IoT Lab deliverable submission – 2 of 2

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Report contains the following deliverables:

- Marketing Plan

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Table of Contents

Table of Contents

1. Situation assessment

Currently, competition between IoT facilities does not exist, since there are no existing IoT facilities, nor is it expected that this will change anytime soon. In addition, there is a trmendous need to introduce STREAM (Science, Technology, Reading, Engineering, Art and Mathematics) throughout all education levels and is the country saddled with an outdated energy and ICT infrastructure, facilitating all sorts of inefficiencies. To this end, automation, problem solving, programming, computer graphics, software development, etc. can all play a significant role in the activities performed at the IoT facility. The marketing environment for IoT lab thus represents overwhelming opportunities. It also contains some challenges that can be met successfully.

2. Organizational context

Vision

The IoT lab is a region-wide exemplary laboratory on the cutting edge of mass-market technology that is the premier outlet of ideas, products, and programs – both innovative and as substitute of foreign supply – to the educational and private sector (in particular innovative micro, small and medium enterprises, with some foray into large multinational companies) and co-joins to reach prototyping and demonstration development phases with respect to Internet-of-Things technology.

Mission

Continuous application of innovation, ownership, structure and rigor in research, development, prototyping and demonstrating in a wide range of partnerships with public and private actors, and thereby engraining Internet-of-Things applications in daily life, while simultaneously providing solutions for wicked problems.

The Internet-of-Things laboratory (or IoT lab for short) requires a tailored organization in order to run properly, i.e. establish contact with third parties (both domestic and foreign), ensure proper operations and maintenance of equipment, providing products and services, scanning the market, etc. Given the wide array of tasks on one hand, but the relative small nature of the lab on the other hand, the organizational staff needs to be lean, flexible and a multi-potential; marketing efforts undertaken and marketing content displayed much oust this tenet of the organization, since it is one of its competitive advantages.

3. Products

The IoT lab needs to offer those products that add to its mission; this culminates in a wide arrange of products and services that can be offered:

- Classes
- Workshops
- Events, like for instance gamification events where groups of people are contesting to come up with the best solution for a particular problem, with the group with the best solutions receiving some reward
- Artist/maker residencies
- IoT consulting
- IoT research, development, prototyping and demonstration
- Supervise large IoT projects for third parties
- Conduct small IoT projects for third parties

All these products and services need to elevate:

1. Iterations and design thinking: trying is risky, and risk can lead to failure but also iteration and innovation. The lab is a great place to teach students about opportunities that can be found from failure within a safe space. Not all projects work perfectly the first time, allowing students the chance to rethink their approach and learn from what didn't work. Within the lab, iterations allow for the chance to try again until you get it right, an important skill from which many students can benefit. Many great inventions are the result of making mistakes. The effort put into a project and the act of trying should be rewarded and praised

2. Training: the lab needs a champion on the staff promoting their use and teaching others how to effectively use the space to incorporate standards-based projects into their classrooms. Ideally, any educator who wants to use the space should be trained on how to help students find the resources they need in order to complete a project. Teachers do not

need to be a master of every tool, but, at a minimum, should be trained on safe operation of every tool.

Example of activities to get started:

- ✓ Teach basics of IoT
- ✓ Demonstration projects for classes
- ✓ Build proof-of-concepts
- ✓ Organize gamification events
- ✓ Participate in gamification events
- ✓ Paper Circuit Pins; these are a great way to get students excited about electricity and science. Paper circuits easily introduce students to the concept of building circuits and lighting up LEDs without a lot of expense and are often used during prototyping of larger projects
- ✓ E-Textile Mask; sewable electronics are a fun way to introduce programming and electronics to students who might otherwise not be interested, including girls who are underrepresented in these content areas. This project teaches the basics of electricity and circuits in an approachable manner
- ✓ Dancing Robots; this project uses recycled materials and electronics to teach engineering design and coding by creating a robot that moves around. Robots can even be programmed to dance in a specific pattern

The above options are just a few of the endless projects that can be created within the IoT lab. Encouraging students, visitors and others to create their own projects and seeing what they come up with is a great way to use the IoT lab. With current activities on introducing STREAM into the education system, the IoT lab has a fairly large chance (since there is little competition) to engage in a longstanding partnership with educational institutes and the Ministry of Education, Science and Culture (more on this later), and to modify easily the lab's lessons already in use and incorporate them in existing curricula, considering the following details:

- The IoT can and should be incorporated into the curriculum to help students achieve specific learning objectives. By ensuring that all projects align with the Ministry's and class requirements, it becomes much easier to justify the time spent on IoT projects
- For every potential project idea, there are a number of content areas on which to focus
- Determining the desired content concentration guides the entire project
- Every course focuses on teaching content as well as building skills
- Projects can be a great way to focus on skill-building without students even realizing that's what is happening
- Knowing if a particular IoT project within the lab's portfolio is intended to build critical-thinking, collaboration, or problem-solving skills – or a combination of these – will help determine the project parameters given to students.
- Create restrictions to stimulate student creativity and push them to create a better project

Considering the above, it should be fairly easy to create a project prompt that both aligns with standards and encourages creativity. Simple prompts that allow each student to create their own version of the project provide the most satisfying and stimulating experience for all involved. Consider ways to incorporate "meaningful making" by using societal challenges that add meaning to an activity and engage inquiry-driven behaviors where students seek knowledge and skills while building an IoT solution.

