RTSC Ease of Use Update

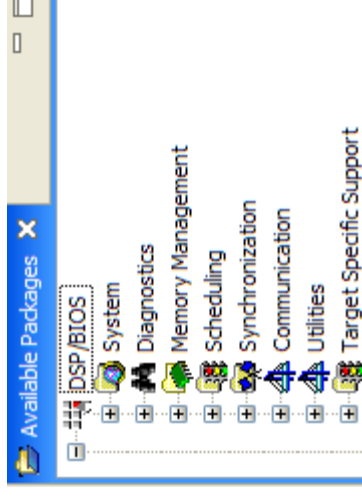# XGCONF

On track, but could use a little more work.

XGCONF Status

- Currently shipping in CCS4 beta 5

- Invoked automatically when opening a cfg file

- Good foundation in place though still buggy (lots of fixes going into XDC 3.15.01 slated for mid June)

- To get maximum benefit we'll need more package producers to create a "rich package" for nicer viewing capabilities
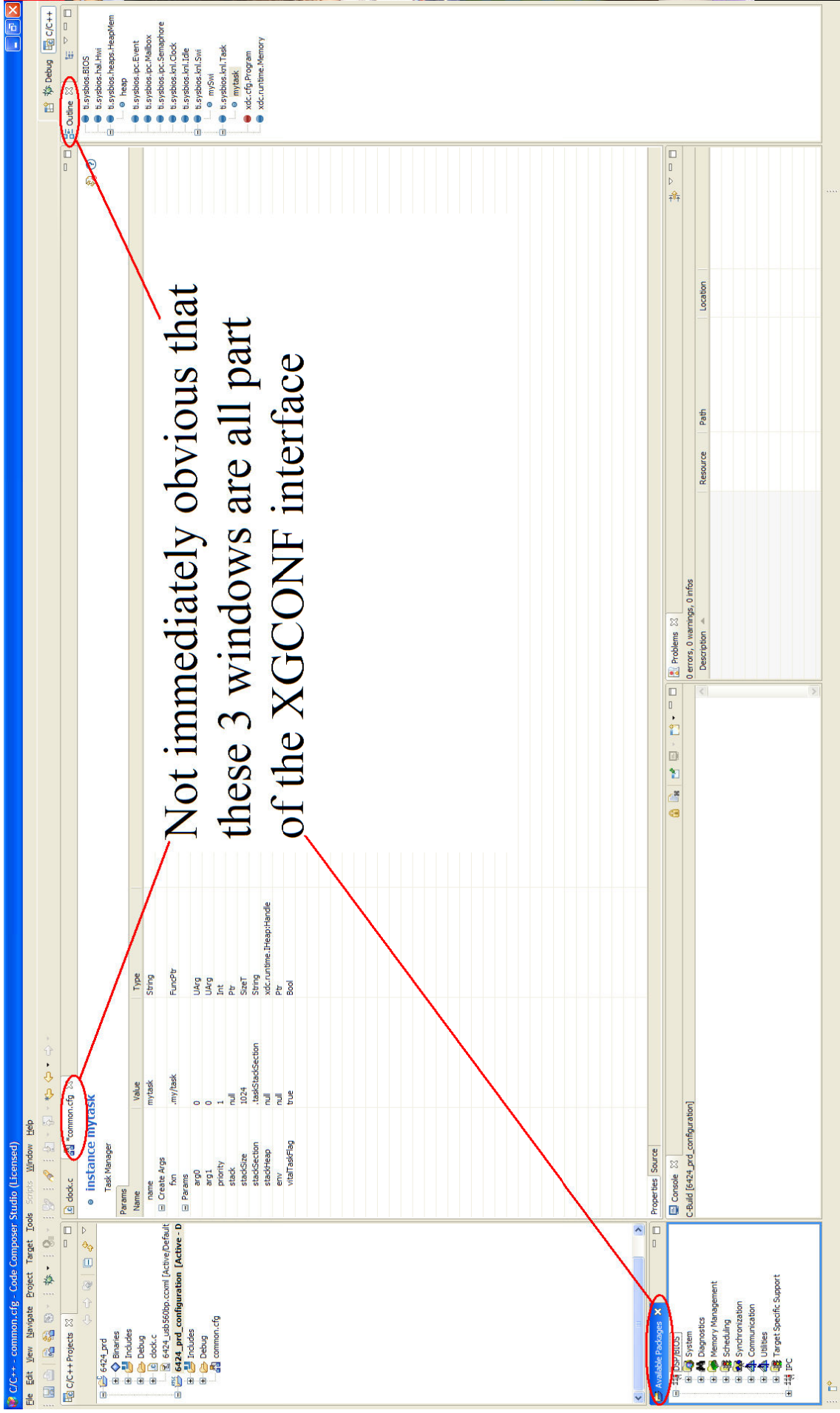
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XGCONF Highlights

