Using Code Templates to enhance software consistency and quality

CURTISS WRIGHT Flow Control Company
SCIENTECH

Overview Schedule

5 min – Introduction and Greetings
10 min – Why Code Templates?
10 min – The R*TIME Code Template
10 min – Demo
10 min – Q&A

CURTISS WRIGHT Flow Control Company
SCIENTECH

Introductions

- Brent Young - Instructor

  Lead Software Engineer

  Cromwell, CT

  860-632-5874 ext14

  byoung@curtisswright.com

CURTISS WRIGHT Flow Control Company
SCIENTECH

Why Code Templates?

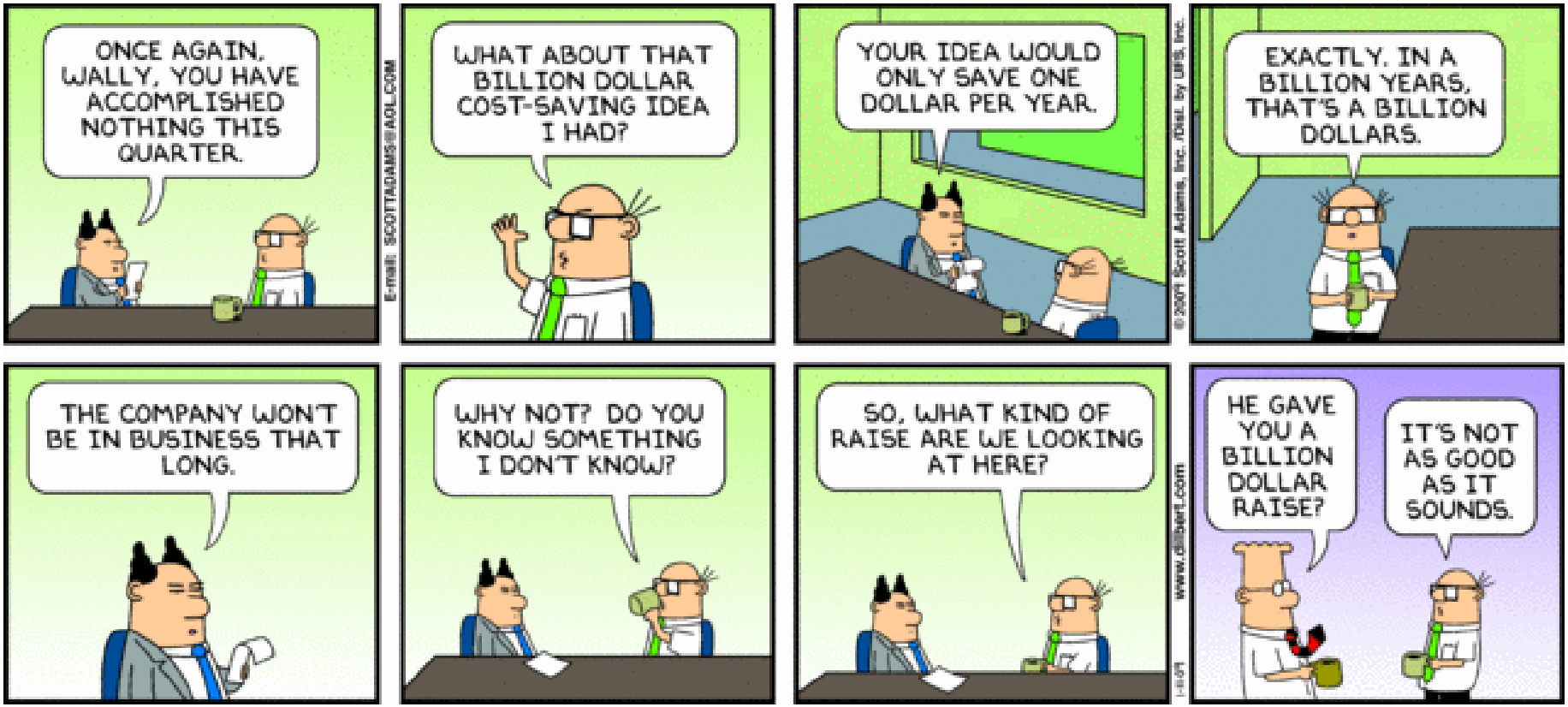
- What is a Code Template? (From Wikipedia)
  - a standardized set of code used as a pre-formatted example or starting point on which to base other code

