IBM

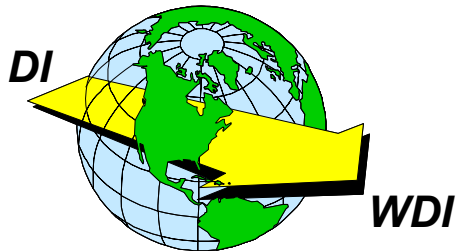# *2002 Users Conference*

Workshop:
WDI Installation/Setup/Performance Measuring

Robert Downey
eSI2, Inc.

The Next Generation

DI

WDI

2002 User Conference

1

Agenda

★ **Part I - Installation**

- **Overview of installation and configuration of WDI Server and Client for the Windows platform**
- **Tips and techniques along the way**

★ **Part II – Performance Lab**

- **How to measure performance impacts of mapping logic**
- **How to benchmark your transactions**
- **Performance techniques and various solutions**
- **Performance metrics**
- **Live Demonstration**

DI

WDI
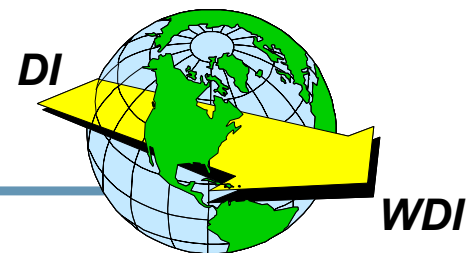
WDI Installation Overview

★ **Be sure the server machine meets the requirements for WDI**

★ **Install the DataBase to be used on server, DB2 Universal Database Workgroup Edition V7.2**

★ **Install WDI Server**

★ **Install Database to be used on client, DB2 Personal Edition V7.2**

★ **Install WDI Client (on separate machine)**

★ **Configure the databases for Server/Client**

★ **Load maps and begin translating!**

DI

WDI
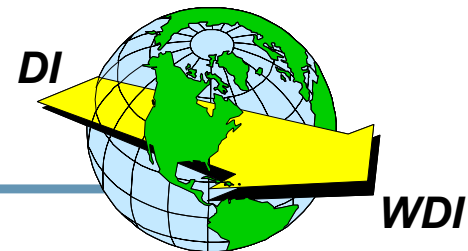
WDI Server Installation Requirements

- ★ **Must be running Microsoft Windows 2000**
- ★ **Intel Pentium III at 933 Mhz or faster**
- ★ **At least 1024 MB RAM**
- ★ **70 MB of free space to install**
- ★ **Recommended 8 GB free space for processing**
- ★ **DB2 Universal Database Workgroup Edition V7.2 already installed before installing WDI Server**

DI

WDI
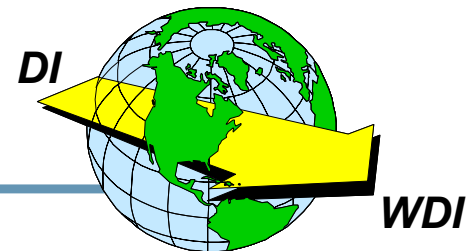
WDI Server Installation Steps

★ **Login to the Win2000 machine with Administrator authority**

★ **Insert the WDI Server CD and run the "wdi.exe" setup program to start the install wizard**

- **Follow the install prompts**
- **Accept the license agreement**
- **Installs in C:\Program Files\IBM\WDIServer V3.1**
- **Once Finished, verify the directories exist in above directory:**

   **bin bind ddl ixf help lib runtime runtime/adf**

DI

WDI
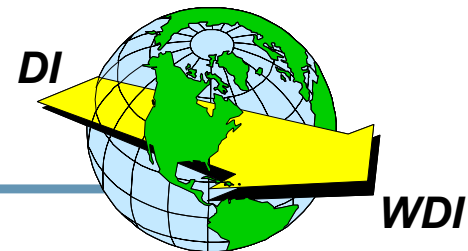
WDI Server DB2 Setup Installation Steps

★ **All DB2 configuration must be performed with "Administrator" authority**

★ **Refer to the "readme.txt" file in the \help directory**

★ **In Windows, select "Start>Programs>IBM DB2>Command Window" to open the DBs Command window**

