Model Driven Payment Gateways Initiative

Sponsored by the Object Management Group, Inc.

Movement of currency defines economies. Electronic payments accelerate currency movement, contributing to economic growth. Various networks of electronic payments clear, settle, conduct card payments, and enable e-commerce. These networks have grown prodigiously during the last three decades. Today, the financial industry stands at the threshold of a coalescence of payment gateways into a continuous convention for money movement. This convention could generate systemic economic growth and open new global markets to currently unrealized or unimagined product offerings.

Today, several hundred independently built and organically grown payment gateways create cacophony when money moves from one network to another. In the back offices of major financial institutions, electronic payments all too often rematerialize as checks or cash to facilitate movement from one payment network into another. The slightest mismatch between gateways can open security holes and introduce inefficiencies.

> "Visa supports development of global payment gateway standards that simply technology interfaces for our members, and that help them to lower their costs and contribute to building Visa's vision of universal commerce, U-Commerce."
>
> Joseph Bugajski
> V.P. Applications and Data
> Visa International.

While there is no single payment gateway standard that would silence the din, technology exists that can enable financial institutions to push payment gateway interfaces into the dark recesses of automation by software without the attendant costs of rebuilding the supporting infrastructure. Global standards that emerge from a ***model-driven*** approach hold that no business should ever be held hostage to technology through non-cooperating proprietary computers, software or networks.

This ambitious but achievable goal will be facilitated through the development of payment gateway standard ***models*** that ***federate***, not replace, existing systems. All that stands between the financial industry and freedom from a plethora of independent and proprietary gateways is a vision and desire to collaborate on creating standard payment ***models***. There has never been a better opportunity to reduce system complexity and cut attendant costs, to accelerate new products to waiting global markets, and to build momentum for global electronic payments. The time is right to ***systemically grow world economies.***

Organization

As members of the financial community, we are nearing critical mass to solve the problem of incompatible payment gateways. We propose an initiative for next generation financial payments. The Object Management Group, Inc. (OMG) provides a global open standards process for this initiative due to its neutrality with regard to the business, country and technology

objectives of its members. We propose therefore, organizing under the OMG charter, taking advantage of the supporting organization, open standards process and MDA methodologies. This initiative will be driven ***by*** and ***for*** the financial community with the OMG providing organizational and technical assistance as required.

This letter is an open invitation to the world financial community to join us in this effort. This will allow all voices to be heard and a consensus to be reached on a compelling solution. The OMG is providing the facilities for face-to-face meetings as well as electronic collaboration to facilitate the process. In its fourteen-year history, the OMG process has proven to be the most rapid and reliable way to achieve high-quality standards.

> "The U-Commerce vision has the unique potential to grow economies and enable new forms of business at a global level. The OMG is excited and honored to sponsor this initiative, and will put the full force of the organization behind making it successful."
>
> Richard Mark Soley, Ph.D.
> Chairman and CEO
> Object Management Group, Inc.

The Object Management Group is an international industry consortium dedicated to open systems through standards. The OMG is the body responsible for CORBA® (open middleware), the Unified Modeling Language (UML™), multiple domain standards in finance and other industries, and most recently Model Driven Architecture® (MDA®). MDA provides the capability to model standards (such as payment data and protocols) at a business level and to automatically generate technology-specific forms of the standards. This has the benefit of "future proofing" standard specifications as business needs and technologies change, while helping to make them easier to implement, maintain and integrate using automated tooling. See www.omg.org for more information.

Scope

There are and have been many initiatives to define technical payment protocols; this is not our focus. Instead we aim to provide a ***model-based payment framework*** that will enable growth, new markets and risk reduction while supporting a variety of needs, protocols, platforms and technologies. Value-added services and security information accompany and augment payment information to facilitate value-added services and to reduce risk. It is this supplementary information, as well as other contextual information relative to payment, that is a prime cause of diversity in payment protocols.

Understanding and facilitating the business contexts under which payments are made will provide the underpinnings to achieve growth in economies and the financial industry. The business context of some payments is well understood, but many such contexts will evolve and germinate, as electronic commerce becomes pervasive. Payment context answers the questions of who, what, where, why and under what authority payments are made.

It is our mission is to create a flexible and adaptable model driven framework for payments that can evolve to support an unbounded set of business contexts enabling universal commerce leading to the growth of economies.

Payment context will be used to manage and accelerate business processes, reduce risk, form markets, counter terrorism, protect privacy and for other purposes yet to be imagined.

