

Joined up thinking:
linking and sharing Science Museum
collections and content

Daniel Evans & Ailsa Jenkins

9 July 2013

ISKO UK Biennial Conference

Knowledge Organization - pushing the boundaries

People, Stories & Objects

- Core museological content – objects, images, archival documents, historical narratives, biographies, key ideas.
- More value from our existing content
- A more effective platform for adding future content

Step 1

- Putting our core museum content on our main website
- Linking it together better



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Alexander Fleming (1881-1955)



The Scottish microbiologist Alexander Fleming was a medical scientist who discovered penicillin, the first antibiotic.

As a boy, Fleming worked in a shipping office in London until an inheritance enabled him to study medicine at St Mary's Hospital. He was interested in microbes which caused diseases such as tetanus and gangrene, and searched for substances to combat them.

In 1928 Fleming observed that a mould which had accidentally grown in a Petri dish with a culture of bacteria had killed the germs around it. He called the active substance in the mould 'penicillin'.

Penicillin became a life-saver in the Second World War when Howard Walter Florey and Ernst Boris Chain came across penicillin in their search for antibiotic substances - research which finally enabled the large-scale production of the antibiotic. Fleming was elected Fellow of the Royal Society in 1943 and knighted in 1944. In 1945 he shared the Nobel Prize in Physiology or Medicine with Florey and



Early sample of Fleming's mould, 1935/1936



Currently on display in: [Making the Modern World](#)

Inventory number : 1997-731

This sample marks penicillin's transition from an interesting phenomenon to a potential drug. In 1928 Alexander Fleming (1881-1955) discovered that a strain of *Penicillium* mould exuded a substance that killed certain bacteria. However neither the nature nor the significance of penicillin were clear to him. New antibacterial medicines such as Prontosil developed in the 1930s however did encourage his belief that it might be therapeutically important. Fleming reportedly gave this sample to a friend, complaining that penicillin was superior to Prontosil but nobody would listen. It was however work at Oxford University from 1940 which led to the isolation of penicillin and demonstration of its worth.

Related Objects



[Stylophone,
electronic mini
organ, c.1968.](#)



[Analogue music
synthesizer, 1970.](#)

All Words [Advanced Search](#)

Popular People



[Walker & Hall](#)

1845-1963, silversmith,
electroplater, cutler,
Sheffield

[Griffin & George Limited](#)

active 1954-1999, science
teaching apparatus
manufacturer/ supplier,
London, England

[Negretti and Zambra](#)

1850-1980s, optical
instrument maker,
mathematical instrument
maker, London, England

[Short and Mason Limited](#)

1875-1969.

Viewing Record 1 of 1

Fleming, Sir Alexander

Nationality: British

Brief Bio: 1881-1955, bacteriologist; discoverer of penicillin, British

10 Related Objects

[personal plaques](#)

Kovacs, Frank (artist)
1955-1957

[personal plaques](#)

Kovacs, Frank (artist)
1955-1957

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Kovacs, Frank (artist)
1950-1955

sciencemuseum

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Exploring the History of Medicine

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People

Alexander Fleming (1881-1955)

Select from the menus below to find out more about a particular person.

A - F G - L M - S T - Z 

The Scottish [microbiologist](#) Alexander Fleming was a medical scientist who discovered [penicillin](#), the first [antibiotic](#).

As a boy, Fleming worked in a shipping office in London until an inheritance enabled him to study medicine at St Mary's Hospital. He was interested in microbes which caused diseases such as [tetanus](#) and [gangrene](#), and searched for substances to combat them.

In 1928 Fleming observed that a mould

MAKING THE MODERN WORLD

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PEOPLE: [Sir Alexander Fleming](#)

Born: 6 August 1881, Lochfield, Ayrshire, Scotland **Died:** 11 March 1955, London, England

Scottish bacteriologist, winner of the Nobel Prize for Physiology or Medicine.

In 1902 Fleming won a scholarship to study medicine at St Mary's Hospital Medical School, London. He graduated four years later and remained at St Mary's for the rest of his career. In 1928 he discovered penicillin, a substance produced by the mould *Penicillium notatum* which was effective in killing various bacteria without harming the cells of the human body. It was the first antibiotic used in medicine and Fleming, along with Ernst Chain and Howard Florey, who found how to extract penicillin and use it medically, shared the 1945 Nobel Prize for Physiology or Medicine.

