

**AIM Global • European-American Business Council • Food Marketing Institute •  
Grocery Manufacturers Association • Healthcare Distribution Management Association  
• Information Technology Association of America •  
National Association of Manufacturers • National Retail Federation •  
Retail Industry Leaders Association • United States Council for International Business**

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Commissioner Viviane Reding  
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Thank you for the chance to comment on the European Commissions' staff working document on the early challenge regarding the "Internet of Things." We appreciate the opportunity to participate in this consultation as the European Commission prepares for a planned Communication on the Internet of Things in the second quarter of 2009. We would like to express our gratitude for the open and inclusive process that has been the hallmark of consultations on radio frequency identification (RFID) dating back to 2006.

### **The "Internet of Things"**

The premise of the Internet of Things is based on some assumptions that are not the most likely deployment scenario for the Internet of Things. While we agree with the concept that, in the future, most if not all items may well be "tagged" in some fashion and thus readable, we find it less likely that they will be directly linked to the Internet. We will use a soda vending machine by way of example. The individual cans of soda and money deposited in the machine may have some form of tagging or way of being read by the machine, but they do not need to connect to the Internet. The machine on the other hand may have an IP address and some connection to the Internet in order to provide information on consumption, service requirements and remaining inventory. Connectivity to the net will thus be via machines and appliances. Individual tagged items are likely to be read in local area networks, which may be connected by machine or device to the Internet. This would be equally true in the house of the future scenario where consumer appliances may be intelligent and able to read tags, assist in decision-making, shopping and domestic chores (e.g. the smart refrigerator, washing machine, oven and microwave) and react to ambient information from a mesh arrays of tags. These will most likely function in a Home LAN that may also have connectivity to the Internet, but which will be mediated by controllable devices. The scenarios proposed in the consultation draft presuppose more direct connection to the Internet.

The tag-based objects, sensors and other diverse items that would comprise the so-called Internet of Things would involve hundreds of identifier namespaces with countless authoritative sources of information about the objects with those identifiers. Currently there are many different

namespaces in existence that are managed by a broad range of organizations. The registries of the different namespaces can be private or public depending on their respective applications and business models. The multiple technical solutions for layered security and encryption can strictly define rules of access and distribution in any query-response interaction across registries. At the same time, there are many ways to facilitate some measure of discovery and interoperability among these namespaces and the related object information sources, and these are already being addressed in multiple standards forums.

Given a machine or device connection to the Internet, some have opined that an Internet of Things gives rise to greater privacy and security concerns. However, this view fails to take into account the capability to build security and personal controls into devices and machines. There are capabilities to have devices and machines secure information by encryption or other technologies, to better authenticate users, to enable sharing profiles, and to respect data minimization, data masking, anonymization, use of pseudonymous information and other user-centric controls.

### **The Connection between People, Policies, Practices and Technology**

The consultation highlights many challenges that will be faced in the future, but fails to appropriately highlight the intersection of people, policies, practices and technology in addressing these issues. While all the issues are mentioned in some way, they are dealt with sequentially instead of providing greater analysis of how they may work together as part of a holistic and cross-functional solution. Solutions will exist at the intersection of these topics, treating them in isolation leads to an unreasonable belief that any one of the topics alone can provide a solution.

While we understand and appreciate the rationale for thinking of the Internet of Things, we remain concerned that it creates a false dichotomy rather than prompting us to consider a continuum of Internet connectivity. Things, people, and perhaps animals will all be part of our future Internet connectivity. Tags, devices, and services will require different levels of information and will contain and protect that information in different ways. Highlighting “things” while providing a compelling vision of the current evolution of RFID tags creates a stilted view of future connectivity between people, places, objects and services.

### **DNS and ONS**

The consultation approaches some topics such as comparisons between the Domain Name System (DNS) and the Object Name System (ONS) with an overly broad perspective. While we agree that it is a compelling concept to compare what seem to be naming and identification conventions, the staff working paper does not differentiate between the needs and the related information of both systems. In conjunction with administering the DNS namespace contact information is captured and placed in a publicly accessible *Whois* directory service; the administering of the ONS most likely does not necessitate such publicly accessible directory service. Thus the implications and consequences are different. Since they are not completely analogous systems, drawing ONS conclusions based on DNS issues is not advisable. It would be

more useful to assure an adequate understanding of how ONS functions today, posit future developments and effectively address issues as they arise.

