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Inter-Operability Made Easy

MapuSoft is the global leader in software interoperability & reusability solutions that provide freedom, protection and stability to embedded applications

FREEDOM

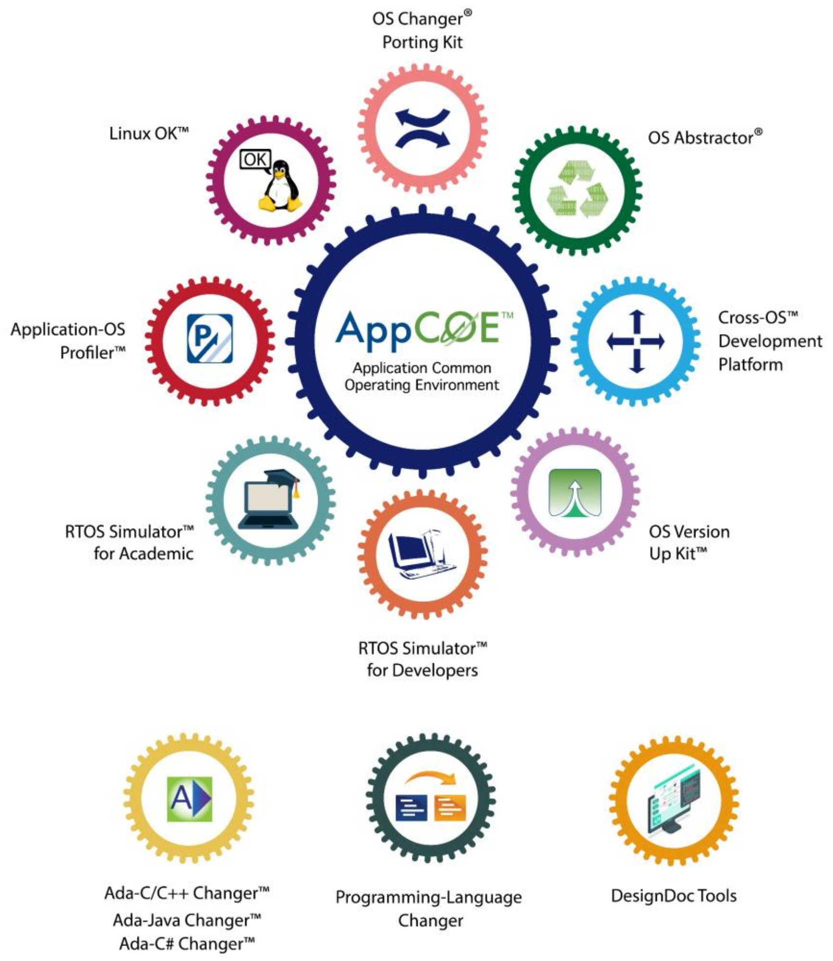
Don't confine your code to one platform

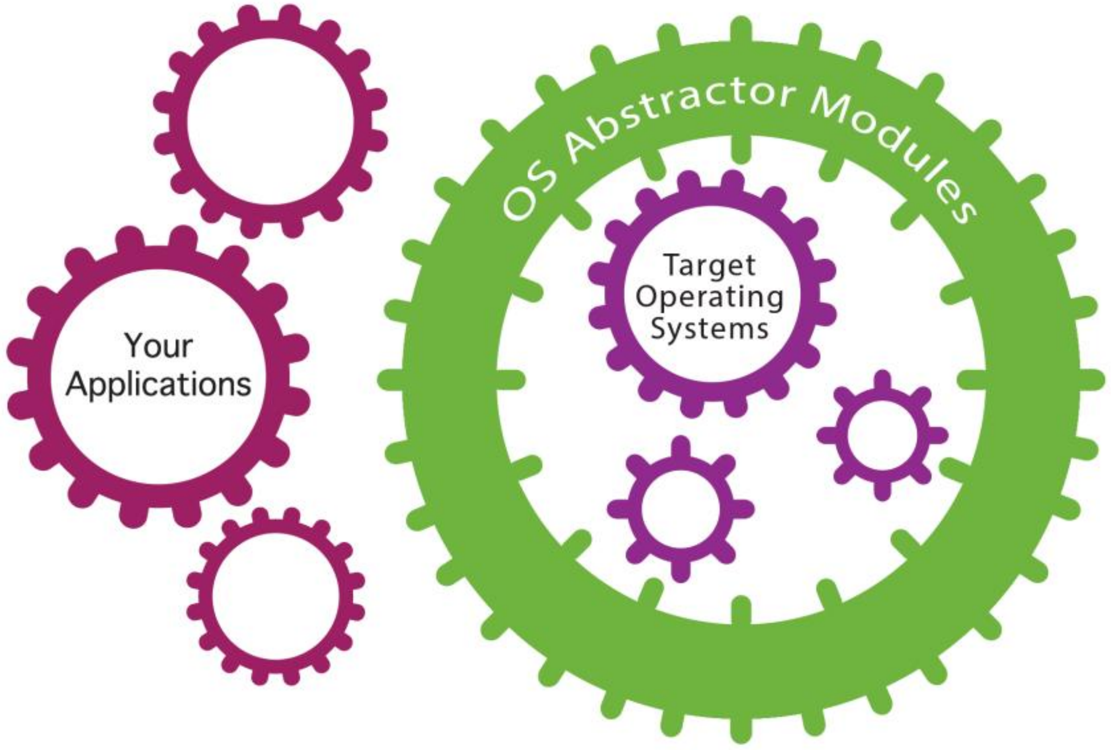
PROTECTION

Protect software investment

STABILITY

Robust and optimized platform


OS Changer® Porting Kit
Linux OK™
OK
OS Abstractor®
AppCOE™
Application Common Operating Environment
Application-OS Profiler™
Cross-OS™ Development Platform
RTOS Simulator™ for Academic
OS Version Up Kit™
RTOS Simulator™ for Developers
Ada-C/C++ Changer™
Ada-Java Changer™
Ada-C# Changer™
Programming-Language Changer
DesignDoc Tools


Your Applications
OS Abstractor Modules
Target Operating Systems

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MapuSoft's OS Abstraction Layer (OSAL)

