Towards IPv6 Deployment

Inspired by the outcome of the EU IPv6 Deployment Survey

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RIPE 59, Lisbon, 6 October 2009

9 October 2009 - DRAFT – NOT REVIEWED, YET.
COMMENTS WELCOME, please send to
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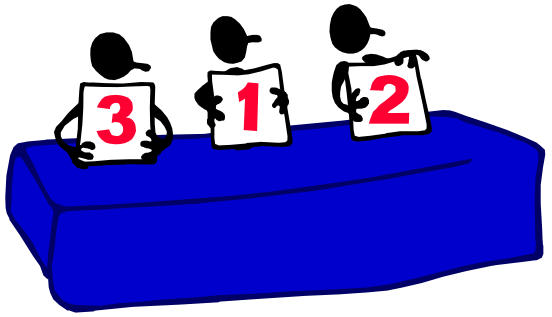
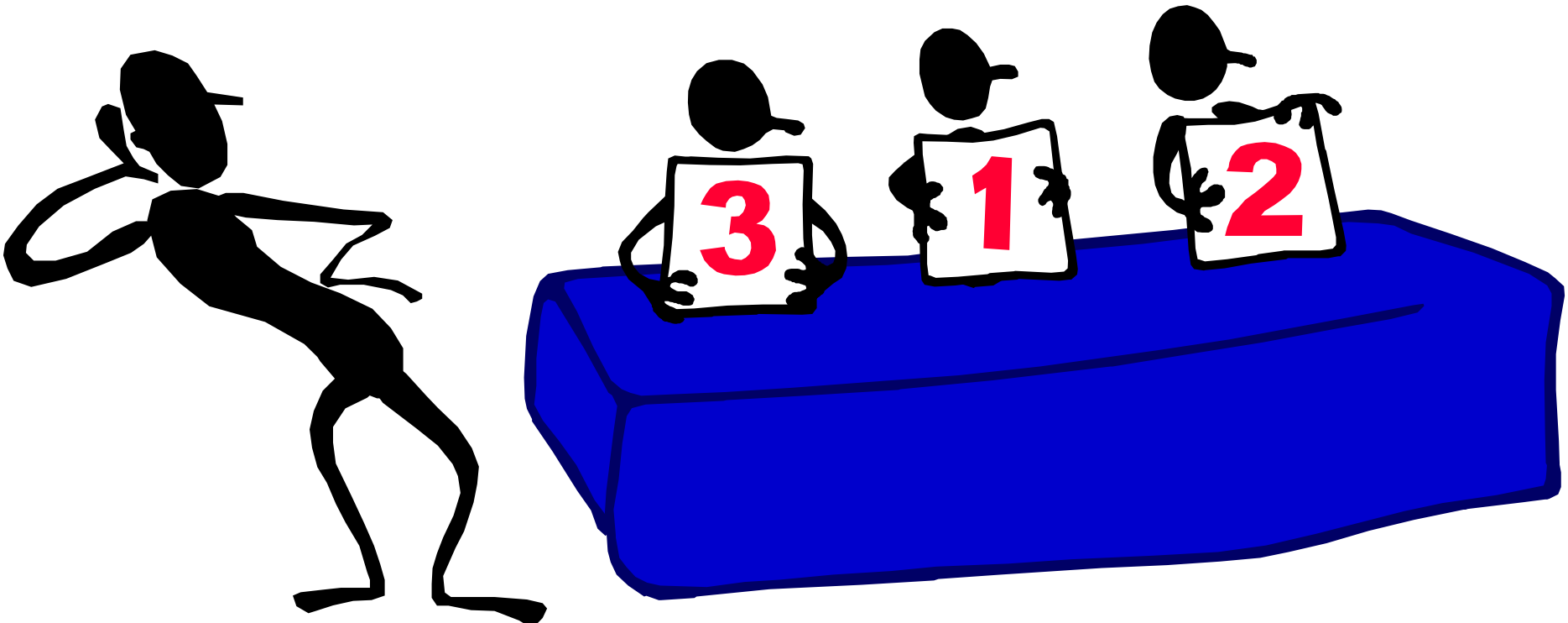
Results of an interactive session

Includes introduction, results of voting during the session, and findings from the panel