CURTISS WRIGHT Flow Control Company
SCIENTECH

Why Code Templates? (Generic)

- Reduces time required to create a project. ($$$)
- Enhances software consistency and quality (Also $$$)
  - Gives source code a consistent look and feel
  - Helps enforce Coding standards. i.e. Good Programming Practices
  - Provides a tested base platform

CURTISS WRIGHT Flow Control Company
SCIENTECH



CURTISS WRIGHT
Flow Control Company
SCIENTECH

Why Code Templates? (R*TIME)

- Each R*TIME PPC Project uses a Standards document to define how the code template will be set up.
- The code template is made to match customer specifications.

CURTISS WRIGHT Flow Control Company
SCIENTECH

Why Code Templates? (R*TIME)

- Verifies functionality required for system integration is handled. (Overhead)
  - Sets up a Template for the Watchdog Timer.
  - Automatically attaches to System Shared Memory to handle Database Updates.

CURTISS WRIGHT Flow Control Company
SCIENTECH

Why Code Templates? (R*TIME)

- Sets up for using an Initialization file.
- Provides functions to Get data from the Initialization on startup and reload the Initialization file if and when it changes during Run Time.
- Dynamic Debugging- provides the ability to provide debug output during run time without having to modify code or put it into debug.

CURTISS WRIGHT Flow Control Company
SCIENTECH

Why Code Templates? (R*TIME)

- Has place holders for Failover processing
- Has place holders for Simulator processing
- Handles Windows and UNIX system implementation differences
- Handles UNICODE message strings

CURTISS WRIGHT Flow Control Company
SCIENTECH

Why Code Templates? (R*TIME)

- TCP/IP Class – A C++ Class that wraps the Standard TCP/IP functions
- Serial Class – A C++ Class that wraps the standard Serial Communication functions.
- Global Interface Functions – Allows a standard mechanism for gathering data from external systems.

CURTISS WRIGHT Flow Control Company
SCIENTECH

Why Code Templates? (Coding standards)

- Helps enforce Coding standards including:
  - Architecture - Platform neutral C and C++
  - Code Comments - Comments are a very important part of the documentation and maintenance of code

CURTISS WRIGHT Flow Control Company
SCIENTECH

Why Code Templates? (Coding standards)

- File Header Comments – Use of standard R*TIME File Header
- Function Header Comments - Function heading comments provide a standard set of information and are required at the beginning of each software module.
- Naming Conventions – Hungarian Notation should be used for all new applications.

CURTISS WRIGHT Flow Control Company
SCIENTECH

Why Code Templates? (Coding standards)

- Hungarian Notation
  - Using Hungarian notation, variable names begin with one or more lowercase letters that denote the variable type, thus providing an inherent identification. For example, the prefix h is used to identify a handle, as in **hWnd** or **hDlg**, referring to window and dialog box handles, respectively. In like fashion, the prefix lpsz identifies a long pointer to a null-terminated (ASCII) string.

CURTISS WRIGHT Flow Control Company
SCIENTECH

Why Code Templates? (Coding standards)

- Application Messaging
  - Applications should generate program messages for abnormal system events.
  - Messages can be written to system message files or console.

CURTISS WRIGHT Flow Control Company
SCIENTECH

The R*TIME Code Template

- Step 1 – Install the VS Templates
  - Get the Zip file from \\IF-NT\RTIME\VS_WIZARDS
  - Extract the Zip file to your C Drive – all the appropriate files will be automatically put in the proper location.

