Position Paper

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The purpose of this document is to provide a brief position paper to address questions that arise from a review of the GridWise™ Interoperability Context Setting Framework document. This document is intended for review at the April 2007 GridWise™ meeting.

Introduction

The integration example for Mrs. Meg A. Watt describes a scenario where the highest level of integration is possible: plug and play. This is proposed through the use of a set of well defined standards, potentially leveraging and building upon key subsets of those standards. The other end of the spectrum is one where the ideal of plug and play can not be met for a variety of reasons. Unfortunately, the other end of the spectrum is the biggest obstacle to the integration of key business processes within the grid of the future (as well as the current).

The key assertions to be made by this position paper are the following:

- Plug and play integration for all information flows is not a realistic expectation
- There many key information resources that can not be readily brought into a plug and play framework
- The more practical integration problem for many information flows is how to efficiently map and/or transform information from one interface (or system) to another
- The importance of recognizing the existence of heterogeneous domain models as well as variations seen with implementations/realizations of information structures using a common domain model
- It is not plug and play integration that will be the barrier to improving the grid, but instead it will be those key integration points that manage key resources within the context of a key business process that can not leverage plug and play integration on a wide scale across the grid that will be a barrier to end-to-end integration

Discussion

Plug and play integration is obviously not always practical for a variety of reasons. These reasons would include, but are not limited to:

- Rapid technical advances, where standards can not keep pace with product offerings and needs of the marketplace
- Diversity of products, where products are often differentiated by proprietary models and/or extensions to standard domain models
- Legacy infrastructure (high cost or little economic incentive to replace)

The following diagram describes the common state of systems integration, which could be within one organization (i.e. the 'owner' of systems) or across multiple organizations. In this example there are systems that are based on standards, although potentially different versions of standards, different levels of compliance or use of extensions. Systems may also leverage proprietary models, as a consequence of the product vendor or localized development.
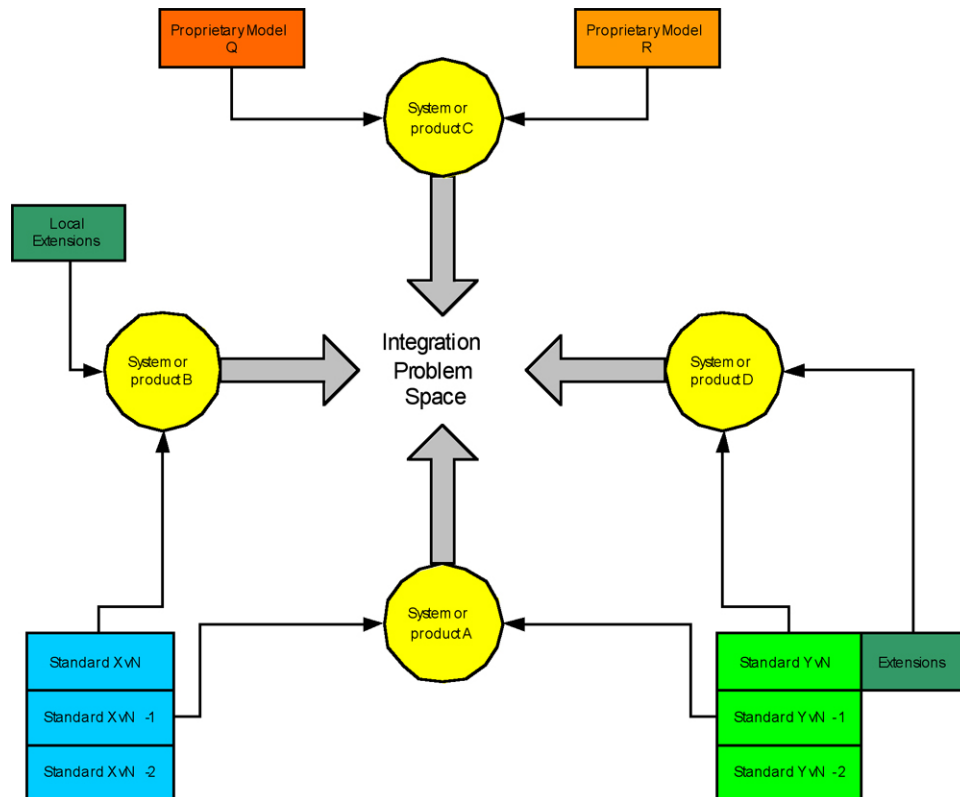
For each integration point, there is philosophically a 'distance to integrate'. Standards facilitate the narrowing of the gap, but not all standards result in 'plug and play' integration. For example, there is no intent or realistic expectation for the CIM to result in plug and play integration for all information flows that leverage the CIM. The following diagram shows some (but certainly not all) of factors that can contribute to the width of each gap.
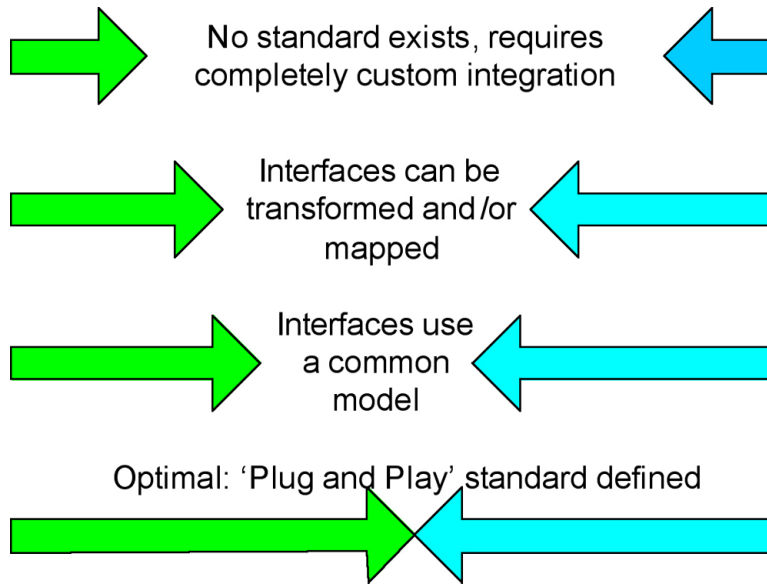
With respect to systems, there are a few key facts:

