

Interaction and collaboration between users on remote tangible tabletops in an educational context - Point of view of the territoriality concept

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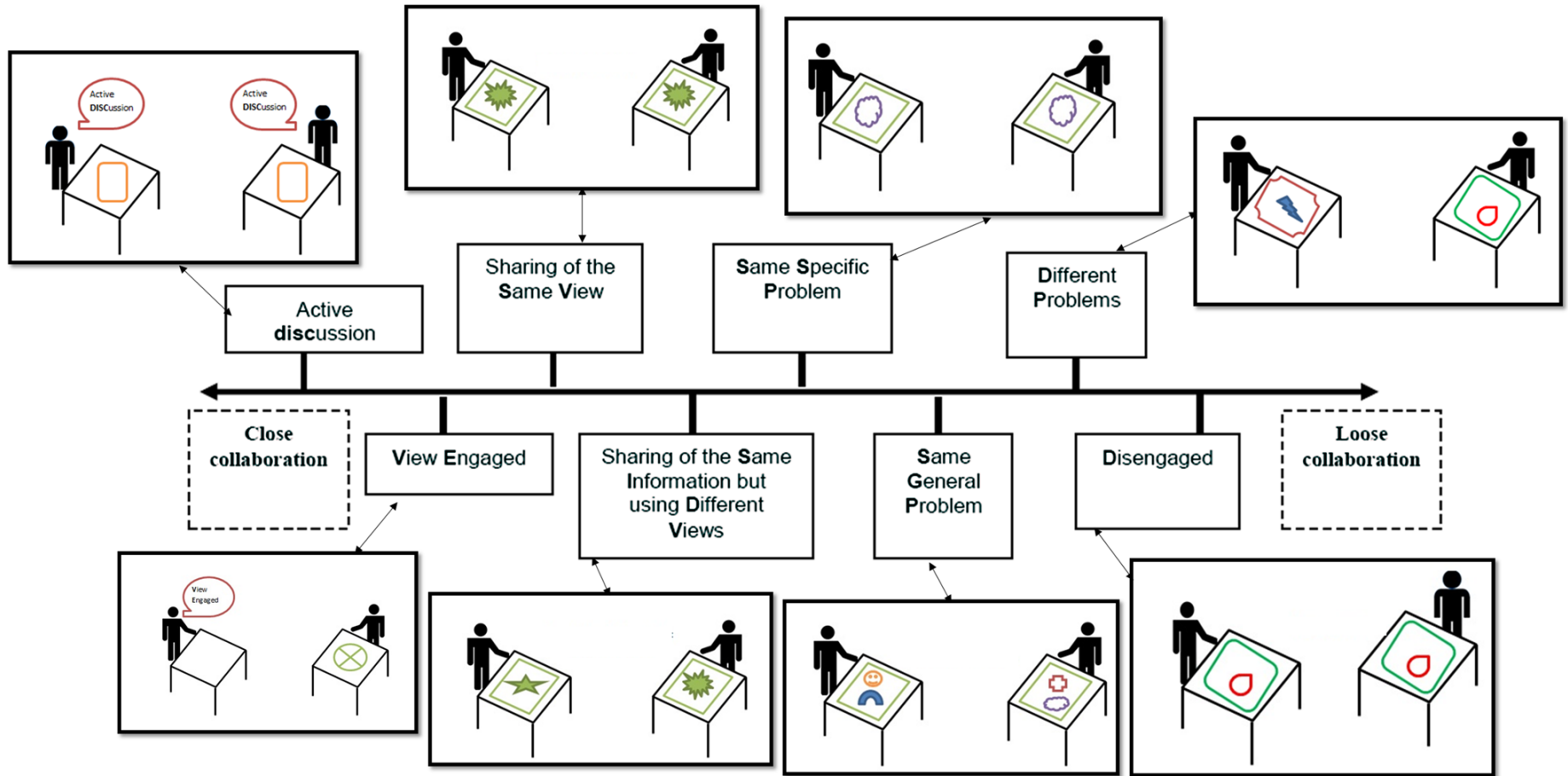
*First author: formerly in this lab



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Collaborative situations



Collaborative situations (so-called styles by the authors) proposed by [Isenberg et al., 2010], illustrated with **two remote interactive tabletops** [Bouabid et al., JMUI 2018]

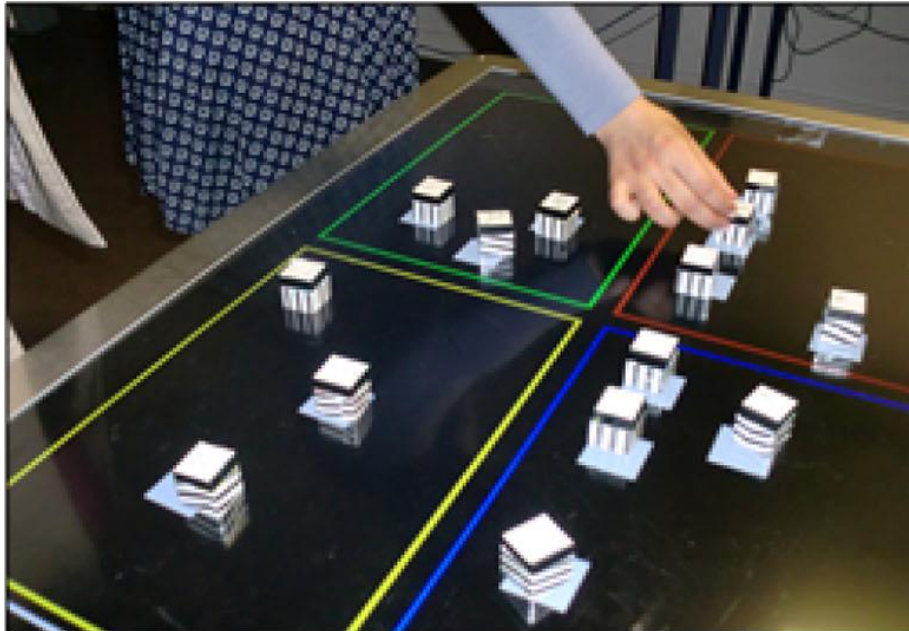
Bouabid A., Lepreux S., Kolski C. (2018). Study on generic tangible objects used to collaborate remotely on RFID tabletops. *Journal on Multimodal User Interfaces*, 12 (3), pp. 161-180.

