



Secure Routing Survey: Preliminary Results

Results of a survey during February/
March 2010 in the RIPE community, and
the IXP communities from AMS-IX, LINX,
DE-CIX, and Netnod-IX.

Outline

- Online survey on routing security was part of project commissioned by ENISA
- Results presented are our own first and preliminary observations, interpretations, and conclusions
- Purpose of the presentation
 - feedback to and from the RIPE and IXP communities
 - sanity check of survey outcome

ENISA Background

- Advising and assisting the EU Commission and the Member States on network and information
- Collecting and analysing data on security incidents in Europe and emerging risks
- Promoting risk assessment and risk management
- Awareness raising and cooperation between different actors in the network and information security field

Goals of Routing Security Survey

- We were interested in:
 - awareness
 - current deployment and experience
 - expectations of (near) future developments
 - policy and governance issues
- Quantitative data from survey can substantiate interviews with routing security experts

Profile of Participants

- More than 130 people from 34 countries responded
 - 80% respondents from EU
 - NW Europe domination: Dutch 24%, Germans 20%, followed by Swedes and other NW Europeans
 - 64% respondents are ISPs
 - other 36% divided among content provider, industry, public body, academic, regulator, and other...
 - experience/responsibilities:
 - 44% technical/operational, 44% strategic/architectural, and 12% policy/managerial level

AWARENESS

Which available technology/methods to improve routing security are you aware of?

Answer Options	Response Percent	Response Count
Session security (TCP MD5, IPSec, BGP TTL Security Hack, Network Ingress Filtering (BCP 38), etc.)	96,6%	112
Monitoring and Filtering (IRR/RPSL based filtering, prefix filtering, AS-path filtering, Renesys Routing Intelligence, RIPE IS Alarms–MyASN project, etc.)	87,1%	101
PKI-based solutions (cryptographic, certification/ attestation)	38,8%	45
Don't know	1,7%	2
Other (please specify)		2
answered question		116

CURRENT DEPLOYMENT AND EXPERIENCE

Importance of Deploying Routing Security

- How important is deploying routing security in the operation of your organisation?
 - 25% top of the list
 - 63% important, but not a priority
 - 12% not important
- Results consistent with Arbor Networks Infrastructure Security Report

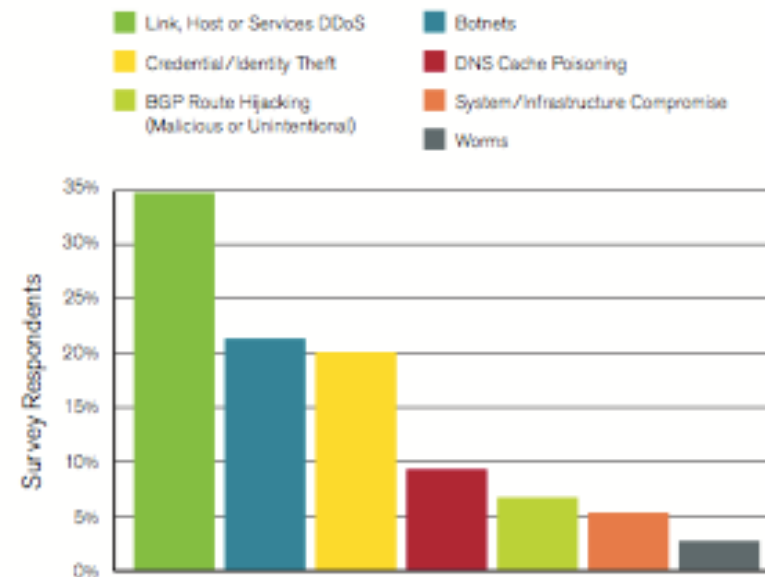
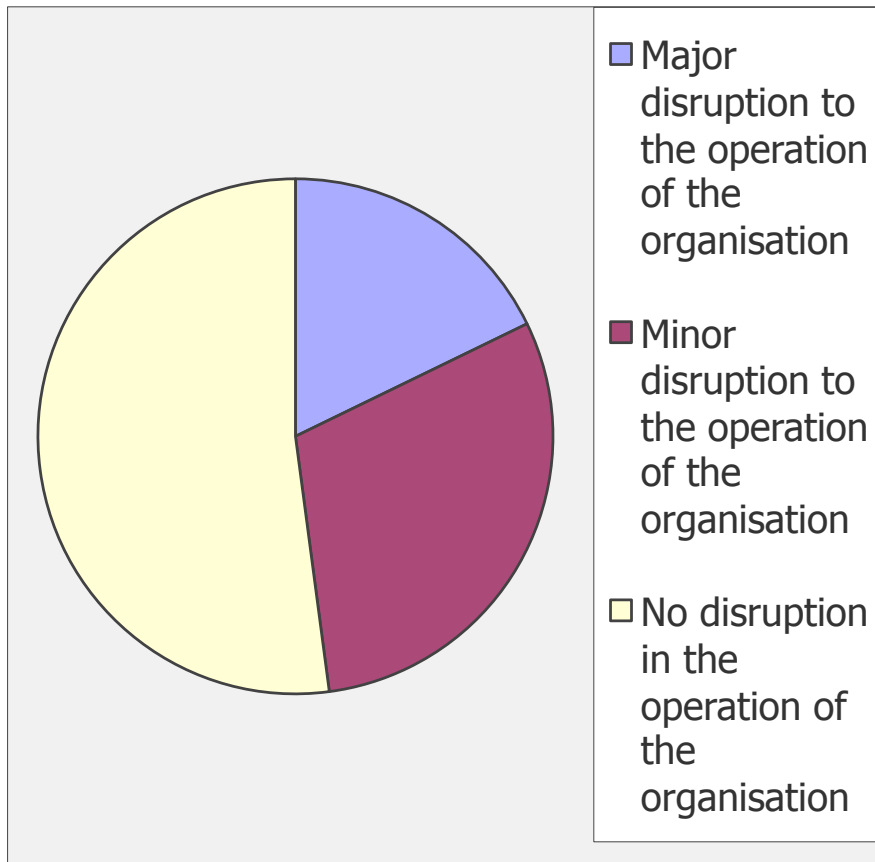


