Before IPhone and Android Came Simon, the First Smartphone

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Simon next to an iPhone. Looks like the physical differences between any 5- and 20-year old

In the 1995 techno thriller, *The Net*, Sandra Bullock plays a software programmer who unwittingly uncovers a plot to gain access to the world's most sensitive computers. The bad guy, played by Jeremy Northam, tries to kill Bullock literally and virtually—by stealing her identity. (For a hacker, Bullock's character is remarkably dim; when she finally catches on to what's happening, she whines: "Our whole lives are on the computer.") Apple gets the customary product cameo as the movie imagines a world in which ordering pizza online or accessing a database from a laptop computer in a car is commonplace.

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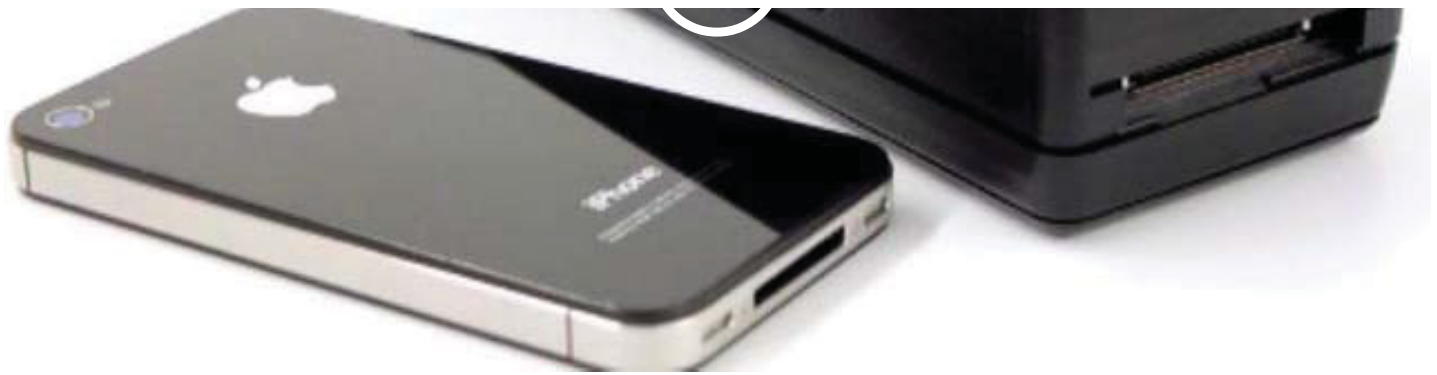
June 28 (Bloomberg) -- Long before the smartphone revolution, IBM and BellSouth teamed up to build and sell the Simon Personal Communicator, a 1-pound, $899 mobile phone that ran apps and featured the first touch screen. It lasted just six months after being put on the market in the summer of 1994. (Source: Bloomberg)

A second product has a more prominent role, only there's no logo or corporate sponsor credited for the cell phone used by Northam's villain. In the final chase scene, he makes a call simply by pressing his phone's touchscreen. When *The Net* was made, there was only one cell phone with a touchscreen and sufficient smarts for one-touch dialing: the Simon Personal Communicator. By the time the movie hit theaters that summer, the phone was off the market after its brief, six-month run before consumers. At least Simon left a more lasting impression than the movie did.

Early prototype designs. The yellow one (never produced) got all the attention in presentations

Simon was the first smartphone. Twenty years ago, it envisioned our app-happy mobile lives, squeezing the features of a cell phone, pager, fax machine, and computer into an 18-ounce black brick. The touchscreen (monochrome) had icons you tapped, or poked with a stylus, for e-mail, calculator, calendar, clock, and a game called Scramble in which you moved squares around the screen until you formed a picture. It featured predictive typing that would guess the next characters as you pecked. And it had apps, or at least a way to deliver more features—including a camera, maps, and music—by plugging a memory card into the phone.

BellSouth wanted customers to think of the phone as being as easy to use as "Simon Says ..."

It would take an additional 10 years before anyone called a cell phone "smart," and a further five before the iPhone shattered our view of what these digital devices could do for us. Simon retailed for $899 and sold approximately 50,000 units. If you were a heavy data user, you had about 60 minutes before you needed to recharge—as little as 30 minutes in areas with poor cell coverage. The Smithsonian Institution has one. Nearly two decades later, you can still find Simons for sale by collectors at the same retail price.

