

Kartography CIC

Home of
ResearchSpace

Open source AGPL

A Semantic Knowledge Base
System

**Semantic Data Management
Systems - Update**

59th CIDOC CRM SIG and
ISO/TC46/SC4/WG9 - 52nd
FRBR/LRMoo-CIDOC CRM
Harmonization Meeting

Kartography - Social Enterprise

Registered Charter

- Data Diversity and Inclusion.
- Empowering subject experts as modellers of their own knowledge.
- Processual Approach (Practitioner-Researcher)
 - Transdisciplinary,
 - dynamic,
 - build contextual and historical provenance, identify significance
 - wider audiences participation.



ResearchSpace Use Cases

1. The Individual Researcher growing a knowledge base
 1. **to support work, academic publication, or prepare for a larger project. (PhD students)**
2. The digital monograph
 1. **able to interconnected with other micro or wider macro projects. (Late Hokusai)**
3. The organisational systems
 1. **to support strategic objectives - partnership, engagement, professional knowledge (TNA)**
4. International Collaborations
 1. **E.g. Pharos Art Archives (Aggationm - new components)**



Interconnecting Individual researchers



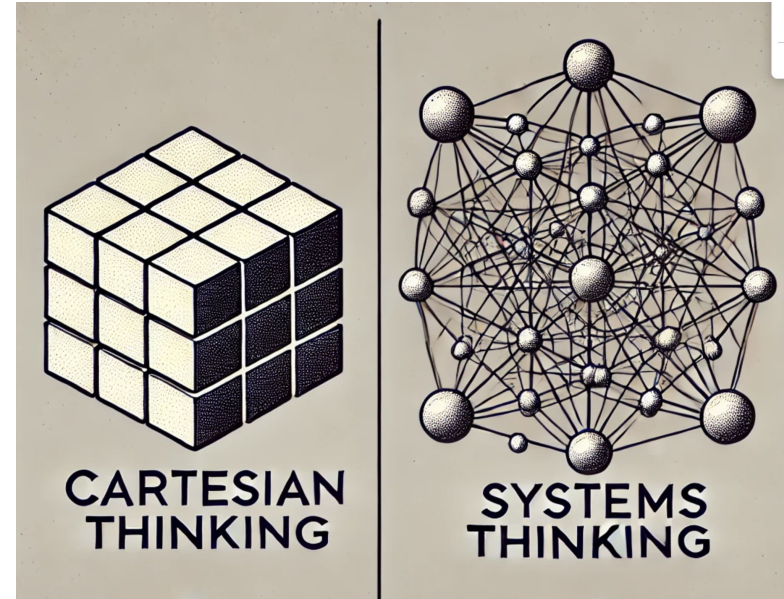
Interconnecting internationally



Interconnecting organisations

Methodology - Cartesian to Processual

| The Cartesian World | The Processual World |
|---|---|
| Made up of Substances - Object Focused | Made up of Processes - Relationship Focussed |
| Static | Dynamic |
| Intrinsic properties | Unfolding relations |
| External Relations | Internal Relations |
| Disciplinary | Transdisciplinary |
| Databases | Graphs |



Semantic Data Management System



A **Semantic Data Management System (SDMS)** is a framework or system designed to manage and organize data using semantic technologies, such as ontologies and linked data, to provide a more meaningful, contextual, and interconnected understanding of information. These systems aim to go beyond traditional data management by embedding meaning (semantics) into data, enabling machines to interpret and reason about the data in a more intelligent way.

