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Yancees

A versatile event-notification service

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Motivation

Event notification servers have been used as the basic middleware infrastructure in a vast set of application domains, including user interfaces and software monitoring, groupware, awareness, workflow management systems, mobile applications and so on. They implement a distributed publish/subscribe service that intermediates the communication between information producers, that publish events, and information consumers that express interest on events by posting subscriptions.

The increasing popularity of the publish/subscribe paradigm has demanded new functionality that goes beyond the traditional publication and subscription of events. Current commercial and research infrastructures strive to address this problem by:

- Developing new infrastructures to support the required functionality (such as CASSIUS, Khronica, GEM, YEAST and so on);
- Providing monolithic one-size-fits all approaches such as CORBA-NS or READY;
- Implementing minimal core services such as Siena and Elvin.

These implementations, however, provide poor extensibility, configurability and dynamic change capabilities, making those solutions not versatile enough to support the new features demanded by continuously evolving applications.

Versatile Event Notification Service

Our research goal is to add versatility to publish/subscribe middleware, in special event notification services. As a result, we have developed ***YANCEES (Yet Another Configurable and Extensible Event Service)*** that provides a common framework based on extensible event, subscription, notification, protocol and resource models, which allows the development of customized notification services to accommodate the requirements of different applications (Figure 1).

Extensibility is provided through plug-ins and extensible languages. Configurability is achieved by the use of configuration managers, while dynamism is provided by dynamic parsers.

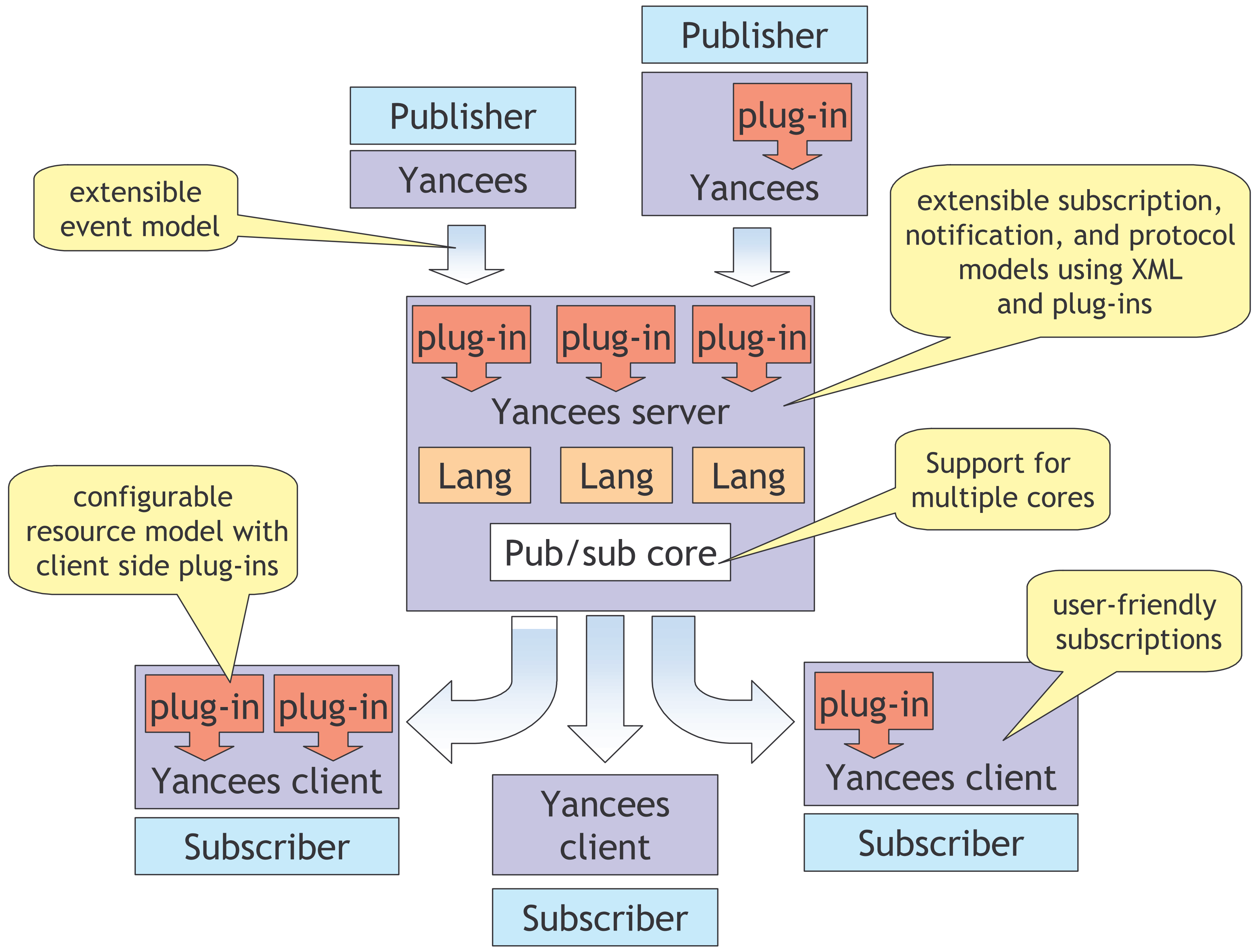

Figure 1: YANCEES enhances publishers and subscribers with plug-ins and languages providing a versatile platform for a large set of applications

