



## MDA Journal

**David S. Frankel**

Lead Standards Architect – Model Driven Systems  
SAP Labs

[David.Frankel@SAP.com](mailto:David.Frankel@SAP.com)

Mr. Frankel's SAP WebLog is:

<https://www.sdn.sap.com/fr/sdn/weblogs?blog=/pub/u/55914>

Author:

Model Driven Architecture:  
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# Banking Industry Architecture Network (BIAN)

## Standardization for Semantic Interoperability

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The Banking Industry Architecture Network ([www.bian.org](http://www.bian.org)) is a not-for-profit organization that was created in 2008 to define standards for service-oriented architecture in the banking industry. BIAN takes an unusual approach to vertical market software standardization that focuses on semantic interoperability. BIAN's members include leading banks, vendors of banking applications, and service providers.

### Enterprise Software in the Banking Industry

The banking industry is notable for its heavy reliance on banks' own IT organizations to develop and maintain enterprise software applications "in-house." In general, banks would like to invest less in software development and more in their core expertise.

However, it is not feasible for a large bank to switch overnight to packaged software offered by software vendors in a "big bang." It is preferable to buy and integrate software packages and retire home-grown packages in a careful, staged fashion. Some of the home-grown packages will still be around for many years. Moreover, no vendor supplies software packages that account for all of a bank's needs.

The barrier to the gradual changeover scenario has been the huge costs of integrating home-grown packages with packages from multiple vendors. BIAN was formed to address the integration problem.

### From Regional to Global Focus

BIAN's goal is to set global standards. However, BIAN's founders made a conscious choice to limit its geographical scope initially, focusing mostly on Europe, to allow time for BIAN procedures and working modes to take shape before attempting expansion.

Recently, banks outside Europe, specifically in Canada and Australia, have joined. Further

expansion is likely.

### Focus on A2A vs. B2B

BIAN's mission is to define the services that comprise a bank's internal application landscape. Each service is essentially a component of the landscape, with well-defined interfaces. Thus, BIAN focuses on integration within a bank's landscape rather than on integration between banks and external parties; in other words, BIAN focuses on application-to-application (A2A) integration rather than business-to-business (B2B) integration.

Of course the line between A2A and B2B sometimes blurs; an outsourcing decision can turn an A2A interaction into a B2B interaction, and an insourcing decision can cause the reverse. Nevertheless, the A2A focus is truly different than a B2B focus.

### The Service Landscape

The BIAN services are organized in what BIAN calls a *Service Landscape*. The Service Landscape defines the boundaries and interfaces of the services, and groups the services in *Business Domains*. The Business Domains are grouped together in *Business Areas*. For example, the *Customer Agreement* service is one of several services within the Business Domain named *Market Operations*, and Market Operations is one of several Business Domains contained within the Business Area named *Financial Markets*.

However, BIAN has no intention of forcing banks to use BIAN's particular hierarchy of Business Areas and Business Domains in order to comply with BIAN's service specifications. Banks are free to define their own Business Area / Business Domain hierarchies for organizing the services.

### Focus on Semantics

In BIAN's formative period, some savvy people with experience as senior IT executives in the banking industry took a hard look at where the costs lie when integrating software packages. They agreed with assessments that I've cited in previous MDA Journal columns, that the bulk of the effort and cost of integration lies in the difficulty of understanding the meaning of the data being integrated.

Therefore, BIAN's founders came to a consensus that BIAN's service specifications should be at the semantic level and that technical service specifications<sup>1</sup> would be out of scope for BIAN. They felt strongly that if there is an agreement on the semantics of the service interfaces, the integration work needed to define the low-level service formats would be relatively small.

BIAN has done some work to map its semantic specifications to lower-level technical formats, as part of proof-of-concept exercises. However, these lower-level format definitions are illustrative only and are not published as official BIAN standards.