Source: OpenAI

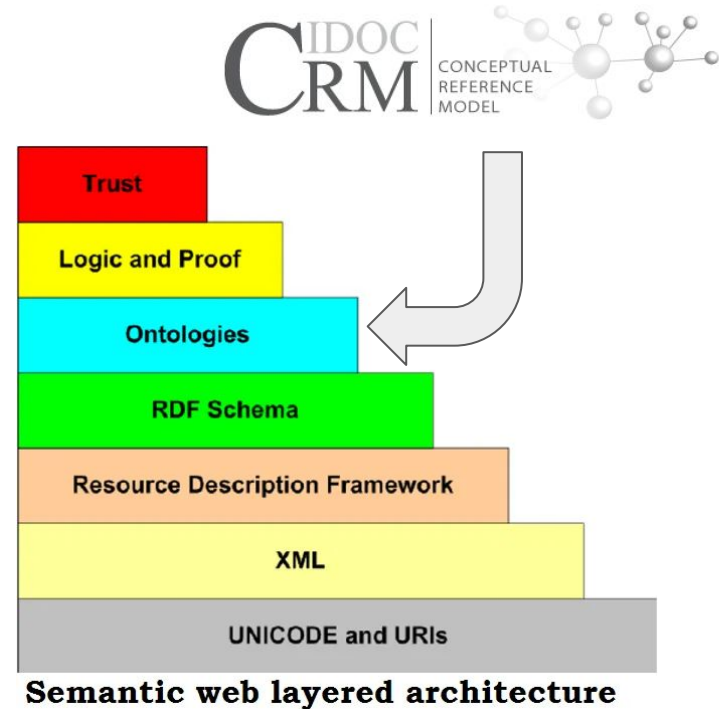
- Active use of Ontology
- Natively Linked Data
- Creates Knowledge Graphs (native structure of CRM)
- Reasoning and Inference
- Semantic Search
- Direct Data Interoperability



Knowledge Representation

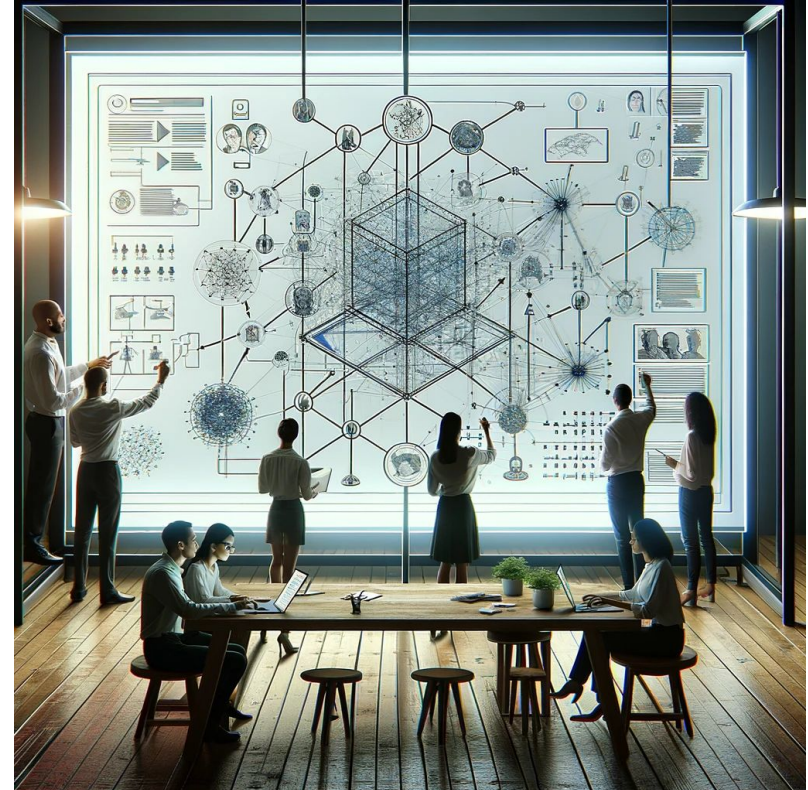
1. Concrete surrogates of the real world.
2. **Ontological Commitment** - for clarifying our different language about those surrogates.
3. Intelligent Reasoning
4. **A Medium for Efficient Digital Thinking**
5. **A Medium of Human Expression**
6. Symbolic Artificial Intelligence

Hugely Important for representing everyday complexity - for professionals and interested audiences, indigenous groups.



