



ENUM

Final Regulatory Impact Assessment (RIA)

APRIL 2005



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Title of proposal

- 1 Proposed Arrangements for the Management of Electronic Numbering (ENUM) in the United Kingdom.

Purpose and intended effect of measure

The objective

- 2 The objective is to establish management arrangements for the UK's part of the proposed ENUM system that will link telephone numbers to Internet names and other Internet related destinations and identities. The management system needs to strike an appropriate balance between allowing for innovation and protecting the rights of individuals with regard to their use of telephone numbers.
- 3 The international arrangements for ENUM require the DTI as the UK Administration to consent within the International Telecommunication Union to the appointment of a single organization as the registry responsible for the ENUM entries that use the UK's country code of +44.
- 4 A group of interested parties has proposed a 'management committee system' for ENUM in the UK that allows for open and fair competition, while also protecting the public interest. It was the form of the management committee system that will select and appoint the registry, and the DTI's recognition of that appointment, that formed the main points of the consultation.
- 5 *Devolution:* This proposal applies to the whole of the UK. Those territories outside the United Kingdom which are covered by the UK telephone numbering plan, ie Jersey, Guernsey and the Isle of Man will decide whether to use ENUM facilities provided through the UK, or make separate provisions.

The background

- 6 ENUM is an international distributed database service, which any party can interrogate with the telephone number of an ENUM subscriber and the database will return a list of identities and Internet related destinations that are associated with that subscriber. Examples are the subscriber's email address, mobile telephone number or web page. These identities can then be used to establish various forms of communications with the ENUM subscriber, e.g. the party can send an email to an ENUM subscriber having initially known only their telephone number. The ENUM database can be used both by human users and by electronic processes (applications) that are providing

other forms of communications services. It is intended primarily to be used by applications that will provide electronic communications service to other users who want to communicate with the ENUM subscriber.

- 7 The ENUM international framework for ENUM has been established through cooperation between the International Telecommunication Union (ITU) and the Internet Engineering Task Force. At the national level the DTI, which, in cooperation with Ofcom, is the UK administration in ITU, has to give its consent to the appointment of a registry for the ENUM entries that are made under the UK's country code of "+44".
- 8 Whilst the commercial prospects for ENUM will depend very much on commercial investment and innovation, the DTI considers that it should ensure that a suitable management framework is created for the different players who will need to cooperate with each other, since ENUM is the only generally agreed standard underpinning Internet and telecommunications cross-connectivity.
- 9 A trial of ENUM has been run in the UK during 2003/4 and trials have also been held in various other countries. The UK trial demonstrated the feasibility of the proposed structure and its main successes were in identifying the roles and responsibilities of the entities involved in an ENUM system and issues related to authorisation and accreditation of potential subscribers. However, few applications were run on it and the trial was thus only a test of the mechanism of the system.
- 10 Arrangements for the implementation of ENUM in the UK have been planned over the last 4 years by the informal UK ENUM Group (UKEG), which was established following a workshop on ENUM run by the DTI in June 2001. UKEG, which includes companies such as BT, Vodafone, Cable and Wireless and Nominet, developed the proposals for the framework for ENUM in UK that were presented in the consultation.
- 11 It is proposed that ENUM will be primarily a commercial development: the investment and its commercial prospects are commercial issues that will be left to the market players. The main issues of concern to DTI are:
 - The appointment of the top level UK registry (the ENUM Tier 1 registry), where the management of the UK's numbering space within ENUM is logically a single monopoly function. This monopoly function will be given to one company, which should be selected in a fair and open manner, and due ongoing safeguards established to ensure effective performance.
 - The extent to which the proposed organisational framework allows for open and fair competition without unduly advantaging any particular class of organisation. The DTI is particularly concerned

that the arrangements should not allow existing large companies, such as the larger telecommunications operators and Internet Service Providers, to gain effective control particularly at the lower tiers to the detriment of smaller newer companies. The openness and competitive neutrality of the arrangements are therefore especially important.

- The protection of public interests, both the individual interests of the assignees of telephone numbers who may become ENUM subscribers, and the collective interests of the users of the telephone system.