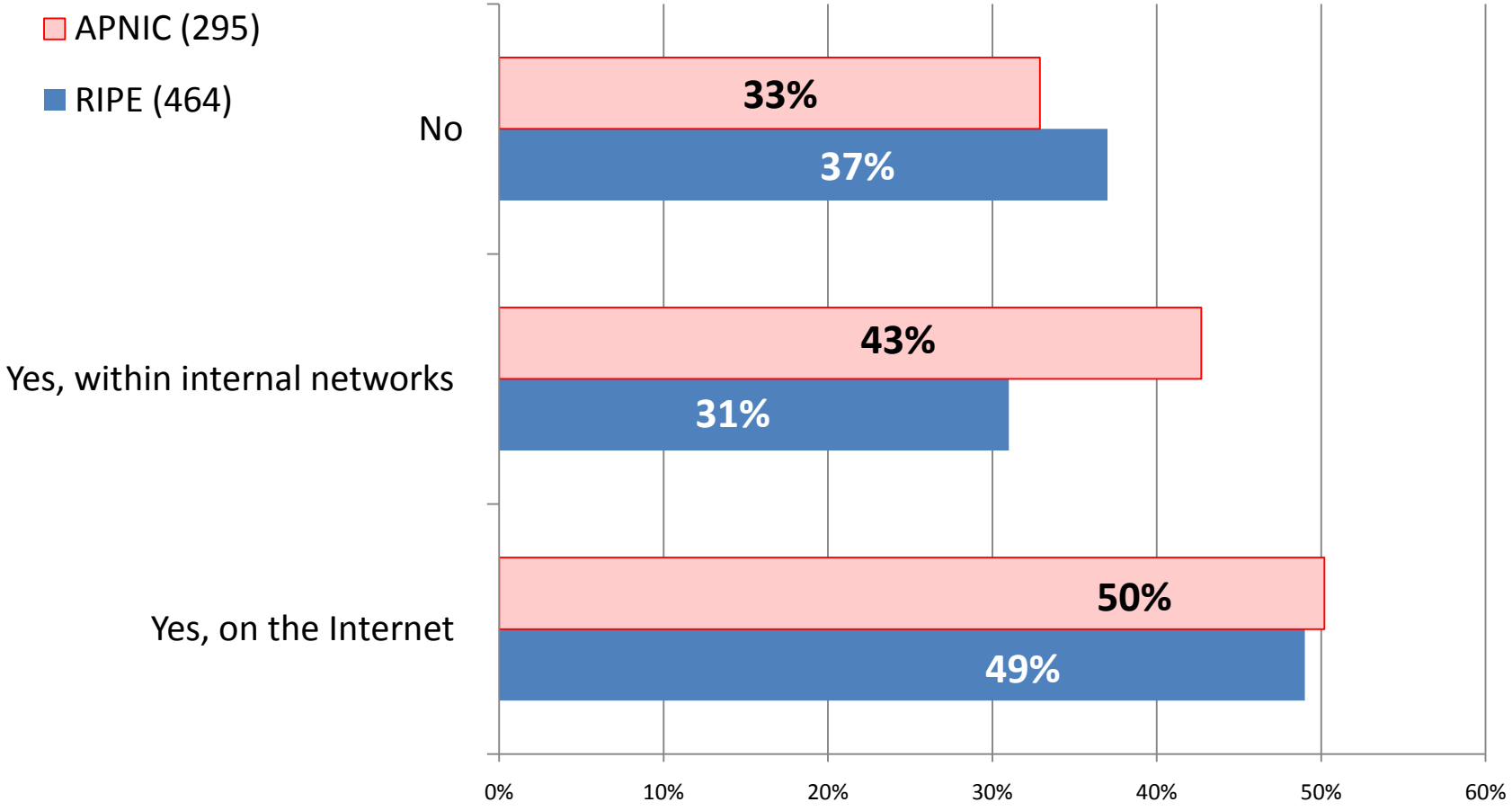


Panel members

- Gert Doering
- Geoff Huston
- Kurt Erik Lindqvist

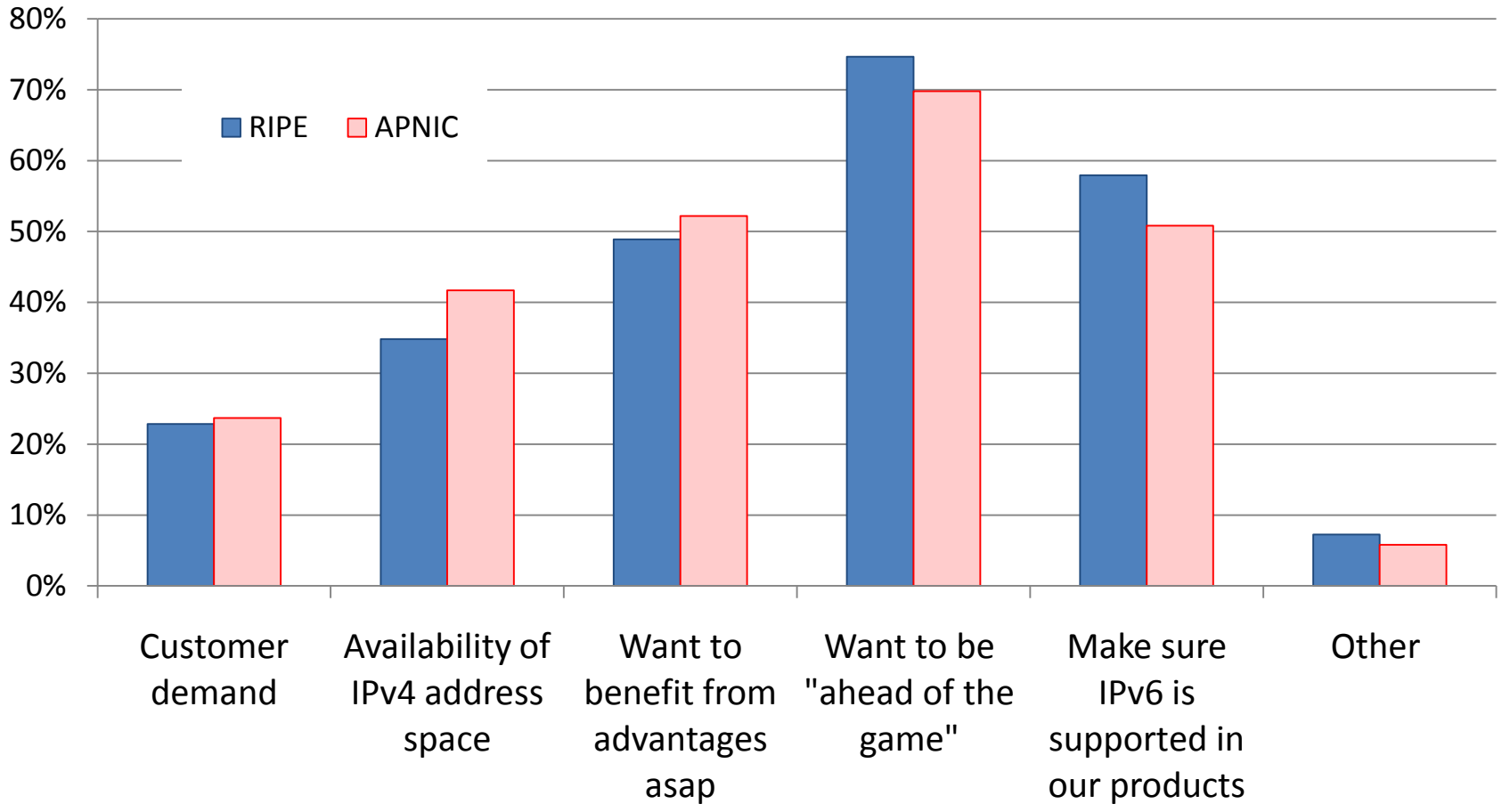


IPv6 presence respondents (~65%)



