GenICam Meeting, Ahrensburg, May 29-31, 2007

Participants:

- DALSA/Coreco Eric Carey
- DALSA/Coreco Eric Bourbonnais
- e2v Frederic Mathieu
- e2v Yves Delzoppo
- Euresys Jean-Michel Wintgens
- IDS Carsten Bienek
- JAI Karsten Ingeman Christensen
- Leturon Stefan Thommen
- Leturon Jan Becvar
- Matrix Vision Uwe Hagmaier
- Matrox Stephane Maurice
- Mikrotron Christian Zenker
- Mikrotron Andreas Ertl
- MVTec Christoph Zierl
- MVTec Milan Rueder
- NI Eric Gross
- Pleora Vincent Rowley
- Stemmer Rupert Stelz
- Stemmer Sascha Dorenbeck
- AVT Holger Eddelbüttel
- Basler Fritz Dierks
- Basler Hartmut Nebelung
- Basler Volker Möbius
- Basler Thies Möller
- Basler Sven Seeger

Tuesday, 2007-05-29

Introduction and Welcome

- given by Dietmar Ley, CEO of Basler

First Session: GenApi (Basler)

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* Maintenance Release 1.0.1
  - Includes several bugfixes,
    see Mantis entries #41,#40,#39,#38,#37,#36,
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#25,#26,#27,#05,#29,#28,#03,#04,#07,#24,#10,#22,#21
- RC1 available since 2007-05-11
- Pleora needs some time to review all changes
- Voting about acceptance within next 2 weeks via conference call

* Feedback from the market
+ many companies use GenApi for GigE Vision
+ mostly good acceptance, positive feedback
+ the market expects GigE, XML and all standard feature list
+ until now strongly coupled with GigE Vision
+ market demands GenICam, e.g., management requirement in the spec
+ most cameras work out of the box, customers are happy about
- quite often problem to explain difference between GigE Vision and GenICam, some customers are confused about the different standards
- not easy to communicate the GenICam idea even within the members' companies
- some customers like more register-based approaches, sometimes GenICam seems to be "too technical", especially in Asia
- Standard Feature List does not always match 100% of the needs of some camera vendors
challenge for the customer, problem with standard feature list
- some problems with corrupt XML files, XML files differ in quality

* Discussion
- Does GenICam need more kind of plug'n play?
- Agreed: Standard Feature List should go into GenICam
- GigE Vision compliance always implies GenICam compliance?
- GiGE Vision describes the "how", GenIcam the "what"
- What does "GenICam compliant" mean exactly?
- Standard Feature List is important for acceptance
- Poor XML files annoy customers, thus, the library vendors get the feedback
- "GenICam plug'n play" -> driver and all mapped features available
- Important: All features should be accessible via GenICam (standard ftr or not)
--> Use standard features if possible!
- Useful: best practice for camera vendors
- What about GigE Vision smart cams?
- Agreed: GenICam = all documented features are accessible via GenApi
and are named according to standard feature list if possible
- How to ensure this? Self-certification like in GigE Vision?

11:00 Coffee break

* Languages, Compilers, and OS Support
- Win2k/WinXP available
- Phar Lab under way (NI)
- Vista and Win64 important
- Other compilers than VC7.1 and VC8.0?
- Borland and Intel compiler interesting?
- Linux port nearly finished (Basler):
. kernel >= 2.6.16
. GNU tools >= 4.2
. use of Autotools
. adapted directory layout
. GCBase, GenApi, GenApiTest already do compile
. tests should run ok until the end of this week
- GenICam .NET Interface (Stemmer)
. .NET 2.0 wrapper (VS 2005) as a DLL
. No smart pointers available
. Status: implementation finished
. Open points: exception handling, put in GAC, COM export

```
    . Problem with differently built GenApi DLLs because of VS

* Missing Features
    <Short Description>                                        <Importance>
  - get rid of __declspec(dllexport)                                 9
  - Selector Node (create multiplexer nodes for different            7
    interface types) depending on a selector index
  - negative chunk addresses                                         0
  - ByRef access to chunk data -> new interface IRegisterEx          2
  - Selector access with smart pointers                              1
  - String node                                                      4
  - Representation entry for all float and integer related           9
    nodes and add precision entry to float nodes
  - Allow Invalidation between all nodes                             6
  - Helper Function for Consistency Check                            0
  - Write Replicator Node                                            6
  - Table Node                                                       2
  - Persisting the node tree                                         9
  - File upload                                                     10
  - Making code from DLLEntry lazy                                   6

  - fast feedback round to get some importance factor (see right side)
  - automatic notification if values exceed the allowed range
      -> does node invalidating do the job? (example: set binning)
      -> Solution is to register callback for all features

12:30 Lunch break

  - some kind of batch node, e.g., by specifying one master
    and an arbitrary number of slave sub nodes
  - extending the swiss knife (integer-to-integer mapping)
  - Using the streaming flag?  Yes, with a common file format
    -> see proposal by Stemmer: GenICam Settings File (GCS)
    -> read/write via user set data?
  - Support of up-/downloading files, e.g., for a shading image
    -> GUI then can provide file selection box for uploading
    -> faster approach for accessing LUTs...
```

