



**The Iam Lotus User Group**

# **Tivoli Directory Integrator (TDI)**

**The Best Free Tool You've Never Heard Of**

**Marie Scott**

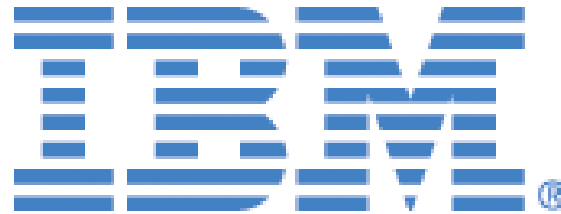
**Thomas "Duffbert" Duff**



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## The Iam Lotus User Group



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# Agenda

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- Introduction to TDI architecture/concepts
- Discuss TDI entitlement
- Install TDI
- Example – Import CSV data into a Notes database
- Intro to TDI and Directories
- Example – Active Directory to Domino Directory Sync
- Resources

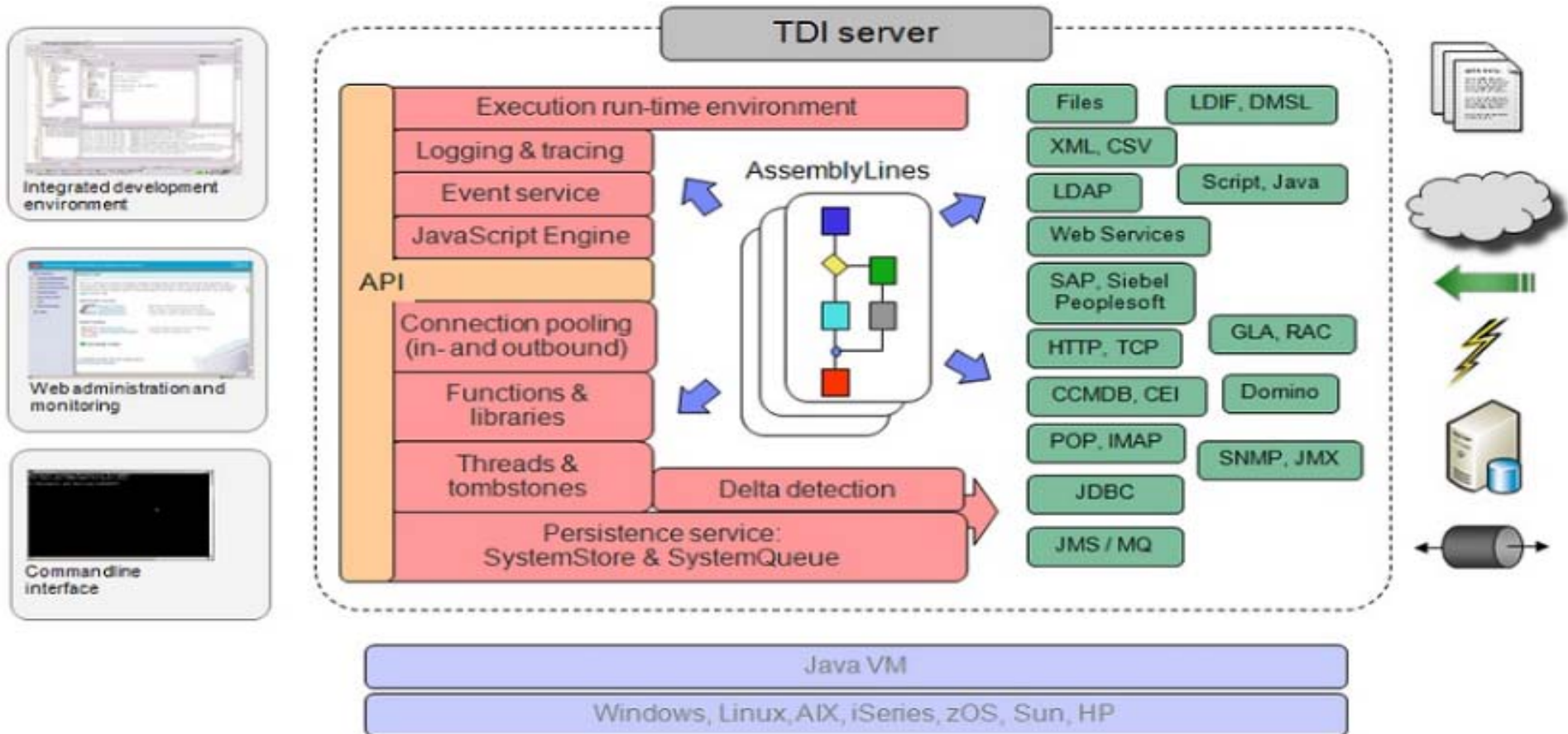
# IBM Tivoli® Directory Integrator®:

"Tivoli Directory Integrator (TDI) is a graphical integration toolkit for accessing and detecting changes in practically any type of system, data store, protocol, or API. It also lets you transform, filter, and validate this data before driving it to the output targets of your choosing."

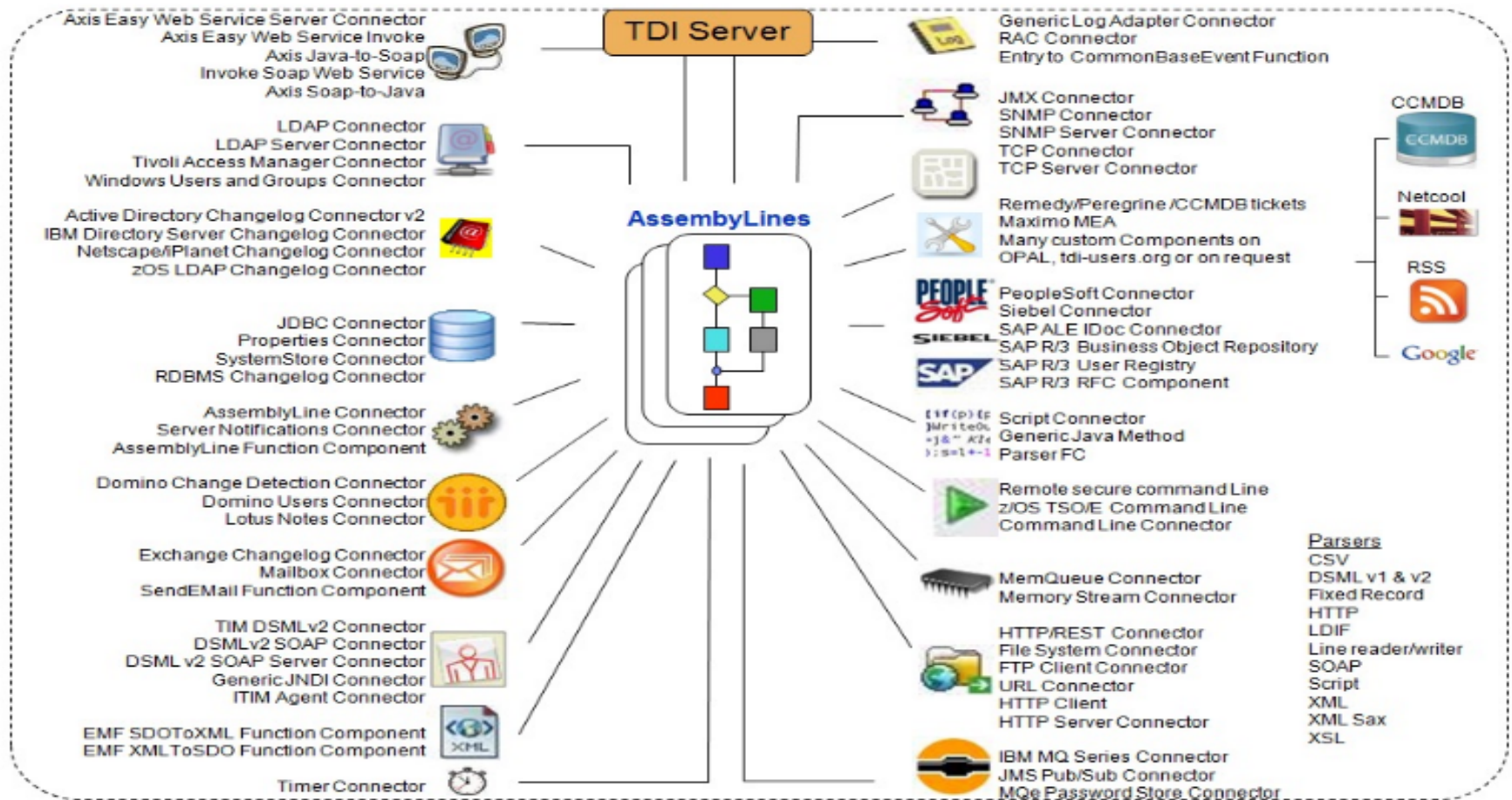
Source: Redpaper IBM Lotus Domino Integration Using IBM Tivoli Directory Integrator

- Use for migration
- Use for integration
- Use for synchronization

# TDI Architecture



# What Will TDI Connect To?



# TDI Definitions/Concepts:

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- **Terms you'll hear us use:**
  - ♦ Project – use projects to organize your AssemblyLines & “parts”
  - ♦ AssemblyLine – moves, transforms, pulls data from data sources using Connectors and other special tools.
  - ♦ Data Source – data system or group of objects
  - ♦ Connector – the authenticated processes that connect your data sources to the AssemblyLine and where you define what data attributes are to be used.
  - ♦ Attribute – describe the data
  - ♦ Entry – each individual data item or record

# TDI Entitlement – “It’s free!”

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- Domino license holders are entitled to TDI
- Check your IBM Passport Advantage download site
- Remember to visit IBM Fix Central for TDI Fixpack downloads.
- AssemblyLine should include Domino as a data source
- For additional information go to:
  - <http://www-01.ibm.com/software/lotus/notesanddomino/additionalswentitlements.html>



# Finding TDI on the IBM Passport Advantage Site

**Download options**

You will see downloads for the most current version. In addition:

**If available, would you like to see previous versions of this product?**

Yes  No

**If available, would you like to see associated products included at no additional charge?**

Yes  No

1. Select your Domino software type
2. Next screen – be sure to select the Download options – “If available would you like to see associated products included at no additional charge.”
3. Expand the “Associated products included at no additional charge” selection
4. Choose the version of TDI you’d like to download

**Select optional downloads, if desired**

Additional software, which you may or may not require, is bundled with your main product (at no additional charge) and is available for downloading. Refer to the license agreements for specifics.

**Associated products included at no additional charge**

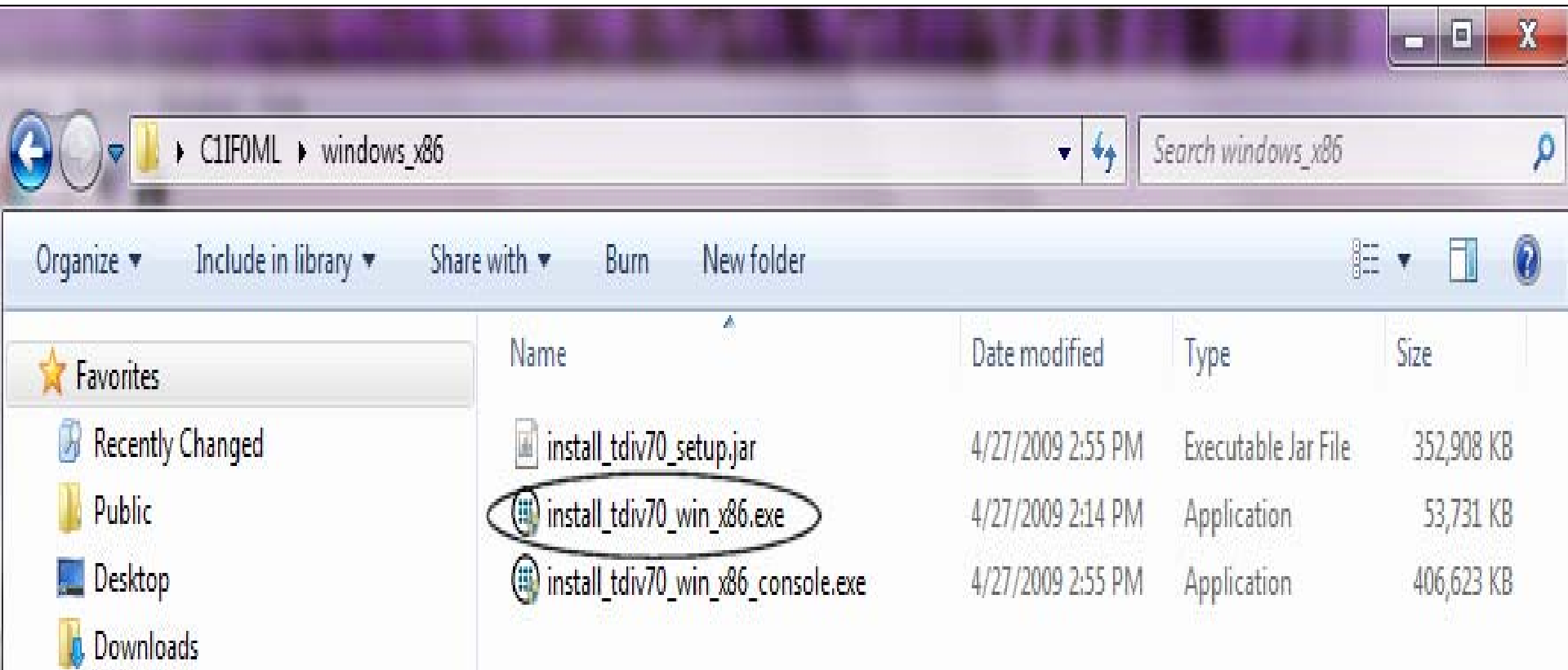
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<b>IBM Tivoli Directory Integrator 6.1.1 for Domino 8.0.x Multiplatform Multilingual eAssembly(CR5TQML)</b>	
		<b>Size</b>	6 files (2490mb)
		<b>Date posted</b>	17-Aug-2007
		<a href="#">Multi-product package terms</a>	
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<b>IBM Tivoli Directory Integrator 7.0 for Lotus Domino 8.5.x Multiplatform Multilingual eAssembly(CR9ZVML)</b>	
		<b>Size</b>	8 files (3388mb)
		<b>Date posted</b>	12-Oct-2009

# Installing TDI

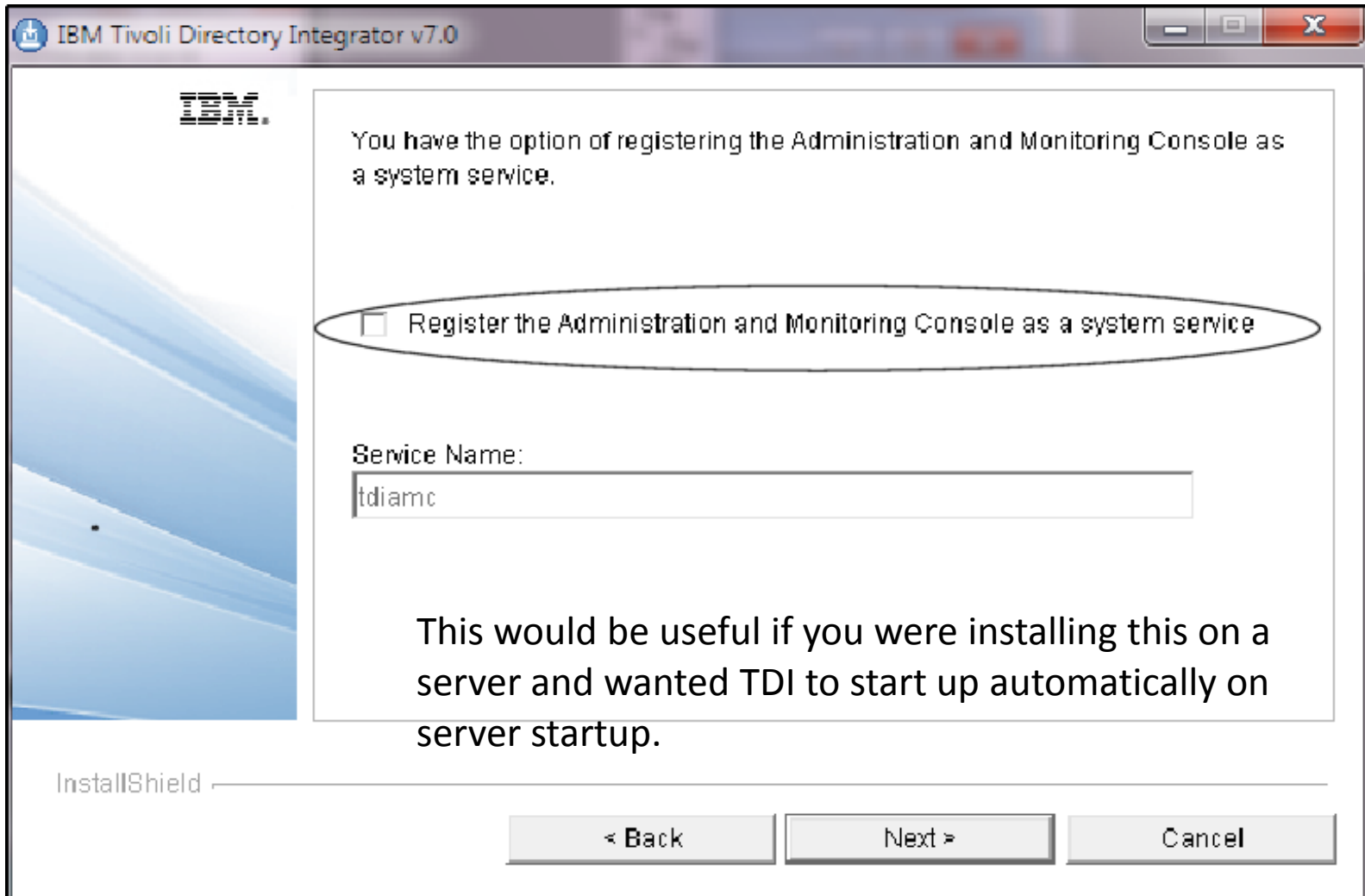
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- TDI 7.0 and 6.1 currently supported versions
- We're going to cover 7.0 in our slides
- Let's get started!

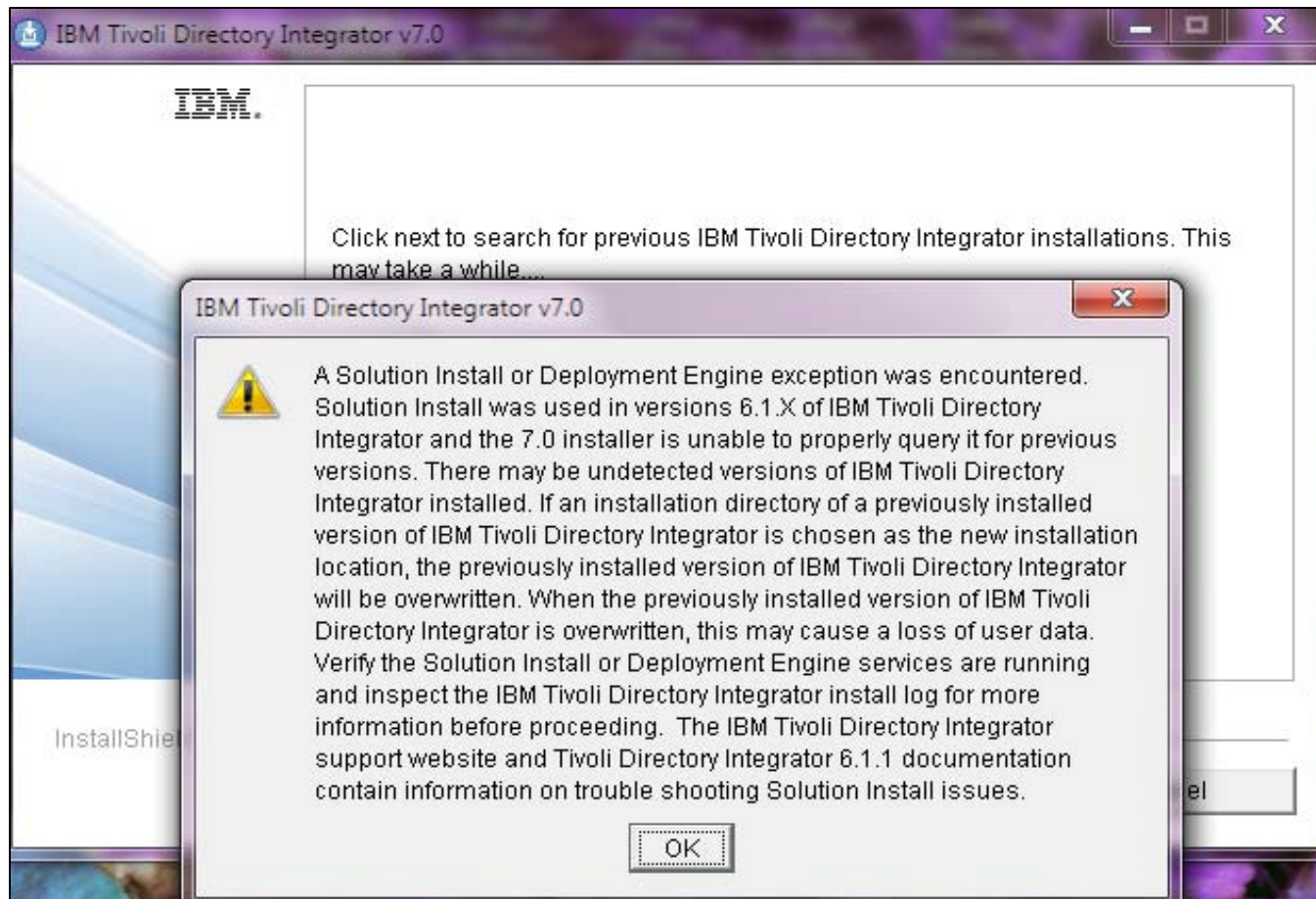
Use the install\_tdiv70\_win\_x86.exe instead of launchpad.exe... It works better



