IEEE 1722b GPIO Proposal

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Previous GPIO discussions (1/3)

- 1st Ad Hoc meeting August 30th 2022
  - General understanding that a minimum GPIO specification is needed in IEEE 1722 to ensure some implementation interoperability.
  - First presentation made by Mr. Ortiz (1722b_GPIO_contrib_ortiz_v10.pdf) was discussed at length.
- 2nd Ad Hoc meeting September 9th 2022
  - Updated presentation made by Mr. Ortiz with the changes suggested in the previous meeting (1722b_GPIO_contrib_ortiz_v20.pdf).
- Mr. Ortiz and Mr. Torres generated Annex L of the IEEE 1722 with the proposed specification including previous inputs from the participants.
- Mr. Lo suggested some simplifications and highlighted points for discussion over Annex L, including some text that should be normative to ensure interoperability (IEEE Std 1722b-ForGPIO_WL markup.doc)

Previous GPIO discussions (2/3)

- 3rd Ad Hoc meeting January 12th 2023
  - Discussion on IEEE Std 1722b-ForGPIO_WL markup.doc
  - Mr. Pannell and other participant raised several concerns about the presented document:
    - Misuse of presentation time as specified in IEEE 1722 and IEEE 802.1AS
    - The algorithm for generating the acquisition time from the presentation time may be against the OSI layer division between Presentation and Application layers.
    - The encapsulation of GPIO signals into ACF_SENSOR messages should be informative, not normative

Previous GPIO discussions (3/3)

- Mr. Ortiz and Mr. Torres generated a new version of Annex L addressing the concerns raised, and distributed *IEEE Std 1722b-workingCopy - C9v02-ForGPIO_v2_1.doc* through the IEEE 1722 reflector on February 20th.
  - Suggested normative changes in 9.4.10.6 and 9.4.10.7 removed.
  - Option of using ACF_SENSOR_BRIEF for GPIO signal encapsulation removed.
  - GPIO_time_offset configuration parameter added (as used in IEEE 1722.1)
  - GPIO identification uses only GPIO_sensor_group, and not the AVTP stream_id field
  - Decapsulation generation of message timestamps removed
  - Combination of GPIO real forward channel and ACK channel (L.2.3) removed
  - Exception handling proposal (L.2.4) removed
- 4rd Ad Hoc meeting February 23rd 2023
  - Discussion on *IEEE Std 1722b-workingCopy - C9v02-ForGPIO_v2_1.doc*
  - Agreed to propose *IEEE Std 1722b-workingCopy - C9v02-ForGPIO_v2_2.doc* *for* discussion inside IEEE 1722b Working Group.

Main directives behind proposal

- Increase GPIO implementations interoperability
- Keep the specification as simpler as possible
- Informative annex – no new shall statements in IEEE 1722

GPIO proposal in a nutshell

- Support of real and virtual talker and listener
  - *“Real” here means associated to physical GPIO pins*
  - *Allows generation and consumption of GPIO by internal processes*

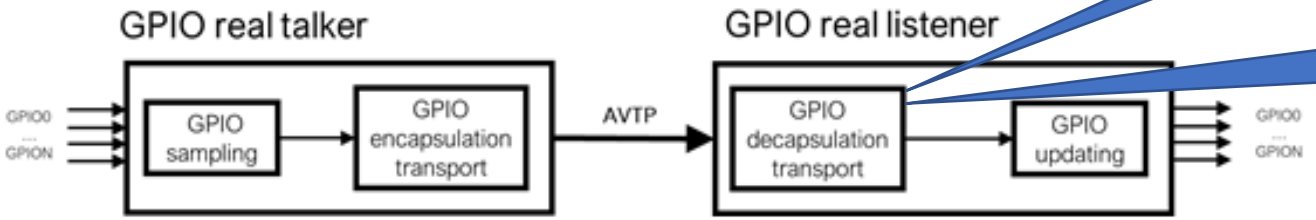

Figure L.1—Example of GPIO real forward channel

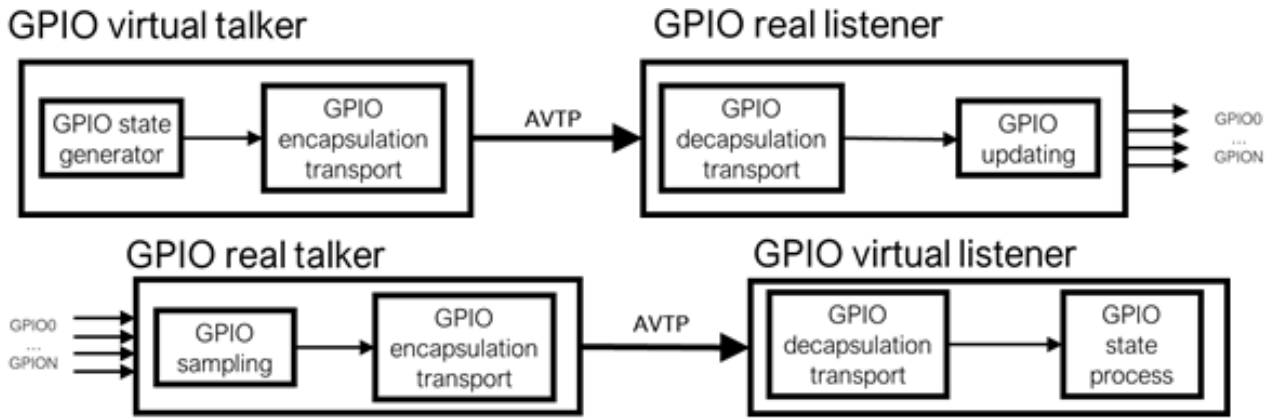

Figure L.2—Examples of GPIO virtual forward channel

Encapsulation using ACF_SENSOR messages in the AVTPDU

Updating time of the output signals using message_timestamp and GPIO_time_offset (fixed)

Enables grouping of N GPIO signals in a GPIO_sensor_group

Next steps

- Propose to circulate *IEEE Std 1722b-workingCopy - C9v02-ForGPIO_v2_2.doc* inside IEEE 1722 Working Group for two weeks.
- Discuss comments received on the document in three weeks (tentative date: July 11th)
  - Two-three sessions should be enough (5 pages document)

Thanks!