Endorsement of Methodology Rules --
Providing Consistent, Usable V3 Schemas

1 BACKGROUND

As you know, we are preparing the first unified release of Version 3 Messaging Specifications as Version 3 Normative Edition 2005. As we worked to get the packages assembled and as coherent as possible. One of the issues we continued to faced was the fragility of the schemas generated by the schema generator.

During the last 12 weeks, efforts to provide "fixes" for the schema generator (by both Charlie McCay and Lloyd Mckenzie) came up short because of gaps in the definitions of the methodology and flaws in the way the rules were implemented in some of the tools.

As each of these issues has been uncovered and defined, it has been discussed on conference calls with the appropriate committees – M&M, Tooling and XML SIG. In order to complete this process, Methodology and Modeling agreed to endorse these changes during an open meeting Sunday, January 23 in Orlando (Q3 in M&M Meeting), followed by formal presentation at the Technical Steering Committee (and, if needed, the Board).

The Board and TSC officers have already approved some of these changes as "technical corrections", based on errors discovered in the Visio tools. The proponents, however, feel that we should take the opportunity for explanation and dialog in Orlando prior to issuing the corrected Normative Edition.

1.1 IMPLICATIONS

The major naming errors arose from a RMIM Designer (in Visio) BUG that was corrected in late October. This presented the issue of what to do about the elements that are currently part of the normative specifications, but which carry defective names. Key factoids are:

1) The erroneous names mean that the names will be inconsistent with future releases, and that an automated schema generator cannot work on them.
2) The limitations of (1) make it very difficult for an implementer to constrain these designs, because they too, cannot generate good schemas for their new designs.
3) Further (1) means that the algorithmically-determined order of associations in an HMD will change.
4) It is possible to do a wholesale correction on the normative material and re-generate the respective table-views and schemas.
5) Implementing the changes will affect element names (in the XML schemas).
6) Implementing the changes in no way affects the semantics of the design because the semantics are controlled by the classCodes, typeCodes and other constraints which
will not be changed. (In V2 terms, its like deciding to change the name of the outer
wrapper from MSG to MSH just before the first coherent document was published.)

7) Failure to make these changes now will mean accepting an admittedly fragile set of
designs for our first composite V3 publication.

1.2 INITIAL M&M REVIEW OF ISSUE

When this question was raised on an M&M Conference Call in late October, the
committee considered the following alternatives:

A) Make the wholesale change as part of the Normative Edition, and document within
the release the rationale for the change and exactly which elements were changed.

B) Make no change -- just live with the weakness.

C) Delay the release and take the changes back for another round of balloting.

D) Publish both sets of names in the Normative Edition, with a strong preference stated
for the new names.

E) Allow each committee that had a normative spec to choose new names or old names.

The M&M discussion was brisk, and there was little dissent. The unanimous position
was to support option (A) and to seek approval for it as a "technical correction" before
final publication. Subsequently, this proposal was made and approved.

M&M comments on the other options included:

- (B) launches a technologically weak standard instead of what should be a
technologically strong foundation for V3 in the future.

- (C) Is a meaningless vote since the algorithmic nature of the element names has
meant that they are not subject to negative vote in any event, and this would be a
waste of time and energy for the Working Group, not to mention the delay in
releasing the specification and some "egg" on our collective faces.

- (D) & (E) Lead to great confusion amongst the implementers and would almost
be worse than (B).

1.3 RATIONALE FOR FURTHER ENDORSEMENT

The only reason for further public discussion is that subsequent work has led to further
recommended changes, although fewer in number. In each case, these have been limited
to changes needed to assure that the foundation structure of the initial V3 releases is
stable and can support further constraint and refinement of the V3 information structures
as they are implemented. The arguments for "doing it now" remain the same as presented
above.
2 SPECIFIC CHANGES

The following five items list the areas in which changes will occur, whether through correction of errors, or through clarification or change of the methodology rules. They are covered here in two categories – changes to formal naming, and changes to association sort order

2.1 FORMAL NAMING

2.1.1 CORRECTION OF RMIM DEGINER BUGS

Prior to November 2004, the RMIM Designer in Visio had two bugs that affected formal naming of associations. One was the incorrect handling of Role clones that were represented by CMETs. The association names to these clones were wrong. The other was the fact that the association names to and from Role clones in general were not being affected by "dynamic naming" (changes that occur automatically when an association is moved or bound). As a consequence, if the designer did not force formal naming from the Visio menu before saving a design, the names were incorrect for Roles. This change is responsible for over 80% of the changes being discussed.

