IBM Software Group

Rational Developer for IBM i (RDi) Working offline using i Projects

Featuring: Using i Projects for: working offline, editing, remote compiling/ building, interfacing with RTCi for source control

Rational. software

Go to IBM

Agenda

- **i Projects**
  - **Overview**
  - How do I use them
  - Working with source files and members
  - Remote actions, compile and build
  - Using RTCi and i Projects

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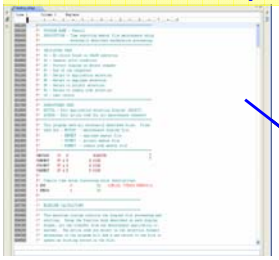
RSE and i Projects

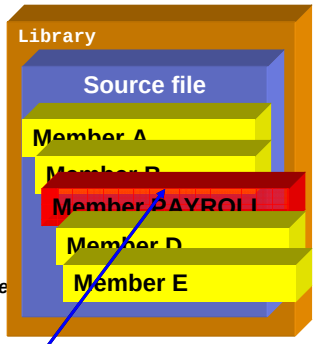
- Remote System Explorer (RSE)
  - Designed to be familiar to PDE / SEU programmer
  - Source members are still kept on IBM i
  - Remote edit, verify, compile, run / debug
- i Projects
  - Designed to be similar to development of Web, Java, and XML in the workbench
  - Source is kept local on the PC in the workspace
  - Local edit and verify then push changes and build on remote system
  - Use any workbench based SCM provider
    - RTCi optimized for IBM i source control and project management

Using Remote Systems Explorer

Source stays on the IBM i server

RSE LPEX editor
Member PAYROLL open





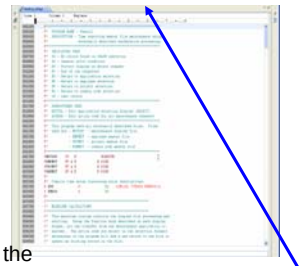
RSE job on IBM i server
Member PAYROLL is locke

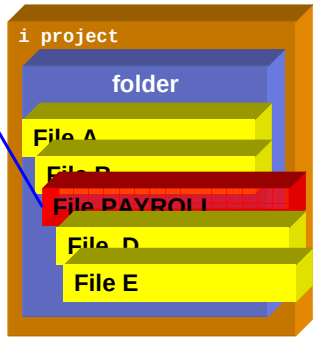
To edit member:
- Select it in RSE and open it in editor
- RSE checks for required authority and member locks
  - Prompted if either check fails
- Member is locked on IBM i, downloaded and opened in editor
- Changes written back to remote member on save
- Locks released when editor is closed
  - or the RSE connection is disconnected

Using i projects

Source is located on PC in an i project

LPEX editor with Member PAYROLL open





To edit member:
- Select it in the i project
- Open it in editor
- The member gets loaded from the workspace and opened in the editor
- No locking on IBM i, no downloading
- Changes written back to local project file

No RSE job needed on IBM i server

Member PAYROLL is not locked

Why use i projects?

- Use for disconnected development
  - If you want to work on source while you're disconnected from an IBM i server
    - On the train
    - At home on the weekend (sorry)
- Use for structured development
  - Organize development into "projects", just like you would for Java, J2EE or Web
  - A project holds the required source and you build the project
  - Easy to develop and maintain versus having source in various locations
  - Version control with RTCi

i projects and RSE the ideal combination

- Work offline and use RSE features such as:
  - Re-use RSE connections to remote servers to push for compiles
  - Advanced editing capabilities in Remote Systems LPEX editor
  - Outline view for RPG and COBOL
  - Content Assist
  - Application Diagram Viewer
  - Verifying source locally with cached reference information
  - GUI Screen Design Tool for display files
  - Integrated, online help for tools and languages

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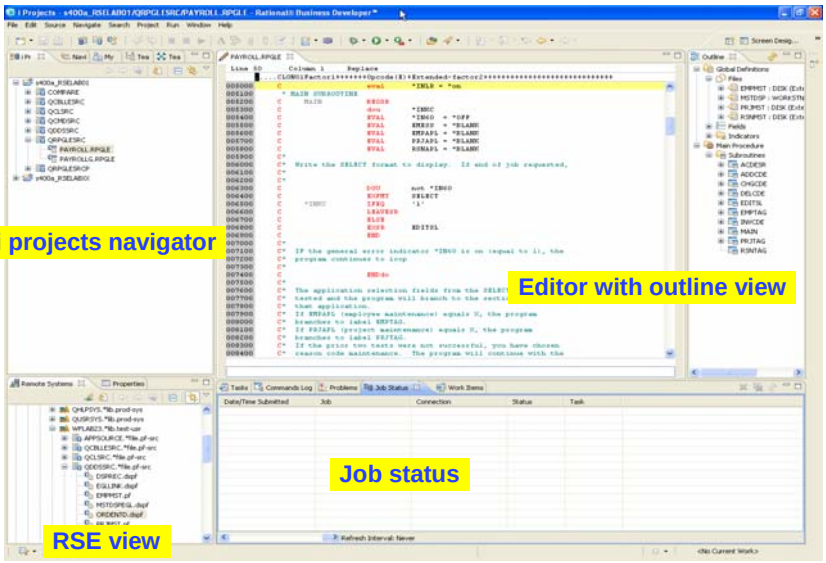
i Projects

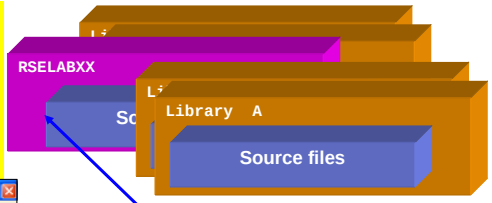
- A dedicated perspective
  - Provides a collection of views and editor
    - i Project Navigator view
- Typical workbench project
  - Contains folders and files, can be shared by a team
  - Has its own tools and perspectives
- But Also
  - Holds source destined to be compiled on IBM i
  - User “Pushes” source periodically to the host, and builds

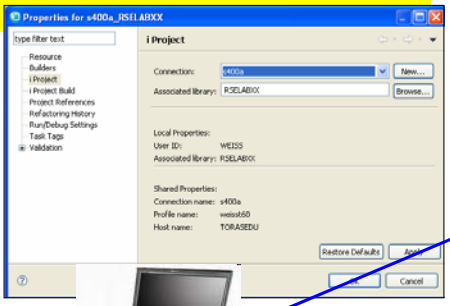
i Projects Perspective

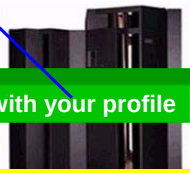


IBM i Associated Library

- **i Project**
  - Each i project is associated with a single IBM i library (associated library)
  - One connection to access the associated library