# If you want to have console start at bootup...

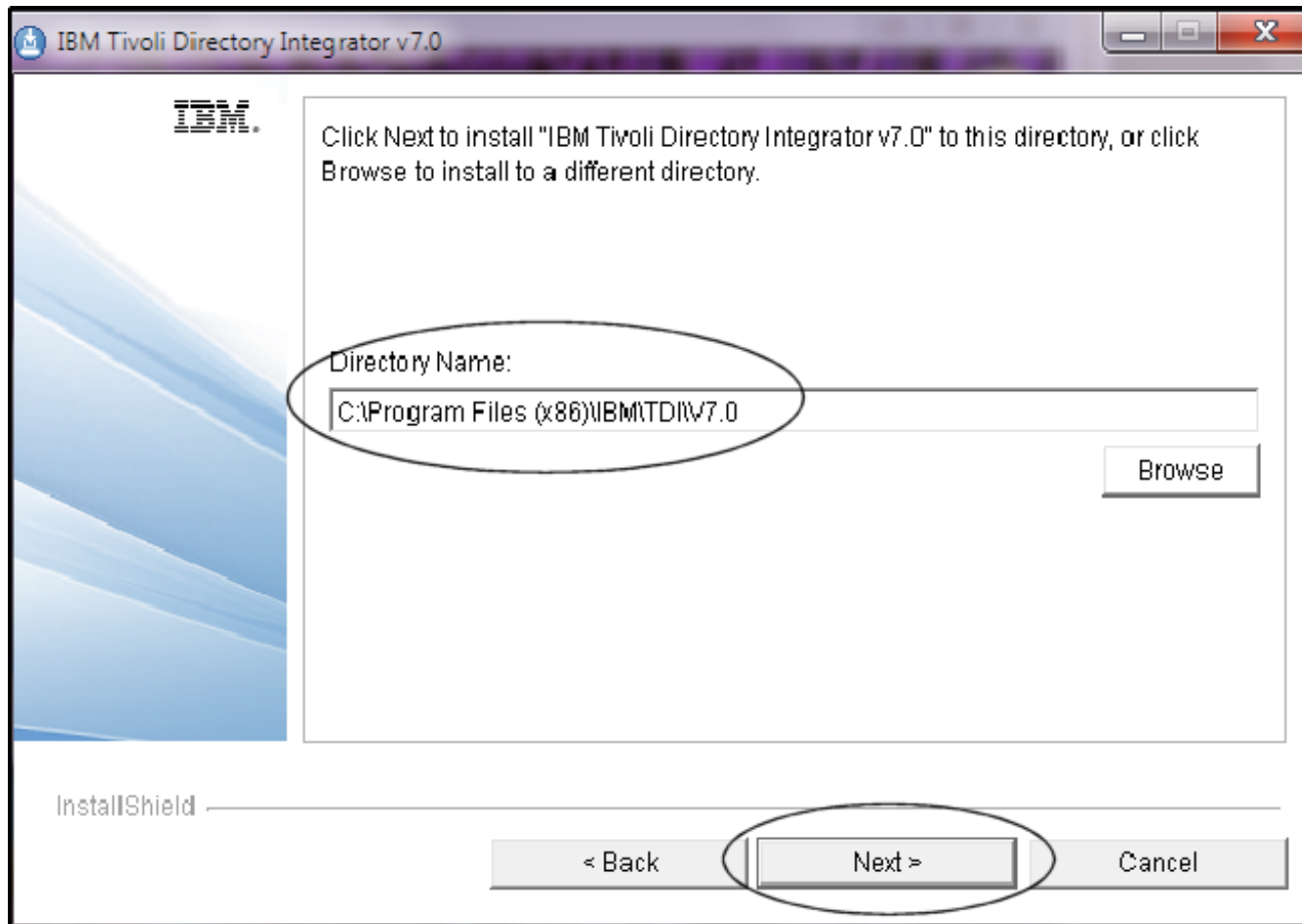


# You might see this if TDI was previously installed...



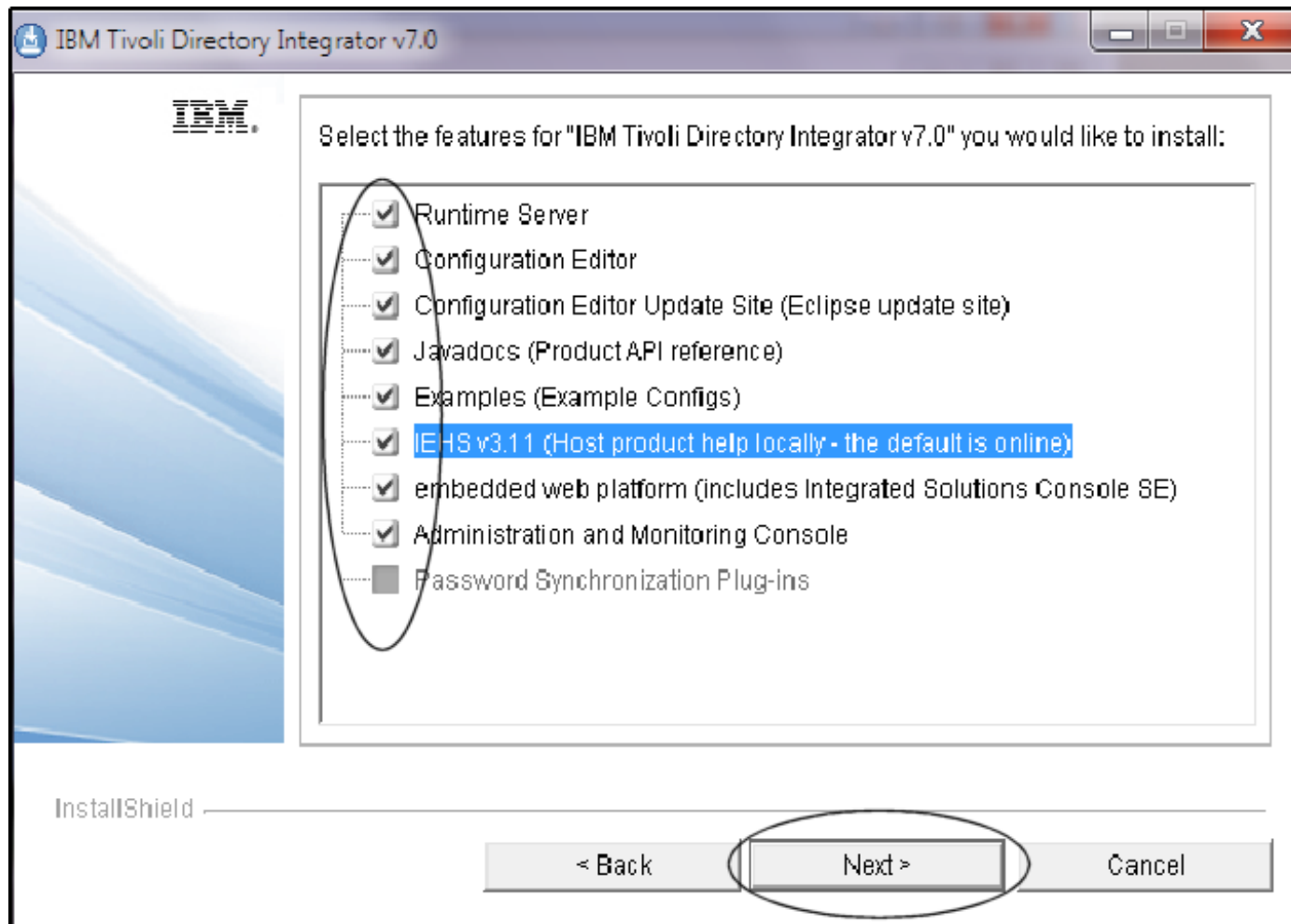
This seems to be quite common on install, even when I think I have everything “cleaned up”. So long as you're not upgrading, you can ignore it.

# Choose your install directory...



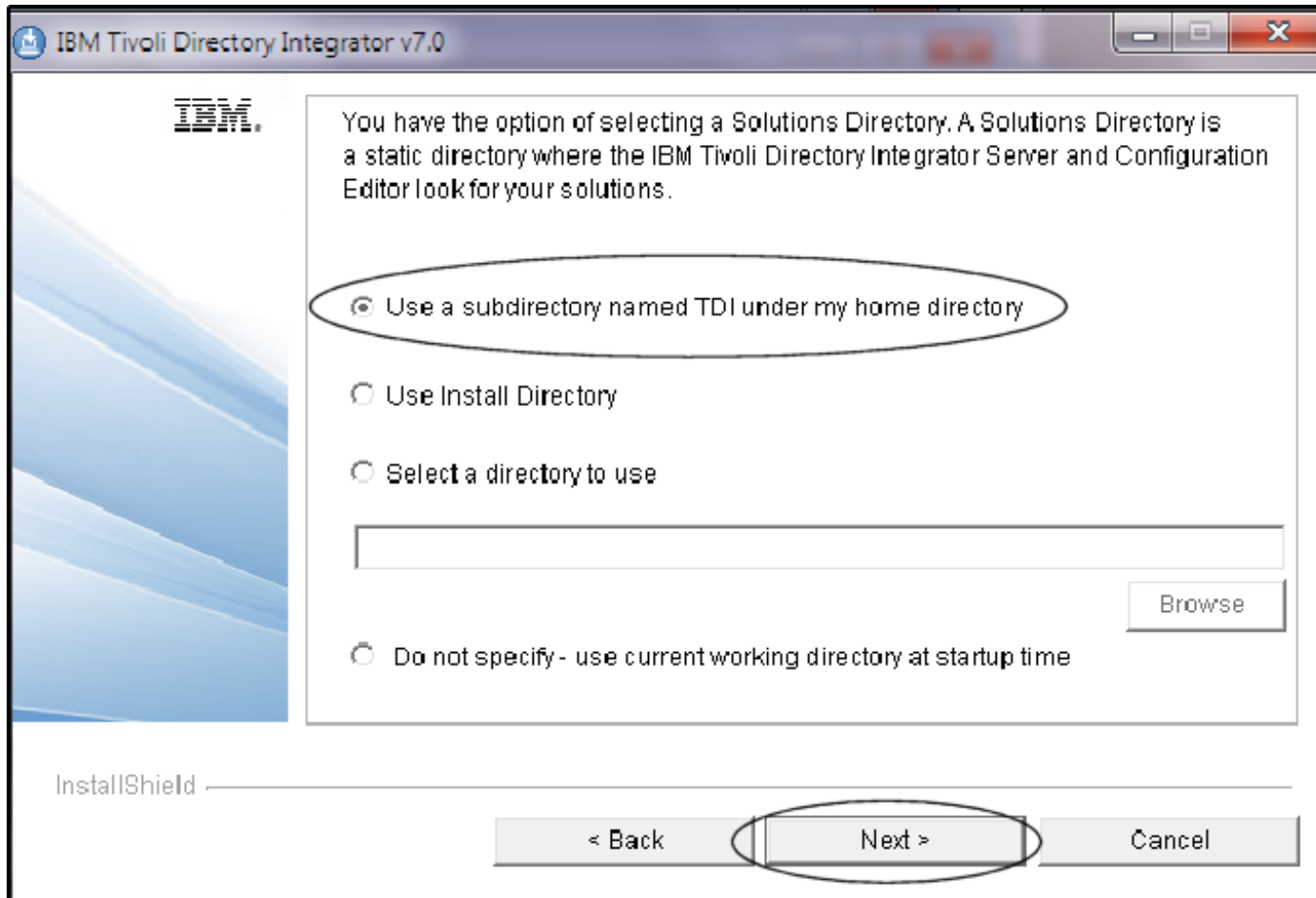
This is my default directory when installing onto a Microsoft Windows 7 platform on my laptop

# Installing everything (disk space is cheap!)



A true server installation would leave out Javadocs, examples, and IEHS. I'm installing here so that I have access to everything locally.

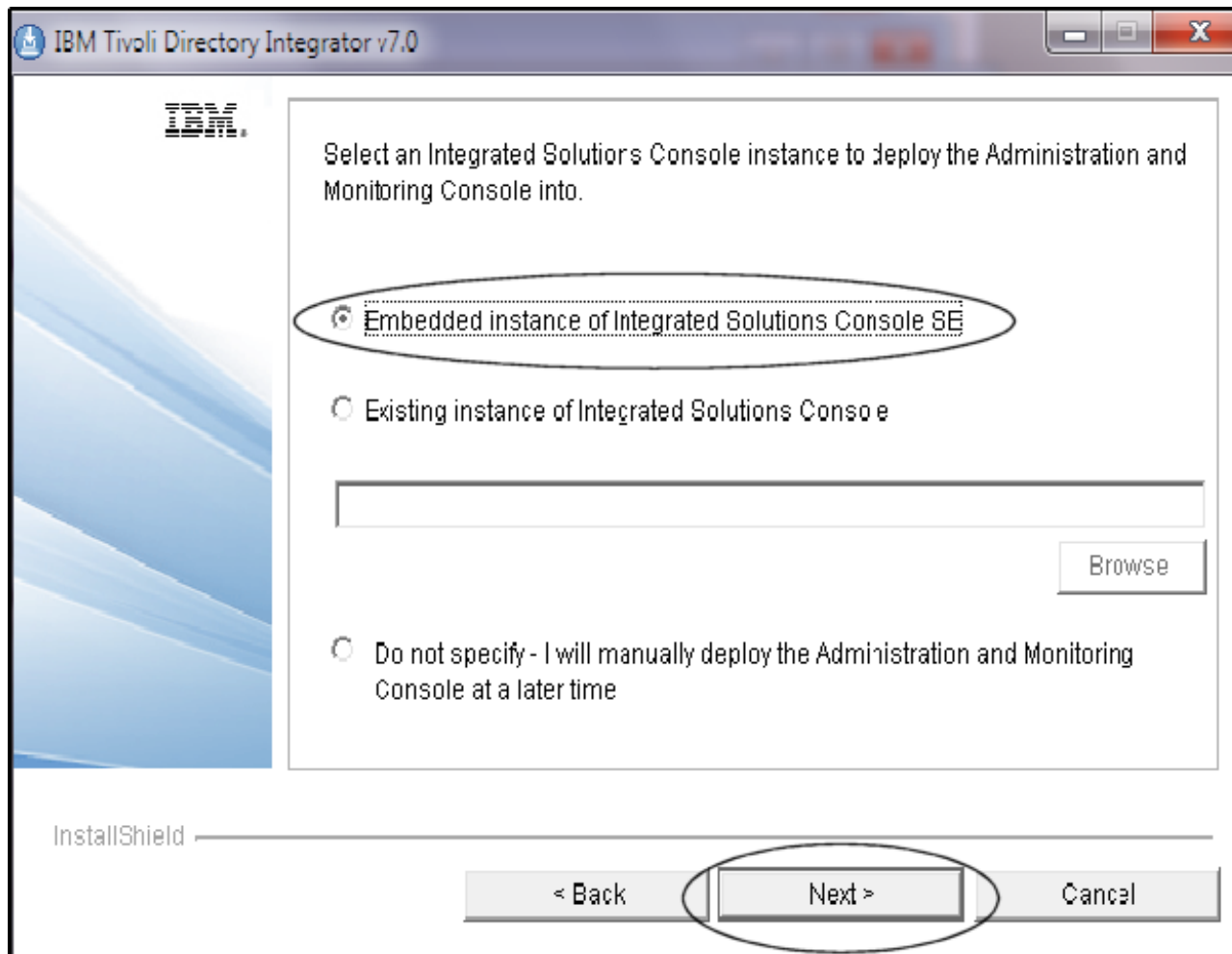
# Choose your solutions directory...



You will have a chance to change this when you start up TDI.  
Your Assembly Lines and jobs will be stored in this directory.



# Select the embedded console...



Again, choosing this for local installation and no existing ISC anywhere.

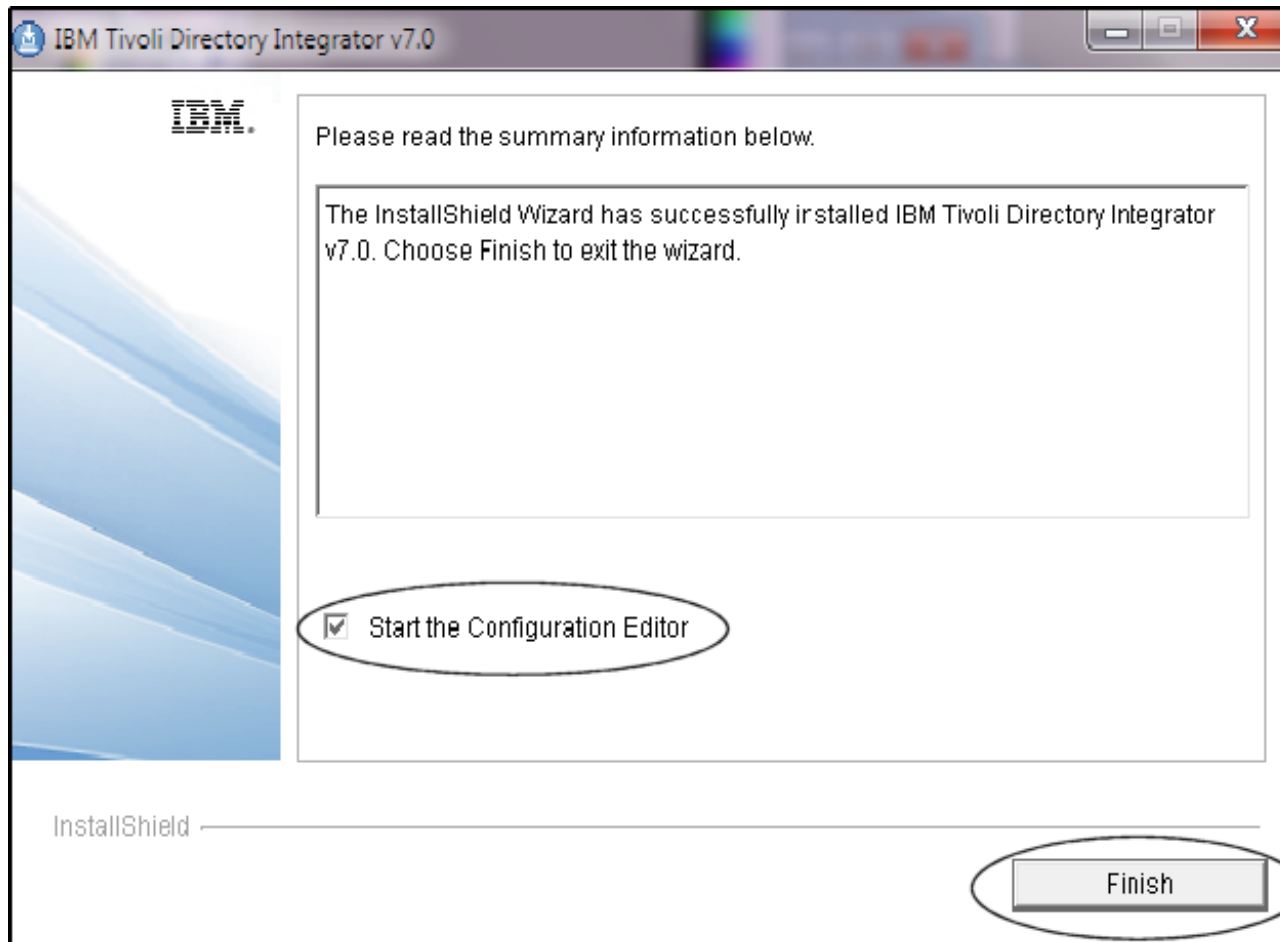
# Taking the default ports for TDI...

The screenshot shows the 'IBM Tivoli Directory Integrator v7.0' installation window. The main content area is titled 'Enter the port values to be used by Integrated Solutions Console SE.' and contains three input fields:

- HTTP port: 13100
- HTTPS port: 13101
- Action Manager API port: 13104

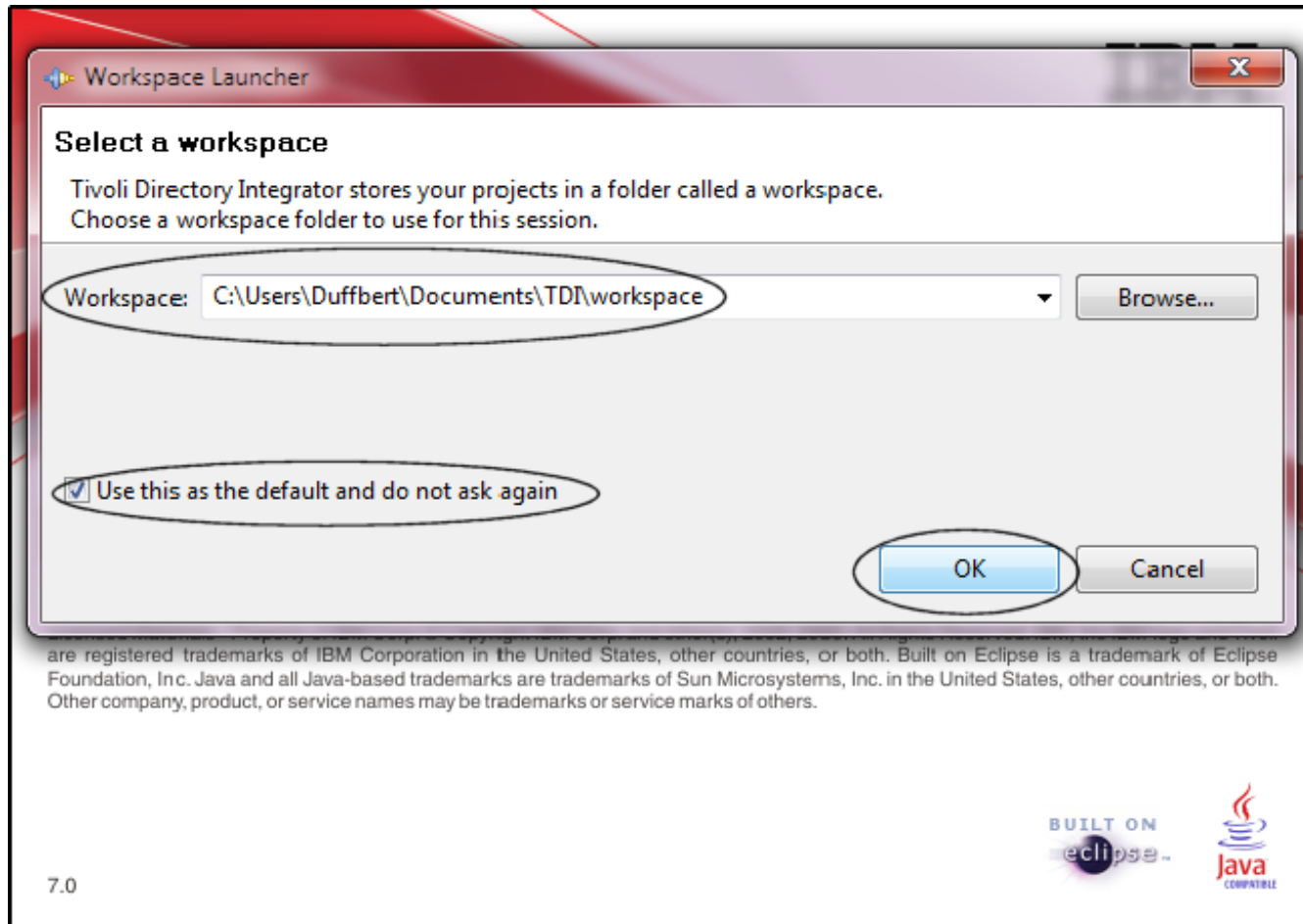
The input fields for 'HTTP port', 'HTTPS port', and 'Action Manager API port' are circled in black. At the bottom of the window, the 'Next >' button is also circled in black. The 'InstallShield' logo is visible in the bottom left corner, and the navigation buttons '< Back', 'Next >', and 'Cancel' are at the bottom center.

