# Object Management Group Meeting
## (Brussels, Belgium – June 2017)

**Report by Claude Baudoin (cébé IT & Knowledge Management)**

**August 31, 2017**

This report contains notes from sessions the author personally led or attended during the OMG® Technical Meeting in Brussels, Belgium on June 5-9, 2017, including the closing plenary reports.

A comprehensive list of all the committees, task forces and working groups of the OMG can be found at www.omg.org/homepages/. A list of all the work in progress, with links to the corresponding materials (RFPs, etc.) is at http://www.omg.org/schedule/. A list of OMG acronyms and abbreviations is included as an Appendix.

## Contents

# 1. Business Modeling & Integration Domain Task Force (BMI DTF)

**Fred Cummins** (Agile Enterprise Design) and **Claude Baudoin** (cébé IT & Knowledge Management) co-chaired the meeting.

Claude Baudoin reviewed the agenda. The participants introduced themselves.

## 1.1. ArchiMate 3.0 Profile Submission Update

**J.D. Baker** (Sparx Systems) presented the status of the submission. He reported that the Open Group metamodel work, which is the reason why the OMG work has been narrowed down to proposing only a UML profile, has not started smoothly. There are relationship issues between entities that has an impact on both the MOF Metamodel and the profile. Sonia Gonzalez Paredes (Forum Director, Architecture and ArchiMate Forums) has been energetically pushing people to solve the issue. On the other hand, some of the BizDesign people who have a lot of influence on the ArchiMate Forum aren't very active in resolving the metamodel issues.

J.D. asked for a revised submission date in late August (four-week rule for the New Orleans meeting) but warned that if cannot get the issues resolved by that new deadline, he is thinking of withdrawing the submission altogether.

## 1.2. Exploring BPMN, CMMN and DMN Unification

**Denis Gagné** (Trisotech) reviewed the areas of overlap or complementarity between the three models and notations. As previously presented, he has a good set of examples of "clues" that indicate that one standard is used when another would be more suitable. For example, when a BPMN process contains a lot of ad-hoc subprocesses, this is probably an indication that you should use case management. Some tool vendors, including IBM, recognize this by including a "case subprocess" in their tools -- but the case is represented in a formalism that is not CMMN.

Trisotech has several initiatives to improve the integration:

- Using the provided BPMN standard extension facilities to add a case object
- A "Digital Enterprise Graph" to interrelate models and model elements
- Integrating the FEEL language (which is part of DMN) as an expression language to connect BPMN and CMMN.FEEL could be used as a replacement for the default XPATH.

The presentation is available at http://www.omg.org/members/cgi-bin/doc?bmi/17-06-01.pdf.

This led to a discussion about the potential need to extract FEEL from DMN and making it a separate standard, which would make it usable in other contexts. FEEL is a context-sensitive language that's hard to implement, but Trisotech, Oracle and Red Hat have implemented it.

The attendees then discussed the issues with "unification" of the three standards:

- each notation captures a distinct viewpoint
- a single unified notation might be too complex

- this would force vendors to implement the whole set, while now they can specialize
- the difference in execution semantic (token, event-condition-action, or first order logic) would be hard to resolve, and this would require people with good knowledge of the three models.

If creating a single new metamodel and notation proves too difficult or "too monstrous," then what should the BMI DTF do? This was left for further discussion. Andrew Watson commented that there are 100 or so pending issues in BPMN 2.0.2, and the BPMN community seems resistant to correct them. Denis replied that the vendors are concerned that a new version would cause confusion in the market.

## 1.3. BUSPRIME – Embedding Privacy Concerns in BPMN

**Paul Malone** (Telecommunications Software and Systems Group, Waterford Institute of Technology, Ireland) presented remotely on BUSPRIME – Business Privacy Modeling and Execution.

We had been in contact with Paul since 2014, when he discussed with Stan Hendryx (proponent of "model-based business engineering") a project proposal in the area of Privacy Extensions for BPMN. Stan and Paul worked together previously on a large collaborative EU funded project called OPAALS.

Paul's work is based around the idea of including privacy and data protection concerns in the business process design and execution and achieving this through extending BPMN, defining cross-cutting facilities and then using these to express privacy concerns. The workflow consists of uploading a BPMN model, annotating each activity with the list of information that is handled and the purpose of handling it, and then generating XACML policies.

The presentation is available at http://www.omg.org/members/cgi-bin/doc?bmi/17-06-02.pdf.

## 1.4. Strategy for Business Modeling & Integration

**Antoine Lonjon** (MEGA) was invited to expand at this meeting on remarks he made in March about the "existential threat" that the multiplicity of OMG models and the competition with the Open Group poses to the work of the BMI DTF.

Specifically, the Open Group's ArchiMate is evolving from a "method," compatible with the use of OMG models, to an end-to-end "autonomous modeling stack" that provides the method *and* the models and therefore can compete with the suite of OMG specifications (BMM, VDML, BPMN, CMMN, DMN, etc.). In addition, enterprise architecture work needs to connect to agile frameworks that leverage value streams, such as SAFe, to stay relevant.

Antoine presented several concrete recommendations. The current work on a core metamodel for business architecture is part of those steps.

The presentation is available at http://www.omg.org/members/cgi-bin/doc?bmi/17-06-03.pdf.

