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Coalition Battle Management Language (C-BML) Phase 1 Specification Development: An Update to the M&S Community / Paper 09S-SIW-002
Coalition Battle Management Language (C-BML)
Phase 1 Specification Development:
An Update to the M&S Community

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ABSTRACT: The Coalition Battle Management Language (C-BML) is a common language for expressing and exchanging plans, orders, and reports across command and control systems, modeling and simulation systems, and robotic systems. In March 2006, the Simulation Interoperability Standards Organization (SISO) approved initiation of a Product Development Group (PDG) to generate a specification and guidance document for C-BML. The PDG laid out a three-phase development effort: (1) Phase 1 will specify a sufficient data model to unambiguously define a set of military orders using the Joint Command, Control, and Consultation Information Exchange Data Model (JC3IEDM) as a starting point; (2) Phase 2 will develop a formal grammar (lexicon and production rules) to formalize the expression of plans, orders, and reports; and (3) Phase 3 will develop a formal battle management ontology to enable conceptual interoperability across systems. Initial efforts to develop the Phase 1 specification identified issues and misunderstandings in the required scope of the Phase 1 product. Subsequent PDG discussions and decisions in late 2008 resolved the issues, permitting continuation of Phase 1 specification development under better-defined technical guidance. This paper describes the decisions made by the PDG and current status of development of the C-BML Phase 1 Specification.
1. Introduction

The Coalition Battle Management Language (C-BML) is an emerging standard for expressing and exchanging plans, orders, and reports across command and control (C2) systems, live, virtual and constructive modeling and simulation (M&S) systems, and robotic systems participating in Coalition operations. During the Spring 2004 Simulation Interoperability Workshop (SIW), a meeting of subject matter experts decided that it would be beneficial to the international M&S community to merge US Army Battle Management Language (BML) initiatives with other countries’ BML interests to create a Coalition BML (C-BML) standard. As a result, a statement of work was drafted and submitted to the Simulation Interoperability Standards Organization (SISO) Standards Activity Committee (SAC). In September 2004, the SISO SAC approved the establishment of a C-BML Study Group (SG) to describe requirements and determine international interest in a standardization effort. The C-BML SG was formed under the following premise [1]:

In order to improve simulation interoperability and better support the military user with M&S-based capabilities an open standards-based framework is needed that establishes operational and technical coherence among C2 and M&S systems. The objective capability will enable automatic and rapid unambiguous initialization and control of one by the other.

The C-BML SG formally began work at the Fall 2004 SIW under sponsorship of the SISO Command, Control, Communication, Computers, and Intelligence (C4I) Forum. In addition to its SISO membership, the SG collaborated with other organizations with potential interest in this work; in particular, the North Atlantic Treaty Organization (NATO) Modeling and Simulation Group (MSG) and the Command and Control Research and Technology Symposium (CCRTS). The SG completed work with submission of a final report [2] to the SISO Executive Committee (EXCOM), SAC, and Conference Committee (CC) at the Fall 2005 SIW. That report recommended initiation of a Product Development Group (PDG) to proceed with development of a specification for SISO standardization, and the SG submitted a Product Nomination to that end. The SAC approved the Product Nomination, resulting in establishment of a Product Development Group and Drafting Group for development of the C-BML specification.

In accordance with SG recommendations, the C-BML specification is being produced in the following three phases providing incremental increase in scope and application in each version:

- **Phase 1, Data Model**: Phase 1 of the C-BML standardization effort defines the basic data model underlying the construction of C-BML expressions (plans, orders, and reports). The data model identifies a sufficient data set, using the Joint Command, Control, and Consultation Information Exchange Data Model (JC3IEDM) [3] as a starting point, for expressing portions of basic Orders information so that they can be unambiguously interpreted by C2, M&S and Robotic systems. Discussion of the data model as a basis for C-BML can be found in [4]. The Phase 1 Specification will also specify standard information exchange content and structure in the form of an Extensible Markup Language (XML) schema, as well as an information exchange mechanism expressed as a Web Services Description Language (WSDL) document. The Phase 1 C-BML XML schema is expected to be evaluated by the NATO MSG-048 effort.

- **Phase 2, Formal Structure (Grammar)**: Phase 2 of the C-BML standardization effort will extend the Phase 1 products to more completely enable unambiguous expression of plans, orders, and reports through a formalized grammar (syntax, semantics, and vocabulary). The objective is to formalize the definition of tasks and reports such that they are rigorous, well documented, and parseable. Various development and demonstration of a C-BML grammar can be found in [5-10].

