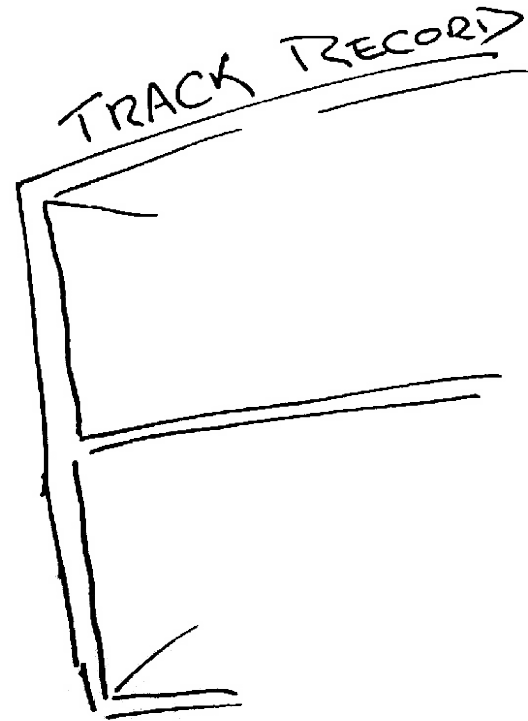


The mainstream  
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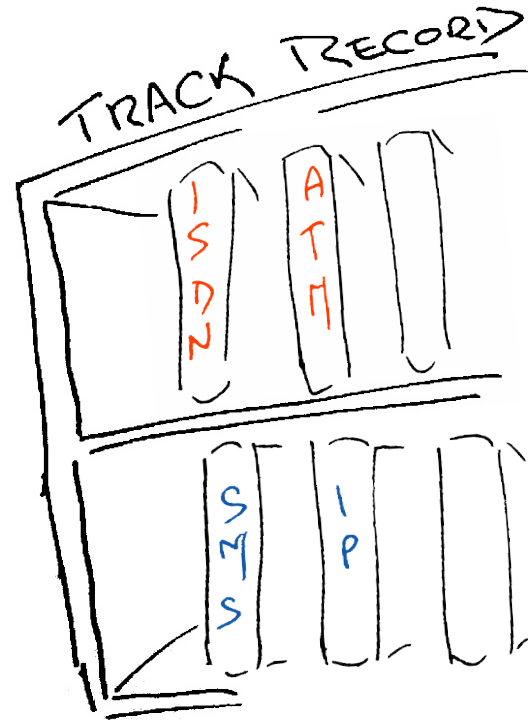
...of making very poor  
technology choices



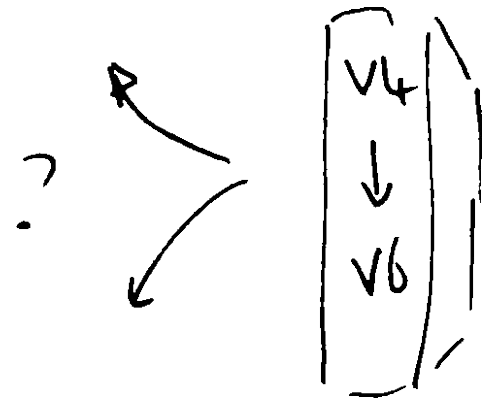
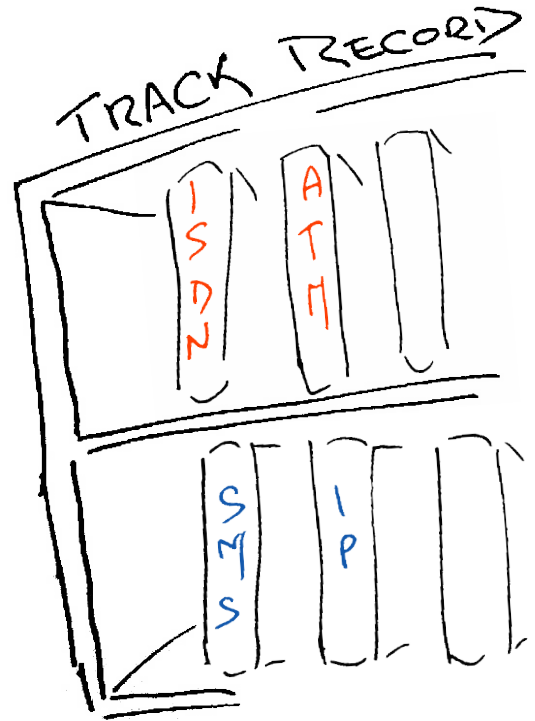
The mainstream  
telecommunications  
industry has a  
rich history

...of making very poor  
technology guesses

and regularly being  
taken by  
surprise!