Figure 4: Largest Anticipated Threat - Next 12 Months

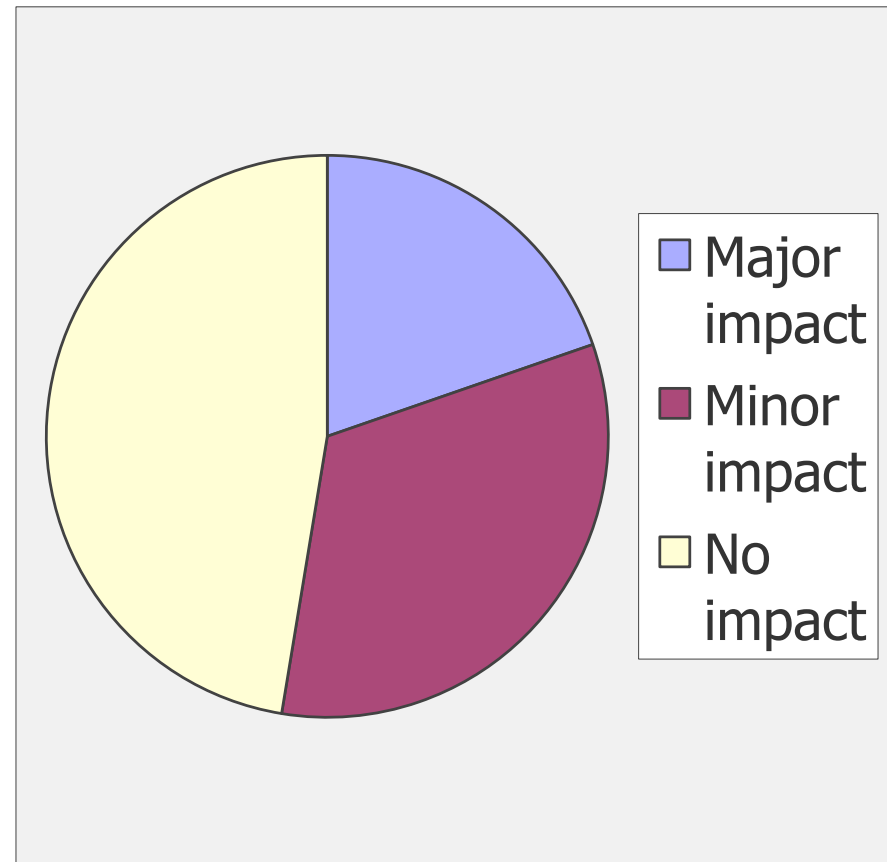
Source: Arbor Networks, Inc.

