Minutes of the 6th ENUM Day, 3 April 2006

1. ENUM Tutorial

1.1 Welcome *(Sabine Dolderer, DENIC eG)*

Sabine Dolderer welcomed the participants to the first ENUM Meeting organized by DENIC since the commencement of its regular ENUM operation. The day began with an ENUM tutorial, given that it had been ascertained that there was clearly a need for such an offering in the light of the marked increase in interest for ENUM since it had started its regular operation.

1.2 Summary Introduction to the ENUM Tutorial
What is ENUM? *(Sabine Dolderer, DENIC eG)*

In her presentation, Sabine Dolderer illustrated the possible applications for ENUM by giving a number of short examples. She stressed the point that ENUM was an open standard and not a proprietary service. ENUM made use of a system that already existed and that was technically mature, namely the DNS. She also drew attention to the pioneering role that DENIC had played in developing ENUM; DENIC had been the first organization anywhere in the world to be granted a delegation for operating an ENUM domain, namely under e.164.arpa, and was the second registry to have moved on to a regular operation.

The details are to be found in the slides that accompanied the presentation: http://www.denic.de/media/pdf/enum/veranstaltungen/dolderer_20060403.pdf .

1.3 How does ENUM work?
Description of how ENUM functions *(Peter Koch, DENIC eG)*

In his presentation, Peter Koch explained the technical background to ENUM. ENUM was a standard that had been developed by the IETF on the foundation of the DDDS Framework (RFC3401). That protocol defined a rule for the unique mapping of a telephone number to a domain. It also made it possible to assign services to that domain by means of so-called NAPTR RR records in the DNS. He made it clear once again that the domain information (and thus also the information about a telephone number) was kept in the public DNS. He went on to explain that the basis chosen for ENUM was a system that was already the basis of all Internet services at that time, namely the DNS. That meant inbuilt redundancy, scalability and technical maturity.

E.164 telephone numbers served as the starting point for ENUM domains, since they had already been in use for a long time and were correspondingly well known.

A questioner wanted to know how ENUM handled unsolicited advertising (SPAM/SPIT), and Peter Koch replied that solutions already existed in the form of entries in the DNS that had been rendered anonymous or that made use of pseudonyms. In that same context, he explained the difference between "User ENUM" and "Infrastructure ENUM". In the first of these, the data is publicly accessible, and there is no authentication of anyone submitting queries; the basis underlying the concept was end-to-end communication. The second variant was one of closed circles of users.

Peter Koch reiterated the point that SPIT and spam did not represent a challenge that was specific to ENUM, but one that would have to be faced up to more and more in the light of communication becoming ever easier and ever cheaper. Dealing effectively with SPIT/spam was thus more a question of the intelligence of devices or filter mechanisms or their future implementation in distinguishing between wanted and unwanted messages.

Here again, details are to be found in the slides that accompanied the presentation:

http://www.denic.de/media/pdf/enum/veranstaltungen/koch_20060403.pdf .

1.4 Possible Applications for ENUM
What Possibilities does ENUM offer me? *(Petra Blank, DENIC eG)*

In her presentation, Petra Blank described how ENUM was able to bring together several differing services into a single service. She showed that solutions existing individually at that time, which would weight up to 20 kilos altogether, could be reduced to a single device, thanks to the intelligent use of ENUM. She showed in detail how a laptop with a soft-phone solution, an IP telephone, a mobile phone and an organizer could all be housed in a single slim device thanks to ENUM (whereby she omitted the fax terminal for considerations of space). She went on to present various scenarios to demonstrate the practical use of ENUM. These scenarios included VoIP, IPfax with OCR, follow-me clients and even SMS-to-fax. The big advantage for end users was that they needed to give just one number to their contacts and that they could then decide personally how they wished to be accessible at any time. In this sense, it was possible to see ENUM as a bridge between the networks, and so-called peering networks (like VoIP) would cease to be necessary with ENUM.

Details are to be found in the slides that accompanied the presentation:

http://www.denic.de/media/pdf/enum/veranstaltungen/blank_20060403.pdf .

1.5 DENIC and ENUM
Where and how do I get my Hands on ENUM? *(Klaus Herzig, DENIC eG)*

In his presentation, Klaus Herzig summed up the ENUM field trial that had taken place at DENIC and the results it had produced. He also described the operational model that had been developed for the regular operation. The registration and administration of ENUM domains under 9.4.e164.arpa was assured by DENIC at the level of Tier 1 and by the registrars at the level of Tier 2. In an analogous way to .de domains, DENIC made sure that the central administration and operation of the domains worked properly. The ENUM registration model had taken over a great deal from the .de model, according to which customers registered their domains through a DENIC member, who took charge of the entire

communication with DENIC via an automated interface. Validation had also been placed in the hands of the registrars. Klaus Herzig went on to mention further details, such as the telephone numbers permitted for ENUM domains, registration, validation, the COMPLAINT procedure and the differences between registering .de domains and ENUM ones.

Details of this presentation are also to be found in the slides that accompanied it:

http://www.denic.de/media/pdf/enum/veranstaltungen/herzig_20060403.pdf .

2.   ENUM Meeting

2.1   Welcome and Presentation of the Agenda *(Petra Blank, DENIC eG)*

Petra Blank gave a brief introduction to the second part of the ENUM Meeting.

2.2   ENUM Transition to Regular Operation – the Role of the German Federal Network Agency *(Rainer Warnecke, Federal Network Agency)*

In his presentation, Rainer Warnecke explained the organizational structure of the Federal Network Agency, showing at which points within this structure ENUM fitted in. He also presented the background to the basic legal requirements. He then went on to explain the outcome of a hearing which the agency had organized in December 2005 on the subject of the regular ENUM operation. The hearing had been based on the assumption of going ahead with the transition to the regular ENUM operation as proposed, and the feedback to this proposal had been broadly positive. This, in turn, had led the Federal Network Agency to submit a positive recommendation to the responsible ministry, the German Federal Ministry of Economics and Technology.

