

IEEE 802.3 Beyond 10km Optical PHYs SG - Starting Point

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Agenda

- Approval of Agenda
- IEEE 802 Participation
- Pre-PAR Patent Policy
- Study Group Overview
 - Scope
 - Study Group Phase
 - Objectives Discussion
 - 5C Discussion
- Interaction with OIF 400ZR Project
 - Communication & Liaison
- Preparation for September Interim

Participation in IEEE 802 Meetings

Participation in any IEEE 802 meeting (Sponsor, Sponsor subgroup, Working Group, Working Group subgroup, etc.) is on an individual basis

- **Participants in the IEEE standards development individual process shall act based on their qualifications and experience. (https://standards.ieee.org/develop/policies/bylaws/sb_bylaws.pdf section 5.2.1)**
- **IEEE 802 Working Group membership is by individual; “Working Group members shall participate in the consensus process in a manner consistent with their professional expert opinion as individuals, and not as organizational representatives”. (subclause 4.2.1 “Establishment”, of the IEEE 802 LMSC Working Group Policies and Procedures)**
- **Participants have an obligation to act and vote as an individual and not under the direction of any other individual or group. A Participant’s obligation to act and vote as an individual applies in all cases, regardless of any external commitments, agreements, contracts, or orders.**
- **Participants shall not direct the actions or votes of any other member of an IEEE 802 Working Group or retaliate against any other member for their actions or votes within IEEE 802 Working Group meetings, see https://standards.ieee.org/develop/policies/bylaws/sb_bylaws.pdf section 5.2.1.3 and the IEEE 802 LMSC Working Group Policies and Procedures, subclause 3.4.1 “Chair”, list item x.**

By participating in IEEE 802 meetings, you accept these requirements. If you do not agree to these policies then you shall not participate.

(Latest revision of IEEE 802 LMSC Working Group Policies and Procedures: <http://www.ieee802.org/devdocs.shtml>)

Guidelines for IEEE-SA Meetings

- **All IEEE-SA standards meetings shall be conducted in compliance with all applicable laws, including antitrust and competition laws.**
- **Don't discuss the interpretation, validity, or essentiality of patents/patent claims.**
- **Don't discuss specific license rates, terms, or conditions.**
 - Relative costs, including licensing costs of essential patent claims, of different technical approaches may be discussed in standards development meetings.
 - Technical considerations remain primary focus
- **Don't discuss or engage in the fixing of product prices, allocation of customers, or division of sales markets.**
- **Don't discuss the status or substance of ongoing or threatened litigation.**
- **Don't be silent if inappropriate topics are discussed... do formally object.**

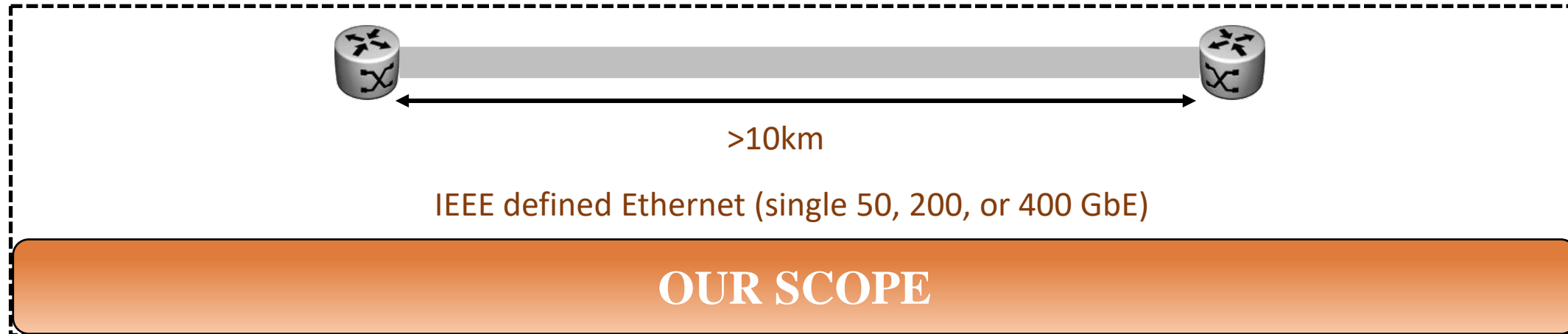
If you have questions, contact the IEEE-SA Standards Board Patent Committee Administrator at patcom@ieee.org or visit <http://standards.ieee.org/about/sasb/patcom/index.html>

See *IEEE-SA Standards Board Operations Manual*, clause 5.3.10 and “Promoting Competition and Innovation: What You Need to Know about the IEEE Standards Association's Antitrust and Competition Policy” for more details.

