GenICam Austin Meeting Minutes – 2018-09-17/18

1. *Welcome (Stefanie Breyer, National Instruments)*

2. *Agenda Review (Fritz Dierks, Basler)*

3. *Homework Status/Voting Members (Fritz Dierks, Basler)*
    - Active Silicon – GenICam website
    - Allied Vision – GenTL Validation Framework, Embedded
    - AVAL DATA – Multiple Language Support
    - Basler – GenICam 3.1, GenDC, Embedded, Ticket cleanup, VS 2017 support
    - Baumer – CLProtocol 1.2, GenTL Producer Framework
    - MathWorks – GenICam 3.1
    - MATRIX VISION – GenICam 3.1, PFNC
    - Matrox – SFNC 2.4, GenDC
    - MVTec – GenICam 3.1, GenDC, Administration, GenTL SFNC proposal
    - NI – GenDC, Meeting host, cmake
    - SICK – GenDC
    - Silicon Software – Processing Results
    - STEMMER IMAGING – GenDC, Modular Logging, GenCP 1.3
    - Teledyne DALSA – GenDC, GenApi headers
    - Toshiba TELI – GenApi/GenTL Python bindings

4. *GenApi (Hartmut Nebelung, Basler)*
    - #1955: Cleanup Ticket System
        - Closed many tickets that were untouched for a long time
    - #1975: Error handling in FileProtocolAdapter
        - -> new homework package
    - #1979: FWUpdate issues (since v1.0 release)
        - Break backwards compatibility? -> Yes, change it for GenICam 3.2
    - Working on GenICam 3.2 reference implementation
        - Use VS 2017 compiler for Windows
        - Updating Linux compilers
        - Merging several development branches (currently, there are about 16 branches)
            - Ask for status about open branches via mailing list
    - Visual Studio 2017 (*Fritz Dierks, Basler*)
        - Studio Version != Toolset Version
        - Proposal: Use Toolset value instead of Studio value for DLL naming, e.g., <*GenICamLibrary*>_VC141.dll
        - Also: Change build directory names
    - Python bindings (*Kazunari Kudo, Toshiba Teli*)
        - Bug fixes and proof of stability

        - GenTL Python Consumer (“Harvester”)
        - Distribution via Wheel
        - Idea: Packaging as genicam2 modules via Wheel
            - E.g., “from genicam2.genapi import NodeMap”
            - Also: “genicam2.gentl”
        - Building these packages as part of the GenICam build process?!
        - Proposal: Include Python bindings in GenICam runtime packages, and in sync with distribution via Wheel
        - Platform maintainers should build the bindings as part of build processes
    - Miscellaneous (Christoph Zier, MVTec)
        - Include GenApi doxygen-based documentation in GenApi runtime package?
            - New homework ticket
        - .NET Wrapper?
            - Conclusion: GenApi .NET seems not to be important (anymore), in particular compared to Python
            - ToDo: Clean up outdated code fragments in repository (possible homework ticket)
    - Release CLProtocol v1.2 (*Christoph Zierl, MVTec*)
        - Ballot nearly finished (10x ACCEPTED, 6x ABSTAINS, 2 still missing)
        - Go through RC2 with 5 final clarifcations/fixes
        - **Vote: ACCEPTED, including the 2 missing ones, with 5x ABSTAINS**
    - GenApi C++ language feature compliance (*Chris Koelling, National Instruments*)
        - CMake and GCC
        - Google’s cpplint
            - Opens a path for enforcing a common coding convention in GenICam
    - GenApi Device Validation (Eric Bourbonnais, Teledyne DALSA)
        - MV TL standards are developing there own GenICam validation
        - Idea: Provide some code that can be integrated to the validation tool of the adopter standard
        - GenICam must make a claim that a device MuST pass the GenApi Validation
        - Conclusion: Interesting idea, more discussion needed
    - Modular logging (Christopher Hartmann, STEMMER IMAGING)
        - Customizable logging output
        - Keep log4cpp or use custom logger
        - Mainly more tests and feedback is needed
        - Idea is to include it into GenICam 3.2 release (hopefully)
    - Multi-Language support (Masahide Matsubara, AVAL DATA)
        - Idea: Separate resource files with localized texts for Name and Tooltip
        - Zip file includes XML and additional res files
        - Merging is done on the fly within GenApi after xml file loading
        - Conclusion: Yes, to be be continued!

