Interconnect issues for VoIP islands

A new question for the regulatory apparatus

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The Future of VoIP II

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With the telco industry moving into VoIP here comes a band of market players most Netheads are hardly familiar with

- Regulators
- Regulatory affairs employees
- Scholars from economic think-tanks
- Telecoms consultants
- Academic economists and policy analysts
- And above all: lawyers, many, many lawyers

- Only here and there you'll see
  - Wholesale voice managers and your occasional tech type
- The reason why they are there:
  - two decades + of fierce telco interconnection debates
  - regulatory assisted break up of old telco monopolies

That’s a large bunch of people you’ll have to educate on what VoIP peering actually is

- **Problem 1: (Dutch) telecommunications law (6. Interoperability)**
  - is only about **bilateral** negotiations & agreements
  - but many (VoIP) peering agreements are **multilateral** of nature
  - **Oops.** Technology neutral law? Maybe, but business model neutral?

- **Problem 2: Economists, Scholars and Consultants discover ...**
  - No payments: it’s **Bill and Keep**, we shall study & discuss that
  - VoiPS-SP’s say: No it’s ***VoIP Peering***
  - ?? What’s the difference ?? (This is the current state of EU debate)

- **Problem 3: Despite 2005 FIST specs, no VoIP interconnection**
  - no company yet has requested a VoIP interconnection with KPN

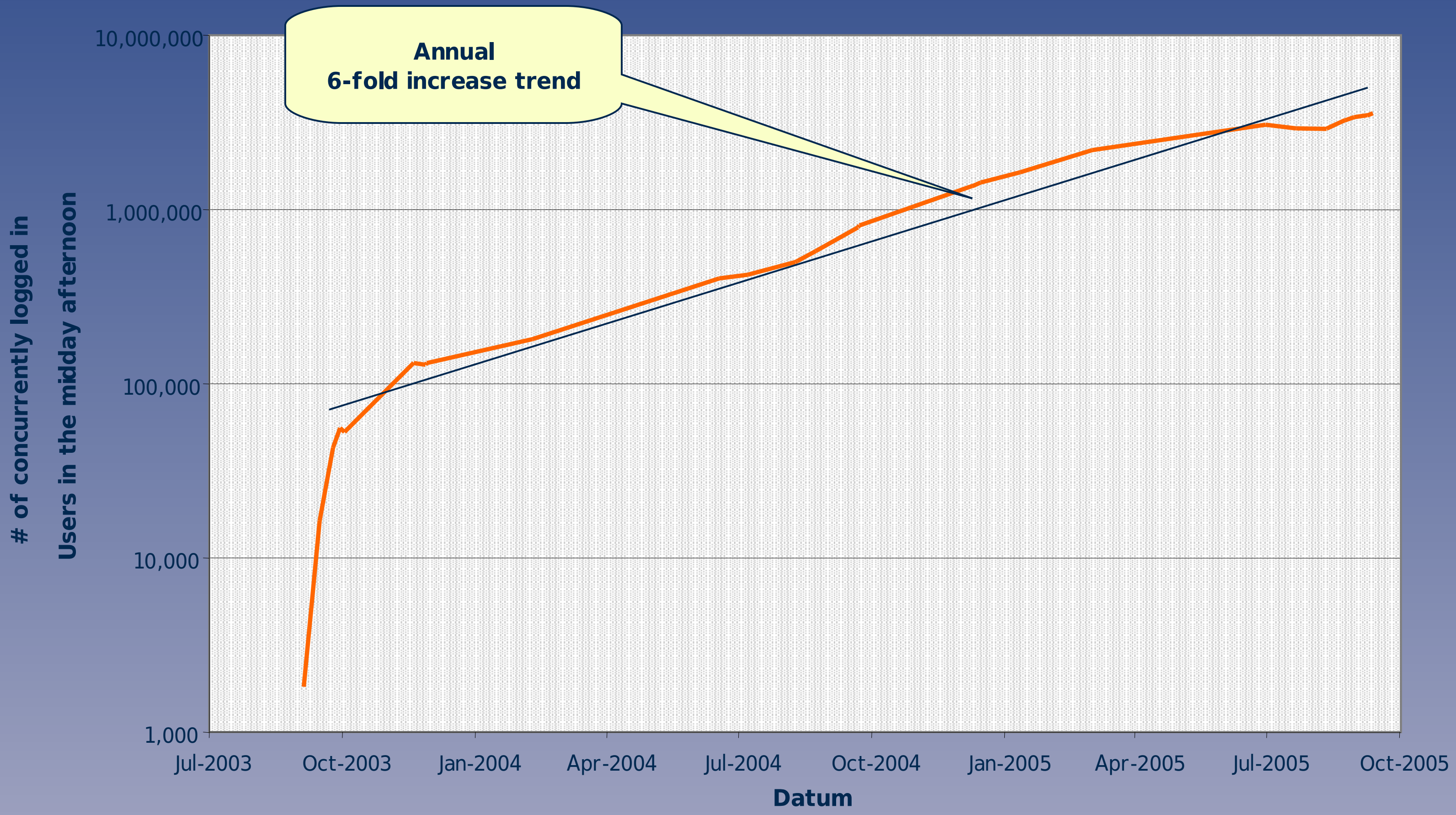
The Dutch market itself is also not yet quite on its way