Isenberg P., Fisher D., Morris M. R., Inkpen K., Czerwinski M. (2010) An exploratory study of co-located collaborative visual analytics around a tabletop display. IEEE Symposium on Visual Analytics Science and Technology. Salt Lake City, UT, USA.

Applicative domain

- Distributed version of the *Recognition and learning of colors* application, dedicated to very young children (initial centralized version available in [Kubicki et al., 2011, 2015]):

=> **Educational context, e-learning (exercice supervised at a distance)**



(a)



(b)

Tangible tabletops used in the collaborative application: on the left, simulation of the child tabletop (two users); on the right, simulation of the adult tabletop [Bouabid et al., JMUI 2018]

Kubicki S., Lepreux S., Kolski C. (2011). Evaluation of an interactive table with tangible objects: Application with children in a classroom. *Proceedings 2nd Workshop on Child Computer Interaction "UI Technologies and Educational Pedagogy"*, at CHI'2011, Vancouver, Canada

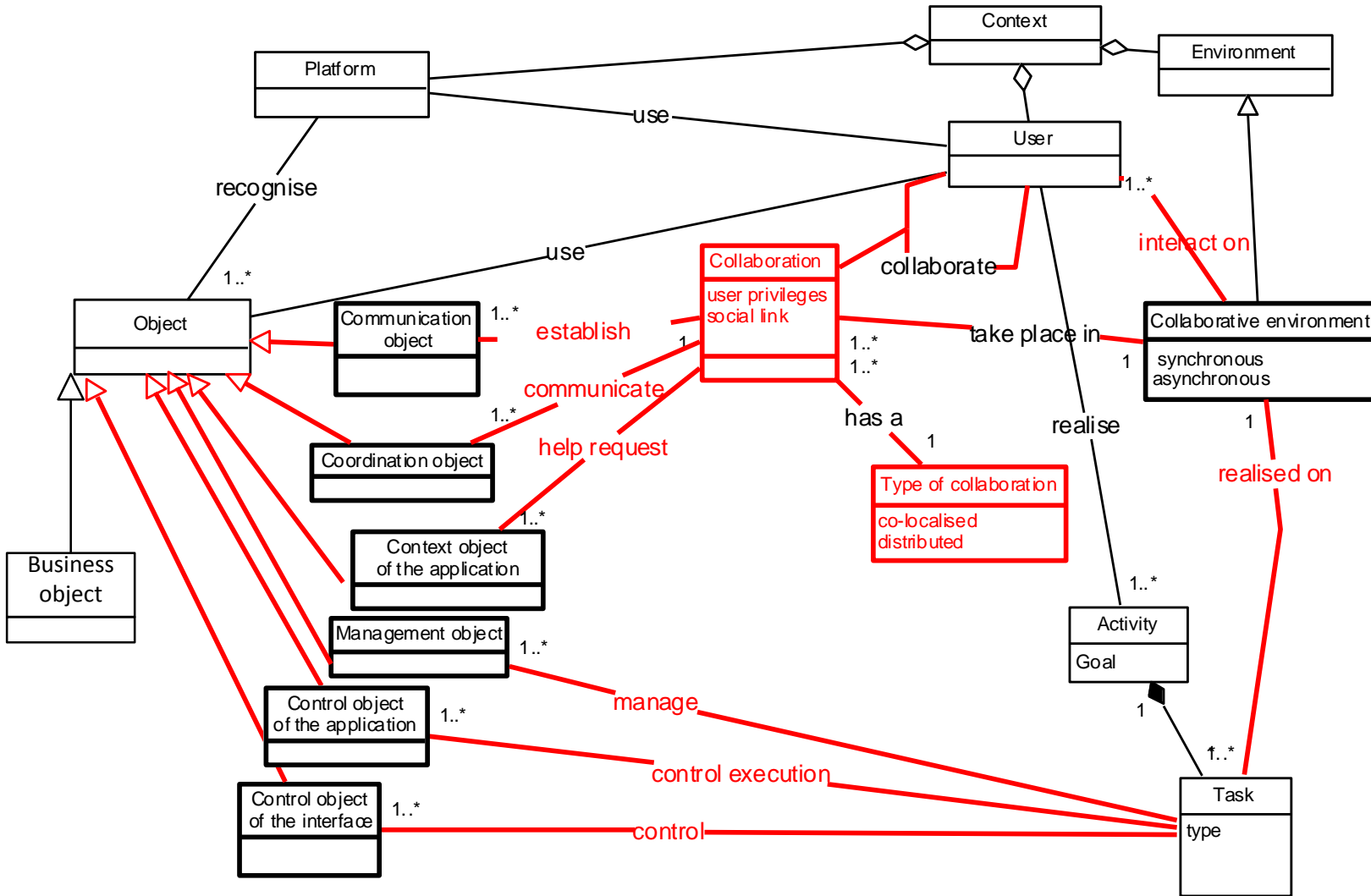
Kubicki S., Wolff M., Lepreux S., Kolski C. (2015). RFID interactive tabletop application with tangible objects: exploratory study to observe young children' behaviors. *Personal and Ubiquitous Computing*, 19 (8), pp. 1259-1274.