- Single most important tool in terms of making RTSC more useable and accessible

- When modifying/deleting an object it actually modifies/removes from the cfg file as opposed to just perpetually adding script (like gtconf)

- Can provide error checking of parameters through a "validate" function

- Highlighting a given instance object highlights the corresponding section of the script

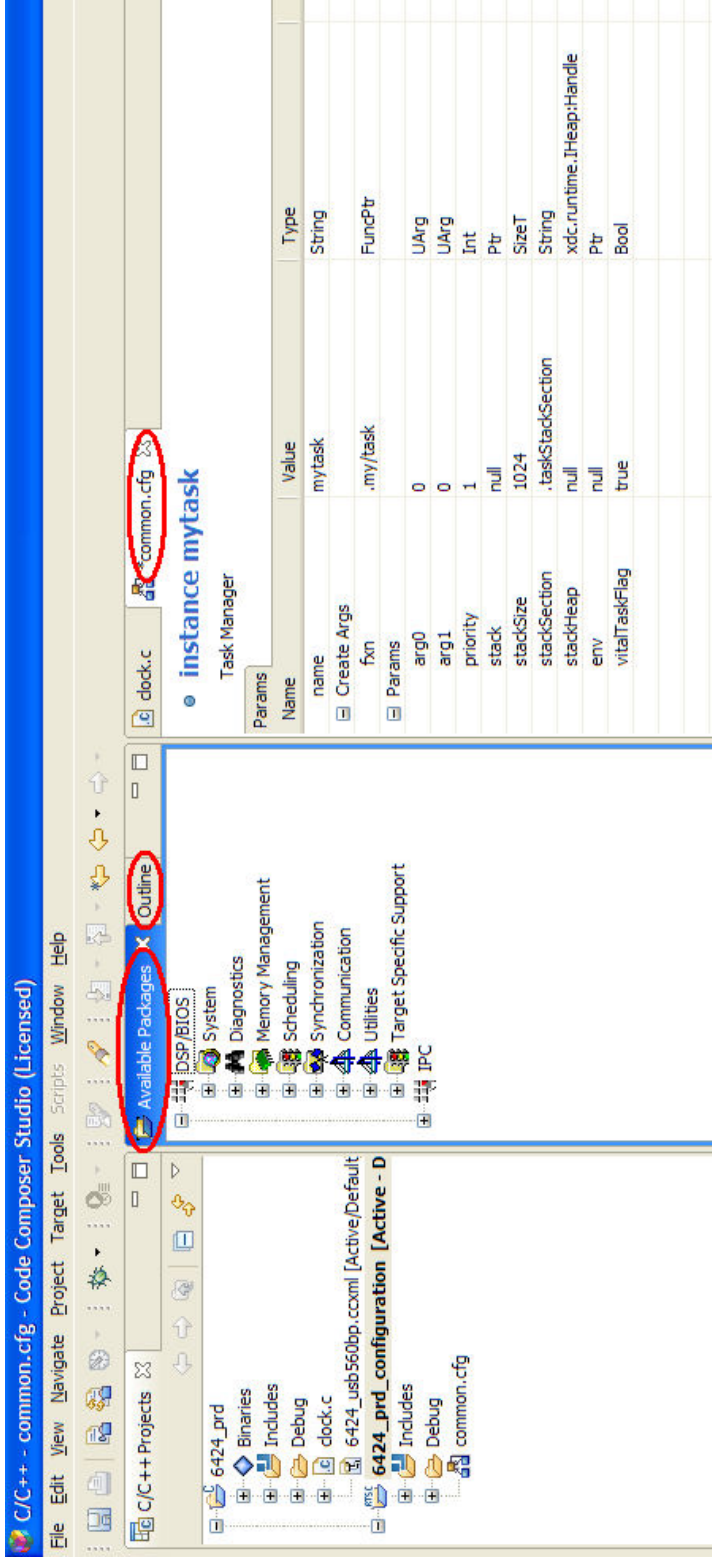- Familiar layout of BIOS modules

Available Packages ✕

DSP/BIOS
System
Diagnostics
Memory Management
Scheduling
Synchronization
Communication
Utilities
Target Specific Support

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Suggested Improvements for XGCONF