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Stories



Discovery of penicillin



Store of penicillin flasks, 1943.
Credit: NMPFT/Syndication
International

In 1928, the Scottish bacteriologist Alexander Fleming discovered that the mould *penicillium notatum* exuded a juice which stopped bacteria growing, but he could not extract a medicine from the juice. In 1940 a group at Oxford University managed to extract tiny amounts of penicillin from the mould juice and used it to cure a few patients who might otherwise have died. However, the mould was hard to grow and the juice contained very little penicillin. In the United States experts on moulds modified the strain and the way in which it was grown. Theirs was an enormous achievement too. By D-Day in 1944 they had enabled penicillin to be made relatively cheaply and in adequate quantities. After the Second World War the new medicine was in demand all over the world. At first there was a shortage, remembered in the film *The Third Man*, but soon penicillin had become very

cheap indeed.

For sixty years there have been debates about who should get the credit for penicillin. What balance of credit should go to Alexander Fleming, who first published an article about the antibacterial properties of the juice released by penicillin? What of Ernst Chain at Oxford, who first isolated an impure sample of the drug? Likewise, Norman Heatley, also at Oxford, who worked out the key to practical extraction, or Howard Florey, who

DEBATE

live debates

Invited guests share their views on issues of concern today



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alexander fleming returned 46 results.



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Professor Alexander Fleming,
'Discoverer of Penicillin', 1943.



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'Sir Alexander Fleming', 1945.



10432101

Producing penicillin, 1943.



10432102

Producing penicillin, 1943.



10432106

Sir Alexander Fleming and Mr Suchet,
1943.



10432108

Professor Fleming working in his
laboratory, 1943.



10432109

Alexander Fleming, St Mary's Hospital,
Paddington, London, 1945.



10432110

Bacteria paintings, 1959.



10432558

'Presentation to Sir Alexander



10432570

'Presentation to Sir Alexander



10555282

Alexander Fleming the discoverer of



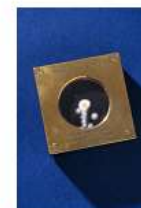
10284107

Penicillin sodium salt in glass bottle,



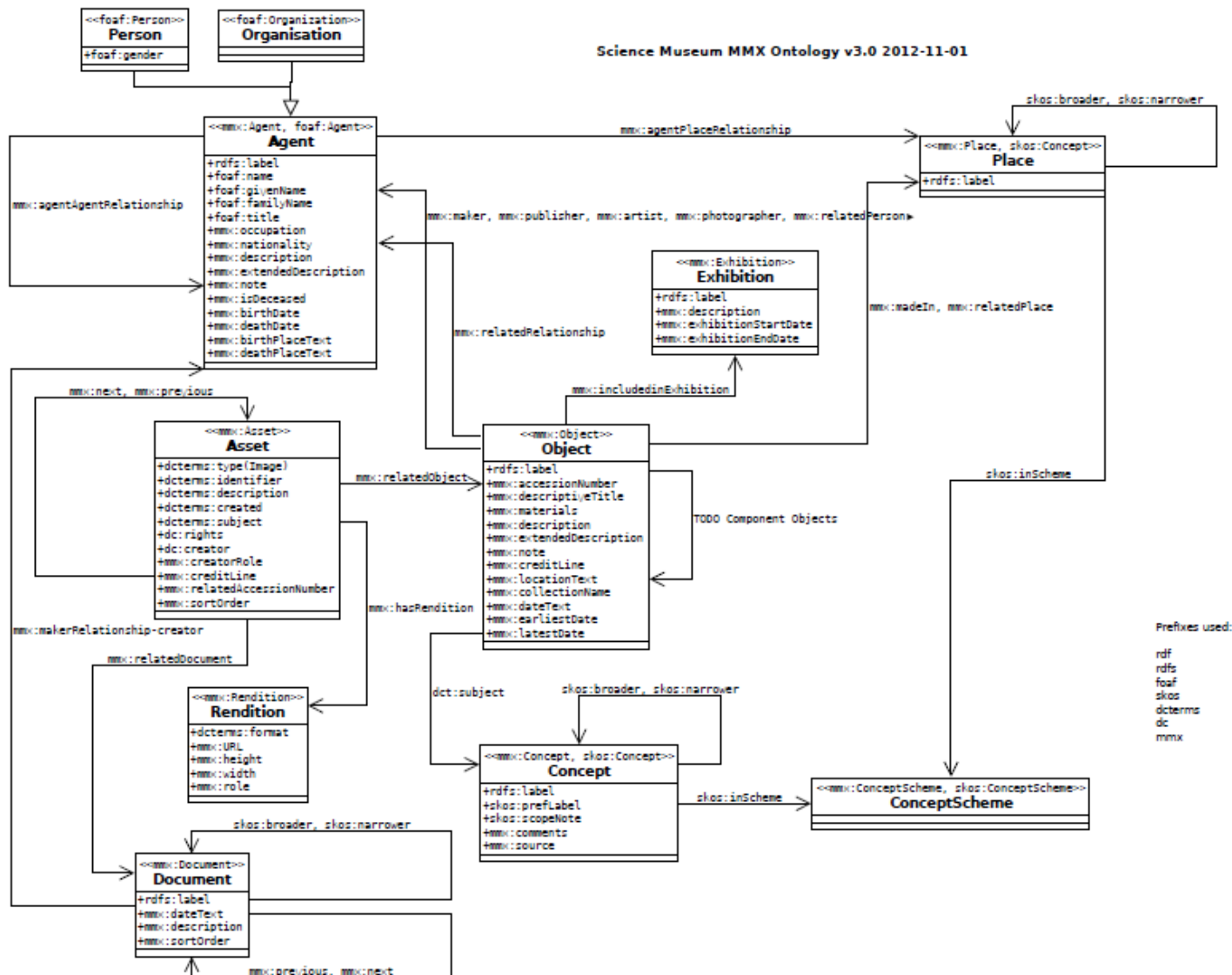
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Glaxo crystalline penicillin and