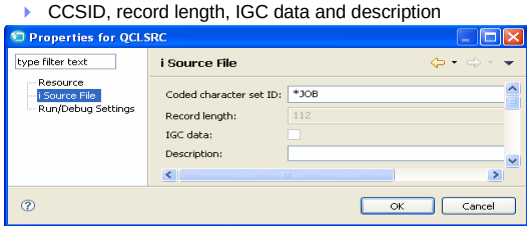
RSE job with your profile

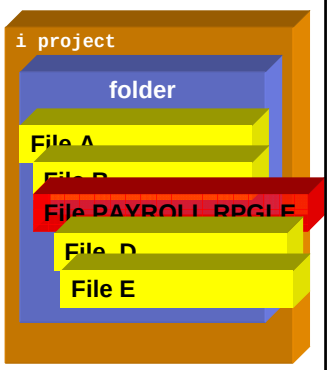
- For compiles a push of source goes to the associated library using the specified connection

i Projects Library, files, members

IBM i Source Physical File

- Source physical files represented as folders in the project
- CCSID, record length, IGC data and description



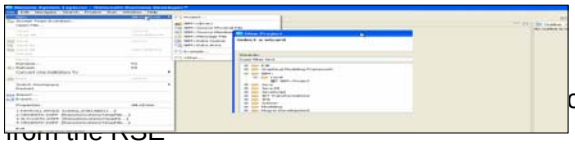


IBM i Member

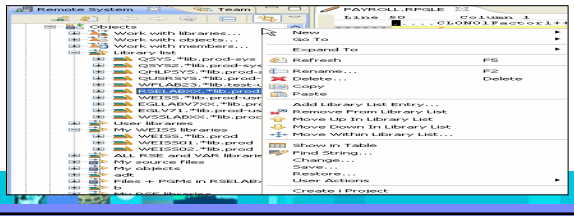
- Members stored as files within “source” folders
- Uses format: memberName.membertype
- ORDRENT. RPGLE

Setting Up Your i Project

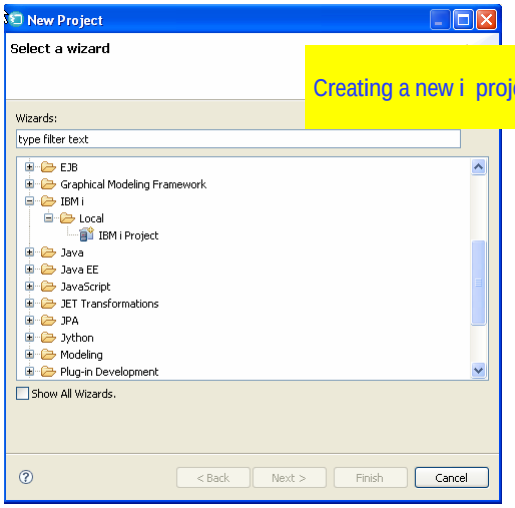
- Multiple ways to setup an i project and add source physical files and members
  - Using the workbench “New” wizard File → New → i project and Using the “Add to Project” actions from the i project



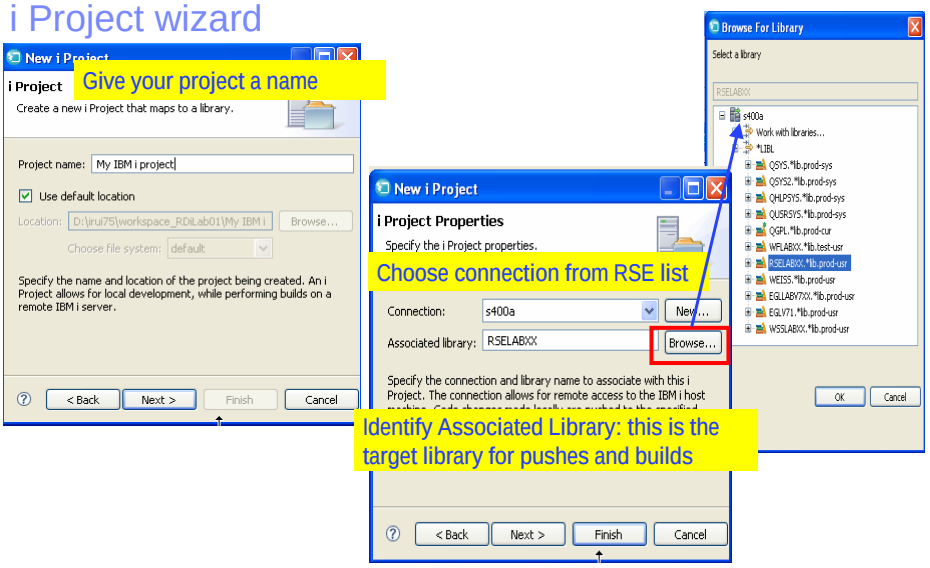
ct” actions from the RSE



New i Project

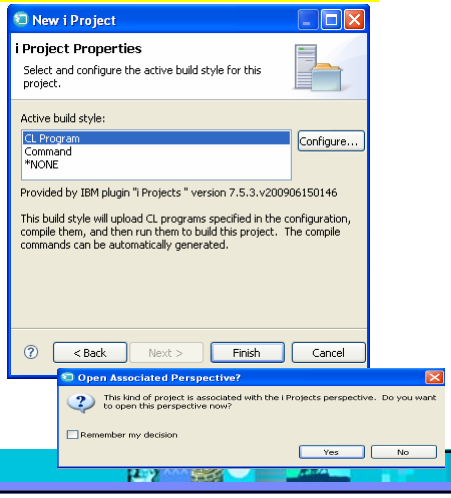


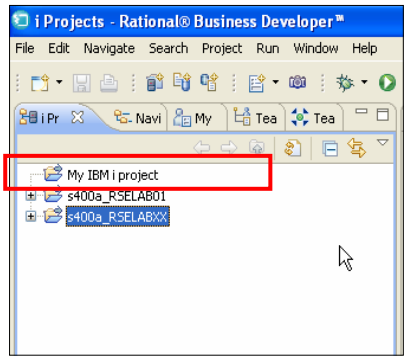
i Project wizard



i Project Wizard (next page)

Build style controls how the i project is built on the remote system (more later)





Empty i project is created

Agenda

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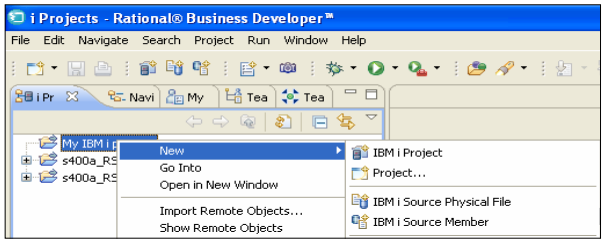
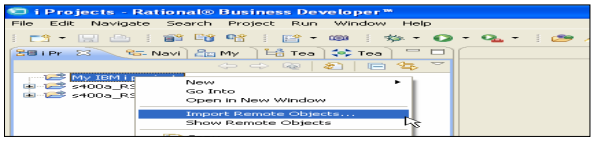
Adding content to the i project

