservation unit linked to the measurement point also has a maximum capacity value. However, if both these fields are filled, the value defined at **Measurement points** level takes precedence.
Time zone	Indicates the time zone of the measurement point.
Calendar	Select the calendar for the measurement point.
	💡 The calendar is important for summarization - it determines the time-frame for conducting measurements.
	You can select a specific calendar to be used, deviating from the location's calendar. If you do not select a specific calendar, the location calendar will be used.
	Using a separate calendar for measurement points can be important if, for example, you have reservation units with different office hours. When you do, the summarization process will be affected.
	⚠️ Note: data that is already summarized will remain based on the previously configured calendar. • By deleting summarized data and subsequently synchronizing again, the summarization will be based on the current calendar. • If you delete summarized data, purge all three levels (hours, days, months). • You can only summarize anew for the period for which you have summarized readings.
Property / Property zone / Floor / Space / Workspace / Reservation unit / Rentable unit	Select a location to which you want to link the measurement point. You can only select one location per measurement point.

See also

Measurement point role

Details - fields

The **Details** level contains the following steps:

- Readings
- Summarized readings:
  - ◦ Hourly summarized readings
  - ◦ Daily summarized readings
  - ◦ Monthly summarized readings
- Sensors
- Sensor types

Readings step

Field	Description
Measurement point	Displays the measurement point.
Occupancy value	Depending on the type of sensors and the API version used, the values in this field can have a different meaning. For more information, see Occupancy measurement.
Pause reason	Displays the reason why a measurement point's occupancy status is put on *Pause*. This is a read-only field that can only be set by the Data Engine. Its values can be: • Connector inactive • Update next polling/event • Outside working hours By including the Pause status, the relevant readings can also be viewed.
Person count	Depending on the type of sensors and the API version used, the values in this field can have a different meaning. For more information, see Occupancy measurement.
Reading date/time	Displays the sensoring system's last reading date/time.
Normalized date/time reading	Displays the data engine's last reading date/time in the time zone of the location linked to your measurement point.
Previous normalized date/time reading	Displays the data engine's normalized reading date/time before last.
Occupancy status	Displays the status of occupancy of the measurement point: *Inactive*, *Pause*, *Immeasurable*, *Not occupied*, *Idle*, *Reservation imminent* and *Occupied*.
Occupancy status change date-time	Displays the date/time of the last occupancy status change.
Previous occupancy status	Displays the status before the current status.
Within office hours	**Yes** indicates that the readings of the measurement point are taken during office hours. (Based on the calendar linked to the measurement point).

Field	Description
Person	Displays the person who occupies the location.
	💡 Only if this was actually measured. Most sensoring systems measure values anonymously.
Location reserved	**Yes** indicates that the location was reserved.
Reservation	Displays the reservation that is active during reading time.
No show	**Yes** indicates that the measurement point experienced a 'No show' event.
Time saving from 'no show'	Displays the net time savings as a result of making a space available by detecting a 'no show'.
Early departure	**Yes** indicates that the measurement point experienced an 'Early departure' event.
Time saving from 'early departure'	Displays the net time savings as a result of making a space available by detecting an 'early departure'.
Maximum capacity (No.)	Displays the maximum number of people the reservation unit can accommodate.
Reserved capacity	Displays the number of people for whom the location was reserved.
Battery status (voltage)	Displays the battery indication (voltage) received from the connector. The value indicates the status of the sensor's power supply.
	If multiple sensors are linked to the measurement point, the lowest battery voltage is returned.
Light intensity (lux)	Displays the luminous intensity or lux (lx) received from the connector.
Carbon dioxide (ppm)	Displays the carbon dioxide level received from the connector. The measurement point's carbon dioxide level is given in parts per million (ppm).
Humidity (%)	Displays the humidity percentage received from the connector.
Noise (dB)	Displays the loudness level received from the connector. The measurement point's loudness level is given in decibel (dB).
Temperature (degrees)	Displays the temperature received from the connector. The measurement point's temperature is given in degrees Celsius or Fahrenheit, which is determined by the sensoring system.
Power level (kWh)	Displays the power level value received from the connector. The power level indicates the energy usage in kilowatt (kWh).
Free field 1/3 for vendor specific readings	Displays any vendor specific values collected from the sensoring system. See also Sensoring system data > free fields.

Field	Description
Error code	Displays the error code that is published by the connector when encountering an error situation for the measurement point (not applicable for API).
System feedback	It displays an error message if the measurement point is *Immeasurable*. When monitoring is enabled, this field displays all data exchange (response) collected by the data engine.
Free measurement field 1/10	Free fields made available for capturing numeric values, e.g. number of particles in a given time frame. This data must be supplied by the sensoring system. Because they are numeric values, they can be summarized and used in analysis.

Summarized readings - fields

The following table lists the fields and their descriptions available for summarized readings on the **Details** level.