Data over the ONS is not publicly available despite the fact that it uses the Internet infrastructure. The technical possibilities for control of access to information depending on application and privacy and security concerns are many. Private discovery services, access, and applications are commonplace on Internet infrastructures. The need for security has resulted in countless closed user networks. These needs also apply in the object space and similar approaches have been employed among the users constituting a private infrastructure. Applications among business partners in the supply chain using ONS/EPCIS data exchange standards developed by EPCglobal are prominent examples

A distinction needs to be made between the DNS and an ONS due to a number of functional and structural differences. Domain Names on the Internet are sold through ICANN accredited registrars to the general public. At the same time, EPCglobal ONS Company Prefixes are assigned by EPCglobal only to EPCglobal member companies. Domain Names on the Internet resolve to servers that host associated websites and email services, while Company Prefixes on the EPCglobal ONS resolve to a network end point managed by an EPCglobal member company. This difference is illustrated also by the fact that servers storing ONS data are ONS-specific servers with tailored geographical distribution for the respective namespaces (there are currently six EPCglobal ONS servers located in Europe, Asia, and the United States).

The method of finding and sharing information on the EPCglobal network in particular follows a publicly available open standard but the ability to find and share specific information on the EPCglobal network is restricted (private), and controlled by the member company, who owns the information, not the ONS. The EPCglobal concept relies on a publicly available open standard that would support the convergence of supply chains across industries, commercial sectors and geography. In this context, the EPCglobal ONS cannot equate to the concept of the Internet of Things that envisions connecting many different types of identifiers and sensors to a network.

### **International, Public, Private**

The paper rightly notes a desire to have competition and opportunity in systems related to the Internet of Things. It likewise notes the dangers of fragmentation and raises concerns about private sector operation. These concerns need to be considered in context while general infrastructure and efficiency issues need to be more carefully considered. Discussions should focus on the framework conditions of fairness, access, transparency, level playing field and competition. Only where these issues cannot be appropriately resolved should alternative infrastructure concepts be considered and then with a view to avoiding fragmentation. While we understand issues of concern about private sector operations, we must recall that many country domains that were under government control provided less competition and higher pricing than domains controlled by private sector organizations. The operation of the organization should be the issue, not its public or private status.

In a number of areas, the consultation calls for harmonization of issues across the EU. This is understandable as this is an EU consultation. We would however suggest caution on two

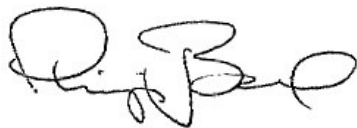
levels:1.The Internet of things is by definition global (if not universal,e.g. items in Space may also be connected) and should be considered in a global context even while recognizing that legislative and regulatory inquiries must by nature consider a locality, nation or region; and 2. In concert with global considerations, a focus on interoperability may be more useful than harmonization as it is easier to find ways for systems and regulatory policies to work together short of mandating identical regulatory approaches.

The paper references openness in an ill-defined manner. We find it very useful to stress the importance of open standards. However, we believe that the paper should be technology neutral. That would mean refraining from choosing among which licensing models are most appropriate so long as no models are used to be anticompetitive or exclusionary, or used in such a fashion that would fragment the Internet. At the same time, we agree with the premise of the Commission staff paper that the already global nature of business and communication dictates global adoption of network components and open standards, as well as interoperable lookup services across geographical locations.

In summary, we believe an extremely diverse array of namespaces, objects and services is implied by “the Internet of Things.” Some of these implementations consist of private networks by closed user groups, enabled for example through EPCglobal open standards. Given this diversity, as well as the public-private bifurcation, different technical and regulatory approaches and treatments will be needed. The Internet is ultimately a collection of private and public networks with an open architecture that can both accommodate many different needs and encourage innovation. Any future Object Namespace will build on this flexibility and create its own customized networks based on their respective applications and business models. We believe that the Internet of Things is too undefined (and its adoption too slow) at this point to commit its future parameters to a concrete control model. It would be premature to base any such decision on considerations of control that go beyond the concern for a technologically optimal governance structure.

