GenICam Hiroshima Meeting Minutes – 2017-10-16/17

1. Welcome (Watanabe-san, JIIA)
2. Agenda Review (Fritz Dierks, Basler)
3. Homework Status/Voting Members (Fritz Dierks, Basler)
   - Active Silicon – GenSP
   - Allied Vision – GenSP, GenTL Validation Framework
   - AVAL DATA – GenApi/Multi-language
   - Automation Technology – Python binding
   - Basler – Python bindings,
   - Baumer – CLProtocol, SFNC, GenTL Producer Framework
   - Gardasoft – Lighting proposal
   - IMAC – Lighting proposal
   - MATRIX VISION – GenApi Persistence
   - Matrox – SFNC, GenSP
   - MVTec – GenSP, Administration, GenTL Producer Framework
   - NI – GenSP, FWUpdate
   - Pleora – PFNC image generator
   - SICK – GenSP
   - Silicon Software – GenSP, OpenVX, Going Embedded SC2 proposal
   - STEMMER IMAGING – Modular Logging, GenSP, GenApi C-bindings
   - Teledyne DALSA – GenApi Persistence&Transactions
   - Toshiba TELI – GenTL Python bindings

4. GenApi (Fritz Dierks, Basler)
   - Overview
     - Changes Ready for v3.1
       - Transaction support
       - Caching MUXed registers
       - Retrieving Value Influencing Children
       - Speeding up MathParser
     - Open Topics for v3.1
       - See below
     - Next Steps
   - Transaction support (Eric Bourbonnais, Teledyne DALSA)
     - Stacking register write by IPortStacked interface
     - Bypassing validations when writing a group of features (e.g., AOI)
     - Decision: Go for option 1, see presentation
   - Caching improvements (Eric Bourbonnais, Teledyne DALSA)
     - pError cannot have cache
   - Retrieving Value Influencing Children (Eric Bourbonnais, Teledyne DALSA)
     - INode::GetProperty is very slow (since GenAPI 3.0)
     - Introduce INode::GetChildren method
• Speeding Up the MathParser
  ▪ Code has been merged now

• C-binding (Sascha Dorenbeck, STEMMER IMAGING)
  ▪ Use cases
    ➢ Stable application binary interface
    ➢ Enable static linking
    ➢ Enable dynamic loading
  ▪ Scope
    ➢ GenApi Module only
    ➢ Make only user interface accessible
    ➢ Keep it minimal
  ▪ Current state
    ➢ Development branch with GenApiC and GenApiTestC
    ➢ Library, e.g. GenApiC_v3.0
  ▪ Future steps
    ➢ Identify what is missing, looking for feedback!
    ➢ Header-only C++ wrapper
    ➢ Refactor use use C or header-only C++
    ➢ Target the infamous “Glue”

• Multi-Language support (Masahide Matsubara, AVAL DATA)
  ▪ Idea: Descriptions, tooltips, display names by e.g., <Description_L lang=”de”>
  ▪ Get/SetLocalizedID globally
  ▪ to be added in SVN dev branch soon
  ▪ increases XML file size
  ▪ -> Localizing the SFNC display names by homework packages

• Log4CPP loading (Silvio Voitzsch, Baumer)
  ▪ New search order for CLAllSerial

• Stop probing serial devices (Silvio Voitzsch, Baumer)
  ▪ Add function StopProbing to CLProtocol::CCLPort
  ▪ Extend GenCP by CLP_STOP_PROBE_DEVICE

• Modular logging (Quang Nguyen, STEMMER IMAGING)
  ▪ Status quo – log4cpp: category, priority, message
  ▪ Proposal 1: new logging module
  ▪ Proposal 2: custom appender (keep the infrastructure)
  ▪ Decision: go for proposal 2, more homework to be done

• Firmware Upload (Thies Möller, Basler)
  ▪ Already tested by several companies, more to be expected during plugfest
  ▪ Naming: New GenICam module “FWUpdate” (analog to “CLProtocol”)
  ▪ Will be released with reference implementation as part of GenICam v3.1
  ▪ Next steps:
    ➢ Final adjustments (e.g., include diagram in introduction)
    ➢ Start ballot soon after the meeting

• Persisting selector sets (Stefan Battmer, MATRIX VISION)
  ▪ New CFeatureBagger class to persist all data

