

ICIS Schema Maintenance and Database Conversion

Maria Corina D. Habito
IRRI-CRIL

Agenda

- Schema maintenance approach
- ICIS Schema release
- Schema update methods
- Database conversion
- Cross-backend synchronization

Schema maintenance approach

- Create separate files for full SQL and patch SQL

PAST:

GMS-5.3.sql (full)

```
GMS-5.3.sql - WordPad
File Edit View Insert Format Help
[Icons]
CREATE INDEX instln_idx04 ON instln (uaid);
CREATE INDEX instln_idx05 ON instln (uldid);
CREATE INDEX instln_idx06 ON instln (ucid);

--
-- table structure for table 'users'
--
CREATE TABLE users (
  userid SMALLINT PRIMARY KEY,
  instald SMALLINT NOT NULL DEFAULT 0,
  ustatus SMALLINT NOT NULL DEFAULT 0,
  uaccess SMALLINT NOT NULL DEFAULT 0,
  utype SMALLINT NOT NULL DEFAULT 0,
  uname VARCHAR(30) NOT NULL DEFAULT '',
  upswd VARCHAR(10) NOT NULL DEFAULT '',
  personid INT NOT NULL,
  adate INT NOT NULL DEFAULT 0,
  cdate INT NOT NULL DEFAULT 0
);
CREATE INDEX users_idx01 ON users (instald);
CREATE INDEX users_idx02 ON users (personid);
```

PRESENT:

GMS-5.4.sql (full)

GMS-5.4_Patch_MYSQL.sql

```
GMS-5.4.sql - WordPad
File Edit View Insert Format Help
[Icons]
GMS-5.4_Patch_MYSQL.sql - WordPad
File Edit View Insert Format Help
[Icons]
--
-- FOR MYSQL
--
-- May 2007
--
--
-- Table NAMES
--
ALTER TABLE names MODIFY nval VARCHAR(255);
```

```
--
-- version 5.1 patch
--
ALTER TABLE germplsm ADD mgid INT;
CREATE INDEX germplsm_idx07 ON germplsm (mgid);
```

← v5.1 patch

```
--
-- version 5.3 patch
--
ALTER TABLE instln ADD dns_status INT;
```

← v5.3 patch

ICIS Schema release

CropForge: ICIS Communication: Project Filelist - Windows Internet Explorer

http://cropforge.org/frs/?group_id=58&release_id=244

CropForge: ICIS Communication: Project Filelist

- icis-application-5.3.0.exe
- icis-application-5.3.1-exe.zip
- ICIS 5.2**
 - icis-application-5.2.0-exe.zip
 - icis-application-5.2.1-exe.zip
- ICIS 5.1**
 - icis-application-5.1.0-exe.zip
- ICIS 5.0**
 - icis-application-5.0.1-exe.zip
- ICIS Schema**
 - ICIS DB 5.4**
 - icis-schema-5.4-full-mdb-template-central.zip ← MS Access templates
 - icis-schema-5.4-full-mdb-template-local.zip ← MySQL/PostgreSQL full SQL
 - icis-schema-5.4-full-sql.zip ← MySQL patch
 - icis-schema-5.4-patch-sql-oracle.zip ← Oracle patch
 - icis-schema-5.4-patch-sql-postgresql.zip ← PostgreSQL patch
 - ICIS DB 5.3**
 - icis-schema-5.3-full-sql.zip ← MySQL/PostgreSQL full sql
 - icis-schema-5.3-patch-sql.zip ← MySQL/PostgreSQL patch
 - ICIS DB 5.2**
 - No Files

Schema update methods

- 1) Run SQL patch from CropForge (non-MS Access database)
- 2) Create and run one ALTER TABLE statement at a time / edit through Design View (MS Access database)
- 3) NEW METHOD: Automatic modification (local DB) facility of the ICIS Installation Diagnostic Tool v5.4

