

Table 1. Equivalence check (between COSBP ontology and BPMN 2.0.2 concepts) and derivation of CDME model concepts (an example of an extract)

Req	Concept	Semantics	Equivalence Check	CDME
Functional Dimension				
R1	Organizational Sub-Process	An Organizational Unit Action (which isCarriedOutBy an Organization Unit) which is aProperPartOf a Business Process.	Equivalence → <i>Sub Process</i> . A combination of <i>Activity/Sub Process</i> and <i>Lane</i> is possible.	BPMN Concept
R2	Critical Organizational Activity	An Organizational Action which isProperPartOf a Sensitive Business Process. It is a knowledge-intensive activity that hasForproperPart different types of Information and Knowledge, in particular, Crucial Knowledge (tacit/explicit, individual/collective). It hasForAgent Experts (Ben Hassen et al., 2018)	Conditional equivalence /Equivalenc by specification → <i>Activity</i> . There is no appropriate activity concept (no appropriate Marker) in BPMN for the critical activities' representation. However, the use of <i>Activity</i> and <i>Property</i> is imaginable (OMG, 2013) This combination lacks both in terms of formalization and integration of the critical dimension of activities. An additional specification is necessary.	Extension Concept/ Specified BPMN concept
Organizational Dimension				
R4, R5, R7	Collective	A group of humans unified by a joint intention to form a group capable of acting (Kassel et al., 2012). A Collective CarriedOut Collective Actions. It can be specified as an Informal Group or an Organization (and their Organization Units) (Turki et al., 2016).	No equivalence	Extension Concept
Knowledge Dimension				
R3, R4, R6, R7, R8	Collective Knowledge	Collective Knowledge are Knowledge which isBorneBy a Collective, or a Collective Physical Knowledge Support toCarryOut an Action of Collective. They are shareable by several Agentive Entities. Their coverage can be global, or partial which bound to a structure. It can be either a Knowledge of Organization, or an Organizational Informal Group Knowledge.	No equivalence	Extension Concept
	Crucial Knowledge	A Knowledge which is a Capacity toCarryOut Critical Organizational Activities which isProperPartOf a Sensitive Business Process. It represents the most valuable/important knowledge on which it is necessary to capitalize, in the sense that the risk of their loss and the cost of their (re-) creation are considered important. Their contribution to reach the firm objectives is very important and their use duration is long.	No equivalence	Extension Concept
Informational Dimension				
R10, R11	Information Source of Knowledge	An Information (a Description) contextual (having meanings) which isUsedBy (and interpreted by) Humans toCarryOut different types of Actions. An Information Source of Knowledge isBorneBy an Information Medium may be interpreted as Explicated Knowledge.	No equivalence	Extension Concept
Intentional Dimension				
R14	Intention, Distal Intention	An Intention is a complex process whose content includes a representation of action, thus allowing an agent to be directed to that action (the deliberative state of agent). A Distal Intention plans the Action and then rationally controls to guide it and determine its success. It hasForContent an Objective. Any Action of Organization isControlledBy an Organizational Distal Intention which is a Collective Distal Intention.	Conditional equivalence/Equivalence (by specification) → <i>Property</i> . The <i>Property</i> element of BPMN “acts as container for data associated with flow elements” and can be assigned to <i>Processes, Activities</i> and <i>Events</i> . Hence, it can be applied as it provides additional information on those elements. As <i>Properties</i> have no further features, additional specification is necessary. (<i>Property</i> has been conducted for the assignment of <i>Objectives</i> to <i>Activities</i> and <i>Processes</i>).	Extension Concept/ Specified BPMN concept