• Using GenICam with MIPI CSI-2 D-PHY (Tim Handschack, Allied Vision)
  ▪ CSI defines protocols for control and also pixel types
• CSI-2 (with C-PHY and D-PHY as physical layer), CSI-3 (with M-PHY)
• CSI-2 D-PHY is well adopted by embedded boards
• Bringing CSI-2 and GenICam together
  ➢ Control: Boxing of GenCP over I2C / CCI
  ➢ Streaming

• Open tickets
  • Multiple roots
    ➢ Proof of concept presented in Natick
    ➢ Still unclear what happens with existing implementations when using these kind of floating nodes, maybe to be clarified in spec
  • Using multiple GenApi versions in parallel
  • New Python bindings for GenApi
    ➢ See discussion in GenTL session

• New bug tickets
  • Resolve pragma warnings -> to be fixed for v3.1

• Roadmap
  • Finalize features reported in Hiroshima and fix open bugs
  • Start building RC
  • Release v3.1 e/o 2017

5. **Going Embedded SC2 - Image processing systems (Ralf Lay, Silicon Software)**
   • Description of dynamic formats for preprocessing
     ➢ Use of chunks: fixed size and number
     ➢ Use of chunks: Variable number of data elements
     ➢ Use of chunks: Two dimensional aspects
     ➢ Full dynamic data formats
   • Custom processing modules
   • Model for embedded camera, XML-merger approach
   • Next steps: further implementations
   • SC3: GenICam and OPC UA -> “OPC Vision”, hosted by VDMA
     ➢ Interaction between SC2/GenICam with SC3?

6. **GenCP (Rupert Stelz, STEMMER IMAGING)**
   • GenCP still in maintenance mode, see tickets and discussion forum

7. **GenTL (Rupert Stelz, STEMMER IMAGING)**
   • GenTL Validation Framework (Tim Handschack, Allied Vision)
     ➢ Bug fixes, in particular regarding long exposure times
     • MultiPart
       ➢ SFNC test feature proposal “TestPayloadFormat”
   • GenTL Producer Framework (Roman Moie, MVTec)
     ➢ Idea: Decouple GenTL core functionality from TL-specific code
       ➢ Starting point for new GenTL Producer implementations
     • Committed to GenICam repository as agreed in Natick
     • Maintain GenTL core by homework packages
• Feedback from other companies
  ➢ Activation of Multi-Part more SFNC-like -> already implemented
  ➢ Multile TL within one Producer
  ➢ Hooks for specific utilities (like GVCP library)
  ➢ Expose BufferNodemap
  ➢ Avoid double definition of custom features (in XML and code)
• New Trac component
• Python bindings (Kazunari Kudo, Toshiba Teli)
  ➢ New README.md for developers
  ➢ Documentation for API consumers
  ➢ Improvements on Usability
• Streams & Buffers vs. Flows (Rupert Stelz, STEMMER IMAGING)
  ➢ from a GenTL point of view
  ➢ Currently, GenSP introduces the so-called flow concept
  ➢ Flow is defined by the sender
  ➢ Flows match to GenTL concept
    ➢ Sub-buffers are a flow, forming flow-sets
    ➢ Instead of AnnounceBuffer then call AnnounceFlowSet
    ➢ Solving many use cases like different receivers, early processing, sequencer
    ➢ No more need for multipart and chunk data
  ➢ The interpretation of data will move to the consumer side (based on GenSP)
• Next steps:
  ➢ Wait for progress on GenSP
  ➢ Presumably big impact, thus, then go for GenTL v2.0