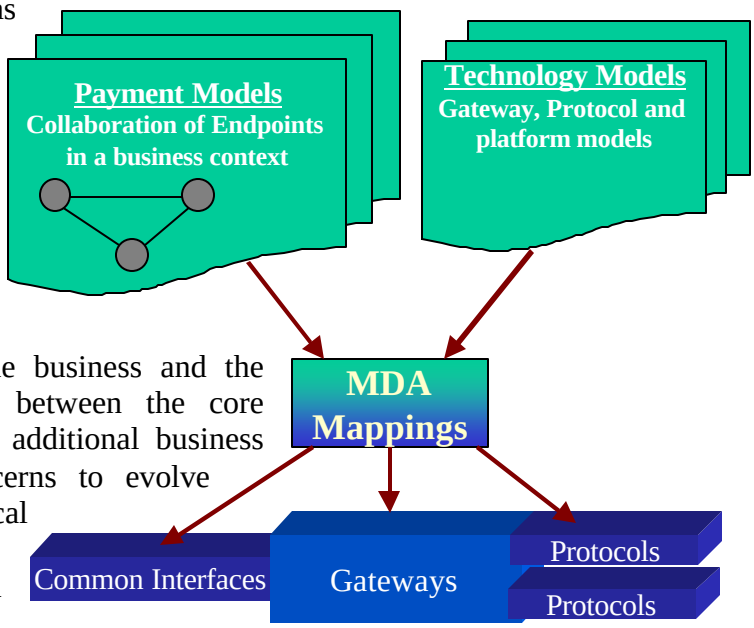
Approach

The payment framework must be sustainable for decades, surviving the transient effects of changing policies, processes and technologies. Sustainability requires that the payment

framework be designed for change. Separation of concerns helps achieve this agility, making it possible to independently specify and manage business processes, policies, message formats and technologies.

The Model Driven Architecture (MDA) standards of the Object Management Group (OMG) provide an excellent basis for this framework. MDA makes formal, ***business-focused models*** the core of specifications, rather than specific and transient technologies. Separate specifications then define how these business-focused models are mapped into the specific technical protocols, platforms and gateways. These business-focused models will capture the structure, rules and semantics of payment as well as the business context under which payments are made. Technology mappings (such as XML) will change over time without affecting the modeled business semantics. This mapping approach works as well for integration with our current operational systems as it does for supporting the latest technical capability.

Each business context will be expressed as a model, one that can be used with the core payment model or with another context. ***Each context will capture the collaboration of endpoints required to complete a business transaction.*** These collaborations capture the underlying business processes and semantics supported by payments.

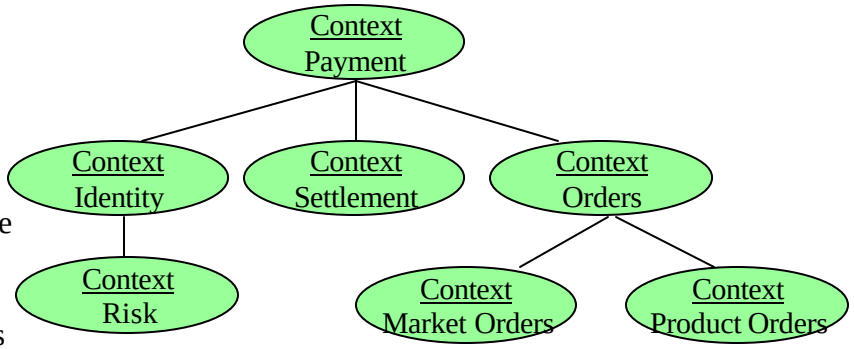


This separation of concerns between the business and the implementing technologies as well as between the core payment information and the aspects of additional business context will allow each of these concerns to evolve independently as required. Vertical industries can take control of their special needs while working within a common payment framework.

One exciting capability of this approach is the universal payment gateway, a model driven gateway that normalizes the spectrum of protocols while presenting a consistent interface to back-end systems. Payment models would drive this gateway such that new capabilities can be added at a single point, based on these high-level business-focused models. Vendors have already expressed interest in producing such a gateway once standards are in place.

Payment is the fundamental shared service. There is a necessity for a payment services across the spectrum of commerce. Payment becomes a pervasive utility offering commoditized common services of ubiquitous availability, scalability, reliability, authenticity, identity, trust and assurance.

Business Contexts to support



While our goal is to design for an open ended and evolving set of business contexts, the initial effort will define models of contexts for fundamental concerns. While this list of fundamental contexts is still under consideration, it is

expected to include; Card Payments, Product Orders, Market Orders, Authorizations, Support for underlying agreements, Business Rules, NET Settlement, and Billing. A set of context will also support Risk, Identity and Security.

Each of these contexts will be able to be used in combination (when provided for by the underlying protocols) in support of a rich payment structure. For example, XML with attachments is one technical approach that could easily support the full spectrum of payment contexts; but the technology layer is constantly changing, and an MDA-based definition allows our systems to change with the underlying infrastructure.

Risk

A principal concern of every financial institution is managing risk. A primary source of risk is the "join points" between the independently conceived and implemented protocols. Currently, the interpretation and integration of these protocols is subject to the continued diligence of individual programmers. Models will consistently and precisely define these protocols with their attendant context, and potentially will automate and/or validate the connections between them. Such consistent definition will also assist in refining these protocols so that gaps do not exist. Management of protocols and these join-points base via models will substantially reduce risk at these critical intersections.

Other Efforts

This initiative's approach of defining technology independent models and mapping these models to protocols, gateways and platforms, compliments rather than duplicates efforts of other groups to define protocols. Our goal will be to work with the capabilities provided by "TWIST", OFX, IFX, and others. In fact, these efforts as well as the existing protocols will provide input to ensure that our approach is general, secure, reliable and efficient. MDA mapping supports these technical protocols and platforms while providing a linkage between them via the common models.

Next Steps

Discussions on electronic forums and face-to-face meetings have already started in support of this initiative. With CIO level support from major institutions, this initiative has real potential to meet our goals of growing economies and reducing risk through agile electronic commerce. We are actively seeking the support and participation of other members of the financial community. Details on schedule and participation are available through the OMG Business Development Team, which can be contacted at:

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