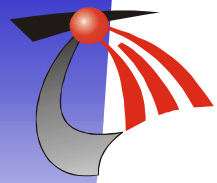

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THE INTERNET NEXT GENERATION PROJECT

http://ing.ctit.utwente.nl/

Aiko Pras
http://wwwhome.ctit.utwente.nl/~pras

Centre for Telematics and Information Technology (CTIT)
University of Twente (UT)
The Netherlands

PRESENTATION AT THE RWTH, AACHEN, GERMANY

17-6-1999

KEY FIGURES

START: 1-1-1999
DURATION: 4 YEARS

PARTNERS:

- CTIT
- TELEMATICS INSTITUTE - CENTRAL ORGANIZATION
- ERICSSON BUSINESS MOBILE NETWORKS
- ERICSSON TELECOMMUNICATIONS
- KPN RESEARCH

- COSTS PER YEAR: 2 MEURO (CTIT: 1 MEURO)

PROJECT GOALS

- **INCREASE DUTCH CONTRIBUTION TO THE INTERNATIONAL DEVELOPMENT OF NEW INTERNET TECHNOLOGIES**
  - **INTERNET-2, IETF, IRTF**

- **KNOWLEDGE CENTER WITHIN THE NETHERLANDS**
- **WEB SITE(S), TUTORIALS, ONLINE TRAINING MATERIAL, ANTC & ETB**

RESEARCH SUBJECT

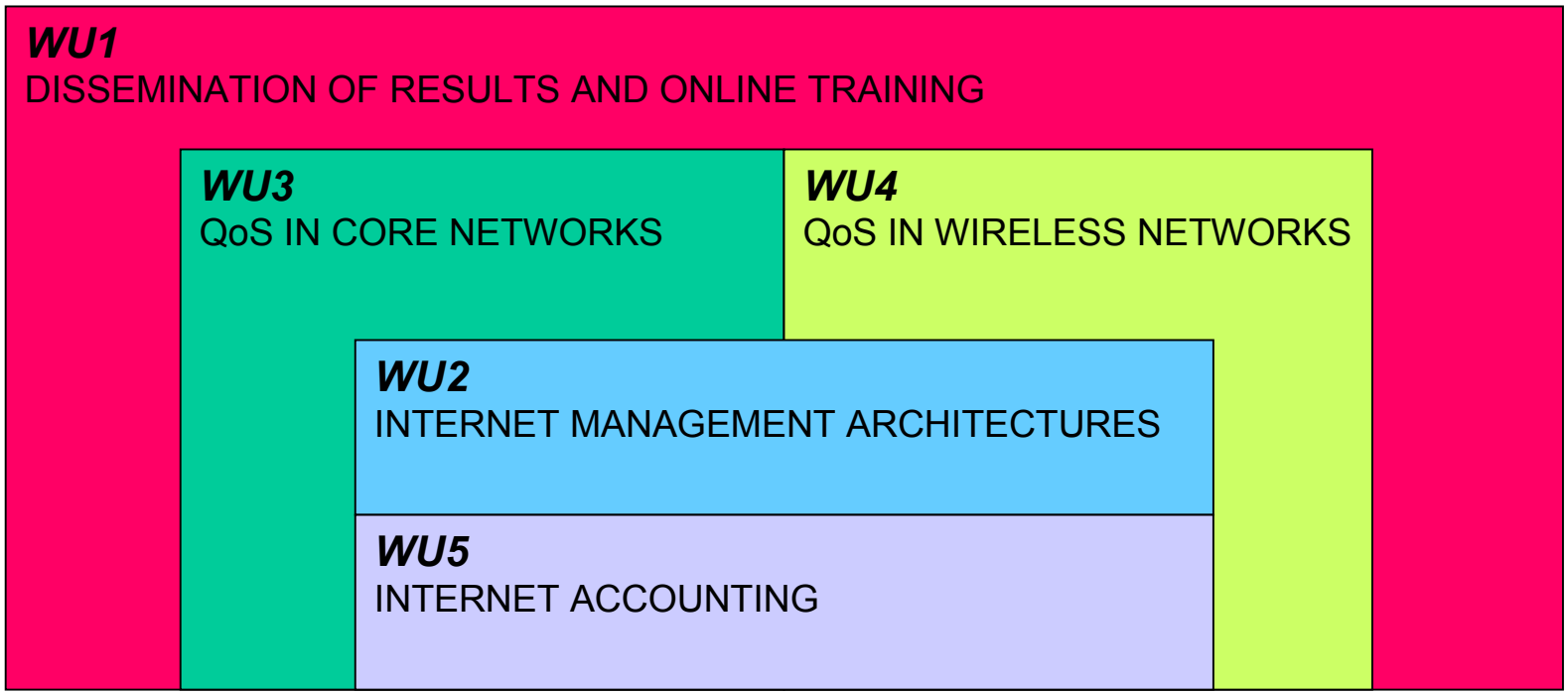
- **PROVISION OF QUALITY OF SERVICE IN THE INTERNET**