Database conversion

- MS Access to MySQL: **PURPOSE:**
 - IRIS Web update
 - SMTA website update

TOOLS USED/TRIED:	Remarks
MySQL Maestro	Free 30-day trial. Powerful import abilities.
Navicat MySQL	Free 30-day trial. Easier to track conversion progress
DBManager Professional (DBTools) Enterprise Edition	Free 20-day trial. With builtin support for several database engines, including: MySQL, PostgreSQL, MSSQL Server, Sybase, and Oracle. Can compare two MySQL DBs & generate an SQL patch. http://www.dbtools.com.br/EN/dbmanagerpro/
Bullzip.com's MSAccess to MySQL Tool	Freeware. Conversion in 5 easy steps (direct transfer/generate dump file). Used for latest update of IRIS and SMTA web databases.

Database conversion

- MS Access to PostgreSQL:
PURPOSE: → IRIS Central & Local DB (Application Testing)

TOOLS USED/TRIED:	Remarks
PostgreSQL Maestro	Free 30-day trial. Powerful import abilities.
Navicat PostgreSQL	Free 30-day trial. Easier to track conversion progress. Used in populating PostgreSQL Dbs used for testing.
DBManager Professional (DBTools) Enterprise Edition	Free 20-day trial. With builtin support for several database engines, including: MySQL, PostgreSQL, MSSQL Server, Sybase, and Oracle. http://www.dbtools.com.br/EN/dbmanagerpro/
AccessToPostgreSQL Pro	Free trial version, no time limit (but trial version converts only the first 10 records of each table). Has “convert to lowercase” facility for table & column names.

Database conversion

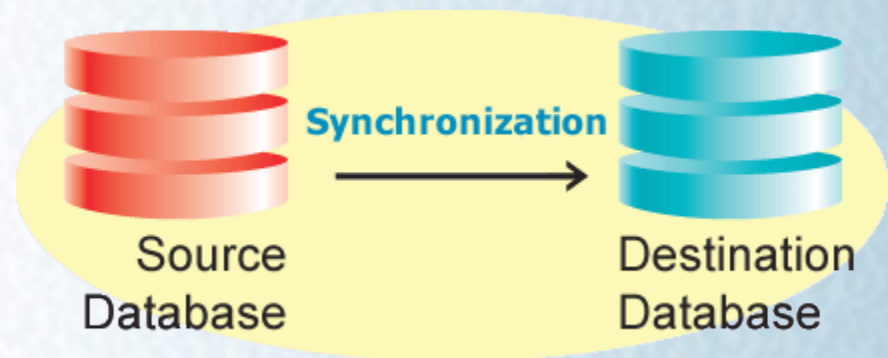
MS Access to PostgreSQL: OBSERVATIONS

- Central GMS & DMS in PostgreSQL: Table and column names must be in lowercase for ICIS applications to successfully startup and run (Windows, Linux)
- Best conversion approach: Run the table creation script on the destination database first then import the data using the conversion tool.

Cross-backend synchronization

Synchronization: data uploading or mirroring between two or more databases

- **Issue:** How to keep IRIS data in MySQL synchronized with IRIS data in MS Access?



- **Background:** At IRRI, our central database (GMS & DMS) is MS Access. This is the database backend in the day-to-day use of ICIS applications. However, our data is published through the IRIS web, the backend of which is MySQL.

Cross-backend synchronization

- Up to present, IRIS web is updated through this process:
 - 1) Convert GMS and DMS (MS Access) to MySQL
 - 2) Create a full dump file of the resulting database
 - 3) Drop the current IRIS database, run dump file to recreate the database
- It takes more than one day to finish the full dump due to the sheer volume of data

Cross-backend synchronization

- Proposed solution: 1)
Database synchronization tool: performs insert synchronization & update synchronization between two databases. E.g. “AccessToMySQL Sync” tool

Insert and Update Synchronization

Source table			
ID	Name	Occupation (position)	Wage
1	Christian Buelter	executive secretary	988
2	Marc Souques	book-keeper	763
3	Robert Scott	administrative assistant	750
4	David Eckart	computer operator	724
5	Scott Hadley	legal secretarie	820
▶	6 Marc Kalberer	administrative manager	1024