- OS Abstractor APIs give users the ability to effectively develop code independent of the underlying OS.
- Protects software investment and easily expands support to multiple operating systems.
- It also allows developers to use a standard OS API interface across multiple OS platforms and greatly reduce the cost associated with code maintenance and learning multiple operating systems.
- It also works with the other MapuSoft OS Changer interfaces which allow you to re-use a wide variety of legacy code base including VxWorks, pSOS, Nucleus PLUS, ThreadX, POSIX and more.
- It is also integrated with AppCOE which provides a multiple OS interface host environment with provisions to generated optimized code for a wide variety of target OS platforms.

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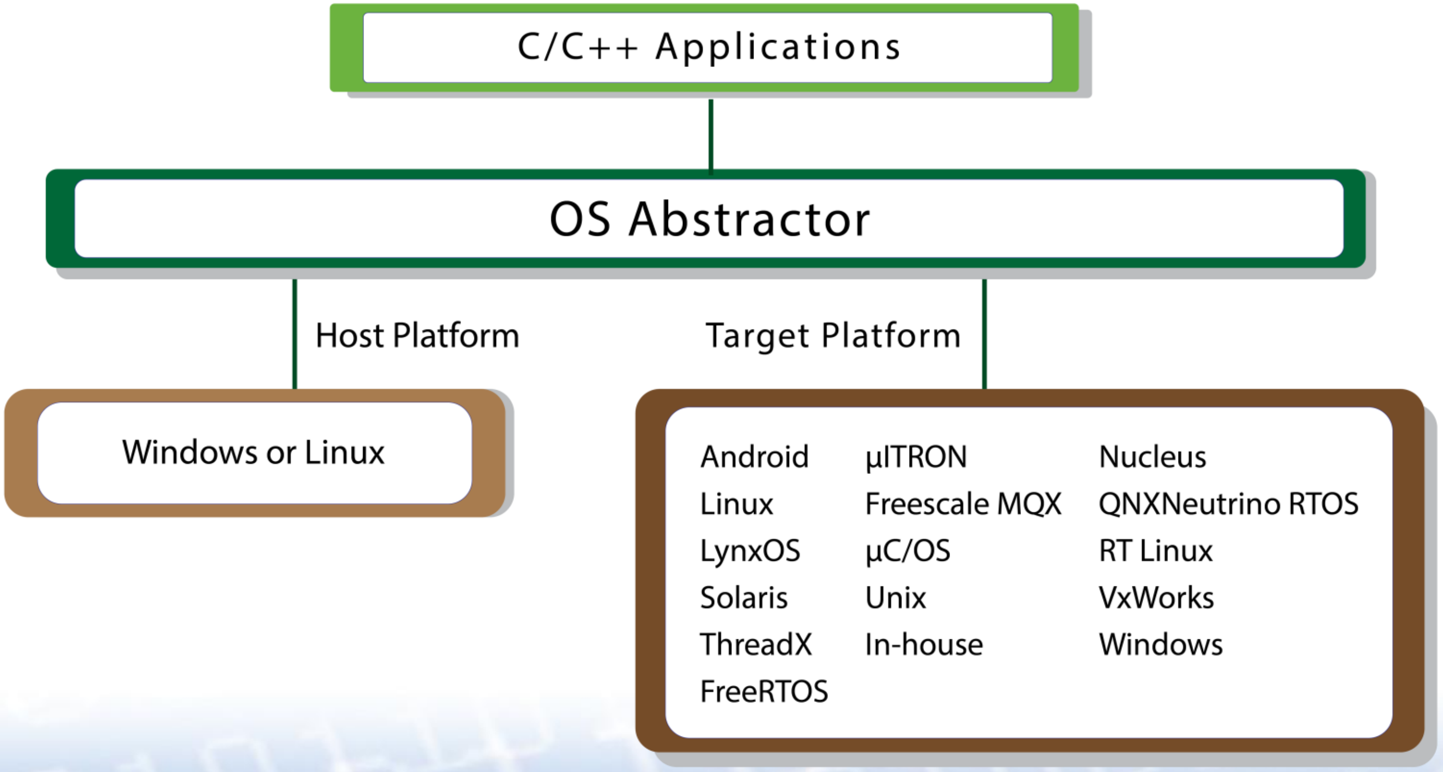
OS ABSTRACTOR

