Certification Working Group Update

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Chair – Certification Working Group

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DIFI Consortium Proprietary

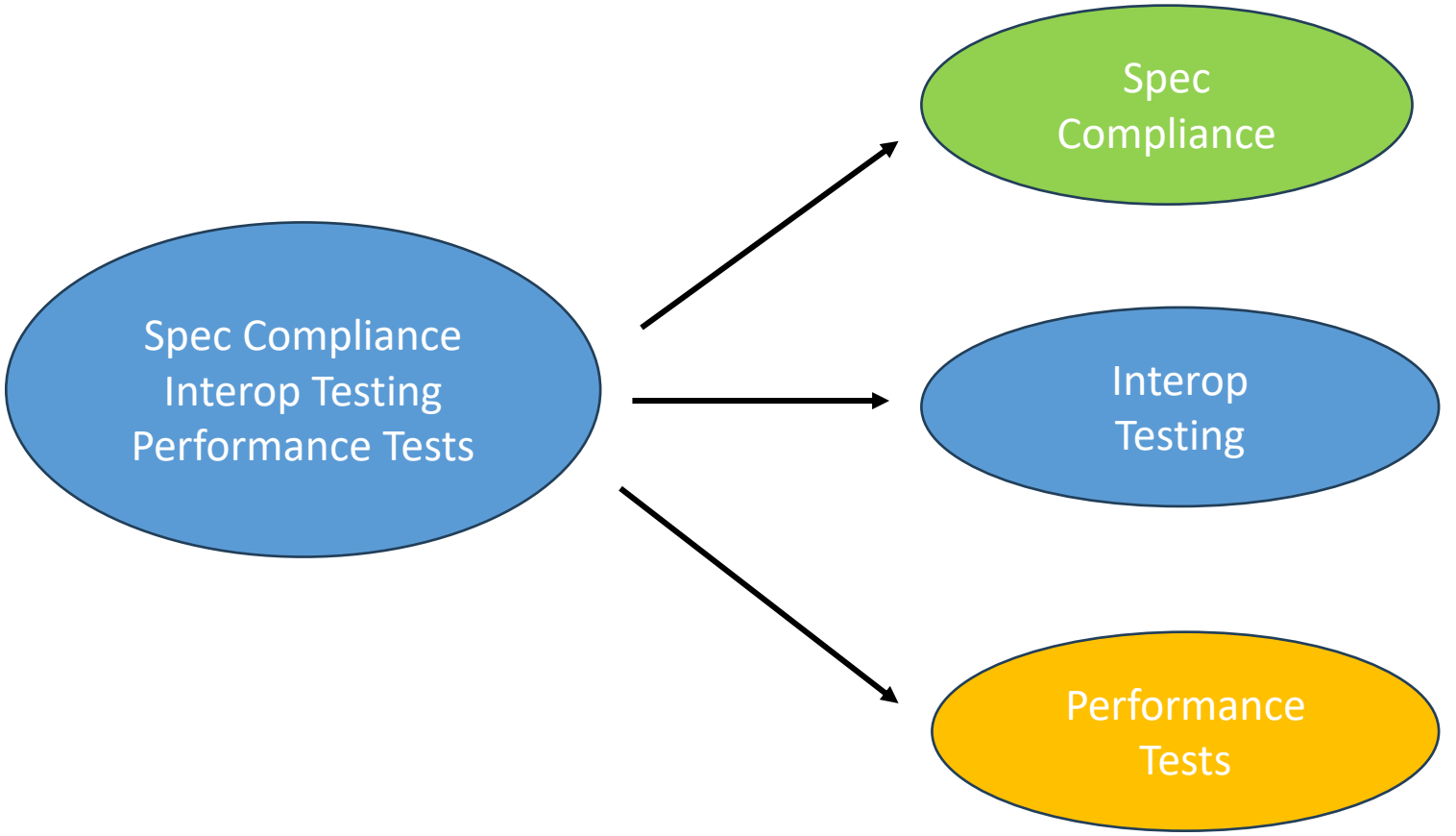
Agenda

- Certification Working Group Charter
- Specification Compliance
- 3rd Party Certified Interoperability
- Working Group Roadmap

