



# Mobile Broadband Working Group

CFP

April 2014 Workshop



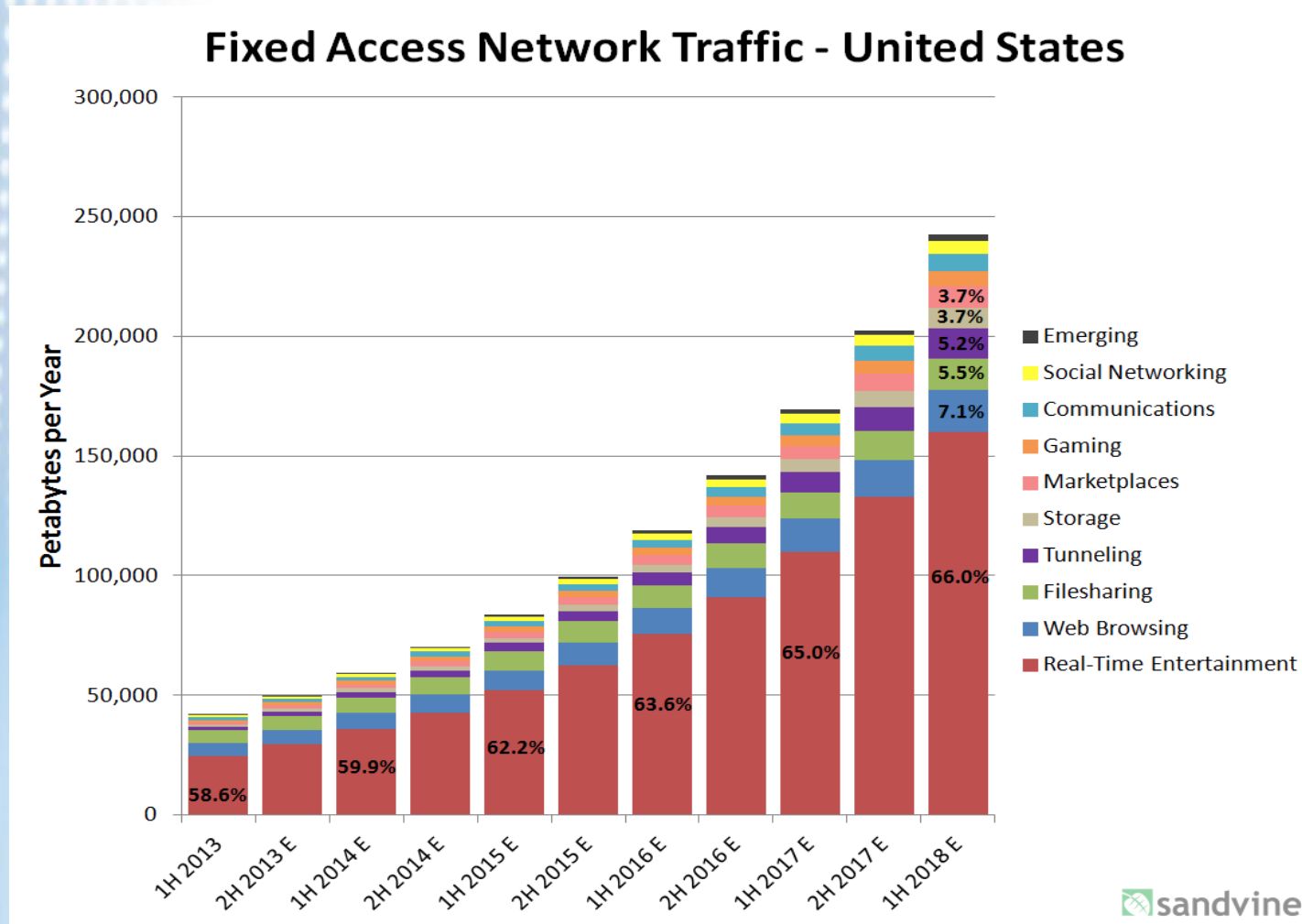
# Economic health

- The overall ecosystem depends on the facilities owners continuing to invest in upgrades to capacity and capability.
- Investment must be justified by return on investment and overall profitability.
- Could broadband access stagnate?
- Some ISPs (especially mobile) claim they are in pain.
  - Why? Growth in demand.

