

FTTH in Switzerland

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FTTH Switzerland: Outline

- Broadband infrastucture: Status in Switzerland
 - Swisscom
 - UTC Cablecom
- FTTH: Status
 - Copper vs fiber
- City power utilities
 - Layer 2 plans of city power utilities
 - Competition with Swisscom
 - Layer 1 roll out by City PU
- 4 fiber compromise
 - Impact on FTTH roll-out

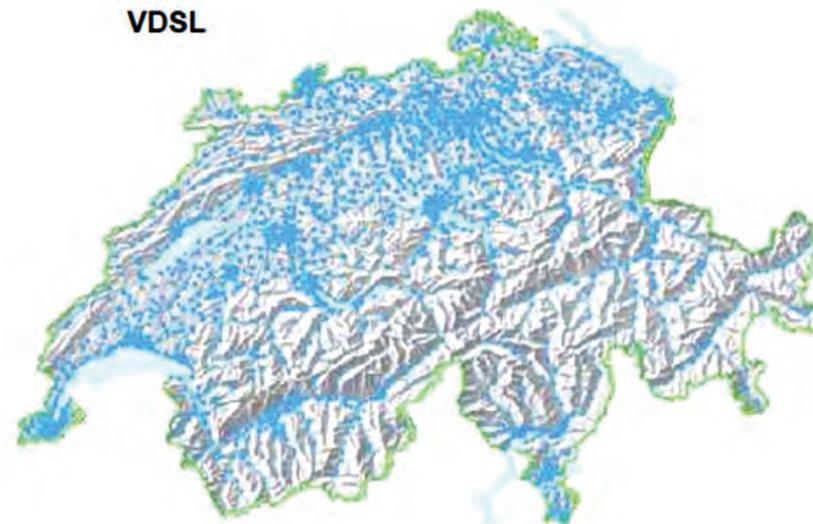
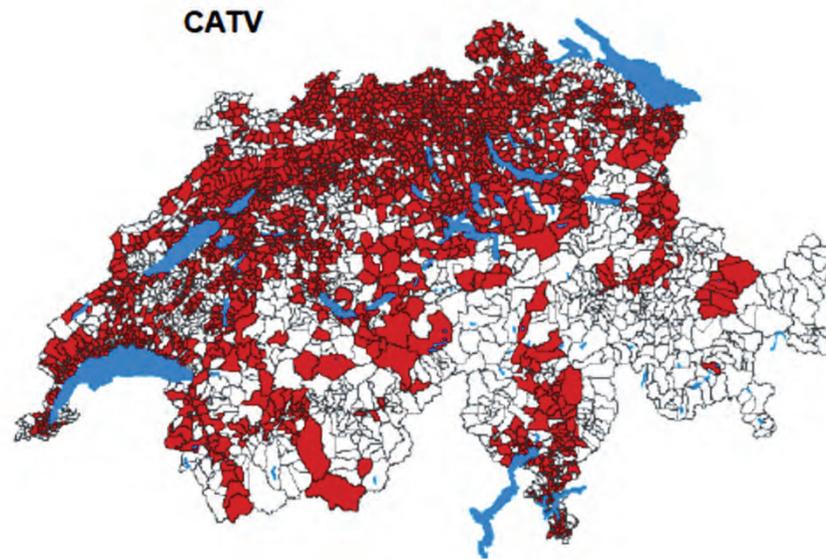
Wireline Status: A/VDSL and Coax

- Swisscom
 - Legacy twisted pair phone system has been upgraded to broadband (internet, TV)
 - From analog to ISDN to ADSL to VDSL
 - Fiber to the local exchange
 - Challenge: Distance from local exchange to customer
 - Solution: Fiber to the neighborhood
 - Limits: < 50 Mbps
- CATV-Nets
 - From TV to internet and VoIP
 - Fiber to the neighborhood and coax
 - Depending on technology: Over 100 Mbps

Business: Swisscom and UPC Cablecom

- Swisscom owns most of market
 - Switzerland: 7.7 Mio inhabitants
 - Swisscom mobile subscribers: 5.8Mio
 - Swisscom fixed lines: 3.5Mio fixed lines
 - Financial
 - 12 bn CHF revenue
 - 2 bn CHF net income with 1bn CHF dividends
 - 57% Swiss government owned
 - «Swiss government monopoly»
- UPC Cablecom
 - Liberty Global
 - 25% of Swiss internet