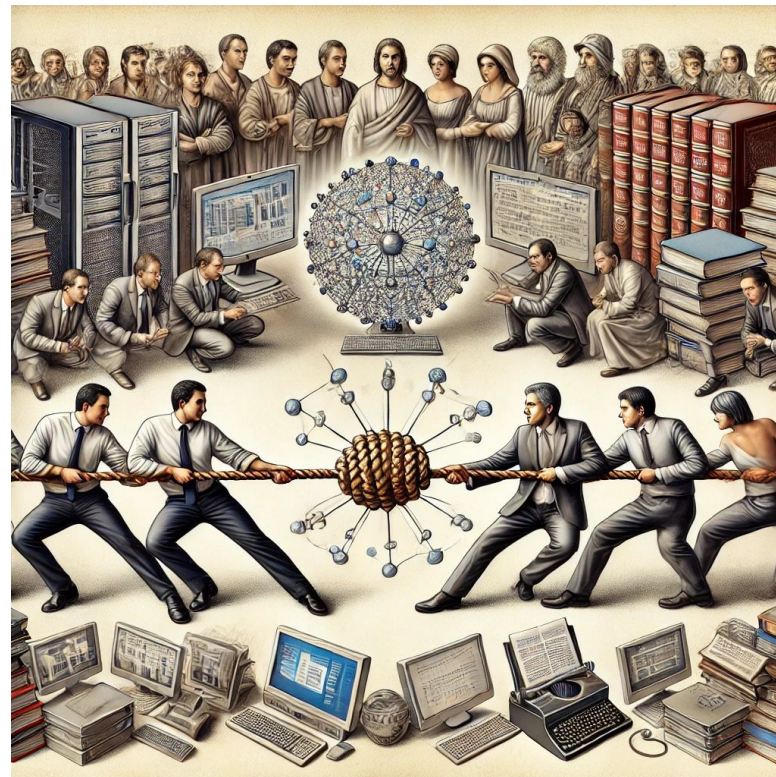
Empowering Subject Experts

- **Object focused models and standards**
 - Heritage & Humanities Experts (Professionals or not) are transdisciplinary
 - Most audiences are interested in wider historical context
- **`Functional / static systems with predefined data models**
 - Unable to reflect dynamic knowledge building on a daily basis
 - Impedes collaboration, both internally and externally
- **Subject experts can't expand models themselves as their knowledge evolves.**
 - Fragment their work using a range of unconnected desktop and cloud tools.