10306133

'Penicillium Mould from Professor



Mimsy XG: XG (xg)

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1 / 1 SMG

Information
 Fleming, Sir Alexander
 1881-1955, bacteriologist, discoverer of penicillin, British

Media

Links

- Authorities (3)
 - Objects (38)
 - Publications (1)
 - Thesaurus (1)
- Other (1)

PEOPLE

Name: Fleming, Sir Alexander

Individual? Y

Sort: FLEMING, ALEXANDER

Title: Sir

First Name(s): Alexander

Surname: Fleming

Suffix:

Honorary Suffix:

Contacts

Gender: Male Female N/A

Deceased/Inactive? Y

Brief Bio: 1881-1955, bacteriologist, discoverer of penicillin, British

Nationality: British

Birth Place: East Ayrshire, Scotland, United Kingdom

Birth Date: 1881-08-06

Death Place: Chelsea, Kensington and Chelsea, London, Greater London, England, United Kingdom

Death Date: 1955-03-11

Cause of Death: heart attack

Description: ODNB: Michael Worboys, 'Fleming, Sir Alexander (1881-1955)', Oxford Dictionary of National Biography, Oxford University Press, 2004 (<http://www.oxforddnb.com/view/article/33163>)
 Sir Alexander Fleming (1881-1955): doi:10.1093/ref:odnb/33163

Occupation: bacteriologist

Web Site:

Note:

Approved? Y

Publish? Y

Authorized By: Jenkins, Ailsa

Date Authorized: 2009-03-07

Assessment: checked, deduped (6 to 1); OK

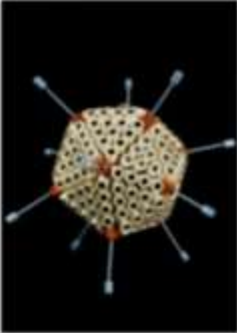


Online Science

Model of adenovirus, England, 1974-1976

Descriptive title if available lorem ipsum

On this page: Images | Article | Content & Discovery | Fact file | Comments



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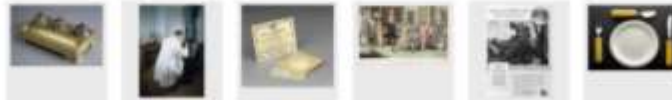
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Component objects - showing 1 - 4 of NNN



Other [in-house object name]s - see all NNN



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Fact file

About this object

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Made in:	[Place] Tritani delenit intellegat ne has, ea qui vitae congue delectus.
Date(s):	[DateText] lorem ipsum dolor
Made from:	[Materials] lorem ipsum dolor sit amet
Acquired from:	[CreditLine] Tritani delenit intellegat ne has, ea qui vitae congue delectus.

Where is this object?

