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Nominet and ENUM

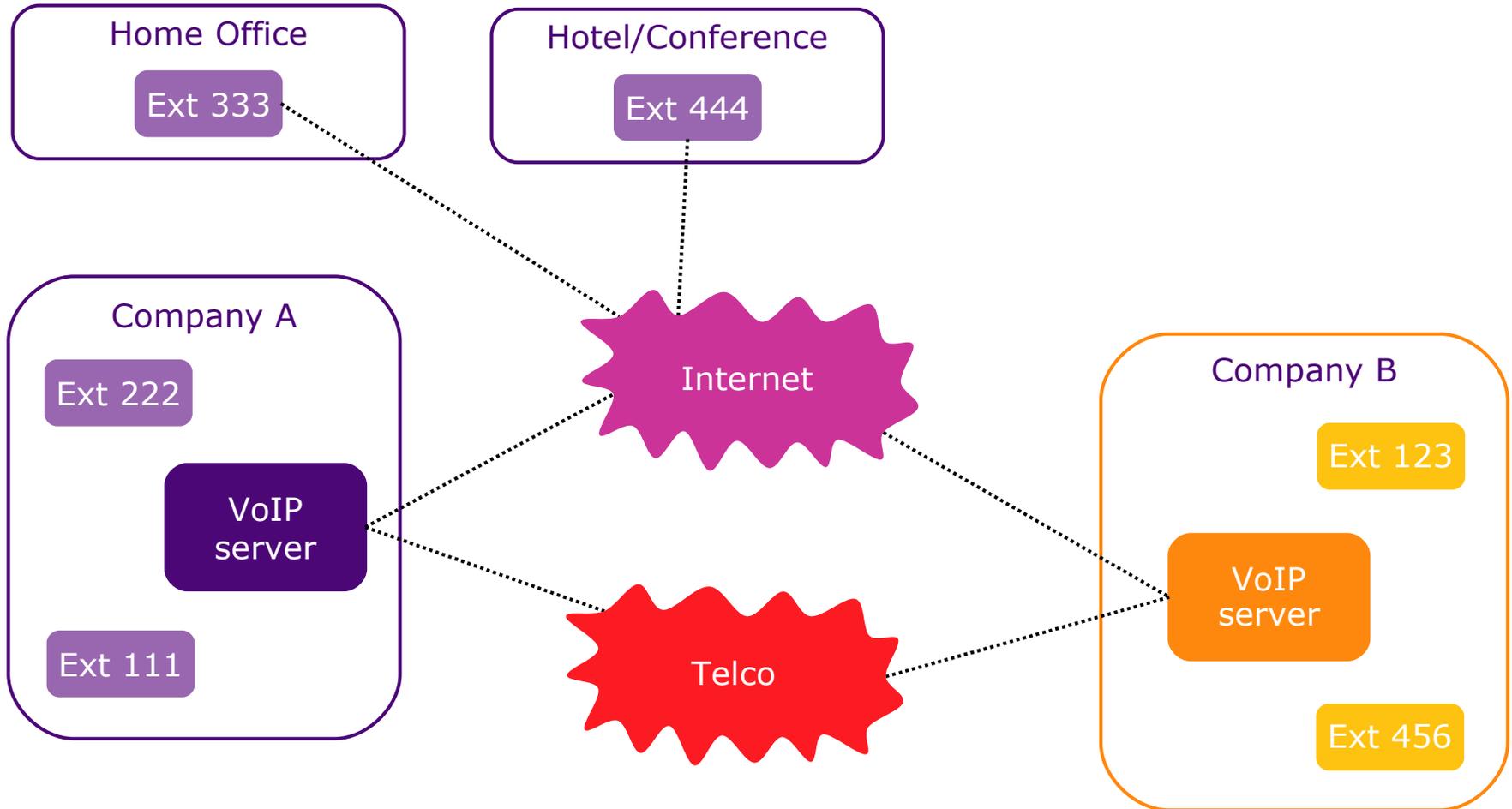Jay Daley

ENUM explained

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What problem does it solve?