Destination table			
ID	Name	Occupation (position)	Wage
1	Christian Buelter	executive secretary	988
2	Marc Souques	book-keeper	763
3	Pierre Richer	administrative assistant	750
4	David Eckart	computer operator	724
▶	5 Scott Hadley	legal secretarie	820

* before insert and update synchronization

<input type="checkbox"/>	3 Robert Scott	administrative assistant	750
<input checked="" type="checkbox"/>	6 Marc Kalberer	administrative manager	1024

Source table			
ID	Name	Occupation (position)	Wage
1	Christian Buelter	executive secretary	988
2	Marc Souques	book-keeper	763
3	Pierre Richer	administrative assistant	750
4	David Eckart	computer operator	724
5	Scott Hadley	legal secretarie	820
▶	6 Marc Kalberer	administrative manager	1024

Destination table			
ID	Name	Occupation (position)	Wage
1	Christian Buelter	executive secretary	988
2	Marc Souques	book-keeper	763
3	Robert Scott	administrative assistant	750
4	David Eckart	computer operator	724
5	Scott Hadley	legal secretarie	820
▶	6 Marc Kalberer	administrative manager	1024

* after insert and update synchronization

Cross-backend synchronization

- Database conversion and database synchronization products available at <http://dbconvert.com>

The screenshot displays the dbconvert.com website interface. At the top, the navigation menu includes Home, Download, Order, Support, Partnership, About, Sitemap, and Contact. The main content area is titled "Database Converters product line" and features a "FIND A SOLUTION" section with a "GO" button. Below this, there are two columns of product information:

- Conversion:**
 - Access2MySQL Pro:** migration tool converts Microsoft Access db to MySQL server and MySQL bases to MS Access. In case your hosting provider restricts direct access to your MySQL database you can save data into a dump file or even generate PHP script to overcome the restrictions. [more ..](#)
 - Access2MSSQL Pro:** performs database conversion from MS Access to MS SQL, from MS SQL to MS Access as well as from MS SQL to MS SQL and from MS Access to MS Access. Our product provides direct conversion, but when you need to workaround firewalls MS SQL Dump files may be generated. [more ..](#)
 - Access2PostgreSQL Pro:** converts Microsoft Access databases to PostgreSQL and vice versa allowing user to convert data to PostgreSQL Text file and PHP script. Unicode Support and Primary keys and Indexes conversion are available. [more ..](#)
 - MySQL2PostgreSQL Pro:** converts your database from MySQL to PostgreSQL and from PostgreSQL to MySQL. Our product provides direct conversion, but when necessary to workaround firewalls you can take advantage of Dump files and PHP scripts. [more ..](#)
 - MSSQL2MySQL Pro:** converts your database from MSSQL to MySQL and from MySQL
- Synchronisation:**
 - Access2MySQL Sync:** accomplishes data transfer between Access and MySQL (import and export) with synchronization keeping your Access and MySQL databases coherent and up-to-date. [more ..](#)
 - Access2MSSQL Sync:** is a powerful synchronization tool designed for bi-directional conversion between MS Access and MS SQL databases and for accurate synchronization in both directions. This excellent utility allows users to keep their Access and MS SQL databases fresh and up-to-date satisfying all possible syncing needs. [more ..](#)
 - Access2PostgreSQL Sync:** database synchronization software converts Access to PostgreSQL databases and perform PostgreSQL to Access conversion. [more ..](#)
 - MySQL2PostgreSQL Sync:** synchronize and convert your database from MySQL to PostgreSQL and from PostgreSQL to MySQL. MySQL2PostgreSQL Sync is really affective and up-to-date product. This product provides insert synchronization and update synchronization as well as other our synchronizers. [more ..](#)
 - MSSQL2MySQL Sync:** synchronize and convert your database from MSSQL to

Additional features include a "Latest releases" section with RSS and Blog links, and a "DB Convert Product Line" sidebar with links to MS Access, MS SQL, MS FoxPro, MySQL, PostgreSQL, and DC Scheduler. The footer contains logos for "dbconvert technologies CUSTOM SOFTWARE DEVELOPMENT" and "skin crafter Custom applications skinning library".

