

## White Paper

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# Kurogo Mobile Optimized Middleware: At The Heart Of Mobile Apps And Websites

### Executive Summary

Mobile Optimized Middleware is a new category of middleware developed to address the fragmented mobile value chain. This fragmentation creates many challenges for organizations like; complex integration and maintenance, extensive mobile development costs, and under-supported processed and users.

Kurogo Mobile Optimized Middleware takes a fresh approach. Based on the MIT Mobile Framework, it was designed from the ground up specifically for mobile.

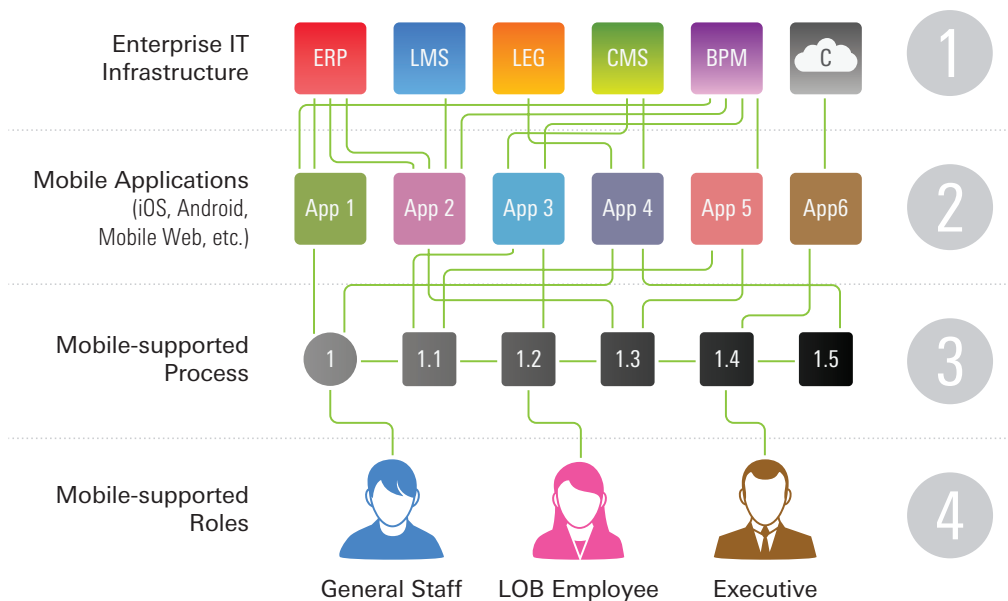
This white paper looks at the fragmented mobile value chain, the architecture of Kurogo Mobile Optimized Middleware, explains how it works, details its benefits and provides tips on what to look for in Mobile Optimized Middleware.

# Why Mobile Optimized Middleware?

## Fragmentation In the Mobile Value Chain

The current mobile value chain is fundamentally fragmented. This fragmentation affects an organization's enterprise architecture, knowledge management efforts, application development processes, and approach to mobile application design. Fragmentation exists at every step in the value chain; from an organization's data sources, to its mobile applications, and its mobile-supported processes and people (see Exhibit 1).

Exhibit 1: Mobile Value Chain Faces Issues



This fragmentation causes four basic problems:

1. **Complex integration and maintenance:** CIOs and Enterprise Architects must spend more of their budget and time creating and maintaining connections between mobile apps and data sources instead of building the core technologies that help grow their businesses.
2. **Extensive development/QA:** Mobile programmers spend a lot of time developing mobile applications because skills must be maintained for multiple platforms and programming languages. Additionally, testing is complex because of the vast number of different mobile form factors and extends deployment time frames.
3. **Fractured process-level support:** App users must often visit multiple mobile and even use desktop applications to complete critical tasks while mobile. This is very inconvenient, creates inefficiencies, and limits productivity.
4. **Under-supported roles:** Users are not always provided with a targeted, device-appropriate mobile user experiences. This leads to less engaged employees and customers and lower mobile app adoption rates.