Consultation

- 12 The consultation document was circulated to a number of organisations who may wish to reply, and these are listed in that document. It was also made available publicly on the DTI website and via a printed version. Those organisations and individuals who responded are listed at Annex B to the DTI response document. In addition, a public workshop was held to allow for more detailed discussion. Copies of public responses and notes from the workshop have been made available on the DTI website.
- 13 The Consultation asked a number of specific questions, these are dealt with in the DTI response document. The following are the main issues identified as needing further study. These issues were all indicated in the initial consultation, but they are the subset of all the considerations around ENUM that have drawn the most comment. Accordingly it is proposed that they should be priority issues for UKEC:
 - Refining the validation and authentication process so that it provides adequate security and yet does not become a major barrier to people entering their data into ENUM.
 - Ensuring that data in ENUM is accurate and up-to-date and that ENUM entries are deleted when service on numbers is ceased.
 - Ensuring that there is adequate subscriber awareness that data entered into ENUM will be open to the public.
 - Clarifying issues concerning ENUM entries for numbers that are shared.
 - Ensuring that premium rate numbers do not lead to abuse in ENUM.
 - Developing more ideas for applications based on ENUM.
 - Finding ways to motivate users to enter their data into ENUM to build critical mass.
 - Preventing abuse of the system, ensuring it develops for the public benefit and that these issues are adequately protected within the organisational structure of ENUM.

- 14 DTI has always said that ENUM must remain a private sector initiative. The Consultation has confirmed that ENUM is developing along lines that are satisfactory from a public policy perspective and so it is up to the interested parties to decide how they wish to address these issues and take ENUM forward.
- 15 DTI now looks to the formation of the UK ENUM Committee (UKEC), the proposed industry lead body for ENUM, to take forward the proposals from the original consultation and to consider in addition the points highlighted in this response document. The DTI will recognise UKEC and grant recognition as the holder of the UK e164.arpa designation as soon as seems viable. DTI will continue to participate in discussions in the UK ENUM Group (UKEG) aimed at this. Along with Ofcom, DTI will take an observer role on the Supervisory Board of UKEC when it is formed, to continue to monitor the evolution of ENUM.

Options

- 16 There are three alternative courses of action for DTI in the development of ENUM:
 - Do nothing.
 - Impose regulation.
 - Establish a system of self regulation.

Option 1: Do Nothing

- 17 This option would mean that the DTI would
 - Consent to any organisation becoming the unique UK Tier 1 registry on a first-come-first-served basis without any particular duties being imposed on the organisation and without limitation on its other commercial activities.
 - Not participate at all in the on-going development of the policy and management of ENUM.
- 18 We wish to reject this option because we consider that if ENUM develops into an important service that becomes the basis of other services then:
 - The scope for discrimination and cross subsidy between the unique UK Tier 1 registry and the other roles in ENUM is too great and the organisation winning the UK Tier 1 could abuse its role to the detriment of its competitors, ENUM subscribers and users of services based on ENUM. For example, the registry could charge monopoly prices.
 - There would be no guarantees that numbers would be entered into ENUM only after suitable authentication (identification and validation) checks, and so third parties could associate their identities with numbers that "belong" to other people and so "steal"

their incoming traffic. Third parties could also enter unallocated numbers into ENUM and so damage its integrity by undermining future allocations of numbers within the telephone system.

- 19 Although the consultation did not explicitly offer this as an option in the questions, the thrust of many responses was that the writer wished to see a public interest influence present in the organisation of ENUM. It is concluded therefore that our original rejection of this option is correct.

Option 2: Impose regulation

- 20 This option involves two possibilities:
- DTI would introduce primary legislation that would establish the management framework for ENUM and set out the duties of the different players. In practice this might mean establishing a licensing system specifically for the different roles in ENUM.
 - Ofcom would consider what regulation it would be appropriate to place on ENUM providers.
- 21 We propose to reject these options because:
- The procedures to establish relevant regulation are lengthy and expensive. They are disproportionate and would delay the implementation of ENUM.
 - There are too many uncertainties, especially commercial ones, about how ENUM will develop and the use of regulation would be too inflexible.
 - UK policy is (and is set to remain) not to regulate the allocation and use of Internet identifiers including domain names such as the ENUM DNS entries that contain telephone numbers
 - The trend under the 2002 European Directives and the Communications Act 2003 is away from regulation and towards greater liberalisation and self-regulation.
- 22 Although some correspondents to the Consultation expressed a wish to see tighter control on ENUM there was no general feeling to this effect. We therefore conclude that our original reasoning was sound, and that this is not a line to follow.

