

VPX Expands

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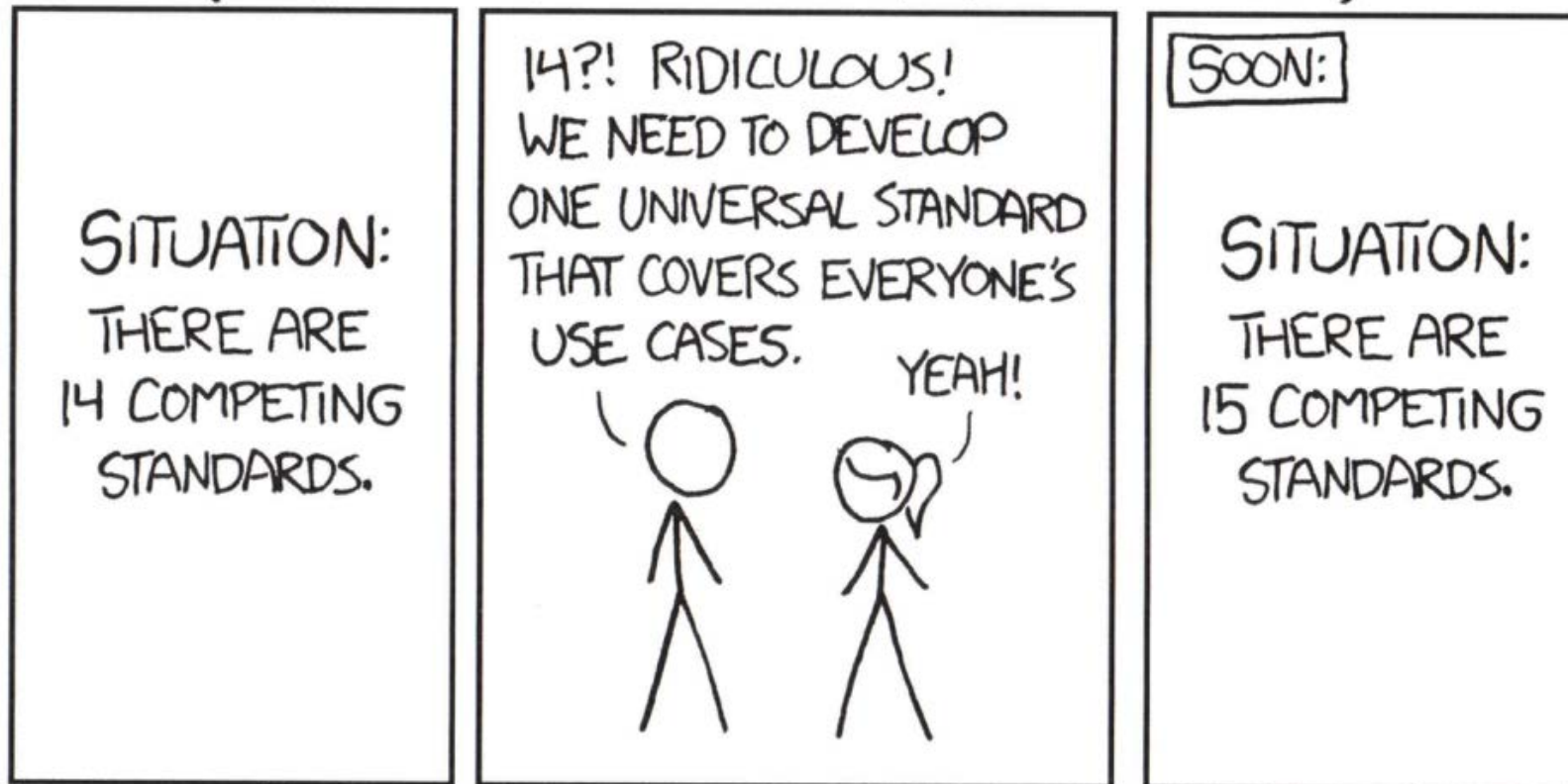
**VPX is now faster
and more
powerful
than ever**

**Taking the Optical
Plunge**



How Standards Proliferate

HOW STANDARDS PROLIFERATE:
(SEE: A/C CHARGERS, CHARACTER ENCODINGS, INSTANT MESSAGING, ETC.)



