ELM Call for Interest Physical Layer Options

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The Need for Longer Reach Ethernet

- **Connectivity to the work place or home using Ethernet protocol only**
  - **“Last mile” without more costly protocol conversion**
- **Cost benefits of using existing Ethernet hardware**
- **Reuse of existing UTP cabling in the ground**

Applications: Inside Plant Cabling

- **New installations**
  - **Hospitals: medical imaging/records produces large files accessible in all areas of the hospital**
  - **Hotels: Long Reach Ethernet would allow ease of installation for multimedia services such as video-on-demand or games**
  - **Factories: Manufacturing automation could be controlled more easily**
  - **Apartment Buildings: Built-in high-speed networking service to the apartment.**

Applications: Outside Plant Cabling

- **Reuse of existing cable in the ground**
  - **Ethernet to the home/office**
  - **University campus: Low cost network solution for sharing scientific data**
  - **Video-on-demand type services requiring higher bandwidth to the home or office**

Technical challenges

- **Dependent on whether internal or external plant wiring is being considered**
- **Characteristics of UTP cabling restricts Physical Layer options**
- **Distance: 1500 feet or 18000+ feet or 1Km or 1.5Km**
- **Speed: e.g.10Mb/s over single pair CAT-3 or 100Mb/s over 4-pair CAT-5**
- **Coding: Copy or adapt from existing standards e.g. MLT3-like or SCM/MCM**
- **Cost effective CMOS-only solutions**

Conclusions

- **We think the market may be looking for:**
  - **an external wiring solution (e.g. 10Mb/s over 3Kft of CAT-3 AWG24)**
  - **an internal wiring solution (e.g. 100Mb/s over 1000m CAT-5/CAT-6)**
- **Support the formation of study group(s) to investigate longer-reach ethernet in either or both areas.**