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Home Office
Ext 333

Hotel/Conference
Ext 444

Company A
Ext 222
VoIP server
Ext 111

Internet

Telco

Company B
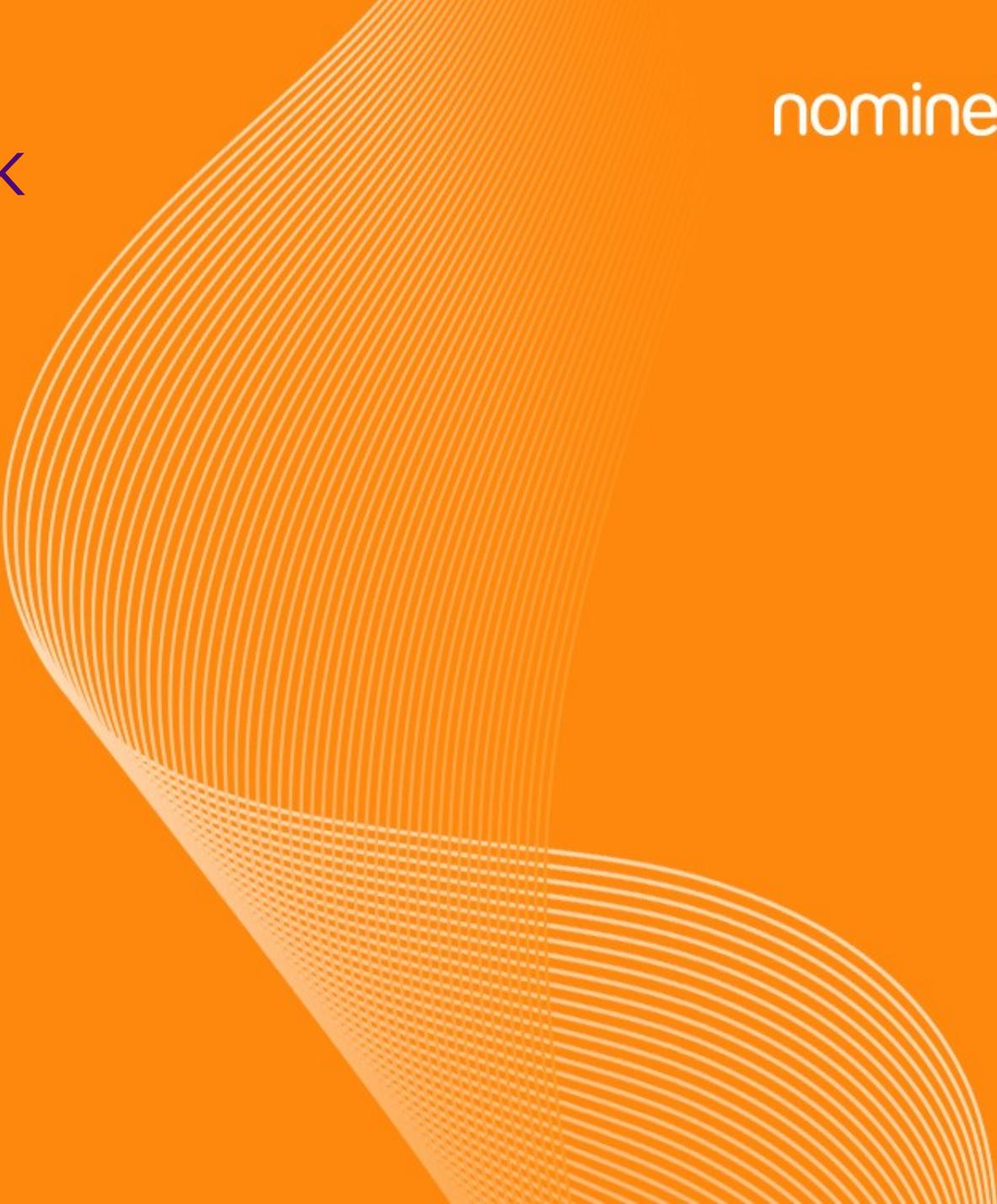Ext 123
VoIP server
Ext 456

Technical solution

- ENUM solves problem by
  - turning telephone numbers into domain names:
  - finding available services associated with those numbers