- **Change to the c:\Program Files\IBM\WDIServer V3.1\ddl directory and run the following:**
  - ✓ **db2 create db ediec31e**
  - ✓ **db2 create db edict31e**
  - ✓ **altrec31**
 - ✓ **altrct31**

DI

WDI
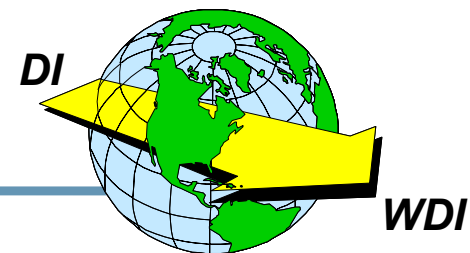
WDI Server DB2 Setup Installation Steps p.2

- **Change to the DB2 bind directory, c:\Program Files\SQLLIB\bnd and run the following:**
  - ✓ **db2 connect to ediec31e**
  - ✓ **db2 bind @db2ubind.lst messages bind.msg grant public**
  - ✓ **db2 bind @db2cli.lst messages clibind.msg grant public**
  - ✓ **db2 connect reset**
  - ✓ **db2 connect to edict31e**
  - ✓ **db2 bind @db2ubind.lst messages bind.msg grant public**
  - ✓ **db2 bind @db2cli.lst messages clibind.msg grant public**
 - ✓ **db2 connect reset**

DI

WDI
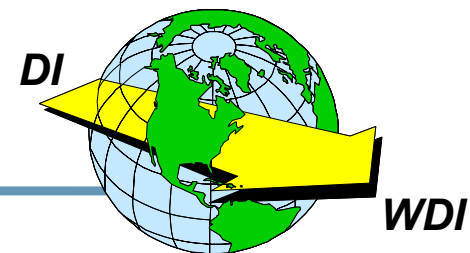
WDI Server DB2 Setup Installation Steps p.3

- **Change back to the ddl directory, c:\Program Files\ \IBM\WDIServer V3.1\ddl and run the following:**
  - ✓ **db2 -tf ediec31.ddl -l ec31.log**
  - ✓ **db2 -tf edict31.ddl -l ct31.log**
  - ✓ **db2 -tf grntec31.ddl -l grntec31.log**
  - ✓ **db2 -tf grntct31.ddl -l grntct31.log**
- **Change to the ixf directory, c:\Program Files\ \IBM\WDIServer V3.1\ixf and run the following:**
  - ✓ **loadec31**
  - ✓ **loadct31**
- **Change to the bind directory, c:\Program Files\ \IBM\WDIServer V3.1\bind and run the following:**
  - ✓ **db2 -tf bindgrnt.fil -l bind.log**
- **WDI Server Installation is COMPLETE!**

DI

WDI
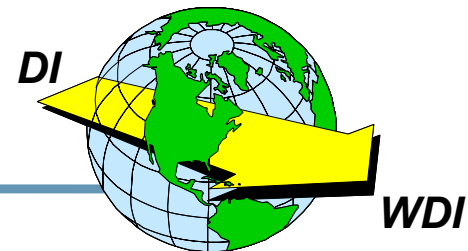
WDI Client Installation Requirements

★ **Intel Pentium PC**

★ **CD-Rom (for install)**

★ **128 MB RAM**

★ **MS Windows 95, 98, or 2000**

★ **DB2 Connect Personal Edition V7.2**

    (for connection to the server)

DI

WDI
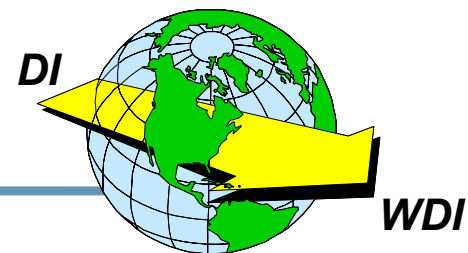
WDI Client Installation Steps

★ **Insert the WDI Client CD and run the "WDIClientV3.1.exe" setup program to start the install wizard**

- **Follow the install prompts**
- **Accept the license agreement**
- **Installs in C:\Program Files\IBM\WDIClient V3.1**
- **Select "Typical" installation setup**
- **Select all possible features to install with WDI**
- **Once Finished, you'll need to configure the ODBC databases**