5. *GenICam for Embedded (Fritz Dierks, Basler & Thomas Lück, Allied Vision)*
    - New EMVA standard dealing with Embedded Transport Layers
        - Chair: Thomas Lück, Allied Vision
        - Vice-chairs: Miho Akahide, SONY & Werner Feith, Euresys

        - Working group: Adimec, Allied, Basler, Baumer, Euresys, Framos, SONY
        - Idea: Use GenTL as standard interface
            - Promote using GenICam in embedded systems
            - Embedded cameras shall provide a GenTL Producer
            - V4L2 binding for GenICam
            - Map SFNC to V4L2 standard features
        - Motivation: Transition from PC-based to Embedded Systems
    - Challenges:
        - No standardized HW/TL
        - Firmware moves to host
        - Which camera API to use?
            - Linux classic approach: V4L2, dma_buf, gstreamer
            - Vendor specific approaches: NVIDIA libargus, Google HAL3 ...
            - Standards for MV: (OpenKCam), GenICam (!)
        - Need to promote GenICam to big Embedded players!
        - Zero Copy using dma_buf (GenTL manages buffer handles only)
        - Add GenTL to V4L2 converter to GenICam reference implementation
    - MIPI CSI-2 D-PHY vs. SLVS-EC
        - MIPI CSI-2 D-PHY is currently used, but
        - SLVS-EC is the new trend
    - ISP functions could be on camera or/and embedded host
    - Next standard meeting here during IVSM Austin meeting on Sept 20th.
    - Further roadmap
        - White paper planned for early 2019
        - First RC in 2020
    - Need for a GenICam sub group to force/support Embedded? Yes.

6. GenTL (Rupert Stelz, STEMMER IMAGING)

- GenTL Validation Framework (Tom Kirchner, Allied Vision)
    - Bugfixes
    - GenTL Validation Framework now separate GenICam module
- GenTL Producer Framework (Roman Moie, MVTec)
    - Several bugs and features since release of v1.0 in September 2017
    - New tickets, ready to be merged into SVN
        - Add support to hook on interface open/close in client code
        - Introduce GenTL Core mode allowing direct stream control by stream engine itself
        - Revise producer init/cleanup procedure
        - Added persistence support
    - Further open tickets
        - Deprecate TLSimu and port it to the producer framework
        - Implement a common one-click build for GenTL PF and GenApi
        - Write GenTL PF tests for stream and buffer modules
    - GenTL Validation Framework now separate GenICam module
    - Prepare release candidate and ask for feedback for some weeks
- Flows (Rupert Stelz, STEMMER IMAGING)

        - Flow is transfer to single (sub)buffer
        - Flowset consists of certain flows (synchronized)
        - Flows are transported via a stream
        - Flow information should be available in the TL bootstrap
        - New functions DSAnnounceFlowSet and DSAllocAndAnnounceFlowSet
        - Buffer info provides FlowsetHandle instead of BufferHandle
        - New payload format for GenDC
        - Stream will carry flowsets instead of buffers
        - Only flowsets can be revoked, not flows
        - Early processing
    - Prepare GenTL 1.6 draft including stacked buffers, flows, GenDC support and additional enums

7. *GenTL SFNC (Mattias Johannesson, SICK)*
    - Already agreed proposals
        - Clarify events
        - PacketSize renegotiation
    - Feature persistence
        - Issue: GenApi persistence algorithm use DeviceFeaturePersistenceStart/Stop
        - Proposal: Use generic “FeaturePersistenceStart/Stop” features instead
        - Change GenApi reference implementation to try generic one first? Yes.
    - Release of GenTL SFNC 1.2 planned after next GenTL/GenDC releases

8. GenCP (Rupert Stelz, STEMMER IMAGING)
    - GenCP 1.3 draft including stacked read/write commands and acknowledges
        - READMEM_STACKED CMD/ACK
        - WRITEMEM_STACKED CMD/ACK
    - Clarification about the meaning of existing Device Version register
        - Conclusion: Introduce new register “Manufacturer Device Version” instead with well-defined meaning
    - Release of GenCP 1.3 planned for around November 2018
    - Further ideas:
        - Command queues
        - “Functions”

9. GenDC (Stephane Maurice, Matrox Imaging)
    - Status: GenDC draft v0.92
        - Prefetch descriptor vs. preliminary descriptor vs. final descriptor
        - Introduced requirements (absolute & conditional)
    - Go through open issues in the draft and vote on controversial issues:
        - Remove all the prefixes from the headers fields (even for the Part header)
        - Remove ContinuousContent flag in Container Header Description
        - Keep ComponentInvalid flag in Container Header Description
        - Remove the limitation of the possible use cases to Bayer only for the Variablefields -> Format flag