The details of this presentation are also to be found in the slides which accompanied it:

http://www.denic.de/media/pdf/enum/veranstaltungen/warnecke_20060403.pdf

2.3   Recent ENUM developments

2.3.1   ENUM and Security Issues *(Gerhard Schröder, Deutsche Telekom AG)*

In order to explain the security problems arising in connection with ENUM through a fundamental example, Gerhard Schröder took the well-known model of an ISDN connection. Moving on to the more specific example of IP telephony, he showed that the ISDN and IP-telephony approaches were the same on many points. He then presented a number of scenarios including the application of ENUM to draw attention to potential security loopholes, which, he felt, had not yet been resolved.

Details of this presentation are also to be found in the slides which accompanied it:

http://www.denic.de/media/pdf/enum/veranstaltungen/schroeder_20060403.pdf

2.3.2   Presentation of a Draft Document on "ENUM Validation Architecture" *(Bernie Höneisen, SWITCH)*

In order to make it clearer to his listeners what the challenge of "validation" really meant, Bernie Höneisen used a practical example, namely the loss of a personal credit card. In such a case, the company that issued the card would initiate an authentication process, with the intention of making sure that the person phoning to report the loss really was the rightful owner of the credit card that was purportedly missing. This was an everyday situation in which validation played a big part.

The aim of the draft he was presenting, which had been drawn up jointly with Alexander Mayrhofer of enum.at, was to arrive at a shared understanding of the meaning of validation. Bernie Höneisen expressed the view that solving the problem of validation was crucial for the further development of ENUM. Successful validation was based on several points:

(1) The mapping of the ENUM domain must correspond to an assigned E.164 telephone number;
(2) It must be clear that the domain holder is the legitimate user of the E.164 telephone number concerned; and
(3) It must be possible to use the ENUM domain from within that particular number range.

The standardization proposals he was presenting were setting out to structure the process of validation and to define and standardize the possible interrelationships. Bernie Höneisen ended his presentation by demonstrating the whole registration process, emphasizing the aspect of validation, considering the proposed standardization model and using Switzerland as his example.

Once again, details of the presentation are to be found in the slides which accompanied it: http://www.denic.de/media/pdf/enum/veranstaltungen/hoeneisen_20060403.pdf .

2.4 Successful ENUM Services – Best Practice

2.4.1 Experience from the Final-Customer Market *(Jörn Dost, outbox AG)*

The report presented by Jörn Dost of outbox AG dealt with the experience of the last year of the ENUM trial at his company. He began by showing some statistics and by listing the challenges that outbox had faced during the trial. His conclusion was that ENUM had aroused the interest of his customers. As ENUM integration was continuing to expand, the demand for peerings was declining.

At that time, ENUM's most important role at outbox was in the B2B segment. Despite that, solutions were being developed for private customers and, now that ENUM's regular operation had been launched, outbox had already started to work on new products, such as the provision of an ENUM domain robot for its resellers, offering validation as a service and giving customers the possibility of registering (0)32 telephone numbers in combination with an ENUM domain.

Details of this presentation are also to be found in the accompanying slides:

http://www.denic.de/media/pdf/enum/veranstaltungen/dost_20060403.pdf .

2.4.2 Résumé: Two Years of Testing ENUM *(Björn Rücker, Portunity GmbH)*

Björn Rücker began with a brief historical summary of how ENUM had started at Portunity. To begin with, it had registered ENUM domains primarily for its own use and for existing customers. Portunity had developed an automated validation system, in which a telephone number was validated by calling it back. The outcome of this was a web interface that it was very convenient to use for registering ENUM domains. Björn Rücker was of the view that this automatic validation procedure by means of call-back, which his company had also developed, had already proven its value. E-mail was used for the revalidation of an existing ENUM domain. At Portunity, that had emerged as the most successful method for revalidating an existing ENUM domain, since it was a convenient solution for customers to use and the administrative outlay for Portunity itself could be considered reasonable. His conclusion on the regular ENUM operation was that, although he would also like to be able to offer ENUM as a standalone product, he saw the real future in bundling solutions and in reselling.

Details are to be found in the slides that accompanied the presentation: http://www.denic.de/media/pdf/enum/veranstaltungen/ruecker_20060403.pdf .

2.4.3 ENUM Boom – Scenarios and Other Odds and Ends *(Ulrich Keil, AmEuro Ventures GmbH)*

Ulrich Keil made an amusing presentation in looking forward to the future use of ENUM and its potential for use. One central point was that it was not necessary to explain ENUM to final customers explicitly, but rather to link it into other services as a service working in the background. As a reason for this, he stated that the use of NAPTR RR was far too complex for a typical end user to comprehend. Since, however, ENUM was a very powerful tool for future communication, he was convinced that it was going to have a big influence on communication in many different ways, provided the use of ENUM could be integrated inside devices and services. His opinion was thus that ENUM needed more intelligent terminals and/or applications.

Details are to be found in the slides that accompanied the presentation:
http://www.denic.de/media/pdf/enum/veranstaltungen/keil_20060403.pdf .

2.5 Concluding Remarks *(Sabine Dolderer, DENIC eG)*

Sabine Dolderer thanked the participants for their interest. In concluding, she also drew attention to the enum-l mailing list and DENIC's webpages, where the presentations were going to be made publicly available. In some of the discussions, a study by Credit Suisse into the potential use of ENUM had been mentioned, and DENIC announced that it would be happy to send a copy to anyone requesting it.