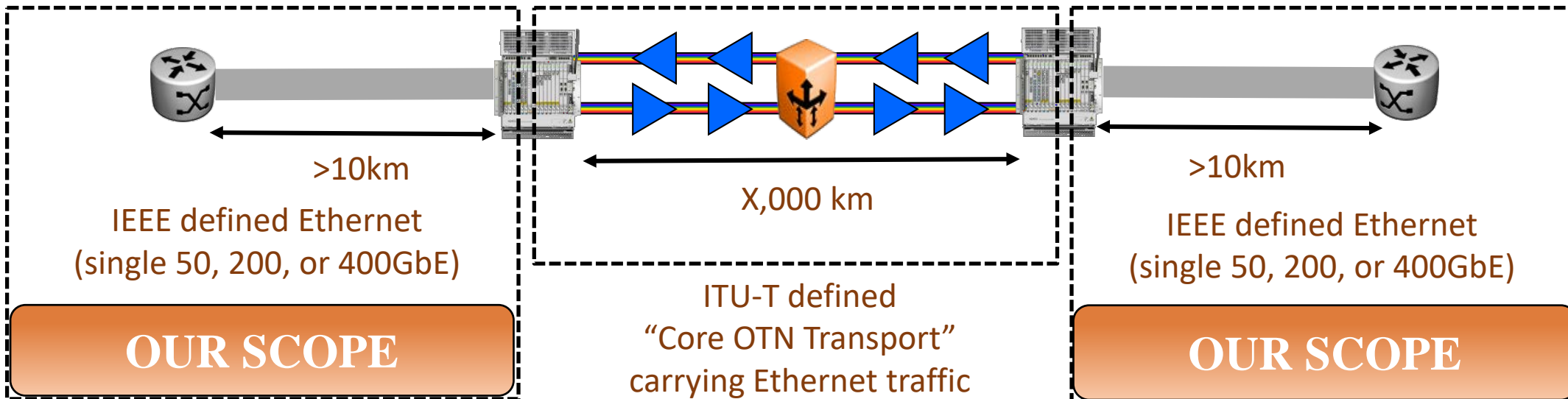
This slide set is available
at <https://development.standards.ieee.org/myproject/Public/mytools/mob/preparslides.ppt>

What Are We Talking About?