## The Jungle and How it Got that Way

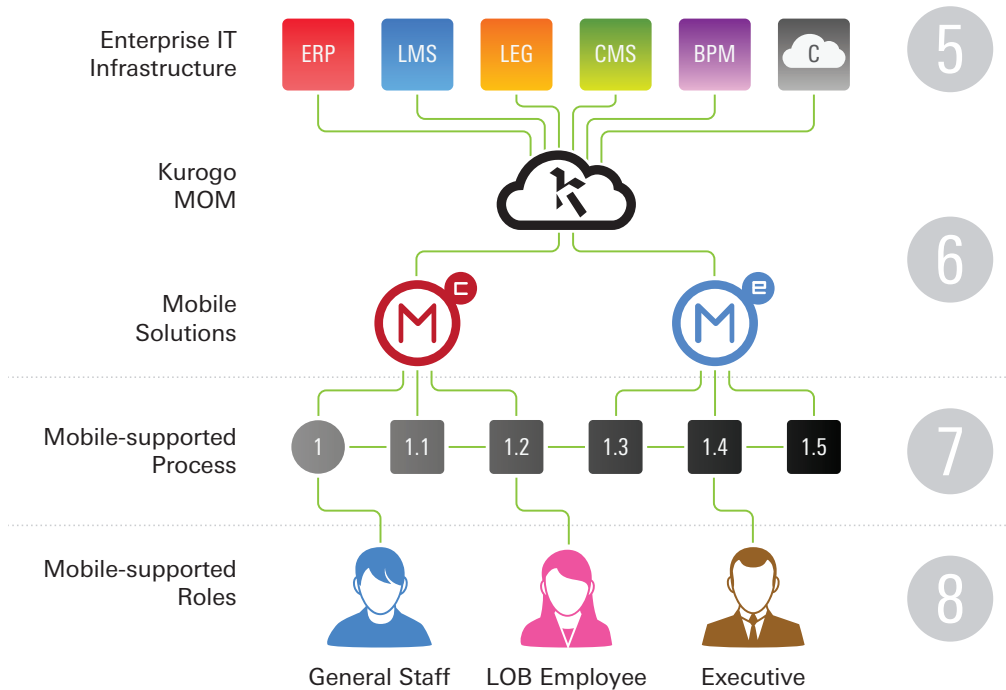
It's easy to see how this jungle cropped up. To meet market demand, software vendors developed mobile extensions to their own products and organizations used those apps. At the same time, developers mobilized data sources to meet specific needs, like supporting new processes or roles within the organization.

This kind of operation included not only the building of mobile apps, but also connecting the apps with various data sources.

## A Solution Is Developed

A solution to this jungle of data sources, connectors, apps, processes, and roles, required a fresh approach. Kurogo Mobile Optimized Middleware, which was based on the highly regarded MIT Mobile Framework, was designed from the ground up to tackle the problems outlined above (see Exhibit 2).

## Exhibit 2: Mobile Optimized Middleware



## Simplicity at its Heart

Looking at Exhibit 2, let's start at the top, with the enterprise IT infrastructure (item 5). Kurogo Mobile Optimized Middleware simplifies the integration and maintenance for CIOs and enterprise architects by providing a single, open API that plays well with different data sources and data formats. By using familiar languages and standards like as PHP, developers can easily aggregate data from many sources for delivery to mobile apps.

Kurogo Mobile Optimized Middleware then feeds that data into pre-configured solutions—like Mobile Enterprise or Mobile Campus from Modo Labs (item 6), greatly reducing development time for mobile programmers. These solutions include modules like authentication, directories, news and notifications, calendars, and more.

The mobile solutions that plug into Kurogo Mobile Optimized Middleware pull data from a broad set of data sources and then provide that data to users who leverage the data and content to make decisions and execute transactions from their mobile devices (item 7). Because Kurogo detects a user's device type and optimizes content and data before displaying it, users of Kurogo-backed mobile apps get the best possible user experience and are better supported (item 8).

# Kurogo's Architecture

## So, how does Mobile Optimized Middleware work?

Kurogo Mobile Optimized Middleware aggregates and organizes raw, decentralized data sources from your enterprise systems and delivers them to mobile websites and native mobile applications. The combination of connectors, business logic, presentation templates, and APIs—which have all been created specifically for mobile—is what makes up Kurogo Mobile Optimized Middleware (see Exhibit 3).

