PARIS — “In the ’50s, we were the first museum in the world to have an audio tour,” Hein Wils, a project manager for the Stedelijk Museum in Amsterdam, said last month. “Today, we’re one of the first to have augmented reality.”

Mr. Wils was speaking about the museum’s project that lets people use their smartphones to enrich their museum visits. Smartphones can overlay digital content, like images or movies, across real spaces. Mr. Wils wants visitors to use their phones as lenses, allowing them to see otherwise invisible images — like sleek computer-generated sculptures or floating interviews with artists — on the screens as they walk around the Stedelijk and point their phones’ cameras at objects. This creates what developers are referring to as “augmented reality.”

The Amsterdam museum is not alone in its use of smartphones. Within the next year, many of the top museums in the world — especially contemporary ones — will introduce applications for smartphones, if they have not done so already. The Museum of Modern Art in New York and the Los Angeles County Museum of Art offered smartphone applications this summer, and European museums are following suit. Think of it as a 21st-century update on the audio guide, that staple of museum education departments.

By next spring, the Stedelijk will allow people to interact with exhibitions on smartphones while at their home or in the museum. Although the Centre Pompidou in Paris has no anticipated starting date, it is six months into the production of a smartphone application and already sells exhibition guides to be used with smartphones. The Reina Sofia Museum in Madrid and the Hamburger Bahnhof in Berlin are expecting Web sites or applications designed for mobile technology in the next two years.

The Museum of Modern Art’s application is one of the most popular. Since its application was introduced in August, it has been downloaded more than 400,000 times, according to Allegra Burnette, the museum’s creative director of digital media. Drawing on earlier applications like those from the Museum of London and the Brooklyn Museum, MoMA’s application offers a selection of audio tours with images and videos and access to one-fifth of the museum’s collection. MoMA also started offering a Web site for mobile phones last month.

MoMA’s effective use of audio, video and slide shows on its smartphone application is likely to keep drawing new users, but the future of museum applications lies in how these features are combined. The Stedelijk is taking a gamble, putting audio and video features on an “augmented reality” Web browser on the smartphone. Stedelijk is using Layar, an application that lays three-dimensional objects over the smartphone’s screen when the phone’s camera is pointed at real rooms and buildings.

The Stedelijk used the Layar application at the Lowlands music festival in the Netherlands in August and in September at Picnic, a yearly conference in Amsterdam on art, science, technology and business. At Stedelijk stations set up at the events, visitors thumbed through collections showing the museum’s works. The works included bar codes that people could scan using a separate application. They then received a digital version of each work. Using Layar, they could “hang” the work on a geographic coordinate within the grounds of the festival. When other Layar users pointed their phones at the coordinate, they could also see the hung work.

The Museum of Modern Art was the site of another Layar exhibition. The Conflux Festival in New York held a show in October, using Layar on smartphones to display art in the museum’s galleries without first asking the museum.

Ms. Burnette, the museum’s digital media director, was unfazed by this new use. “That’s something we were really excited to see,” she said. “For us, it means that they care about the museum enough to participate actively in it.”
Participation is important for the new generation of applications coming from these museums. The Stedelijk, for example, intends to ask a lot of the user. “We want to make an A.R. project with strong emphasis on user-generated content,” Mr. Wils said, referring to augmented reality. He also emphasized the importance of getting artists involved in the process. “We want to see that artists are using the technology to come up with new user experiences,” he said.

The Los Angeles County Museum of Art started offering an application last summer, called “In Still Life 2001-2010,” that required user participation.

“I myself would call it an interactive participatory work of art, but it’s up for interpretation,” said Amy Heibel, the museum’s director of Web and digital media, referring to the application that lets people rearrange 38 elements of a 17th-century Dutch still life.

This application, produced by the technology companies For Your Art and Ovation, yields results in the style of the contemporary conceptual artist John Baldessari. Its introduction coincided with the June exhibition of Mr. Baldessari’s work at the Los Angeles museum.

The general smartphone application for the museum is expected to be introduced by the end of this month. Through an icon that appears on the smartphone’s screen, the phone’s browser will be connected to the museum’s mobile Web site, where users can see 175 works from the permanent collection, with supporting text, video and audio from the curatorial department.

In Madrid, the Reina Sofía is taking a different track. Chema González, the head of cultural activities, says the museum is focusing on audio programming, in an effort keep visitors’ eyes on the artworks while enriching their experience. It plans to have four audio podcast channels from which people can download programming onto smartphones and use at home or in the gallery.

“The key is not to offer a substitute for real experience,” Mr. González said. With podcasts, Mr. González wants to mix oral history with the museum visit. “What is important is not to narrate each specific work of art,” he said. “The works are politically and socially engaged moments. We will focus on context.”

Beginning this month, two channels will have programming by exhibiting artists and curators. Another channel will draw programming from the museum’s 1970s collective conceptual art, and the last channel will be left for more conceptual programming by artists.

Most museums’ smartphone application projects have a similar approach to development, through contracting with outside companies or experts in the digital arts sector. The museums all offer information and gather feedback on social networking and media sites, and almost all the products are free. The Centre Pompidou sells smartphone audio guides to special exhibitions, and the Stedelijk is considering offering premium smartphone editions. But for the most part, all of these new experiences cost nothing but the time it takes to download them.