

enum.at  
net.communications

# The +43 ENUM rollout

status and experience from trial and  
production service

Michael Haberler

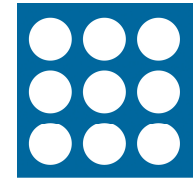
[mah@eunet.at](mailto:mah@eunet.at)

+43 59966 366001

+43 664 4213465

Bratislava, Mar 15, 2005

# introducing enum.at



enum.at  
net.communications

- enum.at Dienstleistungs GmbH für konvergente Kommunikationsdienste is a fully owned subsidiary of Internet Foundation Austria
- core business of enum.at is operating the Tier 1 ENUM registry services
- for providing those, enum.at uses experience and resources of nic.at GmbH

# development of ENUM in Austria

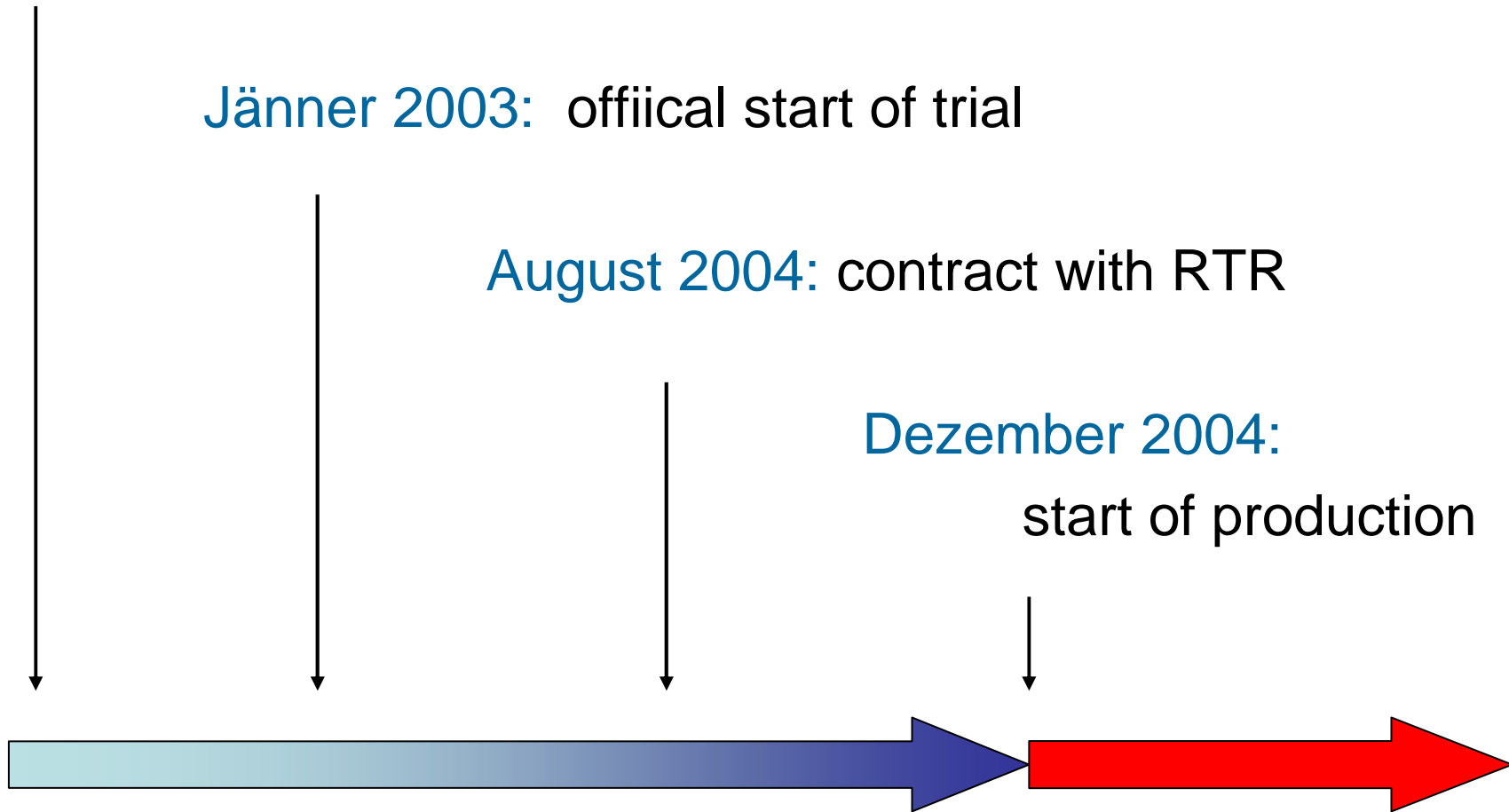


Juni 2002: delegation of 3.4.e164.arpa

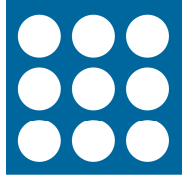
Jänner 2003: official start of trial

August 2004: contract with RTR

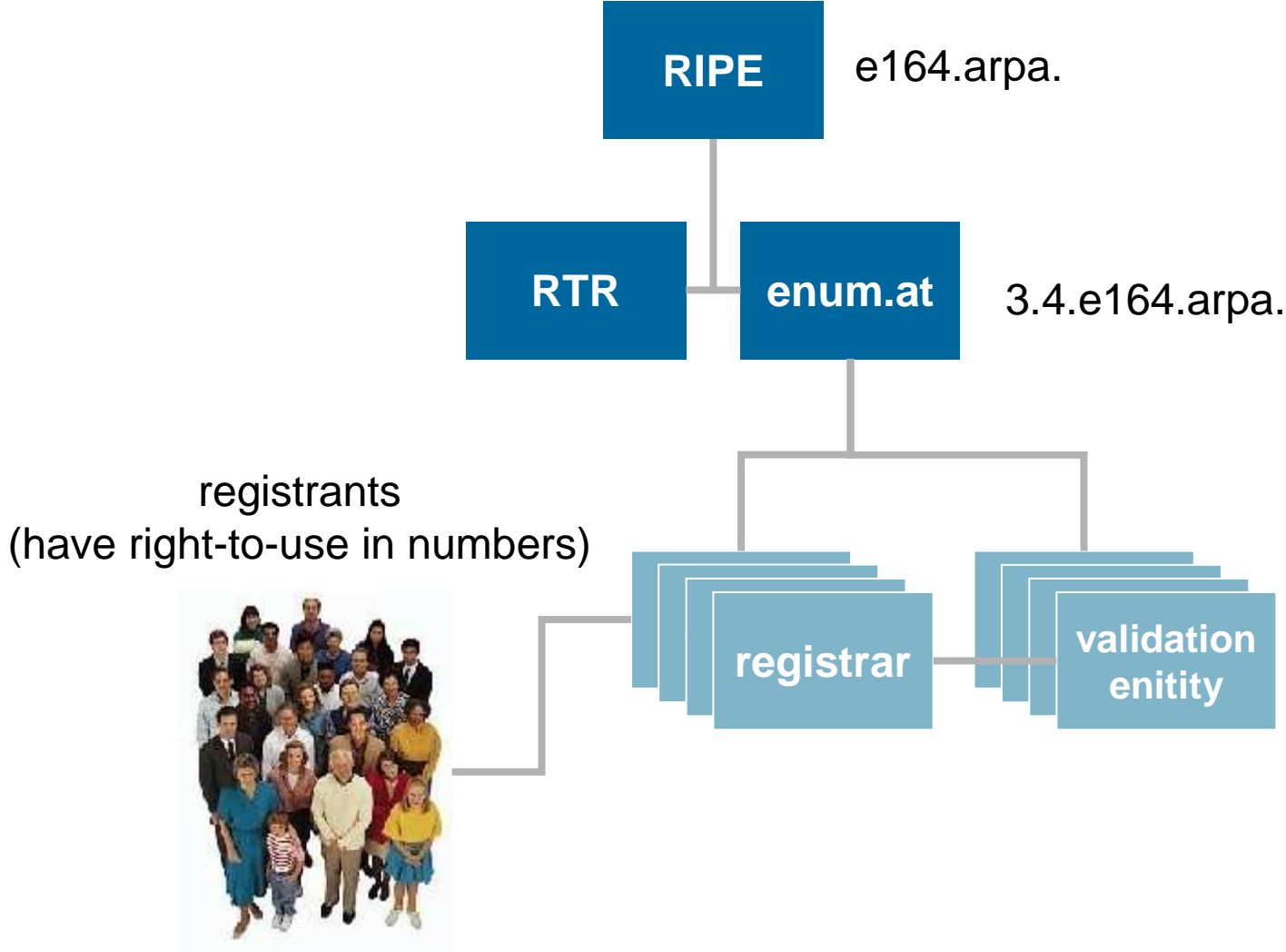
Dezember 2004:  
start of production



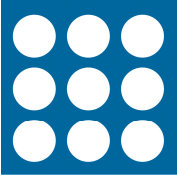
# ENUM architecture – „the big picture“



enum.at  
net.communications

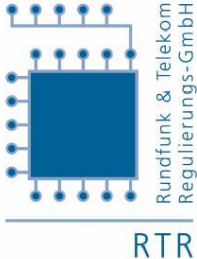


# contractual relations



enum.at  
net.communications

Admin-C  
3.4.e164.arpa



Tech-C  
3.4.e164.arpa



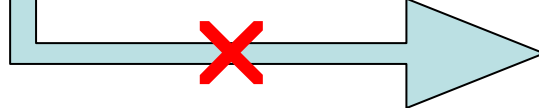
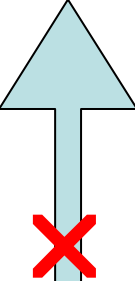
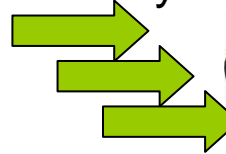
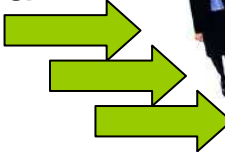
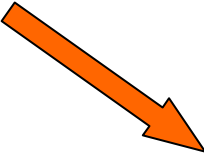
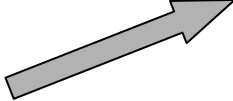
validation entity



