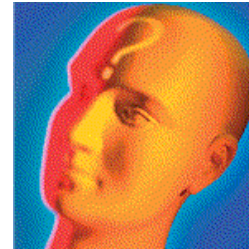


# Robin Wilson Director

Digital Identifiers  
Metadata Services





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JISC



# Report

*Digital Object Identifiers  
for Publishing  
and the  
e-Learning Community*

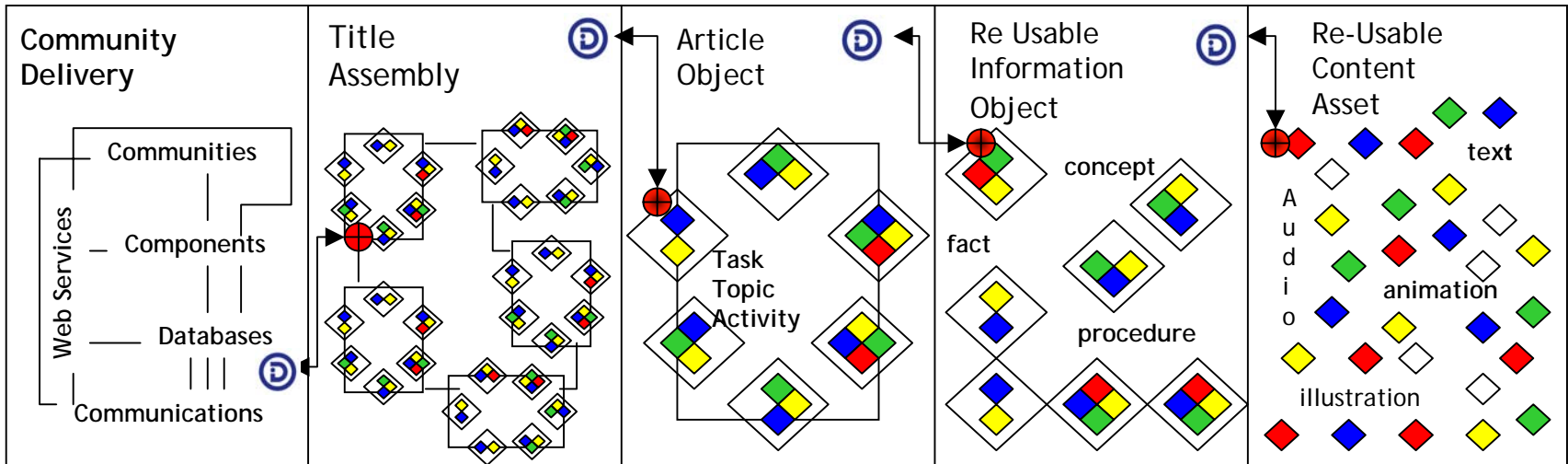


- *eLearning*  
*“the Publishing Challenge”*
- *eLearning*  
*“the Information Federation Challenge”*

*Output : Publishing & Community*

Metadata + 

*Input : Knowledge & Information Management*



Built on semantically focused open technology : open architecture platforms specifically to give interoperation and re- use