Cross-backend synchronization



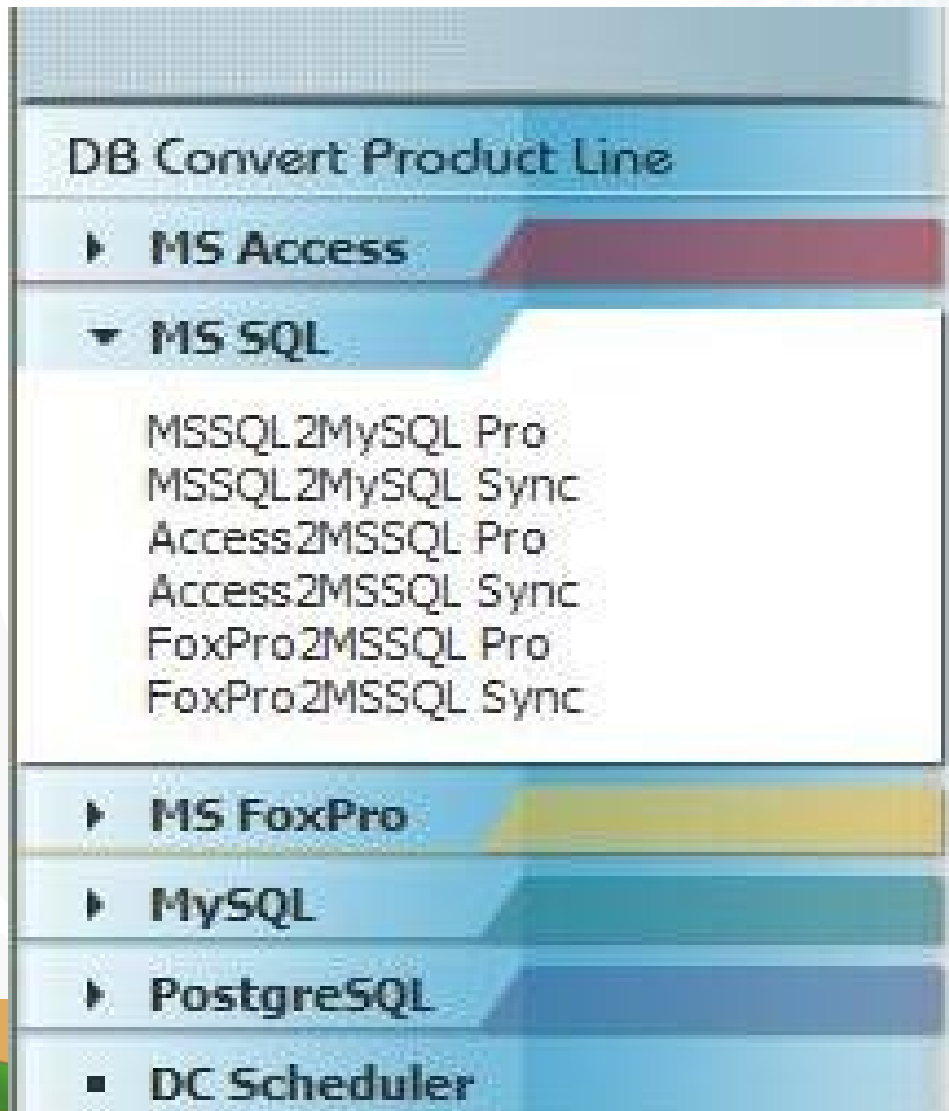
- Conversion & synchronization tools: **MS Access** as source/destination

