Features

TaskRunner

- TaskRunner is a method for development of real-time software that is independent of the target hardware and its operating system.
- TaskRunner is based on experience with a wide variety of hardware and operating systems
- TaskRunner supports development of multi-tasking, multiple-CPU Systems

TaskRunner Development Method Features

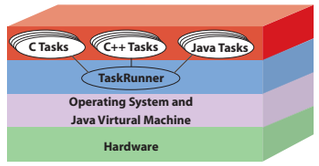
- Provides application software with isolation from operating system and hardware upgrades and patches
- Encourages modular, object-oriented code design
- Is based on experience with variety of hardware and operating systems
- Makes it easier to re-target or re-host software
- Enables software to be reused; for example, in a non-real-time application
- Supports software unit function test
- Allows for side-by-side deployment with legacy or non-TaskRunner code

TaskRunner Emulator Features

- Is a workstation application that implements the TaskRunner interface
- Used in debugging and testing prototype Task algorithms, such as message communication and signal processing
- Allows development and test to proceed when the target system is unavailable
- Can be used to implement large-scale simulations based on operations in a virtual environment
- Supports user-interface development and user training
- Produces realistic data products as an aid to system analysis

TaskRunner Supports Multiple Languages

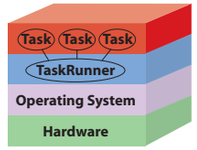
- Task interface and TaskRunner interface is specified in C, C++ and Java languages
- Java and C++ interface implemented for workstation platforms



Details

TaskRunner and Tasks

- System functionality is implemented by a set of system-independent "Task" objects
- Tasks are specialized objects that implement a common interface
- TaskRunner is an system-dependent object that represents real-time services
- TaskRunner uses polymorphism to service its Tasks through
  - Initialization of Task object
  - Dispatch of real-time events to Task
  - Desruction of Task object



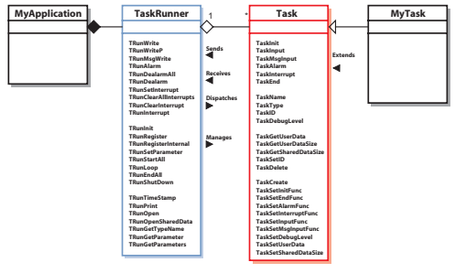
TaskRunner Supports Multiple Platforms Existing Implementations

- Real-time operating systems
  - Workstation: Windows, Solaris, Linux
  - PSoS, Mercury Operating System (MC/OS)
- Hardware
  - Workstation: Sun and PC-type
  - VME-based: Motorola MVME 6800 series CPU and MVME 24XX Power PC CPU

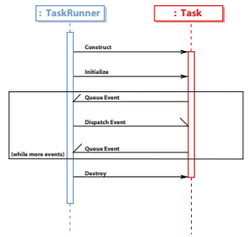
VME Architecture

Power PC Processor

TaskRunner System API Overview

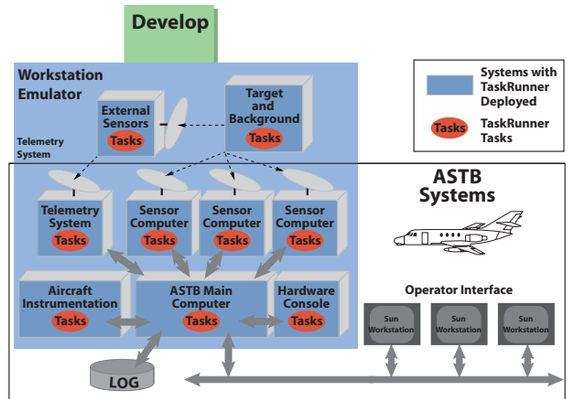


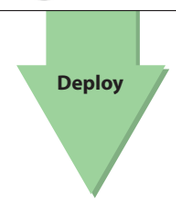
TaskRunner Sequence Diagram



TaskRunner Software Development

Example: The Airborne Seeker Test Bed (ASTB)





- Task Code unchanged from development to deployment
- Man-in-the-loop testing and data log testing are supported