ENUM Trial in Japan

Participation by presentation file

ETSI Plugtests ENUM Workshop

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Background

Trends in Communication Market in Japan

Drivers

- **Change of Regulation**
  - **Privatization of Public Telecom Corporation**
  - **Relaxation of Regulation**
- **Evolution of Devices**
  - **Small, Wireless, High-functioned (e.g., mobile phones with cameras)**
- **Popularization of Internet and IP Technology**
  - **From Circuit Exchange to Packet Data Exchange**

History

|	
~Sept.1987	**only NTT provided public telephone services**
First half of 1990s	**communication cost decreased rapidly by competition**
Latter half of 1990s	**share of mobile phones grew rapidly** **subscribers of mobile phones overtook PSTN in March 2000**
2000~	**broadband including IP telephony grew rapidly**

individual IP phone service providers ==> a couple of groups

Assignment of 050-xxxxxxxx to IP Phones

050-xxxxxxxx are being assigned to IP phones so that PSTN users can make calls to IP phones.

* prefix 050 is an easily recognized code for IP Phone

IP Phone Numbering Structure

050-CDEF-GHJK

IP phone   Assigned to   Assigned to
                 service provider   subscriber
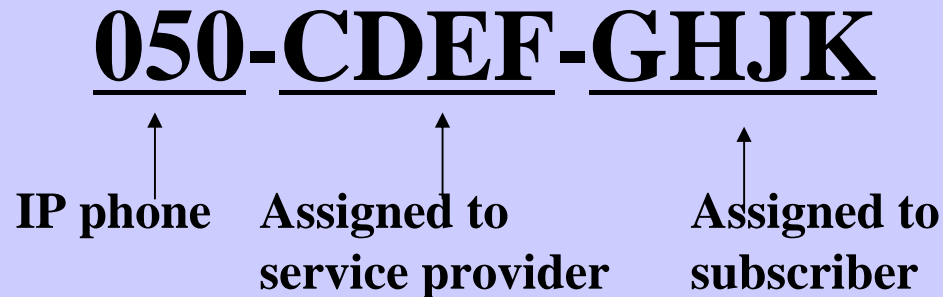
MPHPT

↓ **10 million 050 phone numbers**

service providers

↓ **5 million 050 phone numbers**

users

cf.
PSTN subscribers   60 million
mobile subscribers   80 million

ENUM activities in Japan

- ENUM Study Group & ENUM Trial Japan -

ENUM Study Group

http://www.nic.ad.jp/en/enum/index.html

- **Established**
  - **September 2002**
- **Objectives**
  - **Understanding the ENUM technology : desk work**
  - **Studying the implementation and operation of the ENUM–based system, and related matters**
  - **Finding political/regulatory issues related to ENUM-based implementation and operation**
  - **Finding technological issues related to ENUM**
  - **Clarifying pros and cons in ENUM usage**
- **Final report**
  - **Published in May 2003**
    http://www.nic.ad.jp/en/enum/ENUMReport.pdf