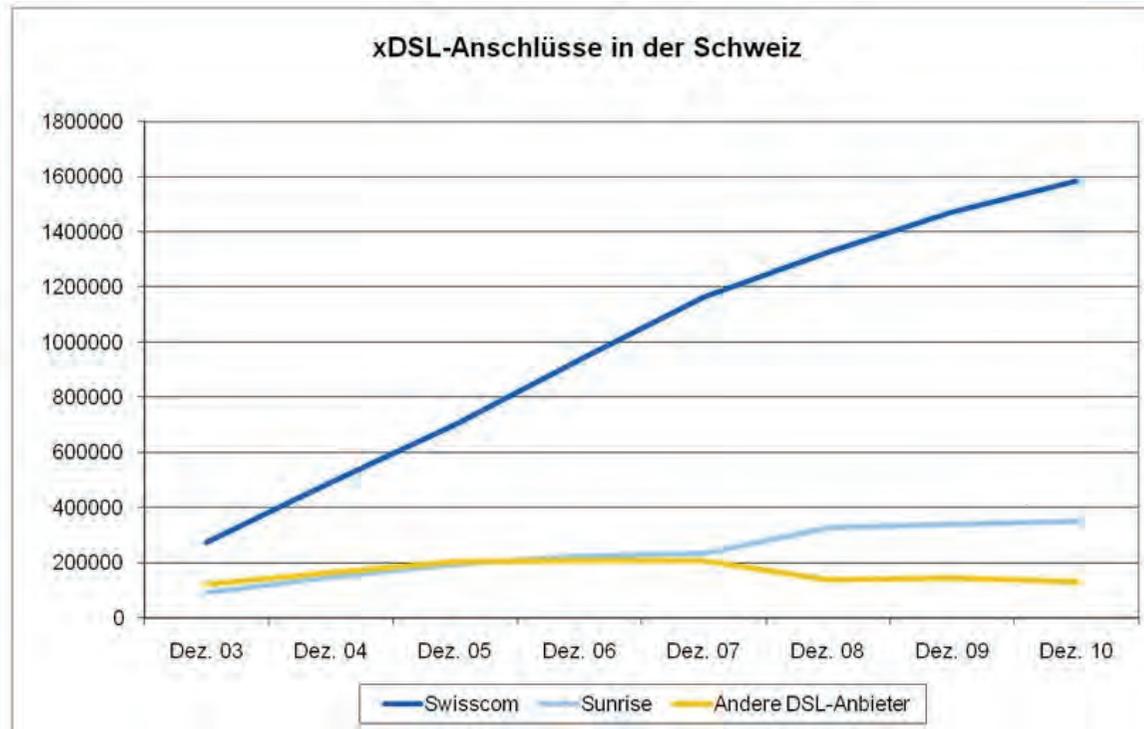
CATV and VDSL



Infrastructure competition:

- 85% of households have a CATV connection
- 90% of these telecom capable
- 98% ADSL coverage
- 75% VDSL coverage

