CTK Plugin Framework

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Plugin Framework

- Dynamic Plugin Framework (based on OSGi)
- Enables service oriented architectures
- CTK provides basic plugins for distributed/large-scale applications
OSGi

- The OSGi Alliance is a non-profit corporation founded in March 1999.

- More than 35 companies from various areas

- Roots in embedded systems

- The OSGi specification is at Release 4 with numerous implementations in Java

- Specification for the core framework and a compendium of service interfaces
Layers

- Plugins
  Plugins are the CTK components created by the developers.

- Services Layer
  Connects plugins in a dynamic way by offering a publish-find-bind model for C++ objects.

- Life Cycle Layer
  The API to install, start, stop, update, and uninstall plugins.

- Security
  Handles security aspects (not available yet)
Specifications

- OSGi Core Specifications are small
- OSGi Service Compendium defines many optional services:
  - 13 Remote Services
  - 101 Log Service Specification
  - 102 Http Service Specification
  - 103 Device Access Specification
  - 104 Configuration Admin Service Specification
  - 105 Metatype Service Specification
  - 106 Preferences Service Specification
  - 107 User Admin Service Specification
  - 108 Wire Admin Service Specification
  - 109 IO Connector Service Specification
  - 110 Initial Provisioning
  - 111 UPnP™ Device Service Specification
  - 112 Declarative Services Specification
  - 113 Event Admin Service Specification
  - 114 Deployment Admin Specification
  - 115 Auto Configuration Specification
  - 116 Application Admin Specification
CTK Services

Implemented OSGi specifications in CTK

- Log Service Specification
  Provides a general purpose message logger.

- Metatype Service Specification
  Provides a unified way to describe metadata about services.

- Configuration Admin Service Specification
  Allows to set the configuration information of deployed plugins.

- Event Admin Service Specification
  Inter-plugin communication mechanism based on a event publish and subscribe model.
Event Admin

- Event publisher: sends events related to a specific topic
- Event handler: expresses interest in one or more topics

Features

- Synchronous or asynchronous event delivery
- Event from different threads are sent in parallel
- Event handler blacklisting
Using the Plugin Framework

Programming using the CTK Plugin Framework means:

1. Create plug-ins
2. Use services
3. Provide services
4. Deploy plug-ins in a CTK-based environment

What do we get?

- Stronger encapsulation & loose coupling
- Live updates
- Exchangeable software modules

What does it cost?

- Code for tracking services: they can come and go as they want
- Little overhead for the plug-in management
General Benefits

- Reduced Complexity
- Reuse
- Real World
- Easy Deployment
- Dynamic Updates
- Adaptive
- Transparency
- Versioning
- Simple
- Lazy
- Humble
- Non Intrusive

Integration is easy

- The framework is easy to start and to embed
- Clear separation between inside and outside world
Use Case – DICOM Application Hosting