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Ethernet in the Last Mile
Why Here? Why Now?

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DomiNet Systems

IEEE 802.3 ELM CFI

Tampa, FL

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Outline

- What is the Last Mile?
- Why is it important?
- What's in the Last Mile?
- Why ELM?
- Why now?

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What is the Last Mile?

A-> Hit horror movie staring Tom Hanks

B-> The last 26th of a marathon race

C-> How far Howard would walk for a Camel

D-> The critical link between users and the ‘net

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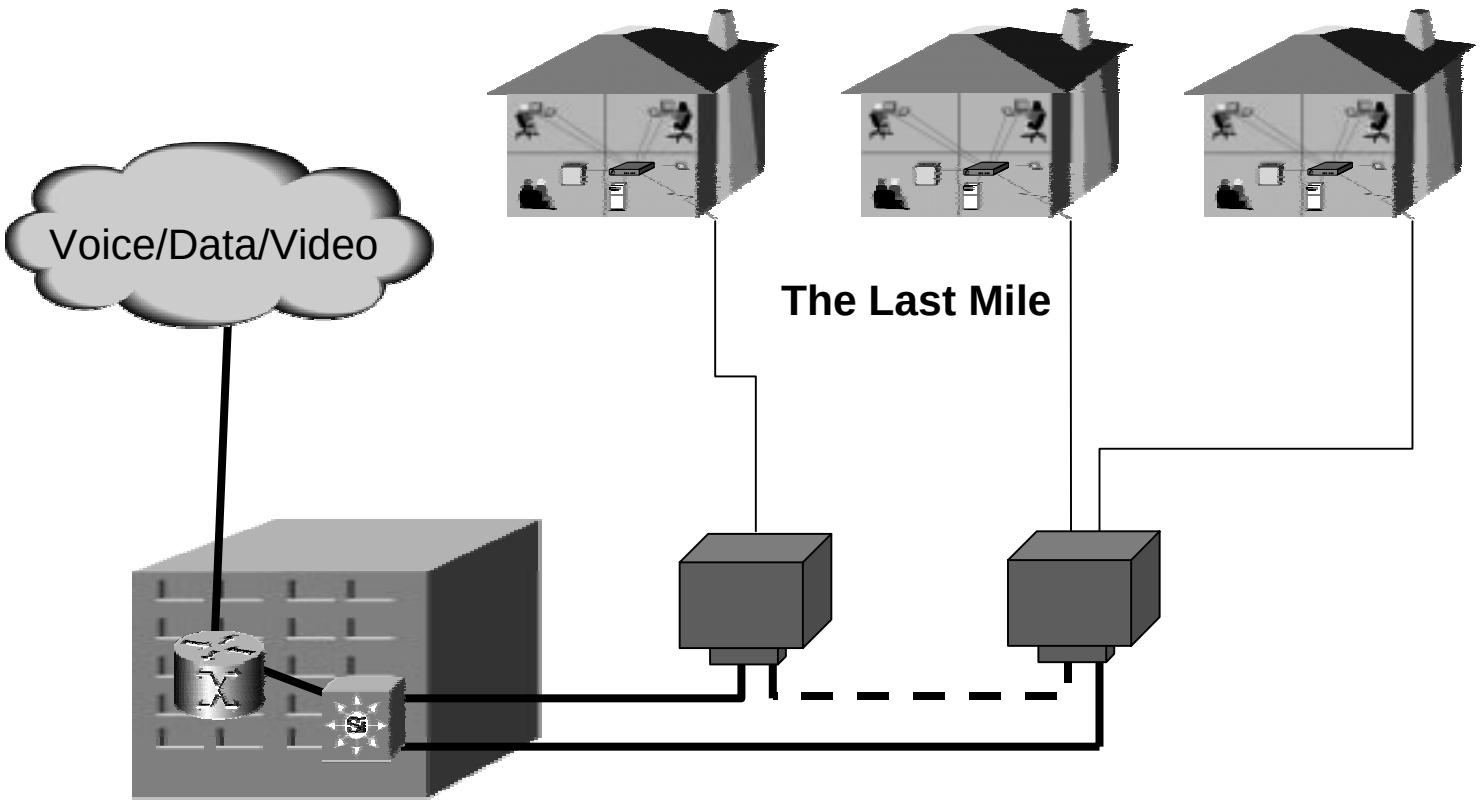
What is the Last Mile?



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Why is it important?

- **Current solutions found lacking in**
  - **Bandwidth**
  - **Ease of installation-use-maintenance**
  - **Economic feasibility**

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What's in the Last Mile?

- **A variety of protocols:**
  - **ADSL/HDSL – too slow, too complicated**
  - **Cable Modem – too slow, not dedicated**
  - **ISDN – way too slow, way too complicated**
  - **Satellite – too expensive, download only**
  - **Fast/Gig Ethernet FTTH – X years out**
  - **Broadband wireless – to be determined**

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What's in the Last Mile?

- **A variety of media**
  - **Unshielded twisted pair**
    - **One or more pairs**
    - **Various grades**
  - **Coaxial cable**
  - **Fiber (mostly SMF, thankfully)**
  - **Hybrid fiber/copper**
  - **Air**

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Why ELM?