Two choices

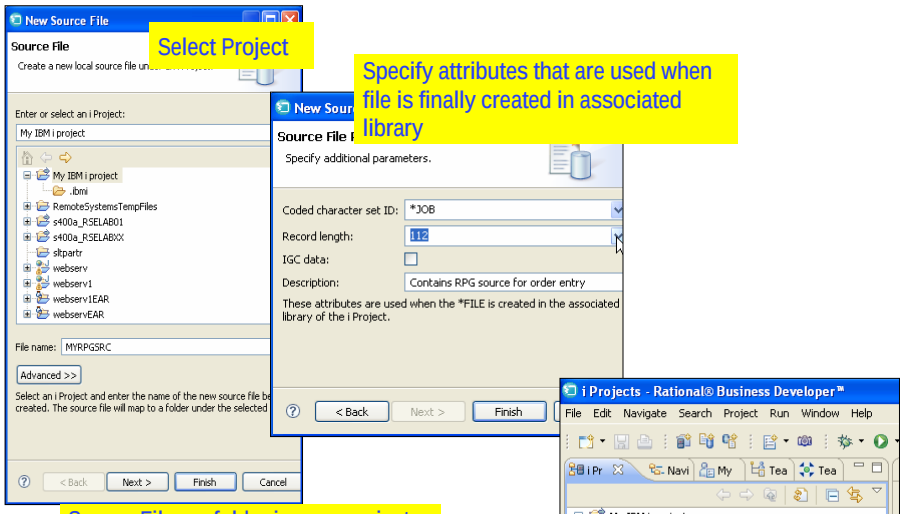
- Create new source files and members



- Add existing source files with their members to the project



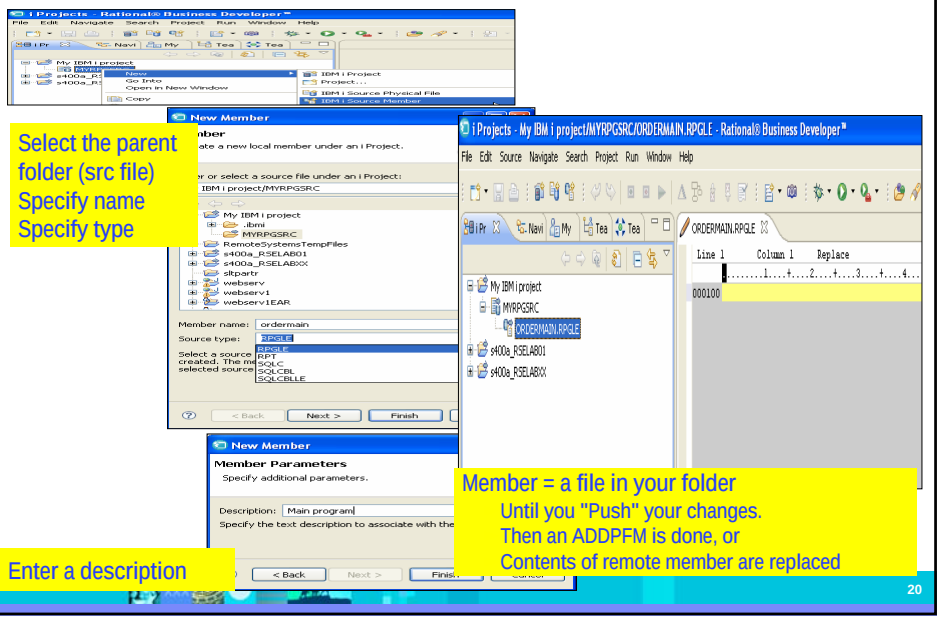
Adding a new source file to the i project



Source File = a folder in your project
Until you "Push" your changes. Then a CRTSRCPF is done

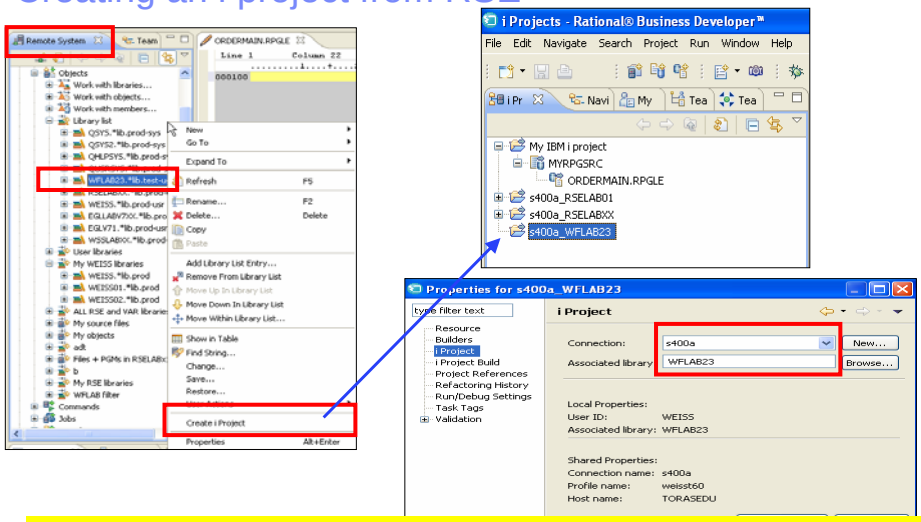
Project contains a source file (local only)

Adding a member to an i project source



Member = a file in your folder
- Until you "Push" your changes.
- Then an ADDPFM is done, or
- Contents of remote member are replaced

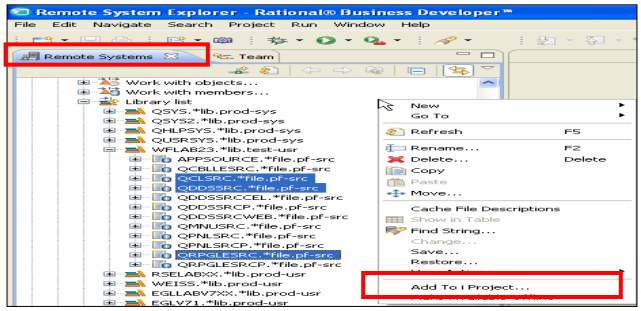
Creating an i project from RSE



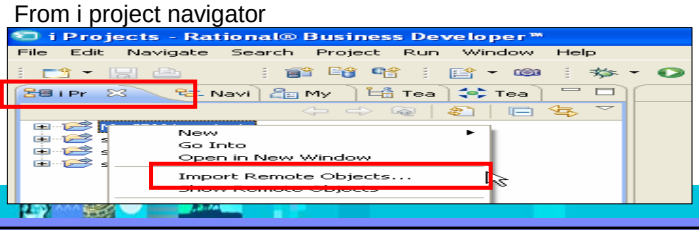
- **The connection and associated library information is automatically applied to the i project**
- **The default project name is the concatenation of connection name and library name**

What about adding existing members on IBM i?

