

# Q Algorithm

Rafael Perazzo Barbosa Mota

February 11, 2013

## 1 Q Algorithm Fluxogram

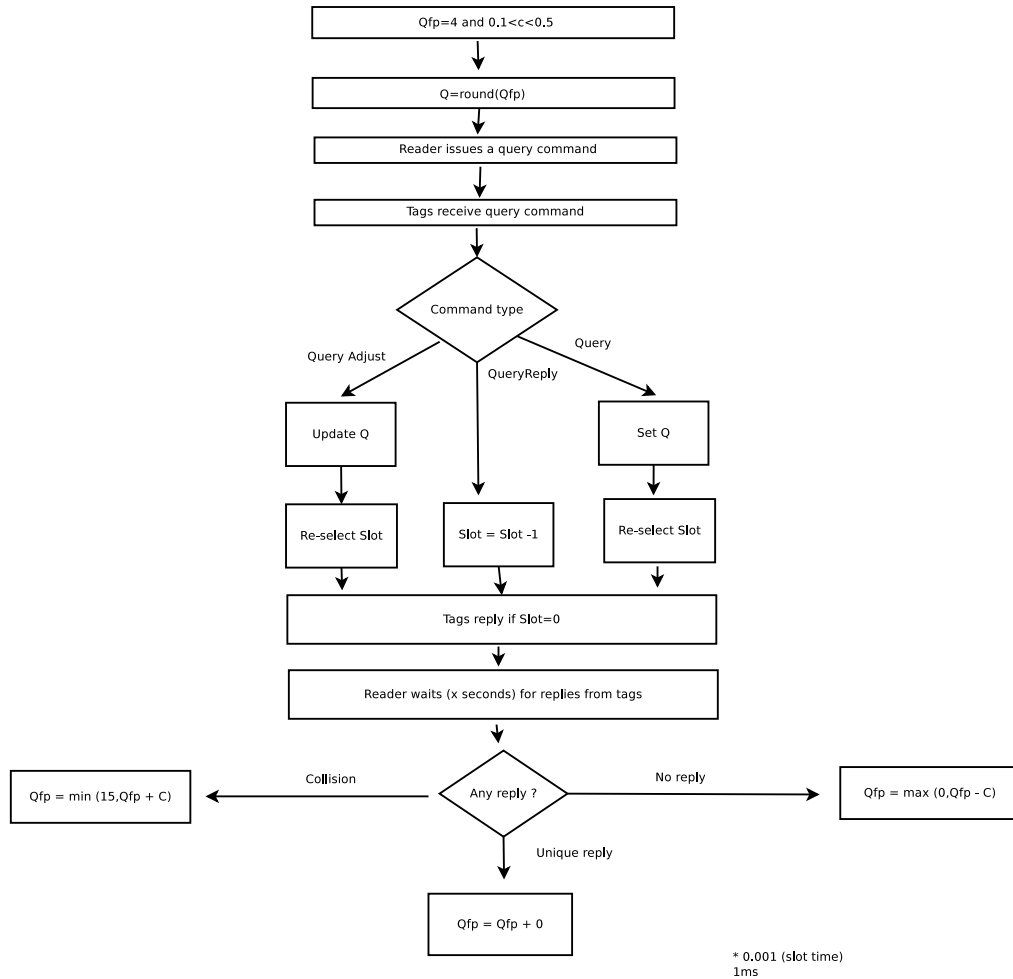


Figure 1: Q Algorithm Fluxogram

## 2 Tags states diagram

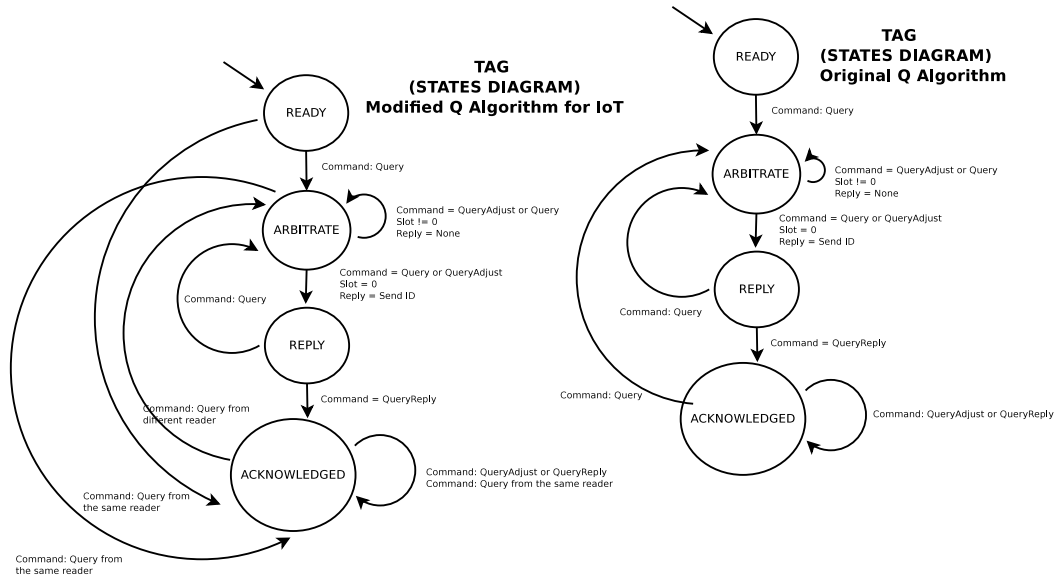


Figure 2: Q Algorithm tags state machine (Original and Modified)

## 3 Number of tags identified per time

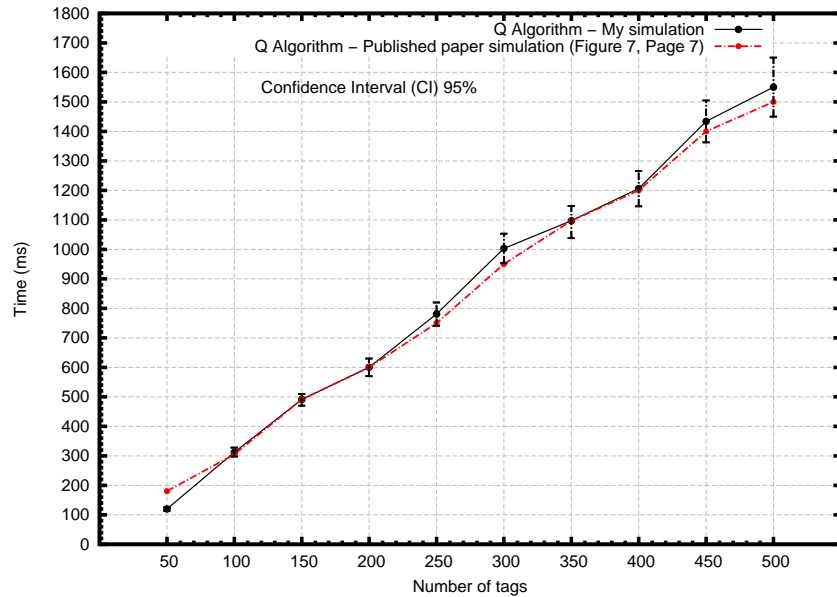


Figure 3: Performance analysis of Q Algorithm simulation

## 4 Inventory application scenario

Supply Chain Management (SCM) is the “management and control of all materials and information in the logistics process from acquisition of raw materials to delivery to the end user” [1]. Smart shelves have been studied by several research groups, and a number of industrial initiatives already apply these technologies [2, 3, 4].