## 1.5. "Risky Business" – Operational Threat and Risk

**Cory Casanave** (Model Driven Solutions) presented the status of, and metamodel contained in, the still-evolving submission in response to the Operational Threat and Risk RFP. There is now a more explicit reference to a broad range of risks outside of what had appeared to be the initial focus of the work, namely cyberthreat. For starters, the title slide of Cory's presentation is subtitled "Leveraging common risk concepts across operational, security, business and financial risks." The methodology explanation also says "we have not had sufficient review of generic risk concepts – so operational bias may be seen." Together, these statements represent a significant broadening of the initial work.

The presentation is available at http://www.omg.org/members/cgi-bin/doc?bmi/17-06-04.pdf.

The BMI DTF continues to watch this effort in order to determine:

- Whether it will still need to be complemented by a more global risk management model
- How it will fit within the Business Architecture Core Metamodel (BACM)

## 1.6. Introduction to Retail Industry Task Force

**Andrew Watson** (OMG) was invited to explain the recently signed partnership between OMG and the US National Retail Federation (NRF), the world's largest federation of retailers. This allows OMG to take responsibility for retail technology standards currently published by NRF under the ARTS (Association for Retail Technology Standards) brand, and also to develop and publish new retail standards in partnership with NRF. To facilitate this integration, ARTS Council members will be able to join OMG using a new "Task Force membership" level already approved by the OMG Board of Directors, if they aren't already OMG members.

Given the domain-specificity of many retail requirements and standards, it makes sense for the DTC to set up a Retail Domain Task Force to handle this new OMG work. And we expect some coordination between the new task force and the BMI DTF.

## 1.7. Future Activities Roadmap

The agenda for the next meeting(s) includes:

- Completing (or abandoning?) the UML Profile for ArchiMate™
- The initial submission to the Business Architecture Core Metamodel RFP (due February 2018)
- Guidance for application of BMI modelling specifications
- Discussion of approach to enterprise risk modeling

While this meeting did not have time for a discussion of the roadmap, interested readers are encouraged to review these and other potential initiatives outlines at https://docs.google.com/spreadsheet/ccc?key=0AgKdn8LxSqPldDNNQzRJRWp0UlpYQ05LdEZhNmZsWmc&usp=sharing

## 2. Data Residency Working Group and Tutorial

**Claude Baudoin** led two half-day meetings on Data Residency:

- A meeting of the working group on Tuesday
- A tutorial on Thursday.

The Working group discussed its potential roadmap after the recent publication of our discussion paper (and an almost identical white paper by the Cloud Standards Customer Council).

We then developed a first draft of a "Data Residency Maturity Model":

| Level | SEI CMM Name | Definition (under construction) | Key Process Areas |
|---|---|---|---|
| 5 | **Optimizing** | There is continuous improvement… | ● Active monitoring and auditing<br>● Regular review of changes in business, data content, technology, laws and regulations<br>● Formal process to evolve policies, procedures, practices and technology<br>● Formal process to review all incidents and take corrective action |
| 4 | **Managed** | Active management takes place at all levels of the organization | ● Executive accountability<br>● Governance<br>● Formal policies<br>● Assign roles and responsibilities for DR policy and implementation<br>● Data storage location assignment is part of information modeling<br>● Logging<br>● Formal program of employee training |
| 3 | **Defined** | Policies, procedures, practices are documented and institutionalized, and data location impact is formally documented | ● Active executive involvement<br>● Formally documented processes<br>● Taxonomy of sensitive data<br>● Informal training resources |
| 2 | **Repeatable** | The organization performs on the basis of human knowledge, informally shared | ● Executive awareness<br>● Informal practices and guidelines to identify and locate data<br>● Informal mentoring |
| 1 | **Initial** | None of above practices exist | |

We are going to ask for advice from Dr. Bill Curtis (key author of the initial SEI Capability Maturity Model), and it was also suggested that we approach NIST to find out if they might be interested in endorsing/completing/publishing this maturity model.

There are three OMG groups we need to brief and find out if they are interested in collaborating:

- the Finance Domain Task Force, due to residency constraints on financial data,
- the Systems Assurance Task Force, as data residency may be an operational risk/threat,
- the Ontology Platform SIG, because an ontology may be part of our next steps.

We are also continuing to talk to the MARS Task Force (which issued our discussion paper) and in particular the Information Exchange Facility (IEF) proponents, especially Mike Abramson.

The 3-hour tutorial given on Thursday was compiled from all the information developed or gathered over the past couple of years. Although 10 people had registered, even fewer came, which was quite disappointing. In spite of that, we had excellent discussions and Claude used this as a "test run" in case there are more opportunities to present the material – starting with the New Orleans meeting.

The tutorial slides are available at http://www.omg.org/cgi-bin/doc?datares/17-06-01.pdf. The roadmap status appears on slide 38 and the draft Maturity Model is on slide 40.

# 3. Internet of Things and Model-Based Engineering in Manufacturing

At each of the last several OMG meetings, we organized a special public event devoted to how OMG standards address Industrial Internet of Things (IIoT) challenges and opportunities. Each meeting has a slightly different focus. This time, the topic was smart manufacturing and the event lasted a full day. It was introduced and moderated by Claude Baudoin.