Second Session: GenTL (Stemmer)

```
* Present status of GenTL standard text
  - GenTL, see proposal sent last week
    . module-based concept
    . System -> Interface -> Device -> Streaming Channel -> Buffer
    . Event-based approach (maybe wrapper for Linux)
    . GenICam compliant XML file for every GenTL
    . One DLL per transport layer, providing a C interface
    . Queue mechanism: Announce, (Re)Queue, Start, Wait, Stop, Flush, Revoke
    . 3 use cases: first unprocessed image, latest unprocessed image, next image
    . Optionally auto-requeue buffers (no buffer locking)?
    . still missing: preprocessing plugins
    . to discuss: standard features for GenTL
    . proof of concept already implemented, also TL simulator and application

  - Question: Also support of Camera Link?
  - Question: Support device-allocated buffers?
```

15:45 Coffee break

- AllocAndAnnounce should be added
- Agreed, that enumerations in Client.h should be transformed in parameters in standard feature list for GenTL
- Walk along the example code
- Discussion about allowing user- and driver-allocated buffers
- Once again: events vs. callbacks (consider Linux port)
- Encapsulate event handling (or use of semaphors) by simple interface to support also Linux and other OS?

Wednesday, 2007-05-29

GenTL Session Continued (Stemmer)

* Present status of GenTL standard text - continued (Stemmer)
  - Factory
    . Enumerating actually available transport layers
    . Wrapping the GenTL functionality
  - Registry
    . mostly a database
    . TL Type -> Module Type -> Device version -> Device ID
    . manage links, bindings, names
    . Discussion about flexibility vs. complexity
    . Document retrieval, create link entries automatically
    . Link query: TL Type -> Module Type -> Vendor -> Model -> Revision
    . Important: Clear documentation to make retrieval transparent
    . Discussion about coverage of all use cases (newer XML files, downgrading the firmware, etc.)
    . Bindings should not only be limited to specific DeviceIDs, but also to Vendor/Model/Revision types
    . Status: basic functionality is implemented, interfaces have to be completed, GUI is missing
  - Collect work items

11:00 Coffee break

- TLC interface is part of the standard (including the header file...)
- TLC interface should be complete and well-defined
- Discussion: What is GenICam?
  . GenICam vs. GenTL
  . GenAPI/GenTL consumer vs. GenApi/GenTL provider
  . GenICam today and tomorrow
  . Different roles: Camera vendor - Driver/FG vendor - Library vendor
  . GenICam compliant currently means:
    - camera provides XML
    - driver and library consume XML/GenApi
  . Proposal: The "GenICam 2.0" (or whatever name is) compliant means:
    - GenICam 1.0 compliant and
    - driver/FG provides GenTL
    - library consumes GenTL

12:30 Lunch break

Third Session: Standard Feature List (Matrox)

```
* Status and feedback from the market
  - Camera vendors are willing to implement missing features
  - Up to now positive feedback, good acceptance
  - Some misunderstanding about the list
    -> in case of questions send an email
  - feedback from customer:
    . triggering is not easy to understand for beginners
    . selectors may be difficult to handle, i.e.,
      the special semantics of selectors is not intuitive
    . problems with standard GEV bootstrap registers
      (consistency between TL and GenApi)

* Making the Standard Feature List part of GenICam?
  - Voting: Yes
  - Procedures for maintenance (incl. voting rights) should be similar
    to the procedures of GenICam software releases
  - Migrate the GigEStdFeatList email list to genicam@imaging.de
  - Transform current draft 1.00.02 to release version

* Missing features
  - Proposals based on draft 1.00.02:
    . New features SensorTaps and SensorDigitizationTaps
    . AcquisitionFrameRateAbs and AcquisitionLineRateAbs
      should be IFloat instead of IInteger
    . Value 'reserved' in GevDeviceModeCharacterSet? Not necessary.
    . Comment for GevMACAddress that it should return the full 64bit integer
    . Replace GevCurrentIPConfiguration analog to GevSupportedIPConfiguration
    . Additional value 'OpenAccess' in GevCCP
  - Proposal for Camera Link support:
    . New features TapFormat and BaudRate
    . Leutron&Euresys will email the proposal soon

15:15 Coffee break

  - Voting about new features in cw 26
  - Intention: One document for both GenApi and GenTL feature names
  - No more use of GigE Vision and AIA logo in headline
  - Market request: LUT access is confusing
    . add features for querying size and format of LUTs
      (LUTNumberOfElements, LUTPixelFormat)
  - For Gain and Offset, check IRegister access -> Basler
  - Support of rotary encoder
    . Incremental shaft encoder using 2 signals = Gray code
    . Somebody should make a proposal
  - Loading a XML too slow?
    . It may take 2 to 5 seconds (and much more slower in debug mode)
    . Depends on caching enabled?
  - Should we add a recommended visibility to every standard feature?
    -> Yes
```