Generic objects proposed for remote collaboration

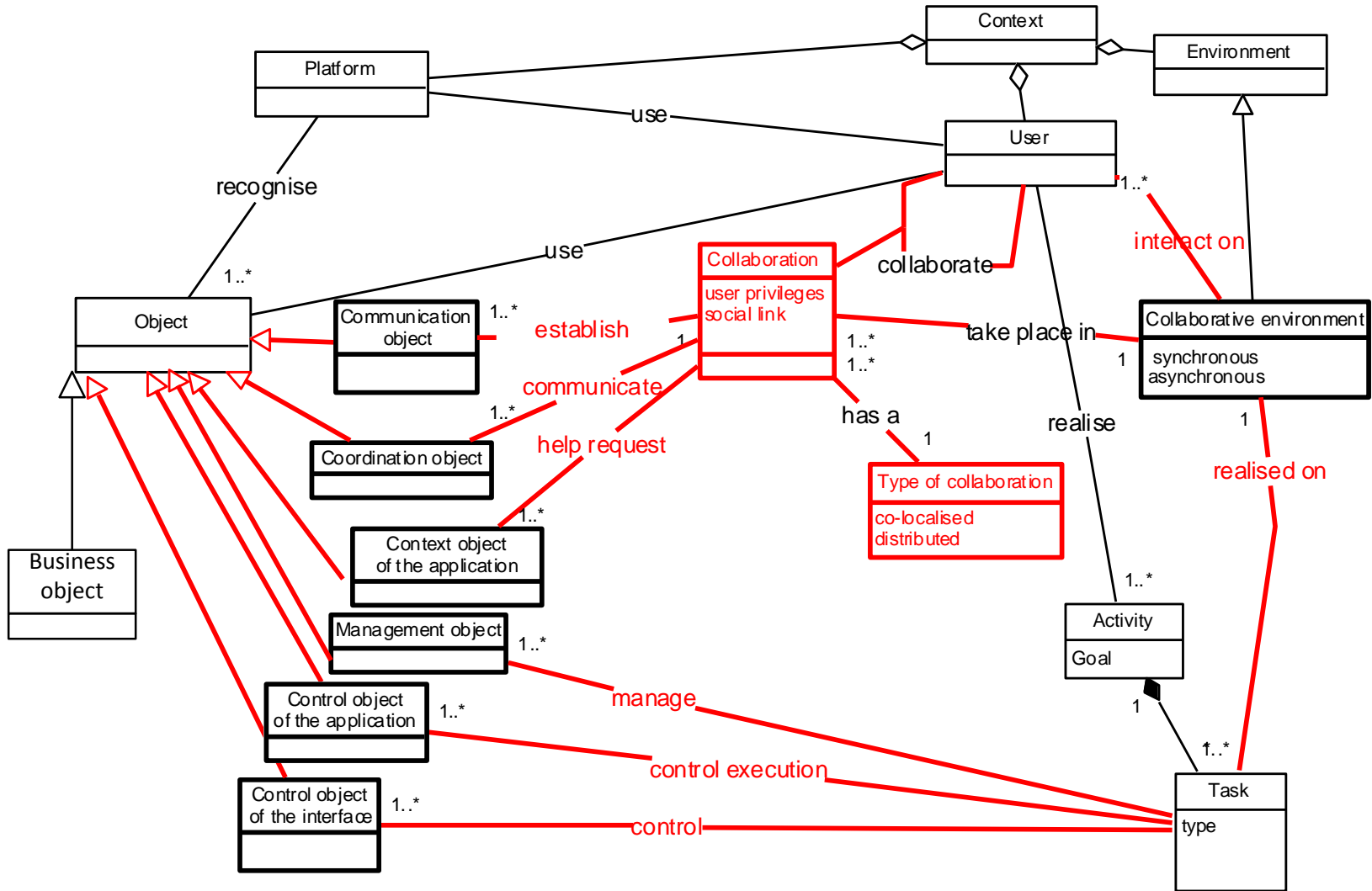
Table 3 Step 2: Generic objects proposed for remote collaboration

Name of the tangiget	Main function	Type of tangiget
Identification	Used to identify users who are currently using the collaborative application and want to enter into collaboration with other users	Tangible communication object
Task assignment	Used to organize tasks between different users of the collaborative application	Tangible management object
Starting synchronization	Used to synchronize the start of the activity distributed on connected tabletops	Tangible control object of the application
Request help	Used to ask for help or ask a question about a step or a detail of the collaborative activity	Tangible context object of the application
Provide help	Used to offer help about a step or detail following a request	Tangible coordination object
Display mode	Used to change the display of the main interface according to the user needs	Tangible control objects of the user interface
End task	Used to mark the end of a task and/or to switch to another task	Tangible control object of the application
Criticism	Used to work on all of the activity (not on one task)	Tangible coordination object