ENUM Trial Japan (ETJP)
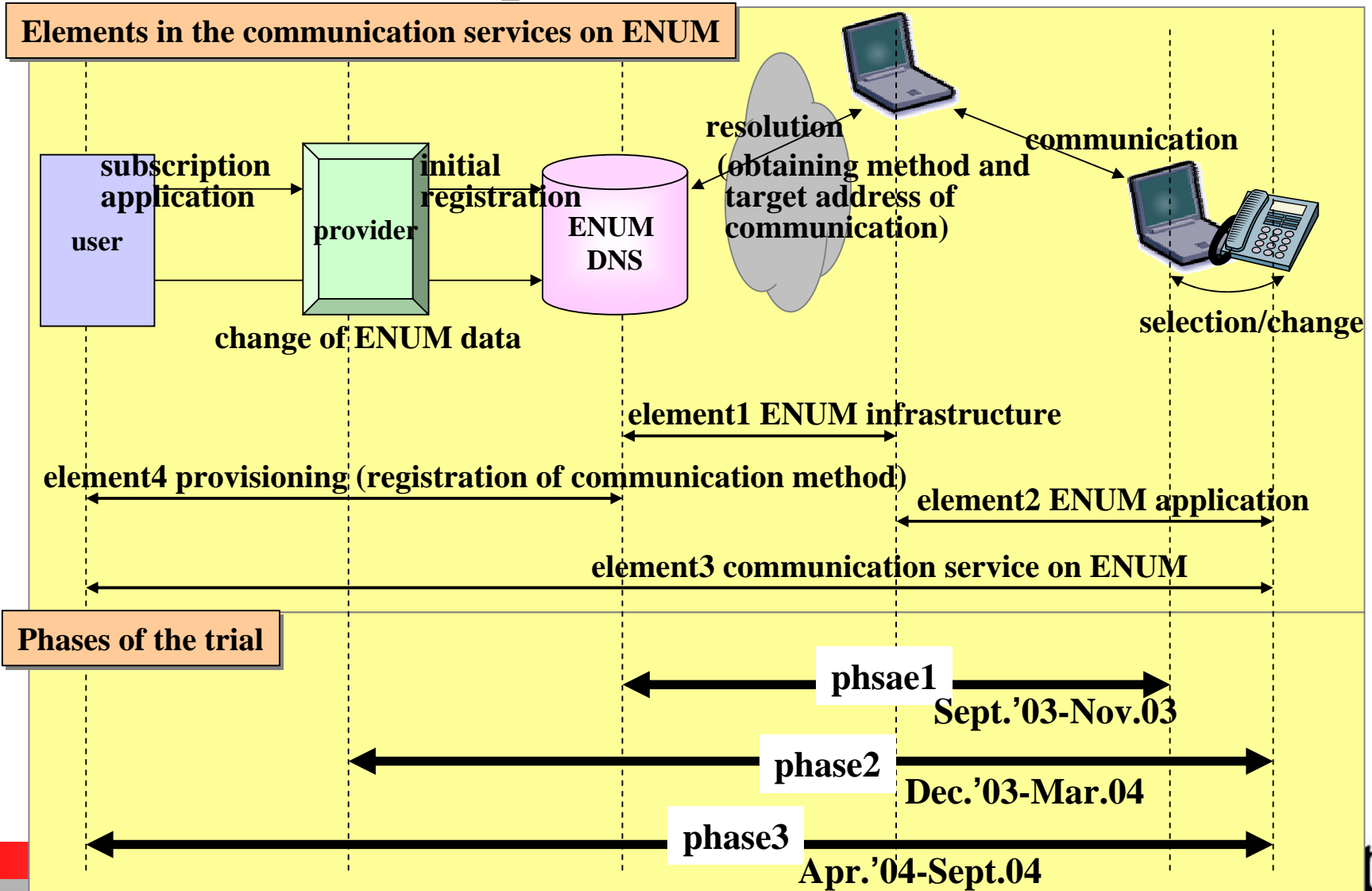
http://etjp.jp/english/index.html

- **Established**
  - **on 17 September 2003   (1 year activity)**
- **Purpose**
  - **Perform ENUM trials to ensure functioning and feasibility of basic technical facility**
  - **Demonstration of technology for international use**
  - **Accumulation and sharing of know-how about ENUM**
  - **DNS operation for ENUM Trial**
  - **Feasibility test of communication applications (device, software) using ENUM**
  - **Feasibility test of communication services**
- **Results**
  - **Technical verification**
    - **Communication devices and software provided by participants**
    - **Communication services**
  - **Clarification and consideration of relevant issues**

ETJP organization

- **Participants**
  - **Companies, organizations, and individuals who hope to contribute to ETJP activities**
  - **Number of members: 42 (as of January 28, 2004)**
- **Officers**
  - **Chairman**
    - **Shigeki Goto**
      Japan Network Information Center (JPNIC)/Waseda University
  - **Vice chairman**
    - **Hirofumi Hotta**
      Japan Registry Service Co., Ltd.(JPRS)
    - **Yoshiki Ishida**
      WIDE Project