Thursday, 2007-05-29

Fourth Session: Marketing

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* Positioning of the GenICam brand
  - Vivid discussion about definition of Compliance
    . Product Categories: Cameras - Transport Layers - Libraries
    . Compliance Levels: supports GenApi / GenTL / StdFeatureList
    . For using the logo at least GenApi must be supported
    . GenApi:
      - All public features must be accessible through GenApi
    . GenTL:
      - Transport Layers must be able to act as a GenTL client
        and plug to libraries supporting GenTL
      - Libraries must be able to access cameras through transport
        layers supporting GenTL
    . StdFeatureList:
      - The naming and behavior of all public features must follow the
        StdFeatureList
    . Basic read/write register functions are part of every GenTL client
      (fixed interface with fixed signature)
    . Do we need another logo or brand for being GenTL-compliant?
    . 2 business cases
      - Library <-> TL/camera    -> GenApi-compliant
      - Library/TL <-> camera    -> GenApi & GenTL-compliant
    . Ideas for names:
      "GenICam TL",
      "GenTL/GenApi producer/consumer"
      "GenICam 2.0"
      "GenICam XML" in contrast to "GenICam TL"

10:45 Coffee break

    . Founding a subcommittee to find the "best" wordings or brands
      - Pleora (maintainer), Matrox, Basler, MVTec, Stemmer, JAI
      - task: prepare a proposal

  - GenICam web site
    . Agreed: expose the contributing members on the web site
  - Collaborative marketing
    . Agreed: furtheron push the brand "GenICam" in the market
  - Dealing with the IIDC committee
    . unfortunately, there is not much support from the IIDC
```

Collect work packages

```
  - GenApi
    . Call for voting for GenICam release 1.0.1 end of cw 23 -> Basler
    . get rid of __declspec(dllexport) -> Basler&Stemmer
    . Provide more requested features -> Basler
    . Provide code for streaming node trees and consistency checks -> NI
    . Write test code for new GenApi features -> Leutron
    . Supply GenApi port to Linux -> Basler
    . Supply GenApi port to Phar Lap -> NI
    . Supply .NET layer -> Stemmer
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    . Write test code for .NET layer (NUnit) ->  JAI
    . Study GenApi port to Win64 -> Matrox
    . Supply GenApi port to Borland -> defer
    . Check if there any problems for using IRegister to Uploading -> Basler
    . Create a best practice XML / camera simulator -> defer to GigE Chicago

  - GenTL
    . Finalize and supply GenTL, Factory and Registry code -> Stemmer
    . Finalize and supply GenTL standard text -> Stemmer
      (incl. feature lists and some drawings)
    . Write test code for GenTL -> e2v
    . Write test code for factory -> e2v
    . Write test code for registry -> MVTec
    . Provide description of the registry behaviour -> Stemmer
    . Provide a .NET wrapper -> deferred
    . User interface for registry -> MVTec
    . Create standard feature names for GenTL -> Stemmer&Pleora
    . Implement TL clients for own drivers -> All

  - Standard Feature List
    . Proposal for dealing with GEV bootstrap registers -> Stemmer&NI
    . Clarify in the spec that a selector must not have side effects -> Matrox
    . Create procedures for maintaining the list -> Pleora
    . Close down the old mailing list -> Stemmer
    . Make a non-draft version 1.00.02 -> Matrox
    . Proposal for CL features including tap handling -> Leutron&Euresys
    . Proposal how to interpret the LUT data via IRegister -> Matrox
    . Proposal for the feature visibility -> JAI
    . Proposal for standard feature list 1.1 -> Pleora&Matrox

  - Marketing
    . Find marketing wording for GenICam
      -> Pleora (maintainer), Matrox, Basler, MVTec, Stemmer, JAI
    . Proposal for "hall of fame" -> Basler
```

Wrap up

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* Next meeting
  - cw 39
  - probably hosted by Pleora in Montreal

* Miscellaneous
  - access to CVS repository
    . read-write access only for contributing members
    . read-only access to associated members
    . old account with weak passwords must change it,
      otherwise disable accounts -> MVTec
    . GenICam FTP web site has changed recently
      -> Basler will notify new URL and login soon

12:30 Lunch break

* Final feedback round
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