GenICam Liège Meeting Minutes – 2016-10-10/11

1. Welcome (Marc Damhaut, Euresys)
2. Agenda Review (Fritz Dierks, Basler)
3. Homework Status/Voting Members (Fritz Dierks, Basler)
   - Allied Vision – GenTL Validation Framework
   - Automation Technology – SFNC review
   - Basler – GenICam 3.0.1, Going Embedded SC1 proposal
   - Baumer – SFNC proposal
   - Euresys – Meeting host
   - Gardasoft – SFNC proposal
   - Mathworks – GenICam 3.0.1
   - MATRIX VISION – GenICam 3.0.1, Multi-slope exposure
   - Matrox – SFNC 2.3
   - MVTec – GenICam 3.0.1, Marketing
   - Pleora – SFNC
   - Point Grey / FLIR – Logic block proposal
   - SICK – SFNC, Java/Python wrapping, GenTL SFNC
   - Silicon Software – Going Embedded SC2 proposal
   - STEMMER IMAGING – GenTL, GenCP
   - Teledyne DALSA – MathParser
   - Toshiba TELI – Python bindings

4. GenApi (Fritz Dierks, Basler)
   - Short review of fixed GenApi tickets in GenICam 3.0.1 release
   - New issues since Kyoto meeting
     - #1667 fixed
     - #1669 fixed
     - #1680 fixed
     - #1682 avoid LoadLibrary() in DllMain
     - #1686 Tool for creating and maintaining XML files?
   - MathParser (Eric Bourbonnais, Teledyne DALSA & Thies Möller, Basler)
     - Original idea: Use new library to speedup current implementation
     - How to guarantee compatibility? Testing with real-world formulas from Google and plugfest cache (>15,000 integer, >3000 float formulas)
     - New idea: Parse all formulas in advance, thus avoiding parsing on-demand
     - More work to do regarding optimization, validation and robustness
   - Wormhole (Rupert Stelz, STEMMER IMAGING)
     - “GenTP Extension (Tunneling Protocol)”
     - Waiting for more comments on current proposal, see #1624

5. GenCP (Rupert Stelz, STEMMER IMAGING)
   - GenCP 1.2 is released and available
Currently only two new tickets for next release
CL is adopting GenCP

6. Going Embedded SC1 - GenICam 4.0 & Industrial MIPI (Fritz Dierks, Basler)

- The Big Picture
  - Embedded processors take over the race (by putting critical SW tasks to HW)
  - ... and cover the full range from very cheap to very powerful
- GenICam 4.0 objectives
  - Make GenICam fit for embedded systems
  - System architecture changes (camera firmware moves to embedded host)
  - No need for registers anymore!
  - Support device bundles (e.g., camera, lens, and illumination)
  - Support virtual devices (e.g., also to finally solve the glue problem)
  - Support channeling video data to GPUs
  - Support MIPI as camera interface

- GenApi 4.x
  - Use Extended Object Model (with Running Object Table (ROT))
  - Need for a binary portable Interface
  - Bindings and backwards compatibility

- GenTL 4.0
  - Combine ROT with Device/Interface/System modules
  - Support also Stream modules targeting to GPUs
  - Make sure to be as compatible as possible with SW frameworks like OpenVX

- “Politics”
  - MV world vs. Consumer world
  - Competing camera standards, see OpenKCam and Android Camera HAL v3

- Industrial MIPI Camera Interface Standard
  - Create interface for MIPI CSI-2
  - Collaborate with MIPI consortium
  - EMVA has already claimed MIPI for embedded cameras under G3 rules

- Conclusion
  - Go for GenICam 4.0 (binary DLL portable interface, also full support of classical systems)
    - Form a sub-group, 15 companies showed interest to participate
  - Go for MIPI CSI-2 as new TLI
    - New standard group under the EMVA umbrella, 14 companies showed interest to participate

7. Going Embedded SC2 - Image processing systems (Ralf Lay, Silicon Software)

- Short review
  - Meetings every 14 days by telco/webex
  - Step-by-step approach

- Motivation
  - Trend towards embedded vision
  - Challenge complexity
Still keep it simple

- Different use cases, e.g. smart camera (sensor->FPGA->ARM)

Challenges
- Image processing
- Varying data formats
- Multiple vendors
- Multiple processing modules
- Security issues
- Simplicity

- Technical challenges
  - Keep compatibility with existing Processing Modules concept
  - Extend region concept, e.g. introducing objects
  - Idea of defining components
  - Idea of hierarchical View/Control
  - System level, incl. merging XMLs from different vendors

- SC2 Working Group
  - Call for participation and feedback!

8. GenTL SFNC (Mattias Johannesson, SICK)
   - Current draft version is v1.1 Beta5
   - See Trac discussion topic #50
   - Clarify how much Version features are needed
   - GEV features
   - Action features
   - Multipart support via BufferPartSelector
   - Event control
   - GenTL SFNC 1.1 RC expected until e/o 2016

9. GenTL (Rupert Stelz, STEMMER IMAGING)
   - Scope of next version 1.6, incl.
     - Multi-event proposal via EventGetDataMulti
     - Additional info commands
     - New payload types (JPEG, JPEG2000, Chunk only)
   - Python bindings (Kazunari Kudo, Toshiba Teli)
     - See also github.com/genicam
   - GenTL Validation Framework (Tim Handschack, Allied Vision)
     - Key idea: Starting with GenTL 1.6, certification will be mandatory
       - Producers have to pass the GenTL VF
       - Consumers have to show compatibility with 3 producers on plugfest
     - Function Declaration Tests (16)
     - Enumeration Tests (completed)
     - Functional Behavior Tests (nearly complete)
     - Extended GenTLPackage
     - Idea: Certification online as a cloud service?
     - Alternative: Signed self certification
- Start on plugfest on Friday and also on plugfest in Stuttgart on Nov. 11th