A link to the PDF version of each slide set has been included in the meeting agenda at http://www.omg.org/news/meetings/tc/brussels-17/special-events/MBE-IIoT-MFG_agenda.htm (click on "VIEW PDF" to the right of each speaker's name).

## 3.1. Moving Smart Manufacturing Forward: IIC Testbeds and OMG Standards

**Dr. Richard Soley,** in his dual capacity of Chairman and CEO of OMG and Executive Director of the Industrial Internet Consortium (among others…) painted the overall picture of how manufacturing is getting transformed by sensors, and how the standards developed by OMG and the processes put in place by the IIC to demonstrate practical IIoT applications complement each other.

He said that there are now 27 IIC testbeds, and gave an example of a business case: the Track & Trace testbed addresses, among other goals, the fact that some factory workers spend as much as 50% of their time looking for the tool they need to perform the next task.

## 3.2. Introduction to OMG

**Andrew Watson** (OMG) gave his usual overview of the applicability of OMG standards (including DDS™, IFML™, SysML™, ODM™ and MDMI™, as well as the work of the System Assurance Task Force) to the Industrial Internet. His presentation gives great examples of the actual deployment of OMG standards, especially DDS, in major realizations like the new NASA launch system.

## 3.3. Strategy and Roadmap of Industrie 4.0 for International Standardization

**Alexander Bentkus** (Industrie 4.0 Standardization Council and VDE – Association for Electrical, Electronic and Information Technologies) explained that the Industrie 4.0 vision of a digital twin of a factory requires international standardization and coordination of efforts with groups such a ISO/IEC. A number of German organizations, including Plattform Industrie 4.0, have joined to create an Industrie 4.0 Standardization Council to "initiate, coordinate and implement international standardization activities."

The Reference Architecture Model for Industrie 4.0, or RAMI, consists of six layers. From the bottom up: asset, integration, communication, information, functional, and business.

## 3.4. The IIC Smart Factory Task Group: Driving Manufacturing IIoT Standards, Adoption and Best Practices

**John Kowal** (B&R Industrial Automation Corp.), co-leader of the IIC Smart Factory Task Group, presented the work of the Task Group.

## 3.5. AutomationML – Industrie 4.0 Candidate Standard for Asset Model Engineering and Plug & Work

**Dr. Kym Watson** (Fraunhofer IOSB) spoke about the need to model in a unified way the various layers of the product (based on the RAMI architecture) being produced. This results in a requirement to have a modeling language that can encompass all asset descriptions and metadata, and that can be accepted by the industrial community.

Dr. Watson proposes that the IEC 62714 standard, AutomationML, fulfills these requirements. To achieve what he calls "Plug & Work," this modeling language would be used in conjunction with a communication protocol, which in his view is OPC-UA. From an OMG perspective, one may of course wonder why OPC-UA would play such a specific role, and why another communication protocol such as DDS could not be substituted.

## 3.6. prostep ivip: Smart Engineering Meets Smart Production

**Rachel Bauer** is Technical Program Manager for prostep ivip, an industry association based in Darmstadt that deals with "systems engineering, requirements management, digital twin, long-term archiving and, in general, with enabling the digital transformation and improving collaboration through standardization." The association is the result of the merger between ProSTEP, which was formed to support the adoption of the STEP standard (ISO 10303) for the exchange of product data, and iVIP, dedicated to integrated virtual product creation.

prostep ivip has about 25 projects underway, and Ms. Bauer presented two of them, "Smart Systems Engineering" (SSE) and "Synched Factory Twins." The SSE Working Group has about 30 participants. The goal is to manage a *distributed* product model among multiple partners in the supply chain. The group is working on use cases and test cases for model interchange using XMI.

## 3.7. Software Security and Quality Issues in the Industrial Internet

**Dr. Bill Curtis** (CAST Software, and Executive Director of the Consortium for IT Software Quality, CISQ) explained the heightened challenges posed by software vulnerabilities in a highly automated and integrated industrial environment that is supposed to run 24x7. CISQ continues to work on developing metrics of software quality that can be automatically checked. Work to date includes automated source code measurements for maintainability (ASCMM), reliability (ASCRM), performance efficiency (ASCPEM) and security (ASCSM). Another significant current focus of CISQ is Technical Debt.

This fall, CISQ will start working on the vulnerabilities that specifically address *embedded* systems, for which there may be additional issues to those that affect enterprise systems.

## 3.8. From Concept to Manufacturing: Transforming Product Creation in the Connected and Cognitive Era

**Graham Bleakley** (IBM IoT Watson), co-chair of the OMG's Unified Architecture Framework (UAF), described a vision of continuous evolution from model-based engineering of the product (MBE) to smart manufacturing, which includes predictive and cognitive processed to optimize the performance of the shop floor (or of multiple connected shop floors).

The speaker focused in particular on the capabilities of the Watson IoT "solution stack and ecosystem." However, he was not in a position to answer some of the audience questions about what Watson IoT actually does.

## 3.9. Bridging the Digital and Physical Worlds: IoT & Model-Based Approaches in Manufacturing

**Hedley Apperly** (PTC) focused his presentation on the model-driven approach to the engineering of IoT systems and products, bridging the gap between the digital design and the physical product. He then described how PTC's technology stack, ThingWorx, provides a platform for an IIoT manufacturing solution.