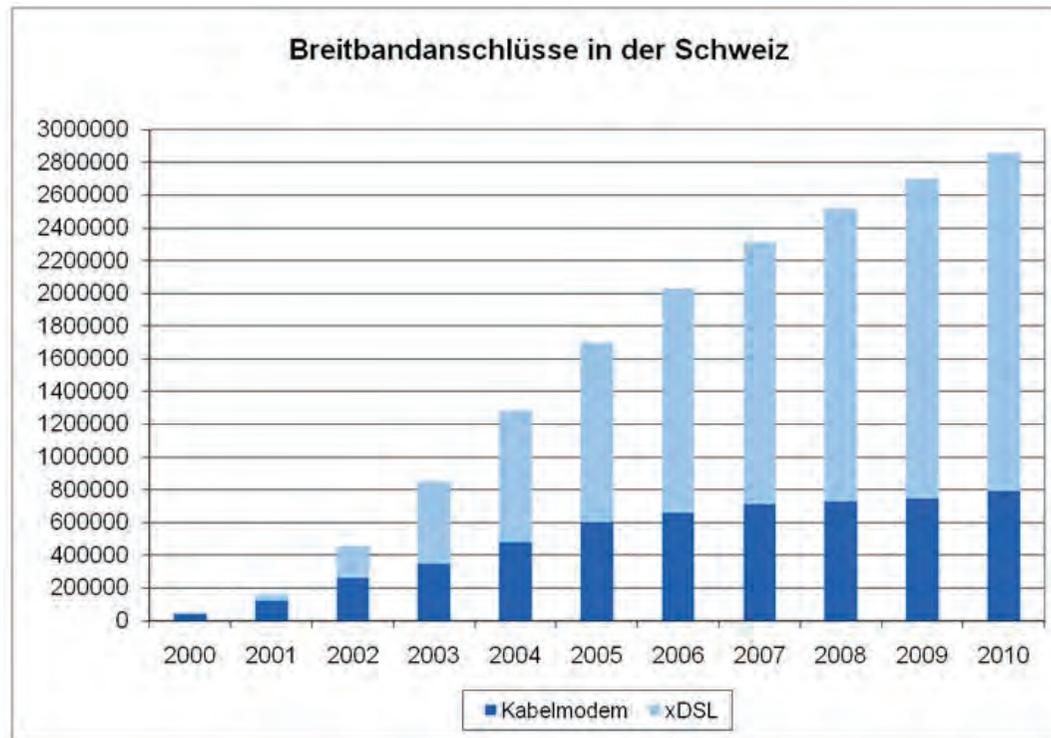
X(A or V)DSL: Dominated by Swisscom



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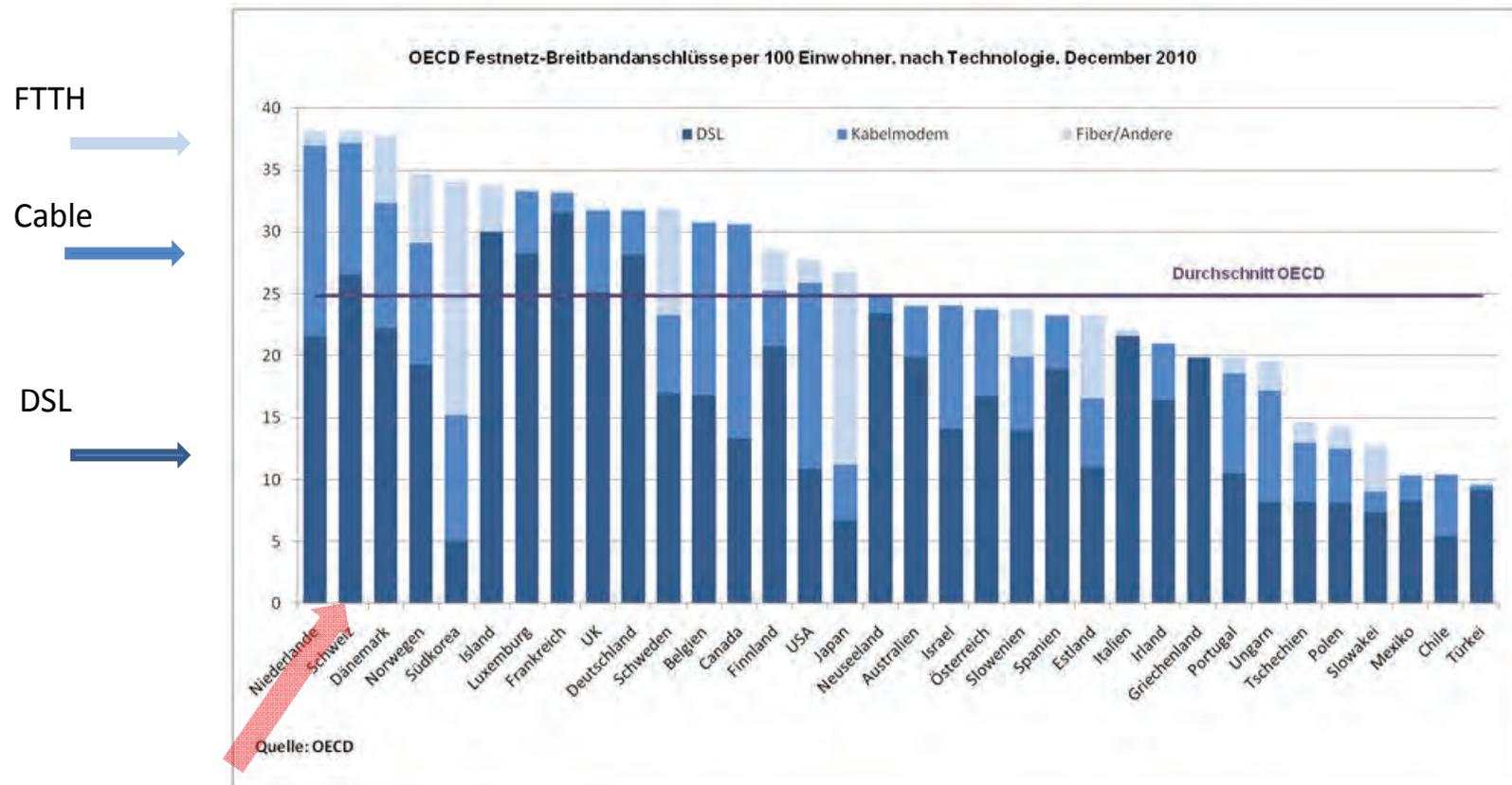
- ADSL and VDSL: Dominated by Swisscom