Certification WG Charter

- From the DIFI Website:
  The Certification Working Group is the primary forum for establishing and maintaining **a certification program in connection with the Standard**, subject to the review, and within the strategic direction established, by the Board. The Certification Committee may, by a majority vote, make recommendations to the Board concerning certification matters, may coordinate and implement the same, and may undertake such other tasks as may from time to time be permitted by the Board.
- Monthly meetings
- Discuss and define the tests that a device must pass to be “DIFI Compliant” and “DIFI Certified”

DIFI Certification: Where We're Going



Fully automated, DIFI device vendor self-run

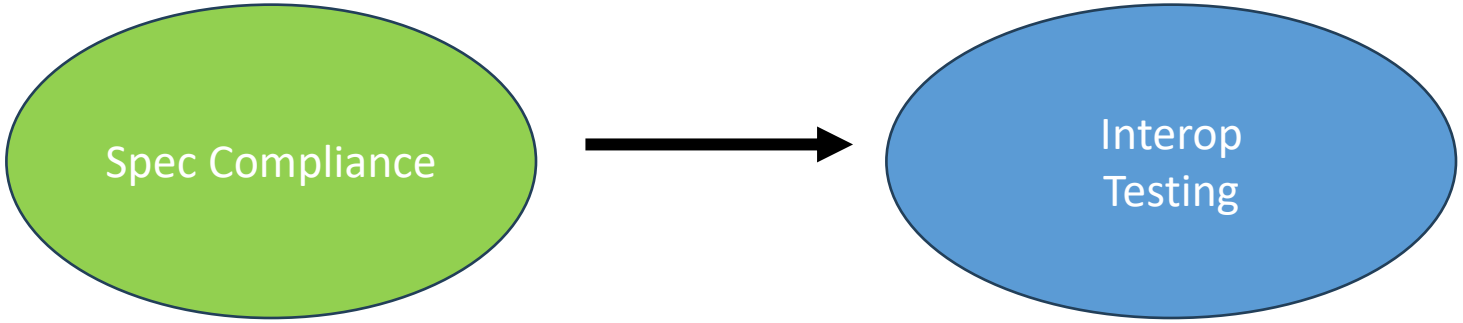
3rd Party Lab Certified Interoperability

Outside the Cert WG charter, not part of interoperability

Device Evaluation Levels

- Specification Compliance
  - Packets are correct size, appropriate fields are populated, correct packets are grouped per Information Class
- Certified Interoperability
  - Devices emitting and consuming packets are evaluated against official DIFI test equipment, devices behave appropriately per role and information class
- Performance per Use Case Requirements
  - Dependent on type of DIFI device; phase noise, dynamic range, and G/T are in this category
  - Responsibility of the Digital Ground Cert WG

New Process for Certification



- Prerequisite to enter interop testing
- Improved automated sw tool
- Self run by vendors
- Outputs “pass” result

- Fully automated, lab run
- 3rd Party Certified Interoperability
- Certified logo issued if device passes