- **IN CORE NETWORKS**
- **IN ACCESS NETWORKS**

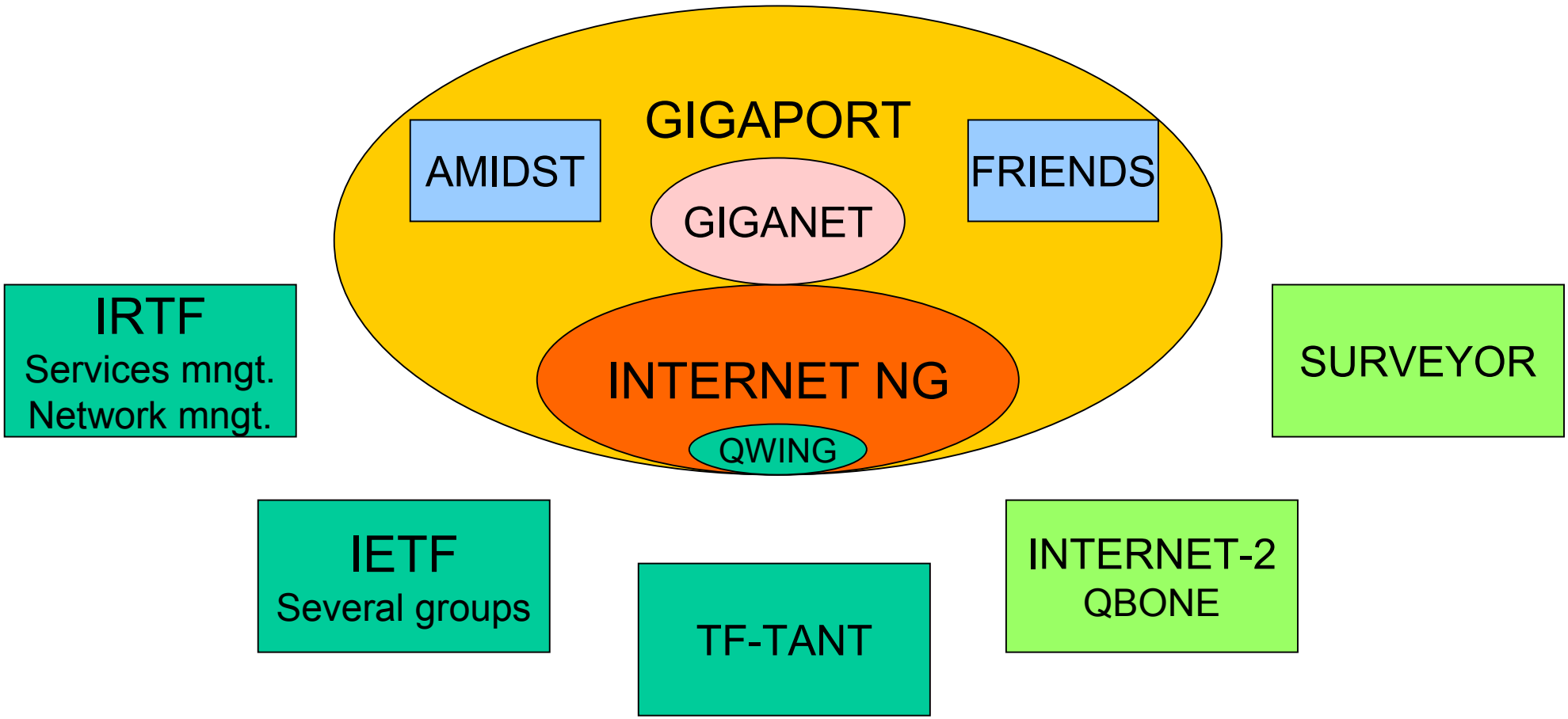
- **INTRODUCE ACCOUNTING**

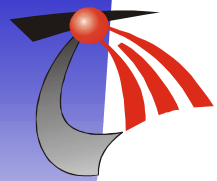
- **IMPROVE MANAGEMENT ARCHITECTURE**

PROJECT STRUCTURE



RELATION TO OTHER PROJECTS





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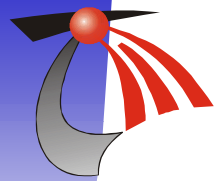
WU 1: DISSEMINATION

