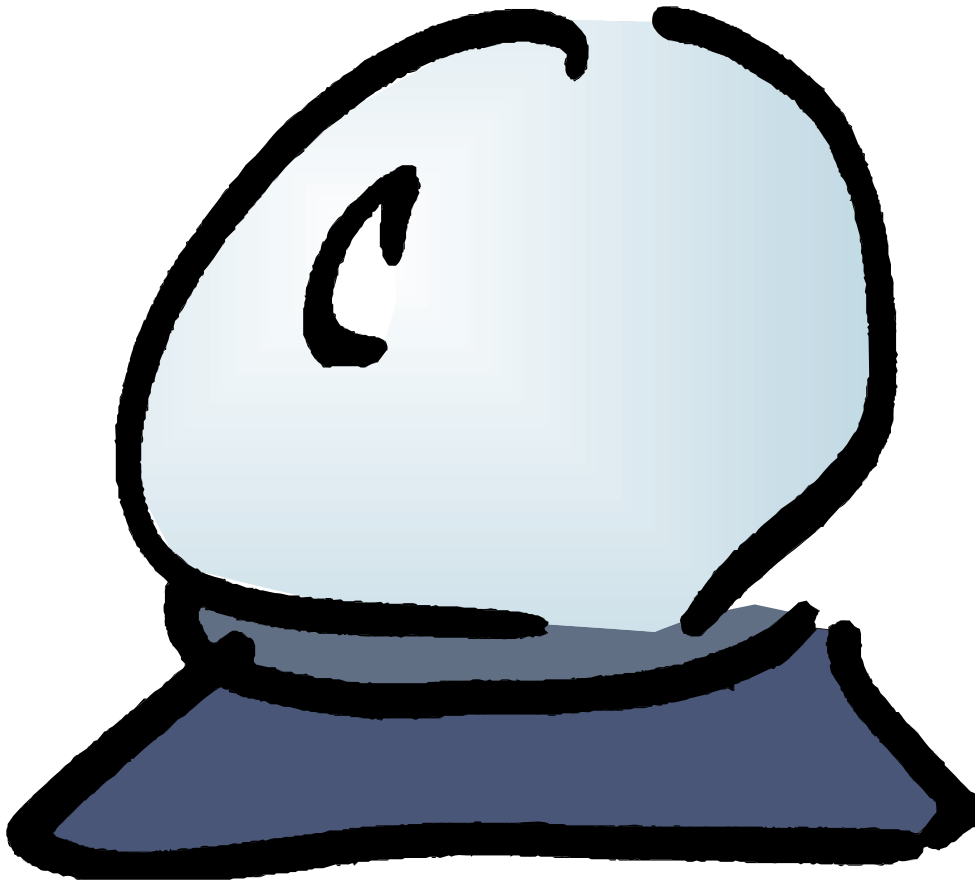


Internet Futures



Acknowledgement to Anders Rockstrom
of Teija Sonera, whose presentation on
this topic had a profound impact on me -
he presented his arguments so clearly and
simply it was just an irresistible message.

Thanks Anders!

Geoff

purpose:



share some thoughts
about the Internet
and its future

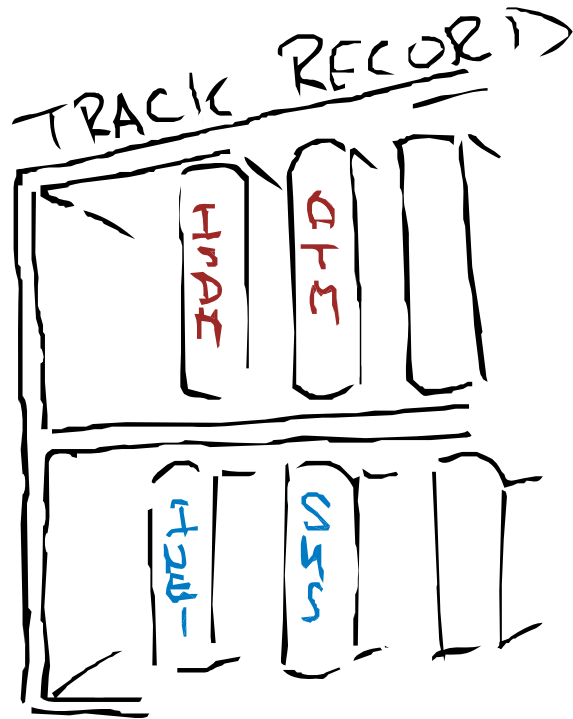
think about some
of the major
factors that will
shape our future

why

The mainstream
telecommunications
industry has a
rich history

...of making very poor
technology guesses

and regularly being
taken by
surprise!



why

could we do a
better job?



