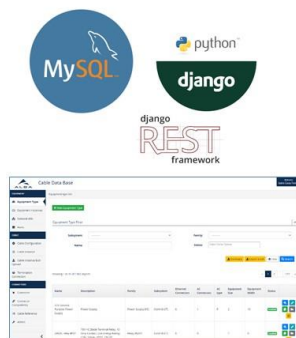


I. Costa, A. Camps Gimenez, R. Cazorla, T. Fernández Maltas, D. Salvat
ALBA-CELLS Synchrotron, Barcelona, Spain

CCDB Upgrade

During the ALBA's design phase back in 2006, the Management Information Systems section (MIS), under the Computing Division, started to develop the "Cabling and Controls Database" (CCDB). Since then, this web application has been used as a central repository to keep information of all racks, equipment, connectors and cables used in ALBA.

This in-house development has been evolving for years, and in 2019 started a process of **technological upgrade**. In this upgrade **new features** have been included, such as the **integration** between equipment instances and **Jira**, and also their integration to the **ALBA Inventory Pools** system. These integrations aim to become a new ALBA's **Asset Management System**.



Technology and look and field of the CCDB application

The Concept of Equipment Instance

An equipment instance of CCDB is the representation of the specific location of the facility that will be used to place an equipment of a particular type for a determined functionality.

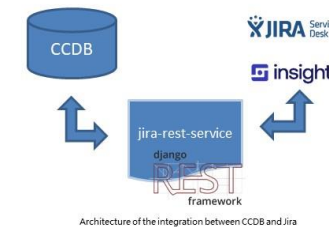
SR-CT-CPCI-RKA04B01-01
System-Subsystem-Family (Eq.Type)-Location-Code
 Example of equipment instance code

Issue Tracking of Equipment

In 2016 ALBA adopted Jira as its Service Management System, given that it fulfills all the needs of the organization, not only in terms of service but also in terms of project management.

Insight is a Jira application used by some ALBA teams for **asset and configuration management**. The CCDB object schema in Insight is composed by the location places and the equipment instances.

To centralize the interactions between our applications and Jira and Insight, ALBA developed an internal REST API built in Python called `jira-rest-service`.



Architecture of the integration between CCDB and Jira

Deployment Dashboard					
Deployment type	Docker (Kubernetes)			Code	DEV-100-PROD-000001
Description	Backend API			Status	Success
Deployment	Kubernetes (Deploy PVC)			4 items	10
Rollback				0 items	0

View Deployment History

Order	By	Ascending	Filter	Refresh
1	Time	Ascending	10-10-2023 10:00 AM	Refresh
2	Time	Descending	10-10-2023 10:00 AM	Refresh
3	Time	Ascending	10-10-2023 10:00 AM	Refresh
4	Time	Descending	10-10-2023 10:00 AM	Refresh
5	Time	Ascending	10-10-2023 10:00 AM	Refresh
6	Time	Descending	10-10-2023 10:00 AM	Refresh
7	Time	Ascending	10-10-2023 10:00 AM	Refresh
8	Time	Descending	10-10-2023 10:00 AM	Refresh
9	Time	Ascending	10-10-2023 10:00 AM	Refresh
10	Time	Descending	10-10-2023 10:00 AM	Refresh

Equipment instance detail page with the list of its related Jira issues

[illegible]

Jira Service Desk search page filtering by the Equipment instance showing the list of issues

Users can create issues in Jira directly from CCDB relating the equipment instance. The list of issues by equipment instance is available from the application or in the Jira Service Desk.

This feature enables the detection of dysfunctional equipment or hot locations.

Installation of Items in CCDB

The ALBA's **Inventory Pools** is an in-house web application that allows the different groups of ALBA the management of the **inventory** of their **items** as well as the **booking** and **lending** of the **material** stored in the different **warehouses** and **labs** in the facility.

A unique **Alba Code** is assigned to every returnable item. User can go to the warehouse, **get the item** and **scan its barcode** and, after authenticating himself with a card reader, **choose an equipment instance** of CCDB where the **item will be installed**, keeping unavailable for other users.