# If all goes well, you're good to go!



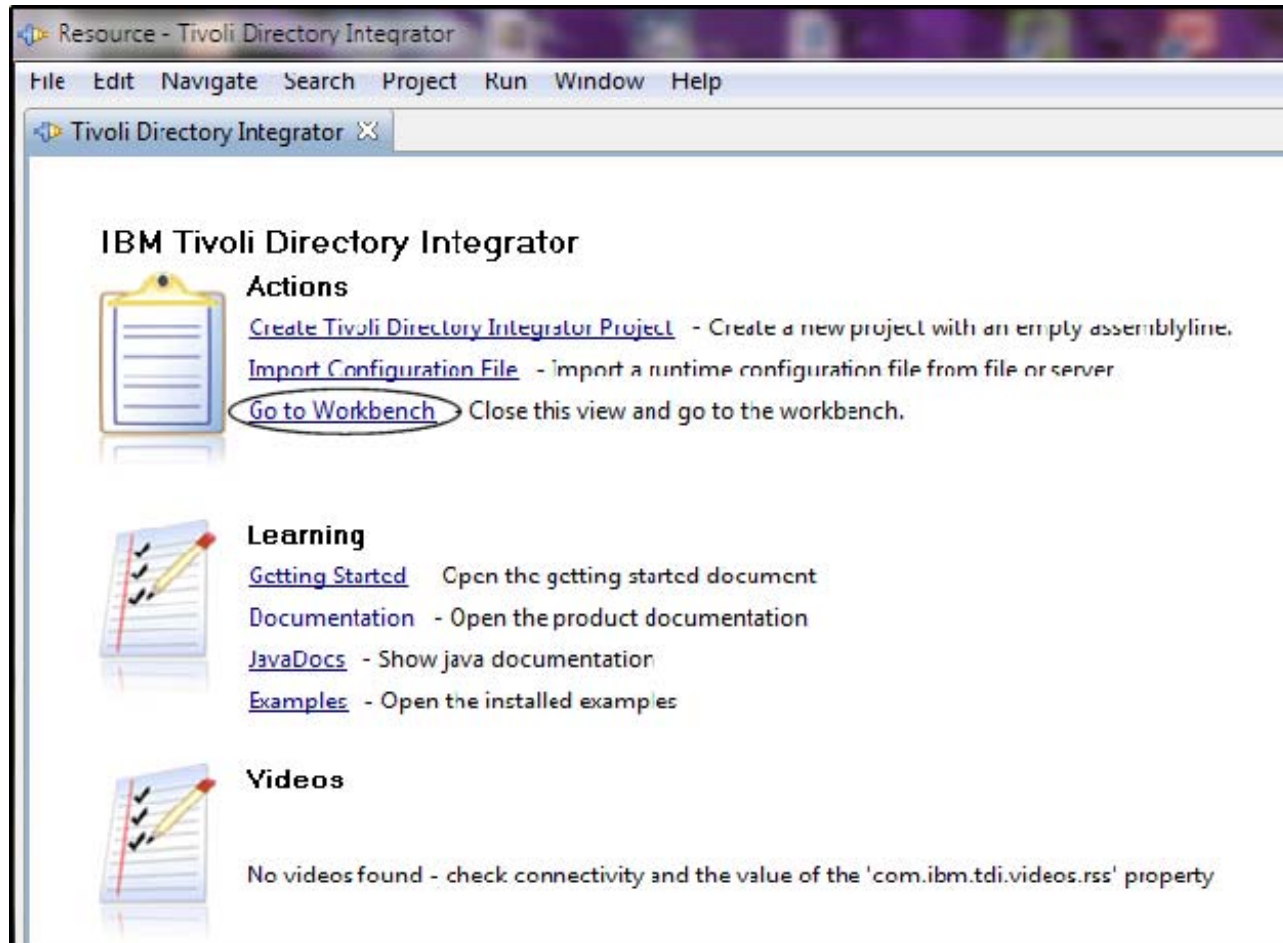
Since we're going directly into testing to see if TDI starts up, the Start the Configuration Editor option can remain selected.

# Starting up TDI and selecting my solution directory



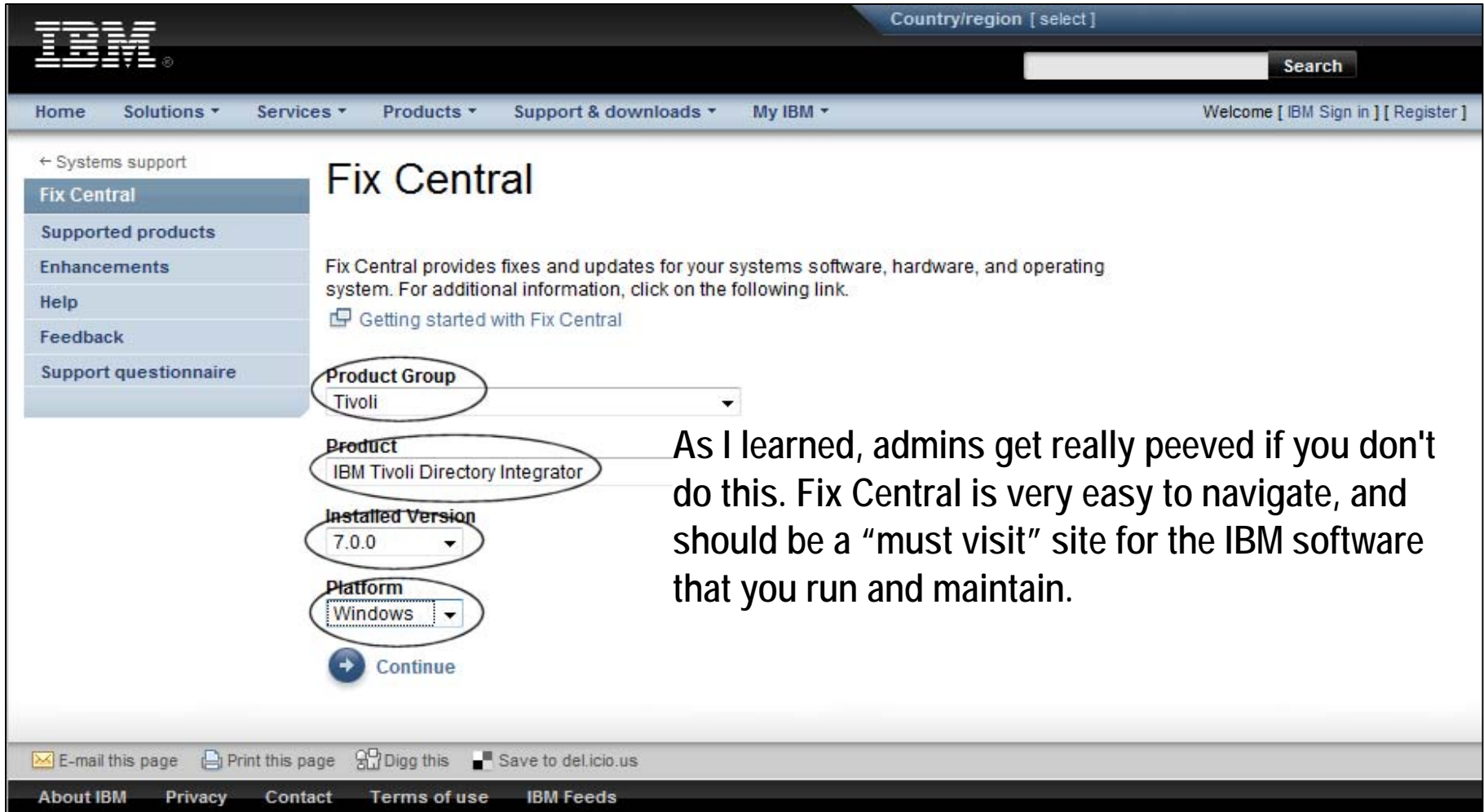
This is where you can change your solution directory, aka the "Workspace". This can be useful if you want to have separate workspaces for different customers or jobs.

# And we're there!



If all goes well, this is the screen we'll first see. Once you select the Go to Workbench option, you'll open up to that screen when you start up in subsequent sessions.

# Job #1 after install... install fix packs!



The screenshot shows the IBM Fix Central website interface. The top navigation bar includes the IBM logo, a "Country/region [ select ]" dropdown, and a "Search" button. Below the navigation bar, there are links for "Home", "Solutions", "Services", "Products", "Support & downloads", and "My IBM". A "Welcome [ IBM Sign in ] [ Register ]" message is visible in the top right.

The main content area is titled "Fix Central" and contains the following text: "Fix Central provides fixes and updates for your systems software, hardware, and operating system. For additional information, click on the following link." Below this text is a link labeled "Getting started with Fix Central".

On the left side, there is a sidebar menu with the following items: "Systems support", "Fix Central", "Supported products", "Enhancements", "Help", "Feedback", and "Support questionnaire".

The main content area features four dropdown menus, each circled in red:

- Product Group**: Tivoli
- Product**: IBM Tivoli Directory Integrator
- Installed Version**: 7.0.0
- Platform**: Windows

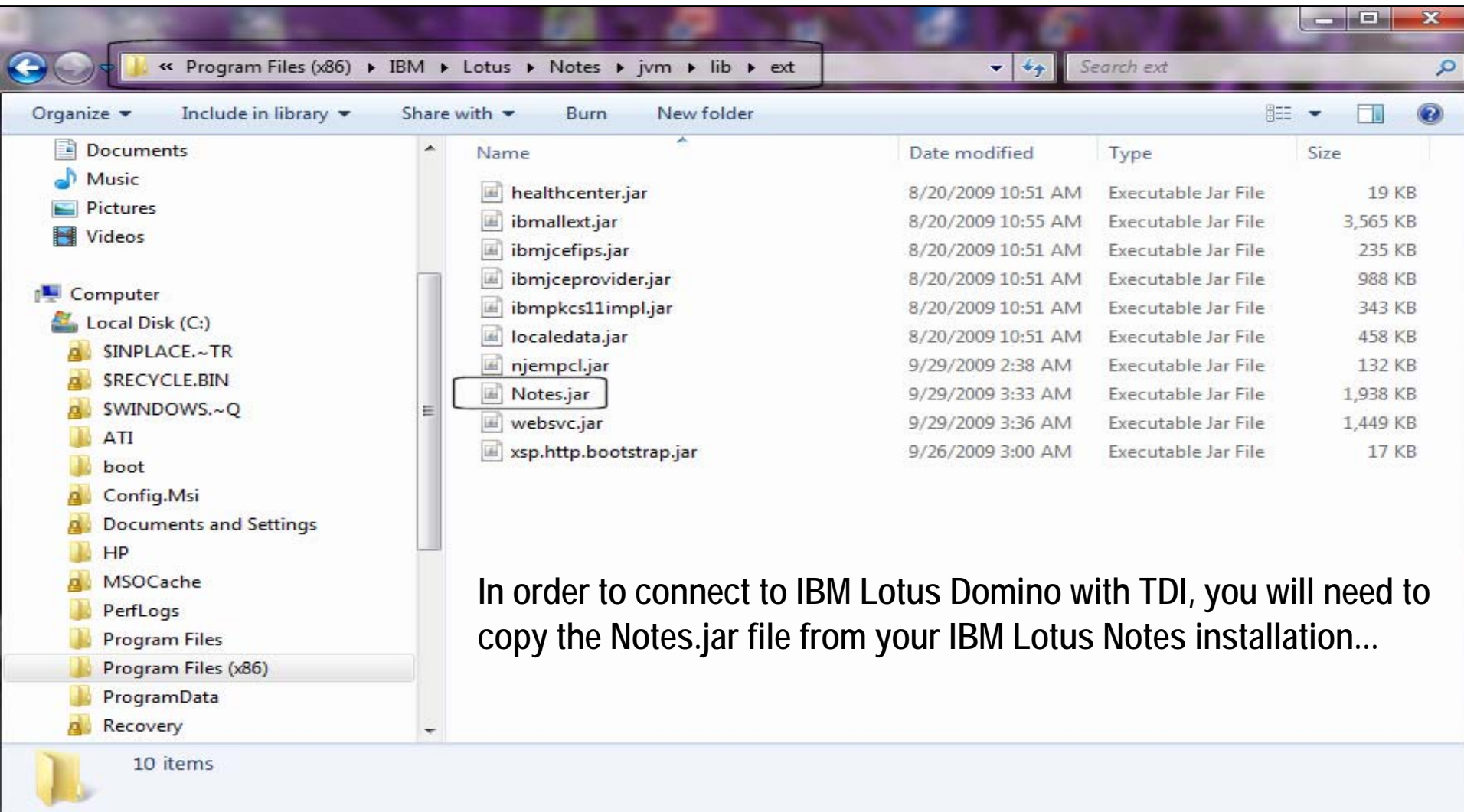
Below the dropdown menus is a "Continue" button with a right-pointing arrow.

At the bottom of the page, there are links for "E-mail this page", "Print this page", "Digg this", and "Save to del.icio.us". The footer contains links for "About IBM", "Privacy", "Contact", "Terms of use", and "IBM Feeds".

As I learned, admins get really peeved if you don't do this. Fix Central is very easy to navigate, and should be a "must visit" site for the IBM software that you run and maintain.

<http://www.ibm.com/support/fixcentral/>

# And to connect to Domino...



The screenshot shows a Windows Explorer window with the address bar set to `Program Files (x86) > IBM > Lotus > Notes > jvm > lib > ext`. The left sidebar shows the navigation pane with 'Program Files (x86)' selected. The main pane displays a list of files in a table format:

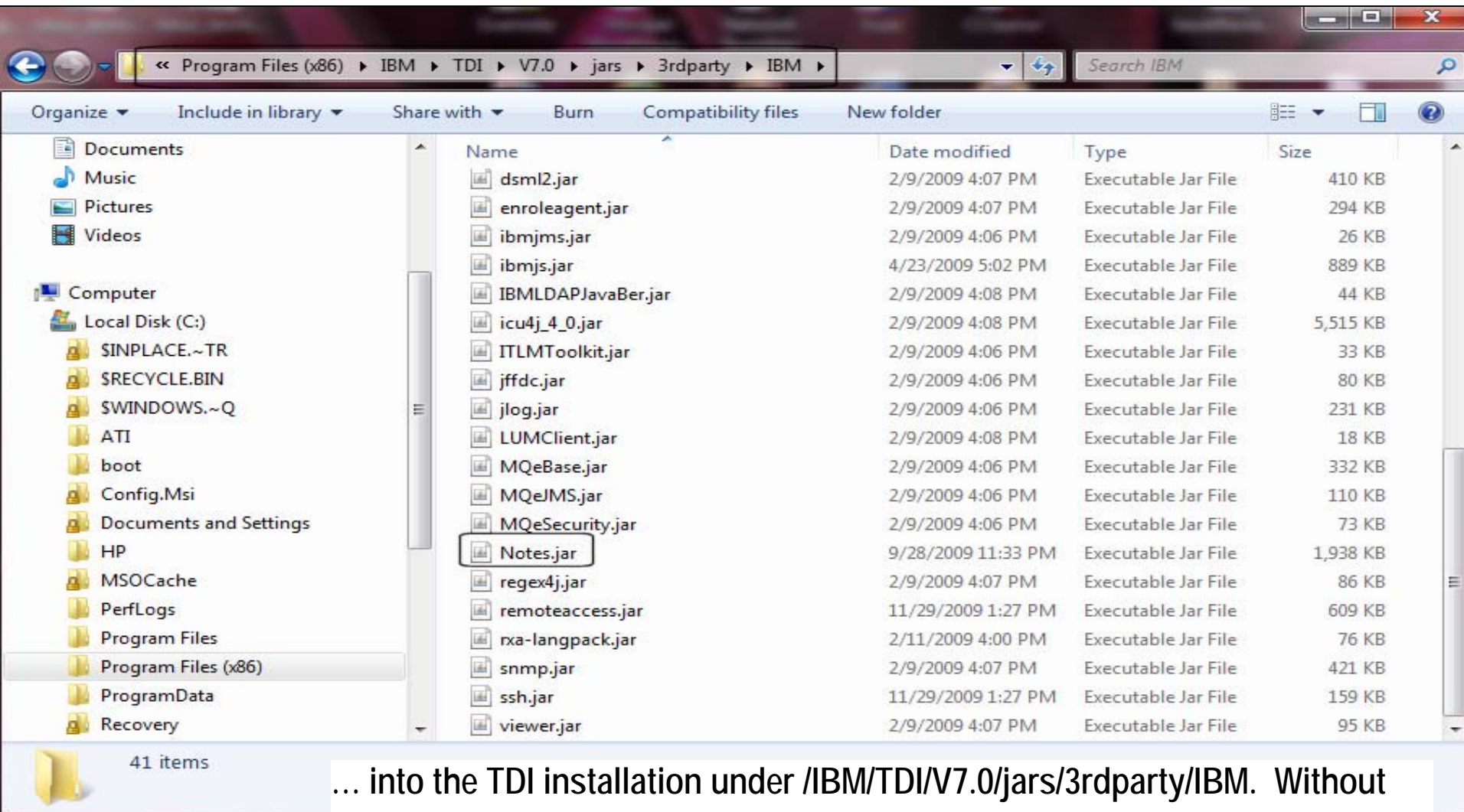
Name	Date modified	Type	Size
healthcenter.jar	8/20/2009 10:51 AM	Executable Jar File	19 KB
ibmallext.jar	8/20/2009 10:55 AM	Executable Jar File	3,565 KB
ibmjcefips.jar	8/20/2009 10:51 AM	Executable Jar File	235 KB
ibmjceprovider.jar	8/20/2009 10:51 AM	Executable Jar File	988 KB
ibmpkcs11impl.jar	8/20/2009 10:51 AM	Executable Jar File	343 KB
localedata.jar	8/20/2009 10:51 AM	Executable Jar File	458 KB
njempl.jar	9/29/2009 2:38 AM	Executable Jar File	132 KB
Notes.jar	9/29/2009 3:33 AM	Executable Jar File	1,938 KB
websvc.jar	9/29/2009 3:36 AM	Executable Jar File	1,449 KB
xsp.http.bootstrap.jar	9/26/2009 3:00 AM	Executable Jar File	17 KB

The file `Notes.jar` is highlighted with a mouse cursor. The status bar at the bottom indicates '10 items'.

In order to connect to IBM Lotus Domino with TDI, you will need to copy the Notes.jar file from your IBM Lotus Notes installation...



# Into the TDI directory...



The screenshot shows a Windows Explorer window with the following address bar path: <code><< Program Files (x86) >> IBM >> TDI >> V7.0 >> jars >> 3rdparty >> IBM >></code>. The left sidebar shows the navigation pane with 'Program Files (x86)' selected. The main pane displays a list of files with columns for Name, Date modified, Type, and Size. The file 'Notes.jar' is highlighted with a red box.

Name	Date modified	Type	Size
dsml2.jar	2/9/2009 4:07 PM	Executable Jar File	410 KB
enroleagent.jar	2/9/2009 4:07 PM	Executable Jar File	294 KB
ibmjms.jar	2/9/2009 4:06 PM	Executable Jar File	26 KB
ibmjms.jar	4/23/2009 5:02 PM	Executable Jar File	889 KB
IBMLDAPJavaBer.jar	2/9/2009 4:08 PM	Executable Jar File	44 KB
icu4j_4_0.jar	2/9/2009 4:08 PM	Executable Jar File	5,515 KB
ITLMTToolkit.jar	2/9/2009 4:06 PM	Executable Jar File	33 KB
jffdc.jar	2/9/2009 4:06 PM	Executable Jar File	80 KB
jlog.jar	2/9/2009 4:06 PM	Executable Jar File	231 KB
LUMClient.jar	2/9/2009 4:08 PM	Executable Jar File	18 KB
MQeBase.jar	2/9/2009 4:06 PM	Executable Jar File	332 KB
MQeJMS.jar	2/9/2009 4:06 PM	Executable Jar File	110 KB
MQeSecurity.jar	2/9/2009 4:06 PM	Executable Jar File	73 KB
Notes.jar	9/28/2009 11:33 PM	Executable Jar File	1,938 KB
regex4j.jar	2/9/2009 4:07 PM	Executable Jar File	86 KB
remoteaccess.jar	11/29/2009 1:27 PM	Executable Jar File	609 KB
rx-langpack.jar	2/11/2009 4:00 PM	Executable Jar File	76 KB
snmp.jar	2/9/2009 4:07 PM	Executable Jar File	421 KB
ssh.jar	11/29/2009 1:27 PM	Executable Jar File	159 KB
viewer.jar	2/9/2009 4:07 PM	Executable Jar File	95 KB

... into the TDI installation under `/IBM/TDI/V7.0/jars/3rdparty/IBM`. Without this, you'll get Java errors when trying to connect.



