Draft - General Recommendation, Accelerate the adoption of IoT technologies manufactured by small business and startup organizations.

Recommendation XX: Accelerate the adoption of IoT technologies manufacturered by small business and startup organizations through targeted Federal Government programs, policies, procedures, and funding methods.

Description:

The federal government should accelerate the adoption of IoT technologies manufacturers by small business and startup organizations. This can be done via policies, procedures, and funding methods that specifically target them. It is particularly challenging for small businesses and startup companies in this sector that have to provide upfront capital and full understanding in successfully navigating opportunities both within the federal government and with federal government support to market externally. The process for these projects can also take many years to bring them from proposal to commercial operation and these companies may not have patient resources.

Small businesses have the primary option of using a channel with existing relationships to cities to make sales which is also unpredictable and not very scalable. This makes it challenging for small businesses and startups. Federal funding mechanisms and procurements targeted to them can aid these companies so they can more effectively compete with larger organizations on RFPs relevant to their business. There are many existing Federal Government programs and policies that support small businesses and startup organizations. Rather than create from scratch, this recommendation advises tapping into these existing programs and have a dedicated IoT technologies track for related small businesses and startups in this space.

Justification:

Greater adoption of IoT technologies manufactured by small businesses and startups could help in the following examples:

- Incorporation of technologies enabled by IoT: Opportunities for IoT technologies are manufacturers by small business and startups across the IoT. For example, in smart, connected transportation these technologies include sensors, cameras, and edge computing devices that can improve safety in things such as vulnerable road users (i.e., pedestrians at crosswalks), traffic intersections, school, and work zones. Opportunities for IoT technologies in electrified transportation manufactured by small businesses and startups include in car systems or mobile apps that can locate charging stations, as well sensors that manage charging stations to gather data about usage and performance, to anticipate maintenance needs, and troubleshoot problems.

- Greater competition across IoT markets: Making it easier for small businesses and startups to bid on projects and deploy their technology will increase their market penetration and provide end-users more technology options. This would lead to greater competition in selected markets providing end-users the ability to select manufacturers

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> based on several factors such as cost, quality of products manufacturered, service, and innovation.

Implementation considerations:

- The Federal Government could set aside easily and readily tappable funding pools year-round for innovation and next-generation technologies. Grants could be set aside for categories that the government deems high importance.

- The Federal Government could fast-track programs for startups and small companies to deploy this technology in pilots.

- The Federal Government should set up a system to make it easier for startups and small companies to find relevant funding sources like grants and SBIR awards.

- The Federal Government should encourage local governments to leverage its local startup accelerator network to develop technology and fast-track it to local adoption on successes.

- The Federal Government could look into providing incentives and training to small businesses on IoT adoption themselves. These could include financial, but also profiling them and their work for marketing and promotion purposes that could benefit them and also encourage more people to adopt it.

- The Federal can adopt a 'train the trainer' model where small business associations or start up incubators/coworking spaces/accelerators could support each other in IoT adoption.

- The Federal Government can modify guidelines for grant programs and funding mechanisms already in existence for small businesses to allow for greater incorporation of IoT technologies. Examples include the following:
  - The U.S. Department of Commerce, Minority Business Development Agency (MBDA) (https://www.mbda.gov/who-we-are/overview)
  - DOE Office of Small and Disadvantaged Business (https://www.energy.gov/osdbu/office-small-and-disadvantaged-business-utilization)
  - National Science Foundation Program for Small Business (https://www.nsf.gov/funding/smallbusiness.jsp)

Potential implementation barriers:

- Time and Cost: The time and cost for this transformation could be considerable and small companies or startups may find it hard to continue the process. That is why targeted Federal Government programs and policies could provide greater incentive.

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- Education and Training: There is an overarching need to educate local governments and consumers on these new types of technologies which could be hard and time consuming, especially relevant for small businesses and startups

- Supply Chain: The manufacturing industry recognizes the goal from the Administration of Buy America, Build America (BABA) however, there are current constraints meeting domestic content requirements and there needs to be an appropriate ramp-up, phase in period to get to full production. Again, this could be particularly relevant for small businesses and startups.

Possible participating agencies

- DOE/DOT Joint Office, DOT, DOE, NIST, DHS, GSA, Department of Commerce, among others.

- Local Chamber of Commerce or Rotary Clubs with a national organization for coordination and local adoption

- Local Coworking spaces/accelerators/incubators like Tech Stars

- Universities that have small business advisement and start-up support