



parallel tools platform

<http://eclipse.org/ptp>

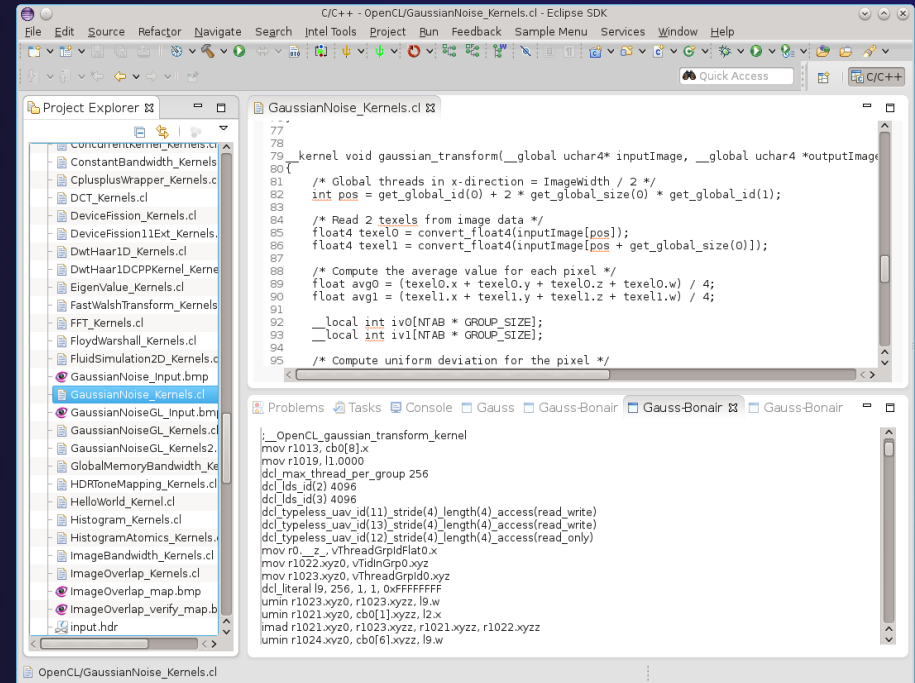
## OpenCL Tools for PTP

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# Overview

- ★ New plugins to support OpenCL
- ★ Integrate existing OpenCL Tools in PTP
- ★ Extensible architecture