RTOS Abstraction Layer

Develop code independent of the OS



Advantages to developing applications with OS Abstractor:

- It protects your software investment
- Provides advanced development features and capable of adding functionality to an existing OS
- Adds API flexibility to run applications written for different OS API's on one or many OS's
- Generates interface code that is specific to your application during code generation
- It is easily extended to support a new commercial OS or your in-house OS/in-house abstraction
- Comes with a Profiler for API and application profiling

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OS Abstractor – Design Goals

- Effective abstraction WITHOUT loss of performance.
- Effective abstraction WITHOUT losing key OS features available on the target OS. Take full advantage of the process mode and MMU features if the underlying OS supports it, otherwise offer memory/resource protection via OS Abstractor's process feature.
- Share application code effectively across single memory and virtual memory based operating systems.
- Ability to extend OS Abstractor easily to support a new OS.
- Ability to extend OS Abstractor features without loosing backward compatibility.

OS Abstractor Development Platform Contents

- Application Common Operating Environment (AppCOE): An eclipse based IDE for development of C/C++ applications
- OS Abstractor Development Platform Interface
- OS Abstractor Target Specific Module for the target OS
- Library Package Generator
  - Full source code libraries for the OS Abstractor Interface for host and target development platform
  - Sample demo applications
  - Project build files for supported tools and IDEs for your host & target environment

OS Abstractor Contents

- Optimized Target Code Generator
  - Generate pre-configured full library of OS Abstractor source based on GUI settings for target
  - Generate optimized OS Abstractor source code files added to application code for target. Optionally, enable Application and/or Platform API profiling to collect performance data on target (see note *)
  - Creates project files for your target IDE automatically
  - Includes GUI-based Wizard to set up initial kernel resources & configuration required by application

- OS Simulator for OS Abstractor Development Platform Interface(s) for host development/simulation and system integration

- Profiler to view performance data regarding your application and Cross-OS Development Platform Interface(s) for your target

* Please refer to release notes regarding profiler supported on target OS environment. There may need some customization work to read hardware clock from your target board to support profiler feature

OS Abstractor Target Specific Module: Performance Features

- Not your typical wrapper
  - Provides most of the OS features by itself and does not depend on the OS, except for a few features (ex. priority scheduling, change priority, semaphore, messaging, thread suspend/resume
- Quick support for a new OS
  - MapuSoft can easily add support to a new commercial or in-house OS, typically in two weeks
- Process support to any OS
  - Add software based process and shared memory functionality to an OS, even if they do not have those features
- Advanced process memory allocation scheme
  - Applications can allocate required system heap memory during process creation to ensure that they will always have the required system memory
  - Setting memory limits prevents an application from using up all system memory and impacting others

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OS Abstractor Target Specific Module: Performance Features

