

Electronic signatures: Removing the last bottleneck to productive digital transactions



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Digital systems have become pervasive in today's world. Every activity in life has been infiltrated by digital interactions made possible by ubiquitous mobile devices, broadband wireless connectivity, web applications, and cloud computing. In response, industries must confront the technology adoption lifecycle once again and decide what to adopt and when. Over the course of this decade, processes will transition from old to new, like a cascade of dominoes.

Electronic signatures, or e-signatures, are a case in point. Although they represent a relatively small change, they have a great impact on the processes they help reengineer. They remove the last barrier between a hybrid paper-to-digital workflow to an all-electronic process, dramatically accelerating closure in any type of transaction that requires a contract—sales, employment and hiring, purchase orders, legal agreements, and more.

As such, e-signatures are poised at the boundary of old and new IT, like a turnstyle through one era to the next. Accordingly, this paper looks down the road to see where this new IT is going and what role e-signatures may play in that transition. It begins by examining how current IT propelled organizations to where they are today.

Systems of record vs. systems of engagement

Current IT built and today maintains the digital systems of record upon which all business, commerce, and government rest. These are the database systems that run accounting, human resources, order processing, inventory management, and customer relationship management departments around the world. Today at the enterprise level, they have consolidated around two large global vendors, Oracle and SAP, each of which offers a full suite of capabilities. Without them, the modern global economy simply could not function.

That said, these systems of record are not without their drawbacks. They are difficult to install, expensive to maintain, hard to learn, and awkward to use. Those who grew up with them take all this for granted. Members of the next generation, on the other hand, view them as a hardship.

This new generation grew up in the midst of a revolution in consumer IT, beginning with breakthroughs in usability led by Netscape, Yahoo!, AOL, Amazon, and eBay, all of which were then boosted by Apple, Google, Facebook, and Twitter and sent into orbit by a host of additional services like OpenTable, Yelp, Uber, and AirBnB. Collectively, these companies have created a new kind of IT, one focused on *systems of engagement*.

Systems of engagement turn computing power inside out, directing it away from data and records and pointing it squarely at the user experience itself. The massive adoption of mobile phones with ubiquitous access has driven this entire revolution. Mobile phones, and specifically smartphones, are amazingly empowering, and consumers love them. Indeed they have proliferated so rapidly and so widely that now it is a rare person who does not use a smartphone a dozen or more times per day.

None of the aforementioned has been lost on the enterprise IT communities that support business, commerce, and government. Nor has it been lost on end users, managers, and executives they support. Clearly, systems of engagement represent a much better way of meeting the needs of end users, and the sooner they can be incorporated into enterprise business processes, the better. But what exactly do they entail from the point of view of an enterprise IT organization?

At a high level, systems of engagement require IT to reconceive its systems architecture from a new perspective. In the old systems of record model, enterprise IT was organized around the database, a technology that sits squarely in the middle of a "technology stack."

Systems of Record Today

Infrastructure Designed around the Client/Server Model

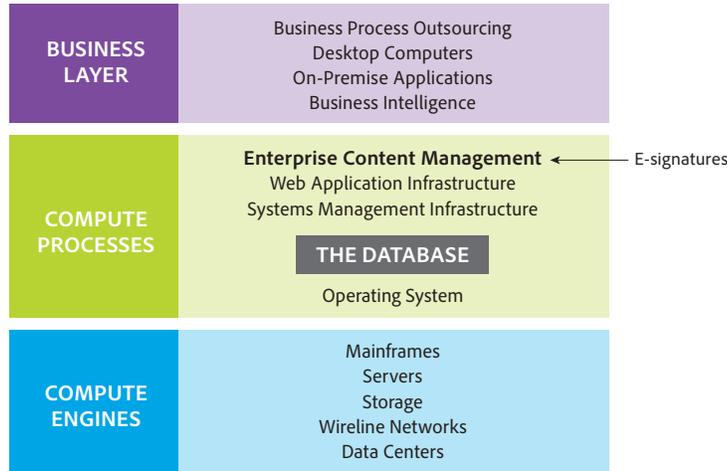


Figure 1: Systems of record model architecture

Everything above the database in the stack mediates between it and the external environment to ensure that data can get into and out of the database. This includes desktop computing, end-user applications, security software, and so on. Everything below the database in the stack provides a suitable computing environment in which these efforts can be conducted, including servers, storage, networks, and so on. The key point is that every element in this model, including the end users themselves, is in service to and subordinates its own interests to creating and maintaining the database that lives at the heart of every system of record.