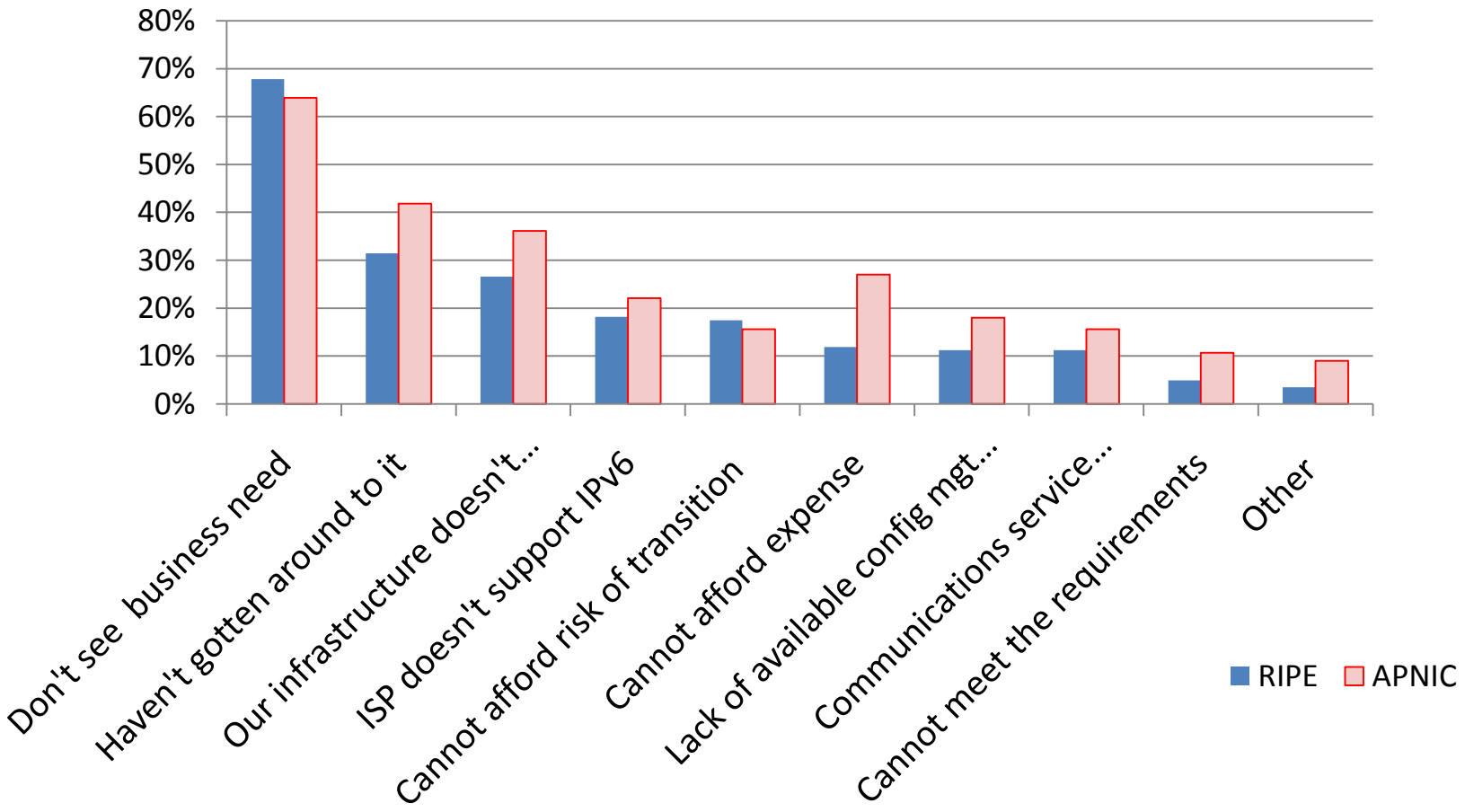
source: TNO/GNKS 2009

Main drivers to IPv6 deployment



source: TNO/GNKS 2009

Why not considering IPv6?

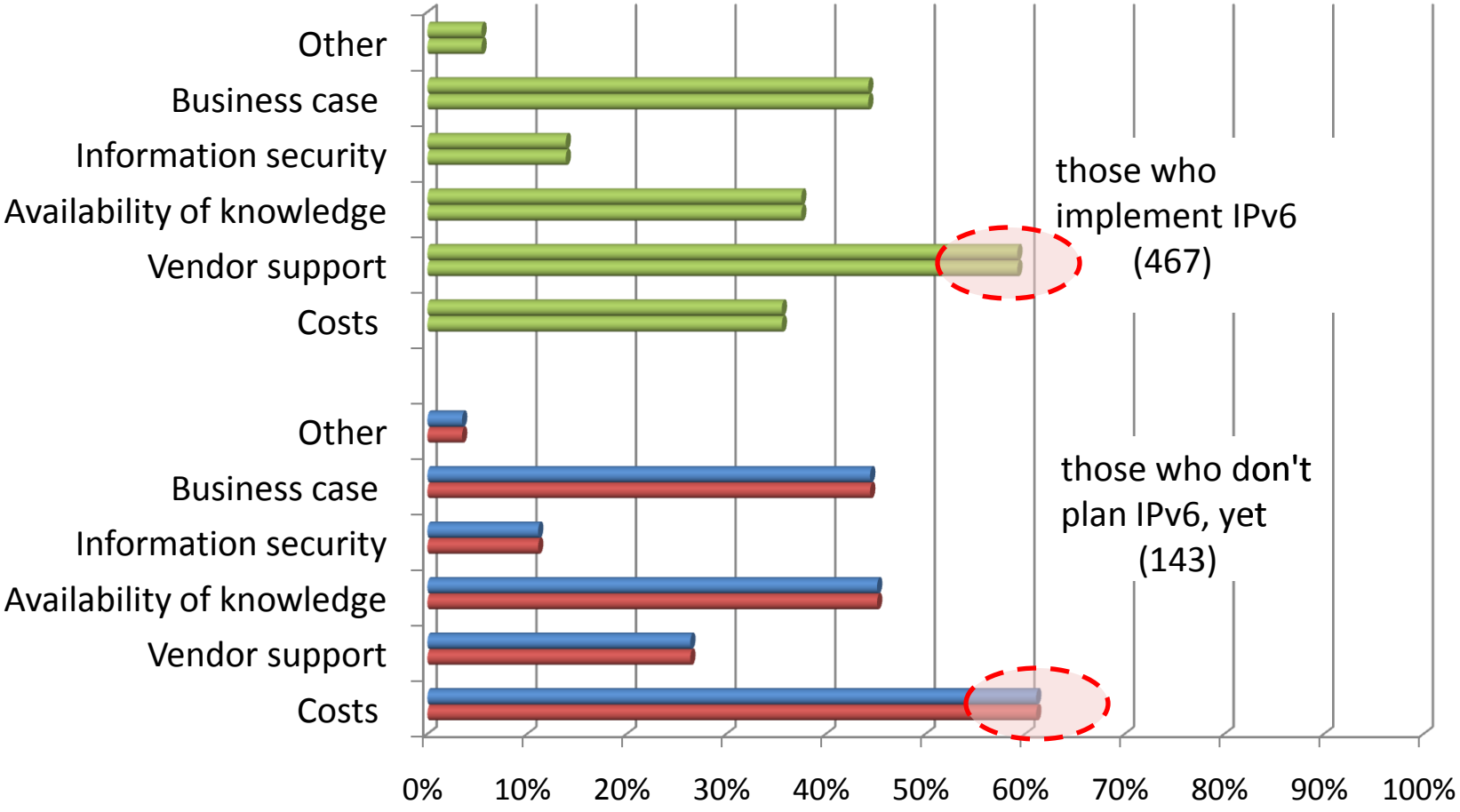


… it's true: for many there is no business need, today!

source: TNO/GNKS 2009

What's under the surface?

