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**Poseidon House  
Castle Park  
Cambridge CB3 0RD  
United Kingdom**

TELEPHONE:  
INTERNATIONAL:  
FAX:  
E-MAIL:

**Cambridge (01223) 515010  
+44 1223 515010  
+44 1223 359779  
apm@ansa.co.uk**

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## **ANSA Phase III**

# **Naming and Trading in the World Wide Web (TC presentation)**

**Owen Rees**

### **Abstract**

This is a Work in Progress report for the ANSA Phase III Technical Committee meeting of 6th/7th December 1994.

This presentation describes some of the problems in the Internet, and in particular, in the World Wide Web, that involve naming issues.

The document describing this work is APM.1282 "The Name of the Resource".

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APM.1367.00.03

**Draft**

2nd December 1994

Request for Comments (confidential to ANSA consortium for 2 years)

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# Naming and Trading in the World Wide Web

Owen Rees

**APM**



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## The problem in the World Wide Web today

- **Overloaded servers; users see failures**
- **Discovery and Enquiry services are ad-hoc and patchy**
- **Administering services is ad-hoc and time-consuming**
- **Explosive growth is making these worse**
- **WWW browsers — usage pattern**
  - **RPC-like — suits stateless servers, connectionless protocol**
  - **HTTP protocol and servers match this assumption**
  - **FTP, NNTP also used — mismatch of usage assumptions**



## What can we do?

- **Solutions native to WWW and Internet**
- **Solutions that enable and exploit WWW/CORBA interworking**
- **RPC based (stateless) protocols to supplant FTP, NNTP**



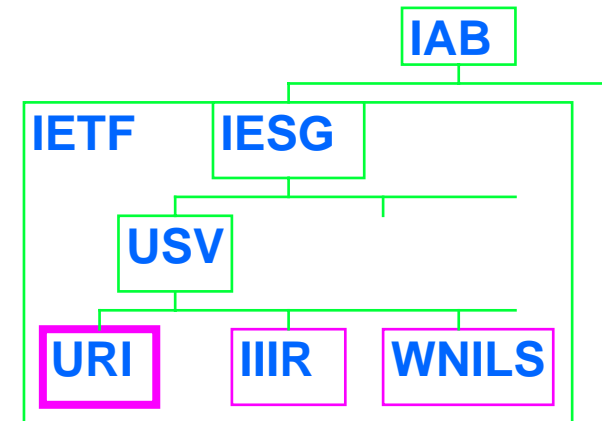
## Solutions

- **Replication to solve load problem**
  - “mirror sites” in use today
  - another instance of same resource
  - but how is consistency maintained
- **Versions of a resource**
  - administrative technique — e.g. ANSA internal/external WWW servers
  - copy of a resource, but different resource
- **Cost is in more administration — ad-hoc**
- **Interworking to access discovery services, management services**
  - between Internet protocols today; resource at both `http://...`, `wais://...`
  - between Internet and CORBA; more of the same or different?
- **Naming model is foundation**



## Who is working on the issues in the Internet

- **IAB: Internet Activities Board**
- **IETF: Internet Engineering Task Force**
  - Areas, Working Groups
- **IESG: Internet Engineering Steering Group**
  - Area Directors, IAB liason, IETF Director



- **USV: User Services area**
  - **URI: Uniform Resource Identification**
  - **IIIR: Integration of Internet Information Resources**
  - **WNILS: Whois and Network Information Lookup Service**
- **Naming issues — URI working group**



## Relevant topics

- **URI**
  - **URN: Uniform Resource Name — identifier for resource**
  - **URL: Uniform Resource Locator — location of resource**
  - **URC: Uniform Resource Characteristics — meta-information (incl. URLs)**
  
- **IIIR**
  - **IAFA: Internet Anonymous FTP Archives**
  - **protocols**
  - **vision**





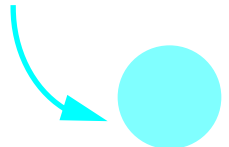
## URC usage — URN to URL translation

URN: //dns:ansa.co.uk:1234

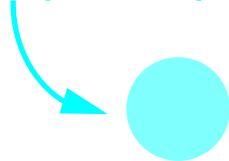
→ URC:

### instances of the resource

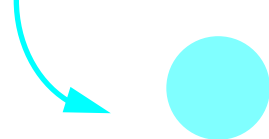
<URL:http://www.ansa.co.uk/ansa.html>



<URL:http://www.hp.com/ansa.html>



<URL:http://www.bellcore.com/ansa.html>



URN://dns:ansa.co.uk:1234

Title: Welcome to ANSA

Abstract: ANSA is an architecture for distributed computer systems ...