Cross-backend synchronization



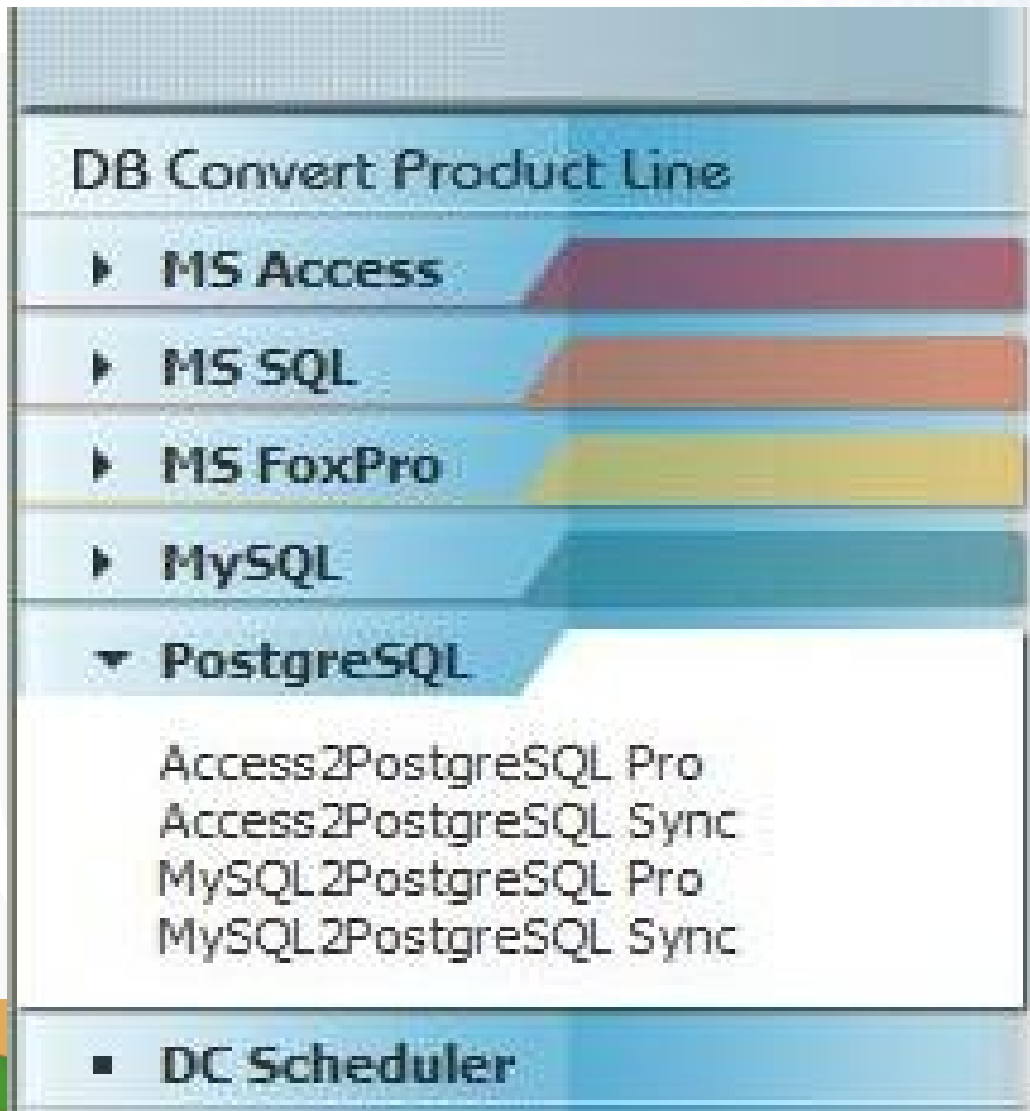
- Conversion & synchronization tools:
MySQL as source/destination

Cross-backend synchronization



- Conversion & synchronization tools:
MS SQL as source/destination

Cross-backend synchronization



- Conversion & synchronization tools: **PostgreSQL** as source/destination