



The CIDOC Conceptual Reference Model - a Standard for the Integration of Cultural Information

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Cultural Diversity and Data Standards

□ Cultural information is more than a domain:

- ◆ Collection description (art, archeology, natural history....)
- ◆ Archives and literature (records, treaties, letters, artful works..)
- ◆ Administration, preservation, conservation of material heritage
- ◆ Science and scholarship – investigation, interpretation
- ◆ Presentation – exhibition making, teaching, publication

□ But how to make a documentation standard ?

- ◆ Each aspect needs its methods, forms, communication means
- ◆ Data overlap, but do **not fit in one** schema
- ◆ Understanding lives from relationships, but how to express them?



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Historical Archives....

Type:	Text
Title:	Protocol of Proceedings of Crimea Conference
Title.Subtitle:	II. Declaration of Liberated Europe
Date:	February 11, 1945.
Creator:	The Premier of the Union of Soviet Socialist Republics The Prime Minister of the United Kingdom The President of the United States of America
Publisher:	State Department
Subject:	Postwar division of Europe and Japan

Metadata

Documents



“The following declaration has been approved:
The Premier of the Union of Soviet Socialist Republics,
the Prime Minister of the United Kingdom and the President
of the United States of America have consulted with each
other in the common interests of the people of their countries
and those of liberated Europe. They jointly declare their mutual
agreement to concert...
....and to ensure that Germany will never again be able to
disturb the peace of the world..... “



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Images, non-verbose...

Type:	Image
Title:	Allied Leaders at Yalta
Date:	1945
Publisher:	United Press International (UPI)
Source:	The Bettmann Archive
Copyright:	Corbis
References:	Churchill, Roosevelt, Stalin

Metadata

About...

Photos, Persons





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Places and Objects

TGN Id: 7012124
Names: Yalta (C,V), Jalta (C,V)
Types: inhabited place(C), city (C)
Position: Lat: 44 30 N, Long: 034 10 E
Hierarchy: Europe (continent) ← Ukrayina (nation) ← Krym (autonomous republic)
Note: ...Site of conference between Allied powers in WW II in 1945;
Source: TGN, Thesaurus of Geographic Names

Places, Objects

About...

