



Object Management Group Meeting (New Orleans, Louisiana, USA – September 2017)

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This report contains notes from sessions the author personally led or attended during the OMG® Technical Meeting held in New Orleans on Sep. 25-29, 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.

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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.

1.1. ArchiMate 3.0 Profile Submission Update



J.D. Baker (Sparx Systems) reminded the attendees of the history of the RFP, specifically the fact that we narrowed the submissions to a UML profile since the Open Group's ArchiMate Forum is working on the metamodel. Sridhar Iyengar and Cory Casanave immediately posed the question (which has come up in previous meeting) of how to keep the metamodel and the profile in sync since they will be managed by two different organizations.

J.D. gave an example of the syntax tables associated with ArchiMate concepts. ArchiMate business processes have no structure – they're just boxes in a diagram. The specification of the activities would typically be done in BPMN, but there is no formal link between the two languages. There is still a discussion inside the Open Group about the challenge of specifying relationships.

After several delays, the final submission is contained in documents bmi/17-08-01 to -04, posted less than four weeks before the meeting. J.D. said that he was not asking for a vote-to-vote at this meeting, so the submission will be up for a vote at the December meeting.

Someone asked a clarification question on the ability to access the proprietary ArchiMate specification, a subject of discussion between OMG and the Open Group since the beginning of this effort. J.D. said that there are three ways to obtain it: be a member of the ArchiMate Forum, pay for a license, or use the HTML version which is published on the Open Group site.

The ArchiMate Forum leader has asked their members for feedback on the activities of the Forum and suggestions for improvements to the standard. Sridhar Iyengar suggested that the two key points to submit in response are:

- make the ArchiMate specification available for free to Open Group members or partners,
- ensure the alignment between the metamodel and the profile.

Regarding the first point, Cory Casanave noted that early on, OMG had restrictions on specification download, but realized that the organization would not survive unless it made its work freely available. J.D. said that HL7, the health standards organization that works in partnership with the OMG Healthcare Task Force, has gone through the same transition and that it was not easy – the revenue model needed to change once the specifications were free, and HL7 has increased meeting fees in particular.

Cory asked to see an example of an ArchiMate model rendered in UML. J.D. did not have one ready, but said he could create one and show it at the Sparx demonstration booth two days later. He then showed an example that appeared to be a model of customer relationship management.

1.2. Data Residency Update



Claude Baudoin (cébé IT & Knowledge Management) gave the status of the Data Residency Working Group. There has been no significant advance since the June meeting, at which a Data Residency Maturity Model was drafted. He reminded the participants of the DRWG tutorial scheduled for the next morning, and the working meeting of the DRWG the next afternoon.

Pamela Wise-Martinez (Pension Benefit Guaranty Corporation) said that she wanted to establish connections to other potential stakeholders, especially in Government.

Pete Rivett (Adaptive) said that in addition to modeling the regulations and the metadata, you also need to model the *intent* of the transfer, as well as the *authorizations* that people may already have to store or transfer data in a specific location. This was an excellent point.

Steve MacLaird (OMG) said that wanted to use some of the slides at the Global Forum 2017 in Winnipeg the following week.

1.3. Exchange of Information with the Retail Domain Task Force (RDTF)



Leonid Rubakhin (Aptos Retail) and **John Glaubitz** (Vertex Inc.) represented the RDTF, which they co-chair with Bart McGlothin (Cisco). The RDTF carries on the work of the ARTS Council (see Section 5) under the umbrella of the OMG. BMI DTF members spent some time explaining the scope of each of the key specifications created (or inherited and maintained, in the case of BPMN) by BMI. In turn, Leo and John described their work and the potential connections between the two groups.

1.4. Risk Management Profile



Fred Cummins presented an initial proposal for a Risk Management Profile. He clarified that the scope is broader than operational risk, which is the focus of the Systems Assurance RFP. Pete Rivett and Claude Baudoin pointed out that the public at large is an additional stakeholder (looking for example at what happens after a major accident, such as the BP Macondo oil well explosion).

It was argued that the word "profile" should be replaced by "framework" because "profile" would be ambiguous in the OMG context. The use of the word generated some confusion in the meeting -- "what is this thing you're proposing? Is it a UML profile?"

We should look at the Security Exchange Commission (SEC) Form 10-K, which public companies have to file each year, to see what list of risks it may mandate. The SEC rules refer to other documents, which should also be consulted.

There was discussion of the goal of defining such a risk framework – is it just sharing information in a more standard way, or analyzing a system to determine what the risks are? Cory Casanave stated that “risk” may mean different things – the risk itself, vs. the impact, which he calls an “undesirable

situation.” Claude noted that it is similar to the difference between “ensure” and “insure”: if you cannot ensure that the undesirable event never happens, you may want to insure yourself against the damage.

Claude also stated that an interesting outcome would be to enhance languages like BMM, VDML, or capability maps, so they integrate risk and risk mitigation. Risk modeling also includes understanding the risk that the mitigation may fail.

Cory asked a typical question whenever we consider issuing an RFP: "Do we know who is ready to pay for this?" Is there a coalition of vendors, or a driving stakeholder, that are capable of making this effort succeed? If not, no one will respond to the RFP, or no one will implement the resulting standard.