Severity and impact of incidents to the operation of the organisation

severity of incidents



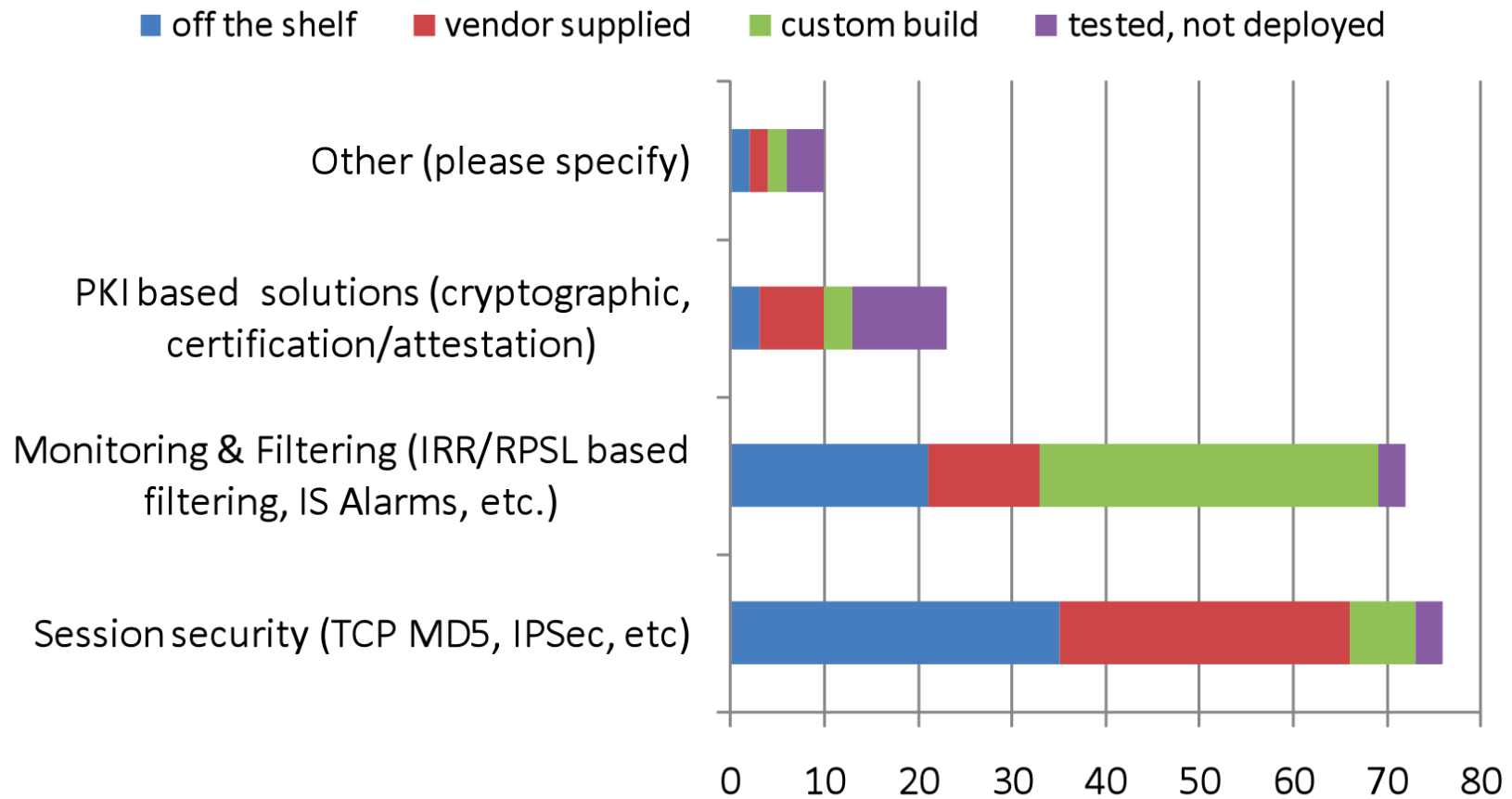
impact to level of awareness



What critical risks do you foresee for your organisation in case of breach of routing security?