- So the number
  - 01865 332211 becomes
  - 1.1.2.2.3.3.5.6.8.1.4.4.e164.arpa

- Special DNS entries describe available services
  - So to say we have can be contacted by VoIP on this number:
  - ```
    NAPTR  10 10 "u" "E2U+sip"
    "!^.*$!sip:441865332211@nominet.org.uk!i" .
    ```

- These domain names and entries are not meant to be
  directly used by people.

User ENUM

- e164.arpa is the <u>user</u> tree.

- Each country code (international dialling code) will have a registry
  - UK has +44   4.4.e164.arpa
  - Germany has +49   9.4.e164.arpa
  - Austria has +43   3.4.e164.arpa
  - Eleven countries share +1   1.e164.arpa

- Each registry will operate differently
  - Local policy considerations
  - Local telecoms regulator
  - Local dialling plan

- Some alternate roots
  - e164.org, e164.info, enum.org

ENUM in the UK

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UK ENUM Management

- For 3 years industry consortium (UKEG) ran trials and designed interactions and policies

- DTI issued public consultation in 2005 based on trial

- UKEC now formed
  - Overall management of UK ENUM
  - Not-for-profit, membership organisation
  - Management board and policy advisory group
  - Tendered for 4.4 registry in early 2007
  - Will accredit registrars and authentication agencies

- We won bid to run 4.4 registry on license from UKEC
  - UK ENUM up and running in early 2008

UK Policy

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- Telephony world is highly regulated