- **Problem 4: Mobile operators have a long way to go**
  - 3G has VoIP, from the handset to the base-station
    - * about 8% in 2006 had a 3G handset
  - First step: internal backbone to VoIP and then interconnect (2010?)
- **To think about: Mobile operators already have parallel IP nets**
  - GRX, GRX Peering Exchange, MDX …, it spans the globe
  - It’s IP technology but a logically separated world (even a .gprs TLD)
  - All set up via GSM Association, they will not move without them
- **Bright side 1: Cable operators have founded SIP Exchange**
  - They implemented VoIP Peering towards each other
  - Advanced features (IM, presence, video) are on the way
  - However: some are yet busy retrofitting networks from MEGACO

Bright side 2: Growth 12-fold in 2005, more than tripled in 2006

Telephony subscriptions NL (x 1000)	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Mobile	**1,014**	**1,716**	**3,398**	**6,768**	**10,693**	**12,070**	**12,069**	**13,468**	**16,017**	**16,279**	**17,058**
- KPN	804	1,185	2,162	3,479	4,845	5,225	5,034	5,205	6,076	8,072	8,642
- Vodafone	210	531	1,189	2,179	3,180	3,231	3,284	3,403	3,671	3,976	3,817
- Telfort			47	450	900	1,285	1,290	1,551	2,308		
- Orange				360	1,000	1,153	1,025	1,323	1,701	1,914	2,047
- T-Mobile				300	768	1,176	1,436	1,986	2,261	2,317	2,552
Fixed net access lines	**8,208**	**8,329**	**8,377**	**8,278**	**8,248**	**8,185**	**8,061**	**7,883**	**7,597**	**7,598**	**7,555**
- KPN PSTN	8,110	8,050	7,767	7,330	6,915	6,569	6,316	6,120	5,860	5,483	4,459
- KPN ISDN	96	272	584	881	1,185	1,417	1,536	1557	1,487	1,424	1,297
- KPN InternetPlusBellen										13	517
- non-KPN	2	7	26	67	148	199	209	206	250	678	1,299
- Cable operators		3	18	58	138	188	196	190	230	467	863
- Internet (ADSL/ISP, VoIP-SP)							1	2	3	184	355
- FTTH/FTTB-net										6	35
VoIP lines							**1**	**6**	**41**	**512**	**1,607**
Decline of PSTN/ISDN		-116	-29	140	111	114	134	175	330	440	1,151
Growth non-KPN fixed telephony		5	19	41	81	51	10	-3	44	441	1,108

Dutch VoIP in 2005 outpaced Skype's active users growth



The problem set is now clear

- 1.6 million VoIP fixed access lines (21%)
- 1.4 million (8%) mobile VoIP accesses