Field	Description
Measurement point	Displays the linked measurement point.
Type	Displays the summarization type.
Year	Indicates the year of the summarization period.
Month	Indicates the month of the summarization period.
Day	Indicates the day of the summarization period, if applicable.
Hour	Indicates the hour of the summarization period, if applicable.
Composed date-time	The value in this field is composed of the preceding four reading field values for Year, Month, Day and Hours. By using this field, it is now possible to create a From-To analysis for a period. **Hour summarization** Start date-time of hour: Year: 2020 Month: 06 Day: 25 Hour: 14 Composed data-time: 25-06-2020H14.00 **Day summarization** Start date-time of day: Year: 2020 Month: 06 Day: 25 Composed date-time: 25-06-2020H00.00 **Month summarization** Start date-time of month Year: 2020 Month: 06

Field	Description
	Composed date-time: 01-06-2020H00.00
Readings (in min.) during office hours	Displays the number of minutes of valid readings (in the status **Non-occupied**, **Reservation imminent**, **Occupied** or **Idle**) within the the summarization time frame.
Time slot	Displays the actual number of minutes in the office calender within the summarization time frame (day/week/month). **Example (hour)** Office hours = 8:30 - 17:00 For time bucket 8, the time slot will be 30 minutes For time bucket 9-17, it will be 60 minutes each.

Hours	Time slot	# minutes
8-9 am	8	30
9-10 am	9	60
10-11 am	10	60
11-12 am	11	60
12-13 pm	12	60
13-14 pm	13	60
14-15 pm	14	60
15-16 pm	15	60
16-17 pm	16	60

Calculation % of valid reservations:

(mins. of valid reservation / time slot) * 100.0

Field	Description
Reserved status (in min.)	Displays the number of minutes in the status **Reserved** during office hours within the summarization time frame.
Non-occupied status (in min.)	Displays the number of minutes in the status **Non-occupied** during office hours, within the summarization time frame.
Occupied status (in min.)	Displays the number of minutes in the status **Occupied** during office hours within the summarization time frame.
Idle status (in min.)	Displays the number of minutes in the status **Idle** during office hours within the summarization time frame.
Immeasurable status (in min.)	Displays the number of minutes in the status **Immeasurable** during office hours within the summarization time frame.
Minimum occupancy value	Displays the minimum occupancy value during office hours for readings in status **Occupied** within the summarization time frame.
Maximum occupancy value	Displays the maximum occupancy value during office hours for readings in the status **Occupied** within the time frame.
Valid reservations (in min.)	Displays the number of minutes for which a valid reservation existed for the measurement point during office hours within the summarization time frame. This is based on the value in the **Time block** field.

Field	Description
Total occupancy value	Displays the sum of all occupancy values during office hours in the status **Occupied** within the summarization time frame. The sum is based on the **Person count** field. **Example** When measuring 10 minutes occupancy for 8 persons in one hour, the value is 80.
Max. capacity	Displays the sum of all maximum capacity values during office hours in the status **Occupied** within the time frame.
Reserved capacity	Displays the sum of all people for whom a reservation was planned during office hours in the status **Occupied** within the time frame.
Number of 'no-show' events	Displays the number of **No-show** events during office hours.
Time saving from 'no show'	Displays the net time savings as a result of making a space available by detecting a 'no show'.
Number of 'early departure' events	Displays the number of **Early departure** events during office hours.
Time saving from 'early departure'	Displays the net time savings as a result of making a space available by detecting an 'early departure'.
Free measurement field 1/10	Free fields made available for capturing numeric values, e.g. number of particles in a given time frame. This data must be supplied by the sensoring system. Because they are numeric values, they can be summarized and used in analysis.

Environmental measurements

> Environmental measurements all display summarized values of valid measurements.

Battery status (voltage)	Displays the battery indication (voltage) received from the connector. The value indicates the status of the sensor's power supply. If multiple sensors are linked to the measurement point, the lowest battery voltage is returned.
Light intensity (lux)	Displays the luminous intensity or lux (lx) received from the connector.
Carbon dioxide (ppm)	Displays the carbon dioxide level received from the connector. The measurement point's carbon dioxide level is given in parts per million (ppm).
Humidity (%)	Displays the humidity percentage received from the connector.
Noise (dB)	Displays the loudness level received from the connector. The measurement point's loudness level is given in decibel (dB).

Field	Description
Temperature (degrees)	Displays the temperature received from the connector. The measurement point's temperature is given in degrees Celsius or Fahrenheit, which is determined by the sensoring system.
Power level (kWh)	Displays the power level value received from the connector. The power level indicates the energy usage in kilowatt (kWh).

Sensor - fields

Field	Description
Measurement point	Select a measurement point from the list to which you want to link a sensor.
Sensor ID 1 – 5	Enter a sensor ID to uniquely identify a sensor. You can have a maximum of 5 IDs per sensor.
	The sensoring system used determines which Sensor ID fields will be used for identification.
	The combination of these 5 fields will render the sensor ID. It is not mandatory to use all 5 fields.
Sensor type	Select the sensor type from the picklist. This list must be consistent with your specific sensoring system.
Secondary sensor?	Indicates whether the sensor serves a secondary role. If **Yes**, the sensor is used to correct the primary sensors. For example, the combination of people counting sensors (primary role) and motion sensors (secondary role).
Comment	Enter additional information if necessary.
Start date	Enter a start date for sensor activation.
End date	Enter an end date for sensor activation.
	The start date and end date are used for synchronization. Sensors with an invalid date are excluded from the synchronization run.

