From “Smart Objects” to “Social Objects”: The Next Evolutionary Step of the Internet of Things

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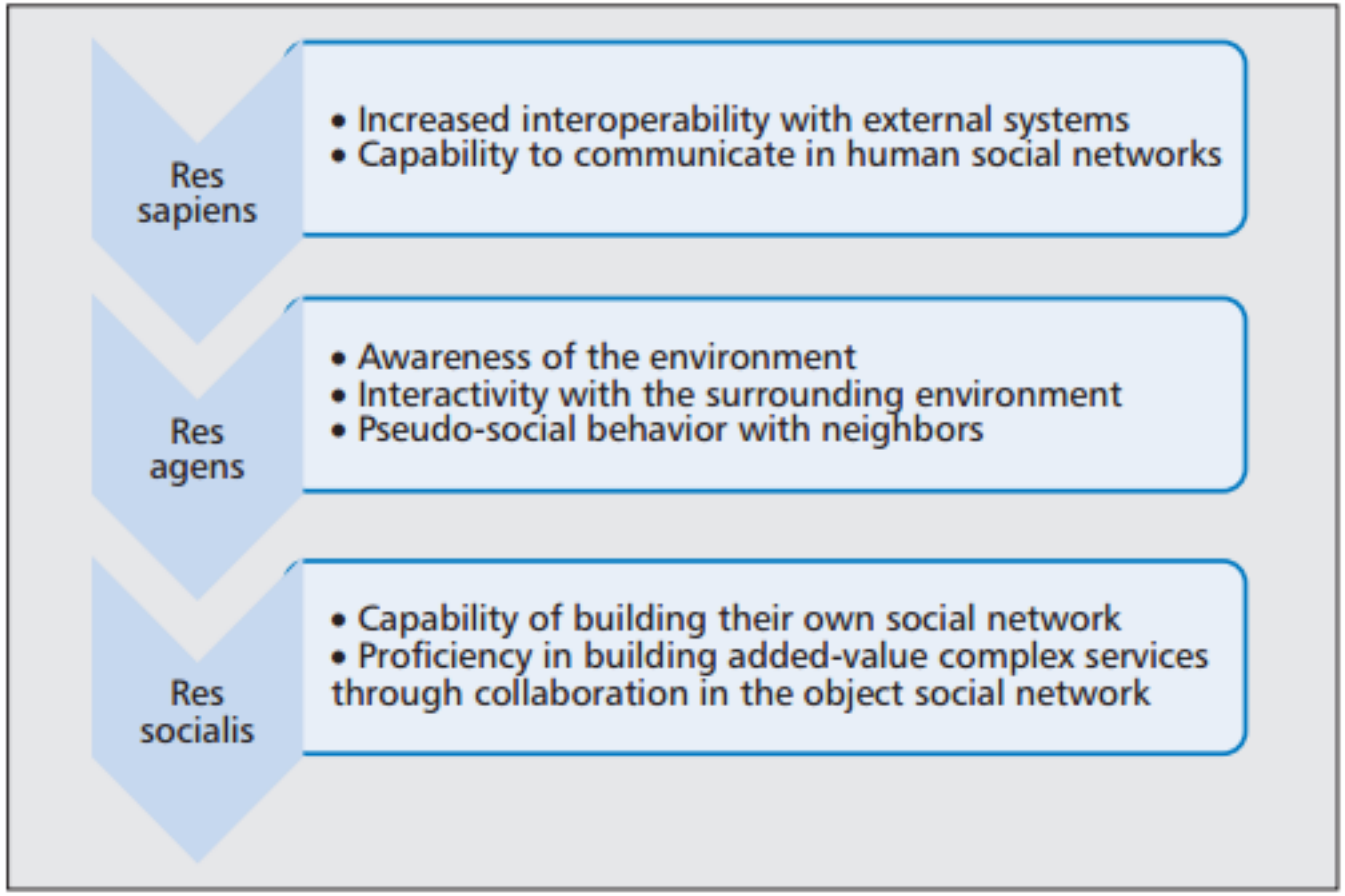
1. Introduction

- 1.1 At the present stage of the IoT evolution, the questions are:
- i)Are there new potentials that smart objects are still expected to manifest?
- ii)Can these potentials bring new (more effective) models of IoT systems and contribute toward the achievement of a fully networked human society?