Location:	[Location Text]Tritani delenit intellegat ne has, ea qui vitae congue delectus.
Collection:	[CollectionName] Tritani delenit intellegat ne has, ea qui vitae congue delectus.Tritani delenit intellegat ne has, ea qui vitae congue delectus.
Object number:	1981-2206

Outcome 1

- Create a critical mass of content; compelling, coherent overall offer
- Emphasise content and the outside world: more than a catalogue

Step 2

- Open our content up to wider use and wider engagement

Victorian "rather sinister" artificial arm and hand

Posted by Cory Doctorow on Monday, Aug 30th at 10:27pm



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Daily Tech
Virtualization Reaches 92% Enterprise Penetration Rate, VMware Leads the Way

Virtualization is a popular buzzword around enterprise circles these days. Many enterprise and SMB entities are embracing virtualization in an effort to reduce costs and streamline their operations.



AnandTech
Details on AMD Bulldozer: Ootrons to Feature

Do more with less.
Dell Virtualization

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The History major in me wants to nitpick: I'm surprised the writer says that "The rather sinister appearance of the hand suggests the wearer may have disguised it with a glove." A curator should know better than to make such an assumption, as it is based on a modern standard of normalcy that directly results from our quite recent ability to properly disguise prosthetics. Before we invented efficient skin grafts and other cosmetic enhancements to prosthetic surgery, it would have been more likely for a gentleman of sufficient means to afford this piece to proudly display his mechanical limb, which his contemporaries would not have found sinister because they lacked any standard of comparison for articulated prosthetics that did *not* look like this. If I may be a hypocrite and offer my own counter-assumption, I think Victorians would have found this piece to be beautiful, intricately crafted, and worthy of respect for craftsman and buyer/user alike.

08/30/2010 05:22 PM

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12 comments • 71 reactions ★ 1




Discussion | Community Share ⚙

 **Malian Lahey** · a day ago
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 **JasonNewYork** → Tian Gao · 4 days ago
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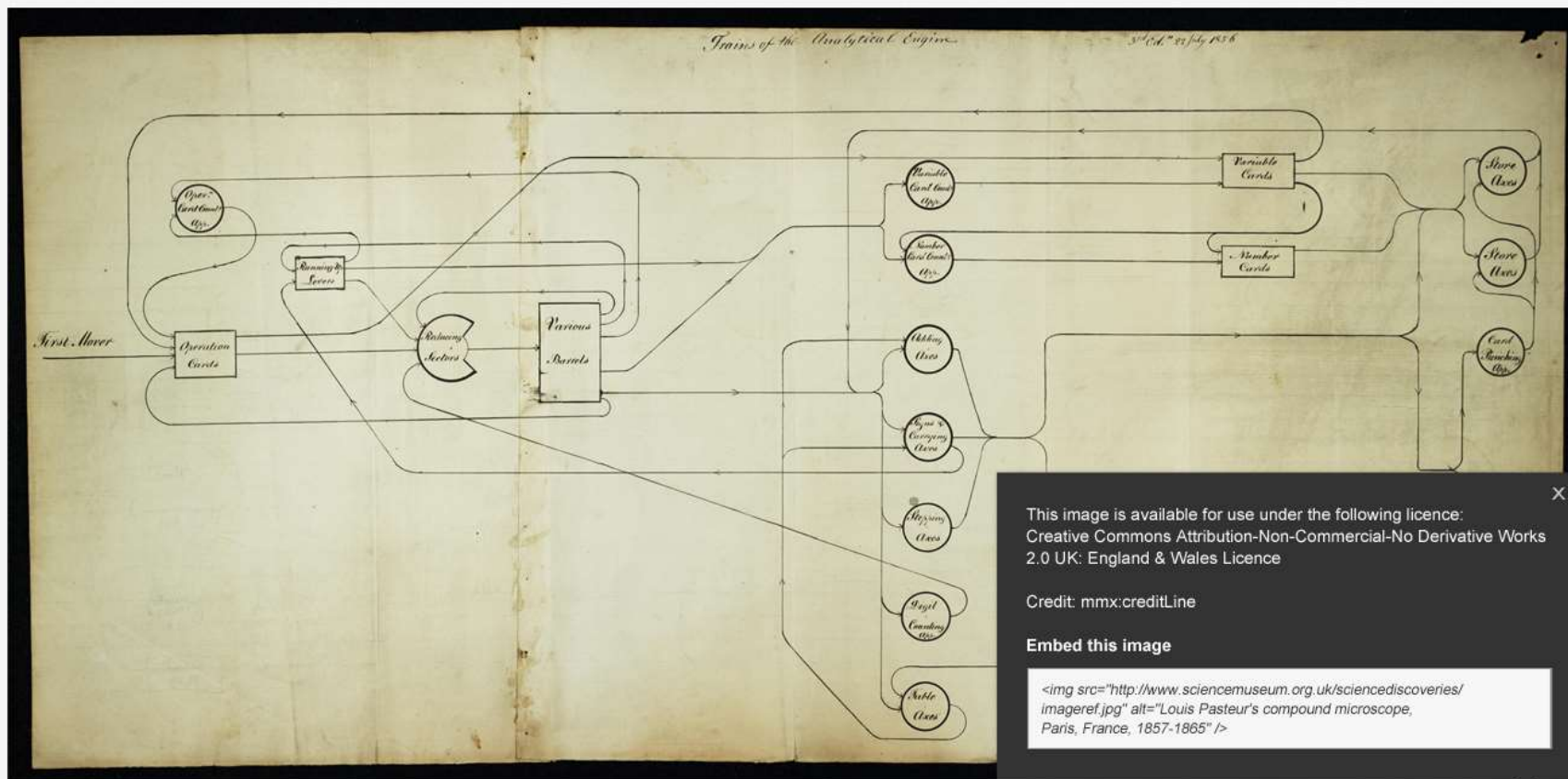
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- Place our core Museum content at the heart of our engagement with our audiences
- Make it as easy as possible for people to use our content wherever possible
- Reflect as much of this activity as possible back on the website

