FRESCHE SOLUTIONS

X-DB Modernize

Database Modernization, including DDS-to-DDL Conversion and Detailed Impact Analysis

What's Inside

A description of X-DB Modernize, the heart of the Database Modernization module in X-Analysis. The module provides full DDS-to-DDL conversion functionality, with impact analysis and a full range of options to benefit from modern database technology on IBM i.

X-DB Modernize

X-DB Modernize Database Modernization

Why Modernize? Why Move to DDL?

There are a variety of reasons to modernize. The two primary reasons are to take advantage of IBM's latest database features while remaining on IBM i, and to make data more easily available to users. IBM no longer makes its newest database features available on DDS, so the move to DDL is essential. By moving to DDL, you are effectively opening up DB2 to your business. But the reasons for modernizing and moving to DDL don't end there:

- Resources are far more familiar with the DDL structure. Resources who know DDS are becoming more difficult to find
- New DBAs understand DDL, not DDS
- Performance is enhanced on DDL
- Moving to DDL helps with strategic alignment throughout the enterprise, helping to bring older technology in line with newer
- Data integrity features are significantly enhanced on DDL
- Referential integrity is more robust on DDL
- Modernized databases help begin the process of making information available through different means — modern UIs, mobile, cloud
- Significantly increased security features are available on DDL

```
CREATE TABLE ContractDetail (
Contract FOR COLUMN     XWORDN  numeric(6, 0) NOT NULL ,
Product FOR COLUMN      XWABCD  char(20) NOT NULL ,
Store FOR COLUMN        XWAACS  char(11) ,
RefNo FOR COLUMN        XWT8TX  char(15) ,
TrnHstTrnType FOR COLUMN        XWRICD  char(3) ,
ContractQty FOR COLUMN  XWA5QT  numeric(9, 2) ,
UM FOR COLUMN   XWA2CD  char(3) ,
Price FOR COLUMN        XWPRIC  numeric(6, 2) )
RCDFMT  CONDETR;

ALTER TABLE ContractDetail
ADD CONSTRAINT ContractDetail_keys
PRIMARY KEY(Contract, Product);

RENAME TABLE ContractDetail
TO SYSTEM NAME CONDET;

ALTER TABLE ContractDetail
ADD CONSTRAINT ContractDetail_REFERS_ContractHeader
FOREIGN KEY (Contract)
REFERENCES ContractHeader (Contract);

ALTER TABLE ContractDetail
ADD CONSTRAINT ContractDetail_REFERS_StockBalances
FOREIGN KEY (Product, Store)
REFERENCES StockBalances (Product,Store);

LABEL ON TABLE ContractDetail is 'Contract Detail';

LABEL ON ContractDetail(
Contract        TEXT IS 'Contract',
Product TEXT IS 'Product',
Store   TEXT IS 'Store',
RefNo   TEXT IS 'Ref_No',
TrnHstTrnType   TEXT IS 'Trn_Hst_Trn_Type',
ContractQty     TEXT IS 'Contract_Qty',
```

Enriched DDL with derived long names and foreign key constraints

X-DB Modernize

X-DB Modernize:
The Fresche solutions product that converts DDS to DDL and provides a host of modern database features on IBM i.

Some Highlights:

X-DB Modernize provides all of the following, and much more:

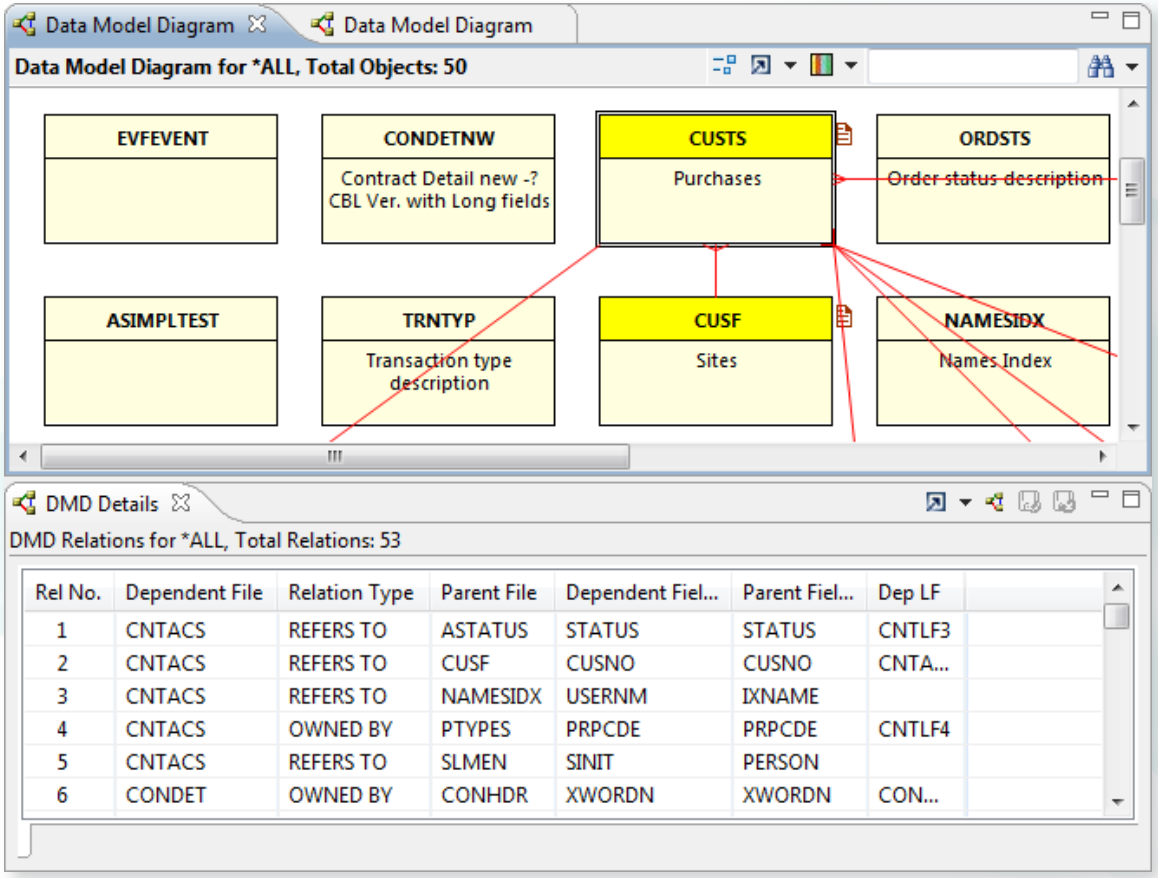
- Export of DDL from relational data model
- Conversion of DDS to DDL
  - Problem analysis
  - Auto recovers constraints, long names, views
  - Automated conversion
  - Granular Project Control
  - Integration with SCM
- Export of UML Class Diagrams from relational data model
- Builds CRUD Map and matrix for all DB IO
- Generates database RPGSQLLE service programs
- Creates Hibernate configuration files and JPA package from generated relational model

X-DB Modernize Database Modernization

Data Model Extraction Provides Rich Base for Modernization, Rewriting or Replacement

Any system modernization initiative starts naturally with the database. One of the primary reasons for this is that in a business application, 80% of its architecture and domain fit is determined by the architecture of the data model. Therefore, having an explicitly defined logical model that can be used both programmatically and manually by developers is a key requirement that all modern applications have. By moving much of the descriptive and referential information back into the database, new programs do not have to contain code for these conditions, thereby producing cleaner code that is purely focused on transactional functionality.

A modern database that has reusable logic embedded in it also provides opportunities for further application modernization. Development in modern languages or development of new UI device types can benefit from database modernization since coding effort and errors can be reduced. Changes can be implemented quicker and more consistently. Data model extraction with the Database Modernization module can help with all of the following:



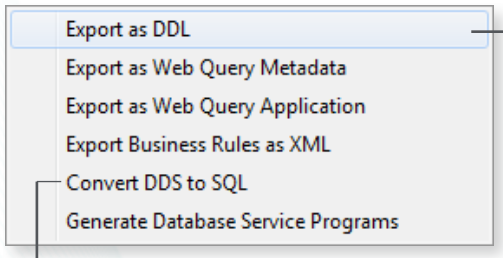
Modernization:
- Perform normalization
- Verify referential integrity
- Convert to SQL
- Test data extraction and desensitizing

