10GFC Draft Status

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January 16-18, 2002
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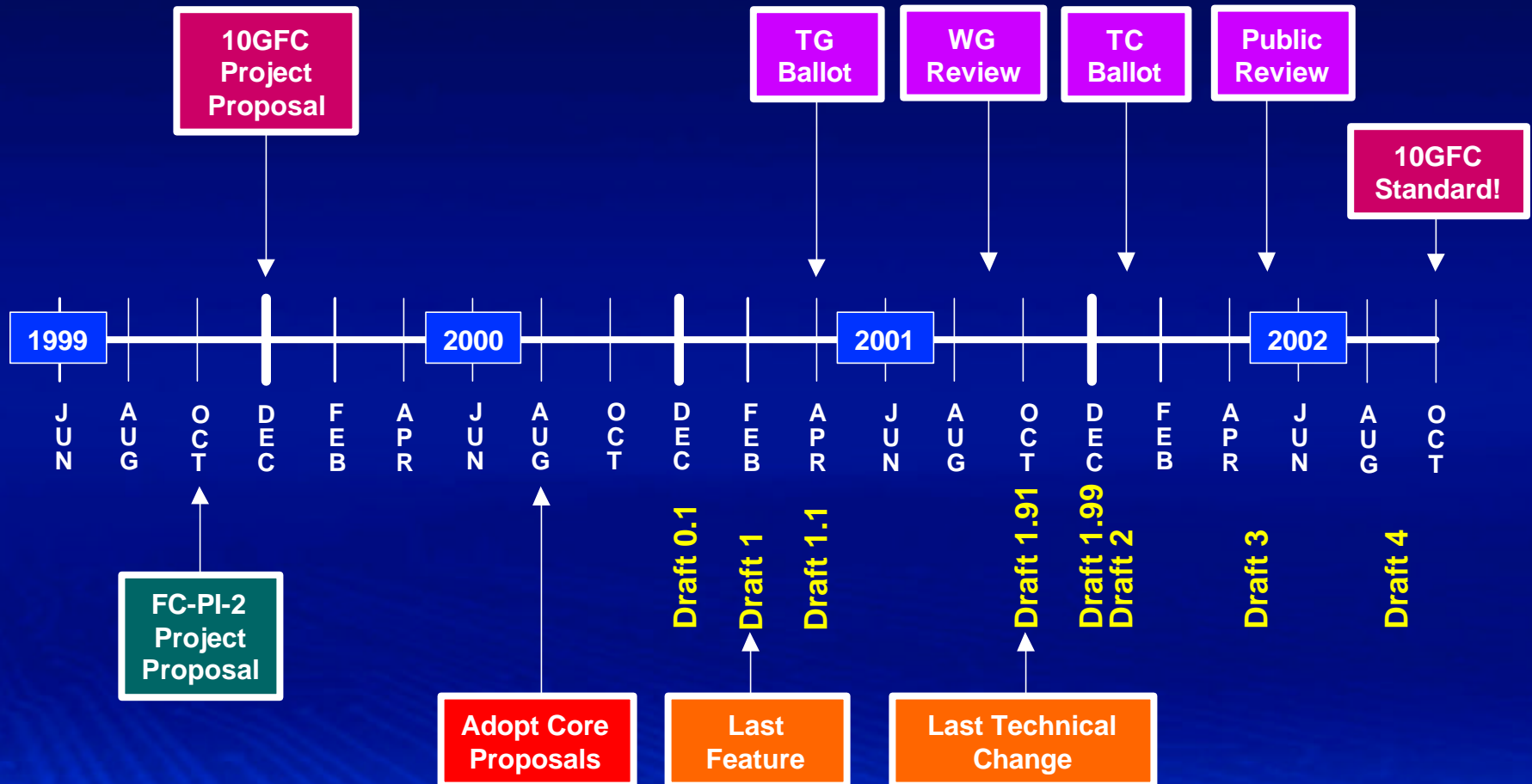
T11 – 10GFC Status

Current Draft Status

- **10GFC Draft 2.0 available: T11/01-099v5**
  - **Publicly available from www.t11.org**
- **Started T11 Letter Ballot on December 20, 2001**
- **Conclude T11 Letter Ballot on January 25, 2002**
- **Hold LB comment resolution sessions February through April, 2002**
- **December '02 T11 10GFC meeting progress**
  - **T11.2 motion deleted 4-Lane Copper PHY**
    - **10GFC 4-Lane Copper PHY to be developed in FC-PI-2**
  - **T11.3 motions deleted LSS and WIS**
    - **10GFC Normative Annex added to D2.0 to address requirements for direct mapping of 10GFC to SONET**