Default layout can be confusing

Not immediately obvious that these 3 windows are all part of the XGCONF interface
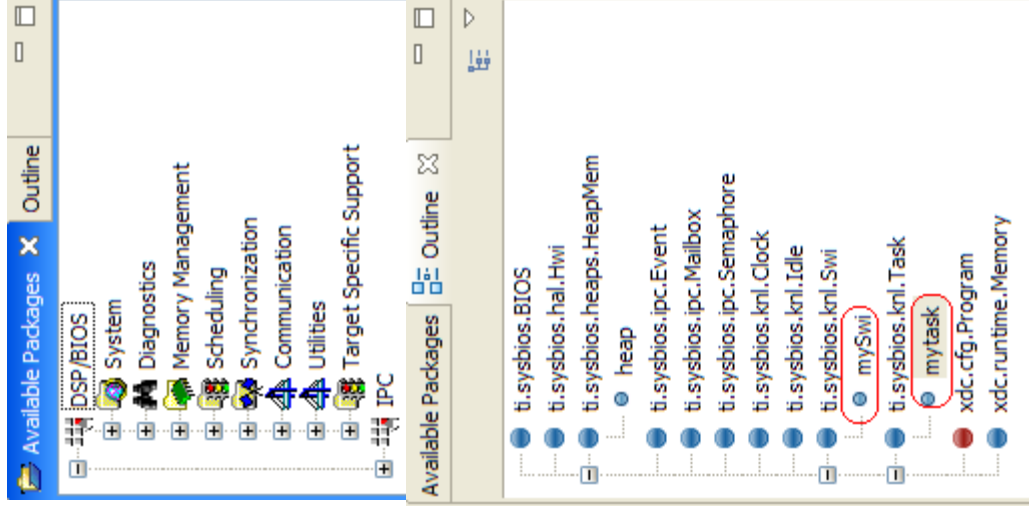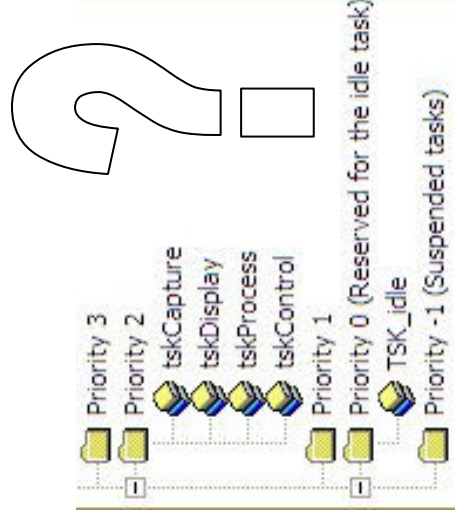
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Possibility for New Default Layout

"Available Packages" needs more features

- Currently unable to do "Add Instance" like BIOS 5 users are accustomed to doing

- Instances only show up in "Outline" view, but "Available Packages" should also have this capability

- Has drag-and-drop priority management died? Was nice for getting a high-level system overview in the BIOS 5 days

Strange Behavior

Default values in the dialog box do not match the defaults for the instance object

Create a Module Instance/Handle

Params

Name	Value	Type
name	null	String
☐ Create Args		
fxn	_my_func	FuncPtr
☐ Params		
arg0	0	UArg
arg1	0	UArg
priority	1	Int
stack	null	Ptr
stackSize	0	SizeT
stackSection		String
stackHeap	null	xdc.runtime.IHeap:Handle
env	null	Ptr
vitalTaskFlag	true	Bool

clock.c   *common.cfg

instance instTask1

Task Manager

Params

Name	Value	Type
name	null	String
☐ Create Args		
fxn	.my/func	FuncPtr
☐ Params		
arg0	0	UArg
arg1	0	UArg
priority	1	Int
stack	null	Ptr
stackSize	2048	SizeT
stackSection	.taskStackSection	String
stackHeap	null	xdc.runtime.IHeap:Handle
env	null	Ptr
vitalTaskFlag	true	Bool

Outline

Available Packages

- ti.sysbios.BIOS
- ti.sysbios.hal.Hwi
- ti.sysbios.heaps.HeapMem
  - heap
- ti.sysbios.ipc.Event
- ti.sysbios.ipc.Mailbox
- ti.sysbios.ipc.Semaphore
- ti.sysbios.knl.Clock
- ti.sysbios.knl.Idle
- ti.sysbios.knl.Swi
  - mySwi
- ti.sysbios.knl.Task
  - instTask1
  - mytask
- xdc.cfg.Program
- xdc.runtime.Memory

Generated cfg script

- Some additional spacing and comments would be good for readability for times when not using the XGCONF viewer

Awesome highlighting!

