



Assembling a Case Management System with LEGO®-like Blocks

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Most courts have a case management system provided by a single vendor built with preassembled building blocks that may not work easily (or at all) with building blocks from third-party vendors. Technology is available to help courts choose and assemble building blocks that meet their case management needs.

Technology can be complex and opaque to non-technologists. At the same time, technology must serve the business of the court. How should we design technology to serve the goals of the court and the goals of the public? This article proposes that we encourage the courts to demand, and industry to supply, best-of-breed application components that operate with standardized interfaces to improve the courts' service to the public.

Courts (and clerks) typically manage a suite of applications to support basic daily business, including receiving and sharing information with the public and justice partners, filing and scheduling cases, handling documents, accounting for costs and financial obligations, disposing cases, and tracking cases. As capabilities of technology have matured and the public has adopted smartphones, judges, clerks, staff, attorneys, and litigants desire to access court case records and information in new ways.

Courts and clerks need a variety of case management software applications that typically come from different sources but operate with common data, including e-filing, judicial tools/eBench, public and partner access, notifications, online dispute resolution, litigant (legal) portal, remote audio/visual, digital recording, electronic payment processing, compliance monitoring, electronic transcripts, evidence/exhibit management, and jury management.

The Current State of Component Integration

At this time, court software applications come from many sources and are typically not designed to easily interact with each other without significant investment because there are few standards. Some commercial off-the-shelf/configured applications may be developed and maintained by vendors, while others may be developed and maintained by local- or state-level in-house developers.

Lack of integration between applications often means that data must be entered more than once, increasing labor and risk of error, and those data are not easily accessible to people who need that data. Courts and application providers are moving toward a consensus that standards are needed to enable applications to integrate easily, regardless of their source.

Most courts have a monolithic case management system provided by a single vendor. The system is monolithic because integration of its preassembled components is controlled by the system vendor. Components from other vendors, which may provide improved or additional functionality, may have only limited access to the data and internal components of the monolithic system.

Currently, vendors of monolithic court case management systems seek to offer a complete solution. Many systems do not offer “hooks” that would enable other vendors to interface with a system; they were not designed to operate like this. In addition, interfacing may require access by third-party software to update the “of-record” court case database, something antithetical to vendors for reasons of risk/data security and the business desire for exclusive customer relationships.

Fitting third-party components to a legacy base system requires communication between the additional components and the base system components. The effort and expense of the monolithic system vendor and of the external component vendor discourages interconnection of components because integrating an external component to the base system for the first time requires custom coding.

Vendors of third-party court components currently must develop a customized interface with the specific legacy case management system that the court customer has implemented.

Case Management Systems as a Set of Components

A system is generally defined as a set of things working together as parts of a mechanism or an interconnecting network. After considering two types of system analogies, we will see how those characteristics apply to case management system hardware and software. Components are the things that work together in a system, and compatibility of components is a typical challenge when mixing brands of components.

LEGO® Components Analogy

The first system component analogy is LEGO® building blocks. LEGO® is a line of plastic construction toys using pieces that can be assembled and connected in many ways to construct objects, either free-form or following a specific plan. When two pieces are connected, they must fit firmly, yet be easily disassembled. Most of the pieces can be used for free building, but some specialized pieces only serve one purpose.

The challenge in the LEGO® analogy is building things using pieces from non-LEGO® systems and building the desired constructed object with the pieces available. Other types of plastic construction toys include DUPLO®, which is made by the LEGO® company, with bigger pieces, and Mega Bloks mini, which is made by a competing company, and some sets of them are compatible with LEGO® brand (DUPLO® and regular LEGO®) pieces. The success and aesthetic appearance of constructing the desired system depends on the pieces fitting together snugly onto LEGO® bumps, a consistent color palette, excellent articulation, great details, good quality pieces, and interchangeable accessories.

Video Media Components Analogy

The second system component analogy is video media components. In addition to a flat-screen television with remote controls, hardware components may include a satellite dish or cable connection to the Internet, a digital video recorder, a Blu-ray player, a video game platform, and a voice-controlled virtual assistant. Software components may include streaming services providing content on the Internet. The hardware components have standard connectors and adapters, allowing the user to select and integrate the desired components into the overall video system without compatibility issues. Additional streaming services can be added to the list of what is available. There is a well-developed market of brands for each type of hardware and software component.

A Vision for Court Components in Court Case Management Systems

The strategic goal of both court and industry developers/providers of court case management systems is availability of standardized court component interfaces. These include LEGO®-like pieces that snap together (no matter who was the original “manufacturer”) and hardware components that a court can select from a list to add to the configuration of components to achieve the desired functionality.

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Court Component Model

The court case management system industry has a legacy of monolithic one-size-fits-all solutions where one vendor has tightly connected components that meet most of a court’s case management needs and are typically implemented all at once. The court community and the vendor community increasingly support the idea that case management components should be able to be procured from different vendors (“best of breed”), with the ability to add or swap components as needed, and that the components should be able to work together without customization. NCSC is facilitating this initiative, called the Court Component Model.