- **Phase 3, Formal Semantics (Ontology)**: Phase 3 will involve specification of a battle management ontology to enable conceptual interoperability across systems [11]. Preliminary discussion of C-BML ontology issues can be found in [12].

As recommended by the SG final report, each phase of the C-BML specification development will describe:

- A data model (specifically, the C-BML SG recommended JC3IEDM as a starting point for all phases of the effort);

- An information exchange content and structure specification defining valid form and content of C-BML expressions;

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1 Tolk and Muguira [8] describe 7 levels of interoperability from weakest to strongest capability: Level 0, No Interoperability; Level 1, Technical Interoperability; Level 2, Syntactic Interoperability; Level 3, Semantic Interoperability; Level 4, Pragmatic Interoperability; Level 5, Dynamic Interoperability; Level 6, Conceptual Interoperability.
An information exchange mechanism specification enabling a common approach to implementation of applications that can process C-BML information;

Guidelines for adoption and application of the standard that explain C-BML use and provide practical examples.

A draft Phase 1 Specification was developed in late 2007 and provided to the C-BML PDG for initial review. Specification development progress and disposition of comments received from the review were presented to the SISO community in the Spring 2008 SIW [13] and at the PDG meeting held during the workshop. Of the 64 comments on the specification received up to that time, 17 were classified as editorial (of which 1 was invalid/withdrawn, 2 were misunderstandings that had been clarified, and 14 were accepted as stated), 20 were classified as minor technical comments (of which 19 were accepted for improvements to the draft specification and 1 was accepted in principle but would be addressed in the C-BML Guidelines document), and 27 were classified as major technical comments (of which 13 were accepted for improvements to the draft specification and 14 were identified as needing PDG decision/direction). However, rather than proceeding with comment resolution at that time, a motion was made to “add to the Phase 1 draft a specification based on the results of the top two layers of the Ground schema from the JBML [Joint Battle Management Language] Phase 1 project in the version used by the MSG-048 in 2007 and documented at http://netlab.gmu.edu/JBML.” During PDG proceedings, this motion was replaced with a resolution to form a Tiger Team (TT) to identify and assess alternative approaches to the C-BML Phase 1 Specification.

The Tiger Team was established following the Spring 2008 SIW meeting and conducted its analysis over several months. The Tiger Team reported its findings and recommendations to the M&S community at the Fall 2008 SIW [14] and to the PDG meeting conducted during the workshop. The Tiger Team findings described three alternatives for defining the scope of the Phase 1 C-BML specification. The alternatives are described briefly in Section 2 below.

This paper describes decisions of the PDG made during and following the Fall 2008 SIW regarding scope of the C-BML Phase 1 Specification and further development of the specification and supporting products. The paper also presents current status and plans for completion of the Phase 1 products of the standardization effort and related SISO activities.

2. C-BML Specification Tiger Team Findings

The Tiger Team identified and evaluated a number of technical alternatives for the required scope of the Phase 1 C-BML specification and guidelines documents. The effort began under the premise that the alternatives represented distinctly different courses of action. However, the Tiger Team found the alternatives actually represent milestones along a common path to fulfilling the objectives of C-BML. The team confirmed SG and PDG positions that a strong connection to JC3IEDM as the underlying logical data model is a necessary condition of any alternative. Therefore, explicit alignment of the standard with the JC3IEDM logical data model is a fundamental starting point for any alternative. Furthermore, none of the alternatives precluded specification of an exchange mechanism using WSDL as had been addressed in the early draft of the Phase 1 specification.

The Tiger Team analysis helped confirm that people were using different language to describe the same concepts, so there was a false sense of disagreement across stakeholders. Moreover, the Tiger Team found that people also used the same terms to represent very different concepts and beliefs, resulting in a false sense of agreement across stakeholders in some areas. For example, the term grammar appeared to represent many different things:

- JC3IEDM business rules
- Grammar of Tasks (verb, object, qualifier, etc.)
- Grammar of Orders
- Aggregate (abstract) terms built upon terminals of the JC3IEDM

Based on assessments of the various alternatives, the Tiger Team derived a simplified view of the alternatives, shown in Figure 1 and summarized below:


2. Alternative 2: 5W Contextual Term Subsets – Schema subsets that apply additional constraints and contextual relationships derived from the 5W Term Subsets (Alternative 1).