Option 3: Establish a system of self regulation

- 23 This is the proposal on which we consulted.
- 24 The proposal has been developed by interested parties and consists of establishing the 'UK ENUM Committee (UKEC),' consisting of two UK ENUM boards, a Policy Board and a Supervisory Board. These boards would be responsible for:

- Selecting and appointing the UK Tier 1 registry for a fixed period as a result of an open competitive tendering process (DTI would recognize the selection made by the UK ENUM Committee)
 - Setting requirements for the UK Tier 1 registry.
 - Setting a Code of Conduct for ENUM registrars and any other roles involved in ENUM.
 - Establishing appropriate authentication procedures for ENUM subscribers to safeguard the rights of individual assignees of telephone numbers and the integrity of the telephone numbering system.
 - Developing future policy.
- 25 We consider that this option offers the best combination of low costs, flexibility, scope for innovation and protection of the public interest. This option does not preclude the use of regulation at a later date in the unlikely event that it proves necessary, as new regulatory requirements could be introduced when a period of appointment of the Tier 1 registry expires.
- 26 Although there were comments in the Consultation on the precise detail of this proposal, there was no strong feeling against this proposal, or towards any other line. It is thus concluded that this proposal is satisfactory, and is the line to be taken.

(ii) Risk assessment

- 27 We now assess the risks involved in the proposed strategy of self-regulation. They are as follows:
- *Failure to establish the UK ENUM Committee.* There is a risk that the stakeholders may not agree with each other sufficiently to establish the committee or to agree its policies. Given that these proposals have been developed with many of the main stakeholders whose input takes account of their commercial interests, the risk that they will fail to reach agreement and jeopardise the prospects of ENUM is low.
 - *Domination of the system by a few large players.* DTI is concerned to see the development of ENUM provide an efficient and innovative basis for new services and believes that the best way to achieve this is to encourage participation by viable businesses regardless of size. The membership of the ENUM boards has been chosen to represent a wide range of stakeholder interests and to avoid opportunity for domination by larger companies.
 - *Abuse of ENUM that affects the public interest.* ENUM could become a vehicle for fraud and misrepresentation if there is not adequate authentication of entries. Great attention has been given

to authentication and the proposals should minimise the risks of abuse.

- *Non-cooperation by the major telephone service providers that impedes the development of ENUM.* This is a risk because the authentication of ENUM subscribers involves matching the information that the subscriber claims with the allocations made by the telephone service providers. Whilst direct involvement of the telephone service providers would be helpful it is not essential and UKEG has developed checks based on the UK directory enquiry database and the number portability process, checking against bills and call-backs to the number concerned that avoid direct dependence on the telephone service providers.
- *Delay in the establishment of ENUM.* At present, the UK has a leading position in the development of ENUM and this should provide good commercial opportunities for the development of services based on ENUM. Undue delay would jeopardise these services but the proposed system of self- regulation gives the stakeholders who have the incentive to make it work the opportunity to make it work.

- 28 We regard self- regulation based on consultation as the best means of minimising the risks.

Benefits

Of self regulation

- 29 The proposed approach to establish self-regulation for ENUM in the UK avoids the need for legislation and its associated costs (and delays) and lets the system develop on a commercial basis that allows for open and fair competition while protecting the public interest.

Of ENUM

- 30 ENUM enables enterprises including small and medium businesses to offer new Internet-based communication services such as reading emails to telephone users. ENUM offers a standard that provides something for manufacturers and other stakeholders to work around. It enables everyone to work in a defined way internationally and the standard is sufficiently detailed to ensure interoperability between systems developed independently but in compliance with the standard in other countries. It is too early in the international development of ENUM to provide examples of its use although a limited service is now in operation in Austria.
- 31 While the trial was carried out on only a limited number of applications, it was encouraging that more ENUM-based applications emerged towards the end of the trial and their numbers are growing. These could attract very large numbers of future registrations.