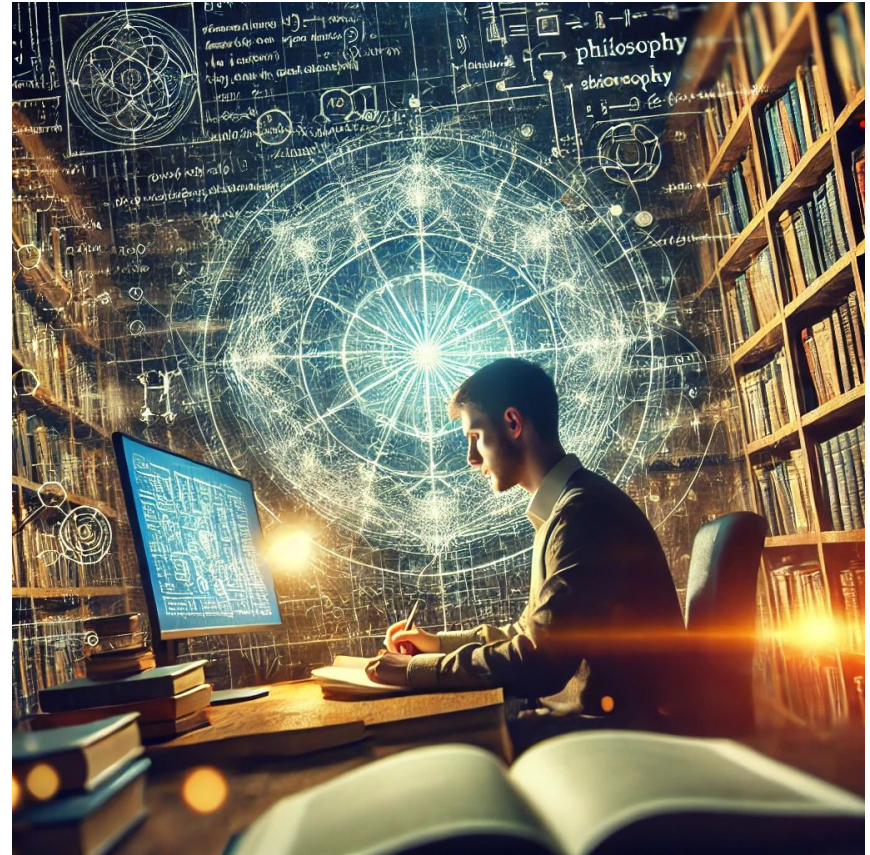


The Knowledge Paradox

- Subject Experts have the knowledge.
- They are continually looking at different questions and problems.
- They are transdisciplinary - there is no fixed model.
- They have no way to adapt the model to their work.
- The CIDOC CRM is a bottom up ontology but is often implemented top down.



ResearchSpace Update: New Version



Resource Configuration

Create New resource New Project admin ? ? ?

Finder

- Favourites
 - Activity
 - Event
 - Actor
 - Man-Made Object
 - Place
 - Research Question
 - Type
- Resources
 - Audio
 - Authority Document
 - Document
 - Image
 - Image Annotation
 - Model 3D
 - Publication
 - Virtual
- System
 - Knowledge Map
 - Semantic Chart
 - Semantic Narrative
 - Timeline
 - Set
 - User

Search all resources >

Resource configuration >

Search Place

Resource configuration

Resource configuration

New configuration

ACTIVITY

| | | |
|-------------------------|--------------|--------|
| Acquisition | System | |
| Activity | Finder | System |
| Actor | Finder | System |
| Appellation | System | |
| Attribute assignment | System | |
| Audio | Finder | System |
| Authority document | System | |
| Beginning of existence | System | |
| Biological object | Voc. / Auth. | System |
| Birth | System | |
| Communicative Group | | |
| Communicative Influence | | |
| Conceptual object | System | |
| Condition assessment | System | |
| Condition state | System | |
| Creation | System | |
| Curated collection | System | |
| Curation activity | System | |
| Death | System | |
| Design or procedure | System | |
| Destruction | System | |

Activity System

Copy IRI Refresh

Resource details Resource edit/visualisation Resource in authority document Search Finder

Enter the resource details, ontology class, optional type and custom SPARQL patterns that define the resource label and restriction queries.

Name *

Activity ?

Description

Enter the resource description X ?

Ontology class (CIDOC-CRM, Skos, etc.) *

ACTIVITY ?

Type

Select an additional type to be associated to the resource ?

Label (SPARQL pattern)

?item crm:P1_is_identified_by ?appellation . ?appellation a crm:E41_Appellation . ?appellation crm:P2_has_type <http://www.researchspace.org/r< X ?

Restriction (SPARQL pattern)

Enter a SPARQL pattern to apply a restriction X ?

Reset Debug Save configuration

Frame System

The screenshot displays the Frame System interface, divided into two main panels. The top navigation bar includes 'Create', 'New resource', and 'New Project' buttons, along with a user profile 'admin' and utility icons. The left sidebar features a 'Finder' search bar and a list of categories: Favourites (Timespan, Activity, Event, Actor, Man-Made Object, Place, Research Question, Tvne), Resources (Audio, Authority Document, Document, Image, Image Annotation, Model 3D, Publication, Video), and System (Knowledge Map, Semantic Chart, Semantic Narrative, Timeline, Set, User). A search bar at the bottom left allows for 'Search all resources' and 'Resource configuration'.