## 3.10. OMG Manufacturing Technology and Information Systems (ManTIS) Task Force Perspectives on Smart Manufacturing

**Uwe Kaufmann** (ModelAlchemy Consulting) and **Michael Pfenning** are the co-chairs of OMG's ManTIS Task Force. The Task Force has been focused for some time on the integration between model-based systems engineering (MBSE) and product lifecycle management (PLM). The speakers discussed the benefits and challenges of this approach to smart manufacturing.

## 3.11. Panel: What Standards Specifications Do We Need?

Claude Baudoin moderated this panel, whose participants were four of the previous speakers (Dr. Kym Watson, Graham Bleakley, Hedley Apperly and Uwe Kaufmann) as well as **Larry Johnson,** newly assigned Technical Director or OMG, replacing Andrew Watson – and who was also a leader of the ManTIS Task Force when it was originally formed.

Some of the points made by the panelists were:

- We need semantic interoperability between engineering data from multiple tools.
- In the context of IoT, *things* need to understand what other *things* do (not just people or systems).
- We need to include the concept of "effectivity" – what is the actual version of a "thing" that is being operated, based on design variants and modifications made in the field?

## 4. Plenary Lunch Session

**Pawel Chadzynski**, from ARAS Corporation, was the plenary lunch speaker on Wednesday (between the two halves of the Smart Manufacturing event).

He started by explaining how a traditional industry, the manufacturing of residential windows, is being digitally transformed. CAD and PLM systems allow the manufacturing of individual custom-sized windows, while IoT allows embedded sensors in latches in order to detect when a window is not properly closed.

Options and variants complicate the product lifecycle and require models to include the concept of effectivity. One must be able to build a digital twin of a specific *instance* of a product in the field, not just a generic digital twin of the whole product family, in order to be able to analyze and diagnose a maintenance issue.

In an extreme view of this approach, you cannot build a digital twin of a specific product until it has been completely manufactured, because the factory may substitute one component (say, a resistor or a battery) for another based on dynamic availability and price. It becomes tricky to understand what all these dependencies are, and whether the differences matter for the purpose of building the digital twin.

## 5. Plenary Reports and Technical Committee Sessions

Friday morning, as always, was devoted to plenary sessions during which all OMG subgroups briefly reported on their work, and the Platform and Domain Technology Committees made decisions on technology adoptions. While many attendees leave after the work of their Task Forces and SIGs ends on Wednesday or Thursday, the plenary reports offer a comprehensive view of OMG activities.

The points listed in the subsections that follow were singled out as worthy of mention, but are not an exhaustive list of the work the group chairs reported.

This section will frequently refer to the three forms of requests issued by OMG Technical Committees:

- A **Request for Proposal (RFP)** is a formal call for the submission of specifications; it opens up a time window for organizations at the appropriate level of membership to submit proposals.
- A **Request for Comments (RFC)** is a fast-track process whereby someone submits a specification that is expected to receive broad consensus. A comment period opens to allow people to voice any objections or submit changes. If there are no serious objections, the proposal is adopted. If there are, then the process may revert to a competitive RFP.
- A **Request for Information (RFI)** is a less formal process to obtain feedback from the community, and organizations can respond regardless of OMG membership level. An RFI is often used to generate enough information about the "state of the practice" to allow the writing of an RFP.

## 5.1. Architecture Board Subgroup Reports

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| **Specification Management Subcommittee (SMSC)** | Andrew Watson reported on behalf of Jishnu Mukerji. Six specifications were formally published since the last meeting: AEP 1.0, DDS-RPC 1.0, UML Profile for NIEM 3.0, SysML 1.5, DTV 1.3 and SBVR 1.4 (see "Appendix: Glossary of Abbreviations" at the end of this report).<br><br>Two specifications are being voted for final publication at this meeting: SPMS 1.1 and IDL 4.1. An electronic vote has started.<br><br>The edit queue now contains 10 approved specifications (five FIBO-related ones that were already in the queue, and five that were added: PSSM 1.0, FIBO Foundations 1.2, fUML 1.3, ALF 1.1 and DDS-XTYPES 1.2. |
| **Liaison Subcommittee** | Len Levine (Defense Information Systems Agency) reported, mostly as usual about activities related to transforming OMG specifications into ISO/IEC standards.<br><br>The good news is that SysML 1.4.1 has been published as ISO/IEC International Standard 19514.<br><br>The bad news is that the adoption of UPDM 2.1.1 (as ISO/IEC FDIS 19513) stalled again after having briefly advanced, possibly just because it is not clear who needs to edit what.<br><br>Automated Function Points (AFP) 1.0, to become ISO/IEC DIS 19515, is pending some final document submission step – the submission is now in the ISO template but it contains some fuzzy bitmap graphics, a recurring problem.<br><br>Discussions were held with NATO about their impending choice (mid-July) between OMG's UAF and the Open Group's ArchiMate as a metamodel for NAF, the NATO Architecture Framework.<br><br>Steve MacLaird is still investigating links with the US National Defense Industrial Association (NDIA).<br><br>MARS is working on an exploratory report, to be ready by September, about the disposition of IDL 4.1. This may go to ISO/IEC JTC 1 for adoption as ISO/IEC 19516. |
| **Model Interchange SIG** | Ed Seidewitz (nMeta) said that the UML/SysML Model Interchange Working Group:<br>• had a "spirited discussion" about model interchange challenges with the UPDM/UAF FTF,<br>• explained model interchange and its work to NATO representatives.<br><br>There was good feedback and ongoing activities are expected (activities with NATO will depend on their framework choice, mentioned above).<br><br>The BPMN Model Interchange Working Group conducted another successful model interchange demo, this time with ten different vendors. There were 45 people in the room and 15 remote attendees. |

## 5.2. Platform Technical Committee Plenary Meeting

Andrew Watson verified that the quorum was met. The minutes of the previous meeting were approved by white ballot. The PTC then proceeded with the presentation of subgroup reports.