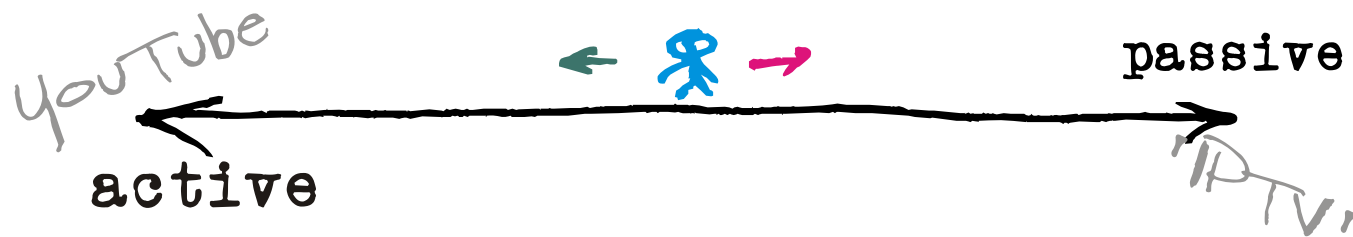
One approach:

1. Observe the situation and what's happening
2. Believe what we see
(the most difficult one!)
3. Understand where this may lead us and what options may be presented on the way

What's Happening Today: User Preferences and the Market for Services

From telephony to chat
to mashups to p2p to ?

From radio to tv to ?