WEB SITE WITH INTERNET MANAGEMENT INFORMATION

TUTORIALS ON:

- IPv6
- SNMPv3
- DISTRIBUTED MANAGEMENT
- INTSERV AND DIFFSERV
- MOBILE NETWORKING

TRAINING MODULE ON INTERNET MANAGEMENT PROTOCOLS



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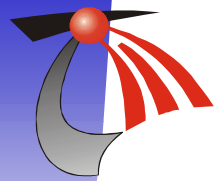
WORK UNIT 2

NEW INTERNET MANAGEMENT ARCHITECTURES



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WU2: NEW INTERNET MANAGEMENT ARCHITECTURES

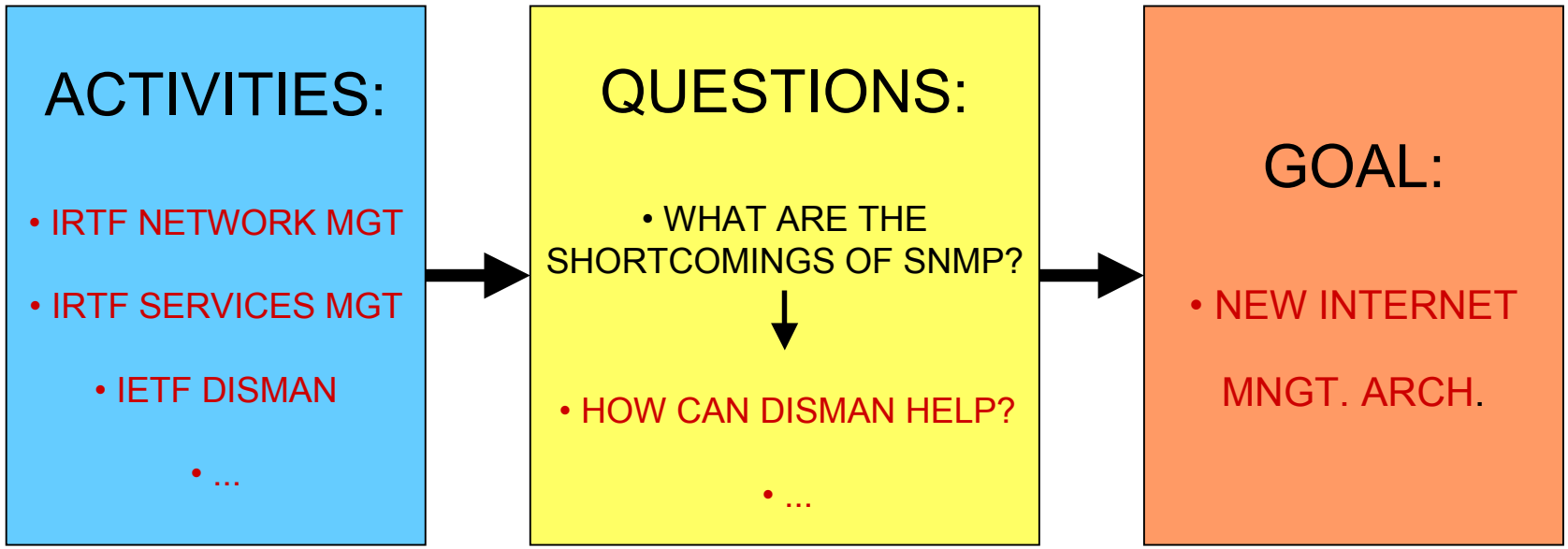
31-10-1999: D2.1

HOW TO TRANSFER LARGE AMOUNTS OF MANAGEMENT DATA RELIABLY

31-12-1999: D2.2

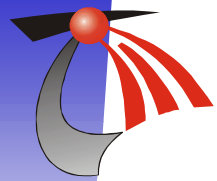
INITIAL SERVICE MANAGEMENT ARCHITECTURE

WU2 Approach



SHORTCOMINGS OF SNMP

- LIMITED SCALABILITY
- NO SPECIAL MEANS FOR INTER-OPERATOR MANAGEMENT
- DIFFICULT TO USE FOR END USERS (CNM)
- ...