ETJP phases and schedule

Elements in the communication services on ENUM

subscription
application

user

provider

initial
registration

ENUM
DNS

resolution
(obtaining method and
target address of
communication)

communication

selection/change

change of ENUM data

element1 ENUM infrastructure

element4 provisioning (registration of communication method)

element2 ENUM application

element3 communication service on ENUM

Phases of the trial

phsae1
Sept.'03-Nov.03

phase2
Dec.'03-Mar.04

phase3
Apr.'04-Sept.04

ETJP Working Groups

- **Privacy and Security WG**
  - **Objective**
    - **Discuss data treatment policy in each phase of trial and then publish guidelines**
  - **Milestone**
    - **Jan 2004: First draft, request for comments**
    - **Feb 2004: Second draft**
    - **Mar 2004: Publish guideline**
- **DNS WG**
  - **Objective**
    - **Definition of possible ENUM DNS models in Japan, their requirements and evaluation criteria, then evaluate current DNS implementations**
  - **Milestone**
    - **Feb 2004: Definition of possible ENUM DNS models, requirements, evaluation criteria**
    - **Mar 2004: Build Testbed, evaluation**
    - **Apr 2004: publish reports of the evaluation**
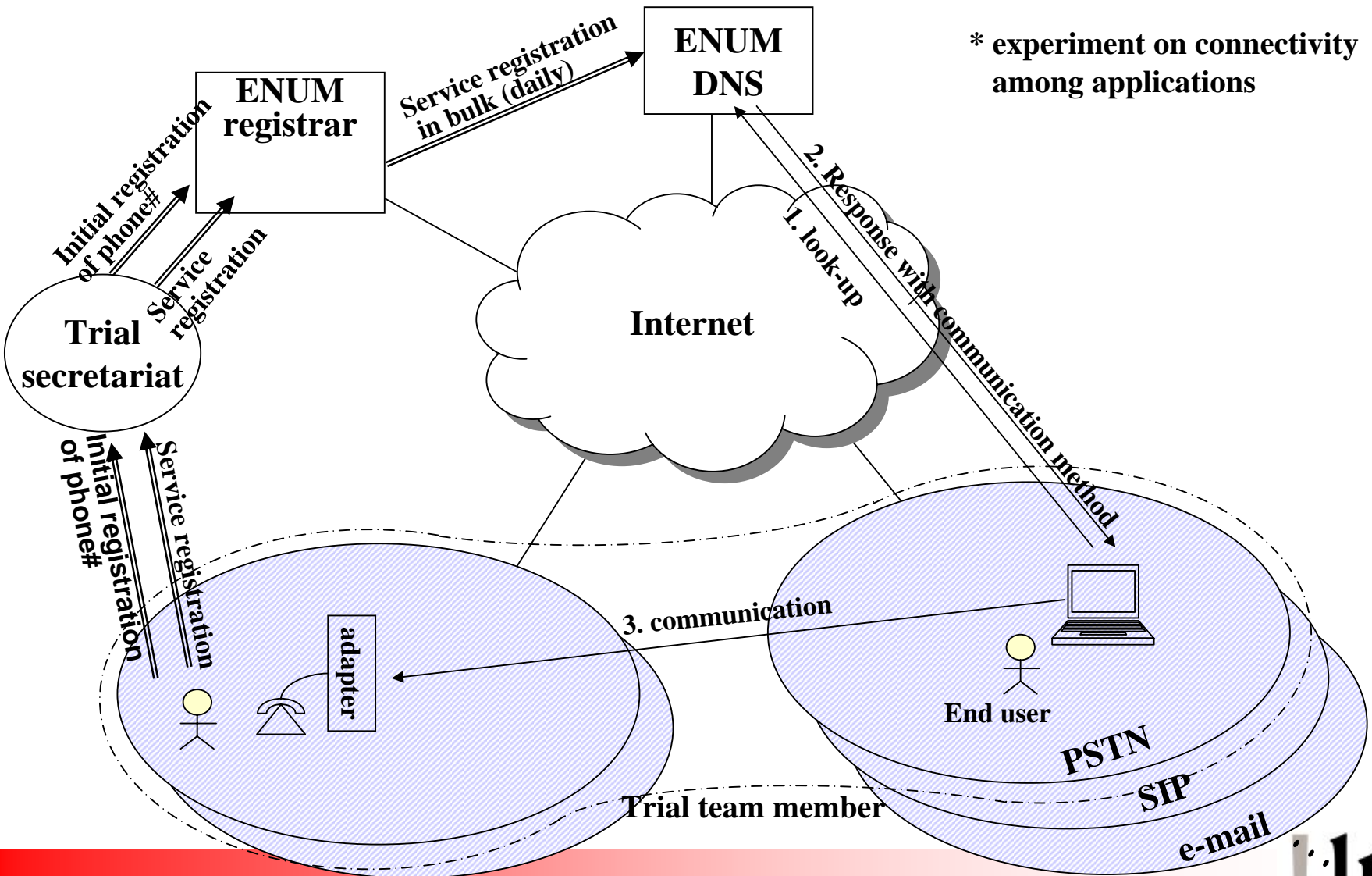
DNS structure design