Rewriting:
- Inventory existing data
- Perform analysis and create new data model
- Convert to DDL/SQL as a starting point
- Test data extraction and desensitizing

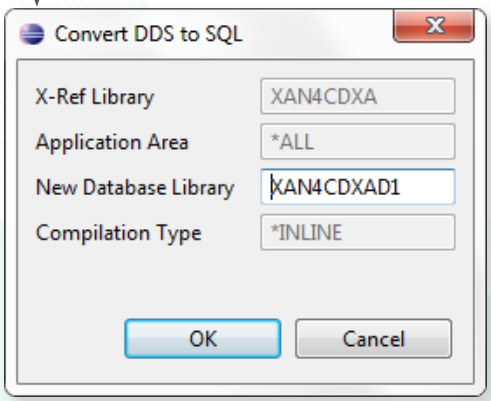
Package Replacement:
- Inventory existing data
- Feed the gap analysis process
- Perform data mapping and ETL planning

X-DB Modernize Database Modernization

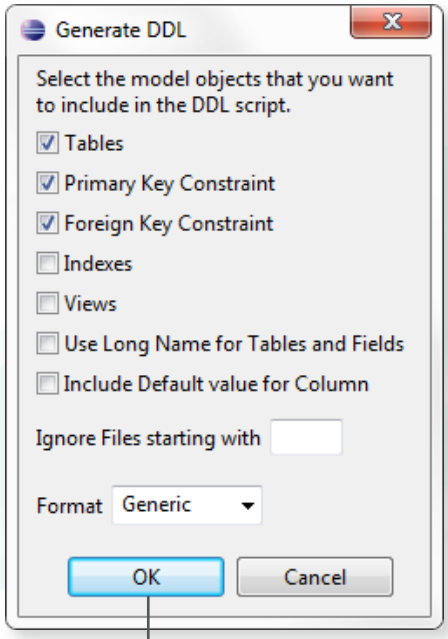
Easy and Efficient Modernization From DDS to DDL with X-DB Modernize



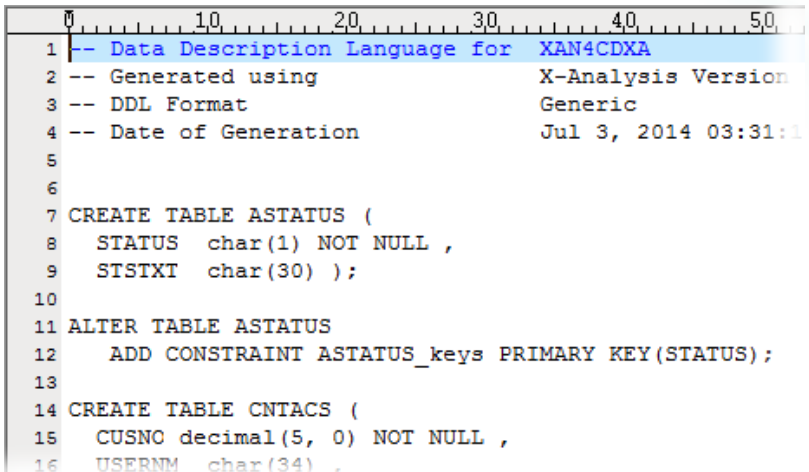
A wide variety of export options



Conversion to DDL is completely automated and provides the benefit of the latest IBM database features on the IBM i.



X-DB Modernize module gives you a fast and efficient method of extracting and viewing the Data Description Language for databases in your system. The same simple interface begins the conversion to DDL.