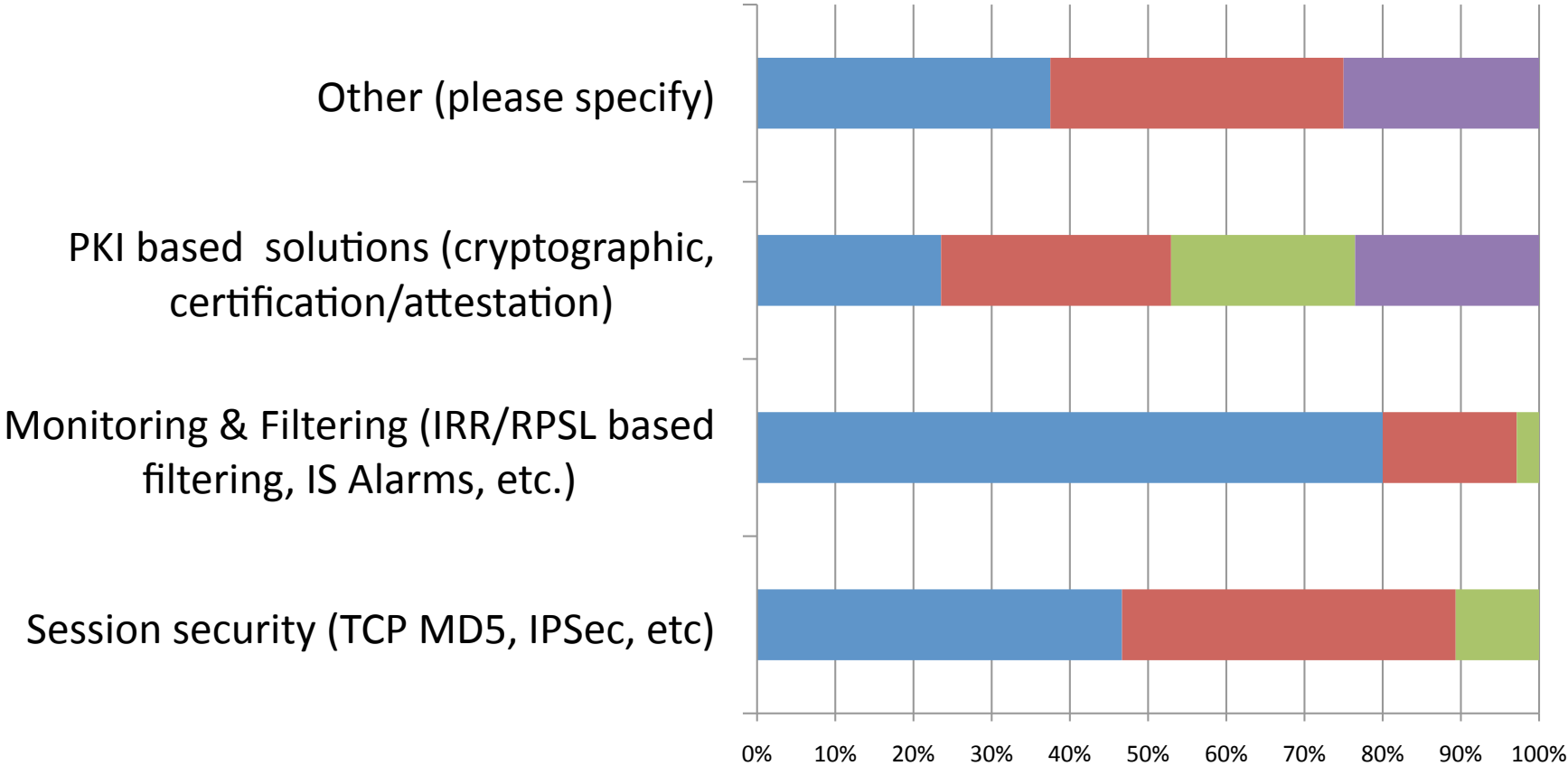
Answer Options	Response Percent	Response Count
Reduced performance or QoS	69,0%	78
Reputational damage	77,0%	87
Loss of money (liability)	43,4%	49
None	3,5%	4
Other (please specify)		4
<i>answered question</i>		113

Which methods are deployed to improve security of inter-domain routing in your organisation?



What is your experience with the methods that you tested or deployed?