★ **Be sure DB2 Personal Edition V7.2 is installed before proceeding**

DI

WDI
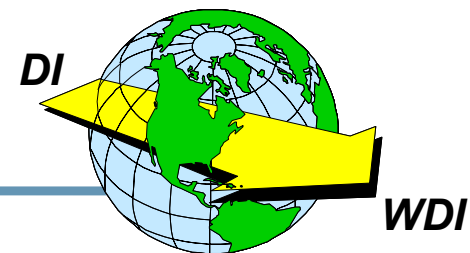
WDI Client DB2/ODBC Configuration

★ **Refer to Ch.2 page 15 of the "User'sGuide V3.1"**

★ **In Windows, select "Start>Programs>IBM DB2>Configuration Assistant"**

- **Select to "ADD" a database if not automatically pulled up**

- **Select to "Manually Configure a Connection" then click "Next"**

- **Select "TCP/IP" protocol then click "Next"**

- **Fill in the "Host Name"**

  - ✓ **This will be the name of the server, to verify go to "Start>Settings>Control Panel>Systems>Network Id 'System name' "**

- **Fill in Port Number of 50000 and click "Next**

- **Fill in db name/alias of "EDICT31E" for custtime and click "Next"**

- **Make sure "Register for ODBC" is checked and "As a system data source" is checked and click "Finish" (can config pw's here too)**

(NOTE: If a "Test" is done, be sure to use a userid/password that is the same as that used on the server and registered to DB2.)

DI

WDI
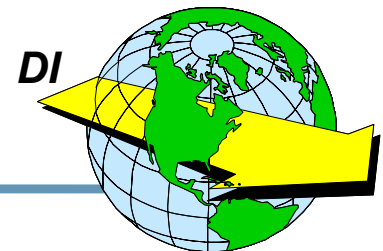
WDI Client DB2/ODBC Configuration   p.2

★ **Repeat again for the runtime db - In Windows, select "Start>Programs>IBM DB2>Configuration Assistant"**

- **Select to "ADD" a database**
- **Select to "Manually Configure a Connection" then click "Next"**
- **Select "TCP/IP" protocol then click "Next"**
- **Fill in the "Host Name"**
  - ✓ **This will be the name of the server, to verify go to "Start>Settings>Control Panel>Systems>Network Id 'System name' "**
- **Fill in Port Number of 50000 and click "Next**
- **Fill in db name/ alias of "EDIEC31E" for runtime and click "Next"**
- **Make sure "Register for ODBC" is checked and "As a system data source" is checked and click "Finish" (can config pw's here too)**
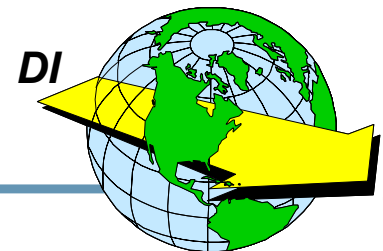
(NOTE: If a "Test" is done, be sure to use a userid/password that is the same as that used on the server and registered to DB2.)

DI

WDI

WDI Client DB2/ODBC Configuration p.3

★ **Start up WDI Client 3.1, via "Start>Programs>Websphere Data Interchange MP V3.1>WDI MP V3.1 Client"**

★ **We now need to add a new "System" pointing to the ODBC databases**

- **Select "View" tab and "EDI Systems"**
- **When the "EDI Systems" list apears, select "File" and "New"**
- **Enter the new System name for the ODBC db**
- **Under "Customization time ODBC Source"**
  - ✓ **Enter "EDICT31E" as the 'Data Source Name'**
  - ✓ **Enter "CUSTIME" as the 'Database Qualifier'**
- **Under "Runtime ODBC Source"**
  - ✓ **Enter "EDIEC31E" as the 'Data Source Name'**
  - ✓ **Enter "EDIENU31" as the 'Database Qualifier'**
- **Change "Server Platform to 'WINDOWS'**
- **Click 'OK' and complete.**

DI

WDI
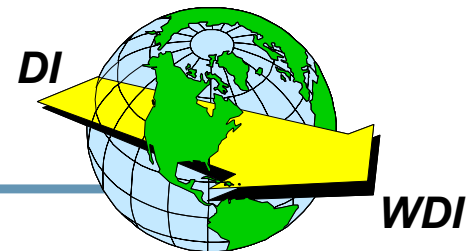
WDI Client DB2/ODBC Configuration   p.4

