



SATO White Paper

Application-Enabled Printing Solutions for the Retail and Food Industries

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In the age of the Smart Phone, almost everyone is familiar with ‘apps’- or applications - in mainstream technology, which allow users to take a standard piece of equipment and adapt it with software to easily configure a device that is perfectly suited to the individual’s use. Perhaps what is less well known or considered however, are the huge benefits that this technology holds for the business world.

It should come as no surprise that the leading printer manufacturers are now incorporating this ability for end-users to customise their product, giving the concept of customer satisfaction a whole new meaning by helping businesses streamline their printing processes and resellers to cater precisely to their customers’ needs. In this paper, I will discuss how Application-Enabled Printing technology is offering retail and food environments sophisticated and flexible solutions which are set to revolutionise the way we do printing.

Businesses are always looking for ways to work better and more efficiently, and one area where major gains are possible – especially in the retail and fast-food trades – is printing. In particular, the use of new intelligent printing technologies to make the production of labels and tags an order of magnitude more flexible and cost-effective.

Labels are everywhere, yet while businesses want label printing solutions that are tailored to their individual needs and work processes, too often they are offered a standard non-intelligent package that either does far more than they need and is complex to install and maintain, or one that must be laboriously built up from a kit of parts. The result can be multiple labels where one would suffice, plus wasted staff time and resource.

One of the first technologies to address these problems was called Smart Printing, and it offered a partial solution. It allowed a printer to be used stand-alone by making it programmable and able to operate without being attached to a PC. While useful in its way, it had the drawback that once programmed, the smart printer became a single-purpose device until it was taken back and reprogrammed, with all the potential downtime it might entail. That might be acceptable in some more predictable industries, but not in more fast-moving areas. To put it briefly, in the world of retail and fast food, one size does not fit all.

Enter application-enabled printing (AEP), a new generation of technology that leaps far beyond the smart printer in capability. By fixing the holes in smart printing and bringing intelligent printing into the 21st century, AEP helps businesses get a grasp on their printing processes, and enables resellers to win more business by better meeting the needs of their customers.

An application-enabled printer not only has its own internal processing power - so it can connect to other devices such as weighing scales, a handheld barcode scanner, or a keyboard, and it can print without the need to connect to a PC - but it is designed to be readily reprogrammable. This means that, unlike smart printers which can only hold one program at a time, new applications can be added to an existing AEP, much as you might add multiple apps to an iPhone or Android smartphone.



The first AEP device is a stand-alone two-inch (50mm) label printer, so target markets include retail, for promotions, printing price and shelf labels, quick-service restaurants for food safety and stock rotation labels, etc. And because it is programmable, it makes it relatively easy to create new or custom labels.

For example in a retail environment an app could be downloaded to automatically calculate and print thaw and use-by labels – relying on the printer's internal real-time clock. Another app might use its internal product and price database to correctly calculate and clearly print mark-down labels to clear older stock.

Not only does this mean that you could start with a printer with one function, then add others as the needs arise, it also means that the printer can be customised to include exactly the right set of applications for a given purpose.

For the reseller, the opportunity is to build a mutually profitable business relationship that delivers what the customer wants now, without the appearance of expensive over-engineering and while still keeping the door open to future cooperation. That means the ability to easily tailor the printing system, plus it should also be simple to develop and deploy new vertical market capabilities as new customer requirements arise.

For both reseller and customer, it means a product that more accurately fits the user's needs, yet at the same time it also means fewer components in the chain – fewer devices to look after, fewer interconnections to manage, and fewer things to go wrong.

It can also mean a simpler package that is easier to understand. That is because it can be easier to set up and tailor an AEP app for a specific purpose than it would be to set up a large PC-based software suite of which only a few elements which actually be required.

And because the AEP device can be powered by a rechargeable lithium-ion battery, not only can it operate free of connection to a PC but it does not need a mains lead either. That means printing can be located where it is required, not where the infrastructure says it has to go. It can therefore operate on a trolley or a table in the centre of a shop or warehouse and away from any power sockets.

AEP devices are also designed to be user-friendly. Current models have a mobile phone-type keyboard which will be familiar to most users. Both the buttons and the display screen are designed for ease of use – the buttons are large and the screen is wide. Future models could include a smartphone-type touchscreen, too.

Apps can be downloaded to the AEP unit either using a PC running a utility program, or loaded directly as a package containing all the necessary elements, such as a pricing database. They can be loaded via a USB cable, a wireless network (Wi-Fi) connection, or on a memory card, with some AEP units accepting the same SD-cards that are widely used in digital cameras and other devices.



Programmable printing

So-called smart printers are not new, of course: the ability to set a printer up and then use it independently of a PC has been around for many years. What has changed now with the arrival of application-enabled printing is the sophistication and flexibility of those printers, and their ability to grow with the customers, providing far greater levels of investment protection.

The ease of programming has also changed dramatically, mirroring the huge advances that have taken place in application development tools in recent decades. Gone are the days of having to write code in BASIC, and instead we look for advanced scripting languages, and development tools that abstract most of the heavy lifting involved in creating new applications. Called AEP Works, these app development tools include a PC-based printer simulator, enabling developers to load new apps and test or demonstrate them.