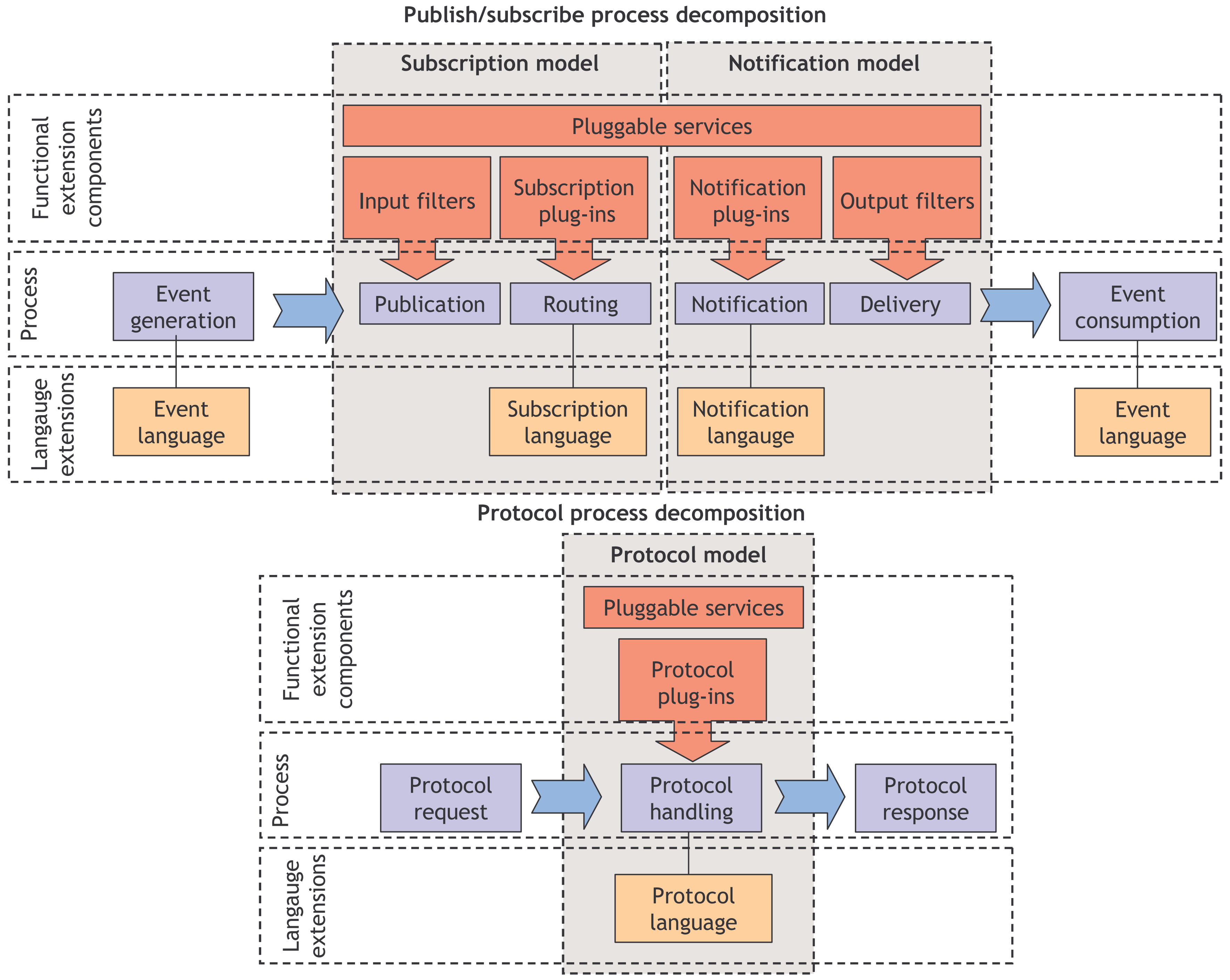

Figure 2: Internally, YANCEES uses plug-ins, filters and services to implement the functionality demanded by the notification, subscription, protocol and event models, achieving the versatility demanded by new applications

Extensible Architecture

YANCEES' dynamism and architecture rely on the combination of extensible languages defined in XML and plug-ins implemented in Java. Any new functionality defined in a notification server language is matched by plug-ins installed in the framework along the main publish/subscribe process (Figure 2). Dynamic parsers combine existing plug-ins to address the specific requirements of each subscription, notification or protocol messages. This approach allows the allocation of resources according to the subscriber's need, besides promoting the reuse of plug-ins.

YANCEES' core functionality can be used to extend current content-based publish/subscribe systems as Siena, Elvin, CORBA-NS, and others. This approach copes with compatibility and allows the integration of different event notification networks.

Key benefits

The extensibility and configurability characteristics of the YANCEES framework provide the following set of benefits compared to current event-notification services:

- Extensibility of the subscription, notification, event and protocol models by using plug-ins and XML-based languages;
- Reuse of existing functionality by the smart composition of plug-ins and integration with existing publish/subscribe networks;
- Distribution configurability, allowing the definition of client and server-side plug-ins;
- Support for runtime upgrade and change of plug-ins;
- Support for different protocols other than the common publish/subscribe;
- Configurable architecture, allowing the selection of the functionality to include in the service;
- Interoperability with existing publish/subscribe cores (Elvin, Siena and others);
- Compatibility with existing publish/subscribe networks.

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To learn more about YANCEES
and have access to a prototype of
the system and documentation,
please visit the website:
http://isr.uci.edu/projects/yancees

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