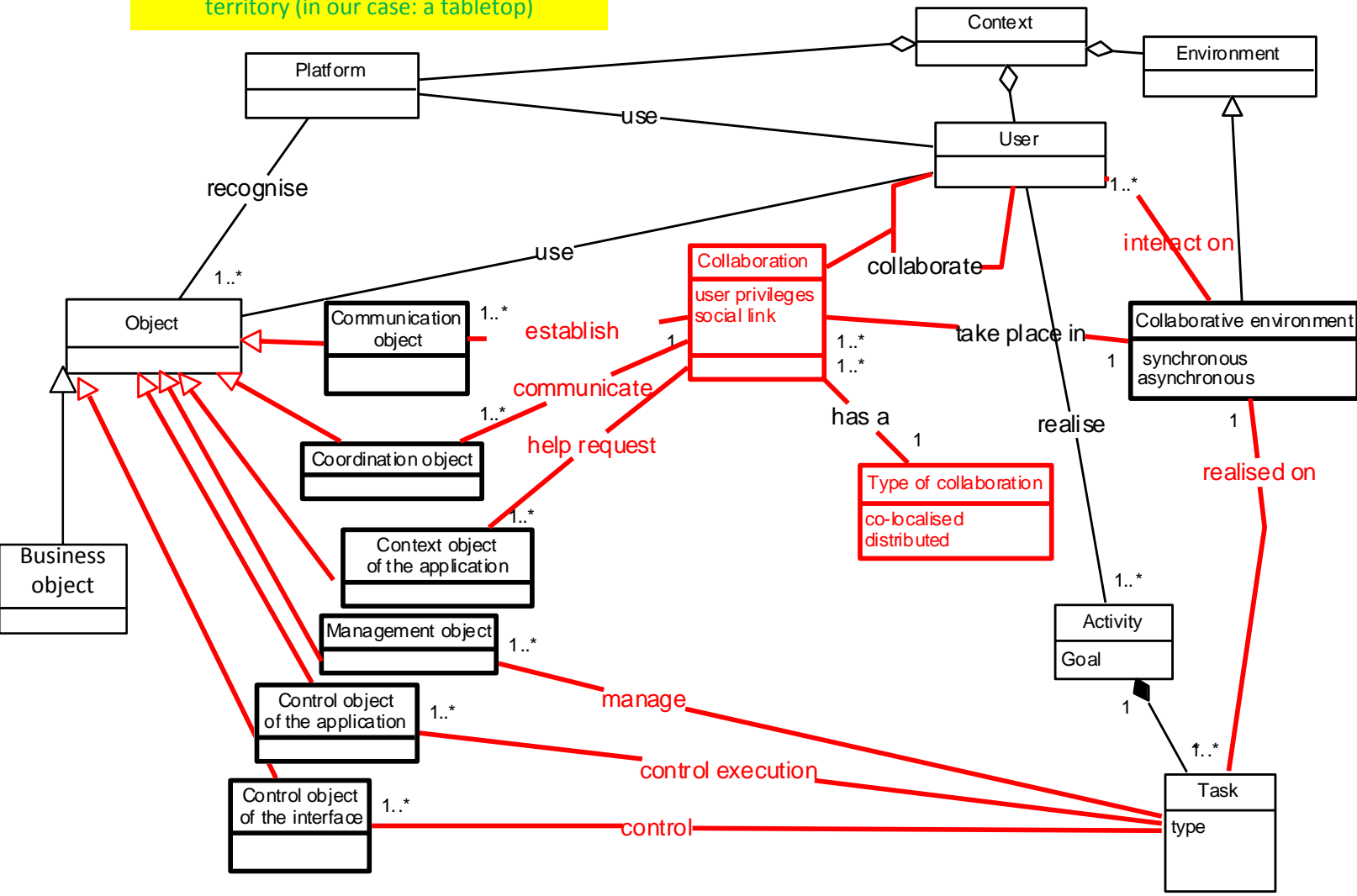
Initial context model



Initial context model => revisited from the territoriality point of view

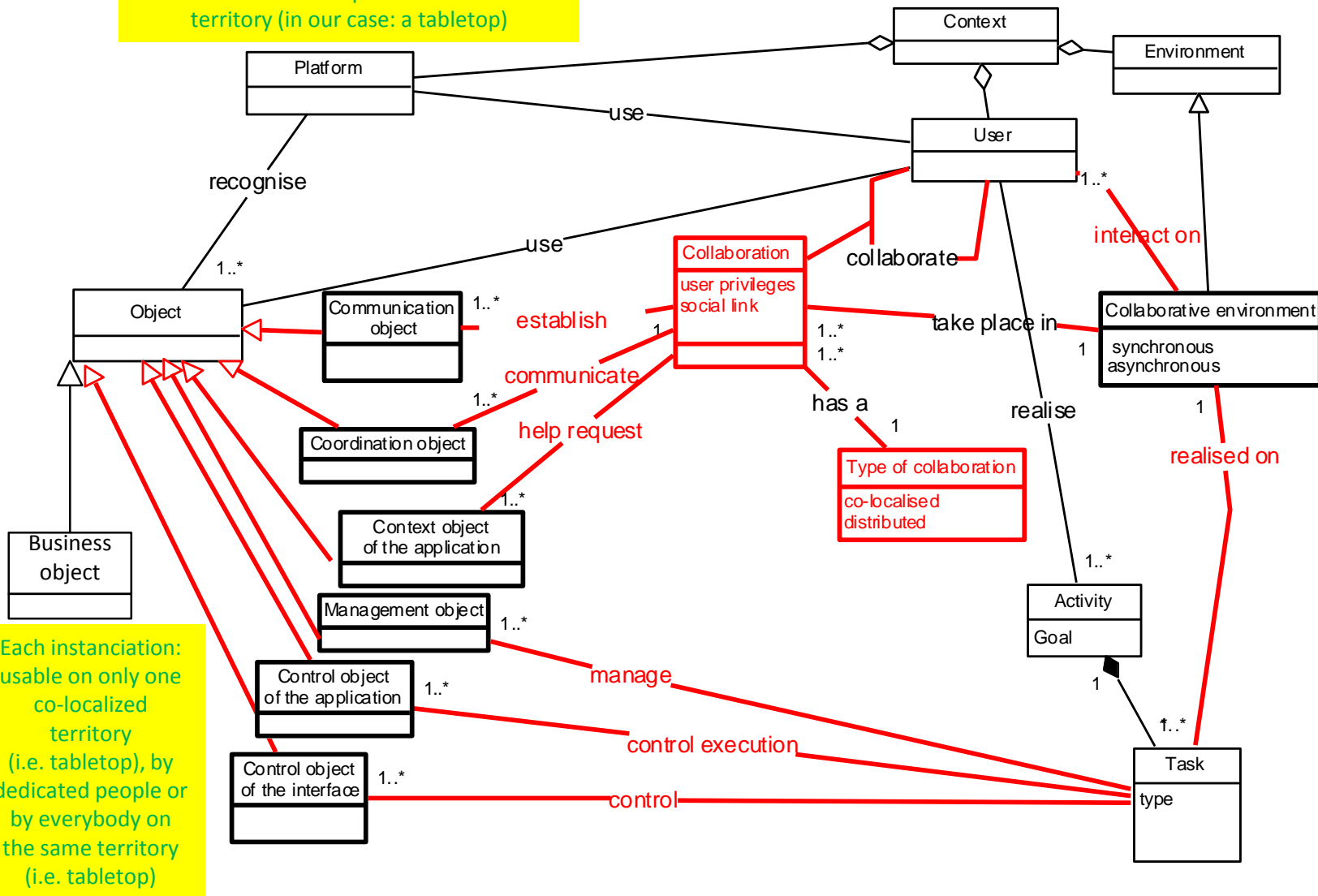


Each instantiation of platform: becomes a territory (in our case: a tabletop)