From the warehouse user can get the item, choose and equipment instance of CCDB and install it

Q	Customer	Shipping Date	Information	Category	Quantity	Priority	Product	Estimated Ship Date	Shipment Method	ETA (Days)	Order Number	Status	Notes
Q	Customer A	2023-10-25	Order #123456789	Electronics	1	High	Smartphone X	2023-10-26	Standard	1	123456789	Shipped	Delivered on time
Q	Customer B	2023-10-26	Order #987654321	Electronics	2	High	Smartphone X	2023-10-27	Standard	2	987654321	Shipped	Delivered on time
Q	Customer C	2023-10-27	Order #567890123	Electronics	1	High	Smartphone X	2023-10-28	Standard	1	567890123	Shipped	Delivered on time
Q	Customer D	2023-10-28	Order #345678901	Electronics	1	High	Smartphone X	2023-10-29	Standard	1	345678901	Shipped	Delivered on time
Q	Customer E	2023-10-29	Order #234567890	Electronics	1	High	Smartphone X	2023-10-30	Standard	1	234567890	Shipped	Delivered on time
Q	Customer F	2023-10-30	Order #123456789	Electronics	1	High	Smartphone X	2023-10-31	Standard	1	123456789	Shipped	Delivered on time
Q	Customer G	2023-10-31	Order #987654321	Electronics	1	High	Smartphone X	2023-11-01	Standard	1	987654321	Shipped	Delivered on time
Q	Customer H	2023-11-01	Order #567890123	Electronics	1	High	Smartphone X	2023-11-02	Standard	1	567890123	Shipped	Delivered on time
Q	Customer I	2023-11-02	Order #345678901	Electronics	1	High	Smartphone X	2023-11-03	Standard	1	345678901	Shipped	Delivered on time
Q	Customer J	2023-11-03	Order #234567890	Electronics	1	High	Smartphone X	2023-11-04	Standard	1	234567890	Shipped	Delivered on time

Item management page of the Inventory Pools application

Asset Product Object in Insight

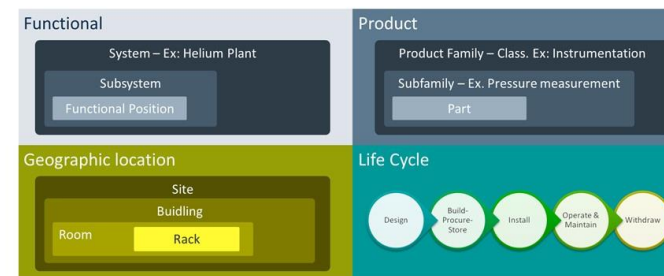
The API `jira-rest-service` creates an `Asset Product` object in `Insight` when a returnable item is created in `Inventory Pools`.

When an item is installed in an equipment instance, the `jira-rest-service` relates both objects in `Insight`. On the opposite, it removes their relationship in case of uninstallation.

Insight keeps a historic of events for every object, thus a tracking of operations can be obtained.

Asset Management

The integration between both applications, CCDB and Inventory Pools with Jira and Insight can be considered as a first step to build a new Asset Management System, since the combination of these systems covers all the four aspects that every asset needs to be unique.



The 4 aspects of an asset: Functional (CCDB), Product (CCDB and Inventory Pools), Location (CCDB), Life Cycle (Jira and Insight)

Future Roadmap

A definition of the process of a standard life cycle of an asset is needed to be implemented in Jira and Insight. Now only install and uninstall operations are allowed.

The multi-equipment feature in CCDB is needed to provide a complete break-down of components in each equipment instance.

CCDB Upgrade

During the ALBA' s design phase back in 2006, the Management Information Systems section (MIS), under the Computing Division, started to develop the “Cabling and Controls Database” (CCDB). Since then, this [web application has been used as a central repository to keep information of all racks, equipment, connectors and cables used in ALBA.](#)

This in-house development has been evolving for years, and in 2019 started a process of [technological upgrade](#). In this upgrade [new features](#) have been included, such as the integration between equipment instances and [Jira](#), and also their integration to the [ALBA Inventory Pools](#) system. These integrations aim to become a new ALBA' s [Asset Management System](#).