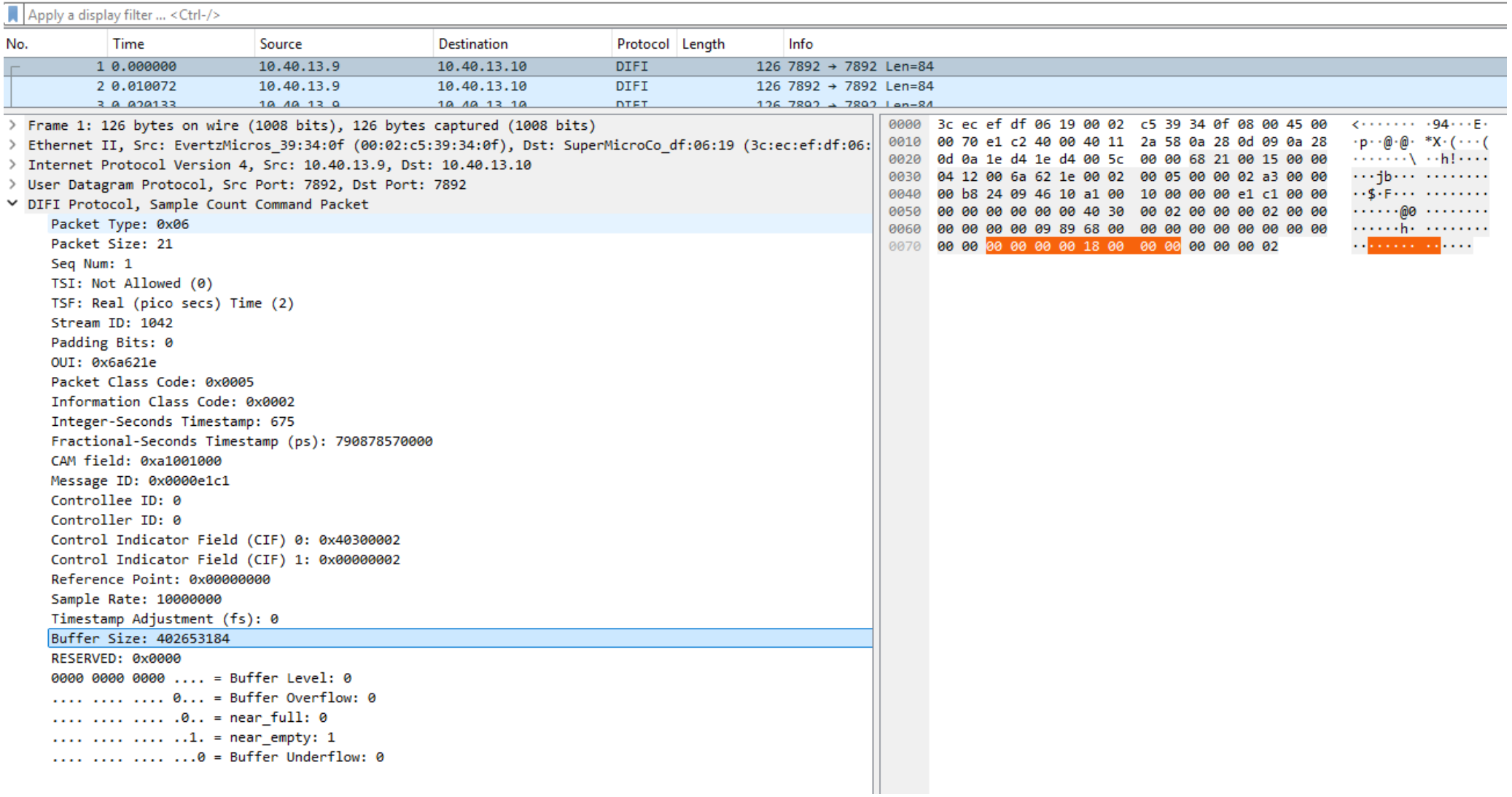
Specification Compliance

- Goal: verify packet formats and parameter ranges before Plugfest, Interoperability events
- Leverage open-source automated toolset
  - https://github.com/DIFI-Consortium
  - GnuRadio and Python tooling
  - Active development ongoing, feedback welcome
- Benefits of automation include speed, convenience, objectivity, and cost
- Pre-requisite of Interoperability Testing

GitHub: Automated Toolset

- GnuRadio
  - Added PN11 -> QPSK -> DIFI stream generation
  - Added DIFI -> QPSK -> PN11 stream consumption
  - YouTube tutorial (3min): https://youtu.be/fI38FmG3ySQ?si=v7DSX5F6zf-dNZPl
- Python
  - Used for specification compliance validation
  - Validation and stream generation/consumption
  - YouTube tutorial (9min): https://www.youtube.com/watch?v=5cDJKdRCMqI
- Wireshark Plugin
  - Available on GitHub
  - Very useful in DIFI PlugFest