Spacing/comments would be nice

```
26/* Create default heap and hook it into Memory */
27var heapMemParams = new HeapMem.Params;
28heapMemParams.size = 8192;
29var heap = HeapMem.create(heapMemParams);
30
31Memory.defaultHeapInstance = heap;
32
33/* Required only for Event example */
34Semaphore.supportsEvents = true;
35Task.common$.diags_ENTRY = xdc.module("xdc.runtime.Diags").ALWAYS_ON;
36var ti_sysbios_hal_Hwi = xdc.useModule('ti.sysbios.hal.Hwi');
37var instSwi0Params0 = new Swi.Params();
38instSwi0Params0.priority = 3;
39instSwi0Params0.instance.name = "mySwi";
40Program.global.mySwi = Swi.create("&_my_swi", instSwi0Params0);
41var instTask0Params0 = new Task.Params();
42var instTask0 = Task.create("&_my_func", instTask0Params0);
43var instti_sysbios_hal_Hwi0Params0 = new ti_sysbios_hal_Hwi.Params();
44instti_sysbios_hal_Hwi0Params0.maskSetting = xdc.module("ti.sysbios.interfaces.IHwi").MaskingOption_BITMASK;
45instti_sysbios_hal_Hwi0Params0.arg = 0xF00;
46var instti_sysbios_hal_Hwi0 = ti_sysbios_hal_Hwi.create(null, "&_my_isr", instti_sysbios_hal_Hwi0Params0);
47
```

Outline
- ti.sysbios.BIOS
- ti.sysbios.hal.Hwi
  - instti_sysbios_hal_Hwi0
- ti.sysbios.heaps.HeapMem
  - heap
- ti.sysbios.ipc.Event
- ti.sysbios.ipc.Mailbox
- ti.sysbios.ipc.Semaphore
- ti.sysbios.knl.Clock
- ti.sysbios.knl.Idle
- ti.sysbios.knl.Swi

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Other XGCONF Suggestions

- On-the-fly parameter validation

Path Tool

Useful, sort of.

How to use it

A Package Repository Path Browser window with columns: Name, Repository, Provider Id, Release Name, Label. Command prompt window showing: C:\Program Files\Texas Instruments\xdctools_3_15_00_50\xs xdc.tools.path.sg

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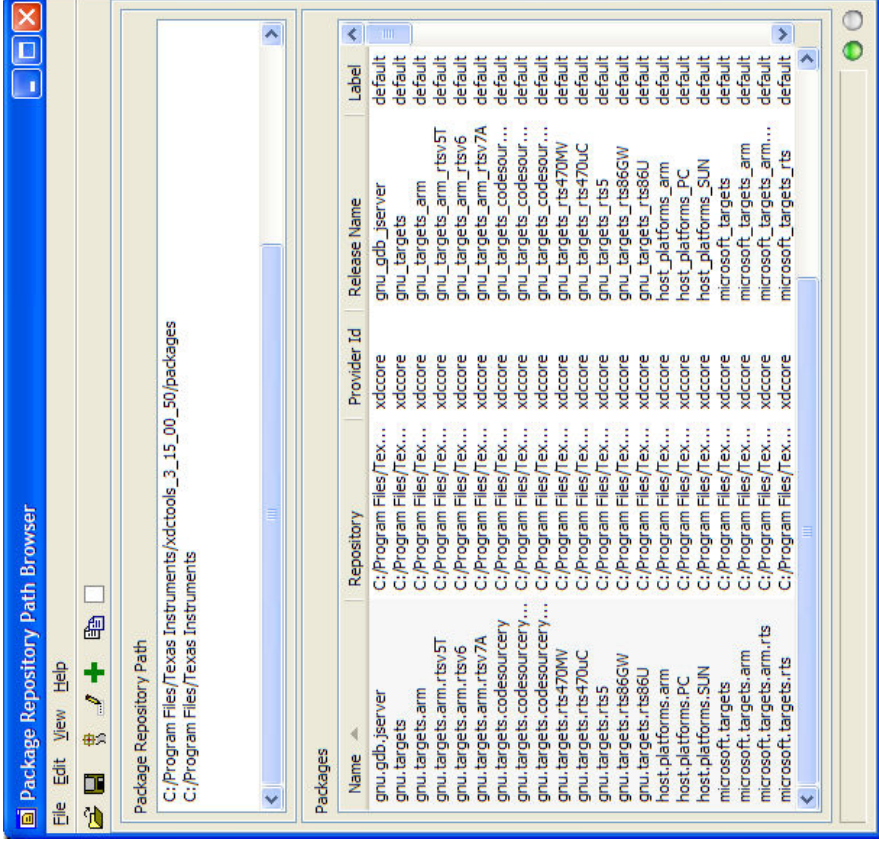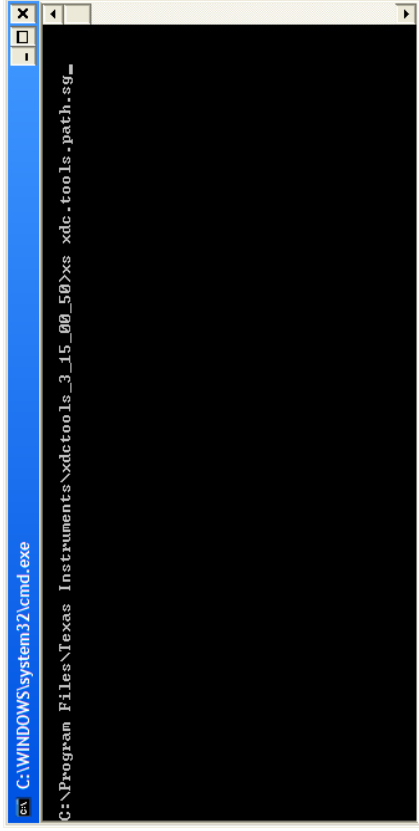
Criticism of Path Tool