★ **Verify connections**

- **Change to the "new" system just created**
- **Select the mapping icon and some default maps should appear for functional acknowledgements**
- **Be sure when prompted for userid/password information that the DB2 administrator or other registered DB2 userids on the server are used**

★ **You are now ready to create or import your maps and begin translating!!**

DI

WDI
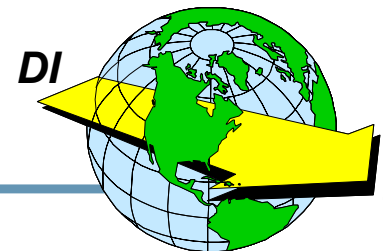
WDI Performance Measuring

★ **How do you measure performance?**

- **Records processed per minute or second**
- **EDI segments processed per minute or second**
- **Or, total time for a single transaction compared against a benchmark…**

★ **The later is the preferred method because you should be using a static input file between the comparisons.**

★ **Depending on the platform, there are various ways to measure the run times for comparison:**

- **Always use actual CPU time if available, never elapsed time…**
- **Or a stop watch when using Windows :)**

DI

WDI
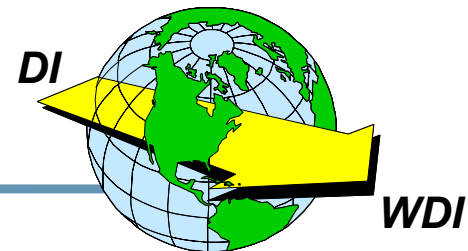
WDI Performance - Benchmark

★ **The "benchmark" should be set as the fastest possible translation time for the input you are using**

★ **How to create the benchmark:**

- **Create your WDI mapping using little or no special logic, especially in repeating loops**
  - ↗ Straight map every element/field that you will need to pass on, no matter if it's the real value you are looking for
  - ↗ Include in your map every element/field that may be used to determine another value even though the final value may not be determined in the output fle

- **Create enough input data to cause the translator to run at least 15 seconds CPU time, otherwise it will be difficult to notice any performance impact.**
  - ↗ Repeat loops many many times, such as a PO Line Item loop.
  - ↗ Use a single transaction so that only mapping techniques affect the performance and not looking up maps and trading partners.

DI

WDI
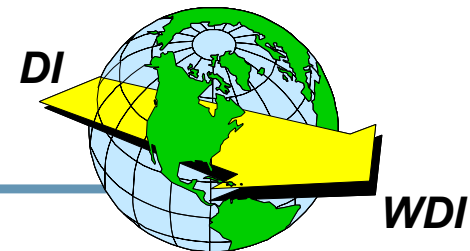
WDI Performance - Benchmark

★ **Once the "benchmark" has been created, you ready to create your "real" mapping to produce the exact results you are looking for**

★ **Using the "real" map, now run WDI with the same input file used for the benchmark and using the same measuring technique**

★ **The delta in CPU/execution times will be the performance impact**

  • **Must factor future growth now into your findings and determine if your current platform and CPU handle this in the future.**

NOTE: This can also be done in reverse if you already have a map that you feel can be improved upon in the performance area.

DI

WDI
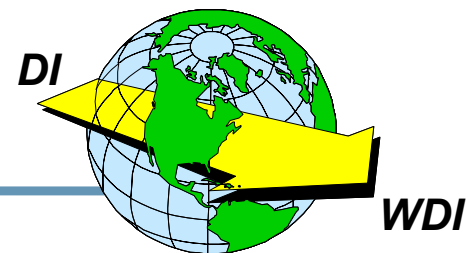
WDI Performance - Techniques / Solutions

★ **Various mapping techniques could impact performance**

- • **Obviously any "in map" special logic, such as &IF, etc..**
- • **Data Format layout - multiple vs single records**
  - ↗ **Combine records when possible**
  - ↗ **Repeat fields/structures horizontally in file when possible**
- • **Translation / Validation tables and number of entries**
- • **User Exit Routines**
- • **Literal use**
- • **Segment / element mappings that are never used**
- • **Structures in the Data Format that are not used**
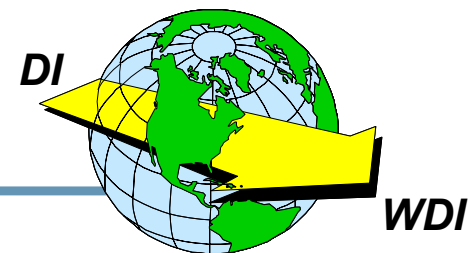
DI