Author: APM Ltd.<apm@ansa.co.uk>

URL:http://www.ansa.co.uk/ansa.html

Content-Type: text/html

URL:http://www.hp.com/ansa.html

Content-Type: text/html

URL:http://www.bellcore.com/ansa.html

Content-Type: text/html

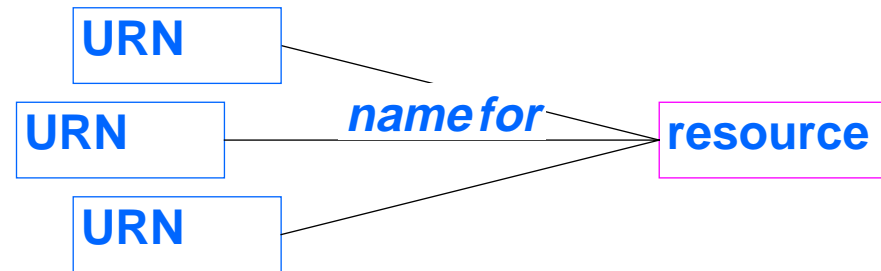


## The fundamental questions

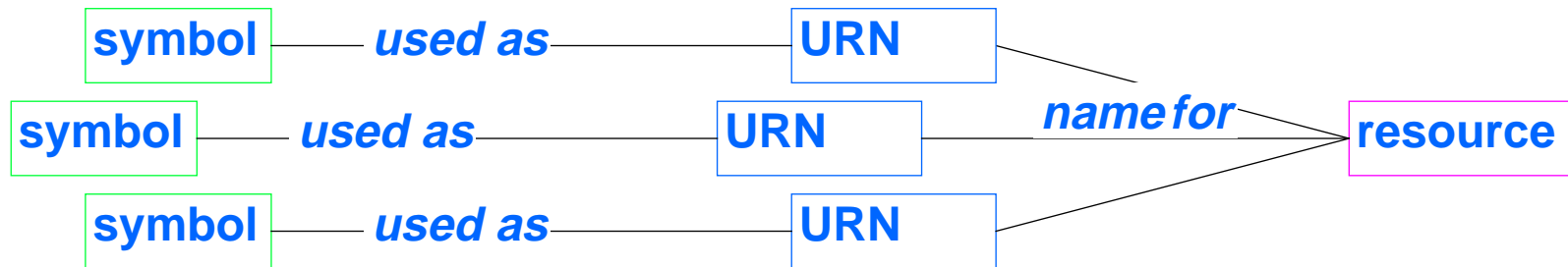
- **What is a resource**
  - what resources do we want to name — naming domain
- **What is a name**
  - what symbols (i.e. syntax) — naming convention
- **What makes that a name for that resource, whose point of view**
  - contexts, binding
- **How do I tell you your name for a resource, given that I have my name**
  - naming network, name resolution
- **What can I/you do with the name once I/you have it**
- **Answers/definitions must be acceptable to Internet community**

## Names and resources

- Name (URN) for a resource
  - zero or more URN for resource
  - URN for zero or one resource