Sensor types

On this step you can create and distinguish between various sensor types. For example, types of sensors for measuring occupancy only and those that measure environmental values also.

The distinction could be based on sensor variables (vendor-specific):

- ELSYS_NO_ENVIRON: non of the environmental measurements of this sensor are used.

- ELSYS_NO_TEMP: this sensor is not used for measuring temperature.

Example

A location is fitted with three sensors. Two are positioned on the ceiling and one is fitted on thermostat height. You would not want to take the ceiling sensors into account when measuring the location's temperature as this would throw off the average value.

> Specifying sensor types is optional. The above example is based on the SWYCS sensoring system.

Profiles & targets

Nowadays, measuring office space comfort levels is more than just measuring temperature. Science has shown that personal health and productivity may be impacted by various environmental values.
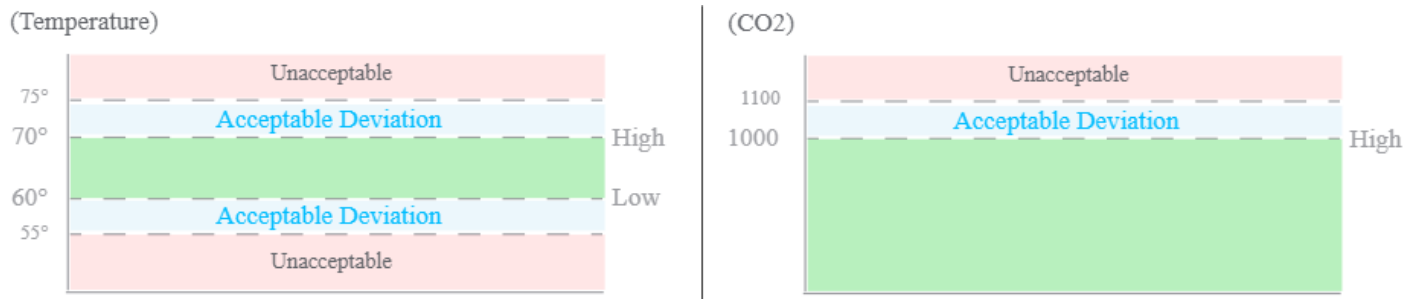
By specifying targets per property, you can define comfort levels on a large number of factors that contribute to well-being.

How it works

Depending on the factor, you can specify:

- An upper limit (high)
- A lower limit (low)
- A margin

The result, in a diagram, is visualized as follows:

This will quickly enable you to verify whether a given value falls within the acceptable parameters as specified. Any value beyond the margin automatically becomes *unacceptable*.

In addition of showing data in floor maps or dashboards, the data is also transformed into a profile score - an indication of how well a space complies with its defined limits.

> 💡 You need a Planon Workspace Insights License to use these functionalities.

Concepts

The following topics describe the concepts that are key to understanding the functionality.

> 💡 You need a Planon Workspace Insights License to use these functionalities.

Profile

A profile is an umbrella component for capturing a set of targets defining critical values for related measurements.

Creating a profile is the starting point for specifying target values.

You can have one default profile for all locations or specify a profile for a specific property if you want to deviate from the default. You can only have one profile as default.

> 💡 By having only one profile, you can easily compare the profile score across your organization's/company's properties.

Profile score

A profile score provides an indication of how well a space complies with expectations.

It does so by approximating the percentage of time that temperature, humidity, CO2, and volatile organic compound (VOC) values stay within targeted ranges.

Profile scores enable you to monitor and compare the overall target values of spaces located throughout your facility. You also use them to evaluate changes over time.

Working with...

This section describes the various functions available.

> 💡 You need a Planon Workspace Insights License to use these functionalities.

Adding a target

Procedure

1. On **Profiles**, add or select the profile for which you want to specify target values.
2. Go to **Target values** and click **Add**.
3. Fill out the fields in the data panel.

   You can specify targets for each measurement field. Or, in other words, add targets for each measurement field. For information about the fields, see Target values - fields

Field descriptions

The following section(s) describe(s) the fields, their purpose and meaning.

> 💡 You need a Planon Workspace Insights License to use these functionalities.

Profiles - fields

Field	Description
Code	Enter a code to identify your profile.
Name	Enter a name for your profile.
Is default?	Specify whether the profile you are specifying is considered the default profile.
	The default profile is used for locations for which no specific profile is defined on the property.
	> 💡 There can only be one default profile.
Under capacity	Specify a percentage (a number between 0-100) that will be used to calculate what is considered underutilization of the capacity.
	Under capacity is a percentage of the maximum capacity, rounded down to the next available integer.
	Example
	50% capacity for a 3 person location:
	• 2 would be OK
	• 1 would be too few
Comfort score boundary	Specify a value to indicate what is (not) acceptable: *the boundary*.
	The **Comfort score boundary** is a value between 0 and 100.