- From RSE use Add to Project action to copy them

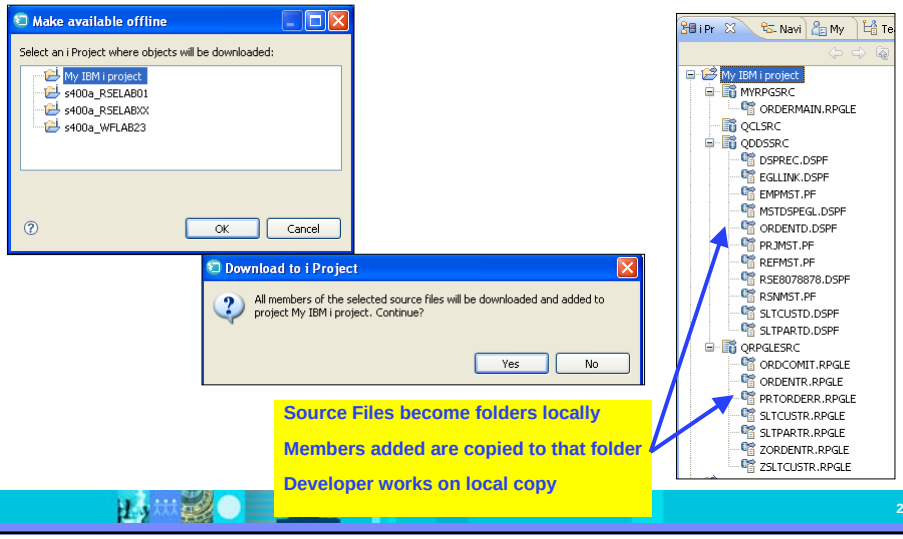


- From i project navigator



Add to i project

- From RSE use Add to Project action to copy them



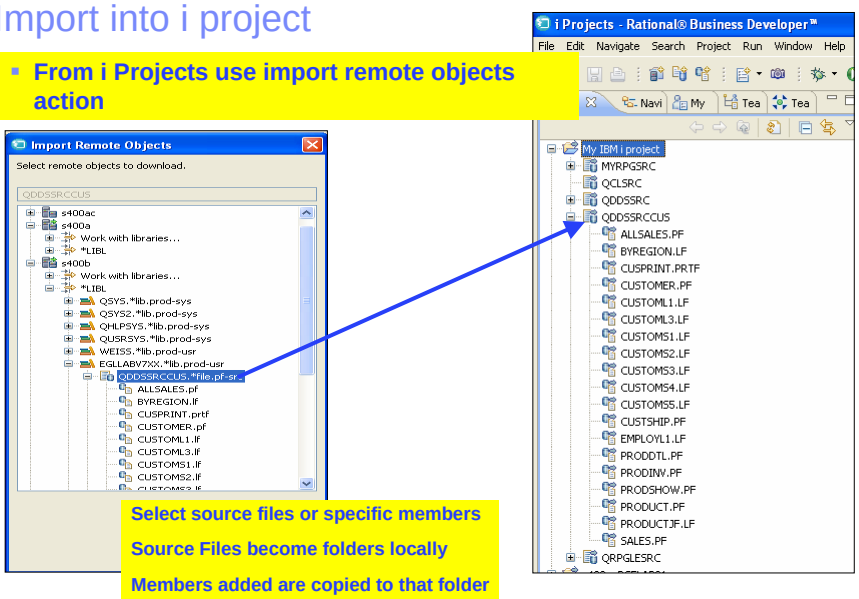
Source Files become folders locally

Members added are copied to that folder

Developer works on local copy

Import into i project

- **From i Projects use import remote objects action**



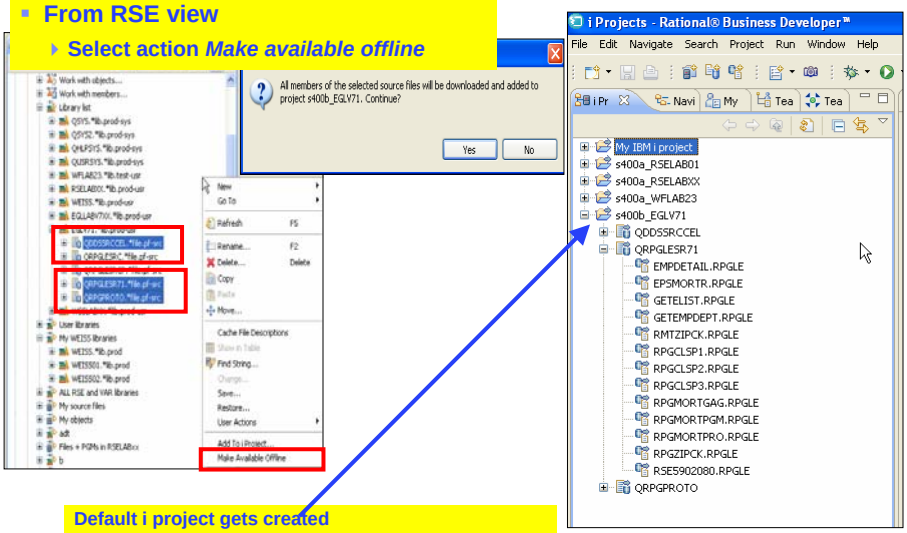
Select source files or specific members

Source Files become folders locally

Members added are copied to that folder

Creating default i project and adding objects

- **From RSE view**
  - **Select action *Make available offline***

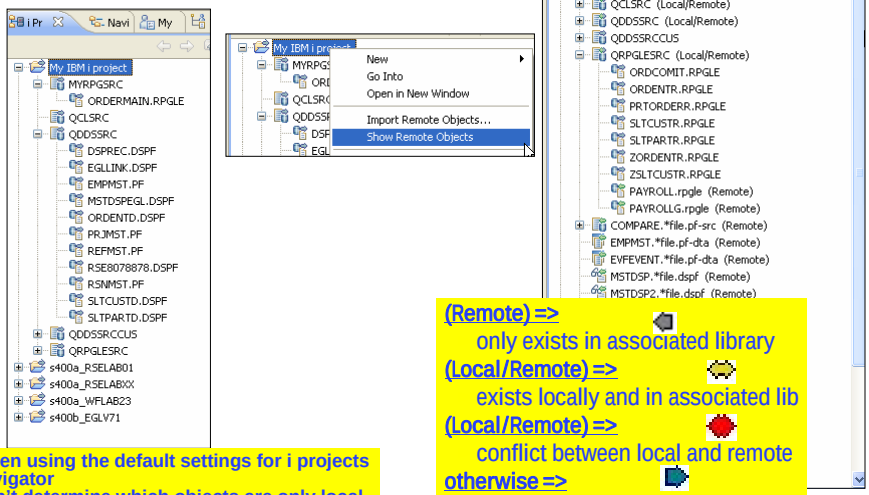


Default i project gets created

Source files get copied to the project with members

i project navigator
Show Remote Objects

Local and remote objects are shown



(Remote) =>
only exists in associated library

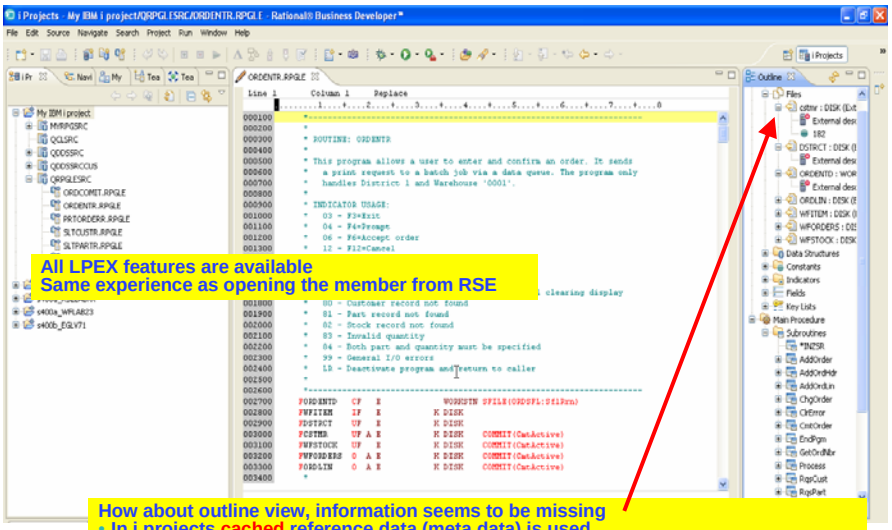
(Local/Remote) =>
exists locally and in associated lib