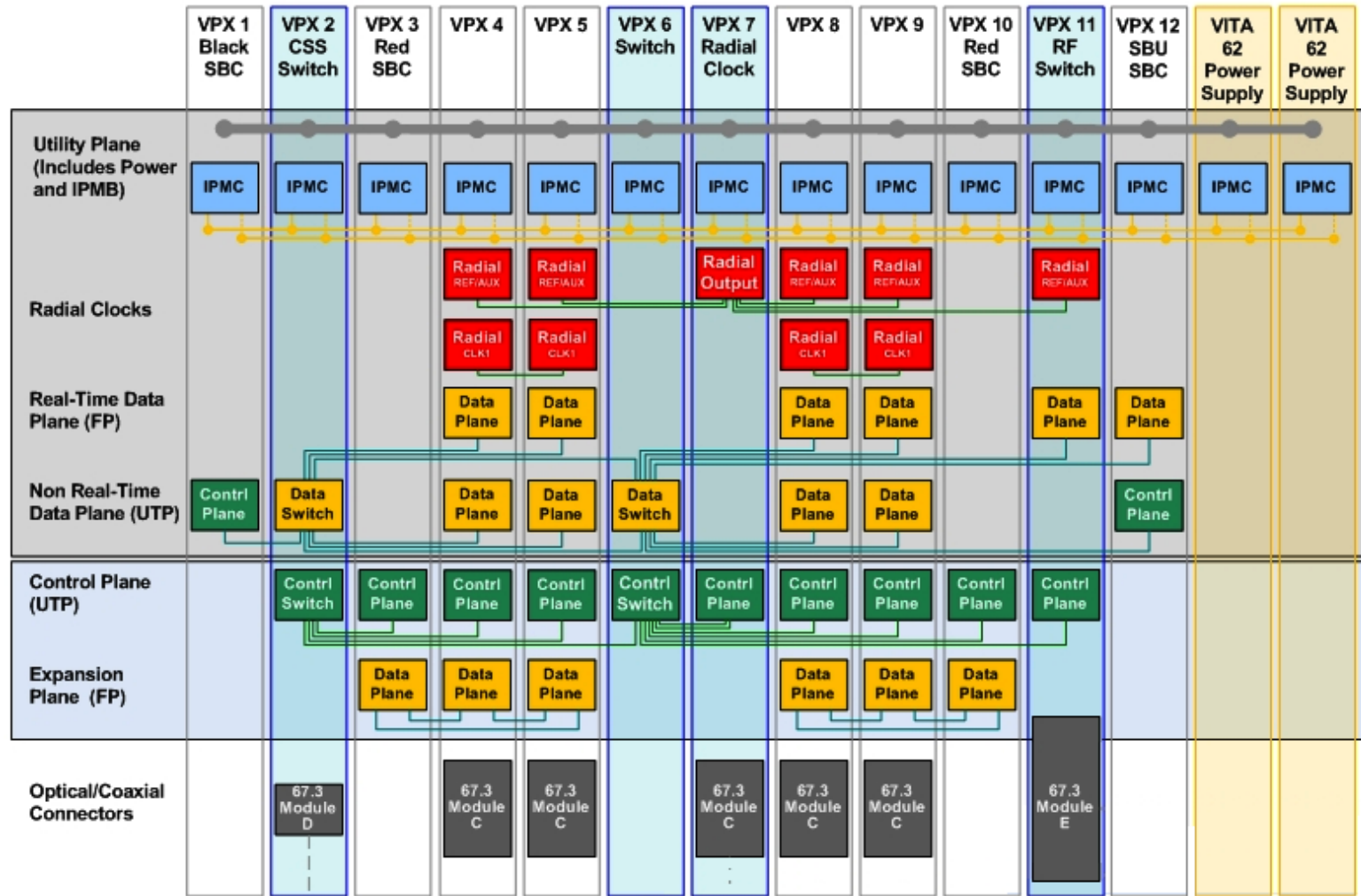
Cartoon mouse-over text

Fortunately, the charging one has been solved now that we have all standardized on mini-USB. Wait, or is or is it micro-USB? Shit