### How to Capture the Semantics?

The founders had in mind that BIAN service specifications would be written primarily in English, with some accompanying illustrative business process diagrams and possibly some business object diagrams. The first round of service specifications adhered to a lightly structured Word template. The first version of the BIAN metamodel was basically a rough sketch in UML of the section headings of the Word template.

It did not take long for people to realize that this approach would not scale. The first version of the Service Landscape created placeholders for upwards of 50 services, and version 1.5 due to be released in mid 2011 identifies over 200. After defining several services, the BIAN community realized that the service definitions need to be more structured and need to be stored in a real

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<sup>1</sup> For the technically inclined, what I mean here by technical service specifications are service definitions at the level of technologies such as WSDL, SOAP, and REST, and wire formats for service input messages and output messages.

database, to allow for reasonably easy management of the specifications and to improve the specifications' precision. The challenge was how to raise the level of precision while remaining true to BIAN's commitment to define services at the semantic level.

A team of experienced software architects in BIAN's Architecture Framework and Foundation working group has taken on this challenge, bearing in mind that what they come up with has to be usable by the business analysts who populate BIAN's service definition working groups. The trick is to enable the subject matter experts to encode their knowledge in a way that is structured enough to enable software tools to use the specifications to help integration analysts do their work more productively and more accurately. Clearly, lightly structured Word documents do not give such tools much to go on.

The first step was to define a more rigorous metamodel that defines the appropriate mechanisms for capturing semantic definitions of services in a structured way. The new metamodel, version 1.5, will be released in mid 2011. It reflects techniques that I've written about in previous MDA Journal columns.<sup>2</sup>

The next step will be the creation of tools that implement the metamodel in such a way as to present a suitable interface to the business analysts.

### **BIAN and ISO 20022**

BIAN is not the first standards initiative in the financial services sector to address the issue of capturing semantics. In 2003, a number of standards bodies active in the financial services sector started a project to align their work, under the auspices of ISO's financial services standards committee (Technical Committee 68, aka TC68). In 2004 ISO released the ISO 20022 standard, which defined a common methodology for defining electronic financial messages and laid out the structure of a common repository as well as procedures by which communities of interest make contributions to the repository. SWIFT was contracted to administer the repository.

The ISO 20022 methodology uses an approach that models business information, business messages, and business transactions at a level of abstraction well above that of the technical message formats that emerge from the end of the process. The technical message formats are generated automatically from higher-level models.

BIAN resolved last year to move toward alignment with ISO 20022. Thus, the new BIAN metamodel is an extension of the ISO 20022 metamodel. It adds mechanisms for defining services, which ISO 20022 does not cover, and adds additional mechanisms for defining semantics that may eventually be included in ISO 20022. BIAN plans to use the technical, non-semantic mechanisms of ISO 20022 only in proof-of-concept exercises, being more interested in the semantic mechanisms and the BIAN extensions thereof.

This alignment with ISO 20022 should smooth the way for BIAN to contribute semantic content to the ISO 20022 Repository. Since the content contributed to the ISO 20022 Repository so far is overwhelmingly B2B oriented, the contribution of A2A-oriented content to the Repository should help broaden the scope of the ISO 20022 initiative.

### **Conclusion**

BIAN has staked out a position in financial services standards that leverages accomplishments in that arena to date while breaking new ground in its semantics-focused approach to service-oriented architecture. Its members are planning a sharp acceleration of the pace of the definition of its service landscape in the coming months.

*David Frankel has over 30 years of experience in the software industry as a technical strategist, architect, and programmer. He is recognized as a pioneer and international authority on the*

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<sup>2</sup> See, in particular, *Semantic Metadata*, BPTrends, February, 2010.

*subject of model-driven systems. He has published two books and dozens of trade press articles, and has co-authored a number of industry standards.*

*David is a member of SAP's Technology Strategy team, which is part of the CTO's Technology and Innovation Platform organization. He focuses on standards for the financial services sector and for model-driven systems. He is a member of BIAN's Architecture Framework and Foundation Working Group.*