

# ENUM

Why doesn't it rise, Why doesn't it die?

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# Agenda

- ▶ Study Context
- ▶ Portuguese ENUM Story
- ▶ Findings
  - Business Model
  - Innovation Spreading
  - Externalities
- ▶ Conclusions
- ▶ Suggestions



# Study Context

- ▶ Professional Background
  - Advanced Services Manager at Portuguese NREN (FCCN)
    - Video-conference, VoIP, ...
    - IP Service Manager (WEB, DNS, ...)
    - FCCN manages the ".pt" ccTLD
- ▶ Master Degree Dissertation
  - Instituto Superior de Economia e Gestão (ISEG)
  - Master in Managing and Economy of Science, Technology and Innovation
- ▶ Portuguese Situation
  - Portugal Telecom – incumbent
  - Liberalization (1998 – 2000)
  - Late digitalization (80's)
  - “Universal Network” property of Portugal Telecom (2002)
  - “2,5” Mobile Operators + 1 Failed 3G/UMTS operator



# Portuguese ENUM Story

## ▶ ANACOM

- Portuguese Regulator for Telecommunications
- ENUM Workshops: 2001, 2002, ..., 2007 (NGN), ..., 2009

## ▶ VoIP Public Hearing

- 4rd Tri 2005
- Results and Conclusions:  
1st Tri 2006
  - VoIP as a Service
  - “Nomad” Numbering: +35130\*

## ▶ ENUM Public Hearing

- 1st Tri – 2006
- Results and Conclusions:  
1st Tri – 2007
  - Field Trial
    - FCCN as a partner (NREN and TLD manager)
    - Driven by group of interest from operators
  - No Field Trial yet...

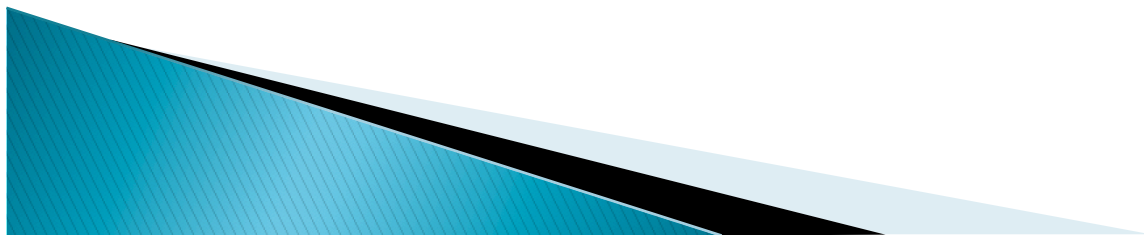
# Findings – Business Model

- ▶ Tier 1 / Registries
  - Sustainable
  - Critical Mass ~ 40.000 numbers 5€/year (estimate)
- ▶ Tier 2 / Registrars  
(DNS Registrars / Integrators / ISPs)
  - Service Package (support fees, broadband/data fees)
  - Cost reduction (dial-in)
  - New Services, new products
    - Portability, Portability inquiry before call dial, Redirection, Ring-all, VoIP Set Top Boxes, ...