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10GFC Highlights

- **Target application: Storage Area Networks**
- **Initial usage: SAN inter-switch links**
  - **Similar to LAN inter-switch**
- **Synergy with 10GbE: Strong, Direct Reference**
  - **10GFC line rates = 10GbE + 2%**
  - **Corresponds to 12X Fibre Channel base rate**
    - **FC 1X legacy, 2X now shipping (2.125 GBaud/ 1.6 Gb/s)**
- **Other Differences:**
  - **Focus on short PMDs, smaller form factors**
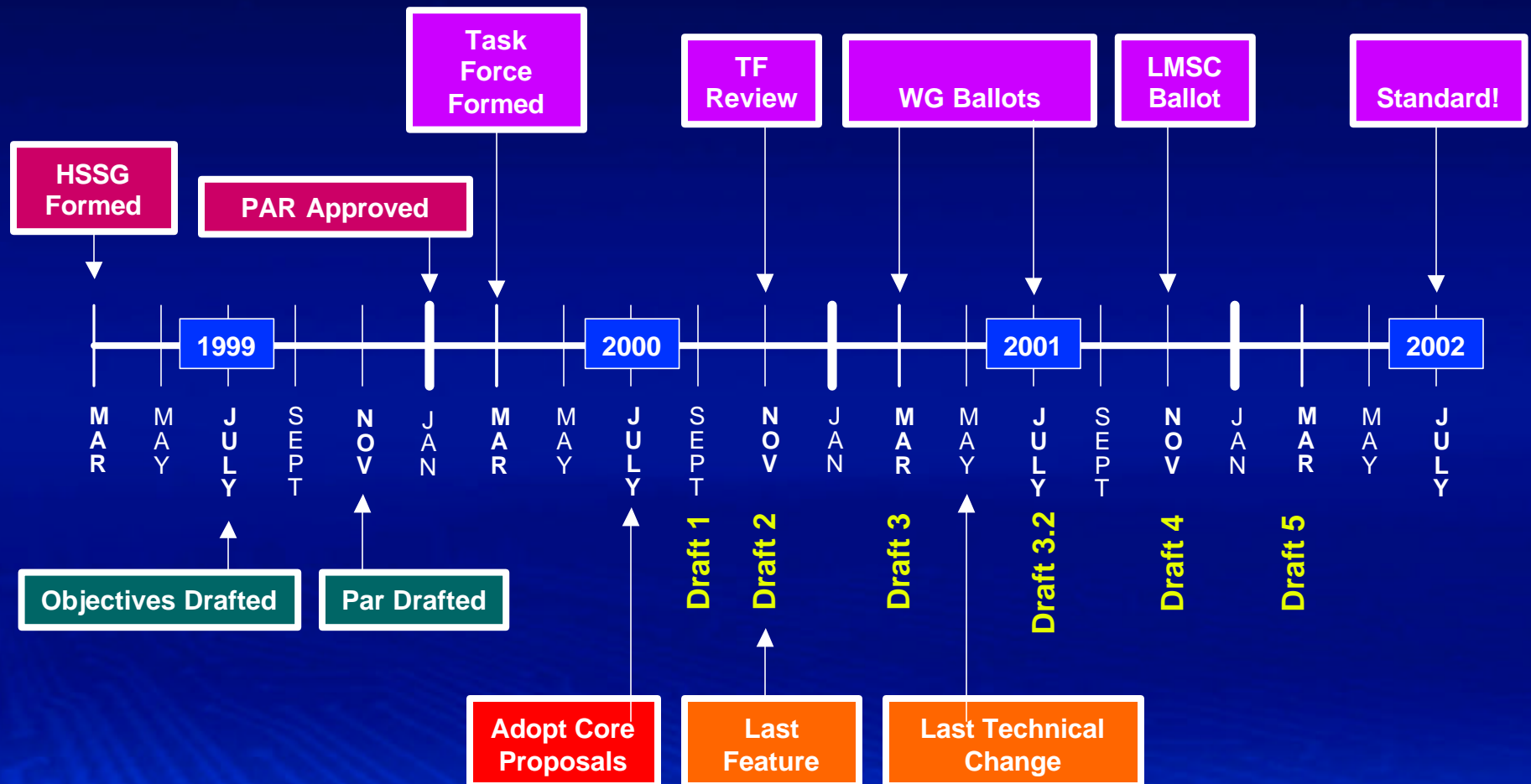 - **Adds 850 nm Parallel & CWDM PMDs**
  - **No 1550 nm PMDs**

