



# Intelligent Routing Network (IRoNet)

Results Seminar

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Otaniemi, TUAS House

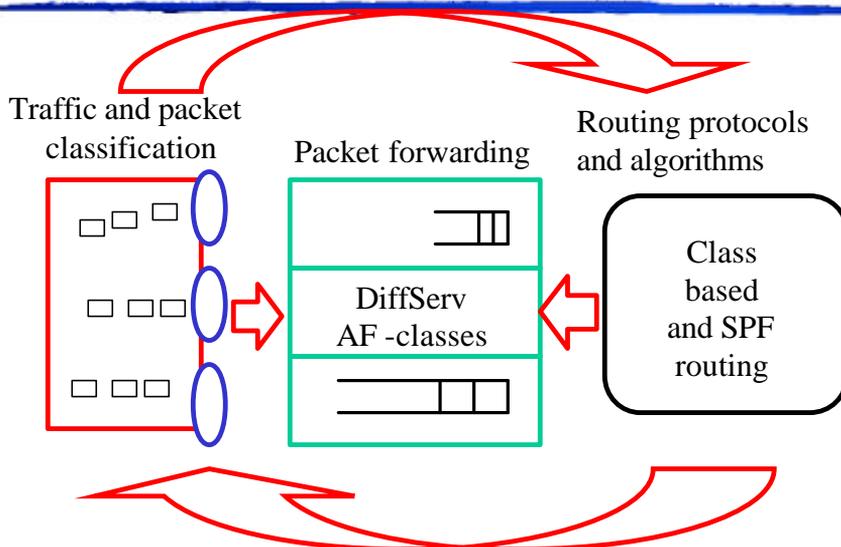


## IRoNet Objectives

- To advance state-of-the-art in QoS for the Internet using methods from mathematical modeling and simulations to measurements and prototyping.
- Focus on
  - End-to-end modeling, packet scheduling and queueing mechanisms, traffic classification, policy based networking, QoS Routing and Network Economics.



## Components of the solution



## Major Achievements

- **Strengthening the team and contact network**
  - New professor on Network Business 1/2003
  - International recruitment for Ph.D study
  - Memberships in E-Next and EuroNGI Networks of Excellence
  - Cooperation with FUNET/CSC
  - Closer cooperation between network theory and practice
  - Will initiate a Graduate School on “Networks for Information Society”
- **Technology**
  - Prototype on Policy based networking runs on Free-BSD and off-the-shelf PC hardware
  - Measurements in FUNET on 2.5 Gbit/s
  - Expansions to QoS Routing Simulator
- **Theory**
  - Methodology of traffic classification
  - Analytical Modelling of TCP behaviour backed up by simulations



# IRoNet is on Schedule

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- Budget: Slow first year (2002), will catch up during 2003
- Publications ...
- Network Business launched according to plan, Measurements in FUNET progress positively



# Intellectual contribution

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- We understand the problem of QoS routing more clearly
  - Usefulness= a) performance and scalability of the routing schema+algorithms and b) time-variability in directionality of traffic
  - a) is addressed by prototyping, simulations and analysis and b) by measurements in FUNET
- More evidence found supporting the idea that only similar traffic should be classified to a class. Dissimilar traffic in one class lowers network utility and makes service less manageable
- Traffic classification can be a multi-purpose tool for network management
- A business game can be useful tool for learning and discussing the business logic



# Broader Impact of the project

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- **Commercial**
  - Nokia, Tellabs, Finnish Defence Forces and NECSOM have formed a consortia supporting IRoNet.
  - Sonera, Elisa and CSC/FUNET are advisory members in the Steering Group
  - CSC/FUNET cooperation established for traffic measurements
  - Hope to contribute to more efficient market rules in Mobile Data (Mobile Business Game)
- **Scientific**
  - hope to make a wider impact in classification.
- **Educational**
  - 7 PhD students and 10 M.Sc students work for IRoNet
  - Contribution for courses: Quality of Service in the Internet, Seminar on Networking business