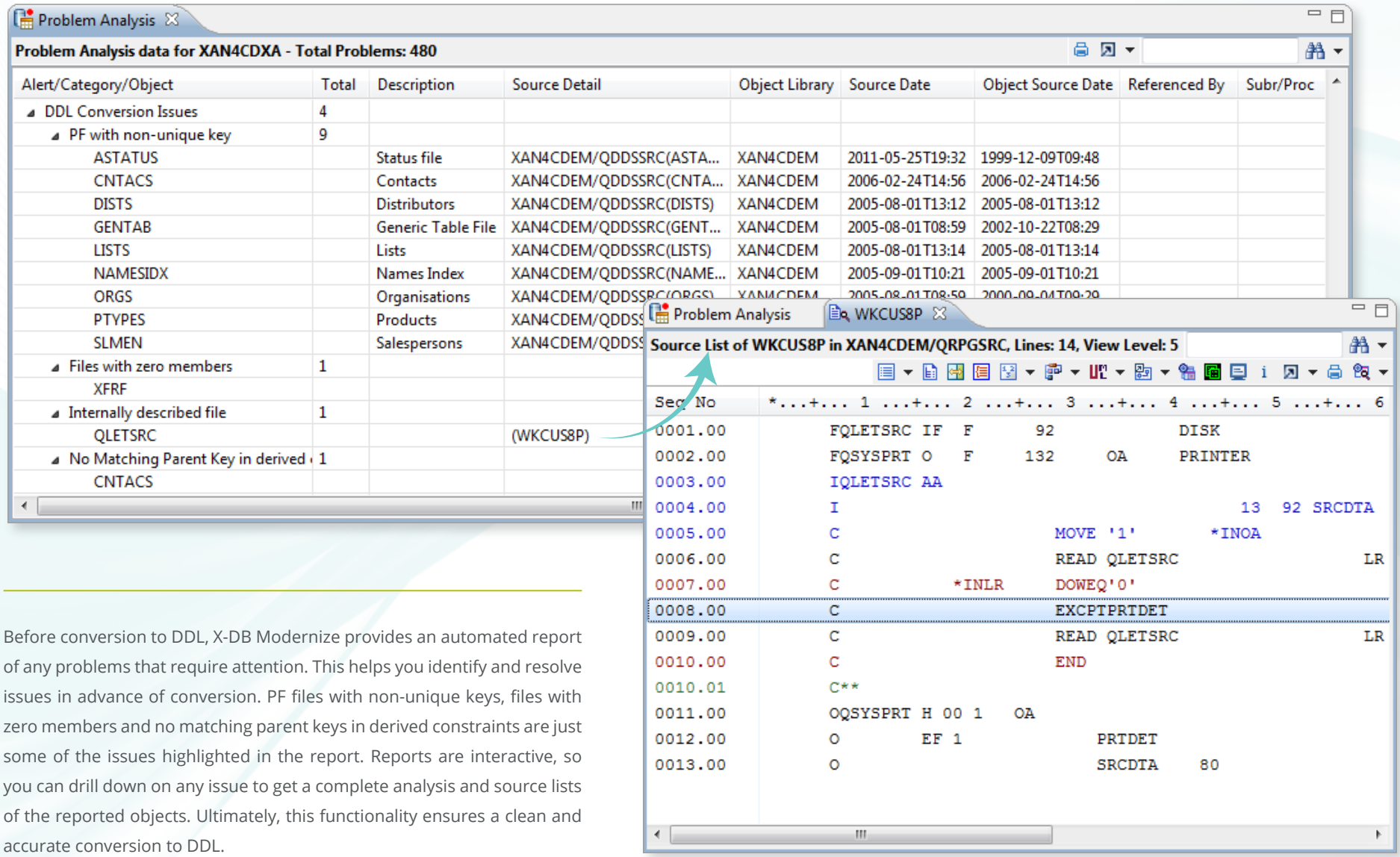
```
-- Data Description Language for  XAN4CDXA
-- Generated using                X-Analysis Version
-- DDL Format                     Generic
-- Date of Generation             Jul 3, 2014 03:31:1


CREATE TABLE ASTATUS (
  STATUS  char(1) NOT NULL ,
  STSTXT  char(30) );

ALTER TABLE ASTATUS
   ADD CONSTRAINT ASTATUS_keys PRIMARY KEY(STATUS);

CREATE TABLE CNTACS (
  CUSNO decimal(5, 0) NOT NULL ,
  USERNM  char(34) ,
```

Modernized Databases

X-DB Modernize module facilitates automatic DDS-to-DDL conversion. The module converts the database, copies production data into a new database and does not require re-compiling of programs. Applications modernized with X-Analysis can take full advantage of modernized databases.