X(A or V)DSL and Cable: Broadband



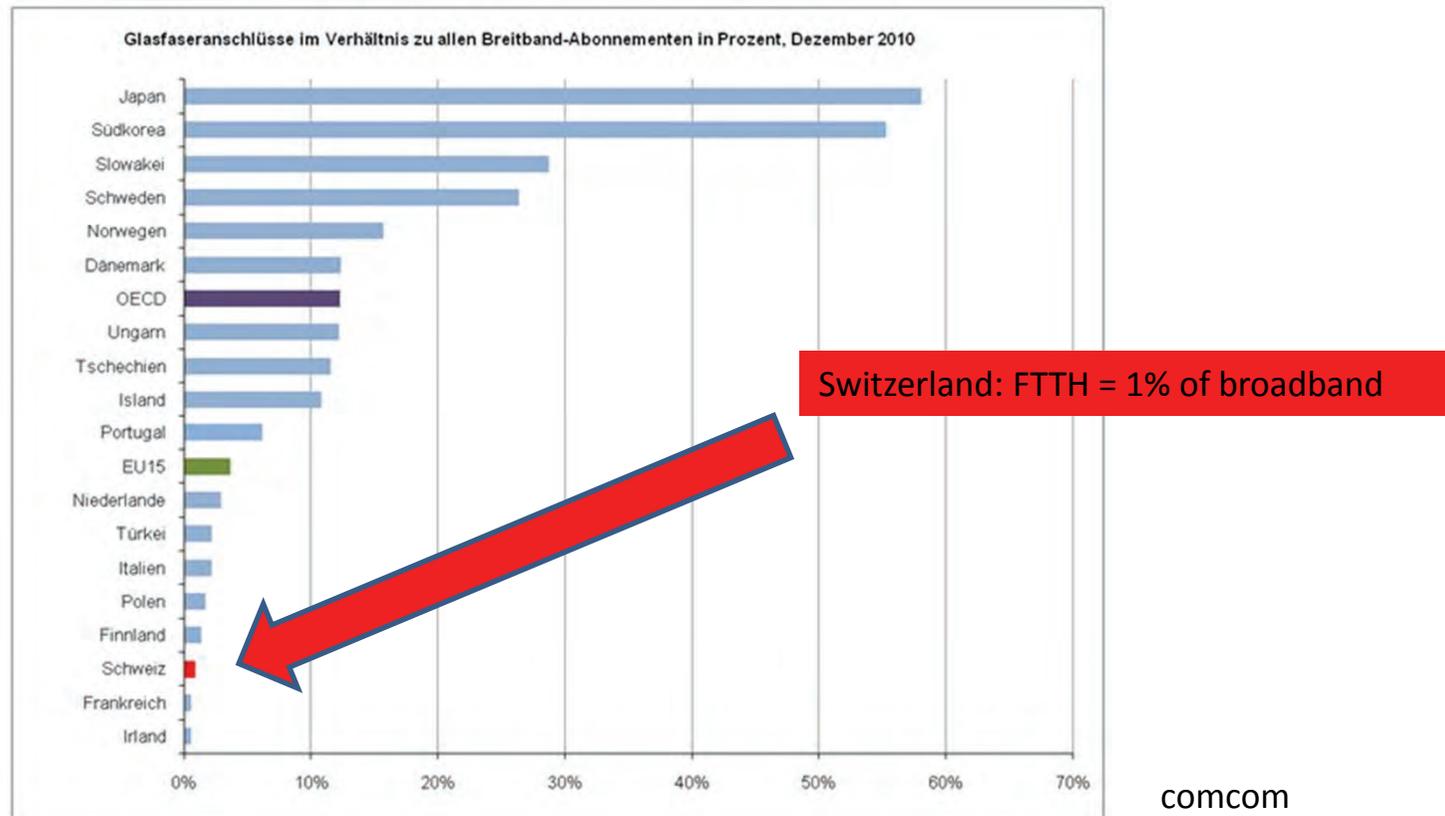
- 3 Mio broadband lines for 7.7Mio inhabitants
 - 50% of Swiss people have broadband access