- **Depends on what model to select**
  - **User ENUM / Operator ENUM**
    - **Both are within the scope of trial**
  - **Requirements (such as Number-Portability?)**
- **Typical requirements for Tier1 DNS:**
  - **Handling of large zone**
    - **even over 100M entries (if all the numbers are held in Tier1)**
  - **Scalability and stability**
  - **Performance**
- **Typical requirements for Tier2 DNS:**
  - **Capability for frequent update**
  - **EDNS0 support ?**
    - **To hold a number of NAPTR RRs for a single E.164 number that may exceed 512 octets in one DNS packet**

Consideration on DNS

- **Typical ENUM services like Web, Mail, SIP also lookup DNS.**
  - **Web: Hyper-links(A).**
  - **Mail: sending (MX, A), receiving (PTR).**
  - **SIP: service protocol (D2U/D2T NAPTR), service location(SRV), sip server(A)**
- **The number of DNS queries will increase when ENUM is deployed.**
- **Users are nervous about service quality.**
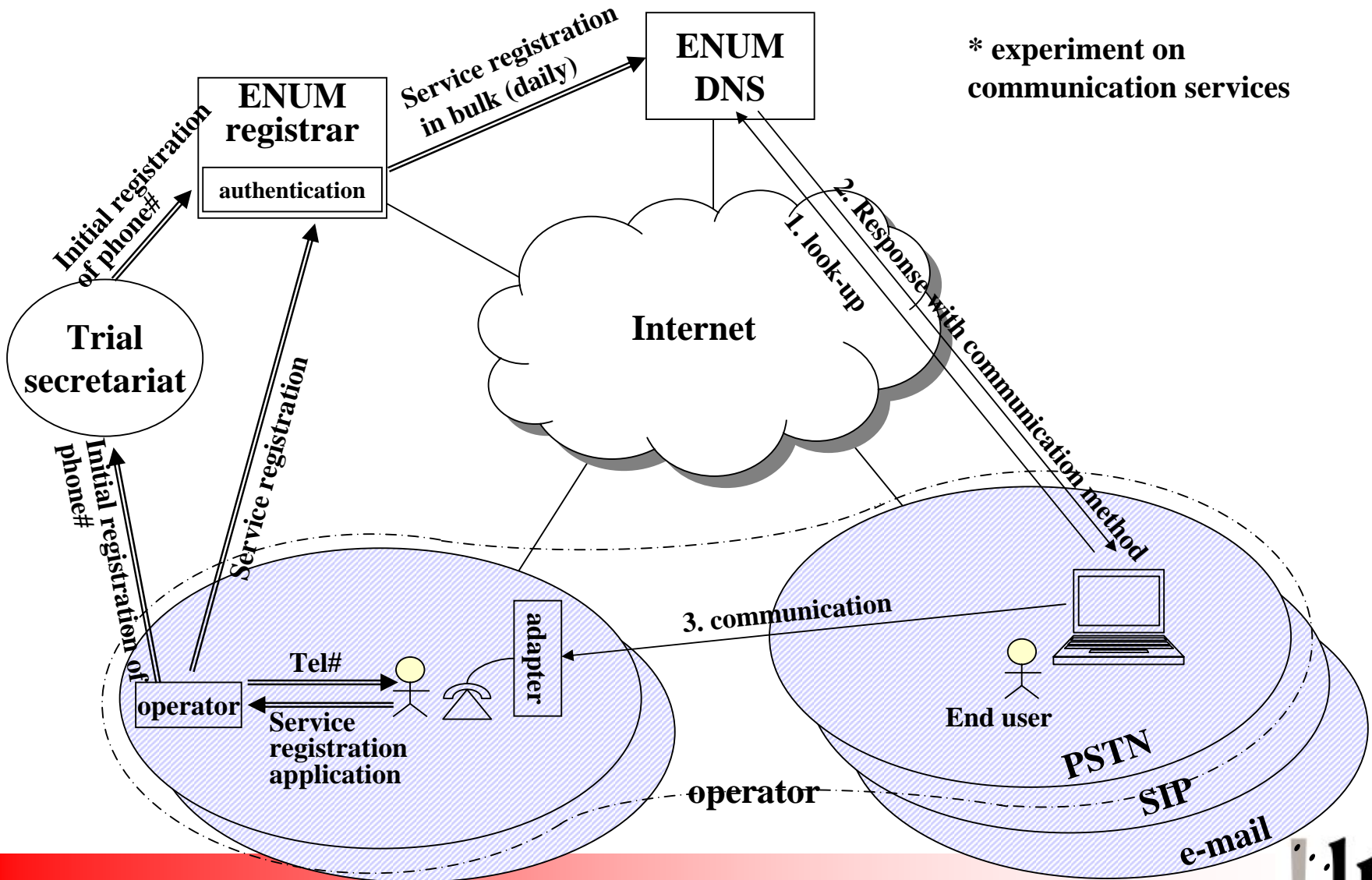 - **Users don't care where the bottle neck is.**

ENUM trial (phase1)

JPRS

ENUM DNS

ENUM registrar

Service registration in bulk (daily)

* **experiment on connectivity among applications**

Initial registration of phone#

Service registration

2. Response with communication method

1. look-up

Trial secretariat

Internet

Initial registration of phone#

Service registration

adapter

3. communication

End user

PSTN

SIP

e-mail

Trial team member

ENUM trial (phase2)

ENUM trial (phase3)

- **operator C**
  - **ENUM registrar**
    - authentication
- **ENUM DNS**
- Service registration in bulk (several times a day)
- Internet
- Initial registration and authentication of phone# and authentication code
- Service registration
- 1. look-up
- 2. Response with communication method
- adaptor
- 3. communication
- **Operator office** — Tel# → End user
- **operator A**
- **operator B** — End user
- PSTN
- SIP
- e-mail

•**Experiment on connection among communication services with user ENUM**

Layer of ENUM services and standards

Communication service (multiple carriers)

Authentication, Social Security

Communication service (single carrier)

Provisioning, Communication Security

Applications/Terminals

SIP, Mail, Web, etc.