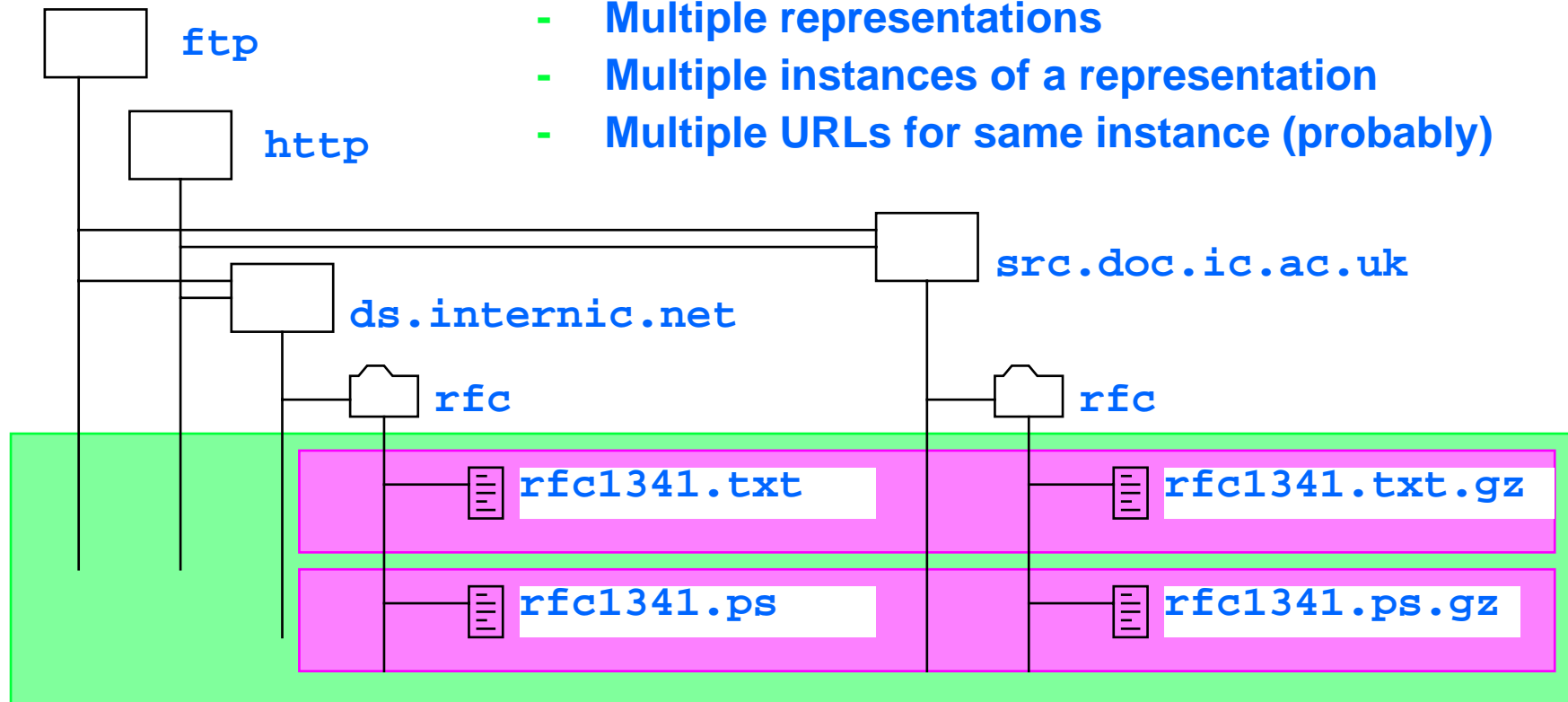
- Symbol used as name
  - zero or one symbol used as URN
  - URN for exactly one resource