High broadband penetration: 2010



- Switzerland: High Broadband penetration: mostly by DSL and cable and essentially **no FTTH**

Small FTTH % of Broadband connection



- Most Broadband connection NOT by FTTH

Swiss Broadband: FTTH Strategy

- CATV-Nets:
 - Extend fiber to the neighbourhood,
 - Continue to use already installed coax on the premise.
 - Sufficient for 10 years (upload speed limited).
- Swisscom (and third parties using their net):
 - FTTH is necessary to stay competitive (twisted pair on premise has to be replaced)
 - **Competition arises on who can install the FTTH**

Hydro electricity, democracy and Swiss FTTH



- City power utilities (PU) run electric power stations
 - Swiss electricity generation is cheap: Hydro and nuclear
 - Swiss cities collect their own taxes and can decide on how to spend it
 - City PU have cash and can decide to expand into new markets: FTTH

FTTH: City Power Utilities (PU)

- City power utilities (PU) operate and have right of way for pipes for distribution of electricity, gas, sewage. etc.
 - Many of these pipes can be used for fiber distribution
- City power utilities (PU) started their own FTTH program
 - Original business plan of PU Zürich and St.Gallen was:
 - Single fiber with open access on layer 2, neutral access for everybody (against payment). Good business case for PU
 - Local popular votes to pay for it by tax money
- Swisscom started to install in parallel their own fibers in cities
- Roundtable (Initiative Swiss Comcom) lead to decision to install multi-fiber cables in cooperation between city PUs and Swisscom

Swiss 4 Fiber

- Investing companies deploy 4 fibers instead of one.
 - Four fibres are property of constructing partner (PU or Swisscom); longterm infeasible right of use (IRU) on some fibres granted to co-operation partner. One to two fibers are property of Swisscom, shared cost
 - Power Utilities have possibility to differentiate by lighting up their own fiber. But difficult to be competitive against Swisscom fiber

➤ Consequences

1. Cooperation partners gets FTTH and can share investment
2. FTTH deployment is accelerated by investment from PUs
3. City PUs started with L2 single fiber business case and ended up with essentially challenging 4 fiber L1 business case.

FTTH - Market

- Cable operators will continue to use their coax to the home:
 - FTTN and CTTH
- FTTH installation: Competition between Swisscom and city PU:
Round table agreement
 - Swisscom at an advantage since Swisscom can offer
 - quadruple play «Vivo Tutto» (fixed wire, internet, TV and wireless)
 - City PU with challenge
 - Have challenging business case against Swisscom services
 - Pay with electricity profit and taxes part of 4 fiber FTTH cost
 - Dark fiber business case?