QUESTIONS

- **WHAT ASPECTS OF EXISTING MANAGEMENT ARCHITECTURES MAY BE RELEVANT FOR THE FUTURE INTERNET MANAGEMENT ARCHITECTURE?**
- **WILL SNMP REMAIN IMPORTANT?**
- **CAN DISMAN HELP TO SOLVE THE SCALEABILITY PROBLEM? HOW?**

- **WHAT ARE THE MAIN PROBLEMS FOR INTER-OPERATOR MANAGEMENT**
- **CAN WE USE TMN IDEAS TO SOLVE INTER-OPERATOR MANAGEMENT? HOW?**

- **IS SNMP A GOOD SOLUTION TO TRANSFER LARGE AMOUNTS OF MANAGEMENT DATA? WHY (NOT)?**
- **CAN XML HELP TO TRANSFER LARGE AMOUNTS OF MANAGEMENT DATA?**

- **WHAT ARE THE MAIN PROBLEMS FOR CUSTOMER NETWORK MANAGEMENT?**

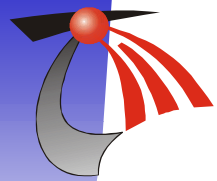
ACTIVITIES

- DEFINE TERMINOLGY (E.G. ELEMENT, DEVICE, NETWORK, PROTOCOL, APPLICATION, SERVICE, CUSTOMER & BUSINESS MANAGEMENT)
- STUDY STATE OF THE ART (E.G. SNMPv3, DISMAN, TMN, ISO, OMG/CORBA, W3C/XML)
- PARTICIPATE IN IRTF SERVICES MANAGEMENT GROUP
- PARTICIPATE IN IRTF NETWORK MANAGEMENT GROUP
- PARTICIPATE IN IETF DISMAN GROUP
- EXPERIMENT WITH DISMAN IMPLEMENTATIONS
- ...

WU3: QBone ?

Interdomain Testbed for Differentiated Services

- **Goals:**
  - **Provide QoS for advanced applications**
  - **Engineering issues for Differentiated Services**
  - **Policy issues in interdomain differentiated services**
  - **Measure behaviour of traffic and networks**
- **Focus on Engineering**
  - **Get Expedited Forwarding running**
  - **Support measurement and evaluation**
  - **Focus on interoperating domains**
  - **Get prototype bandwidth brokers running**



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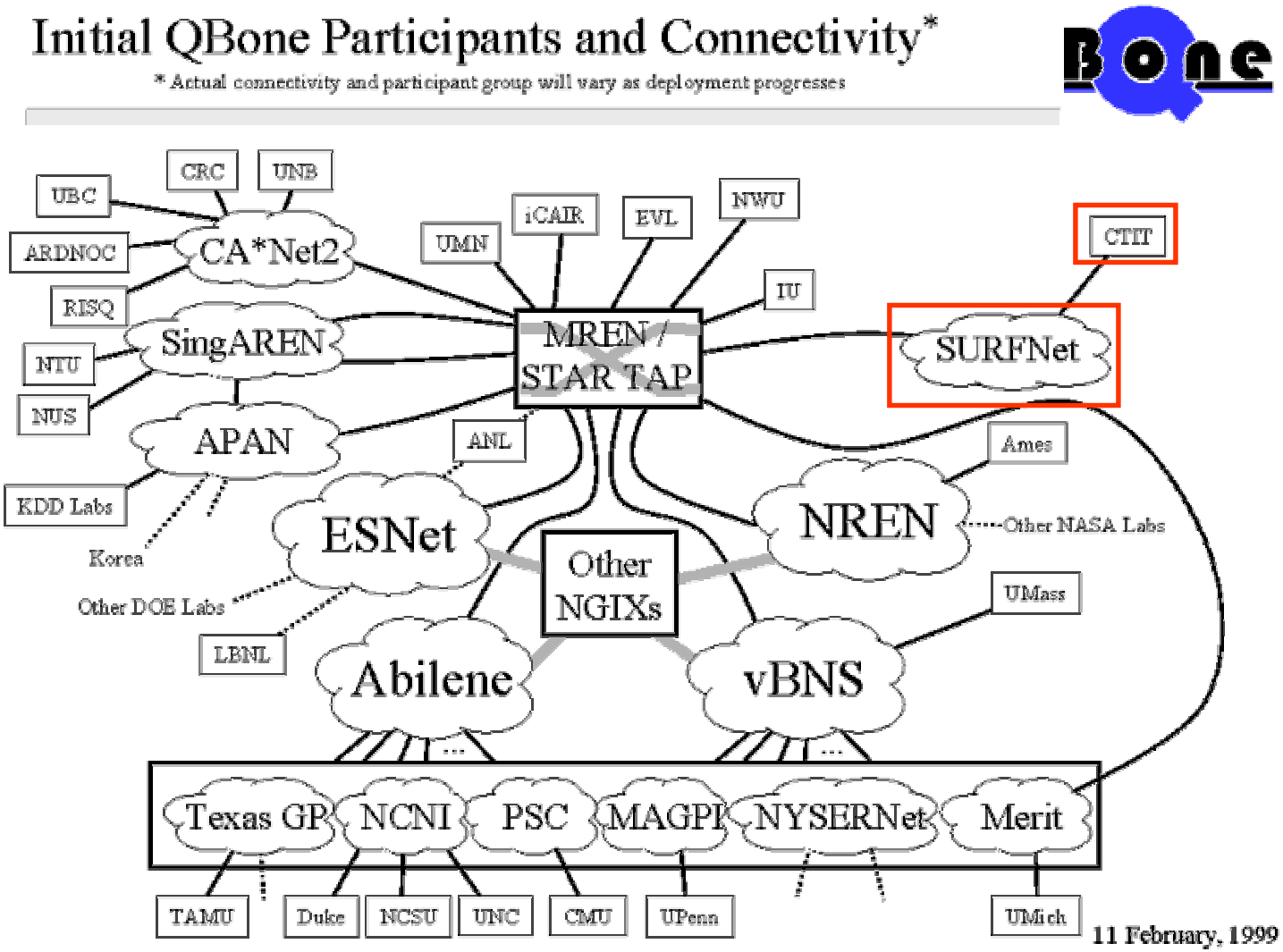
QBone
Consortium Members