        - Voted that no GroupType will be defined and that this field stay there but will be reserved for future use.
        - Remove GroupType, but keep GroupId in Component Header Description
        - Require SFNC predefined values for the known Component types that will be always used by the transmitter
        - Need PFNC predefined values represent known data types that are not Pixels or coordinates. Ex: Data8, Data8s, Data16, …Data32f
        - New chapter describing the Flow mechanism usage in relation with the GenDC Container was added
        - New header format for the Flow table with full 8 bit version
        - Need to create a ticket to discuss GenDC-related SFNC features in detail and finalize the text
    - Next steps:
        - Prepare RC and start voting process
        - Release planned until end of year 2018

10. PFNC (Uwe Hagmaier, MATRIX VISION)

- Current status
    - New version 2.2 released with semiplanar pixel format
    - New pixel formats requested
        - 4x Semiplanar
        - Still open, waiting for feedback of TL standard chairs
- Request for new Pixel formats regarding the new polarized image sensors
    - Presentation from Allied Vision (Thomas Lück)
        - Continue with self-speaking pixel formats? Or go for more non-self-speaking, simple pixel formats
        - Conclusion: Defer pixel format request, start working group

11. *SFNC (Stephane Maurice, Matrox Imaging)*

- SFNC 2.4 released on 2018/6/22
- GenDC related features
    - Add value “GenDC” for TestPayloadFormatMode
    - ComponentIdValue predefined value for all known component types
    - SFNC new features related to GenDC Container format and control
        - GenDCDescriptor (IRegister)
        - GenDCFlowMappingTable (IRegister)
        - GenDCStreamingMode (Off, On, Mixed)
        - GenDCStreamingStatus (Off, On)
- PFNC addition related to GenDC
    - Data8, Data8s, Data8s, Data16, Data16s, … Data32f
    - and probably CustomXXX
- Next SFNC Release will be v2.5

12. Marketing & Operations (Christoph Zierl, MVTec)

- Update on membership: 7 new member companies since last meeting
- Currently 15 contributing members

- Module maintainers
    - Decision: Make GenTL Producer Framework (GenTL PF) and GenTL Validation Framework (GenTL VF) separate GenICam modules
    - Roman Moie (MVTec) as new GenTL PF maintainer
    - Tom Kirchner (Allied Vision) as new GenTL VF maintainer
- Roadmap
    - Planned updated content of next GenICam Pacakge Release
        - GenICam reference implementation 3.2 (incl. VS 2017 support)
        - GenApi Standard 2.1.2 (?)
        - SFNC 2.5
        - PFNC 2.3
        - GenTL 1.5
        - GenTL Producer Framework 2.0
        - GenTL Validation Framework 1.5.x
        - GenCP 1.3
        - GenDC 1.0
        - CLProtocol 1.2
        - License 1.7
- www.genicam.org
    - Updated text on “Introduction” page
    - Removed “Status” page
    - Regular updates on “News” page
- Certification
    - Continue work on GenTL Certifcation Procedures
    - Integrate GenDC compliancy rules in GenICam License document

13. Processing results handling in GenICam (Andreas Beyer, Silicon Software)

- Goals
    - Preserve data structure
    - Provide random access to fields
    - Annotate results to convey their meaning
    - Stay within bounds of XML and SFNC
    - Do not define or restrict data organization inside buffer
- Implementation
    - Top hierarchy category “ProcessingResults” to announce independent data sets stored in buffer
    - Sub categories announce iterable collections within each data entry
    - Index is provided as feature “<categoryName>Index” of each (sub-)category
    - Primitives are announced as features inside a category

14. GenICam and OPC UA Vision (Fritz Dierks, Basler on behalf of Ralf Lay, Silicon Software)

- Tunneling GenICam through OPC-UA
    - Exposing device features through OPC-UA
        - Converter to access GenICam feature tree through OPC-UA
        - Convert/filter/merge several GenICam feature trees
    - Business Case “Support Access”

        - SFNC for Vision Processing Systems?
        - New GenICam Binding for OPC-UA?
    - New subworking group (together with OPC Vision) to investigate possibilities and to develop first implementations
        - Basler, MATRIX Vision, Silicon Software, MVTec, Lucid, IDS, Allied Vision, Baumer, STEMMER IMAGING, Matrox

15. *Homework session (Fritz Dierks, Basler)*
    - Go through homework list/items
    - Next meeting:
        - 2019, March 25-29, hosted by CMV in Suzhou