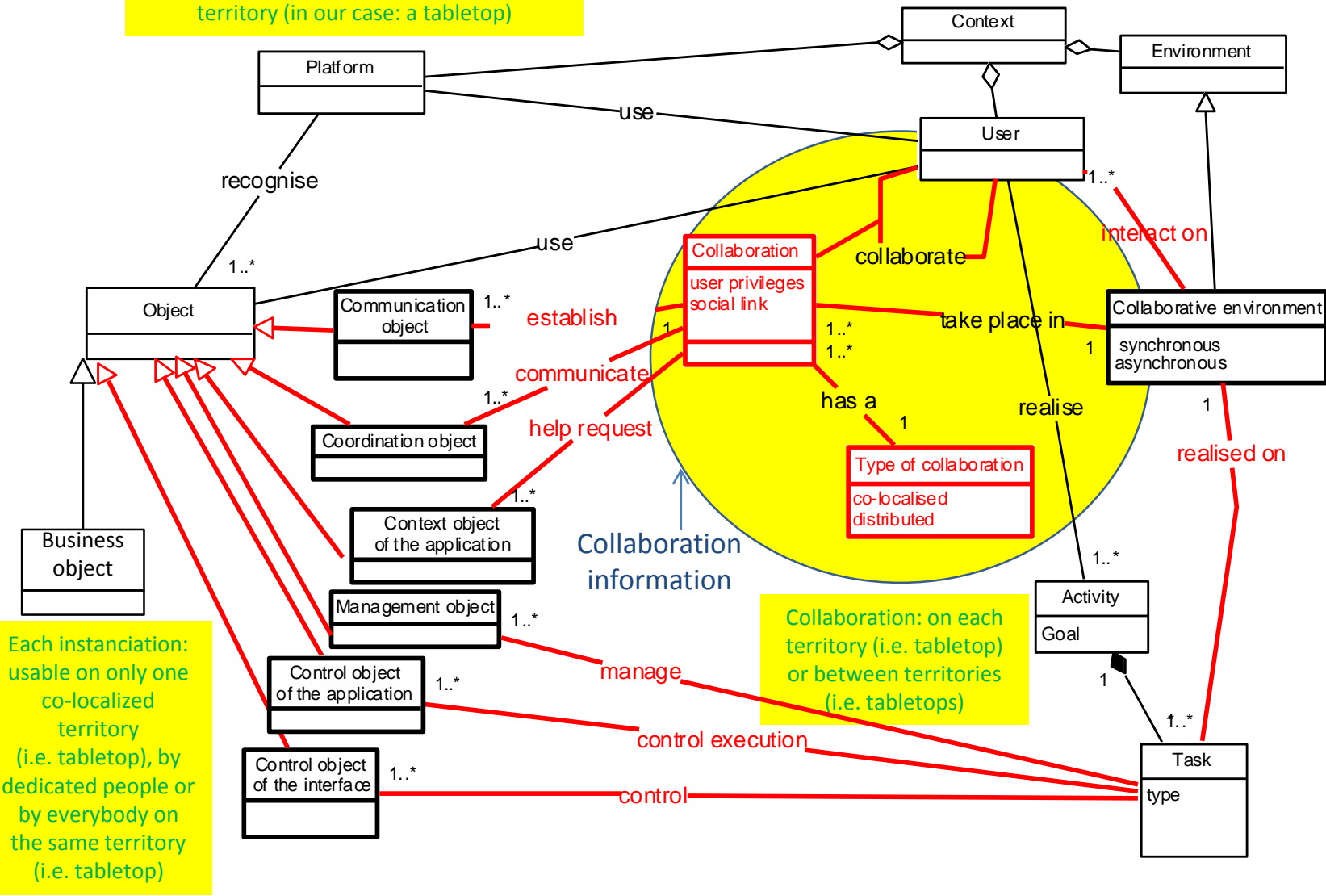
Adapted from:
 Bouabid A., Lepreux S., Kolski C., Havrez C. (2014). Context-sensitive and Collaborative application for Distributed User Interfaces on tabletops. *DUI'2014, 4th Workshop on Distributed User Interfaces and Multimodal Interaction*, Toulouse, France, July.

