(intel®)

Eco-friendly, efficiency-driving and engaging: SAVORTEX transforms the IoT

Intel® Atom™ Processor E3825
Internet of Things

SAVORTEX®

A Smart Energy Saving Revolution

Of the 70 million corporate washrooms, 20 percent are equipped with environmentally unfriendly, inefficient, and unhygienic hand-dryers and around 80 percent offer expensive paper towels that create three million tons of waste, costing corporate landlords £10.5bn per year[1]. As such, reducing building management costs, boosting facility efficiencies, and cutting energy use is very lucrative. SAVORTEX has built the world's first IoT-enabled messaging hand-dryer to disrupt this inefficient sector and transform corporate washrooms into smart spaces. Built on Intel® technology, the SAVORTEX AdDryer* uses the Internet of Things (IoT) to deliver waste savings, alert cleaners to washroom needs based on usage, and engage consumers with tailored, high-definition video messages, allowing enterprises to transform costly commercial washrooms into connected, hygienic, and sustainable revenue-producing assets.

Challenges

• **Ingrained issues.** High costs, inefficient maintenance, and energy consumption in washrooms make them difficult to manage. SAVORTEX wanted to solve multiple problems at once.

• **Excessive waste.** The prevalent drying choice of expensive paper towels significantly impacts the environment in both manufacture and disposal.

• **Status quo.** Conventional brushed-motor hand-dryers are energy-hungry and have a short life-expectancy so are costly to run, but finding budget to deploy new solutions on the necessary scale can be difficult.

Solutions

• **Strong performance per watt.** SAVORTEX chose Intel® Atom™ processors to power its hand-dryers because they are powerful yet very energy efficient.

• **Rugged and reliable.** This version of the Intel Atom processor is a ruggedized compute platform in a sealed environment that can withstand extreme temperatures (-40 to 110 degrees) for excellent longevity.

• **IoT connectivity.** SAVORTEX deployed Intel® Dual Band Wireless-N 7260 network adapters within its solution, including Intel® Smart Connect Technology, to be able to confidently connect to the cloud.

Impact

• **True sustainability.** SAVORTEX offers a powerful, energy-efficient hand-dryer that delivers quick-dry in 11 seconds and runs on just 550 watts – significantly lower than competitor products in the marketplace.

• **Operational efficiency.** The solution offers a connected washroom management system that can reduce clients' operational costs by facilitating effective and responsive washroom cleaning.

• **New revenue.** Thanks to hardware from Intel, the AdDryer engages users with one-to-one, high definition video messages so enterprises can use real data to push content and drive additional revenue streams.

> "Our ambition relies on having the right global connections, so we're really proud to be working with Intel to make our IoT vision a global reality and be able to disrupt traditional business models."
>
> **Syed Ahmed,**
> **Managing Director, SAVORTEX**

> "The Intel brand is the kind of brand we want to be associated with. Intel's IoT strategy aligns well with ours and the Intel teams give us fantastic ongoing support."
>
> **Chris Dockrill,**
> **Head of Digital and IT, SAVORTEX**

Cut waste and risk

British IoT company, SAVORTEX, is an award-winning manufacturer of green technology: "We are leading a smart energy-saving revolution," said Syed Ahmed, managing director at SAVORTEX. "It takes an incredible five gallons of water to produce just one pound of paper[2]. 30 percent of paper goes to waste in corporate buildings[3], and washroom waste is a large part of that. 51,000 trees would need to be planted to replace the number of paper towels that are discarded every day and used paper towels create 254 million tons of refuse every year[4]. Since a standard roll of paper towels requires at least 2.5 gallons of water to manufacture, there's a lot going to waste that shouldn't be."

SAVORTEX wants to replace costly, unsustainable paper towels with smart hand-dryers that offer so much more than effectively dried hands. Currently, outdated, energy-hungry hand-dryers produce 9.2 million tons of CO2 annually, costing businesses £1.75 billion a year[5]. So, SAVORTEX designed a smart and sustainable hand-dryer range fit for 21st century commerce.

The EcoCurve* 550A and 550D and AdDryer hand-dryers use the latest compact digital brushless motor technology and curved air delivery to maximize energy-efficiency. Hand-dryers with brushless motors offer up to 10 times the longevity, use less energy than other motors, allow significant cost savings, and are quieter. They are also better for you: Hand-dryers powered by brushed motors produce significant pollution because dust particles are produced as the brushes in the motor wear. These tiny particles are less than 2.5 microns across and are easily ingested into the respiratory system. SAVORTEX tests on brushed motor hand-dryers revealed that they produce a total of 75 micrograms per cubic meter, which is over twice the short term level considered safe for outdoor air[6]. They also produce oxides of nitrogen and nitric acid vapor, so the pollution risk from brushed motors is considerable.