**Infrastructure**

ENUM DNS
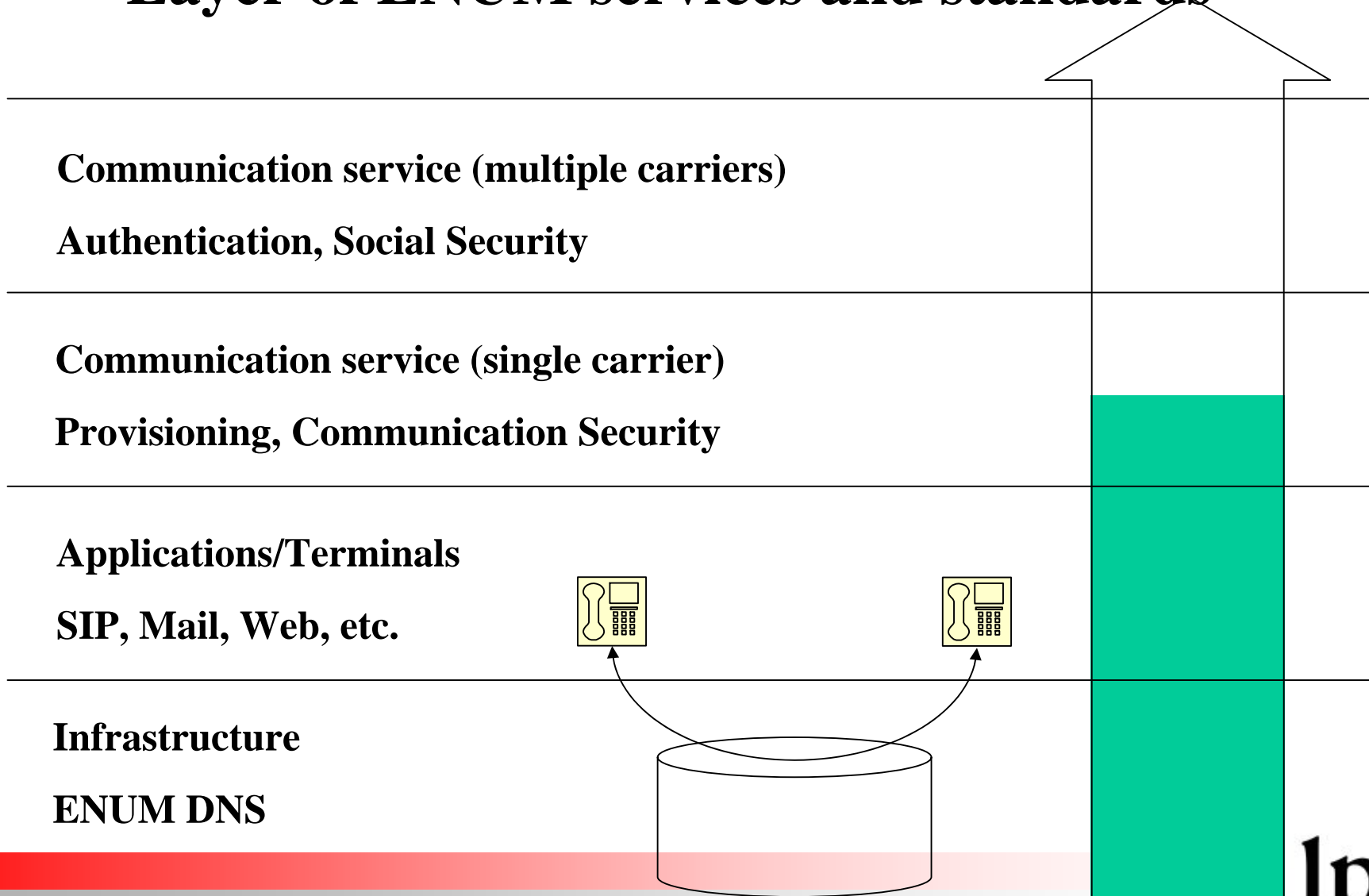
ETJP Registration system (Phase 1)

- **Each ETJP member can apply their preferred numbers as their trial E.164 numbers.**
  - **The rules of the numbers to be registered in phase2 and 3 are under negotiation with the government**
- **Verification is performed by each member's ID and password.**