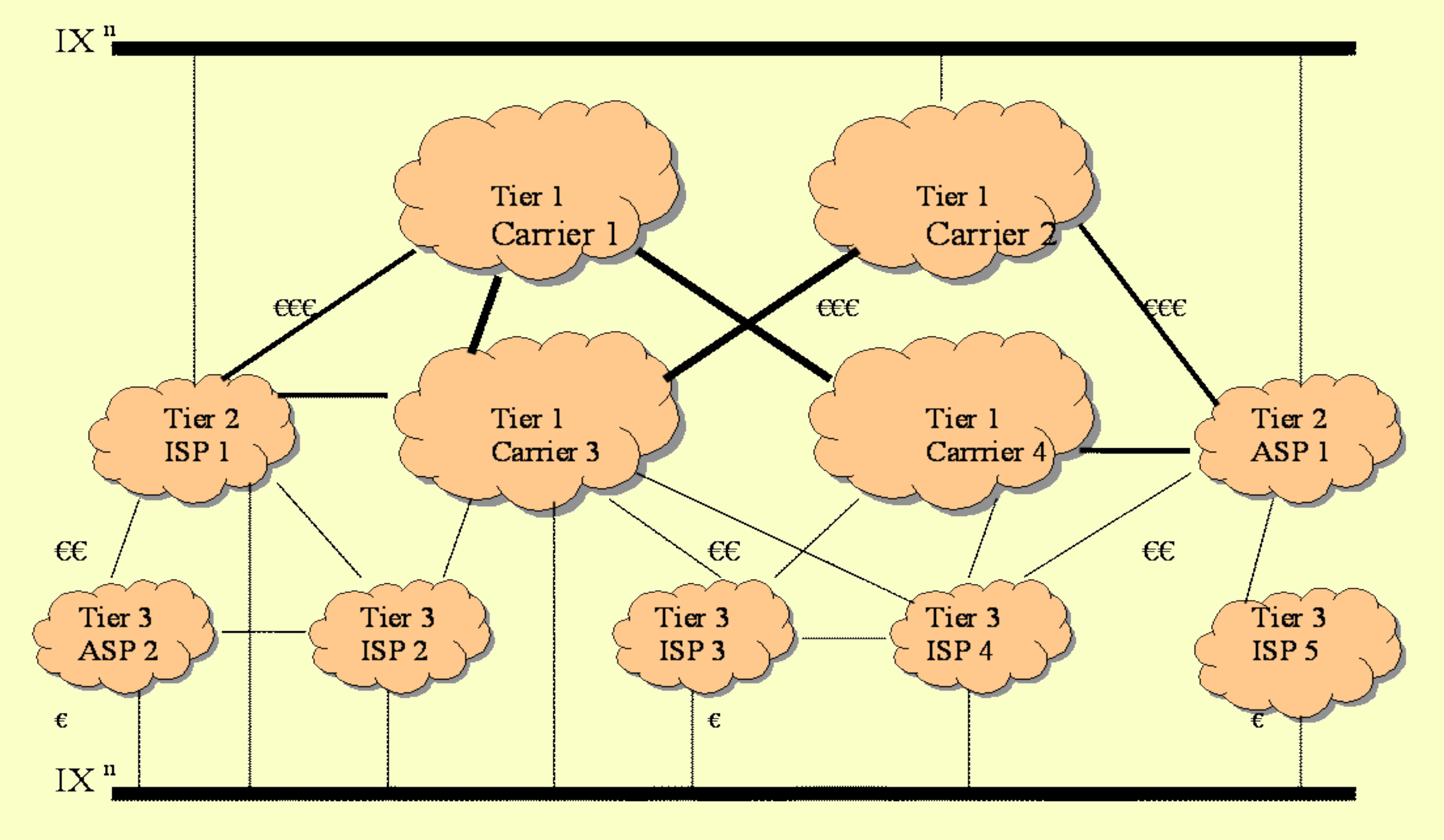
- But no serious VoIP interconnection yet
- Nearly all traffic still runs through the TDM core of switches
- A lot not yet SIP based older tech (MEGACO, H.323)

- And then there are some fringe types 'sipping'
  - working mainly over the public Internet
  - doing something they call VoIP Peering
  - seem to have some role for ENUM directories too

So this is what you see as you start looking with a regulator’s hat on, walking around in this new industry of VoIP islands

- **Funny guys, writing funny types of contracts you’re not used to**
  - they are used to resolve disputes on bilaterals, not multilaterals
  - how to judge an interconnection conflict?
    * between a VoIP peering group member and an outside company
- **They are doing advanced features with each other**
  - but give a minimum set to competitors
    * hey, I had price competition in my booklet, not tech favouritism
  - feature competition, price does not matter, settlement free ...
    * which regulatory economics handbook is that?
- **They use weird new words and acronyms:**
  - Server federations
  - SPEERMINT, Peeri

Ams-IX: sketching peering at the IP layer



A mix of settlement free arrangements at the IX and paid bilateral contracts between ISPs