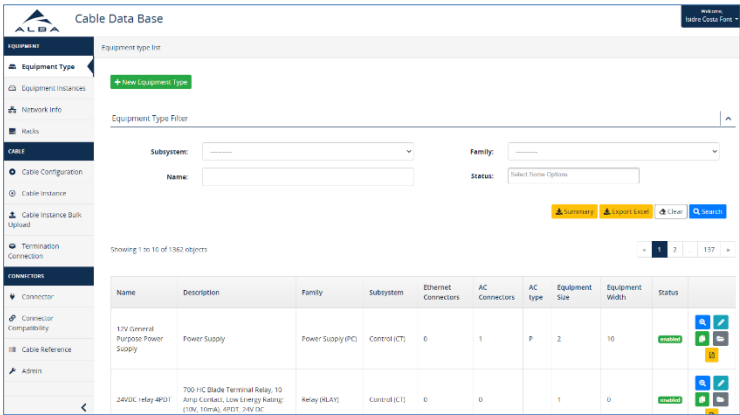


The Concept of Equipment Instance

An [equipment instance](#) of CCDB is the representation of the [specific location](#) of the facility that will be used to place an equipment of a [particular type](#) for a [determined functionality](#).

SR-CT-CPCI-RKA04B01-01
System-Subsystem-Family (Eq.Type)-Location-Code

Example of equipment instance code



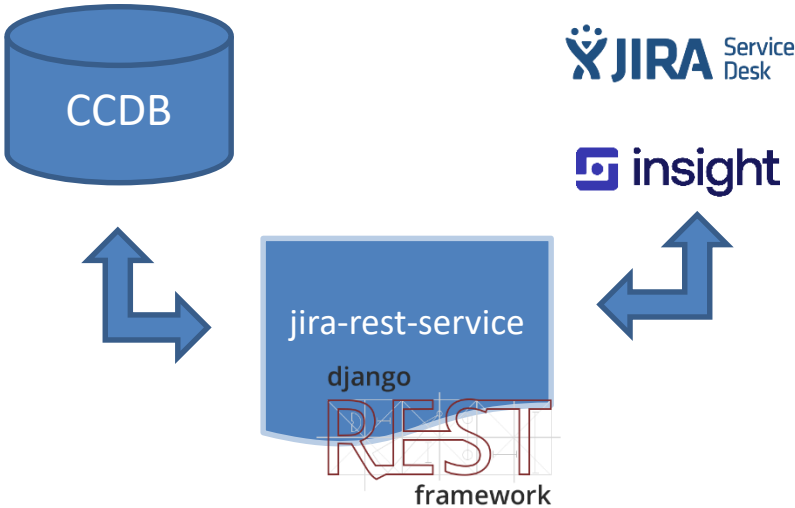
Technology and look and field of the CCDB application

Issue Tracking of Equipment

In 2016 ALBA adopted [Jira](#) as its [Service Management System](#), given that it fulfils all the needs of the organization, not only in terms of service but also in terms of project management.

[Insight](#) is a Jira application used by some ALBA teams for [asset and configuration management](#). The CCDB object schema in Insight is composed by the location places and the equipment instances.

To centralize the interactions between our applications and Jira and Insight, ALBA developed an internal REST API built in Python called [jira-rest-service](#).



