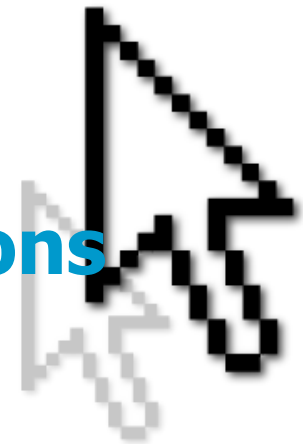


Mobile communications in the Netherlands

Lessons from the past auctions

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Was the Dutch 2.6 GHz auction a success?

Country	€cent/MHz/pop
Denmark	13,08
Finland	0,33
Germany	2,21
Netherlands	0,12
Norway	2,95
Sweden	13,01



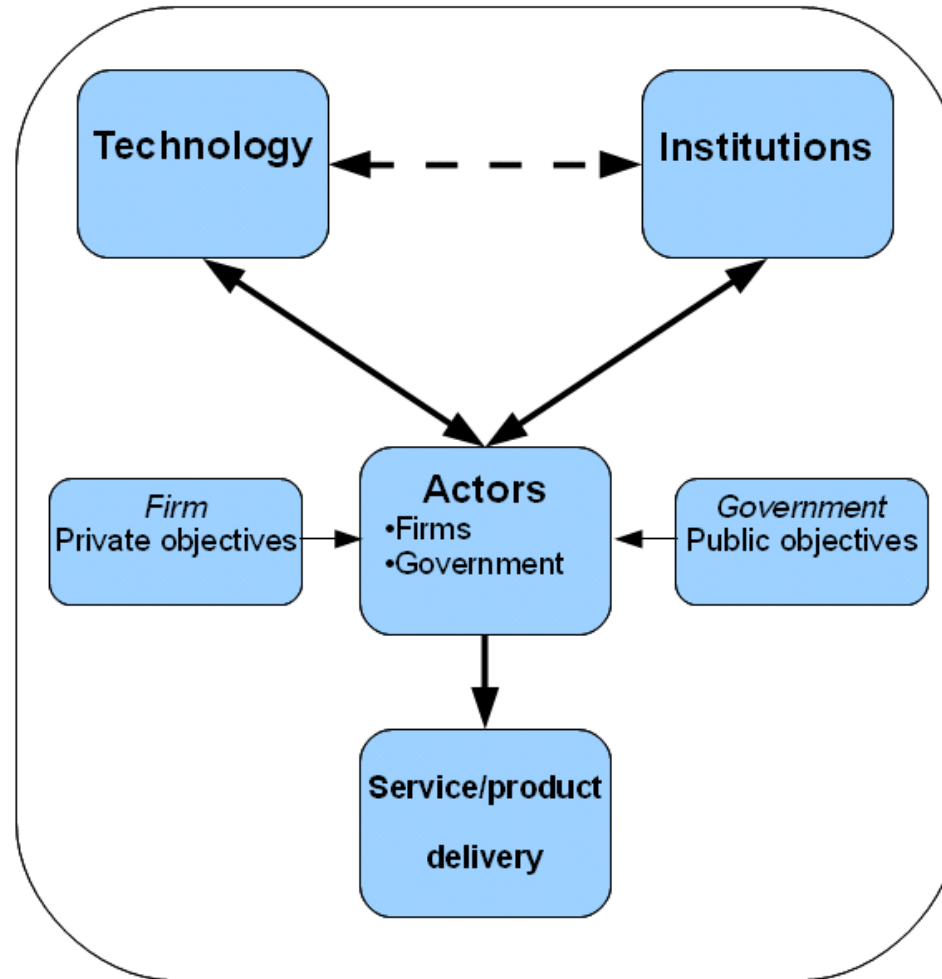
Was the Dutch 2.6 GHz auction a success?