Scenario #1



Scenario #2



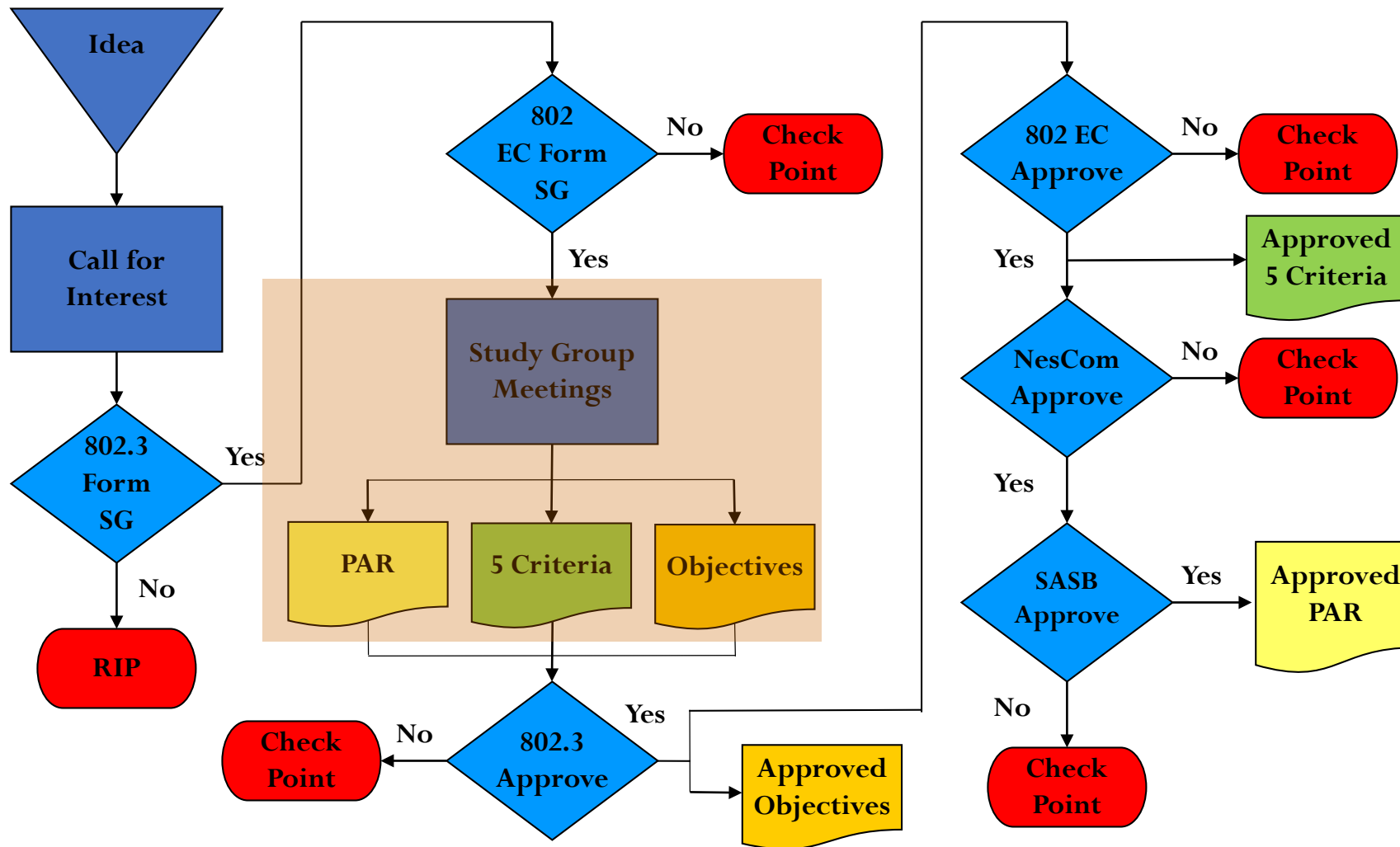
IEEE 802.3 Beyond 10km Optical PHYs SG Information

- John D'Ambrosia, Acting Chair
- Home Page - <http://www.ieee802.org/3/B10K/index.html>
- Reflector Information – <http://www.ieee802.org/3/B10K/reflector.html>