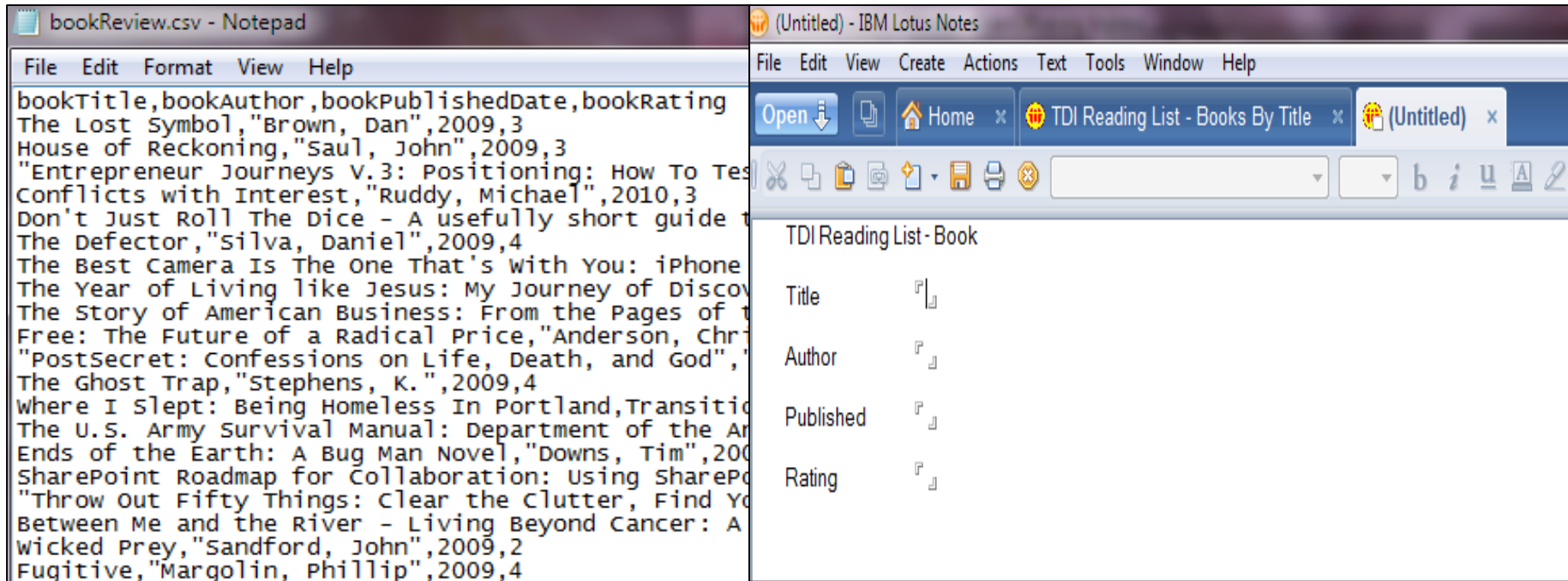
# Example – CSV to Notes

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- In this scenario, we're going to demonstrate the creation of an Assembly Line that imports data from a CSV file into a Notes database

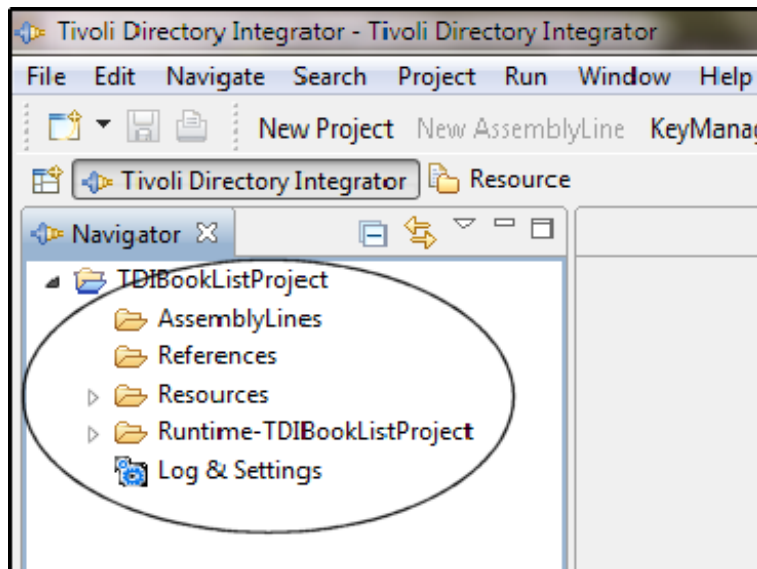
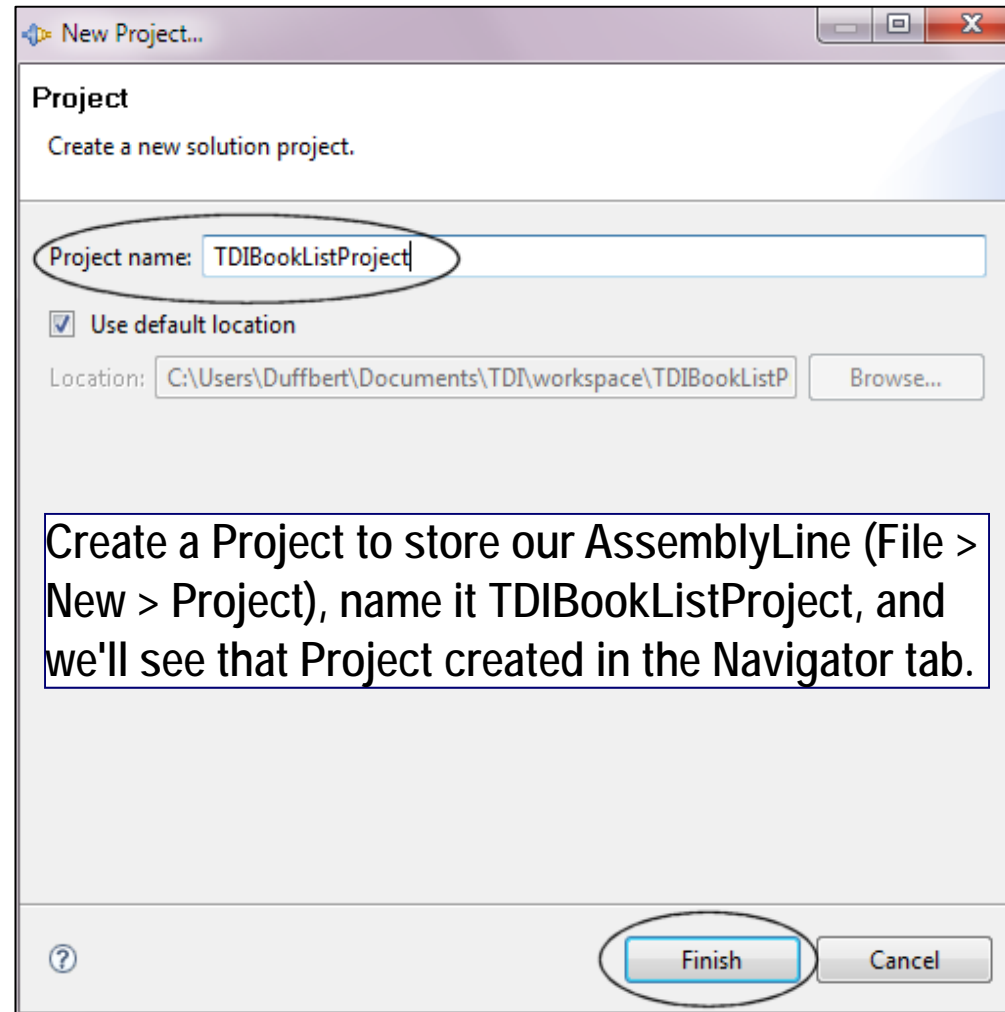
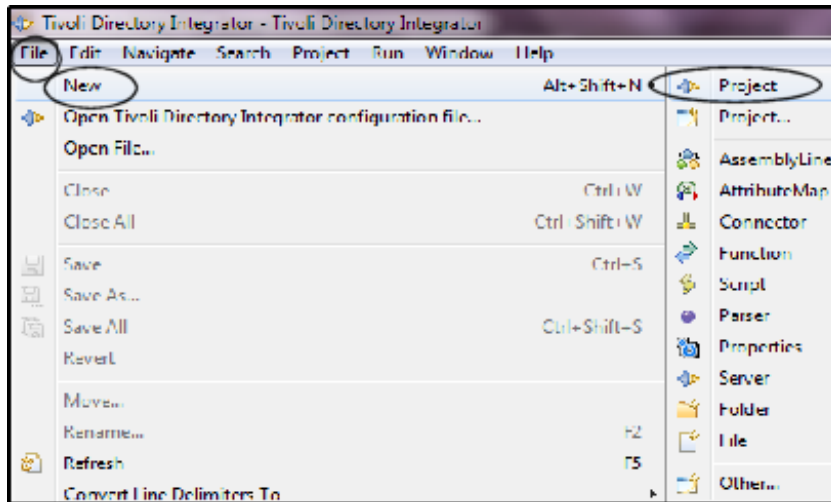
# To begin...

You have a comma-separated values (.csv) file with data that you want to get into a Notes database.



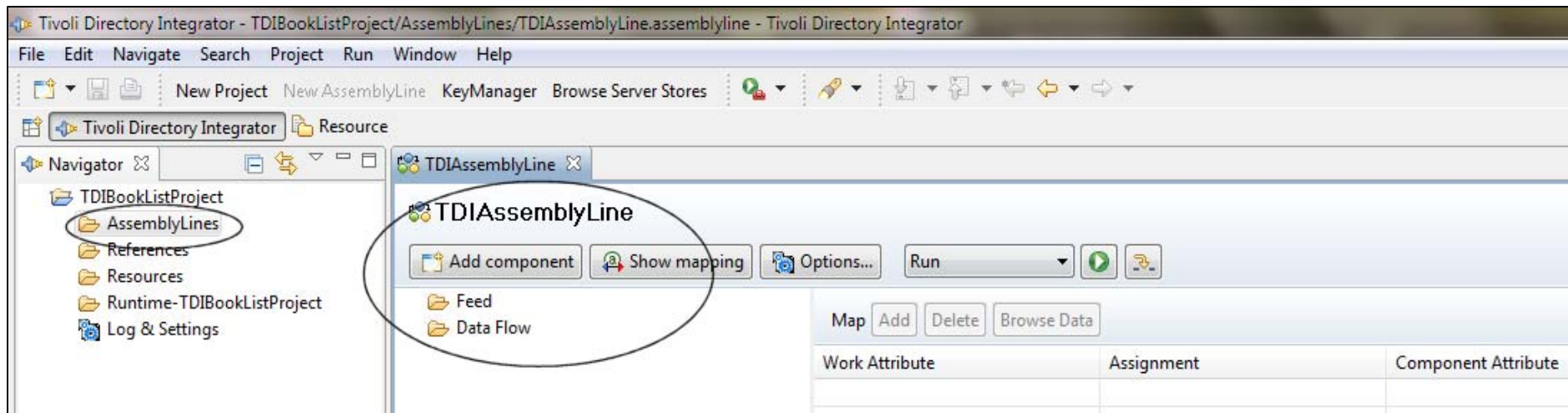
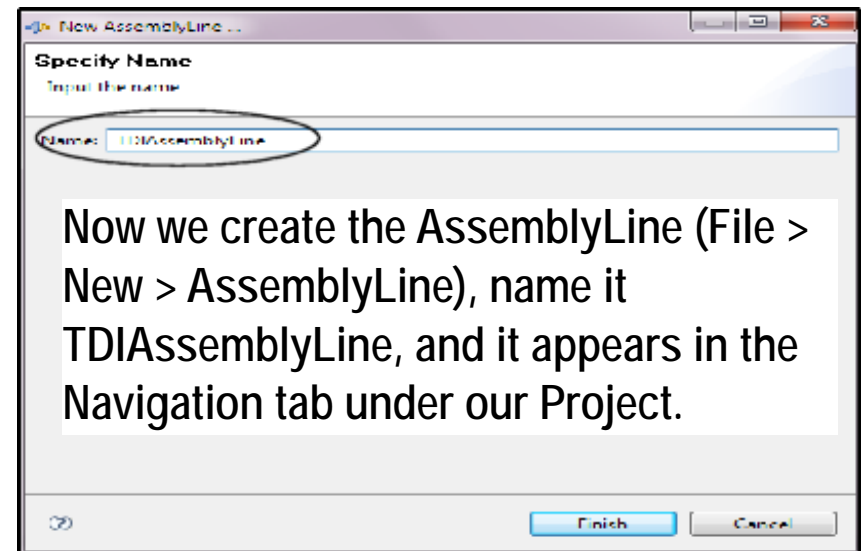
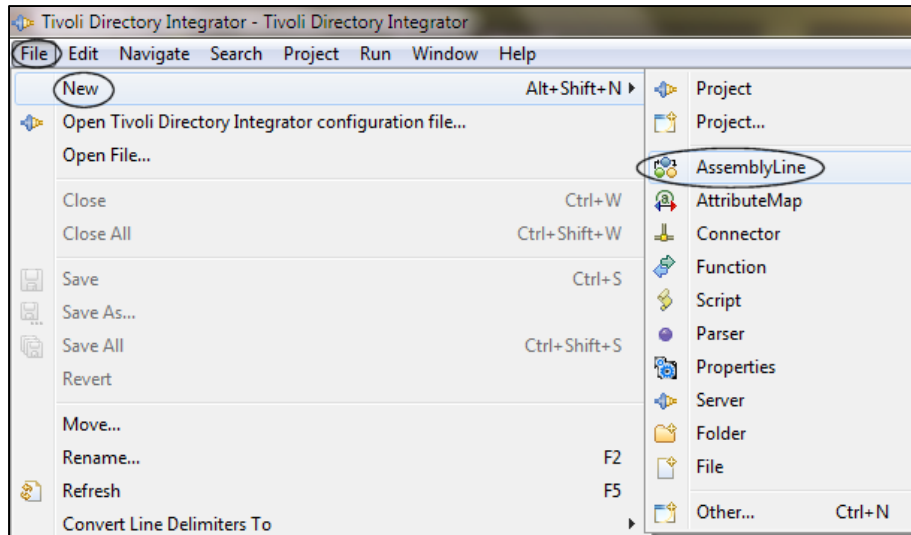
Truly nothing fancy here... four fields in a .csv file, four fields in the Notes database.

# Creating the Project for our job...



Create a Project to store our AssemblyLine (File > New > Project), name it TDIBookListProject, and we'll see that Project created in the Navigator tab.

# Creating the AssemblyLine...

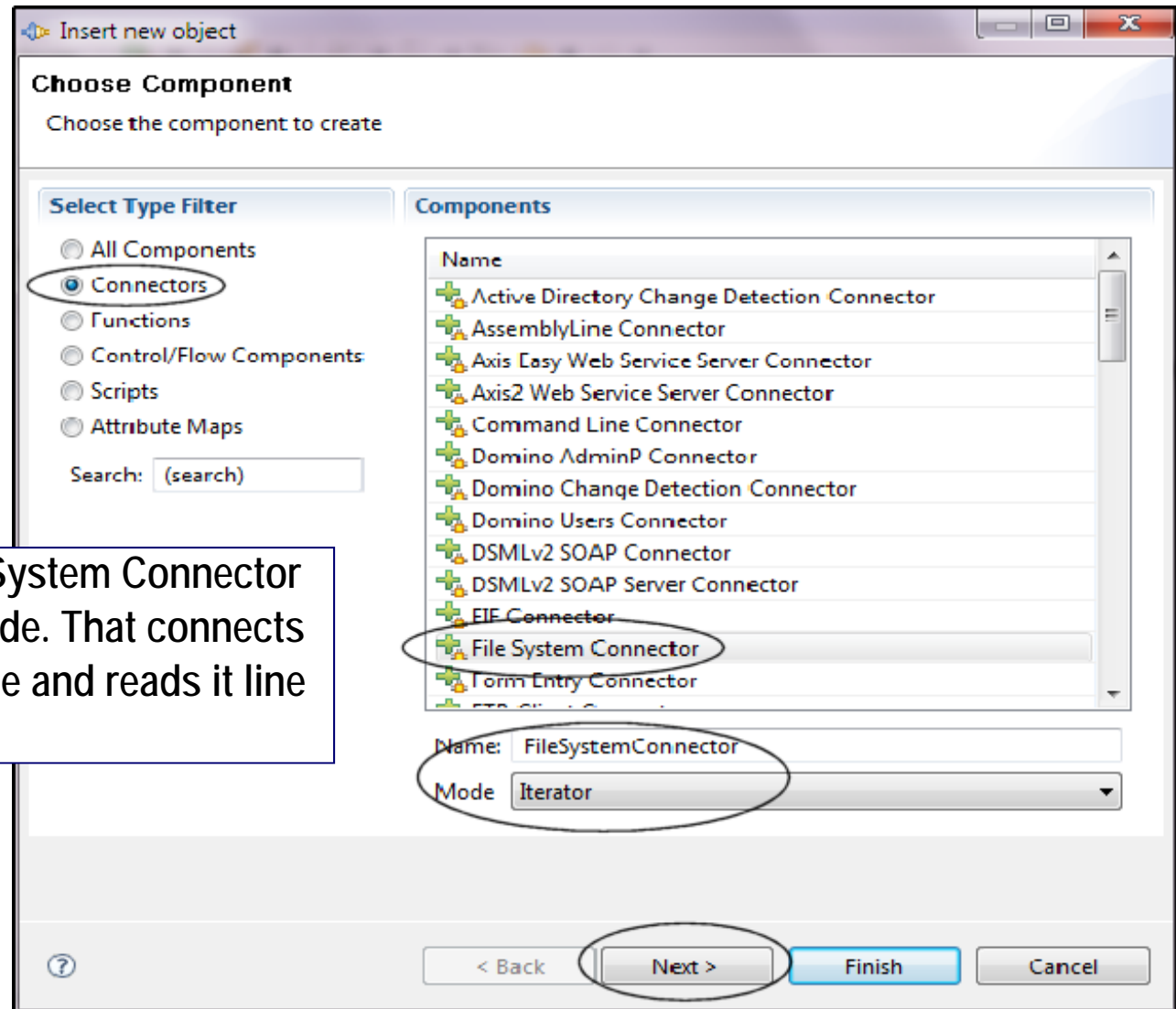


# First job is to build the Feed Connector...

The screenshot shows the Tivoli Directory Integrator interface. On the left, the Navigator pane displays the project structure: TDIBookListProject, AssemblyLines, References, Resources, Runtime-TDIBookListProject, and Log & Settings. The main workspace shows the TDIAssemblyLine project with a sub-structure containing 'Feed' and 'Data Flow'. The 'Add component' button is circled in red. An 'Insert new object' dialog box is open, titled 'Choose Component'. It has a 'Select Type Filter' section with radio buttons for 'All Components', 'Connectors', 'Functions', 'Control/Flow Components', 'Scripts', and 'Attribute Maps'. The 'Components' list includes: Active Directory Change Detection Connector, AssemblyLine Connector, AssemblyLine Function Component, Attribute Map, Axis Easy Web Service Server Connector, Axis EasyInvoke Soap Web Service Function Component, Axis Java-to-Soap Function Component, Axis Soap-to-Java Function Component, Axis2 Web Service Client Function Component, Axis2 Web Service Server Connector, Case, Castor Java-to-XML Function Component, and Castor XML-to-Java Function Component. There are also input fields for 'Name' and 'Mode'.

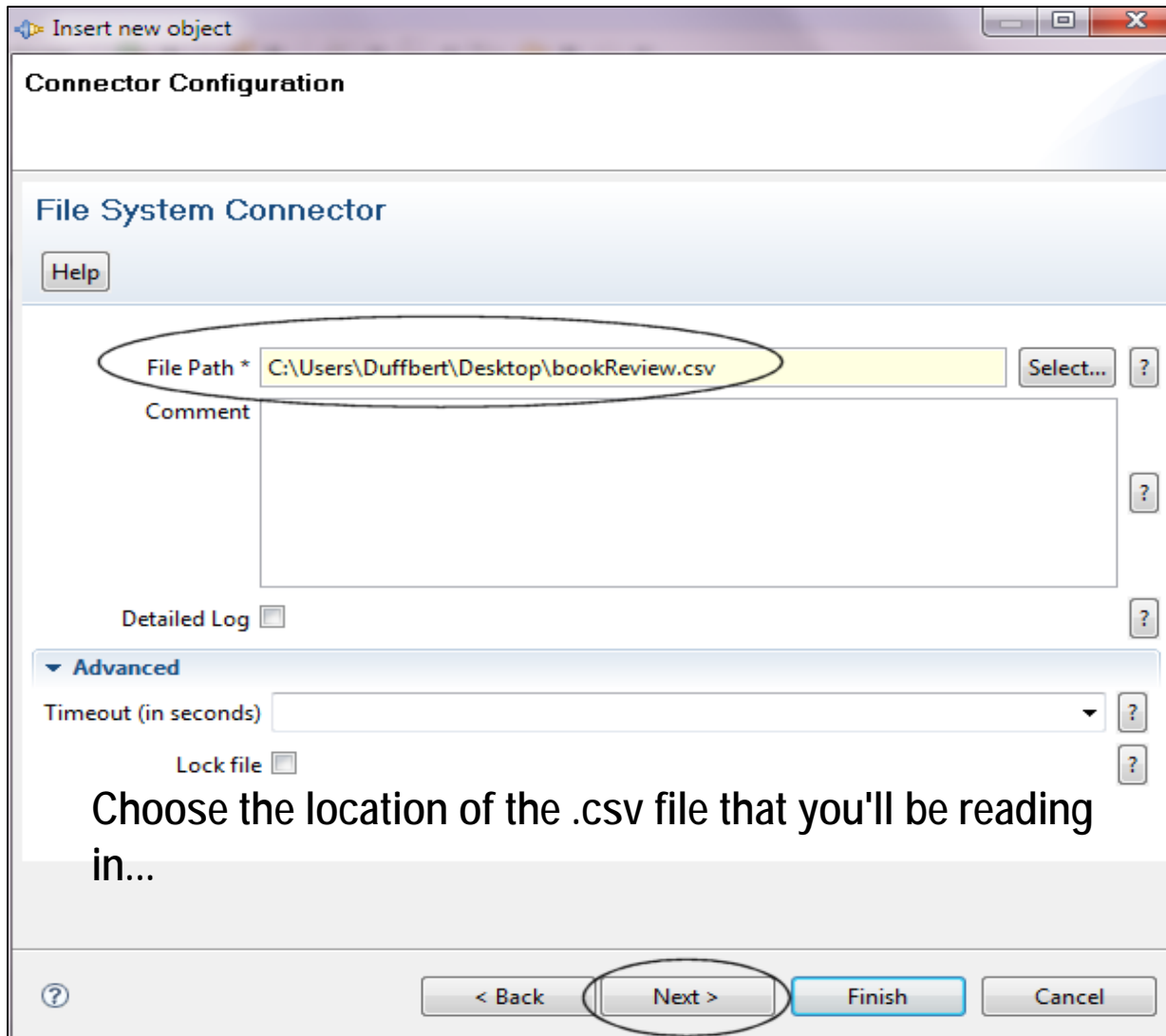
In our AssemblyLine, we'll create our first feed component that will allow us to read our .csv file. Click the Add component button...

# Choose the File System Connector...

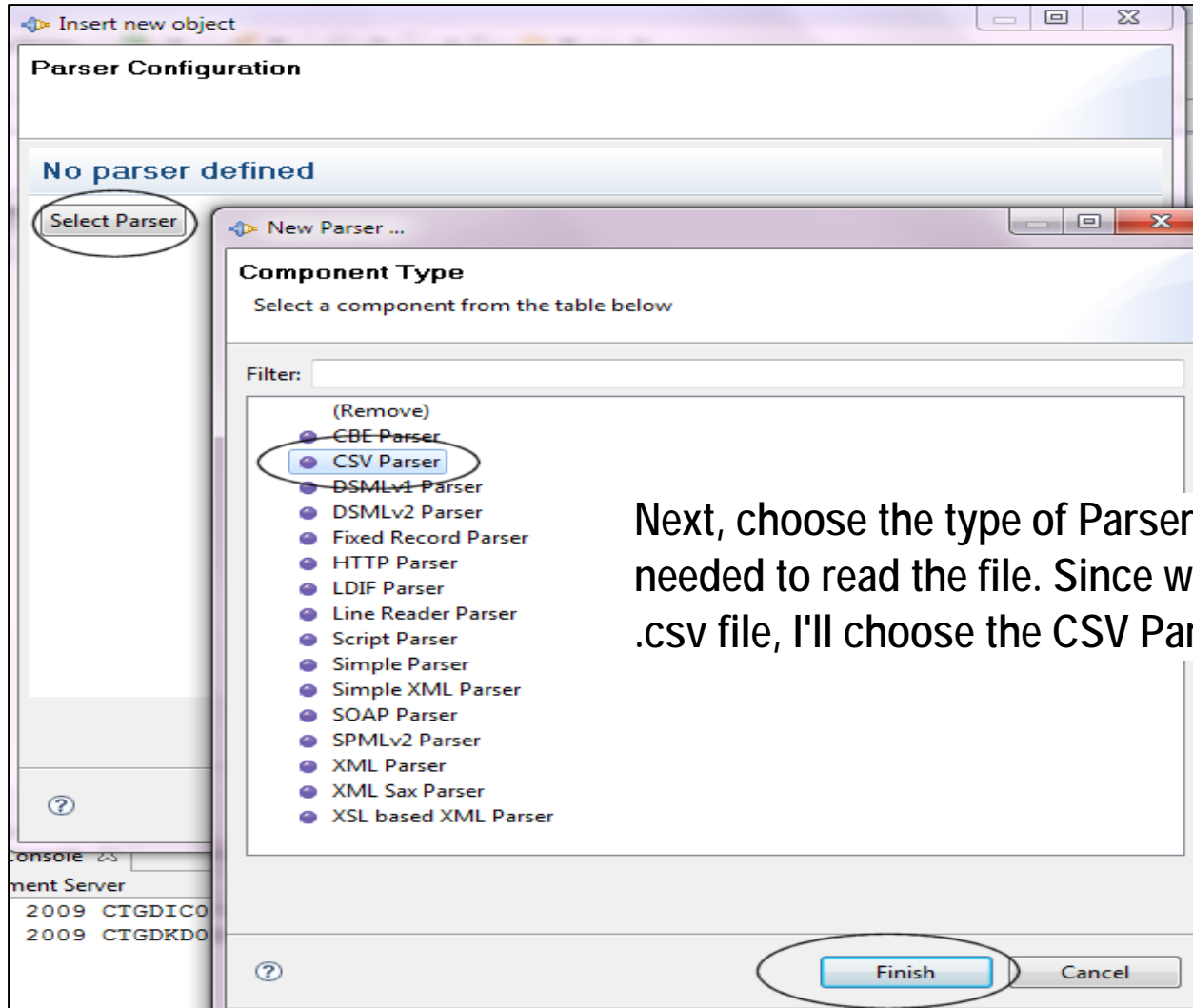


Choose the File System Connector in the Iterator mode. That connects to any external file and reads it line by line.

