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| **FORTH-ICS** |
| Fundamental Categories and Relationships for intuitive querying CIDOC-CRM based repositories |
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# Synopsis

In this section we display a summary of all the Fundamental Relationships we use:

1. ***has type****:*denotesrelations of an item to a classification, category, type, essential role or other unary property, such as a format, material, color. It generalizes over dc:type, dc:classification, dc:format, dc:language. The relationship is applicable to all FCs and has always range Concept.
2. ***is type of***: the inverse of “*has type”.* The relationship is applicable to all FCs and has always domain Concept.
3. ***has part :*** the inverse of *is part of*. Denotes structural relations of an item to a narrower unit it contains. The relationship is applicable to all FCs, except for Concept. In case of Actors, one would rather speak of “*has member*”, and persons are the minimal elements. Domain and range must be identical.
4. ***is part of***: denotes structural relations of an item to a wider unit it is contained in. The relationship is applicable to all FCs, except for Concept. In case of Actors, one would rather speak of “***is member of***”, and persons are the minimal elements. Domain and range must be identical.
5. ***from, has generator****:*denotes the relations of an item to constituents of a context in its history which is either significant for the item, or the item is significant for the context, “provenance” in the widest sense, including time intervals and places. In case of genealogy or group formation, natural language prefers the terms parent and founder respectively in order to refer to Actors. The relationship is a special case of has met.
6. ***is origin of, generator of***: the inverse of from, has founder or parent. In case of Actor as domain, one would rather speak of ***“is owner or creator of “.***
7. ***is similar or the same with***:denotes the symmetric relation between items that share features or are possibly identical. It is only usual for Things to document similarity manually. There exist enough comparison algorithms that deduce degrees of similarity automatically. We do not deal with these in this work.
8. ***has met****:*denotes the symmetric relation between items that were present in the same event, including time intervals and places. Applicable to any combination of FCs, except for Concepts.
9. ***refers to or is about****:* denotes the relation of an item that is information, contains information or has produced information to the item this information refers to or is about. The relation can even be extended to a Place from where such information originated.
10. ***is referred to by/ is referred to at****:* the inverse of *refers to.*
11. ***borders or overlaps with***: this symmetric Relationship denotes the relationship between instances of the category place that limit with one another or overlap.
12. ***by***: denotes the active participation of an actor upon a Thing or Event

Table1 describes which of the above relationships are applicable to respective combinations of FCs as domain and range.

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| Domain  (select) | Range(query parameter) | | | | |  |
| Thing | Actor | Place | Event | Time | Concept |
| Thing | 8.has met  9.refers to or is about  10.is referred to by  3.has part  7.is similar or same with  5. from  4.is part of | 8.has met  5.from  9.refers to or is about  10.is referred to by  12.by  Used by  Created by  Modified by  Found or  acquired by | 9.refers to  10.is referred to at  5.from  Used at  Created at  Found or  acquired at  Was created  /produced by  person from  Is/was located  at | 9.refers to  10.is referred to by  5.from  Destroyed in  Created in  Modified in  Used in | 9.refers to  5.from  Destroyed on  Created on  Modified on  Used on | 1.has type |
| Actor | 8.has met  6.is owner or creator of  9. refers to  10.is referred to by | 4.is member of  3.has member  8. has met  5.has generator  6.is generator of  9.refers to  10.is referred to by | 8.has met  5.from  9.refers to  10.is referred to at | 9.refers to  10.is referred to by  5.from  8.has met  Was brought  into existence at  Was taken out  of existence at  Performed  action at  Influenced | 9.refers to  5.from  8.has met  Was brought  into existence at  Was taken out  of existence at  Performed  action at  Influenced | 1.has type |
| Place | 8.has met  6.Is origin of  9.refers to or is about  10.is referred to by | 8.has met  6.Is origin of  9.refers to or is about  10.is referred to by  8.has met | 4.is part of  3.has part  11.borders or overlaps with | 9.refers to  10.is referred toby  8.has met | 8.has met | 1.has type |
| Event | 6.is origin of  10.is referred to by  9.refers to or is about  8.has met  created  destroyed  modified  used | 12.by  10.is referred to by  9.refers to or is about  8.has met  brought into  existence  took out of  existence | 9.refers to or is about  10. is referred to at  5.from | 9.refers to or is about  10.is referred to by  3.has part  5.from | 9.refers to or is about  5.from  starts  ends  has duration | 1.has type |
| Time | 10.is referred to by  8.has met  Signals the beginning of  Signals the end of | 10.is referred to by  8.has met  Brought into existence  Took out of existence | 8.has met | 10. is referred to at  4.is part of  3.has part | 4.is part of  3.has part | 1.has type |
| Concept | 2.is type of | 2.is type of | 2.is type of | 2.is type of | 2.is type of | 1.has type  2.is type of |

Table 1: Fundamental Categories – Fundamental Relationships

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