There was a sense that we need to involve other groups for which risk is an important concept: FIBO, UAF, and others. We discussed the possibility of a Sunday afternoon working group before the December meeting, since so many parties will never find common free time during the week.

Fred shared the draft taxonomy he generated (document bmi/17-09-01). Cory thought that it mixed risks and impacts.

1.5. Business Architecture Core Metamodel (BACM)

After the BMI meeting ended on Monday, the co-chairs received a request (via Bill Ulrich) to reopen the Letter of Intent window because Thematix and Enterprise Web were interested in submitting. We agreed to consider such a motion during the Thursday morning slot already announced on the agenda. A reminder was sent to the BMI mailing list on Wednesday. In spite of that, no one showed up on Thursday morning, therefore no motion could be made or voted on.

2. Provenance and Pedigree Working Group



John Butler (Auxilium Technology Group) and **Robert Lario** (Visumpoint) led a two-hour meeting of their working group.

John first described the data migration and custody issues affecting the systems used by the Veterans Administration for health care. The award to Cerner Corp., announced on June 5, for the VA's next-generation electronic health records system will result in a massive merger with the DoD system known as MHS Genesis.

John reviewed the outline document developed in the course of previous meetings, which includes a catalog of related efforts. There was a consensus to start developing requirements. Claude Baudoin asked if there should also be a discussion paper capturing some use cases. Alternatively, there could be an RFI containing the current outline as an appendix and requesting more details, additional sources, and requirements. John listed who should be asked to respond, and who should reach out to them:

- Veterans Administration (John Butler, Robert Lario)
- Department of Defense (two new participants in the room)
- National Archives & Records Administration
- National Telecommunications & Information Administration (Claude)
- Any large data organization
- Members using FIBO (Finance Industry Business Ontology)
- Members of EDMC (Enterprise Data Management Council), led by Mike Bennett
- Engineering companies (get a list through Sandy Friedenthal)
- Healthcare groups
 - HL7
 - Cerner

We discussed organizing a roundtable in March 2018 and/or a webinar promoted by OMG.

John Butler made a list of “what to start with” – which became a list of what motivated the various attendees to come to this meeting.

3. Data Residency Working Group

3.1. Tutorial



Claude Baudoin repeated the tutorial on Data Residency he had premiered at the June meeting in Brussels. There were about 10 attendees.

Richard Lee, of the Aerospace Corp., made most of the following remarks during the tutorial:

- Does data residency apply to “data spillage” – i.e., data released accidentally? It probably does.
- Can “tokenization” (see [https://en.wikipedia.org/wiki/Tokenization_\(data_security\)](https://en.wikipedia.org/wiki/Tokenization_(data_security))) be a solution? Yes, at least in part, as is any other method of obfuscation. However, tokenization may not be enough if the location of the data exposes it to a law enforcement warrant to provide the original data, not just the tokenized data.
- Does residency also control the duplication or destruction of data? Probably. For example, if the country where the data is stored requires a longer retention period than the country of the data owner, that longer period probably takes precedence
- “We are going from CRUD (create, read, update, delete) to CRAV (create, rad, archive, validate)”
- We should look at the ISO/IEC 17826 standard, Cloud Data Management Interface (CDMI).
- On slide 36, the Chief Data Officer (CDO), if one exists, is a potential owner. However, the tole of the CDO is still controversial – why is the CIO, assuming his/her role has not been reduced to just cutting infrastructure costs, not in charge of the data?
- On slide 37, it should be noted that encryption techniques “wear off” because of advances in computing techniques and hardware, or the discovery of vulnerabilities in the encryption algorithm. In particular, quantum computing will probably break all existing encryption methods.

3.2. Working Group Meeting

Following the tutorial, the attendees met as a working group. The first topic was the draft Data Residency Maturity Model. Sumeet Malhotra (TCS) suggested that there should be measurable criteria to determine if each Key Process Area contained in the model has been implemented.

The working group continued by discussing the relationship between data residency and other OMG standards. With Mike Abramson’s participation, we talked about the need for some sort of reference architecture, or framework, to articulate the connections between the Information Exchange Facility (IEF), the Data Tagging and Labeling proposal from C4I, Data Residency, and Information Provenance & Pedigree. We may need to organize a roundtable between all the concerned parties at one of the next meetings – with the usual difficulty of finding a time when they are all available.

4. Industrial Internet of Things for the Oil & Gas (O&G) Industry

4.1. Background and Participants

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 oil and gas, but the event was shortened to a two-hour conference call after a couple of speakers became unavailable on short notice. The attendees were:

- Steve Bass, data center manager at Chevron
- Claude Baudoin (discussion leader)
- Clint Chapman, chief architect for production at Schlumberger
- Matthew Hause, PTC
- John Hollingsworth, CTO of Energistics – an O&G industry standards group
- Alan Johnston, MIMOSA – a standards group dedicated to asset management interoperability
- Lowell Lehmann, Resolvit – an IoT and mobility solutions company
- Kevin Stanley, Object Computing Inc. – the supplier of OpenDDS
- several OMG staff members (Meg Duncan, Fred Foster, Ann McDonough)

The discussion was introduced and moderated by Claude Baudoin.