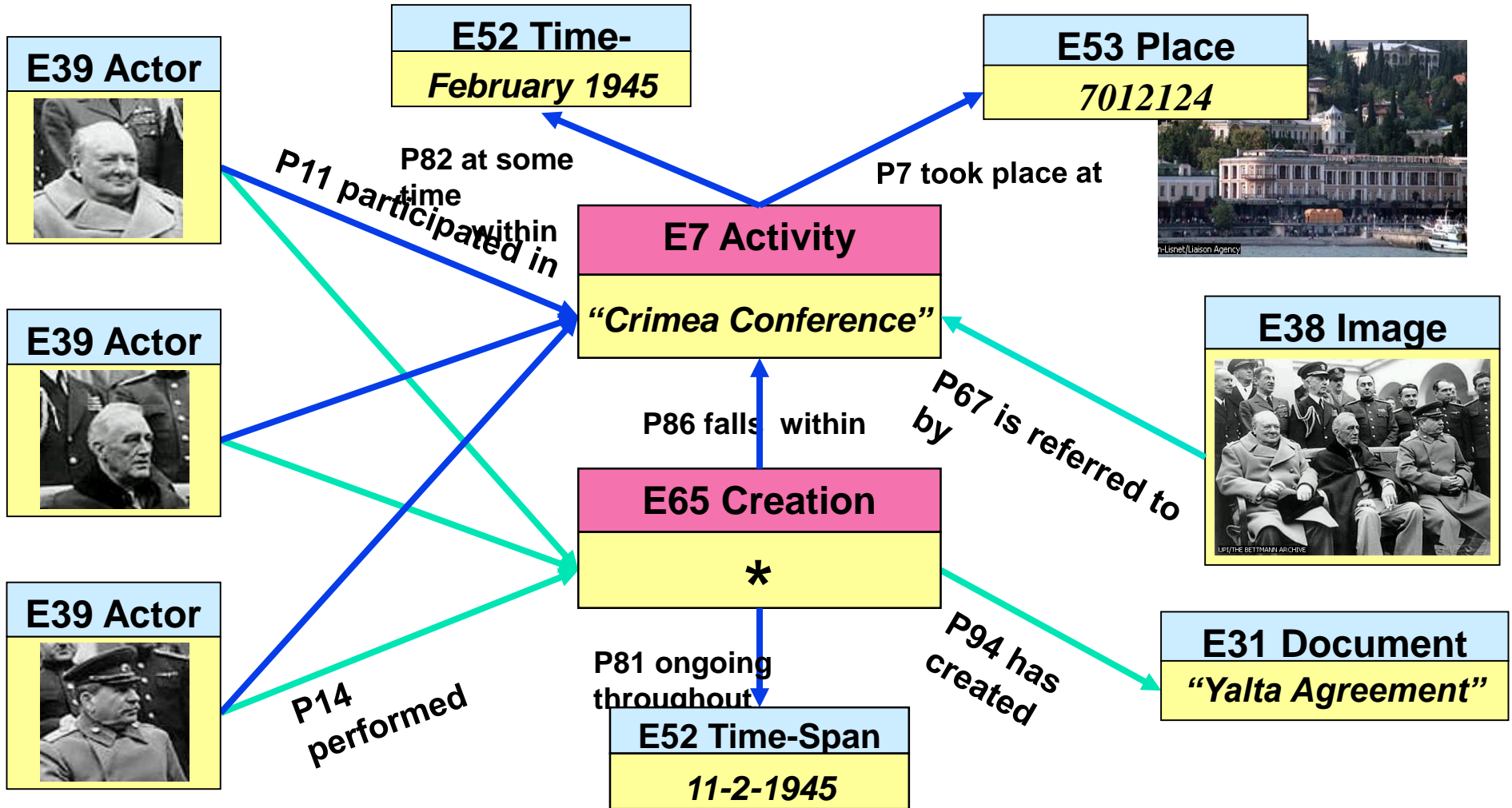
Title: Yalta, Crimean Peninsula
Publisher: Kurgan-Lisnet
Source: Liaison Agency





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Explicit Events, Object Identity, Symmetry





