ROUNDTABLE ON NATIONAL AIOT STRATEGY - OTTAWA
Summary

CONTENTS

1 OVERVIEW....1
2 OPPORTUNITIES....2
3 CHALLENGES....3
4 SOLUTIONS....4
5 NEXT STEPS....5
6 SUMMARY....6
7 ABOUT AIOT CANADA....6
APPENDIX: PARTICIPATION....7

1 OVERVIEW

The following summarizes the deliberations at AIoT Canada's Roundtable on AIoT Strategy, held on May 5, 2022. This summary is initially intended for roundtable participants and AIoT Canada's team, not yet for general public disclosure.

The overall roundtable mission was:

> Leverage the combined wisdom and experience of industry, government, and academic leaders to identify the needs and actions to be addressed by a national Canadian AIoT strategy, aiming to elevate Canada's economic growth and competitiveness through AIoT.

To that end, participants were divided into six groups (see Appendix), each addressing three primary questions related to the contents of the would-be strategy, including

- Opportunities for AIoT application in three different verticals – with two groups assigned per vertical,
- Challenges in achieving the opportunities, and
- Solutions to the challenges.

Keynotes preceded the workshops to establish a mindset for the roundtable work. Keynote presentations and other roundtable materials are available from the roundtable webpage.

An abstracted summary of the reports from all of the groups and related common open discussions follows.

2 OPPORTUNITIES

The Question:

> What are the **OPPORTUNITIES** in your vertical where AIoT product innovation or adoption can significantly contribute to the growth of the Canadian economy ?

The purpose of addressing opportunities in three verticals, rather than an open-ended general question about AIoT applications, was to narrow the focus for each group to value-generating applications in the limited time allotted. A pre-event vote at registration by the participants chose the three verticals, which included

- Connected Transportation
- Smart Buildings
- Smart Agriculture

The results of the opportunities discussions were more to set up for and identify the challenges around the opportunities rather than to get detailed AIoT application in the vertical – though this was also valuable output.

The following are **some** of the top opportunities identified for each vertical.

Connected Transportation

- Energy management – especially in adverse climates (weather) like Canada's – resulting in product, knowledge, and innovation export opportunities
- Climate/pollution control – limit pollution and adverse effects of rising energy costs
- Since trust is critical in connected transportation – develop Canadian leadership to compete with "global hyperscalars" – i.e., GAFA
- Cybersecurity in transportation, leveraging Canada's trusted neutral (honest broker) image

Smart Buildings

- Energy management – heating, cooling, air conditioning, lighting, power distribution
- Empathic buildings – understanding occupation levels and behaviours
- Building lifecycle management through digital twinning – including planning, building construction, maintenance, and demolition
- Non-invasive healthcare – e.g., seniors care
- Pandemic mitigation – e.g., watch and understand behaviour, touchless operation
- Smart – doors, windows, coverings, etc.

Smart Agriculture

- Productivity and efficiency optimization through automation
- Precision resource application (water, fertilizer, pest control, other)

- Agricultural yield improvement
- Infrastructure for smart agriculture – e.g., batteries, charging systems
- Greater quality
- Minimize stress on the environment

3 CHALLENGES

The Question:

> What are the **CHALLENGES** in addressing and realizing the opportunities ?

The many challenges discussed can be aggregated under four broad categories: heterogeneity, data trust and access, talent and skills availability and readiness, and proving business cases.

Heterogeneity

Heterogeneity is a broad challenge category characterizing several challenge subcategories. They all suffer from too much diversity, inconsistency, direction misalignment, or generally, unsettledness. That adds risk and slows the progress of leveraging AIoT addressable opportunities.

