ICT 2008 - FI Socio-Economics
Lyon, France, November 25, 2008

University of Zurich

Towards a Future Internet Socio-Economics Research Agenda

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Outline

Future Internet Socio-Economics (FISE)

- FISE Working Group
- Topics of Interest

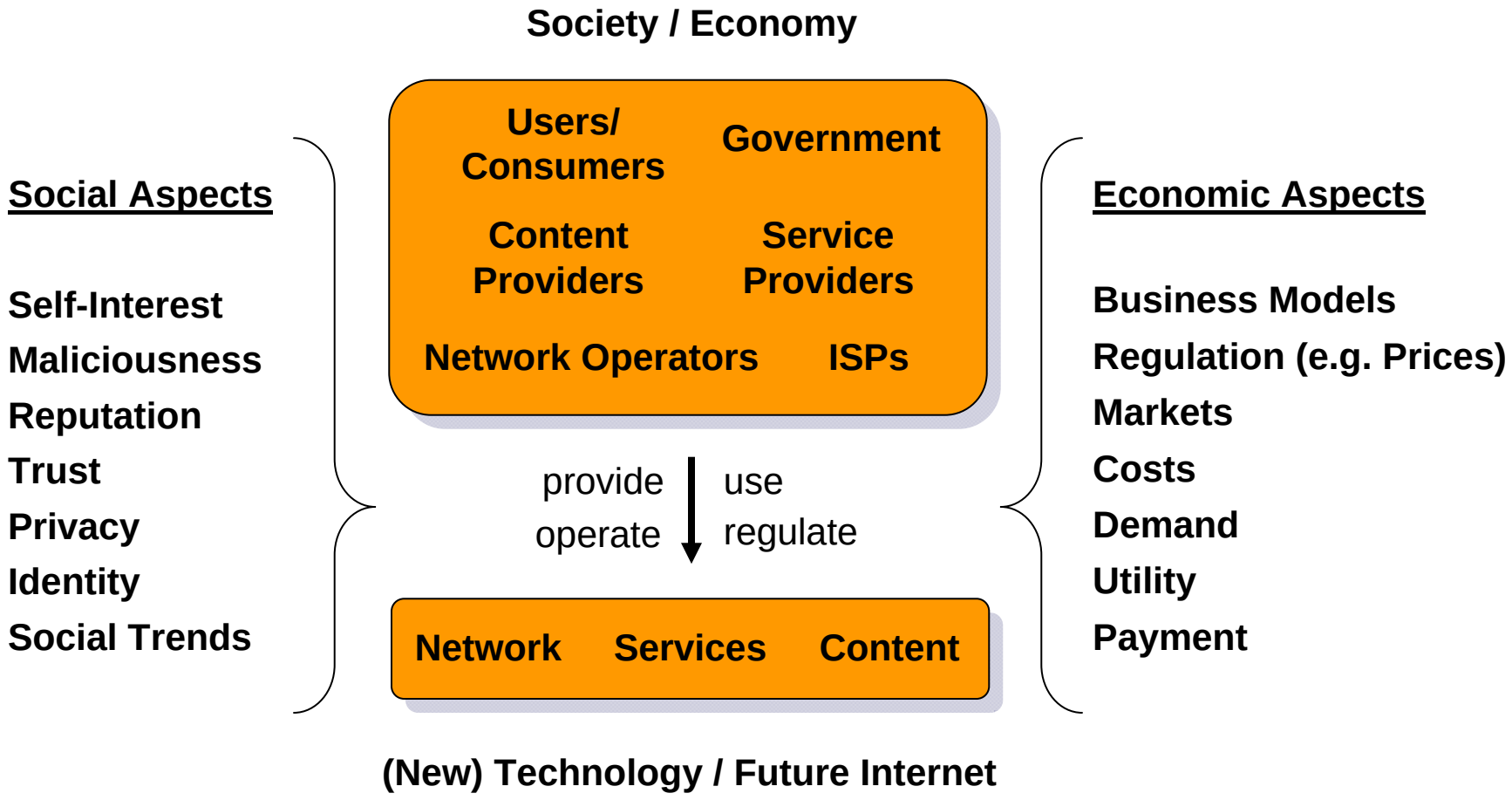
Selected Example: Economic Management of Overlay Network Traffic

- Scenario
- Challenges
- Solution Concepts

Outlook

- FISE Wiki
- FISE White Paper
- Next Meetings

Future Internet Socio-Economics (FISE)