Software technology has evolved to the point that a best-of-breed approach is not only desirable from the court user side, but also feasible from the software development side. When courts demand a type of product, the market will respond. Court managers, judges, and clerks who have attended a conference and vendor exhibit may return to their court saying, “I saw [component X] and we need that.” It is up to court technologists to determine if that piece of technology would fit in court and prepare for a discussion with court leadership about how it would align with the long-term vision of the organization.

Taking a business-before-technology approach, the best practice is to have a business vision and then figure out what technology will support it. Components that provide the best functionality at the best price will succeed in the marketplace. This approach depends on setting standards that govern the exchange of messages and data between components.

Discussion of the Court Component Model comes with the caveat that the model is and will always be a work in progress as technology is always changing. The model will eventually be approved by the Joint Technology Committee of NCSC. Next steps on the model will be to add, revise, and consolidate components; document scope and key functional capabilities for each component; prioritize components for subsequent activities; and develop interface standards and conduct pilot projects to demonstrate successful implementation of components in a statewide or local court.

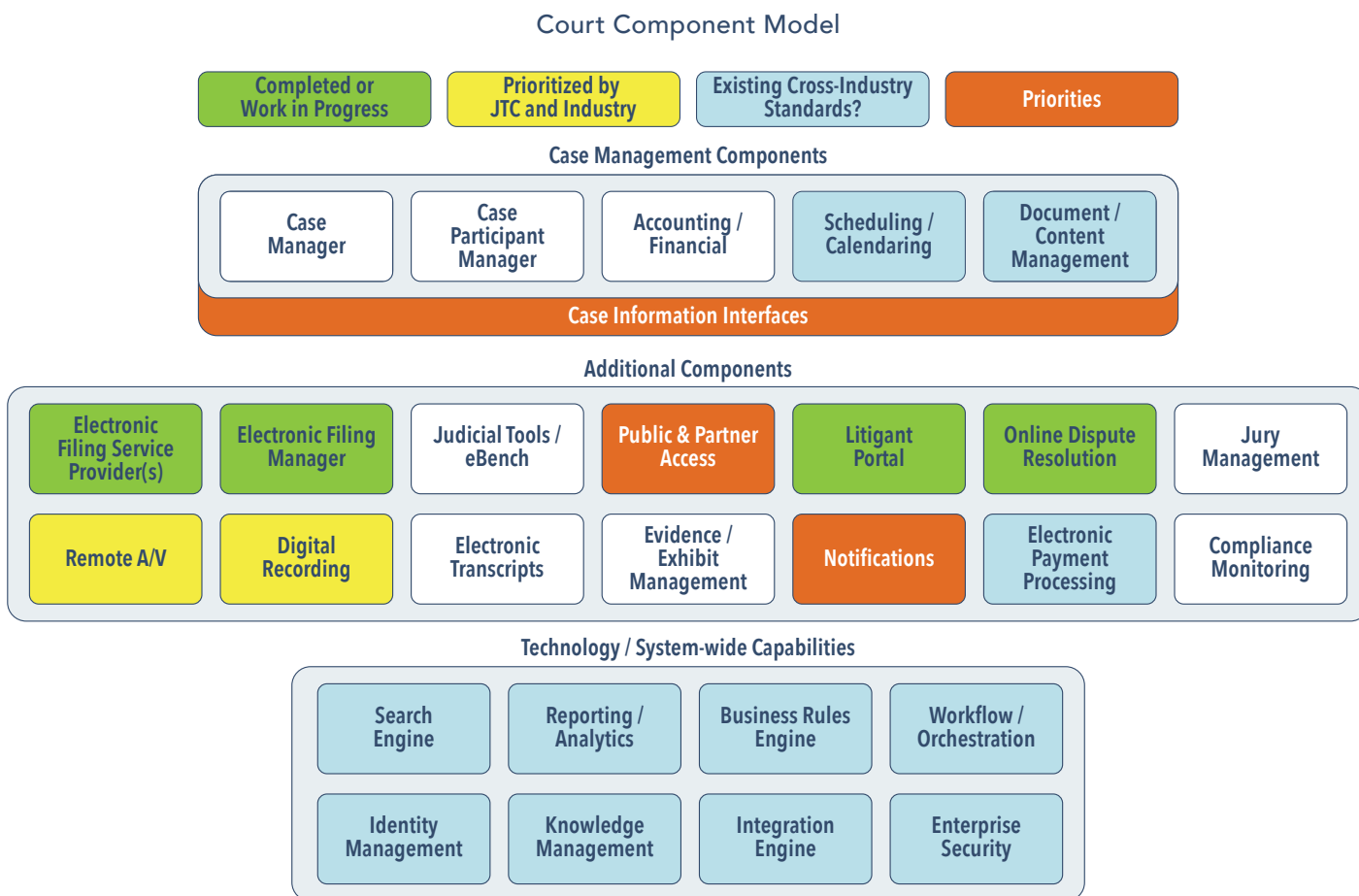
The Court Component Model has three categories:

1. Case Management Components of a traditional monolithic case management system are functions that are traditionally part of a legacy system currently used in courts, including a case manager, case participants, accounting/financial, scheduling/calendaring, and document/content management.
2. Additional Components are typically sold separately to add to capabilities of traditional components, including electronic filing service providers, electronic filing manager, judicial tools/ebench, public and partner access, litigant (legal) portals, online dispute resolution, jury management, remote audio/visual, digital recording, electronic transcripts, evidence/exhibit management, notifications, electronic payment processing, and compliance monitoring.
3. Technology/System-wide Capabilities offer functions and features used by the components, including search engine, reporting/analytics, business rules engine, workflow/orchestration, identity management, knowledge management, integration engine, and enterprise security (see Joint Technology Committee, 2017).

The diagram below shows the components in the three categories, with color coding indicating priorities and the status of interface standards.

How to Implement this Vision

We do not have to start at the beginning. We have examples of interoperable components in court technology already. Essential to a component-based approach is connecting applications using standards-based interfaces. Thus, to get to greater interoperability, groups are working together to define technical interface standards. As shown in the figure, several interface standards are complete or in progress (shown in green). Others may be leveraged from existing cross-industry standards (shown in blue). And then the components shown in yellow and in orange are prioritized for development.



We Are Part of the Way There— Some Components Already Interact Well

Not everything is in technical silos. Even now, there is a wide variety of component building blocks on the market to increase the availability and usefulness of court case data to other court functions. The most widespread ones include e-filing, judicial tools/eBench, and electronic payment processing for cases already filed in the court or being filed.

Even before a court case begins, courts that promote access to justice also recognize that litigant/legal portals and online dispute resolution will play an increasing role in helping the public access information and resources to address legal and nonlegal problems. Courts increasingly sponsor online assistance to the public, and provide a pathway if the incident or dispute results in a court case, through a seamless transfer of information from the component to the court's case management system.

For courts interested in locating components, the IJIS Institute Court Advisory Committee (ICAC) provides a free directory service at <https://icacprovidir.ijis.org>; the ICAC *Technology Provider Directory* presents products and services available in the market in a way that maps their capabilities and application to court technology components identified in the Court Component Model. This approach is designed to make it easier to find applications that meet specific challenges of courts.

Recommendations for Future Component Architecture: A RESTful Technical Approach

The standard for software interoperability is to constrain communications between systems via an API, or Application Programming Interface. A current popular and lightweight API method is a RESTful API. REST is Representational State Transfer (REST). Web services using this architecture are termed “RESTful.” REST was developed for distributed web (“hypermedia”) systems by Roy Fielding in 2000. It is meant to provide a “uniform connector interface” between software systems (Fielding, 2000: chap. 5). Its goal is to provide a structure for scalability, generality, and independence.

REST defines a set of constraints to be used for requests made to a resource (Uniform Resource Identifier, or URI, which is an entity or capability on a network or on the Internet, similar to a URL). The request elicits a response with a payload formatted in HTML, XML, or JSON. For example, one component may request a time slot in a docket based on case type with other parameters. In the RESTful style, a message from the scheduling resource contains all the metadata necessary for the requestor to understand what it can do. REST makes system integration more like the Web by providing hyperlink abstractions to the requestor, which adapt over time creating interoperability through discoverability of resources and location independence. (For more information, see also Bloomberg, 2013.)



Other Options for Component Interfaces: ECF

REST is not the only option. For example, the proposed technical interface standard for the Online Dispute Resolution component (see ODRTIS, 2019) leverages the OASIS Electronic Court Filing (ECF) standard for communication between software systems (see OASIS LegalXML Electronic Court Filing TC at <https://tinyurl.com/6wefanq>). The ECF standard is a mature one, originally approved in 2002, it remains actively used and adapted. ECF specification version 5.0 was approved in April 2019. ECF defines the communication of information between component systems in XML, the functions available, and the syntax of messages to request or receive information. For more detail, see the Electronic Court Filing version 5.0 specification (online at <https://tinyurl.com/uvmdg3b>).

Conclusion

The list of components in the Court Component Model informs court managers of the kinds of automated case management functions (potentially) available to enhance what their legacy system does for the court. The Court Component Model looks forward to the day that all components are based on standards and are separately available in the market or can be developed in-house. This will enable courts to mix and match components they want to assemble for their case management system, even components from multiple vendors, which, by virtue of standards, will interoperate with each other. Courts are advised to ask their vendors/providers if a certain desired component will operate with their legacy system, and how much it will cost to integrate it, creating a demand for standardized integration. Finally, the court component approach will motivate court case management system vendors to meet the emerging needs of court case management by building standardized interfaces and not building the components themselves, which only continues the pitfall of “one size fits all.” We want all courts in the nation to have at their fingertips software that works well, regardless of source, and to focus on the work of justice, rather than the details of supporting technology.

The work of courts is challenging. It is time to create a technology environment where courts can choose and easily implement the software they need to get their work done.

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