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Considerations for a successful EFM Standardization Project within IEEE802.3

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January 2001

The Question

Should IEEE 802.3 form a SG to develop a Standards Project Proposal (PAR & 5 Criteria)?

From the interest that we have seen the obvious answer is - YES!

…but then that brings us to...

Question #2

What is it that we are going to:

- **Standardize?**
- **Evaluate the 5 Criteria against?**

So far, all we have agreed upon is a "market area."

More Questions:

✸ What is the standards focus and environment for EFM?

✸ Ethernet from the residence, to where?

✸ After we get to "where", then what?

✸ Who are the customers and who are the users?

✸ Have we invited network providers and carriers to participate?

✸ What are the impacts to existing network infrastructure

✸ How will network providers manage EFM?

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A BIG Question:

Given that applications used in most EFM target environments are likely to be highly asymmetrical in bandwidth requirements:

What are the odds for commercial success of a standard which, by definition, will require adopters to capitalize a 'reverse' data path equal in cost to the 'forward' path, and which 'reverse' path will likely not generate any appreciable revenue?

Characteristics of a Mass-Market Standard

- **Encompass traditional elements that address requirements of carrier networks**
  - Signaling, Services & Applications, Asset Control, Traffic Management, Provisioning, Billing, Maintenance

- **Can gain acceptance from Service Providers**
  - low cost, minimizes customer disruption, broad acceptance

- **Design allows network providers to support existing infrastructures as they evolve**

- **Support S/W "hooks" with flexibility to introduce services driven by customer markets**

Market Justification for Standard

- **Idealized Access Method**
  - Uses a protocol not tied to a specific physical layer architecture; allowing end users flexibility to establish local networks

- **Evolutionary**
  - Support existing architecture as new media are deployed; limiting stranded costs and other economic hindrances

- **Optical Technology**
  - Continued investment in copper media is ending anyway
  - standard should anticipate this shift and accelerate it ...
  - efficiencies of scale encourage conversion AND competition

- **Realize End-To-End Ethernet**

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Market Criteria in opposition to an 802.3 EFM Standard

- **Existing Market is Captive to LECs (in the USA) and similar organizations elsewhere**
- **Dealing with Outside Plant & Local Exchange Carriers is not in the traditional area of expertise for this group.**
- **There are already too many flavors of DSL, assuming copper media for EFM.**
- **Irrespective of EFM media, at the end of "the first mile" you are on top of a telephone pole in the middle of nowhere. At best, this is an inhospitable environment.**

Market Criteria in opposition to an 802.3 EFM Standard

- **Standardization within 802.3 is NOT a guarantee of success.**

- **Existing copper media is of inconsistent, and often very poor, quality.**

- **The turnover rate for existing media is too slow.**

- **There would be a whole new (to 802.3) set of requirements for:**
  - Environmental conditions
  - Lightning protection
  - Reliability
  - Etc., etc.

Issues & Criteria for Ethernet to the Home

- **Ethernet from the home to where?**
  - What impacts are there to the central office internal plant vs. external plant facilities?
  - What consideration will be given to the craft (telco-speak for labor pool) available?

- **How comprehensive is the scope of the standard effort?**
  - Will 802.3 address Operations Administration, Application Management and Billing for this technology?
  - Is there to be any guidance regarding interoperability with existing residential broadband installed plant?

Conclusions

- I and my team would like to understand the main intent and primary focus for the EFM work.

- Presently we believe further study is required to identify the standards scope and charter that EFM will detail, before the PAR is formally initiated.

- We would request 802.3 to perform a preliminary assessment of the actual scope of standards work and possible impacts to existing facilities (CO and Outside Plant).

- We would recommend a SG focus that identifies a functional reference model. Specifically but not inclusively, this model would identify the possible termination points, or common reference points, specific for EFM access.

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Graphical Strawman:
Offered as a Basis for Talking Points
## (flames cheerfully extinguished)

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*January 2001*

Distribution Network Strawman

Wiring Center (CO)

Curb
(pedestal/vault
pole mount)

Customer Premise
Equipment
(CPE) (see detail)

10 Gigabit Ethernet

1550 nm

"100 BASE T"