Service Profile Choices

Open collaboration
framework

open

vs

walled
garden

Bundled services

role
specialization

open delivery
infrastructure

vs

Service / content
distribution networks

Vertical
integration

Active user
networks

user
produced

vs

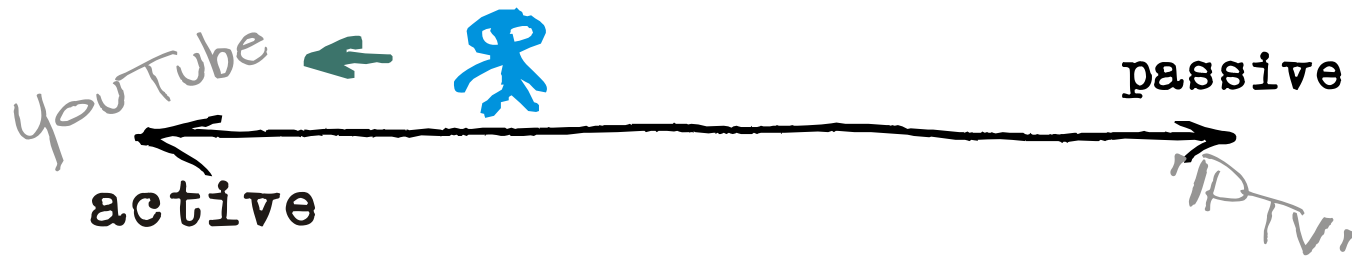
externally
produced

Passive users

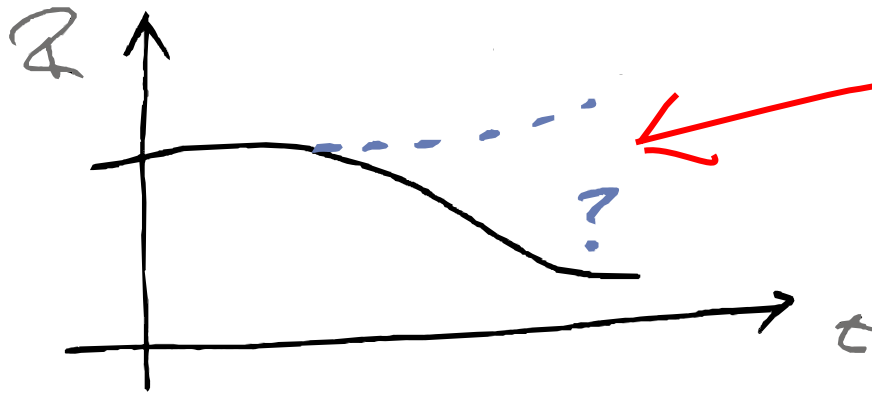
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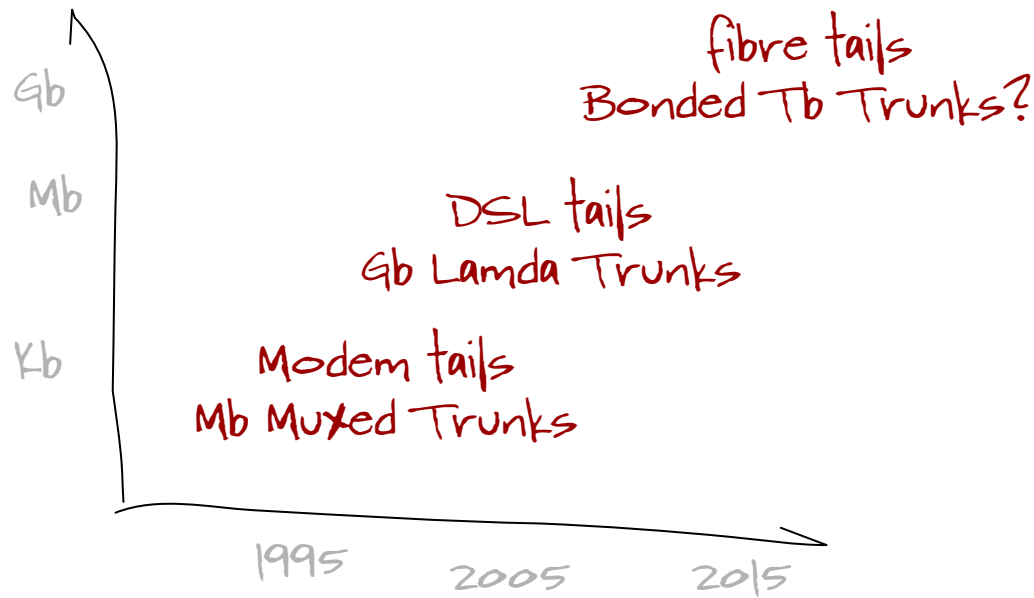
Whats Happening Today: Declining Revenue Profile for incumbent telcos



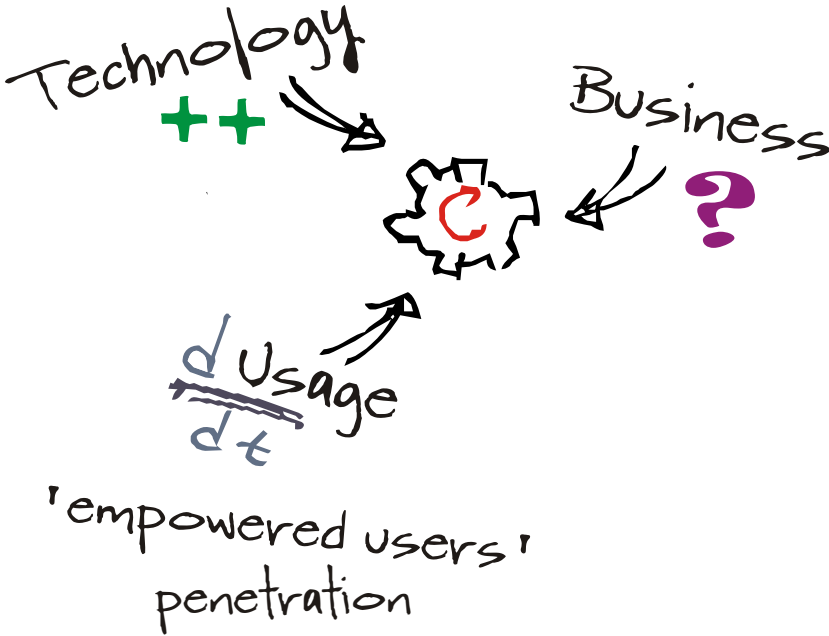
How to fill the gap of the
Internet's revenue leak?