- **BROAD MARKET POTENTIAL**
- **COMPATIBILITY**
- **DISTINCT IDENTITY**
- **TECHNICAL FEASIBILITY**
- **ECONOMIC FEASIBILITY**

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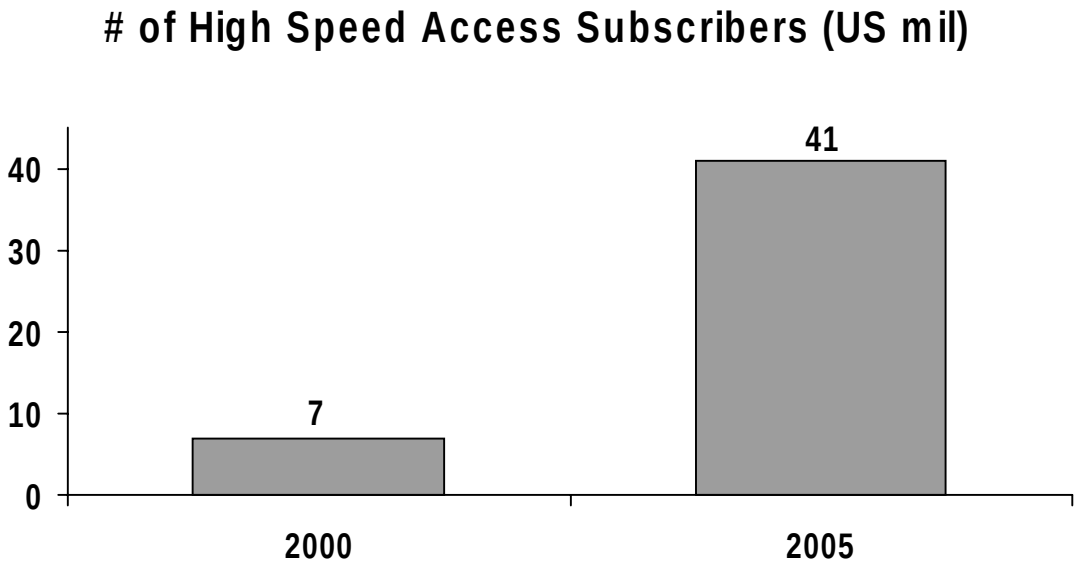
Why ELM?

- **BROAD MARKET POTENTIAL**



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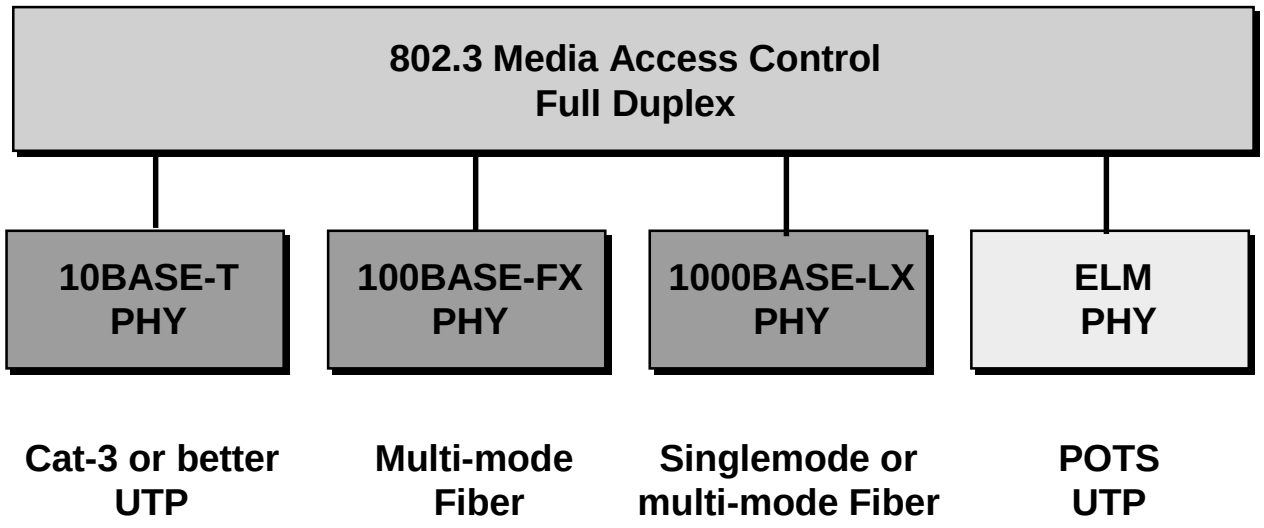
Why ELM?

- **COMPATIBILITY**



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Why ELM?

- **DISTINCT IDENTITY**
  - **There is no 802 standard for wire-line access**
  - **We may be able to re-use a PHY from another standards body, like we did in 100/1000BASE-X**
  - **IEEE 802.3 MAC + ANSI PHY combinations can be distinctly successful**

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Why ELM?

- **TECHNICAL FEASIBILITY**
  - **ANSI T1E1.4 is about to start balloting on two distinct signaling protocols for Very high speed Digital Subscriber Lines (VDSL)**
    - **Single Carrier Modulation (based on QAM)**
    - **Discrete Multi-Tone**
  - **Early versions of SCM silicon are on the market**
  - **DMT silicon expected to arrive soon**

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Why ELM?

- **Economic Feasibility**
  - **To be established, however:**
    - **Eliminating protocol conversions can reduce cost**
    - **High volume of Ethernet components can reduce cost**
    - **Broad knowledge base and labour pool can reduce cost**

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Why Now?

- **High speed access (defined as greater than 128 kbps) is still in the early stages of deployment**
- **Ethernet NIC and switch technology is incredibly mature - users take reliability and interoperability for granted**

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Summary

- **The access market demands a better solution**
- **IEEE 802.3 is a proven SDO**
- **Ethernet is a proven networking technology**
- **Ethernet in the Last Mile is worth studying**