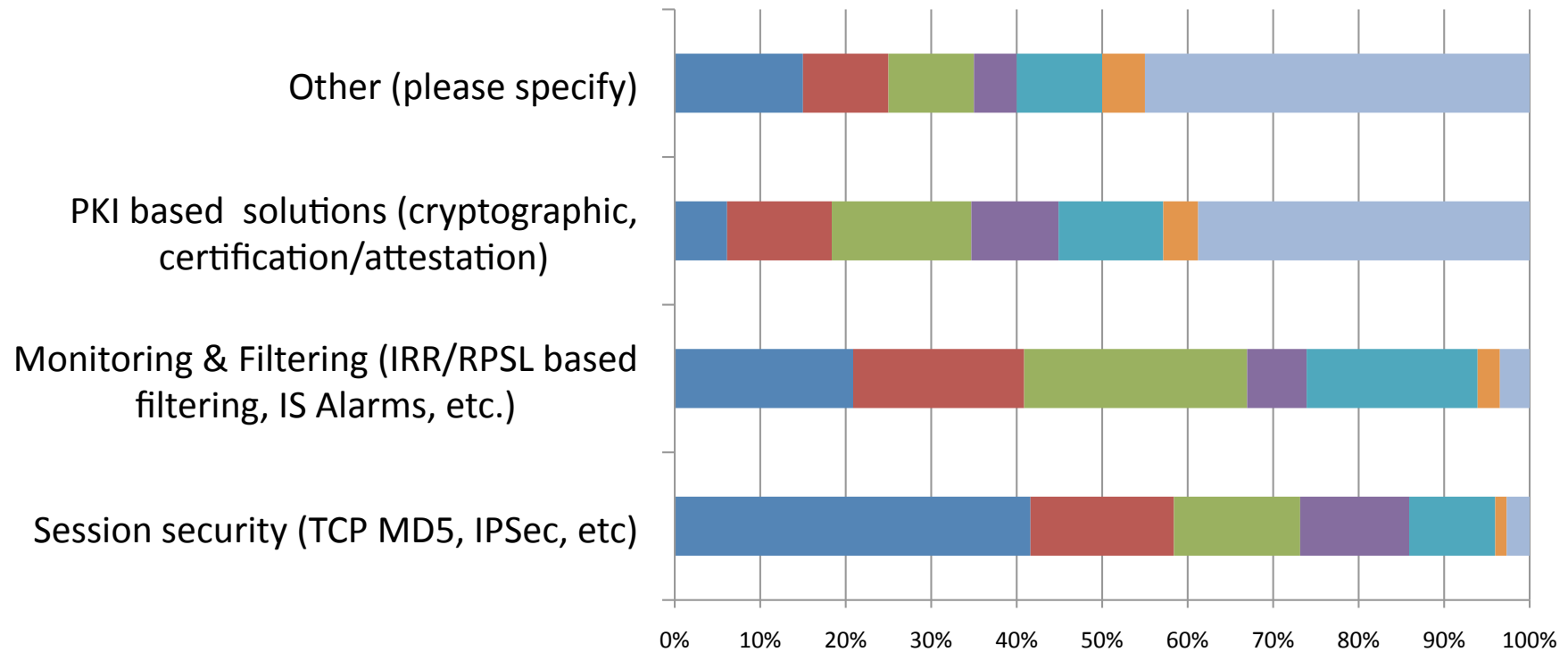
Effective impact No observed improvement Counter productive Didn't work



n = 77

What are the advantages of the different methods?

- Ease of deployment
- Relative costs of deployment
- Risks of mis-configuration
- Impact on performance
- Effectivity of measure
- Other
- Don't know



n = 78

FUTURE DEVELOPMENTS

What are the barriers in deploying improved routing security?

Answer Options	Response Percent
Availability of knowledge	64,9%
Expected increase in operational costs	45,5%
Implementation costs	45,5%
No confidence in their effectiveness	32,5%
Don't know	6,5%
Other (please specify)	13,0%