Architecture of the integration between CCDB and Jira

Equipment Description

Equipment type

BRUKER 1000-750 4Q BM

Description

-

Subsystem

Power Converter (Supply) (PC)

Alba code

-

Code

BO-PC-BM-RKA15A02-01

System

Booster (BO)

L guide

False

Ac type

-

Jira Issue History

Count by status: 0015

See the issues in JIRA

Type	Key	Summary	Status	Created	Last Update
Incident	EL-14747	BO-BEND-1 buck overvoltage	Resolved	Jul 24, 2021, 3:12 am	Sep 06, 2021, 9:24 am
Incident	EL-14938	BO-BEND-1 buck overcurrent	Resolved	Sep 05, 2021, 10:18 pm	Sep 06, 2021, 8:40 am
Incident	EL-14065	BO-BEND01 interlock	Resolved	Apr 21, 2021, 12:55 am	Aug 09, 2021, 9:00 am
Incident	EL-14736	BO PS Bend1 buck2 IGBT fault	Resolved	Jul 21, 2021, 8:04 am	Jul 23, 2021, 9:09 am
Service Request	EL-13359	TEST sigmaphi buck module in BEND 1	Resolved	Dec 18, 2020, 9:25 am	May 28, 2021, 10:57 am
Incident	EL-14171	BO Bend1 rik	Resolved	May 07, 2021, 5:00 am	May 28, 2021, 9:07 am

Equipment instance detail page with the list of its related Jira issues

ALBA Issues									
Search									
equipment = "BO-PC-BM-RKA15A02-01 (CDB-8505)"									
1-15 of 15									
Key	Summary	Status	Created	Links	Consequences on the beam	Reporter	Equipment		
EL-14938	BO-BEND-1 buck overcurrent	RESOLVED	05/Sep/21	ABI-9294	No Consequence	Operator Control Room	BO-PC-BM-RKA15A02-01		
EL-14747	BO-BEND-1 buck overvoltage	RESOLVED	24/Jul/21	ABI-9291	Injection delayed	Operator Control Room	BO-PC-BM-RKA15A02-01		
EL-14736	BO PS Bend1 buck2 IGBT fault	RESOLVED	21/Jul/21	ABI-9286	Injection delayed	Operator Control Room	BO-PC-BM-RKA15A02-01		
EL-14171	BO Bend1 Itik	RESOLVED	07/May/21	ABI-9135	Injection delayed	Operator Control Room	BO-PC-BM-RKA15A02-01		
EL-14065	BO-BEND01 interlock	RESOLVED	21/Apr/21	ABI-9090	No Consequence	David Yépez Vindel	BO-PC-BM-RKA15A02-01		
EL-13681	BO-BEND-1 communication failure	RESOLVED	23/Feb/21	ABI-8995		Operator Control Room	BO-PC-BM-RKA15A02-01		

Jira Service Desk search page filtering by the Equipment instance showing the list of issues

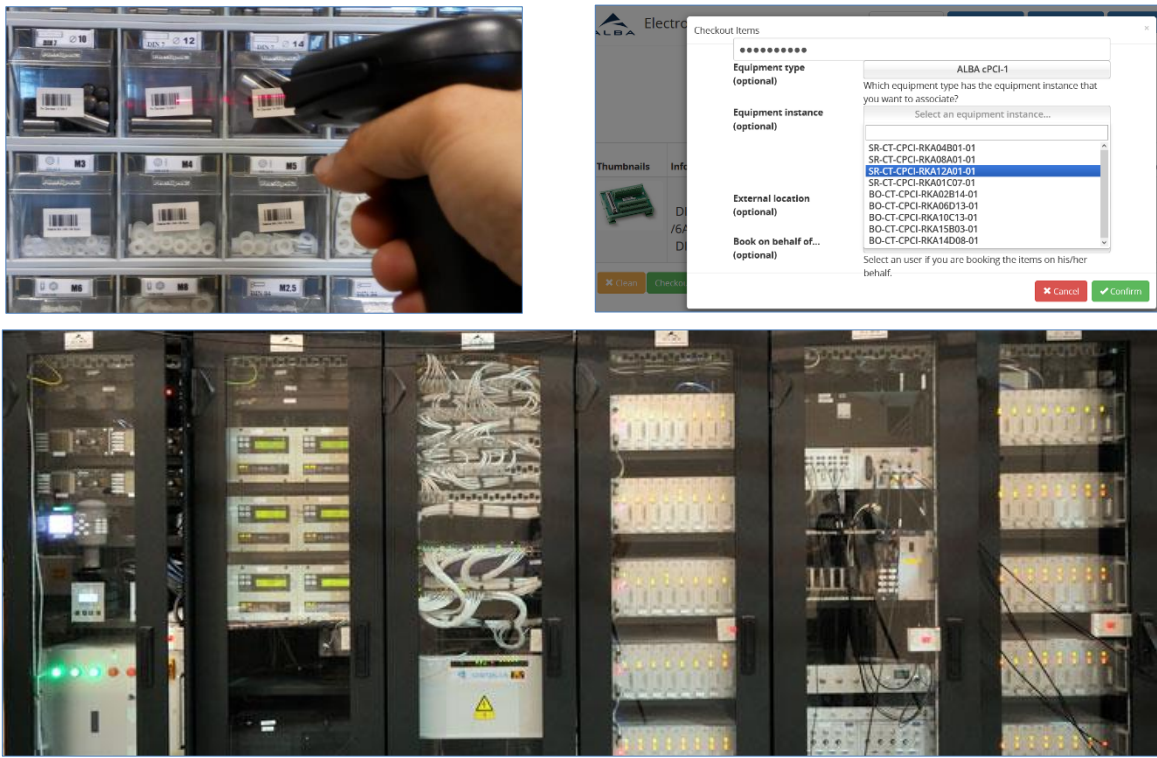
Users can [create issues](#) in Jira directly from CCDB relating the [equipment instance](#). The list of issues by equipment instance is available from the application or in the Jira Service Desk.