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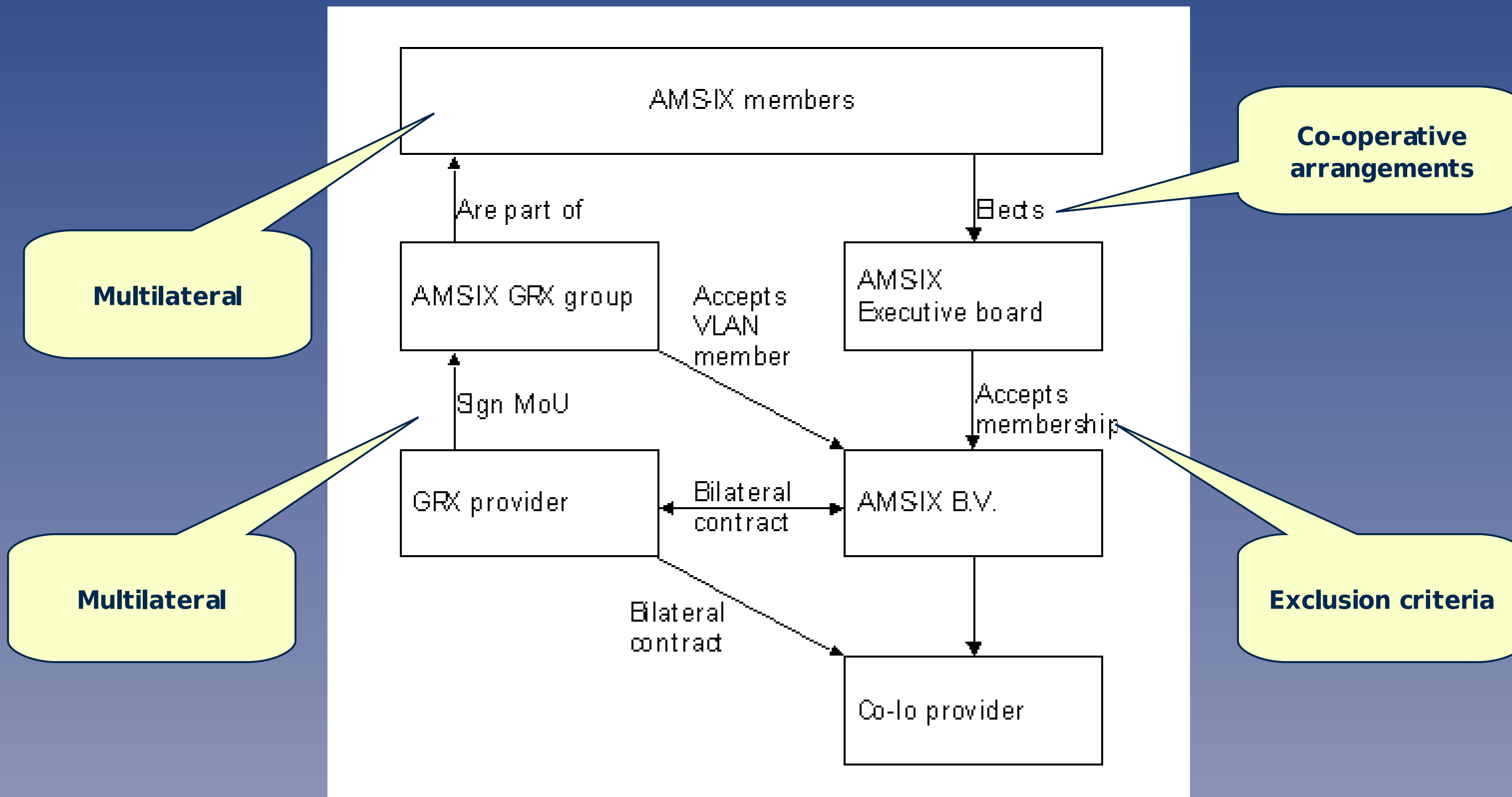
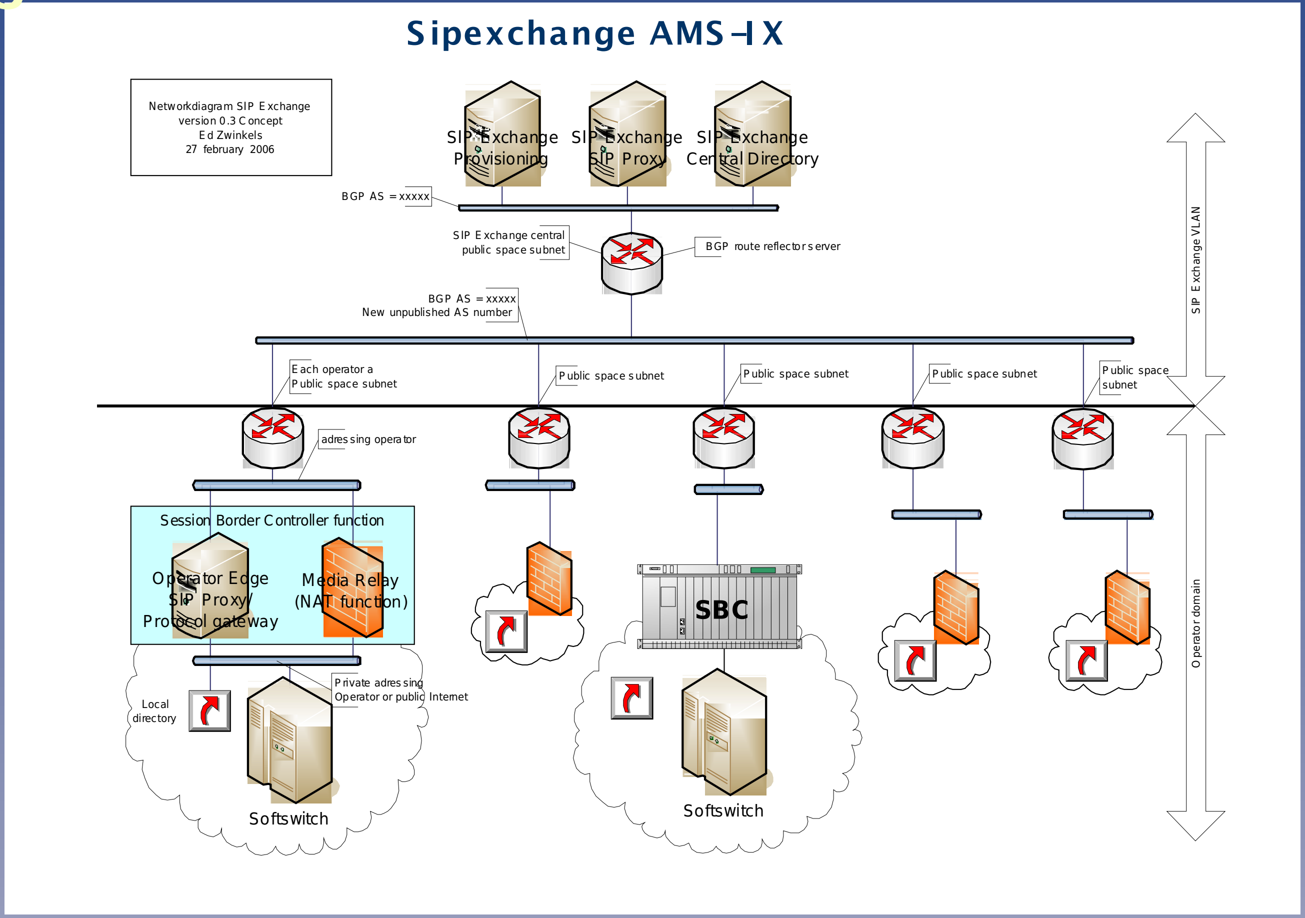
But then, what is this?