They include:

- **IoT as a multi-technology space** presents a complex challenge in managing, understanding, and applying the diversity of technologies to solutions.
- **Lack of standards** (or unknown standards) needed for systems interoperability, to avoid solution lock-in (by adopters) and future exposures (by providers and adopters), and to form a base for innovation.
- **Lack of regulation and governance** needed to set a level playing field for providers, protect adopters, and avoid future liability exposures.
- **Unarticulated national framework** or strategy to guide (as one of the pillars) industry investment decisions and evoke participation in regulation and governance conversation with government.
- **Seeming lack of urgency and leadership** in Canada for all of the above, which constrains policies to traditional silos instead of leveraging the horizontal nature of IoT and AI across verticals and sectors.
- **Lack of (IoT+AI) community awareness** among providers and adopters (who is doing what) further reinforcing silos, preventing cross-pollination and collaboration, and retarding adoption velocity.

Data Trust and Access

Lack of trust in IoT-generated data is a crucial risk to adopting AIoT, which envelopes cybersecurity, privacy, data integrity, and provenance issues. There isn't one place or framework, or a complete framework, to turn to for data assurance, which results in a) risks to both provider and adopter liability exposure and b) prevents interoperability between systems and providers.

In addition, data access is also not always easy and available, both due to the trust and standards issues above and a fragmented data marketplace – resulting in data access complexity and diminished affordability and scalability.

Talent and Skills

It's often a challenge to acquire people with the proper knowledge and skill set. The contributing factors include the technology diversity of the AIoT space and rising demands from new entrants and players.

Proving a Business Case

Proving a business case for both a provider and adopter is sometimes a challenge stemming from the cost of initial infrastructure buildout, extreme competition in many adjacent (verticals) silos, and or just plain insufficient margins. Proving a business case can also be attributed to a lack of commercialization savvy and resistance to change from established processes.

4 SOLUTIONS

The Question:

> What are the **SOLUTIONS** for the top opportunities/challenges in questions 1 and 2 - and how would these solutions address the them ?

Solution items (recommendations) were captured by each workgroup on a workgroup flipchart, which were all posted on the common area walls. Everyone voted on what they thought were top-four solution items across all workgroup flipcharts by placing sticky dots on the items.

With the votes in view, an open debate was held to discuss the solutions and reach a consensus on the top solution categories (below) abstracted from the voted-on solution items. That is, a solution category subsumes several similar solution items.

The solutions categories identified below usually start with "Canada should", where "Canada" refers to the Canadian constituency in general and does not necessarily mean the government of Canada. It could involve Canadian industry, not-for-profits like AIoT Canada or others, or one or more levels of government. The details are for further assessment, not afforded by this abbreviated summary.

The number shown with each solution category below represents the sum of the votes for the solution items comprising that category.

Develop an ecosystem (19)

Canada should develop an AIoT ecosystem that consists of diverse constituents, including providers, suppliers, government, adopters, and end-users. And, there should be a transparent understanding of who is doing what – i.e., mapping between organizations, verticals and sectors, and products/services/technology capabilities.

Develop a shared vision, community framework, and plan (20)

Closely tied to the above (develop an ecosystem) – Canada should develop a national vision and community framework, including industry and government, and a plan to leverage AIoT to elevate the country's economy. The framework and plan should include targets and objectives and measure progress.

There was a debate about whether this should be government-led or industry-led, with arguments on both sides. The consensus seemed that it should be industry-led (like smart mining initiatives in Sudbury), with the government playing a solid supporting and facilitating role to lower barriers.

Develop a data trust (23)

Canada should develop a pan-Canadian regulatory approach to data privacy, integrity, and provenance and to foster a data exchange market. That includes a data trust framework and related standards.

Support innovation programs (16)

Canada should support AIoT innovation through its innovation budgets, which could include a new AIoT-specific program or support from existing superclusters (or both). Innovation funding should center on proof of concept and industry solutions where there is demand.

Stimulate adoption (18)

Canada should stimulate AIoT adoption through policy and funding, lowering adopters' entry barriers in Canada-strategic sectors – e.g., agriculture, resource extraction, etc.

Standards and governance (19)

Canada should close IoT and AI standards gaps and develop any related regulations to set a level playing field for AIoT providers and adopters – to de-risk future exposures and underpin innovation.