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| **Architecture-Driven Modernization (ADM) Task Force** | Philip Newcomb (TSRI) was elected co-chair at the last meeting. He reported that the Task Force, which has been in existence for 14 years, will develop a new 15-year roadmap. There will be an emphasis on communicating the modernization message through a summit at each OMG meeting as well as a series of books.<br><br>As a reminder, the Automated Technical Debt Measure specification was voted for issuance. |
| **Middleware and Related Services (MARS) Task Force** | Char Wales (MITRE) reported on the extensive (as usual) meeting. A large number of items were on the agenda:<br>• DDS XML Consolidation RFC (2nd reading, recommendation for adoption)<br>• IEF Reference Architecture: final submission reviewed and recommended for adoption. This is not an implementable submission, but a framework for IEF specifications.<br>• DDS-XRCE RFP: progress report on the two competing submissions (one from PrismTech and the other jointly submitted by RTI, Twin Oaks and eProsima). Revised submissions are due in September.<br>• DDS TCP/IP PSM RFP (reviewed draft)<br>• RFP for the IDL 4 to Java language mapping (reviewed draft)<br>• There was a progress report on the joint submission for the DDS/OPC-UA gateway.<br>• UML Profile for ROSETTA: draft RFC reviewed.<br>• MARTE: reviewed status and discussed future plans for updates.<br><br>The working group for Software-Based Communications / Software-Defined Radio (SBC/SDR) met for the first time and will draft an RFI to refine its charter. The intent is to extend SBC/SDR beyond the military scope, covering needs in space, manufacturing, healthcare and other domains.<br><br>The strategy to submit DDS and IDL specifications to ISO was discussed.<br><br>There was a discussion of DIDO (Distributed Immutable Data Objects), which is a generalization of blockchain. Secure Messaging Platform as a Service (SMPaaS), the project that Ian Stavros and Bryan Turek have demonstrated at several meetings, is seen as a use case for DIDO networks.<br><br>Other items to be progressed in September include the DDS/OPC-UA gateway submissions, an RFC or RFP for the XML/JSON mapping for DDS, and an RFP of the IEF Policy-based Packaging Service (IEPPS) |
| **Data Distribution Service (DDS™) SIG** | Gerardo Pardo (RTI) reported on behalf of Justin Scaduto (General Dynamics) and his newly elected co-chair Clark Tucker (Twin Oaks). Apart from the work already mentioned in the MARS section above, the SIG supported the DDS tutorial and discussed the priorities of ongoing DDS-related RFPs.<br><br>There may be a DDS Security demonstration at the next meeting. |

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| **Analysis and Design Task Force (ADTF)** | J.D. Baker (Sparx Systems) reported on behalf of chair Jim Logan (No Magic) that there were three presentations of work in progress:<br>• Sandy Friedenthal on the initial requirements for SysML v2<br>• Marc-Florian Wendland on the revised submission to UTP v2, following which the submission was recommended for adoption.<br>• Tao Yue on the initial requirements for Uncertainty Modeling<br>Motions were adopted to change the deadlines for submissions to the API4KB and SMIF RFPs.<br>Overall, the Task Force has 6 technology adoptions to handle (in theory) between the September and December meetings. |
| **Agent Platform SIG** | Manfred Koethe (88Solutions) reported that the SIG typically meets by teleconference between OMG meetings, but will probably meet in person during the September OMG meeting in New Orleans. |
| **Ontology Platform SIG** | The SIG did not meet this time. |
| **Methods and Tools SIG** | This SIG was chartered at the March meeting, but did not meet this time. |
| **System Assurance (SysA) Platform Task Force** | Andrew Watson presented the status slides provided by co-chair Ben Calloni.<br>There was a status update on the finalization of SACM 2.0, and a presentation on the Open Group's ArchiMate 3.0 Stereotyped Model of SACM 2.0.<br>There were discussions (no slides) of the ADTF's Safety RFP and of the progress of the Unified Architecture Framework finalization, including security views in UAF.<br>The next meeting should address:<br>• the Operational Threat and Risk submission<br>• a Software Fault Patterns RFC<br>• a Tool Output Integration Framework (TOIF) RFC. |

Following the subgroup reports, various motions were made and approved to charter, extend, and update the membership of various RTFs, FTFs and voting lists.

Initial votes were taken from platform members who wished to approve the issuance of the IEF Reference Architecture, the UML Testing Profile v2, the Automated Technical Debt Measure RFC (2nd reading), the DDS-XML RFC (2nd reading), the UCM 1.0 FTF report, and the SPMS 1.2 RTF report. The vote will be completed by e-mail.