Target values - fields

The following fields are available for target values:

Field	Description
Profile	Select the profile for which you are specifying these targets.
Measurement point field	Select the field for which you want to specify the limits. You can select either of the following measurement point fields: • Carbon dioxide (ppm) • Humidity (%) • Light intensity (lux) • Noise (dB) • Temperature (degrees) • Free measurement field 1-10 For more information about these fields, see: Measurement point - fields.
High	Specify the maximum acceptable value.
Low	Specify the minimum acceptable value.
Margin	Specify the margin for which the high or low value may deviate.

Data engine

The data engine is an installed component that communicates with the active sensoring systems and updates/adds the occupancy information in the Planon Software Suite. The reading process is performed at specified time intervals (for example, each minute).

> ℹ️ For more information about the time interval setting, see Data engine - fields.

> 💡 You need a Planon Workspace Insights License to use these functionalities.

PWIDATAENGINEADMIN user

- The data engine requires its own user (PWIDATAENGINEADMIN) to log on to Planon.
- This user should be available and linked to a user group that should be linked to the PWIDataEngine product definition and this system user should have full functionality.
- The check box **Password never expires** must be selected for this user. If this is not selected, the data engine may be unavailable because the user's password has expired.
- It is good practice to create a separate user group for the data engine.

See also

See also Adding an PWIDATAENGINEADMIN user

Reading (polling) cycle

During the reading intervals, the following tasks are performed:

> 💡 Polling can apply to both Planon managed, and custom managed connectors (but only when the latter is using the **Pull** mechanism).

- Collects all active connectors.
- A connector is active if its status in Planon Software Suite is set to **Active** manually.
- Collects all active measurement points linked to these connectors.
- A measurement point is active if its status in Planon Software Suite is set to **Active** manually.
- Communicates with the sensoring system(s) and collects occupancy data from all active measurement points.

- The connector defines the API to the sensoring system (web service).

- Updates every active measurement point based on the occupancy data received (only when a change is detected). This update is performed on the measurement point, linked to the location.

- Stores historical data.

> Some of these tasks depend on configuration settings.

See also

Polling

Sensoring system data

The following data is collected from the sensoring system for each location to which an active measurement point is linked:

Field	Description
Measurement point ID	Displays the measurement point.
Person ID	Displays the person linked to the sensoring system. This field is optional.
Date/time of last reading	Date/time of last reading (server time).
Occupancy value	Depending on the type of sensors and the API version used, the values in this field can have a different meaning. For more information, see Occupancy measurement.
Pause reason	Displays the reason why a measurement point's occupancy status is put on *Pause*. This is a read-only field that can only be set by the Data Engine. Its values can be: • Connector inactive • Update next polling/event • Outside working hours By including the Pause status, the relevant readings can also be viewed.
Person count	Depending on the type of sensors and the API version used, the values in this field can have a different meaning. For more information, see Occupancy measurement. > The sensoring system determines whether the value 1 just means "Occupied" or whether it means "Occupied by

Field	Description
	one person". For a description of these values, and how to resolve issues, see *SWI Technical Reference*.
Free field 1-3 for vendor specific readings	It is possible to store additional vendor data here, if available.
Free measurement field 1/10	Free fields made available for capturing numeric values, e.g. number of particles in a given time frame. This data must be supplied by the sensoring system. Because they are numeric values, they can be summarized and used in analysis.
Environmental values	
Battery status (voltage)	Displays the battery indication (voltage) received from the connector. The value indicates the status of the sensor's power supply.
	If multiple sensors are linked to the measurement point, the lowest battery voltage is returned.
Light intensity (lux)	Displays the luminous intensity or lux (lx) received from the connector.
Carbon dioxide (ppm)	Displays the carbon dioxide level received from the connector. The measurement point's carbon dioxide level is given in parts per million (ppm).
Humidity (%)	Displays the humidity percentage received from the connector.
Noise (dB)	Displays the loudness level received from the connector. The measurement point's loudness level is given in decibel (dB).
Temperature (degrees)	Displays the temperature received from the connector. The measurement point's temperature is given in degrees Celsius or Fahrenheit, which is determined by the sensoring system.
Power level (kWh)	Displays the power level value received from the connector. The power level indicates the energy usage in kilowatt (kWh).
Error code	Displays the error code that is published by the connector when encountering an error situation for the measurement point (not applicable for API).
System feedback	It displays an error message if the measurement point is *Immeasurable*. When monitoring is enabled, this field displays all data exchange (response) collected by the data engine.

Linking persons

Depending on the sensoring system, it is possible to configure and enable the Planon Workplace Insights solution to identify availability on the level of individual persons. In that case the sensoring system will provide a person's ID. However, most sensoring systems are anonymous and will not be able to identify the person that is occupying the location.

On the **Connector** level the Person key field is configured. Based on the person ID received and the configured field, the reader will try to find the person. If there is a match and the person is found, he/she is linked to the measurement point; in all other cases the measurement point **Person** field will be left empty.

Statuses

Communication of Planon Workplace Insights components is status-driven. This section describes the possible statuses available and their significance.