So, how are we going with the IPv4 to IPv6 transition?



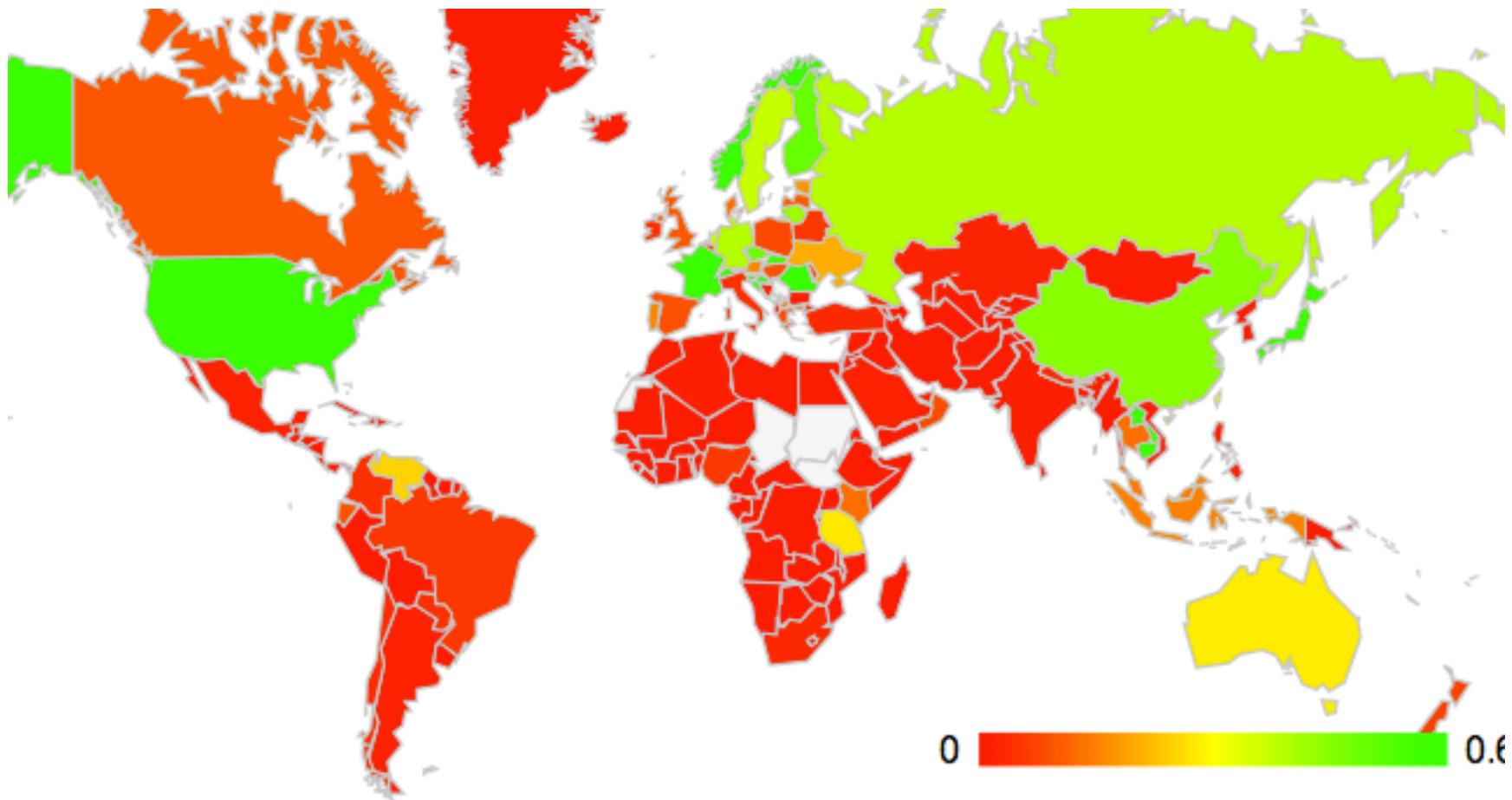
# Some Measurements

**50%** of the IPv4 transit networks appear to be dual stack capable

**50%** of the Internet's end devices have an installed IPv6 stack that can be tickled into life

**0.6%** of the Internet's end devices have native IPv6 delivered to them

# IPv6 Uptake is NOT uniform!



# IPv6 Users by Country

Date: 19 Jul 2012

<http://labs.apnic.net/dists/v6dcc.html>

Index	ISO-3166 Code	Internet Users	V6 Use ratio	V6 Users (Est)	Population	Country
1	RO	8666554	8.12%	703724	22108557	Romania
2	FR	49989738	4.03%	2014586	64753547	France
3	LU	465560	2.80%	13035	509366	Luxembourg
4	EU	0	2.72%	0	0	European Union
5	JP	100944611	2.00%	2018892	126180764	Japan
6	US	247741029	1.19%	2948118	316399782	United States of America
7	NO	4576107	0.99%	45303	4707930	Norway
8	HR	2652967	0.78%	20693	4481364	Croatia
9	SI	1418146	0.78%	11061	1997389	Slovenia
10	CH	6447874	0.75%	48359	7657808	Switzerland
11	SK	4344024	0.63%	27367	5484879	Slovakia
12	KH	474036	0.61%	2891	15291489	Cambodia
13	FI	4663623	0.58%	27049	5263683	Finland