"Competition in the hand-dryer space

is quite fierce, although the norm is not smart hand-dryers," commented Ahmed. "Beyond offering low cost, energy efficient products that are better and safer than the traditional brushed motor hand-dryers, we have added IoT capability and a content management system at low cost to our product to carve out a totally unique selling point."

SAVORTEX counts many sustainability-focused organizations amongst its clients, including Honda, MacDonalds, and Marriott Hotels[7]. With the latest addition to the new range, the AdDryer, businesses like these can change how they approach business and generate additional revenue while experiencing huge savings in cost, energy-consumption, and waste.

Futureproof and flexible

The AdDryer can transform washrooms into smart revenue generators thanks to its IoT capabilities. It runs on Intel Atom Processor E3825, which gives this product 8 GB of memory, low power draw, and excellent HD graphics. "Intel technology is known for its impressive power to performance ratio, and this was very important to us as energy-efficiency is so central to our offering," said Chris Dockrill, Head of Digital and IT at SAVORTEX.

"The AdDryer plays 1080p HD video in response to someone drying their hands, so we needed to make sure the processor we chose was powerful enough but also had reliable connectivity because our system chooses a commercial to show based on real-time location information in under five seconds. Adding a good quality screen to a hand-dryer could have increased energy consumption, but it was very important that it didn't. Intel technology gives us the dynamism, performance, and flexibility we need. It also delivers longevity, giving the AdDryer a compelling lifespan from a building manager's perspective, guaranteed for seven years."

SAVORTEX manufactures in the UK so it was easy to collaborate with Intel's IoT Ignition Lab and design the hardware to fit the product specifications. The Intel Atom Processor SAVORTEX used has

a small compute footprint to suit this product. It can withstand temperatures ranging from -40 to 110 degrees and is built in a completely sealed environment, so it provides the durability and reliability necessary for corporate washrooms. For full IoT connectivity, SAVORTEX smart hand-dryers have Intel Dual Band Wireless-N 7260 network adapter built in, with Intel Smart Connect Technology and Intel® Ethernet Controller I210-IT.

SAVORTEX built the whole EcoCurve Smart range of hand-dryers on Intel technology. "We chose Intel because our products needed to be all-in-one to offer building managers straightforward deployments that fit organically into their environment," said Dockrill. "Intel technology is highly versatile and can meet different standards, so our range is easy to install and won't disrupt existing facilities processes. Ease and simplicity, as well as scalability, were top priorities and Intel delivers them."

An important decision-point for SAVORTEX was that from both a software and hardware perspective Intel is low risk. Both companies are working to develop this offering further, so basing these products on technology that is easy to scale and integrate with other features was crucial. Intel technology gives SAVORTEX peace of mind and supports the lifecycle of the product into the future.

Energy-saving

Recent energy price rises and public focus on the impact of climate change have driven organizations to examine energy use and implement environmental strategies to reduce unnecessary expenditure, energy consumption, and greenhouse gas emissions based on actionable data. Global requirements like the energy saving opportunity scheme, which is the first mandatory regulation asking businesses with over 250 employees to reduce waste and energy-consumption, only increase this pressure.

With SAVORTEX, building managers can dry the equivalent of 59 pairs of hands for the cost of just one paper towel[8]. SAVORTEX hand-dryers run off just 550

watts, which is significantly lower than competitor products in the marketplace. SAVORTEX customer, the Royal Bank of Scotland (RBS) announced savings of £53,635 in operational costs by deploying just 80 smart hand-dryers at RBS Premier Place. Previously, a typical RBS building like this one used 14 tons of paper towels per year, which has been eliminated by switching over to SAVORTEX smart dryers. This equates to a carbon saving of 95.4%. In total, the real-time data collected on site demonstrates savings of an extraordinary 3.14 million paper towels, reducing CO_2 usage by 4494.51 kilograms in under 13 months.

John Hayes, head of property at RBS said: "In the past, Corporate Responsibility and cost management were relatively separate activities. However, in recent times these two agendas have moved much closer together. We at RBS chose to undertake a trial with SAVORTEX as we felt that they had created a product which recognized that investment in resource efficiency also needs to be commercially sustainable. In this case, incorporating wireless energy monitoring of 'real-time' cost usage allowed a comparison versus other hand-drying options such as hand towels [...]

[SAVORTEX] understood the corporate agenda perfectly and created an easily implementable solution. The trial was an overwhelming success and we are expanding this more widely because RBS recognizes the two-way benefit that we can have by working with SME's like SAVORTEX, who are often a real hot bed for innovation and invention."[9]

Operational efficiency

Flexible, secure, and cost-effective cloud-based applications that can convert the vast volume of data generated by smart buildings into a decision-making platform are predicted to drive expansion of the IoT[10]. SAVORTEX smart hand-dryers record washroom-specific energy and footfall data in real-time to show businesses where savings can be made.