# Get the actual location of the file...



# The next option selects the parser...



Next, choose the type of Parser that will be needed to read the file. Since we're reading a .csv file, I'll choose the CSV Parser...



# We have to make sure the parser is configured...

Parser Configuration

CSV Parser

Select Parser Help

Field Separator \* ,

Comment

Detailed Log

Advanced

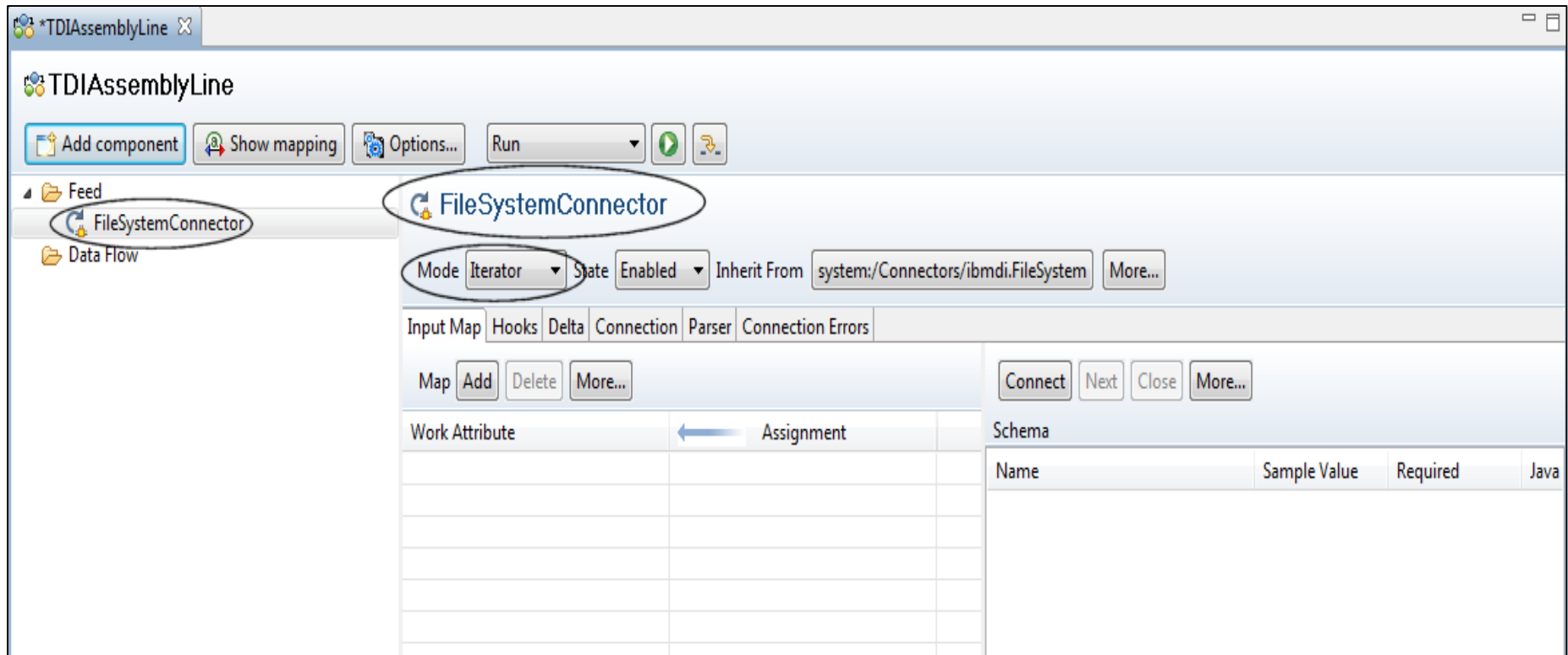
Field Names

Field names, in the order they

< Back Next > Finish Cancel

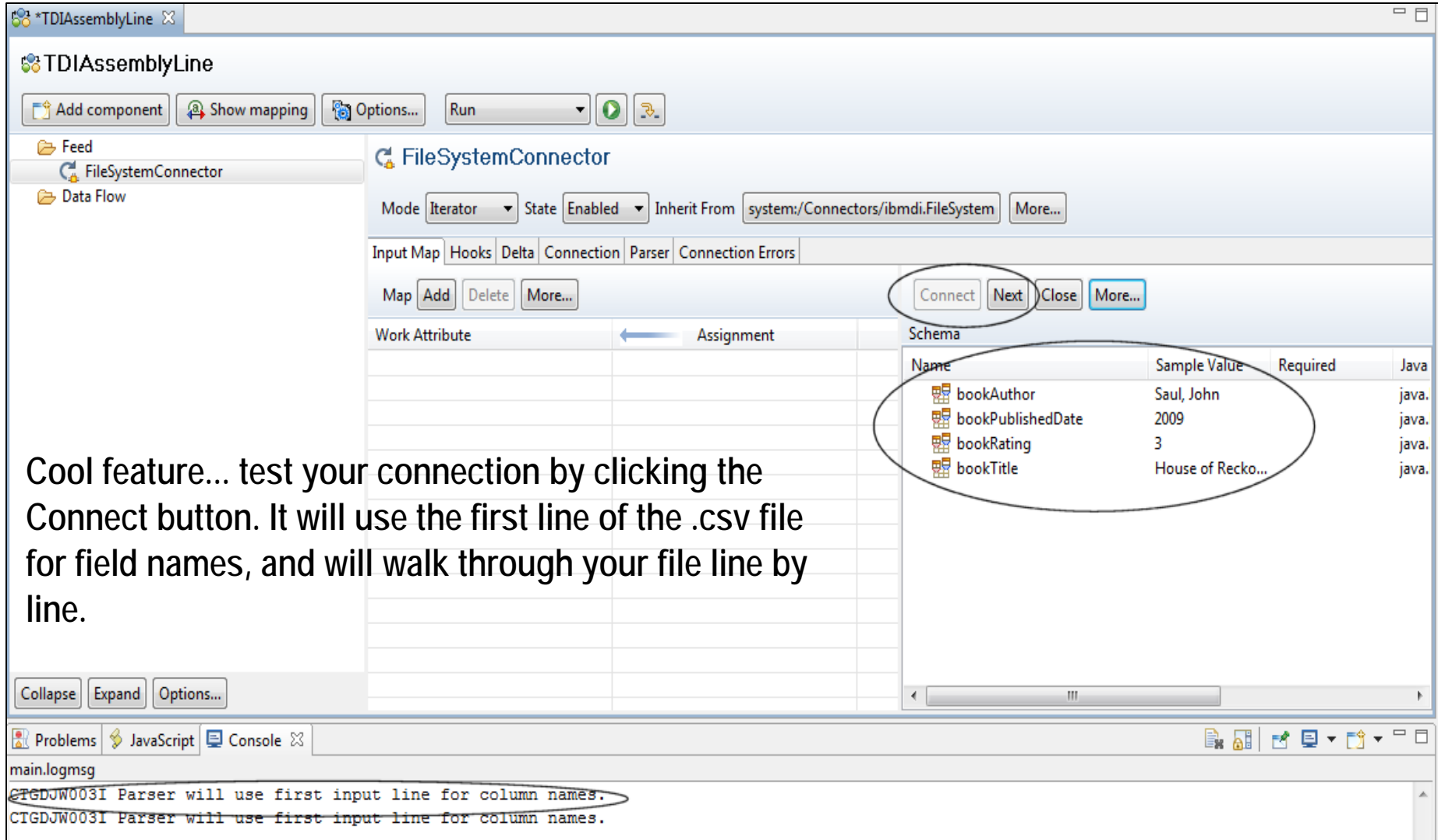
You may have to configure the parser. In this case, I needed to change the Field Separator from ; to , to make it conform to my file.

# The Feed Connector is now configured...



The File System Connector is now complete, set to iterate through the file and parsing the lines via the comma separator.

# Test your connection to the file...

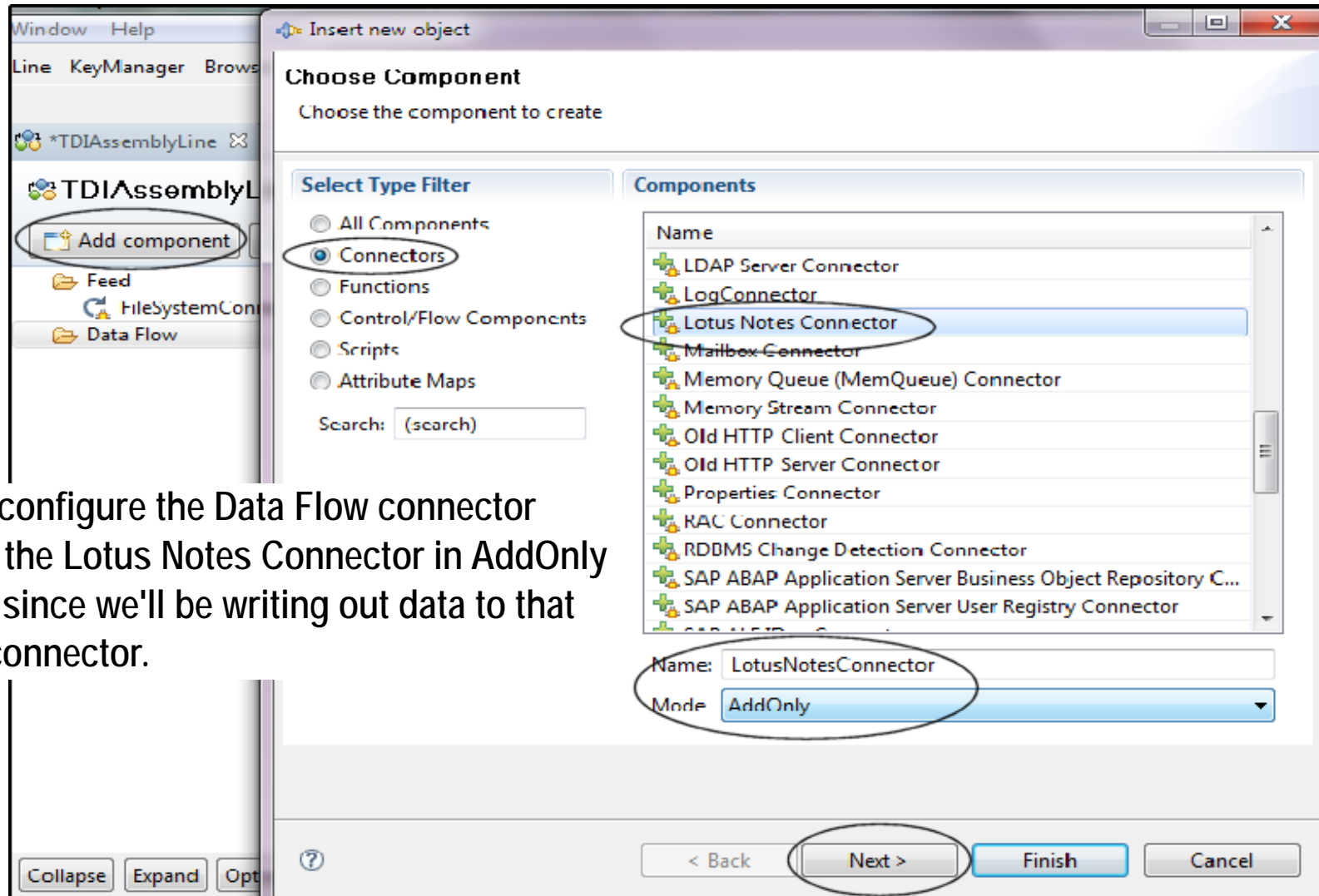


Cool feature... test your connection by clicking the Connect button. It will use the first line of the .csv file for field names, and will walk through your file line by line.

Name	Sample Value	Required	Java
bookAuthor	Saul, John		java.
bookPublishedDate	2009		java.
bookRating	3		java.
bookTitle	House of Recko...		java.

```
main.logmsg
CTGDJW003I Parser will use first input line for column names.
CTGDJW003I Parser will use first input line for column names.
```

# Now, we'll configure the Data Flow Connector...



Next, configure the Data Flow connector using the Lotus Notes Connector in AddOnly Mode since we'll be writing out data to that data connector.

# Configuration of the Lotus Notes Connector...

The screenshot shows a window titled "Insert new object" with a sub-dialog titled "Connector Configuration". Inside, there is a section for "Lotus Notes Connector" with a "Help" button. The configuration fields are as follows:

- Domino Server IP Address \* (empty text box)
- Domino Server Name (empty text box)
- HTTP port 80 (text box)
- Session Type \* LocalClient (dropdown menu, circled)
- Username (empty text box)
- Password \* (masked with asterisks, circled)
- Database \* TDIReadingList.nsf (text box with a "Select..." button, circled)
- Comment (empty text box)

For this example, we'll use a LocalClient session, enter the password of our Notes ID, and choose the database we'll be connecting to...

The bottom section of the dialog box contains a question mark icon on the left and four buttons: "< Back", "Next >", "Finish" (circled), and "Cancel".

# And if that connection works...

The screenshot displays the IBM Tivoli Directory Integrator (TDI) interface. The main window shows the configuration for a **LotusNotesConnector** component. The component is set to **Mode: AddOnly**, **State: Enabled**, and **Inherit From: system:/Connectors/ibmdi.Notes**. The **Output Map** tab is active, showing a table with columns for **Assignment**, **Component Attribute**, and **Schema**. The **Schema** table has columns for **Name**, **Sample Value**, **Required**, and **Java**.

At the bottom of the interface, the **Problems** box shows the following log message:

```
main.logmsg
CTGDIV002I Opening Session to Domino Server: Session Type='LocalClient', Hostname='{1}', User ID='{2}', Requested IIOP/SSL='false'.
CTGDIV049I Session to Domino Server is created.
CTGDIV005I Successfully connected to Domino Server: Name='', Version='Release 8.5.1|September 28, 2009', Platform='Windows/32'.
```

The log message **CTGDIV005I Successfully connected to Domino Server: Name='', Version='Release 8.5.1|September 28, 2009', Platform='Windows/32'.** is circled in red, indicating a successful connection to the Domino Server.

And if our Lotus Notes Connector is configured correctly, we should see a message in the Problems box that says we connected to the Domino Server, which means our local client.

# Get the fields from the File Connector...

Back in our File Connector, we'll click the Add button under Mappings to select the fields we'll be reading...

**File System Connector Configuration:**

- Mode: Iterator
- State: Enabled
- Inherit From: system:/Connectors/ibmdi.FileSystem
- Buttons: Map, Add, Delete, More...

**Add attribute Dialog:**

- Select Attribute list:
  - ^ (Map all Attributes)
  - bookAuthor
  - bookPublishedDate
  - bookRating
  - bookTitle

**Schema Table:**

Name	Sample Value
bookAuthor	Brown, Dan
bookPublishedDate	2009
bookRating	3
bookTitle	The Lost Symbol

**Console Log (main.logmsg):**

```
CTGDIV002I Opening Session to Domino Server: S
CTGDIV049I Session to Domino Server is created
CTGDIV005T Successfully connected to Domino Ser
CTGDJW000I Parser will use first input line fo
```

# And here's how the configuration looks...

The screenshot shows the Tivoli Directory Integrator interface. The main window is titled "Tivoli Directory Integrator - TDIBookListProject/AssemblyLines/TDIAssemblyLine.assemblyline". The "Navigator" on the left shows the project structure. The "TDIAssemblyLine" configuration page is active, showing the "FileSystemConnector" component. The "Input Map" tab is selected, displaying a table of work attributes and their assignments. A black oval highlights the "Work Attribute" and "Assignment" columns. The "Schema" table on the right shows the data types and sample values for the attributes.

And when finished, it should look like this on the File System Connector page...

Work Attribute	Assignment
bookAuthor	conn.bookAuthor
bookPublishedDate	conn.bookPublishedDate
bookRating	conn.bookRating
bookTitle	conn.bookTitle

Name	Sample Value	Required
bookAuthor	Brown, Dan	
bookPublishedDate	2009	
bookRating	3	
bookTitle	The Lost Symbol	



# Select the fields from the Notes Connection...

The screenshot shows the TDIAssemblyLine interface. In the left-hand tree view, the 'Data Flow' folder is expanded, and the 'LotusNotesConnector' is selected and circled. In the main workspace, the 'LotusNotesConnector' is configured with 'Mode' set to 'AddOnly'. Below the connector, the 'Map' button is circled. An 'Add attribute' dialog box is open in the foreground, showing a list of attributes to be selected. The 'bookAuthor', 'bookPublishedDate', 'bookRating', and 'bookTitle' attributes are checked and circled. The 'OK' button at the bottom of the dialog is also circled.

Then, we choose what fields we'll map to in the Lotus Notes Connector...

# And now we have the other end configured...

The screenshot shows the TDI configuration window for a **LotusNotesConnector**. The interface includes a Navigator on the left, a central configuration area, and a table for mapping data.

**Configuration Details:**

- Mode: AddOnly
- State: Enabled
- Inherit From: system:/Connectors/ibmdi.Notes

**Output Map Configuration:**

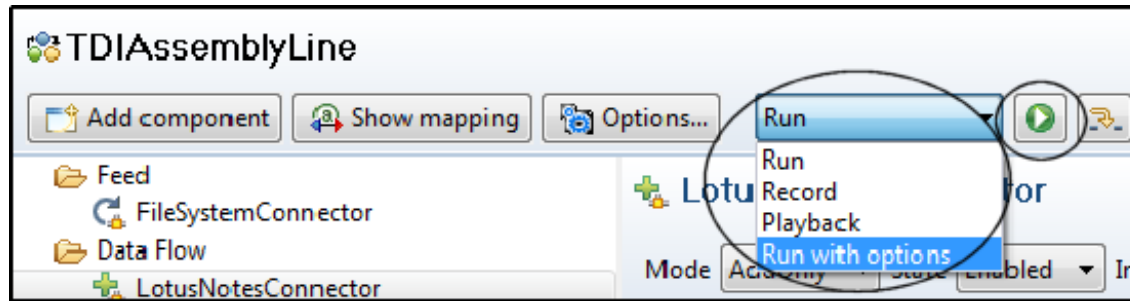
Assignment	Component Attribute
work.bookAuthor	bookAuthor
work.bookPublishedDate	bookPublishedDate
work.bookRating	bookRating
work.bookTitle	bookTitle

The table above shows the mapping between the source attributes (Assignment) and the target component attributes (Component Attribute). The mapping is as follows:

Assignment	Component Attribute
work.bookAuthor	bookAuthor
work.bookPublishedDate	bookPublishedDate
work.bookRating	bookRating
work.bookTitle	bookTitle

And like before, the finished configuration should look like this...

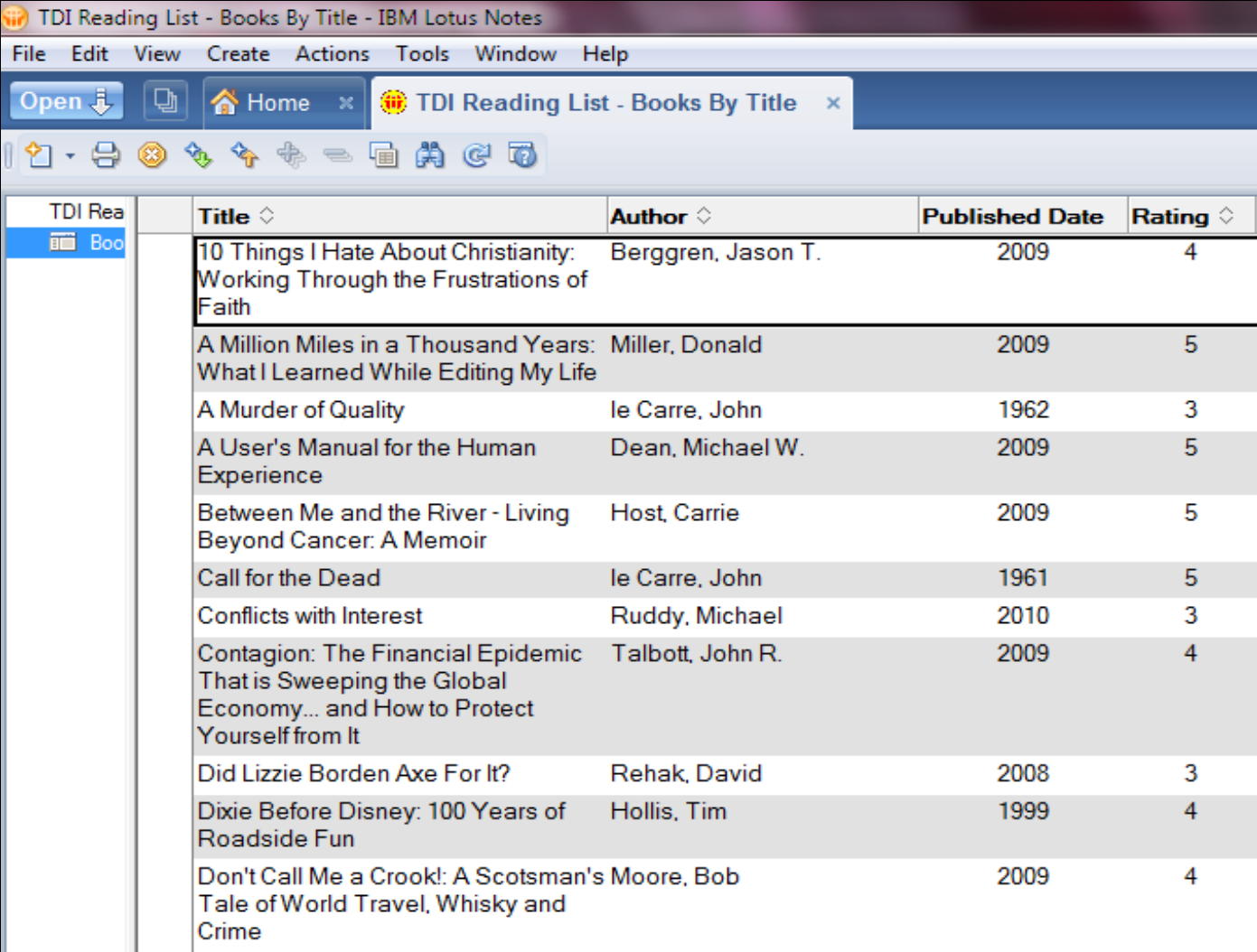
# And now we can run it!



```
*TDIAssemblyLine  TDIAssemblyLine X
12:59:04,995 INFO - [FileSystemConnector] CTGDJW003I Parser will use first input line for column names.
12:59:05,541 INFO - [LotusNotesConnector] CTGDIV002I Opening Session to Domino Server: Session Type='LocalClient',, Hostname='{1}', User ID='
12:59:05,977 INFO - [LotusNotesConnector] CTGDIV049I Session to Domino Server is created.
12:59:05,977 INFO - [LotusNotesConnector] CTGDIV005I Successfully connected to Domino Server: Name='', Version='Release 8.5.1|September 28, 20
12:59:05,977 INFO - CTGDIS087I Iterating.
12:59:06,243 INFO - CTGDIS088I Finished iterating.
12:59:06,258 INFO - CTGDIS100I Printing the Connector statistics.
12:59:06,258 INFO - [FileSystemConnector] Get:87
12:59:06,258 INFO - [LotusNotesConnector] Add:87
12:59:06,258 INFO - CTGDIS104I Total: Get:87, Add:87.
12:59:06,258 INFO - CTGDIS101I Finished printing the Connector statistics.
12:59:06,305 INFO - CTGDIS080I Terminated successfully (0 errors).
```

All that's left is to run it. On the console, you'll see the parser config, the connection to Domino, the iteration through the file, and the printing of statistics... All in less than two seconds...