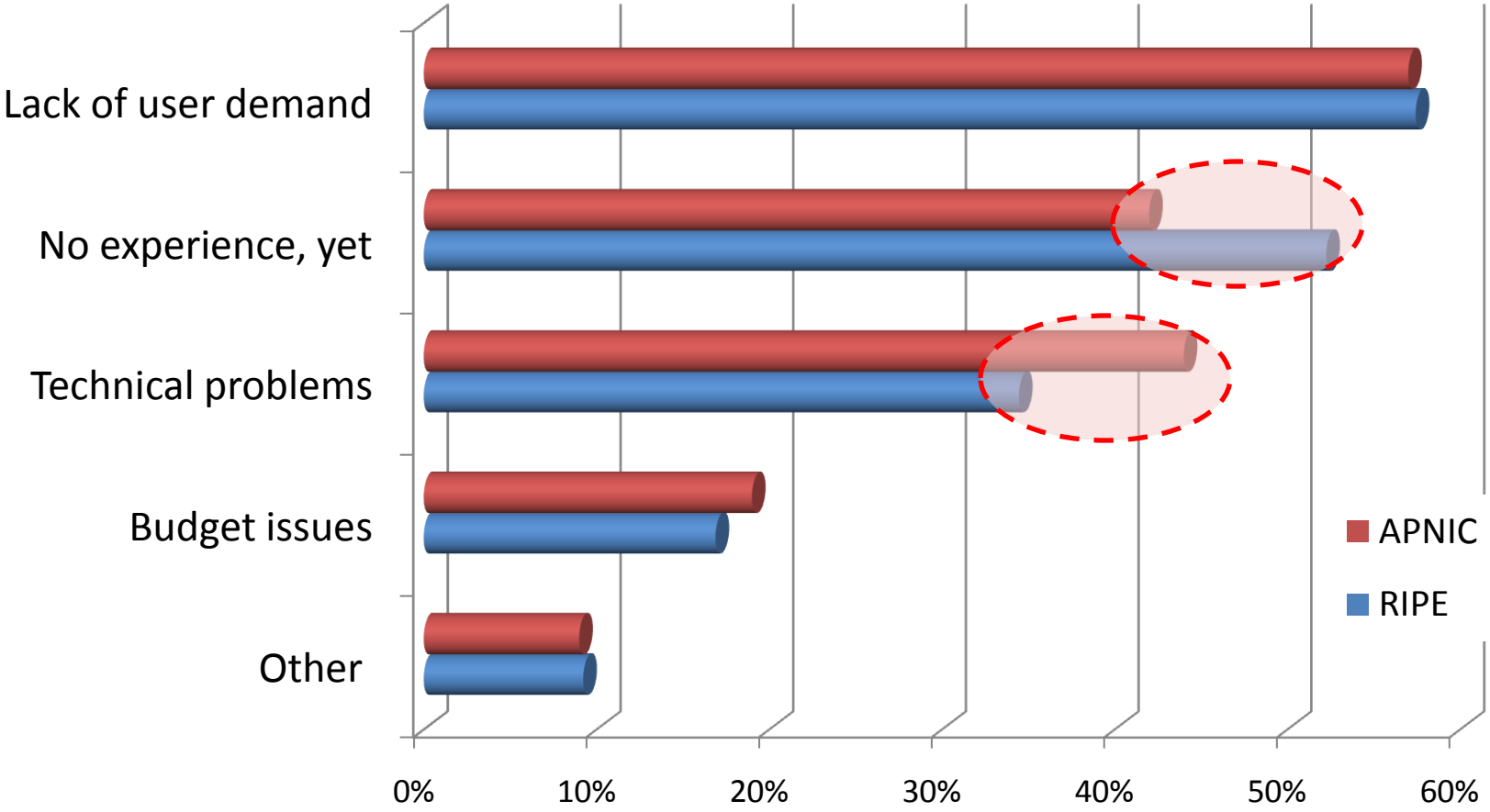
Biggest hurdles



… vendor support, a real issue in practice !

source: TNO/GNKS 2009

Experience: biggest problems with IPv6 in production?



… more experience, more technical problems !

source: TNO/GNKS 2009

What people say …

We don’t need to deploy IPv6

- “IPv6 is not the ultimate solution for the Internet of the future. I will hold out with my current IPv4 with NAT until a better solution is available.”
- “My connection works, why should I use IPv6?”
- “I hear people say that NAT will do the trick. In that case I can keep my current addresses and network infrastructure.”
- IPv6 does not provide backwards compatibility with IPv4. How will my IPv6 network then communicate with IPv4 devices?

IPv6 deployment is cumbersome

- When I access a website on its usual domain name “http://xyz.com”, I am automatically routed to the IPv4 version of the site. To approach the IPv6 version (if it exists), I need to type explicitly “http://ipv6.xyz.com”. This is too cumbersome.
- “My network runs IPv4 and it’s working and I don’t gain anything when implementing IPv6 except increasing costs”
- “When I implement IPv6 in a customer’s network and the network fails more often than my regular IPv4 implementations: why should I get myself into these troubles?”
- “I have no idea how I should migrate my network, is there a roadmap/guideline for that?”
- “IPv4-IPv6 translation mechanisms have not been standardized yet. It is too early to adopt IPv6.”
- “My ISP does not support IPv6 yet, so I’m not able to migrate.”

IPv6 deployment is a security threat

- IPv6 security is less mature than IPv4, there is less experience with IPv6 security and reliability issues. So migrating to IPv6 might lower my security and reliability level.
- Running IPv6 next to IPv4 will make my organisation vulnerable to the sum of both protocol issues. (Also IPv6 might be used to attack IPv4 and vice versa.)
- Security devices (like firewalls, IDS, etc) for the IPv6 world are not available and/or do not offer the same capabilities as their IPv4 functionalities.
- "In IPv6 there is no NAT, therefore an IPv6-network will never be as secure as my IPv4 network. I don't want my security risk to increase!"
- "Entering IPv6 addresses is much more error-prone than entering IPv4 addresses. This will lead to configuration mistakes and vulnerabilities in routing and security policies." http://www.ietf.org/internet-drafts/draft-kawamura-ipv6-text-representation-02.txt

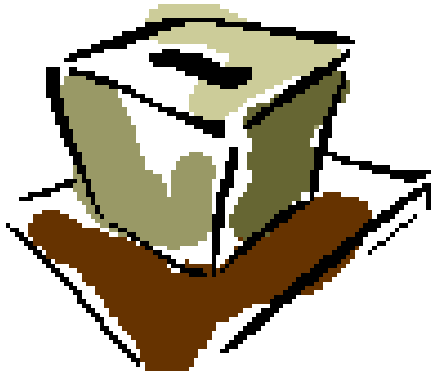
Can we help?

