

OPEN OPTICAL & PACKET TRANSPORT PROJECT GROUP CHARTER

This Project Group Charter establishes the objectives, scope, intellectual property rights policies and agreements applicable to the Deliverables identified in this Project Group Charter. Only Participants who agree to the terms of this Project Group Charter are permitted to participate in this Project Group.

Access to the PG, its draft and final Deliverables, meetings, etc. and permission to use it are offered by TIP to any TIP Participant who agrees to the terms of this Charter. You agree that you will not share any Contributions of other PG members, or any draft or final PG Deliverables with any party who is not a member of this PG.

TIP Board of Directors Approval Date: August 7, 2024

Project Group Charter Effective Date: October 5, 2024

1. Project Group Name

OPEN OPTICAL & PACKET TRANSPORT (OOPT)

2. Objectives

TIP's Open Optical and Packet Transport (OOPT) project group is a mature and consolidated community of industrial partners collaborating into various open and disaggregated transport technologies including, but not limited to, Optical Dense Wavelength Division Multiplexing (DWDM) and IP routing from Access to Core and Peering technologies, SDN Management and Optical Planning. The mission of the project is to trigger technology innovation, and expand supply chain flexibility into the transport networks segment by introducing open technical requirements of disaggregated products to the market which can be adopted by the industry and consumed at scale.



The OOPT PG intends to enable open networks driven by open and standard APIs where multi-vendor solutions can be technically realizable, certifiable, simple to operate, and cost-competitive compared with traditionally vertically integrated transport network architectures.

The project group was started in 2016 and since then multiple achievements have been reached such as the definition and productization of TIP's Disaggregated Cell Site Gateways which are deployed at scale nowadays, the definition of more than 20 open technical requirement documents across the different technologies, the launch of the TIP Test and Validation and Badging program with more than 35 products/solutions certified at different stages.

3. Project Group Scope

OOPT Scope includes the complete lifecycle design of new open and disaggregated transport technologies in optical DWDM and IP Transport segments and their management.

The General lifecycle of a product or solution from inception to market includes the following milestones closely mapped to TIP PG procedures (see here):

- Definition of the product/solutions' architectures and use cases.
- Modelling Technical Requirements, typically sustained by already defined and mature open and standard protocols and management interfaces.
- Evaluation of GA products and solutions in the market supplied by vendors and system integrators part of the OOPT community. Definition of common detail requirements and allocation criteria for analogous evaluations.
- Standards contributions and industrial technical papers. The community members can contribute industrial target technical papers and targeted standards' contributions to be discussed and contributed by the community. This collaborative approach benefits members with valuable community feedback, OOPT is a vibrant space for debate and discussion which allows different players, including vendors and operators, to align in the early-stage phases of a new technology.

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- Define the Test and Validation strategies against the product's test plan requirements defined and approved by the TIP Test and Validation Committee.
- Commercial deployments. Support operators and vendors with previous testing experience (test plans and test reports) and deployment cookbooks, all information sharing to be done in line with TIP Bylaws and Antitrust Guidelines.

The technology streams which OOPT is covering are:

- IP Transport Disaggregated Open Routers – Including Disaggregated Cell Site Gateways, Aggregation routers, Distributed Core and Peering routers.
- DWDM Open Optical Transport Disaggregated Systems – Including open and disaggregated packet/optical transponders such as Cassini or Phoenix, with different combinations of L2, L1 and L0 capabilities and potentially in Open Line Systems technical requirements and individual components such Amplifiers or Reconfigurable Optical Add/Drop Multiplexers .
- Open SDN Architecture based on Standard APIs – An important target of the community is to define an open SDN architecture based on Standard and Open APIs that fosters transport disaggregation from the management and control plane perspective. The scope of this stream is both Optical and IP, but also spans to Microwave Transport and Service Orchestration.
- Open Optical Planning, Physical Impairment Simulation and Validation – Vendor agnostic impairment validation is one of the key technology enablers of the disaggregation of the optical transport network. In this scope, OOPT fosters open-source optical planning and physical impairment solutions which will help the industry to evolve into breaking monolithic systems to enable multi-vendor interoperability.
- Convergent IP and Optical integration – OOPT community is highly focused on new technology innovations and there is space for early-stage proof of concepts of new open and disaggregated architectures such as IPoDWDM capable routers and convergent multi-layer SDN architectures.