FOR DAD.
Randy



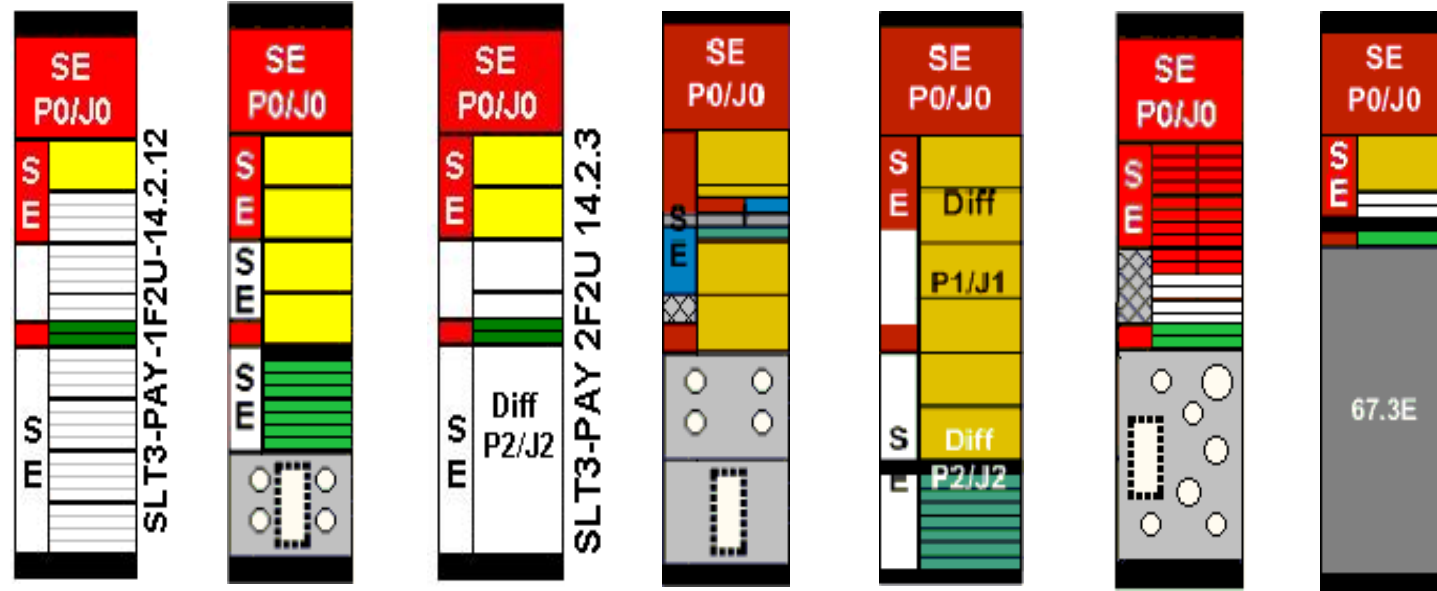
Defense Hardware Convergence BP



- **Blind mate coaxial for RF**
- **Blind mate fiber ribbons**
- **Radial clocks for timing, synchronization and sampling**
- **Radial RF for local oscillators for software radio**
- **40GBase-KR4 Ethernet Data Planes**
- **PCIe 3 Expansion Planes**
- **10GBase-KR Ethernet Control Planes**
- **RF Switch**
- **Optical switch [components available]**
- **Optical I/O or slot-to-slot**
- **RF I/O or slot-to-slot**



CERDEC Slot Types



Conventional Payload

Switch with Fiber

Conventional Payload

Payload with RF and Fiber

Conventional Switch

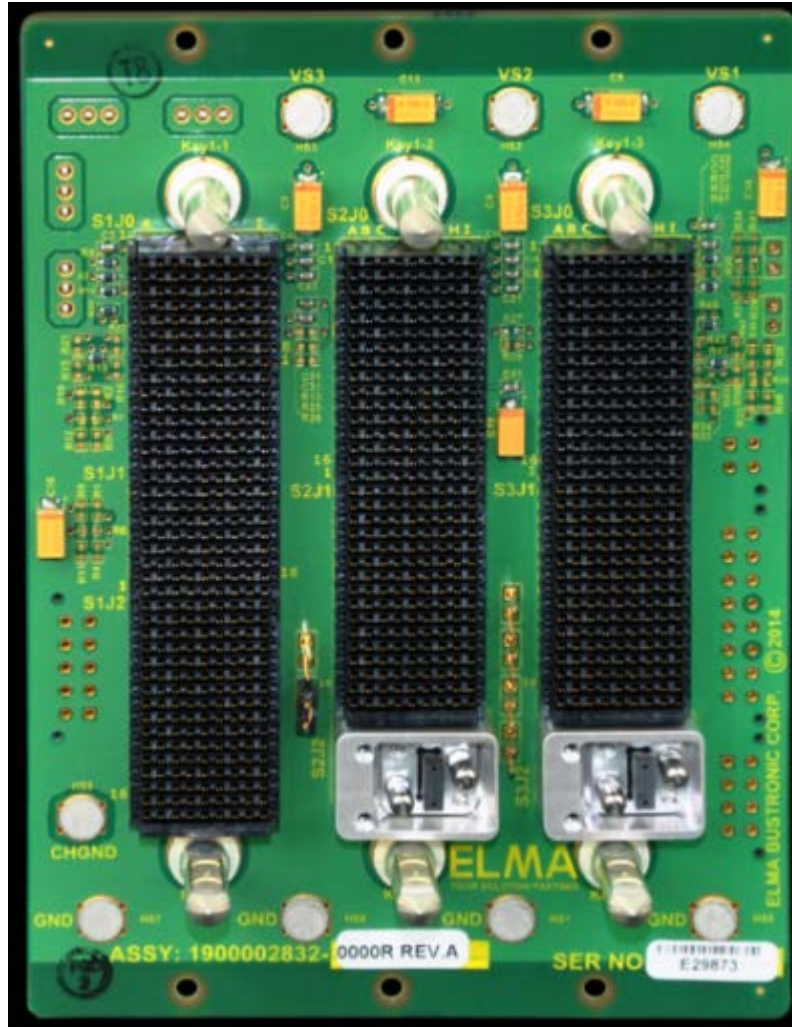
Timing Module with Radial Clocks and RF

RF switch



VITA 66.4 Optical Modules

(Also support VITA 67.1 coaxial RF inserts)