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10GFC Standard Schedule

10GFC Project Proposal

TG Ballot

WG Review

TC Ballot

Public Review

10GFC Standard!

| 1999 | | | | | | 2000 | | | | | | 2001 | | | | | | 2002 | | |

J U N · A U G · O C T · D E C · F E B · A P R · J U N · A U G · O C T · D E C · F E B · A P R · J U N · A U G · O C T · D E C · F E B · A P R · J U N · A U G · O C T

FC-PI-2 Project Proposal

Draft 0.1

Draft 1

Draft 1.1

Draft 1.91

Draft 1.99 Draft 2

Draft 3

Draft 4

Adopt Core Proposals

Last Feature

Last Technical Change

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T11 – 10GFC Status

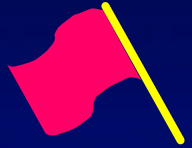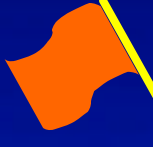# Backup

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T11 – 10GFC Status

10GFC Draft Status

- **Editor: Rich Taborek, Intel**
- **Co-Editor: Craig Stuber, JNI**
- **Clauses 1-5: Boilerplate, Overview: 10GFC Editors**
- **Clause 6: Optical Interface**
  - **Chief editor: 10GFC Editors**
    - **1310 nm Serial Subclause editor: Dave Kabal, Picolight, Primarily referenced to 10GE Clause 52, Good shape**
    - **1310 nm CWDM Subclause editor: Bill Wiedemann, Blaze, Primarily referenced to 10GE Clause 53, Good shape**
    - **850 nm Serial Subclause editor: Dave Kabal, Picolight, Primarily referenced to 10GE Clause 52, Good shape**
    - **850 nm CWDM Subclause editor: Bill Wiedemann, Blaze, Similar to 10GE Clause 53, Good shape**
    - **850 nm Parallel Subclause editor: Dubravko Babic, Alvesta; Tom Lindsay, Stratos Lightwave; Randy Clark, Agilent, Somewhat similar to 10GE Clause 53, Good shape**

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10GFC Clause Status

- **Clause 7: Optical Interface Receptacle, Good shape**
  - Clause editor: Kevin White, US Conec
  - Duplex receptacle: Direct references to FC-PI and FC-PI-2
  - Quad-Duplex receptacle: MPO

- **Clause 8: Optical Interface Cable Plant, Good shape**
  - Clause editor: Len Young, Corning
  - New Information in support of Clause 6 - Optical Interface

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10GFC Clause Status

- **Clause 9: Electrical Interface, Poor shape**
  - Clause editor: None
  - Electrical: No progress since D1.1 LB comments
  - Equalization: No progress since D1.1 LB comments
- **Clause 10: Electrical Connector and Cable, Fair shape**
  - Clause editor: Bob Thornton, Fujitsu; Ed Cady, Meritec
  - Connector: Good Shape, but only needed for Clause 9
  - Cable: No progress since D1.1 LB comments
- **Discussion at T11.2 Copper Working Group**
  - Straw Poll to retain and complete Clause 9: 3Y, 7N
  - Straw Poll to develop 10G 4-Lane Cu PHY in FC-PI-2: 17Y, 1N
- **Discussion at T11.2/T11.3 Joint Meeting**
  - Motion to delete electrical interface and electrical connector and cable (clause 9 and 10) from 10GFC document, and solicit proposals in FC-PI-2 for copper variants. Moved by Curt Ridgeway, seconded by Len Young. Results: 25Y, 0N, 6A

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10GFC T11.2 Copper Motion

- **Recommend to T11 to delete electrical interface and electrical connector and cable (clause 9 and 10) from 10GFC document, and solicit proposals in FC-PI-2 for copper variants.**

Motioner: Rich Taborek, Intel
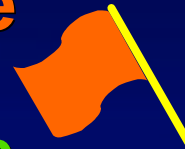
Second: Mike Jenkins, LSI Logic

Results: 20Y, 0N, 2A

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T11 – 10GFC Status

10GFC Clause Status

- **Clause 11: Ordered Sets, Good shape**
  - Clause editor: **Craig Stuber, JNI**
  - **FC-1 to 10GFC Primitive Mapping**
- **Clause 12: RS & XGMII, Good shape**
  - Clause editor: **Curt Ridgeway, LSI Logic**
  - **Reference to 10GE Clause 46 + 10GFC Extensions**
- **Clause 13: XAUI, Good shape**
  - Clause editor: **Craig Stuber, JNI**
  - **Reference to 10GE Clause 47**
- **Clause 14: 8B/10B PCS, Good shape**
  - Clause editor: **Curt Ridgeway, LSI Logic**
  - **Reference to 10GE Clause 48**
- **Clause 15: 64B/66B PCS, Good shape**
  - Clause editor: **Rich Taborek, Intel**
  - **Reference to 10GE P802.3ae Clause 49**

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10GFC Clause Status

- **Clause 16: XSBI, Fair shape**
  - Clause editor: None
  - Reference to 10GE Clause 50
  - Applicability? Obsolete Soon? Long Term Support?