Connector statuses

The connector can have the following statuses:

Status	Description
Active	The connector is operational; this status is set manually.
Inactive	The connector is not operational; this status is set manually.
Immeasurable	The connector is not operational. It is not possible to establish a communication with the connector.
	If the communication is restored the data engine will automatically switch the status to Active again.

Measurement point (system) statuses

The measurement point can have the following statuses:

Status	Description
Active	The measurement point is operational (data will be updated); this status is set manually.
Inactive	The measurement point is not operational (data will not be updated); this status is set manually.

Switching status manually

In Planon Software Suite, the connector and the measurement point (system) statuses can be changed manually.

> Note that this status differs from the occupancy status.

Action	Result
Switching the connector to inactive	All related measurement points that are in the Active status will be switched to occupancy status Pause. Communication between the data engine and the sensoring system is not possible.
Switching the connector to active	All related measurement points that are in occupancy status Pause will be switched to the actual occupancy status (occupied/unoccupied) following the next reading cycle.
Switching the measurement point to inactive	The measurement point occupancy status will be switched Inactive.
Switching the measurement point to active	The measurement point occupancy status is switched to Pause and will be set to the actual occupancy status following the next reading cycle.

Occupancy statuses

The occupancy status is determined based on the reading value of a measurement point:

| Status	Description	Related configurations
Occupied	The location is physically occupied by one or more people.	
Not occupied	The location is not occupied nor in status "Reservation imminent", "Idle".	
Reservation imminent	The location is not occupied but is (soon) reserved based on a Planon reservation.	Determined by: • Pre-reservation time • Allowed delay reservation time
Idle	The location in use by one or more people, who have left the location temporarily.	Determined by: • Idle time reservable location • Idle time non- reservable location • Break time 1-3
Inactive	The location is set to Inactive by a Planon user; no measurements are performed.	
Immeasurable	The location is set to Immeasurable; it cannot be measured temporarily. This can have various, technical reasons, such as: a sensor is not available, the web service is not operational.	

Status	Description	Related configurations
Pause	Indicates that the measurement time is either: • outside office hours. • the measurement point is waiting to be updated by the next polling cycle. • the connector is inactive.	Measurement point: Update during office hours only.

Synchronization

Synchronization is the process of publishing the links between the measurement points (locations) and their sensor(s) to the corresponding sensoring system. Both measurement points and sensors are identified by their ID. You can maintain measurement points and sensors on the **Sensors** business object. A sensor is linked to its corresponding measurement point.
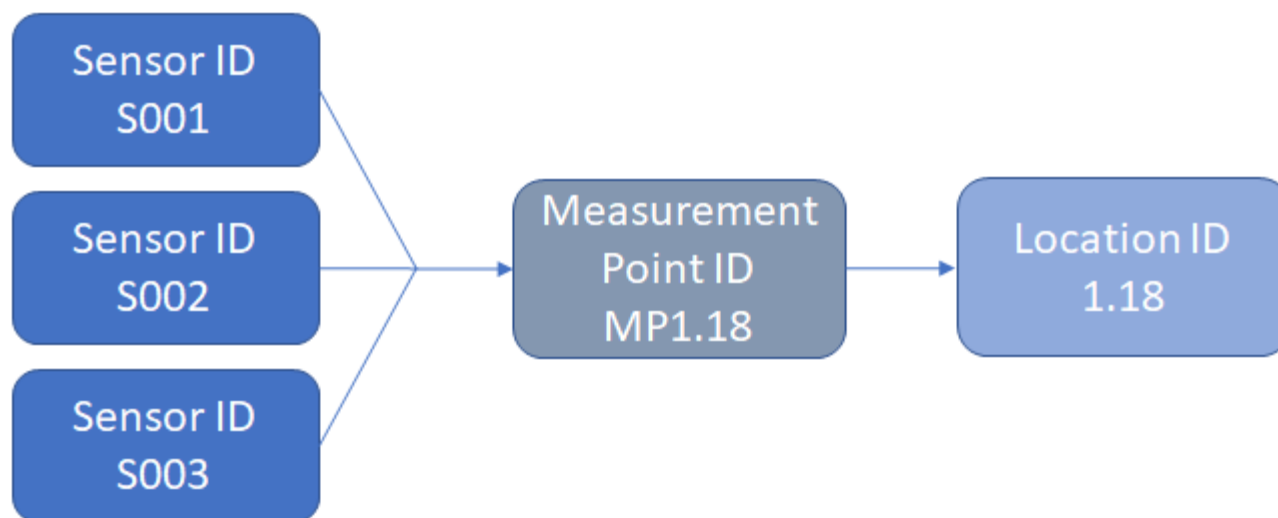
In the above configuration, the following mapping should be published to the sensoring system:

Sensor ID	Measurement point ID
S001	MP1.18
S002	MP1.18
S003	MP1.18

To enable rearranging or adding sensors, the sensor reference is date-aware. This implies that the synchronization process only takes into account the sensor records that correspond with the period of the server date of synchronization.