Country	€cent/MHz/pop	New entrants?
Denmark	13,08	✗
Finland	0,33	✗
Germany	2,21	✗
Netherlands	0,12	✓
Norway	2,95	✓
Sweden	13,01	✗

Lesson 1: You can only tell if something is a success if you have defined the objective



A dynamic model of interaction for Complex Technical Systems

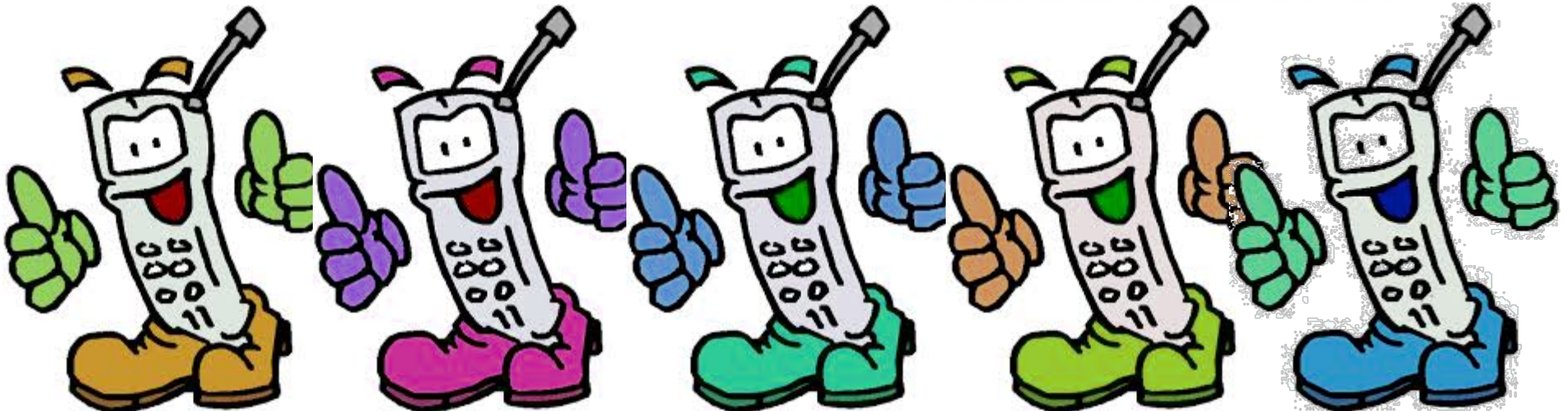


1995: GSM900

- 1994: KPN (former PTT) gets GSM900 license
- 1995: Beauty contest
 - Criteria:
 - network quality
 - offered services
 - Libertel (Vodafone) wins

GSM®

GLOBAL SYSTEM FOR
MOBILE COMMUNICATIONS



1998: GSM1800 “enhancing competition”

- Objective: enhancing competition with at least 2 new entrants
- 2 big licenses with 2x15 MHz GSM1800 + 2x5 MHz GSM900
 - nationwide coverage obligation
- 16 small licenses with 2x2.4 or 2x2.6 MHz of GSM1800
 - no coverage obligation
- 2 new entrants with a big license
- 1 new entrant based on 4 small licenses
- Auction not fully efficient
 - Bidding on a combined number of small lots was not possible (bid of either n small lots or nothing)

Lesson 2: Careful auction design needed to match the objective



2000: UMTS “mobile data communications”

- Original objective: innovative new mobile broadband services
 - 4 big licenses
- Lobby from existing (5) mobile operators:
 - auction: 5 licenses for sale
- Auction attracted only 1 new entrant