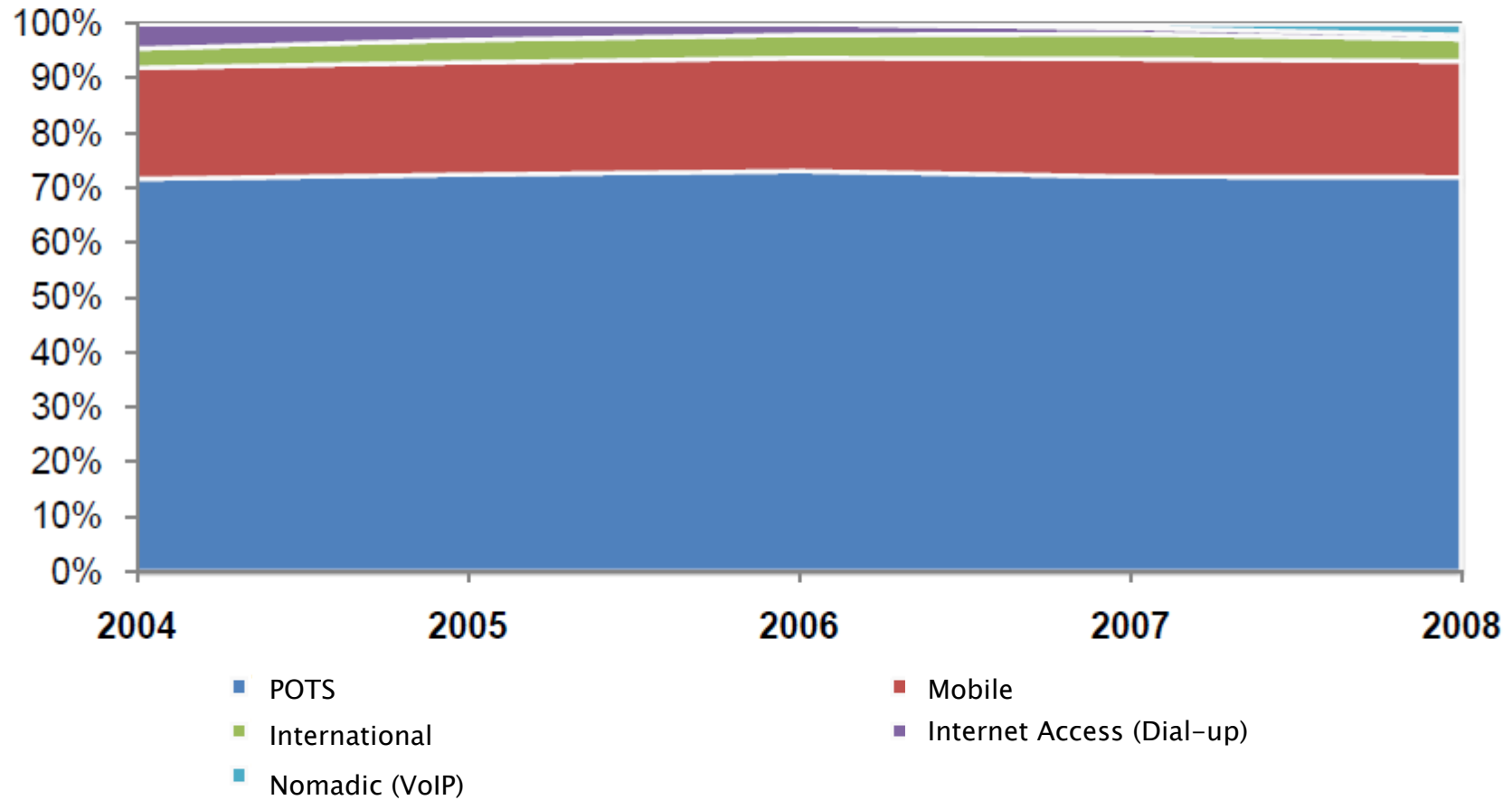
# Findings – Business Model

- ▶ Users / Enterprises / Integrators
  - Multi-homed offices / enterprise clusters
  - New Services (encryption, videoconference, multi-device, ...)
- ▶ Operators
  - Not “that good” business model
  - High risk, opposing to...



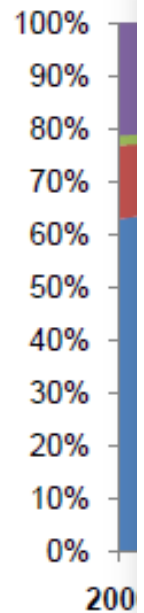
# Findings

Destinies from POTS Distribution in Portugal (calls)