λ dependent
on media

100 Customers

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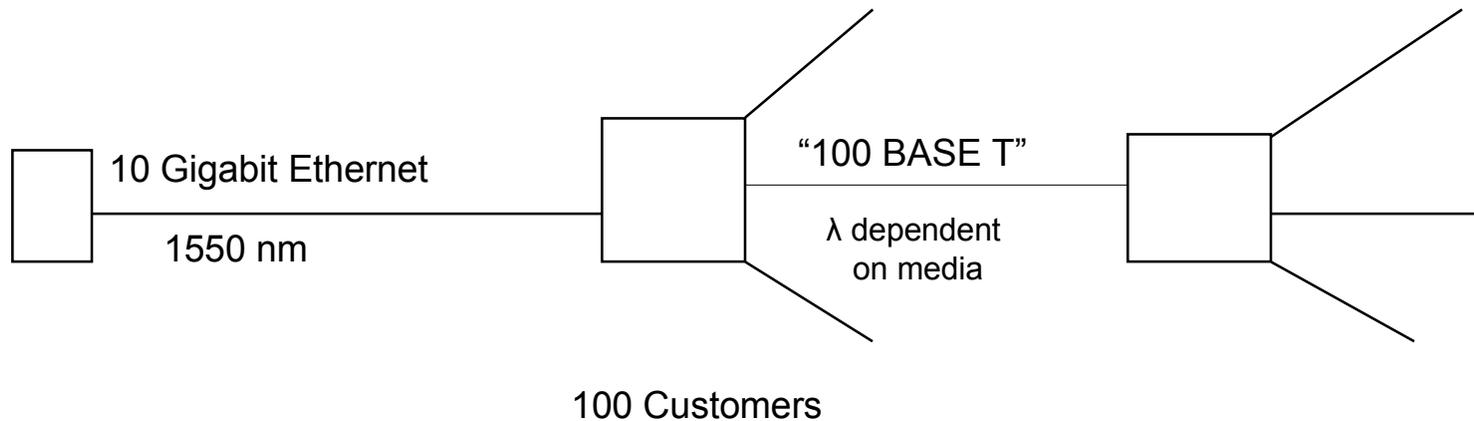
Active Curb

1-30+ Residences

Single Mode Fiber

GBE

1550 nm
E/O
Module

Hybrid
E/O
Module

100 Base FX

•Media T.B.D.
•All options "on the table"

•"At Market" Port Cost
•Easily Upgraded to 10 GE
or WDM for higher rates

Idealized Port cost
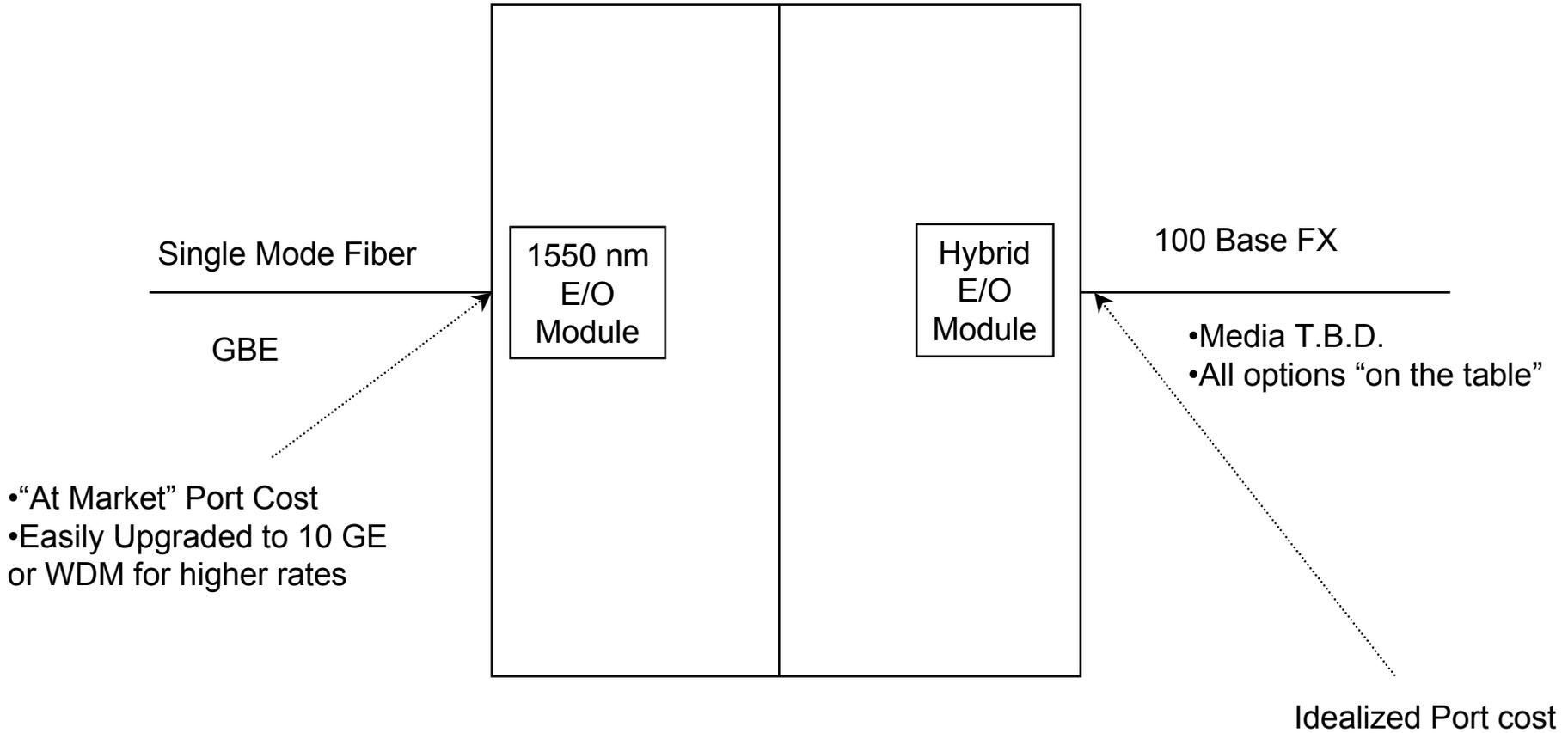
Active MDU

1-30+ Apartments

Also suitable for
urban hybrid deployment
(business & residential users)