- Perhaps THE most common mistake of RTSC users is having a mistake in their XDCPATH. **This tool will have little to no impact in resolving those mistakes because it is not integrated into the build process (e.g. configuro).**

- The tool does not warn when a path is added with no valid packages. In fact, by default it has "C:\Program Files\Texas Instruments" on the repository path which is itself an empty repository.

- The tool is difficult to find and launch.

How about a shortcut?
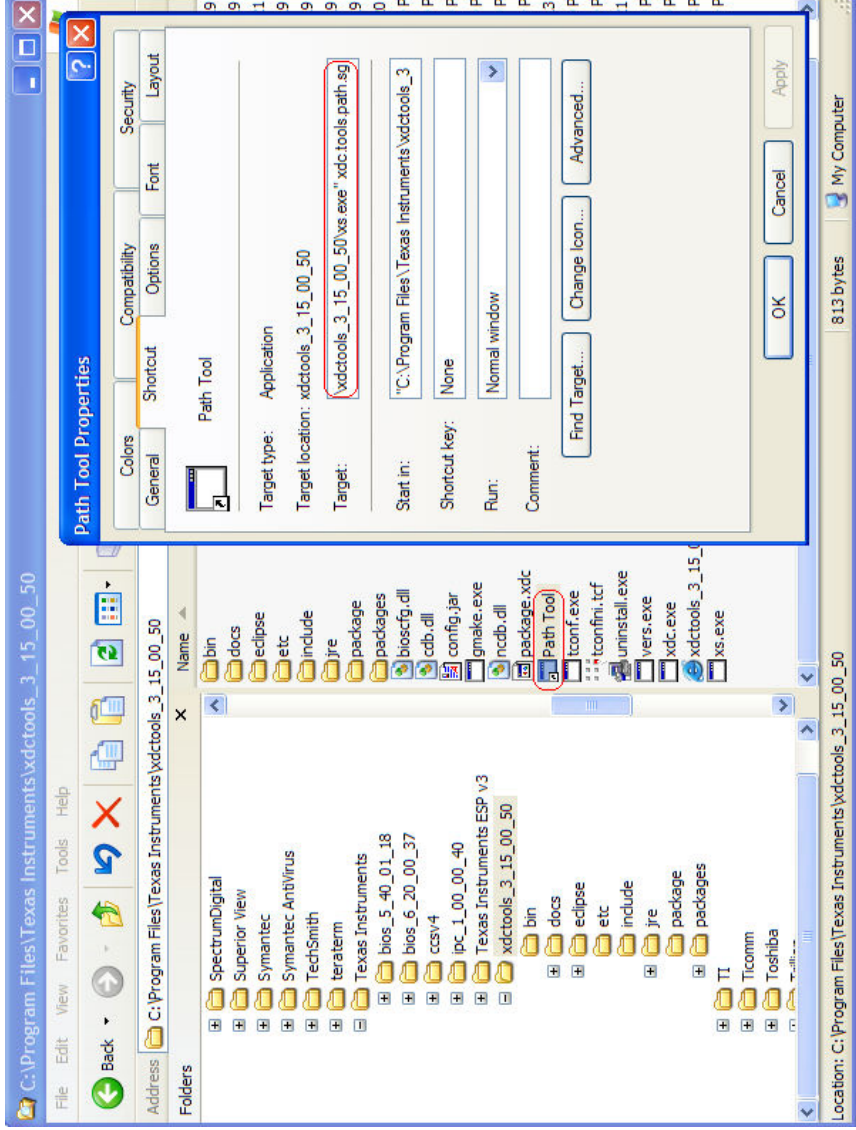
Better Error Messages

We made a wrong turn somewhere.