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Outcomes

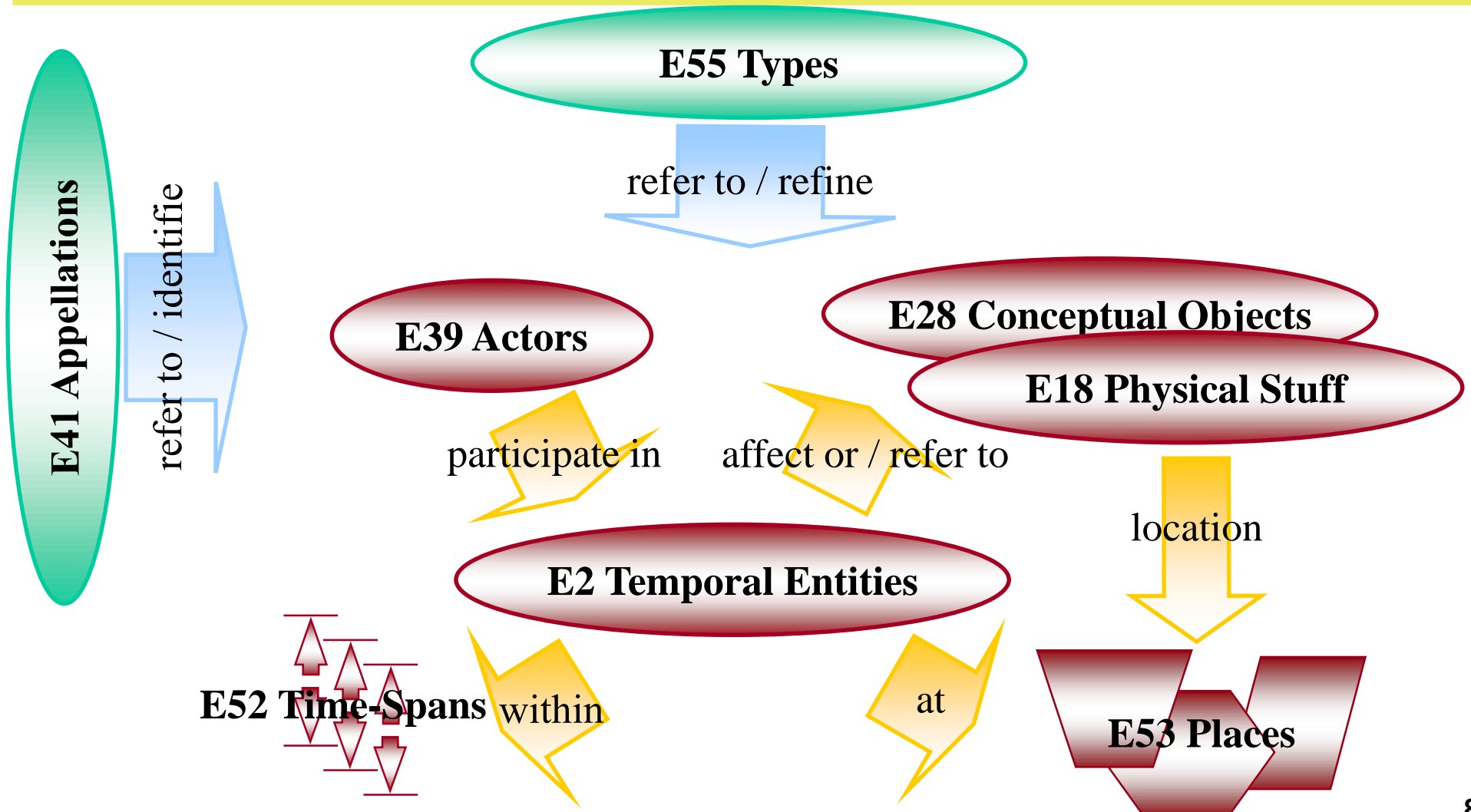
- The CIDOC Conceptual Reference Model is
 - ◆ A **collaboration** of the International Council of Museums
 - ◆ An ontology of 80 classes and 130 properties for **culture** and **more**
 - ◆ With the capacity to **explain** dozens of (meta)data formats
 - ◆ Accepted by ISO TC46 in Sept. 2000, now
ISO/CD 21127 accepted Committee Draft

- Serving as:
 - ◆ intellectual guide to create schemata, formats, profiles
 - ◆ A language for integration of existing sources and querying:
“Identify elements with **common meaning**”
 - ◆ **Transportation format** for data integration / migration / Internet



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Top-level Classes relevant for Integration





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A Classification of its Relationships

- ◆ **Identification** of real world items by real world names.
- ◆ **Classification** of real world items.
- ◆ **Part-decomposition** and structural properties of Conceptual & Physical Objects, Periods, Actors, Places and Times.
- ◆ **Participation** of persistent items in temporal entities.
 - creates a notion of history: “world-lines” meeting in space-time.
- ◆ **Location** of periods in space-time and physical objects in space.
- ◆ **Influence** of objects on activities and products and vice-versa.
- ◆ **Reference** of information objects to any real-world item.



Possible Encoding of Data as CIDOC CRM instance (XML-style)

Epitaphios GE34604 (entity E22 Man-Made Object)

P30 custody changed by, P24 changed ownership by

Transfer of Epitaphios GE34604 (entity E10 Transfer of Custody, E8 Acquisition Event)

P28 custody surrendered by

Metropolitan Church of the Greek Community of Ankara (entity E39 Actor)

P23 transferred title from

Metropolitan Church of the Greek Community of Ankara (entity E39 Actor)

P29 custody received by

Museum Benaki (entity E39 Actor)

P22 transferred title to

Exchangable Fund of Refugees (entity P40 Legal Body)

P2 has type

national foundation (entity E55 Type)

P14 carried out by

Exchangable Fund of Refugees (entity E39 Actor)

P4 has time-span

GE34604_transfer_time (entity E52 Time-Span)