FISE Working Group

First meeting at Future Internet Conference in Bled

- Panel on Socio-Economics Aspects of the Future Internet
- Organized by Pekka Nikander and David Hausheer
- Topics: Business, society and regulatory drivers, user behavior, trust and reputation, Future Internet divergence, IPv6 economy, Internet governance

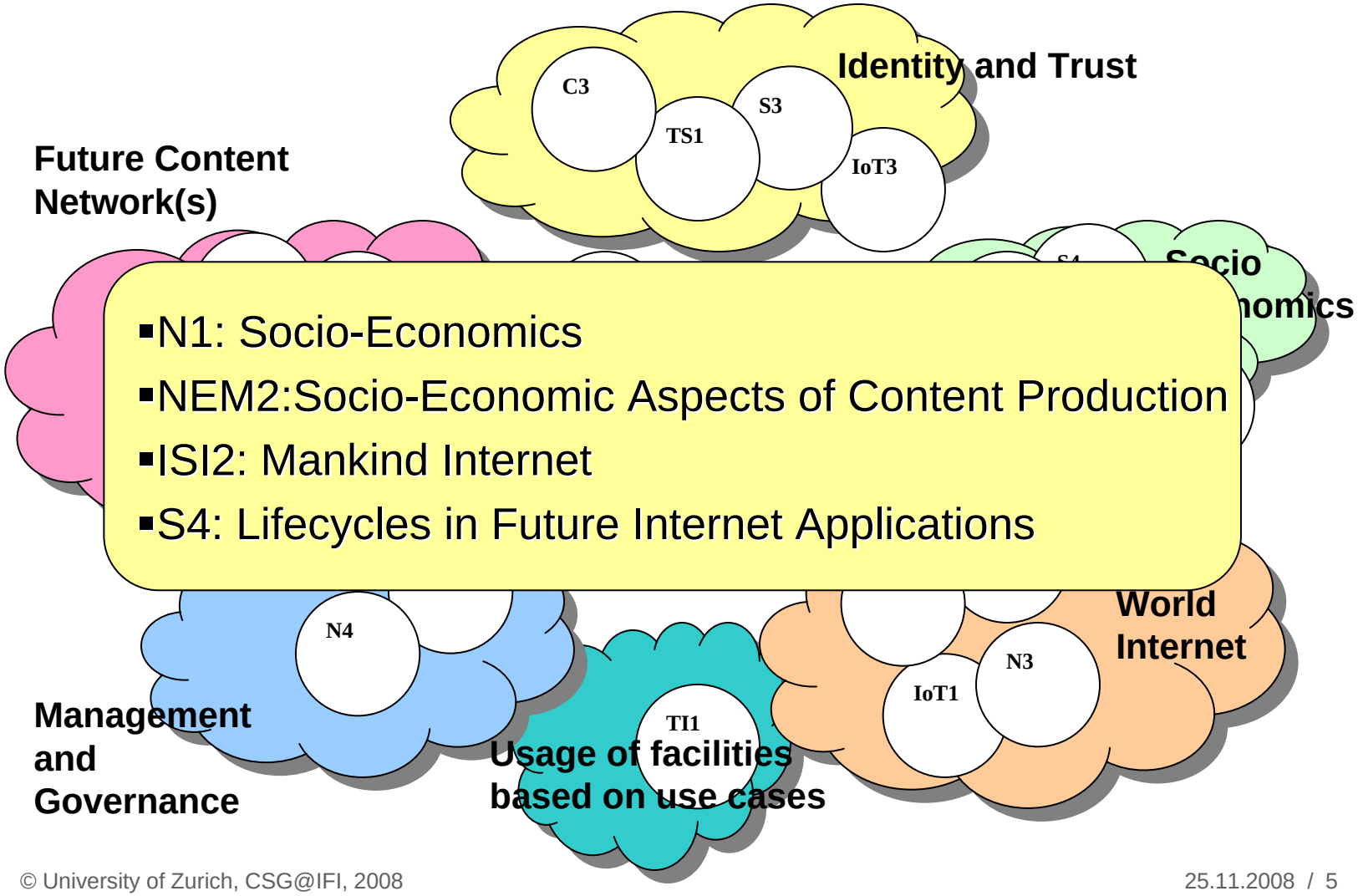
Working group objectives

- Create a network among people interested in FISE
- Collaboration: Wiki page, white paper, future meetings
- Get new insights how to structure the FI architecture and services

FP7 projects involved

- 4NEM, 4WARD, COIN, EFIPSANS, EIFFEL, EURO-NF, FIREworks, IRMOS, ISI, PARADISO, PSIRP, SENSEI, SmoothIT, SOA4ALL, SOCIALNETS, Think-Trust, ...