WDI
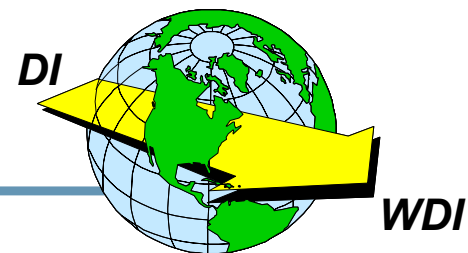
WDI Performance - Techniques / Solutions

★ **Solutions for improving performance and reducing impacts:**

- **Move any special in map logic into pre/post processor programs or application**

- **Redesign application processing program interfaces to handle combined records and repeating horizontal fields/structures**

- **Create the application to handle the "standard" values rather than using a translation table**

- **Place any user exit programming outside the translator in a pre/post application program**

- **Use validation tables only when absolutely necessary**

⇨ **Rather than changing the application, you can create pre/post processing programs to handle the reduced translator logic, but remember this also cost CPU time and must be considered in the overall picture….but almost always, a well written COBOL or C program will execute a lot faster than the same logic in the translator.**
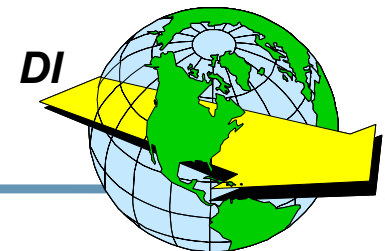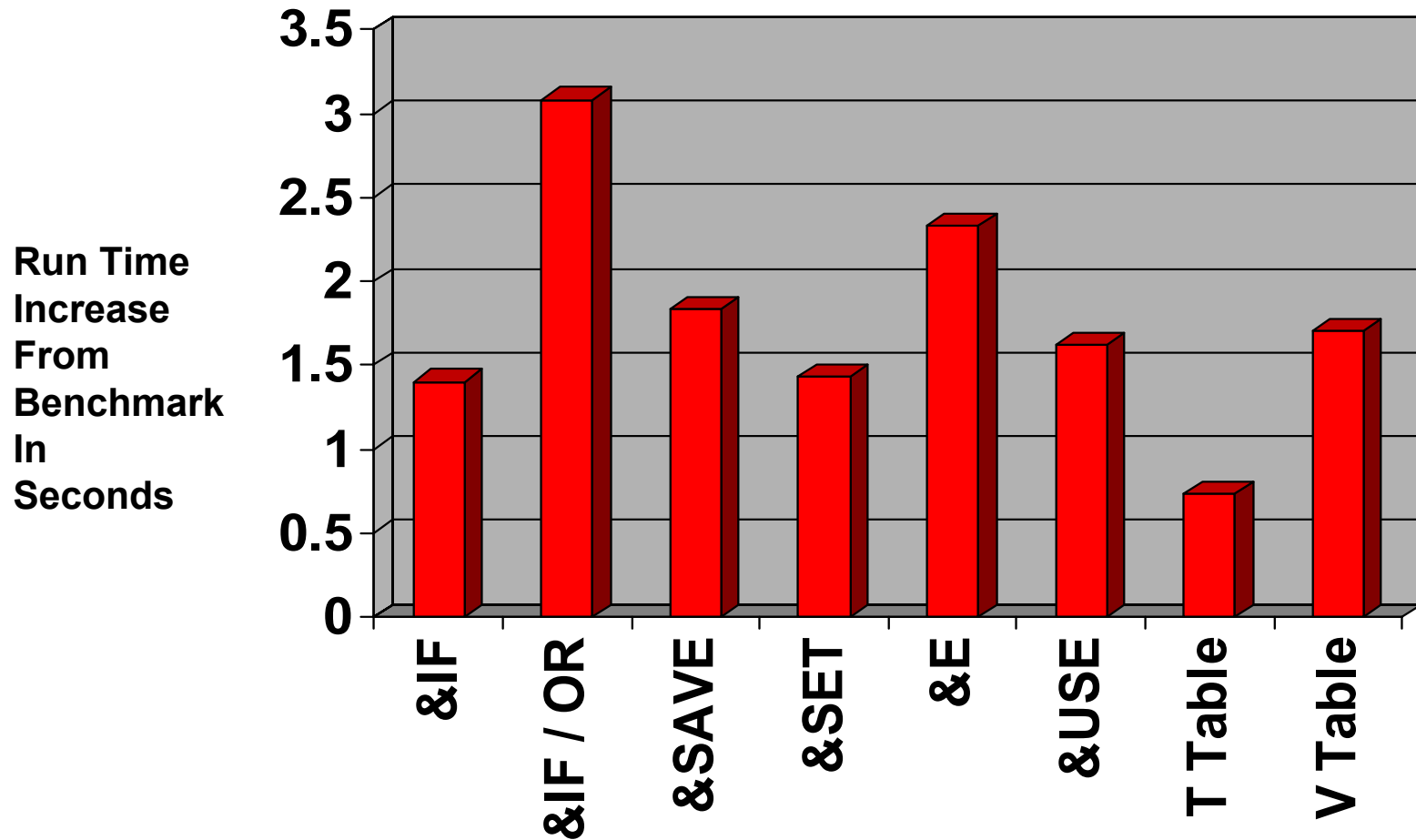
DI