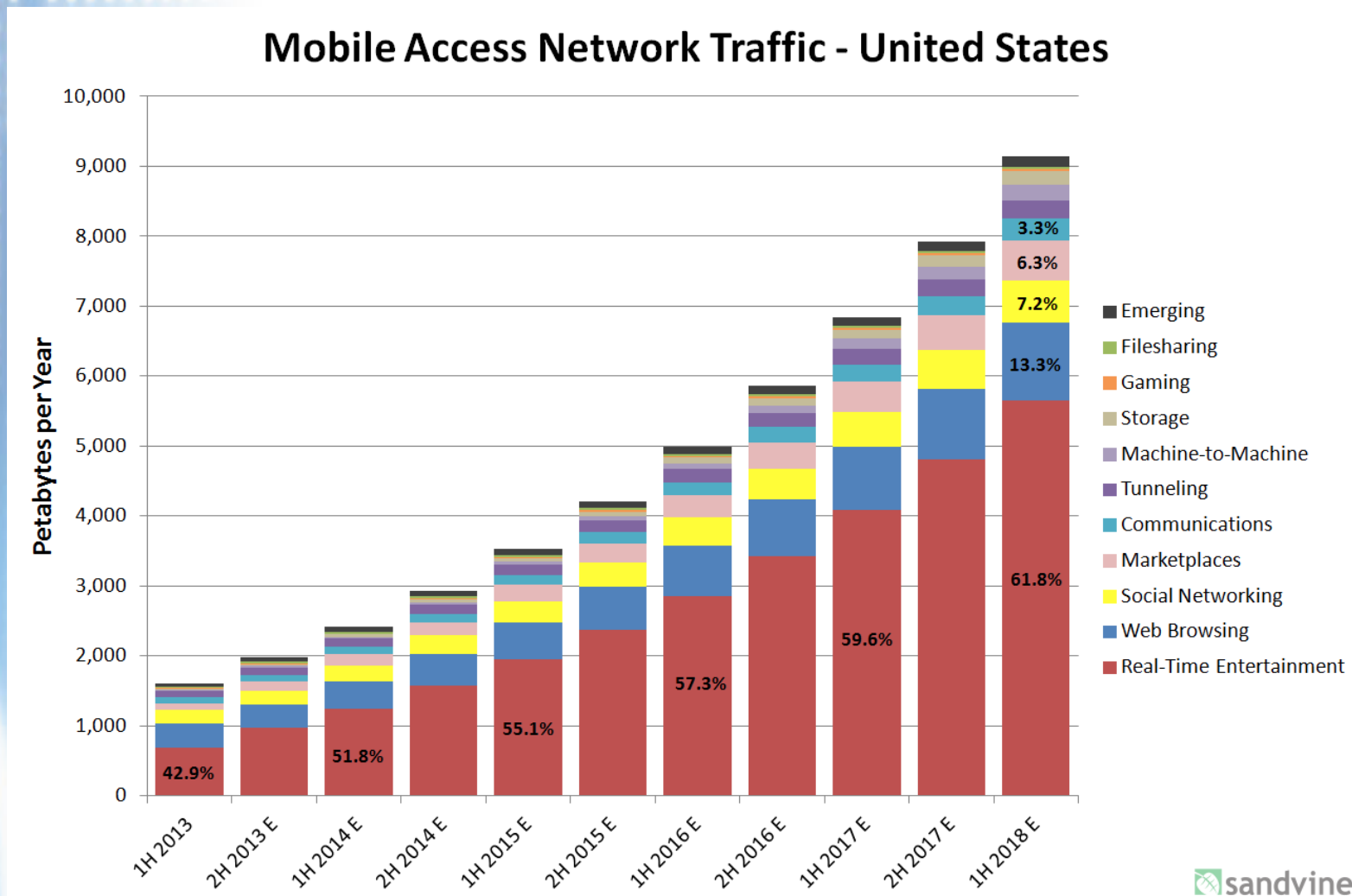
# Three issues

- Growth in demand.
  - Is raw capacity the only issue?
- Cost of usage.
  - More properly, cost of investment in capacity.
- Sources of revenues.
  - Follow the money.

# A prediction of growth



# And another--mobile



# THIS MAY NOT HAPPEN!

- Growth is not exogenous.
  - Important to understand what will shape it.
    - Netflix, QoE, cost.
    - Why should providers invest? What are drivers?
- Exponential growth requires exponential response.
  - More of a challenge for mobile providers.
    - New spectrum, spectrum efficiency are linear.
      - Slow the need to take other steps.
    - Only exponential response I can see is smaller cells.
      - Could this be a “Clay Christensen” event?
- In wireline world, subscriptions may be saturating.
  - Unclear about mobile, but will happen sometime.

# Costs

- Data hard to get, but...
- Mobile usage costs may be 10x or more than fixed wired access.
  - Must engineer for ubiquity, not just capacity.
- If this is so, hard to see how mobile can substitute for wired access.
  - But fixed wireless may be a different story.
  - Small cells, again.

# Revenues

- Flat rate encourages experimentation, excitement, new uses.
  - Flat rate is bad for recovery of usage based costs.
- Usage tiers better align costs and revenues.
  - But may inhibit usage, drive “off-loading” to fixed wireless, etc.
- My personal interest: Advertising.
  - Follow that money.



# Future plans

- Draft white paper is out.
  - Bill Lehr and Marie-Jose Montpetit
- Setting new directions.
- Possible topic: quality of experience
  - QoE
  - Sources of impairment in the network.
    - Current work—congestion.