Dear SAP INFO reader,

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Sincerely,

Your SAP INFO Team
German Chancellor Gerhard Schröder was genuinely intrigued by this latest innovation for the office: a digital paperclip — the “Digi-Clip” — to make handling paper files more efficient. Henning Kagermann, CEO of SAP, knew how to get the chancellor, a qualified lawyer, interested in this technology at the CeBIT computer fair in Hanover, Germany, this spring. The credit-card size “intelligent paperclip,” equipped with a sensor, can be attached to documents that are to be distributed throughout several departments — for example, in a public administration office. If you want to know where the document is at any point in time — in whose in- or outbox the document is pending — you can track it with the DigiClip. If the person authorized to sign the document also uses a second DigiClip for identification, the document can even be signed digitally, at the push of a button.

At SAP Research, the DigiClips, with their tiny memories and limited computing power, are designed with only one purpose in mind — as stepping stones toward more complex systems, such as sensor networks or collaborative business models that can acquire environmental data from their surroundings and apply business logic on the spot. This next generation of RFID technology, limited in its business potential, is expected to surge onto the market in the next five years, as more and more intelligent capabilities are put into smart items and the costs of RFID manufacturing decrease to the point that an individual sensory tag will be only a few cents. SAP Research, partnered with key businesses through its Smart Items Research Program, is taking a leading role in exploring creative industrial applications that make this technology meaningful for businesses that need a real-time method for monitoring goods and products in the physical world.

Transferring knowledge into products

While SAP product teams are in the process of delivering to the market the ramp-up release version of SAP Auto-ID Infrastructure (AII), the new SAP NetWeaver component that integrates RFID technology with supply chain processes, researchers at SAP Research are already working on driving this technology further. Whereas in RFID, the tag — an antenna fitted with a microchip — communicates with the central server via a reader, the next generation of smart items will be enhanced with more storage, microprocessor capacity, or sensors, thus having much higher communications, sensing, and calculation abilities. These new devices will “talk” to each other directly via radio waves from their own network and can be dynamically reprogrammed. For example, in tracking a pallet of eggs crates, the server load would be too high if each bottle of an egg contacted the server individually. Instead, these next-generation smart items collaborate by first collecting and processing their data locally. Data is transferred to the central server only when further processing is needed — if a pallet is delivered incomplete or is damaged, for example. This represents a paradigm shift in software technology from client/server structures to peer-to-peer (P2P) computing — a scalable solution that avoids data overload by performing as much processing as possible at local level and that also makes it possible to push business logic to the periphery of the information system, business logic that is generated in SAP’s enterprise service architectures and downloaded to the smart items.

SAP researchers see promise in the networking of embedded smart systems, minicomputers capable of taking in sensory data from their environment and reprogramming the sensor devices in the sensor network. These sensor devices can be placed in numerous technology products, such as cars, airplanes, and manufacturing equipment. While embedded systems are often specialized for one-specific application and not at present generally not designed for communication with central systems, the future connectivity of these systems offers a new dimension for efficiency and scalability. For example, expensive industrial machinery can be monitored by continuously taking into consideration environmental data about the equipment’s condition and operation. The data can be used to forecast an impending defect (by identifying, for example, unusual vibration in the machinery), which upon detection can lead to an early warning alert being sent to the company’s SAP system. This preemptive alert allows service personnel to act on a timely basis, with resulting benefits to the company’s financial and operational performance.
Together with national and international research partners, SAP is developing novel solutions that will help companies increase efficiency, drive innovation and achieve competitive advantage. Hoffmann and Kogermann explain the DigiClip to German Chancellor Gerhard Schröder.

The DigiClip attaches easily to documents and folders to eliminate the guesswork from document tracking. Rather than imagining what may have happened to a document or where it is, you can check on the document’s physical location at any time. When a user signs the document, the DigiClip confirms the action on a personal computer or PDA. A second DigiClip can be configured to send an instant email notification to the signee’s email address. A second DigiClip can be used to verify authorisation. Through the company’s workflow, information about the document is updated in real-time.

Henning Hoffmann, journalist, Heidelberg, Germany The DigiClip in the workflow

Henning Kagermann explains to German Chancellor Gerhard Schröder.

The Digiclip: on the paper trail

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