Section 2

Introduction to VisualDSP++

VisualDSP++ 4.0

- VisualDSP++ is an integrated development environment that enables efficient management of projects.
  - Key Features Include:
    - Editing
    - Building
      - Compiler, assembler, linker
    - Debugging
      - Simulation, Emulation, EZ-KIT
      - Run, Step, Halt
      - Breakpoints, Watchpoints
      - Advanced plotting and profiling capabilities
      - Pipeline and cache viewers

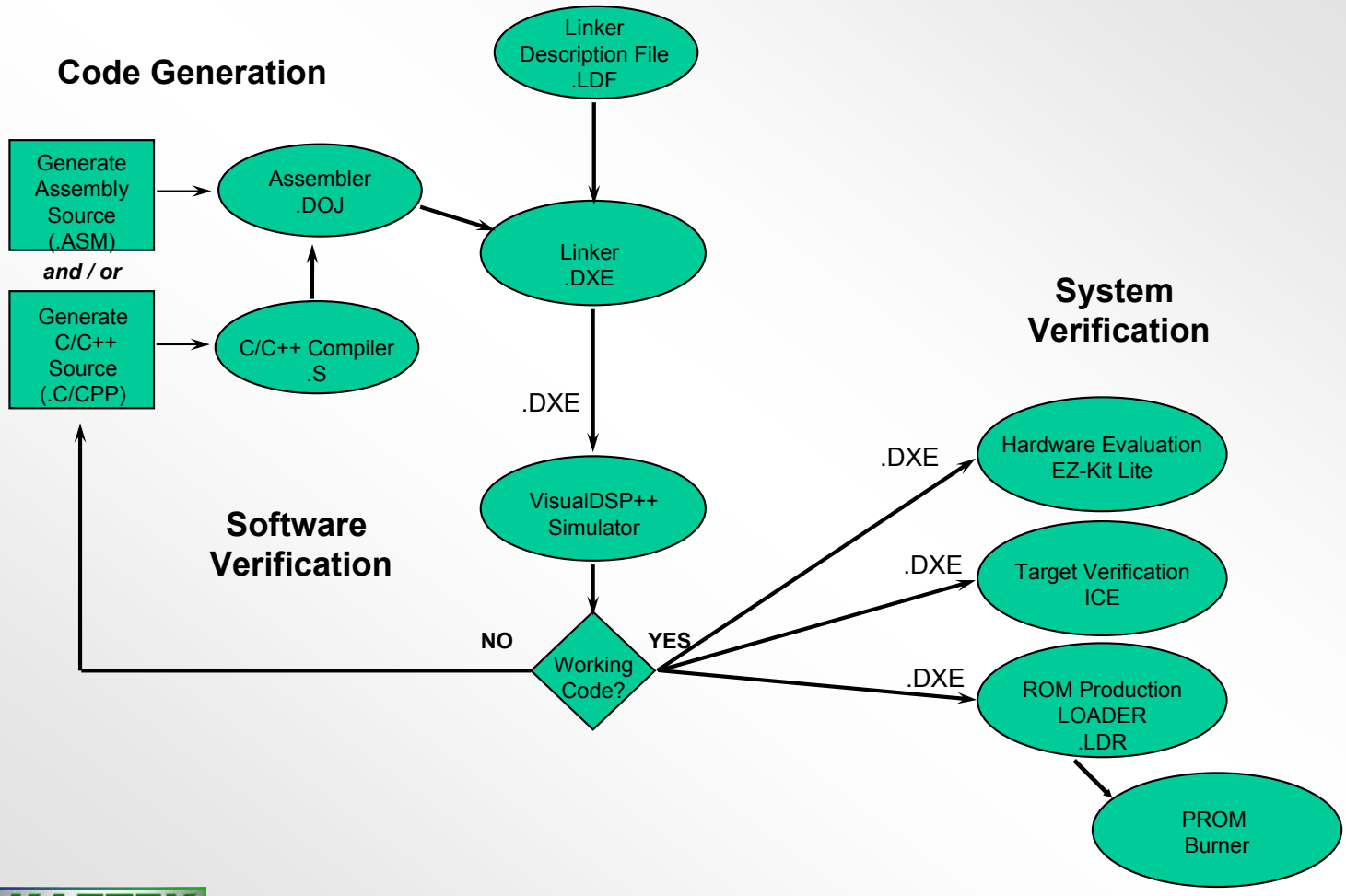
VisualDSP++

- What comes with VisualDSP++?
  - Integrated Development and Debugger Environment (IDDE), C/C++ Compiler, Assembler, Linker, VDK, Emulation and Simulation Support, On-line help and documentation
    - Part #: VDSP-BLKFN-FULL
    - Floating License Part #: VDSP-BLKFN-PCFLOAT
- VisualDSP++ is a common development environment for all ADI processor families
  - Blackfin
    - ADSP-BF5xx
  - TigerSharc
    - ADSP-TSxxx
  - Sharc
    - ADSP-21xxx
      - Each processor family requires a separate license

Features of VisualDSP++ 4.0

- Integrated Development and Debugger Environment (IDDE)
  - Multiple workspaces, projects, project groups
- Project Wizard
