SDDB System Dynamics Database

System Dynamics Database (SDDB) provides a state-of-the-art approach for dynamic model management that includes automatic data validation and a comprehensive set of other features.

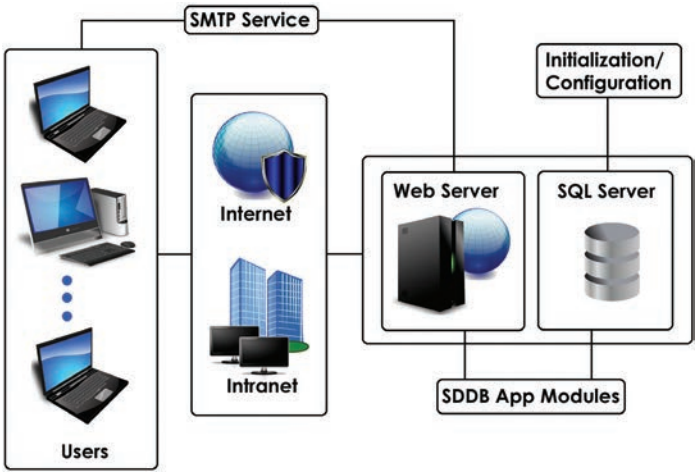
SDDB is a multi-user, web-based tool that facilitates model-building process by:

- Assimilating
- Inspecting
- and pairing dynamic data with powerflow

SDDB was developed for the assembly of power system base cases for the East-interconnection Reliability Assessment Group (ERAG). SDDB is now being used by the ERAG for its annual model building task. SDDB is also well suited for similar model building work at different levels for grid reliability coordination.

SDDB is capable of:

- importing and exporting dynamics data in PSS/E format.
- uploading, validating, viewing, modifying, and downloading dynamics data.
- matching powerflow cases with dynamic models.



APPLICATION SCOPE

SDDB is designed to host dynamic models for use in building cases for power system studies.

SDDB is a cloud based service that supports:

- secure dynamic model hosting and backup.
- automatic data validation.
- multi-user accessibility.
- data auditing.
- usage tracing.
- high availability.

USER AUTHORIZATION LEVELS

In SDDB, users are categorized into three levels of authority to ensure a structured flow of data:

- System Administrator (SA): manages SDDB and backend issues.
- Regional Administrator (RA): manages and validates dynamic models submitted by their members.
- Area Administrator (AA): submits dynamic models pertaining to their control areas.

Such user authorization levels can be customized to suit for specific applications.

PRODUCT FEATURES:

- *User-friendly graphical web interface*
- *Secure dynamic model data hosting and backup*
- *Automatic data validation*
- *Multi-user accessibility*
- *Data auditing and usage tracing*

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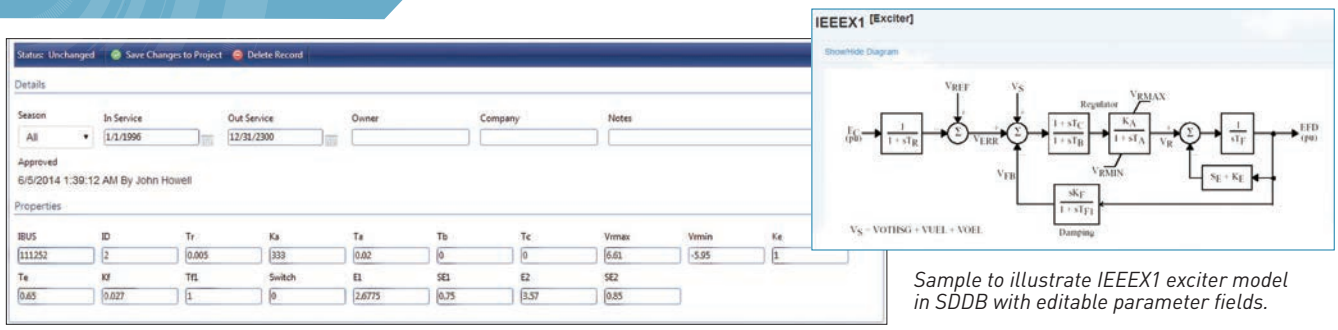

Sample to illustrate IEEEX1 exciter model in SDDB with editable parameter fields.

PROCESS FLOW

In general, SDDB maintains a downward flow of authorization from SA to AA and an upward flow of data for model formulation from AA to SA.

Typical model-building process includes four stages:

- **Stage 1:** AA submits new dynamic models (or changes to existing models) under their jurisdictions to SDDB.
- **Stage 2:** concerned RAs are notified via emails; RAs review the new models (or model changes) submitted and approve/reject accordingly.
- **Stage 3:** approved new models (or model changes) from Stage 2 are added to the database.
- **Stage 4:** upon demand, SA requests SDDB to create a dynamic model set that matches a provided powerflow case.

USER INTERFACE

One of the user-friendly features of SDDB is its ability to show dynamic model details including model diagrams. Users can identify parameters of a model visually from its diagram and make changes easily.

Users can enter or edit dynamic models from a large library including various types of components:

- Generator and its controls
- Wind turbines and other renewable generators
- Shunt (including SVC/STATCOM)
- Load (including motor)
- FACTS
- HVDC
- Relay

SPECIFICATIONS AND REQUIREMENTS

- Runs on MS Windows 7/10/server 2012 R2/server 2016
- Browser: Internet Explorer 9 or above.
- Internet Speed: 1 Mbps or above.

OTHER POWERTECH SERVICES

- Licensing of the power system analysis software package DSA*Tools*™
- Licensing of other software products for utility applications
- Implementation of on-line dynamic security assessment (DSA) systems
- Development of custom software systems
- Development of models for use in power system analysis
- Generator field testing, model development and validation
- Training
- Technical consultancy studies including
  - Development of power system base cases
  - System planning and operation studies
  - Facility (including renewables) interconnection studies
  - Compliancy studies (such as NERC TPL, CIP, UFLS, etc.)
  - Post-mortem analysis of system disturbances

ABOUT POWERTECH LABS

Powertech Labs Inc. is one of the largest testing and research laboratories in North America, situated in beautiful British Columbia, Canada. Our 11-acre facility offers 15 different testing labs for a one-stop-shop approach to managing utility generation, transmission and distribution power systems.

Outside of the utilities industry, Powertech provides routine testing capabilities, product development, research and consulting services to support an array of industrial-type operations, electrical equipment manufacturers and automotive original equipment manufacturers.

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