Whats Happening Today: Demand for Bandwidth

what mass market customers want for \$25 per month!



driver dimensions



technology

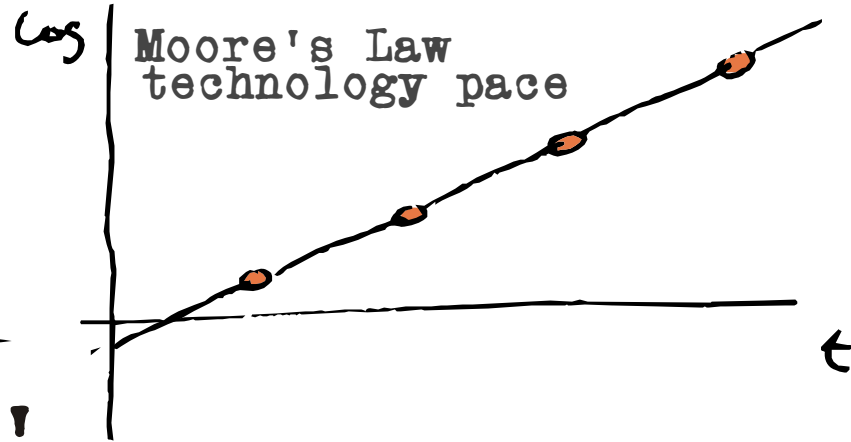
++

surplus

fast refill

enabling windows

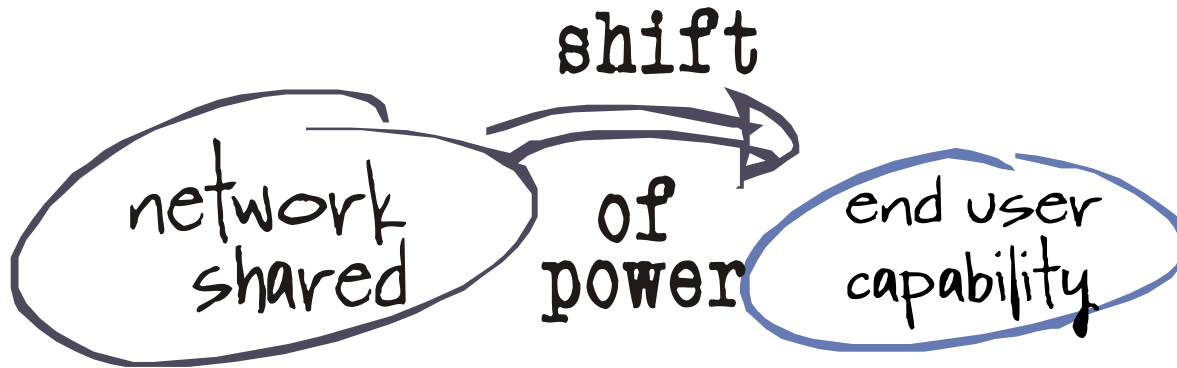
see it ...
... seize it !



technology

++

technology push and network architecture



technology

new production paradigms

"Over the top"
applications



a 'network-service'
produced outside
of the 'network'

technology

new production paradigms

"Over the top"
applications



a 'network-service'
produced outside
of the 'network'

Content production is a commodity
application that users sustain
through sharing, rather than a
valuable service that is produced
externally through dedicated
production channels

technology

surplus enables
divergence

for
simplicity and
performance

~~QoS~~ ~~IMS~~
~~Network VPNs~~

no need for
IP-convergence

Web enabled user generated
content

facebook
doppler youtube
wikipedia

heterogeneity

convergence complemented
with divergence

interoperability

when there is a
use for it

$\frac{d}{dt}$ usage

fuelling the usage growth fire

Please send heaps more....

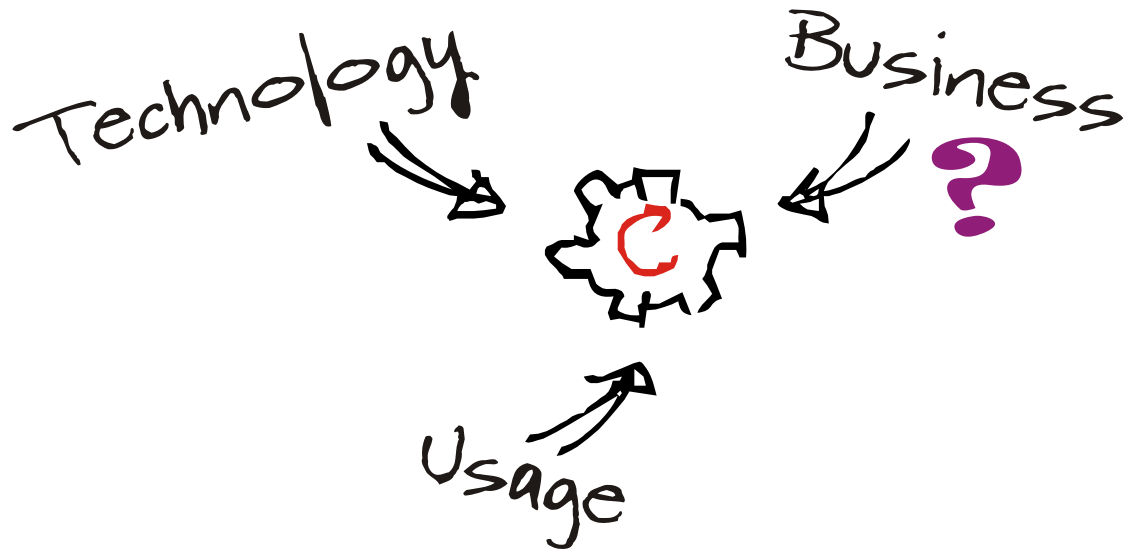
bandwidth
switching fibre routes storage
routing
addressing delivering
silicon density
memory speed power heat dissipation
storage efficiency