4.2. MIMOSA – Asset Management and Digital Twins

After an introduction to the meeting, **Alan Johnston** described the work of MIMOSA, which is supported by IBM and SAP:



- The focus is on the management of large assets, not just in O&G.
- MIMOSA contributes to the ISO 13374 standard (Condition Monitoring and Diagnostics of Machines).
- The goal is to collect condition information and integrate it with lifecycle asset information in order to predict failures or intelligently schedule maintenance.
- One of the approaches is to create and maintain a digital twin of the asset, aligned with configuration management so that it doesn't just reflect the asset "as designed" or "as built," but "as maintained."
- Alan is the convener of ISO/IEC TC 184/WG 6, Oil & Gas Interoperability (OGI), which takes deliverables from other groups as pre-validated standards. There was some discussion of the NiFi project, derived from an open-source code base shared by the US National Security Agency, designed to automate the flow of data between software systems.
- MIMOSA is working on a pilot project called the Open Industrial Interoperability Ecosystem (OIIE).
- MIMOSA collaborates with other standards group through the Oil & Gas Standards Leadership Council (SLC), of which OMG and Energistics are also part.

Matthew Hause (PTC) commented that "we've seen a lot of things about digital twins, and they usually are static models." PTC wants the digital twin to be live, synchronized with the operating asset, allowing

the use of augmented reality to observe the system as it is moving/working. Remote control should be possible through telemetry and augmented reality. The idea is the virtualization of the system and combining the various representations. What is MIMOSA's vision?

Alan replied that “we've done this in other verticals like military, aviation and ships.” The configuration management discipline (management of change) is important – capturing changes in an event-driven manner and updating all the systems that need to be synchronized. If you know “what's going on out there,” there you can provide simulations based on the information flowing from the sensors.

Matthew and Alan discussed the standards for product lifecycle management (PLM). PTC is doing some work on this in Australia, looking at machine learning for gas production. Additional capabilities, based on IoT sensors, can have an impact on more aspects of the process, including on safety. But one needs to be able to detect conflicting data and decide which component is giving you the correct information.

Matthew Hause then talked about people discovering the importance and need for requirements management. “From a systems engineer's perspective, it's like someone telling you they just invented fire.”

4.3. Security of IIoT Systems

The discussion then moved on to the security challenges of IIoT systems. The O&G industry needs to adopt cybersecurity standards before serious problems happen. Matthew Hause said that many programmable logic controllers (PLCs) are deployed with factory passwords unchanged, and now that control systems are connected to the enterprise network and, through it, to the Internet, the risk is much higher.

Alan Johnston said that a proper degree of isolation for IIoT systems, especially legacy ones, is important. The “air gap” we had in legacy systems is going away without people assessing the risk.

Steve Bass said that Chevron shares concerns about cybersecurity and is starting to see offerings with hardware-based security. In addition, they're concerned about the fact that, as a large company, they source multiple IIoT solutions from various vendors that do not interoperate. “We even have process control networks within the data center that are a little bit like a refinery.”

Kevin Stanley asked whether the O&G industry is seeing any adoption of blockchain. **Lowell Lehmann** said that he sees blockchain adoption in manufacturing. **Clint Chapman** said that Schlumberger is looking at traditional X.509 certificates (PKI) rather than blockchain.

4.4. Communication Standards

When it comes to the O&G industry inventing its own standards, **Clint Chapman** pointed out that this is often due to severe bandwidth limitations, high latency and costs, especially but not exclusively offshore. This has led the industry to invent new protocols or payload formats.

Jay Hollingsworth said that the new release of OPC-UA will support multiple transport layers and publish/subscribe. Each protocol tends to solve one problem well, including the Energetics Transfer Protocol (ETP), which is more of an O&G-specific payload standard than a real protocol. It doesn't necessarily provide QoS settings (like DDS) or having a common message bus. “We need standards, but

they can be specific to certain purposes; we need to find the ‘sweet spot’ for each.” He said that standards bodies are often pushing their own efforts forward and creating the multiplicity of standards that now make the situation difficult. Defending the creation of ETP against the (latent) argument of “why didn’t use DDS?” he said: “What if we had come to OMG and told you to stop working on DDS? You would have said ‘no, it’s not your job to tell us not to do it’.” Alan Johnston said that there has been a question of how forceful the Standards Leadership Council should be to avoid the development of parallel standards. But he pointed out that the SLC was created after most of the current standards appeared, so it was too late to prevent the proliferation.

Clint talked about the difficulty of sorting through vendor offerings, which aren’t even compatible with each other when they nominally follow the same standard. It’s often because the standard only specifies a protocol, without an accompanying *payload* standard.

4.5. Conclusions

We agreed that the O&G industry wasn’t so dependent on realizing efficiencies (including through standards) when the price of oil was \$100/bbl. Industry players also always felt they were “unique” and that their problems couldn’t be solved by techniques already adopted in other vertical domains.

The main takeaways were:

- IIoT requires standards (at each level, from the enterprise down) in order to achieve interoperability.
- Users should look at the Industrial Internet Security Framework (IISF) from the Industrial Internet Consortium (IIC).
- What would convince an operator to select a particular solution -- e.g., what protocols support interoperable configuration management?
- Best practices in configuration management, already developed elsewhere, should be adopted.
- We need to communicate opportunities such as working with the Industrial Internet Interoperability Coalition (I3C).
- What role does the SLC play? Should the IIC’s Energy Task Group and the SLC work directly together on the above actions?