(Local/Remote) =>
conflict between local and remote

otherwise =>
only exists locally

When using the default settings for i projects navigator
Can't determine which objects are only local and which objects are also available on IBM i server

Editing members in i projects



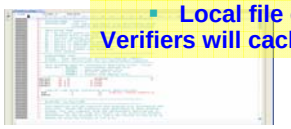
All LPEX features are available
Same experience as opening the member from RSE

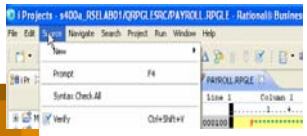
How about outline view, information seems to be missing
- In i projects cached reference data (meta data) is used
- If reference data is not found in cache the connection is used to fetch the information

Using IBM i reference data in i projects

What is a RSE cache?
- Local file containing reference data

Verifiers will cache reference data





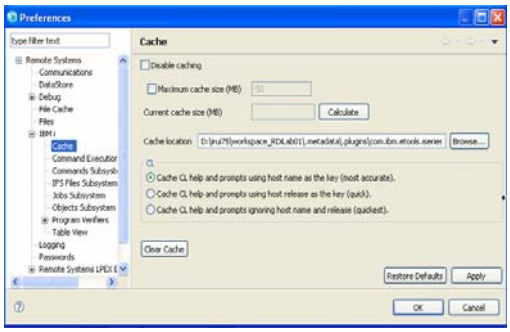
Cache
- File A reference data
- File B reference data
- File C reference data
- File D reference data

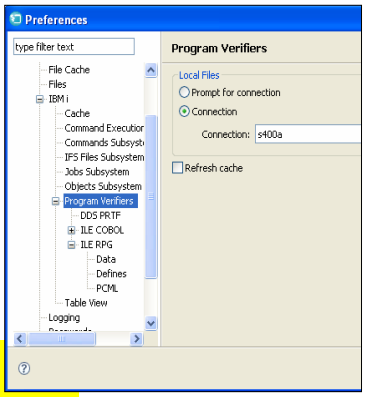
Library
- Physical File A
- Logical File B
- Display File C
- Printer File D

RSE job with your profile

Verify will try to use cache
No cached info found then download from IBM i
Using default connection in project

Looking at cache options



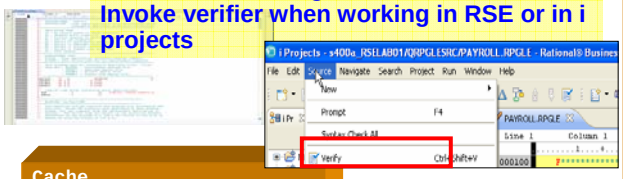


You can
- Disable caching,
- Restrict the size of cache on your workstation disk
- Specify the location of the cache (default the current workspace)
- Specify how much you want to cache
- You can clear the cache and dispose of any info in there

- Use verifier properties to specify to refresh cache when verifying

Filling the cache

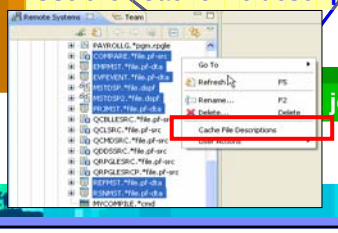
Use the verifier to get reference info
Invoke verifier when working in RSE or in i projects



Library
- Physical File A
- Logical File B
- Display File C
- Printer File D

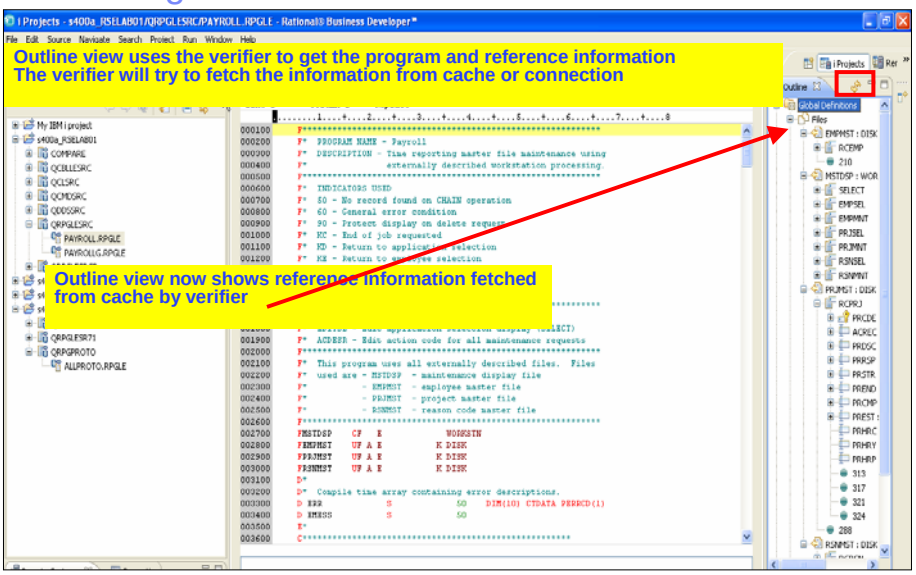
Cache
- File A reference data
- File B reference data
- File C reference data
- File D reference data

In RSE select files you want cache information for
Use the "Cache file descriptions" action