3. Coalition Grammar Subsets – Schema subsets that place the 5W Contextual Terms (Alternative 2) into the grammatical context of a task, order, or report for a particular operational domain.
The alternatives considered represent varying levels of constituent structure representation mapped onto each other sequentially, via transformations. As indicated in the diagram, if the PDG decided to choose Alternative 3, Alternative 2 also would need to be implemented a priori. Similarly, to achieve Alternative 2, Alternative 1 would need to be implemented.

The following subsections provide additional discussion of the three alternatives.

**Context-Independent Terms (5Ws)**

Alternative 1 specifies a logical C-BML data model as a subset of the logical JC3IEDM. The JC3IEDM namespace is used to express the “Five W” of C-BML in the following way:

- Each W is expressed as a choice of JC3IEDM entities that covers the range of its definition. For instance, the “Who” is defined as “any entity real or imaginary that can be tasked, targeted or reported.” This definition includes a wide range of entities such as bridges, geographic features, organizations, weather and other entities that are all represented as part of the choice.

- All logical relationships between respective “W’s” are represented by a logical relation in the logical data model. Relationships such as “Who is doing what” for tasking and reporting, “Who is in charge of What” for planning, and organic relations between different “Who” entities, and temporal and functional associations between instances of “What” are captured in the logical schema.

By using the JC3IEDM namespace and specifically reusing the JC3IEDM entities, each C-BML entity is a JC3IEDM entity and C-BML enumerations are identical in syntax and definition to the JC3IEDM syntax and enumerations. Figure 2 shows a meta-level description of the logical C-BML as proposed in Alternative 1.

**Context-Specific Terms**

Alternative 2 proposes the creation of a C-BML namespace comprised of C-BML context-specific terms and their relationships. The basic 5Ws are defined along with additional specifications of roles (context) for each “W”. For example, this alternative introduces subclasses of terms such as Tasker and Taskee representing subclasses of a “Who,” and StartWhen and EndWhen as subclasses of “When.” In addition, when a mapping between C-BML and the JC3IEDM is not possible, the
JC3IEDM (logical data model) is extended in terms of additional attributes and enumerations.

**Grammatical Representation of Tasking**

The interface is defined as the tasking portion of an Operational Order (OPORD) that is based on a lexical grammar for tasks. The lexical grammar [9] places terms representative of Alternative 2 into a grammatical context of a tasking. The terms map to JC3IEDM as represented in alternative 1 and 2 and tasks map to JC3IEDM as an ActionTaskActivityCode, with grammatical structure providing context of alternative 2 terms within each task.

### 3. Recommendations to the PDG

The C-BML Tiger Team made the following recommendations to the PDG:

- **JC3IEDM Extensions**: All C-BML alternatives will identify proposed extensions to the JC3IEDM needed for C-BML specification. These extensions can be proposed by any member of the PDG, providing justification specific to the context of the use of JC3IEDM for C-BML purposes, and must be approved by vote of the PDG (or future C-BML Product Support Group (PSG) after any version of the standard has been approved by SISO vote) for inclusion in the standard.

- **DG Meetings**: The PDG needs to strongly differentiate between DG activities and PDG activities. DG activities should report back on status to the PDG, but not involve the PDG directly in DG work. The PDG tasks the DG as the experts in the field. PDG members who wish to be involved in drafting of the standard shall work with the DG in DG meetings to that end.

- **JC3IEDM Compliance**: All alternatives were evaluated assuming JC3IEDM compliance has been satisfied. It is up to C-BML users, through the PDG and subsequent PSG, to evolve alternatives to the state of JC3IEDM compliance. C-BML stakeholders depend on honest and objective efforts in this area.

- **Common Terms**: It is recommended the DG develop and maintain a dictionary of common terms as they relate to C-BML. The PDG would act as the authority for approving the terms. These are terms beyond the data. They are terms used to describe C-BML, its grammar, and the data model.

- **Tracking**: Many inputs and evaluations of C-BML have been made available. These issues need to be tracked as requirements, defects, Problem/Change Reports, etc. through a formal process as prescribed by SISO policy [15].

- **Product Development Plan (PDP)**: A common code of policy and procedure needs to be established between the DG, PDG, and any subsequent tiger teams to ensure (1) the correct group works any given issue; and (2) C-BML activities remain in scope of PDG intent.

- **Coalition Doctrine**: Identify authoritative data sources for coalition doctrine (STANAG, etc.) and post those documents or links to the documents on the C-BML file area. Doctrine needs to be used to verify and validate any C-BML representation of plans, orders, and reports.

