OPENEDGE REFERENCE ARCHITECTURE: PACIFIC EXTENSIONS – OVERVIEW

PROGRESS

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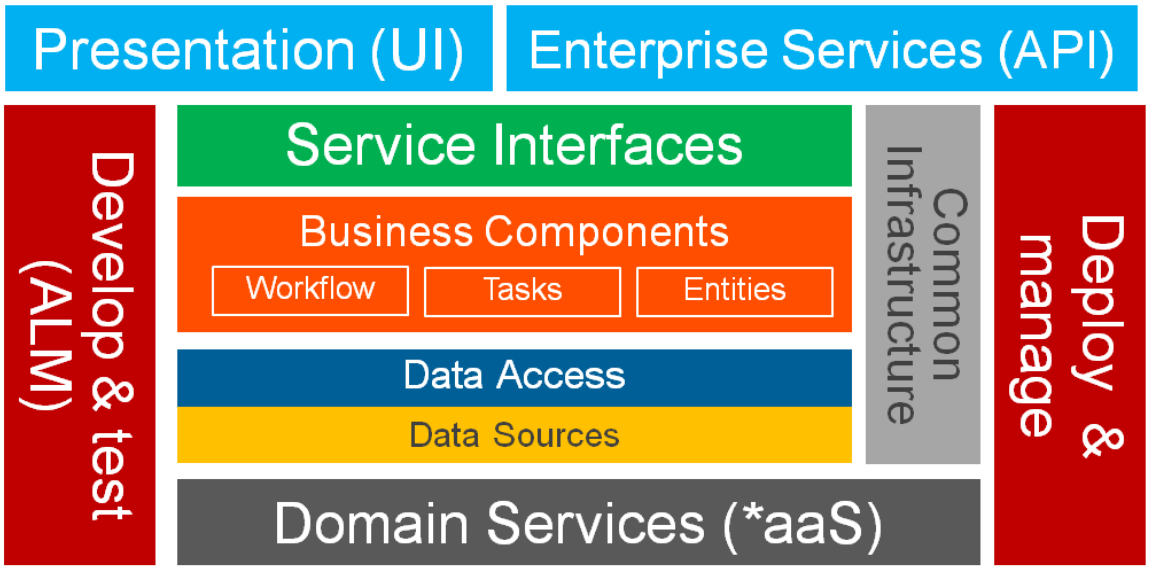
INTRODUCTION

The OpenEdge Reference Architecture (OERA) defines the general functional categories of components that comprise an business application. The Pacific Extensions to the OERA is a set of designs for building applications in a SaaS or scalable web environment. It extends

These extensions can be used as high-level blueprints for developing, deploying and managing service-oriented business applications in a web-enabled, collaborative environment.



These extensions update and extend the OERA in a number of ways. Most importantly, this starts with extending the Presentation (UI) and Enterprise Services (API) layers. The UI/UX layer allows a single UI to access data and services from any number of business applications, all within a single URL space. Similarly, the Enterprise Services – or API – layer is more clearly defined.

Additional services are also known to the OERA: Application Lifecycle Services (such as development and testing), and Deployment and Management Services (such as billing and monitoring) are added. Domain Services are shared services that can provide endpoints to multiple business applications within the same application.

The Pacific Extensions also include the notion of collaborative (social) services, which form a large part of modern application design.

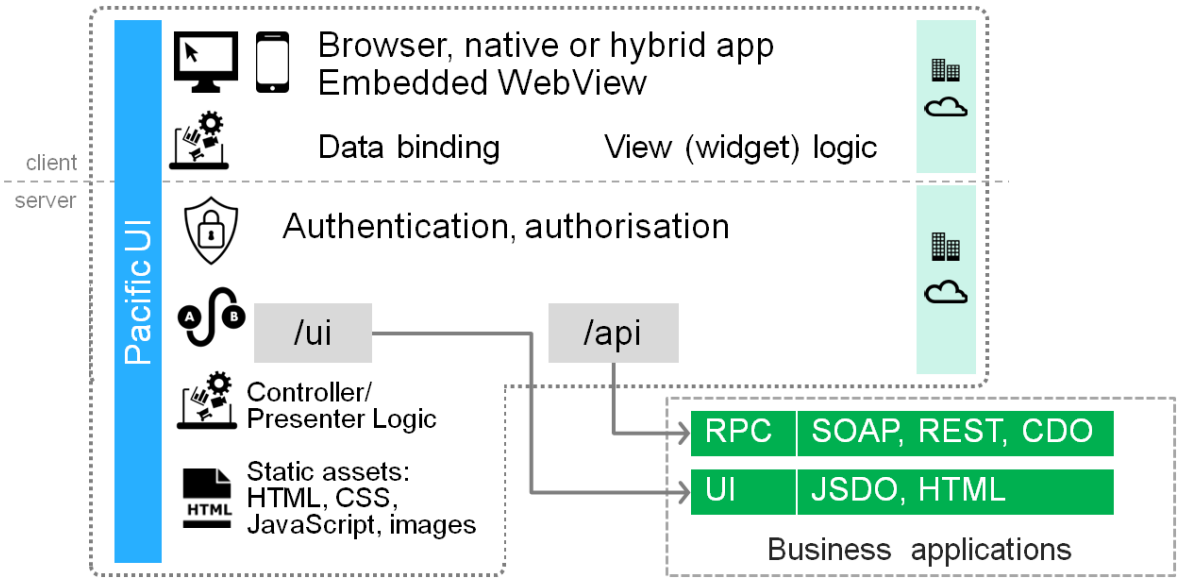
Each layer of the OERA consists of distinct components and services, each with specific characteristics, roles and responsibilities. The OERA describes these services and layers, as well as how each layer may interact with the other layers.