Of Proposals aimed at Ensuring Fair Competition

- 32 The approach we propose is designed to make the system equitable. Our aim is to ensure that the Invitation to Tender for Tier 1 (the monopoly business) is prepared and issued by an independent body and the business is awarded in a transparent and accountable way. Tier 2 will operate on a multiple level and both large and small companies will be selected through competitive tender. This could be facilitated by offering different sized blocks of numbers/domains.

Costs

Compliance costs

- 33 This is not a regulatory proposal and therefore there would be no regulatory compliance costs. The proposed self-regulation allows flexibility for the stakeholders to establish procedures that minimise costs. The competition for the role of UK Tier 1 registrar should create pressure to minimise registration costs and the competition between organisations for other roles will also minimise costs.

Other costs

- 34 This will be an 'opting-in' service and subscription will be a voluntary cost. Businesses and the public will not be bound to use it or subscribe to it. The service will develop according to the perceived benefits it brings to users and providers of other services.

Equity and Fairness

- 35 The purpose of consultation is to provide in an agreed and transparent way for a management committee that will preside over a fair and open market. Thus, the Tier 1 Registry would be appointed by the UK ENUM Committee as a result of competitive tender and evaluation by an independent panel. The consultation document proposes a system of checks and balances to ensure the market is fair and open.

Competition Assessment

- 36 Our aim is to maximise competition while maintaining standards and recognising the uniqueness of the role of the UK Tier 1 registry. The proposed approach of appointing the Tier 1 Registry by public tender with competition at the Tier 2 registrar level is intended to foster fair competition and innovation. There would be a number of constraints for the Tier 1 operator, including a set duration of contract, separation of the policy formulation function from the Tier 1 organisation and a ban on operating at the Tier 2 level.
- 37 The outline of our proposals has been discussed with OFT who agreed that they presented a fair and equitable way of providing the ENUM service in the UK.

Enforcement and sanctions

- 38 Methods of enforcement and sanctions are yet to be developed by the proposed UK ENUM Committee.
- 39 Sanctions for breach of the code of conduct by registrars could be based ultimately on deleting numbers serviced by the registrars from the UK registry.
- 40 As ENUM is currently works at an international level, the national administration (DTI in the UK) recognises the top-level tier 1 registry to the ITU, which is then enabled to operate in the DNS thereafter. Similarly the national administration could withdraw recognition and the DNS links to the registry should then be withdrawn. This would thus be the ultimate sanction in the event of extreme problems with how ENUM is run. Use of this option would be carried out in coordination with UKEC, following reasonable efforts to resolve the problem.

Monitoring and review

- 41 There will be review by the UK ENUM Supervisory Board, at which both DTI and OFCOM will be observers, to ensure that the public interest is being protected and that a fair market is developing. This review will make DTI aware of any negative developments and the solutions proposed. Ultimately, it will inform DTI's determination of what, if any, further action needs to be put in place.

Summary and recommendation

Summary

- 42 ENUM is an international distributed database service, which any party can interrogate with the telephone number of an ENUM subscriber and the database will return a list of identities and Internet related destinations that are associated with that subscriber. Examples are the subscriber's email address, mobile telephone number or web page. These identities can then be used to establish various forms of communications with the ENUM subscriber, e.g. the party can send an email to an ENUM subscriber having initially known only their telephone number. The ENUM database is intended, primarily, to be used by applications that will provide electronic communications service to other users who want to communicate with the ENUM subscriber.
- 43 A number of telecommunications companies have been involved in the development of ENUM in the UK to date as part of the informal UK ENUM Group (UKEG) in which DTI has also participated. The group is

now proposing a framework, based on self-regulation, for the commercial development of ENUM in the UK including proposals to ensure fair and open competition and protection of the public interest.

- 44 DTI has undertaken a public consultation on accepting the proposals from the UK ENUM Group based on self-regulation.

Recommendation

- 45 From the responses to the Consultation it is apparent that option 3 of self-regulation is generally accepted by all parties, and was originally advocated as our preferred option. We thus endorse this as a way ahead and look to industry to form the body known in the Consultation as the UK ENUM Committee (UKEC) to carry the use of ENUM forward.