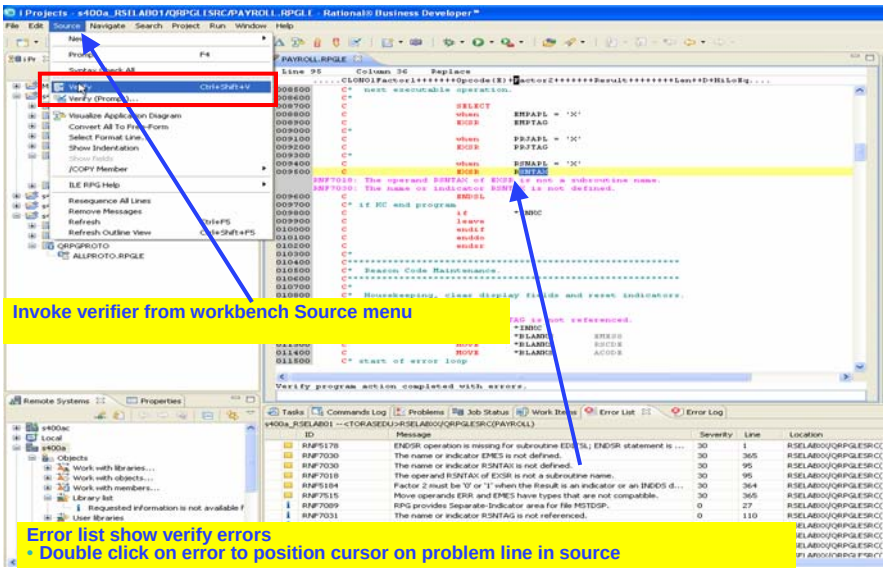


job with your profile

Refreshing the outline view when disconnected



Verifying in i projects



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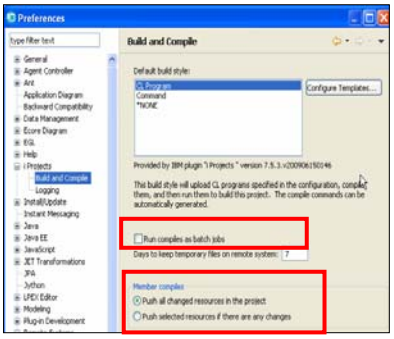
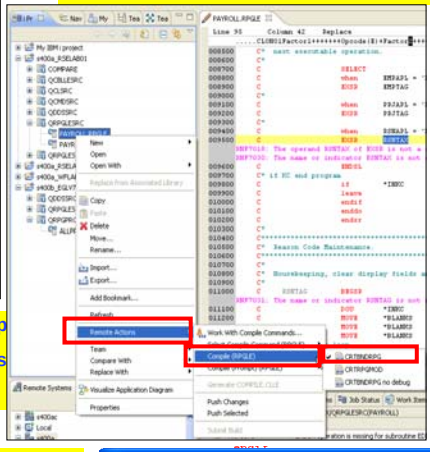
Remote COMPILE

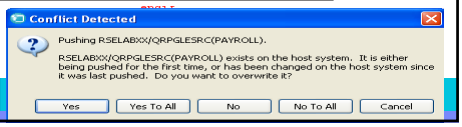
Remember source is kept on workstation
Before compiling the source has to be pushed (uploaded) to the IBM i server.
Associated library is only target for the Pushed source members.



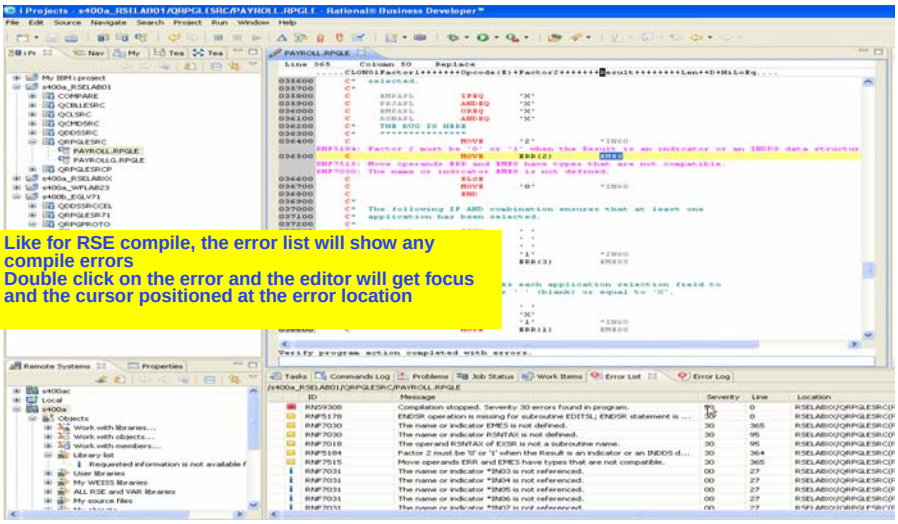
Option to not submit to batch, instead comp in RSE job
Option to push all changed resources or jus selected changed



The remote compile action will push member(s) If there is a conflict on the server a message is displayed.
Compile is started after everything is pushed.

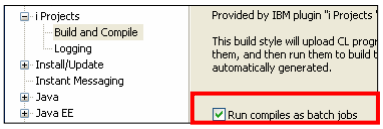


Error list

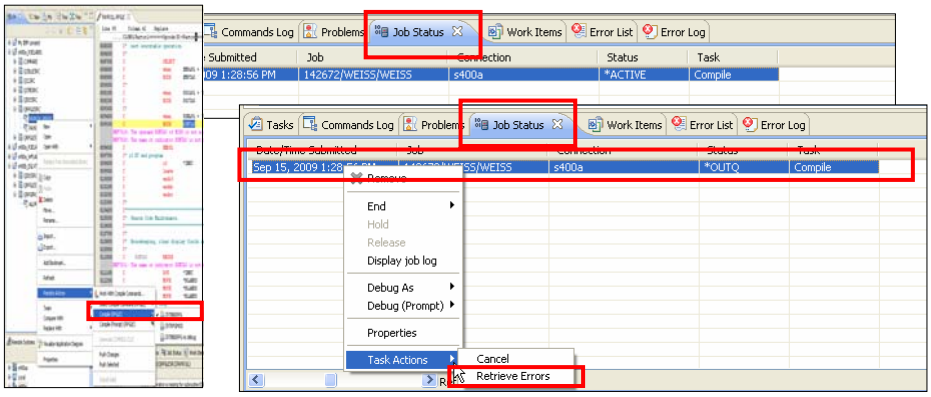


Like for RSE compile, the error list will show any compile errors
Double click on the error and the editor will get focus and the cursor positioned at the error location

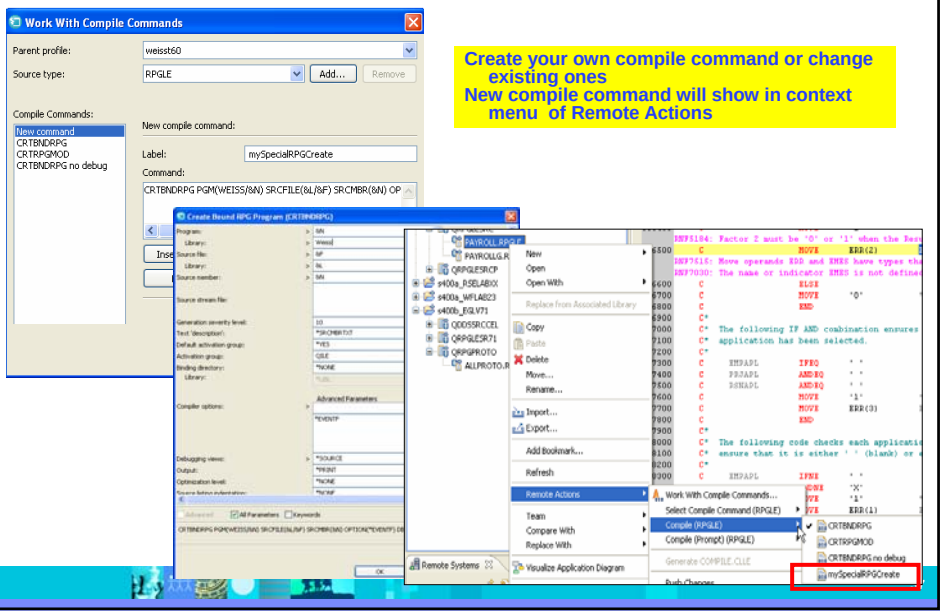
Remote COMPILE using submit to batch



Same remote action but submit to batch
- **Job status view contains job info**
- **When job is in OUTQ status**
- **Retrieve error list**