Typical mistake – "package" instead of "packages" in XDCPATH

Build response still not clear to typical user

"C:/Program Files/Texas Instruments/xdctools_3_15_00_50/xs" --xdcpath="C:/Program Files/Texas Instruments/bios_6_20_00_37/package";"C:/Program Files/Texas Instruments/ipc_1_00_00_40/packages"; xdc.tools.configuro -o "configPkg" -t ti.targets.C64P -p ti.platforms.evm6424 -r debug -c "C:/Program Files/Texas Instruments/ccsv4/tools/compiler/c6000" "../common.cfg"
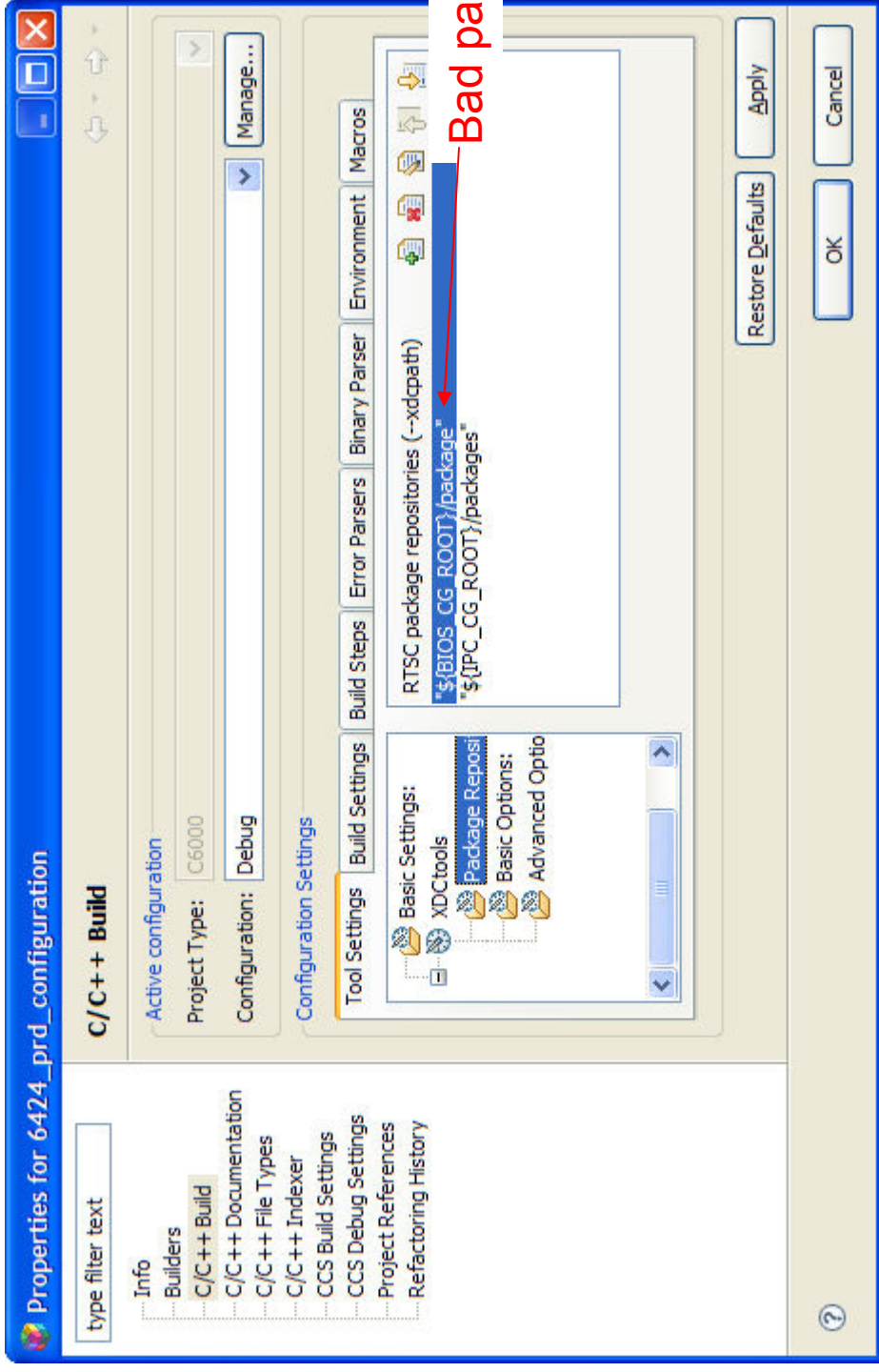
making package.mak (because of package.bld) ....

generating interfaces for package configPkg (because package/package.xdc.inc is older than package.xdc) ...

configuring common.x64P from package/cfg/common_x64P.cfg ...

js: "C:/Documents and Settings/a0193370/My Documents/My Projects/64x+/CCS4 tryout/6424_prd_configuration/common.cfg", line 16: xdc.services.global.XDCException: xdc.PACKAGE NOT FOUND: can't locate the package 'ti.sysbios' along the path: 'C:/PROGRA~1/TEXASI~1/IPC_1_~1/packages;C:/PROGRA~1/TEXASI~1/XDCTOO~1/packages;..;'. Ensure that the package path is set correctly.