# And we look at our Notes database output...



The screenshot shows the IBM Lotus Notes interface. The window title is "TDI Reading List - Books By Title - IBM Lotus Notes". The menu bar includes "File", "Edit", "View", "Create", "Actions", "Tools", "Window", and "Help". The toolbar contains icons for "Open", "Home", and various navigation and editing tools. The main content area displays a table with the following columns: "Title", "Author", "Published Date", and "Rating". The table contains 11 rows of book data.

TDI Rea	Title	Author	Published Date	Rating
Boo	10 Things I Hate About Christianity: Working Through the Frustrations of Faith	Berggren, Jason T.	2009	4
	A Million Miles in a Thousand Years: What I Learned While Editing My Life	Miller, Donald	2009	5
	A Murder of Quality	le Carre, John	1962	3
	A User's Manual for the Human Experience	Dean, Michael W.	2009	5
	Between Me and the River - Living Beyond Cancer: A Memoir	Host, Carrie	2009	5
	Call for the Dead	le Carre, John	1961	5
	Conflicts with Interest	Ruddy, Michael	2010	3
	Contagion: The Financial Epidemic That is Sweeping the Global Economy... and How to Protect Yourself from It	Talbott, John R.	2009	4
	Did Lizzie Borden Axe For It?	Rehak, David	2008	3
	Dixie Before Disney: 100 Years of Roadside Fun	Hollis, Tim	1999	4
	Don't Call Me a Crook!: A Scotsman's Tale of World Travel, Whisky and Crime	Moore, Bob	2009	4

# Other possible scenarios!

---

- Other uses with Notes databases (we think developers might like)
  - ♦ Connect to SQL db (or other relational db) to update Domino web page or database (scheduled or event driven)
  - ♦ Notes db to Notes db (one time event)
  - ♦ SAP or Peoplesoft connectors
  - ♦ Output Notes to XML with data scrubbing

# Intro to TDI and Directories

---

- Directory related connectors
- LDAP configuration related details
- Only need to update corporate data?
  - ◆ Use an LDAP connector
    - ▶ Easy to set up, attributes easy to customize
    - ▶ Doesn't provision Notes accounts

# TDI is fantastic for working with directories...

- **Connectors already included for Directory work:**
  - ◆ **LDAP Connector:**
    - ▶ Use to connect to LDAP directories (including AD & Domino)
  - ◆ **Domino Change Detection Connector**
    - ▶ Detects changes on objects in a Notes database (add, modify, delete). Includes actions on the names.nsf.
  - ◆ **Active Directory Change Detection Connector**
    - ▶ Detects changes on AD objects.
  - ◆ **Domino Users Connector**
    - ▶ Use when you want to create, delete or modify Notes user information (in names.nsf or admin4.nsf). Can be used to create or delete Notes accounts.

# Details for LDAP Connections

- Know your LDAP schema (or work with your LDAP team).
- You'll need the following:
  - LDAP userid that can read and/or write to the LDAP directory.
  - Organizational Unit
  - OrgClass
- Another invaluable tool is Softerra's LDAP Browser (FREE!)
  - <http://www.softerra.com/download.htm>
- If you considering an assembly line to create Lotus Notes accounts:
  - LDAP connection will not create full Notes users
  - Use Lotus Domino Users Connector in order to provision new accounts



# A little Domino LDAP config check:

- Confirm that domain configuration document has the following set on the LDAP tab.
- You can control security via Security settings and/or XACL.

uniqueMember	
userCertificate	
vendorname	
vendorversion	
<u>Allow LDAP users write access:</u>	<input checked="" type="radio"/> Yes <input type="radio"/> No
Timeout:	0 seconds
Maximum number of entries returned:	0
Minimum characters for wildcard search:	1
Allow Alternate Language Information processing:	<input type="radio"/> Yes <input checked="" type="radio"/> No

# Domino LDAP Schema

- Domino LDAP Schema is stored in the schema.nsf
- Review classes and attributes to see how Domino might be using them and what type of data is stored (string, domain name, etc.)

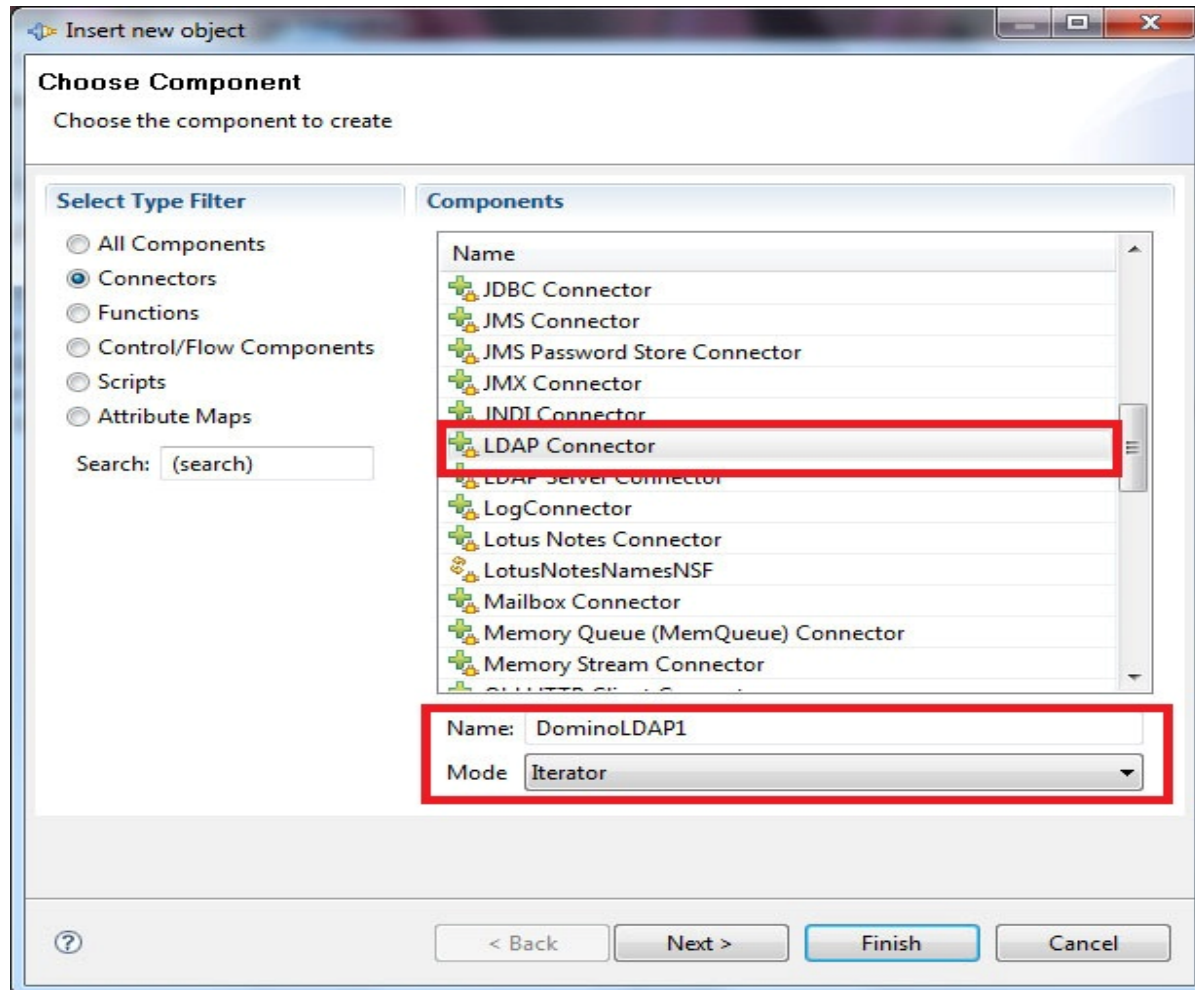


The screenshot shows the Domino LDAP Schema interface. On the left is a navigation pane with a tree view. The 'LDAP' folder is expanded, and 'Domino LDAP Schema (6)' is selected. Under it, 'LDAP - ObjectClasses' is highlighted. A red box highlights this section in the navigation pane. The main area displays a table with four columns: LDAP OID, LDAP Name, LDAP Aliases, and Notes Name. A red box highlights the rows for LDAP OIDs 2.5.6.5, 2.5.6.6, and 2.5.6.7.

LDAP OID	LDAP Name	LDAP Aliases	Notes Name
2.5.6.4	organization		organization
2.5.6.5	organizationalUnit		organizationalUnit
2.5.6.6	person		ldapPerson
2.5.6.7	organizationalPerson		organizationalPerson
2.5.6.8	organizationalRole		organizationalRole
2.5.6.9	groupOfNames		groupOfNames
id-oc-DominoDB2Server	DB2Server		DB2Server
id-oc-DominoDisclaimDlg	DisclaimDlg		DisclaimDlg
id-oc-DominoDlgServerMulti	dlgServerMulti		dlgServerMulti
id-oc-DominoIDVault	IDVault		IDVault
id-oc-DominoReliefActivities	ReliefActivities		ReliefActivities

# Create Domino LDAP Connector

- Create a connector for Domino – using base LDAP Connector
- Create in Iterator Mode



# Configure the Domino LDAP Connector

- Add the specifics for your Domino LDAP connection (Connector Tab)

DominoLDAP1

Mode  State  Inherit From

Input Map | Hooks | Delta | **Connection** | Connection Errors

### LDAP Connector

LDAP URL *	<input type="text" value="ldap://viking1.topchefs.com:389"/>
Login username	<input type="text" value="cn=doctor notes,o=topchefs"/>
Login password	<input type="text" value="*****"/>
Search Base	<input type="text" value="o=topchefs"/>
Search Filter	<input type="text" value="objectclass=dominoperson"/>
Search Scope	<input type="text" value="subtree"/>
Comment	<input type="text"/>

# Browsing LDAP data: How & Why

---

- Click the Connect button. Once you've established a connection you can begin to browse your data.
- Review each record by clicking Next to review the data in each attribute.
- This allows you to determine if you need to make any editing changes when performing an update or data match.
- You'll also see what attributes are available in the schema.

# Browsing Domino Directory Data

DominoLDAP1

LDAP View

\*\* Server Information \*\*

Attributes

Connect

Select All

Clear All

Next

Close

Accumulate

Attribute	Value
<input type="checkbox"/> \$dn	"CN=Doctor Notes,o=topchefs"
<input type="checkbox"/> availableordirsync	1
<input type="checkbox"/> checkpassword	"0"
▶ <input type="checkbox"/> clienttype	["3","4"]
<input type="checkbox"/> clntbld	"Release 8.5.1"
▶ <input type="checkbox"/> clntdate	["20091218010112Z","20091219172754Z"]
▶ <input type="checkbox"/> clntmachine	["WIN-90J74NVC1D1","TCWK1"]
<input type="checkbox"/> clntpltrm	"Windows/Vista 6.1 Intel Pentium"
<input type="checkbox"/> cn	"Doctor Notes"

Details Connection

[Object Data Dump]

checkpassword[0] (java.lang.String) = 0

# Example: Active Directory to Domino Sync

- Create an assembly line(s) to do the following:
  - Connect to Active Directory
  - Connect to Domino names.nsf
  - Detect any additional users created for Active Directory and create them in Domino names.nsf
  - Detect any changes to information in Active Directory and update in Domino names.nsf (but don't change internet address)
  - Detect any accounts deleted from Active Directory and delete in Domino (via admin4.nsf)
  - Detect any changes in Domino and update to Active Directory.
  - Detect any deletes in Domino and update to Active Directory.
- Going to use IF and ELSE IF Branches
- And some javascripting for good measure!

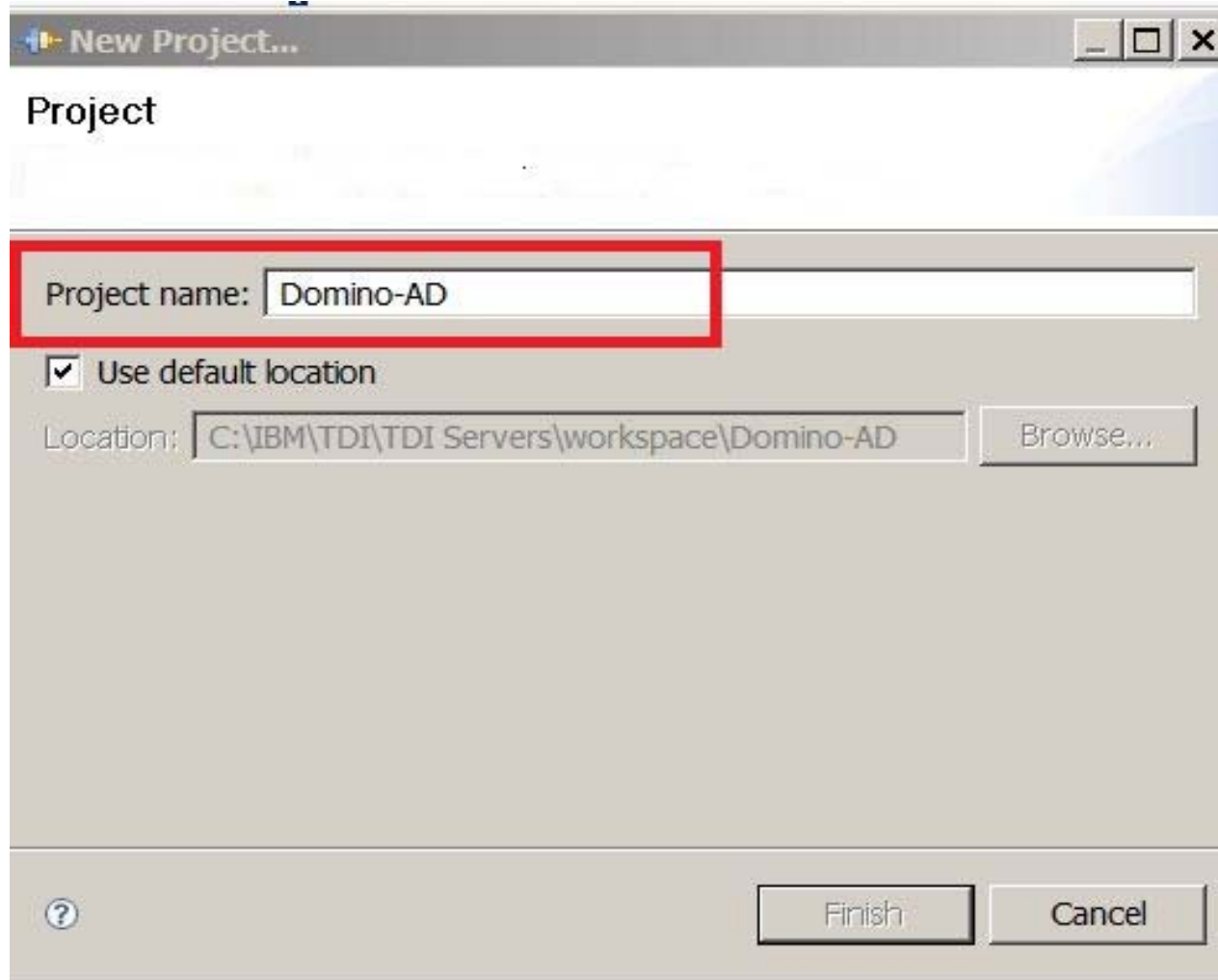
# So how are we going to do all that?

---

- Create a project
- Create “template” connectors
- Create a new *AssemblyLine*
- Create Feed connector based on template connector
- Create IF ELSE logic



# Create a new TDI Project



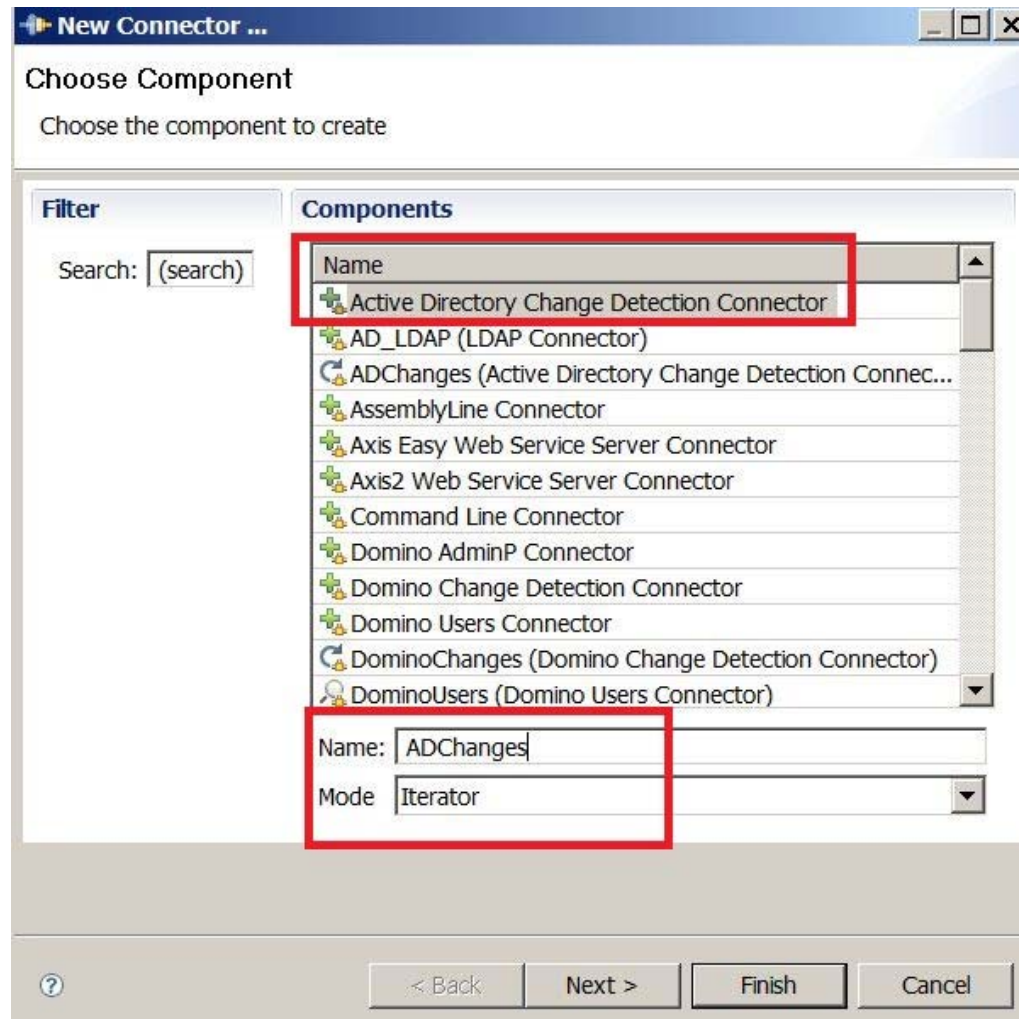
# Create your Connector “templates”

---

- Create the connectors you will use throughout the Assembly line
- ADChanges – based on ActiveDirectoryChangeDetector
- DominoUsers – based on DominoUsersConnector

# Create Connector: ADChanges

- Use Active Directory Change Detection Connector template
- Use Iterator mode



# Connector Config: ADChanges

- See LDAP search base
- LastChangeInAD parm
- Inherits from ADChangelog connector template

**ADChanges**

Mode **Iterator** State **Enabled** Inherit From **system:/Connectors/ibmdi.ADChangelogv2** More...