X-DB Modernize Database Modernization

Crucial Pre-Conversion (DDS-to-DDL) Problem Analysis



Before conversion to DDL, X-DB Modernize provides an automated report of any problems that require attention. This helps you identify and resolve issues in advance of conversion. PF files with non-unique keys, files with zero members and no matching parent keys in derived constraints are just some of the issues highlighted in the report. Reports are interactive, so you can drill down on any issue to get a complete analysis and source lists of the reported objects. Ultimately, this functionality ensures a clean and accurate conversion to DDL.

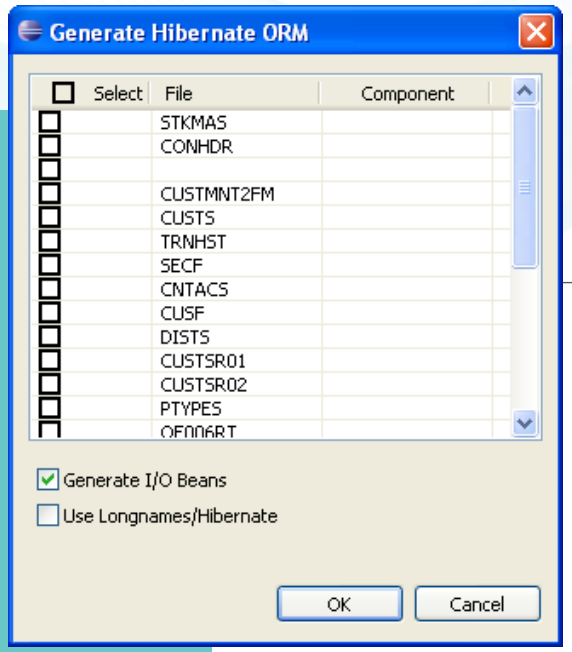
X-DB Modernize Database Modernization

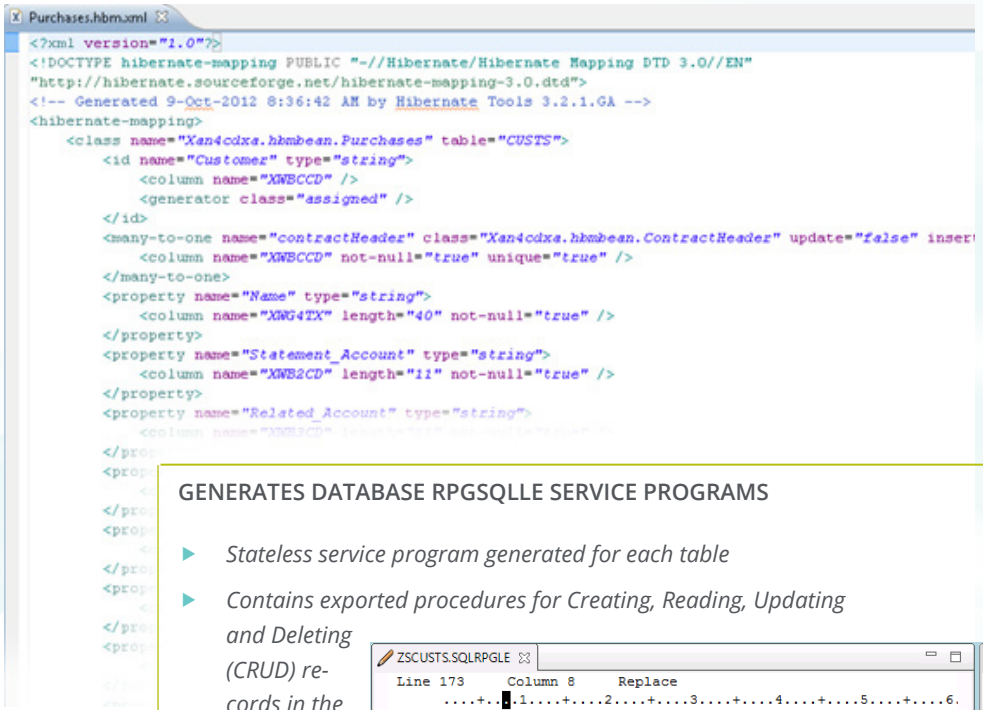
A Wide Range of Options and Functionality

In addition to DDS-to-DDL conversion and problem analysis, the Database Modernization module provides numerous functions to help with your IBM i databases. Some of the highlights:

