

# Asset management in CERN data centres

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# Agenda

- What assets are managed with Infor EAM?
- Assets structure in Infor EAM
- Inventory of equipment purchased over the last 5 years
- Exploitation of the asset data in Infor EAM
- Future work
- Conclusion

# What assets are managed with Infor EAM?

- Only Tangible assets are managed:
  - Racks
  - Power Distribution Units (PDU)
  - Servers
  - Disk arrays
  - Rail kits, SAS cables, etc...
  
- Intangible assets are not, for now:
  - Software
  - Licenses
  - Activation keys



# What assets are managed with Infor EAM? (2)

Tangible assets are characterized by sets common attributes

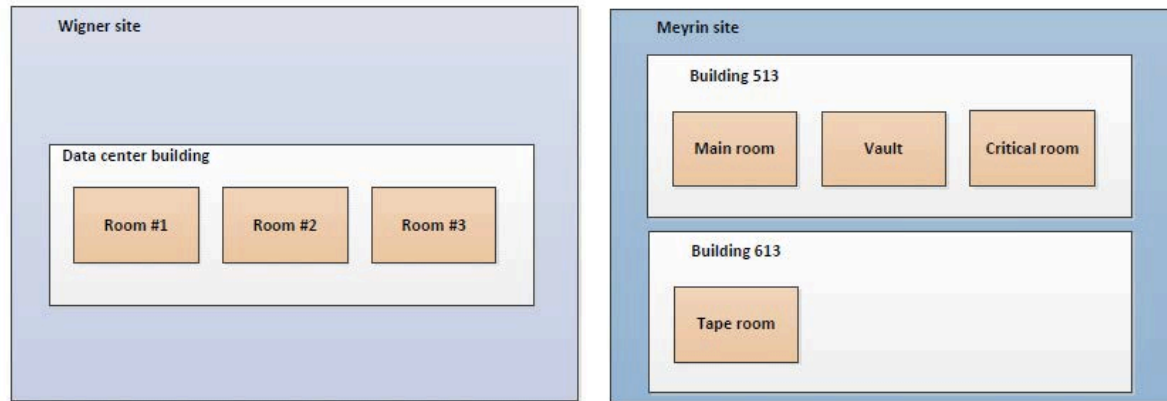
- Procurement attributes:
  - Departmental Request
  - Tender ID number
  - Supplier
  - Purchase Order number
  - Good reception ID number
  - Delivery Approval ID number
  - Commissioning date
  - Warranty duration
  - Status
- Financial attributes (in CHF):
  - Starting value
  - Estimated useful life (typically 5 years)
  - Depreciation method (straight line)
  - Depreciation value (to date)
  - Book value (to date)
  - Residual value

# What assets are managed with Infor EAM? (3)

- Assets are also categorized by classes
  - About 30 different classes currently defined
  - Most of them have been foreseen to handle stocks of spare parts
- Each class has its own set of specific attributes (custom fields)
  - Server enclosures have dimensions, weight, amount of power outlet, max wattage of PSU, ...
  - Cables have a length, type of connectors, amount of connectors, ...
- The class defined for Power Distribution Units is particular
  - One of its attributes references the power in-feed to which the PDU is connected
  - This reference points to the related Infor EAM asset handled by the EN/EL group at CERN

# Assets structure in Infor EAM (1)

- CERN IT operates data center in Budapest (Wigner) and Geneva (Meyrin)
- Infor EAM provides support for multiple sites/buildings/rooms



# Assets structure in Infor EAM (2)

- Sites, buildings and rooms are not assets
  - They are containers for assets
- In our structure, the top level assets are racks
  - For now, we focus on computing equipment only. About 1300+ racks registered
- Each rack is characterized by “U positions”
  - Usually between 42 and 47 depending on the type of the rack (water cooled vs air cooled)
- “U positions” are translated in Infor EAM as “functional positions”
  - Each functional position can have only one asset attached to it
  - About 60 000 functional position registered (but not all are in use!)

