Blockchain PSG Call Notes

*15 Oct 2020*

# Attendees

* Rob Nehmer
* Char Wales (Jackrabbitt, 265992)
* Mike Bennett
* Neil Aeschliman
* Frederic
* Ian Stavros (Jackrabbit - 643024)
* Robert Stavros (Jackrabbit, 569992)
* Bobbin Teegarden

# Agenda

* IOTA Updates
* LETS RFP

# Meeting Notes

## IOTA Updates

IOTA Streams has just been released.

IOTA Streams 1.0.0 code base TODAY

<https://github.com/iotaledger/streams/releases/tag/1.0.0>

IOTA Streams spec (version 1.0) yesterday

<https://blog.iota.org/final-alpha-release-for-iota-streams-5a4cfeca506c>

First part (Protocol or Framework) – basis for submission

Second part = product (Channels app) including some things they call ‘protocol’

## LETS RFP Document

No change since September QM version

See working Word document

### References – Editing Requirements

(Re. Feedback from Char Wales during September Quarterly Meeting at MARS){

Was referring to the sections on OMG and non-OMG specs -- that references to either (OMG and non-OMG) need to include links to those specs. Basically complete attribution (title, date, etc.) for specs called out in those 2 sections.

These are 6.3 and 6.4

6.3.1

When we call out the DDS spec we have to call out a normal reference to that spec with a link to the version they want to work from.

Also applies to any other OMG specs they should be looking at or drawing heavily from.

Likewise a section on non-OMG specs 6.4

Also 6.3.4 has reference to other OMG stuff (other than specs)

* The DIDO- RA would a nice example of such a thing.
* We agree that that should go in there?
  + Yes

### Drafting Questions

There’s already a References section in B1 General References

* No change to that (boilerplate)

If something is already there e.g. UML, do we need to also call it out in the specifics in 6.3.1?

* Nobody knows

**Conclusion**: I guess we will – working assumption for now.

Then the stuff in 6.3.1 highlights the ones we particularly care about in the context of this RFP

**Action:** Check SYSML RFP for comparison.

### Scope of References

Q: Whether the list of things in 6.3.1 is:

1. Things we refer to in this RFP specifically or
2. Things we want the submitter to refer to in their submission

**Answer:** Confirm this is (b).

That is, when the submission needs to incorporate use of these specific specs, this is the reference (with version etc.) to use. E.g. we don’t want them using someone else’s UML Profile or a different version than the one we specify.

That is:

“If your submission uses DDS then you need to use this DDS”

Note that we reduced our use of DDS in the RFP itself from what we expected and previously had.

We can say that ‘we would prefer’ that submissions take advantage of DDS – in 6.8.

### Evaluation Criteria

This is a whole section here to be created (had thought it was boilerplate)

Look at other RFPs for how those used that section.

Include the note above – we might say a thing is optional but here we can say what kind of thing we would like to see.

Similarly in ‘Issues to be discussed’

* For something we made optional, if you didn’t use it please include your rationale.

We don’t want to limit things.

For example people who ‘do’ DDS versus those who don’t.

### Role of DDS

(what did someone mean by to ‘do’ DDS here?)

By ‘do’ we mean if a DDS vendor had a solution they wanted to bring forward, we would not want to preclude them; If another vendor not ‘doing’ DDS, these could also submit hence the non mandatory reference.

IOTA does not ‘Do’ DDS.

#### Clarify: ‘Do’ DDS versus using DDS as descriptive language?

MB understanding was that DDS as a standard provides the language in which to describe what IOTA already do.

Also (separate point): Not all the people who ‘do’ DDS are vendors.

Reasoning :If no-one comes forward with DDS we don’t want the LETS RFP to die.

Have made assumption that these things are ‘good’ together and it would be nice for them to be done together, this does not concern this RFP.

#### Side Conversation re DDS

Would like to unpack.

Are we assuming:

* We are using DDS as the language to say what IOTA Streams already does OR
* We are expecting a ‘DDS Solution’ from a DDS vendor

Answer: the first thing above. As follows:

MB intends that in the IOTA Streams submission we use the language of existing (OMG) standards where applicable:

* UML
  + Class diagrams
  + Timing diagrams
  + State machine
* DDS
* SysML?
* What else

Also use of an appropriate language to describe APIs (DDL, IDL or something)

That is, there are aspects of DDS we can use to help out certain aspects of LETS

* E.g. the way it defines interfaces
* The way it defines topics
* Etc.

That is, things that DDS **‘does’** that we want to take advantage of.

#### Conclusion:

‘Does’ = ‘says’ in the various statements about ‘doing’ DDS, above.

Are we all on the same page on this?

* Seems so. Was simply slack use of language.

#### Potential IP issues re DDS

Q: Are there IP issues in DDS? We are saying to replicate something that DDS does if we want to

(again ‘does’ = ‘says’)

Answer: the use of an OMG spec – you say in the submission that we are using these aspects of this spec or that spec, call it out and give attribution to it. So not an issue.

So yes we are all on the same page.

End of side quest.

### DDS Specification Stuff

DDS Spec has an API that is defined using IDL.

#### Another side question: documenting APIs in a Standard

(Dumb Q: Is IDL the right or only way to define API?)

Look at DDS specs that are coming out. The original PSL for DDS was done in IDL. There are other PSMs that define DDS in other formalisms, e.g. C#, C++ and others.