  - Create/configure a DSP project
- High level language support including C and C++
- Expert Linker
  - Graphical support for managing linker description files
  - Code profiling support
- Easy to use Online Help
- BTC (Background Telemetry Channel) Support
  - Data Streaming and Logging
- Easy to test and verify applications with scripts (TCL, VB, Java)
- VisualDSP++ RTOS/Kernel/Scheduler (VDK)
- Integrated Source Code Control
- Device Drivers and System Services

Software Development Flow



Invoking the Software Tools

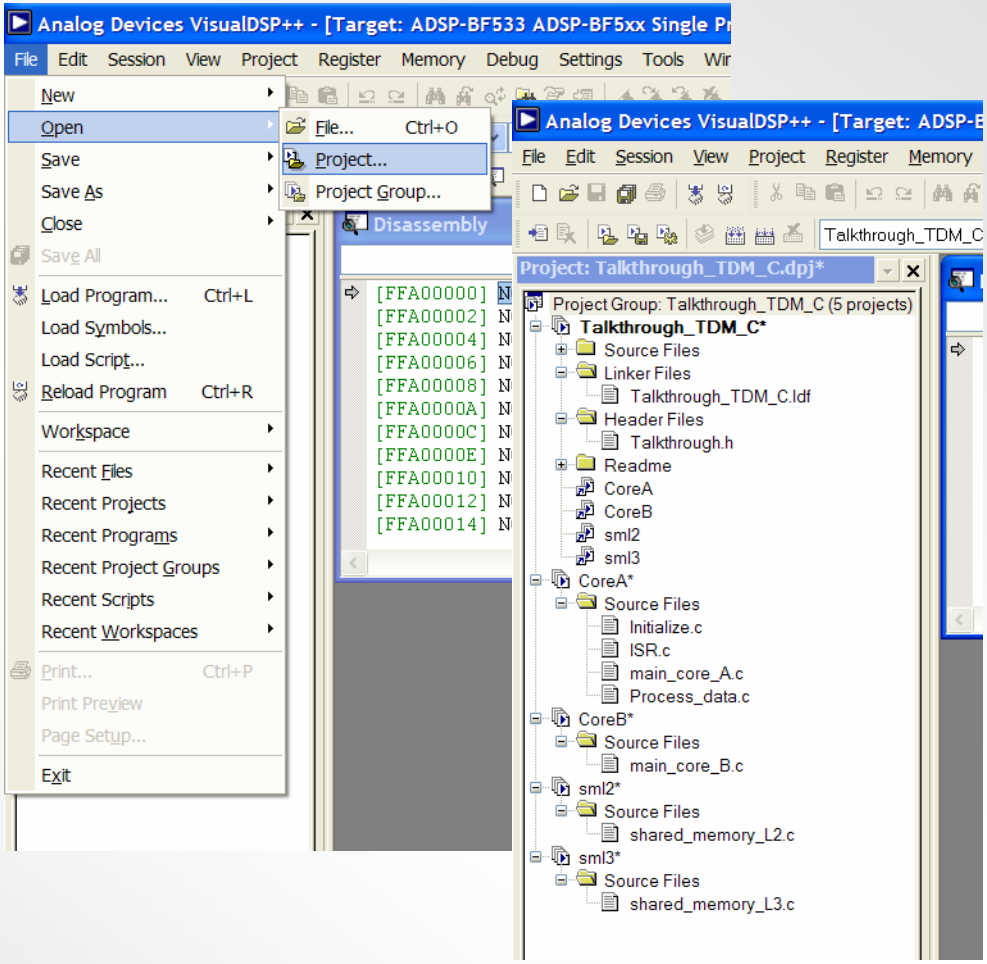
- **Software tools may be configured and called by the IDDE**
  - Software tools are configured via property pages
  - The IDDE calls the software tools it needs to complete the build
    - GUI front end to a command line ‘make’ utility
- **Software tools can be invoked from a Command line**
  - C Compiler: *ccblkfn* sourcefile -switch [-switch...]
  - Assembler: e*asmblkfn* sourcefile -switch [-switch...]
  - Linker: *linker* object [object…] -switch [-switch…]
  - Loader: *elfloader* executable -switch [-switches...]
- **For the complete list of switches see the appropriate tools manual**