When a few IBM engineers first showed a working prototype at the 1992 Comdex computer show in Las Vegas, the model was code-named "Angler" and drew crowds of people eight-to-10 deep. BellSouth Cellular teamed with IBM to turn it into a commercial product with a Milton-Bradley-meets-Gene-Rodenberry name. The two companies hold 11 Simon-related patents—including how to highlight text on a touchscreen

to do things like place a call, update apps in the field, and remotely set up and activate a cell phone—among other unique functions that are now standard on smartphones.

The story of Simon is the timeless lesson of tech innovation: Groundbreaking products require a rich ecosystem before the "big idea" can become truly useful or widespread. In this case, what was needed included fast networks, Web browsers, and a whole lot of apps waiting to be pulled off the Internet. In the early 1990s, none of these were available. Phone networks were designed mostly for voice, not sending data. When Simon was conceived, a Web browser had yet to be released. IBM was hemorrhaging money and people, losing $16 billion and over 100,000 jobs in the years from 1991 to 1993. In the end, technical limitations, product delays, a world-class corporate meltdown, revolving-door management, and bad business decisions conspired against Simon.

Plastic mockups of memory cards show how additional features (today's apps) could make Simon versatile

IBM and BellSouth chose to drop the phone and abandon a next-generation version of Simon that would have been closer in size to an iPhone. Motorola, a supplier of the cellular smarts for the prototype, passed when it came time to build the product, concerned that it would be helping IBM become a future competitor. Mitsubishi (6503:JP) replaced Motorola and built the commercial product.

Simon's short lifespan also illustrates how truly original tech products feed so many other creative efforts, if not those of its creators—at least directly. "The innovations of the Simon are reflected in virtually all modern touchscreen phones," writes Bill Buxton in an e-mail. Buxton, a computer scientist at Microsoft Research, has been collecting groundbreaking tech gadgets for 30 years. He has two Simons, including one in its original box.

It's somehow fitting that Simon is nowhere in the credits of *The Net*. IBM has no record of Simon in its archives. The company passes inquiries on to BellSouth, which merged with AT&T in an $86 billion deal in 2006. The original engineers that worked on Simon still refer to themselves as "Simoneers." In over 20 conversations and e-mail exchanges I had with the BellSouth and IBM team members about the project, some memories had faded over time. But the team discussed its technical accomplishments with pride, despite Simon's belly flop in the market.

Frank J. Canova Jr. is the IBM engineer who came up with the original concept for Simon. With 51 patents logged over the course of his career, he always had a few ideas banging around in his head. In the early '90s, he was thinking chip-and-wireless technology was becoming small enough to put in the palm of your hand. He described his concept to colleagues, including his boss Jerry Merckel, who was on an industry task force working up specifications for a now defunct device (the PCMCIA card) that could plug into a laptop computer for extra memory—the grandfather of today's thumb drives. Merckel realized the cards could be used to launch other apps or services for Canova's phone. He just needed approval to build a prototype.

Paul C. Mugge indirectly put all this in motion after he became director of the Florida Research Lab in late 1988—long after the glory days of the IBM Personal Computer Co.—with a mandate to re-energize development. Mugge put together a small team of engineers including Canova and Merckel to explore ways to use ever-smaller, more powerful electronics to build new products.

One day in Mugge's office, he listened to Merckel's pitch. "This is the phone of the future," Merckel said, reaching into a sleek black aluminum box to pull out plastic cards, all in different colors. (Those cards didn't function and were purely for show; they had been created by Hunter T. Foy, who headed a small group of industrial designers attached to the lab.) Merckel explained to Mugge that you plug the card into the phone to get directions or music. One card, labeled "ZZ Top's Greatest Hits" (with a picture of the group), was Merckel's personal favorite. On reading the label, Mugge asked: "Who's ZZ Top?" He approved the project anyway.

The applications on those cards became the core of IBM's first services, code-named InTouch. "We knew services would make or break Simon," says Mugge, now executive director of the Center for Innovation Management Studies at North Carolina State University. "As you see with Apple, without apps [the iPhone] is just a device. It all came to pass—unfortunately 15 years later," he says.