# Findings

Gráfico 4



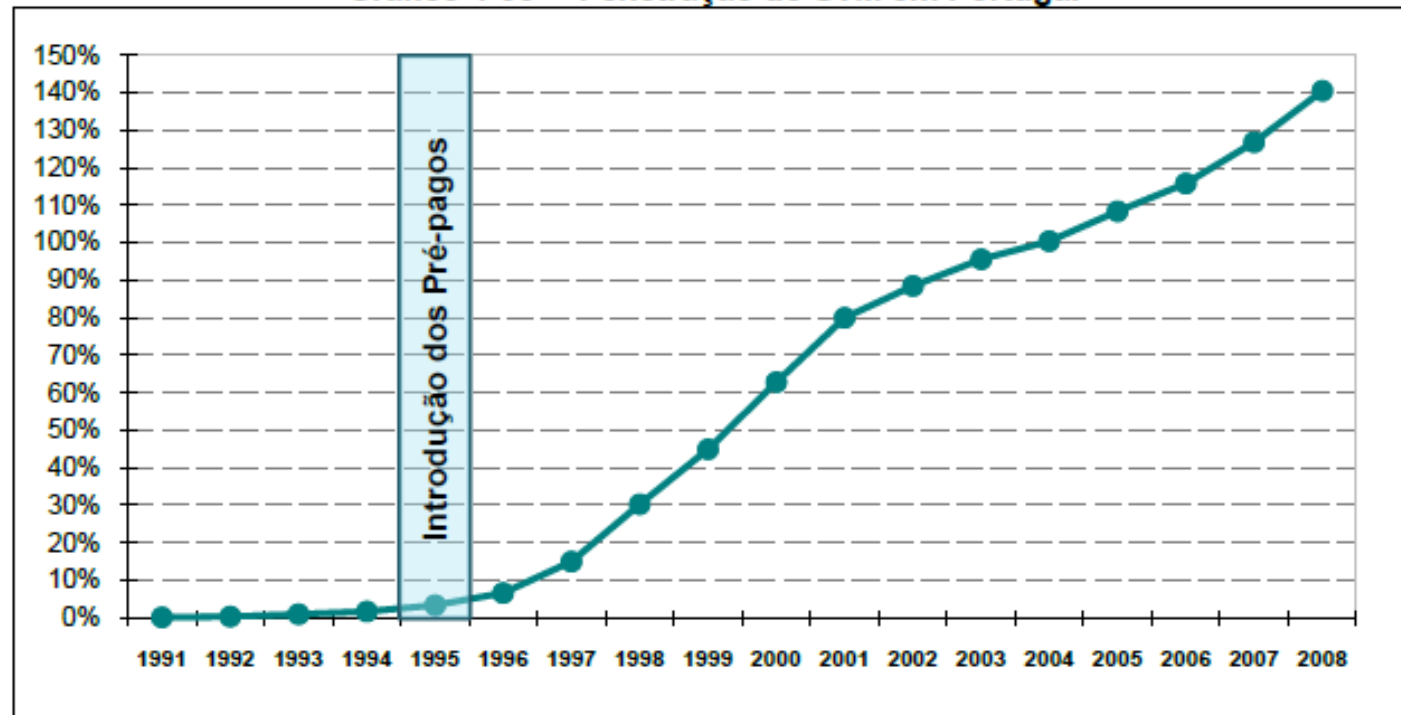
Fonte: ICP-ANACOM

Gráfico 4-35 - Peso do tráfego fixo-móvel no total do tráfego de entrada (minutos)



Fonte: IC

Gráfico 4-53 - Penetração do STM em Portugal



Fonte: ICP-ANACOM.

