

IEEE 802.3 Beyond 10km Optical PHYs SG - The Path Forward

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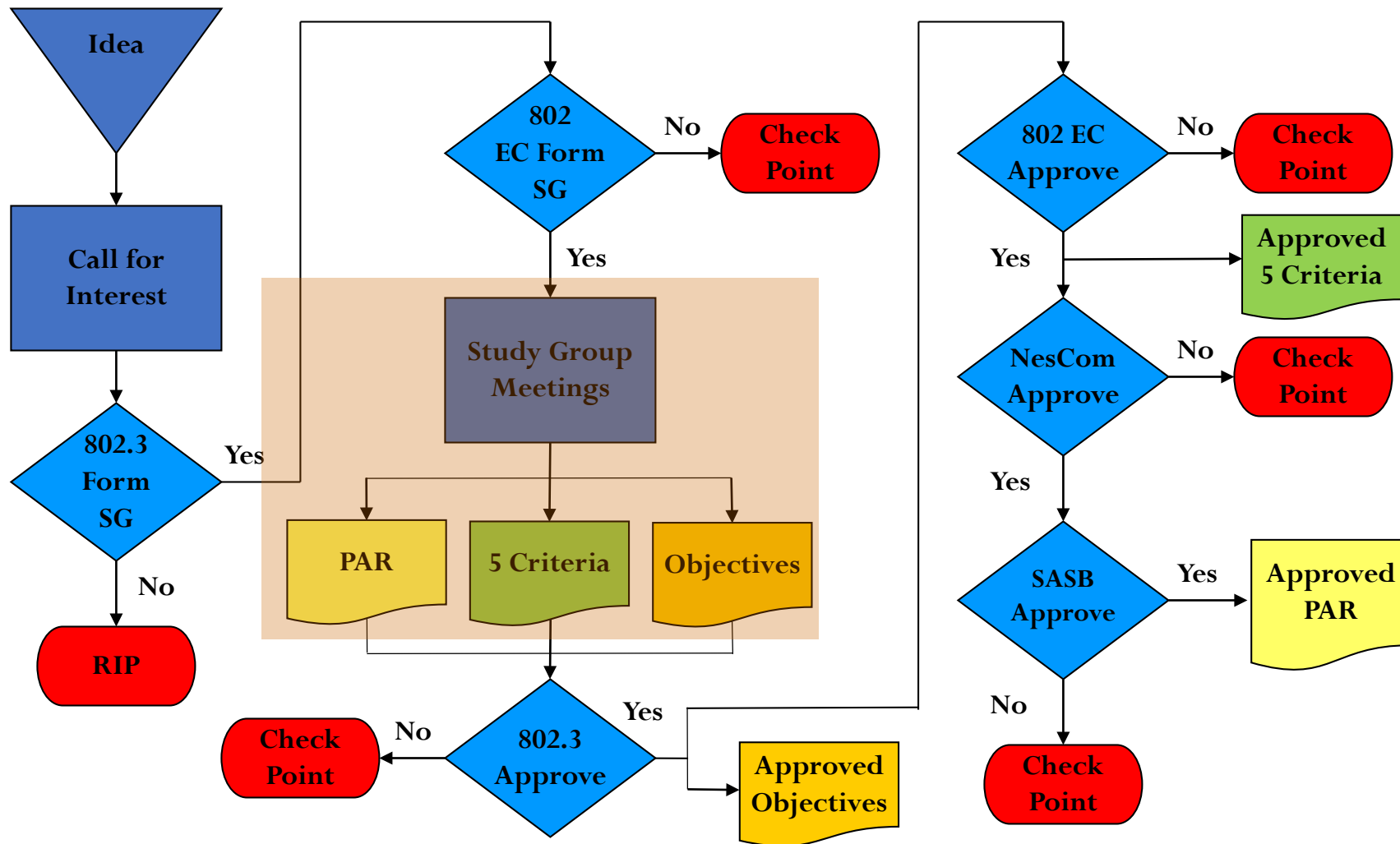
Foreword -

- Presentation is being given with my “Chair” hat on.
- We need to discuss the different options facing the study group and determine a course forward.
- None of this discussion should be interpreted as an endorsement of any objective or proposal by me.
- “100G Beyond 100km” is tentatively included in the discussion, recognizing that approval of the SG Scope change is pending CFI Results.