To give the concept form, IBM turned to Frog Design, a rare move because the computer giant never went outside for design work. When Foy projected it would cost $80,000 to create the prototype, he says, Merckel and Mugge "threw up on it." When Frog didn't come up with anything radically different from Foy's early sketches, he was soon back on the project. IBM paid Frog $49,760 for its sketches, according to an unsigned copy of the agreement.

There wasn't much leeway for Frog to come up with a different look. The phone could be only so small. The memory cards dictated a certain width. The touchscreen had a set thickness. And you needed a battery with enough juice to power the device. The finished prototype is the Shaq of phones, standing 8 inches high, 2.5 inches wide, and 1.5 in. thick. Pull out your smartphone and you'll see the difference.

Everything about the phone required something unique, from the motherboard housing an Intel chip to the operating system and on to the way all its features interrelated. At first there was no rush to produce the prototype, but IBM decided 14 weeks before Comdex that it wanted to display the device at the trade show. The race was on. Canova and other engineers worked 80-hour weeks, including weekends, right up to the last day.

The prototype at Comdex displayed a map of the Las Vegas strip, plus stock quotes. There was no website for Canova to download that information, so he scanned the maps into the prototype's memory from printed sources and punched in sample ticker data. "It was hard for people to believe back then you would carry maps or stock quotes in your phone," he says. "As we know now, it was just the tip of the iceberg."

When the team finished the prototype—it wasn't clear they'd make the deadline until two weeks before the show—IBM sent a manager to Florida to make sure "Angler" worked as advertised. (A substitute was ready if it didn't.) It worked too well: The company made the team encase each of the three prototypes for Comdex in bulky, see-through plastic housing to make clear that these were not finished products. "IBM was afraid people would want to buy it," says Canova.

In truth, IBM wasn't sure it wanted to be in the phone business. Alan Testani recalls showing Jack Keuhler, then IBM's top technologist, a prototype. Keuhler, an internal critic of IBM's already troubled communications effort, called it "a World War II walkie talkie." It wasn't a compliment.
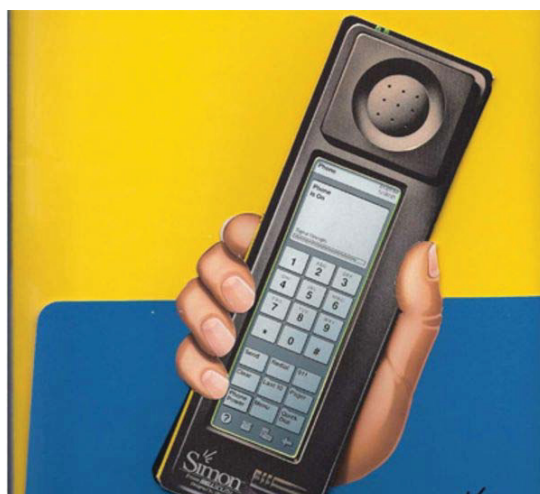
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The effort moved forward, anyway. Deep within IBM's DNA was the eternal belief that the multiplication of electronic gadgets—cell phones or PCs—would fuel demand for big, powerful mainframe computers. Jim Cannavino, then a senior vice president responsible for IBM's Personal Systems division, recalls telling the board: "Whether you want to build them or not (cell phones), you really want them to happen. That was the air cover to get Simon out the door."

Canova has a video taken by one of the Simoneers as they're setting up in Las Vegas before Comdex opens. The narrator approaches the mustachioed engineer as he's intently working on the prototype. Then in his early 30s, Canova is wearing a white, short-sleeved shirt. He seems genuinely surprised as he reports that everything is working smoothly. There's a hint of pride when he says colleagues like the device.

Later, Canova walked out into the cool Las Vegas night to call Gary Wisgo, the project's engineering manager. Wisgo had booked too late to get a hotel room anywhere near the convention center. "Here I was, talking to someone with access to my calendar, e-mail, and much more, with only a phone in my hand. For the first time, no computer was needed," recalls Canova. "That simple moment is when I realized the world was about to change."