+

*Context*

-

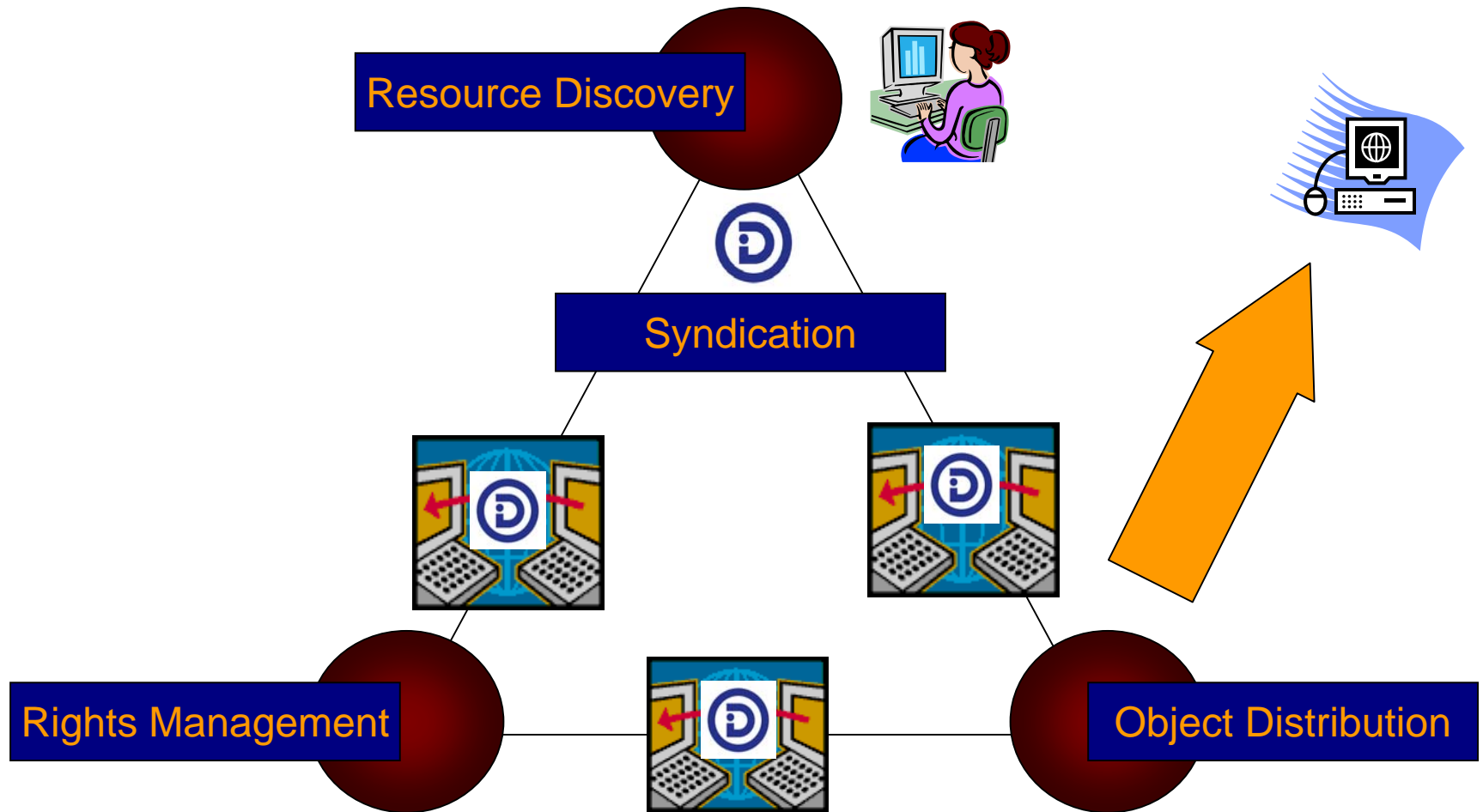
-

*Reusability*

+

A **Digital** Assembly Resolution Model for Designing and Delivering Information Objects

**Taking content beyond tradition to create intelligent information**



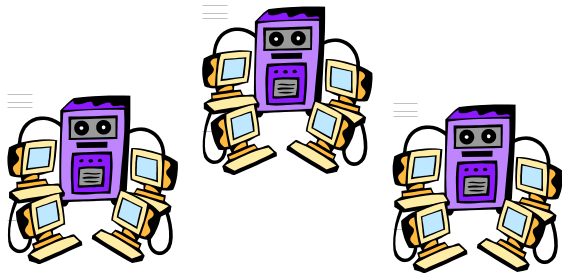
The challenge is for digital INFORMATION to be reliably distributed and accessible across differing applications and services, that span organisations platforms, different programming models and information communities.