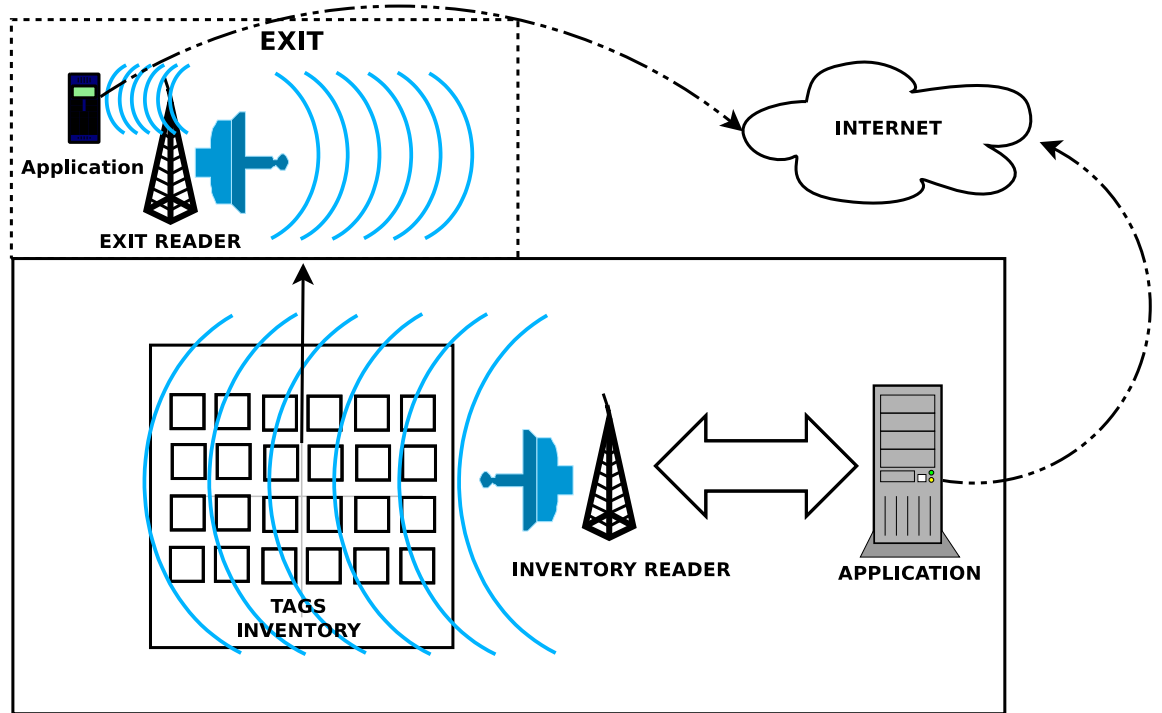


Figure 4: Example of Inventory IoT application

## References

- [1] Michael, K.; McCathie, L.; , “The pros and cons of RFID in supply chain management,” *Mobile Business*, 2005. ICMB 2005. International Conference on , vol., no., pp. 623- 629, 11-13 July 2005 doi: 10.1109/ICMB.2005.103
- [2] Hinske, Steve; , “Determining the Position and Orientation of Multi-Tagged Objects Using RFID Technology,” *Pervasive Computing and Communications Workshops*, 2007. PerCom Workshops '07. Fifth Annual IEEE International Conference on , vol., no., pp.377-381, 19-23 March 2007 doi: 10.1109/PERCOMW.2007.38
- [3] Aysegul Sarac, Nabil Absi, and Stéphane Dauzère-Pérès. 2008. A simulation approach to evaluate the impact of introducing RFID technologies in a three-level supply chain. In *Proceedings of the 40th Conference on Winter*

Simulation (WSC '08), Scott Mason, Ray Hill, Lars Mönch, and Oliver Rose (Eds.). Winter Simulation Conference 2741-2749.

- [4] Blau, J.; , “Supermarket’s futuristic outlet”, Spectrum, IEEE , vol.41, no.4, pp. 21- 22, 25, April 2004 doi: 10.1109/MSPEC.2004.1279188