4. Project Group Deliverables

TIP OOPT may develop up to four types of Deliverables:

- Documents (includes Use Case Definition documents, Technical Requirements Documents, Industrial White Papers);
- Test Materials (Test Plans, Test Scripts, Exit Reports, etc.);
- Software

The applicable policies or agreements are specified in the table below along with any procedures for approval and/or release of each Deliverable the Project Group intends to develop.

Contributions to Deliverables, the approval process and any license to use the Deliverable upon its finalization are governed by TIP's Organizational Documents which may be accessed [here](#). The IPR policies and agreements referenced below are TIP Organizational Documents unless otherwise specified and attached to this Charter.

Project Group Deliverables

The PG will develop the types of Deliverables selected below. Creation of and contributions to Draft Deliverables, as well as approval of Final Deliverables is subject to the PG Procedures. The IPR treatment for all Deliverables is set forth in the TIP Intellectual Property Policy, as revised from time-to-time by action of the Board, and other of TIP's Organizational Documents, as applicable.

Deliverable	OOPT Subgroup	Approval Procedures¹
Use Cases Definition Documents	MUST, DOS, MANTRA, DOR, PSE	Versions by consensus of the PG. Final approval by TC.
Industrial technical papers	MUST, DOS, MANTRA, DOR, PSE	Versions by consensus of the PG. Final approval by TC.
Technical Requirement Documents (TRD)	MUST, DOS, MANTRA, DOR	Versions by consensus of the PG. Final approval by TC.
Detail Technical Requirement Documents (dTRD)	MUST, DOS, MANTRA, DOR	Versions by consensus of the PG. Final approval by TC.

¹ Updates and revisions to Deliverable approval pursuant to TIP policies and procedures are administrative, non-substantive, and do not trigger TIP's Charter Revision Policy.

Test Plans	MUST, DOS, MANTRA, DOR	Versions by consensus of the PG. Final approval by TVC.
Exit Reports	MUST, DOS, MANTRA, DOR	Versions by consensus of the PG.
Open-Source Software Releases	PSE, NOS, MUST	Versions by consensus of the PG. Final approval by TC.

Deliverables categorized as “Software” are subject to the additional provisions set forth in Exhibit A.

5. Project Group Leadership & Structure

OOPT will have at least 2 and up to 5 designated Chairs/Co-Chairs to oversee and guide general PG activities. Additionally, upon the creation of a sub-group, individual sub-group leads/co-leads will be designated to guide the activities of the sub-group, reporting upwards into the larger PG.

The group will be initially composed of the following 5 Subgroups. Each Subgroup is governed by its own Charter, which describes the Deliverables, Leadership, participation criteria, etc., for that specific Subgroup.

- Mandatory Use Cases for SDN Transport (MUST)
- Metaverse Ready Architectures for Transport Networks (MANTRA)
- Disaggregated Open Routers (DOR)
- Disaggregated Optical Systems (DOS)
- Physical Simulation Environment (PSE)

Subject to TIP Board and Technical Committee approval, additional subgroups may be created to address new technology and market developments arising within the Scope of the Project Group.