 "./package/cfg/common_x64P.cfg", line 767

 "./package/cfg/common_x64P.cfg", line 722

gmake.exe: *** [package/cfg/common_x64P.c] Error 1

js: "C:/Program Files/Texas Instruments/xdctools_3_15_00_50/packages/xdc/tools/Cmdr.xs", line 51: Error: xdc.tools.configuro: configuration failed due to earlier errors (status = 2); 'linker.cmd' deleted.

C:\Program Files\Texas Instruments\ccsv4\utils\gmake\gmake: *** [configPkg.PHONY] Error 1

C:\Program Files\Texas Instruments\ccsv4\utils\gmake\gmake: Target `all' not remade because of errors.

Build complete for project 6424_prd_configuration

No mention of the fact that ${BIOS_CG_ROOT}/package does not contain a valid package!!!

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What do we *really* need?

- We **MUST** have better path checking capabilities in configuro.

- The following cases should generate unique warnings:

  – A path does not actually exist on the computer (e.g. typo in path).

  – A path references <some-component>/package instead of package**s** (common mistake).

  – No packages are found on a given path. (The user probably is "off" a bit in the path, e.g. <CE_INSTALL_DIR> instead of <CE_INSTALL_DIR>/packages. For "extra credit" in this scenario we should look up/down *n* levels to see if we find any directories with valid packages and suggest that as a possibility to the user.

CCS Integration

At last!

Platform Wizard

- Finally it's easy to create your own platform!

- Could be easier to find – needed to email RTSC team to find it!

- In CCS4, Find -> New -> Other... -> RTSC Wizards -> RTSC Platform Wizard

Platform Wizard – Page 1

Page 1 of 2 - Basic Information

Package Path
XDCtools Version: 3.15.00.50
RTSC Products and Repositories:
DSP/BIOS
6.20.00.37
5.40.01.18
Inter-processor Communication
1.00.00.40

Add Repository

Platform Package Details
Platform Package Repository:
Browse...
Platform Package Name: local.platform

Base Platform
Platform:
CPU:
Device Name
host.platforms.arm
host.platforms.PC
host.platforms.SUN
ti.platforms.app510
ti.platforms.control28027

< Back   Next >   Finish   Cancel

company.division.platform might be
a better default name

Could we please get a text filter box?

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Platform Wizard – Page 2

Creates a ready-to-use RTSC platform package. Easy!

Page 2 of 2 - Device Page
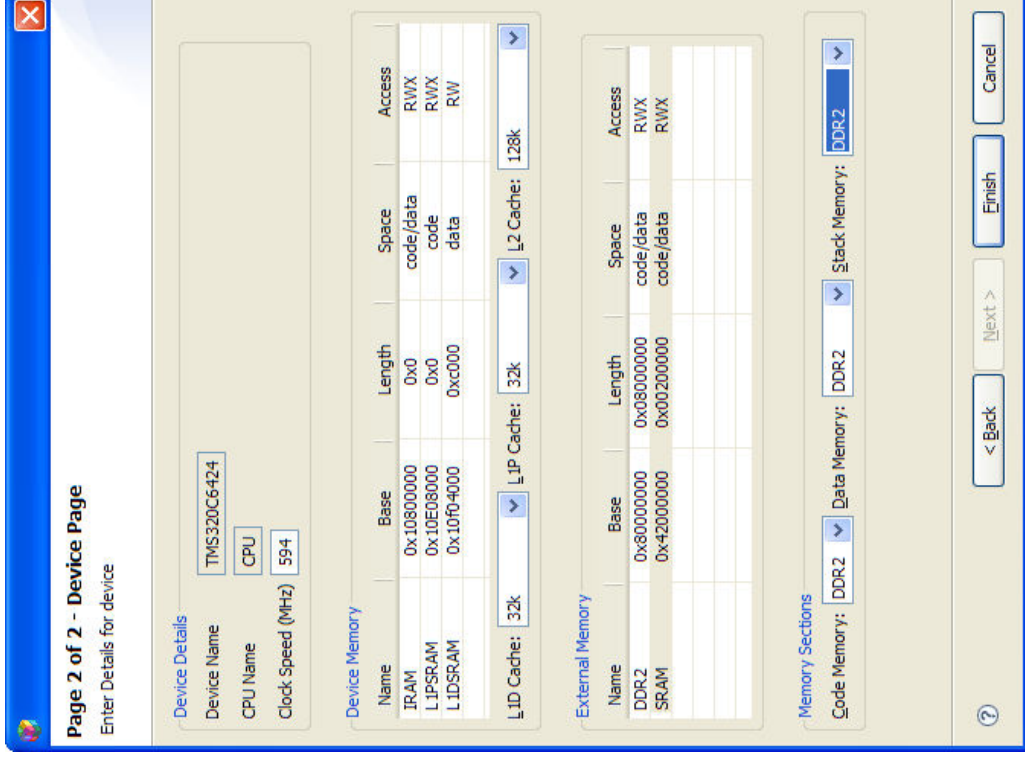Enter Details for device