The main content area is split into two panes. The left pane, titled 'New Tab', shows the 'nutty nougat caramel chocolate bars' object. It includes a search bar for 'MAN-MADE OBJECT', a 'Refresh' button, and a tabbed interface with 'Location' selected. The 'Location' section contains several fields: 'Current permanent location' (with a placeholder 'Select the place reserved as the current permanent location of the man-made object'), 'Current location' (with a placeholder 'Select a place as the current location of the man-made object'), 'Former or current location' (containing 'Tesco Ltd' and a 'Former or current location' button), 'Has section' (with a placeholder 'Select a place as the area upon which the man-made object is found' and a 'Has section' button), and 'Occupies space' (with a placeholder 'Select a place as the volume that contains all the points which the man-made object has covered at some time during its existence' and an 'Occupies space' button). At the bottom of this pane are 'Reset', 'Delete', 'Debug', and 'Save man-made object' buttons.

The right pane, titled 'Place', features a 'New Place' button and a search bar. Below the search bar is a table with columns 'PLACE NAME', 'TYPE', 'COUNTRY', and 'MORE'. A single entry is visible: 'Tes... Place' with a location pin icon and a '+' button. To the right of the table is a 'Filter by' section with a right-pointing arrow. At the bottom of the pane, it indicates 'Found 1 results'.

Charts & Timelines

The screenshot displays a software interface for visualizing data. The main content area shows a pie chart titled "Man-made object" with a visualization context of "Material [Material]". The chart is divided into three segments: Chocolate (red), Peanuts (yellow), and Caramel (green). A tooltip for the Chocolate segment indicates "Number of values: 1".

The interface includes a top navigation bar with "Create", "New resource", and "New Project" buttons. A left sidebar contains a "Finder" with categories like "Favourites", "Event", "Actor", "Man-Made Object", "Place", "Research Question", "Type", "Birth", "Resources", and "System". A right sidebar has a "Filter by" section with a "Select category" dropdown and a "Material" filter option. The bottom of the interface shows a URL: `localhost:10214/resource/ThinkingFrames?semanticSearch=N4tqZ8Ddc6A0iB08TAzjVhDYBcx4FREATAQx1LBRzS8YkxEstzAOwF5UJ29JQAVCAi6UgDo4soQC6AixQHEANXkEiF3AHABYBIAMy87HsgMgS5i3vvhBkEWXmFSMK7zCQA#`

chart 1



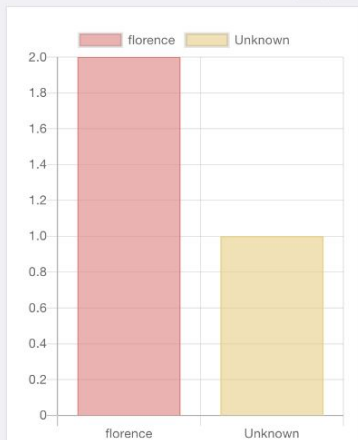
CHART

Refresh



Details **Chart values** Right Events Things More Metadata

Chart



Filter by value

VALUE

COUNT

florencia

2

Unknown

1

Related media/resources



Images



Main image



Drag main image from

[Image Library](#) or [Image Annotation Library](#)

or click to upload

More images



Drag image from

[Image Library](#) or [Image Annotation Library](#)

or click to upload

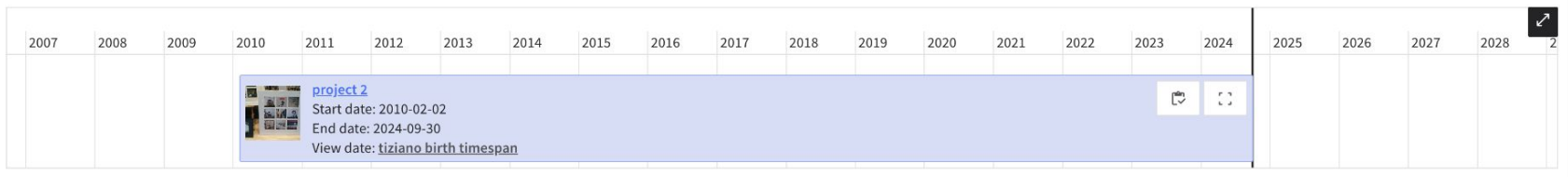
Reset

Delete

Debug

Save chart

Timeline



Description

Enter description/comment ✕

Preferred identifier

Select preferred identifier ▼ New ✕

Other identifier

Select other identifier ▼ New ✕

+ Other identifier

Semantic Narratives

Create ▾ + New resource + New Project admin ▾ ? ⚙

New Tab Search Man-made object New Man-made object Search Semantic narrative Semantic narrative Nutty Nougat Caramel Chocolate Bars Search Image


Paragraph B I U Links ↕ ⋮ Save narrative

Nutty Bar

I want to complain about the nutty bar

Change Layout Full Screen

nutty nougat caramel bars



Search all resources >

Resource configuration >

Clipboard

Search Search

Image
nutty nougat caram...