n = 77

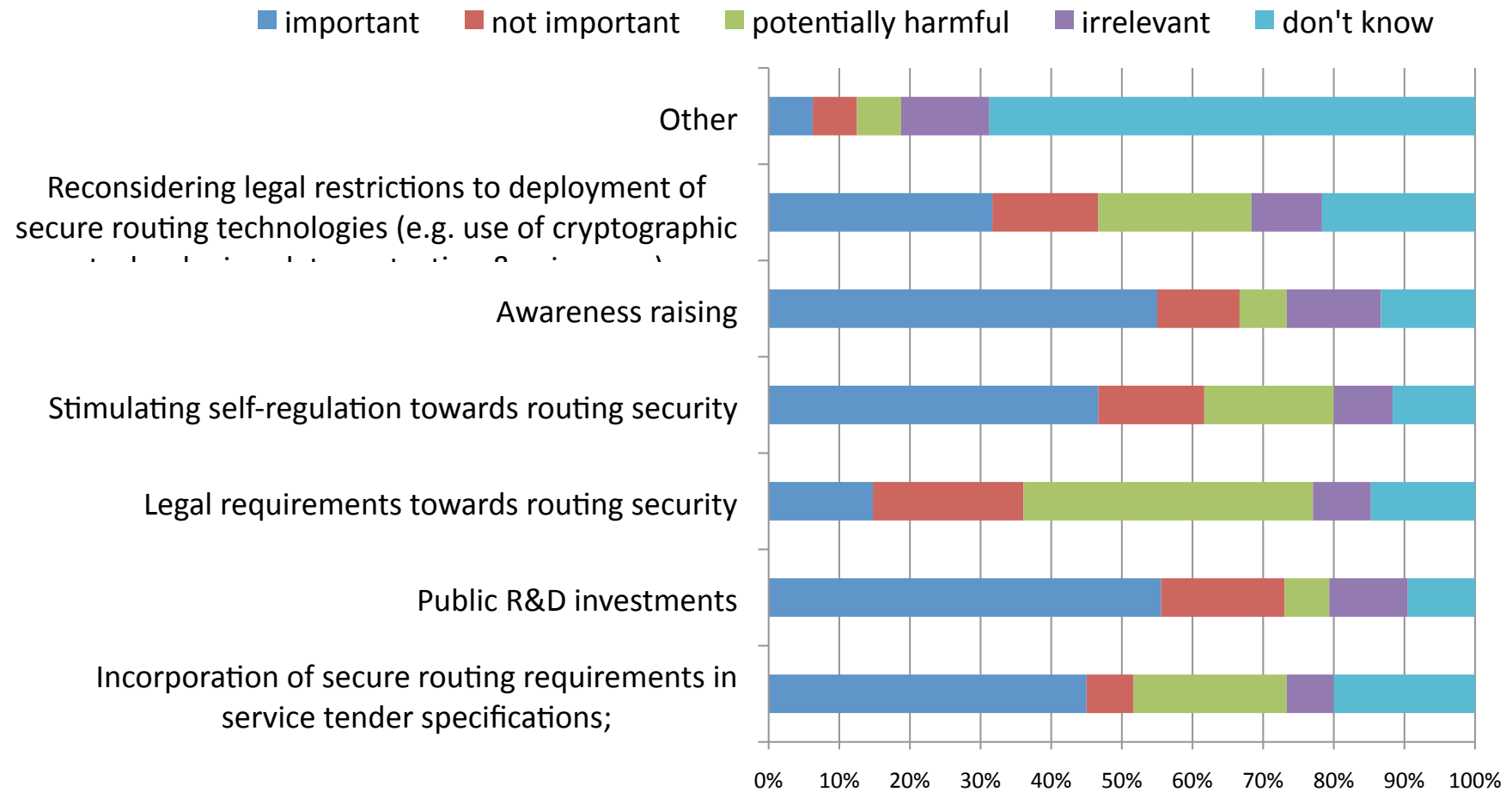
What are the drivers in deploying improved routing services?

Answer Options	Response Percent
Reducing operational risk	83,1%
Expected reduction of operational costs (e.g. less ad hoc incident handling)	29,9%
Improved image towards customers (goodwill, trust, etc.)	59,7%
Don't know	5,2%
Other (please specify)	6,5%

n = 77

ROLE OF GOVERNMENTS

Should, in your opinion, governments facilitate development and deployment by:



n = 63

Summary

- Routing security
 - session security: MD5, TCP hack, ...
 - monitoring and filtering
- Level of awareness of RPKI is relatively low
- Government involvement: stimulation, not regulation
 - Self-regulation of community is preferred
 - aware of challenges and solutions
 - Stimulating through
 - public R&D
 - awareness raising



With thanks to all that participated

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