Integrated Development and Debugger Environment (IDDE) Features

- **IDDE allows one to manage the project build**
- **The user configures the project and the development tools via property pages**
- **Project Property pages configure the project**
  - Project Property Page
  - General Property Page
  - Pre Build Property Page
  - Post Build Property Page
- **Development Tools Property Pages are used to configure the development tools**
  - Assembler Property Page
  - Compiler Property Page
  - Linker Property Page
  - Loader Property Page

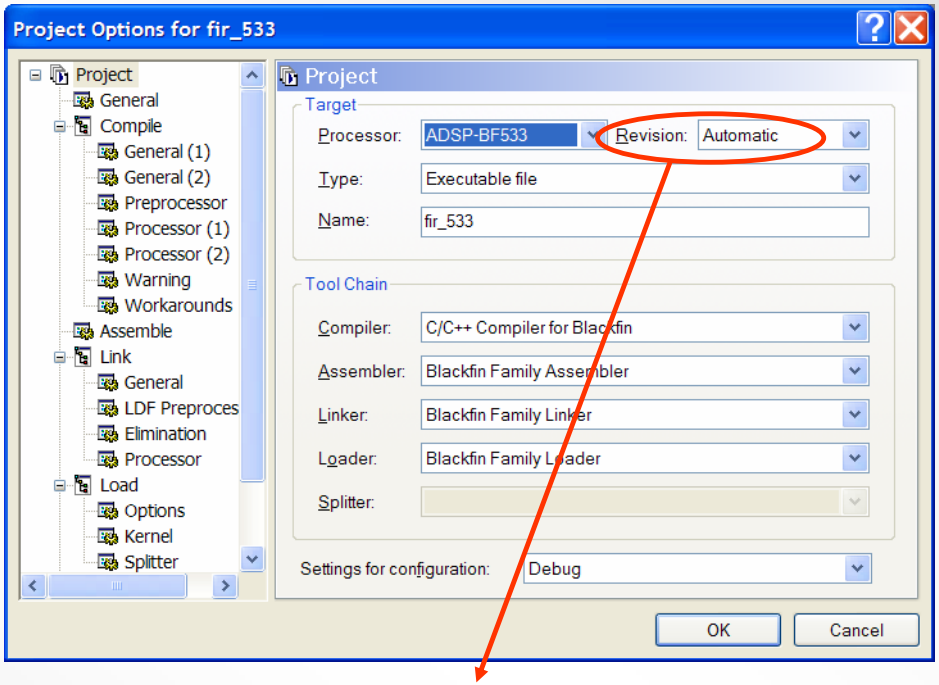
Project Development

- **Create a project**
  - All development in VisualDSP++ occurs within a project.
  - The project file (.DPJ) stores your program's build information: source files list and development tools option settings
  - A project group file (.DPG) contains a list of projects that make up an application (eg ADSP-BF561 dual core application)