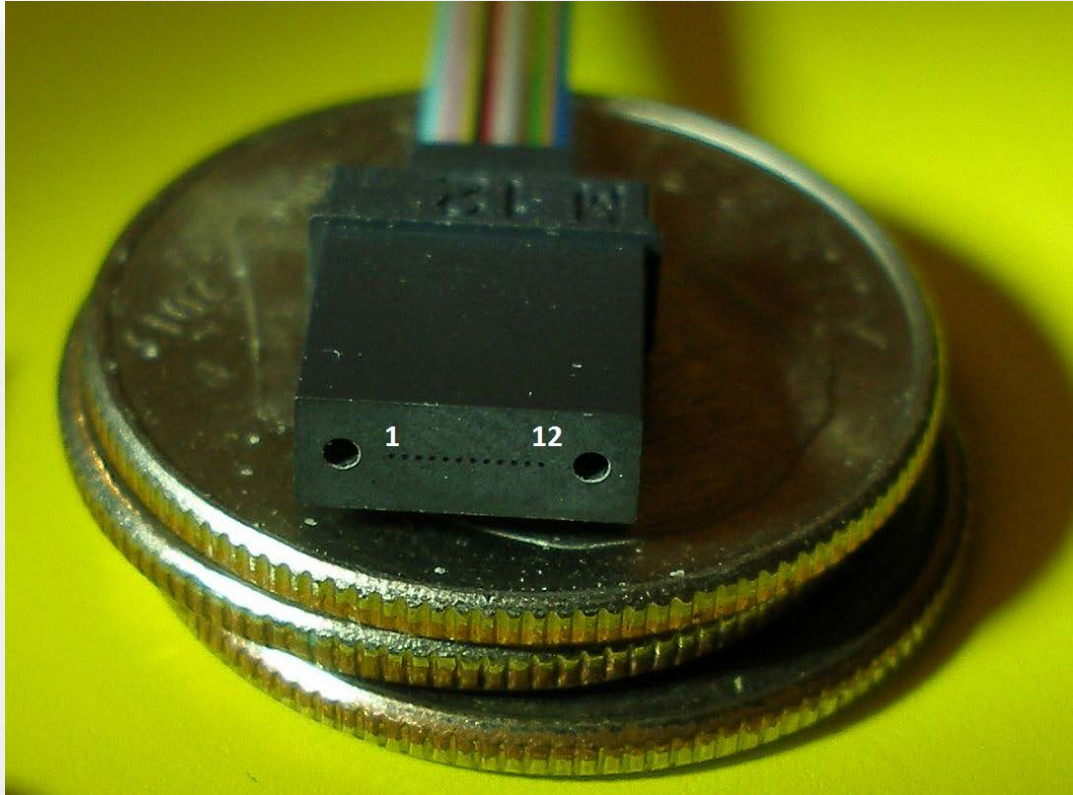
MT/MPO ferrule in VITA 66.4 holder

Front view 3U VPX with VITA 66.4 optical modules

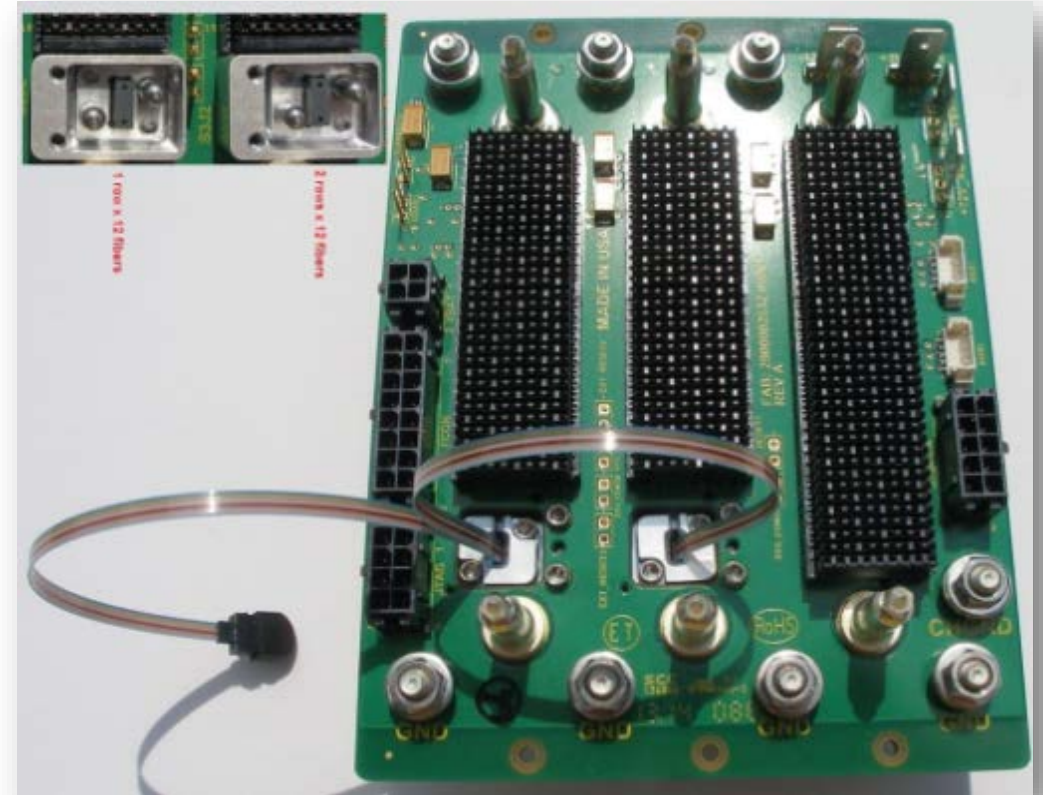


VITA 66.4 supports 12 or 24 fibers

(64 fibers with Prizm™ from US Conec)