FIA Working Groups



- N1: Socio-Economics
- NEM2:Socio-Economic Aspects of Content Production
- ISI2: Mankind Internet
- S4: Lifecycles in Future Internet Applications

Topics of Interest

Networks	***Services***	***Content***
Pricing, value chains, and business models		
Network neutrality	User identity and privacy	
Regulation and governance	Trust and reputation	
Peer-to-Peer content distribution models		
Bandwidth markets	Customer usage behaviour, customization	
Universal Internet service		Creative commons

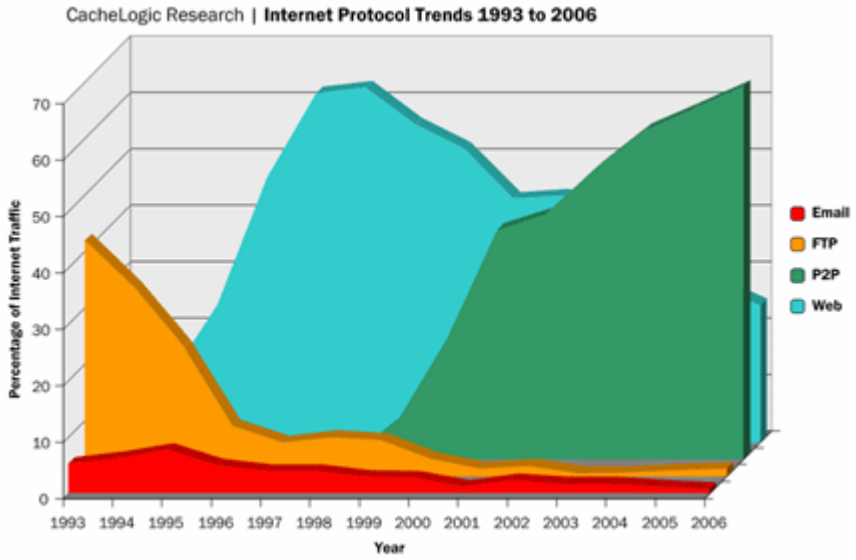
Selected Example: Economic Management of Overlay Network Traffic

Traditionally, Web and Email used to be the main Internet applications

- Today, 70% is P2P traffic

Management of P2P (peer-to-peer) traffic is a challenge

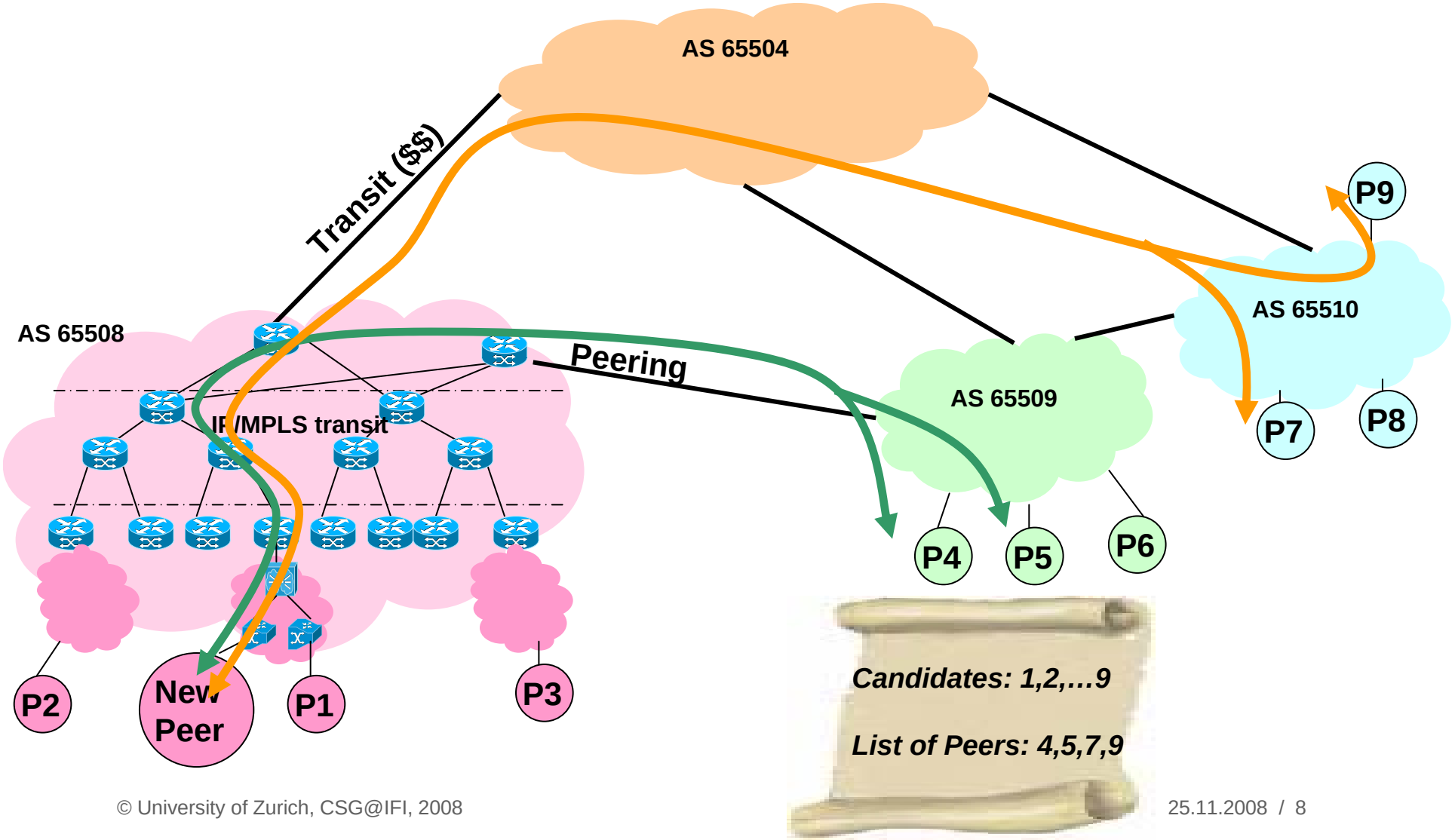
- P2P applications create dynamic overlays outside the ISPs control