WDI
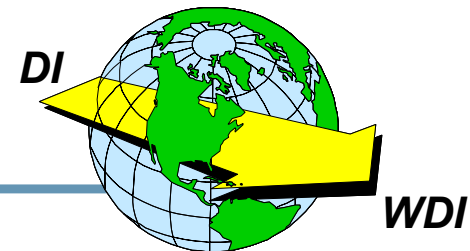
WDI Performance Metrics

★ **The following metrics are from executing the given logic statement 100k times on a 1.6Ghz processor and the "benchmark" had none: (Benchmark time is 15.64 seconds)**

- **&IF(expression)**   17.04 sec (71,429 &IF's / second)
- **&IF(expression) OR (expression)**   18.72 sec (32,468 &IF/OR's / second)
- **&SAVE**   17.47 sec (54,645 &SAVE's / second)
- **&SET**   17.07 sec (69,930 &SET's / second)
- **&E(addition expression)**   17.97 sec (42,919 &E's / second)
- **Translation table w/10 entries**   16.37 sec (136,986 hits / second)
- **Validation Table w/794 entries**   17.34 sec (58,824 hits / second)

DI

WDI

WDI Performance Metrics

Run Time Increase From Benchmark In Seconds

Chart values (approximate):
- &IF: 1.4
- &IF / OR: 3.05
- &SAVE: 1.8
- &SET: 1.4
- &E: 2.3
- &USE: 1.55
- T Table: 0.7
- V Table: 1.65

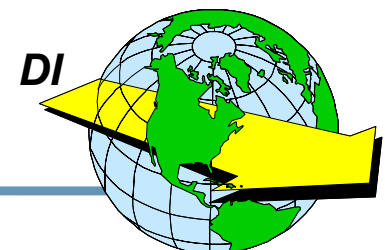**DataInterchange – The Next Generation**

DI

WDI

WDI Performance - Live Demo

★ **Benchmark uses no logic with 100k line item PO**

★ **For the Test - the following logic was added:**

- **In the "item number" field in the line item loop**
  - ✒ **&SET varA A**
  - ✒ **&SET varB B**
  - ✒ **&LSAVE itemnumber   (from the line item number field)**
  - ✒ **&IF(varA = 'B') B**
  - ✒ **&IF(varB = 'B') &USE itemnumber**

- **In the "item description" field in the line item loop**
  - ✒ **&SET var1 1**
  - ✒ **&SET var2 2**
  - ✒ **&LSAVE descript   (from the item description field)**
  - ✒ **&IF(var1 = 0) Mistake**
  - ✒ **&IF(var2 = 2) &USE descript**

Benchmark Time: _____

Test Time: _____

DI

WDI

Q/A

Open Q / A

DI

WDI