... and the most popular conclusion was:

- *There are too many standards to choose from – can an impartial third party provide a guide to selecting one in certain situations?*

After the meeting, Claude Baudoin introduced Alan Johnston to Char Wales (in order to make him aware of the work being done on a gateway between OPC-UA, which the oil and gas industry uses heavily, and DDS) and to Sandy Friedenthal, in order to look at how MIMOSA standards and SysML might influence each other.

5. (Part of) Modernization Summit

This section concerns only one presentation given by **Jason McC. Smith** (TSRI) during the day-long Modernization Summit, entitled “**SPMS: Modernization by Lifting Your Abstractions.**” SPMS is the Structured Patterns Metamodel Standard created by the Architecture-Driven Modernization (ADM) Task Force.



Jason’s talk started with an extensive analogy to flying cards. The sort of choices you would be able to make in designing a flying car, that are not available in traditional means of transportation, were described as equivalent to agility, choice of details, and information.

After that, Jason described SPMS, which includes five parts: definitions, observations, relationships, diagramming (an SPMS pattern can be introduced into a UML diagram), and formalisms (which provide automation capabilities).

SPMS supports the creation of communities that collectively build libraries of patterns.

6. Plenary Lunch Session – The Retail Domain Task Force

Following the integration of the National Retail Federation’s ARTS Council into the OMG, forming the new Retail Domain Task Force, this plenary session served to introduce the scope and program of the new group to other OMG members.



Karen Schunk, who came from the NRF where she worked from 1996 until May 2017, is now on the OMG staff as Technology Director. She gave an overview of the standards developed and needed by the retail industry, which she called “the second-oldest profession.”

There has not been much change in how business is transacted until SKU (stock-keeping unit) bar codes were introduced in 1974. The retail industry operates on low margins, so it spends only 1.5% of revenue on IT, near the bottom of the ranking of industry sectors.

The ARTS Council was chartered in 1993 by the National Retail Federation (NRF). The goal is to make technology less expensive for retailers and their suppliers through standards. This work includes (see <https://nrf.com/resources/retail-technology-standards-0>):

- Operational Data Model (ODM)
- Data Warehouse Model (DWM)
- UnifiedPOS, an architectural specification for application interfaces to point-of-service devices
- an XML Schema for application-to-application (A2A) integration
- Business process models
- Template RFPs

7. Cybersecurity Workshop

This day-long event is understandably becoming more and more popular and is being repeated at successive OMG meetings.



Ben Calloni (Lockheed Martin) gave a “Cybersecurity Primer for Managers,” based in part on the directives created by NIST in partnership with other U.S. Government agencies.

Bob Martin (MITRE), who leads the Security Working Group of the IIC, described the principles and recommendations contained in three documents from the IIC:



- the Industrial Internet Reference Architecture (IIRA),
- the Industrial Internet Security Framework (IISF),
- the Industrial Internet Communication Framework (IICF).

The overall goal is to create a safe, secure and reliable Industrial Internet of Things, including in the “proximity network” (others tend to use the phrase “edge network”) that connects the devices. Bob discussed how to require evidence-based assurance cases as part of the software and systems sourcing process. He also mentioned how IT and OT (operational technology) need to converge their respective trustworthiness concepts.



In line with one of the previous speaker’s ideas (assurance cases), **Dr. Nikolai Mansourov** (KDM Analytics) discussed “Model-Based Cybersecurity Assessment” – how to perform risk analysis on systems using formal and automated methods, because it will be impossible to muster enough well-trained human security professionals to continue to rely on manual inspection.

Nik pointed out a key difference between the real world and cybersystems: cyberattacks happen in the very cyberspace *created* by the cybersystems. That’s why risk assessment is now an engineering analysis problem, which can be made systematic, objective, and allows automation.

Two inputs to such an assessment are a machine-readable system description, from which “system facts” can be extracted, and a cybersecurity knowledge base built from cybersecurity research.

The presentation included a description of the risk model from the ISO/IEC 15408 standard.



Cory Casanave (Model Driven Solutions) talked about “Federated Threat Analytics and Information Sharing.” We can better respond to complex threats by analyzing, federating, and sharing information across multiple domains such as critical infrastructure (e.g., utilities), cyber, health and human services, public safety, etc.



Mike Abramson (Advanced Systems Management Group) talked about “Cyber Information Sharing and Safeguarding,” a concept defined by NIST in one of their Special Publications. He described how the OMG’s Information Exchange Framework (IEF) can be used to specify rules that can be applied to decrease the information security risks associated with interfaces between systems.

Claude Baudoin (this author) described OMG’s work addressing Data Residency issues. See Section 0.



Dr. Bill Curtis (CAST Software, and Executive Director of the Consortium for IT Software Quality, CISQ) explained the heightened challenges posed by software vulnerabilities. CISQ continues to work on developing metrics of software quality that can be automatically checked. Work to date includes standards for Automated Function Points (defined in 2013), Automated Enhancement Points, and four quality measures that can be derived from the source code -- addressing maintainability (ASCMM), reliability (ASCRM), performance efficiency (ASCPM) and security (ASCSM). ASCSM uses 22 of the 25 top items in the Common Weakness Enumeration (CWE) maintained by MITRE – those that can be detected by static analysis.