Please go to the session agenda and tick on “take the survey” to participate to the following questions

Doing it

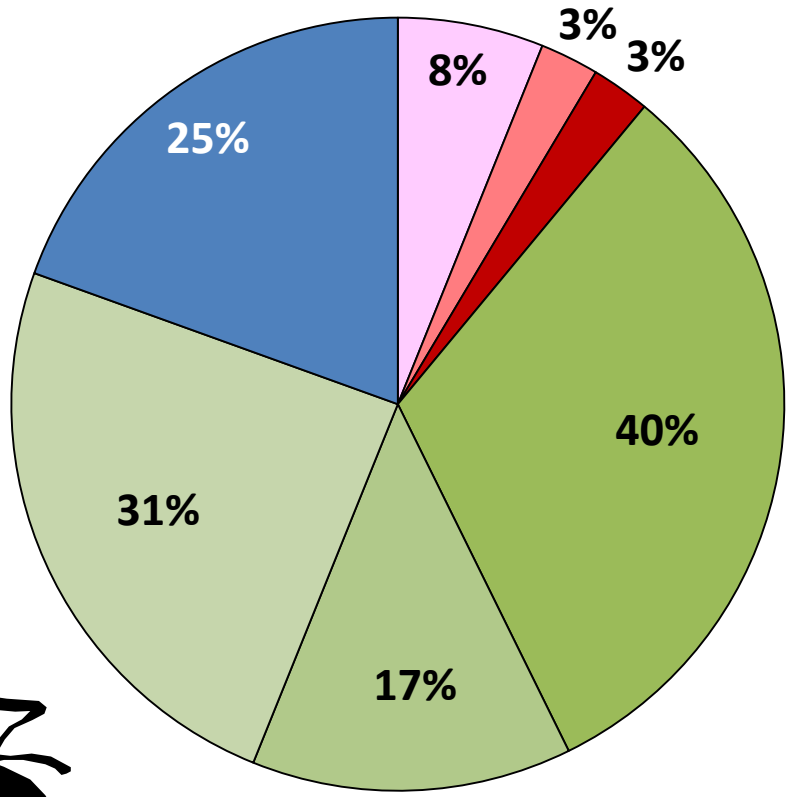
- What would you gain by postponing, and what would you gain by stepping up to the plate, earlier rather than later? Your current position:
  - By postponing deployment of IPv6 I save costs now. When the time has come, it will be cheaper to switch;
  - By postponing deployment of IPv6 I will be able to rely on vendors that are not all ready yet to help me out, today;
  - Postponing? I don't believe we will ever need to make the switch to IPv6;
  - By stepping up to the plate I have time and space to do the transition, which will allow me to do it gradually and well thought through;
  - By stepping up to the plate I will attract customers from other suppliers that do not offer IPv6 support, yet
  - By stepping up to the plate I confirm my brand's image as "state-of-the-art" or "top-of-the-wave"
  - None of the above

Your votes, please



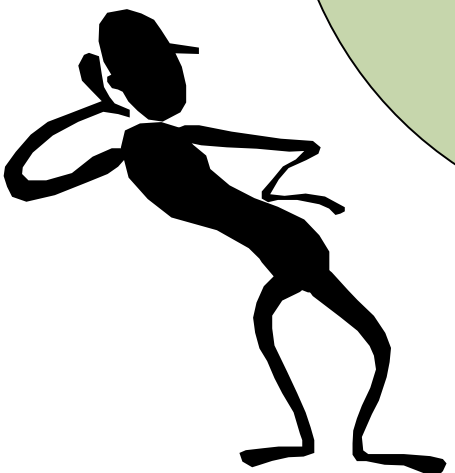
www.surveymonkey.com

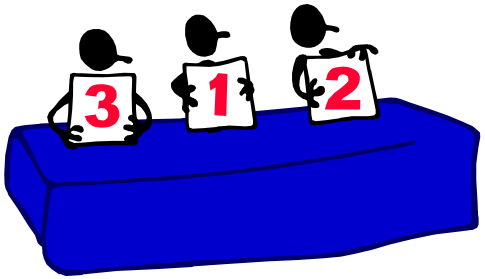
The responses during the session



- Postpone, than cheaper
- Postpone, than easier
- Never switch
- Now, to do it well
- Now, to attract
- Now, to confirm brand
- None of the above

n = 65





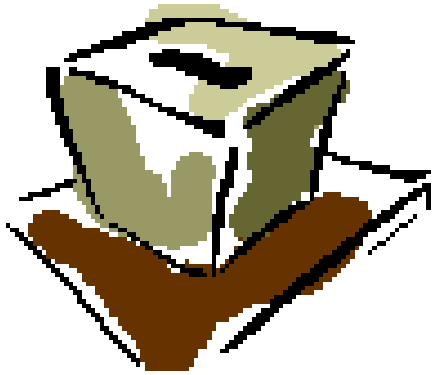
Panel's conclusions

- *"Is actually everybody in the game right and fine right now or are there a few zombies who just do not know they have no chance to survive the next two years?"*
- Players need to act in the common interest and make investments which, in the short term, yield no return.
  - That is amazing difficult for a deregulated industry
  - In fact, everyone operating a network today will be in a better position after IP exhaustion than any new entrant and it is therefore in their interest to postpone
  - … until the pressure gets too high and we will be faced with an urgent and very costly transition
- Side note: when you work with middleware transition gets to be complex as much still needs to be developed there

Hurdles

- There is perception and experience of/with a number of hurdles that seem to be difficult to overcome. Which are important to you:
  - As there is very little customer demand, I cannot justify the investment to my management, even if I would like to move;
  - I have the experience that costs for transition are substantive
  - I have the perception that costs for transition are substantive
  - I have the experience that it is technically very difficult
  - I have the perception that it is technically very difficult
  - I have the experience that my vendors cannot deliver what I need
  - I have the perception that my vendors cannot deliver what I need