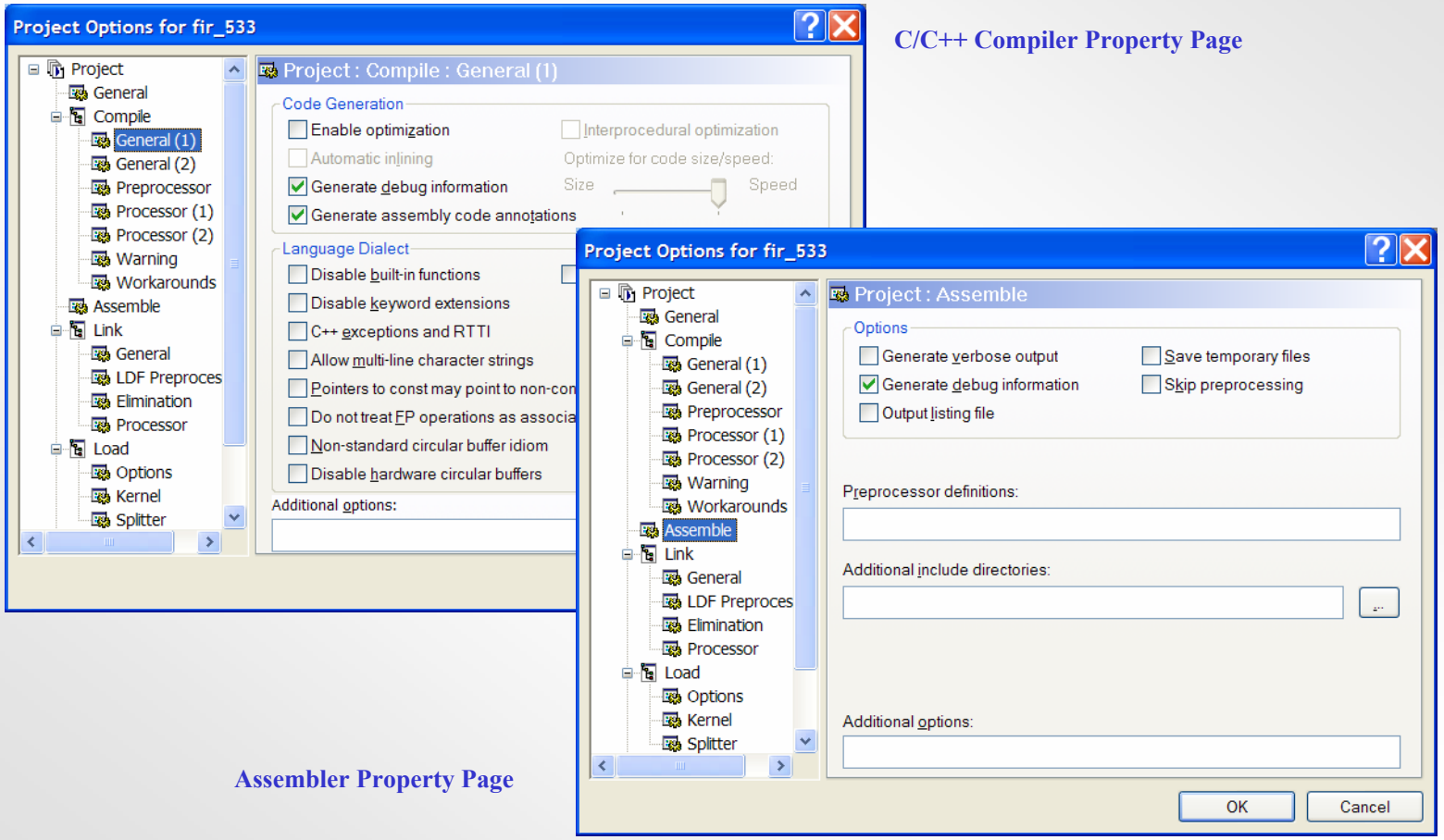
Project Property Page

- **Configure project options**
  - Define the target processor and set up your project options (or accept default settings) before adding files to the project.
  - The Project Options dialog box provides access to project options, which enable the corresponding build tools to process the project's files correctly



Enable building for a specific revision of silicon
- No need to specify '-si-revision' switch
- Automatic will attempt to determine revision of the attached target
- or specify a specific rev level (eg 0.3)