Wireshark Plugin Example



Certified Interoperability

- Goal: verify interoperability between DIFI sources and sinks
- Testing performed by impartial 3rd party test lab to ensure confidence in the results
- Test per DIFI Profiles that reflect typical industry configurations
- Avoiding vendor lock-in is a primary driver

- Focus for launch: 3 devices, 1 profile
  - DIFI Modem
  - DIFI Spectrum Analyzer
  - IFC/RFC

DIFI CORE Profile

- Definition (not exhaustive)
  - Information Class 0x0
  - Real time time stamp format
  - Sample Rate - 20 Msamp/sec
  - Bit Depth - 8 bits per sample
  - Packet Size - 1500 byte MTU
  - Timestamp & Emission: NTR
  - Context packet rate: 10/sec
- Launch the interoperability program with DIFI Core
- Establishes the basis of our interoperability program

Update from PlugFest (Oct 2026)

- ~20 vendors with ~30 devices interoperated using the DIFI CORE profile, 100% of attendees
- All attendees who wanted to run through draft certification procedures were able to do so
- Strong momentum behind this approach
- Moving towards Q1 launch of 3rd party interoperability certification program

Future Profiles

- Certification WG considering a roadmap of additional Profiles that are important to DIFI's market and constituencies
- Examples of optional additional Profiles currently under discussion in the Cert WG
  - High Rate Profile
  - Flow Control Profile
  - Cloud Timing/Sample Rate Profile
  - Link Establishment Profile
- Profiles are member driven. Any DIFI Member can start an effort to create a new profile for consideration on the roadmap
- Profiles will be judged by factors such as 1) market need 2) level of member support 3) level of member readiness

Certificate Mockup

- Modified “DIFI Certified” logo but still mock up. Real logo artwork to come.
- Basic information about product that has been certified

- Profiles this product has been certified for with some details of each profile
- DIFI Core is always required; others are optional