2.1.2 CHANGE IN RECOGNITION OF NAME EXTENSIONS

In several places, the naming algorithm treats a name differently if it is a simple "extension" of the algorithmic name, than it would if it were a "different" user-defined name. The previous algorithm recognized only numeric suffixes as extensions. The revised algorithm, implemented in November, recognizes any prefix or suffix as being a simple extension. Phrased another way, if the name starts or ends with the algorithmic name, it is a simple extension. For example, the previous algorithm implementation recognized "Pateint123" as an extension of Role "Patient", but did not recognize "UnregisteredPatient" as an extension. The new algorithm treats both as extensions.

2.1.3 ELIMINATION OF STUTTERING

The original algorithm would, at times, create names with repeating words when the association name and the clone name were the same. The revised algorithm drops the association prefix that would cause a stutter (repeated word).

2.2 CHANGE IN ASSOCIATION SORTING

Background: About two years ago, a sorting algorithm was added to the RoseTree that automatically sorts all of the associations in an RMIM into a repeatable order. Although the algorithm was documented and presented to M&M, it was accepted without intense review. As part of the recent focus on tooling for schemas, this algorithm was re-implemented in the schema generator.

Prior algorithm: A simplified summary of the current algorithm follows. It defines a sort key for each association from a class, and builds the sort key as follows:
a) The opening letter is determined by the "target" class of the association in the order: Entity, Role, Participation, ActRelationship and any other.

b) The second element of the key is determined by the type code for Participations, and ActRelationships (if they are the target class), and only certain type codes have an order (the rest of the type codes are assigned a common letter).

c) The third element appears only in associations to ActRelationship and sorts cases where the Act in which the association originates is the "source" act of the ActRelationship before those where the originating Act is the "target."

d) The final element, in all cases, is the clone name of the associated clone.

Although this algorithm is repeatable, two problems were identified. Since the associations in the existing HMDs will be re-sorted as a result of the formal naming changes, M&M suggests that these problems also be addressed prior to issuing the first Normative addition. The two specific changes follow:

2.2.1 SORT "STUB" ASSOCIATIONS LAST

Because "stubs" (the binding point for payloads within message and control-act wrappers) represent the point at which a new model is inserted within the wrapper design, it has been proposed that the associations to stubs come last if they appear within a set of associations for a particular clone. This will not affect the order of associations to CMETs. Doing this will allow the definition of the generic model for the wrapper without the stubs, and then permit the stubs to be treated as extensions "tacked on" to the end of that model.

The impact of this change is limited to wrapper designs.

2.2.2 IMPROVE LOGICAL CONSISTENCY OF ALGORITHM

An alternate algorithm can be formulated as:

I. The opening letter is determined by the RIM association being represented.

II. The second element of the key is determined by the type code for Participations, and ActRelationships (if they are the target class). Only certain type codes have an order; the rest of the type codes are assigned a common letter.

III. The final element, in all cases, is the clone name of the associated clone.

This algorithm is simpler to state and understand. The primary order is defined in the RIM (as it is for attributes); followed by the value of the structural attributes; and finally by the assigned clone names.

Indeed, the only difference between this algorithm and the current one is the presence of step (c) in the current algorithm (above), which, in effect, defers RIM-dependent sorting for ActRelationships until after the typeCode-dependent sort is done.

The impact of this change will only appear where there are multiple ActRelationships stemming from a single Act clone.
3 REPRESENTATION IN NORMATIVE EDITION

At present, there are tools to represent all of these changes in the "table-view", in schemas, and in the Excel view of the normative editions. All of these will be generated by transforms performed on the "hmd" files produced by RoseTree. In addition, the design repositories will be processed so that they, too, hold the appropriate formal names and sort-keys.

The only representation in question is the Visio diagrams. Efforts are currently underway to automate the process of regenerating these artifacts. If possible, the Editions will also include revised diagrams.

Respectfully submitted:

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