**What IDL does:**

IDL is a Higher level language, interpreters can read the IDL and generate any kind of code you want. Adds things like exception handlers and the like.

There is an underlying C Library you can use to go do DDS.

Better to get vendors to create their own APIs for things.

#### Specification Requirements for API

Q: If someone has already written an API, what is the best way for them to define it in a standard way, for a standard? Do they just write it out or is there a language in which they are to specify it?

In general, is there a formalism with which to specify an API?

* Can use UML
* Can use IDL

So there are 2 equally valid ways in which an API can be described.

When we do a Specification e.g. the IOTA Protocol RFC, OR the LETS RFP Response Specification

When there is a thing in there that is an API, what would we like to see? UML, IDL, English, code? Something else?

* Evaluation Criteria section of the RFP should address this

#### Our Evaluation criteria for LETS RFP

* NOT English
* Something you can code from
* Structured English? The structured English standard for APIs is IDL

There are multiple levels of API:

* An API for procedural languages (C, C++ etc.)
* Wire protocol API – the ones that ways if I want to put something on the wire and want other vendors to understand – use RTPS (a standard)

#### RTPS and Wire Protocols

Wire protocol – handles big endian, little endian

See also Google Protobuf – this is a wire protocol.

IOTA does use Protobuf

Can replace Protobuf with the wire protocol. We encourage them to do that. If there are shortcomings we submit these to DDS as an RFC, as they should support Protobuf. Or we need a bridge between Protobuf and RTPS.

What is RTPS? Whose standard is it?

Is an OMG standard. It is one of the DDS family of standards.

There is a DDS-I RTPS RTF

See also OCA on this (not the ToIP OCA). A machine interface bus thing.

Suppose they want to use Rust (as IOTA does), for implementation; then should be an API developed for Rust that becomes standardized. That would be another RFP back to the DDS group.

There is ‘an API’ versus ‘here an API that exists, in what language shall we describe them?’

Nick was referring to the DDS to OPC-UA Gateway spec .

NS: I'll go look up what OPC-UA stands for.

<https://www.omg.org/spec/DDS-OPCUA/>

<https://en.wikipedia.org/wiki/OPC_Unified_Architecture>

See: <https://www.omgwiki.org/ddsf/doku.php?id=ddsf:private:cookbook:06_append:01_family_of_standards>

You can have an API with 1000 options or an API with 1 option that does 1000 things

Likely at lowest level we use Protobuf. At a higher level we might use ZeroMQ

(IOTA is using both)

Granularity – they need to understand which layer they are trying to go with. If they tie themselves heavily to Rust. What happens when we want to do something in another language.

If someone just creates a library of their stuff and then creates an API for it you can end up with some bad stuff. Causes maintenance issues.

Q: In what language do we want them to submit a thing such that when we evaluate it we can address the questions above?

Answer: IDL

NS: Alternatively they could do it in C.

SW: Not a good idea – we are not expecting an implementation

We are following the PSM / PIM model. How do we want them to define the PIM?

* UML where applicable
* IDL? – NO this is only for PSM APIs
  + Or rather that is how it has been used
  + Not use IDL for this

See e.g. the DDS RFP – the first to use the MDA distinction of PIM and PSM. DDS spec was PIM in UML and PSM in IDL.

So the PIM defines the structure of how the thing works. How data is gathered, how things ae grouped together and so on.

Then the PSM has (obviously) different PSMs for different languages. IDL was one of these.

So IDL is a PSM language.

Which UML language do we use to define an API at the PIM level?

* Use a combination of these UML formalisms:
  + State (show where things get called, what state changes
  + Class
  + Sequence
  + Activity (for API? Yes)

We expect to see all these as part of the Specification that is submitted in any case.

Then the kind of normalization for the APIs.

When comparing protocols in terms of APIs and behaviors, use a 2-layer sequence diagram, with DDS as one of the levels, so you can compare the differences.

### APIs: Outcome

The above guicange on APIs documentation for standards applies to IOTA Protocol AND where applicable (Layer 2 in the IOTA Stack) to the Streams submission against LETS RFP.

## So to the RFP Edits

Tabular? (stated requirement from Char)

List as ‘these are the specs we want you to use and why’

(note the ‘and why’ there).

### Specs Usage

e.g. we want you to use this spec, this reason, these parts.

On this:

Why – visibility of blah de blah

Parts to focus on is these.

#### UML

For UML that would be the list above (for APIs). And separately for other matter that are not APIs

#### DDS

Are there other specs in the DDS Family we want to include? Or do we just want to refer to DDS

**Action:** Char and Nick to look at the DDS Family of specs and recommend ones to include in 6.3.1

In 6.3.2 – add DIDO-RA (MB add as an editing action)

#### Nick – any others ?

6.3.2 can also reference emerging OMG specs.

Would also include the existing reference to the OMG IOTA Protocol RFC? Ha to have been issued.

NO – WiP is only things that have been issued but may not have been Finalized. Must be in process.

So put the Tangle in 6.4 (as it’s a non OMG activity). Add a comment on the OMG plans.

**Action (MB)** replace the bullet points in 6.4 with text.

Maybe mention that the submission should NOT be dependent on that spec, but may refer to it.

## Actions, AoB and Next Meeting

Should mail this RFP to this list - action MB

Meet in 2 weeks time on this one!