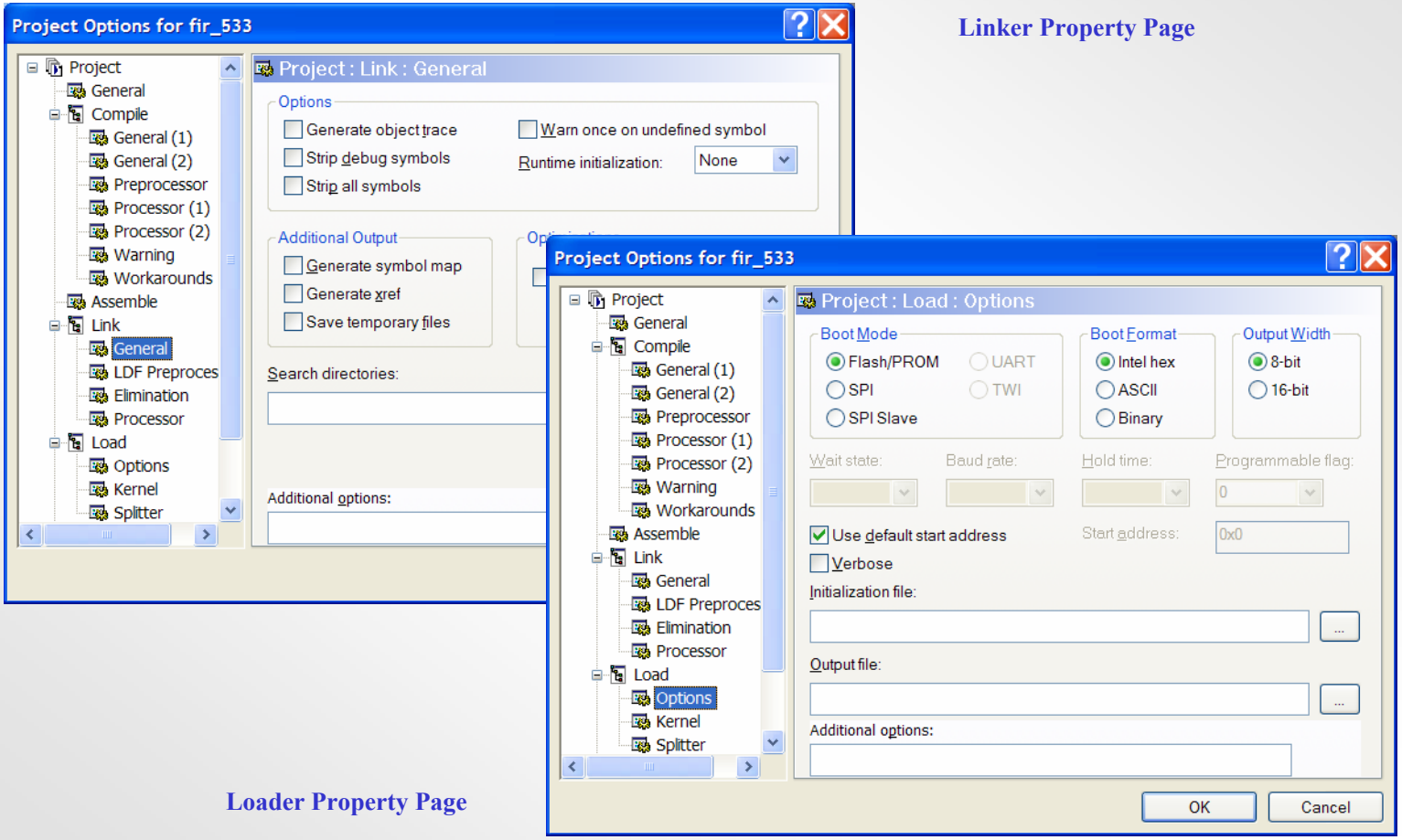
Property Pages



C/C++ Compiler Property Page

Assembler Property Page

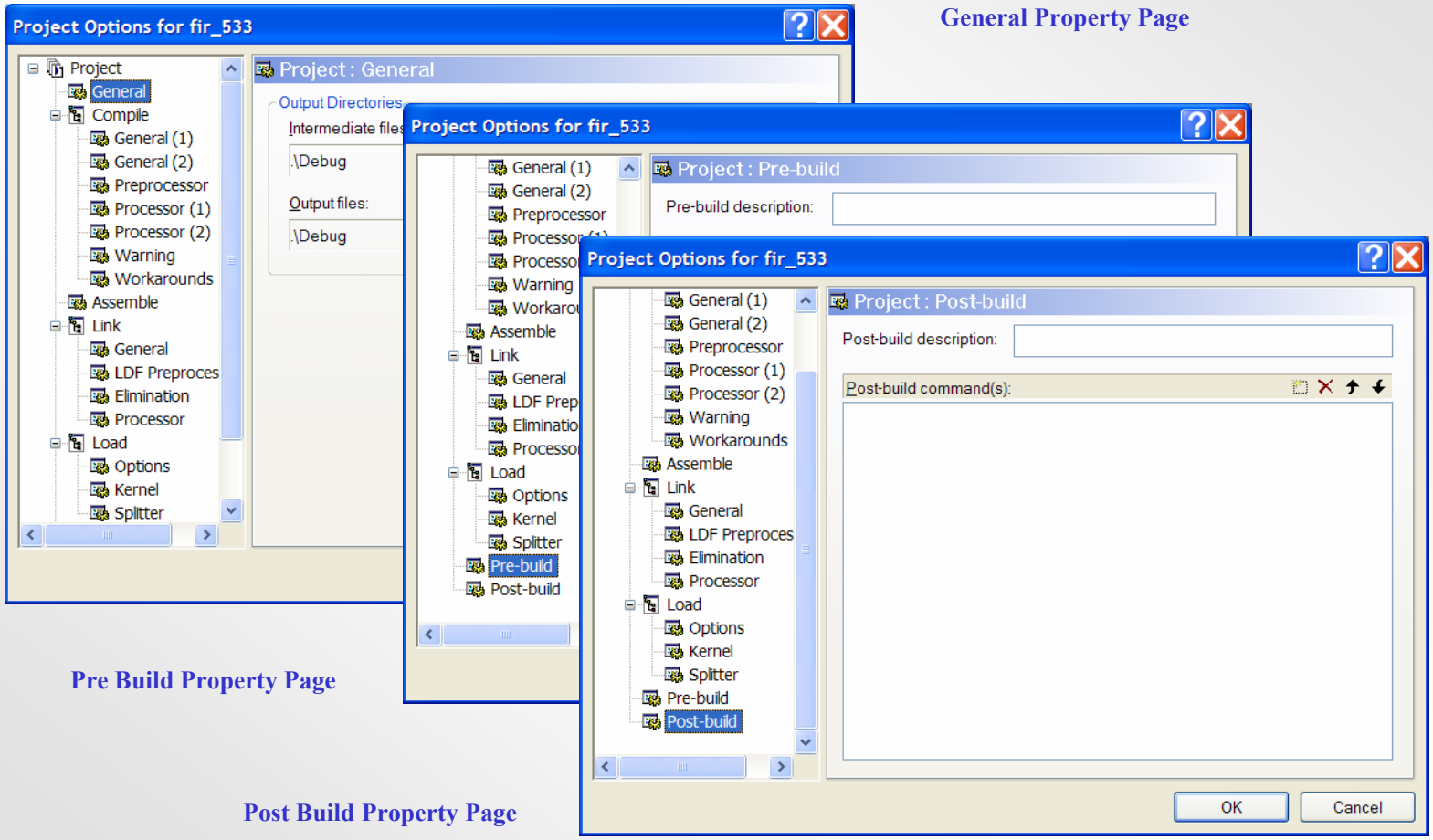
Property Pages



Linker Property Page

Loader Property Page

Property Pages



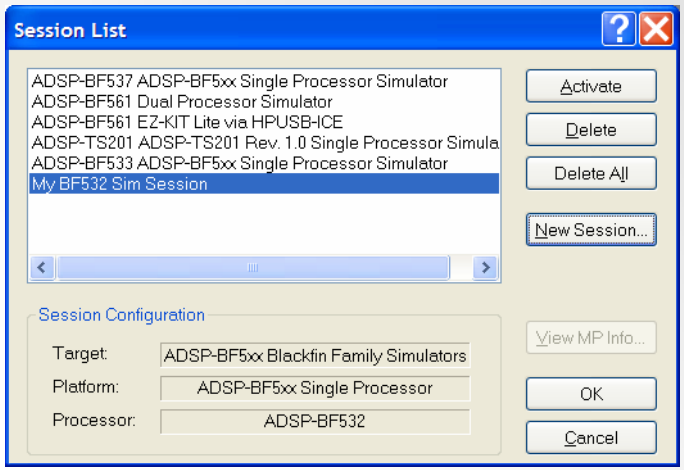
General Property Page

Pre Build Property Page

Post Build Property Page

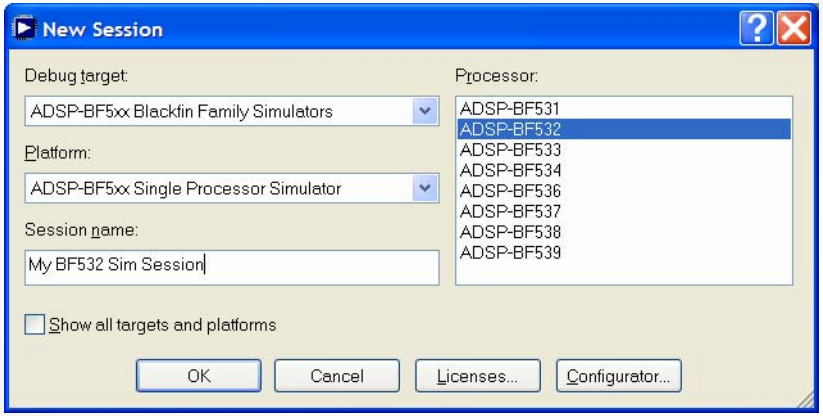
Selecting VisualDSP++ Sessions

- **Sessions define Debug Environments**
- **Select Sessions pull down menu**
  - Choose Sessions List
  - Select Session to activate
- **Define New Session from Session List**
  - Select New Session
  - Configure session as required e.g.



Debug target : ADSP-BF53x Family Simulator
Platform : ADSP-BF53x Single Processor Simulator
