

Application Evolution: Web UI Strategy for Modern Progress OpenEdge Applications

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Summary

Over the course of almost 40 years, our mission at Progress has been the same: provide the platform and tools that enable you to build the best strategic business applications. Evolving an OpenEdge application is top of mind for many enterprise businesses. Companies across the world are looking to modernize applications built many years ago, back when the technology landscape was a single platform running on a single machine. The ever-evolving technology landscape has introduced several technologies—elastic cloud infrastructure, serverless, event driven architectures, responsive UI, mobile form factors, and predictive analytics, to name a few—that must be considered when delivering modern, competitive business applications today.

For Progress® OpenEdge®, we continue to introduce new capabilities and solutions for modernizing the backend, including support for REST, microservices and enterprise messaging. However, new user interface requirements demand a user experience that is available anywhere, anytime and on any device. To help you to capitalize on the latest UI technologies and UX paradigms and deliver a state-of-the-art user experience, we provide market leading tools and frameworks, such as Progress Kendo UI® and Progress Telerik. We also support community-driven, open-source solutions (not vendor specific) that are widely adopted with a large pool of developer resources.

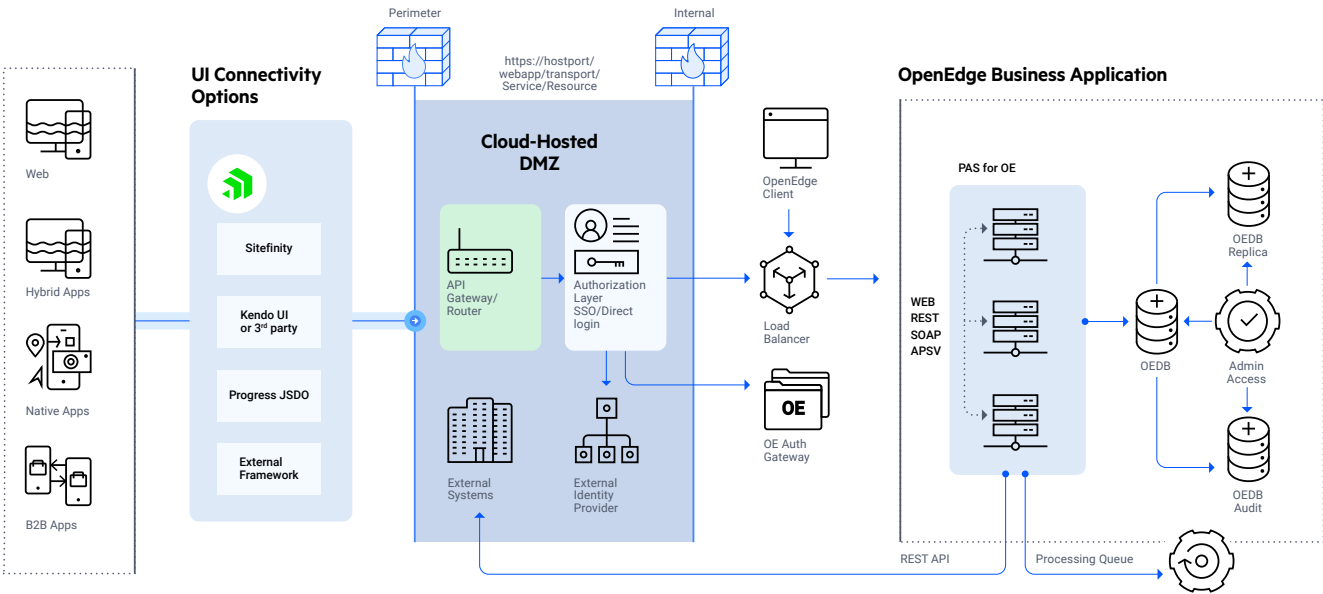
This paper will provide a review of the recommended OpenEdge architecture for delivering modern applications with a primary focus on UI technologies to consider when modernizing the application front-end.

The OpenEdge Platform

OpenEdge is a platform for development, deployment and execution of enterprise transactional-based business applications. The power of the platform with its domain-specific Advanced Business Language (ABL) minimizes the complexities of managing relational data and business logic. Concepts such as database connections, transactions and multiple record error handling are built-in to the runtime and make writing enterprise-level business applications using OpenEdge simpler and more productive.