Step 3

- Linked data + open data
= Linked Open Data
- We can combine our data with other data, and re-use it in different ways
- So can others
- The possibilities are limitless...
...but uncertain

Database

ID	Type	Colour	Brand	Owner
72	Digital Watch	Blue	Rolex	96

ID	Name	Age	City
96	Daniel Evans	21	London

```
SELECT Watches_Colour from Watches, People  
WHERE Watches_Owner=People_ID AND  
People_Age = 21
```

Triples

Subject	Predicate	Object
Daniel Evans	Is	96
Daniel Evans	Owns	72
72	Is	Digital Watch
72	Is	Blue
Daniel Evans	Is aged	21
Daniel Evans	Is	NW 62 85 26 X
72	Is made by	Rolex



Data

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Future Flows Climate Data Dataset

Centre for Ecology & Hydrology Future Flows Climate (FF-HadRM3-PPE) is an 11-member ensemble climate projection for Great Britain at a 1-km resolution spanning from 1950 to 2098. It was ...

• [Centre for Ecology & Hydrology \(CEH\)](#)



Future Flows Hydrology Data Dataset

Centre for Ecology & Hydrology Future Flows River Flows and Groundwater Levels (FF-HydMod-PPE) is an 11-member ensemble projections of river flow and groundwater levels time series for 283 ...

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Current search

Search found 687 items

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Map Based Search

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London Cycle Hire Journeys and Pollution

Thicker lines are more journeys

Redder lines are more polluted (PM10 2008 mean)



Data: 3.2 Million Journeys (from TfL)
Routing: Ollie O'Brien (@oobr) + OpenStreetMap cc-by-sa
Buildings: OS Opendata Crown Copyright 2011
Pollution: GLA (via LondonDataStore)
Map: James Cheshire (@spatialanalysis)

Locah Linking Lives: an introduction

Written by Jane

We are very pleased to announce that the Archives Hub will be working on a new Linked Data project over the next 11 months, following on from our first phase of Locah, and called Linking Lives. We'd like to introduce this with a brief overview of the benefits of the Linked Data approach, and an outline of what the project is looking to achieve. For more in-depth discussion of Linked Data, please see our [Locah project blog](#), or take a look at the [Linked Data website guides and tutorials](#).

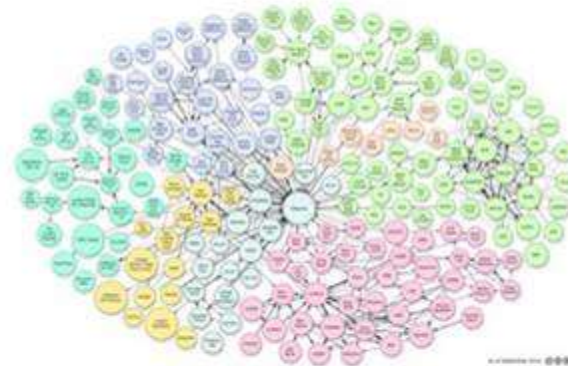
The benefits of Linked Data

The W3C currently has a draft of a report, '[Library Linked Data](#)', which covers archives and museums. In this they state that:

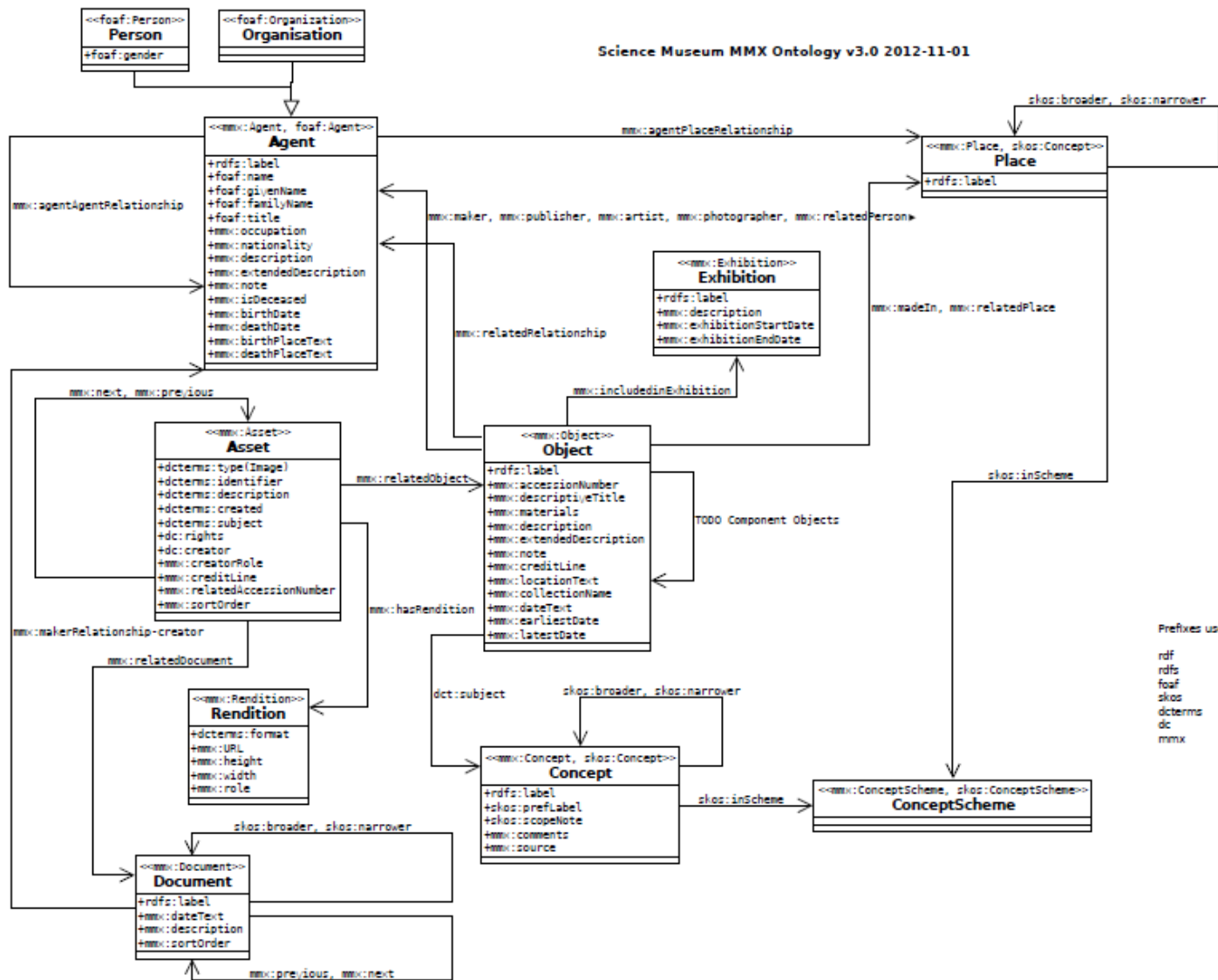
'Linked data is **shareable, extensible**, and easily **re-usable**... These characteristics are inherent in the linked data standards and are supported by the use of web-friendly identifiers for data and concepts.'

Shareable

One of the exciting things about Linked Data is that it is about sharing data (certainly where you have Linked Open Data). I have found that this emphasis on sharing and data integration has actually had a positive



Linked Data Cloud



Prefixes used:
 rdf
 rdfs
 foaf
 skos
 dct:terms
 dc
 mmx



People, Stories & Objects

- Linking our content together better, and linking it to our brand
- Opening our content up to wider use and wider engagement
- Experimenting with what we (and others) can achieve with Linked Open Data