Man-made object
Nutty Nougat Caram...

Different A

Import from external source

Wikipedia [Museum collections](#) Archives

Search in MET collection

ipuy

Filter Results

| TITLE | ACCESSION NUMBER | TYPE | PRIMARY ARTIST NAME |
|---|------------------|--|----------------------|
| Building a Casafalque. Tomb of Ispuy | 30.4.116 | Facsimile, Ispuy (TT 217), catalaïque | Norman de Garis Davs |
| Butcher, Cleaning Fowl. Tomb of Ispuy | 30.4.191 | Facsimile, Ispuy (TT 217), butcher, fowl | Norman de Garis Davs |
| Cat Seated under a Chair. Tomb of Ispuy | 30.4.183 | Facsimile, Ispuy (TT 217), cat | Norman de Garis Davs |
| Fishing Scene. Tomb of Ispuy | 15.5.6 | Facsimile, Ispuy (TT 217), fishing | Nina de Garis Davies |

Import from external source

Wikipedia [Museum collections](#) Archives

Search in Wikidata

magna carta

Filter Results





| NAME | DESCRIPTION | RESOU |
|---|--|-----------------|
| Magna Carta | Charter of rights agreed between King John of England and the nobility in 1225 | musica |
| Magna Carta | book by David Carpenter published in 2015 | book |
| Magna Carta Records | American indie record label of New York | record |
| Magna Carta | book by J. C. Holt published in 2015 | version transla |
| Magna Carta | band | musica |
| Magna Carta, Tears of Blood | 2004 video game | video g |

Import from external source **al source**

Wikipedia [Museum collections](#) Archives

Search in Victoria and Albert Museum collection

vase

| TITLE | ACCESSION NUMBER | TYPE | DESCRIPTION | PRIMARY ARTIST NAME | PRIMARY ARTIST ROLE | IMAGE | ACTIONS |
|-------------------------------|-----------------------|------|---|-----------------------|---------------------|--|--|
| Q156669 | LOAN:GILBERT.110-2008 | Vase | Sir Arthur Gilbert and h Expand | de Vecchis, Nicola | maker |  | Import Man-made object |
| Q156670 | LOAN:GILBERT.111-2008 | Vase | Sir Arthur Gilbert and h Expand | de Vecchis, Nicola | maker |  | Import Man-made object |
| Q164180 | 872-1882 | Vase | The vase is carved in a st Expand | Unknown | |  | Import Man-made object |
| Alhambra Vase | 18-1865 | Vase | The Alhambra, the palac Expand | Deck, Joseph-Théodore | maker |  | Import Man-made object |

Feedback Settings Account

Search object

Actions

[Import and add to project](#)

89070. When [Import and add to project](#)

ACTIONS

[Import Man-made object](#)

[Import Man-made object](#)

Visual Observation - (create visual features)

The screenshot shows a software interface for visual observation. The top navigation bar includes 'Create', 'New resource', and 'New Project' buttons. The main workspace displays an image of a 'Tesco Nutty Nougat Caramel Chocolate Bar' with a blue bounding box around a peanut. The interface includes a left sidebar with a 'Finder' and categories like 'Favourites', 'Resources', and 'System'. A right sidebar shows 'Image annotations' with a list item 'image of Peanut'. The bottom right corner features a set of navigation controls.

