How can delivery costs for letters and packages be lowered in the age of e-commerce? In the race to find the best solution for the “last mile,” experts are examining several competing systems.

Many Roads Lead to the Last Mile

We no longer have to personally accept deliveries, but the articles are still stored safely and securely.” It’s impossible not to notice Daniel Steiner’s enthusiasm when he discusses SkyBox, a combination locker-refrigerator. Since he and his family began living as test subjects in “Futurelife,” a house outfitted with Siemens technology near Hüneburg, Switzerland, they have been ordering everyday items from a major Swiss supermarket chain — over the Internet.

Thanks to SkyBox, no one has to hang around the house waiting for an order to be delivered. The two-section container, which is the size of a washing machine, is built into the house’s facade and can be opened from the inside or outside. The delivery person just needs a smart card and a PIN — perishables can then be packed in the refrigerator, and the rest goes into the bottom compartment.

Last Mile Logistics. Such service is only a dream for the average consumer. But courier and package services are working hard to make the delivery process more efficient. “The question is how the customer can get the product in the cheapest and fastest way,” says Matthias Krause of Siemens Dematic Postal Automation in Constance, Germany. “After all, the delivery process is responsible for 50 to 70 percent of transport costs for letters and packages.” The remaining costs are generated by “in-house” operations.

Even today, a letter carrier working at the post office has to search through several shelves for his or her letters and parcels, and then map out a delivery route based on their addresses. “Logistics specialists have to find a solution for the problem of the last mile as quickly as possible,” says Krause.

The term ‘last mile’ originated in telecommunications and refers to the distance between a telecommunications company’s local distribution box and the customer’s home. In logistics, the term applies to urban pick-up and delivery traffic. Transporting physical goods is much more complicated than transmitting electronic data, and the task will not become easier in the future. What’s more, demographic trends such as the rising number of single households and increased mobility will worsen the problem. Customers who surf the Web’s “stores” know no shopping hours, and when they have to pay for purchases immediately, they expect speedy delivery and no additional charges. In Germany
alone, more than 1.5 billion packages were delivered in 2002. A major portion of these parcels was generated by Internet shoppers — and the trend is growing. The Fraunhofer Institute for Material Flow and Logistics (IML) in Dortmund, Germany, estimates that by 2006, electronic trade will generate about 600 million packages in German-speaking countries. Logistics specialists will therefore have to adjust their strategies to meet this changing mail pattern, which will produce more and smaller packages. For online business to be successful, efficient but economical sales and delivery systems are indispensable. Currently, three approaches are being tested: box systems, pick-up stations, and locker facilities. All are interesting for urban areas. "That's because the delivery points are strategically located near the customer," Krause says.

Box Systems. Systems like SkyBox serve homes much as mail boxes do. Condelsys, a company in Dortmund, Germany, employs such a system. When a customer places an online order, he or she simply has to add a delivery code to the address. The code will be added to the address sticker, and the delivery person will automatically have the right information at his or her fingertips. Using this combination of numbers, the delivery person can unlock the empty box and place the package inside. The recipient then uses his or her own personal identification number to open the box. The system's drawbacks are that the customer has to buy the box, payment is made through an online dealer and there are no arrangements for returns.

Pack Stations. Pick-up stations require customers to retrieve their packages. Potential retrieval points could include filling stations, newsstands and video stores. Currently, Germany has about 1,700 collection sites and the service is offered by PickPoint, among others. In the United Kingdom and Ireland, there are about 3,400 so-called Collectpoints. Parcel recipients are notified of deliveries by text-message or e-mail. If the package is not picked up within ten days, it is returned to the sender. But here too there are obstacles. Not every filling station operator or store owner offers the additional service. The customer is also tied to the opening hours of the retrieval station, and not every station will accept returns.

Automated retrieval stations eliminate these problems. At the end of 2001, Germany's national postal service began a large-scale test of such a system in several major cities. The service involves about 90 "pack stations" that are open around the clock in places like train stations, shopping centers and universities. The pack stations are used for packages that are no bigger than two cases of wine. Customers can also send pre-stamped goods and return packages. After registering once, the customer is informed of the delivery via a text message or an e-mail and can then pick up the package within nine days.

In the future, Deutsche Post will use the pack-stations to offer additional services. "We can imagine that rental-car drivers would want to drop off car keys, mechanics might want to pick up replacement parts, and people heading for the opera might like to get their tickets," says Boris Mayer, who is in charge of the test, in which more than 60,000 customers have already participated. The Fraunhofer IML wants to tap into the same potential with Tower24, a 10-meter structure that can hold 200 packages. But unlike the pack station, it has two temperature zones: one compartment at a normal temperature and one for fresh products that is cooled to between two and seven degrees Celsius. The cooling occurs naturally because Tower24 extends four meters below ground. An automatic conveyor system carries the products to the distribution area after a delivery person has deposited them inside.

Real-life Test. "Right now, all versions are in the evaluation phase. But most likely, all of them will be used in the future," Krause predicts. It is also possible that independent service companies would operate a network of package stations — similar to the cooperative arrangements that banks have created for their cash machines — to allow small logistics providers to gain access to the facilities for a fee.

One thing is certain, however. Because of deregulation, all participants can expect to face increased competition in the years ahead. "They can do that only by bringing their delivery costs under control and offering customers new individual services," Krause says.

He adds that "the company with the biggest competitive edge is the one that will be the first to drive down the costs of the last mile."