CURTISS WRIGHT Flow Control Company
SCIENTECH

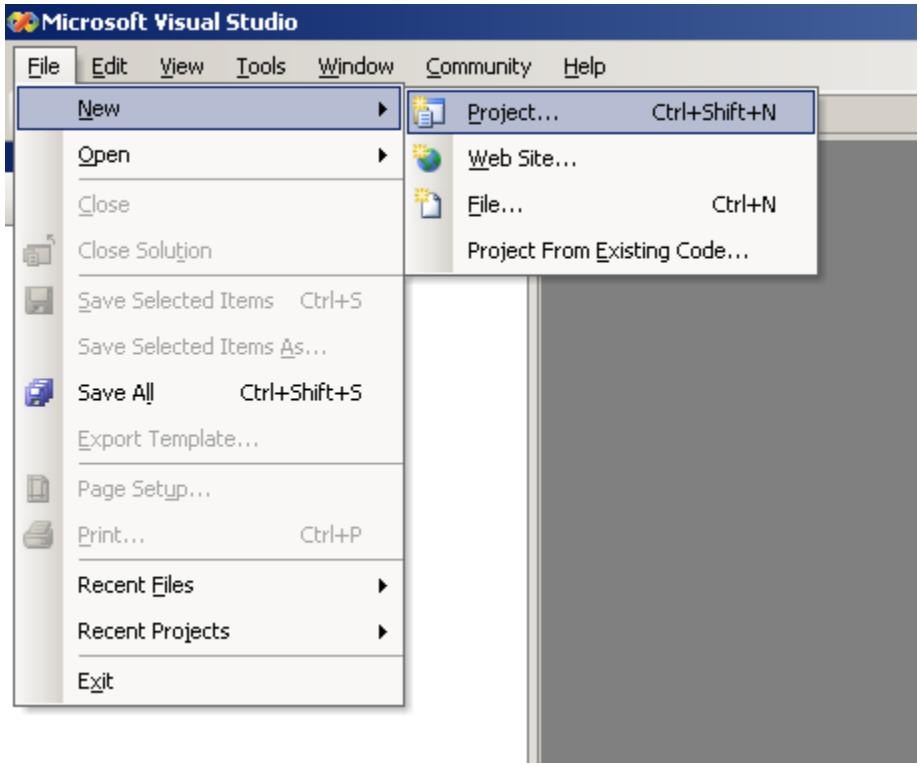
The R*TIME Code Template

- Location of VS Templates
  - VS2005
    - Project Files – C:\Program Files\Microsoft Visual Studio 8\VC\vcprojects
    - Wizard Files – C:\Program Files\Microsoft Visual Studio 8\VC\VCWizards
      - RTimeBgCppApp
      - RTimeExtCppApp

CURTISS WRIGHT Flow Control Company
SCIENTECH

The R*TIME Code Template

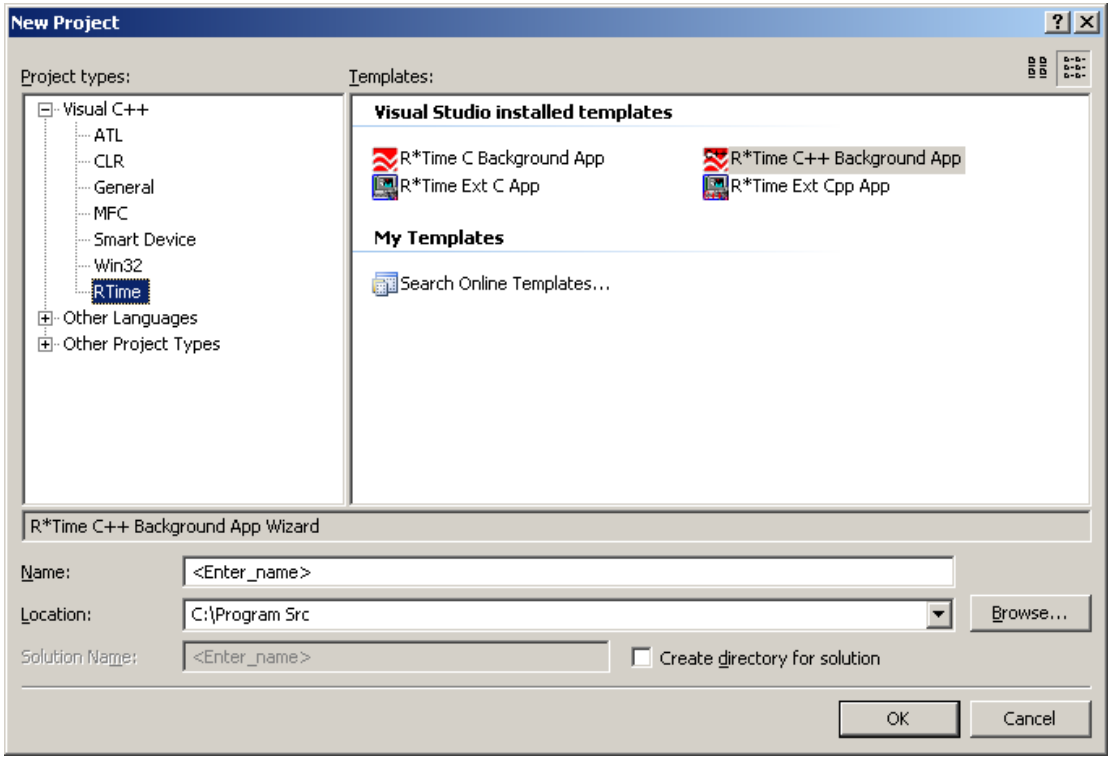
Step 2 – Open VS and create a new VS Project