OOPT PG structure

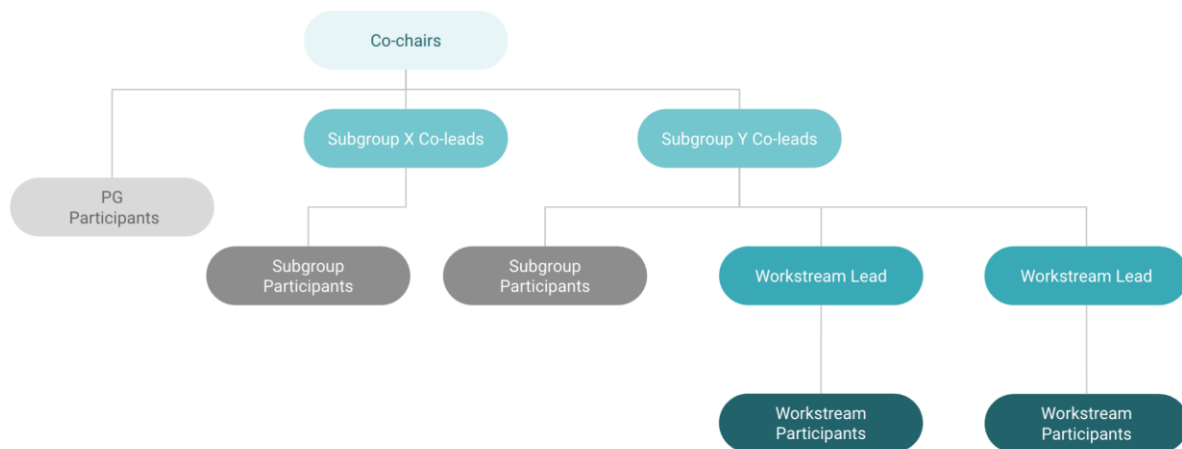


Figure 1. Open Optical & Packet PG structure.

The OOPT structure is illustrated in Figure 1, the activity of the PG is developed within the subgroups which in turn may (it is worth to remark that the composition of workstreams are optional within a subgroup) have dedicated workstreams that focus on the development of specific deliverables or the evaluation of test and validation activities.

PG Co-chairs and subgroup co-leads are expected to follow the guidelines and procedures defined in the general TIP PG Procedures document available here, and the Co-Chair and Co-Lead Training document available here.

5.1. Subgroup workstreams composition, governance and participation rules

1. A Subgroup member can submit to the subgroup leadership a new workstream item proposal.
2. A workstream item proposal shall contain the following information:
 - **Scope** - Definition of the technical problem that is going to be addressed by the workstream.
 - **Deliverables** - Set of deliverables which will be the target outcome of the workstream collaboration.
 - **Collaboration framework**

- The workstream item proposal shall contain the list of initial subgroup members who support the proposal and who are willing to participate.
 - The proposal shall include a target Workstream Leader. If it is foreseen that this role will be rotating from the members of the workstream group, the procedure shall be specified in the proposal.
 - Additionally, the proposal may include a set of restriction rules for participants to join the activity. These restrictions shall be approved by the subgroup leadership and eventually the PG co-chairs and must be according to TIP Bylaws and Antitrust Guidelines.
 - **Timeline** - Expected timeline for the activities to be carried out in the workstream.
 - **Roadmap** - Project plan with the proposed deliverables/milestones and the roadmap to develop them.
3. The workstream item proposals' scope and deliverables must be aligned with the PG and SG charters and compliant with TIP Bylaws and Antitrust Guidelines.
 4. The workstream item proposals are reviewed by the Subgroup leads and OOPT Co-chairs before sending them to the TIP Technical Committee for approval. Eventually, the new approved work streams shall be reflected in the Subgroup charter.

5.2. Subgroup's Authorized T&V Reviewer workstreams

The T&V activities are considered confidentially sensitive activities since they involve the review and evaluation of PG member's confidential technical information such as:

- **Evaluation of Statements of Compliance (SoC)** to existing detail technical requirement document (dTRDs) defined by the PG for the awarding of the TIP Bronze Badges. In this case, the awarding decision is taken by the PG leadership, while the TVC supervises it.

- **Evaluation of the test reports** submitted when a Silver or Gold Badges candidate products/solutions submit the test results to TIP for the approval of the Silver and/or Gold Badges. In this case, the PG leadership recommended the awarding, but the ultimate decision was taken by the TVC.

The PG leadership, represented by the PG Co-chairs and the Subgroup leads, can authorize/delegate the execution of T&V activities, such as TIP Bronze Badges requirements compliance evaluations or the review of Test Reports of candidate Silver or Gold Badges lab or field trials executions, to an **“Authorized T&V Reviewer workstream”**. The Authorized T&V Reviewer workstream may consist of:

- Delegated members of the companies represented in the SG leadership.
- Specific/relevant members of the subgroup qualified and approved by the SG and PG leadership.

The conformance of an Authorized T&V Reviewer workstream follows the same rules of any other workstream item proposal, with the difference that participation is restricted to the nominated members by the Subgroup Leads.

- Alternatively, an existing workstream within the Subgroup can become an Authorized T&V Reviewer workstream by the PG leadership for a given set of deliverables' responses review such as dTRDs and/or Test Plans.
- All recommendations of a badge approval or rejection shall be supervised by the PG leadership, including the PG co-chairs and the SG leads.