During synchronization, the measurement/sensor mappings of all measurements points (Planon status: **Active** and **Inactive**) are published to their corresponding sensoring system. The **Sensors** business object is date-aware. Synchronization only takes into account Planon Workplace Insights connectors with an **Active** status.

> After a successful run, the application switches off the **Monitoring mode activated?** and **Synchronize** fields automatically. However, if encountering issues, the application will continue to try and do this for some time, clogging the process. To overcome this situation, you can inactivate the connector. By inactivating the connector, the **Monitoring mode activated?** and **Synchronize** fields will be switched off and the process is reset. After activating the connector again, you can manually enable these fields.

💡 You need a Planon Workspace Insights License to use these functionalities.

Triggering synchronization

This section describes the process of triggering synchronization.

If the connector is defined for API Version 3 or 4, the synchronization of measurement points can be triggered via the **Synchronize** action on the **Connectors** level.

If the value of the **Synchronize** field is set to **Yes**, the measurement points that are linked to the connector are transmitted to the sensoring system to be synchronized. When the synchronization is completed, the value of the **Synchronize** field is changed to **No**.

Failures during the synchronization process will be returned as errors resulting in a list in the Connector's event log.

- The sensoring system is responsible for the correctness of registration of measurement points.

- You can automate synchronization by using a scheduled action in Alerts on the **Sensoring system connectors** business object. The action will set the **Synchronize** field on the connector to **Yes**, so that the synchronization process is picked up at the next polling cycle.

Synchronization process

During synchronization, a list of the relations between a measurement point and its corresponding sensors is created for each connector. The sensoring system determines which of the following sensor properties are required:

- Connector code

- Measurement point code (mandatory)

- Measurement point name

- Measurement point capacity

- Measurement point type

- Sensor IDs (1-5) (mandatory)

- Sensor type

- Is secondary sensor

This list is published to the corresponding sensoring system, so that it can update its configuration table mapping the physical sensor IDs and their measurement point IDs.

⚠ Per API Version 3 Planon supports polling by multiple Planon environments. Be careful when simultaneously linking two different Planon environments to one sensoring system, e.g. in the case of DTAP. When changing settings to the measurement points in a test environment

and synchronizing these changes with the sensoring system, this will result in a production environment that is out of sync.

There are two ways to perform synchronization, manually triggering the action or by scheduling it. Typically, synchronization is required only if something has changed; usually manually triggering the action suffices.

Summarization

The process of compressing data into smaller time components: hours, days and months, decreasing the number of historical data. By continuously retrieving and storing data from the data engine, data storage and analysis may become an issue. By compressing this data, less storage is needed and analyses are easier to perform.

> • Almost all Planon Workplace Insights analytics are based on summarized data.
> • Not all measurement fields are included in the summarization process. Only numerical fields can be summarized.

> You need a Planon Workspace Insights License to use these functionalities.

See also

Configuration

Configuration

Configuration for summarization can be performed at the business object settings of the **Summarized readings** (MeasurementPointSummarizedReading) business object. To adjust these settings, go to **FieldDefiner** and the set the (base) business object to **Under construction**.

Field	Description
Number of days for storing historical readings	The number of days during which actual readings will be stored. Older actual reading records will be purged by the summarization process.
Number of days for storing hourly summarized readings	The number of days during which hour readings will be stored. Older summarized hour readings will be summarized to day readings. Corresponds with "Value X" in the Summarization example.
Number of days for storing readings summarized per day	The number of days during which summarized day readings will be stored. Older summarized day readings will be summarized to month readings. Corresponds with "Value Y" in the Summarization example.
Number of months for storing readings summarized per month	The number of summarized month readings that will be stored. Older summarized month readings will be purged. Corresponds with "Value Z" in the Summarization example.