The separate arrangements at Ams-IX between mobile GRX providers (left) and Ams-IX general governance structure (top and right)

A SIP Exchange: nice tech, but what are the arrangements?



SIP Exchange as sketched by S. de Graaf, CAIW at nov 2006 SIP SIG on Infrastructure ENUM

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So what is shifting today in a regulatory perspective

- An industry structure with both bilateral and multilateral arrangements co-existing
  - looks a bit like IP Peering, but then with federations / carriers
- From wholesale cost models → multilateral arrangements
  → minimum feature sets
- Avoiding niche players not locked out from essential services
  - But what is then essential? what is the right price?
- That thorny issue of Number portability, seems multilateral too
  - Infrastructure ENUM …
- And interoperability obligations are written in the law …
  - And it is your task to maintain that law in dispute resolution

Some new regulatory questions popping up

- **How far are federations/clubs allowed to go in excluding other parties while an *interoperability obligation* exists**
- **Is it permitted for a Significant Market Power to join one or more federations, treating some different *(non-discrimination)***
- **Is it necessary to establish minimum levels for quality, not this becomes more variable *(but what about new features)***
- **Must a regulator allow tariff differentiation for calls to the same numbers but with different functionality (video vs speech)**
- **What mix of bilateral and multilateral arrangements for**

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Thank you for your attention

Questions?