Input Map Hooks Delta **Connection** Connection Errors Pool

### Active Directory Change Detection Connector

Help

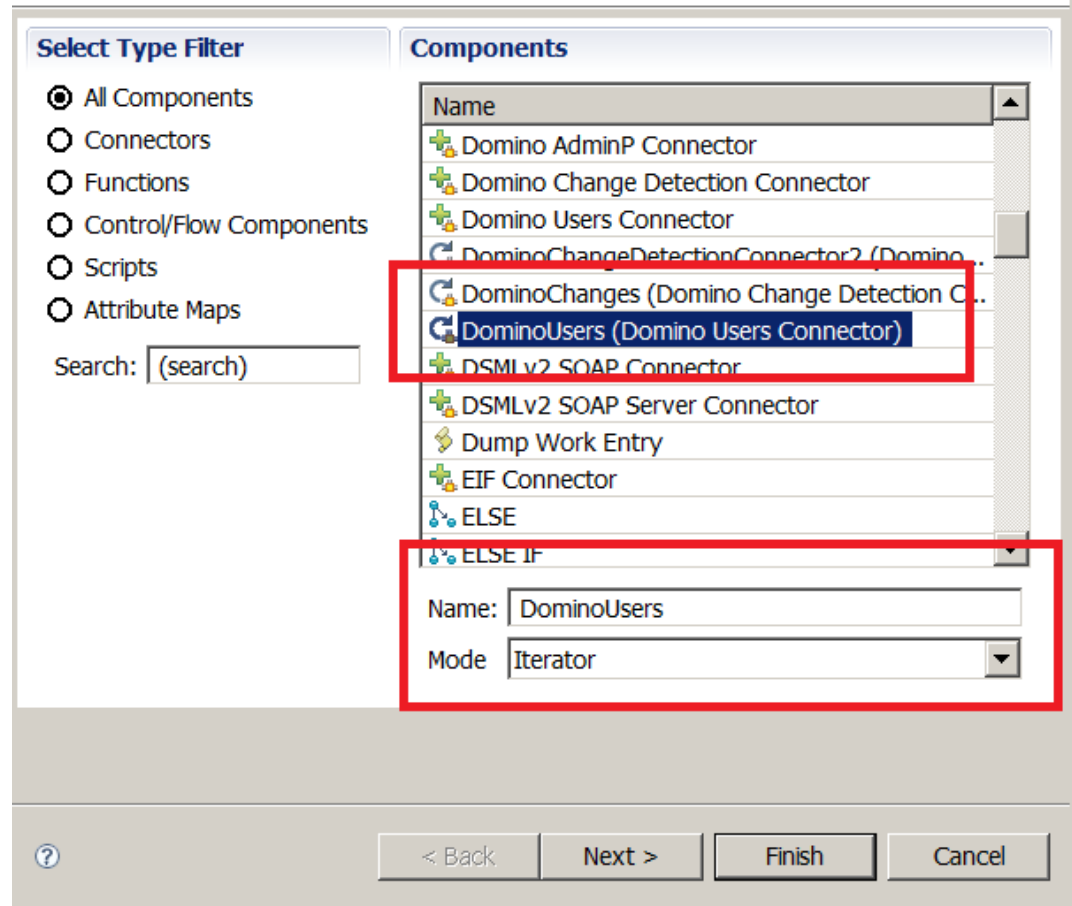
LDAP URL *	ldap://viking1.topchefs.com:389
Login username	cn=Administrator,cn=users,dc=topchefs,dc=com
Login password	*****
LDAP Search Base *	DC=topchefs,DC=com
Iterator State Key	LastChangeInAD
Start at	0
Comment	

# Create Connector: DominoUsers

- Uses DominoUserConnector template
- Set up in Iterator Mode

Choose Component

Choose the component to create



# Connector Config: DominoUsers

- Detects changes to users
- Uses local client connection

**DominoUsers**

Mode **Iterator** State **Enabled** Inherit From **system:/Connector/ibmdi.DominoUsersConnector**

Input Map | Hooks | Link Criteria | Connection | Connection Errors | Pool

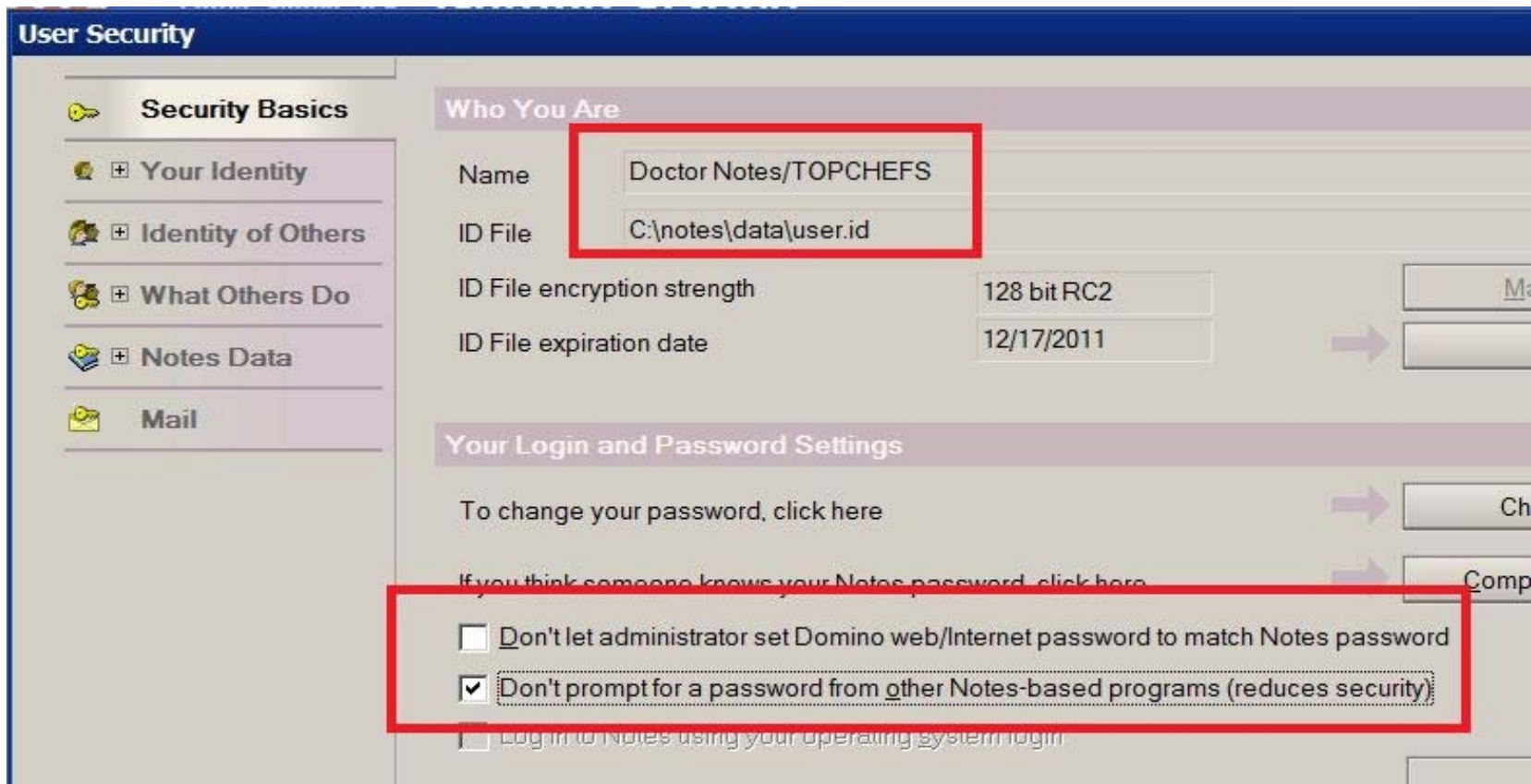
### Domino Users Connector

Help

Session Type *	LocalClient
Domino Server IP Address	viking1.topchefs.com
HTTP Port	80
Username	dnotes
Password *	*****
Comment	

# Notes client configuration

- Change the following security property to allow for DominoUsers connection without prompt



# AssemblyLine next...

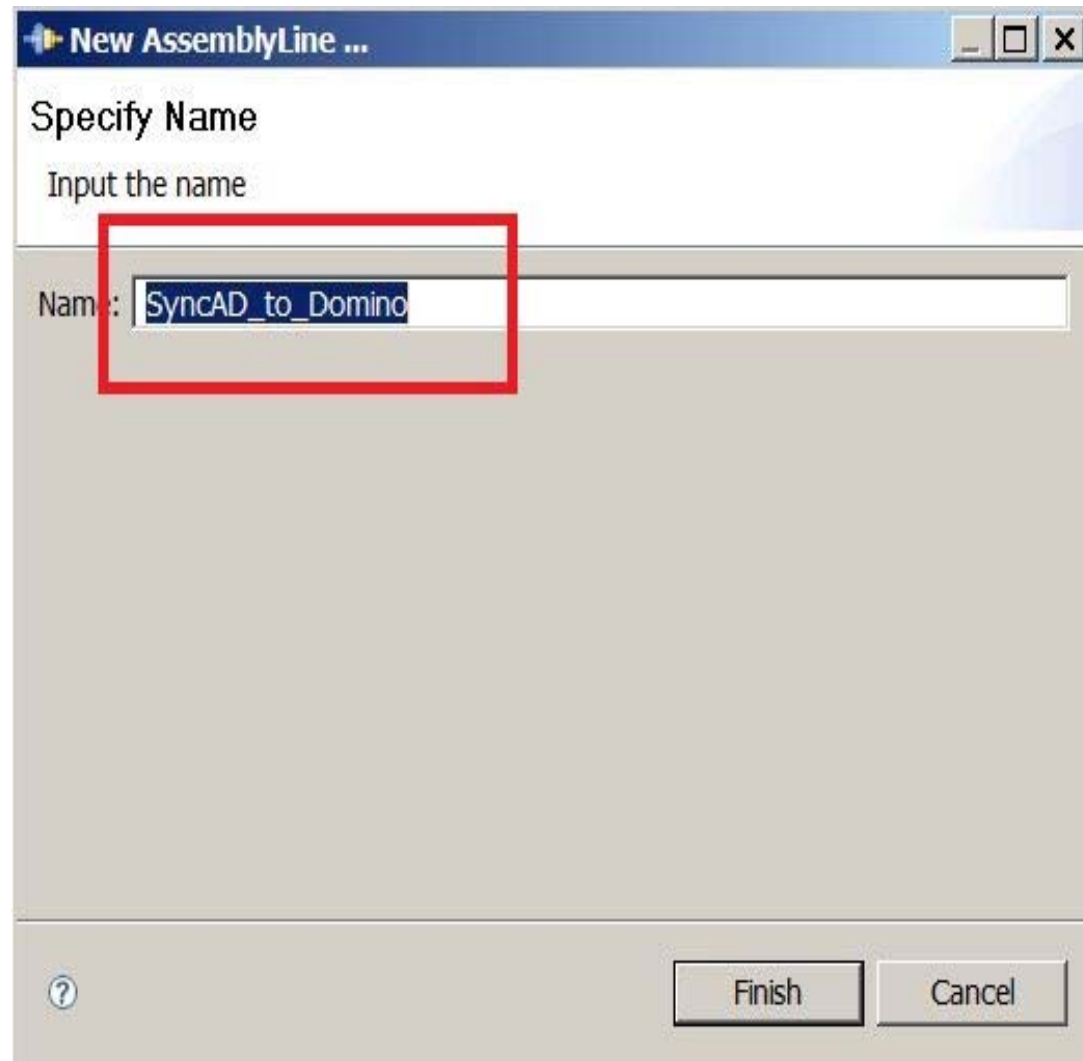
---

- Setup AssemblyLine with data feed and data flow
- Will map attributes that will match between AD and Domino
- Will set up any exception processes
- Create scripts or IF/Else/IF/ElseIF logic



# Create AssemblyLine: SyncAD\_to\_Domino

- Let's create our AssemblyLine



# Create Data Feed Connector:ADChanges

- Create Connector based on ADChanges and include all work attributes

The screenshot shows the configuration of an ADChanges connector in the SyncAD\_to\_Domino application. The connector is named 'ADChanges' and is configured with the following settings:

- Mode: Iterator
- State: Enabled
- Inherit From: /Connectors/AD

The 'Input Map' tab is active, showing a table with the following configuration:

Work Attribute	Assignment
*	(Map all Attributes)

# Connector Config: ADChanges

- See LDAP search base
- LastChangeInAD parm
- Inherits from ADChangelog connector template

**ADChanges**

Mode **Iterator** State **Enabled** Inherit From **system:/Connectors/ibmdi.ADChangelogv2** More...

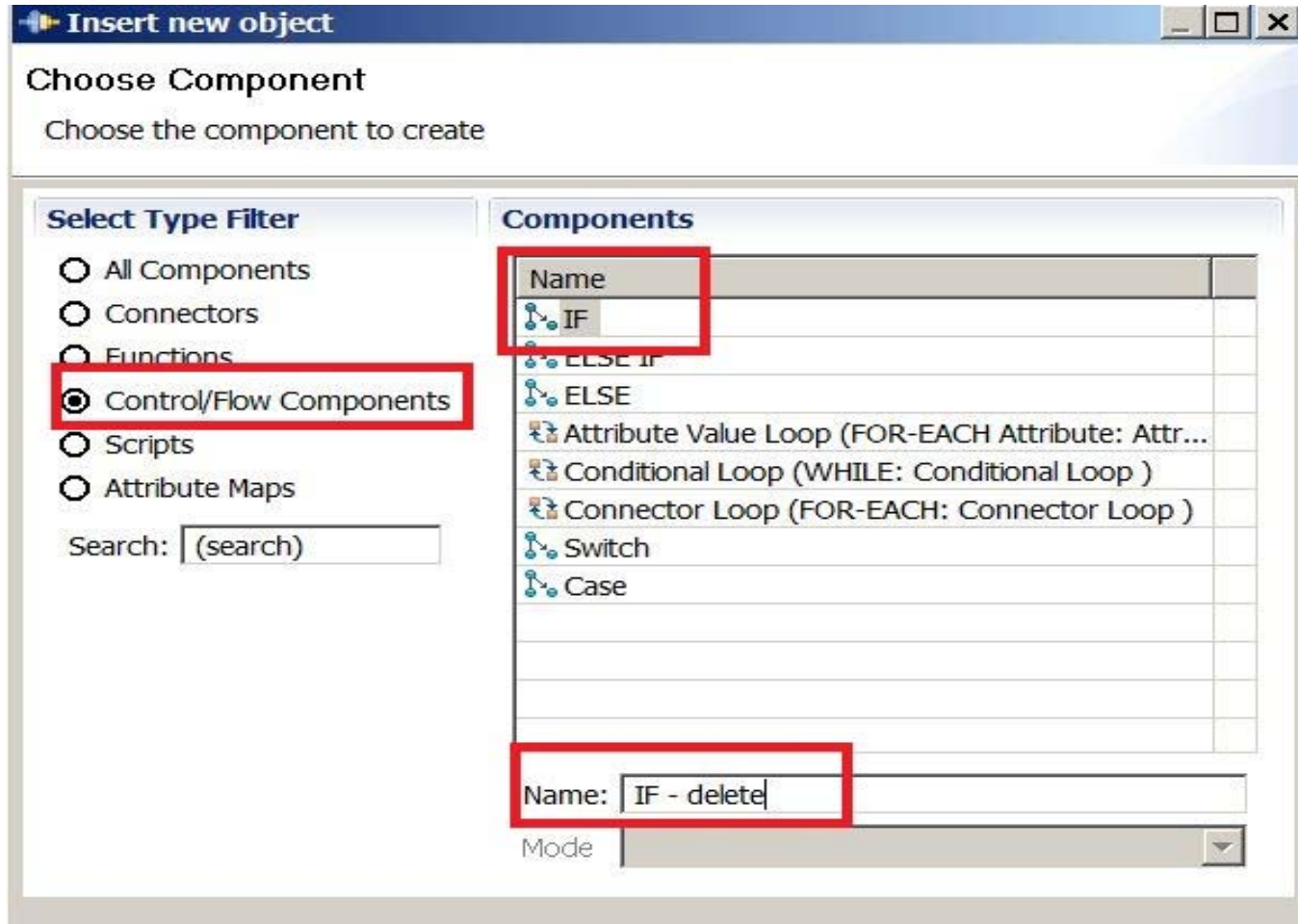
Input Map Hooks Delta **Connection** Connection Errors Pool

### Active Directory Change Detection Connector

Help

LDAP URL *	ldap://viking1.topchefs.com:389
Login username	cn=Administrator,cn=users,dc=topchefs,dc=com
Login password	*****
LDAP Search Base *	DC=topchefs,DC=com
Iterator State Key	LastChangeInAD
Start at	0
Comment	

# Add IF BRANCH - delete



# Create IF-delete script

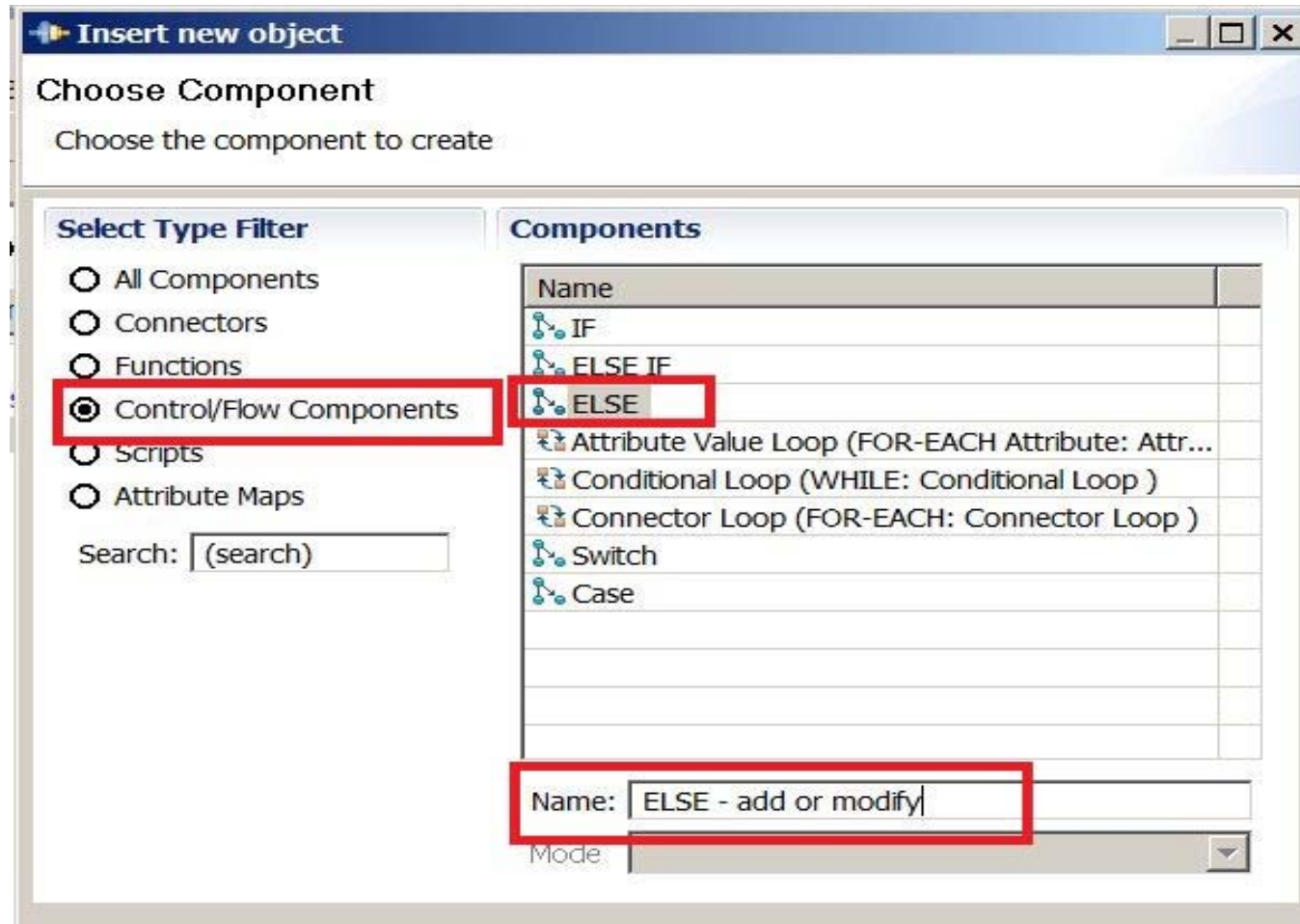
IF branch

IF branch Close

Add Remove Move Up Move Down Script  Match all

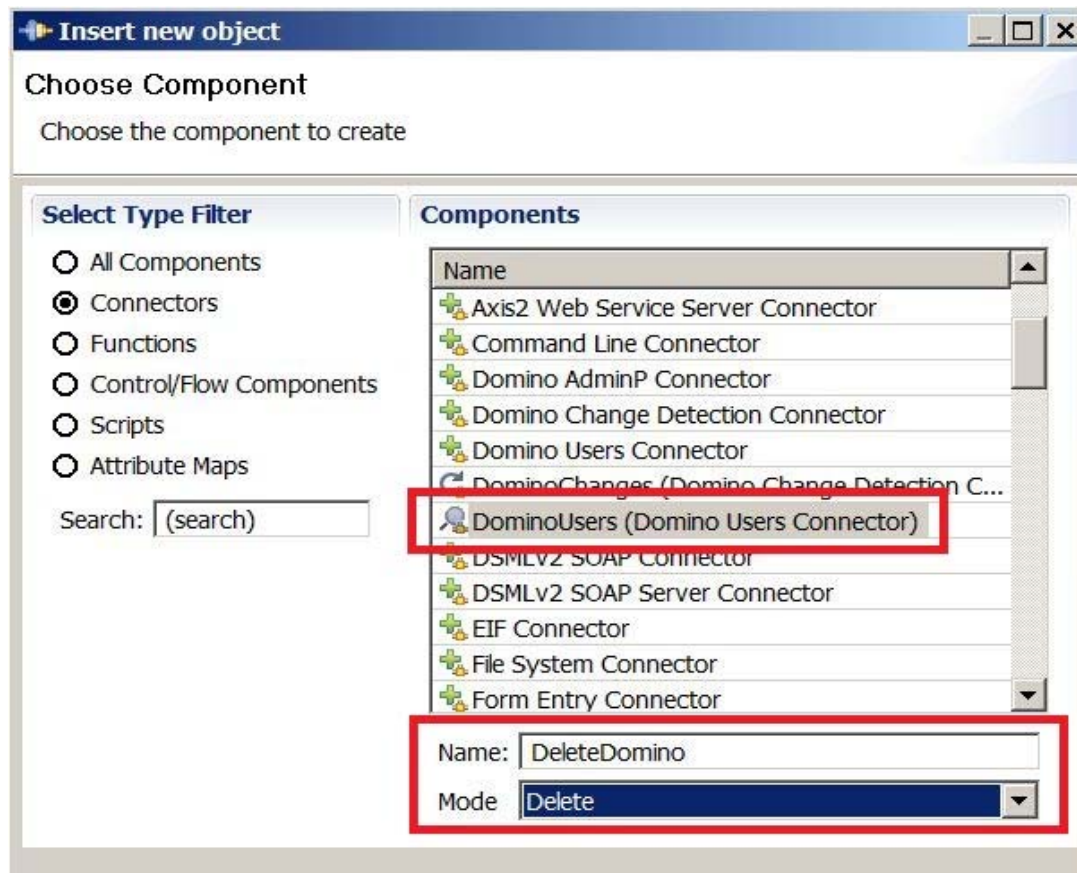
Attribute	NOT	Operator	Value	Case Sensitive
			<code>ret.value = work.getOperation() == "delete";</code>	