P82 at some time within

1923 - 1928 (entity E59 Time Primitive)

P7 took place at

Greece (entity E53 Place)

P2 has type

nation (entity E55 Type)

republic (entity E55 Type)

P86 falls within

Europe (entity E53 Place)

P2 has type

continent (entity E55 Type)

TGN data



The CIDOC CRM -Application

Mapping DC to the CIDOC CRM

Example: Partial DC Record about a painting

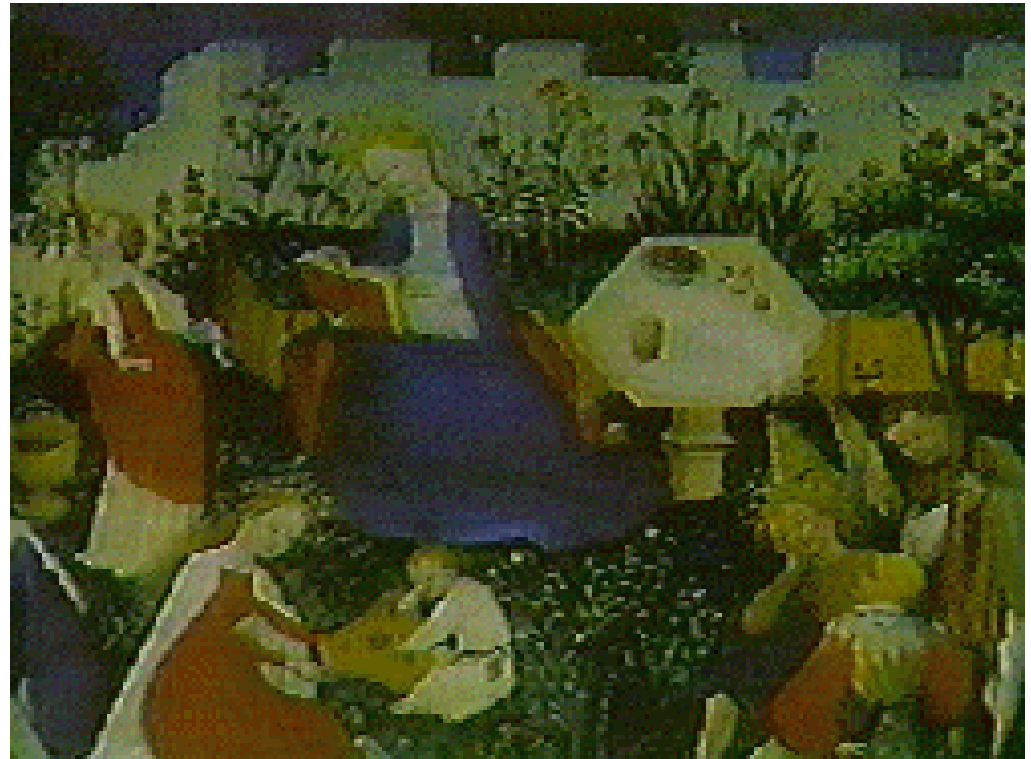
Type.DCT1: [image](#)

Type: [painting](#)

Title: [Garden of Paradise](#)

Creator: [Master of the Paradise Garden](#)

Publisher: [Staedelsches Kunstinstitut](#)