Certified Interoperability

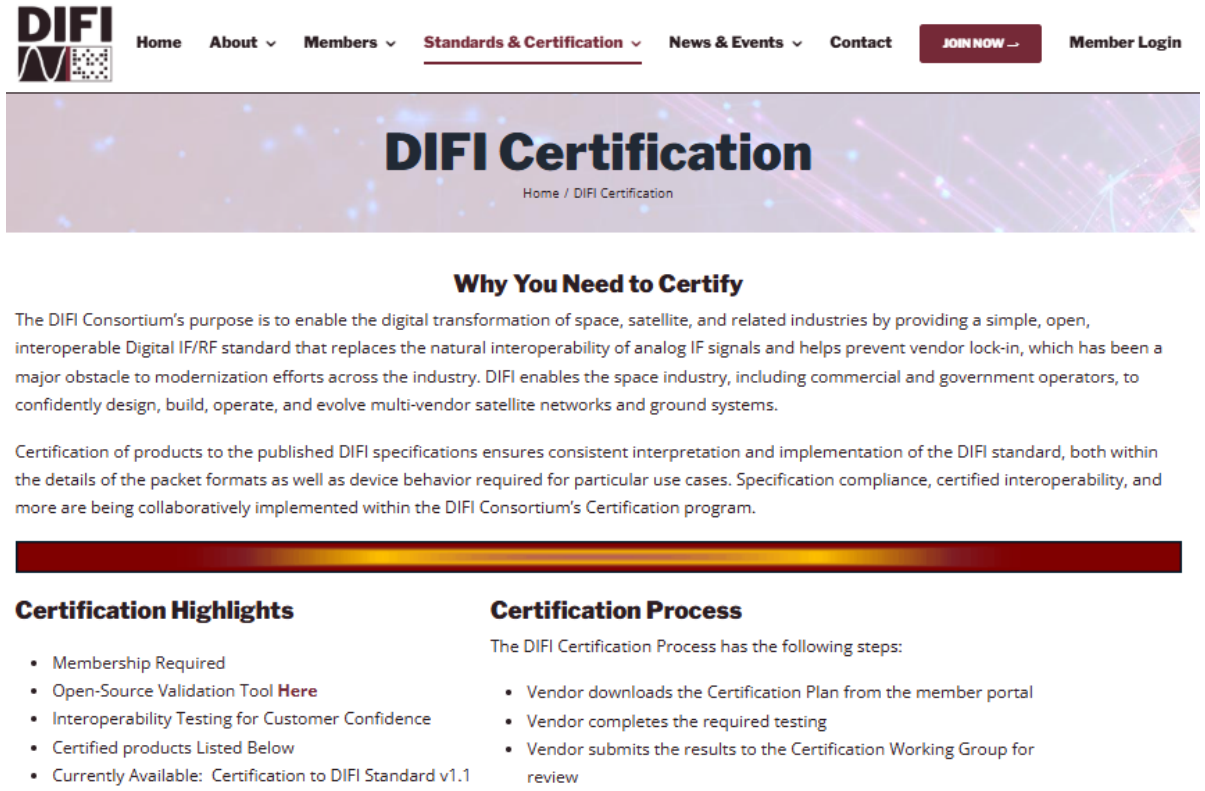
- The “DIFI Certified” brand and logo deliver on the promise of interoperability among DIFI products from the very first release and into the future.
- DIFI Certified will always mean something useful for pairing DIFI products together from different vendors
- Buyers will know they get true interoperability by selecting products that have been DIFI Certified and bear the DIFI Certified logo
- More advanced buyers looking for specific functionality need only check a product’s certificate for certification to the relevant profile, e.g., DIFI Link Establishment
  - In future, we can make this database searchable

Performance Testing

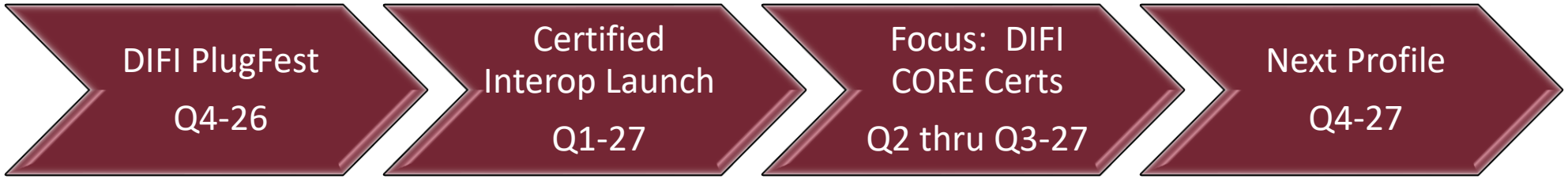
- Not covered by the Certification WG, and not part of Certified Interoperability testing
- Discussed within Digital Ground Cert WG

DIFI Website – Certification Page

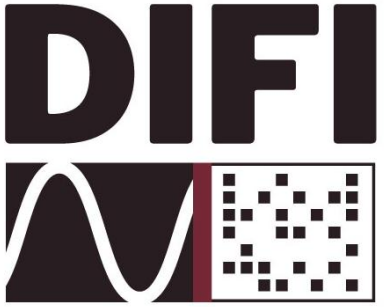
- https://dificonsortium.org/difi-certification-why-certify/
- General information about the Certification Plan and Process
- Product lookup for certification status



DIFI Certification WG Roadmap



Certification WG – Get Involved

- Monthly meetings on first Tuesday of the month
- Active GitHub repo for specification compliance
  - GnuRadio
  - Python parser and generator for spec compliance
  - Wireshark .lua file for displaying DIFI packets in a human-friendly way
- Discussions ongoing wrt Certified Interoperability

Thank You