E-signatures in this model are part of enterprise content management. Since systems of record have highly regulated interfaces, the traditional way to digitize a signature is to bring up a digital record of the document, print it to paper, sign it, and then scan it back into digital form and store it as a digital record. This is what happens when the interests of humans are subordinate to the dictates of a database. The word bottleneck describes the effect.

Systems of engagement are architected to remove these bottlenecks. Because they focus on enabling a user experience as opposed to a database experience, they are inherently user-centric in their orientation. This leads to configuring the full suite of enterprise computing assets into a different set of relationships.

Systems of Engagement

User Centric IT*

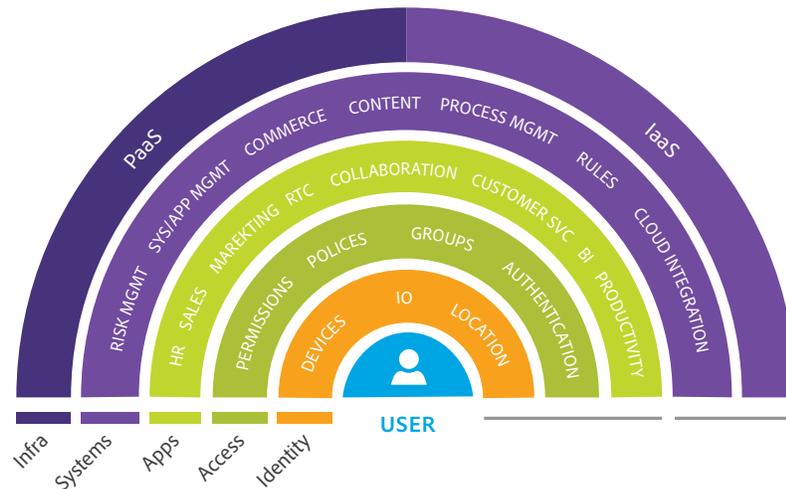


Figure 2: Systems of engagement model architecture, *Source: Box

In this model, the end user displaces the database as the central organizing focus. Every other element of the computing environment is then aligned with one or another of five rings of technology, each positioned relative to its immediate relevance to and impact on the end-user experience as follows.

- The inner "identity" ring calls out all technologies that touch assets or properties that belong to the end user directly, including mobile device, identity information, and current location. The IT system must not compromise anything in this ring, which can be used only with the explicit permission of the end user.
- The second "access" ring calls out a corresponding set of assets and properties that belong to the enterprise, including its data usage policies, security requirements, role-based permissions, and so on. The end user must not compromise anything in this ring, and access to any subsequent ring is permitted only by complying with the processes deployed here.
- The third "apps" ring calls out the software applications that end users interact with directly to accomplish their various purposes. Each application is positioned as a service to the end user, and the onus is on the application, not on the end user, to see that it is used properly. This is in stark contrast to a system of record, where the onus is on the end user not to make a mistake.
- The fourth "systems" and fifth "infra" rings are staging areas for all the other technologies that make up the systems of record stack. They are set at a distance from the end user because they should not impinge directly on the end-user experience, with a goal of being completely invisible in that context.

In the systems of engagement context, e-signatures are part of the content managed in the 4th "systems" ring of the model. But how they get there plays out very differently than before. The applications in the 3rd "apps" ring integrate digital signing capability into their workflow such that the user, having reached the app by complying with the enterprise rules enforced in the 2nd "access" ring, can invoke signing as a digital function. No printing, no physical signing, no scanning—just clicking. E-signatures let users cruise through the workflow without stopping. That is how e-signatures break the bottleneck.

This dramatic increase in productivity is part of a larger trend of enterprise IT, embracing a new set of design goals. Instead of designing a system from the database outward, as with systems of record, the new approach is to design it backward from the user experience. That is, to design a system of engagement, you start by focusing on the moment of engagement and develop digital processes that reengineer that moment for greater effectiveness or efficiency, as measured by the end user's experience.