6. Participation Criteria

Eligible participants in OOPT PG and all its subgroups are Sponsor and/or General Participants who are in good financial standing within TIP, and who have not opted out of participation in the OOPT PG.

7. Charter Update

This Project Group Charter will be updated to reflect any changes as set forth in the Project Group Charter Revision Policy which may be accessed [here](#).

8. Collaboration and Cooperation:

OOPT intends to collaborate with the following project groups:

- Fixed Broadband PG - the two project groups share some technology areas such as the Broadband Network Gateway (BNG) functions which can benefit from a fluid share of information between project groups. The collaboration areas include the definition of project deliverables and sharing space in industrial conferences such as FYUZ.

In addition, OOPT will leverage existing network standards and infrastructure, as appropriate, from other industry groups such as:

- Open Interworking Forum (OIF) - <https://www.oiforum.com/>
- Linux Foundation (LF)
- IOWN Global Forum
- IETF
- ETSI

And other open-source projects or

- OpenROADM
- OpenZR+
- OpenConfig

9 PG Procedures

The Open Optical & Packet Transport PG complies with and follows the TIP PG Procedures, as may be amended or revised from time-to-time

Exhibit A Provisions Applicable to PG's Developing Software

Definitions

Capitalized terms not defined below that are used in this Exhibit A have the meaning assigned to them in the PG Charter or TIP's Organizational Documents.

Contributor: Any PG Participant making a Contribution to a PG Deliverable designated as "Software" in the PG Charter.

Open Source Project Governance

The Project Group or the Subgroup will select members to form the Project Steering Committee (PSC), the PSC will decide, based on consensus, on the day-to-day operation of the SW project including:

- Define roles & responsibilities (SW contributors / maintainers)
- Software development process
- Code contribution process

PSC guidelines:

- Any member of the OOPT PG is eligible for the PSC
- PSC members will be selected once a year by a vote of the community
- The PSC will consist of a stable number from 4 to 7 selected members of the open source community which are members of the sponsor subgroup.
- PSC defined process, decisions & meeting notes will be published to the community (foster transparency)
- All existing TIP bylaws and policies supersede anything within this document.

Software Maintainer Responsibilities

The Maintainer, according to the Telecom Infra Project IPR Policy, has the following responsibilities:

- The Maintainer will coordinate the Contributions of Contributors (including accepting or rejecting proposed Contributions), the hosting of the software project, and handling of pull requests in accordance with the then-current TIP Guidelines for Maintainers for TIP Software Projects
- The Maintainer will determine practices for releases of updates subject to approval by the Board of Directors or an Administrative Committee formed in accordance with the TIP Bylaws

If the Maintainer resigns or is removed, the Board, based on recommendation of the PG Leadership or proposal by a Sponsor, will appoint a new Maintainer. The Board may remove a Maintainer by majority vote in accordance with the Bylaws.

The Maintainer has the additional responsibilities described in this Charter and as may be delegated to him or her from time to time by the TIP Board of Directors, or PG Leadership with approval of the Board, including:

- Ensuring that all Contributors' Authorized Representatives have executed the TIP Software Contribution and License Agreement
- Tracking all Contributions submitted including the date of submission, the entity responsible for the submission, and whether the Contribution was accepted, with or without modification, or rejected
- Appointing and managing Committers, if any, in accordance with the then-current TIP Guidelines for Maintainers for TIP Software Projects
- Coordinating with TIP Legal to ensure compliance with all third-party software licenses including free and/or open-source software licenses, as necessary
- Ensuring TIP Software Projects are maintained and reside in TIP-approved repositories.

Services Provided by TIP

- Github code repository

Software License Terms

The license terms applicable to the Software Project shall be as follows:

- Limited copyright-only license as approved by the TIP Board of Directors.
- Standard 3-clause BSD License.
- BSD License plus patent grant.

A copy of the complete license for the Project is attached hereto as Schedule 1 (the "**Project License**").



Software Contribution Terms

Organizations and individuals participating in the OOPT PG are considered “Contributors” in the project as defined in the TIP software contribution and license agreement.

Contributions to the Software Project for must be made pursuant to the TIP Software Contribution and License Agreement (CLA)

Check here if Contributions must also be accompanied by the Developer Certificate of Origin as set forth in Annex B of the Telecom Infra Project IPR Policy