  - Two cultures coming together

- Major concerns are:
  - Privacy - Protecting personal information
  - Misuse - Cold calling, abusive calls
  - Scams - 'Slamming' customers, fake directories

- UKEC will run policy board with various representatives
  - Registry has automatic seat

- Very high profile - government/Parliamentary interest

- UK policy still being worked on by UKEG

Registration process for UK user ENUM

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- Registrant supplies details to Registrar

- Registrar forwards them to Authentication Agency (AA)

- AA checks ownership of number - replies with token

- Registrar sends request to Registry with AA token

- Registry creates registration - for one or more numbers

- Registry delegates numbers in 4.4.e164.arpa zone

Registrant

details

Registrar — details → Authentication Agency

token

details

token
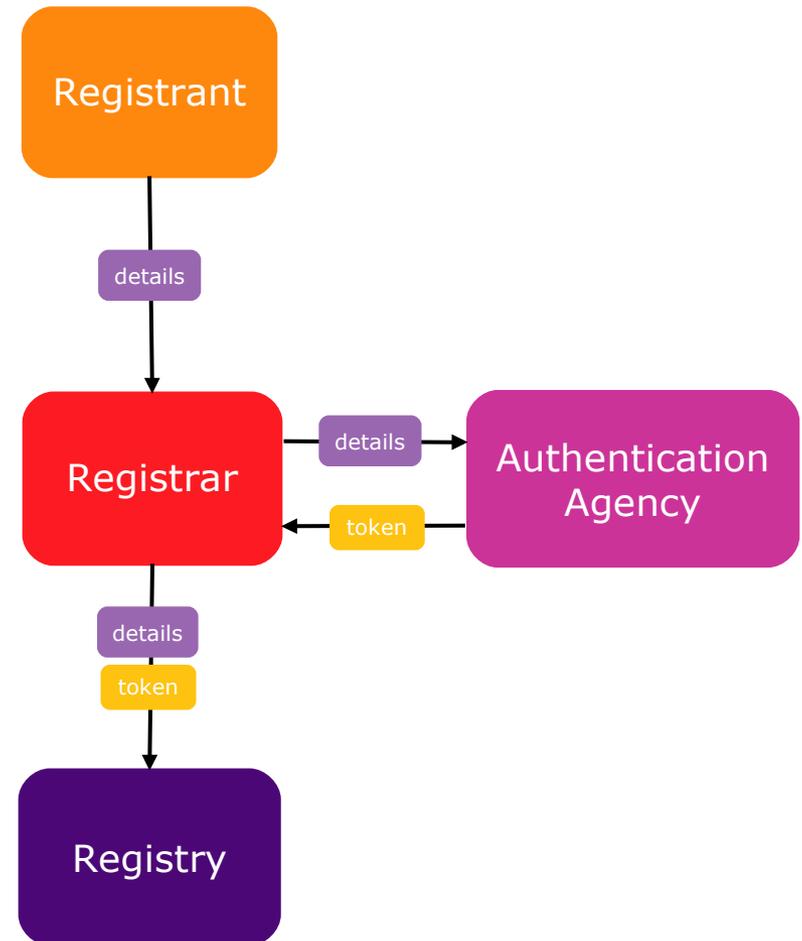
Registry

Key differences from Nominet process

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- No direct contract between Registry and Registrant
  - But policy unclear on forced registrar change

- All registrations are authenticated
  - So no cyber-squatting, disputes, availability checkers etc
  - How easy to prove you 'own' your number?
  - AA will expect payment

- One registration can be for many numbers
  - More complex pricing model

- No WHOIS
  - that would be a phone book in reverse

- User experience is very different

Other flavours of ENUM