While these measures comply with the definitions in the ISO/IEC 25010 standard (the ISO 25000 series replaces ISO/IEC 9126 parts 1–4), they go farther by providing source code measures. ISO is “resisting the approach of looking at source code,” therefore their standards are in terms of the *consequences* that happen, not in terms of the inherent *characteristics* that might cause these consequences (e.g., a crash due to unreleased memory, as opposed to a succession of calls that allocate memory without releasing it).

Bill addressed the question of whether software development outsourcing causes lower software quality. He said that a study of vulnerability factors indicated that insourcing/outsourcing were not a factor, neither were onshore/offshore decisions, but the number of releases per year were – presumably because a high release frequency means that the code is not well tested for lack of time.

This well-attended event concluding with a **panel session** on “Economics of Cybersecurity: Cost vs. Protection,” led by **Djenana Campara** (KDM Analytics).

8. 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.

8.1. Architecture Board Subgroup Reports

The Business Architecture SIG (BASIG) and the Model Interchange Working Group (MIWG) did not meet this time.

Specification Management Subcommittee (SMSC)

Larry Johnson reported on behalf of Jishnu Mukerji. Seven specifications were formally published since the last meeting: SPMS 1.1, IDL 4.1, FIBO Financial Business and Commerce (FBC), FIBO Foundations 1.1, FIBO Indices and Indicators (IND), fUML v1.3, and Alf 1.1 (see “*Appendix: Glossary of Abbreviations*” at the end of this report).

The edit queue now contains 9 approved specifications: 5 that were already in the queue, including 3 FIBO-related ones), and 4 that were added at this meeting: UML Component Model for DRATES 1.0, SPMS 1.2, UAF 1.0 and AML 1.0.

Larry pointed out the good work done by Mario Benitez to produce an easy-to-read catalog of OMG specifications.

**Liaison
Subcommittee**

Len Levine (Defense Information Systems Agency) reported on two new liaison agreements:

- one with the Healthcare Services Platform Consortium (HSPC)
- one with the Continental Automated Buildings Association (CABA)

As usual, most of the liaison activities are related to transforming OMG specifications into ISO/IEC standards:

- UPDM 2.1.1 is (after several delays) adopted as ISO/IEC 19513
- SysML 1.4.1 is being adopted as ISO/IEC 19514
- Automated Function Points (AFP) 1.0 was submitted, and will eventually become ISO/IEC DIS 19515
- IDL 4.1, to become ISO/IEC 15916, is still pending the submission of an explanatory report by MARS.
- UAF 1.1 should become an ISO submission, and number 19517 has been reserved for it.
- There is a question of whether an update to UML will be published.
- OMG is going to rebuild a (lost) list of the copyrighted ISO documents for which permission was obtained to use them in the OMG development process. Help may be required from OMG members.

After an evaluation and discussions, previously reported, NATO decided to recommend the use of both OMG's UAF and the Open Group's ArchiMate as metamodels for the NATO Architecture Framework (NAF). They also asked OMG to work with the Open Group to make architecture models interoperable. This has led to a flurry of activity (and many questions) that may include:

- a Memorandum of Understanding, which might clarify such things as whether we have a mutual membership agreement with the Open Group
- a joint event on architecture metamodeling,
- a "table of relations" to describe the contacts between the two entities, which has been drafted but is incomplete and perhaps incorrect in places.

Len also reported on pending work with the U.S. Department of Defense Information Technology Standards Registry (DISR), and the Consultative Committee for Space Data Systems (CCSDS).

There are some gaps in liaison coverage:

- National Defense Industrial Association (Steve MacLaird is investigating)
- IEEE
- ISO TC 185/SC 5
- WINF (Wireless Innovation Forum)

John Butler says that NEMA (National Emergency Management Association) is interested in a liaison. It's the professional association of emergency management directors from the 50 U.S. states, 8 territories and D.C.

Manfred Koethe asks about liaison with ISO TC 184/SC 4 on STEP -- he needs to talk to Uwe Kaufmann from the ManTIS Task Force.

Len Levine announced that he is leaving as Liaison Chair as of the next meeting.

8.2. Domain Technical Committee Subgroup Reports

Larry Johnson verified that the quorum was met. The minutes of the June meeting in Brussels were approved by white ballot. The DTC then proceeded with the presentation of subgroup reports.