Your votes, please



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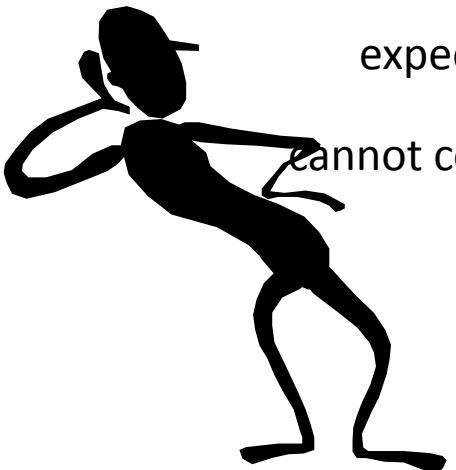
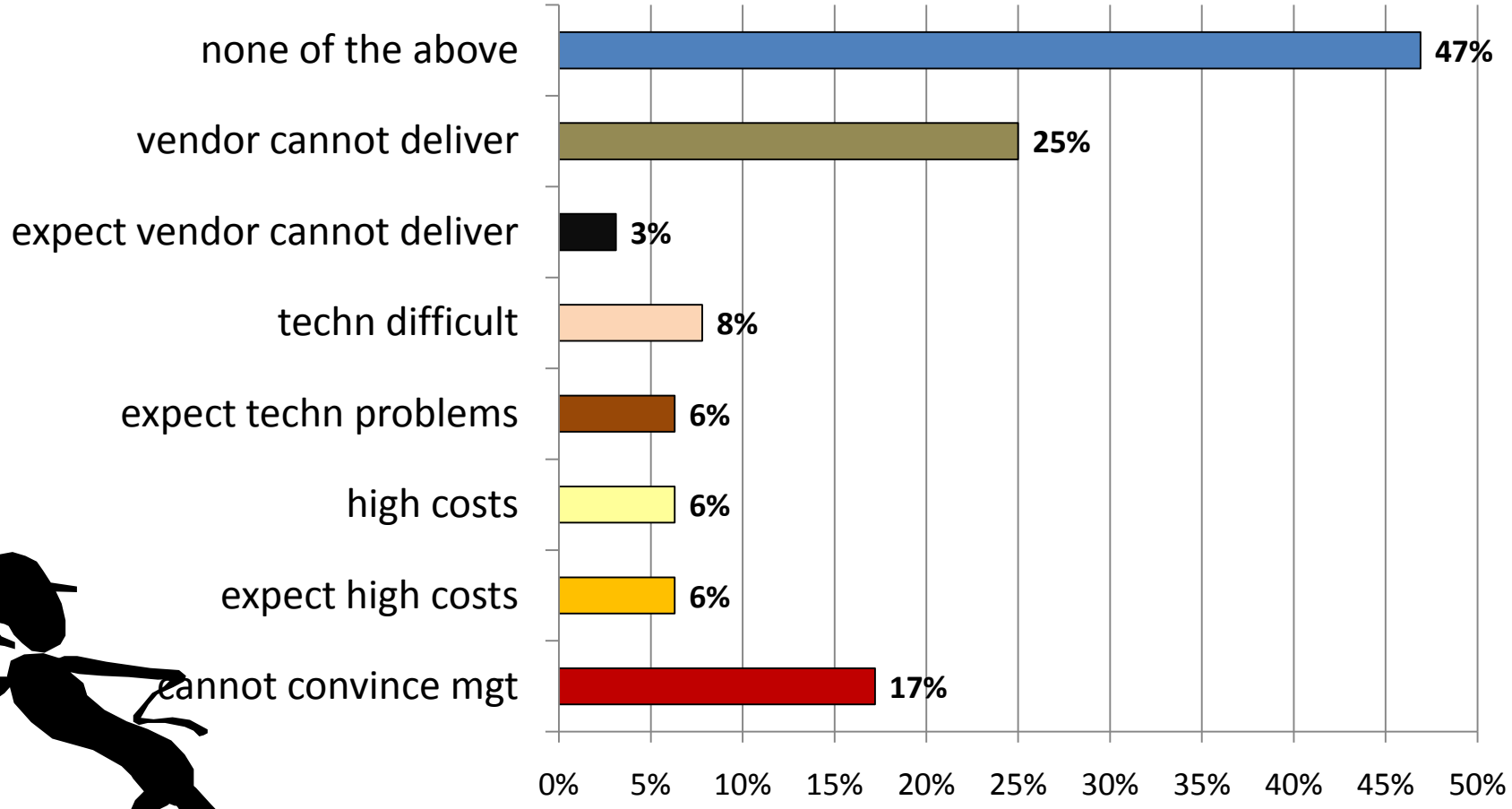
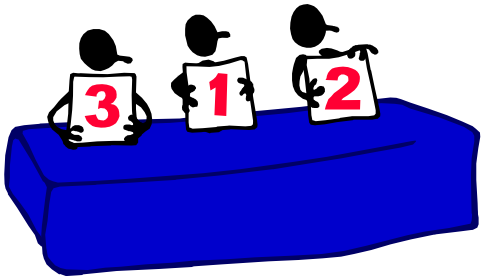






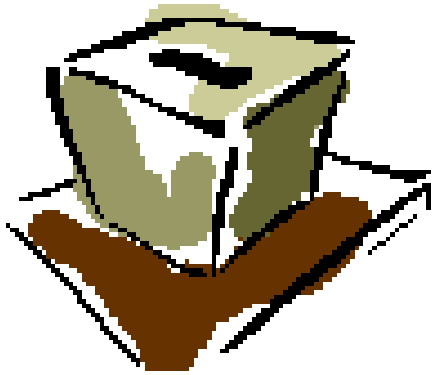
Panel's conclusions

- The issues with IPv6 are getting less extreme as some things are slowly becoming easier
  - Transition is technically possible today
  - The capital needed is not extreme anymore
- Vendors do not sell IPv6 as long as there is no market
  - Who is going to pay for this transition in a business that is commodity based networking
  - It's not the vendors' problem you will need to write off IPv4 only equipment if you want to stay in the game

What do you think?