Multiple locations,  
companies, organisations ,  
departments, agencies, etc



multiple audiences



multiple Systems

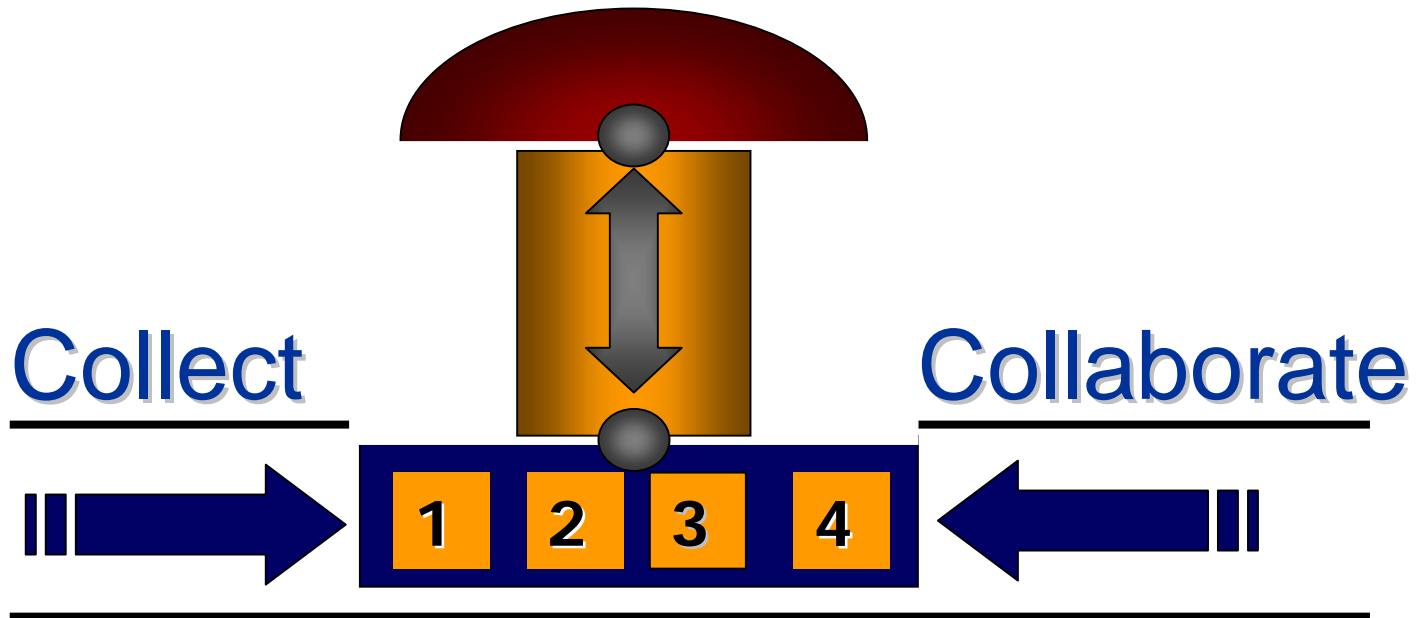


multiple web communities



# Integration of Resource Knowledge / Information as discoverable re-usable assets

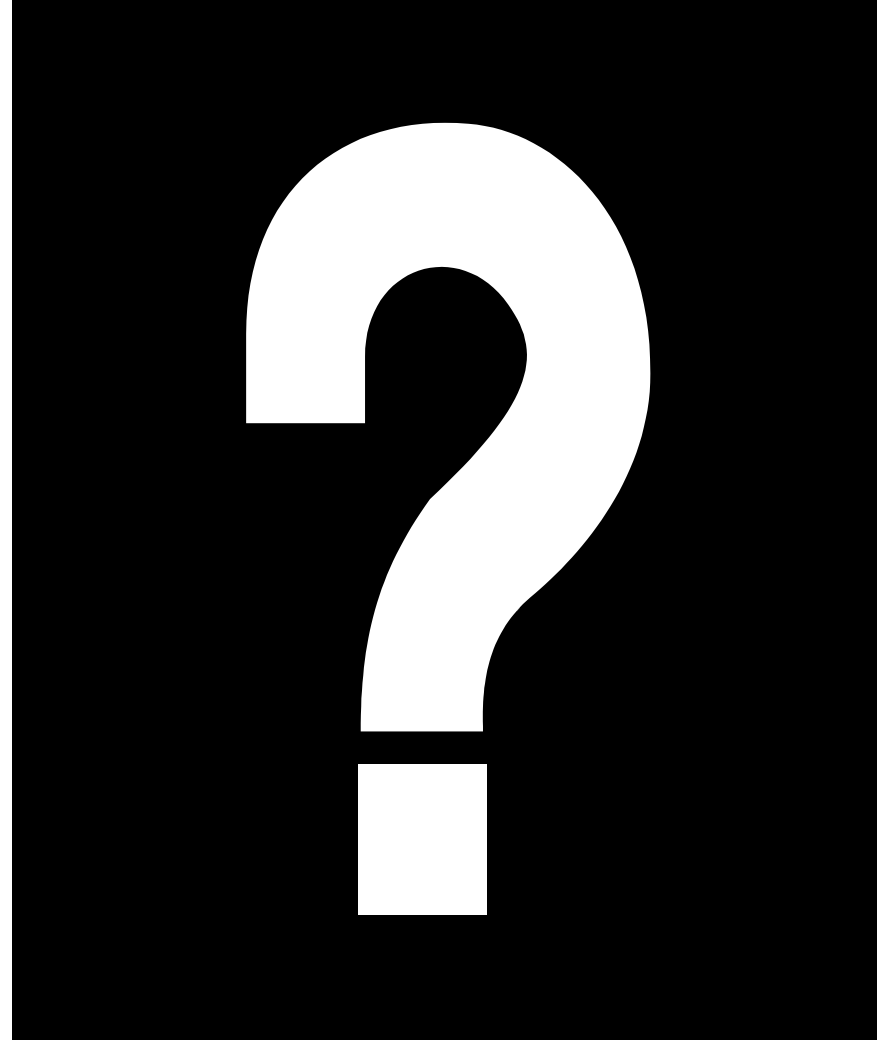
*i.e. “Doing a better thing for the Audience”*





# The Information Nightmare : Why Digital Identity for objects is essential

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Identify a reference or citable point in cyberspace

**Place**

**Discovery**



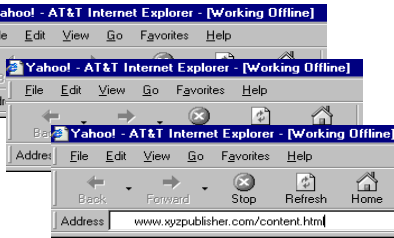
Identify a metadata description in cyberspace

**Description**



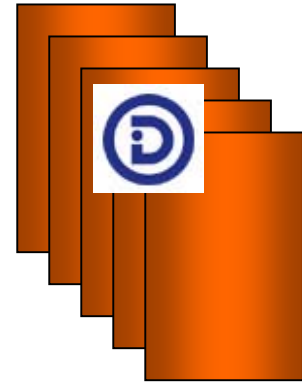
Identify a web deliverable resource in cyberspace

**Resource**



**Relationships**

Identify relationships to other related resources in cyberspace



## UNIQUE

Create a number which is the only one “Worldwide”