NAPTR Registration Web I/F (Phase 1)
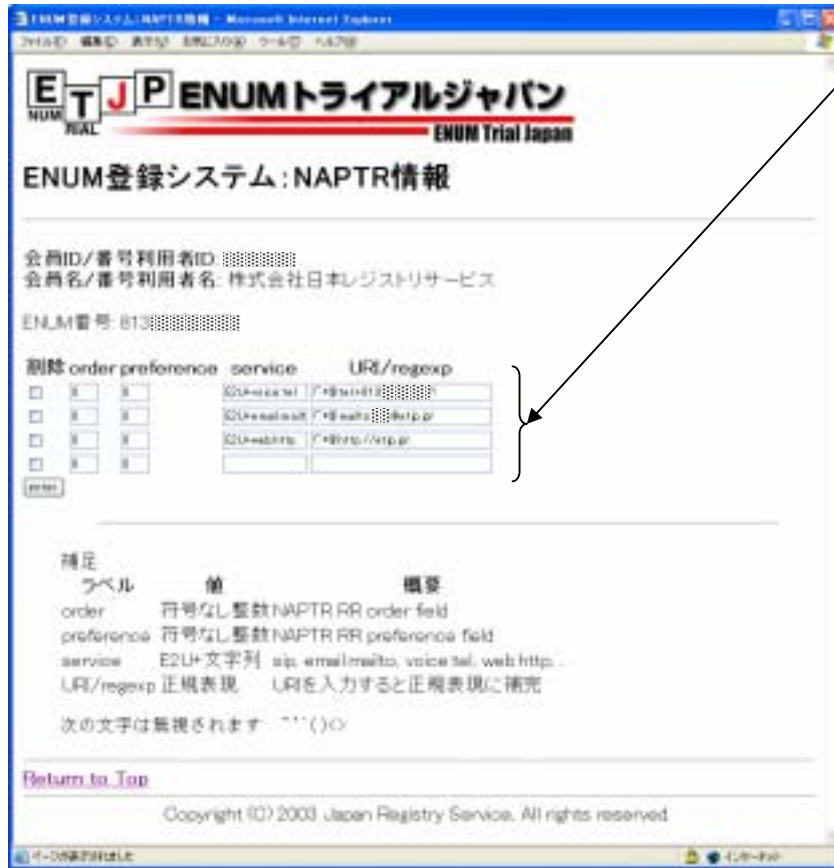
- **ETJP members can set their preferred NAPTR RRs to the trial DNS through this Web I/F.**
- **Those NAPTR RRs are updated within a few minutes.**
- **Can be examined via ENUM client-like Web I/F.**
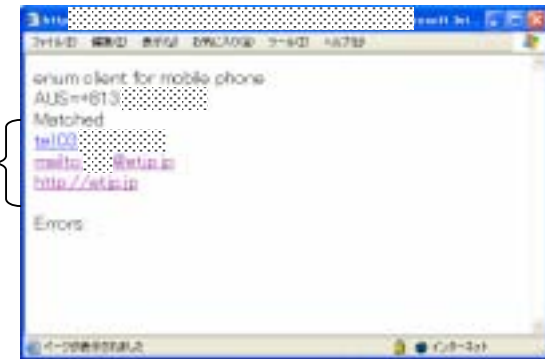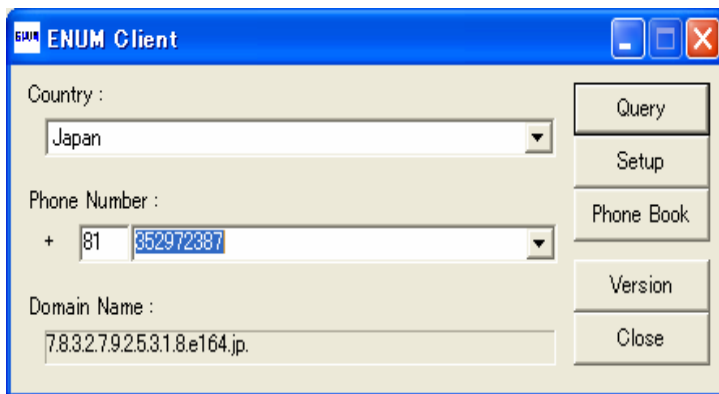
ETJP applications (Phase 1)