# Current Prototype

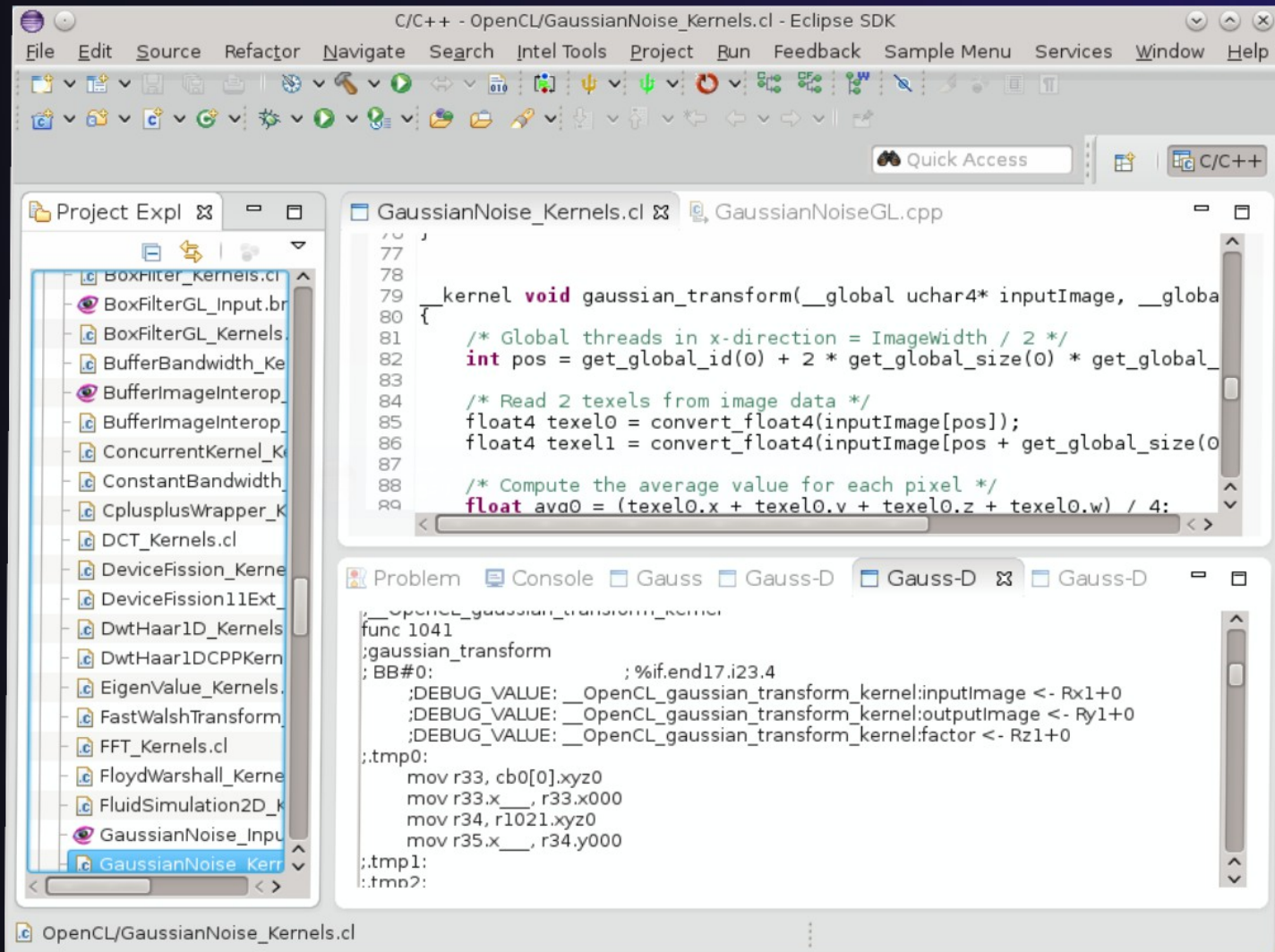
- ★ Assumes vendor tools have CLI
- ★ Base plugin
  - ◆ Handles Eclipse UI interactions
  - ◆ New extension point for vendor plugins
  - ◆ Allows multiple vendor implementations
- ★ Vendor plugin
  - ◆ One per vendor OpenCL implementation
  - ◆ Handles interaction with vendor tools
  - ◆ Requests handled thru extension point interface

