HPEC 2010
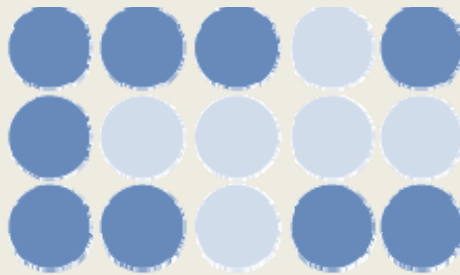# Automated Software Cache Management

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WWW.GEDAE.COM

Standard Approach

Desired Behavior

Manual Translation

Language

API for Distribution

Compiler

Application

Application

Middleware

OS

Hardware
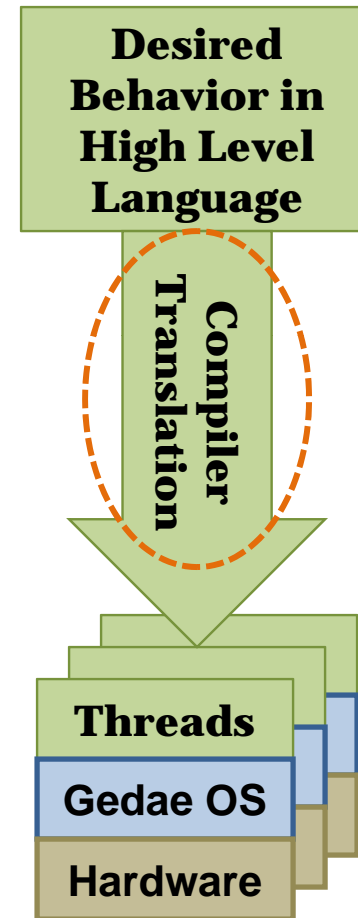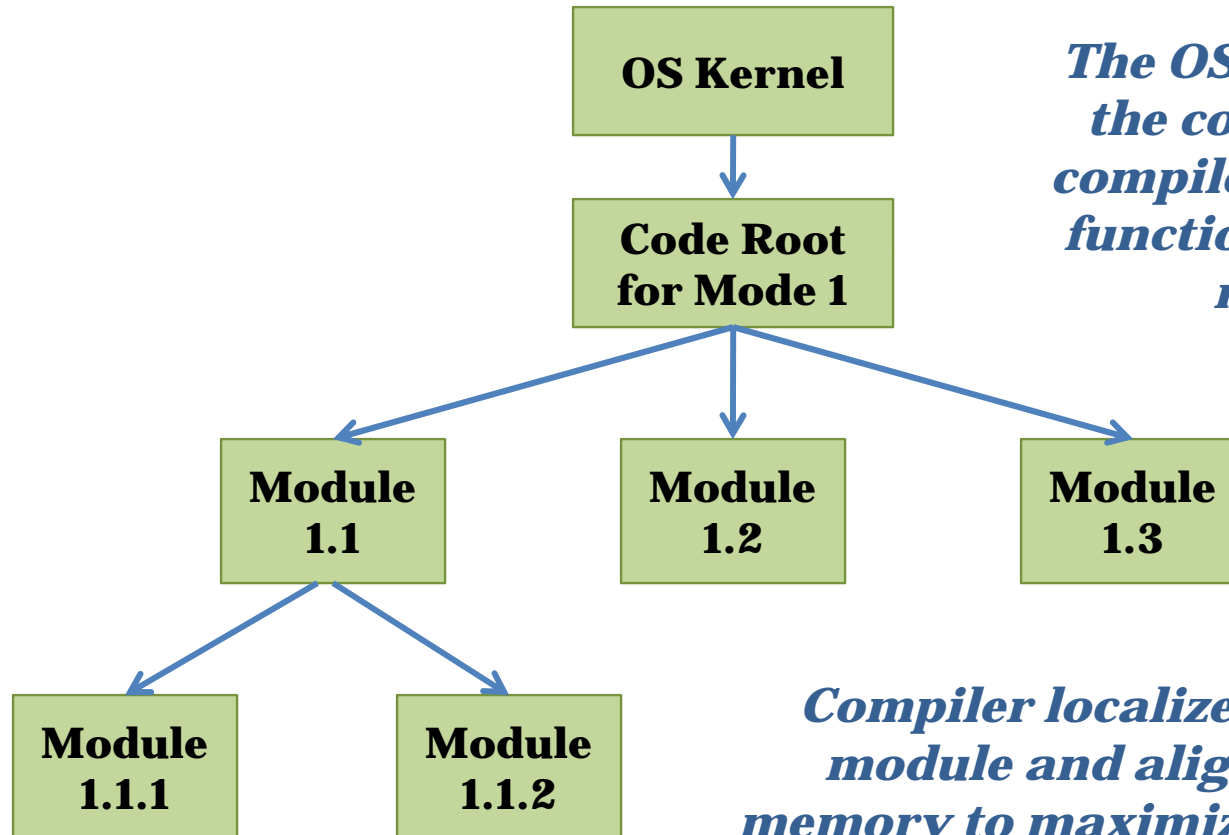
Software Stack
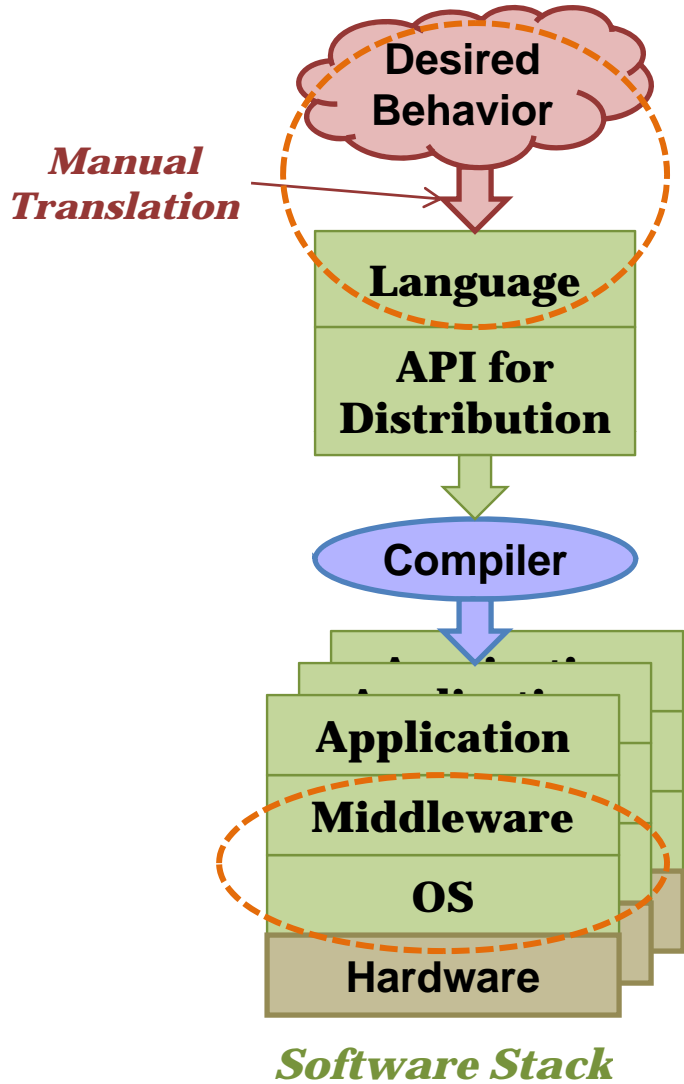
Gedae Approach

Gedae moves the complexity of hand coding, distribution of computation and resource management (e.g. load balancing) to the compiler.

Desired Behavior in High Level Language

Compiler Translation

Threads

Gedae OS

Hardware

Compiler Automation

Compiler Creates a Code Tree

```
OS Kernel
    │
    ▼
Code Root
for Mode 1
   ╱  │  ╲
  ▼   ▼   ▼
Module  Module  Module
 1.1     1.2     1.3
 ╱ ╲
▼   ▼
Module   Module
1.1.1    1.1.2
```

The OS kernel loads the code root. The compiler has built in functions to load as needed.

Compiler localizes each code module and aligns them in memory to maximize the transfer speed from system memory.

Each SPE Manages Its Own Code Tree

The PPE controls the mode of operation. Once set it informs each SPE of the code tree it is to run and each SPE then runs independently maximizing concurrency.

SPE 0	SPE 1	SPE 2	SPE 3	SPE 4	SPE 5	SPE 6	SPE 7

System Memory

Mode A

Mode B

System memory stores all overlays for all modes

PPE

Run mode A