Traffic management methods employed by today's ISPs are suitable for conventional traffic/service profiles

- P2P overlay traffic is treated according to traditional techniques

Example: Locality-unaware Overlay



SmoothIT Objectives

Management of overlay networks based on a collaboration between the overlay provider and the network (underlay) provider (operator) in support of the user

- Optimize traffic and achieve win-win-win situation for all parties

Incentives for operators

- Cost and investment recovery
- Reduce overlay traffic and inter-domain traffic
- Keep overlay services (boost flat rate tariffs; keep customers)
- Avoid to be on an overlay block list `http://www.azureuswiki.com/index.php/Bad_ISPs`

Incentives for overlay providers

- Active role in traffic management increases service quality
- Increased user base due to better performing services

Incentives for user

- Increased service quality, *e.g.*, in terms of reliability, RTT, bandwidth

Challenges

Integration and mapping of operator-driven and overlay service requirements into effective, manageable, and viable

economic and technical signals

within/in a multi-domain operational environment

Development of an efficient and scalable economic management of all overlay types (mainly control and transport overlays) so that:

- They maximize the benefit for multiple operators/ISPs involved, independently of the underlying technology and topology
- They can be operated autonomously, show an increasing capability to withstand faults, and balance the load in the network.

Solution Concepts

Agreements between overlay provider and operator

- *E.g.*, active caching:
  the operator provides explicit local caches for overlay content