- **ENUM enabled SIP Proxy (Softfront)**
- **ENUM enabled VoIP Router (Yamaha, CISCO)**
- **ENUM enabled InternetFAX (Panasonic)**
- **Sample Software ENUM Client (JPRS)**
  - **Object codes of runtime libraries used by the sample software are open to the members**
  - **API (under development)**
    - **SetDNS : specifies the DNS server**
    - **SetAUS : specifies the Telephone Number**
    - **CreateAUS : create the AUS Number using the locale info**
    - **ENUMQuery : look-up NAPTR records**
    - **ENUMGetData : picks up NAPTR records one by one**
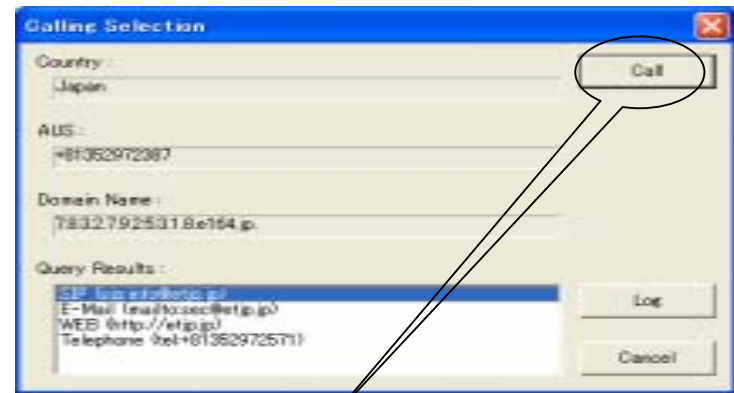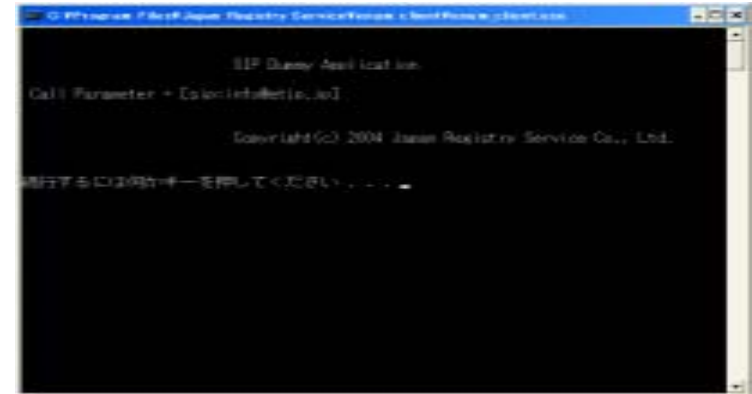   - **….**

More application and SDK

1) start

3) services are shown and select one
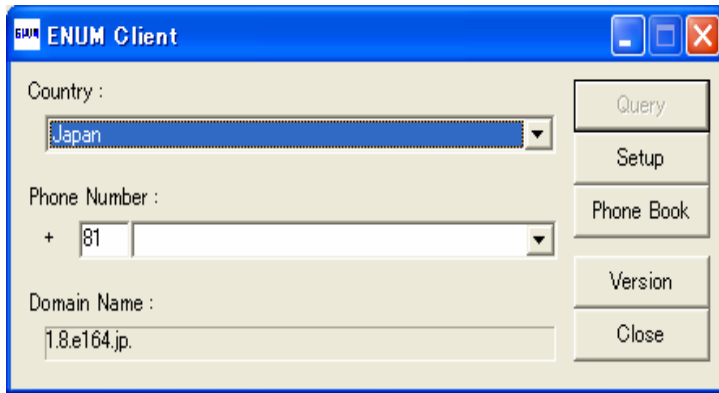
2) input telephone number and look-up

4) Start the communication service

References

- **ETJP**
  - **http://etjp.jp/   (in Japanese)**
  - **http://etjp.jp/english/**
- **ENUM Study Group**
  - **http://www.nic.ad.jp/en/enum/**
- **JPRS**
  - **http://jprs.co.jp/enum/   (in Japanese)**