Study Group Chartering Motion

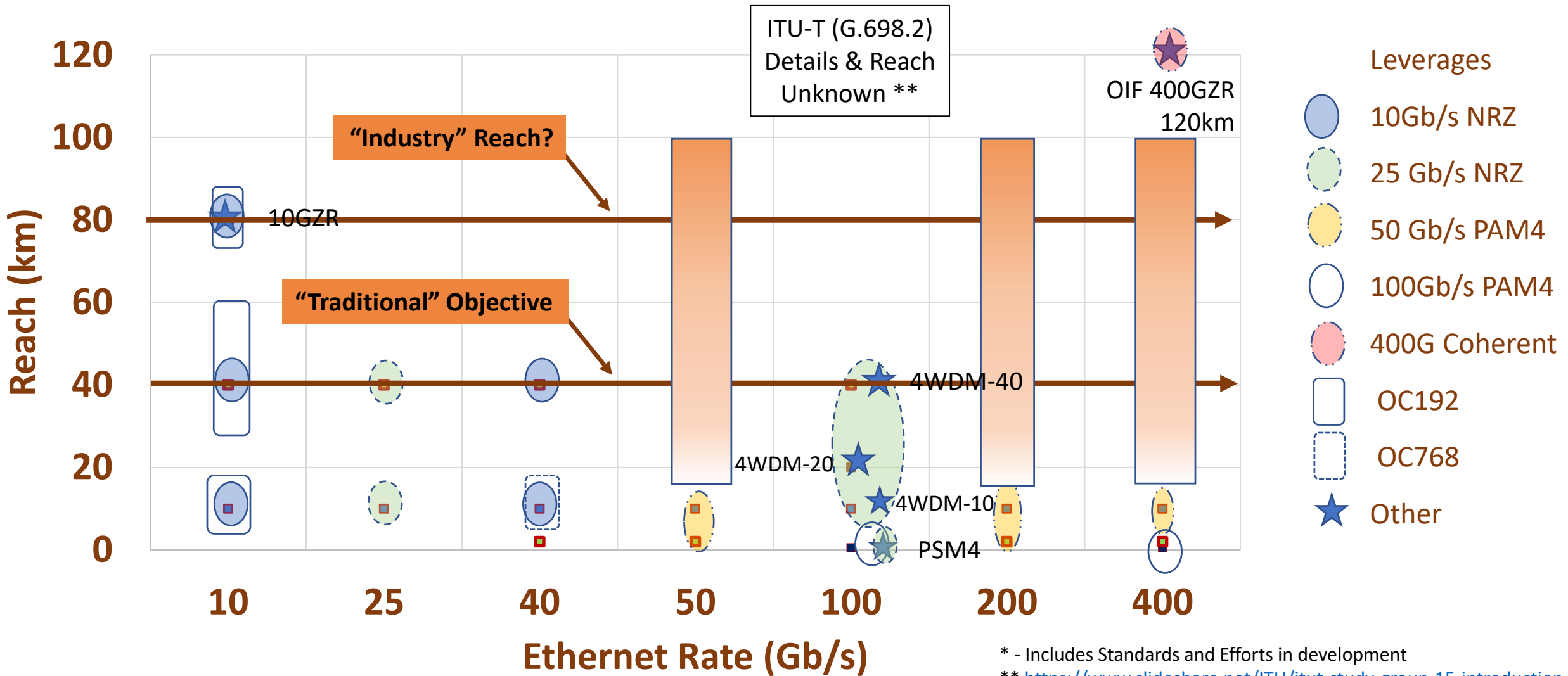
Move that the IEEE 802.3 Ethernet Working Group authorizes the formation of a study group to develop a Project Authorization Request (PAR) and Criteria for Standards Development (CSD) responses for “Beyond 10km Optical PHYs for 50 Gb/s, 200 Gb/s, and 400 Gb/s Ethernet”

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?