Implementing systems of engagement

Systems of engagement came into being in the context of B2C consumer markets, for example, OpenTable for finding a restaurant, Uber for getting a taxi, Amazon for buying a book. With their broad deployment and acceptance in our day-to-day lives comes the desire to use systems of engagement for enterprise interactions as well, such as expense reports, sign-offs and approvals, and contract signatures. In this context, systems of engagement would reengineer user interactions with systems of record. In effect, they would serve as a buffer from the database's set of user-unfriendly demands. So, what would they look like?

To be clear, the obstacles to overcome are far from trivial. Security is the foremost issue, for systems of engagement are specifically designed to be open and accessible. Many, if not most, are hosted on mobile devices, which in themselves pose new challenges. For instance, unlike the PC-oriented systems of record that could standardize on Microsoft as a single vendor for the desktop, there is no single defining de facto standard to simplify development and maintenance for systems of engagement. The two most prevalent—Apple iOS and Google Android—are both optimized for B2C consumer experiences and do not provide the extra service layers needed for an enterprise deployment. Moreover, mobile devices themselves are easily misplaced, putting sensitive data at risk, calling for device management and data management software that can be activated remotely. All of this implies deploying a layer of infrastructure that is present only in patches today, much of which comes from venture-backed start-ups with uncertain futures.

Systems of engagement pose a directory problem as well. They are designed to connect people to one another, which is what makes Facebook, Instagram, and LinkedIn so popular. But no one "friends" another person in business, commerce, or government. Where do enterprise end users go in this new world to find out how to contact one another? In the old IT, the corporate directory served this purpose, but in the new IT, users want to engage with many people who don't work for their companies.

There are also regulatory issues. Systems of engagement operate like ant colonies—they leave trails everywhere. How much of an audit trail does IT have to maintain? Where do boundaries of e-discovery fall? How liable is an enterprise for content that is collectively developed and maintained across an entire community of interest? Technology issues spill over into governance issues, adding layers of complexity.

The new IT truly does represent a disruptive innovation when it comes to broad adoption throughout the enterprise. But like all such innovations, it also holds the promise of great benefits as well. Consider the following:

- For the first time ever, all the participants in your ecosystem are linked 24x7 via a ubiquitous wireless network, connecting endpoint devices that have more power than the original mainframe computers. Isn't that something your company should be taking advantage of?
- Moreover, your enterprise does not have to fund any of this new infrastructure—end users buy it for themselves. And not only that, everyone gets the Internet for free. For the first time ever, "anywhere, anytime" is no longer a concept, but a reality.
- This new pervasive infrastructure has the potential to fundamentally change the cycle time of any processes that require individuals to connect in order to complete a task. Wait time dominates the end-to-end cycle time for most workflows. The new IT lets you collapse these idle cycles to a fraction of their former footprints.
- This ability, in turn, fundamentally changes how IT needs to think about the risk profile of any process that stages resources "just in case." You don't need to dedicate physical resources on-site when they can be made virtually available on call. Risk exposures can be covered at a fraction of the traditional investment.
- Further, the new IT can restore you to a level of agility and responsiveness you haven't experienced in years. You can detect issues sooner, investigate them quicker, and close them directly with the principals involved.
- Finally, your customers are simply demanding it (and your partners and employees are not far behind), particularly if any part of your ecosystem incorporates members of the younger generation. Companies that fall behind will be bypassed—they may keep their current customers, but they won't get many new ones.

Technology adoption and e-signatures

Given the obstacles on the one hand and opportunities on the other, how should companies approach transitioning to the new IT? Returning to the starting point, e-signatures are a case in point. By taking this small step in IT, businesses take a gigantic step in business workflow acceleration. What is the holdup?

Signatures are mission-critical. They certify a piece of information or confirm a contractual commitment. They are ubiquitous, providing the necessary links that tie together the worlds of business, commerce, and government. They are not to be taken lightly or for granted. So, reengineering such a business process should take into account potential side effects or unintended consequences.

In this context, signing itself represents a critical moment of engagement. The act of signing, however, has been painfully disrupted by the proliferation of digital systems. To get a signature today, a digital representation of the content to be signed must be printed and mailed or emailed to the signer. The signer must then print it out; sign it; and mail, scan and email, or fax it back. Once returned, the signed document must be scanned back into digital form, if the signer didn't do so already, for further processing, after which the paper document is either discarded or archived. This process is not user-friendly, eco-friendly, or bottom line-friendly.