Andrew Watson then presented a proposed **change to the Policies & Procedures,** which needed to be passed by both Technical Committees. This consists in creating a new type of membership, called "Task Force Member." This was triggered by an agreement with the US National Retail Federation (NRF), which has an ARTS Council (Association for Retail Technology Standards), which wishes to continue its

standards activities under the auspices of the OMG. As part of the agreement for the OMG to work on such retail standards, NRF members already engaged in retail specifications will be allowed to participate in the newly formed Retail Domain Task Force on a "cost-neutral" basis. The OMG Board has already approved a new type of membership in the bylaws so that these participants can be "Task Force members." But the P&P, which are under the responsibility of the TCs, need to be aligned with the Board decision.

Andrew went through the changes requested, including a quote from the modified bylaws and a list of the rights of each category of members. Task Force membership is actually a "class" of membership, which will be instantiated as, for example, "Retail Domain Task Force Member" through a separate Board action. Those members will only be able to vote or submit in that Task Force, and in any RTFs and FTFs it spins off, while Domain Members can participate and vote in any DTF they want.

There were a number of clarification questions. A Task Force with such members (e.g., Retail) itself will be formed and will be working in the same way as other Task Forces. The only change is in the limited privileges of the members in that new class of membership. Someone coming across from NRF who wants to have fuller privileges could do so by paying for one of the traditional membership levels. Conversely, an existing OMG member can join such a new Task Force.

After further discussion, the motion passed.

## 5.3. Domain Technical Committee Subgroup Reports

Andrew Watson verified that the quorum was met (14 members were present or represented). The minutes of the previous meeting were approved by white ballot.

The DTC then considered the same motion as the PTC about the approval of the new “Task Force Member” status in the Policies & Procedures. The motion passed.

The DTC then proceeded with the presentation of subgroup reports.

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| **Manufacturing Technology and Industrial Systems (ManTIS) DTF** | Uwe Kaufmann (ModelAlchemy) reported that the DTF hosted an Information Day on IoT and Model-Based Engineering in Manufacturing (see Section 3).<br>As last time, Uwe reported on the work of the GfSE (German chapter of INCOSE) PLM4MBE (Product Lifecycle Management for Model Based Engineering).<br>Brittany Friedland (Boeing) presented on her company’s work on MBSE, including long-term archiving of records (LOTAR), which will be a topic at the next meeting. |
| **Business Modeling & Integration DTF** | Claude Baudoin (cébé IT & Knowledge Management) reported on this meeting. See details in Section 1 of this report.<br>Fred Hirsch (Fujitsu) said that BMI needs to talk to the Finance Task Force about financial risks.<br>Len Levine asked whether there exists a comparison between ArchiMate and the family of BMI specifications. J.D. Baker said no. Bill Ulrich said that someone once gave a presentation comparing ArchiMate to the Business Architecture Guild’s BizBOK. |

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| **Mathematical Formalism SIG** | Prof. Charles Dickerson reported on the presentation and submission to MARS of the draft ROSETTA UML profile. The draft, about 70-80% complete, proposes 4 stereotypes and 3 metaclasses and includes 3 case studies. It will be submitted in time for the September meeting, and approval is expected by March 2018. |
| **System Engineering Domain SIG** | Ed Seidewitz reported on behalf of Sandy Friedenthal that the DSIG met mostly about the SysML 2.0 RFP requirements. Those requirements, listed in the report from the last meeting and further revised at this meeting, are generated using a "design rationale" modeling approach.<br><br>The SIG plans to present the RFP itself at the next meeting, and have it revised and ready for adoption in December. |
| **Command, Control, Communication, Computers and Intelligence (C4I) DTF** | Someone reported on behalf of co-chair Ron Townsen that C4I discussed two RFPs, trying to resolve comments in time to bring them up to the Architecture Board:<br>• DDS Health Monitoring (to be renamed DDS Status Monitoring)<br>• Command and Control Vehicle Navigation Application Interface<br>The Task Force was not able to complete this, and will finish at the next meeting. The Data Labeling and Tagging RFP and the response to the TacSit Display Data Exchange RFP will also be on the September agenda. |
| **Space DTF** | Brad Kizzort (Harris Corp.) reported that the Space Task Force presented its current status and roadmap to representatives from the European Space Agency (ESA) Consultative Committee for Space Data Systems (CCSDS) and Thales.<br><br>The Space DTF continues to work on:<br>• The XML Telemetric and Command Exchange (XTCE) 1.2 revision<br>• The Ground Data RFP<br>• The CubeSat Reference Architecture RFC<br>• an RFC or RFP for a JSON platform-specific model for a Ground Equipment Monitoring Service (GEMS)<br>• an RFC from NASA's Goddard Mission Services Evolution Center (GMSEC) for a Command & Control Message Specification (C2MS) |
| **Finance DTF** | Mike Bennett (EDMC) reported that the Task Force meeting covered:<br>• updates on FIBO specs, which are now all published on the EDM Council website<br>• updates and a workshop by the Distributed Ledger Working Group on distributed ledger technology (DLT), e.g., blockchain<br>• liaison with ISO TC 68/SC 9 WG 1 on multi-standard semantic portal<br>• a financial risk ontology<br>• ontology styles and application architectures<br>• a proof of concept by University College Cork and State Street<br>• the Task Force's standards roadmap<br>In September, updates are expected on FIGI and the EDM Council's consolidated FIBO 2.0 RFC should be ready for issuance. |