In each and every product the following needs to take center stage, and should be communicated throughout:

1. IoT Technology
2. Advanced learning types
3. World trends
4. Innovation: benefits in terms of efficiency gains, product development, and new business models

4. Market

IoT technology focus and application is as varied as their affiliations and organizational structures. Business profiles include profit based, non-profits, school affiliated, library partnerships, business alliances and/or a combination of various collaboration. In general, they tend to have local support and membership, with their technology emphasis being driven by their constituents.

4.1. For profit

IoT technology and applications are currently hardly present. Nevertheless, it offers a tremendous amount of opportunity in terms of new products, services and business models. This could therefore be a foray for the private sector to move into, and such a move can be supported by the IoT lab. This automatically implies that the lab should also cater to business and trade organizations, interest groups, industry development centers, industry and manufacturing association, chamber of commerce, etc.

4.2. Non-profit

The following actors are targeted:

- Ministry of Education, Science and Culture
- Educational institutes (FHR, IBW, IBSAE, UvS, UNASAT, PTC, primary and secondary schools, etc.)
- Academic course programs (e.g. mechanical and electrical engineering)
- Non-Governmental Organizations (WWF, Conservation International, etc.)
- Multilateral institutes (e.g. IDB, EU, UNDP, Unesco)
- Government bodies (e.g. SAO, SPWE)

5. Marketing Strategy

Marketing should be focused on:

- Uniqueness of the team
- Project portfolio
- Innovation: benefits both in learning types and efficiency, service and product offering
- Global trends in IoT

The message should be consistent and should be transmitted using non-traditional media (so no TV, radio, newspapers, billboard and the like). Given the wide variety of customers (both for and non-profit), word of mouth is extremely important and connecting with the right potential stakeholders.

Marketing Instruments

- The following instruments should be the main marketing focus for the IoT lab:
- An attractive and user-friendly IoT Lab Website
- Facebook page
- YouTube channel for instructions and video updates
- LinkedIn profile
- Twitter
- Instagram
- Short articles on online news outlets
- Active networking with regional and international organizations
- Email blasts
- Calendar events promoting the incubator process, providing tips on developing ideas, and celebrating past ideas

- Presentations at various fora
- Organizing events

Great dissemination needs to take place to stakeholders, communities, government agencies, interest groups and foreign organization in case of:

- Newly established collaborations
- Celebrating success: one of the best parts of any project is sharing it with others, especially when students are involved. Motivate students by planning showcase events where students and their friends and relatives are invited to see what students have created on a regular basis. In-class showcases can be planned to encourage students to show one another what they have been working on. Alternatively, challenge students to share pictures or videos of their progression on a class/school website or on social media. Seeing the success of one student may inspire creativity in another, and even provide positive impetus towards collaborations with other entities
- The latest facility upgrades, equipment enhancements, and weekly activities highlighting training sessions, networking events and partnership activities

The idea is to keep the IoT lab, its communication to stakeholders, and the information contained therein vibrant, in order to stimulate stakeholders to participate, as well as clubs and private and public organizations.

7. Marketing alignment with Funding

Marketing emphasis needs to focus on all stakeholders, such as industries and various civic organizations, but special attention should be paid to those that potentially are able to host and sponsor IoT leb's endeavors:

- ✓ Corporation foundations that support business, entrepreneurship business student education, and economic growth
- ✓ Economic development agency support in the form of sponsorship and scholarships
- ✓ Angel investment circles
- ✓ Private philanthropic foundations
- ✓ Business sponsorships

6. Roles and Responsibilities

Within the IoT lab the General Manager is responsible to execute the marketing plan, aided by the secretarial assistant for outreach purposes, and the IoT assistant for marketing content. The Board aids in setting connections with Government, businesses, interest groups, organizations abroad, etc. The General Manager can enlist the help of an professional to detail and execute specific marketing efforts (e.g. create a standard e-bulletin, organizing large events, etc.)

7. Sustainable Competitive Advantage

The IoT lab seeks to use its first mover advantage and core competencies to achieve a sustainable competitive advantage, in which potential new competitors cannot provide the same value to consumers that the lab. By forming strong relationships with consumers, businesses, Government agencies, foreign partners, suppliers, etc., the IoT lab can create a sustainable competitive advantage for a long period to come.