8. GenTL SFNC (Mattias Johannesson, SICK)
• GenTL SFNC still in maintenance mode, see tickets and discussion forum

9. GenSP (Stephane Maurice, Matrox Imaging)
• Status
  ➢ Descriptor structure, layout and fields were accepted by workgroup
  ➢ New notion of data Flow was introduced
  ➢ Official name not decided yet
• Container structure
  ➢ Container has Descriptor + Data
  ➢ Descriptor has Container Header and Component header(s)
• Component header fields and layout
  ➢ Part type specific section depending on content (e.g., JPEG, H.264 or 1D)
  ➢ No more extra Parts headers
  ➢ Component info section is of fixed size followed by Part type specific info
  ➢ Container is self-described, i.e., no need to interpret XML
• Various container scenarios
  ➢ 2D multispectral
  ➢ Compressed images (JPEG, H.264)
  ➢ 3D image (range, confidence, reflectance)
- 3D image (xyz planar point cloud, confidence, reflectance)
- 2D images sequence
- 2D image with metadata
- New SFNC feature GenSPDescriptor to fetch complete descriptor in binary format
- New SFNC feature GenSPStreamingMode (Default, Native, GenSP, MultiPart)
- Renaming “GenSP”
  - Avoid both the terms “Protocol” and “Payload” since both are not right
  - Proposal: Go for “GenDC” – Generic Data Container
  - Test vote looks good
- GenSP-to-Flow mapping (Eric Gross, NI)
  - Flows != Streams
  - On the wire, a GenSP payload is complete only when all flows are completed
  - Flows represent the lowest common level of transfer described by GenSP
- Rules of Flows
  - GenSP headers always in flow 0
  - Multiple components/parts may share the same flow
  - Headers are always before payloads if in same flow
  - Components/parts within the same flow are ordered as in header
- Configuring
  - Enabling flows by camera, end-user or SW library
  - Mapping of flows to user buffers is responsibility of receiver
- SFNC Features
  - ComponentPartSelector
  - ComponentPartFlowID
  - ComponentPartCurrentFlows
- Target milestones for next meeting (in Frankfurt May 2018)
  - Finalize GenSP Container Descriptor
  - Conclude on a common approach for the handling of variable scan/payload device producing GenSP Container
  - Study the mapping of the GenSP Container to the various TLs

10. SFNC (Stephane Maurice, Matrox Imaging)
- SFNC status
  - SFNC 2.3 released in May 2016
- Lighting Device Control mechanism using GenICam
  - New category LightingControl with features for source, ratings, brightness, ...
  - Already also reviewed by JIIA
  - Ready to be included in next SFNC release
- PFNC extensions (Eric Carey, Teledyne DALSA)
  - Multicomponents
    - Only describe the number of components, not the content
    - MnC pixel formats, e.g., M4C10p
    - Interpreting the content requires then additional information not covered within PFNC
  - Planar
    - Currently, defined by ‘_Planar’
- Regroup multiple components in same buffer, but in planar fashion
  - Introduce ‘Planar’ suffix (without underscore), e.g. M4C10pPlanar
  - 32-bit Pixel ID Fields
- Support of simultaneous non-compressed and compressed image streaming
  - Already possible by using RegionSelector combined with CompressionMode feature (per Region)
- Handling frame endings in linescan (Mattias Johannesson, SICK)
  - Proposal for new AcquisitionStopMode feature
  - Values are Normal, Immediate, ImmediateWithPadding
- Multi-Part test feature proposal (Mattias Johannesson, SICK)
  - New feature TestPayloadFormat with values Off and MulitPart
- TLParamsLocked mandatory before AcquisitionStart (Eric Bourbonnais, Teledyne DALSA)
  - New selector TLDynamicParamsSelector with values ImageSize, PixelFormatConstSize, PixelFormatDynamicSize, ExtendedPayload
  - New feature TLDynamicParamsEnable
- New SFNC features to help automate EMVA 1288 measurement (Kazunari Kudo, Toshiba Teli)
  - SensorPixelWidth
  - SensorPixelHeight
  - SensorName
  - Agreed in general, further review needed
- IEEE 1588 extended feature set proposal (Thies Möller, Basler)
  - GevIEEE1588DatasetLatch
  - Agreed to further review
- Next SFNC Release is v2.4 (as part of GenICam v3.1 release)

11. Marketing & Operations (Christoph Zierl, MVTec)
- Update on membership: nearly 200 companies, 18 with voting rights
- Introduced new status homework_done on Trac ticket workflow to indicate that homework has been done, but not completed
- Naming:
  - Proposal to rename GenSP with GenDC (Generic Data Container)
  - -> Decision: Yes, by 12 positive votes (and 4 abstains)
- Roadmap:
  - Go for GenICam 3.1 before next meeting
    - in particular reference implementation and SFNC v2.4
    - also small updates on GenCP and GenTL SFNC should be included

12. Homework session (Fritz Dierks, Basler)
- Go through homework list/items
- Next meeting:
  - 2018, May 14-18, hosted by Silicon Software at VDMA@Frankfurt, Germany