Unidade: assinantes por 100 habitantes

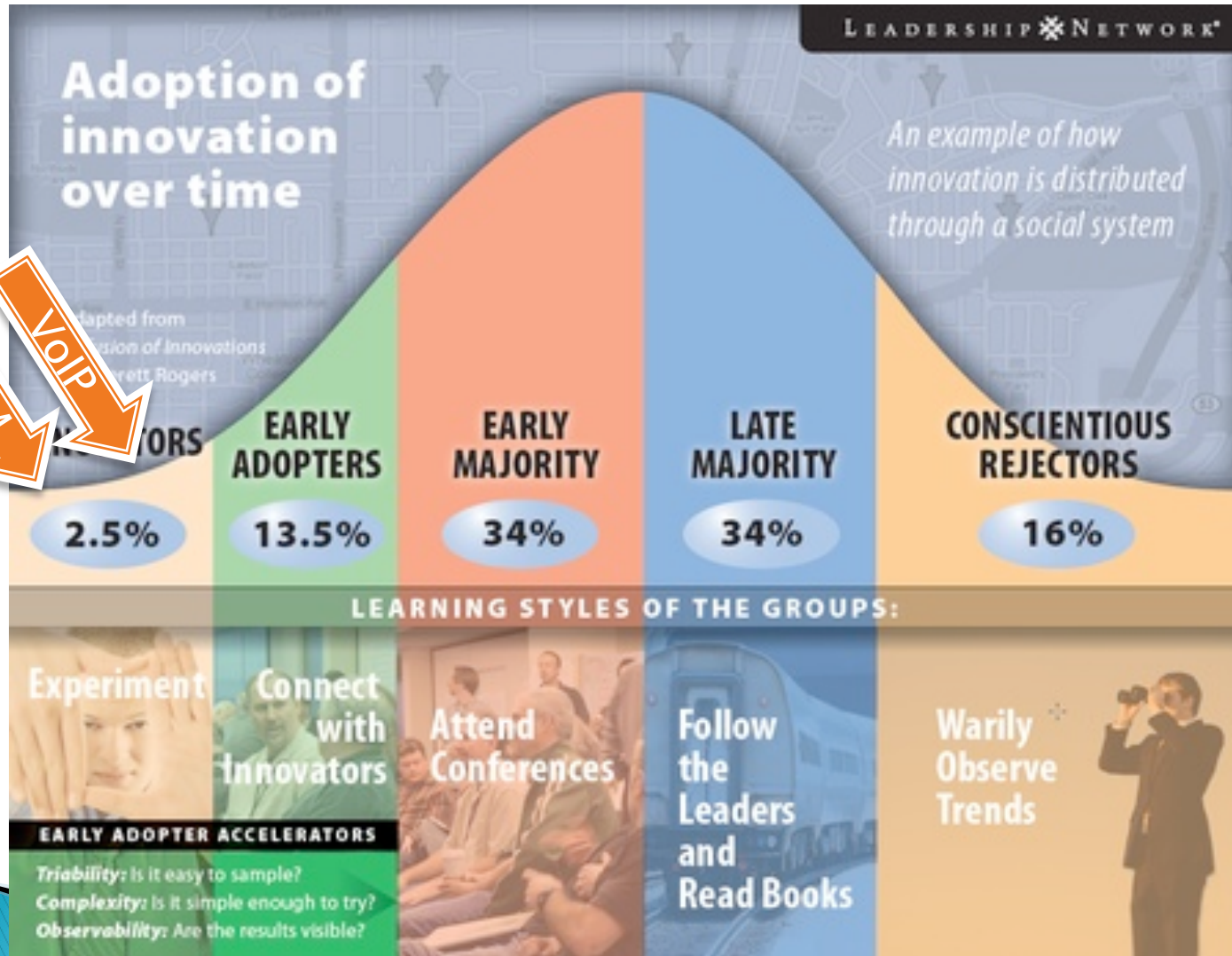


# Findings

- ▶ Two Types of VoIP, Two Types of ENUM
  - Infrastructure VoIP ⇔ Infrastructure ENUM
  - User VoIP ⇔ User ENUM!
- ▶ Lack of knowledge from IT personal
  - VoIP (in general, open standards based [SIP])
  - Infrastructure ENUM vs. User ENUM
  - ~0,39% of domains in Portugal have VoIP Deployed (May 2009)
- ▶ Operators are front-end for integrators
  - Integrators depend of operators;
  - User VoIP, although technically possible, isn't offered.
- ▶ Proactive User
  - Resource and data management (emergency call information, ...)