- They may be product-based or customer-specific implementations
- They may embrace one or more standard domain models, proprietary models or local custom models
- They may extend standard models in order to meet local requirements
- They may have varying degrees/levels of integration capability
- Products often lead standards efforts
- Some product vendors feel threatened by standards
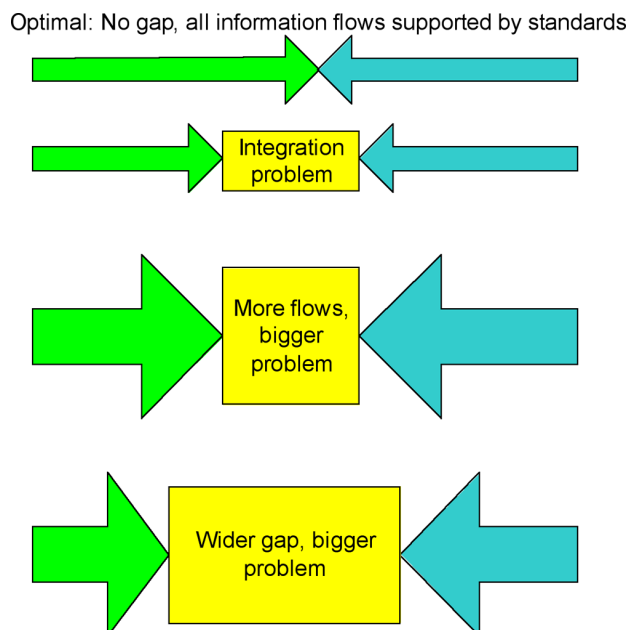- Products evolve, like everything else

With respect to standards, there are a few key facts:

- They often lag product capabilities
- They are often a 'lowest common denominator' of products within a market space
- Standards may overlap other standards
  (the nice thing about standards is that if you don't like one, you can always pick another)
- Standards evolve like everything else, where different versions and extension sets may exist

The following diagram illustrates the 'distance to integrate' from a standards perspective:

No standard exists, requires
completely custom integration

Interfaces can be
transformed and /or
mapped

Interfaces use
a common
model

Optimal: 'Plug and Play' standard defined

It must also be recognized that each interface has breadth, depending upon the number of information exchanges that are required between systems. This is shown by the following diagram. The wider the gap, and the greater the breadth, the greater the integration problem.

Optimal: No gap, all information flows supported by standards

Integration problem

More flows, bigger problem

Wider gap, bigger problem

It is important to recognize that everything is relative. Certainly there must be the means to leverage integration technologies to minimize the width and breadth of 'gaps'.

Summary

In summary, the key question to be addressed, where plug and play integration can not be achieved, is how to efficiently address the width and breadth of the gap for systems integration. Assuming that more basic issues, such as transports and integration frameworks are not an issue, the focus of this should be:

- The recognition of the existence of heterogeneous domain models
  (both standards-based and proprietary)
- Overlaps between domain, product and custom models
- How to map and/or transform information between models, as well as issues often seen
  related to mapping information between different realizations of a common model
- Application of technologies in a way that maximizes flexibility, evolvability, etc.

At a higher level, the need for simple and stable business processes will be key.
This will help identify key flows and facilitate/focus related standardization efforts.