Agreed Specification

## RESOLUTION

Use a resolution service which guarantees persistent connection

Permanent Services

## GLOBAL

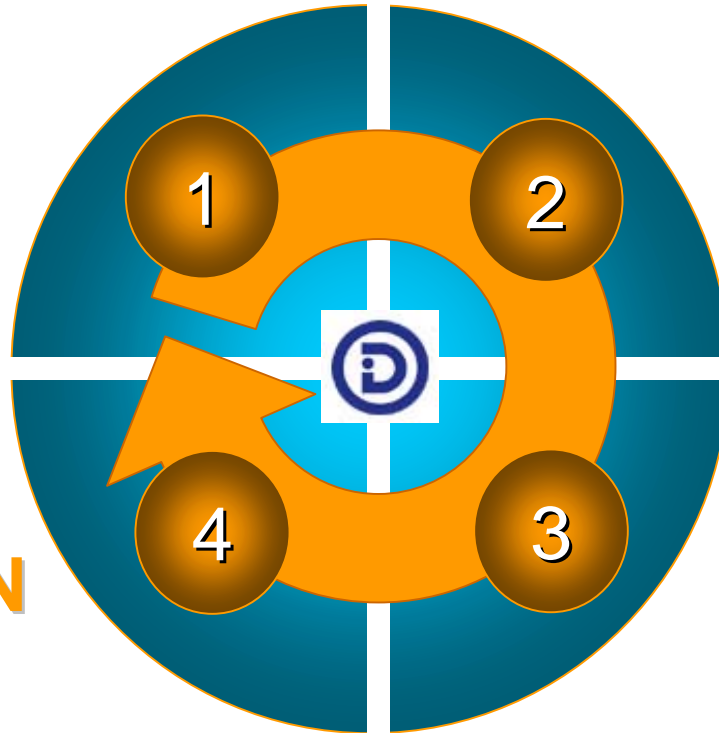
Register an Digital ID to agreed universal definition

International Governance

## PERSISTENT

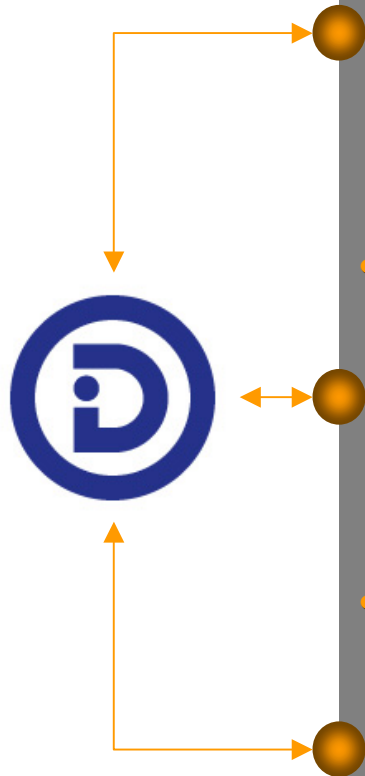
Use a service facility which guarantees permanence

Global Assurance



1. **Guide and Assist** development of a JISC digital identifier policy.
2. **Identify standards** for data integration and interoperation would support the long-term management of JISC digital information and data.
3. **Create policy** for JISC participation in digital information communities and the growth of a distributed digital infrastructure.
4. Report should be **cognisant of central UK government** influence on e-learning (such as DfES, Office of the e-Envoy and Becta), including the government control of namespaces, government registration authorities and associated resolution services or gateways.
5. **Define a pivotal “Persistent Digital Identifier” framework** that sets out policies for the use of persistent data identifiers, specifications for identifiers and the associated services,
6. **Provide recommendations** for ID interoperability and information coherence across all of the JISC’s information sectors.

- This report was concerned with **persistent digital identifiers and their use in the UK higher and further education sectors**. The report considers what persistent digital identifiers are, and their purpose and requirements within this environment.
- The stakeholders within the JISC Information Environment who are the **creators and users of such persistent digital identifiers** include: publishers, authors, JISC services, researchers, tutors and learners.
- Persistent digital identifiers may be associated with almost anything, but the main focus of this report is on **Identifiers for digital content resources for e-learning communities**.
- The **primary type of resource** is a 'learning object', but many other diverse types of resource are also available to learners and their teachers, including: articles in journals and in institutional open archives, books, datasets, images, maps, archival collections, etc.
- **And Metadata records** that describe these identified information resources and content objects.



