Iskratel Intelligent Applications Platform for Energy (IAPE)

Iskratel CIM network model repository

Key features

- **Network model** repository
- **CIM** standardized
- **Object** registration and unique **mRID**
- **Innovative** and state-of-the -art **design**
- Simplicity: **upgrade & management**
- **RDF XML** triplestore

Why Iskratel?

- **Own R&D** and EU-based **manufacturing**
- **First** integration **pilot** on a national level in EU
- **70 years** of Iskratel experience

CIM repository presents a central system component for interoperable data exchange in energy infrastructure.

Role

CIM repository build a digital representation of the network, including physical network objects, network topology with GEO location, and object registry with unique object ID – object mRID. The main services that CIM repository offers are: network model exchange and objects registration: objects mRID and local ID.

Interoperability and CIM standard

CIM repository applies CIM standard (IEC 61970/61968) and offers web services that are compliant with CIM recommendations, both on the level of service structure, as well as data model. CIM repository therefore enables applying CIM profiles as a reference XSD schemas network model exchange payload.

Network model data is exchanged in CIM RDF XML format as a way of standardized CIM model data exchange.

CIM data model

Data stored in CIM repository is in RDF XML format, recognized as flexible schema-less data model. Using a triplestore database architecture, CIM repository enables to store network model data in native format. This enables high flexibility and performance in large payloads of model exchange.

Key advantages:

- Enabling direct conversion from RDF CIM model format into chosen database format.
- Don't need to make a complex data schema.
- Don't need to link tables, you can do one too many relationships directly.
- Can add a new attributes (predicates on the fly), that are instantly available for querying due to automatic indexing.
- Simple system management.
- Simple management of CIM profiles.

Integration services and interfaces

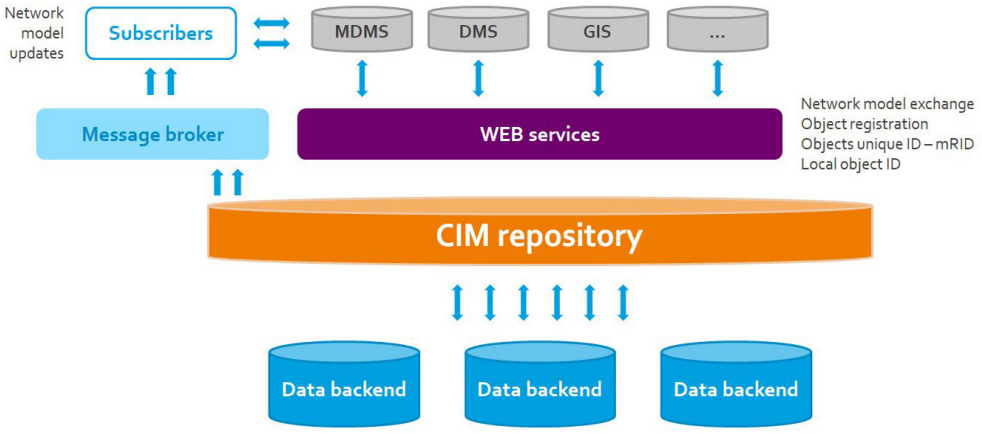
Both Object Registry Services and Integration services module expose their functionality as REST or SOAP web services.

The primary role of CIM repository is to maintain a master repository of network topology model data (as-built master EQ Model Parts) that is shared by different consumers.

Secondary role closely tight to Primary is to create unique master resource keys (mRID) which undoubtedly defines the network topology objects (by means of mRID, authority and local ID).

Why Iskratel CIM repository?

- Following IEC domain based on **IEC standardized** manner
- **Modular** and **scalable** solution
- Easy **integration** with **existing** environment
- Based on **open source** software components.



Innovative design for rapid deployment

Iskratel's CIM repository system uses a unique architecture to manage network model exchange data in RDF XML format in real-time.

It uses RDF as a data model that is expressed as simple »subject()–predicate–object« "triples" – a triplestore database, built either on top of the existing commercial databases (e.g. SQL based) or native TDB database (own file structure). Its unique architecture enables CIM repository to provide different main features.

Building network model

CIM repository enables building system services for accessing network objects and model topology. CIM repository enables propagation of all model changes to other systems, using publish/subscribe mechanisms.

Network model update

Network model is under continuous update process, as objects are added (new physical network elements), or the state of the objects is under dynamic changes.

These changes are propagated to all the enterprise systems using network model for analytics and operation. The updates are propagated using message broker, with publish/subscribe method.

Using subscription methods enables network model changes to be propagated to all the IT/OT systems promptly for network model consistency.

Intuitive user interface

CIM repository includes intuitive graphical user interface - GUI. The GUI enables easy navigation and administration of CIM repository functionalities and settings:

- Hierarchical network model view
- Interface for setting access rights to access individual network objects (RBAC)
- Drag-and-drop CIM profiles update
- Setting system for backup and restore
- Full network model export

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