SG Chartering Motion

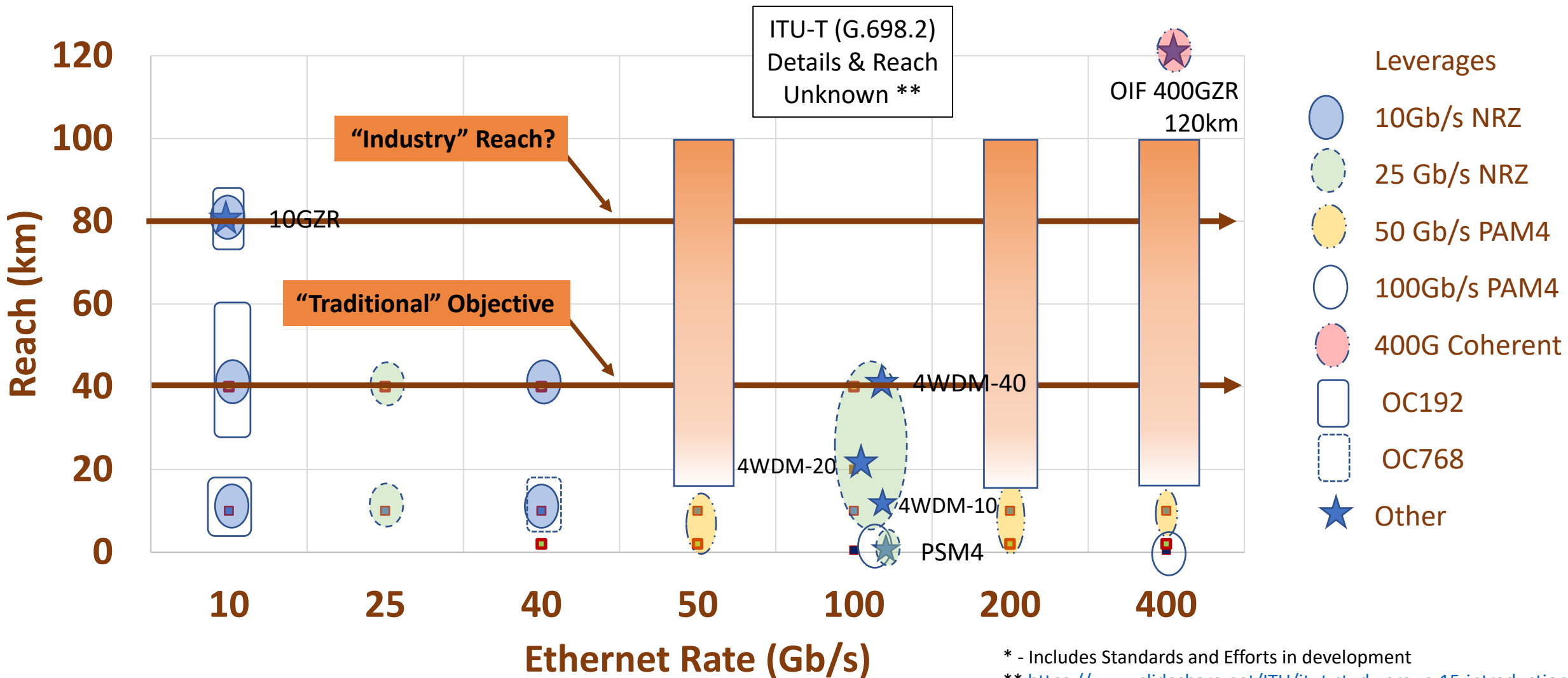
Move that the IEEE 802.3 Ethernet Working Group authorizes the formation of a study group to develop a Project Authorization Request (PAR) and Criteria for Standards Development (CSD) responses for “Beyond 10km Optical PHYs for 50 Gb/s, 200 Gb/s, and 400 Gb/s Ethernet”

Overview of IEEE 802.3 Standards Process (1/5)- Study Group Phase



Note: At "Check Point", either the activity is ended, or there may be various options that would allow reconsideration of the approval.

The SMF Optical Landscape *



* - Includes Standards and Efforts in development
 ** <https://www.slideshare.net/ITU/itut-study-group-15-introduction>.

Summary Observed Reaches - Telecom

Source		<2km	10km	40km	>40km	80km
China Mobile *	10GbE	0.3%	44.5%	44.1%	-	11.2%
	100GbE	0	56.4%	34.6%	-	9.0%
CAICT Aggregation Nodes ** (200GbE / 400GbE)	Province A	-	19.0%	77.5%	3.5%	-
	Province B	-	40.1%	54.5%	5.4%	-
	Province C	-	12.8%	77.6%	12.8%	-
	Province D	-	24%	69.9%	6.1%	-
LightCounting	10 GbE All	- ***	93%	5.4%	-	1.6%
	10 GbE Telecom	0	76%	17%	-	7%

Other Data?

* - Source: Huang/ Cheng, China Mobile, http://www.ieee802.org/3/ad_hoc/ngrates/public/16_07/huang_ecdc_01_0716.pdf