Exhibit 3: Kurogo Mobile Optimized Middleware Architecture



## Pre-Built and Custom Modules

As Exhibit 3 makes clear, data sources integrate with pre-built (i.e., people, news, calendar, map, video, content, login, stats, emergency, and more) or custom modules, which then pull data into the Kurogo Server. At that point, native and mobile web-based solutions like Mobile Campus and Mobile Enterprise request data and content from Kurogo.

Data and content are delivered to these solutions in an optimized way that takes into account the screen size, data input method (including keyboards or touch screens), platform, and device type of the user.

The result is a data- and content-rich application that's optimized for all mobile devices.

## Kurogo's Simple Admin Console

Kurogo Mobile Optimized Middleware includes an extensive Web-based admin console that's simple to use and makes short work of site management. More importantly, with the admin console, configuring a mobile app or website requires minimal coding.

With the admin console, you can view and manage the overall properties of each module, manage authentication, decide on the behavior of the various modules, and control the site setup.

There are numerous other controls that the admin console gives you, including SSL, theme, device detection, error handling and logging, database configuration, cookies, caching and performance, analytics, file paths and locations, text strings, and site maintenance (see Exhibit 4).

### Exhibit 4: Kurogo Mobile Optimized Middleware Admin Console

The screenshot displays the Kurogo™ Administration Console for Universitas Mobile Web. On the left is a sidebar menu with three main sections: SITE CONFIGURATION (containing Site Setup, Module Behavior, SSL, Theme, Device Detection, Error Handling and Logging, Database Configuration, Cookies, Authentication, Caching and Performance, Analytics, File Paths and Locations, Text Strings, and Site Maintenance), MODULE CONFIGURATION, and CREDITS AND LICENSING. The main content area is titled 'Site Setup' and includes a 'Save' button. It contains the following fields and options:

- Site Name:** Universitas Mobile Web. Description: Name of this website as it appears in the website, including in the "Return to [site-name] home" link in the footer.
- Organization name:** Universitas. Description: Name of the organization that owns this site.
- Language:** English (United States). Description: The primary language for this site.
- Local time zone:** (GMT-05:00) Eastern Time (US & Canada).
- Local area code:** 617. Description: Area code for local phone numbers. Added to phone numbers that are missing an area code.
- Enable auto-detection of phone numbers:** A checked checkbox. Description: On some web browsers (e.g., iOS), phone numbers are automatically detected and turned into tappable or clickable links. Uncheck this box to disable this behavior site-wide.

At the bottom, it shows the Kurogo Version: Your version of Kurogo (1.3) is up to date (1.3).

