Discussion notes on next-gen long reach

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Applications

- Process control trunks (industrial automation facilities)
  - 100 Mbps
  - Intrinsically safe voltage limits
  - 300+ m (ideally same links as 10BASE-T1L)
- 500m, 100 Mbps (renewable energy facilities)
  - Windmills, wind parts – 100k, ports/year (2-3 M ports at 50m)
  - Solar plants – greater than 100m…
- 40+ m, 100Mbps & 1 Gbps (mobile machines)
  - Trucks/Trailers – 40+ m, 6-8M ports/year
  - Mobile working machines – (tractors, harvesters, mining) – 2-3M/year but also up to 5Gbps
  - Railway – 1 to 1.5M ports/year, up to 10 Gbps

Points of consensus? / lack of consensus

- Consensus?
  - Autoneg
  - Harmonization with 10BASE-T1L
  - Focus on OT, not IT
  - 100 Mb/s at least
  - Low latency
- Lack of consensus – presentations needed?
  - 40m links? (distinct identity particularly for 1000 Mb/s)
  - > 100m links? same or multipurpose link segment as 10BASE-T1L?
  - 1000 Mbps? – technical feasiblility
  - Intrinsic safe limits?
  - Autonegotiation to long-reach? or to short reach? (both)

Possible objectives

- Support a rate of 100 Mbps at the MAC PLS interface
- Define a link segment and PHY to support 100 Mbps up to at least xxxx m …
- Support autonegotiation with (at least) 10BASE-T1L