Business Modeling & Integration DTF	<p>Claude Baudoin (cébé IT & Knowledge Management) reported on this meeting. See details in Section 1 of this report.</p> <p>JD Baker pointed out an error in the slides, which should have said that the UML Profile for ArchiMate <u>was</u> submitted at this meeting.</p> <p>The failed reopening of the LOI window for the Business Architecture Core Metamodel was mentioned (see Section 1.5). If Enterprise Web does not need more time to submit, we could re-open the LOI for just a week, without moving the initial submission date. There was no decision in Bill Ulrich’s absence.</p>
Command, Control, Communication, Computers and Intelligence (C4I) DTF	<p>Ron Townsen (General Dynamics) reported that C4I voted to release the DDS Status Monitoring RFP (DDS Health Monitoring). The Task Force also discussed:</p> <ul style="list-style-type: none">• Command and Control Interface for Navigation (C2INav).• A draft Data Tagging and Labeling (DTL) RFP, which needs to be very broad per a request from NATO. Ron wants to convene a meeting in December to include the Provenance & Pedigree, Data Residency, and IEF efforts.• Updates to the OARIS standard – because the British Navy has implemented it and found some errors.• Collaboration with the Future Airborne Capability Environment (FACE™) community.
Government Information Sharing and Services (GovDTF)	<p>Cory Casanave (Model Driven Solutions) reported that the DTF and its work are not well known. Some of the standards are known, but people who use them do not realize they come from OMG. A new, externally-focused initiative called Empowering Government is being launched and the rollout was planned at this meeting. The public announcement will be in December 2017 and the first meetup in January 2018. The leaders of other Task Forces are invited to contribute articles and presentations.</p> <p>The effort is meant to be international, but all the people currently involved are within 20 miles of Washington, DC.</p>
Healthcare DTF	<p>Ken Rubin and Robert Lario were re-elected co-chairs.</p> <p>Most of the meeting focused on the adoption of BPMN, CMMN and DMN as the standards to use when describing healthcare processes. This was discussed in a workshop on “Healthcare Portability Workflow with BPMN” and a “healthy pregnancy” use case submitted by the American College of Obstetrics and Gynecology. The lessons learned from these discussions will be incorporated into a “BPM Field Guide” under development. Denis Gagné (Trisotech) is playing a key role in this effort. CMMN is providing a way to describe “clinical pathways,” which BPMN didn’t.</p> <p>A “Healthcare Day” will be held during the March meeting.</p>

Mathematical Formalism SIG

Charles Dickerson (Loughborough University) reported on the continuing work on the ROSETTA UML profile, which “provides facilities to annotate models with information required to perform analysis for optimization and trade-offs.”

The SIG also presented to the MARS PTF a ROSETTA case study, Remote Sensing Systems (RMS), and another case study, Constrained Objective Design, to the Systems Engineering DSIG.

The profile now proposes 13 stereotypes (up from 4 mentioned last time) and includes 3 case studies for illustration, including those mentioned above. Due to extensive comments (49), the submission was withdrawn at this meeting and will be presented again in December, aiming for adoption in March 2018.

Retail Domain Task Force (RDTF)

Bart McGlothlin (co-chair) said that this new Task Force, resulting from the merger of the National Retail Federation’s ARTS Council with OMG, had a two-day meeting with 20+ attendees. The meeting covered:

- An overview and history of ARTS/RDTF, to be repeated at the next meeting, and a walkthrough existing ARTS standards and artifacts.
 - Work on the UPOS v2 Printer API, which was approved by the Task Force and the AB (leading to the formation of a work group).
 - A discussion with the Ontology PSIG of “Ontologies for Retail” (leading to the formation of another work group). Elisa Kendall will help the RDTF transform its existing catalog into a real ontology.
 - A discussion of a potential standard, suggested by Target, to annotate surveillance videos to note events of interest.
 - A roadmap discussion.
-

Finance DTF

Mike Bennett (EDMC) reported that the Task Force meeting covered updates on FIBO specifications, which the EDM Council is consolidating into a FIBO v2 to be submitted as an RFC in March 2018, with RFCs each quarter for updates.

FIBO Currencies will be a separate specification managed through the ADTF.

There were also updates from the Distributed Ledger Working Group and on a proof of concept by University College Cork and State Street. Gerardo Pardo asked for clarification on the relationship between this distributed ledger work and Nick Stavros’ DIDO (Distributed Immutable Data Objects) paper.

Robotics DTF

Kenichi Nakamura (JASA) said that two working groups met and provided reports to the Task Force:

- the Hardware Abstraction Layer (HAL) WG, which is working on fixes to the Hardware Abstraction Layer for Robotic Technology (HAL4RT).
- the Robotic Functional Service working group, which proposed a Robotic Service Ontology RFI.

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,” which was discussed at a meeting in Budapest.

Space DTF Brad Kizzort (Harris Corp.) reported that the Space Task Force reviewed two specifications that will be submitted later as RFCs:

- the Command & Control Message Specification (C2MS) from NASA Goddard Mission Services Evolution Center (GMSEC)
- the CubeSat Reference Architecture from INCOSE.

The Space DTF continues to work on the XML Telemetric and Command Exchange (XTCE) 1.2 revision.

System Engineering Domain SIG Conrad Bock (NIST) reported on behalf of Sandy Friedenthal that the DSIG met mostly about the SysML 2.0 RFP requirements and the separate SysML v2 API and Services RFP, which were presented to the ADTF (which will eventually consider it for issuance) and Architecture Board. The AB had several comments about the scope of the specifications.

The SIG also received presentations from Charles Dickerson on applications of ROSETTA, from Ron Townsen on “software architecting needs for SysML v2,” and from Ed Seidewitz on the status and plans for Executable UML.

The Manufacturing Technology and Industrial Systems (ManTIS) DTF did not meet.

Following the subgroup reports, three requests were issued, all by white ballot:

- DDS Status Monitoring RFP (from C4I)
- Point-of-sale Printer API RFP (from Retail)
- Robotics Service Ontology RFI (from Robotics)

Several motions were made and adopted to convene, extend or change the membership of RTFs, FTFs and voting lists. There were no domain technology adoptions at this meeting.

8.3. Platform Technical Committee Plenary Meeting

Larry Johnson 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.