## The Benefits of Kurogo Mobile Optimized Middleware

Open Source	<i>Kurogo is open source.</i> As a result, organizations have direct access to 100% of their source code, providing an unparalleled level of transparency. In addition, although contributions are not mandated, Modo Labs engineers and the vibrant Kurogo community frequently make code contributions.
Faster App and Website Creation	<i>Mobile Optimized Middleware takes arduous tasks off the plate for the CIO, Enterprise Architect, and the developer.</i> Because of the open, flexible API, pre-built applications that are ready to go, inheritable mobile web templates, flexible data handling, and an admin console, integration and development times are significantly reduced. Mobile websites and apps can be created in a fraction of the time it used to take.
Code Specifically Written for Mobile	<i>Existing middleware platforms have become large and bloated.</i> That's because they were designed to deliver applications to computers with large screens and fast networks. Kurogo's tablet- and mobile-first design ensures that your mobile websites and apps are optimized for the lower bandwidth, screen sizes and interaction methods of all mobile devices.
Standard Languages and Systems	<i>Developers will be comfortable creating Kurogo applications and connectors.</i> Familiar languages and standards such as PHP, HTML5, CSS and JavaScript reduce development costs while enabling a high level of user experience delivered across multiple device platforms. Kurogo middleware application servers can be installed on both Linux and Windows servers, and will fit into any IT infrastructure.
Taming the Jungle	<i>Mobile Optimized Middleware integrates quickly, cleanly, and reliably.</i> Rather than the jungle that results from connecting disparate data sources with makeshift code that can balloon out of control and can often break inexplicably, Kurogo Mobile Optimized Middleware works right away and remains reliably integrated with the data sources. Connections are easy to maintain and modify should the need arise.
Focus on the User	<i>Kurogo Mobile Optimized Middleware provides best practice user experiences across all platforms and devices.</i> Many mobile development options favor one device over another, but sacrificing one device might mean you won't get to the audience you need to reach. Kurogo's unique templating engine enables tailoring of the user experience at the platform, device family, or individual hardware level.
Customization Options	<i>With the Kurogo platform, Modo Labs' prebuilt modules work right out of the box.</i> Customization can often be an all or nothing proposition for an organization looking to roll out a mobile app or website. Either you start customizing at the beginning of a project or you go with the included functionality and forget about customizing until you rip it all out a few years down the road. Kurogo Mobile Optimized Middleware modules can be quickly and easily customized to the functional and user experience needs of an organization. Once they're up and running, an organization can expand the modules to evolve an app even further, with minimal development time.
Clean Break Between Business and Presentation Logic	<i>The right pieces stay in the right places.</i> Because it was designed from the ground up for mobile websites and mobile apps, Kurogo Mobile Optimized Middleware provides a clean break where there are often unclear demarcations: between business logic processing and presentation logic.

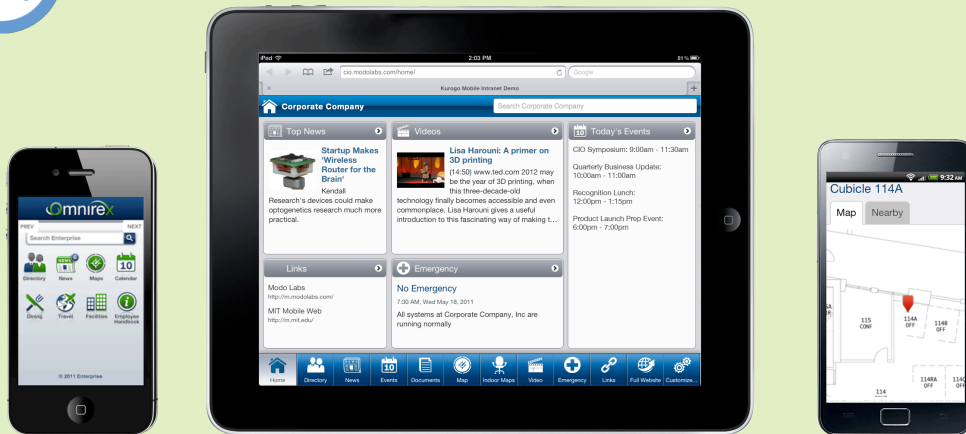
# The Mobile Enterprise and Mobile Campus Solutions from Modo Labs

Modo Labs solutions for business and education are built on the Kurogo Platform and connect to Kurogo Mobile Optimized Middleware.

The solutions are comprised of specific modules that request data and content from source through Kurogo. Mobile Enterprise and Mobile Campus are available on the Mobile Web, iOS, and Android platforms. They can be implemented out of the box and can be modified to fit specific client needs.



## Mobile Enterprise



## Mobile Campus





# What to Look for in Mobile Optimized Middleware

## Questions you need to ask your vendor

To ensure you get the most from your Mobile Optimized Middleware, ask these questions:

- When data sources change, how easy is it to change code?
- Can customers see 100% of the source code?
- Is the middleware based on open standards and is it open source?
- How easily does it integrate with existing data sources and legacy systems?
- How easy is it to tailor the web sites and applications for different mobile devices to maintain a high level of user experience on the different mobile platforms?
- Does the platform only provide a least common denominator user experience?

For more information on Kurogo Mobile Optimized Middleware or Modo Labs, Please visit [www.modolabs.com](http://www.modolabs.com) or contact sales at: [sales@modolabs.com](mailto:sales@modolabs.com).