- 1.2 A new generation of social objects that:
- i) are able to interact with other objects in an autonomous way with
- respect to the owners;
- ii) can easily crawl the IoT made of billions of objects to discover
- services and information in a trust-oriented way;
- iii) are able to advertise their presence to provide services to the rest
- of the network

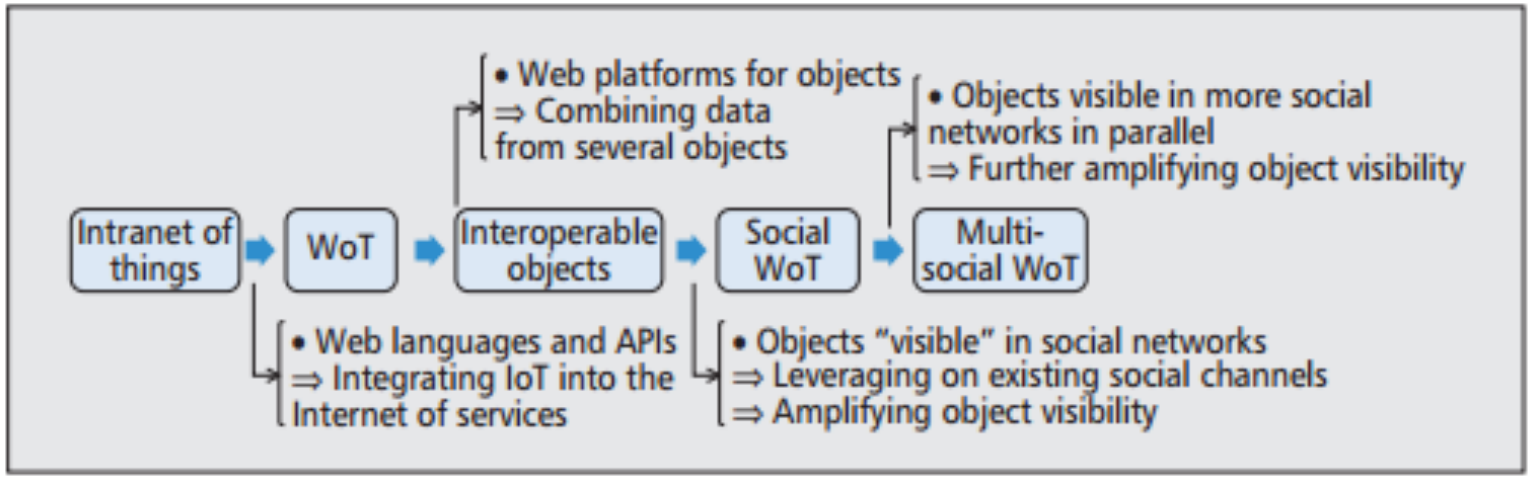
2.FROM SMART THINGS TO THINGS THAT SOCIALIZE

- Figure 1. Main features of the identified three categories IoT objects.



Res sapiens: smart object
Res agens: acting object
Res socialis: social object

2.1 THE STATUS QUO: SMART OBJECT IN THE IOT



2.2 THE ONGOING EVOLUTIONARY STEP: ACTING OBJECTS IN THE IOT

- i) Smart-Its Friends procedure:
- smart wireless devices, which in general integrate sensing, processing, and communication functions
- ii) Participative Market Solution

2.3 THE FUTURE EVOLUTIONARY STEP: SOCIAL OBJECTS IN THE IOT

- Why objects should have their own social network?
- In the scientific arena there have been discussions on what an object really has to say to another object for which you really need an IoT.
- Or
- How these "conversations" between objects may promote the development of human society.

Major characteristics of platforms and implementations on a social web of things.

Project/ company	Website or Twitter	Interaction *between* things	Autonomous establishment of social relationships	Open to the development of new applications	Clear application/ business case
Toyota Friend	https://twitter.com/#!/toyotafriend	Minimal	No	No	Yes
Nike+	http://nikeplus.nike.com	Minimal	No	No	Yes
Xively	http://www.xively.cim	Yes	No	Yes	Unspecified
Paraimpu	http://www.crs4.it/paraimpu	Yes	No	Yes	Unspecified
Social Web of Things	http://labs.ericsson.com/	Yes	Unspecified	Yes	Yes
Evrythng	http://www.evrythng.com	Yes	Yes	Yes	Unspecified
Platform in [21]	N.A.	Yes	Unspecified	Yes	No

EXPLOITING FEATURES OF SOCIAL OBJECTS AT THE APPLICATION LAYER

Feature	Description
Find service providers	The network of friends is crawled to find another object capable of providing the needed service.
Publish information	The object publishes new information along friendship paths to optimize its consumption while limiting message exchanges.
Evaluate trustworthiness	The community is exploited to rate the trustworthiness of potential providers of information and services.
Get filtered information	To improve the accuracy of information, communities of objects collaborate to provide a common view.

Main features of a possible social network of objects to be exploited toward the development of complex IoT applications.

THE HEALTHCARE MANAGER

URBAN TRAFFIC

OPEN RESEARCH ISSUES

1.DEFINITION OF INTER-OBJECT RELATIONSHIPS

- Digital representations
- New types of social relationships
- Effectively and efficiently discover ,interact with objects

2. Security and Privacy issues

Conclusion

- The thought of allowing the development of relationships between smart devices could lead to more productive, technology-aided lives.