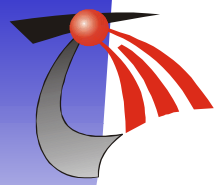
- iCAIR (Northwestern University)
- IBM
- APAN/TransPAC (IU)
- Asia/Pacific Advanced Network (Japan)
- Kokusai Denshin Denwa Japan
- Korea Telecom
- Singapore National University
- SURFnet b.v.
- CTIT
- MREN (Chicago)
- Nanyang Technical University
- STAR-TAP
- Electronic Visualization Lab/UIC
- SingAREN

QBONE - TESTBED



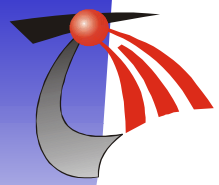
WU4: QoS OVER WIRELESS AND MOBILE ACCESS NETWORKS

- A FRAMEWORK FOR QoS SUPPORT FOR IP NETWORKS WITH WIRELESS AND MOBILE ACCESS NETWORKS
- A DESCRIPTION OF QoS SUPPORT BY WIRELESS NETWORKS
- A DESCRIPTION OF MOBILITY SUPPORT IN WIRELESS NETWORKS
- A DESCRIPTION OF RESOURCE RESERVATION AND ROUTING ALGORITHMS IN IP NETWORKS WITH MOBILITY
- WIRELESS TESTBED IN ANTC
- WIRELESS TESTBED AT ERICSSON



Key Issues

- **Extension of Integrated Services and Differentiated Services Frameworks with the notion of QoS and mobility in wireless networks**
- **The use of mechanisms and protocols (e.g., RSVP) for service differentiation over wireless link layers**
- **The support of various wireless networks for QoS requirements and ability to differentiate between QoS classes**
- **Location management and handover algorithms to support real-time IP services in wireless networks**
- **Combined resource reservation and routing for high network efficiency, QoS support, and mobility support**