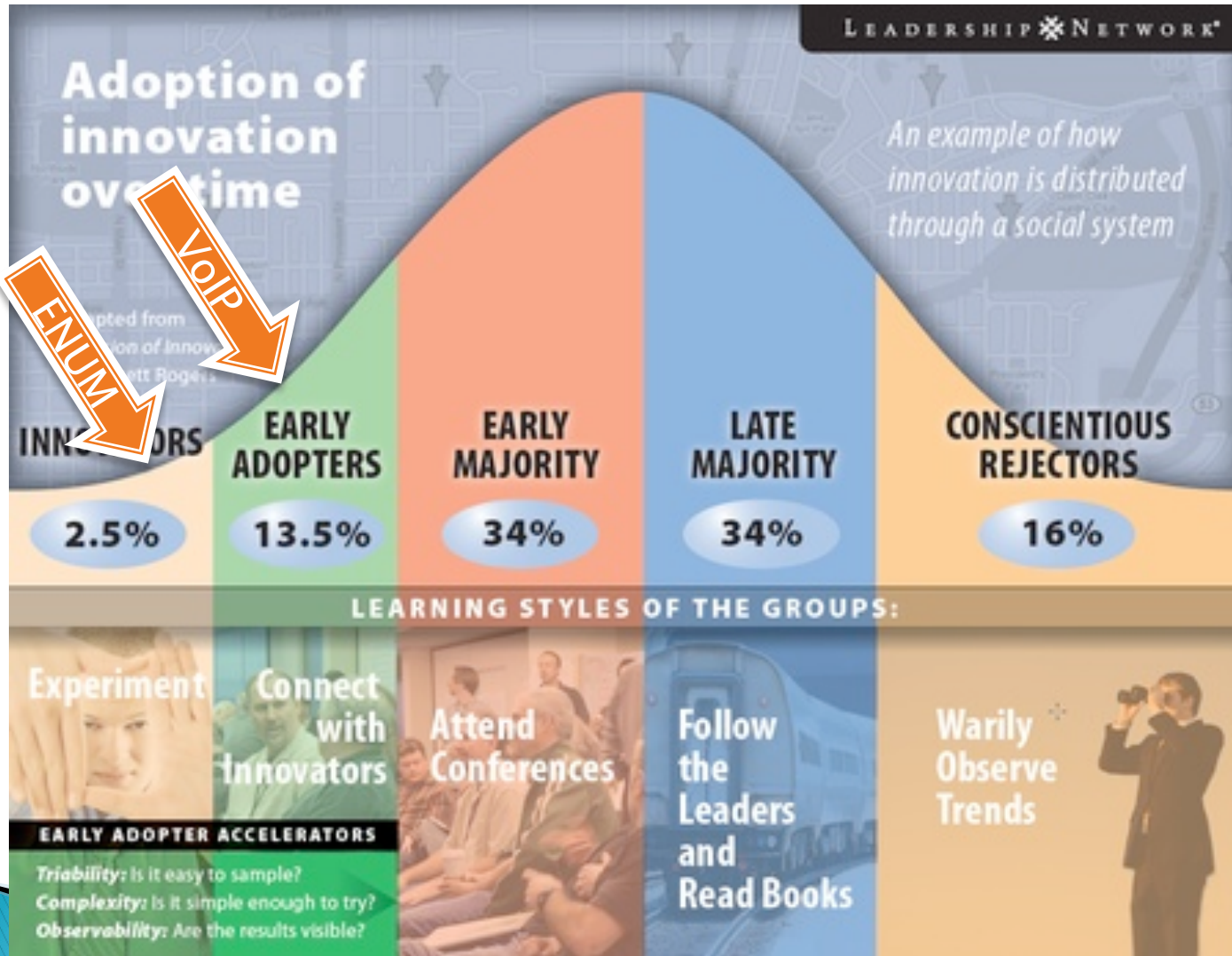
# Innovation Spreading



ENUM  
VoIP

2000  
2004  
2008

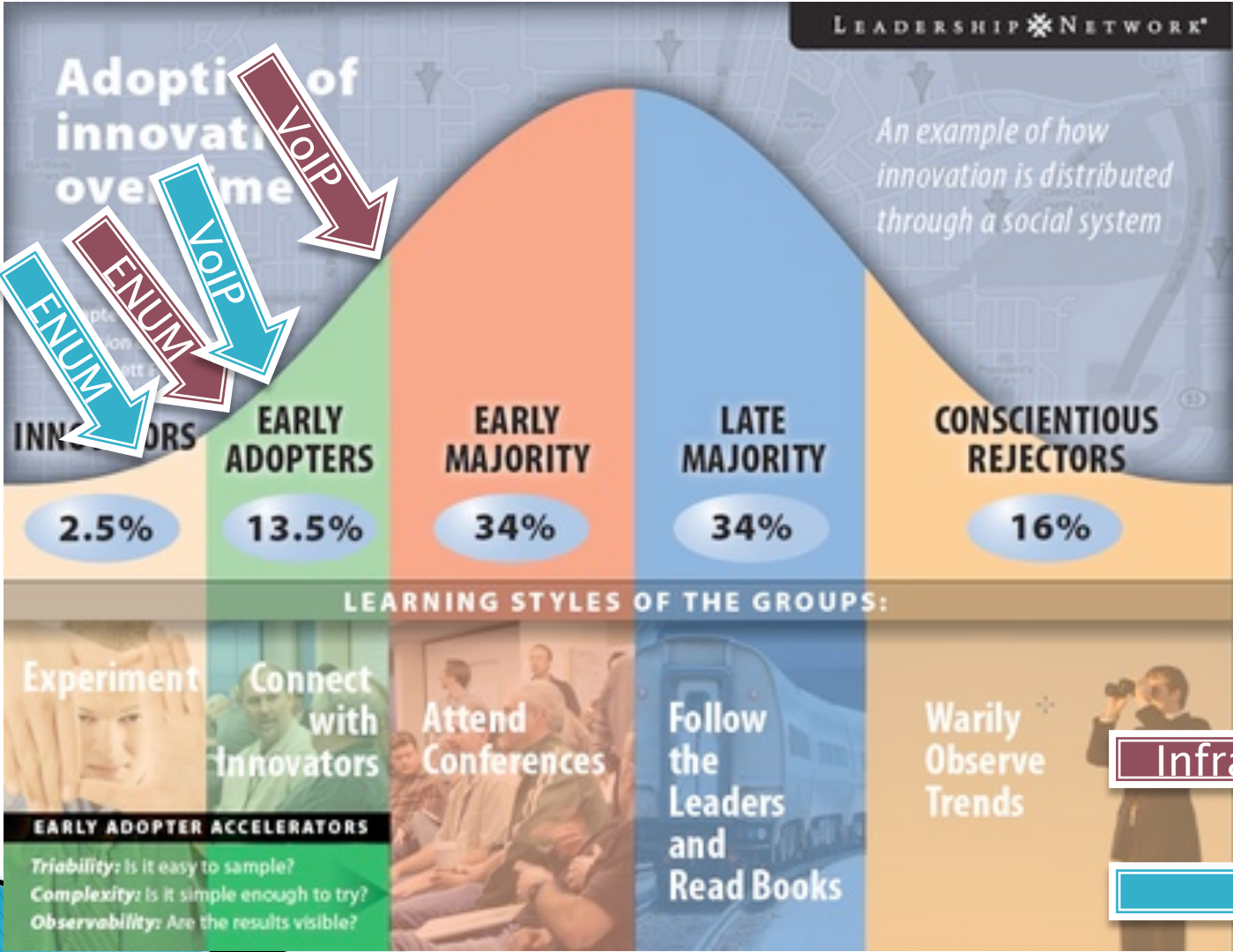
# Innovation Spreading



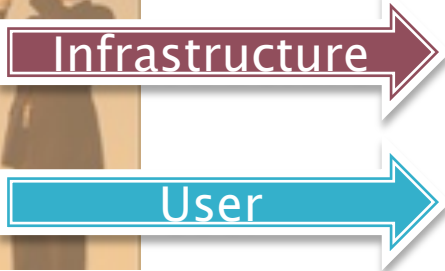
ENUM  
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# Innovation Spreading



