Emerging issues/Future opportunities

1. **4G LTE Mobile Broadband**: Emerging WiFi broadband technology for data radios will increase Internet Protocol-based bandwidth on the order of 20 times from current technology. The commercial deployment of this advancement will occur over the next two years and mature over the next ten, enabling new operating concepts to be deployed in many forms including applications on mobile, EFB-classes, and panel mounted devices in the cockpit. The decision-sharing relationship between the flight deck, the FOC and the ANSP can be reshaped through this technology. FAA awareness of this advancement will be vital to the R&D required to support appropriate management of safety and security of advancements made possible through this technology.
2. **Big Data for ATM**: Applications of big data for operational problem solving, system optimization, and disruption management in non-aviation fields have been maturing over recent years. As the use of big data in aviation develop, FAA R&D into the means by which the FAA data relevant to NAS operations can be best integrated and made available to airspace users and managers.
3. **Portables and Wear-ables in the Cockpit**: Moore’s Law on computing power and Gilder’s Law on bandwidth continue to play out in ways affecting the functionality, power, weight, and form factors affecting avionics systems. The development of even more advanced portable devices, including “wear-ables” is plausible next step in the user interfaces made possible for the cockpit and perhaps FOC and airspace managers. The implementation of low-power Bluetooth systems for system management and control may become relevant to the implementation of such capabilities. The FAA R&D into the human factors, certification, security, and operational approvals supporting these advancements will be relevant to the pace of advancement of these concepts in the marketplace.