- **Reference Implementation**: A reference implementation should be developed and provided with the release of the Phase 1 specification and guidelines documents.

- **Selected Alternative**: The ratings of the three alternatives were very close and resulted in no major differentiation at the total rating level. The selection of an alternative by PDG vote is an issue of cost, performance, and schedule for the Phase 1 Specification and associated products. Since all alternatives have the same level of JC3IEDM compliance and extension, technology is not the issue. If rapid completion of the specification is the priority, then Alternative 1 is the lowest risk. If performance (ability to represent a particular set of domain-specific plans and orders) is the priority, then Alternative 3 is the lowest risk.

- **Recommended Alternative**: The Product Nomination and SG final report clearly specify Alternative 1 as the minimal Phase 1 specification scope. It is recommended the PDG vote to include alternatives 2 and/or 3 in either the guidelines (use cases) part of Phase 1 standardization, as reference implementations, or as an additional level of the Phase 1 Specification if the PDG feels that the maturity and scope of the alternative warrant it.

### 4. PDG Decisions

During the PDG meeting at the Fall 2008 SIW, all recommendations of the Tiger Team were voted on and approved. As a result of the final recommendation given in the previous section (titled “Recommended Alternative”), a further decision needed to be made by the PDG regarding inclusion of alternatives 2 and/or 3 in any or all of the three Phase 1 products (Specification, Guidelines, and Reference Implementation). In order to
reach the full PDG membership, it was agreed that the alternatives would be posted to the PDG reflector for discussion and vote.

On October 1, 2008, the following announcement was posted to the PDG reflector opening a period of discussion in preparation for a subsequent vote:

There will be three polls (votes) - one for each of the documents (Specification/Standard, Reference Implementation, and Guidance Document).

Each Poll will have 7 choices for that document:

1. Include Alt 1 only
2. Include Alt 2 only
3. Include Alt 3 only
4. Include Alt 1 and Alt 2 only
5. Include Alt 1 and Alt 3 only
6. Include Alt 2 and Alt 3 only
7. Include Alt 1, Alt 2, and Alt 3

During the discussion period, several postings provided additional commentary on the alternatives. Some of the postings (non-attributed) are provided here to aid in considering some of the issues raised during the discussion period.

[Discussion Posting 1]

The issue is deciding on the scope needed in the C-BML Phase 1 Specification. According to the original plan, Phase 1 involves specification of the data model serving as the basis for C-BML definition, and has previously been determined to be JC3IEDM, with extensions as needed. In addition, the Phase 1 specification is supposed to provide an interchange format in XML as well as an exchange mechanism in WSDL. There has been no issue regarding the underlying data model (JC3IEDM) - that is a given. The alternatives relate to the degree of specificity needed in the interchange format (XML schema) and the exchange mechanism (WSDL). With this as background, here is a short description of the three alternatives:

Alternative 1: An XML schema defining a C-BML namespace and principal elements for Who, What, When, Where, and Why. The definition of each element is stated directly in terms of data structures in the XML schema for the logical model of JC3IEDM. This approach is documented in the early draft Phase 1 Specification.

Alternative 2: An XML schema defining a set of elements derived from earlier C2 Lexical Grammar work and used in MSG-048 experiments/demonstrations and in the Joint Battle Management Language demonstration. The elements (e.g., from the JBML FiveWTypesV1.5 XML schema circa June 2007) refine the basic 5Ws: (1) When is a DTG or label indicating relative timing to a task; (2) Who is a type of equipment, an organization, or a composite of equipment and organization; (3) Where is a route (path or bearing) or a type of control measure, either of which can have a qualifier (e.g., AT, ALONG, BETWEEN, etc.), and locations can be indicated by a specific location, indirectly by referencing a Who, or relative to some Who; (4) Why is a description of desired effects and a label referring to another task; and (5) What is a task activity code (e.g., ADVANCE, ARINTR, AMBUSH, etc.) and an optional Target (specified with the same construct as Where described above). Under Alternative 2, some additional work is needed in the early draft Phase 1 Specification to precisely map these elements to the underlying data model. Extensions to the JC3IEDM may need to be specified to accommodate the content of expressions using the Alternative 2 approach.