Today users expect access to information 24x7x365 making continuous availability one of the primary themes for the OpenEdge 12 series. The OpenEdge RDBMS, the Progress Application Server for OpenEdge (PAS for OpenEdge™) and the ABL Virtual Machine (AVM) are designed to support the security, high-availability, continuous operations and scalability necessary for enterprise business applications. OpenEdge supports the latest web application architecture paradigms and UI technologies by providing access to business applications using standard protocols like REST, JSON and HTTPS easily and without changes to the core business application.

This image shown below provides a detailed view of a modern enterprise application architecture with load-balanced PAS for OpenEdge application servers, OpenEdge RDBMS with Replication and enterprise authentication. It demonstrates various UI options where the UI clients communicate with OpenEdge through HTTP requests.



Application Evolution Journey

[Application Evolution](#) is a continuous journey through six application focus areas: Architecture, Cloud, DevOps, Security, Data Integration and Management, and User Interface/User Experience. Modern enterprise applications are a combination of new architecture patterns, UX changes such as web, mobile and IoT devices, AI/ML workloads, batch processing, microservices and more.

A modernized web application architecture sets the foundation to update your application's UX, since most modern UI technologies require a well-architected set of business logic, APIs and data. As discussed in the article "[Top 10 Requirements for a Modern UI System](#)" from **On Point Technology LLC**, the key considerations for a modern UI revolve first around the architecture of the application. These are the top 10 considerations you need to account for to assure your modernization is truly modern:

- Microservice Architecture
- A Viable, Sustainable Fiscal Model
- Configuration, Not Code
- Rules-Driven Business Processes
- Extensibility
- Reporting
- Enterprise Service Bus
- Integrated Change & Version Control
- Data Migration
- Legacy Integration

Progress products support modernization of both the behavior, integration and UX including:

- [Progress Application Server for OpenEdge](#): REST, Web, SOAP (Microservice Architecture)
- [Docker Containerization for PAS for OE](#) (Configuration, Not Code)
- [OpenEdge Pro2™](#) (Data Migration)
- [DataDirect® Hybrid Data Pipeline](#) (Data Access)
- [Progress Corticon®](#) (Rules-Driven Business Processes)
- [Progress Sitefinity® and Sitefinity Insight](#) (UX and DX)
- [Progress MOVEit®](#) (Secure File Transfer)
- [JavaScript Data Object: JSDO](#) (Legacy Integration)

User Interfaces for Cloud Enterprise Applications

An enterprise application is different than a commercial one. Commercial users have choices—if the application doesn't work (or if it works poorly), they can simply uninstall it and use a different one.

On the other hand, enterprise users are often required to use specific applications. These applications are critical to their daily work, and they can't just switch to another if they don't like how it's working. They need to use the application to do their job.

For enterprise applications, user needs must be considered. These applications must be state of the art so they can compete in today's market.

As described in the article "[Designing a powerful UX for enterprise applications — a UX case study](#)" by **Atishay Goyal**, the UX principles for enterprise applications are:

- Simple
- Intuitive
- Consistent
- User control and freedom
- Visibility of system status
- Error prevention and cure

In summary, any modernization of a user interface needs to meet the demands and expectations of the enterprise user and their work environment.

OpenEdge Application UI Options for Cloud Applications

With the fast-paced, ever-changing nature of UI, properly defined backend services and data in an OpenEdge application keep these services future-proof and available to new UI components. Today's web UI technologies include:

- Mobile applications
- Single-page and other browser-based applications
- Content management systems
- Chatbots
- IoT Devices

Kendo UI Builder Migration


With the end of life status of OpenEdge Kendo UI Builder (KUIB), customers are faced with a question of the best direction forward.

With its perpetual license, you can continue to use Kendo UI Builder with the understanding that there is no future product support. If it has worked for your application, you can continue to use the product. KUIB was designed with customization and extensibility in mind, so if the specific functionality you need is missing, you might be able to add it yourself—for example, new or custom UI controls.

The generated code from the Kendo UI Builder is a fully functional Angular or AngularJS web application that follows Angular best practices and core concepts to bring UI richness and structure to the web application. The generated code uses Angular's prescriptive model of separating code blocks into individual modules.

At any time, it is possible to generate a final version of your code from Kendo UI Builder and move your future development outside of the tool. This takes advantage of all the generated code which avoids a costly rewrite. Experienced Angular developers should be able to get familiar with the code and extend it by hand in JavaScript or TypeScript.

Every modernization project is unique based on the existing business strategy, application development architecture, integration requirements and more. Let Progress help you determine your best path forward.

 [Talk to an Expert](#)

Mobile applications

Most mobile apps are small, auxiliary apps to a larger business enterprise application due to the limited screen real estate on a device. Mobile apps can be native, hybrid or browser-based and work seamlessly with well-architected OpenEdge services.