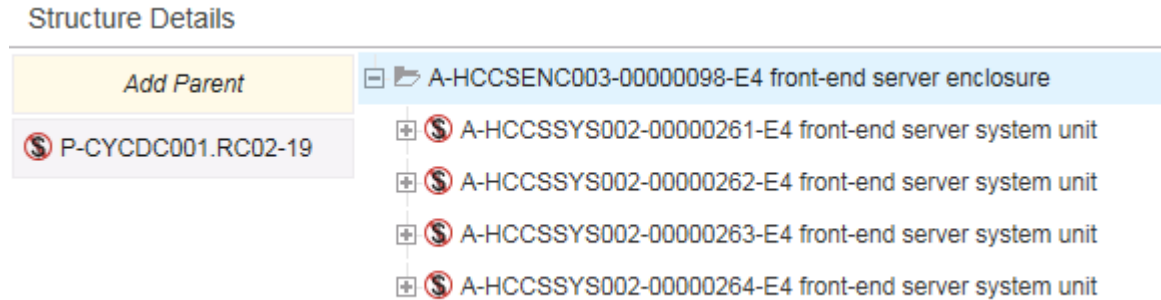
# Assets structure in Infor EAM (3)

Asset	Description	Position▲	Status	Department	Class	Commission Date
HCCSENC003-00000098	E4 front-end server enclosure	CYCDC001.RC02-19	Installe et Maintenu	CDC01	CSENC	19/APR/2013
HCCSENC003-00000028	E4 CPU server enclosure	CYCDC001.RC02-33	Installe et Maintenu	CDC01	CSENC	19/APR/2013
HCCSENC003-00000099	E4 front-end server enclosure	CYCDC001.RC04-19	Installe et Maintenu	CDC01	CSENC	19/APR/2013
HCCSENC003-00000092	E4 front-end server enclosure	CYCDC001.RC06-19	Installe et Maintenu	CDC01	CSENC	19/APR/2013
HCCSENC003-00000034	E4 CPU server enclosure	CYCDC001.RC06-33	Installe et Maintenu	CDC01	CSENC	19/APR/2013
HCCSENC003-00000096	E4 front-end server enclosure	CYCDC001.RC08-19	Installe et Maintenu	CDC01	CSENC	19/APR/2013

- Assets are uniquely identified by Infor EAM with asset codes (HCCS...)
- In addition, assets are characterized with:
  - A supplier serial number and/or
  - A manufacturer serial number



# Assets structure in Infor EAM (4)



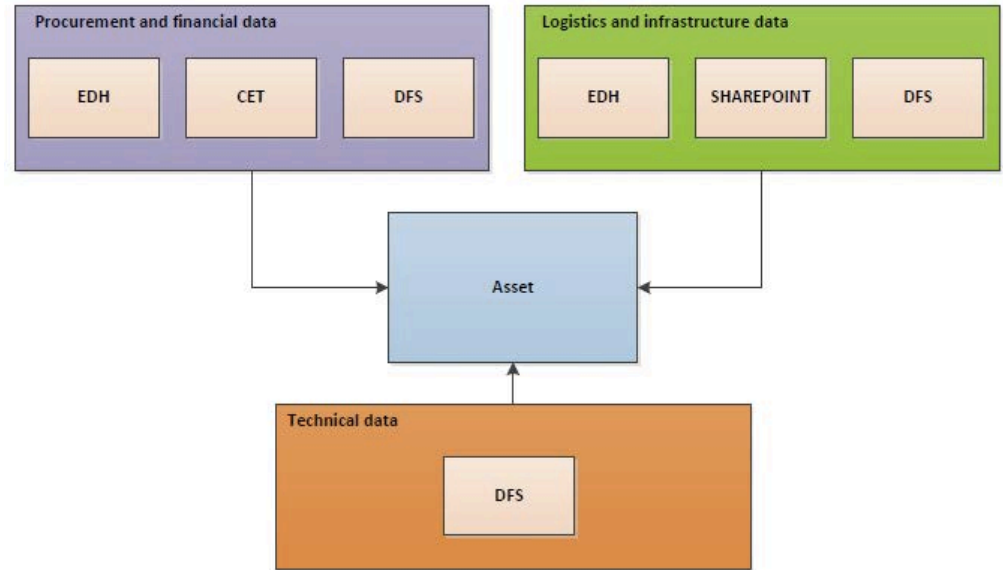
- The tree structure implemented in Infor EAM is flexible
- We handle single servers, “twins”, “quads”, disk arrays, any kind of equipment!
- Additional components (i.e.: Host Bus Adapters) have system units as parents
- Full traceability is insured: no asset can be deleted, only statuses are updated