Close up: 12 fiber MT/MPO ferrule



Rear: 12 fibers and 24 fibers



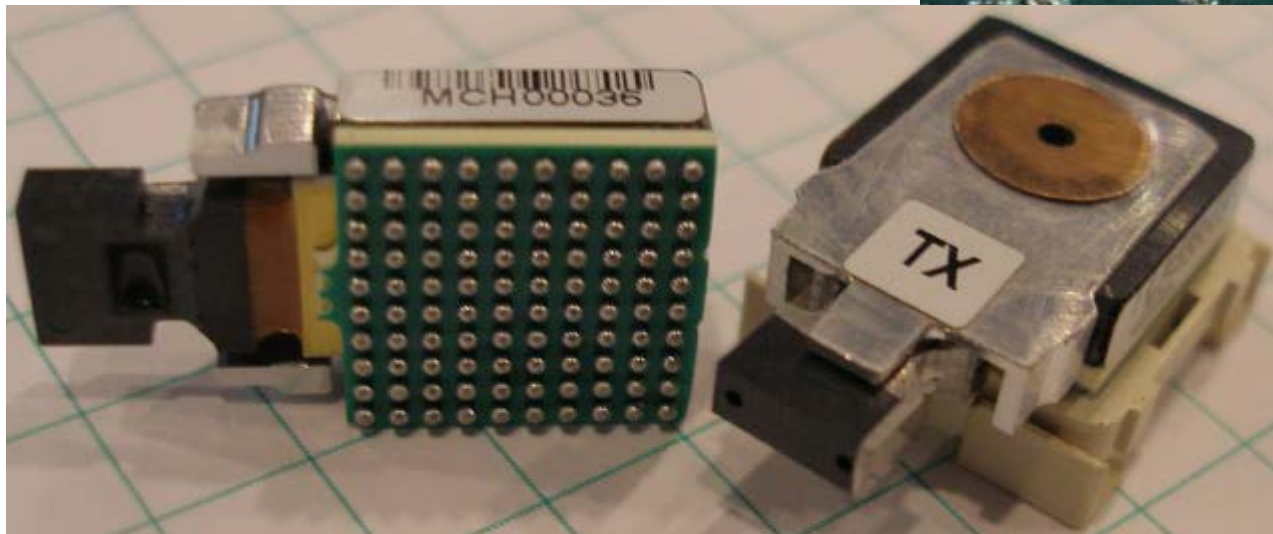
Typical Optical Components

3U module implementation example

Samtec



Reflex Photonics

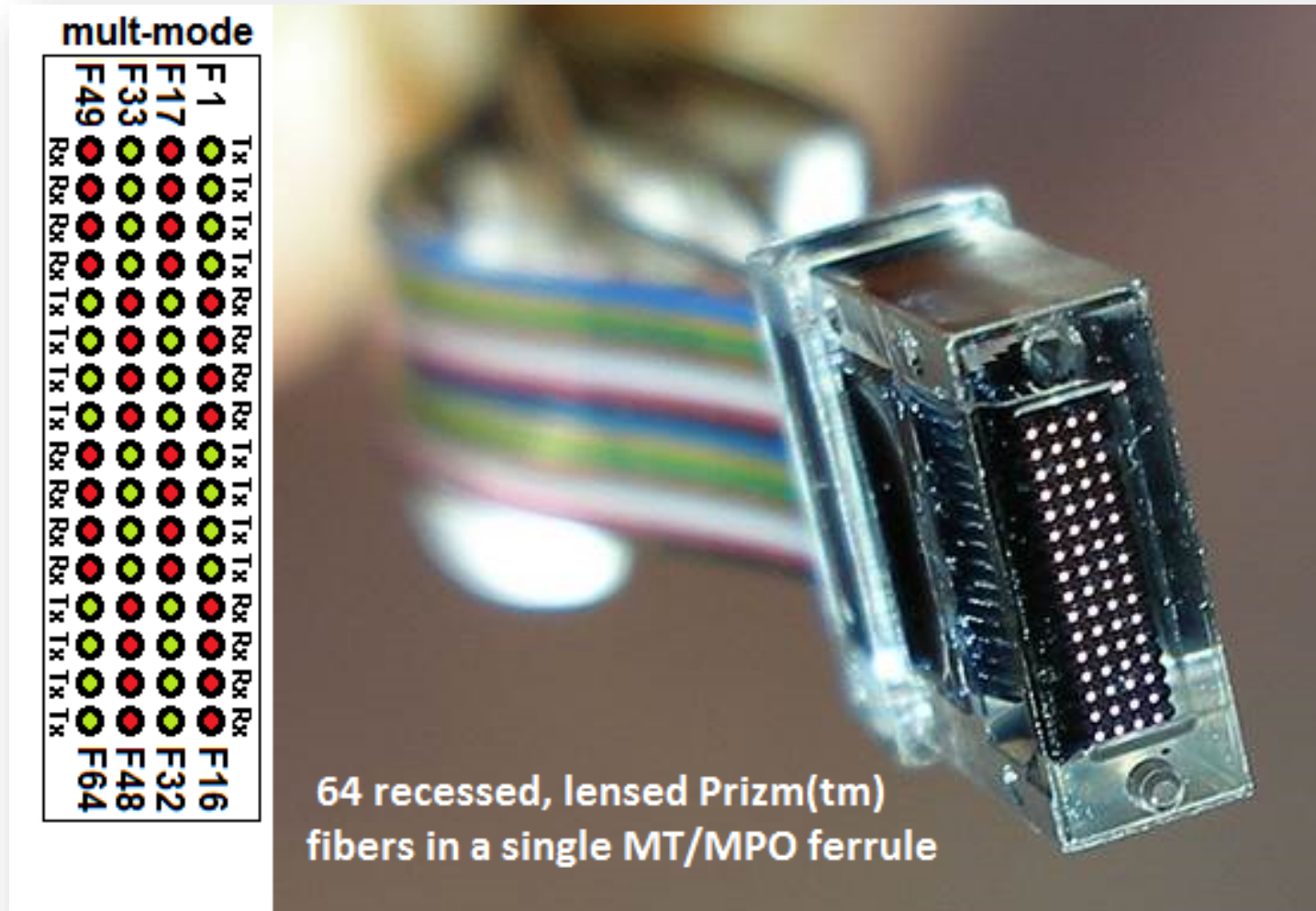


Pentek



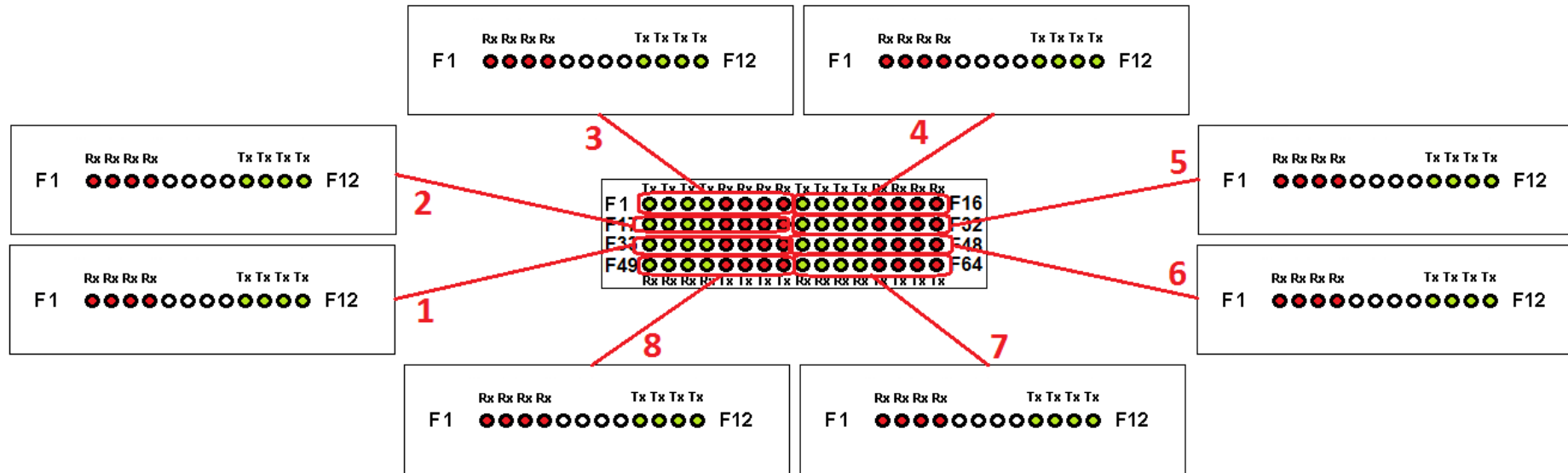
