Upcoming Features in Dyninst and its Components

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What's New in Dyninst

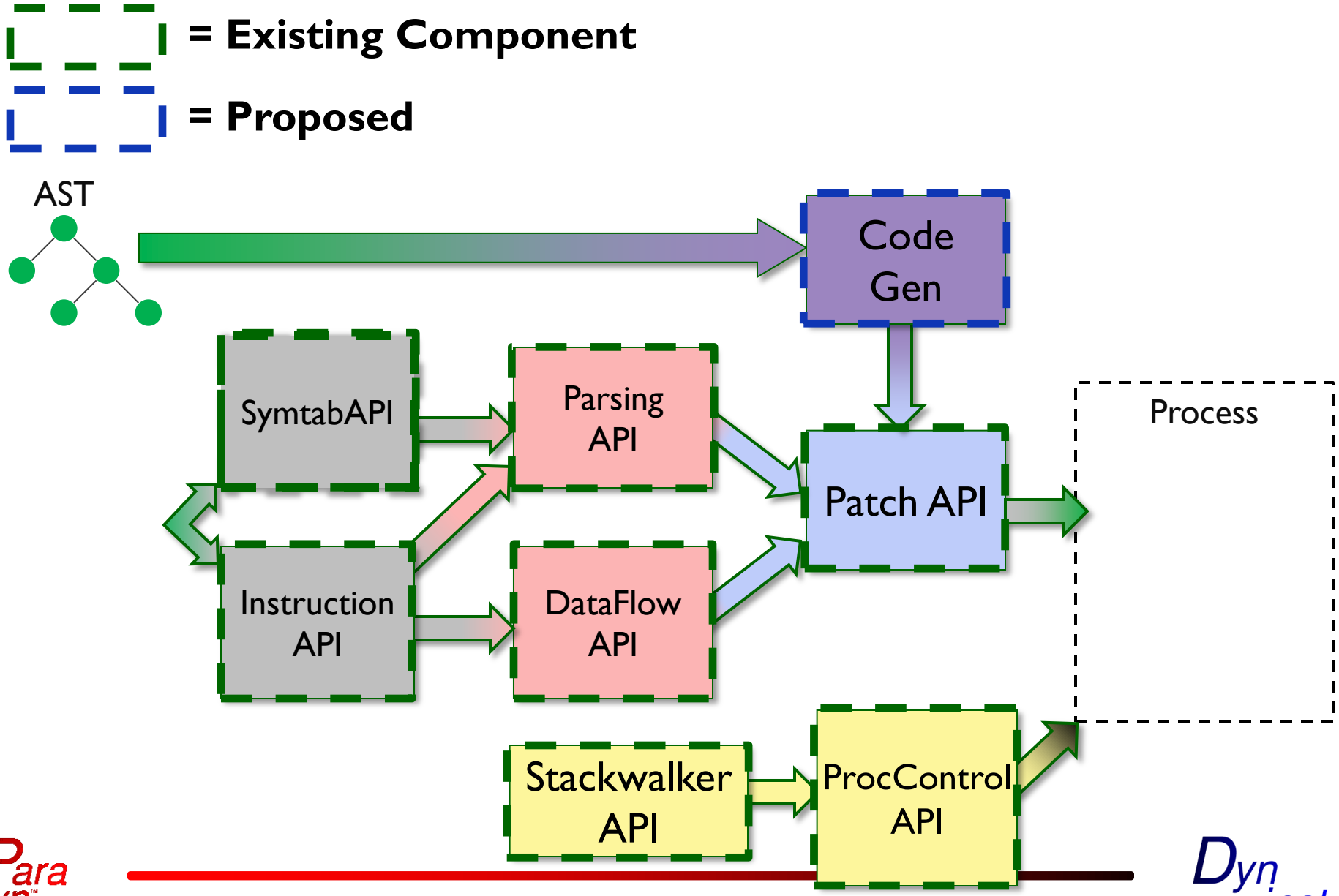
Dyninst 7.0.1

- ProcControl, Stackwalker not reintegrated
- DataflowAPI early prototype
- Static CFG model
- No PPC64 or BlueGene rewriting
- Non-standard configure, packaging

Dyninst 8.0

- ProcControl, Stackwalker fully integrated on all platforms
- DataflowAPI includes all analyses used by Dyninst
- Dynamic CFG model
- PPC64 and BlueGene rewriting
- More standards-compliant distribution

Dyninst and the Components



ProcControlAPI: Ports

- Windows port
  - Complex things become simple (e.g. library load)
  - Simple things become complex (e.g. stopping process)
- BlueGene port
  - Everything is asynchronous
  - Everything is at large scale

ProcControlAPI: Interface Extensions

- RPCs revisited
  - Sometimes you really want a blocking operation
- Process groups
  - Iteration, once again, the bane of scalability
- Detach-on-the-fly support

DataflowAPI

- New features
  - Liveness analysis
- Existing features
  - Stack height analysis
  - Symbolic evaluation
  - Slicing
- Application inside Dyninst
  - Code generation
  - BG/P return instruction analysis

Dynamic CFG Applications

- Malware analysis
- Binary modification
- Dynamically loaded libraries
- Unparsed indirect control flow

Dynamic CFG

- Observe updated CFG via callbacks
  - New code
  - Modified code
  - Overwritten code
- Using modified CFG is optional
  - Instrumentation works normally

SymtabAPI and orthogonality

Old model (pre-PPC64 Linux)

- Symtab depends on:
  - Binary format
  - …and address width
- Symbols in ELF binaries point to:
  - Functions
  - Variables

New model (including PPC64)

- Symtab depends on:
  - Binary format
  - Address width
  - ABI, including:
    - Architecture
    - OS
- Symbols in ELF binaries point to:
  - Functions
  - Variables
  - Pointers to functions

Packaging

- Separate **`make`**, **`make install`**
- Improved detection of dependencies
- Improved modularity
- Working with RedHat to make a standards-compliant RPM

New in MRNet 4.0

- Performance improvements
- Platform pruning
  - No more AIX, Solaris official support
- New multithreaded, lightweight back end

Questions?