

Governments Influence RFID Adoption

In the United States, private investment is advancing RFID adoption. But in Asia—and even more so in Europe—government funds are jump-starting RFID research and pilots, and helping the regions stay competitive.

By John Edwards

Adam Adgar is a member of a research team that's working on an exciting RFID project, one that promises to help businesses better monitor the condition of routinely used mechanical systems, such as pumps and electric motors. But the parties behind Project Dynamite (Dynamic Decisions in Maintenance) don't expect private investors or corporate partners to foot all their expenses. Instead, most of the money that's energizing Project Dynamite is coming from the European Commission, the European Union's executive branch.

Project Dynamite is one of several RFID-related projects being funded by the EC, reflecting the EU's commitment to be on the leading edge of RFID adoption. "RFID is seen as a key technology for enhancing competitiveness of economies and for improving the life of citizens in tomorrow's information society," says Joao da Silva, director of converged networks and services for the EC's Information Society and Media Directorate-General. "Most experts agree that this technology will become pervasive in the long term."



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—RAGHU DAS

The EC's dedication to RFID funding stands in stark contrast to the United States, where government-funded RFID is almost exclusively limited to projects with direct military or national security potential. Asian governments, including those in China, Japan and South Korea, are enthusiastic RFID supporters, but lack the EU's regional focus. With dozens of projects and trials completed, planned and in progress, Europe leads the world in government RFID involvement and arguably has the most cohesive vision for future development.

The EC's robust funding of RFID projects is rooted, at least to some extent, in a feeling of insecurity. As EU leaders anxiously view a steadily growing number of commercial RFID deployments in North America and Asia, they worry that Europe may be falling behind in a pivotal technology. "In Europe, increased funding means more trials, and more trials leads to the possibility of real-world deployments," says Tim Payne, supply-chain management research director for [Gartner](#), a technology research firm based in Stamford, Conn. "This means that Europe doesn't get seen as something of a backwater from the point of view of modern supply-chain management."

No matter which government is handing out the cash, public-funding proponents claim that taxpayer dollars poured into RFID ventures represent seed money that will begin paying sizable benefits at some future point. "The EC, for

example, is trying to encourage the use of RFID," says Raghu Das, CEO of [IDTechEx](#), an RFID and smart-packaging consulting firm located in Cambridge, England. "The idea is that this is the initial funding to get over the RFID pain barrier."

But public-funding critics contend that governments often lavish money on projects with social and political ties that do little but waste time, drive up costs and blur the technology's focus. They believe that private investors tend to keep a sharper eye on the bottom line, remorselessly pulling the plug on projects that fail to prove their worth. "The U.S. offers more of a free reign," says Jonathan Collins, former RFID Journal European editor and now a senior RFID analyst at [ABI Research](#), a technology research company headquartered in Oyster Bay, N.Y. "It lets companies work things out in the market."

Establishing a Framework

European government RFID funding isn't a new phenomenon, although the pace of public investment keeps accelerating. Back in 2000, the U.K.'s Home Office invested £5.5M in the Chipping of Goods Initiative, making it the first country in the world to embrace the use of RFID to deal with property crime. The initiative, which included eight demonstrator projects, was established to lower the incidence and cost of property crime and reduce the burden on police resources in tracing the ownership of stolen goods. The initiative was also created to show the clear business benefits that can be gained from adopting RFID-powered theft-prevention technology.

A 2004 Home Office final review of the project presented a glowing assessment, stating that the initiative "raised new possibilities for improving business operations and established a solid foundation of knowledge and understanding. Awareness of the potential for tagging solutions has been elevated...in leading retailers and brand owners." The review also recommended further action. "Wireless communication systems that enable critical, timely and accurate business information to be available, and which can be shared with key stakeholders via centralized databases, should remain high on the agenda of future government initiatives."



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Around the same time that the British were launching their Chipping of Goods project, the EU was preparing an ambitious plan to unify and coordinate European scientific and technical research. At a summit held in Lisbon, Portugal, in March 2000, EU government representatives agreed to create a European Research Area (ERA) that would establish an internal market for technical and scientific research projects, including RFID and related technologies. The representatives also formed the Sixth Framework Programme (FP6) as the financial instrument that would make the ERA a reality.