This feature enables the detection of dysfunctional equipment or hot locations.

Installation of Items in CCDB

The ALBA' s **Inventory Pools** is an in-house web application that allows the different groups of ALBA the management of the **inventory** of their **items** as well as the **booking** and lending of the **material** stored in the different **warehouses** and labs in the facility.

A unique **Alba Code** is assigned to every returnable **item**. User can go to the warehouse, **get the item** and **scan its barcode** and, after authenticating himself with a card reader, **choose an equipment instance** of CCDB where the **item** will be **installed**, keeping unavailable for other users.



<input type="checkbox"/>	Thumbnails	Catalog Item	Information	Location	Category	Quantity	Available	Returnable	Delivered by a pool member	Equipment Instance	Alba Code	Serial Number	Status	Actions
<input type="checkbox"/>		IcePAP Crate (ID: 2076)	0008020AD476 ICEPAPCRATE	PO/B/059	IcePap	1	✗	✓	✓		0008020AD476	0008020AD476	ACTIVE	
<input type="checkbox"/>		IcePAP Crate (ID: 2077)	0008020ADD85 ICEPAPCRATE	PO/B/059	IcePap	-	✗	✓	✓		0008020ADD85	0008020ADD85	ACTIVE	
<input type="checkbox"/>		IcePAP Crate (ID: 2078)	0008020AF764 ICEPAPCRATE	PO/B/059	IcePap	-	✗	✓	✓		0008020AF764	0008020AF764	ACTIVE	
<input type="checkbox"/>		IcePAP Crate (ID: 2079)	0008020AC631 ICEPAPCRATE	PO/B/059	IcePap	-	✗	✓	✓	BL20-CT-IPAP-RX00A05-01	0008020AC631	0008020AC631	ACTIVE	
<input type="checkbox"/>		IcePAP Crate (ID: 2080)	0008020B0639 ICEPAPCRATE	PO/B/060	IcePap	1	✗	✓	✓	BL06-CT-IPAP-RX00A05-01	0008020B0639	0008020B0639	ACTIVE	

Item management page of the Inventory Pools application

Asset Product Object in Insight

The API **jira-rest-service** creates an **Asset Product** object in **Insight** when a returnable **item** is created in **Inventory Pools**.