# Current Prototype (cont)

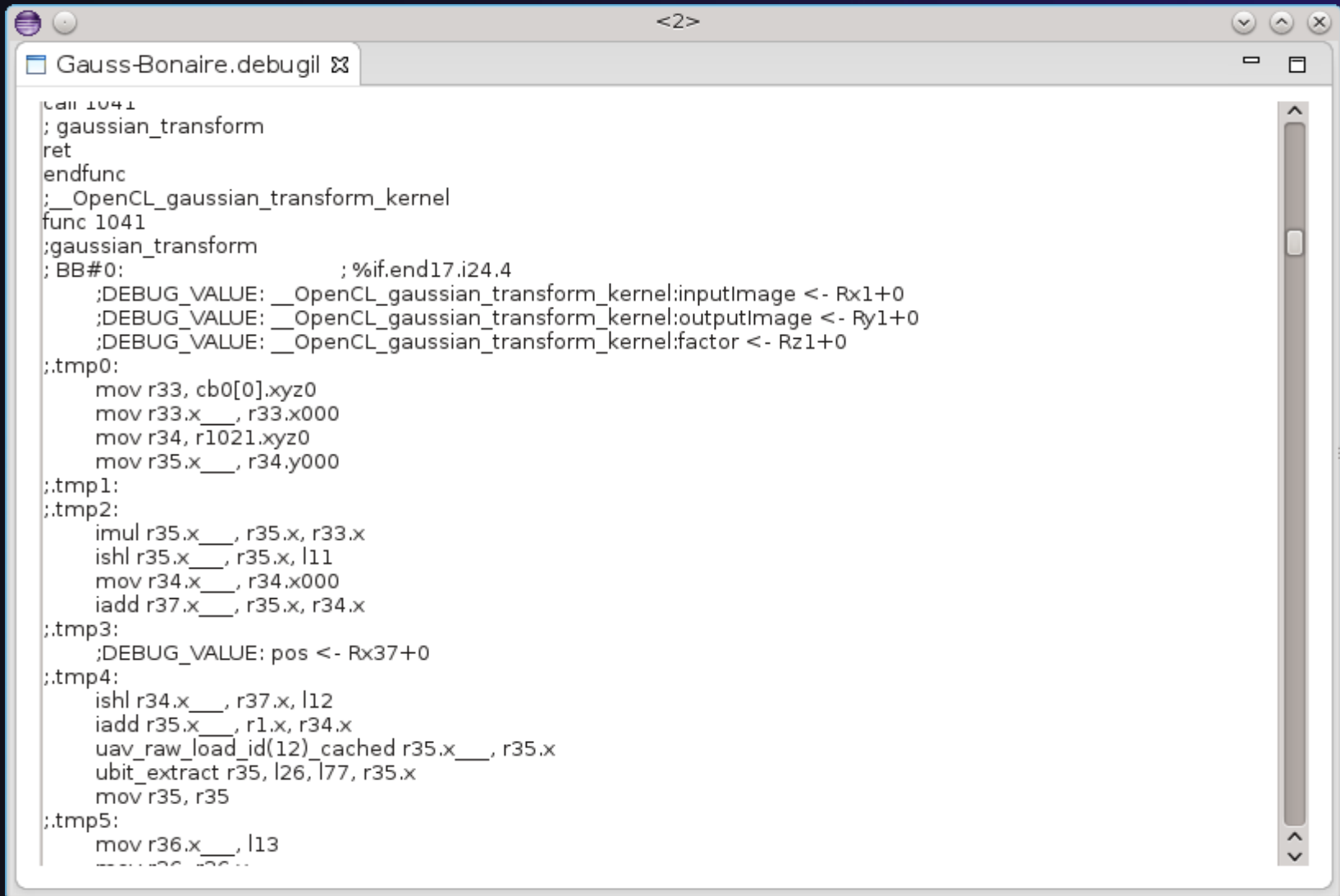
## ★ Function

- ◆ AMD CodeXL static analysis tool
  - ◆ Summary kernel statistics
  - ◆ Number of registers (scalar, vector)
  - ◆ Workgroup size/shape
  - ◆ Threads
- ◆ Kernel disassembly
  - ◆ IL (machine code)
  - ◆ ISA (shader)

# OpenCL Perspective



# Sample Output



```
call 1041
; gaussian_transform
ret
endfunc
; __OpenCL_gaussian_transform_kernel
func 1041
; gaussian_transform
; BB#0:                                ; %if.end17.i24.4
; DEBUG_VALUE: __OpenCL_gaussian_transform_kernel:inputImage <- Rx1+0
; DEBUG_VALUE: __OpenCL_gaussian_transform_kernel:outputImage <- Ry1+0
; DEBUG_VALUE: __OpenCL_gaussian_transform_kernel:factor <- Rz1+0
;.tmp0:
mov r33, cb0[0].xyz0
mov r33.x__, r33.x000
mov r34, r1021.xyz0
mov r35.x__, r34.y000
;.tmp1:
;.tmp2:
imul r35.x__, r35.x, r33.x
ishl r35.x__, r35.x, l11
mov r34.x__, r34.x000
iadd r37.x__, r35.x, r34.x
;.tmp3:
; DEBUG_VALUE: pos <- Rx37+0
;.tmp4:
ishl r34.x__, r37.x, l12
iadd r35.x__, r1.x, r34.x
uav_raw_load_id(12)_cached r35.x__, r35.x
ubit_extract r35, l26, l77, r35.x
mov r35, r35
;.tmp5:
mov r36.x__, l13
...
```

## Future

- ★ Assumes vendor tools fit model
- ★ Runtime profiling tool
- ★ Additional vendor implementations
- ★ Debugger
- ★ PLDT extensions
  - ◆ Code assists
  - ◆ Flyover help for API calls