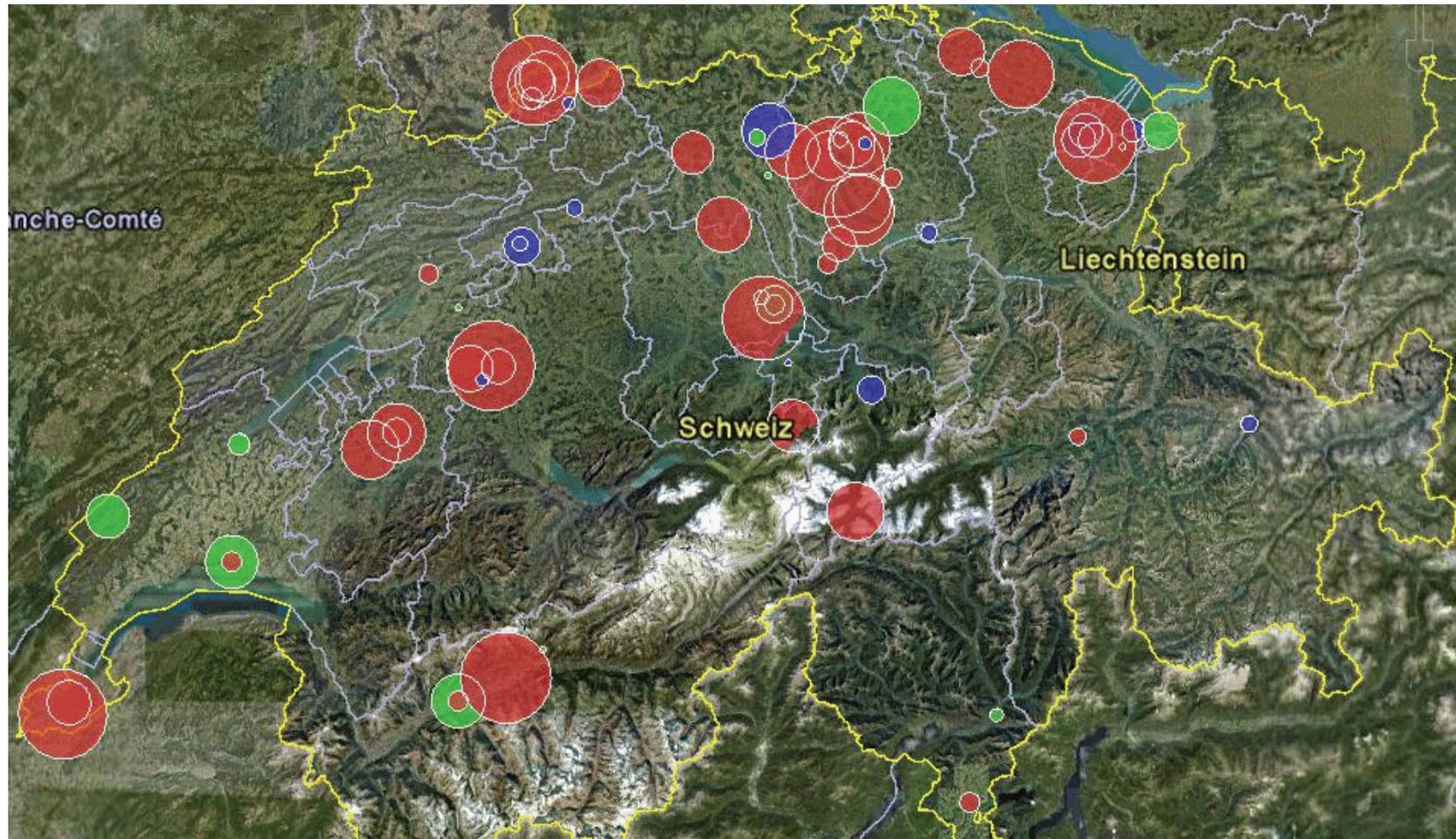
City PU/Swisscom 4 fiber agreement

- Following city PUs have signed pre agreement

<i>CHF millions</i>	Total Invest	Ports	Timetable
Freiburg (City & Kanton)	200 ⁹	125'000	until 2020
Lausanne	140	80'000	Pilot
St. Gallen	78	42'000	until 2014
Bern	140	82'000	until 2014
Genf	189	180'000	until 2016
Basel	170	110'000	until 2017
Zürich	430	220'000	until 2017
Luzern	90	41'000	until 2014
Winterthur	100 ¹⁰	50'000 ¹¹	-
Total	1'537	930'000	

- St. Gallen and Genf have signed full and final agreement

Openaxs: City PU FTTH Organisation



FTTH Switzerland – Future (1)

- Some PU have objections against the round table 4 fiber agreement
 - Escalation to Competition commission (WEKO) to verify cooperation agreement with respect to dominance of Swisscom/city PU partnership
 - **Decision on September 5th that 4 fibers should be open to additional partners**
- Swisscom put FTTH installation on hold
- Some PU stopped FTTH installation due to poor ROI
 - Swisscom has to do FTTH by itself: Slowdown rollout?
- FTTH investments (totally in range of 100 MCHF per anno in past years. CAPEX 2012 several 100 MCHF according newspapers).

FTTH Switzerland – Future (2)

- Today: > 100 planned FTTH Projects in Switzerland
 - Service Provider request standards
 - Can different PUs agree on common standard (Openaxs)
 - FTTH projects in cities. How to reach homes in the mountains?

<i>Projects in cities and municipalities</i>	Total identified projects
50 largest cities	~ 30
51 st to 100 largest cities and municipalities	~ 25
Remaining 2'500 municipalities	30 to 50
Total Switzerland	85 to 105

FTTH Switzerland



Switzerland: 2010

- has high broadband access: 38%
- Very small FTTH access (<1%)

Switzerland future

- New dynamics due to city PU FTTH initiative
 - Started with L2 but was basically squeezed into L1 (dark fiber)
- Will know in a few years if 4 fiber model was successful