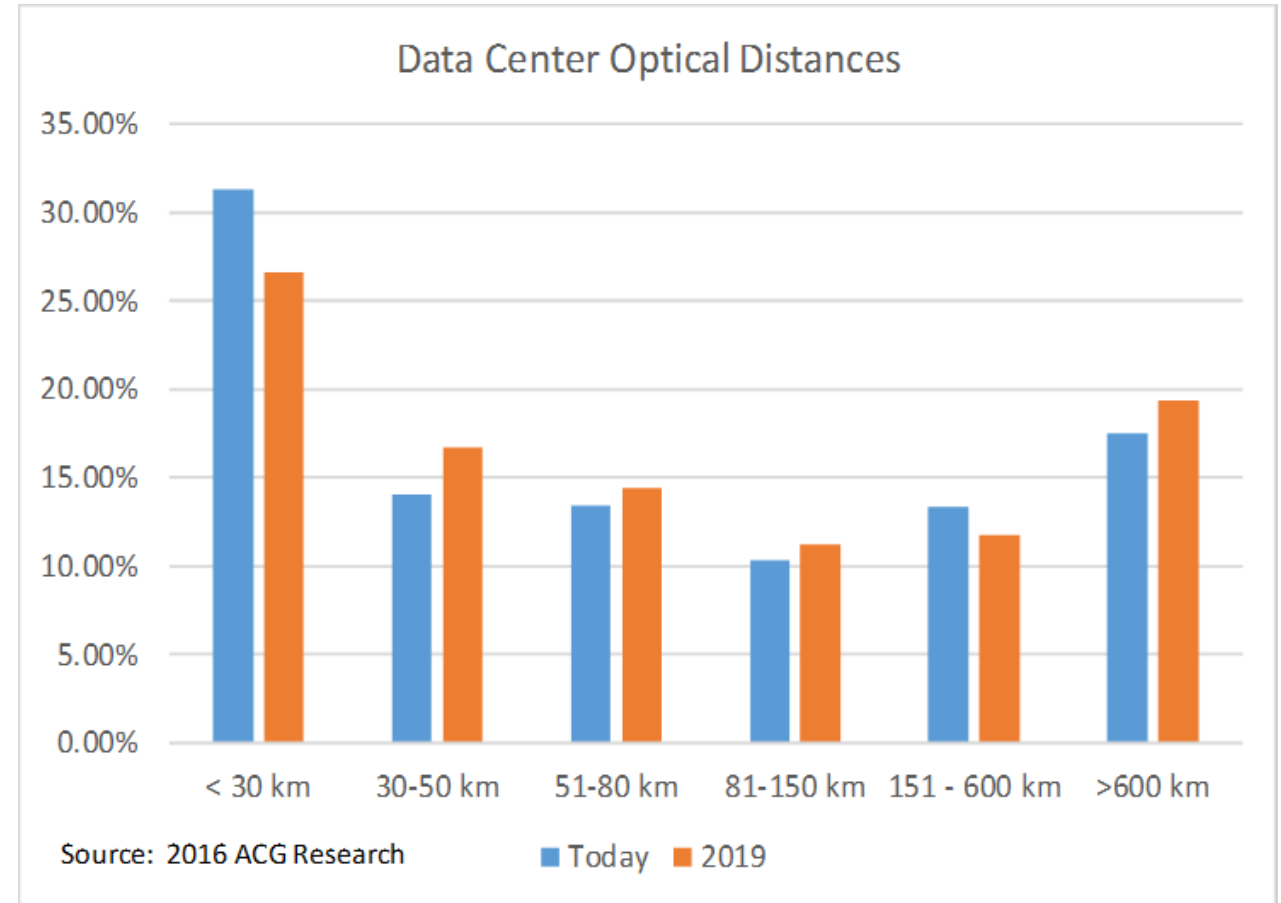
* - Source: Huang/ Cheng, China Mobile, http://www.ieee802.org/3/ad_hoc/ngrates/public/16_07/huang_ecdc_01_0716.pdf

** - 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

Reach

- Limited data
 - Only reach data for DCI (DWDM) obtained.
 - Per Robert Lingle, OFS – “Fiber is shipped in 5 to 6km reels. I have been unable to obtain any data that would help to determine specific link lengths.”
- New data?