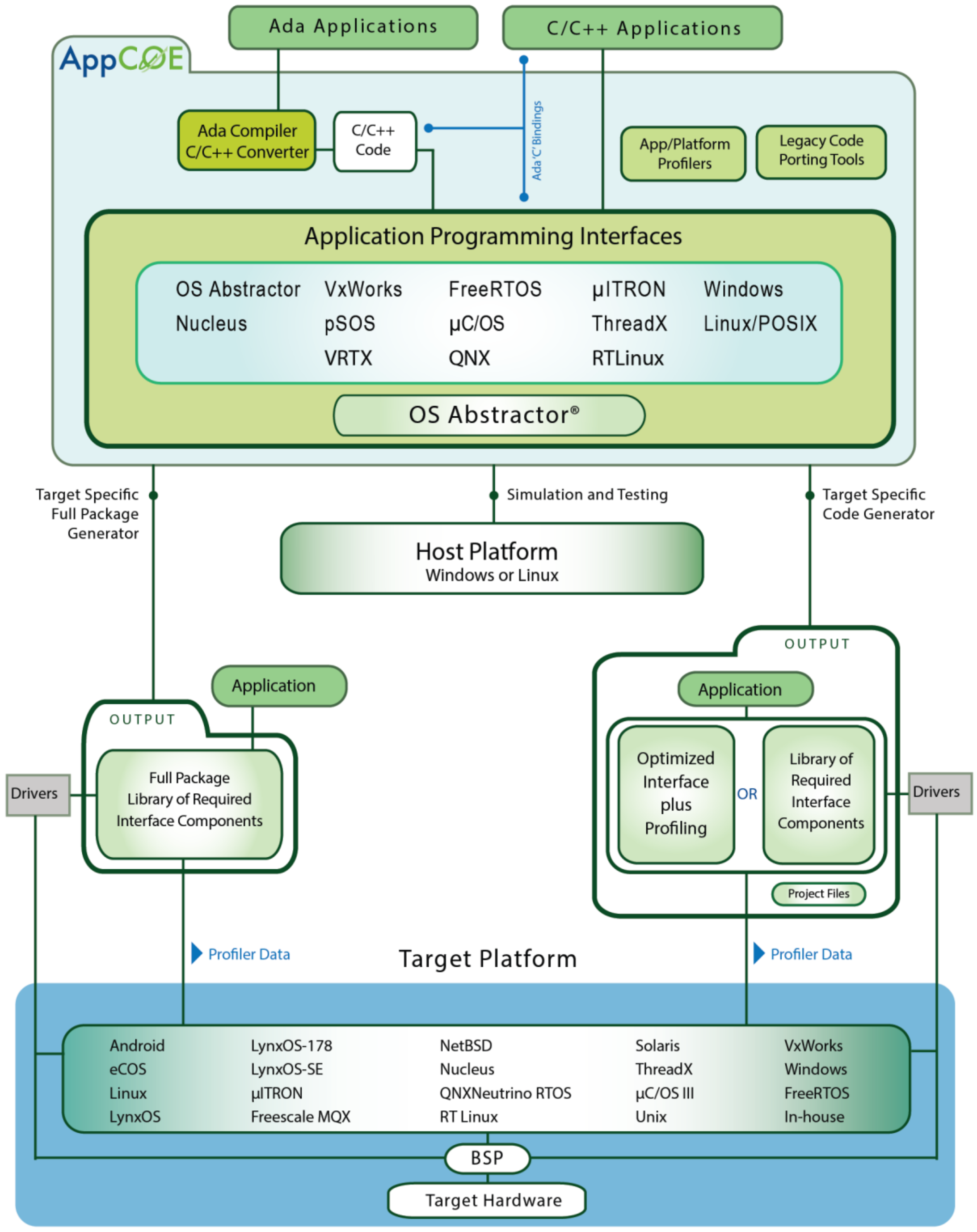
- Thread pooling
  - Applications can pool threads to increase platform robustness & performance by eliminating the overhead associated with actual task creation & deletion at run-time
- Mission Critical Features
  - Applications have the ability to recover from software fatal errors through a soft reset by rolling the stack back to the start of the application
- API Flexibility
  - Use one or more of the Cross-OS Development Platform Interface(s)
  - Cross-OS Development Interface(s) can also be used within a single or across multiple applications
  - Combine applications written with different OS APIs and run them on one or many OS

OS Interface API Module

- Error Handling
- Variable memory allocation
- Partitioned or fixed memory allocation
- Tiered Local/Shared Memory Pools
- Events
- Signals
- Resource identification
- User configuration
- Link list
- Queues
- Pipes
- Semaphore

OS Interface API Module (Contd..)

- Mutex
- Process
- Timers
- Tasks
- Task-pooling
- Changing resource scope (from private to system)
- Adopting native threads/tasks to OS Abstractor
- Get Resource Ids
- Miscellaneous



AppCOE™

Application Common Operating Environment