- Used primarily as a SONET optical module electrical interface.
- Evolved from Optical Internetworking Forum (OIF) SFI-4 Interface.
- SFI-4 is a 16-bit LVDS 622 MHz clocked interface.
- XSBI/SFI-4 Optical Modules are not z-axis pluggable and generally pigtailed.
- Electrical connector is 300-pin or 200-pin per MSAs.
- New SFI-4 Phase 2 Project calls for a narrow (4-lane) interface.
- May be used for early 10GE and 10GFC Serial optical modules.
- XSBI is an optional 10GFC interface.
- No clause editor (grounds for chief editor deleting clause)
- *Clause retained. Editor identified prior to deadline.*

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10GFC Clause Status

- **Clause 17: LSS, Good shape**
  - Clause editor: **Osamu Ishida, NTT**
  - **Fibre Channel native OAM**
  - **Applicability? Widespread Use? Long Term Support?**

- **Link Signaling Sublayer is a 10GFC-specific transport for OAM (Operations, Administration, Management)**
- **OAM is a SONET feature intended for MAN/WAN applications**
- **10GFC would use LSS for native FC MAN/WAN applications**
- **LSS originally proposed for 10GE and not accepted into baseline**
- **Ethernet now defining Frame/Preamble-based OAM for MAN/WAN and access applications (MEF and EFM)**
- **T11.2/T11.3 Joint meeting motion: To remove clause 17 and modify other text as appropriate. Moved by Curt Ridgeway, LSI, seconded by Rich Taborek, Intel: 8Y, 2N, 7A**

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10GFC T11.3 LSS Motion

- **Recommend to T11 to remove clause 17 (LSS) from 10GFC document and modify other text as appropriate.**

Motioner: Rich Taborek, Intel

Second: Neil Wanamaker, Akara
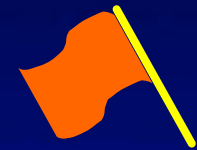
Results: 32Y, 0N, 5A

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10GFC Clause Status

- **Clause 18: Port Management, Fair shape**
  - Clause editor: **Neil MacLean, Adaptec**
  - **Reference to 10GE Clause 30, 45 + 10GFC extensions**
  - **10GFC extensions missing**

- **Need to finish clause in terms of 10GFC specific extensions**
- **Management is always the last issue to settle**
- **Recommend finishing clause**

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10GFC Clause Status

- **Clause 19: WAN Interface Sublayer, Fair shape**
  - Clause editor: **None**
  - **Reference to 10GE Clause 51**
  - **Applicability? Long Term Support? Move to FC-BB-X?**

- Mapping of 10GFC to SONET OC192c
- Mapping is indirect using 10GE clause 51
- FC extensions are required but not specified
- Even when complete, finished 10GFC "WAN PHY" would not be SONET compatible in jitter and overhead bytes
- No clause editor (grounds for chief editor deleting clause)
- Recommend straightforward 10GFC to SONET mapping instead
- T11.2/T11.3 Joint meeting motion: To remove clause 19 and create normative annex to include known requirements for direct mapping of 10GFC to SONET. Moved by Rich Taborek, seconded by Osamu Ishida. Vote 20Y, 0N, 5A

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T11 – 10GFC Status

10GFC T11.3 WIS Motion

- **Recommend to T11 to remove clause 19 (WAN Interface Sublayer) from 10GFC and create normative annex in 10GFC to include known requirements for direct mapping of 10GFC to SONET including C2 byte.**

Motioner: Rich Taborek, Intel

Second: Neil Wanamaker, Akara

Results: 40Y, 0N, 1A

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10GFC T11 Clause Action Motion

- **Recommend that T11 approve deletion of the following 10GFC clauses:**

  9. Copper Interface

  10. Copper Receptacle and Cable

  17. Link Signaling Sublayer (LSS)

  19. WAN Interface Sublayer (WIS)

  16. Sixteen-Bit Interface (XSBI) if clause editor not identified by December 18, 2001

  - **Also recommend addition of normative Annex to address requirements for mapping of 10GFC to SONET**

Motioner: Rich Taborek, Intel
Second: Craig Stuber, JNI

Results: 35Y, 0N, 2A

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