- IPv6 has no value over IPv4 for my organization in terms of deployment costs and risks, today
- IPv6 has value over IPv4 for my organization in terms of deployment costs and risks, today
- The deployment of IPv6 is unavoidable for my organization in due time
- We will probably never deploy IPv6
- Technically, everything is in place to deploy IPv6
- Technically, more needs to be done, urgently, before we can effectively deploy IPv6

Your votes, please



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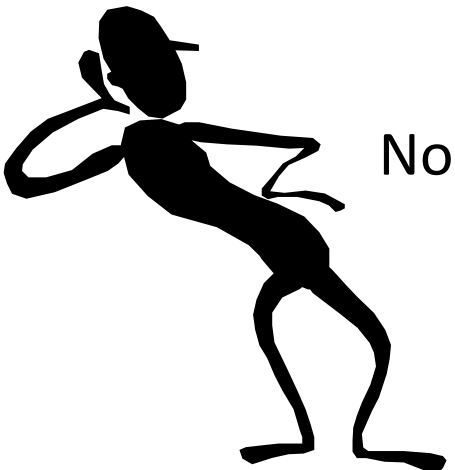
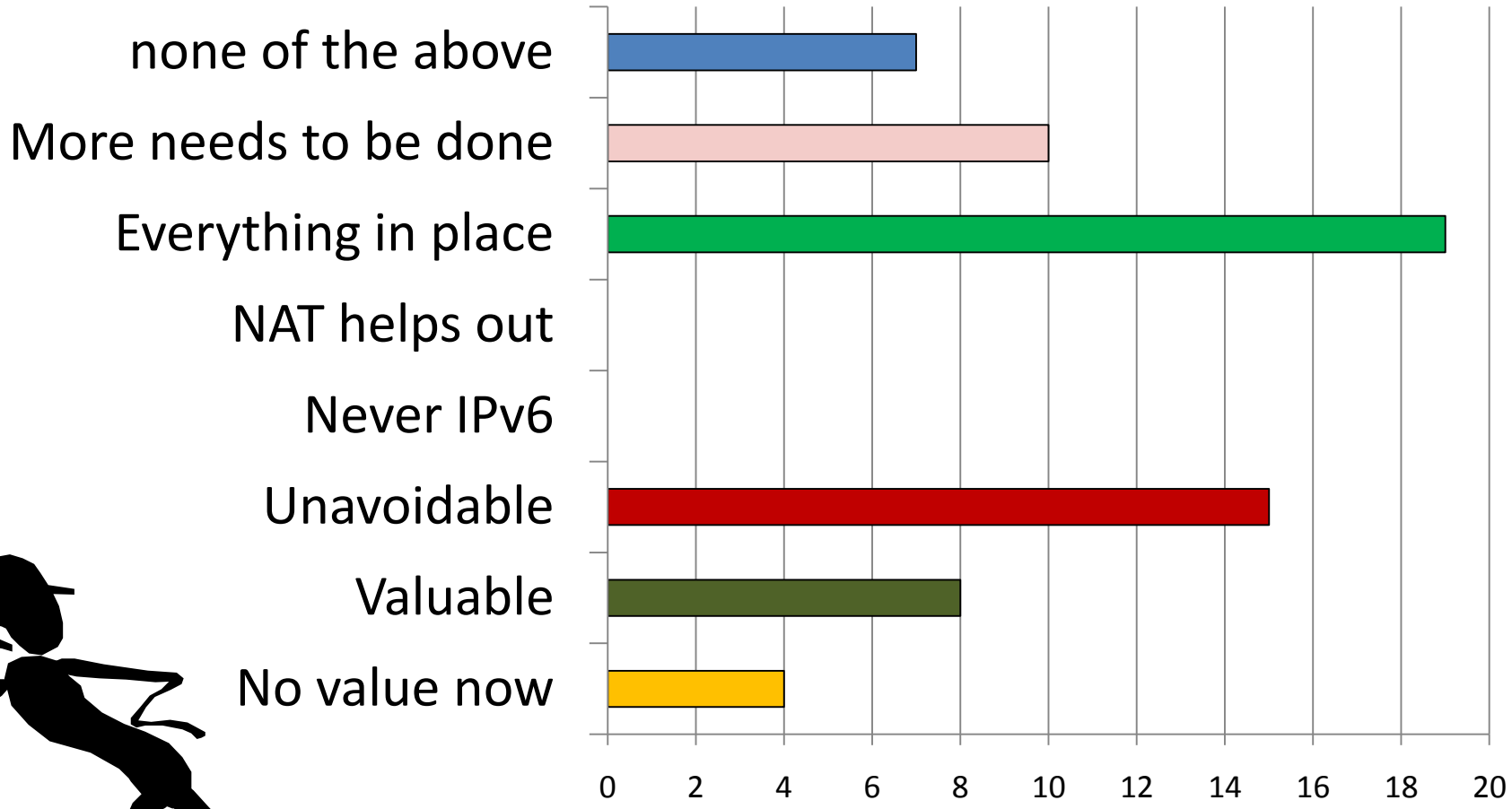
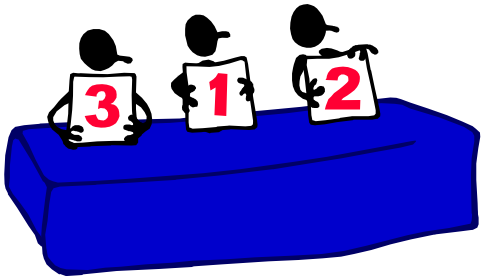






Panel's conclusions

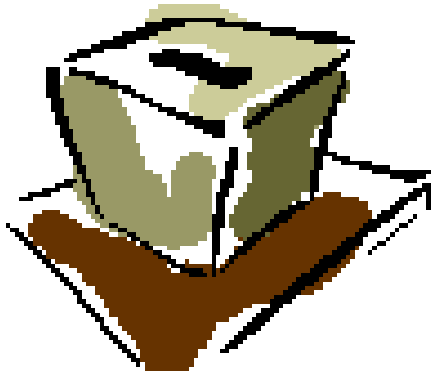
- Public and private value do not coincide.
  - The CFO is trying to figure out how to pay the mortgage for next month. IPv6 is just not on the radar screen. Maybe the problem is the time-line is too far away, CFO's have much more pressing issues.
  - Open networks is a public good
- The version of IP is not a mass market decision
  - web-hosting customer has to upgrade the load balancing gear, which costs money to have their website v6 capable, they need to make an informed decision
  - backbone provider is faced with lots of customer demand from smaller ISPs, buying from the big ones so they definitely see customer demand
  - end user in the home will just plug in the CPE that Telco provides

Actions that matter

EU IPv6 Action Plan

- Actions to stimulate IPv6 accessibility to content, services, and applications
  - Government information reachable via IPv6
  - Encourage content providers to offer their content via IPv6
  - Encourage standardization bodies and research projects to explore this
- Actions to generate demand for IPv6 connectivity and products through public procurement
  - Governments to take up IPv6 within their own networks, and service contracts
- Actions to ensure timely preparation for IPv6 deployment
  - Awareness campaigns and sharing of best practice experience
  - Standardization processes
  - Take IPv6 knowledge on board of curricula
- Actions to tackle security and privacy issues
  - Disseminate best practices
  - Monitor privacy and security issues arising through consultation of stakeholders
- Other actions than those mentioned in the Action Plan

