

# **Interconnect issues for VoIP islands**

**A new question for the regulatory apparatus**

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**March 15, 2007**

**The Future of VoIP II**

**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**  
Stratix company yet has requested a VoIP interconnection with KPN

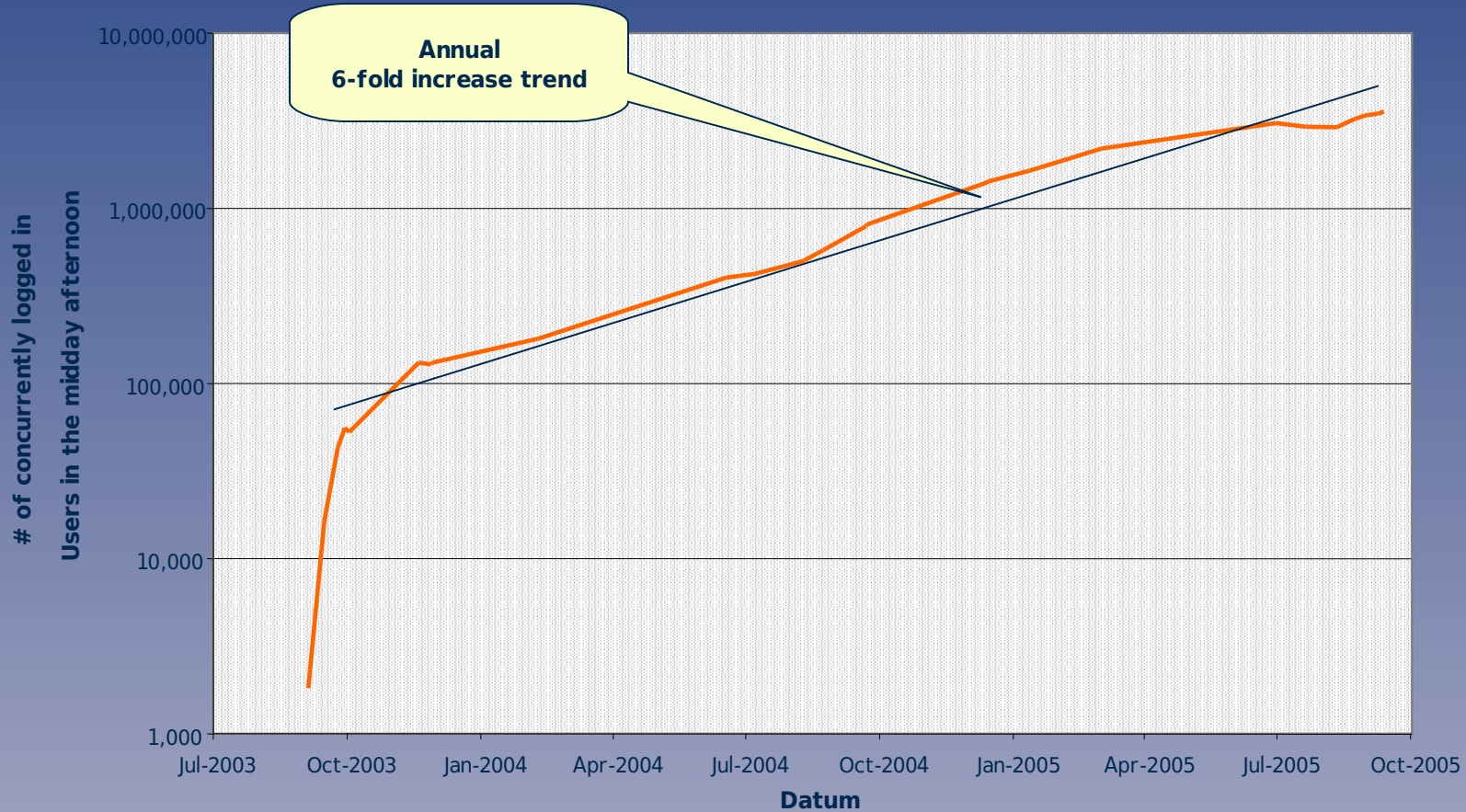
## The Dutch market itself is also not yet quite on its way