Prizm™ MT ferrule

With 4 ribbons – 64 fibers total



Star Optical Network Concept

8 Channels, 64 fiber organization



A 64 fiber MT ferrule supports 8 Fat Pipes

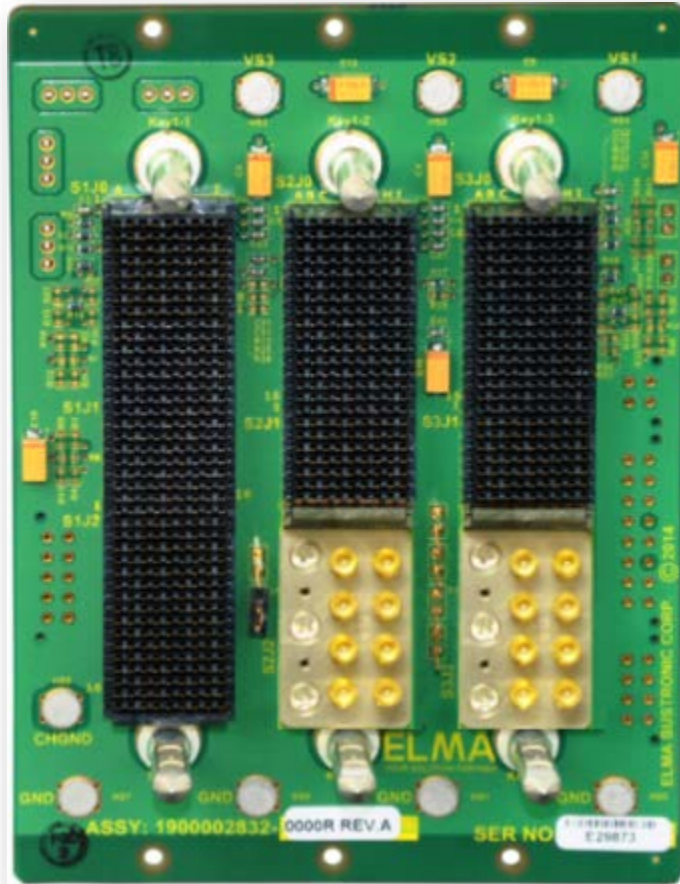


A 64 fiber ferrule fans out to 8 separate cables each with 8 fibers (4Tx and 4Rx)