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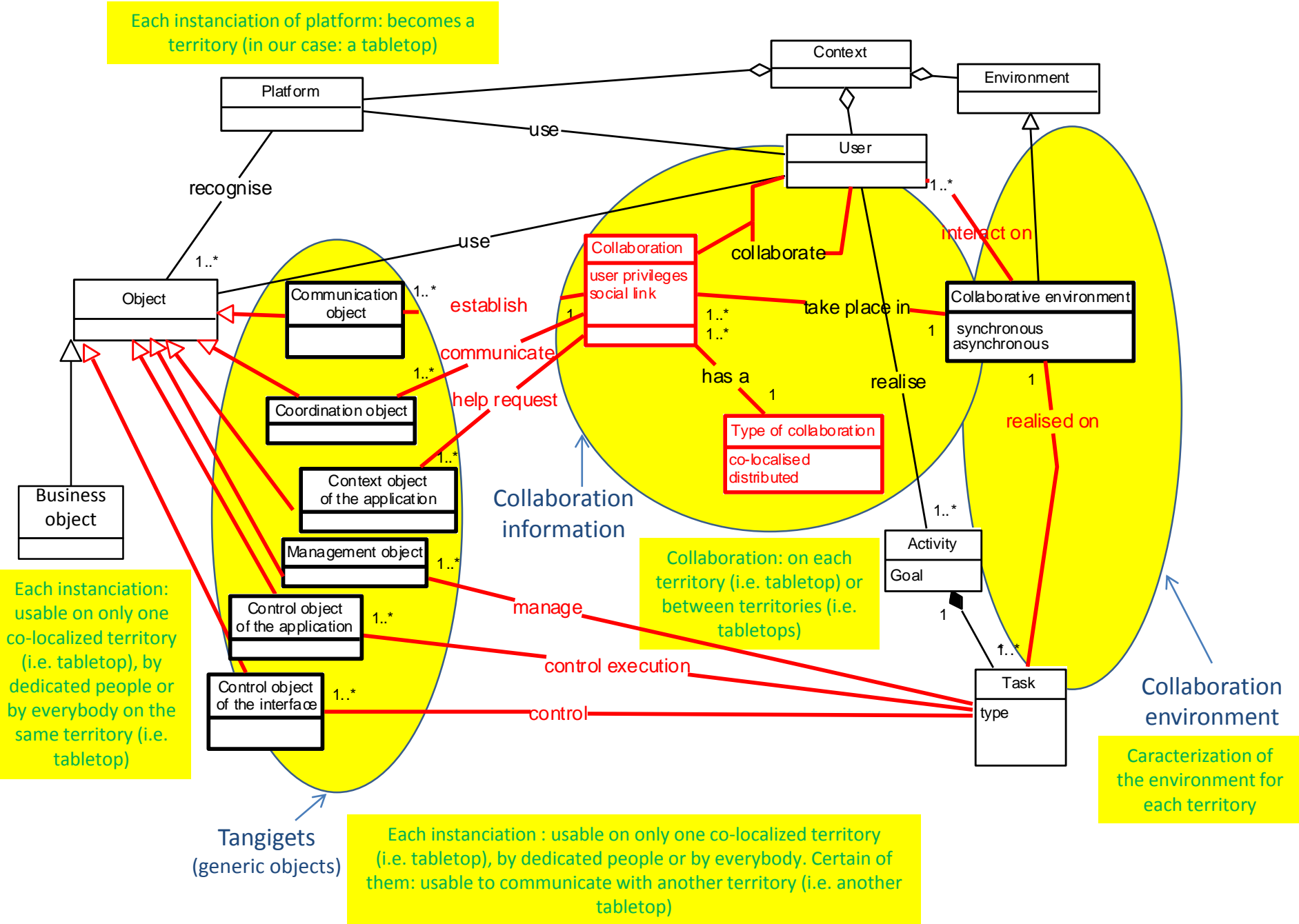


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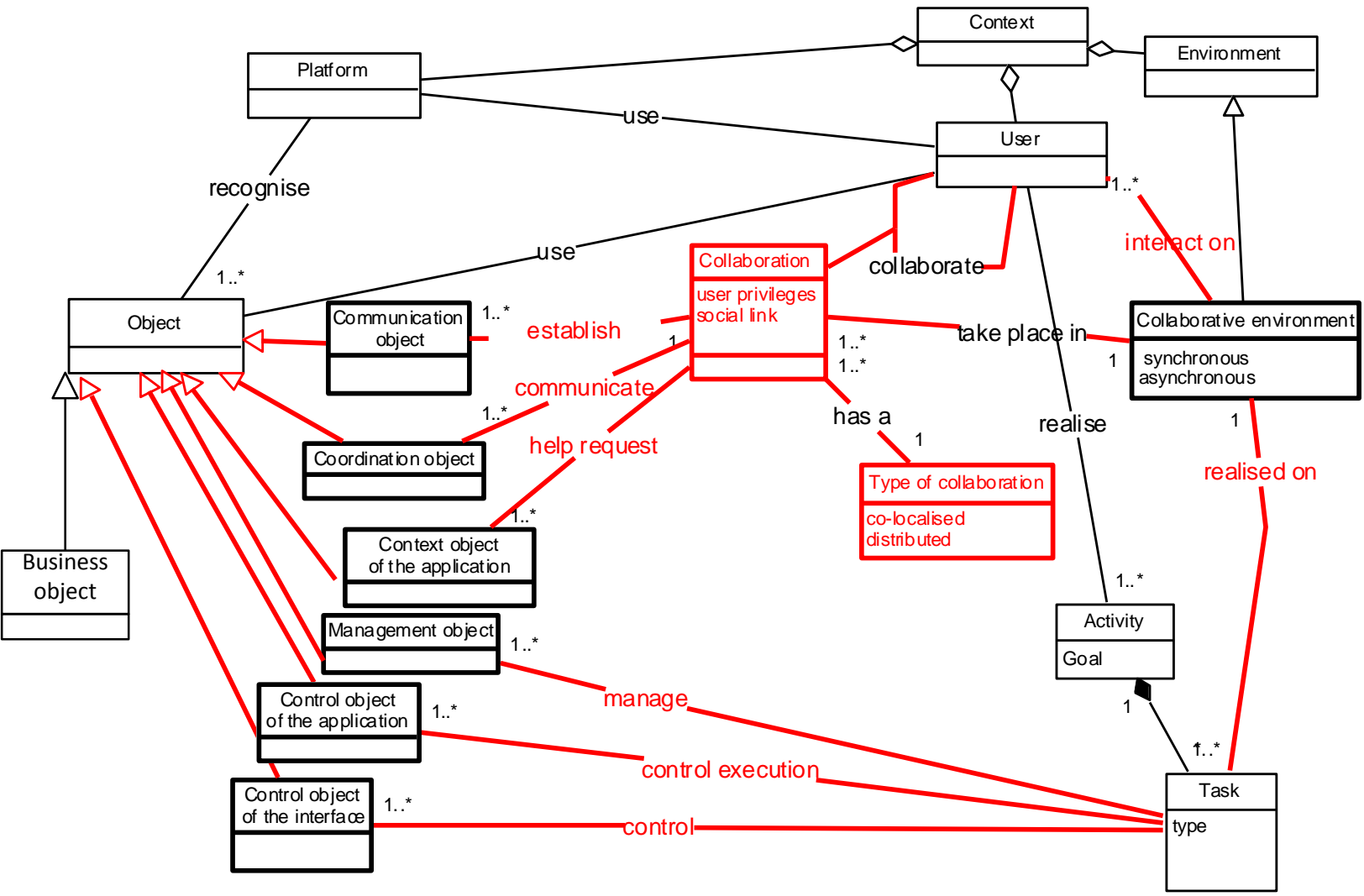


