The Web of Things: A Multimodal Web Culture

When considering the web of things there are a multitude of challenges. Consider three features from the Boeing 737 MAX as an example. With an electronic bleed air system that contributes to fuel efficiency, an onboard network system that provides real-time data processing to support airline operations and built-in test equipment in the flight deck to give technicians better access to maintenance information [1], the 737 MAX is a complex network of things in itself. Airplanes are certainly not alone in this sense; cars, homes and a variety of commonplaces are all primed for the web in a plethora of ways.

Airplanes aside, an emerging hurdle in the WoT is around the openness of devices in a web of things. Certainly there are dangerous implications in accessing certain mechanisms in a thing; however this same thing could encourage the discovery of certain sub systems. Hence, work needs to be done around device discovery. Many of these discovery standards are being specified and expanded upon currently in the W3C Multimodal Interaction (MMI) Working Group [2]. Discovery and registration of devices is a key component in taking a closed internet of things into an extensible and accessible domain using the web.

Additionally, MMI recommendations and standards can support abstract and diverse user interfaces, another challenge facing the WoT. Networking everything will lead to things we cannot imagine; this will increase the ubiquity of the web. Screenless interfaces could become commonplace in the WoT world. Such interfaces would introduce WYFIWYG interaction [3]. Moving beyond: the internet understands you. This is already apparent on the web today (ads); this awareness is only moderately leveraged; the potential is vast, especially considering present advancements in neuromorphic computing. [4] Complex systems such as these are supported today by the Multimodal Architecture and Interfaces recommendation. [5] MMI architecture can be applied to further the web of things.

Many of the challenges around the WoT were foreseen eight years ago in the web of applications as presented by Dave Raggett [6]. The WoT workshop could help discover what differentiates a thing from an application running on a thing. Are they one in the same?

Other considerations which may or may not be relevant:

1) Inanimate objects, are they members of the web of things? Is a wall a thing? What defines a thing in a web of things? If a thing in the web of things can identify un-addressable things (such as a wall), it could know how to potentially leverage it (such as for projection).
2) A human is a systems most powerful processor; the more the brain processes the more a system potentially processes about you; hence the WoT will greatly benefit machine learning applications
3) Meanwhile as the web becomes more complex so it begins to further permeate itself deeper into human life; are we abstracting the web or is the web abstracting us?

Thanks!

Nicholas M Barry

MMI WG < --- > The Boeing Company

[1] http://www.boeing.com/commercial/aeromagazine/articles/2014_q1/pdf/AERO_2014q1.pdf
p 11 Retrieved May 20th, 2014

[2] http://www.w3.org/TR/mmi-discovery/ Retrieved May 20th, 2014

[3] http://lists.w3.org/Archives/Public/w3c-wai-ig/1999JulSep/0225.html Retrieved May 20th,
2014

[4] http://www.technologyreview.com/featuredstory/526506/neuromorphic-chips/ Retrieved
May 20th, 2014

[5] http://www.w3.org/TR/2012/REC-mmi-arch-20121025/ Retrieved May 20th, 2014

[6] http://www.w3.org/2006/02/woa/ Slides 10-11 Retrieved May 20th, 2014