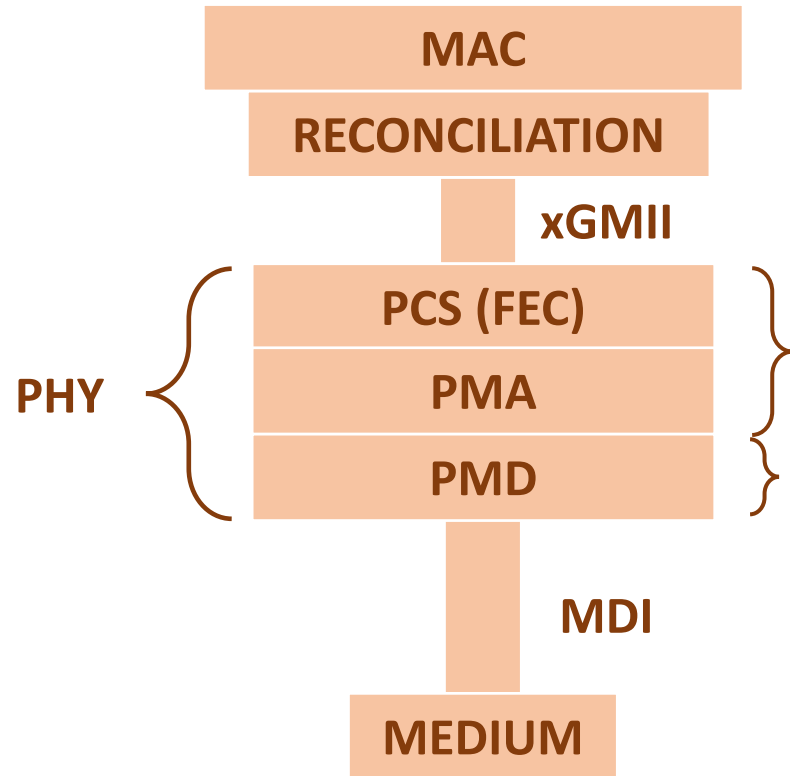
** - Source: Wenyu Zhao, CAICT < http://www.ieee802.org/3/ad_hoc/ngrates/public/16_07/zhao_ecdc_01_0716.pdf

*** - 10GLR "Subspec" volume not included for this analysis

5 Criteria – Must be addressed

- **Broad Market Potential**
 - Each proposed IEEE 802 LMSC standard shall have broad market potential. At a minimum, address the following areas:
 - a) Broad sets of applicability.
 - b) Multiple vendors and numerous users.
- **Compatibility**
 - Each proposed IEEE 802 LMSC standard should be in conformance with IEEE Std 802, IEEE 802.1AC, and IEEE 802.1Q. If any variances in conformance emerge, they shall be thoroughly disclosed and reviewed with IEEE 802.1 WG prior to submitting a PAR to the Sponsor.
 - a) Will the proposed standard comply with IEEE Std 802, IEEE Std 802.1AC and IEEE Std 802.1Q?
 - b) If the answer to a) is “no”, supply the response from the IEEE 802.1 WG.
 - c) Compatibility with IEEE Std 802.3
 - d) Conformance with the IEEE Std 802.3 MAC
 - e) Managed object definitions compatible with SNMP
- **Distinct Identity**
 - a) Each proposed IEEE 802 LMSC standard shall provide evidence of a distinct identity. Identify standards and standards projects with similar scopes and for each one describe why the proposed project is substantially different.
 - b) Substantially different from other IEEE 802.3 specifications / solutions.
- **Technical Feasibility**
 - Each proposed IEEE 802 LMSC standard shall provide evidence that the project is technically feasible within the time frame of the project. At a minimum, address the following items to demonstrate technical feasibility:
 - a) Demonstrated system feasibility.
 - b) Proven similar technology via testing, modeling, simulation, etc.
 - c) Confidence in reliability.
- **Economic Feasibility**
 - Each proposed IEEE 802 LMSC standard shall provide evidence of economic feasibility. Demonstrate, as far as can reasonably be estimated, the economic feasibility of the proposed project for its intended applications. Among the areas that may be addressed in the cost for performance analysis are the following:
 - a) Balanced costs (infrastructure versus attached stations).
 - b) Known cost factors.
 - c) Consideration of installation costs.
 - d) Consideration of operational costs (e.g., energy consumption).
 - e) Other areas, as appropriate.