Session name : ADSP-BF533 ADSP-BF53x Single Processor Simulator

- **Click OK**
  - Session name will appear in Session List
- **Click Activate**
  - IDDE session will open



Debug Features

- Single Step
- Run
- Halt
- Set Breakpoints
- Register Viewing
- Memory
  - Viewing
  - Plotting
  - Dump/Fill
- Code Optimization Utilities
  - Profiling
  - Pipeline Viewer
  - Cache Viewer
- Compiled Simulation
- High Level Language debug support
  - Mixed mode

Online Help

- Fully searchable and indexed online help
- Includes quick overviews on using VisualDSP++ and all of its features.
- Excellent supplement to the manual for things that are better represented visually such as what various plot windows should look like.
- Customizable by using the “Favorites” window

On Line Help Example

VisualDSP++ 4.0 Help

Hide Locate Back Forward Home Print Options

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Type in the keyword to find:

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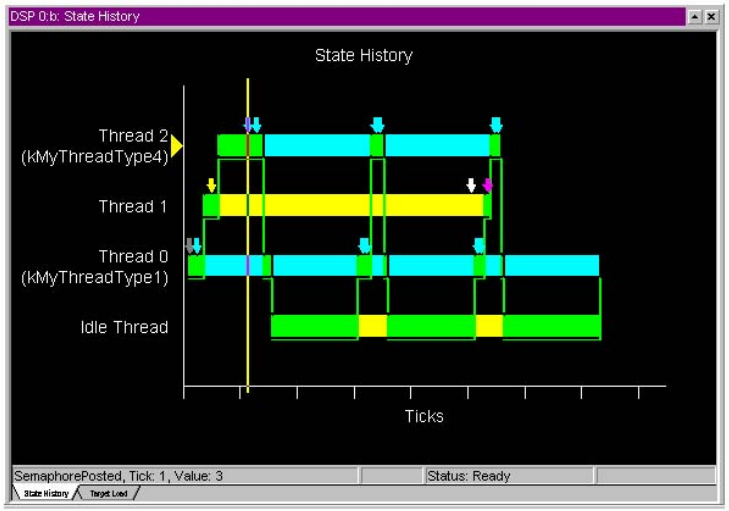
  - deleting semaphores

Display

VDK State History Window Operations



Status Bar

The status bar (bottom of plot) of the State History page of the VDK State History window shows the event's details and thread status when the data cursor is enabled. Event details include the event type, the tick when the event occurred, and an event value.

The value for a thread-switched event indicates the thread being switched in or out.

The status bar indicates thread status for the active location.

Data Cursor

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