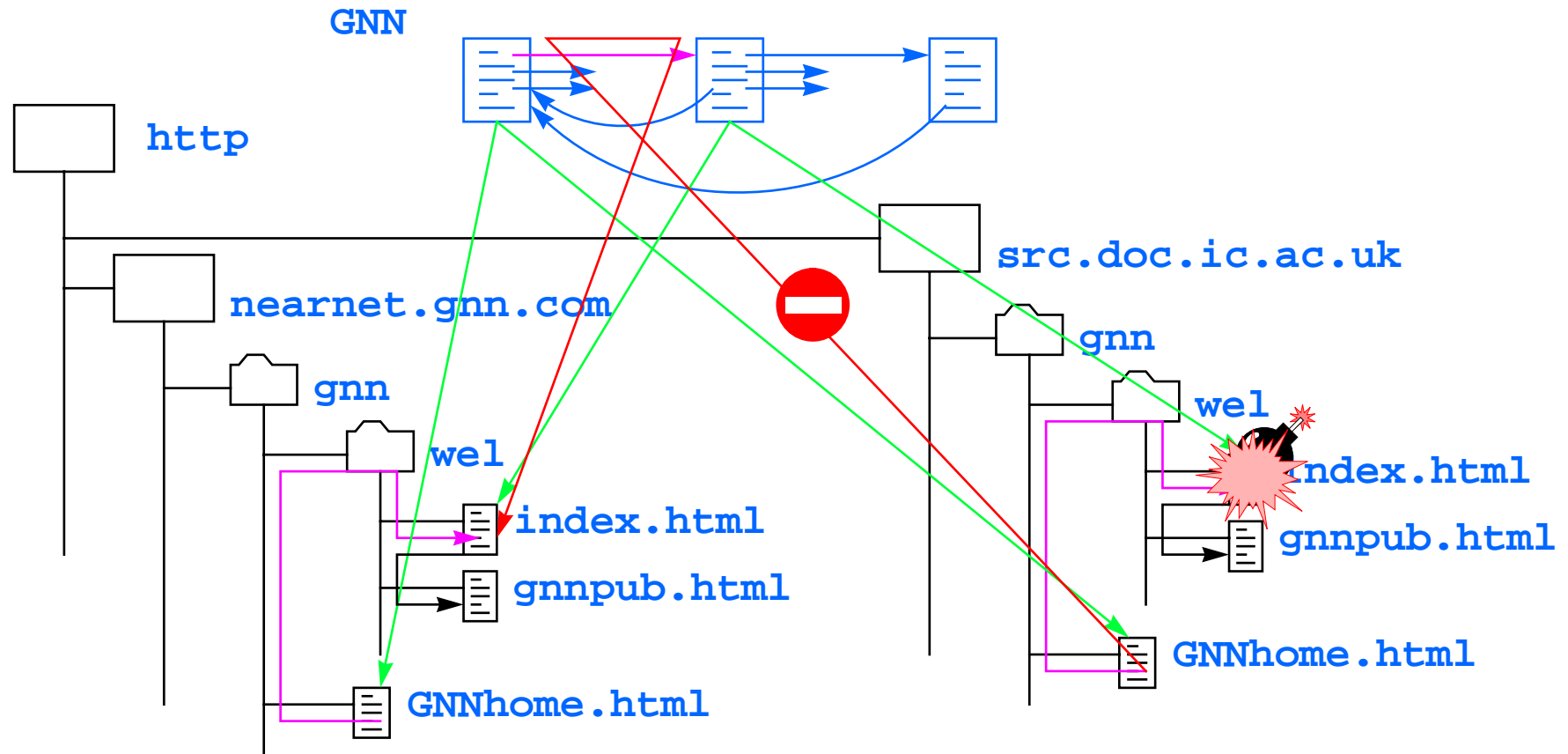
- Naming system must accommodate URI and IIR requirements
  - problem: symbol used as URL, also used as if URN — “URN is a URL” ✗

## Representations, Instances and Locations

- RFC 1341 — one resource
  - Multiple representations
  - Multiple instances of a representation
  - Multiple URLs for same instance (probably)



# References in Resources (1)





## References in Resources (2)

- Enquire about reference or just use it
- Example was easy case — HTTP URLs have filesystem-like hierarchy
  - Discovery tool WAIS — URLs, but not like HTTP
  - `wais://plato.ansa.co.uk/ansaWeb/HTML/1123/1=plato.ansa.co.uk%3A210;2=wais-sources/ansaWeb;3=0%201123%20/disc3/Documents/www/phase3-doc-root/sponsors/APM.1003.01.html;4=plato.ansa.co.uk%3A210;5=wais-sources/ansaWeb;6=0%201123%20/disc3/Documents/www/phase3-doc-root/sponsors/APM.1003.01.html;7=%00;`
  - `http://plato.ansa.co.uk/phase3-doc-root/sponsors/APM.1003.01.html`
  - relative name `href="/ansa.html"` — `http:... works, wais:... does not`
  - but does the “right thing” when copied to `www.ansa.co.uk`



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## Trading and URCs — Discovery and Enquiry

- **Similarities and differences between trading and URC service**
- **Meta-information**
  - technical — locations, formats (type)
  - content (information) — keywords, subject matter
  - enterprise — access rights, cost
  - RFC 1521 Obsoletes RFC 1341 — technical/content or both
- **Discovery vs Enquiry**
  - Discovery — what resources about asthma, online as PS/text/HTML, free
  - Enquiry — APM.1282.00.01: about what, where, format, price
- **Naming model is fundamental**
  - in response to discovery question
  - as part of enquiry question



## Key Issues

- **Infrastructure manipulates names and (representations of) resources**
- **Interworking between WWW and CORBA**
  - What is a resource in WWW, in CORBA; how are these related?
  - What is a name in WWW, in CORBA; how are these related?
  - How is a CORBA resource named from WWW?
  - How is a WWW resource named from CORBA?
- **Naming model is essential for lasting solution**
- **Naming model must be acceptable to Internet/WWW community**

## Relevant documents

- **APM.1282 “The Name of the Resource”**