usage = scaling

But is bigger always cheaper?

and what happens when its not?

Business modelling



..today operators
tend to be very
hype driven ..

convergence

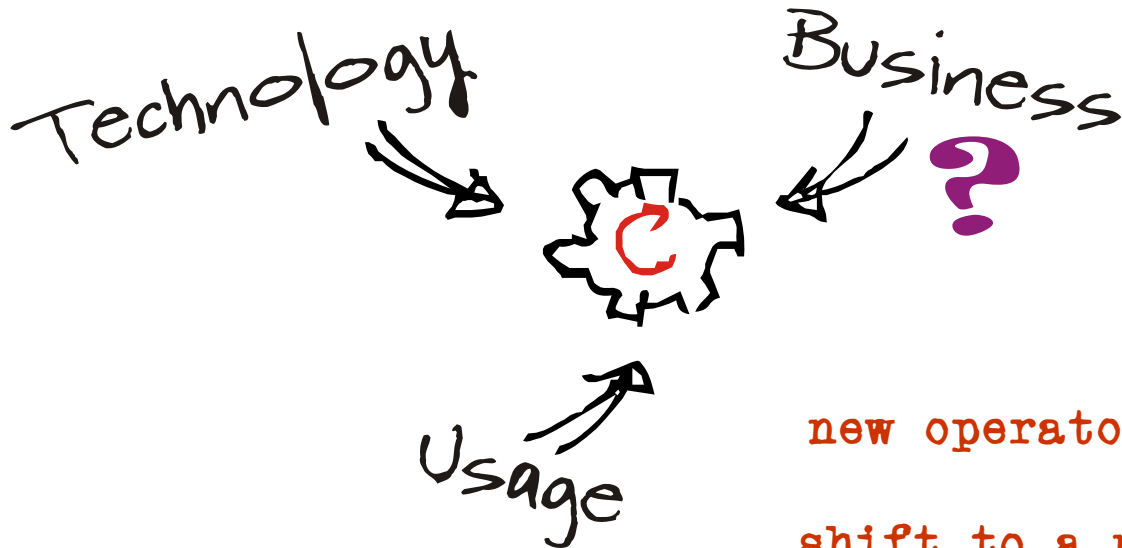
seemlessnet

NGN - . . .

triple play

- ✖ Everyone is talking about it
- ✖ Few have actual experience
- ✖ .. and the actual experiences are mostly failures

Business modelling



new operator roles being defined
shift to a new business structure

.. involving users
and other stake-holders

Business modelling

❑ Packet pushing is a commodity utility activity

Low margins

Low barriers to entry

No product differentiation

Deregulation and competition

Valued services are overlays to the network

❑ Traditional revenue streams are vaporizing

wired telephony

Business data products

Local Access
monopolies

Mobile telephony

❑ Investors remain nervous about telcos

Cost of capital is high

Consumers are fleeing legacy telcos in the face of price gouging

Shareholder returns need to stay high

No residual expertise left in-house

So where are we heading?

My personal view sees the following..

network
commodity utility
network operation

high capacity
packet pushing

user - drive, production
p2p, content, ..

User-centric applications,
not network-centric services

Value shift up
the protocol stack

Reinvention:

involving users
new partners

and different business models

a closing thought

I'm probably going to be proved wrong as much as I may be right with these thoughts. There is no certain track of progress here.

Each shift of the Internet's use paradigm through innovation is as much a surprise to the innovator as it is to everyone else

which is probably a very good thing!