Navigation Bar: Create, New resource, New Project, admin, Help, Settings

Finder (Left Sidebar): Favourites (Timespan, Activity, Event, Actor, Man-Made Object, Place, Research Question, Type), Resources (Audio, Authority Document, Document, Image, Image Annotation, Model 3D, Publication, Video), System (Knowledge Map, Semantic Chart, Semantic Narrative, Timeline, Set, User)

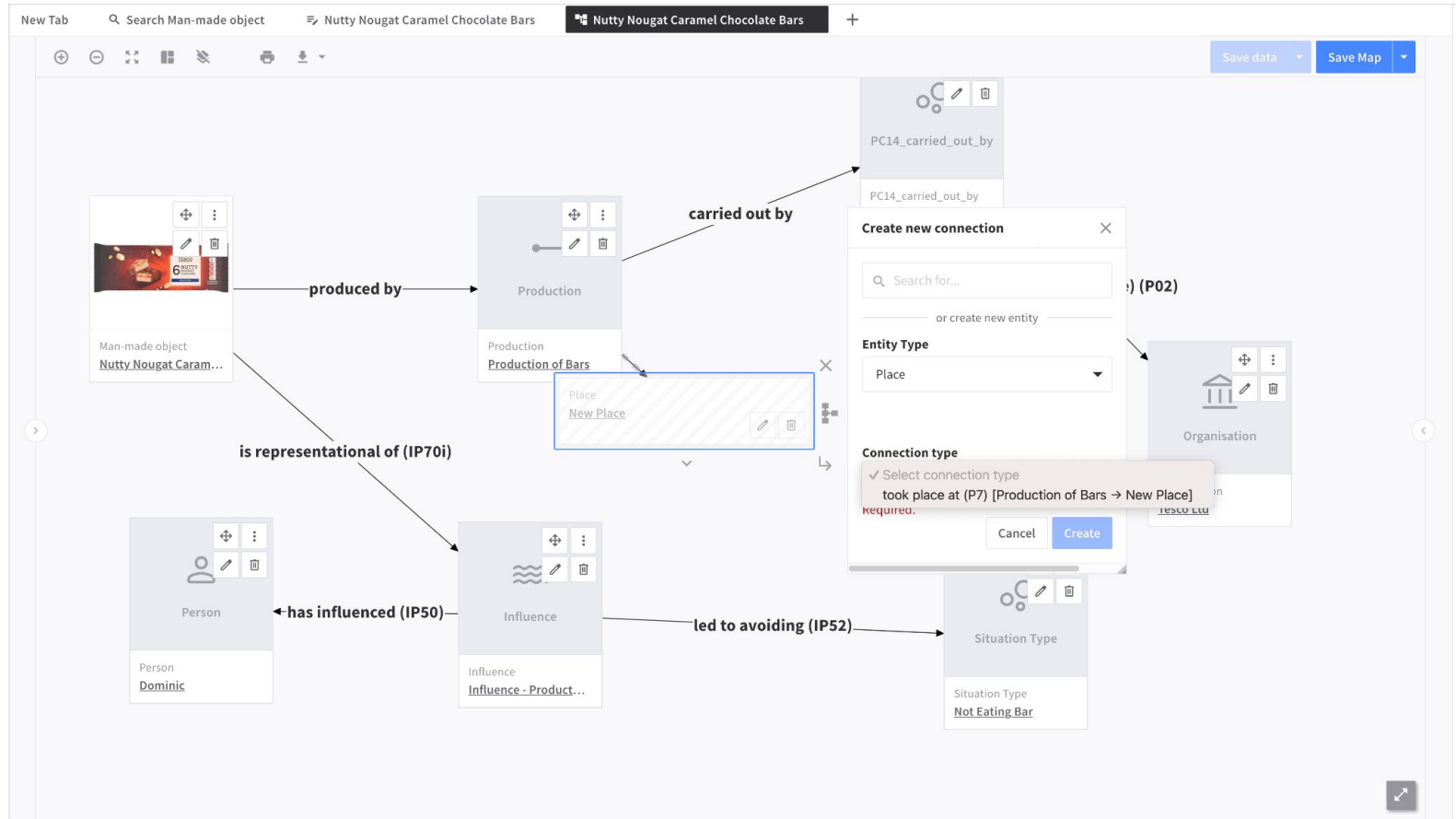
Main Workspace: New Tab, Search Man-made object, Nutty Nougat Caramel Chocolate Bars, Nutty Nougat Caramel Chocolate Bars, New Image, Refresh, Change Layout, Full Screen

Image Annotations (Right Sidebar): Nutty Nougat Caramel Chocolate Bars, image of Peanut (Image annotation)

Image: A package of Tesco Nutty Nougat Caramel Chocolate Bars. A blue bounding box highlights a peanut on the left side of the package.