Discussed Approaches



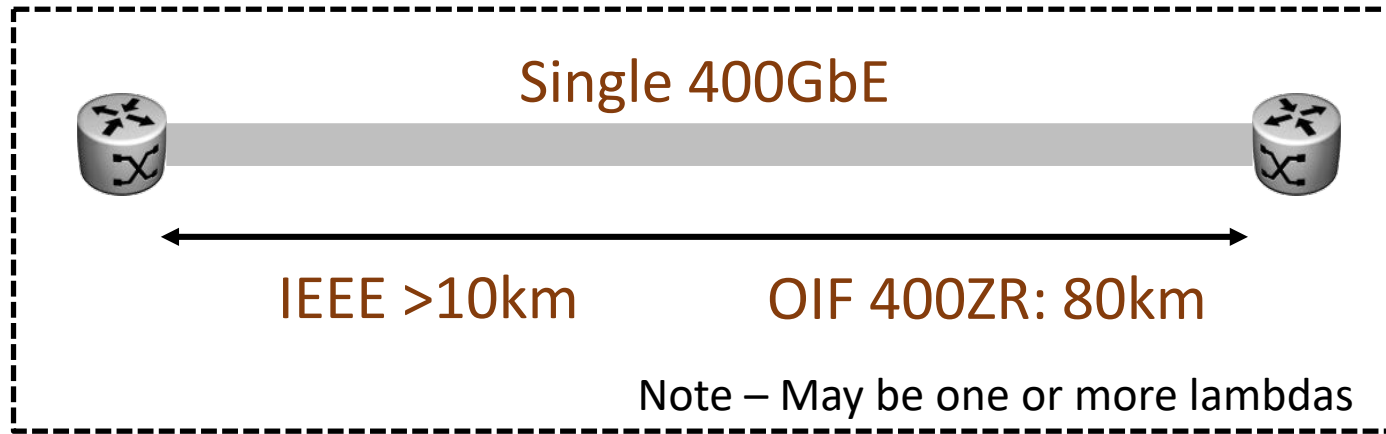
Approaches to Longer Reach

- Stronger FEC
- Improved Tx / Rx
- APD
- DSP
- Coherent
- Other (SOA,)

Technical Feasibility?

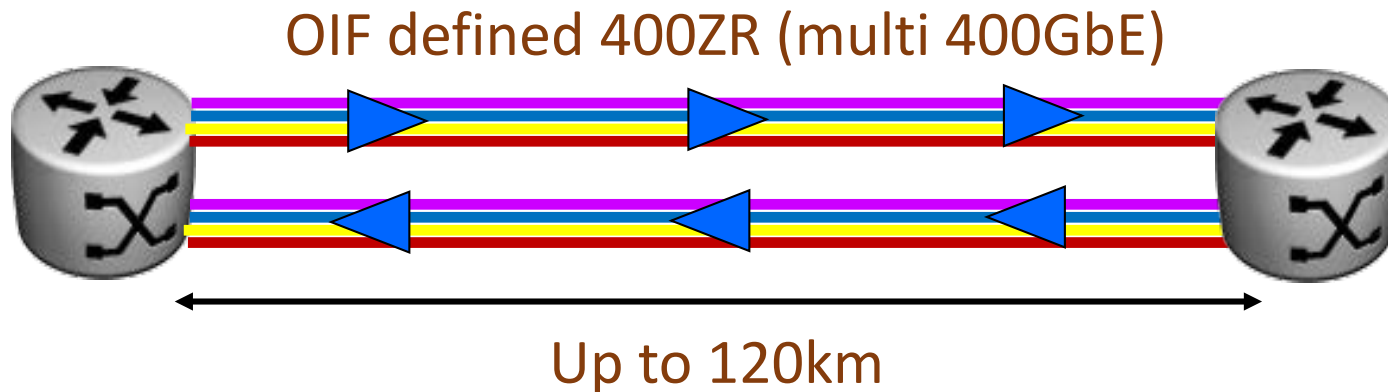
Economic Feasibility?

400GbE and Potential Relationship to OIF 400ZR Data Center Interconnect (DCI) Solution



Liaison & Communication Received –

- OIF – 400ZR Interop Project
 - [http://www.ieee802.org/3/minutes/sep17/incoming/OIF to IEEE 802d3 400ZR Aug 2017.pdf](http://www.ieee802.org/3/minutes/sep17/incoming/OIF_to_IEEE_802d3_400ZR_Aug_2017.pdf)
- Need to propose response for 802.3WG to consider @ Sept Interim



Preparation for September Interim

- Presentations
 - Objectives
 - What reaches @ what rates?
 - Other?
 - 5 Criteria Response
- Liaison Consideration