Agent PSIG Bobbin Teegarden (No Magic) said that the SIG, which usually meets by teleconference between OMG TC meetings, discussed the latest developments in agent and event technology.

The AgEnt initial submission, which responds to both the AMP and EMP RFPs (respectively Agent and Event Metamodel and Profile), was presented to the ADTF.

Analysis and Design Task Force (ADTF)	<p>Jim Logan (No Magic) reported that the ADTF conducted a number of important reviews at this meeting:</p> <ul style="list-style-type: none"> • Geoffrey Biggs presented an initial submission to the Safety and Reliability for UML RFP • Manfred Koethe presented the initial “AgEnt” submission (see above) • Davide Sottara presented the initial submission to the API4KP RFP • Cory Casanave and Jim Logan gave a status report on the SIMF revised submission • Sandy Friedenthal and Ed Seidewitz presented on the SysML v2 and SysML v2 API and Services RFPs • Ed Seidewitz made a proposal to issue an RFP on Precise Semantics of Time. <p>Various submission deadlines were postponed as a result of these reviews.</p> <p>In theory, the Task Force has as many as 7 submissions to process in the next few meetings.</p>
Architecture-Driven Modernization (ADM) Task Force	<p>Jason Smith (TSRI) reported that the main activity of the Task Force was to hold a one-day Modernization Summit, which will probably be repeated in March or June.</p> <p>The Task Force also discussed its roadmap and will continue doing so at the next meeting. This will be a 15-year roadmap focused on Business/IT transformation.</p>
Data Distribution Service (DDS™) SIG	<p>Gerardo Pardo (RTI) reported that the SIG hosted a security demonstration involving Kongsberg, RTI, and Twin Oaks, and will hold one with additional vendors in December.</p> <p>Two RTFs completed their work, and one more will be chartered (DDS-Security 1.2). An RFP on the TCP/IP PSM for DDS-RTPS is being issued.</p>
Methods and Tools SIG	<p>Sumeet Malhotra (TCS) reminded the audience of the mission of this SIG, which was chartered at the March meeting but did not meet in June. The SIG discussed:</p> <ul style="list-style-type: none"> • Practical issues encountered in the real world (training, and the free exchange of Essence packages) • Three new Essence packages and test suites coming soon from SEMAT.

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:

- the status of the DDS/OPC-UA gateway submission,
- the two competing revised submissions to the DDS-XRCE RFP (Justin Scaduto, MARS co-chair, will lead the evaluation team and hopes to be able to send only one final submission to the Architecture Board),
- a draft RFP (almost ready) for the IDL 4 to Java language mapping,
- a draft RFP for the IEF Policy-based Packaging Service (IEPPS),
- a draft RFC for a UML Profile for ROSETTA (which may be issued by the ADTF rather than by MARS, since it is a UML profile),
- a vote to issue an RFI for Secure Network Communications (SNC), aimed at refining the scope of the SNC working group, formerly called SBC/SDR (software-based communications/software-defined radio),
- an agreement to draft an RFP for the XML/JSON mapping for DDS,
- a review and vote to issue the RFP for a TCP/IP PSM for DDS Interoperability,
- the content of a potential DIDO (Distributed Immutable Data Objects) reference architecture, based on the DIDO paper from Nick Stavros.

Someone asked why it took five years to issue the DDS TCP/IP PSM RFP. Char explained the history of this effort.

Ontology Platform SIG

Elisa Kendall reported on behalf of SIG chair Evan Wallace.

There were status reports on various work items, including the API4KP and Multiple Vocabulary Facility (MVF) initial submissions.

The LCC (Languages, Countries and Codes) ontologies were demonstrated. An automated script was developed to scrape the language and country codes from relevant ISO standards in order to collect them for the LCC ontologies.

There were presentations and discussions related to the development of ontologies for FACE (Future Airborne Capability Environment) Data Modeling and for Retail.

The Specification Metadata ontology currently in use by OMG will be submitted as an RFC.

System Assurance (SysA) Platform Task Force

Ben Calloni (Lockheed Martin) reported that the meeting included updates and discussions on:

- the finalization of SACM 2.0
- the Operational Threat and Risk Metamodel
- the Tool Output Integration Framework (TOIF) RFC (OASIS has asked KDM Analytics if they can help push this quickly, so they can adopt the OMG standard rather than rolling their own)
- the Software Fault Patterns RFC

In addition, the Task Force was involved in the Cybersecurity Workshop (see Section 7).

Following the subgroup reports, various motions were made and approved to charter, extend, and update the membership or leadership of various RTFs, FTFs and voting lists. On the motion to charter a third RTF for IDL, there was a discussion about the status of IDL 4.2, which has not yet been formally published. The RTF for IDL 4.3 is being formed in case issues are raised.

The MARS RFP for the TCP/IP PSM for DDS-RTPS, and the MARS RFI for SNC (see above) were issued by white ballot.

Initial votes were taken from platform members who wished to approve several submitted RTF and FTF reports. The vote will be completed by e-mail.

