PAWR Project Office

Platforms for Advanced Wireless Research (PAWR)

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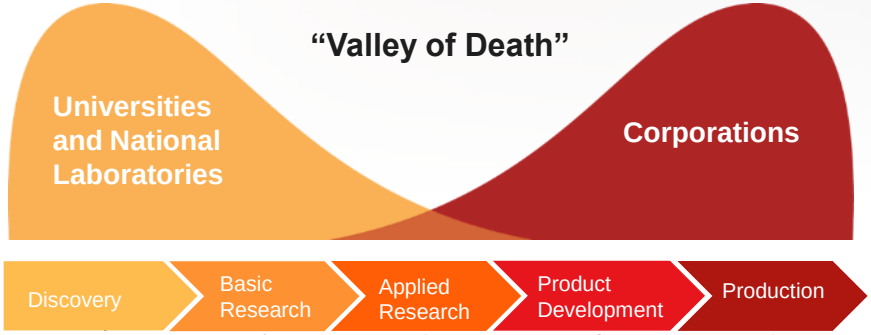
Problem Statement: Bridging the “Valley of Death”

- NSF historically funds over $50M annually in fundamental, pre-competitive wireless research
- This research could be greatly strengthened if:
  - Researchers had access to mid-scale, end-to-end research platforms
  - Industry collaborated earlier in helping to define and focus research areas



$100M Public Private Partnership

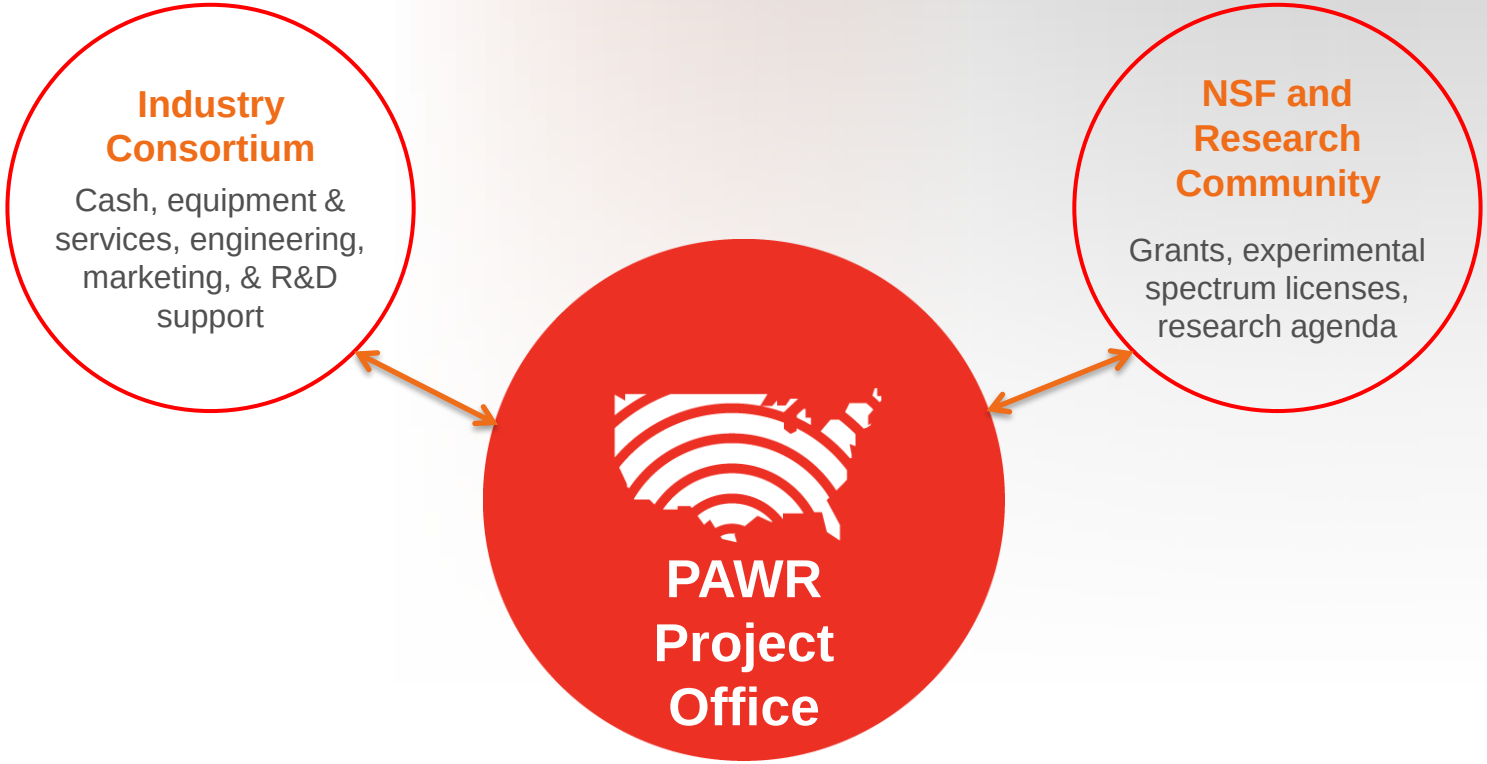
Industry Consortium
<$+ In-Kind>
$50M

NSF
<$>
$50M

Charter Members

PPO is Looking for more Industry Partners….

What is PAWR Project Office?



Why Now ?