14	CZ	7216705	0.54%	38970	10178710	Czech Republic
15	CN	515903270	0.45%	2321564	1343498100	China
16	LT	2097360	0.45%	9438	3524976	Lithuania
17	NC	80195	0.42%	336	235178	New Caledonia
18	RU	61155099	0.40%	244620	138047629	Russian Federation
19	DE	67964360	0.40%	271857	82181814	Germany
20	SE	8457437	0.38%	32138	9103808	Sweden

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19	DE	67964360	0.40%	271857	82181814	Germany
18	RU	61155099	0.40%	244620	138047629	Russian Federation
29	ID	55651780	0.16%	89042	248445448	Indonesia
21	NL	15140919	0.38%	57535	16917228	Netherlands
23	AU	19784410	0.28%	55396	22031637	Australia
53	BR	86900426	0.06%	52140	205925182	Brazil
22	TW	16186831	0.31%	50179	23124045	Taiwan
10	CH	6447874	0.75%	48359	7657808	Switzerland
43	GB	51836265	0.09%	46652	61636463	United Kingdom of Great Britain and Northern Ireland
7	NO	4576107	0.99%	45303	4707930	Norway
14	CZ	7216705	0.54%	38970	10178710	Czech Republic
20	SE	8457437	0.38%	32138	9103808	Sweden
27	UA	15200270	0.20%	30400	44838557	Ukraine
25	VE	11144274	0.27%	30089	28071220	Venezuela
39	CA	27999585	0.10%	27999	34313217	Canada