Our recommendation is [Kinvey](#) which helps to minimize lengthy modernization projects. It starts with a patented serverless architecture engineered to work with existing on-premises enterprise assets, without requiring any changes.

Single-page and other browser-based applications

HTML5, CSS and JavaScript are the core technologies for delivering rich web applications. They are supported by major browsers and fully integrated with web programming.

Enterprise applications require rich web apps or single page apps that share many characteristics of desktop graphical user interfaces and often include the user interactive features such as drag and drop, background menu, WYSIWYG editing, etc. These modern web applications integrate well with OpenEdge business logic services either with the JSDO or HTTP requests.

Our recommendation is to use Kendo UI, which is the ultimate collection of JavaScript UI components that integrate with jQuery, Angular, React and Vue. Kendo UI facilitates building eye-catching, high-performance, responsive web applications—regardless of your JavaScript framework choice.

Content Management Systems

Content Management Systems (CMS) have gained popularity as an integral component of an enterprise business solution. A CMS allows changes to your content without any programming knowledge. Strategic business initiatives can benefit from the integration and sharing of information from the business application to other mission-critical applications, such as CRMs, SCMs and ecommerce. Plus, a CMS delivers enterprise-grade security and personalized page views to various internal and external audiences.

In today's world of multiple screens and devices, a CMS can help you maintain lots of different types of content. From the products your company sells, to the sell sheets your distributors use to make a buying decision, or even feeding data into mobile apps. This

can be done by using a headless environment as a central hub for multichannel content distribution. Ideally, this enables you to deliver a seamless, personalized digital experience to your users that is further refined through ML-based analytics.

Our recommendation for a CMS is [Sitefinity](#), which is the core of the Progress DXP portfolio. Sitefinity instantly delivers high-touch, personalized experiences with rich, relevant content through the user's preferred digital channel. With Sitefinity, you can also manage these experiences on-premises or in the cloud.

Chatbots

Chatbots are UX components that provide automated, 24/7 self-service solutions to handle customer support issues such as frequently asked questions and basic transactions. Chatbots are typically found on websites, social media channels and mobile apps with the goal of using software to simulate a human conversation. By supporting repetitive customer inquiries with a chatbot, support organizations can significantly increase their efficiency by greatly reducing the volume of calls their staff needs to field.

AI/cognitive chatbots are quickly transforming customer interactions. Unlike traditional chatbots, these modern implementations are much more transactional and can be trained like people, utilizing a set of goals, examples, and data from existing systems.

Our recommendation is to use [NativeChat](#), an AI-powered chatbot that automates tasks and information retrieval.

IoT devices

Through the use of IoT devices, you can obtain valuable data that can be used to populate the user interface of a business application. IoT devices are used in manufacturing, supply chains, agriculture, healthcare and many other industries. They provide real-time data and analytics, enabling companies to have greater insight into their business operations and how their customers use their products or services. IoT devices utilize networking standards and technologies to communicate with OpenEdge backend services and data.

Progress Services Application Evolution Approach

The [Progress Services](#) team can help you modernize your OpenEdge application regardless of your technology choice or architecture, deployment goals and business challenges. Progress Services works with you to create a unique roadmap based on the current state of your legacy application as well as your vision for the future. We will work with you to determine what architecture and technology best suits your company, creating a project blueprint that's developed in three phases:

- **Assessment**

Review and analyze the current state of your platform as well as the skills of your staff to determine the best way to move forward.

- **Prototype**

Develop a pilot project in which your future user interface/user experience is identified, and your workflow and application standards are defined.

- **AppEvo Project**

Identify the modernization path based on the pilot project and your business goals. Our methodology and technology framework has been honed by years of experience evolving legacy OpenEdge applications so you can move forward with confidence.

The Progress approach delivers key benefits that include:





- Minimizing UX/UI work and furnishing responsive design
- Leveraging your existing codebase investment
- Supporting both procedural and object-oriented coding
- Offering fast ramp-up using experienced OpenEdge developers
- Crafting easy to develop and debug solutions



Learn More — Application Evolution Approach eBook

About Progress

Progress (NASDAQ: PRGS) provides the leading products to develop, deploy and manage high-impact business applications. Our comprehensive product stack is designed to make technology teams more productive and enable organizations to accelerate the creation and delivery of strategic business applications, automate the process by which apps are configured, deployed and scaled, and make critical data and content more accessible and secure—leading to competitive differentiation and business success. Learn about Progress at www.progress.com or +1-800-477-6473.

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