The state of telecom:
Fundamental drivers of evolution

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Telecom today:

- Still suffering from the overinvestment and malinvestment of the bubble years
- Moving into major restructuring phase
Technology:

- Many choices
- Drive for uniformity (converged network)
- Drive for diversity (walled gardens, security, redundancy, customer-owned networks, outsourcing, ...)

⇒ Likely outcome a multimodal telecom scene, unified by IP layer (in analogy with transportation sector, unified by container)
Long-haul is not where the action is:

- 360networks transatlantic cable

Construction cost: $850 M
Sale price: $18 M
Annual operating cost: $10 M
Lit capacity: 192 Gb/s
Fully lit capacity: 1,920 Gb/s
Ave. transatlantic Internet traffic (mid-2005): 200 Gb/s
Primacy of user needs and user inertia:

Yellow pages example:

- Qwest sale of directory division in 2002 for approx. $7 billion (annual revenues $1.6 billion, margins 63%)
- Current (October 2005) market cap of Qwest: approx. $7 billion

⇒ user inertia often most important factor in business success
User needs: frequently misunderstood by telecom

Example: connectivity and not content primary post-Katrina: what was the main complaint:

- lack of voice telephony?
  
  or

- lack of TV?
Connectivity: value of connection probably logarithmic in bandwidth

early 19th century
“crossed-letter”
Human communication:

One picture is worth a thousand words
Human communication:

One picture is worth a thousand words, provided one uses another thousand words to justify the picture.

Harold Stark, 1970
Voice is uniquely important for human communication:

Possible enhancements:

1. higher quality
2. segmenting the market through several levels of quality
3. voice mail (to combine power of voice with the non-intrusive advantage of email)
4. emergency capacity boosts through pushing all users to lower levels of quality (and higher compression) instead of complicated prioritization schemes
5. wireless toll-free calls

but all are being ignored by telecom that is deluded by the content dream
Conclusions:

Promising future for telecom, but

◆ much turmoil
◆ likely to have a heterogeneous collection of technologies unified at IP layer
◆ winners impossible to predict
◆ success dependent on overcoming false dogmas

Further data, discussions, and speculations in papers and presentation decks at:

http://www.dtc.umn.edu/~odlyzko