CURTISS WRIGHT Flow Control Company
SCIENTECH

The R*TIME Code Template

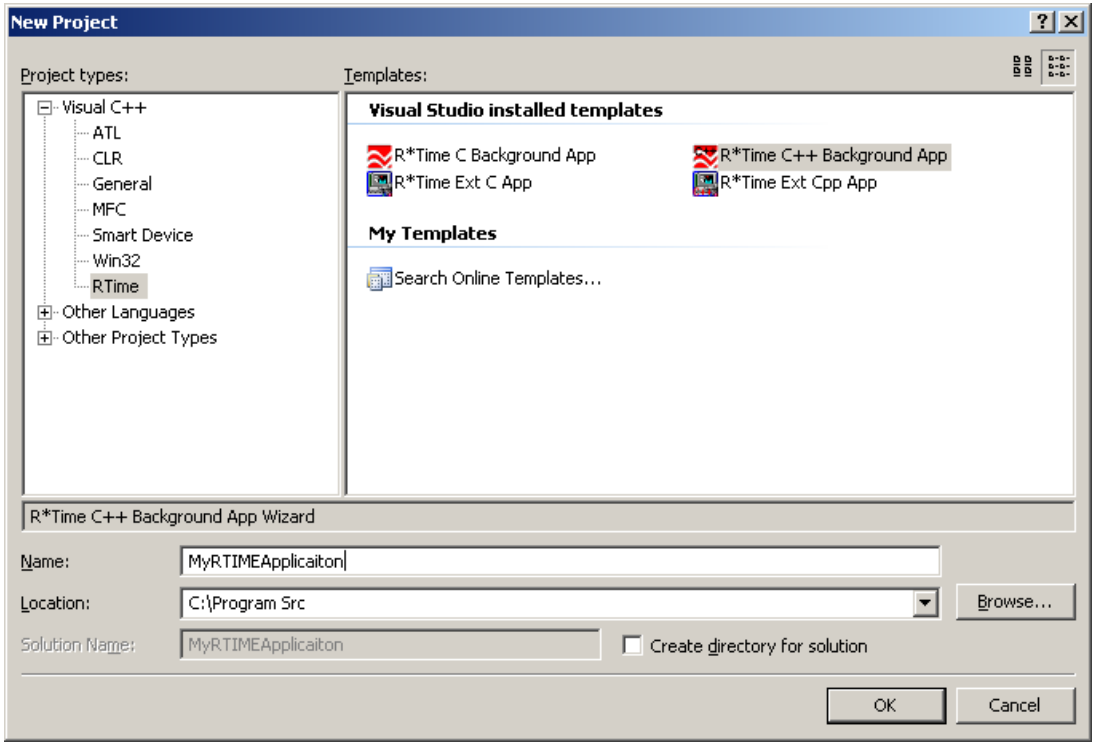
Step 3 – Select the Type of R*TIME Project