In an era when signers often had no access to a digital system, or when the systems they did have access to could not be expected to be compatible with that of the other party, this cumbersome process made sense. But today, these constraints no longer exist in the vast majority of cases. In short, the process of obtaining physical signatures no longer makes sense. Manual signatures involve inconvenient constraints and waste the time of both parties involved. They delay process closure, increase the administrative cost of any process that entails them, and add no value.

So why are businesses still using ink signatures? Because like all disruptive innovations, e-signatures must pass through a technology adoption lifecycle in order to be integrated into the existing fabric of business processes. This lifecycle unfolds as a series of stages, each characterized by a different adoption strategy:

- Just try it—This is the approach taken by technology innovators. They are the first to adopt.
- Go ahead of the herd to garner first-mover advantage—This is the path favored by visionaries. They are the first to adopt in a big way, typically by funding a project to get first-mover advantage.
- Stick with the herd to avoid making any big mistakes—Pragmatists advocate this strategy. They adopt when they see others like them adopt. This creates a "block voting" effect that causes technologies to proliferate rapidly once they pass this tipping point.
- Stick with tried and true solutions to avoid the law of unintended consequences—Conservatives are proponents of this approach. They do not come into the market until very late in the game, after all the shock has been absorbed via the work done by the pragmatists.
- Avoid this stuff at all costs, as it will never work—That is the position taken by skeptics who have a basic mistrust and dislike of new processes and technologies.

As these five adoption strategies play out over time, they create stages of market development.

The Technology Adoption Life Cycle

How Markets Evolve Around Disruptive Innovations

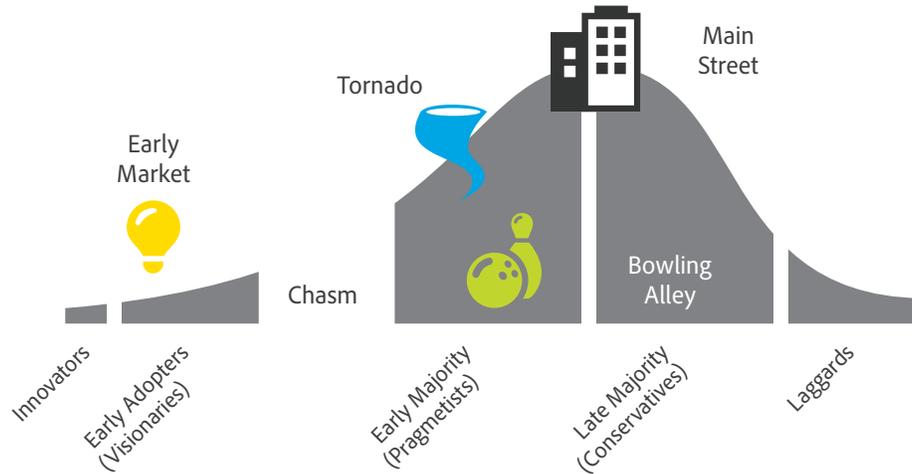


Figure 3: Market development stages

The key stages in this lifecycle are highlighted by the four icons and one gap in the graphic:

- The "early market" represents a time when the technology innovators and the visionary early adopters team up to take the plunge, the former to stay close to the state of the art and the latter to get first-mover advantage within their enterprise's competitive set.
- The "chasm" represents a lull in market development, where the visionaries have jumped in, but the pragmatists are waiting on the sidelines. This puts the entire adoption effort at risk unless the innovation can cross the chasm.
- The "bowling alley" represents a set of highly challenging use cases, typically specific to particular niche markets, where the old technology is not up to solving the problem, and some new solution simply must be found. This is the critical condition for pragmatists to take the plunge, but they do so in a very contained way, applying the innovation locally to the problem area only.
- The "tornado" occurs when enough pragmatists have shown enough success with the new technology across enough use cases that the general population is convinced it is time to adopt. When this tipping point is reached, the technology proliferates extremely rapidly, often catching the IT organization by surprise.
- "Main street" represents the market in its mature state. The technology has proliferated and is now taken for granted. From here on, the focus is on more seamless integration with all other systems to simplify the user experience and reduce the cost of maintenance.