CREATES HIBERNATE CONFIGURATION FILES AND JPA PACKAGE FROM GENERATED RELATIONAL MODEL

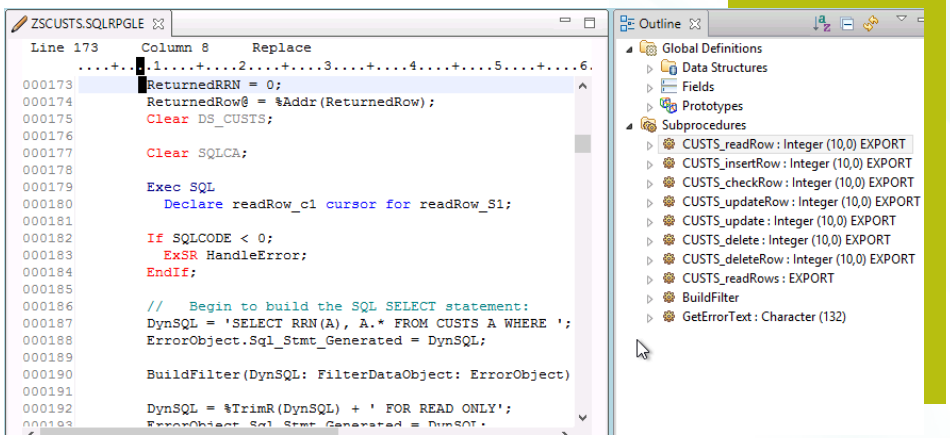
- *Unique capability of automatically deriving the explicit system data model from an RPG, COBOL or 2E application.*
- *The legacy relational model can be exported as DDL. The DDL is used to create Hibernate configuration files, thus producing an Object Relational Map or ORM of the entire application database.*





GENERATES DATABASE RPGSQLLE SERVICE PROGRAMS

- *Stateless service program generated for each table*
- *Contains exported procedures for Creating, Reading, Updating and Deleting (CRUD) records in the table*
- *Service programs may be extended to contain centralized low level business rules*



At a Glance...

X-DB Modernize

The Fresche Solutions product that converts DDS to DDL and provides a host of modern database features on IBM i.

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X-DB Modernize: Functionality Summary

- Export of DDL from relational data model
- Conversion of DDS to DDL
  - Problem analysis
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FRESCHE SOLUTIONS

Ready to Learn More?

X-Analysis products are available in a variety of configurations. At Fresche Solutions, we work closely with you to assess your needs and recommend the best solutions. To get started, contact us using the information below:

www.freschesolutions.com | info@freschesolutions.com
1.800.361.6782 (Worldwide)

X-Analysis Advisor is the main offering in the X-Analysis suite, which includes productivity and modernization tools for your IBM i applications and databases. Following is a brief description of the solutions in the suite:

Understanding and Impact Analysis: An IBM i analysis tool that provides automated online documentation and powerful impact analysis.

Business Process Mapping and Metrics: A complete IBM i analysis tool, providing automated documentation, impact analysis, business rule extraction and code quality metrics.

Data and Test Management: Analysis of data quality; data archiving, data subsetting and data anonymization. Test data automation and management.

Field Resizing: Automated resizing of all occurrences of a field throughout your entire application environment; includes detailed problem analysis.

CA 2E Analysis: Everything required to analyze and document CA 2E applications. Includes business rule extraction and code quality auditing.

Application Modernization: RPG, COBOL and CA 2E (Synon) automatically converted to Java.

Database Modernization: Automated conversion of DDS to DDL, including creation of constraints, long field names and views.

Open Systems Analysis: Cross-referencing and documentation of Java, C#, PHP, and other languages.

About Fresche Solutions

Fresche is the leading provider of automated digital transformation enablement for companies who rely on IBM i systems. Through its transformation framework (tools, processes and methodologies), Fresche delivers high quality application modernization as a service (MaaS) in addition to a wide range of optimization solutions.

With over 400 digitally connected colleagues around the world and an extensive network of over 200 business partners, Fresche collectively brings clients the best solutions to drive innovation and IT success. For more information about our company, visit us on the Web at www.freschesolutions.com