Skillset development (18)

Canada should support efforts to elevate digital literacy around IoT and AI in industry and government, change management in light of these newly emerged technologies, and build subject-matter knowledge at Canadian universities.

5 NEXT STEPS

The next steps following the roundtable are, in general, to use and build on the roundtable results to develop a national AIoT strategy.

Specifically, watch for the following:

1. Launch of a national strategy microsite hosted from AIoT Canada's « connect » B2B portal to support further discussions on the national strategy. All roundtable participants will be automatically invited.

2. Creation of a stakeholder committee to guide and oversee the development of the national AIoT strategy – by invitation.

3. Call to action to contribute to the development of the strategy roadmap.

6 SUMMARY

The roundtable workgroup discussions and the open debate were very interactive, producing substantial input toward a national AIoT strategy, including essential solutions to move Canada forward in leveraging the AIoT-based opportunities and overcoming the related challenges.

The overarching conclusions from the roundtable are:

1. Canada should build an AIoT ecosystem and have a transparent mapping of companies and organizations involved in AIoT (i.e., who is doing what) to foster mutual collaboration and innovation.

2. Canada should develop a national framework and a plan to leverage AIoT for economic growth, involving industry, government, and academia – to

    - stimulate AIoT adoption
    - advance AIoT innovation and development
    - develop AIoT standards and governance
    - and other

3. Canada should develop a framework and standards for a common data trust – to spur a data exchange market and mitigate trust-related social and infrastructure risks.

4. Canada should support the development of IoT and AI skills and literacy training for adopters, providers, and government and the advancement of subject-matter knowledge at Canadian universities.

7 ABOUT AIOT CANADA

AIoT Canada is committed to fostering Canada's economic growth through innovation and adoption of the Internet of Things and Artificial Intelligence (AIoT)_technologies and the advancement of Canada's global AIoT leadership.

Our mission is fulfilled by driving the formation of a national AIoT ecosystem by connecting our members and the broader AIoT community through learning events and member meetings – and, importantly, the AIoT Canada « connect » B2B portal. We also bring industry, government, and academic stakeholders together to leverage and apply their common wisdom in establishing a national AIoT strategy and framework.

APPENDIX: Participation

Work Groups

The following is a list of workgroups separately addressing the key questions, with everyone also contributing in a joint open discussion session[1].

Inspired

Alex Edwards	CENGN
Barrie Kirk	CAVCOE
Brian Garland	Global Affairs Canada - Trade Commissioner Service
Mark Roberts	Eleven-x
Peter Kuciak	Teldio
Stephanie Duguay	IBM

Ingenious

Jason Lee	SMARTCONE
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Mohamed Ibnkahla	Carleton University
René Breyel	Claridion
Rob Davidson	ICTC
Yvan Gauthier	National Research Council

Visionary

Dan Crawford	Raven Connected
John Weigelt	Microsoft
Keith Jansa	CIO Strategy Council
Marcel Chenier	NetExperience
Stefan Fulga	Skyworks
Suzanne Bubic	Global Affairs Canada

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Michel Langelier	AIoT Canada
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Wise

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Will Hickie	Irdeto

Smart

Ben Morris	Wesley Clover
Cliff Ellement	ThinkRF
Faud Khan	TwelveDot
Frank Rayal	Xona Partners
Michael Campbell	Bell
Tim Warland	Invest Ottawa

[1] The list includes all registered participants, including several that were unable to attend due to COVID symptoms

Primary Facilitators and Moderators

Walter Knitl at Praxiem

Nilufer Erdebil at Spring2 Innovation

Organizers, Enablers, Facilitators

Walter Knitl at AIoT Canada

Frank Rayal at Xona Partners

Michel Langelier at AIoT Canada

Veronica Farmer at uOttawa Kanata-North

Elyse Mitchell at uOttawa Kanata-North

Burak Kantarci at University of Ottawa - Smart Connected Vehicle Innovation Center

Sylvain Lemiex at AIoT Ottawa

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