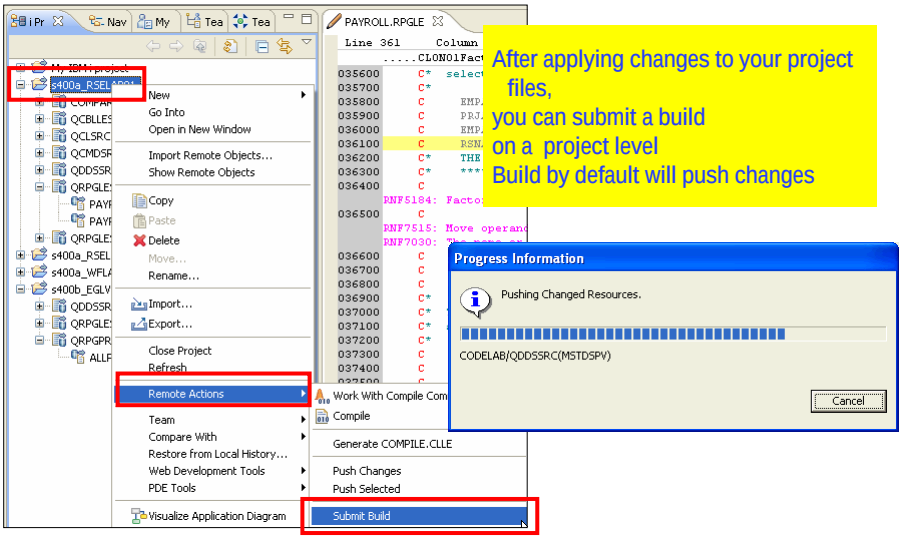


Work With Compile Commands



Create your own compile command or change existing ones
New compile command will show in context menu of Remote Actions

Project Build



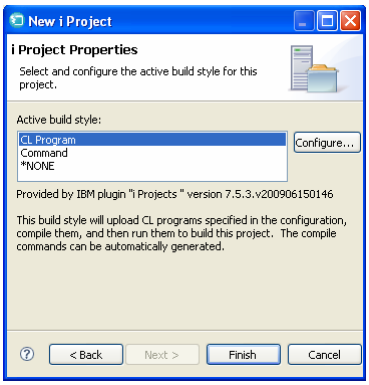
After applying changes to your project files,
you can submit a build
on a project level
Build by default will push changes

Build Styles

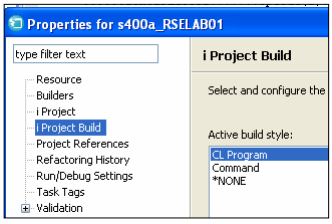
- Specify how to build the i project on the remote system
- Three IBM supplied build styles
  - CL program
    - I project automatically creates CL program
    - CRT statement for each changed member in project
    - Uses last CRT command from RSE for each source type
  - Command
    - You specify a command to run your own build script
  - *NONE
- ISVs can plug-in additional build styles

i Projects defining the build style

Build style controls how the i project is built on the remote system
Defined when project is created
CL program is the default



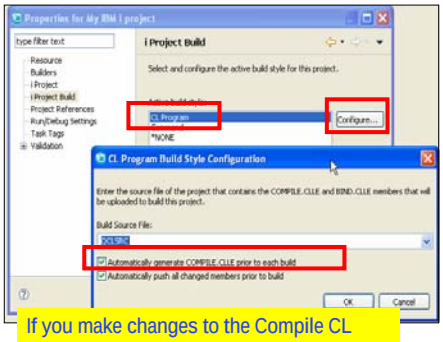
Change in project properties
Specify Build Style and
style configuration parameters
for i Project
more information on next slide ...

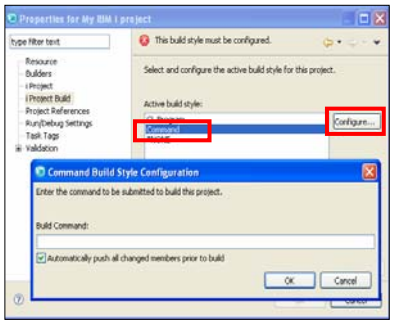


i Projects configure build style

For CL Program specify:
- Source file
- Automatically create compile CL program
- Push all changed members before build program runs

For command specify:
- The command to run, to execute your build script
- Push all changed members before build program runs



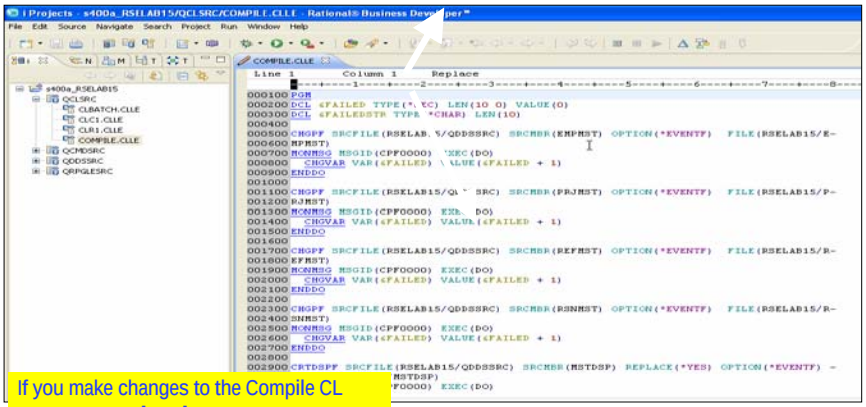


If you make changes to the Compile CL program, uncheck the automatic creation checkbox

i Projects Sample Compile CL program

COMPILE CL program gets created
Source generated
- For each member in the project a CRT command is added

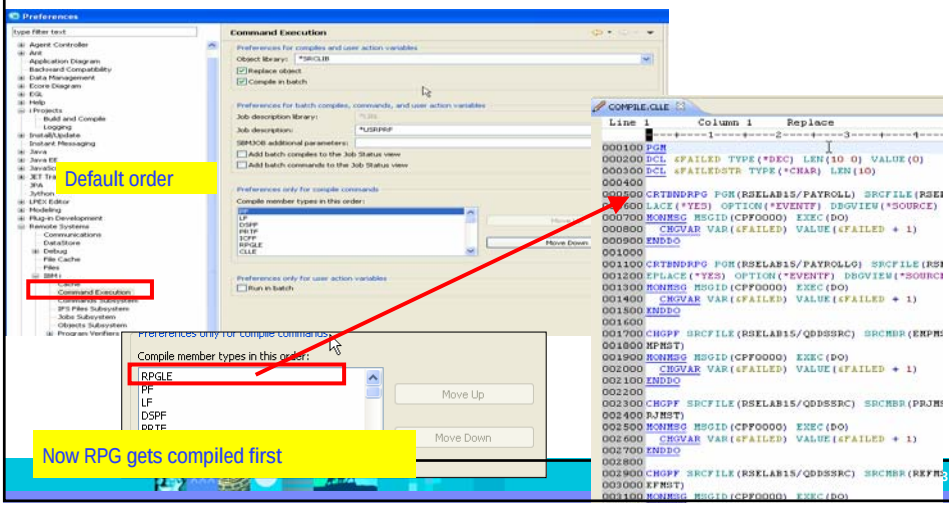
This program is the build script and runs when you submit a build