When the show opened the next day, Canova and the other engineers demonstrating the product were swamped. The prototype was a hit. Wisgo remembers awakening to a ringing phone at 6 a.m. An excited engineer was calling to tell him the project had made the front page of *USA Today*'s Money section, with a photo of Canova holding the prototype. The positive reaction convinced IBM's senor management to build a real product. It helped that BellSouth wanted in on the action. IBM pumped money into the effort and the team grew from five engineers to 32. This was one of the rare parts of IBM that was hiring.

The timing was perfect for Jim Thorpe, senior vice president of marketing for BellSouth Cellular, whose boss wanted to know what they could do to differentiate the company. Thorpe had set up a research and development lab, run by Dan Norman, to devise innovative products. It was BellSouth that came up with the name Simon, following an internal debate over whether the phone should have a science fiction-sounding name (Merlin and Wizard were suggestions.) Others wanted something easy to remember that would evoke simplicity. One of the marketing managers had seen his kids play with the popular electronic memory game, *Simon*, which asked you to repeat a series of tones that got progressively more difficult in order to win. He suggested Simon, as in "Simon says simplicity." An ad campaign was born.

The Simon Personal Communicator had its coming-out party on Nov. 2, 1993, at a telecommunications trade show at Disney World in Orlando. Before an audience of 150 analysts and journalists, Norman and Rich Guidotti, a product development manager, did their interpretation of Alexander Graham Bell's celebrated moment. On stage, Norman sent Guidotti a fax: "Rich, Simon looks great. Dan." Thorpe has the fax framed in his house, along with the stylus Norman used.

To promote Simon at trade shows and to distributors, BellSouth made a video. Norman says the company was concerned customers would think Simon was too complicated because it could do so much. (This was right after Apple's Newton bombed.) They hired an actress to have a little fun with Simon, playing a character named Christy. She is shown in situations you might not think to use Simon, but could: Send a fax while on a picnic, or check e-mail at the opera. As the video progresses, Christy starts making outrageous claims such as, "It'll wash your car," and "You can talk to aliens." Norman appears in the video as the voice of reason, denying you can do those things. The video even veers into late-night infomercial territory: "What would you expect to pay for a machine that does all this, $5,000, $10,000, or more? How about under $1,000?"

The video drummed up interest, but Simon wasn't ready for its scheduled release in May 1994. Customers couldn't get one until Aug. 16. IBM was still wrestling with the device's short battery life. Its engineers reworked some software, but the ultimate solution was to provide a second battery, as a lot of video cameras did at the time. That was just one issue. Consumers were then enthralled by the popular, less expensive, $500 flip cell phones. They were small and cool. (And they looked much more like those communicators on *Star Trek*.)

Norman, who has one of the original Simon prototypes from Comdex, conceived what would have been a first for the cellular industry— activating a cell phone "wirelessly over the air." (AT&T now holds the patent.) At the time, cell phones had to be programmed at the store. It was a laborious, manual process that could take two hours. Norman planned to include with every Simon the software that would let BellSouth handle everything. Simon was off the market before the feature was ready. "That was actually a bigger deal than anything else that Simon was capable of doing," he says.

There was a second generation of Simon, code named Neon—thinner and shorter—that also didn't make it out. The design, sans fax, was to be closer in shape to the eventual iPhone. IBM even made a logo for Neon with the name running both vertically and horizontally around the letter O; it would say Neon, no matter how it was held. "We actually rotated the screen like the iPhone," says Canova.

By now, IBM was closing plants and offices around the world. The company moved PC operations out of Florida, sending the Simon design work to Raleigh, N.C. Many Simon engineers didn't want to move north, so they left. Canova eventually departed after trying to work with the team in Raleigh.

Merckel, now a professor of engineering at the University of North Florida, had more features in the works, too, including a card that would turn the phone into a radio. He also tried to convince Advanced Micro Devices to supply the chip for future products. Those efforts went nowhere. "I threw it in the trash," he says of the working prototype for the radio. "IBM was disappearing."

By early 1995, Simon was off the market. IBM decided not to pursue the business. BellSouth put money into improving its own communications network.

Today, BellSouth executives say Simon was worthwhile. Tech companies began to think about how they could use cellular technology in their products. BellSouth received recognition and attracted partners such as Microsoft, which had never before called on their company.

For Mugge, the lesson of Simon is a familiar tale for many pioneers: "Don't invent one of these things before they invent the Internet or fiber optics with tremendous bandwidth."