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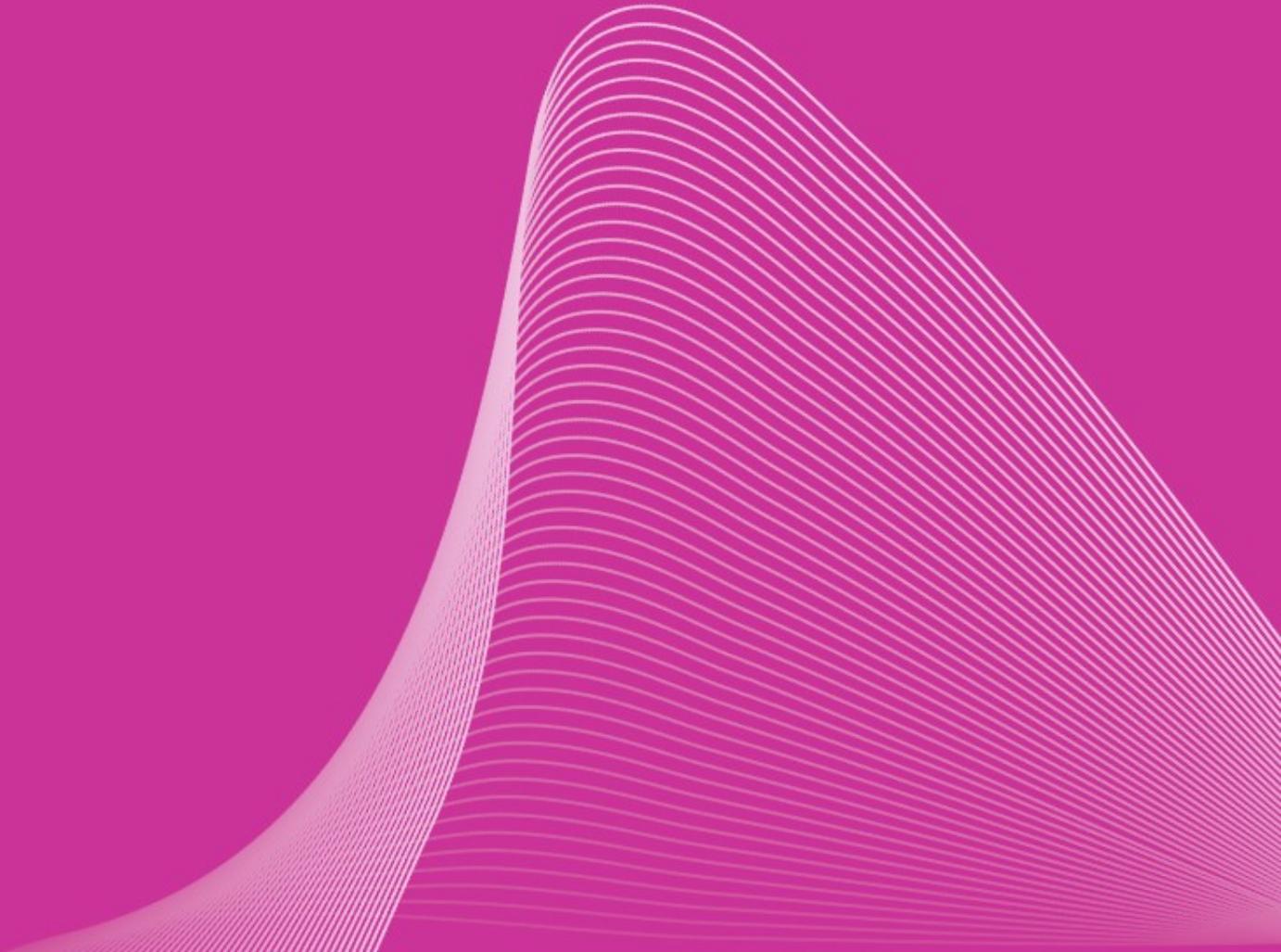
Carrier (telco) ENUM

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- Private ENUM trees used by a carrier (telco) for call routing - no registry involved.

- Very different scale to public DNS
  - Below 1ms response time, always
  - May have millions of ENUM domains
  - ENUM servers in their data centres

- Very big business at the moment
  - Specialist DNS suppliers
  - Peering exchanges for carriers

- Standard being discussed at IETF
  - May designate new tree for this e.g. e164<u>c</u>.arpa
  - May be public tree but <u>private</u> connections

Carrier Registrations in User ENUM (CRUE)

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- Hybrid of Carrier and User ENUM - entirely UK specific

- Process
  - Carrier registers block of numbers with Registry
  - Registry checks ownership
  - Registry publishes NAPTR records not NS records
  - Choice of NAPTR records very limited
  - Overwritten by user ENUM registration

- What is it for?
  - Designed to populate user tree quickly
  - New carriers who are entirely IP/Internet based
  - Low cost services from incumbents (VoB)

- This could be huge ! (for the 4.4. Registry)

Why Nominet?

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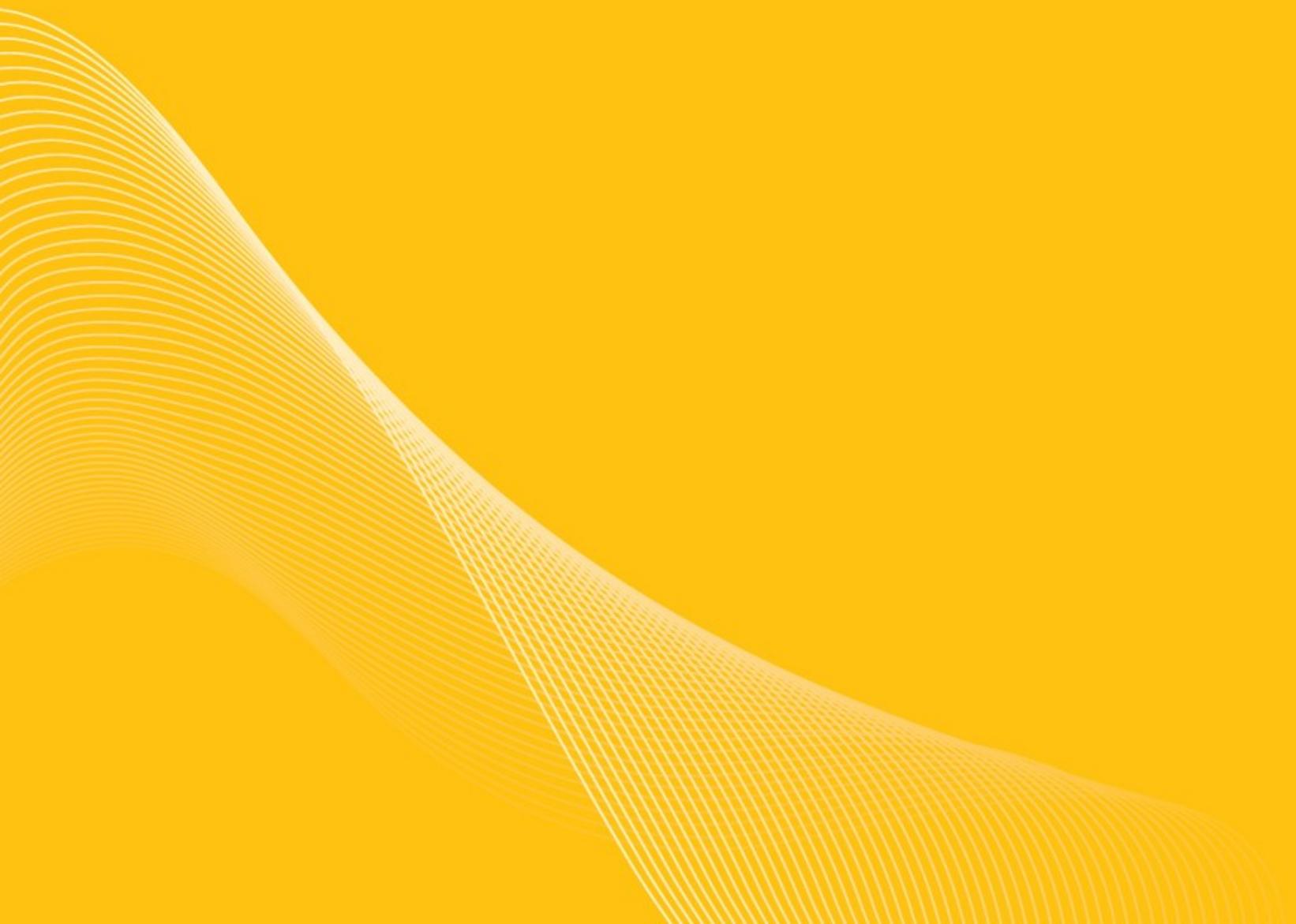
Benefits for all [1]

- Benefits for registrars
  - Single provisioning channel
  - Joined up billing
  - Integrated support
  - Single online management interface
  - Not for profit registry, which you own

- Benefits for registrants
  - Representing the needs of registrants
  - Low cost pioneer
  - Protection of domains of highest importance
  - Safe and secure domains

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Benefits for all (2)

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- Benefits for Nominet
  - Pre-eminent position in UK Internet
  - Builds on our high profile policy involvement
  - Reuse existing systems
  - Same set of current and developing technologies
  - All the same as for you !

- Benefits for the whole community
  - Focus on whole Internet, not profit
  - Strengthens UK input into global Internet policy
  - Ditto for technical standards

- For many, 4.4 is .uk for telephony

Registries are changing

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- Standardised interfaces (e.g. EPP)
  - Need to lead by innovation

- Domain name registries => Internet registries
  - ENUM
  - Number portability
  - Emergency call location services

- Different business - different model
  - Pushed data (registry data to your servers)
  - Controlled access (emergency services)

- Federations (pseudo-registries)
  - Multiple registries - single interface

Summary

- ENUM is coming soon
  - Very different mechanics from .uk
  - Very similar policy and management to .uk

- Just the start
  - Registries are changing

- Innovate and change or be surpassed

Any questions?

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