Modeling Relationships

In USAM there are only service relationships. These are binary relationship between two services. We are currently using USAM to model patient data only. Therefore, the service relationships are binary relationships between two patient data items.

There are three ways in which the patient data relationships can be modeled:
1) Modeling the relationship as an attribute of a Patient Data item.
class Patient_Data
        relationships: Relationship[]

class Relationship
        relationship_cd: {caused_by, …}
        patient_data: Data_Item
        certainty: {certain, clinically_evident, uncertain, certainly_not, suspected}
        // optional

2) Modeling the relationship as a class

class Relationship
        patient_data_from: Data_Item
        patient_data_to: Data_Item
        relationship_cd: {caused-by, …}
        certainty: {certain, clinically_evident, uncertain, certainly_not, suspected}
        // optional

3) Modeling each relationship as a class

class Cause_by
        cause: Data_Item
        clinical_condition: Data_Item
        certainty: {certain, clinically_evident, uncertain, certainly_not, suspected}
        // optional

class Clinical_evidence_of
        evidence: Data_Item
        clinical_condition: Data_Item
        certainty: {certain, clinically_evident, uncertain, certainly_not, suspected}
        // optional

Referring to relationships within criteria

a) Suppose we want to refer to any symptom that is caused by heart failure

Symptom.relationship.relationship_cd == caused–by and
Symptom.relationship.patient_data == Heart_Failure

Relationship (symptom, Heart_Failure, caused by)

Caused_By (Heart_Failure, symptom)

b) Now, suppose we want to refer to any symptom that it is *unknown* whether it is caused by heart failure

Symptom.relationship.relationship_cd == caused–by and Symptom.relationship.certainty == uncertain and Symptom.relationship.patient_data == Heart_Failure

Relationship (symptom, Heart_Failure, caused by, uncertain)

Caused_By (Heart_Failure, symptom, uncertain)