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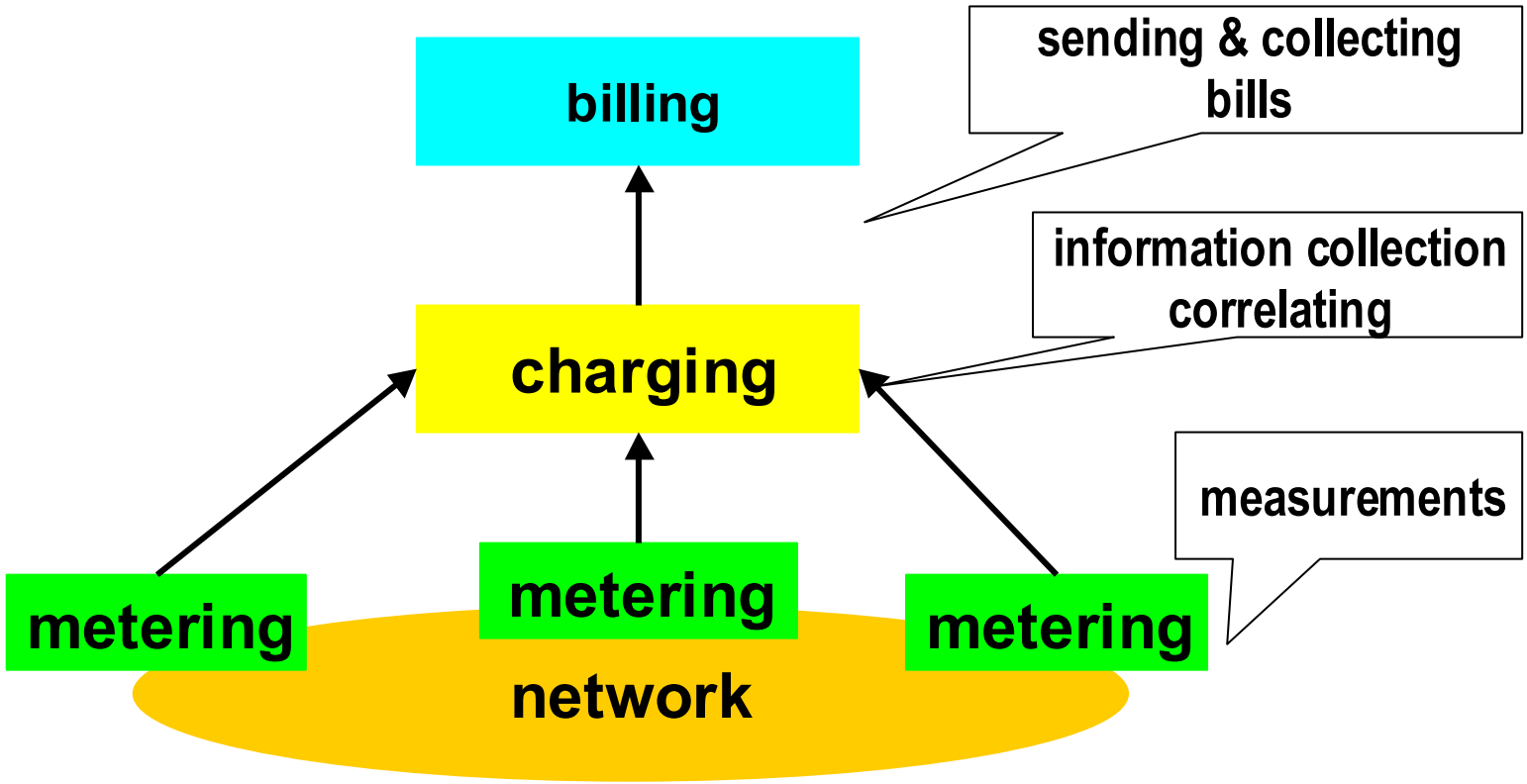
WU5: Internet Accounting

D5.1: STATE OF THE ART REPORT ON ACCOUNTING

D5.2: INITIAL INTERNET ACCOUNTING ARCHITECTURE

D 5.3: REPORT ON POSSIBLE TECHNIQUES FOR METERING

WHAT IS ACCOUNTING?



QUESTIONS - TRANSPORT

- Can you make a difference between local, national and international traffic
- Can you distinguish inter and intra traffic
- Can you do accounting when e.g. retransmissions are involved
- What information is needed for accounting
- What is the influence of future developments
- ...

QUESTIONS - GENERAL

- What's the difference between accounting in the 'old' and 'new' world
- who are involved in the accounting process and how will it be 'organized'
- what accounting information needs to be exchanged between ISPs/operators
- At what level(s) is accounting possible/needed (user or aggregates)
- ...

ACTIVITIES

- State-of-the-art standards (IETF, TINA, IRTF)
- state-of-the-art research (publications, conferences)
- Interviews Internet Service Providers
- Accounting parameters used by ISPs.
- Influence of politics and regulations.
- Accounting lab, prototypes and experiments.
- Insight in Traffic Flows.
- Study new technologies and equipment (e.g. Mobility, DIFFSERV, INTSERV).
- Homepage.