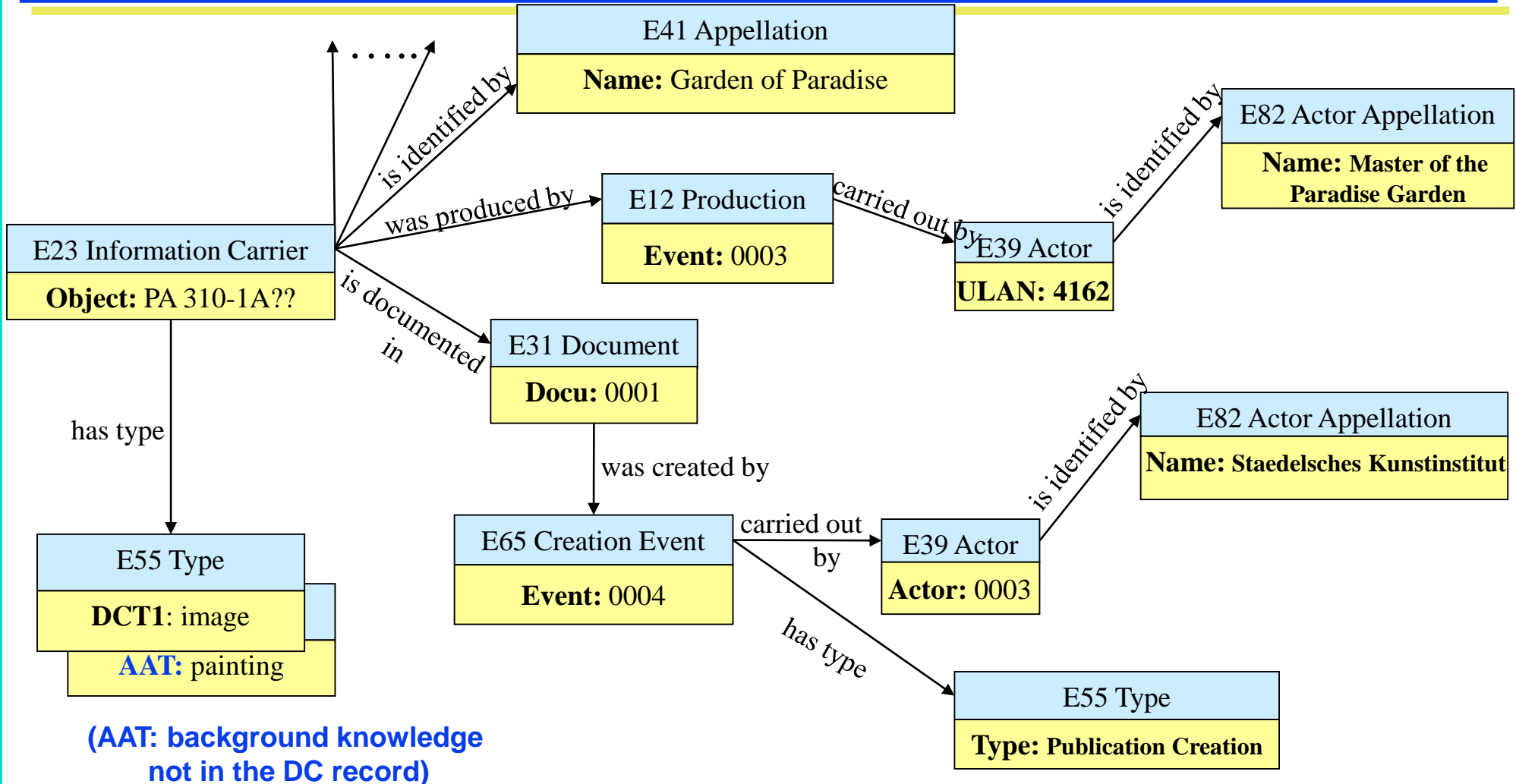
The CIDOC CRM ...

- ❑ ...captures the underlying semantics of relevant documentation structures in a **formal ontology**.
- ❑ Ontologies are **formalized knowledge**: clearly defined concepts and relationships about **possible states of affairs** of a domain.
- ❑ They can be understood by people and processed by machines to enable data exchange, data integration, query mediation.
- ❑ Semantic interoperability in culture can be achieved by an “**extensible ontology of relationships**” and **explicit event** modeling, that provides shared explanation rather than prescription of a common data structure.
- ❑ The ontology is the **language** S/W developers and museum experts can **share**. Therefore it needs interdisciplinary work. That is what CIDOC has done...