- **Uniqueness**

- ▲ How is it made
- ▲ What is it
- ▲ Who does it?
- ▲ Can I use local convention

- **Global Registration / Namespace**

- ▲ How is it made
- ▲ What is it
- ▲ Who does it?
- ▲ Creating ID Persistence over time

- **Resolution & Local Resolver Services**

- ▲ What is it?
- ▲ How does it work
- ▲ Who does it?
- ▲ Resolution Persistence
- ▲ Resource Persistence and faceted commitment

## Areas of investigation :

1. Definitions of Digital Identifiers
2. Functional Requirements for Identifiers
3. Review of existing Digital Identifiers
4. Metadata Schemes
5. Summary of Global Identifiers
6. Persistent Digital Object Identification Services
7. Minimum Requirements for Publishers and the e-learning community
8. DOI System
9. Handle Architecture
10. Costs
11. Use Case Scenarios for Digital Object Identifiers
12. Case studies
13. Outline of Recommendations

## Properties :

- A **single, local identifier implementation** may disable medium to long-term goals of JISC information interoperability. It could create a narrow data ghetto that restricts interoperability with other sectors.
- Many information objects or metadata records, in particular those that are provided by third party publishers, may **already have persistent digital identifiers assigned to them** prior to their reference by the JISC community.
- **Informal sharing of information resources** is likely to have different digital identifier requirements from that of the more formal traditional publishing and dissemination processes. Provide, and assure the continued availability of, more informal methods of creating persistent digital identifiers.
- It's essential for the JISC community to create policy and interoperation specifications to ensure that it can **interact with a range of existing identifier manifestations**. Enable interoperable resource discovery, the exchange of metadata descriptions and digital objects, and aggregation relationships.
- **Additional Services**: Persistent digital identifiers adopted by the JISC need to do more than just provide persistent identity. They should also be able to provide **extended information service functions**. Dynamic actionability requires the availability of metadata.

## Core Properties:

Persistent digital identifiers adopted by publishers in the education sectors in the UK should be able to:

- Reference multiple object types
- Integrate and interoperate with existing standards
- Offer scope for future extension and migration
- Satisfy the needs of the broad JISC community and other sectors
- Adopt declared IETF specifications or those under known IETF approval process
- Avoid any unnecessary semantic or location information in the identifier

## Key Outputs:

- **Publish and disseminate** a policy for persistent digital identifiers to avoid becoming a “data ghetto”.
- For published resources or published metadata records the report **advocates the adoption** of the Digital Object Identifiers
- **Setup the provision** of implement a Handle server with the ability to provide multiple resolution using open source license provision technology from CNRI.
- **Direct collaboration** with ADL should be sought to integrate eLearning handle use activity with that of SCORM 2004 / CORDRA.
- **Provide national guidance** and a framework for namespace use
- **Provide local namespaces** within the jisc.ac.uk namespace
- **Investigate** the POI scheme promoted by UKOLN & OCLC particularly for use with short term use materials
- The increasing use of **OpenURL technology should be recognised**, to provide appropriate copy access to resources.
- **URL's can be used** for ephemeral requirement as identifiers for short time scale, single location, user authored resources, with low management and minimal cost.

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## Additional & Future concerns:

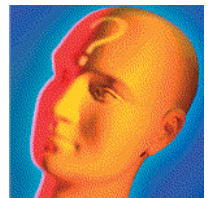
Whilst some issues are clear it became evident during writing the part of this report about Digital Object Identifiers that further investigation is required in a number of areas. These include, but are not restricted to: -

- the nature of the metadata to be used alongside adopted digital identifiers
- the processes for management of ID persistence over time
- the processes for management of resource persistence over time
- details of APIs
- enhanced services (cross referencing, rights management)

# Persistent Digital ID's

- Permanently **Identify**
- Permanently **Describe**
- Permanently **Connect**

: *enable JISC  
global discoverability & re-use*



Before

Non Global / Local Identifiers



Proprietary Governance  
& Self Based Policies



Local Repository  
of proprietary  
metadata or content

After

Global & Resolvable Identifiers



Known Governance



Sector  
Registration Agencies



Agreed Resolution Systems



# Questions ?