It also helps that the AEP is a system with well-defined functional areas, unlike say an Android or Apple smartphone which might be called upon to be a telephone one minute, a satnav the next, and a videogame thereafter. Add advanced programming tools to an AEP therefore, and you have a system that allows new applications to be created and deployed – and subsequently updated – remarkably easily.

A major benefit of being able to add applications for the AEP is customisation, with no need to buy an entire suite of printing capabilities if you only need certain specific ones. It allows an AEP to be set up to exactly meet the user's needs by mixing and matching from a standard set of apps, either written by the reseller or customer, or bought in from other programmers, appstore-style. If further customisation is needed, existing apps can be modified or new ones written to suit.

AEP apps are also able to run on multiple platforms, so there is no need to redevelop apps if you change or update your printer. Instead, an app developed for the first generation AEP units should also run on subsequent AEP-capable devices, whether they be desktop printers, mobile printers, or other print-capable devices.

And of course if the customer is not sure yet what their needs will be, that does not matter: they can choose an initial app or set of apps to load now, then change that mix or add more apps later on as their use of the technology grows and as the need arises.

These capabilities are not entirely free of effort, and some programming skills are required at the reseller level, but this involves simply a one-day training course and the purchase of a demonstration kit on which to test newly-developed apps. Resellers can then go ahead to create specific sets of apps (or app frameworks for later customisation) for their target vertical markets. An end-user company with technical skills could also attend a course and acquire the skills to develop and modify its own AEP programs.

Today's implementation of application-enabled printing is just the start. The same concept will be implemented on multiple classes of printers in the future, including both mobile and desktop printers ranging from low-end to high-end. All these devices will be able to run the same AEP-developed apps.



It is also possible to run the intelligence behind AEP on a separate device, such as a smartphone or tablet computer, and have it print via Bluetooth to a mobile printer, or even a suitably-equipped desktop printer.

Boxout 1 – the TH2



The TH2 label printer is the first device to feature SATO's AEP (application-enabled printing) technology. AEP allows the TH2 to operate as a network-connected but stand-alone intelligent printer that is capable of operating without connection to a host such as a PC.

AEP also allows it to accept new applications, for example to print a new design of custom label, or to look up and automatically calculate pricing details, stock numbers or ingredient listings.

The TH2 is a complete label printing solution, able to accept new printing applications and information databases via USB, on a removable SD memory card, or over a wireless LAN (Wi-Fi). It has its own built-in intelligence to run its stored programs, plus a mobile phone-type control pad, an internal real-time clock, and a wide LCD screen. Its rechargeable lithium-ion battery enables it to print perhaps 4000 or 5000 labels from a single charge, and its casing is made from an anti-microbial material to avoid bacterial cross-contamination, for example in food processing applications.

Typical uses for the TH2 include:

- ✦ Price Marking
- ✦ Price Markdown
- ✦ Shelf Labelling
- ✦ Ingredient Labelling
- ✦ Small Goods Labelling (e.g. Cosmetics. Jewellery)
- ✦ Stock Control
- ✦ Item Identification
- ✦ Incoming Goods Labelling
- ✦ Industrial Manufacturing
- ✦ On Demand Short Run Labelling

The TH2 is simple to use, lightweight yet robust, and can operate at temperatures from 0 and 40°C. There is also a range of accessories available for the TH2, such as a keypad cover, SD memory cards, a hanging wall mount, and a label cutter.



Boxout 2 – Case study

For independent shoe retailer Shoon, the ability to run sales and mark-down prices at short notice is vital: it draws consumer attention and helps clear seasonal and slow-moving stock. Also vital however is the ability to integrate those sales with its point-of-sale systems, which is why Shoon has equipped its 22 stores around the UK with SATO's app-enabled TH2 label printer.

In previous years, it could take days to prepare labelling for a sale – labels had to be pre-printed with sequential numbers, and the sales system required not one but three separate labels. The portable TH2 has reduced that to a few hours.

In particular, the TH2's ability to readily accept new programs and price databases, which is based on AEP (application enabled printing) technology, allows Shoon staff to combine three labels into one and insert the sequential numbering on demand and on the shop-floor. The company has also seen a saving in label costs.

“Since implementing SATO's TH2 the most significant change we have noticed has been the reduction in time spent on sales preparation by our employees,” noted Shoon's Marketing and Design Manager, Jonathan Newton. “To have this technology make such a huge impact on our business, so quickly, is extremely impressive and it means that our employees can spend more time serving our customers, which is really important.”

Shoon plans to make even more use of the printer by adding apps to it via AEP, Newton said, adding: “The TH2 solution is helping our company to realise real cost and time efficiencies and down to its versatility in design, we will be looking to use it for a wider variety of applications in the future.”

Conclusion

AEP allows businesses - and the resellers who work with them – to customise their label printing processes to their specific needs and to work more effectively with their other IT systems. AEP's ability to download and run multiple new apps also enables them to readily adapt those printing processes as their needs grow and change.

In addition, the fact that intelligent AEP devices can operate independently of a PC or other controlling hardware means that they can assist and empower employees, taking tedious tasks out of the workflow and allowing them to spend their time more profitably.

The net result is that businesses can use AEP to cut their costs, improve efficiency and printing quality, and become more agile and responsive to changes in their trading environment.