Welcome to the second edition of the Standards Advisor. This report is issued quarterly and provides updates on the standards relevant to the structured cabling industry, and the impact they have on your network design, planning and operations.

This summary represents several weeks of standards meetings held during the 1st quarter of 2014 and reports on activities from all aspects of the cabling industry. These activities range from the applications standards (IEEE 802.3 and 802.11 and T1 — Fibre Channel) to the cabling standards (ISO/IEC, ANSI/TIA, IEC, and CENELEC) and, finally, cover new developments in the world of multi-source agreements (MSAs).

### 1. 40G over twisted pair
- Category 8 continues to be the focus of all activities related to 40G over twisted pair cabling.
- There are currently two “classes” of cabling within the Category 8 nomenclature: Class I (RJ45-based with Category 8.1 components) and Class II (non-RJ45 based with Category 8.2 components).
- The technical report ballot closed on March 17, 2014 so there was no official discussion at this meeting. Since IEEE 802.3bg had not completed the channel requirements for 40GBASE-T and the Technical Report is likely to be published in September 2014, the intent of WG3 is to incorporate final requirements for cabling in support of IEEE 40GBASE-T into the 3rd edition of ISO/IEC 11801 series.
- TR 11801-99-1 was approved after the meeting, and is currently being reviewed by the ISO/IEC Central Office in Geneva for publication.

### 2. Automated Infrastructure Management (AIM)
- Work continues in ISO/IEC to develop standards around Automated Infrastructure Management, or AIM. This is similar in scope to the AIM standardization process begun in TIA during 2011 as part of TIA 606B. These standards will not only define what makes an AIM system, but also will ensure better interoperability with external applications as AIM becomes a mainstream technology.
- The AIM Task Group had an interim meeting in London UK, January 22-23, 2014 and made significant progress in continuing to develop a third Working Draft (WD3). A second interim meeting is planned to complete the document before the next ISO WG3 meeting in Beijing in September 2014, after which it is expected to be circulated as a first CD ballot.
- The AIM Task Group is also circulating a questionnaire to several standards committees and concerned parties who may be interested in interfacing with AIM systems to develop appropriate data exchange mechanisms.

### 3. ISO/IEC 24764
- The data center task group discussed plans for the next revision which will include new fabric topologies, changes to temperature and humidity ranges, as well as additional information on redundancy.
- The task group discussed the activity in IEC TC 108 that may result in the development of a new standard for modular data centers, and appointed a liaison officer to TC 108.

### 4. ISO/IEC 11801
- WG3 agreed to circulate separate CDs for the ISO/IEC 11801 series of standards consisting of 6 parts in a format similar to the CENELEC 50173 series. The new format will be as follows:

### 5. ISO/IEC 11801-6 Distributed Building Services
- This document can be used alone or as an overlay to the other documents in the new ISO/IEC 11801 series and will cover many applications such as cabling for WAPs, DAS (structured cabling, not coax), BAS, lighting, security, and energy management.
- The document will merge information from CENELEC EN 50173-6 and TIA-862-A to create a comprehensive standard addressing cabling for intelligent building applications.

### TIA TR-42 Plenary Meeting
- Fort Myers, FL (USA), 27-31 January 2014

1. **Category 8**
   - Category 8 draft (part of 568-C.2-1) was revised to remove many “To Be Determined” values and finalize measurement procedures for PSNEXT. An interim meeting is scheduled for April 9-10 in New Orleans, LA where it is likely the document will be sent out for a first “mock” ballot.

2. **TIA-568 “D” series revision**
   - TIA-568 “D” series revision is moving ahead with the TIA-568.0-D generic telecommunications cabling and the TIA-568.1-D commercial telecommunications cabling standards having gone through 2 ballot cycles. A significant change in this revision is that consolation points and MUTOA (Multi-User Telecommunications Outlet Assembly) have been moved into the generic standards recognizing the importance of these for zone cabling as a generic topology for all types of buildings. TIA-568 3-D on optical fiber components is in comment resolution on its first ballot.

3. **TIA-4966**
   - Telecommunications Infrastructure for Educational Buildings and Spaces is approved for publication. This standard was developed to address the unique characteristics of educational facilities, which includes plans for wireless coverage in all buildings except where prohibited. Based on the requirement for extensive WLAN coverage, the recommended cabling media is Category 6A and OM3 fiber.

4. **Distributed antenna systems (DAS) cabling**
   - Standards for distributed antenna systems (DAS) cabling continue to move forward. Initially part of a cabling annex in the draft TIA 4966, the DAS cabling section has been moved to the generic TIA-568.0-D standard as it is applicable across all commercial buildings. A task group has started work on a new DAS standard with more detailed requirements and recommendations.
5. TSB-184 (supporting power)
   TR-42.7 will consider, in its April interim meeting, starting a new project to revise TSB-184 for support of the higher 4-pair power levels being contemplated in IEEE POE (Power over Ethernet).

INCITS T11 Fibre Channel
Scottsdale, AZ (USA), Plenary Meeting, 31 March to 4 April 2014

1. 32G Fibre Channel
   - FC-PH6, 32GFC is in Management Review and will become published standard by end of summer.
   - The only motion in T11.2 was to move MSQS-2 to T11. Unanimously accepted in T11 plenary meeting, and will be moved to INCITS.