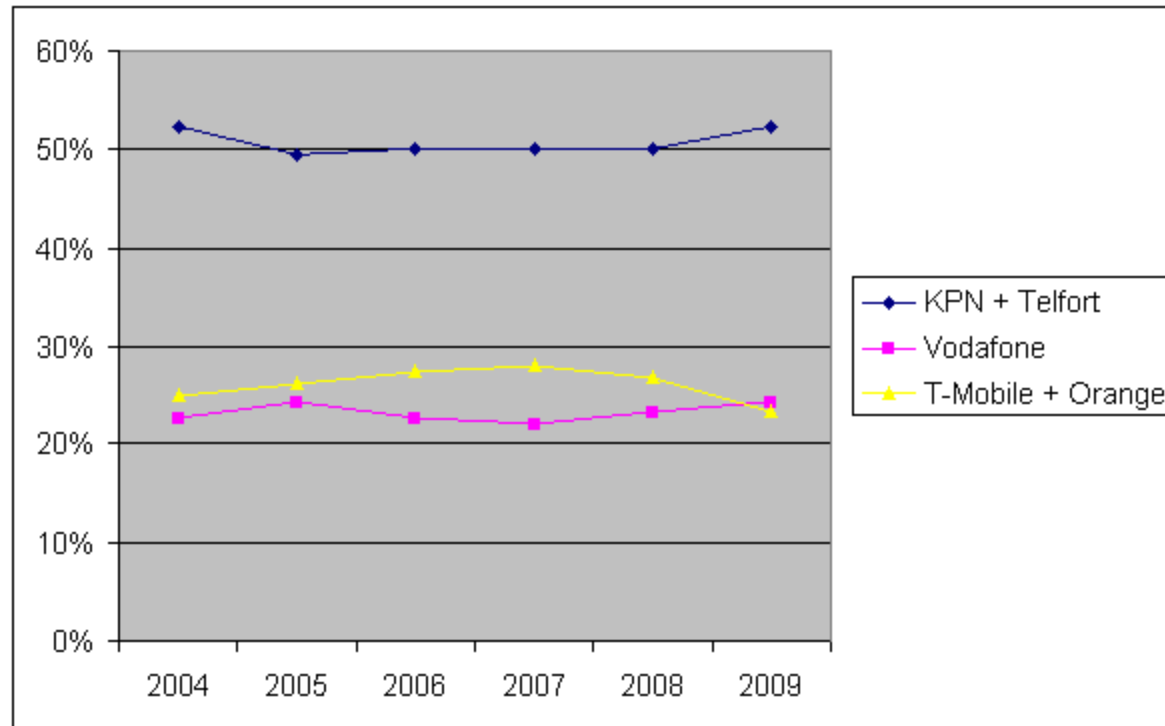
We would however not like to see that we end up with nothing whilst other players get their licenses for free. Versatel invites the incumbent mobile

Lesson 3: need for flexibility in the auction design to cater for changes in the circumstances (only 1 new entrant).

Lesson 4: an equal amount of licenses and existing mobile operators will repel new entrants. (It is very hard for a new entrant to outbid an incumbent operator)



Consolidation in the market



3 operators with a rather fixed market share



2010: “Expanding mobile data communications”

- Auction of 2.6 GHz band
 - max. of 2x65 MHz paired spectrum (wide area mobility; additional capacity in existing networks)
 - min. of 55 MHz unpaired spectrum (specific applications for niche players)
- Original objective: innovative mobile broadband services and possibility for niche players
- Parliament: at least 3 new entrants

⇒ **Lesson 3’: Need for flexibility in the auction design to cater for changed circumstances (less new entrants than expected)**

• **Lesson 5: auction objective should match the good on offer**

Lesson 6: don’t forget the incumbents (they are also important for innovation).



2012: Multi band auction

- Re-auctioning of GSM900 and GSM1800 spectrum
 - New public objective: Continuity of services
- Objective for the mobile market in the period 2011 – 2017

Effective competition on the market for mobile communications, in which continuity of services is assured and with room for innovation.

- ⇒ Need for more than 3 mobile operators
- ⇒ Need for additional low spectrum
 - ⇒ digital dividend (800 MHz band) made available
- ⇒ license exempt spectrum made available within the GSM1800 band to facilitate niche players

- Original auction design: reservation in the 800 MHz band of 2 channels of 2x5 MHz for new entrants
- Parliament: further 2x5 MHz channel reserved for new entrants in the GSM900 band



Multi band auction: the results

	- Coverage spectrum -		- Capacity spectrum -		
	800 MHz	900 MHz	1800 MHz	2100 MHz (FDD only)	2600 MHz (FDD only)
KPN	2×20	2×10	2×20	2×15	2×10
Vodafone	2×20	2×10	2×20	2×15	2×10
T-Mobile	-	2×15	2×30	2×20	2×5
Tele2	2×20	-	-	-	2×20