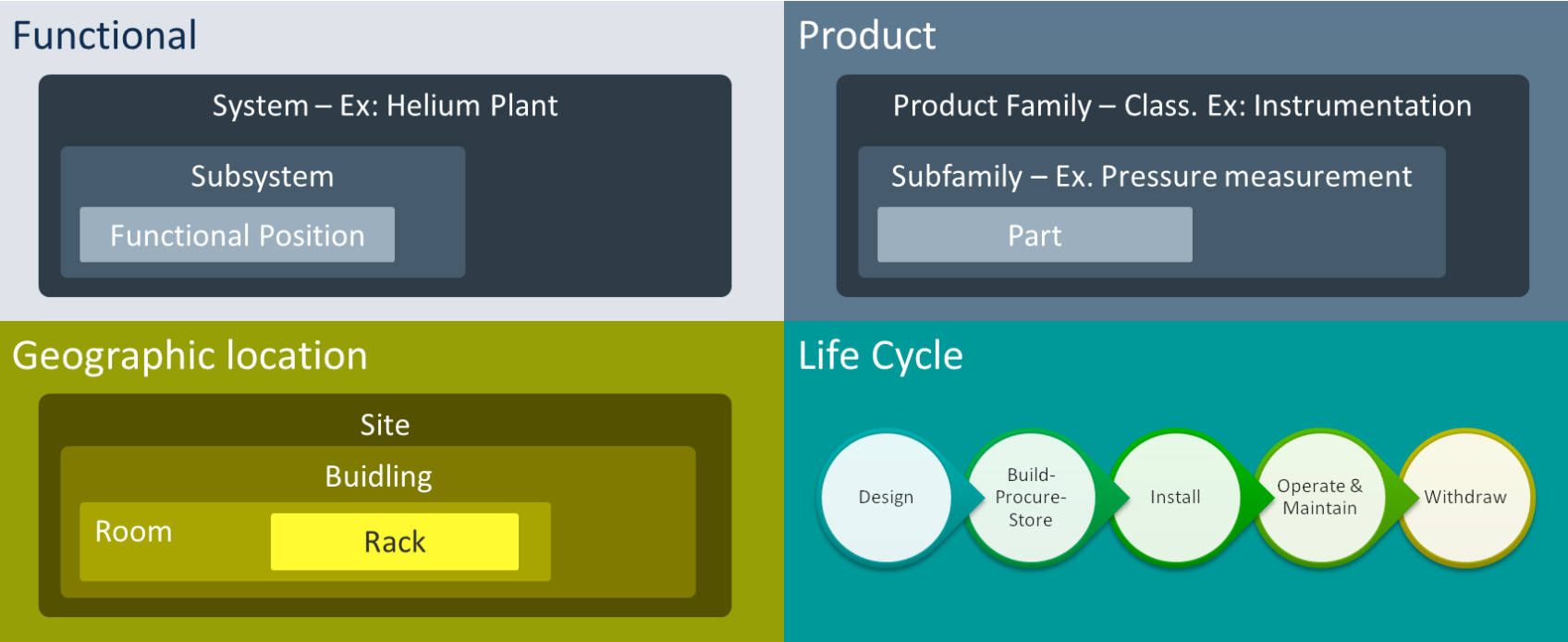
When an item is **installed** in an **equipment instance**, the **jira-rest-service** **relates** both **objects** in **Insight**. On the opposite, it **removes** their **relationship** in case of **uninstallation**.

Insight keeps a **historic of events** for every object, thus a **tracking of operations** can be obtained.

From the warehouse user can get the item, choose and equipment instance of CCDB and install it

Asset Management

The **integration** between both applications, **CCDB** and **Inventory Pools** with **Jira** and **Insight** can be considered as a **first step** to build a **new Asset Management System**, since the combination of these systems **covers** all the **four aspects** that every **asset** needs to be unique.



The 4 aspects of an asset: Functional (CCDB), Product (CCDB and Inventory Pools), Location (CCDB), Life Cycle (Jira and Insight)

Future Roadmap

A **definition** of the process of a standard **life cycle** of an **asset** is **needed** to be implemented in Jira and Insight. Now **only install** and **uninstall** operations are allowed.

The **multi-equipment** feature in CCDB is needed to provide a complete **break-down** of **components** in each **equipment instance**.