Alternative 3: An XML schema based on the earlier C2 Lexical Grammar work that guides construction of higher-level statements using the XML schema element structures from Alternative 2. For example, in JBML (OrderTypesV1.5 XML schema circa June 2007), an order is defined with an optional OrderMode element, optional TaskersIntent element, one or more Task elements, OrderIssuedWhen element (using Alternative 2 WhenType), OrderID element, TaskerWho element (using Alternative 2 WhoType), optional TaskOrganization element, optional EnemyTaskOrg element, optional ControlMeasures (one or more ControlMeasure elements, each of which uses the Alternative 2 WhereType), and an optional TargetList (where each target on the list has a name and uses the Alternative 2 WhereType). Specific Tasks in the order are defined according to the needs of a particular domain – JBML, for

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2 JBML project files are available at http://netlab.gmu.edu/JBML/
example, provided some order structures for air, ground, and maritime domains. Each task statement generally consisted of the following pattern:

- **TaskeeWho** element (using Alternative 2 WhoType)
- **What** element (using Alternative 2 WhatType)
- **Where** element (using Alternative 2 WhereType)
- **StartWhen** and optional **EndWhen** elements (both using Alternative 2 WhenType)
- Optional **AffectedWho** element (using Alternative 2 WhoType)
- **Why** element (using Alternative 2 WhyType)
- Optional list of **ControlMeasureLabel** elements
- A label
- An optional **TaskUpdateTime** element

Under Alternative 3, some additional work is needed in the early draft Phase 1 Specification to precisely map these elements to the underlying data model. As mentioned, previous implementations have used the Alternative 2 schema as an intermediate layer between Alternative 3 expression of orders and the underlying data model. According to conclusions of people working previous implementations, extensions to the JC3IEDM need to be specified to accommodate the content of expressions using the Alternative 3 approach.

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**[Discussion Posting 2]**

The most critical document is the Specification/Standard. The References Implementation(s) and Guidelines document are support documents.

The inclusion of an alternative into the Specification main document is especially meaningful. Although the alternatives build on each other and could be considered layers, inclusion into the main document means that that "layer" is exposed through a Web Service interface directly. Selecting only Alternative 2 for the Specification would mean that a generic WHO (as described in alternative 1) would not be included in the interface. This could be a critical distinction for some applications. Therefore, if we want to ensure that both the generic WHO and the more specific WHO(s) were both included in the interface we would have to vote for Alt 1 AND alt 2 in the specification. If we did NOT want the generic "WHO" exposed then we would only vote for Alternative 2 in the main document.

The RI and Guidance documents votes can be different from the phase 1 specification since they could be used to help us progress toward the next phase of the specification.

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**[Discussion Posting 3]**

Again, the upcoming vote is to determine the scope of the initial C-BML Phase 1 Specification. The vote provides some additional direction to the Drafting Group. Namely, for each alternative, the voter will indicate if the alternative should be included in the specification or not. The voter can further indicate if the alternative is to be addressed in the Phase 1 C-BML Guidelines document serving as assistance/technical tips to early adopters of the specification and/or if the alternative is to be included in an initial reference implementation of the Phase 1 Specification.

Following the discussion period, the final announcement prior to start of the voting period (October 20 through October 31, 2008) provided the following direction (note: this notice is for the Specification/Standard balloting; two additional announcements were posted for each of the other two products):

There are three polls (votes) - one for each of the documents: (Specification/Standard, Reference Implementation, and Guidance Document).

This poll is for the Specification/Standard only.

Each Poll will have 8 choices for that document IAW the agreement at the last PDG meeting:

1. Include Alt 1 only
2. Include Alt 2 only
3. Include Alt 3 only
4. Include Alt 1 and Alt 2 only
5. Include Alt 1 and Alt 3 only
6. Include Alt 2 and Alt 3 only
7. Include Alt 1, Alt 2, and Alt 3
8. Don’t include Alt 1, Alt 2, or Alt 3

Some of these choices may not make sense to all members - however they are allowed IAW the last PDG meeting decision.

The polls will be opened on 10/20/08 (or the day before) and close on 10/31/08 or the day after.
The outcome of the voting resulted in the following decisions:

- Phase 1 Specification/Standard: include Alternative 1 and Alternative 2 only (61% of the vote)
- Phase 1 Guidelines document: include Alternative 1, Alternative 2, and Alternative 3 (52% of the vote)
- Phase 1 Reference Implementation: include Alternative 1 and Alternative 2 only (61% of the vote)

The next section discusses subsequent analysis and planning by the C-BML Drafting Group to proceed with development of the Phase 1 products on the basis of these PDG decisions.