Single Mode Fiber

GBE

| 1550 nm E/O Module | Hybrid E/O Module |

100 Base FX

"MDU oriented media"

Similar to 'curb' criteria
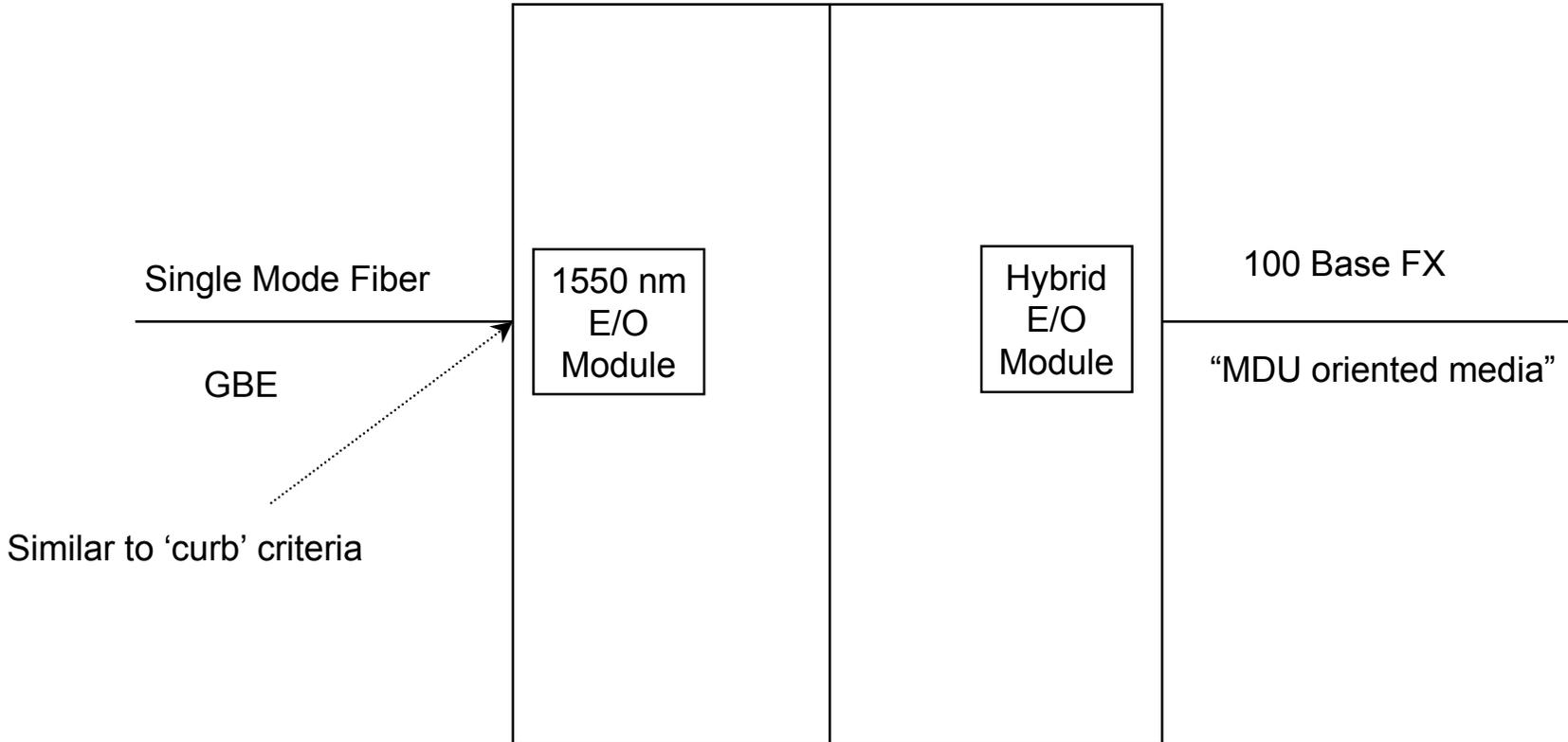
Digital Access Gateway (CPE)

Potentially hybrid media

100 Base FX

Services platform

Hybrid E/O Module

CATV

IEEE 1394

100 BaseT

POTS

Remote Power over Copper Loop