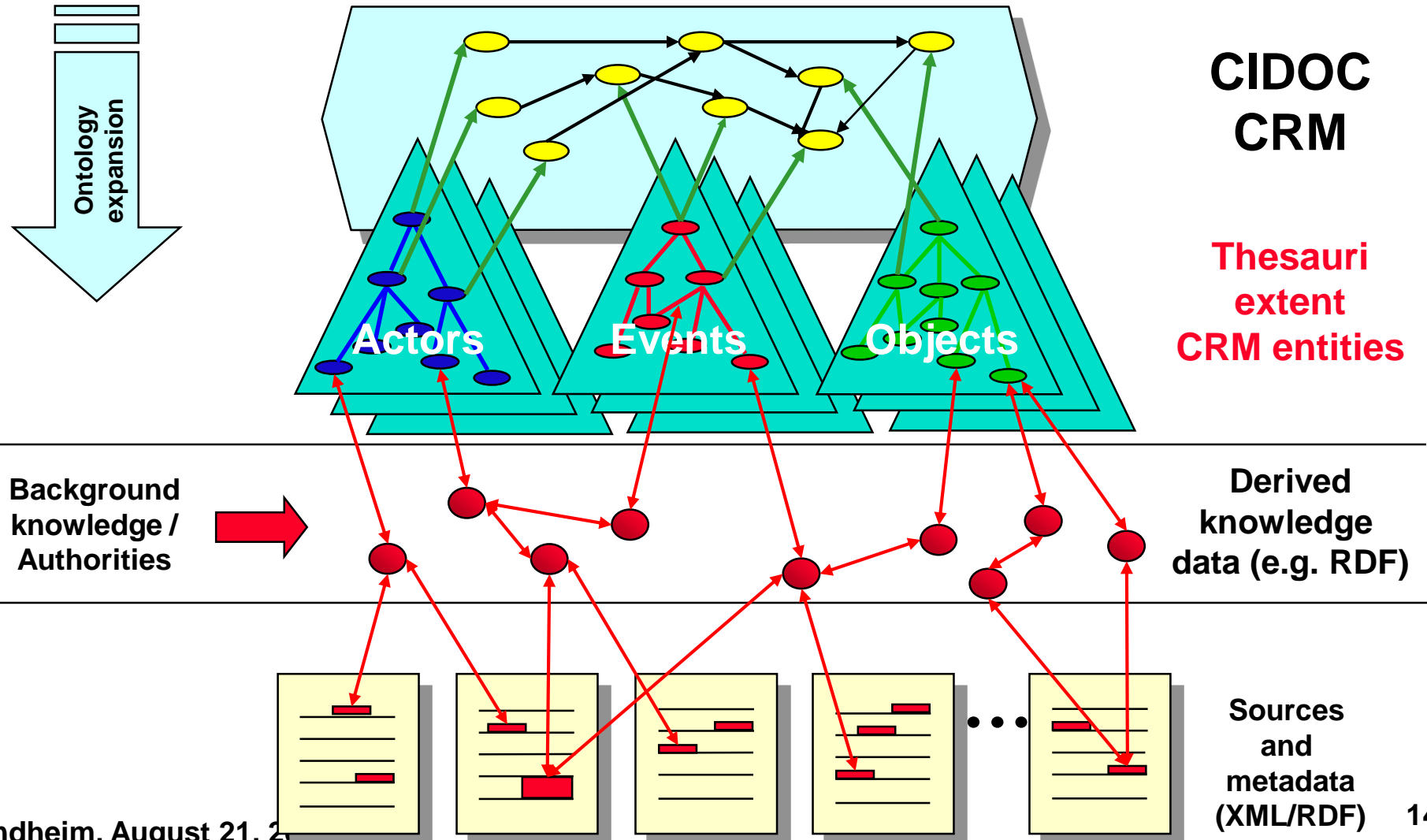
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Mapping DC to the CIDOC CRM