Technology Policy	**Program Experimental Licenses; opening up of new frequency bands both licensed/unlicensed**
Industry Opportunity	**Critical gap between demand pattern and supply; move away from legacy infrastructure; rapid development**
Research Integration Need	**Explosive growth in traffic (IoT, Multimedia, M2M) needs radical new solutions; Multiple research areas need to work together**
Enabling Innovations	**Dynamic spectrum sharing; tunable filters; programmable wireless substrate**

Anticipated Timeline

PAWR Guiding Principles

SAMPLE TOPIC AREAS TO BE ENABLED BY RESEARCH PLATFORMS

mmWave to enable R&D and systems testing at the millimeter-wave bands that are about 26GHz, with a target of 100 Gbps in data rates for small-cell networks that cover a few city blocks.

Dynamic Spectrum to focus on the spectral bands that are sub-6GHz, and aim to identify spectral opportunities in existing networks and establish usage models for novel spectrum driven applications, while also studying co-existence and protection issues.

Architecture to test data network architectures for next-generation networks that operate with a wireless edge.

Mobility-at-Scale to address larger issues with network-mobility from the transport to MAC layers, including evaluation of large-scale, dense, heterogeneous wireless networks, including issues such as connection management, load balancing, and mobility management.

Wide-area Whitespace to utilize novel whitespace-based wireless networks to design, build and demonstrate 16Gbps connectivity to remove locations via long-range wireless mess connections.

Network Metrology to advance capabilities to measure and monitor wireless network performance and support research on methods to improve the security, reliability and performance of wireless networks.

Applications/Services in later years – Platforms will serve as examples of Smart and Connected Community networks that demonstrate potential applications/services including Cyber-Physical Systems, Cyber-Security, Internet of Things, Robotics, Smart and Connected Health, and Big Data.

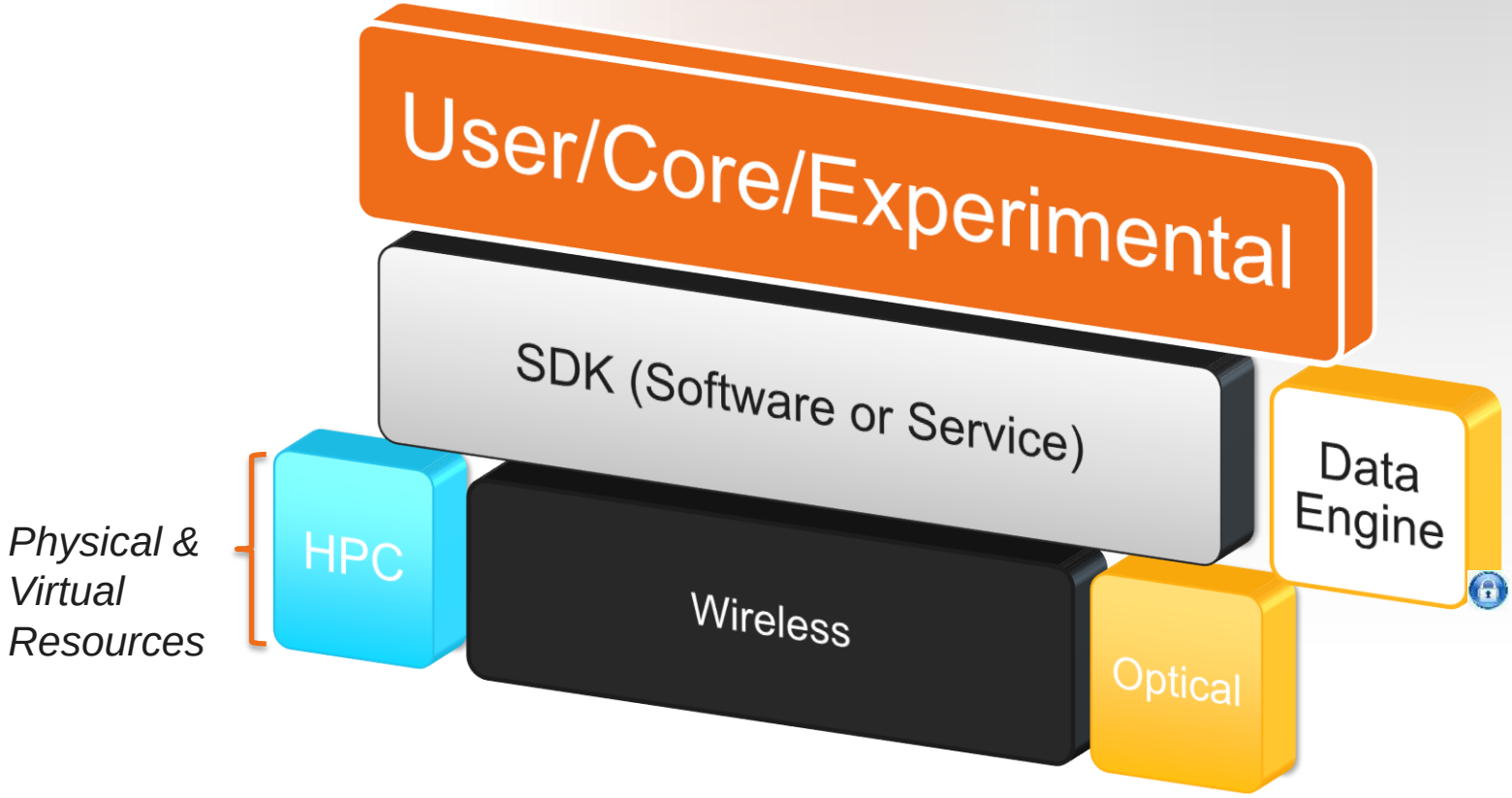
Platform Challenges: Some practical considerations

Usability (or lack thereof)

Source: Jacques Carelman

- Work beyond boundaries of your expertise
- Common interfaces, API and experience
  E.g. InCommon and eduGAIN: Global Interfederation
- Channel Measurements and characterization
- > 6GHz. Interference is Limiting factor
- Understanding the physical environment

PAWR Services Framework



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