In 2000, the US government passed the Electronic Signatures in Global and National Commerce Act putting e-signatures on equal footing with ink signatures. There are also more than 30 countries worldwide that have embraced electronic signatures. Such legislation along with the pervasive adoption of digital devices like tablets and smartphones has made e-signatures a practical choice for a broad set of applications across many different industries and lines of business. The real estate industry, with its heavy burden of low-value paperwork increasing the time to close high-value transactions, represents a classic crossing-the-chasm use case. It is no accident that there has been early adoption of e-signatures in that segment already.

Here are additional use cases that should be considered for e-signature implementations:

- **Closing sales contracts**—This is the number one use of e-signatures, as it shortens the sales cycle, improves sales force productivity, and impresses customers.
- **Contract management**—This is the most popular application for back offices and legal departments that have to manage a high volume of contracts and give the status of any particular item at a moment's notice.
- **Consumer self-service**—This is a winner with companies that are tasked with managing a broad array of customer-facing programs on a do-more-with-less basis. And it's a big hit with consumers as well, who appreciate being able to access the hassle-free, anytime, anywhere benefits of online interactions.
- **Project management**—Especially in complex projects where multiple vendors have to collaborate to achieve shared objectives, e-signatures speed project start-up, ensure accountability at every step of the process, and provide a complete audit trail if and when needed.
- **Workforce management**—E-signatures streamline the timesheet workflow and ensure a high degree of compliance due to a hassle-free system.
- **Digital workflows for digital businesses**—As more and more businesses are effectively "digital from birth," anything other than a digital signature process is unacceptable.

These are great opportunities just coming into view. Adobe research conducted in the United States in March 2014 by Socratic Technologies shows:

- Adoption of e-signature solutions in sales/sales operations, finance, procurement, and HR departments is 18%. That's enough to indicate that the water is fine and a great signal for the pragmatist majority to jump in.
- 61% of decision makers in sales/sales operations, finance, procurement, and HR departments are not aware of e-signature solutions. This makes it clear that IT has to take the lead here—these folks are holding their companies back for no reason.

So, how might your enterprise go about making the transition to e-signatures? Obviously, you want to target moments of engagement that matter. The key principle here is to map your initial target process to the technology adoption style of your company. Here are three basic approaches from which to choose:

- **Visionary**—Target a business process that, once made digital, would set your enterprise's performance apart from your competitive set. In that context, commit to digitize that business process end to end and incorporate e-signatures into the solution set as one component of the whole.
- **Pragmatist**—Target a business process where closing the loop is either taking too long or diverting too much attention from more important matters. The first obvious target is the contracts that close your sales cycles. These systems of record transactions cry out for a systems of engagement front end to speed decisions, reduce errors, and accelerate cycle times.
- **Conservative**—Target a class of signatures where the out-of-pocket cost of using paper and postage is significant enough to repay the investment within the current fiscal year. Announce and enforce a policy that makes that class "digital only." Insert e-signatures into an automated workflow that drives this process entirely by rules and policies.

Conclusion

As the world of business becomes increasingly global and outsourced, the volume of transactions and contractual commitments continues to escalate, and the demand for more productive processes becomes paramount. While buying brand new systems is appealing, for most organizations most of the time, grafting systems of engagement on top of systems of record is the only reasonable path to take. Here companies like Adobe, with its long history of digitizing paper workflows and its deep commitment to enterprise IT, can provide a low-risk, high-return approach to getting your company aligned with its new reality. E-signatures are the only solution that makes sense in an increasingly digital world.

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Geoffrey Moore is an author, speaker, and advisor who splits his consulting time between start-up companies in the Mohr Davidow portfolio and established high-tech enterprises.

Moore's life's work has focused on the market dynamics surrounding disruptive innovations. His first book, *Crossing the Chasm*, focuses on the challenges start-up companies face transitioning from early adopting to mainstream customers. It has sold more than a million copies, and its third edition has been revised such that the majority of its examples and case studies reference companies that have come to prominence in the past decade. Moore's most recent work, *Escape Velocity*, addresses the challenge large enterprises face when they seek to add a new line of business to their established portfolio. It has been the basis of much of his recent consulting.

One theme that has received a lot of attention recently is the transition in enterprise IT investment focus from systems of record to systems of engagement. This is driving the deployment of a new cloud infrastructure to complement the legacy client-server stack, creating massive markets for a next generation of tech industry leaders.

For more information

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