- **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

## 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
<b>Mobile</b>	<b>1,014</b>	<b>1,716</b>	<b>3,398</b>	<b>6,768</b>	<b>10,693</b>	<b>12,070</b>	<b>12,069</b>	<b>13,468</b>	<b>16,017</b>	<b>16,279</b>	<b>17,058</b>
- 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
<b>Fixed net access lines</b>	<b>8,208</b>	<b>8,329</b>	<b>8,377</b>	<b>8,278</b>	<b>8,248</b>	<b>8,185</b>	<b>8,061</b>	<b>7,883</b>	<b>7,597</b>	<b>7,598</b>	<b>7,555</b>
- 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	1,557	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
<b>VoIP lines</b>							<b>1</b>	<b>6</b>	<b>41</b>	<b>512</b>	<b>1,607</b>
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



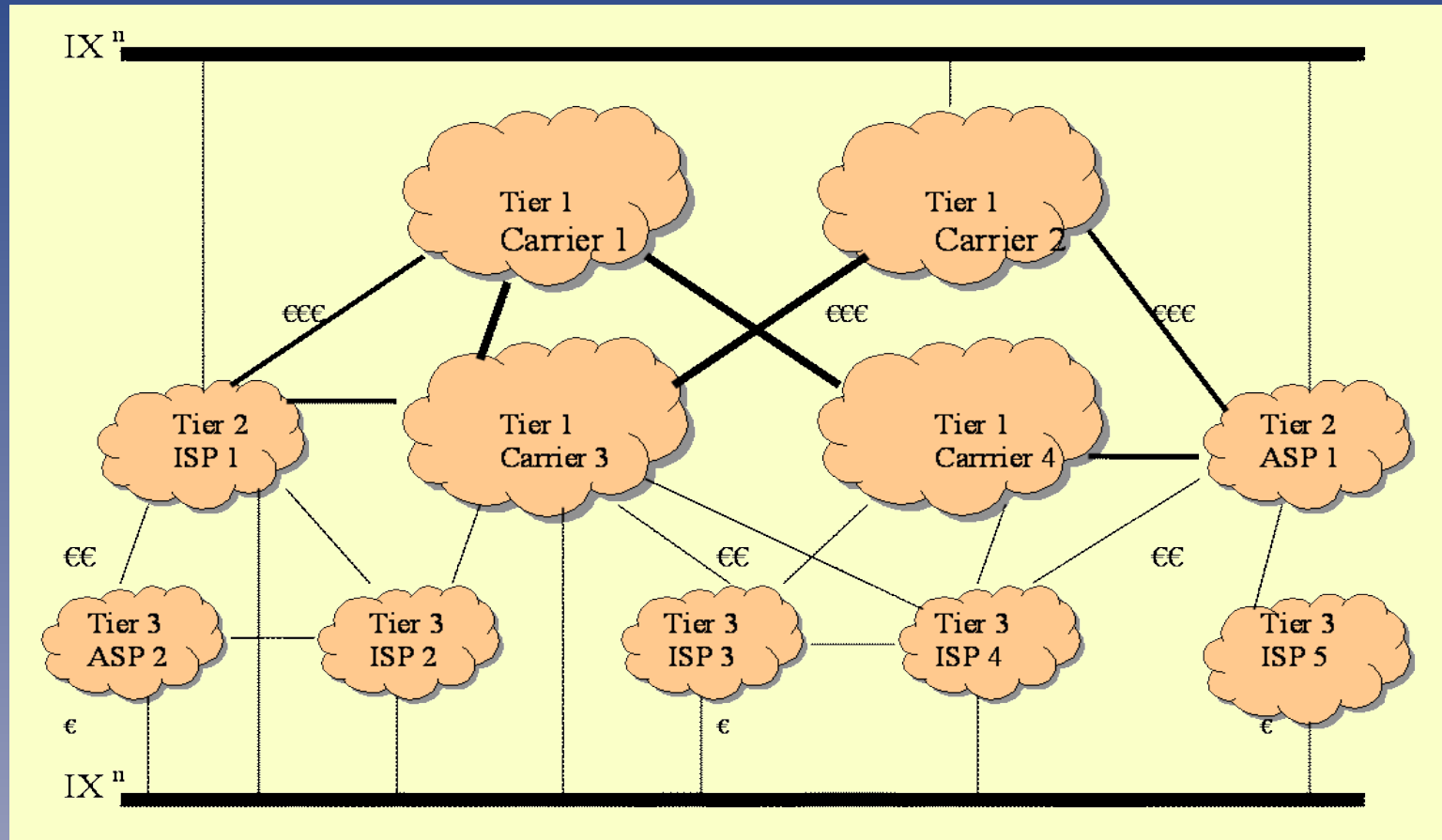
## The problem set is now clear

- **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

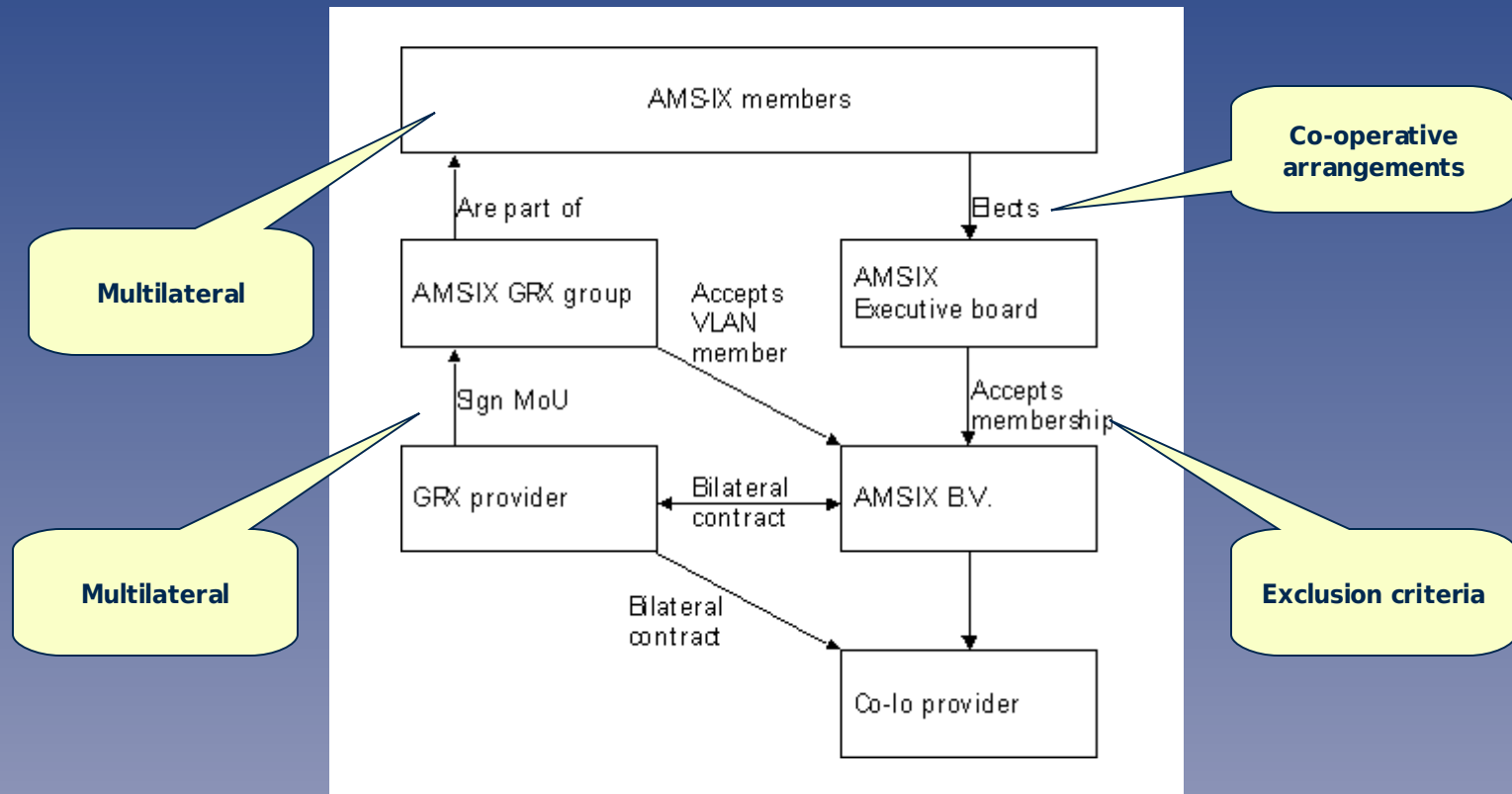
- **Funny guys, writing funny types of contracts you're not used to**
  - they are used to resolve disputes on bilaterals, not multilaterals
  - how to judge an interconnection conflict?
    - \* between a VoIP peering group member and an outside company
- **They are doing advanced features with each 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:**