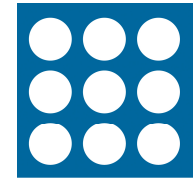
registrar



registrar +  
validation entity



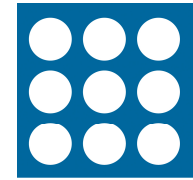
# ENUM-usable number ranges



enum.at  
net.communications

- geographic numbers („01“ .. „04“)
- corporate networks („05“)
- mobile numbers („06“)
- non-geographic fixed („0720“)
- numbers for convergent services („0780“)
- freephone („0800“)
  
- excluded: e.g. premium numbers („0900“ etc.), 0810, 0804, 0820
- service numbers (133, 118xxx, 1503, etc.) – not E.164

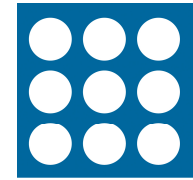
## status (2/05)



enum.at  
net.communications

- currently 5 registrars and validation entities
  - 3 in production
  - 2 in preparation / testing
  - some more considering / still need time to create services
- by domain count still pretty low (about 100) since few services are available or are about to enter the market
- impact needs to be assessed in terms of reachable endpoints, not domain count
  - behind a SINGLE number are:
  - more than 3.100 university staff of Tech University Vienna
  - more than 1.900 employess of Kapsch

# Lessons Learned 1/2

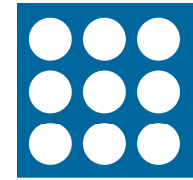


enum.at  
net.communications

- technical procedures are mostly trivial
- organisational and legal issues are (as often) much more complex to solve
- issues in validation (proof of right-to-use in a number) surface really during definition for production service
- processes need to be designed such that „non-cooperation“ of players does not block adoption (this is a non-issue in a trial)



# Lessons Learned 2/2



enum.at  
net.communications

- service development doesnt really happen during a trial
- defining a production environment and framework is essential for market development
- smaller players and new entrant telcos move much faster
- key success factors are open-URI VoIP services → these need some prodding from customers – the termination monopoly is hard to kiss good-bye

# RFC Draft (Work in Progress)



- common draft with Switch
- validation architecture
  - requirements
  - roles and tasks
  - approach: signed validation token
    - non-repudiation
    - integrity
- slow moving process – lack of attention to the problems actually solved
- countries which have central NP database might take a different approach

# some contributions of enum.at



- the generic gateway concept
  - reference implementation for VoIP available
  - for SMS in place in at43
  - being rolled out for +43 780.\* during Q2
  - enables personal numbers & virtual access
- some related development, e.g. Asterisk ENUM
- an EPP-based registry system
  - rewrite from scratch
  - available to qualified parties at no cost
- an Tier2 ENUM portal – [www.my-enum.at](http://www.my-enum.at)
  - including payment with premium SMS



phone: +43 1 5056416

fax: +43 1 5056416 19

office@enum.at

[www.enum.at](http://www.enum.at)