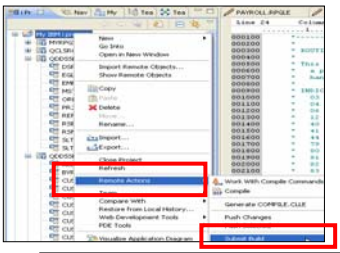
If you make changes to the Compile CL program, **uncheck** the automatic creation checkbox

i Projects Changing the order of member type

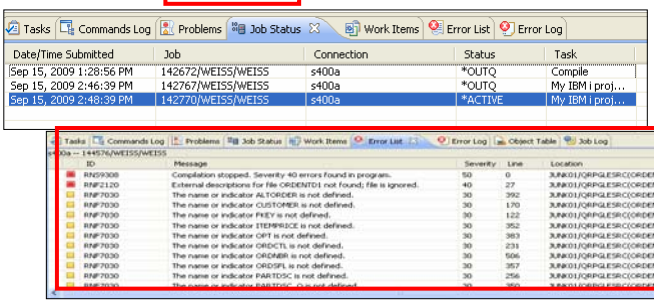
Use preference settings to change the order of CRT commands in COMPILE CL depending on the member type



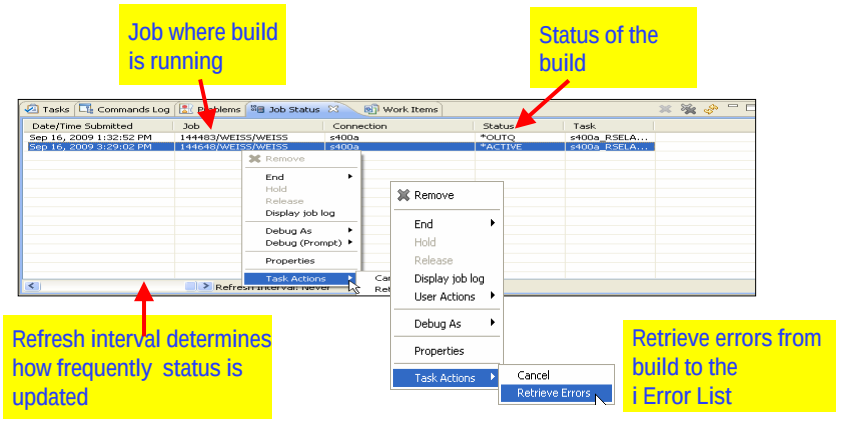
Example Project Build



After applying changes to your project files,
- submit a build
- Compile CL program gets assembled
- CRT commands for all sources run
- Check job status,
  - if OUTQ
- Retrieve errors to show in error list

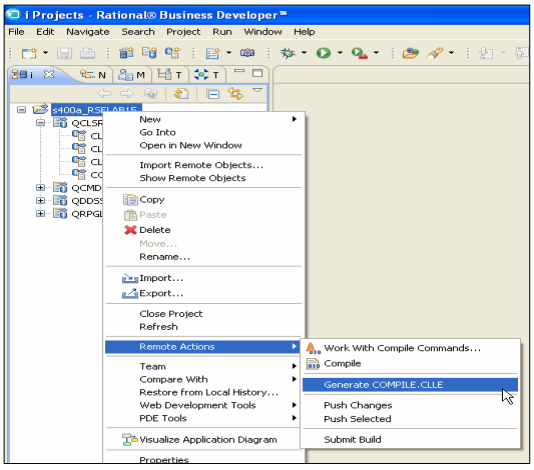


i project Build Job Status view



Create COMPILE.CLLE

- **Can generate COMPILE.CLLE for project without building**
- **Use program as base and change it to your needs**



Agenda

- **i Projects**
  - Overview
  - How do I use them
  - Working with source files and members
  - Remote actions, compile and build
  - **Using RTCi and i Projects**

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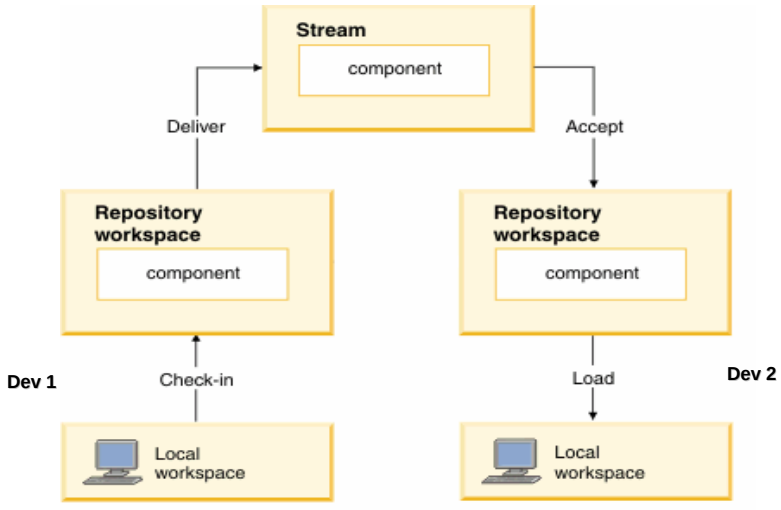
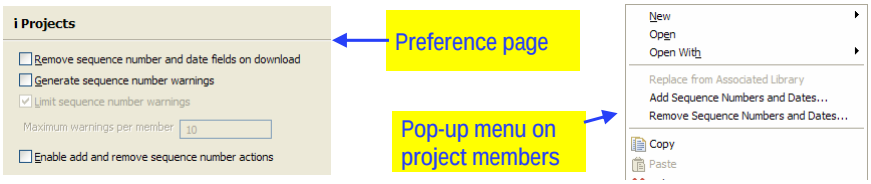
Working With RTCi SCM in a Team Environment



Developers using i projects to work with RTCi

i Projects – Date Field and Seq Number

- **Automatic remove of date / sequence number fields**
  - Preference to remove sequence number and date fields on download from IBM i member to project
    - Default values re-added on upload
    - Add / remove date and sequence number actions added to pop-up menu
- **Useful for**
  - Change management systems
  - Using editors that don't understand timestamp / sequence number fields



Summary

i Projects provide a way to work with RPG, COBOL, CL and DDS source locally on your workstation

- Disconnected development
- Structured development
- Change management

Leverages all the power of the RSE

Plus the ability to:

- Track local change history
- Automatically remove / add timestamp and sequence number fields

Lots of resources available to get you started:

- **RPG Café with RDi hub**
  - www.ibm.com/software/rational/cafe/community/rpg/rdi
- midrange mailing list
  - http://lists.midrange.com/mailman/listinfo/wdsci-l
- Webcasts and System i magazines
- COMMON and IBM Power Technical Conferences
- User group meetings

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Summary

- i Projects provide a way to work with RPG, COBOL, CL and DDS source locally on your workstation
  - Disconnected development
  - Structured development
  - Change management
- Leverages all the power of the RSE
- Plus the ability to:
  - Track local change history
  - Automatically remove / add timestamp and sequence number fields

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