Your votes, please



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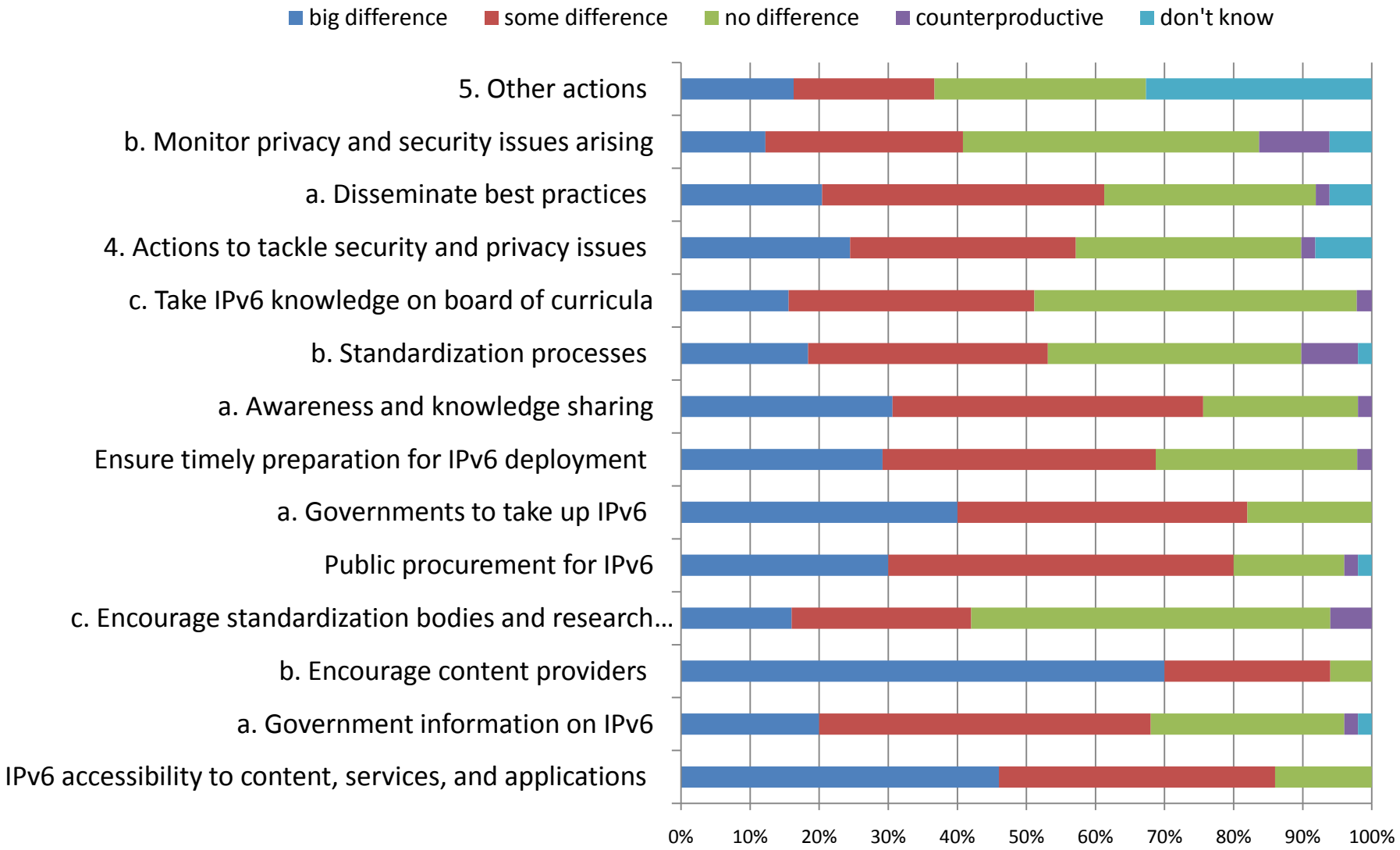

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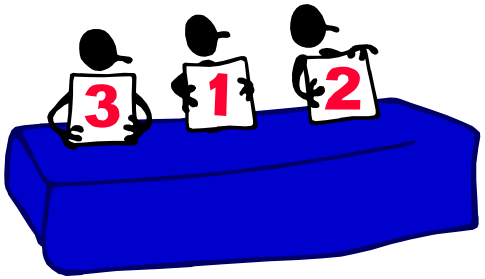
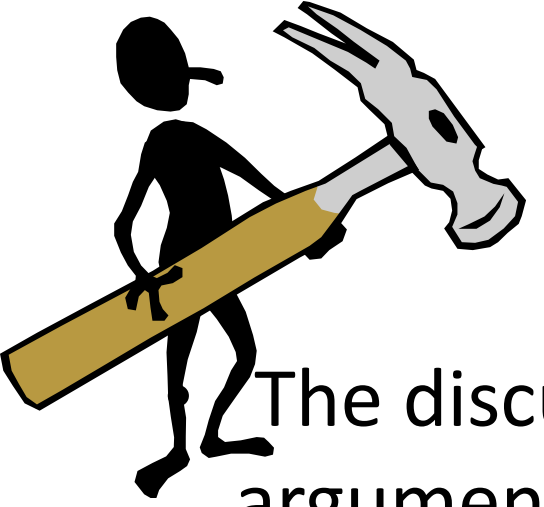


Panel's conclusions

- Governments play an important role in getting the players to move, beyond their short term business interest.
- Carrots always seem to work. And if you can change the investment profile for ISPs they will change their equipment faster. If you can make it for consumers they will do so.
- "*If you fold your arms and say we will conduct a survey next year and see how you are going, quite frankly the numbers we see today are the numbers we are going to see in 12 months' time and that is probably not the best piece of news*."
- Do something and stop talking about it.



Moderator's conclusions

The discussion has been an example of argumentation as is used in policy processes and will be understood by policy makers

- Main findings:
  - ISPs are key in this transition: they need to move first
  - The transition towards IPv6 is a public interest issues. It is necessary for society-at-large, and not yet a business case for most individual ISPs and telco's
  - Government can play a role, most importantly by:
    - implementing fiscal/financial incentives, and by
    - adopting/using IPv6 themselves.

http://www.ipv6monitoring.eu/

Questions regarding this session and session report:

Maarten Botterman

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