We commit to continuing to work together to create an environment where innovation will continue to develop beneficial uses of technology and individuals will have trust and confidence to use such technology. We look forward to our continued dialogue to further refine recommendations so that individuals’ rights are protected while encouraging innovation and the societal benefits we stand to reap with new technology.

Sincerely,



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### **About AIM Global**

AIM Global is the industry association and worldwide authority on automatic identification and data collection technologies. AIM members are providers and users of technologies, systems, and services that capture, manage, and integrate accurate data into larger information systems. Serving members in 43 countries for more than 35 years, the association develops technical specifications and guidelines for the use of automatic identification technologies.

### **About EABC**

The European-American Business Council (EABC) is a Trans-Atlantic alliance of 74 multinational companies based in the US and Europe, dedicated to advancing Trans-Atlantic economic investment, innovation, and integration.

### **About FMI**

Food Marketing Institute (FMI) conducts programs in research, education, industry relations and public affairs on behalf of its 1,500 member companies — food retailers and wholesalers — in the United States and around the world. FMI's U.S. members operate approximately 26,000 retail food stores with a combined annual sales volume of \$680 billion — three-quarters of all retail food store sales in the United States. FMI's retail membership is composed of large multi-store chains, regional firms and independent supermarkets. Its international membership includes 200 companies from more than 50 countries.

### **About GMA**

The Grocery Manufacturers Association (GMA) represent more than 200 companies that manufacture and market branded and private label food and consumer packaged goods through retail, wholesale and foodservice channels of distribution. General members include retailers and foodservice companies that manufacture and market food and beverage products for sale.

### **About HDMA**

The Healthcare Distribution Management Association (HDMA) is the national association representing primary, full-service healthcare distributors. Each day, the member companies of HDMA are responsible for ensuring that more than 13 million prescription medicines and healthcare products are safely delivered to 144,000 pharmacies, hospitals, nursing homes, physician offices, clinics, government and other providers in all 50 states. This essential public health function is provided with tremendous efficiency, saving the nation's healthcare system nearly \$34 billion each year. HDMA and its members are the vital link in the healthcare system, working daily to provide value, remove costs and develop innovative solutions to deliver care safely and effectively.

### **About ITAA**

The Information Technology Association of America (ITAA) is the premier IT and electronics industry association working to maintain America's role as the world's innovation headquarters. With the April 1, 2008 merger of the Government Electronics and Information Technology Association (GEIA), ITAA provides leadership in market research, standards development, business development, networking and public policy advocacy to some 350 corporate members. These members range from the smallest start-ups to industry leaders offering Internet, software, services and hardware solutions to the public and commercial sector markets.

### **About NAM**

The National Association of Manufacturers (NAM) mission is to advocate on behalf of its members to enhance the competitiveness of manufacturers by shaping a legislative and regulatory environment conducive to U.S. economic growth and to increase understanding among policymakers, the media and the general public about the vital role of manufacturing in America's economic and national security for today and in the future.

### **About NRF**

The National Retail Federation (NRF) is the world's largest retail trade association, with membership that comprises all retail formats and channels of distribution including department, specialty, discount, catalog, Internet, independent stores, chain restaurants, drug stores and grocery stores as well as the industry's key trading partners of retail goods and services. NRF represents an industry with more than 1.6 million U.S. retail companies, more than 25 million employees - about one in five American workers - and 2007 sales of \$4.5 trillion. As the industry umbrella group, NRF also represents over 100 state, national and international retail associations.

### **About RILA**

The Retail Industry Leaders Association (RILA) promotes consumer choice and economic freedom through public policy and industry operational excellence. Its members include the largest and fastest growing companies in the retail industry--retailers, product manufacturers, and service suppliers--which together account for more than \$1.5 trillion in annual sales. RILA members provide millions of jobs and operate more than 100,000 stores, manufacturing facilities and distribution centers domestically and abroad.

### **About USCIB**

The United States Council for International Business (USCIB) advocates on behalf of over 300 members that are drawn from leading industrial and service companies in all sectors, and include major U.S. multinationals, law and accounting firms, and business associations.