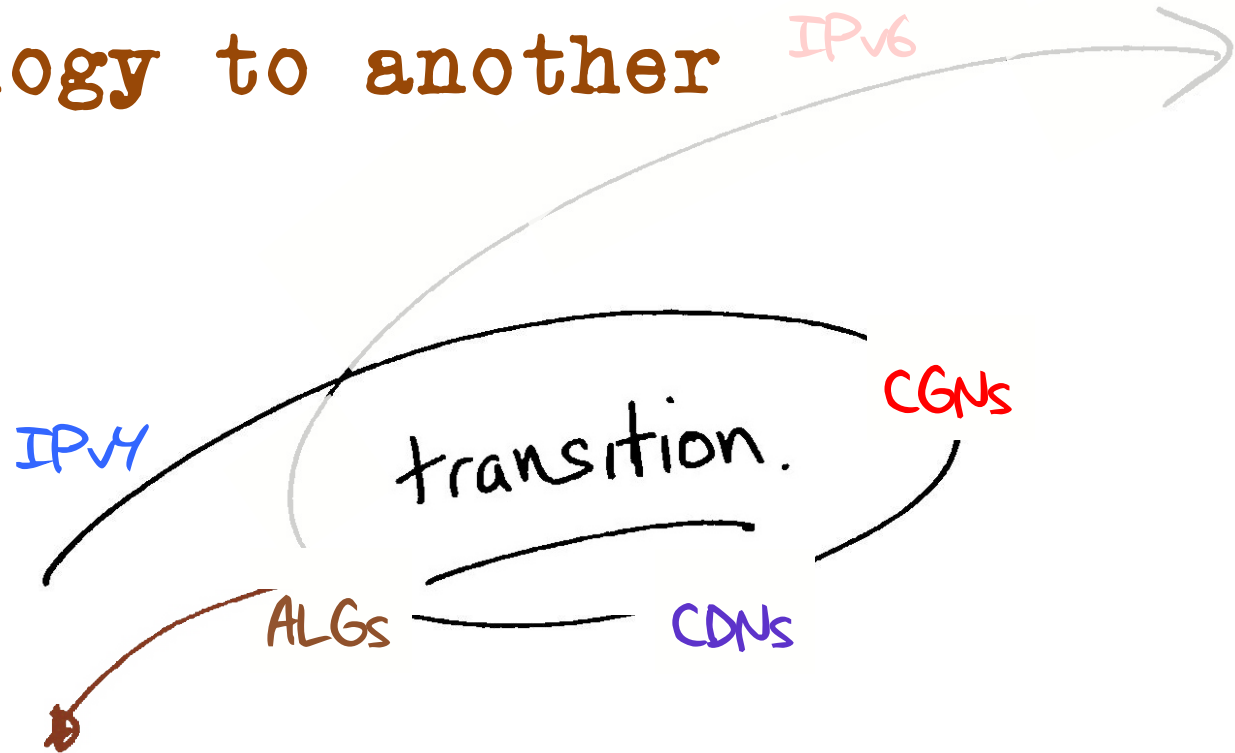
# AsiaPac IPv6 User Ratio

Index	CC Code	IPv6 Deploym	Est. IPv6 Users	
1	JP	2.00%	2018892	Japan
2	KH	0.61%	2891	Cambodia
3	CN	0.45%	2321564	China
4	NC	0.42%	336	New Caledonia
5	TW	0.31%	50179	Taiwan
6	AU	0.28%	55396	Australia
7	LA	0.25%	1482	Lao People's Democratic Republic
8	ID	0.16%	89042	Indonesia
9	MY	0.14%	23384	Malaysia
10	TH	0.13%	23944	Thailand
11	SG	0.11%	4062	Singapore
12	HK	0.10%	4918	Hong Kong Special Administrative Region of China
13	NZ	0.07%	2561	New Zealand
14	IL	0.05%	2675	Israel
15	NP	0.03%	616	Nepal
16	PH	0.02%	6854	Philippines
17	LK	0.02%	516	Sri Lanka
18	CY	0.02%	119	Cyprus
19	KR	0.01%	4043	Republic of Korea
20	IN	0.01%	12304	India

# AsiaPac IPv6 User Population

Country Table				
Index	CC Code	IPv6 Deployr	Est. IPv6 Users	
1	CN	0.45%	2321564	China
2	JP	2.00%	2018892	Japan
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12	KR	0.01%	4043	Republic of Korea
13	VN	0.01%	3123	Vietnam
14	KH	0.61%	2891	Cambodia
15	IL	0.05%	2675	Israel
16	NZ	0.07%	2561	New Zealand
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The challenge often lies in managing the transition from one technology to another



The risk in this transition phase is that the Internet heads off in a completely different direction!

# The Hard Public Policy Question

Will market forces drive the industry to complete this transition to IPv6 ...

Or is this transition turning into a case of a *market failure*?

10 Years from now?



# My personal view...by 2022

The Internet will be all IPv6 by 2022!

The market in IPv4 trading is a short term phase  
CGNs also have near term limits under intense  
scaling pressure

There is no extended afterlife in store for CGNs +  
IPv4 if we make this transition to IPv6

(look at what happened to DECnet, SNA, Appletalk, X.25,...)

# My personal view...by 2022

Or there will be no more Internet by then

- because all the CGNs, ALGs, CDNs in the world will not hold the Internet for 10 years of intense growth pressure
- And because one common protocol platform, one common address space, one common name space is a brittle state, it will fracture and splinter under address pressure