Over time, FP6 has established itself as Europe's leading supplier of research grants. In fact, FP6 now overshadows the funding projects of individual governments. ABI's Collins observes that the Chipping of Goods Initiative may have marked both the start and the end of Britain's funding of major RFID projects with any sort of research angle. "It's been a good five years now," he says, "but I'm not sure there's been a great deal [of government funding] since then."

The U.K. government's largest RFID venture at the moment doesn't have anything to do with research. "It's a billion-

pound initiative to implement an RFID-based ticketing system for London Transport," says IDTechEx's Das.

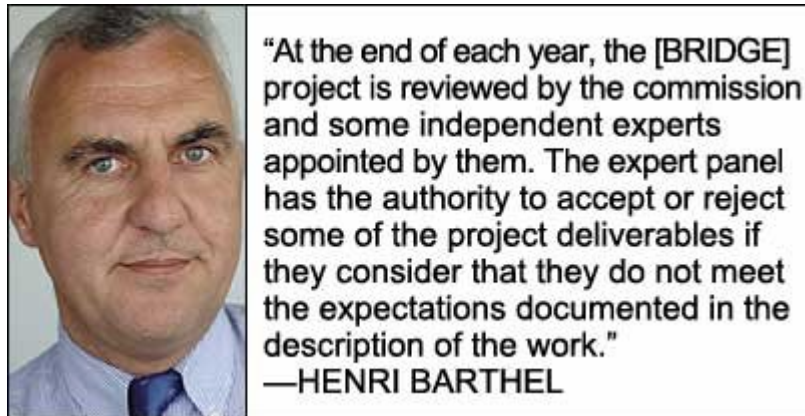
Explosive Momentum

With the help of FP6 money, Project Dynamite is moving ahead at full speed. The venture, launched in September 2005, has a projected three-and-a-half-year life span. "Many of the European research projects are scheduled over a three-year time frame," Adgar says. "This aims to give a balance between coverage of the scope of work and the timeliness of the research outcomes."

Project Dynamite's goal is to produce a global e-maintenance infrastructure that will allow field monitoring of machinery and processes. The project's researchers are working on creating a network, as well as new stationary and mobile devices, that will interact with decision support systems incorporating both sensors and complex algorithms. The project's key technologies include wireless telemetry, intelligent local history in smart tags and online instrumentation.

Machinery maintenance is a major expense for European industry, Adgar says. Studies over the past 20 years have shown that the direct cost of machinery maintenance across Europe is equivalent to between 4 percent and 8 percent of total sales turnover. The EC believes that machine monitoring and processes for predictive maintenance and control are crucial for ensuring a sustainable and competitive European industrial environment.

Project Dynamite is coordinated at the [VTT Technical Research Centre](#) in Finland. Partner institutions include [Manchester University](#) and [Sunderland University](#) in the United Kingdom, the [Université Henri Poincaré](#) in France, [Fundación Tekniker](#) in Spain and [Växjö University](#) in Sweden.



The EC is kicking €3.72 million into Project Dynamite, The rest of the venture's total €6.1 million funding will come from its corporate partners, including Italy's Fiat and Sweden's Volvo, as well as companies in Estonia, Finland, Germany, Greece, Spain and the United Kingdom.

The EC-funded project's return on investment is deeper and more complex than the returns a business might expect. "In the European Union," Adgar says, "when you're asked to justify the success of your project, you look at how much money it saves companies, how many jobs it creates—things that are difficult to estimate."

Projects are designed to include as many EU nations as possible, so they can share in the research spending. But geographic dispersion and language are challenges that must be addressed to ensure the pace of research is maintained. "The European Commission prefers to have lots of different partners from different countries," Adgar says. "This maximizes the profit from the research outcomes and promotes dissemination of the new knowledge generated."