2000  
2004  
2008



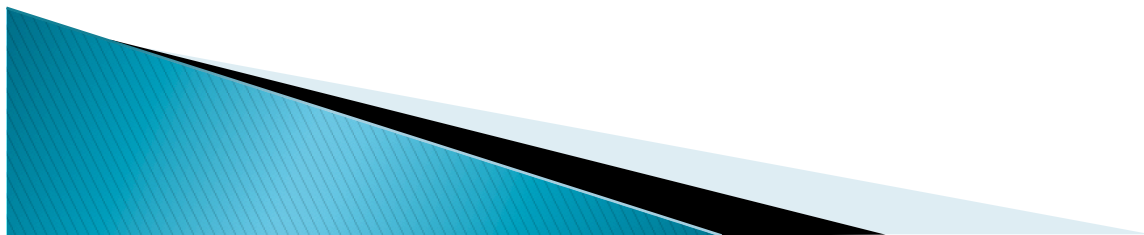
# Findings

- ▶ Externalities

- The real benefit is for the caller, not for the callee (the one that has to register on ENUM)

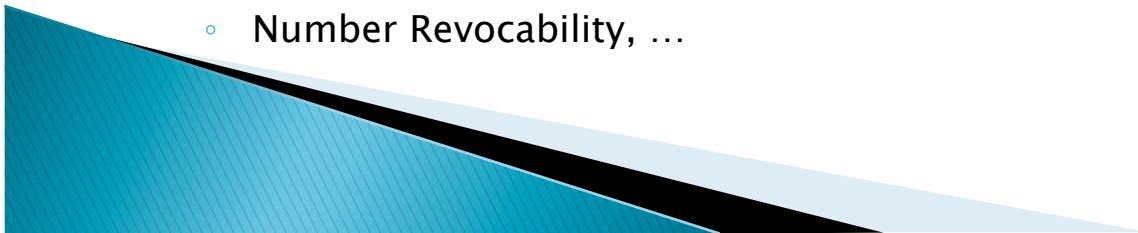
- ▶ Network Dimension

- Metcalfe's law states that the value of a telecommunications network is proportional to the square of the number of connected users of the system ( $n^2$ ).



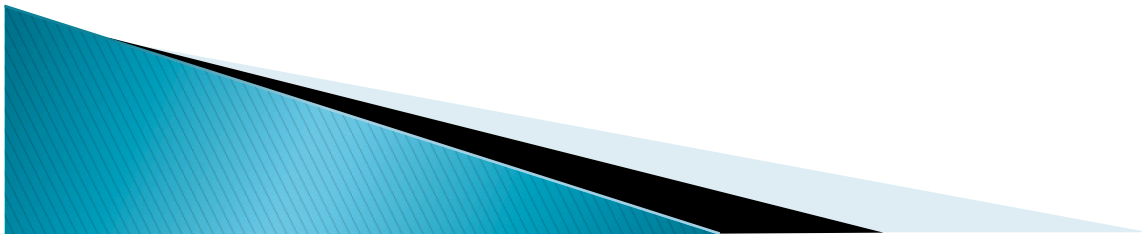
# Technology – Not a Problem

- ▶ Ready to go!
  - Standards: SIP!
  - Phones:
    - Handsets (almost every prices)
    - Softphones (almost every platform)
  - SIP Servers
    - Several SIP servers available for free
  - Security
    - TLS, DNSSEC, ...
  - Broadband
  - Processing Power (cell phones, mp3 players, TV's, ...)
- ▶ Some issues though (most VoIP general)...
  - NAT, SPIT, Emergency Calls, “feels like a phone, it must be a phone”, ...
  - Number Revocability, ...



# Conclusion

- ▶ Successful implementations Worldwide
  - Strong Commitment from Regulator
  - TLD as the technical partner
  - Field Trial (every market is a distinct market)
  - NREN as a “critical mass” network
- ▶ Timmings
  - Now or never...



# Suggestions

- ▶ Do it or die!
    - End of the “opt in” enrollment
      - “at least” providing special number prefix to ENUM lookup (by everyone!)
  - ▶ The “number” as a detached product from Voice Package
  - ▶ Stop calling “User ENUM”!
    - Marketing upgrade: “Enterprise ENUM”
  - ▶ (more) Free SIP servers multi-domain (ENUM free love zone)
    - Free e-mail server, free web servers, ..., free voip servers!
  - ▶ Workshops, many, many more...
  - ▶ DNSSEC like implementation?
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