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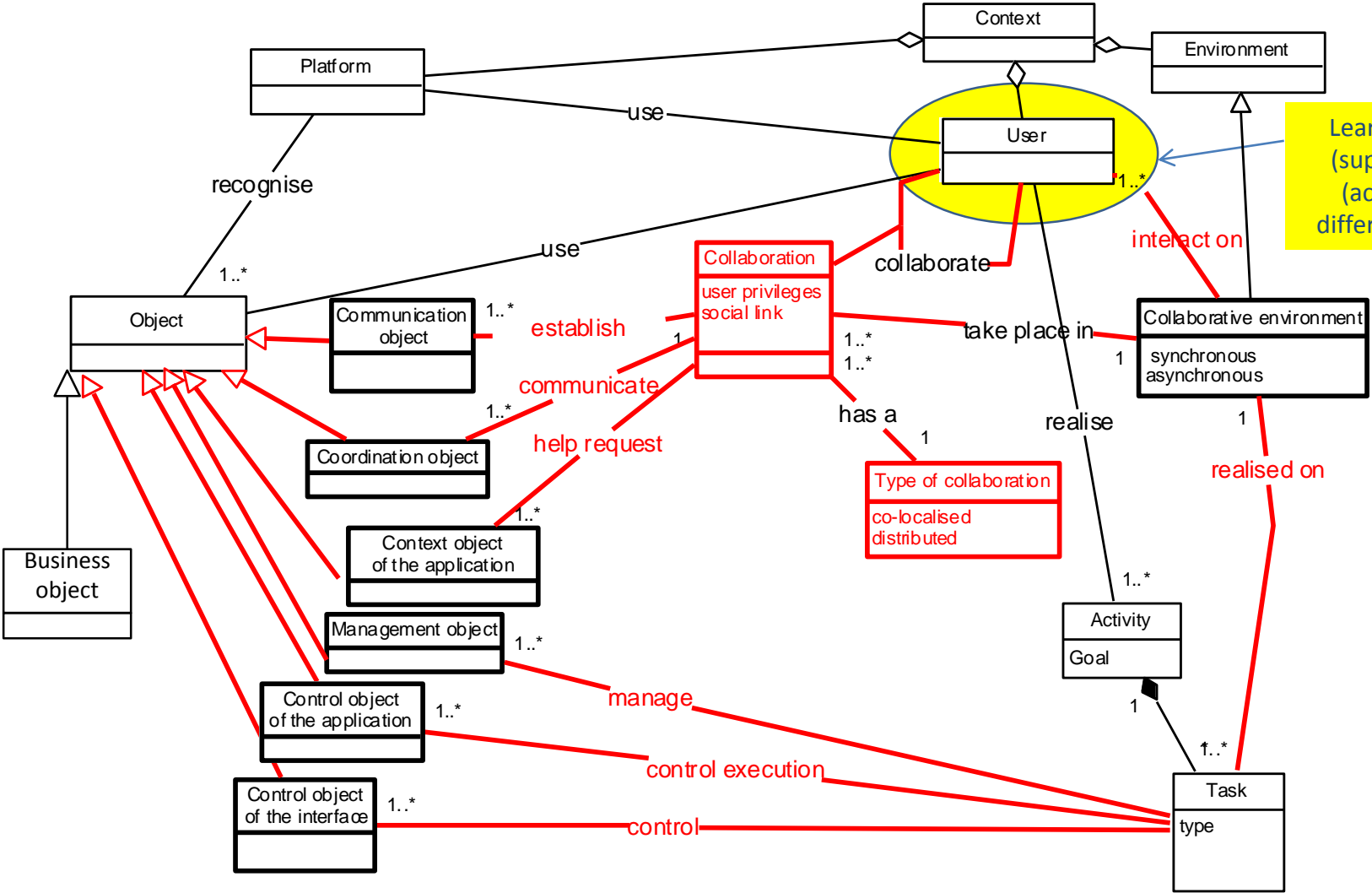
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Initial context model => possibility to consider the educational context