CURTISS WRIGHT Flow Control Company
SCIENTECH

The R*TIME Code Template

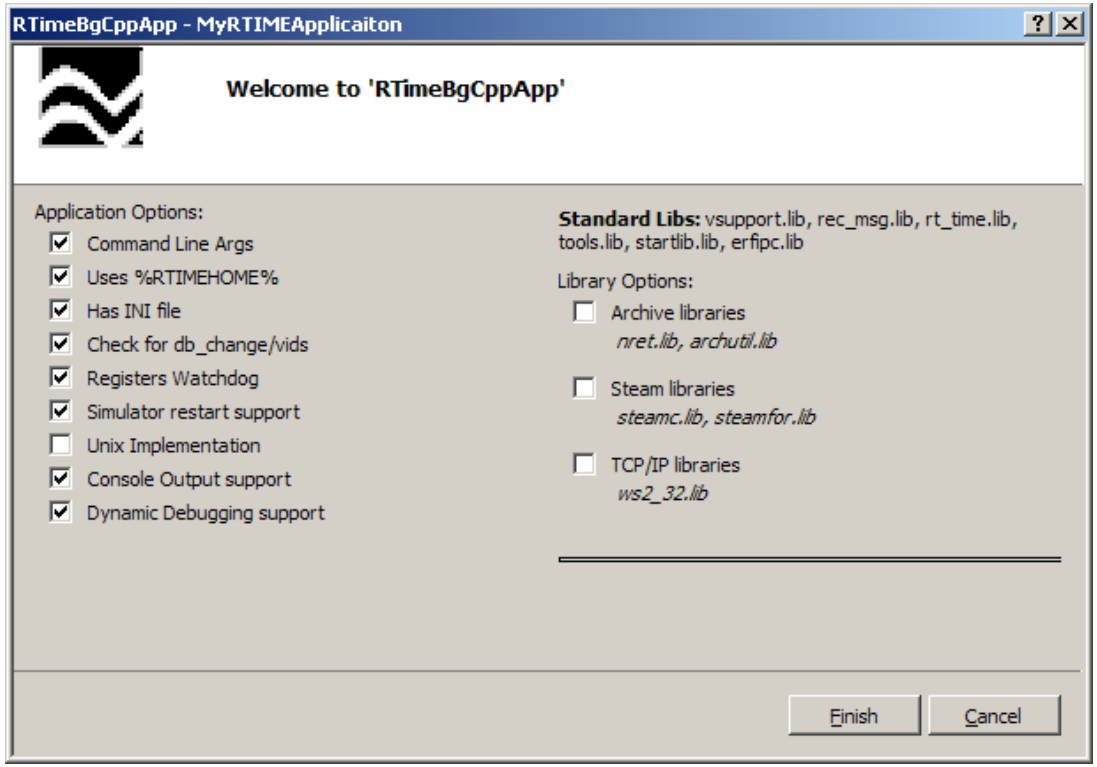
Step 4 – Give the Project a Name and Location



CURTISS WRIGHT Flow Control Company
SCIENTECH

The R*TIME Code Template

Step 5 – Choose the appropriate Project settings



CURTISS WRIGHT Flow Control Company
SCIENTECH

The R*TIME Code Template

Step 6 – Program you Application

Step 7 – Fill out and Verify the R*TIME Application Checklist

CURTISS WRIGHT Flow Control Company
SCIENTECH

R*TIME Application Checklist

- Resolve need for all include files
- Remove any include files that are not required
- Resolve need for all library files.
- Remove any library files that are not required
- Resolve all TODO comments (don't leave them in the source code).
- Resolve the watchdog timer options (don't leave the defaults in there).

CURTISS WRIGHT Flow Control Company
SCIENTECH

R*TIME Application Checklist

- Verify that Standby processing has been addressed.
- Verify that Failover processing has been addressed.
- Verify that Simulator processing has been addressed.
- Verify that PSS processing has been addressed. (Especially for External applications)

CURTISS WRIGHT Flow Control Company
SCIENTECH

Code Template Demo

CURTISS WRIGHT Flow Control Company
SCIENTECH