See also
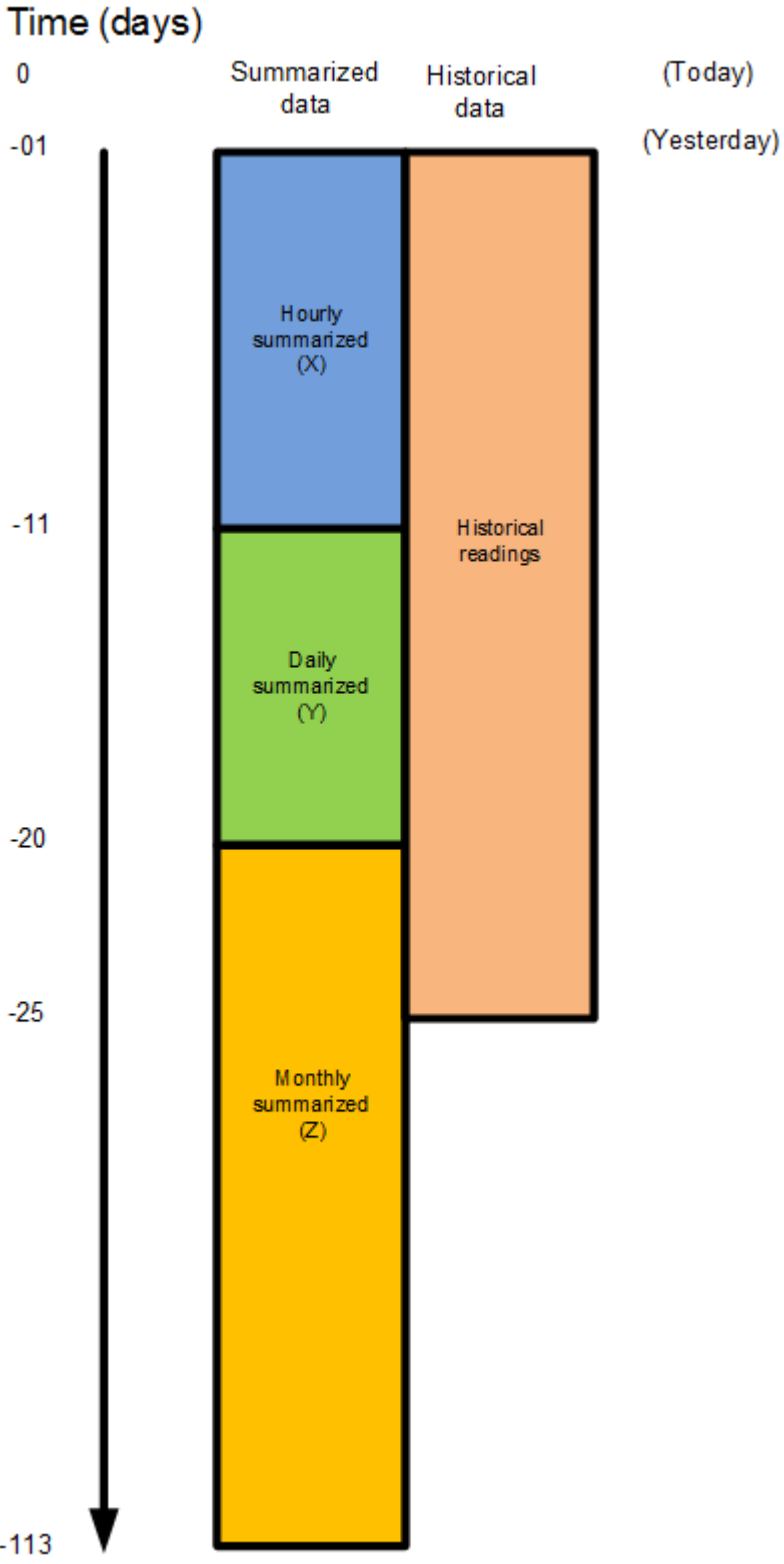
Summarization update process

A summarization process can be launched manually or can be triggered by the Planon scheduler.

Historical data can be stored as actual *readings* or as *summarized data*. Both types will be processed by the summarization process.

During the summarization process the following steps will be performed:

- Delete actual data if the number of days exceeds the **Days for storing historical readings** (DaysOfActualReadingsToStore) setting. Older data will be purged.

- Update summarized data for hour-, day- and month summarization. Summarized data is processed for measurements up to and including today -1 (yesterday).

Summarization is performed chronologically, starting today -1 day (yesterday) and going from this point backwards, as is shown in the following figure:

Time (days)

| | Summarized data | Historical data | (Today) |

0

(Today)

-01

(Yesterday)

Hourly summarized (X)

Historical readings

-11

Daily summarized (Y)

-20

Monthly summarized (Z)

-25

-113

> 💡 These data sets do not overlap. As shown in the figure above, these represent consecutive time blocks.

> 💡 Historical data and summarized data differ in detail. By virtue of compression, the summarized data, logically, contain fewer information compared to the historical data. The summarized data is used by Planon Workplace Insights Dashboards and by (internal and external) business intelligence tooling. Historical data can be viewed and analyzed in Planon itself (by using reporting in Planon).

Explanation

> ⚠ NOTE: In order not to miss any data, make sure your historical readings are kept for a number of years!

- Hourly summarized readings are kept for 10 days.
- Daily summarized readings are kept for 9 days.
- Monthly summarized readings are kept for 3 months.
- Historical readings are kept for 25 days.

> 💡 For historical data, records are only added if a change in the reading data occurred. All Planon Workplace Insights dashboards are based on summarized readings:

- When viewing year and month, data of all three time blocks is used.
- Zooming in to days limits the view on the data set to the period that hour and daily summarized data was stored (in the above example: X + Y).
- Zooming in to hours limits the view on the data set to the period that summarized data was stored for hours (in the above example: X).

Consequently, the choice of the summarized periods influences the detail and zooming options of your summarized data. At the same time, it helps you prevent an overflow of your storage capacity.

Starting summarization

There are two ways in which you can start the summarization process:
- Manually
- Automatically (scheduled)

Manually starting summarization

You can manually start the summarization process on the **Measurement points** selection level. Here, on the action menu, the **Summarize readings** action is available. The result of this action is split on the **Details** level into:

- Hourly reading
- Daily readings
- Monthly readings

Scheduling summarization

Typically, it is a good practice to schedule the summarization process on a daily basis, so that only the newly added historical readings of the former day need to be summarized. Summarized data is always available for analyses (through dashboards) until the current day -1 (yesterday).

