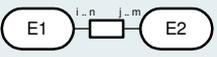
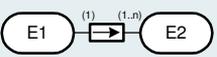
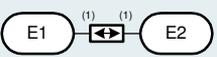
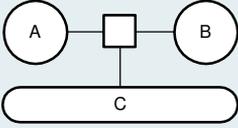
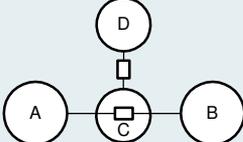
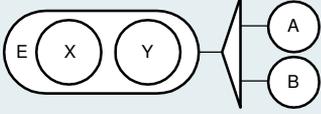


FMC Entity Relationship Diagrams are used to depict value range structures or topics as mathematical structures. Value range structures describe observable value structures at locations within the system whereas topic diagrams allow a much wider usage in order to cover all correlations between interesting points.

basic elements		
	entity / entity set	Entities or sets of entities participate in relations. Furthermore some attributes (A1 ... An) might be specified. (Note: singular nouns should be used for identifier "E")
	relation (n:m, 1:n, 1:1)	Is a subset of the cross product of all participating entities, i.e. they relate entities to each other. If the relation identifier "R" is aligned with one of the entities (usually verbs are used in this case) it should be read from this direction. If the relation identifier "R" is aligned in the middle of the relation there is no direction (usually nouns are used in this case).
<u>[cardinality range] [role]</u>	arc	Connects a relation and an entity. A cardinality range may specify how often the respective entity takes part at least and at most in the relation similar to the (min,max) notation. Furthermore a role might clarify the kind of participation of the entity, which is especially useful for recursive relations. (Note: singular nouns should be used for identifier "role")
further elements		
	orthogonal partitioning	Additional partitioning of an entity which is independent from any previous partitioning.
	structure entity	Is used to create an entity from a structure (entities and relations).
common structures		
	n:m relation	Each element of E1 occurs i to n times in the relation with E2 while each element of E2 occurs j to m times in the relation.
	1:n relation	Is like an unique function $f(x \in E1) = y \in E2$. Each element of E1 is associated with exactly one element of E2. (Note: the cardinality ranges in the parentheses should be assumed due to the arrow symbol inside the relation. Deviant cardinality ranges must be mentioned explicitly.)
	1:1 relation	Is like an one-to-one function. One element of E1 is associated to exactly one element of E2 and vice versa. (Note: the cardinality ranges in the parentheses should be assumed due to the arrow symbol inside the relation. Deviant cardinality ranges must be mentioned explicitly.)
advanced		
		
1) n ary relation (e.g., ternary)	2) reification	3) orthogonal partitioning
<p>1) Sometimes it is necessary to correlate more than two entities to each other via n ary relations. The example shows a ternary relation.</p> <p>2) Elements of a relation constitute the elements of a new entity, which in turn can participate in other relations. The example shows the relation C being reificated.</p> <p>3) Partitioning of entity E into the entities X, Y and additional, independent partitioning of entity E into the entities A, B. Imagine for instance entity E as "Human Being". Then entity X may stand for "Man", Y for "Woman" and thereof independently entities A and B could mean "European" and "Non-European".</p>		