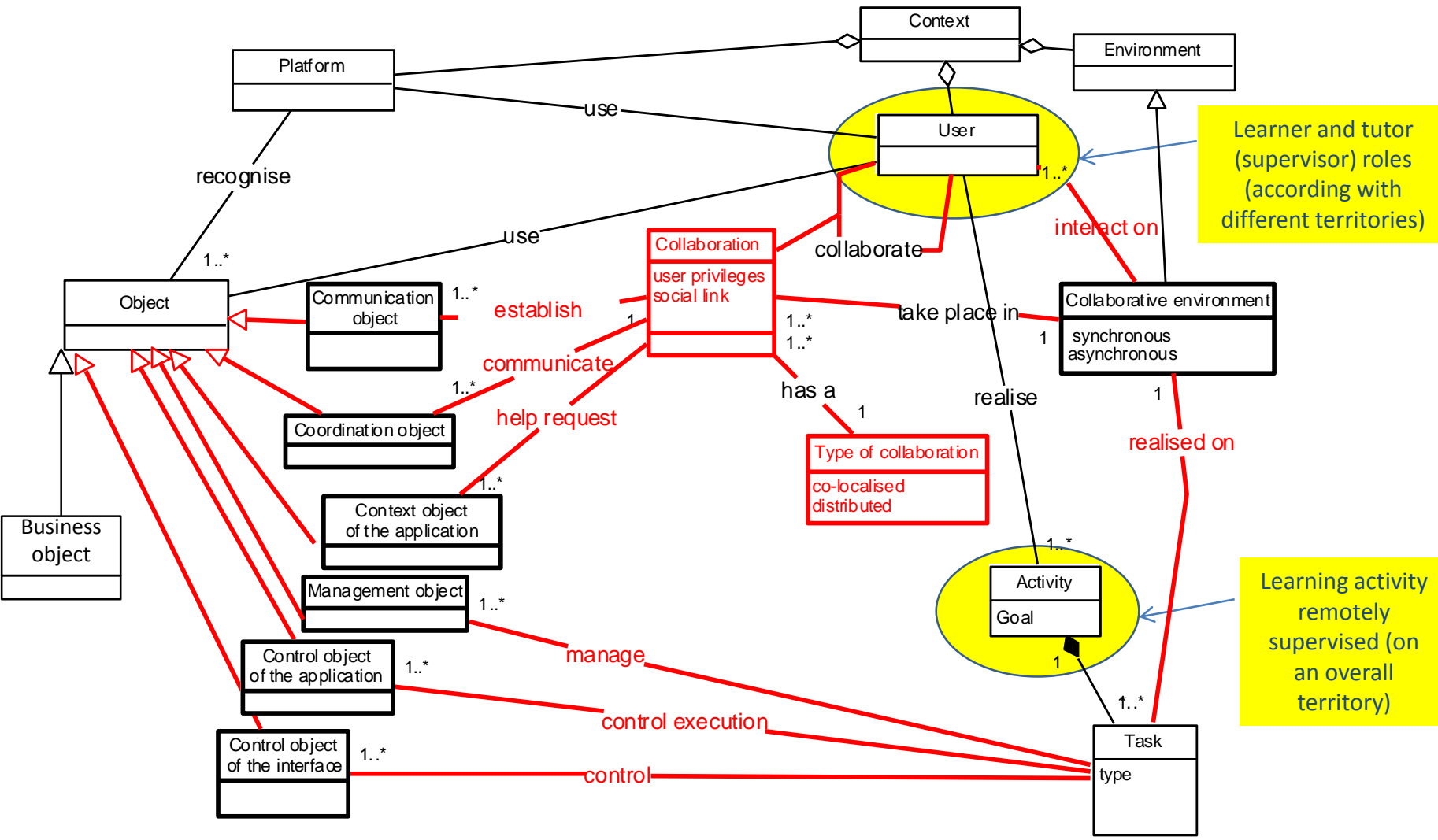
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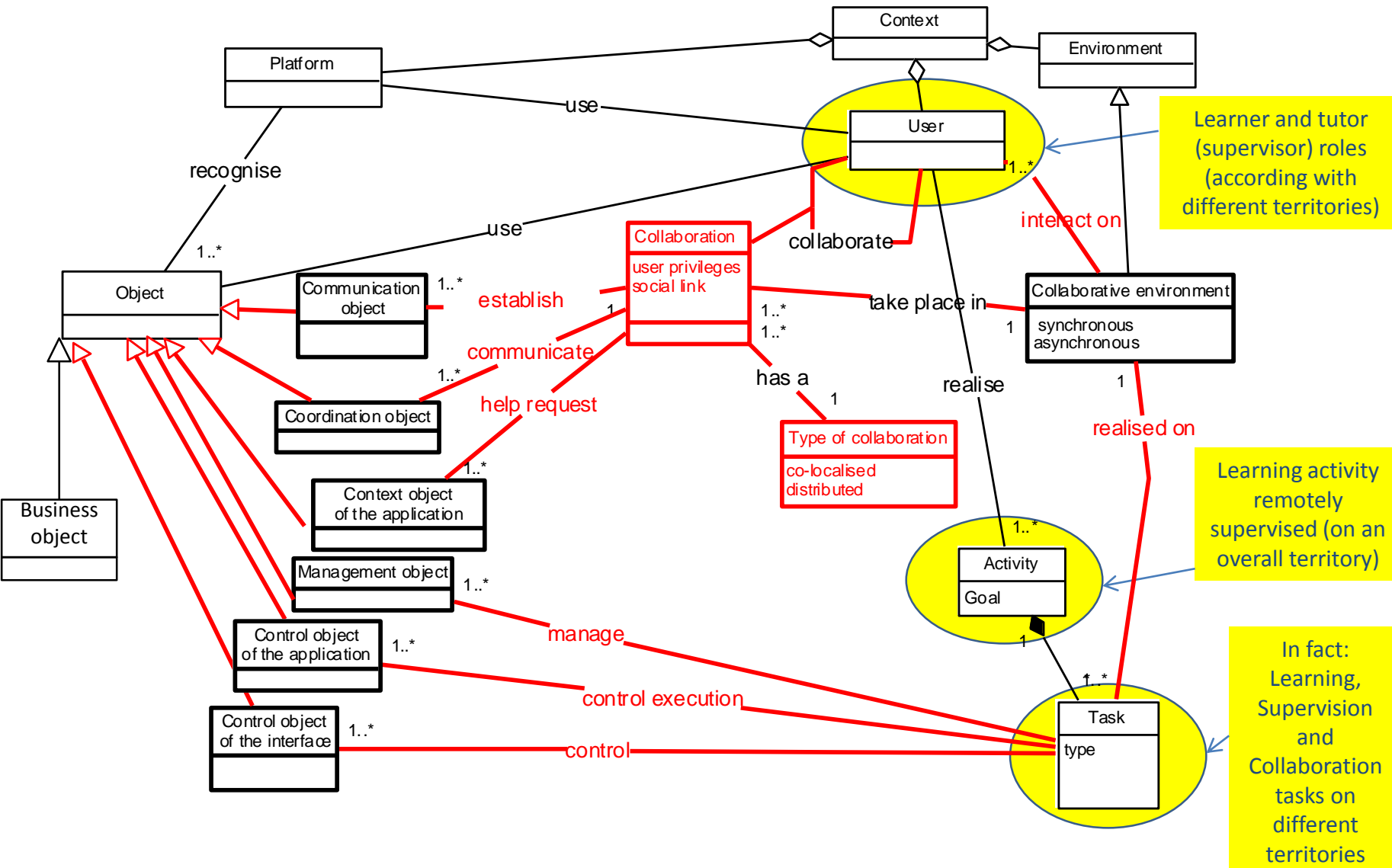
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Conclusion

- For remote tasks and/or collaborative tasks:
 - possibility to consider **territoriality point of view**
- In consequence: possibility to enrich/revisit/update different types of HCI models
 - For instance: **Context models**

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Thank you for your attention

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