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| **Robotics DTF** | Kenichi Nakamura (JASA) said that two working groups met and provided reports to the Task Force:<br>• the Hardware Abstraction Layer (HAL) WG, which is working on the Hardware Abstraction Layer for Robotic Technology (HAL4RT) 1.0;<br>• the Robotic Functional Service working group, working on a draft Robotic Service Ontology RFI.<br>That RFI was reviewed in a joint meeting with the Ontology PSIG, which included a talk by Prof. Abdelghani Chivani of Université de Paris-Est Créteil (UPEC).<br>JASA reported on its contacts with ISO/TC 299 WG 6 (Robots and Robotic Devices, Modularity for Service Robots) and on that group's work item ISO/AWI 22166-1, "Modularity for Service Robots – Part 1: General Requirements." |
| **Healthcare DTF** | J.D. Baker presented on behalf of Jerry Goodnough (Cognitive Medical Systems). The Task Force reviewed:<br>• the Healthcare Ordering Service PIM and possible mappings to the required PSMs – the submission will be reviewed at the next meeting;<br>• the possible use of the RESTful API Modeling Language (RAML) to express REST interfaces for PSMs.<br>The Archetype Modeling Language (AML) finalization report was approved by the Architecture Board. |

Following the subgroup reports, J.D. Baker (Sparx Systems) moved to charter the Retail Domain Task Force. Someone from Lexmark explained what the ARTS Council (Association for Retail Technology Standards) does and what some of its standards are, including:

- a Point-of-Sale peripheral integration standard (UnifiedPOS)
- a set of standard XML schemas (ARTS XML)
- standard templates for RFPs for applications
- …and more.

Several motions were made and adopted to convene, extend or change the membership of RTFs, FTFs and voting lists.

There were two technology adoptions, for which the vote was initiated at the meeting but will be completed through e-mail:

- the UML-Based Architecture Framework (UAF) 1.0 finalization report,
- the Archetype Modeling Language (AML) second FTF report.

## 5.4. Conclusion and Raffle

The plenary session was then adjourned. During the final lunch, Andrew Watson held the third drawing of an iPad, an initiative launched in 2016 to encourage more participants to stay through the plenary sessions. The winner of this raffle was **Bill Ulrich** (TSG Inc., chair of the Business Architecture Guild).

## 6. Next Meetings

The next OMG Technical Meetings are scheduled as follows:

- New Orleans, La., USA, 25-29 September 2017
- Burlingame, Calif., USA, 4-8 December 2017
- Reston, Va., USA, 19-23 March 2018

## Appendix: Glossary of Abbreviations

Below are initialisms that are likely to appear in these reports. It is not an exhaustive list of all terms and abbreviations used by OMG, nor is it limited to the names of OMG specifications. The official OMG glossary is at www.omg.org/gettingstarted/terms_and_acronyms.htm.

**ADM**..... Architecture-Driven Modernization
**ADTF** ..... Analysis and Design Task Force
**AEP** ..... Automated Enhancement Points
**AFP**..... Automated Function Points
**Alf** ..... Action Language for fUML
**ALM** ..... Automated Lifecycle Management
**ALMAS** ..... Alert Management Service
**AML** ..... Archetype Modeling Language
**AMP** ..... Agent Metamodel and Profile
**API4KB** ..... Application Programming Interface for Knowledge Bases (now API4KP)
**API4KP** ..... Application Programming Interface for Knowledge Platforms (formerly API4KB)
**APP-INST**..... Application Instrumentation
**ASCMM**..... Automated Source Code Maintainability Measure
**ASCPEM** ..... Automated Source Code Performance Efficiency Measure
**ASCRM**..... Automated Source Code Reliability Measure
**ASCSM** ..... Automated Source Code Security Measure
**BACM**..... Business Architecture Core Metamodel
**BMI** ..... Business Modeling and Integration
**BMM**..... Business Motivation Model
**BPMN™**..... Business Process Model and Notation
**C4I**..... Consultation, Command, Control, Communications, and Intelligence
**CIEM** ..... Contract Information Exchange Model
**CISQ** ..... Consortium for IT Software Quality
**CMMN** ..... Case Management Modeling Notation
**CSCC**..... Cloud Standards Customer Council
**CTS2** ..... Common Terminology Services version 2
**CWM™** ..... Common Warehouse Metamodel
**DAF** ..... Dependability Assurance Framework
**DAIS** ..... Data Acquisition from Industrial Systems
**DDS™**.....Data Distribution Service
**DDS-DLRL**....DDS Data Local Reconstruction Layer
**DDSI** .....DDS Interoperability
**DDSI-RTPS**...DDS Interoperability for Real-Time Publish-Subscribe
**DMN**.....Decision Modeling Notation
**DoDAF**.....Department of Defense Architecture Framework
**DOL** .....Distributed Ontology modeling and specification Language (ex-OntoIOP)
**DRE**.....Distributed, Real-time and Embedded Systems
**DSIG** .....Domain Special Interest Group
**DSS** .....Distributed Simulation System
**DTF** .....Domain Task Force
**DTV**.....Date and Time Vocabulary
**EMP**.....Event Metamodel and Profile
**FEEL**.....Friendly Enough Expression Language
**FIBO**.....Financial Industry Business Ontology
**FIGI**.....Financial Instrument Global Identifier
**FIRO**.....Financial Industry Regulatory Ontology
**FSM4RTC**.....Finite State Machine for Robotic Technology Component
**FTF**.....Finalization Task Force
**fUML™** .....Foundational Subset for Executable UML Models
**GEMS**.....Ground Equipment Monitoring Service
**GRA** .....Global Reference Architecture
**HAL4RT**.....Hardware Abstraction Layer for Robotic Technology
**HL7** .....Health Level 7
**HPEC**.....High Performance Embedded Computing
**IDL** .....Interface Definition Language (IDL™)
**IEF**.....Information Exchange Framework
**IEPPV**.....Information Exchange Packaging Policy Vocabulary
**IIC** .....Industrial Internet Consortium

