



Deepening BSI's knowledge of SME needs in the IoT space

BSI Student Research Programme Case Study

What is the BSI Student Research Programme?

BSI is the UK's National Standards Body. Each year it produces around 2,500 standards. These are documents, widely used across all industries, which define agreed ways to do or make things.

Standards cover an extraordinarily wide range of issues. Some modernize established practice while others work on the leading edge of emerging technologies. The first standard, in 1901, was on steel beams. Today's standards are being written on subjects like the ethical design of robotic systems, blockchain and data management for autonomous vehicles.

Standards get their authority by being developed through a rigorous consultation process which builds an expert consensus. To enrich its understanding, BSI often commissions and feeds original research into the standards' development process – which is where the Student Research Programme (SRP) comes in. The SRP exists to match master's degree students with a BSI research need.

This case study covers the work done in 2019 by a team of postgraduate students from UCL. They produced research for BSI which asked how SMEs operate in the Internet of Things (IoT) environment and how the SME voice can be better integrated into IoT standards' development.



Introduction

At the beginning of 2019 Clementine Blanchier, Elizabeth Down, Anna Isabella Manghi and Jenni-Kirsty O'Brien were postgraduate students in the Department of Science, Technology, Engineering and Public Policy (STeAPP) at University College London. All four were studying for a Master of Public Administration (MPA) in Digital Technologies and Policy and were deciding on their Major Group Project – the final output for their degree.

Dr Irina Brass, UCL Lecturer in Regulation, Innovation and Public Policy, suggested research into the role standards play in meeting the unique challenges faced by SMEs in the IoT ecosystem. Irina chairs BSI's IoT/1 (Internet of Things) Technical Committee and had discussed the potential for this type of research with one of her BSI contacts, Sophie Erskine, who is BSI's Standards' Development Manager for Governance and Resilience.

Sophie knew of BSI's SRP and suggested that this research would be a perfect fit for the programme. Irina agreed the details with BSI then pitched the idea to her MPA students, four of whom chose to pursue it. Explains Jenni: "We'd had a lecture on standards in term one and it was really interesting to hear about regulation and standards and the role they played, so that was why I wanted to do it. Also, because Irina worked with and knew BSI."



"A unique opportunity to work with a very supportive client."

Jenni-Kirsty O'Brien
UCL STeAPP postgraduate



"It was a really great experience and I'm really glad I chose this project."

Elizabeth Down
UCL STeAPP postgraduate

The perfect collaboration

UCL STeAPP provides its master's students with a unique final project. Instead of the usual solo and often highly academic dissertation favoured by other universities, its students are tasked with producing a cutting-edge group research report in collaboration with an external partner.

Irina Brass notes that she works in an ambitious department in a very ambitious university. "We're top ten in the world," she says, "so we have to be in the forefront from a teaching perspective. We emphasize experiential learning. Teaching should be research led and done in engagement with partners making it as real-world as possible. Also, by setting a group project we're preparing students for real-world team dynamics and they learn a lot from this experience."

Moreover, Irina thinks that BSI made for a perfect collaborator. "BSI is recognized in the standards community as one of the most established and prestigious national standards bodies in the world," she says. "Our students got to work with a world-leading partner and gained world-leading exposure to the world of standards from those who are actually developing them."

She concludes: "UCL's approach is unique. We put a lot of effort into making it so and I think BSI is also a very ambitious and forward-looking partner, so this collaboration marries very well. We are both entities that want to innovate and we put a lot of effort into making this a success for the students, for BSI and for UCL."



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Starting the project

The project began in February 2019 when the students were given a comprehensive brief developed between Irina and BSI colleagues, including Sophie Erskine and Steve Brunige, BSI's Head of Industry and Government Engagement. Steve is particularly interested in SMEs – a challenging group for BSI to engage with, particularly in a fast-moving sector like IoT. The brief set out the background to the problem to be examined and BSI's objectives. Steve says, "We genuinely wanted to understand the issues faced by SMEs and learn something."

The students were invited to BSI's headquarters building in London to discuss the brief further. Characterized as "a negotiation", the project's scope was agreed over a number of meetings so that it would be both valuable and feasible for the students and at the same time, deliver what BSI needed.

The research was to supply important market intelligence that would inform the IoT standards' development programme. "Having a firm brief really helped us ground where our research would fit in in the larger scope of what BSI was looking at and the problems that they were asking us to research," says Elizabeth, "so I personally thought it was a great way to start the project."

Thereafter the students allocated roles within their team. "The point of doing it as a group," says Jenni, "is that in the working world you'll be in a group. So, it gives us more of a professional experience. And we allocated roles to make sure everything got done."

The project ran from February to September 2019. Throughout the students maintained regular contact with BSI via Skype calls and emails. "BSI was very responsive and always came back to us very quickly," notes Clementine. "Other groups in our class had partners who weren't so helpful, so we really appreciated that."



