

Main Identity

From: "Tom O'Reilly" <oreilly@mbari.org>
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Sent: Monday, November 24, 2003 10:10 AM
Subject: O'Reilly's SIAM review notes

SIAM review notes: Tom O'Reilly

Monday, November 17

Chayes: How does puck scale to non-MOOS system (e.g. NEPTUNE or VENUS)

Johnson: Pucks for ethernet or USB instruments?

Maffei: Need a primitive puck command that returns ID (puck ID? instrument ID?) Perhaps need more standardization on puck header.

Chayes: Puck could contain entire history of instrument metadata changes

Godin: Would instrument service get confused during hot-swap?

McLean: Satlantic observatory platform stores metadata on host node.

Burch: Saving metdata with device itself is a big win.

Backes: MBARI is on the right track with metadata stored in puck.

Chayes: Must ensure that there is a standard way to determine format of data stored in puck.

Sibenac: What other data buses are instrument vendors looking at?

Backes: Looking at ethernet and USB, but power is a concern for these. Cable length restriction on USB. RS232/485 is still best for low power.

Godin: Agreed.

Burch: Look at ieee 1451.4, 1451.2.

Burch: Why not store actual Java code on puck, and let host compile after code is retrieved? Could address some versioning issues.

Massion: How does MBARI establish a puck standard?

Chayes: Need to keep proposed standard simple as possible, so that instrument vendors will adopt it.

Chayes: Could puck run off of battery instead of node power?
Most instruments have limited deployment lifetime anyway.

Maffei: Is there a way to easily bypass the puck from a user standpoint?

E.g. user might attach puck+instrument to workstation and try to run vendor's software; puck needs to get out of the way for this. Maybe a timeout after which puck switches to sensor mode?

Backes: Puck software commands should have distinctive prefix, e.g. "puck_".

Burch: If establishing standard, keep software standard separate from electrical standard. Ieee 1451.2 suffered from too much intermingling of electrical and software specs.

Burch: Check out Eclipse tool as an IDE. How about UML?

McLean: Consider JXTA as a message-passing mechanism.

Burch: For lousy wireless link, publish-subscribe mechanism (e.g. JMS) is preferable to client-server (e.g. RMI). Client-server works well for debug/diagnostic tools; publish-subscribe is better for "routine" telemetry via unreliable comm link.

Burch: How does SIAM guarantee against deadlock?

Risi: We need a better profiler.

Burch: Are there agreed-upon tags for XML in puck?

Chayes: FGDC is reasonable; not too hard to implement

Burch: How about developing a parameter-driven generic instrument service?

McLean: Much of Satlantic's device coordination is achieved through tying of power lines (e.g. pump and instrument)

Burch: Would like to discuss device coordination off-line with SIAM team.

Chayes: MBARI should make "puck developer's kit" available to implementers.

Burch: RMI comms mechanisms should be "torture-tested" over RF link. Most user interaction with node should be via portal instead of directly with node service. Portal could contain "proxies" for instruments.

Tuesday, November 18

Chave: There is an "ION" meeting in Berkeley on December 13, immediately following AGU. Group will discuss interface standards for ocean observatories. SIAM representative should attend.

McLean: Should XML be a standard for every kind of puck?

Burch: Are there potential race conditions in SleepManager when it's checking subsystems for readiness to sleep? What about potential for deadlock? One approach is to use global semaphore (but then lose advantages of multi-threading)

Burch: Could have watchdog in separate process which restarts application if deadlock (or other fatal problem) occurs.

Burch: How to do out-of-schedule sampling? What if node is asleep? What is latency from sample request and sample acquisition?

McLean: Satlantic observatory instruments usually check for sample requests about every 15 minutes; each time they check "event queue" for new requests.

Chaffey: Sample trigger based on ADCP detection of turbidity current is a use case.

Burch: Agilent system distributes actual sensor data via "events" (JMS-publish-subscribe) - this has been a Big win for them. Each event has "standard" payload format. Events are batched for transmissions back toward "shore". Each event has a "trusted" timestamp.

Roman: Is wakeup of all moored nodes overkill for each portal session? Could DHCP help with this?

Edgington: Security is discussed in MOOS Requirements document.

Roman: MOOS security may benefit from VPN.

Chave: National security may be an issue

Burch: Could maintain connection logs as means of detecting hacking activities.

Burch: Any use cases for mooring-to-mooring communications? What about multiple/redundant communication channels?

Chaffey: Reset via pager is one such redundancy.

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"The machine does not isolate man from the great mysteries
of nature, but plunges him more deeply into them."

- ANTOINE DE SAINT-EXUPERY
"Wind, Sand, and Stars" (1939)