While job creation, multinational partnerships and other socially oriented objectives can drive up a project's cost, they don't necessarily subtract from the research's overall quality or value. "The project is very application-oriented research," he says. "It's not cutting-edge, blue-skies research. It's very much about applying some new technologies into the way machine maintenance is carried out, organized and planned."

Building BRIDGE

The largest and perhaps most important EC-funded RFID project is BRIDGE (Building Radio Frequency Identification Solutions for the Global Environment), which is looking to help businesses and others surmount the barriers to implementing the EPCglobal network in Europe. The EPCglobal network represents the Internet-based technologies and services that enable businesses to track and manage a wide array of products, containers and other assets associated with Electronic Product Codes. BRIDGE's objectives include EPCglobal network application research, tests and trials, says Henri Barthel, director of global partnerships and projects for Brussels-based [GS1 Global](#), BRIDGE's coordinator.

Barthel responded in September 2005 to an EC research request that appeared to mesh with the [EPCglobal](#) network's objectives. "That's how some of the research is funded in Europe," Barthel says. "They dispatched a call and it drew our attention, because there was a section in it which fit very well with what we do in GS1 and EPCglobal."



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—JOAO DE SILVA

Barthel contacted many of GS1's national organizations, as well as key businesses, research universities, solution providers and other interested parties. "In a matter of a couple of months or so," he says, "we put together a proposal." Getting the project into motion took much longer. Barthel describes the FP6 funding process as "extremely competitive, relatively long and complicated." The EC began formal discussions on the proposal in November 2005, and after several months of contract negotiations between the BRIDGE consortium and the EC, the project finally got under way in July 2006.

BRIDGE is structured into 15 working groups, each dedicated to a specific aspect of the overall project, such as hardware development, security or supply-chain management. One group, a research team that's planning a system to track and trace pharmaceutical products, is a carryover from an earlier project—the GS1 European Healthcare Initiative. "We tried to search for funding, and that was unsuccessful," says John Jenkins, a consultant to the Pharma Traceability Pilot. "It's true to say that the seed funding that came through the European Commission actually enabled this project to take place."

During its three-year life span, stretching from July 2006 to June 2009, BRIDGE is budgeted to spend €13 million. The EC will contribute €7.5 million to the project. But Barthel is quick to note that while the EC is paying more than half of BRIDGE's cost, it doesn't simply toss money at anyone proposing a new idea. "BRIDGE, like any other EC-funded project, was accepted on the basis of a detailed description of the work that would be performed over the three years," he says. "This description of work is part of the contract signed with the EC."

BRIDGE, like other EC-funded research projects, must periodically prove that its work is moving forward and is meeting its planned goals. "At the end of each year, the project is reviewed by the commission and some independent experts appointed by them," Barthel says. "The expert panel has the authority to accept or reject some of the project deliverables if they consider that they do not meet the expectations documented in the description of the work. It's all very rigorous."

Seeing the Forest for the Trees

Another EC-funded research project—Indisputable Key—aims to use RFID to optimize forest production and the use of wood throughout the supply chain, minimizing environmental damage. "The wood industry is, at least in part of Europe, not very well developed," says Gunnar Niblaeus, [Indisputable Key](#)'s project manager. "It's a fragmented industry offering only small resources for each company to develop its business."

To improve quality control and supply-chain efficiency, the project plans to tag individual logs at the time they're harvested, and give wood manufacturers the ability to track and trace products—boards, planks, beams, window frames and so on—back to the original log. "That would be the target," Niblaeus says, "that you would put some kind of transponder in each log and follow that until the log no longer exists." He adds that the transponders should be biodegradable and soft enough to prevent damage to sawing equipment.

Indisputable Key is researching a variety of technologies, including tags, readers, bar codes, printing technologies and software. "It's not enough to have a transponder," Niblaeus says. "You must have the whole system...if you really want to be able to offer something that will give benefits to the industry."

Since Indisputable Key is working with living biological products, it faces a unique challenge. "When you cut the logs into boards and beams, they are wet," Niblaeus says. "With bar codes and other marking technologies, it's mostly paint, and it's very, very difficult to put paint on something that is wet." This obstacle is forcing the project's researchers to examine new marking techniques and media.