The CIDOC CRM -Application Repository Indexing





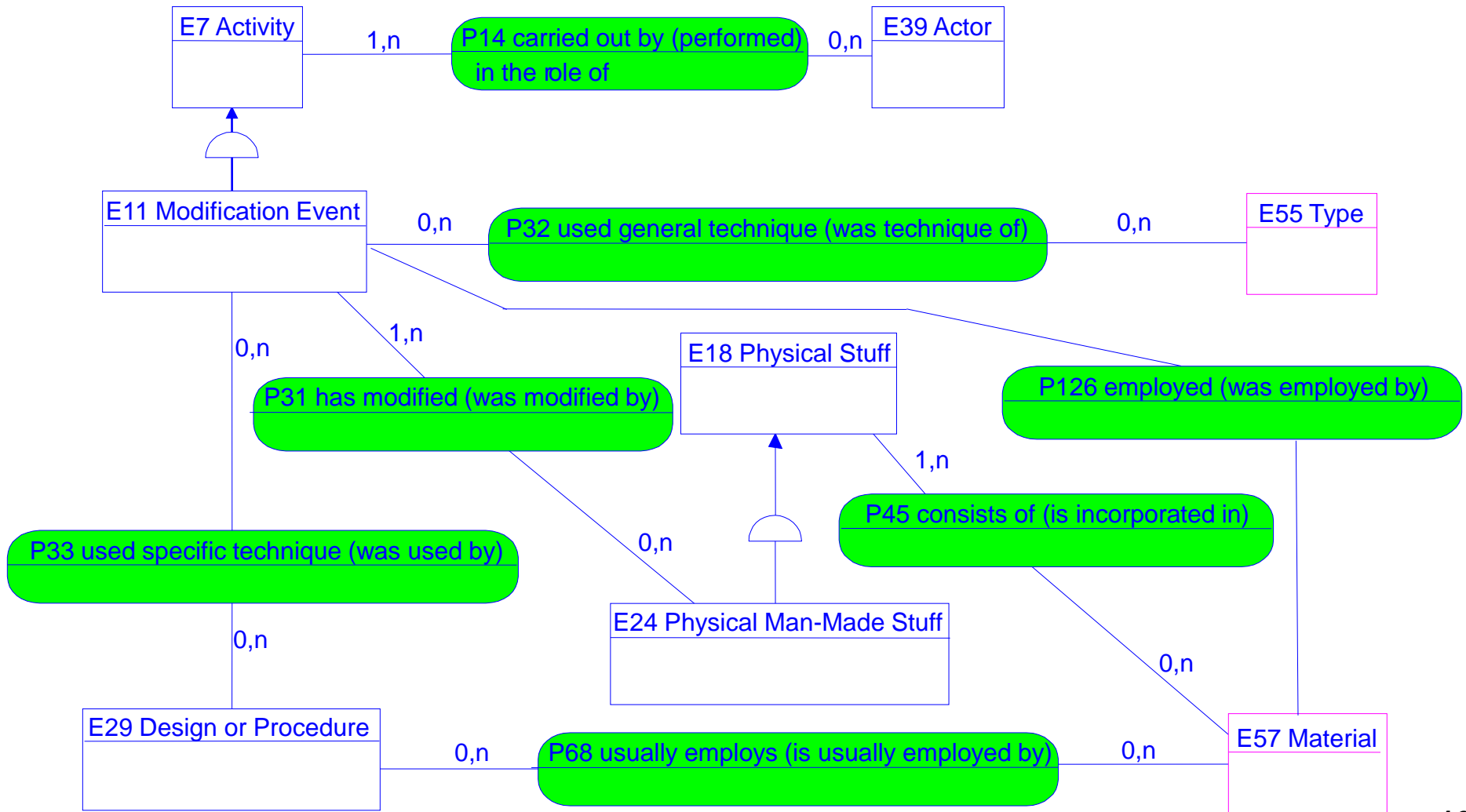
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- Can be used as core ontology
- To organize and standardize major facets
- and the relationships between those,
- and to provide a model to mediate between compound terms and description elements summing up to an equivalent meaning (e.g. “clay pot” and Pot, material: clay).



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Activities: Modification/Production Event





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Where are we?

- ❑ The CRM has a very good ontological **commitment** (scholars agree with the formalized concepts), a rapidly growing community of users and interested parties.
- ❑ There is **no alternative** to formal ontologies for semantic interoperability.
- ❑ There is a huge **gap of knowledge** between scholars and technologists, in **both** directions
- ❑ There is a huge potential of immediate, **practical application**, but also for further **research**.