Why UML?

This is the first in a series of papers that will describe the approach that the SDSFIE Stars Team is taking toward moving the SDSFIE in a new direction. We understand that many current SDSFIE users remember the era of IDEF1x Modeling, where the issue was the "boxes and lines" that defined the tables, attributes, and relationships that built the typical "Feature, Attribute, and Value" model. This FAV model, (Entity Type/Table, Attribute, and List Domain) in SDSFIE speak, has been the basis of the development and expansion of the SDSFIE since 1994. But IDEF1x has fallen from favor within the Department of Defense and it lacks the rigor that is required of a model the size of the SDSFIE.

In 1993, the SDSFIE (then TSSDS) was about 600 Entity Types (Features) and about 75 Tables. Since then, it has expanded to more than 1200 Entity Types and 200 Tables, with more than 30,000 Attributes. The shear size of the SDSFIE has created an inability to effectively model it in any meaningful way. The result is attributes like DATE_BEGIN, BEGIN_DATE, DATE_START, etc, all meaning essentially the same thing existing in the standard and Feature Definitions that allow for far too many options on Feature Location (Entity Types), for the average user. In short, managers don't understand it, database administrators have too many options, and users get frustrated. And these somewhat disorganized changes just keep coming and coming.

Recognizing this problem, a new direction is required. At the same time, DoD management is looking at better ways to define requirements for, and design business solutions to, the ever-growing spatial data environment. One of the first steps is to focus the new SDSFIE toward a new modeling methodology. Models need to be oriented in a more requirements based, logical, direction. The currently recognized methodology both inside and outside the DoD is the Unified Modeling Language, UML. For those not familiar with UML, a new notation, a new terminology set, and a new concept complicate the transition. And taking a logical UML to a physical implementation is much less direct than in the past.

But the reasons for moving to UML are important. First, it facilitates the integration of models between systems. UML is the preferred modeling methodology for the National Geospatial Intelligence Agency (NGA), the Open Geospatial Consortium (OCG), and the Business Enterprise Architecture (BEA). It is the basis for higher-level models from ISO and ANSI. Therefore, it makes good sense for the SDSFIE to move in that direction. However, all by itself, this change will generate complications for current SDSFIE users.

The long-term benefits are important to the SDSFIE. An effective UML model will help to stabilize content, prevent ambiguous Features and Attributes compounding data sharing, and facilitate the "crosswalks" so important across various geospatial systems. In the final UML environment, naming is less critical than definition, geometry can be assigned at implementation, and attributes can be more easily tailored to the specific needs of the user. Ultimately, UML Models will be easier to maintain and will assist subject matter experts in more clearly integrating requirements into the model.

So now the question is, what makes UML so special and so different? The next paper in this series will deal with some concepts that are essential to organizing an effective UML model. Papers to follow will include documentation and notation, reading and interpreting models, class organization, and other topics intended to make the interested user at least familiar with what the models show, and what they mean.

A complete Release 2.500 UML Model should be available soon. That is NOT to say it is an effective model. It contains serious flaws, as does the standard itself. This model will be used to introduce concepts, demonstrate notation and diagrams, and illustrate inheritance. The era of IDEF1x has past, and the era of UML has begun.