# Add ELSE Branch – add or modify



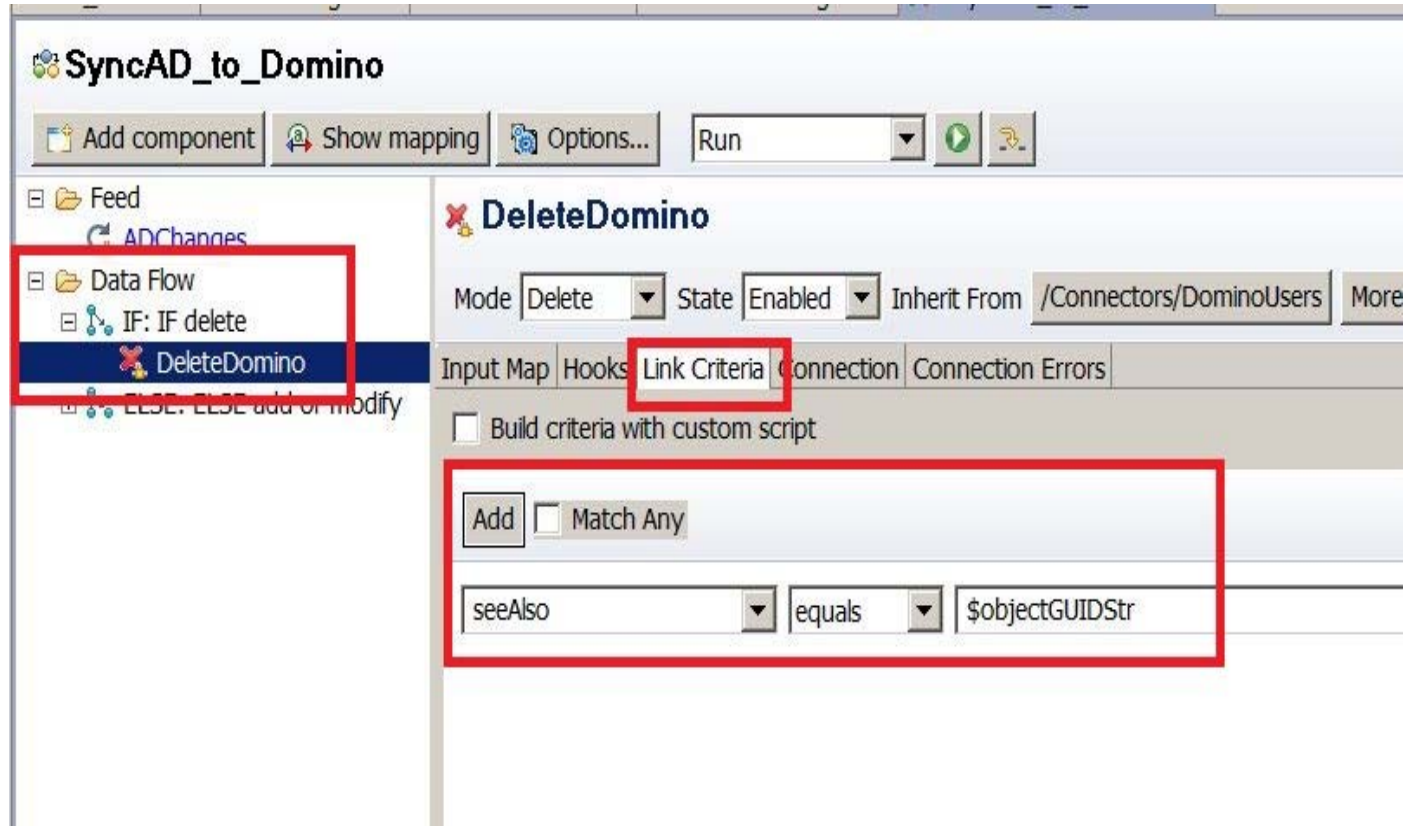
# Create Connector: DeleteDomino

- Use the DominoUsers connector as your template



# Create DeleteDomino Link Criteria

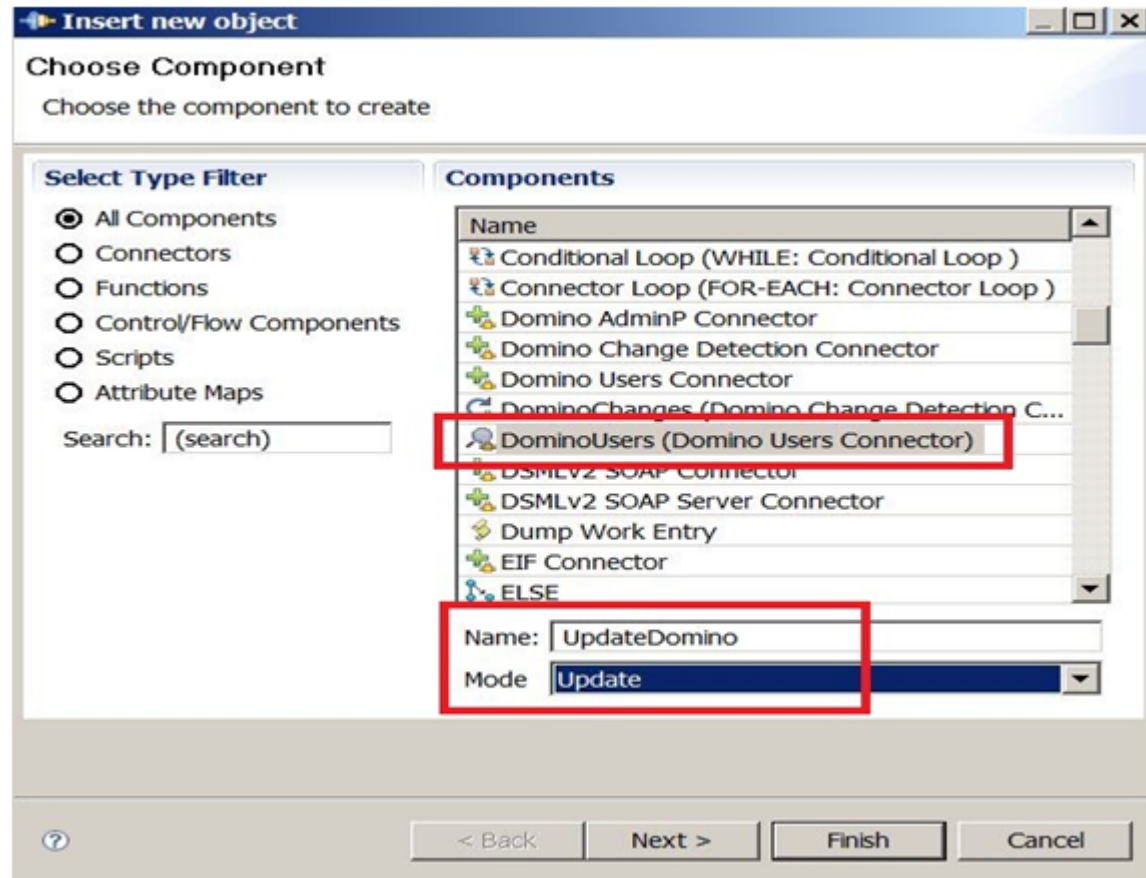
- Create the link criteria to match objects between AD & Domino





# Create UpdateDomino Connector

- Created based on DominoUsers connector
- Created in update mode



# Create UpdateDomino Link Criteria

The screenshot shows the configuration interface for the UpdateDomino connector. The title is "UpdateDomino" with a small icon. Below the title, there are several controls: "Mode" is set to "Update", "State" is "Enabled", and "Inherit From" is "/Connectors/DominoUsers". There is a "More..." button. Below these are tabs for "Output Map", "Hooks", "Link Criteria", "Connection", and "Connection Errors". The "Link Criteria" tab is active. There is a checkbox for "Build criteria with custom script" which is unchecked. Below that is an "Add" button and a "Match Any" checkbox which is also unchecked. At the bottom, a red box highlights a single link criterion: the field is "seeAlso", the operator is "equals", and the value is "\$objectGUIDStr".

**UpdateDomino**

Mode **Update** State **Enabled** Inherit From **/Connectors/DominoUsers** More...

Output Map Hooks **Link Criteria** Connection Connection Errors

Build criteria with custom script

Add  Match Any

**seeAlso** **equals** **\$objectGUIDStr**

# UpdateDomino Mapping

- Essential “working engine” of the AssemblyLine
- Includes javascript to modify the field data

**UpdateDomino**

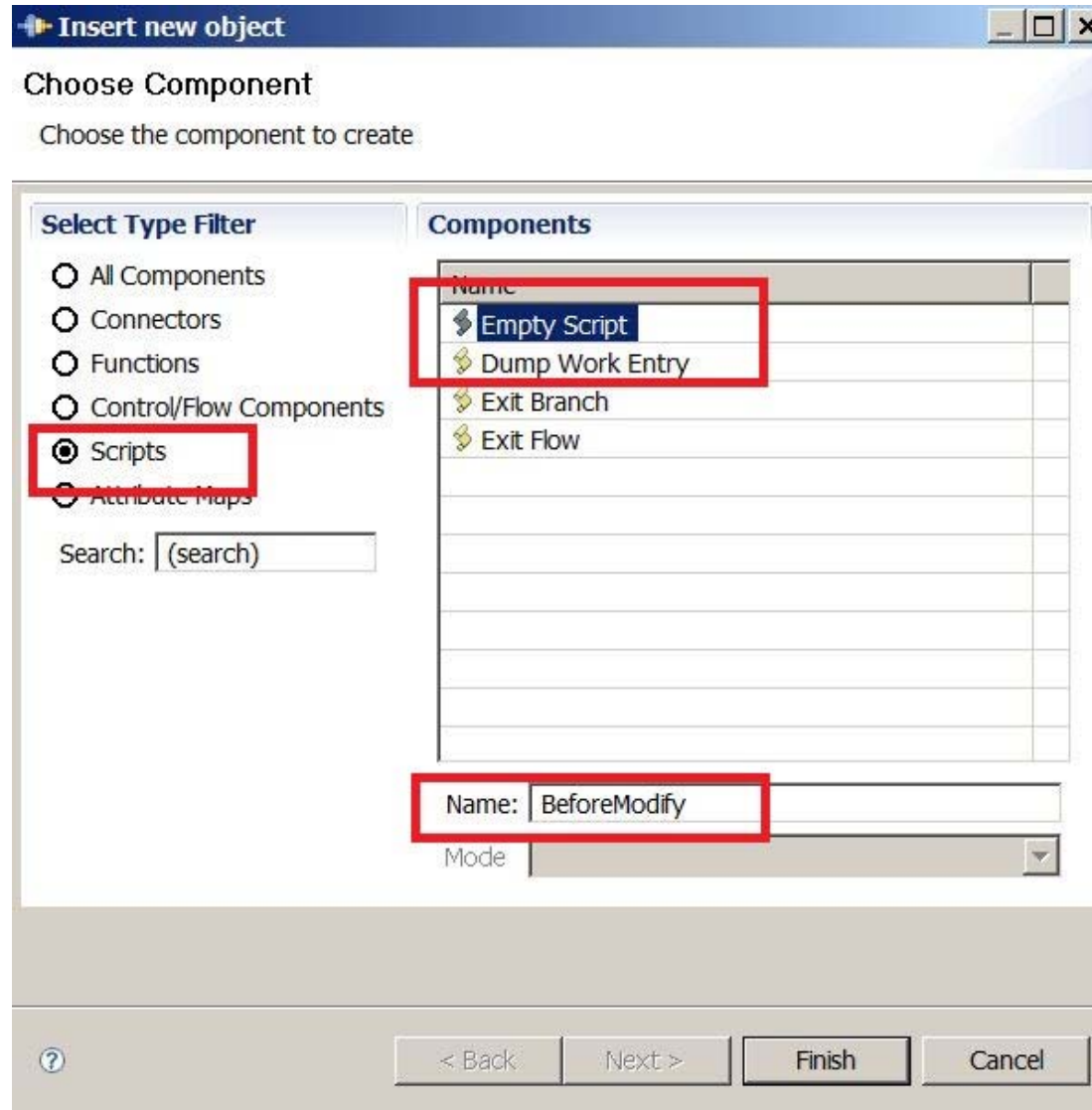
Mode  State  Inherit From  More...

Output Map | Hooks | Link Criteria | Connection | Connection Errors

Map

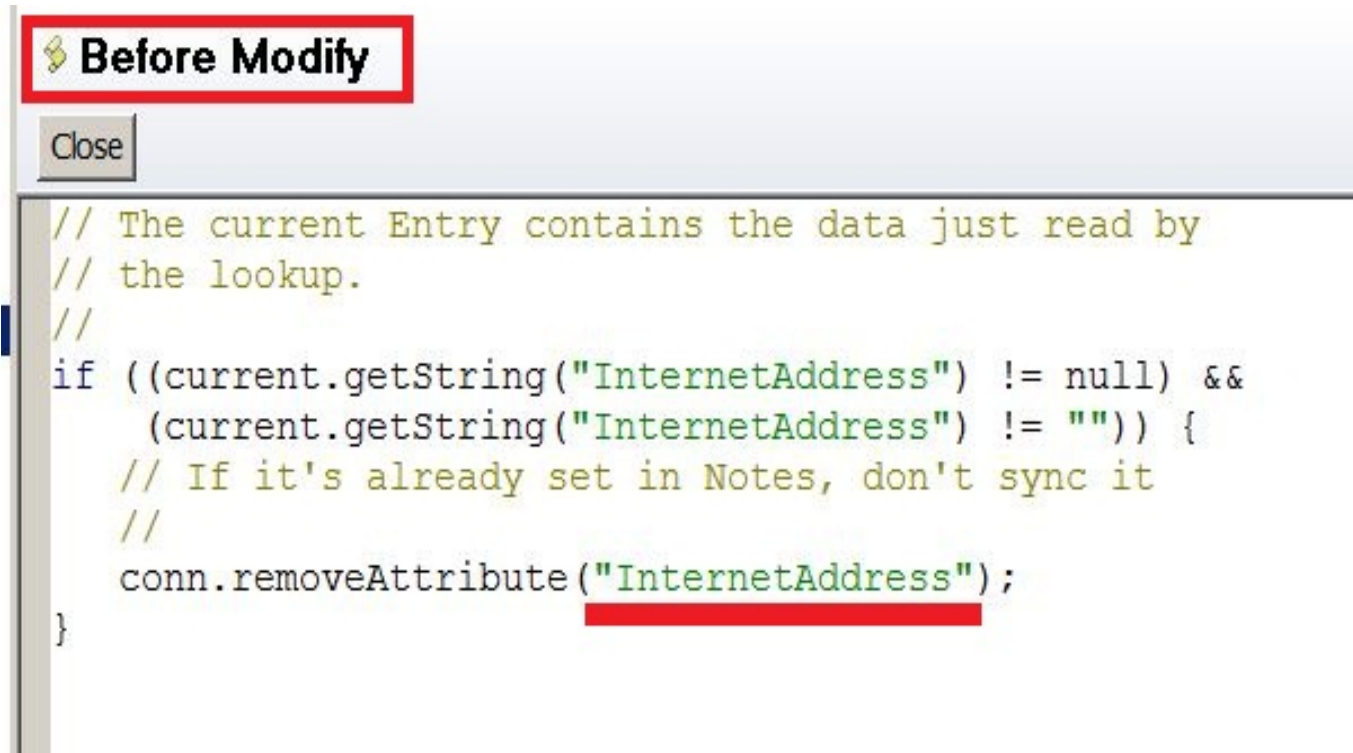
Assignment	Add	Mod	Component Attrib...
work.Department	true	true	Department
work.sAMAccountName	true	true	EmployeeID
work.givenName	true	true	FirstName
Person	true	false	Form
ret.value = "cn=" + work.getString("cn") + "/o=topchefs";	true	true	FullName
work.mail	true	true	InternetAddress
work.title	true	true	JobTitle
work.sn	true	true	LastName
[work.Location, work["\$dn"]]	true	true	Location
{work.cn}/TOPCHEFS	true	true	MailAddress
work.department	true	true	OU
ret.value = "cn=" + work.getString("cn") + "/o=topchefs";	true	false	Owner
work.telephoneNumber	true	true	PhoneNumber
work.sAMAccountName	true	false	ShortName
work.description	true	true	Title
Person	true	false	Type
work.objectGUIDStr	true	true	seeAlso

# Create BeforeModify Script



# Create BeforeModify Script

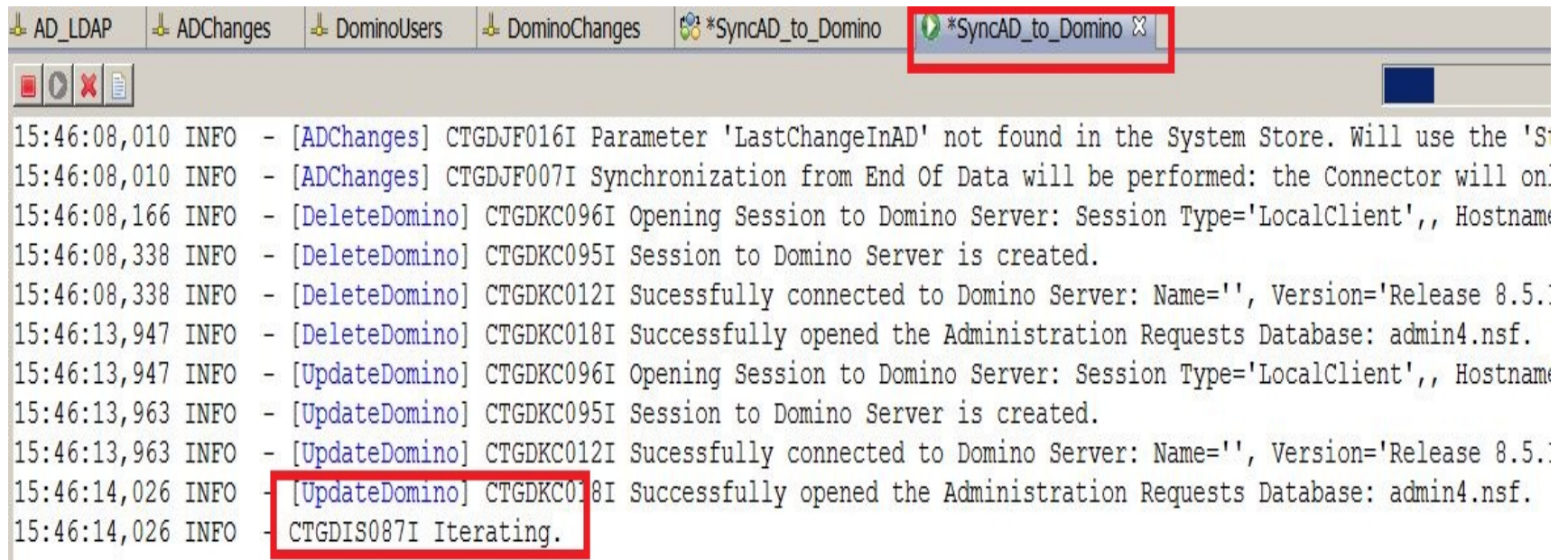
- Not updating internetaddress object



```
// The current Entry contains the data just read by
// the lookup.
//
if ((current.getString("InternetAddress") != null) &&
    (current.getString("InternetAddress") != "")) {
    // If it's already set in Notes, don't sync it
    //
    conn.removeAttribute("InternetAddress");
}
```

# Let's start the assembly line!

- Click Run to start SyncAD\_to\_Domino
- Confirm that the process is "Iterating"



```
AD_LDAP ADChanges DominoUsers DominoChanges *SyncAD_to_Domino *SyncAD_to_Domino X
15:46:08,010 INFO - [ADChanges] CTGDJF016I Parameter 'LastChangeInAD' not found in the System Store. Will use the 'S
15:46:08,010 INFO - [ADChanges] CTGDJF007I Synchronization from End Of Data will be performed: the Connector will on
15:46:08,166 INFO - [DeleteDomino] CTGDKC096I Opening Session to Domino Server: Session Type='LocalClient',, Hostname
15:46:08,338 INFO - [DeleteDomino] CTGDKC095I Session to Domino Server is created.
15:46:08,338 INFO - [DeleteDomino] CTGDKC012I Sucessfully connected to Domino Server: Name='', Version='Release 8.5.
15:46:13,947 INFO - [DeleteDomino] CTGDKC018I Successfully opened the Administration Requests Database: admin4.nsf.
15:46:13,947 INFO - [UpdateDomino] CTGDKC096I Opening Session to Domino Server: Session Type='LocalClient',, Hostname
15:46:13,963 INFO - [UpdateDomino] CTGDKC095I Session to Domino Server is created.
15:46:13,963 INFO - [UpdateDomino] CTGDKC012I Sucessfully connected to Domino Server: Name='', Version='Release 8.5.
15:46:14,026 INFO - [UpdateDomino] CTGDKC018I Successfully opened the Administration Requests Database: admin4.nsf.
15:46:14,026 INFO - CTGDIS087I Iterating.
```



# SyncAD\_to\_Domino Final AssemblyLine

**SyncAD\_to\_Domino**

Add component Show mapping Options... Run

Feed

- ADChanges
- Data Flow
  - IF: IF delete
  - DeleteDomino
  - ELSE: ELSE add or modify
    - UpdateDomino
    - Before Modify

Map Add Delete Browse Data

Work Attribute	Assignment	Component Attribute
ADChanges	←	[Source]
*	(Map all Attributes)	*
DeleteDomino	←	[Source]
	[Empty map - double click to add]	
UpdateDomino	→	[Target]
Department	work.Department	Department
sAMAccountName	work.sAMAccountName	EmployeeID
givenName	work.givenName	FirstName
	Person	Form [Add]
getString	ret.value = "cn=" + work.getSt	FullName
mai	work.mail	InternetAddress
title	work.title	JobTitle
sn	work.sn	LastName
Location	[work.Location, work["\$dn"]]	Location
cn	{work.cn}/TOPCHEFS	MailAddress
department	work.department	OU
getString	ret.value = "cn=" + work.getSt	Owner [Add]
telephoneNumber	work.telephoneNumber	PhoneNumber
sAMAccountName	work.sAMAccountName	ShortName [Add]
description	work.description	Title
	Person	Type [Add]
objectGUIDStr	work.objectGUIDStr	seeAlso

# Provisioning Notes Accounts

---

- You can take this type of `AssemblyLines` and build a process to provision Notes accounts.
- See this document for more information regarding the specific objects you need to pass to `adminp` to set up accounts.
  - ♦ <http://www.tdi-users.org/twiki/pub/Integrator/HowTo/IntegratingDominowithTDIv1.1.pdf>



# A few things we hope you've learned in this session....

- TDI is FREE\*



\*As long as Domino is included in your AssemblyLine

# TDI isn't only for directories....

- TDI connects to many systems:
  - ♦ Domino, Lotus Connections, LDAP, Active Directory, JDBC, RDMS, HTTP/Rest, Oracle, PeopleSoft, SAP, etc., etc.
  - ♦ Connectors are the building blocks of your AssemblyLine
  - ♦ TDI is a tool you'll want to start using!



# Additional Resources

- IBM Tivoli Directory Integrator Users Group - <http://www.tdi-users.org>
- Consultant in Your Pocket Webcasts: TDI Admin Perspective & TDI Developer Perspective  
<http://consultantinyourpocket.com/ciyp/ciyp.nsf/>
- Domino Integration Specific Info: <http://sites.google.com/site/dominointegration>
- IBM DeveloperWorks – Tivoli - <https://www.ibm.com/developerworks/tivoli/>
- TDI User Forum - <http://groups.google.com/group/ibm.software.network.directory-integrator/topics?gvc=2>
- Learning TDI - <http://www.tdi-users.org/twiki/bin/view/Integrator/LearningTDI>
- Domino Integration with TDI - <http://www.tdi-users.org/twiki/bin/view/Integrator/Domino>
- TDI Redbooks/Redpieces –  
<http://www.redbooks.ibm.com/cgi-bin/searchsite.cgi?query=tivoli+AND+directory+AND+integrator>
- And Marie and Tom have done a series of TDI articles on at:  
<http://www.bleedyellow.com/blogs/crashtestchix>
- Thanks to Eddie Hartman “TDI Story Teller” [eddie.hartman@no.ibm.com](mailto:eddie.hartman@no.ibm.com)

# Questions? Comments?

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Twitter: [duffbert](#)