As with most other EC-funded projects, Indisputable Key involves a large array of project participants: 29 partners from five countries—Estonia, Finland, France, Norway and Sweden. The partners represent research institutes, universities, industrial developers, forestry firms and sawmill companies, among others. The 36-month-long project is estimated to cost €12.67 million, with FP6 contributing €7.72 million.

"RFID is something that is regarded as very important by the European Commission," Niblaeus says. "Therefore, they are also keen on RFID-related projects that they believe will be good, and I think this project is a typical example of that."

Money Matters

The EC isn't Europe's only deep-pocketed RFID advocate. "Private industry is still going ahead and doing their own thing," says IDTechEx's Das. "Everyone from [Tesco](#) to Carrefour and the [Metro Group](#) is using RFID."

Yet Das notes that Europe's top retailers, as well as other private adopters, are hardly matching the progress made by their North American counterparts, and that the EC's money may indeed be needed to smooth the way for widespread RFID adoption. "Pickup has been very slow generally," Das says. "I think the idea of this [EC] money is that it will really try and resolve some of the integration issues and technical issues that may be putting off potential adopters."



The EC's da Silva disputes the belief held by public-funding critics that EU spending is squeezing out research and testing funded by other sources, including private investors and national governments. "The EU R&D Framework Program represents a small but important part—about 8 percent—of the total effort made by industry and by the public sector that will act as a catalyst for further research and development in RFID-related technologies," he says. "The United States and Asian countries are investing significantly more in RFID research and related technologies."

Faced with global competition, it's vital for the EU to keep pace with RFID progress in other parts of the world, da Silva says. "Our role is essentially to support innovation and industrial competitiveness in Europe," he says. "Europe believes it has an original contribution to make...by shaping a ubiquitous information society that meets Europe's values and standards."

The American Way

In the United States, nearly all basic RFID research initiatives, as well as pilots with general commercial potential, are in the hands of corporations and private investors. This isn't to say that the U.S. government hasn't had any impact on RFID's commercial adoption. The U.S. Department of Defense's insistence that its suppliers embrace RFID is generally viewed as having had a significant positive effect on the technology's adoption by U.S. businesses, perhaps second only to Wal-Mart's RFID initiative.

But the DOD's impact has been purely motivational, not financial. Businesses, rather than the government, are footing the RFID adoption costs. When compared with Europe and much of Asia, direct U.S. government funding of commercially oriented RFID projects can be summed up in just two words: virtually nothing.

The Asian Connection

In Asia, RFID research and testing is funded by individual countries, typically on a project-by-project basis. "Outside of government-funded projects, industry is doing very little," says Raghu Das, CEO of IDTechEx, an RFID and smart-packaging consulting firm located in Cambridge, England. Das attributes the lack of private RFID interest in Japan and its neighbors in eastern Asia to a fragmented retail landscape.

"In the West, you can have a major retailer bring out a mandate," he says. "In East Asia, that can't happen easily, because retailers there are smaller. Their suppliers would not necessarily do as they insist at great expense with little return."



The development and deployment of RFID technology in China, Japan and South Korea is growing rapidly, thanks in large measure to government support, according to a report from Frost & Sullivan, a technology research firm based in San Jose, Calif. The report states that with increasing government help, RFID use is expected to experience "phenomenal growth" in the coming years—including a tags market worth up to \$469 million by 2012—with greater initiatives by the industry participants as well.

China, for example, is committed to pouring public money into RFID in the run-up to the 2008 Olympic Games, says Joao da Silva, director of converged networks and services for the European Commission's Information Society and Media Directorate-General. In 2007, China's investment in the technology made it the world's largest user of RFID.

In addition to funding research projects and trials, the Frost & Sullivan report notes, the Chinese, Japanese and South Korean governments are aggressively promoting RFID by forming information centers and hosting conferences and summits. It's an effort to get businesses to better understand the latest development in RFID technology and its applications.



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