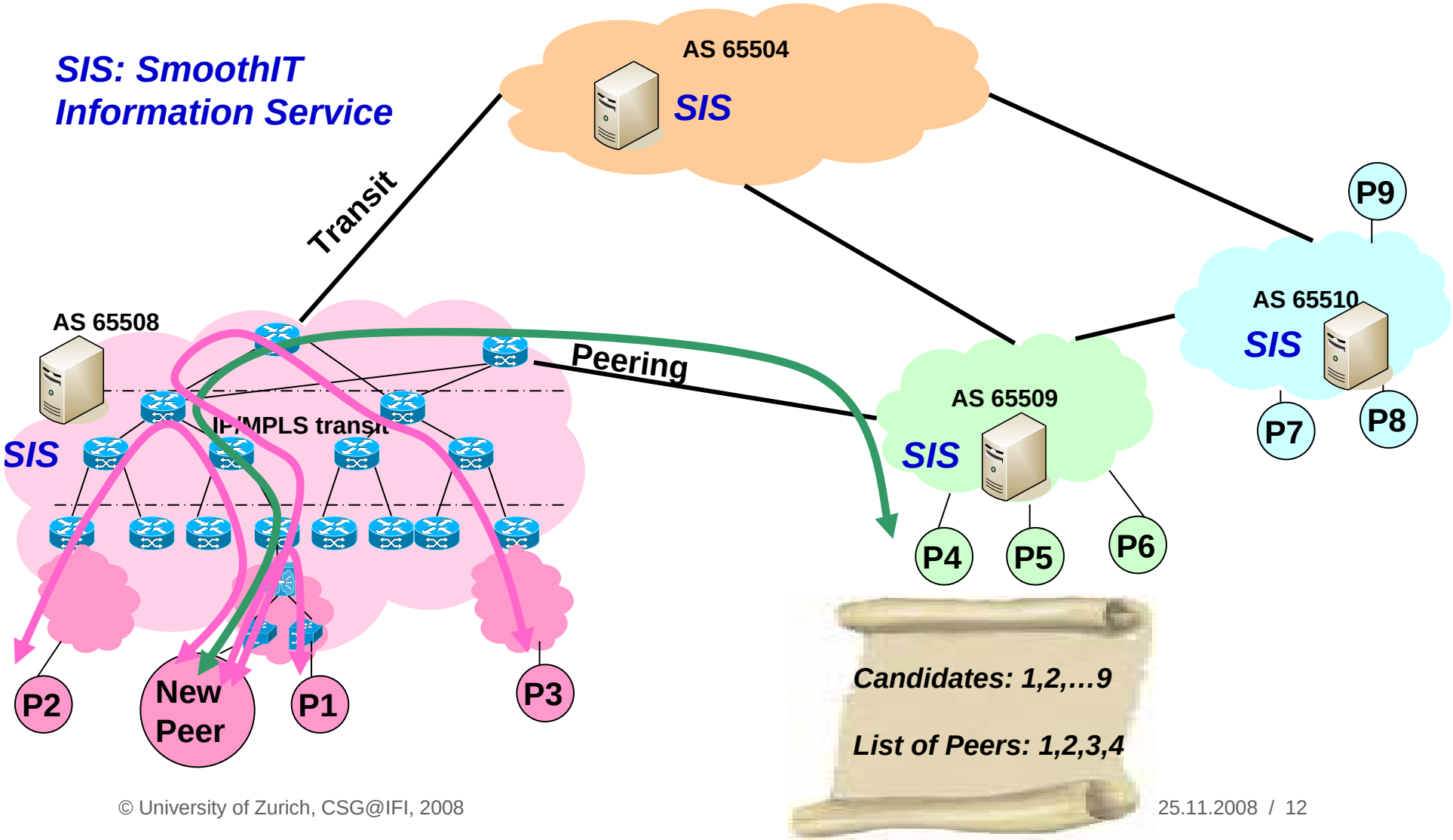
Locality promotion

- Operator provides information about how to achieve best quality in overlay, *e.g.*, operator prioritizes alternative peer interconnections

QoS/QoE differentiation (application-awareness)

- Operator knows overlay application traffic (labels, deep packet inspection) and applies application-aware traffic management

Example: Locality-aware Overlay



FISE Wiki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Future Internet Socio-Economics
Future Internet Socio-Economics (FISE) is a working group inside the Future Internet cluster of the EU Seventh Framework Programme (FP7).
The goal of this activity is to create a network among people who are active in the area of Socio-Economics and the Future Internet.
Meetings
People
White Paper
Topics of Interest
Relevant Papers
Links
People willing to contribute to the FISE working group, please contact the WG chair to get an invitation.
Involved FP7 Projects:
Done

