ISAC DSTF Face to Face Meeting Summary  
@CYTO 2015, Glasgow, UK, June 27, 2015, 12:45pm BST

Present: Josef Spidlen (BC Cancer Agency), Ryan Brinkman (BC Cancer Agency), Dave Kripal (Cytek), David Parks (Standard), Michael Zordan (Sony), David Novo (De Novo Software), Chris Bray (Verity Software House), Seth Holstein (FlowJo LLC), Martin Buscher (Miltenyi Biotec), Bartek Rajwa (guest, Purdue University), Alyson Irvine (guest, Indiana University)

Recorded by: Josef Spidlen

Summary

1) FCS 3.1 addendum
   - Michael Zordan shared his latest update of spectral definition keywords; this is part of the addendum available online and it is ready for a final review.
   - Michael Goldberg shared is C# reference implementation of FCS CRC calculation; this has been independently checked by Josef and it is giving the same results as his C++ implementation with the Blast library. We now have 2 FCS CRC reference implementations to be shared as part of this addendum.
   - Josef updated the $PnR keyword description and added $PnRFMAX and $PnRFMIN; this needs to be reviewed by other DSTF members.
   - It has been noted that the requirement of storing uncompensated data only should be dropped. While having uncompensated data is still desirable, it is not really enforceable and it prevents older (analogue) instruments to save data in the FCS 3.1 format. On top of that, the current text of the specification is not fully consistent (e.g., description of $PnCALIBRATION). Josef will fix that and let others review.
   - It has been noted that some sort of indication of which parameters are compensated (and what uncompensated parameters are they based on, if applicable) would also be useful. Josef will propose appropriate keywords and let others review it.

AI: Josef to revise the addendum as mentioned above, clean it up and let others know when it is ready for a final review (by July 28, 2015).

AI: Everybody to review the whole addendum when ready (by August 25, 2015).

2) Archival Cytometry Standard (ACS)
   - Stat-ML and images in ACS still need to be reviewed. Adam shared a revision that references ZIP64 (zip 6.3.4 instead of zip 6.2) and removed the last paragraph in section 2.1; this also needs to be reviewed.
   - Allison Irvine (Bartek's student) presented a proposal for “Secure ACS”, an extension to ACS that would support the use case where the whole container can be shared, but access to various resources within the container is controlled and can be role-based. This is implemented using asymmetric cryptography (e.g., signing separate components of the ACS, encrypting the signature appended to the data, and finally signing the encrypted file using a DSA or ECDSA). Allison also created a prototype implementation in R using Java cryptography architecture (with rJava to call Java from R). More details are available in abstract 58 (Allison Irvine and Bartek Rajwa. Data Confidentiality, Integrity, and Authentication in the Archival Cytometry Standard) of the CYTO 2015 program (currently available at http://cytoconference.org/getattachment/2015/Home/CYTO-2015-Program-Book-(2).pdf.aspx). Secure ACS is useful in case role-based access control to components...
within the container is required, however, significant effort would be required in order to properly standardize such a format, and it is not clear if this is “simple-enough” for vendors to be willing to adopt (i.e., is the use case prevalent enough to justify additional standardization and implementation costs). At this point, the DSTF would need proper documentation (e.g., revised ACS specification that would include the secure component) in order to properly review this approach. If Allison can provide a draft then it will be reviewed further.

AI: Everybody to review the latest proposals including for Stat-ML and figures in ACS (by July 28, 2015)
AI: Allison to share her implementation and create and share documentation of Secure ACS (by August 25, 2015)

3) A proposal for unified flow cytometer parameter naming
   - Mario Roederer published a Cytometry A Communication to the Editor: A proposal for unified flow cytometer parameter naming (DOI: 10.1002/cyto.a.22670).
   - This communication proposes to name detectors based on which laser was used (one letter abbreviation, e.g., B for blue 488nm laser) followed by 3 digits of emission wavelength center. For example, a typical PE detector might use a “565/20” filter, allowing light from 555 to 575 nm through; the detector name would be “B565” when using a 488 nm (blue) laser or “G565” with a 532 nm (green) laser. In order to name FCS parameters (values of the $PnN$ keywords), the detector name would be followed by the typical “-A”, “-H”, “-W” suffices for peak area, height and width respectively.
   - It's been noted that there are other keywords intended to accommodate this sort of information in the FCS data file format. Unfortunately, those are optional and rarely used, which likely prompted this effort to capture this information as part of the parameter name.
   - It's been also noted that this approach does not extended directly to spectral cytometers where there is no direct correspondence between detectors and measured (captured) parameters. Michael Zordan will discuss this with Mario to determine next steps (if any).

AI: Michael Zordan to talk to Mario Roederer about options of extending his proposal to apply to spectral cytometers (by July 28, 2015)

4) Financial support for ISAC standardization
   - ISAC is looking into options for supporting standardization activities, possibly including asking for support from vendors benefiting from ISAC standards

Next Call: To be determined.
ISAC DSTF calls are scheduled at 9am Pacific time on the fourth Tuesday of every month. This would mean having the next 2 calls on July 28 and August 25. Depending on the availability of ISAC DSTF members during this “vacation period” as well as on progress and updates on current action items, we will either stay on schedule or postpone until September. You can help us decide by emailing your availability to Josef. Information about the next call will be circulated via email once determined.