Navigation Controls (Bottom Right): +, -, ↶, ↷, ↵, ↶, ↷

Knowledge Maps



Example

Tesco recalls chocolate bars over peanut allergy fears

10th June

HEALTH



Tesco have recalled two products over undeclared peanuts (Image: Newsquest)

By Isabel Oldman
Former Digital Reporter
@isabel_oldman

Share [f](#) [x](#) [in](#)

0 Comments

A major supermarket has issued a warning to shoppers over 'a possible health risk.'

Tesco is recalling its Nutty Nougat Caramel Chocolate Bars Multipack and its Dreamy Caramel Chocolate Bars Multipack after they were found to contain peanuts, which has not been declared on the label.

The Food Standards Agency (FSA) says the products present a possible health

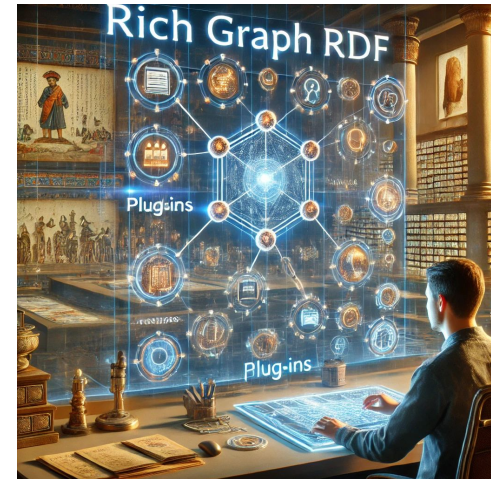
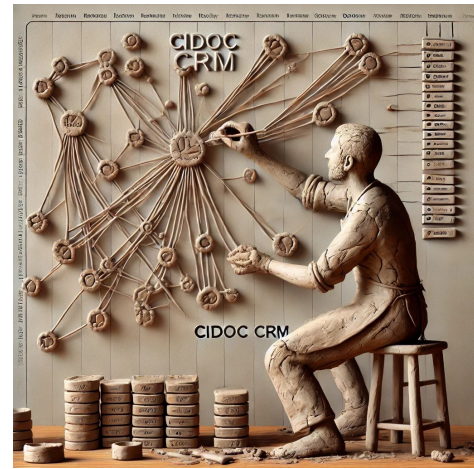
New Version - In Beta Testing

Get *involved*
with the news

Send your news & photos

Benefits

- **Empowerment**
 - Users can start creating their own Linked Data on download.
 - They can start sharing and reusing data with peers
 - They can scale their project without having to transform data (e.g. from spreadsheets etc)
 - Little or no technical help is required to start your researchspace system.
- **CIDOC CRM Education**
 - With the right labels users can learn CIDOC CRM **by doing**
- **Analysis**
 - Developers can analyse patterns of work by users for supporting larger project needs,
 - ResearchSpace is a community environment with component development
 - A fastrack community development system (plugin system) is boeing put in place
- **End Fragmentation**
 - Combining other digital objects, like documents, images, videos, audio (using CRM) brings all information together)



The National Archives CCD Knowledge Base

The Original ResearchSpace system converted previous data in CIDOC CRM.

Three main objectives

1. To ensure that the CCD professionals can record any knowledge (inputs are not predetermined) as they work.
2. **Producing a knowledge base that has many different uses for different people internally and externally**
3. To bring together practice and theory as part of the same system.
4. **To ensure that wider external processes are enrich those representations.**
5. To produce a system that shows change and transformation over time.