Each client's data is wirelessly reported to the SAVORTEX Intelligent Data portal. The data collected can be fed into

facilities management to drive efficiencies and other data-driven cost savings, such as allowing businesses to centrally and remotely manage the cleaning of washroom facilities from the cloud.

This intelligence also allows for accurate ISO 14001 and ISO 50001 reporting and contributes to the management of corporate energy targets. These unique options directly reduce costs and add to bottom-line profitability by saving waste and energy, and managing costly resources efficiently.

The Emprise experience

The AdDryer also offers a new route to revenue, thanks to its unique advertising and content management capability. Once AdDryer is connected, SAVOREX evaluates the building in terms of audience value and then, as soon as the content is sold, its clients start to see the return on investment. For many companies, this extra layer of value-add is a key motivator in choosing a sustainable, IoT-based solution.

The alternative revenue model AdDryer offers is a game-changer in terms of how businesses adopt IoT technology. For example, leading facilities management provider, Emprise, introduced the AdDryer to high-profile corporate customer, The British Library, which wanted an innovative technology solution to engage and inspire its 1.6 million international visitors and drive sustainability. It wanted to determine the building's level of waste and potential resource efficiencies as well as the audience value of its estate to understand any ad revenues that could be achieved.

Emprise's client has 58 washrooms, and annual spend on dry cleaning and replacing linen towels was £22,202 alongside other drying solutions. These included existing dryers with a power rating of 1600 watts, which is almost triple that of the AdDryer, making an immediate potential reduction in energy use of 66%. So, the client ran a two-month trial of the AdDryer at a busy public washroom.

During the trial, the Head of Estates

commented: "So far the [team have] had at least 50 very positive comments on the new SAVORTEX hand dryer. The visitors are very pleased with this new addition." On average, 115 video ads were displayed on the screen each day, with an average drying time of 11 seconds. Running 115 AdDryers used 115 times each day over 348 days would cost £390.08 per annum, which is a potential operational cost saving of £20,124.72 per year, delivering a compelling nine-month payback period. Based on the same ad activation data as that collected during the trial, the organization could generate total revenues of £261,128.58 per annum. These demonstrable savings and improvements in energy-efficiency and hygiene, augmented by the potential ad revenues, convinced the team to deploy this technology widely throughout the estate.

"This is Intel's first foray into the hand drying sector," said Rod O'Shea, EMEA IoT Group Director, Intel UK. "It is a great opportunity to demonstrate how, with smart building management and connected devices, enterprises can use data to drive additional revenue streams while reducing operational costs and saving energy." While the key driver for many businesses may be operational efficiency, SAVORTEX's unique offering disrupts traditional business models and the drying market. By facilitating content management for their clients, SAVORTEX demonstrates a different approach to

revenue generation and smart solutions using Intel building blocks.

A connected future

More and more, media buyers are under pressure to deliver ads that generate tangible value. Companies are no longer happy with random eyeballs. In order to meet these demands, audience data is critical for ads to reach the right targets at the right time. Whether that is a male or a female, or someone working in banking, hospitality or retail, it needs to be captured.
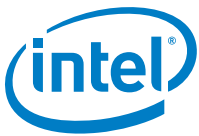
"Corporates wasted at least £1 billion on empty advertising last year because ads were being shown to empty screens or uninterested consumers[11]," said Ahmed. "AdDryer delivers specific, tailored ads to a captive audience and generates granular gender, location, and business information so you know exactly who has seen which ad for how long, and all of this at a fantastic price-point."

"We are proud to work with SAVORTEX, co-developing a product which we can bring to market to drive great customer experiences. The magic of the IoT is that these things can connect to provide useful information and drive transformational business models. This solution not only drives sustainability, reduces cost, and creates great customer experiences, but it provides a framework for new and innovative revenue streams" said O'Shea[12].

Next steps

"The future we are creating is matchmaking building owners and media buyers," said Ahmed. "Thanks to Intel, our technology is interoperable, so we plan to bring in other smart devices for corporate washrooms and the AdDryer will act as the IoT gateway."

Find the solution that's right for your organization. View **success stories from your peers** and check out the **IT Center**, Intel's resource for the IT Industry.

[1] SAVORTEX research
[2] http://www.afandpa.org/docs/default-source/default-document-library/2012-af-amp-pa-sustainability-report.pdf?sfvrsn=0
[3] https://www.bre.co.uk/filelibrary/pdf/rpts/waste/Roadmap_final.pdf
[4] http://www.thepaperlessproject.com/how-to-reduce-your-paper-towel-use/
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[7] SAVORTEX website
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[11] http://insight.proximagroup.com/up-to-60-percent-of-global-marketing-budgets-being-wasted-every-single-year
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