2. 128G Fibre Channel
   Future work of T11.2 P1 (Physical Interface)/MSQS (Methodologies for Signal Quality Specification) will focus on FC-PH6, 128GFC only (along with completing MSQS-2 and generating MSQS-2P/MSQS-3 if necessitated by development of PH6P).

CENELEC TC215 WG1, WG2 and Plenary Meeting
Brussels, Belgium, 24–27 March 2014

1. Working Group 1
   - The entire series of 50173 documents are in revision, with the intent to incorporate the changes from ISO/IEC 11081, 3rd edition into these documents.
     - Requirements are expected to be tightened for remote powering in the next edition to prevent the use of cables with high attenuation.
     - Alignment is expected with ISO/IEC JTC1/SC25/VG3 on Category 8.

2. Working Group 2
   - EN 50174-2 Information technology—Cabling installation—Part 2: Installation planning and practices inside buildings
     This amendment will include a chapter on AIM identical to the information now included in amendment of ISO/IEC 14763-2, including a reference to the upcoming ISO/IEC document ISO/IEC 18598 with more detailed information on AIM.
   - TR 50174-99-1 Information technology—Cabling installation—Remote powering
     Work continues on cable heating from remote power applications and a Technical report will be published in 2015.

3. Working Group 3
   - EN 50600—the following table is an update on the EN 50600 series:

<table>
<thead>
<tr>
<th>EN Number</th>
<th>Information technology - Data centre facilities &amp; infrastructures</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>50600-1</td>
<td>Part 1: General concepts</td>
<td>Published</td>
</tr>
<tr>
<td>50600-2-1</td>
<td>Part 2-1: Building construction</td>
<td>Published</td>
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<td>50600-2-2</td>
<td>Part 2-2: Power distribution</td>
<td>Published</td>
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<tr>
<td>50600-2-3</td>
<td>Part 2-3: Environmental control</td>
<td>Out for final vote, no technical changes</td>
</tr>
<tr>
<td>50600-2-4</td>
<td>Part 2-4: Telecommunications Cabling Infrastructure</td>
<td>Out for 6 month comment and vote</td>
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<tr>
<td>50600-2-5</td>
<td>Part 2-5: Security systems</td>
<td>Soon to be out for first round of comments</td>
</tr>
<tr>
<td>50600-2-6</td>
<td>Part 2-6: Management and operational information</td>
<td>Soon to be out for first round of comments</td>
</tr>
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IEEE Meeting
Beijing, China, 17–21 March 2014

1. 802.3bm – 40 Gb/s and 100 Gb/s Fiber Optic Task Force.
   - Resolved comments on their second Working Group ballot and will issue a third. They plan to transition to final ballot phase, known as Sponsor Ballot, after their next meeting in May.
   - The main topics in debate involve measurement details of the 100GBASE-SR4 transmitter and receiver.
   - The project remains on schedule to publish in March 2015. When published this amendment will add a new specification for 40G operations on one pair of single-mode fiber up to 40 km of OS2 and 100G operation on four pairs of multimode fiber up to 100 m on OM4 and 70 m on OM3.

2. 802.3bg – 40GBASE-T Task Force
   - While the group continues to hear contributions from cabling and connector proponents with measurements on their latest devices, the main task of the meeting was to adopt a baseline for the 40GBASE-T PHY.
   - The project adopted a modification of the signaling already in 10GBASE-T, running at 4X the symbol rate or 3.2 Gbaud, and using a full 1.6GHz of bandwidth. This will require cabling and components specified to 2GHz. Additionally, because it reuses the PCS, PMA, startup and framing from 10GBASE-T, it should greatly accelerate the standard.
   - The group should begin generating drafts following the May 2014 meeting in Norfolk. The next action is to sort through several minor modifications to the baseline, after which PHY characteristics will be well-known enough to engage in discussion of any additional tradeoffs related to the channel, which should take place at or after the July meeting.

3. 4 Pair Power Over Ethernet (PoE) Study Group
   - The group is considering a maximum launch power of just less than 100 Watts, with a delivery of about 70 Watts, as the maximum possible while avoiding high power safety considerations.
   - The 100 Watt proposal would require 1000 mA (1A) per pair. The impact of this on cable heating and maximum cable bundle sizes is being studied.
   - CENELEC and an ad hoc group within IEEE are studying cabling issues affecting this, including heating and DC resistance unbalance between pairs.

4. 400 Gb/s Ethernet Study Group
   - The Study Group officially transitioned to a Task Force after the March meeting. This means they are now chartered to develop an amendment to Standard 802.3 that adds 400 Gb/s operation over optical fiber.
   - Their first meeting as a Task Force will be in May. Key objectives are to provide physical layer specifications which support link distances of:
     - At least 100 m over multimode fiber
     - At least 500 m over single-mode fiber
     - At least 2 km over single-mode fiber
     - At least 10 km over single-mode fiber

Multi-Source Agreement (MSA)
Two new singlemode MSAs were announced for 100G recently: CWDM4 and CLR4. This brings the number of variants for 100G over singlemode for 500 meters to 2km to eight, along with the standard LR4. It is expected that this fragmentation of the 100G singlemode short reach market will result in a small market share for each, thus reinforcing the position of OM3 and OM4 for 100G.

BICSI
BICSI is developing a DAS standard which recommends Category 6A or higher performance cabling for transmitting radio signals.