Face-to-face

The project was not an abstract academic exercise. To underline that point the students had several opportunities to meet standards-makers and users in person.

The team was invited to sit in on a couple of standards committee meetings at BSI's offices. They also attended one of BSI's bi-annual committee member events. Here they ran three workshop sessions with delegates where they presented on their project. They also hosted a stand in the exhibition area during breaks. This provided the chance to network with a wide cross-section of standards users including SMEs.

For the students it definitely felt like a real-world client, with real-world issues. Says Jenni: "Especially because we did a lot of primary research and surveys and observation and presented at the BSI conference. It was very much hands on and on the ground. It didn't feel like we were sitting in a room writing a theoretical dissertation, which was great." She adds: "Particularly when we went to the conference and presented there. Meeting all the different people from different industries with an interest in standards. I loved that experience."

Delivering the report

The team undertook secondary research and participant observations, then conducted primary research via an online survey and semi-structured interviews. BSI helped publicize the online survey by advertising it in a newsletter for committee members, on Twitter and LinkedIn and on the IoT committee's home page.

But it wasn't easy to get SMEs to participate. "I think it's really hard to get survey clicks because people see so many different links nowadays," notes Elizabeth. So BSI put an incentive together wherein those who completed the survey would get time-limited access to the standards database. That helped, but to get the necessary number of completed surveys and interviewees, a lot of work also went into finding subjects and directly inviting people to participate via LinkedIn.

As report drafting got underway, BSI gave feedback on three successive drafts. "It was mainly about making the draft accessible to busy professionals," says Sophie. The students then finalized their report which included five recommendations for BSI. It was submitted to UCL on schedule in September.

Outcomes of the partnership

The SRP aims to benefit all parties. The students learned much more about standards, the IoT and SMEs. In addition, they got to experience working with a real partner on a genuine issue. They feel they gained a deeper understanding of how to interact with a client. They also note the value of learning more about team working. "We found out about different dynamics and people's different strengths and how interactions worked, which will be very useful as we'll be working in teams for the rest of our lives," says Jenni.

The students also valued the opportunity to do something real. "We obviously knew it was for our final project for university, but it also felt like we were contributing to something beyond just a graded paper," says Elizabeth, "and the fact that we got to go to the BSI offices and meet people, it felt a lot more grounded in reality."

Irina Brass highlights the students' exposure to the world of standards and how they got to see decision-making being done in the standards development process first-hand. "They also tackled an issue which is very challenging, dealing with multiple technologies in many different sectors." She notes that they learned a number of managerial, communication and engagement skills including how to meet deadlines, coordinate writing and how to split work. "These challenges are preparing them for the real world and that's what we want to do with our MPA."



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Meanwhile BSI gained knowledge in an under-researched area which was accessed with a lot of academic rigour. "It can be difficult for us to engage with SMEs," says Steve, "It's time-heavy work, so to have them do that for us was really useful. And it really helped that they were not BSI because it made the results more objective."

The students also supplied a fresh and different perspective, and lots of enthusiasm. "I really enjoyed working with them," notes Sophie, "and we were deeply impressed with their professionalism. They had no preconceptions making it a very refreshing experience."

"They were also more ambitious than consultants," says Irina. "They wanted to push the agenda. It's good that they gave recommendations that were ambitious for BSI." The work also increased BSI's visibility both within academia and within the SME community, where in some cases the role of standards is not well-known.

Irina also feels the project was of "great value" to UCL. "We are part of the Faculty of Engineering, the motto of which is 'Change the world,'" she says. "It's about making sure that students experience learning through practice as opposed to just sitting in front of a computer, and in this project the students did exactly that."

The students' report was awarded a Distinction and is now being posted on BSI's website and discussed with TechUK – which is also working to engage more deeply with SMEs. The research findings are informing the future direction of the IoT/1 Committee and future IoT standardization, and the recommendations are being looked at by BSI. Last, but not least, one of the research students – Anna Isabella Manghi – is now working for a FinTech start-up and has joined a BSI FinTech committee.

Would the students recommend that their successors work with BSI in future? "Yes. 100 per cent" says Jenni. "Definitely" says Clementine. Elizabeth adds: "I think it was a unique and interesting opportunity with such a supportive partner as well." "It was a really great experience," concludes Jenni. "I'm really glad I chose this project."

What students gain from BSI's Student Research Programme:



Additional support and impetus in defining and producing their Master's dissertation



Kudos of association with BSI



Networking opportunities



Commercial perspective to the dissertation



Exposure to future potential employers



Access to BSI resources (including standards and committee experts)



About BSI Education

Universities make a significant contribution to standardization by teaching about standards, contributing academic research and being standards-makers. BSI Education builds relationships and creates programmes with universities to help raise awareness of the benefits of standards to society and the economy and to encourage and increase participation in standards-making.



For more information about BSI's Student Research Programme and how to get involved, go to bsigroup.com/education or contact education@bsigroup.com

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