Device Details
Device Name: TMS320C6424
CPU Name: CPU
Clock Speed (MHz): 594

Device Memory

Name	Base	Length	Space	Access
IRAM	0x10800000	0x0	code/data	RWX
L1PSRAM	0x10E08000	0x0	code	RWX
L1DSRAM	0x10f04000	0xc000	data	RW

L1D Cache: 32k   L1P Cache: 32k   L2 Cache: 128k

External Memory

Name	Base	Length	Space	Access
DDR2	0x80000000	0x08000000	code/data	RWX
SRAM	0x42000000	0x00200000	code/data	RWX

Memory Sections
Code Memory: DDR2   Data Memory: DDR2   Stack Memory: DDR2

< Back   Next >   Finish   Cancel

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New Project Wizard

Now it's easy to start from an example without worrying having to bother with copy/paste from the examples directory!*

* BIOS6 only

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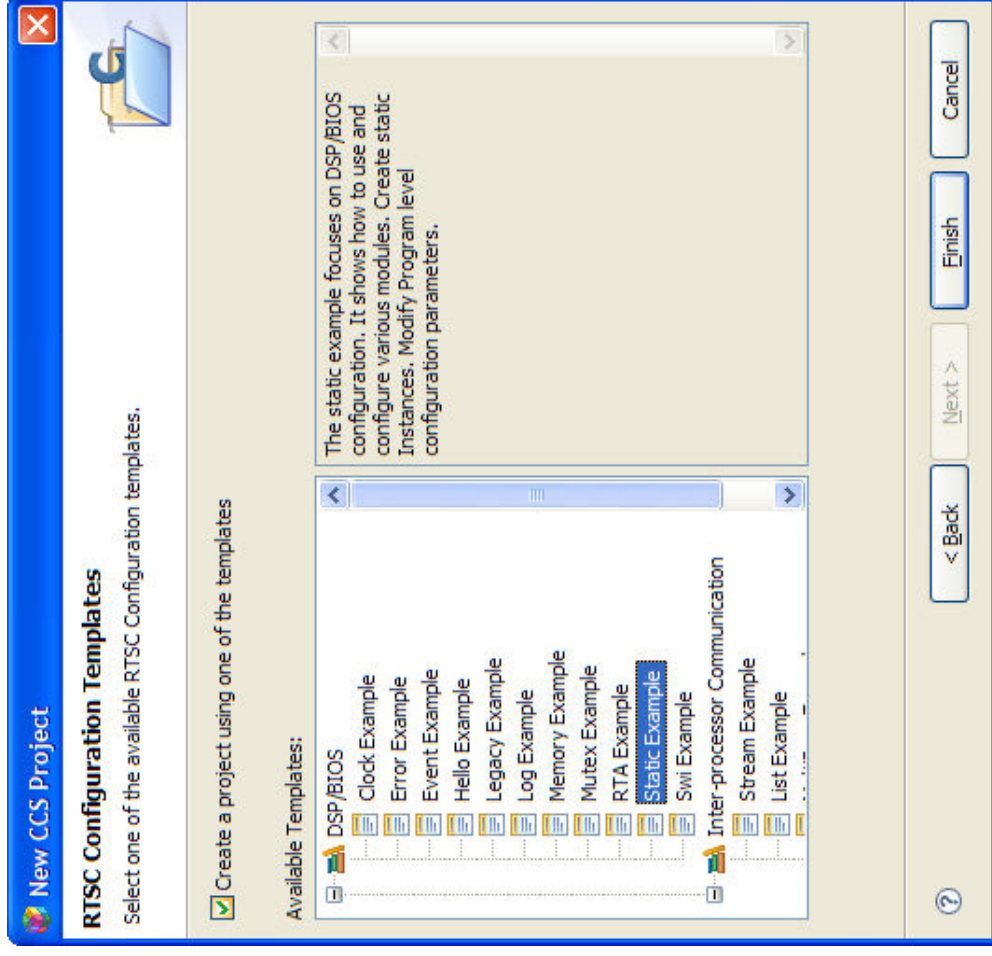
Other suggestions

- Ability to launch path tool and other diagnostics (repoman?) from CCS

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