HAKOM

# Croatia – Consumer Empowerment: Quality Control and Transparency

## Croatian Post and Electronic Communications Agency

## - HAKOM -

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# MONITORING & ASSURING BB SPEEDS

- Internet Broadband Access Transmission Rates
  - All operators have “up to x Mbit/s” packages
  - Some improvements in communication towards the end users are necessary
  - Objective: the packages with guaranteed minimum and maximum speeds
- Solution Proposal
  - Development of a certified tool for transmission rates
  - Installation of the servers in CIX with fake IP addresses
  - Modification of the ordinances in accordance with the proposal
- Migration towards IPv6
  - In terms of IPv6 Croatia is rather lagging behind the EU and the region
  - 11 operators allocated IPv6 addresses, 5 are already using them
  - IPv6 forum Croatia was established
  - Questionnaire sent out to all operators – screening the situation on site
  - Questionnaire consists of six sections, filled out depending on the status of implementation and planning, or non-planning of migration towards IPv6

# RESULTS FROM QUESTIONNAIRE

- Operators
  - Do not have enough IPv4 addresses, therefore have started migration to IPv6
  - Good knowledge on IPv6 migration issues
  - Some of them have production version (business user only!), most of them still preform internal tests
- Government authorities
  - Still have not allocated IPv6 addresses (only one ministry!)
  - Have enough IPv4 addresses for the next 5 years
  - Poor knowledge and experiences on IPv6 transition mechanisms

# QoS ISSUES AND REGULATIONS

- Selection of a legal entity for the implementation of quality of service (QoS) testing, as well as for evaluation, testing and verification of the measuring and collection system.

- Obligations of the operators with revenue exceeding 2% of the total market value:
  - Ensure the evaluation and verification of the operators' billing systems
  - Implement QoS measurements

- Benchmarks:
  - Calls up to 5 s, duration is recorded within +0.5 s and –1.0 s
  - Calls above 5 s, duration is recorded within +0.01% (1:10,000) and –0.02% (1:5,000)
  - when the cost depends on the time in the day, call duration is recorded within +1.0 s and –1.0 s
  - when cost depends on the number of events, the number of events shall be accurate within +0.004% (1:25,000) and –0.1% (1:1,000)

# ACTIVITY PLAN

- Framework activity plan
- „Ordinance on the Manner and Conditions for the Provision of Electronic Communication Networks and Services”

  http://www.hakom.hr/UserDocsImages/dokumenti/Ordinance%20on%20manner%20and%20conditions.pdf
- The examples of the questionnaires are given in the appendices
- HAKOM has bought ADSL analyser in order to perform ADSL line QoS parameters measurements

# Thank you

# for your attention !

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