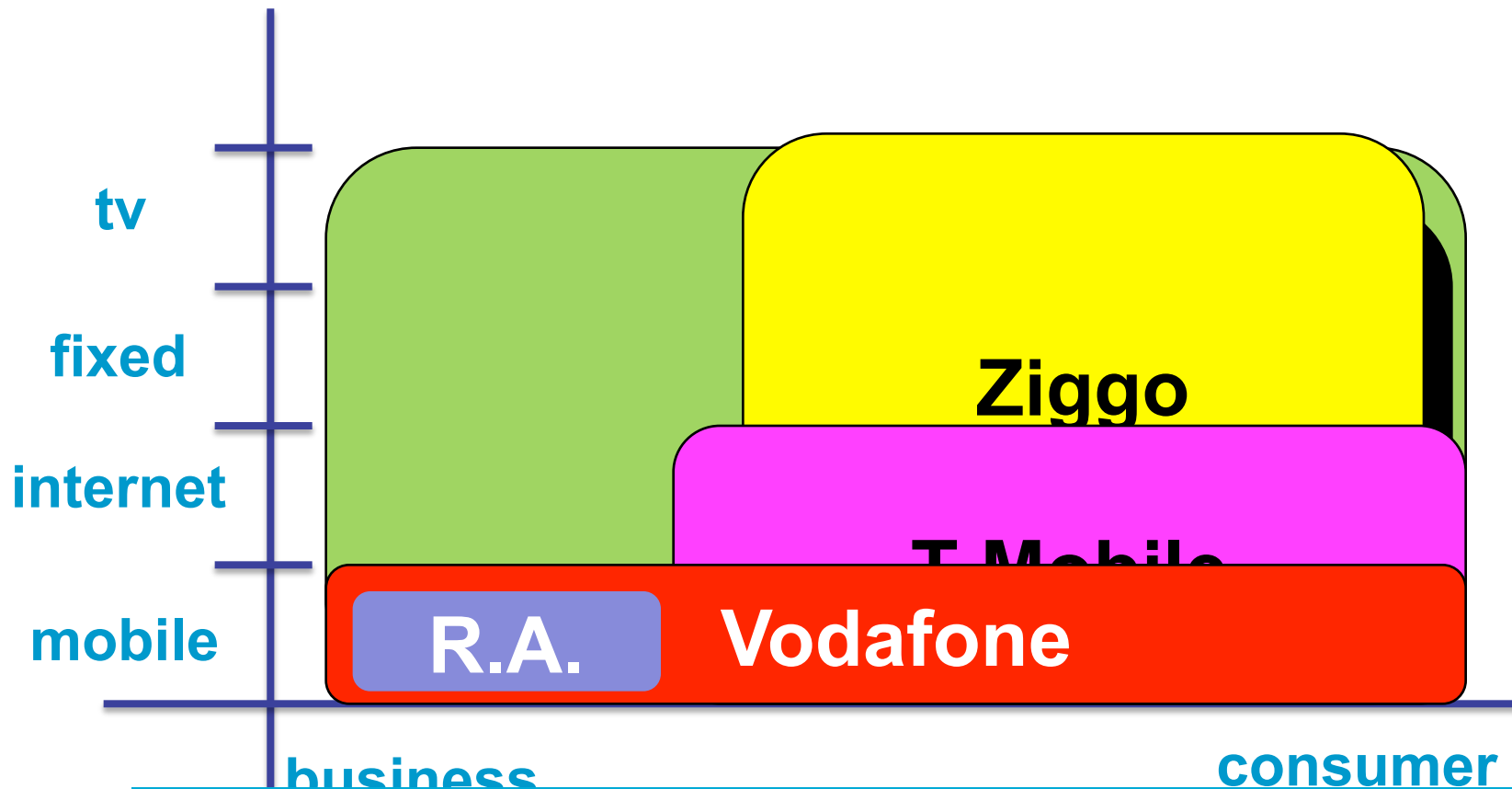
Lesson 3'': Need for flexibility in the auction design if circumstances change (cap on GSM900 was lifted because there was no interest from new entrants)

Lesson 7: interest of new entrants in a saturated market is limited

Lesson 8: Need for an objective for the whole mobile market, not just for the auction itself.



(Mobile) operators on the Dutch market



Can the Dutch government be content after all?