5. Current Status of Specification Development

In accordance with the balloting, the Phase 1 Specification will describe the data model (JC3IEDM) as it did previously (the earlier specification work in this regard was not questioned in the scoping decisions), plus what may be called an "operational" vocabulary (or "base" vocabulary) consisting of (1) Alternative 1: the basic 5Ws at an abstract level (termed “context-independent” in the Tiger Team analysis) tied to the JC3IEDM logical data model; AND (2) Alternative 2: a specialization layer providing an "operational context" (termed “context-specific” in the Tiger Team analysis). To be more precise, the Phase 1 Specification needs to describe:

- the abstract Who specialized to terms like Tasker, Taskee, Affected, etc.
- the abstract What perhaps specialized to terms like tasks, actions, events, etc.
- the abstract When specialized to terms like StartWhen, EndWhen, etc. (perhaps needs addition of concepts like recurrence and duration)
- the abstract Where specialized to modes like absolute, relative (e.g., range and bearing from an absolute location), indirect (e.g., unit aboard a ship), etc.
- the abstract Why perhaps specialized to concepts like purpose, objective, desired end state, intent, etc.

Some of the "contextual" terms have been suggested by prior work like the Command and Control Lexical Grammar (C2LG), JBML, and MSG-048. Additional terms may come out of current work being performed jointly by the Military Scenario Definition Language (MSDL)3 and C-BML PDGs to define a common tasking grammar. Other terms need to be considered, as suggested in some of the terms in the list above. There is, in fact, an additional layer of specialization suggested by work such as JBML, where terms like Taskee can be an item of equipment or an organization, and things like time can be absolute or relative (e.g., to an H-hour). Other vocabulary that needs to be addressed for "operational context" are constraints, controls, or restrictions (such as rules of engagement, control measures, etc.) and other conditions or performance measures (success criteria) important to specification of tasks.

The immediate plan of action for completion of the Phase 1 Specification is given below. Progress on these efforts will be reported during the paper presentation and PDG meeting at the Spring 2009 SIW.

- Resolve prior comments. The disposition of comments made during the review of the early draft of the C-BML Phase 1 Specification was summarized in Section 1 of this paper. The DG needs to evaluate the comments for relevance under the new scoping decision, and to incorporate those that still apply. A full accounting of all comments needs to be presented to the community and PDG at the next SIW.
- Review the earlier draft and update its content based on the scoping decision. As discussed above, each of the major information elements (5Ws) needs to be broken out into context-specific terms based on prospective usage. The DG needs to identify the various contexts that need to be considered with respect to the goals of C-BML—that is, plans, orders, and reports across C2, M&S, and robotics systems—and determine the appropriate context-specific terms that need to be part of the lexicon. For each term identified, the DG will prepare definitions in accordance with the Tiger Team recommendation (see Section 3, recommendation titled “Common Terms”).
- Prepare and finalize the draft specification for balloting.

The Drafting Group is also tasked to develop the Phase 1 Guidelines document, which will describe approaches for employing the Phase 1 specification as well as indication how later grammar-based expressions (Tiger Team Alternative 3) will be built from the Phase 1 Specification vocabulary.

The DG will need to recruit additional participants to develop the third product of the C-BML Phase 1 development effort—the reference implementation (for alternatives 1 & 2 only, according to the voting). Alternatively, perhaps a separate working group for that purpose should be appointed by the PDG. This will be discussed at the C-BML PDG meeting during the Spring 2009 SIW.

Other perspectives/comments are welcomed via the PDG

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3 MSDL version 1.0 was approved as an international standard by SISO in September 2008.
reflector. Also, anyone interested in participating in the continued drafting efforts can indicate their interest on the reflector.

6. Conclusion

As the Tiger Team pointed out in their report, the decision regarding the necessary and sufficient scope for Phase 1 specification of C-BML was not a technical one, but needed to be addressed from a business plan/strategy perspective. The Tiger Team final report provided all the information necessary for the PDG to make the decision based on available time and resources. The fundamental decision addressed what should take precedence:

(1) Should the PDG set a schedule for BML and ballot on each phase accepting the existing level of maturity of the draft?
- or -

(2) Should the PDG set a requirement for what each phase will accomplish and ballot only after that level of maturity has been reached?

The PDG decision on scope of the Phase 1 Specification provided direction in accordance with the second approach. Although the recent PDG decisions effectively increased the complexity of the scope of the Phase 1 products compared to the DG’s understanding of initial guidance, the decisions have enabled development of the specification and guidelines documents to proceed with new clarity of purpose.

7. References


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