To schedule summarization, you need to create an action definition in **Alerts**.

Procedure

1. In **Alerts**, create an action definition for the **Measurement points** business object.
2. Add a filter on **System status** = **Active**.
3. Select **Summarize readings**.
4. Set a daily schedule.

   Make sure your schedule starts after 12 PM because the processing includes data of the previous day.

5. Specify a start time (preferably outside office hours).
6. Set the action definition to **Active**.

Repeat these steps for all summarization actions that you want to schedule.

For more information on scheduling, see *Alerts* and *System Settings*.

Troubleshooting

This section describes possible errors and how to mitigate them.

AWM data engine stopped working

The AWM data engine represents all the communication with the sensoring system and processing the data received.

Description

The AWM Data engine **Last response date-time** field should be updated every 10 minutes (date-time value is in UTC timezone). If the field is empty or not updated in time, the AWM data engine is malfunctioning.

Cause

This is a very rare situation, probably the system has run out of memory because of a very large load of data to process. Maybe the Planon 'WildFly' log (home page) can give more information about the exact cause of stopping.

Solution

First check if the user AWMDATAENGINEADMIN is available and has 'full functionality' function profile.

If this looks good, go to **Home** > **Environment management gadget** > **Danger zone** and restart the Planon instance.

Make sure that no users are still active in the Planon application.

A restart can take 10–20 minutes, during this time, the Planon application is not available.

Sensoring system connector is in status 'Immeasurable'

The Sensoring system connector describes the direct communication with the external sensoring system.

Description

If the Sensoring system connector is malfunctioning, the AWM data engine will set its status to 'Immeasurable'.

The monitoring mode of the connector is automatically switched on if the connector is in the *Immeasurable* status. Information about the issue is displayed in **Configuration & logging** > **Event logs**. You can also enable monitoring manually.

Cause

If the sensoring system connector is put on 'Immeasurable' by the Planon system, it means that communication with the related sensoring system is no longer possible.

First check the error message in the Connector's event log (at **Configurations & logging**), maybe it already points to the reason of the malfunctioning.

Possibly, the Planon web server 'Tomcat' log (home page) can provide more information about the exact cause of the Connector being *Immeasurable*.

Solution

Check all Connector fields: are they still valid? If not, update them as necessary with the appropriate values.

If applicable (only for Custom-managed Connectors), check if the related app is active and has a valid license. The name of the app is displayed in the Connector's **App name** field. If the app is in the 'Inactive' status, change it to Active. If there is a new license required, request a new one at Planon support and upload it.

If the error message points to an authorization issue (HTTP 401 or 403), the account to the sensoring system is no longer accepted. Request a new authentication set at the Sensoring system vendor.

For an on-premise installation, check if the Internet is not down (communication Planon – Sensoring system cloud).

For an on-premise installation, check if the Internet connection is not blocked by the firewall (communication Planon – Sensoring system cloud).

Check with the Sensoring system vendor if their Cloud system has an error or is down, if so, wait for reactivation.

Measurement point is in status 'Immeasurable'

The measurement point describes the Planon location for which (sensor) measurements can be received.

Description

If a measurement point is malfunctioning, the AWM data engine will set its (occupancy) status to *Immeasurable*.

The measurement point's monitoring mode is automatically switched on if the measurement point is in the *Immeasurable* status. Information about the issue is displayed in the (**Measurement points** > **Error monitoring** tab) **System feedback** field. You can also enable monitoring manually.

Cause

If the Planon application sets a measurement point to (occupancy) status 'Immeasurable', it means that no measurement information can be received for that specific measurement point.

Most common reasons are:

- Related Connector is in status Immeasurable.

- Sensoring system does not recognize the measurement ID (error code -1).

- Sensoring system has received no data for the specific measurement point (error code -2) in a time-out period.

At the **Error monitoring** > **System feedback** more information is given about the error.

Solution

- Related Connector is in status Immeasurable.

  ◦ See Sensoring system connector is in status 'Immeasurable'

- Sensoring system does not recognize the measurement ID (error code -1).

  ◦ The specific measurement point (location) is not onboarded in the sensoring system and, consequently, cannot be recognized.

  ◦ For a 'Planon managed Connector' run the Connector's **Synchronization** action.

  ◦ For a 'Custom managed Connector' contact the Sensoring system vendor for onboarding the missing measurement point (location).

- Sensoring system has received no data for the specific measurement point (error code -2) in a time-out period.

  ◦ Check if the gateways (if applicable) for the sensor communication are running and have an Internet connection

  ◦ Check the corresponding sensors.

    - Do they have enough battery power (if applicable) or another power source.

    - Are the sensors not broken or malfunctioning? If only one sensor of a set for a certain location is malfunctioning, the corresponding measurement point will also be put to 'Immeasurable'.

In some situations, a measurement point will be kept in the 'Pause' status with reason 'Waiting for an upcoming update' for a long period. In that case, also no data is received for that specific measurement point.

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