# Inventory of equipment purchased over the last 5 years (1)

- We decided to start from 2010, older equipment being obsolete and gradually retired
- Most importantly, it was agreed not to import data from the previous asset management system (CDB in Quattor), but to perform a complete inventory!
- The first step was to establish the exhaustive list of purchase orders to identify our assets...
- ... A first look in EDH yielded close to 100 of them! A proper workflow was needed to proceed...

# Inventory of equipment purchased over the last 5 years (2)

- First, we would collect required data from various places and verify it
- Then, we would perform a visual inspection in our racks to validate the data
- Finally we would register the data in Infor EAM



# Inventory of equipment purchased over the last 5 years (3)

- The workflow was simple but performing the complete inventory took a significant amount of time
- Several errors and mistakes were found at various levels. Mostly:
  - Incorrect or missing serial numbers on the assets themselves and/or in the data source(s)
  - Erroneous location for a few assets (i.e.: equipment moved and database(s) not updated)
- For two large deliveries, the encoded serial number in the barcode did not match the human readable version!



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# Inventory of equipment purchased over the last 5 years (4)

- Performing the inventory being a manual operation, sometimes mistakes were introduced in the new data sets
- Fortunately, we had a (home made) pre-processing application used to validate the data before the registration in Infor EAM
- Today, there are about 20 000 assets managed by CERN IT registered in Infor EAM totaling a purchasing value of 43MCHF!

# Exploitation of the asset data in Infor EAM (1)

- Broken assets are taken care of by our repair service
  - The Infor EAM warranty module helps them determining if an asset is eligible for repair
- Power Distribution Units registered in Infor EAM are
  - Being monitored
  - Queried on a regular basis to gather power consumption data of other assets
- Asset Inconsistencies Reporting Utility (AIRU) makes sure there are no inconsistencies and that assets are running well into production



## Exploitation of the asset data in Infor EAM (2)

- On a yearly basis, we provide the FP department at CERN with financial data about CERN IT assets deployed in our data centers
  - This takes part in the global asset management strategy of the organization defined by the Property, Plant & Equipment project
- Asset data is also used for the capacity planning
  - Retirement of legacy equipment
  - Deployment of new equipment

# Future work

- Hopefully, in 2016 we will consolidate our usage of Infor EAM!
- The handling of the stocks of parts will be one of the first activities
  - For bulk tenders, each purchase order is linked to its dedicated stock of spare parts
  - For frame contracts, all purchase orders are linked to a shared stock of spare parts
- The integration with CERN Geographic Information System should follow
  - It would allow to have a visual representation of the assets structure inside the building and rooms
- Streamlining the retirement process may be considered
  - Could we automate part of the decommissioning of obsolete assets?



# Conclusion

- A simple assets structure in Infor EAM covers our needs
  - It covers procurement and financial data as well as infrastructure data
- Asset management contains a part which is processed manually and mistakes cannot be avoided.
  - Mechanisms can be put in place to detect and correct them!
- Asset data in Infor EAM is now the source of truth for several activities
  - Repairs, power consumption monitoring, capacity planning, PPE project, AIRU
- 2016 will hopefully be the year were we consolidate our usage of Infor EAM!