Two VITA 67.3C Connector Modules

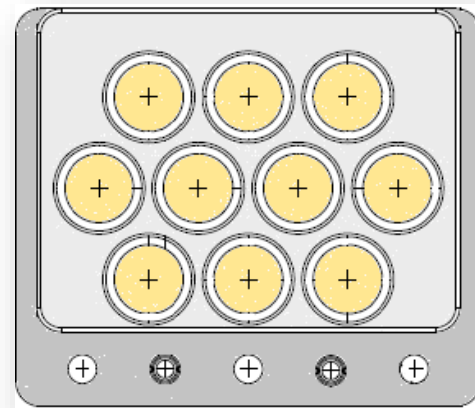
a) RF Optical Combo, b) RF multi-level



Backplane with VITA 67.2



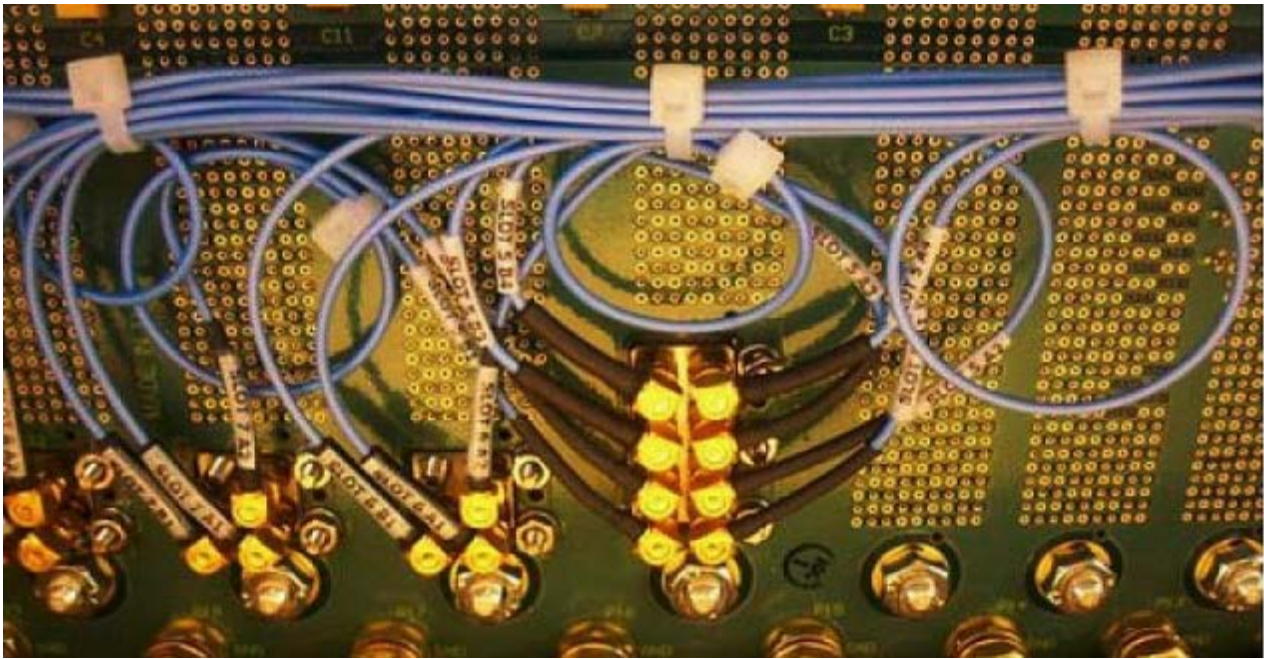
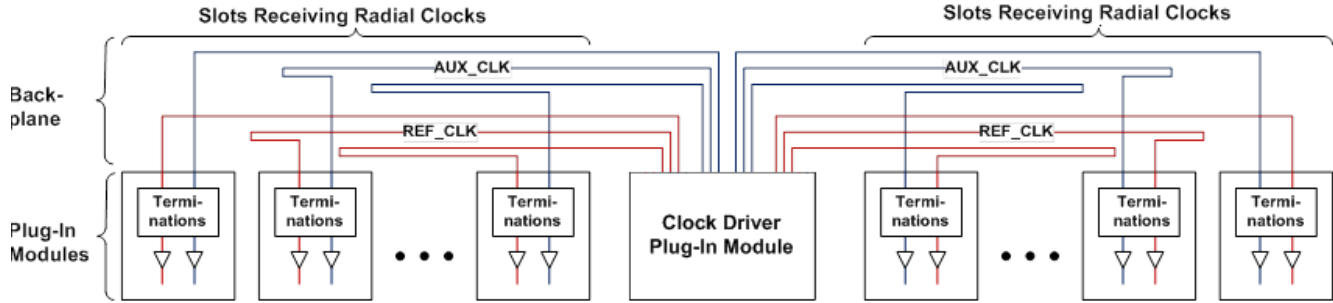
VITA 67.3c combo module