**IIoT**..... Industrial Internet of Things

**IMM®**..... Information Management Metamodel

**INCOSE**..... International Council on Systems Engineering

**IPMSS**..... Implementation Patterns Metamodel for Software Systems (now SPMS)

**IPR**..... Intellectual Property Rights

**ISO** ..... International Organization for Standards

**JSON** ..... JavaScript Object Notation

**KDM**..... Knowledge Discovery Metamodel

**LCC**..... Languages, Countries and Code

**LOI**..... Letter of Intent

**MACL** ..... Machine-checkable Assurance Case Language

**ManTIS** ..... Manufacturing Technology and Industrial Systems

**MARS**..... Middleware and Related Services

**MARTE**..... Modeling and Analysis of Real-time Embedded Systems

**MBSE** ..... Model-Based Systems Engineering

**MDMI** ..... Model Driven Message Interoperability

**MEF**..... Metamodel Extension Facility

**MODAF**..... Ministry of Defence Architecture Framework

**MOF™** ..... Meta Object Facility

**MRC**..... Management of Regulatory Compliance

**MVF** ..... Multiple Vocabulary Facility

**NIEM**..... National Information Exchange Model

**OARIS**..... Open Architecture Radar Interface Standard

**OCL** ..... Object Constraint Language

**ODM** ..... Ontology Definition Metamodel

**OntoIOp**..... Ontology Model and Specification Integration and Interoperability (now DOL).

**OTRM**..... Operational Threat and Risk Metamodel

**ORMSC**..... Object Reference Model Subcommittee

**OSLC**..... Open Services for Lifecycle Collaboration

**OWL**..... Web Ontology Language

**PDME**..... Product Data Management Enablers

**PIM** ..... Platform-Independent Model

**PLM** ..... Product Lifecycle Management

**PSCS** ..... Precise Semantics of UML Composite Structures

**PSIG**..... Platform Special Interest Group

**PSM**..... Platform-Specific Model

**PSSM**..... Precise Semantics of State Machines

**PTF** ..... Platform Task Force

**QVT** ..... Query/View/Transformation

**RAML**..... RESTful API Modeling Language

**RDCM**..... RIA Dynamic Component Model

**ReqIF**..... Requirements Interchange Format

**RFC**..... Request for Comments

**RFI** ..... Request for Information

**RFP** ..... Request for Proposals

**RIA**..... Rich Internet Applications

**RMS**..... Records Management Services

**RoIS** ..... Robotic Interaction Service Framework

**ROSETTA** ..... Relational-Oriented Systems Engineering and Technology Tradeoff Analysis

**RTC**..... Robotic Technology Components

**RTF** ..... Revision Task Force

**RTPS**..... Real-Time Publish-Subscribe

**SACM** ..... Structured Assurance Case Metamodel

**SBVR™**..... Semantics of Business Vocabulary and Business Rules

**SDN** ..... Software-Defined Networking

**SEAM**..... Software Assurance Evidence Metamodel

**SIMF**..... Semantic Information Modeling for Federation (now SMIF)

**SMIF**..... Semantic Modeling for Information Federation (formerly SIMF)

**SMM**..... Structured Metrics Metamodel

**SoaML®** ..... Service-Oriented Architecture Modeling Language

**SPMS**..... Structured Patterns Metamodel Standard (formerly IPMSS)

**SSCD**..... Safety-Sensitive Consumer Devices

**STIX™** ..... Structured Threat Information eXpression

**SysA**..... System Assurance

**SysML™**..... Systems Modeling Language

**SysPISF**..... SysML extension for Physical Interaction and Signal Flow simulation

**TacSIT** ..... Tactical-Situation Display

**TestIF** ..... Test Information Interchange Format

**TOIF** ..... Tool Output Integration Framework

**UAF** ..... UML-Based Architecture Framework (formerly UPDM)

**UCM**..... Unified Component Model

**UML®** ..... Unified Modeling Language

**UML4DDS** ... Unified Modeling Language Profile for Data Distribution Services

**UPDM™** ..... Unified Profile for DoDAF and MODAF (now UAF)

**VDML**..... Value Delivery Modeling Language

**VTW** ..... Vocabulary for Terminology Work

**XMI®** ..... XML Metadata Interchange

**XML**..... eXtensible Markup Language

**XRCE** ..... Extreme Resource Constraint Environment

**XTCE**..... XML Telemetric and Command Exchange

**XUSP** ..... XTCE US Government Satellite Conformance Profile