9. Next Meetings

The next OMG Technical Meetings are scheduled as follows:

- Burlingame, Calif., USA, 4-8 December 2017
- Reston, Va., USA, 19-23 March 2018
- Boston, Mass., USA, 18-24 June 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	CTS2	Common Terminology Services version 2
ADTF	Analysis and Design Task Force	CWM™	Common Warehouse Metamodel
AEP	Automated Enhancement Points	DAF	Dependability Assurance Framework
AFP	Automated Function Points	DAIS	Data Acquisition from Industrial Systems
AgEnt	Agent and Event	DDS™	Data Distribution Service
Alf	Action Language for fUML	DDS-DLRL	DDS Data Local Reconstruction Layer
ALM	Automated Lifecycle Management	DDSI	DDS Interoperability
ALMAS	Alert Management Service	DDSI-RTPS ...	DDS Interoperability for Real-Time Publish-Subscribe
AML	Archetype Modeling Language	DMN	Decision Modeling Notation
AMP	Agent Metamodel and Profile	DoDAF	Department of Defense Architecture Framework
API4KB	Application Programming Interface for Knowledge Bases (now API4KP)	DOL	Distributed Ontology modeling and specification Language (ex-OntoIOP)
API4KP	Application Programming Interface for Knowledge Platforms (formerly API4KB)	DRE	Distributed, Real-time and Embedded Systems
APP-INST	Application Instrumentation	DSIG	Domain Special Interest Group
ASCM	Automated Source Code Maintainability Measure	DSS	Distributed Simulation System
ASCP	Automated Source Code Performance Efficiency Measure	DTF	Domain Task Force
ASCRM	Automated Source Code Reliability Measure	DTV	Date and Time Vocabulary
ASCSM	Automated Source Code Security Measure	EMP	Event Metamodel and Profile
BACM	Business Architecture Core Metamodel	FACE™	Future Airborne Capability Environment
BMI	Business Modeling and Integration	FEEL	Friendly Enough Expression Language
BMM	Business Motivation Model	FIBO	Financial Industry Business Ontology
BPMN™	Business Process Model and Notation	FIGI	Financial Instrument Global Identifier
C2INav	Command and Control Interface for Navigation	FIRO	Financial Industry Regulatory Ontology
C2MS	Command & Control Message Specification	FSM4RTC	Finite State Machine for Robotic Technology Component
C4I	Consultation, Command, Control, Communications, and Intelligence	FTF	Finalization Task Force
CIEM	Contract Information Exchange Model	fUML™	Foundational Subset for Executable UML Models
CISQ	Consortium for IT Software Quality	GEMS	Ground Equipment Monitoring Service
CMMN	Case Management Modeling Notation	GRA	Global Reference Architecture
CSCC	Cloud Standards Customer Council	HAL4RT	Hardware Abstraction Layer for Robotic Technology
		HL7	Health Level 7

HPEC	High Performance Embedded Computing	OTRM	Operational Threat and Risk Metamodel
IDL	Interface Definition Language (IDL™)	ORMSC	Object Reference Model Subcommittee
IEF	Information Exchange Framework	OSLC	Open Services for Lifecycle Collaboration
IEPPV	Information Exchange Packaging Policy Vocabulary	OWL	Web Ontology Language
IIC	Industrial Internet Consortium	PDME	Product Data Management Enablers
IIoT	Industrial Internet of Things	PIM	Platform-Independent Model
IMM ®	Information Management Metamodel	PLM	Product Lifecycle Management
INCOSE	International Council on Systems Engineering	PSCS	Precise Semantics of UML Composite Structures
IPMSS	Implementation Patterns Metamodel for Software Systems (now SPMS)	PSIG	Platform Special Interest Group
IPR	Intellectual Property Rights	PSM	Platform-Specific Model
ISO	International Organization for Standards	PSSM	Precise Semantics of State Machines
JSON	JavaScript Object Notation	PTF	Platform Task Force
KDM	Knowledge Discovery Metamodel	QVT	Query/View/Transformation
LCC	Languages, Countries and Codes	RAML	RESTful API Modeling Language
LOI	Letter of Intent	RDCM	RIA Dynamic Component Model
MACL	Machine-checkable Assurance Case Language	RDTF	Retail Domain Task Force
ManTIS	Manufacturing Technology and Industrial Systems	ReqIF	Requirements Interchange Format
MARS	Middleware and Related Services	RFC	Request for Comments
MARTE	Modeling and Analysis of Real-time Embedded Systems	RFI	Request for Information
MBSE	Model-Based Systems Engineering	RFP	Request for Proposals
MDMI	Model Driven Message Interoperability	RIA	Rich Internet Applications
MEF	Metamodel Extension Facility	RMS	Records Management Services
MODAF	Ministry of Defence Architecture Framework	RoIS	Robotic Interaction Service Framework
MOF ™	Meta Object Facility	ROSETTA	Relational-Oriented Systems Engineering and Technology Tradeoff Analysis
MRC	Management of Regulatory Compliance	RTC	Robotic Technology Components
MVF	Multiple Vocabulary Facility	RTF	Revision Task Force
NIEM	National Information Exchange Model	RTPS	Real-Time Publish-Subscribe
OARIS	Open Architecture Radar Interface Standard	SACM	Structured Assurance Case Metamodel
OCL	Object Constraint Language	SBVR ™	Semantics of Business Vocabulary and Business Rules
ODM	Ontology Definition Metamodel	SDN	Software-Defined Networking
OntoIop	Ontology Model and Specification Integration and Interoperability (now DOL).	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

SNC Secure Network Communications
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