PRESENTATION (UI)

The presentation/UI layer presents user interface and performs UI logic defining the User Experience (UX). It communicates with one or more business applications via service interfaces (for both UI, UX and data).

Pacific UI is a single HTML5 container that talks to a single domain with a single security context. The container will typically be browser- or mobile-based, but is not limited to that – it could be an embedded webview or similar.

Pacific UI uses the Progress UX Constellation (based on HTML5 / CSS 3 / JavaScript) together with the Cloud Data Object (aka JSDO) for communication with the services provided by business applications. Applications are often build using the Single-Page-Applications (SPA) architecture, where one page updates and changes based on the user's state.



ENTERPRISE SERVICES (API)

The Enterprise Services layer presents data and services from one or more business applications via a programmatic interface (API), typically using a standards-based protocol such as REST or SOAP over HTTP.

DOMAIN SERVICES

Domain Services are shared or common domain (business) services that are used by one or more business applications. These domain services are either external to the business application (ie SaaS) or are shared between multiple applications (in which case they effectively act as SaaS).

These services include infrastructure services such as authentication and single sign-on, integration services such as messaging and mobile push notification services, and other general services, such as workflow or business rules (decision) services[1].

[1] *Of course, workflow and business rules (decision) services may be part of a single business application per OERA guidelines. Domain Services are those that apply across multiple business applications.*

SERVICE INTERFACES

The Services Interface layer in the original OERA design was part of the Business Components layer, and has been promoted to an independent layer in these extensions.

Service Interfaces provide a translation layer between a request to a service and the underlying business service. Services interfaces may provide authentication and authorisation for the request. They also translate input and/or output formats to and from the business application service's logical or domain model.

In other words, service interfaces provide the mapping layer from the requesting client and the business application's services. Service interfaces allow the same business services to provide data to a variety of requesting clients and request types without requiring changes to the services themselves.

COMMON INFRASTRUCTURE

This layer provides commons or shared services to the domain services within a business application. Services that are accessed by multiple business applications, or by other services, or that are provided by another SaaS provider, are part of the Domain Services layer. For example, authentication and single sign-on (SSO) are provided by the Domain Services layer. These services may be used by the business applications and their users, by developers (via the Deploy and Test Services) or by engineers who perform deployments. Authorisation services, on the other hand, will tend to belong to the business application's common infrastructure layer, since user permissions will vary according to the work being performed.

More details on designs for business applications are available in the existing OERA documentation and reference implementations.

DEVELOP AND TEST

Development and its associated functions have traditionally been considered somewhat separate to the runtime environments. The technology explosion with cloud deployment demands that modern software be mobile, agile, responsive to customer feedback, and accessible ubiquitously.

As more software is developed and deployed as a, or on a PaaS platform, the SDLC (software development lifecycle) becomes more intertwined with the product itself. The Pacific Extensions take this into account, and provide an outline for topics such as

- Continuous availability
- Performance testing,
- Security testing
- Usability testing,
- Compatibility testing and
- Automation frameworks

DEPLOY AND MANAGE

In the same way that development and testing have become more tightly integrated into applications, deployment and management services have too. Deployment and management service allow applications to provision and manage users, tenants and UI and API application services, and to manage access to those services and the compute resources that deliver the business applications.

Management services furthermore allow the logging, monitoring and metering of access to services, which enables the monetization of those services.

Enterprise (API) services are also managed in this layer, allowing the publication of API and service descriptions and their version information.

COLLABORATION

The collaborative or social aspect of business applications is paradoxically the hardest to quantify, yet adds innumerable value to a business' applications. Social aspects are most visible in tech support or Q&A forums, where developers and users can expect quick answers to their queries with low friction (eg. little or no sign-in; free-form questions). This collaboration can extend into development – where multiple developers or users can participate in the joint development of a single screen or module – and beyond to application discovery and recommendation services.

CONCLUSION

This document describes an overview at a high level into the Pacific Extensions to the OpenEdge Reference Architecture for building business applications that support today's 'cloud' architectures, and Software-as-a-Service (SaaS) deployments. Further documents will expand on each category in depth.

Progress

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Rev. 01/15