FISE White Paper: Challenges and Perspectives

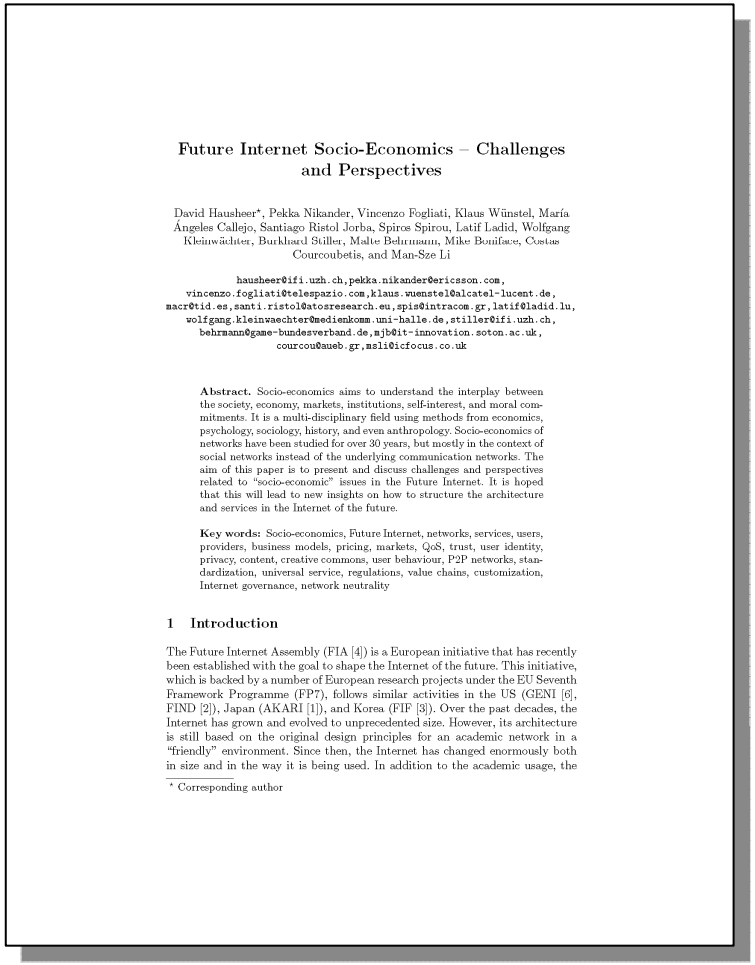
Outcome from Bled

Input to future FISE meetings (FIA Madrid & FIA Prague)

Submitted to „FIA Prague Book“

Available at http://www.smoothit.org/wiki/pmwiki.php/FISE/WhitePaper

Feedback welcome: provide comments in the FISE wiki



Future Internet Socio-Economics – Challenges and Perspectives

David Hausheer*, Pekka Nikander, Vincenzo Fogliati, Klaus Wünstel, María Ángeles Callejo, Santiago Ristol Jorba, Spiros Spirou, Latif Ladid, Wolfgang Kleinwächter, Burkhard Stiller, Malte Behrmann, Mike Boniface, Costas Courcoubetis, and Man-Sze Li

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Abstract. Socio-economics aims to understand the interplay between the society, economy, markets, institutions, self-interest, and moral commitments. It is a multi-disciplinary field using methods from economics, psychology, sociology, history, and even anthropology. Socio-economics of networks have been studied for over 30 years, but mostly in the context of social networks instead of the underlying communication networks. The aim of this paper is to present and discuss challenges and perspectives related to "socio-economic" issues in the Future Internet. It is hoped that this will lead to new insights on how to structure the architecture and services in the Internet of the future.

Key words: Socio-economics, Future Internet, networks, services, users, providers, business models, pricing, markets, QoS, trust, user identity, privacy, content, creative commons, user behaviour, P2P networks, standardization, universal service, regulations, value chains, customization, Internet governance, network neutrality

1 Introduction

The Future Internet Assembly (FIA [4]) is a European initiative that has recently been established with the goal to shape the Internet of the future. This initiative, which is backed by a number of European research projects under the EU Seventh Framework Programme (FP7), follows similar activities in the US (GENI [6], FIND [2]), Japan (AKARI [1]), and Korea (FIF [3]). Over the past decades, the Internet has grown and evolved to unprecedented size. However, its architecture is still based on the original design principles for an academic network in a "friendly" environment. Since then, the Internet has changed enormously both in size and in the way it is being used. In addition to the academic usage, the

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Next FISE Meetings

Future Internet Assembly, Madrid, December 9-10, 2008

- FISE session, December 9, 2008, 16.30 - 19.30

Keynote (25 min + 10 min Q&A)	Costas Courcoubetis
Socio-Economics Panel (2 slides, 5 min each) - Economic Aspects of the Future Internet - Socio-Economic Aspects of Content Production - Social Needs Striven by a Universal Internet Service - Business and Regulation Challenges and Value Chains - Social Benefits and Business Threats in System Customization	Pekka Nikander Costas Courcoubetis Malte Behrmann Vincenzo Fogliati Klaus Wuenstel Mike Boniface
Discussion (30 min Group-Brainstorming, 50 min Discussion) Contributions: - PARADISO Viewpoint - Think-Trust Viewpoint - COIN Viewpoint - Services Players	Pekka Nikander Roger Torrenti Zeta Dooley Man-Sze Li Mike Boniface

Future Internet Conference, Prague, May 11-13, 2009

Thank you for your attention!

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