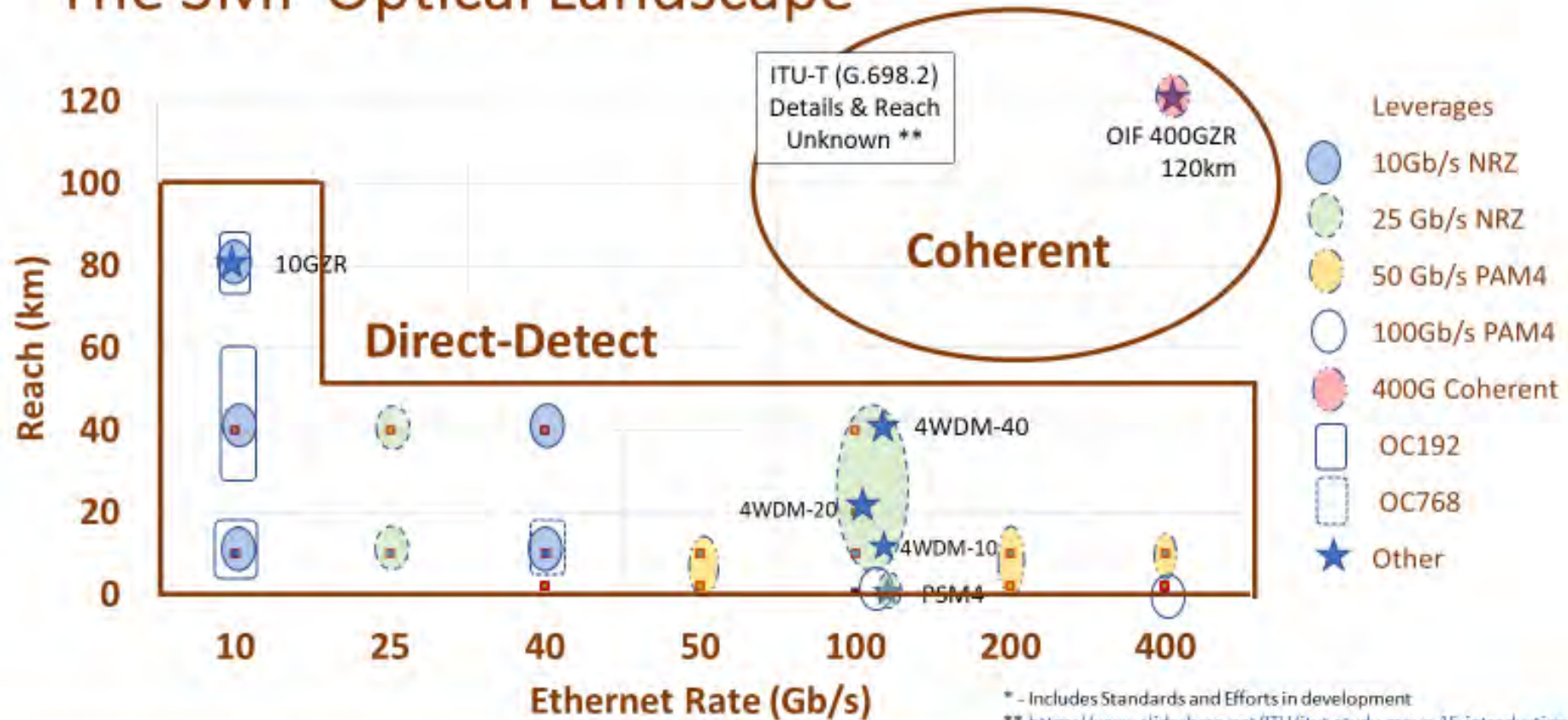
How do we determine objectives?

Where Does This Leave Us?

- Rate Objectives
 - 50GbE
 - 200GbE
 - 400GbE
- Reach Objectives
 - 40km?
 - 80km?
- Technology Choices
 - Direct Detect (PAM4, others?)
 - Coherent

From CFI Consensus Deck

The SMF Optical Landscape *



Observations

- Based on my discussions, there are individuals who believe
 - PAM4 solutions could address some possible objectives
 - Coherent solutions could address some possible objectives
 - Either PAM4 or coherent solutions could address the same possible objectives
- Technical analysis / decisions are necessary.

Starting the Technical Work

- Per IEEE 802.3 Operations Manual
 - Section 4.1 - The normal function of an IEEE 802.3 Study Group (SG) is to draft a complete PAR and responses to the Criteria for Standards Development (CSD) (see 4.5) and to gain approval for them at the WG, LMSC EC, IEEE-SA New Standards Committee (NesCom) and the IEEE Standards Board.
- The start of the project does not happen until the PAR has received approval by the IEEE-SA Standards Board.
 - This is when technical decisions can be made.

Moving Forward

- Develop Project Documentation for a single project for approval
- Technical analysis during Task Force will lead to resolution of choice of technologies for different objectives
- Re-evaluate technical choices / potential timelines / program structure / and consider breaking effort into multiple projects, if necessary
- If necessary, develop updated project documentation for multiple efforts

Beyond 10km for 100GbE

- Straw Poll #1
- I would support modifying the scope of the IEEE 802.3 Beyond 10km Optical PHYs Study Group to include 100Gb/s.
- Results Yes No Abstain
- Impact to Study Group 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, 100 Gb/s, 200 Gb/s, and 400 Gb/s Ethernet”