VITA 67.3c RF module



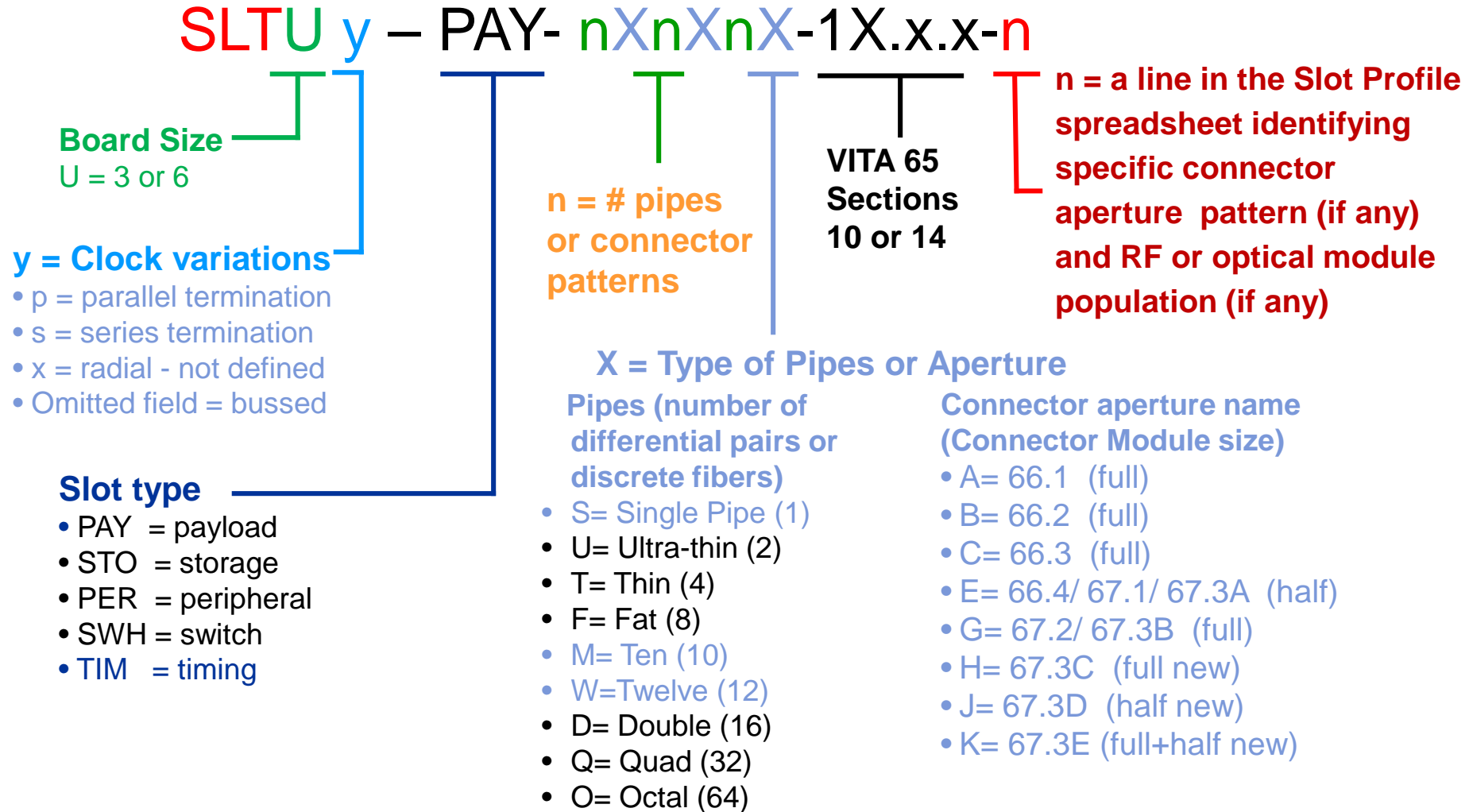
Radial Clocks – digital and RF



Rear view of 3U BP with radial RF cabling



Updated VPX Slot Naming Construct



After the optical plunge – VPX Today

- **More power available per slot than possible to cool**
- **More bandwidth slot-to-slot**
 - 100 Gbps/8 fibers, 800 Gbps/64 fibers
 - (3U example, 6U would be much more)
- **System Management**
- **Control Planes**
- **Multiple – Data Planes (Copper, RF, Optical)**
- **Bussed or Radial Clock Distribution**
 - (Aux_Clk, Ref_Clk)
- **3U or 6U Eurocard format VITA 48**
- **Enclosed modules Level 2 Maintenance (MIL-HDBK 1390)**
- **VITA 48 Module Cooling**
 - Convection
 - Conduction
 - Air-flow thru
 - Air-flow by
 - Liquid flow thru