10. SFNC (Stephane Maurice, Matrox Imaging)

- SFNC status
  - SFNC 2.3 released in May 2016
- Generic Firmware Update (Stefan Klug, Basler)
  - Allow vendor agnostic FW updates
  - Plain GenICam
  - No device-vendor specific driver necessary
  - Work on a reference implementation including unit tests
  - Call for participation!
  - First standard draft and reference implementation prototype until e/o 2016
  - Testing and approval until next meeting

- PFNC
  - Remove generated reference images from repository
  - Provide Readme on how to use the reference image generation tool

- Extended IEEE1588 feature set (Thies Möller, Basler)
  - Five new features proposed and accepted

- GenSP – Generic data Streaming Protocol (Stephane Maurice, Matrox Imaging)
  - Why? Mostly to decouple payload type definitions form TL standards, thus decouple the “what” to transmit from the “how” to transmit
  - Would define a new shared and uniform payload format
  - Permits to introduce new payload types without releasing a new version of each TL standard spec
  - Container structure with headers and data chaining
  - Can be used on existing TL (chunk metadata as GenSP components/parts)
  - Completing the whole GenICam picture (“symmetric” to GenCP)
  - Creation of a working group with members of each TL protocol to see how they could efficiently implement that
    - 14 member companies showed interest to participate
  - Idea: GenSP as a new generic U3V/CXP/CLHS payload type?
  - Presumably too late to introduce it into GigE Vision (as there the multipart proposal is already integrated) but could be supported in the future
  - Further development mainly depends on the adoption by the various TL standards

- Storing UserSets and SequencerSets in files (Marcel Naggatz, Baumer)
  - Formal proposal to come

- Frame completion with linescan cameras (Mattias Johannesson, SICK)
  - Proposal: AcquisitionStopMode

- Discussion on clarification and simplification on Region setup with respect to binning, decimation and reverse features (Mattias Johannesson, SICK)

- Lighting Device Control mechanism using GenICam (Peter Bhagat, Gardasoft)
  - New category LightingControl
  - Mostly finished and approved

- Lens Control (Peter Bhagat, Gardasoft)
  - Are there interested parties, in particular liquid and motorized lens makers?
• Yes, to be developed and formal proposal to come
• TLParamsLocked reloaded (Eric Boubonnais, Teledyne DALSA)
  ▪ Provide additional text for TLParamsLocked feature
  ▪ Define additional features to allow dynamic TL configuration
• Draft for SFNC 2.4 will be available around next meeting

11. Marketing & Operations (Christoph Zierl, MVTec)
• Update on membership: approx. 165 companies, 17 with voting rights
• Regained access on www.genicam.org CMS for publishing news and downloads
• Trac issues:
  ▪ Please announce new proposals also on mailing list
  ▪ ToDo: Introduce new workflow state “homework_done” to enable easier tracking of homework
  ▪ Using git instead of SVN?
    ▶ Requires more user skills, thus, not really worth the migration effort
• Upcoming releases:
  ▪ GenTL SFNC 1.1 targeted e/o 2016
  ▪ SFNC 2.4 draft until next meeting, release afterwards
  ▪ GenTL 1.6 draft until next meeting, release in summer 2017
  ▪ GenAPI 3.1 with faster MathParser implementation
• Press work
  ▪ „Feel-good“ GenICam article published in Vision Yearbook 2016/17, from the publishers of Imaging and Machine Vision Europe
  ▪ German article will also be published
• VISION 2016 in Stuttgart
  ▪ Talk about GenICam Past/Present/Future during Industrial Vision Forum
  ▪ Idea: GenICam 3D demo -> ToDo: ask on mailing list for participation
• Miscellaneous
  ▪ ToDo: Publish latest version of GenApi standard text v2.1.1
  ▪ ToDo: Provide „GenICam full package“ zip files for download, incl. README
  ▪ Open issue: code signing of GenICam binaries by EMVA certificate
• GenTL Certification
  ▪ ToDo: Prepare official GenTL VF binary (Tim Handschack)
  ▪ Now „test run“ for v1.5, not mandatory
    ➢ Start now in Liege and also at plugfest@Stuttgart in Nov. 2016
    ➢ Call for participation with existing implementations (GEV, U3V, CXP, …)
  ▪ Starting with GenTL v1.6/v2.0, certification is planned to be mandatory!
  ▪ ToDo: Clarify paperworks, new logo usage and website listing with EMVA

12. EMVA standards licensing (Jochem Herrmann, EMVA)
• Working with a lawyer to develop better license text
• Step1: diagnosis
  ▪ Mostly done
  ▪ Found nothing surprising, looks feasible
• Step 2: implementation
  ▪ Need for one GenICam person as primary point of contact
  ▪ Goal is to have updates and draft until next meeting

13. Miscellaneous (Jochem Herrmann, EMVA)
  • Report on European Machine Vision Forum held on Sept. 8/9 in Heidelberg
    ▪ 130 participants
    ▪ Interaction between vision industry and academic research
  • European Embedded Vision conference
    ▪ 2017, Oct. 12-13 in Stuttgart
    ▪ Organized by EMVA with Landesmesse Stuttgart
    ▪ www.embedded-vision-emva.org

14. Homework session (Fritz Dierks, Basler)
  • Go through homework list/items
  • Next meeting: May 2017, hosted by Mathworks in Boston, USA