## Ams-IX: sketching peering at the IP layer



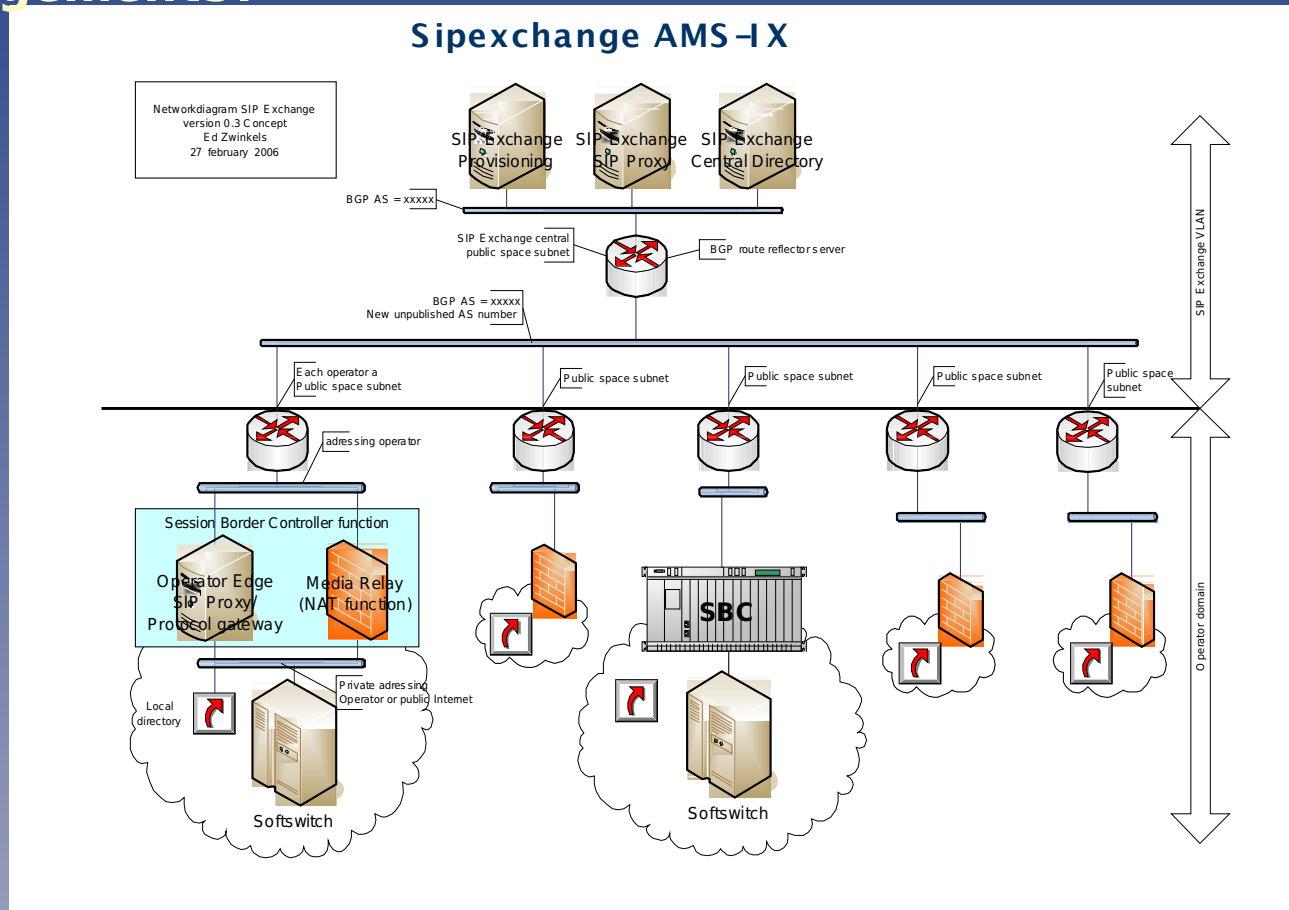
A mix of settlement free arrangements at the IX and paid bilateral contracts between ISPs

## 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

## 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 ...**

**Stratix** And it is your task to maintain that law in dispute resolution. © Stratix 2007

## 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**)

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**Thank you for your attention**

**Questions?**