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This is your life--in bits

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You're at a cocktail party where you spot a familiar and very important-looking guy whose name and business connections are right on the tip of your tongue-but not tripping off it. Who is he? When did you last speak with him? He's headed your way. Uh-oh. Luckily, your memory prosthesis--a computer that monitors and remembers everything you do or experience--is ready to whisper his name in your ear.

No, you 50-somethings worried about memory lapses can't buy anything like it yet. But work is underway to get computers to capture human life and remember it as people do--recalling bits of experience that are linked by a common time or place or person. At Microsoft Research, computing pioneer Gordon **Bell** has stockpiled all the printed and digital detritus of his 68 years of life; now he's developing tools to turn this computerized shoebox into a memory aid. And the Pentagon's Defense Advanced Research Projects Agency wants to combine sensors, cameras, bugging devices, and wearable computers to capture a comprehensive, searchable database of an individual human life. DARPA hopes that the project, called LifeLog, will yield clues about how to make robots more humanlike, but it is also aiming for "a powerful automated multimedia diary and scrapbook," according to a project description.

Life size. A lifetime's experience will soon fit easily on an ordinary hard drive. **Bell's** project at Microsoft's Bay Area Research Center in San Francisco, for example, so far has filled just 30 gigabytes--a fraction of the terabyte (1,000 gigabytes) of storage capacity that hard disks are expected to have within five years. Called MyLifeBits, the project began about four years ago when **Bell** and his research partner Jim Gemmell were studying future technologies for telecommuting. Working from remote offices, they felt handicapped by their lack of access to files, documents, and books back at the main laboratory. "We started to look at E-paper and the paperless office, and then scanning became an obsession," Gemmell says. With an assistant, the pair set about scanning all of **Bell's** old papers and photographs as well as articles and books he had read. They also wrote software to capture a copy of every message and document that crossed his computer screen and every voice mail he received, and they recently began recording all of **Bell's** phone calls and any television he watches.

But after three years of digitizing **Bell's** life, the research team realized they were creating an unwieldy "write-once-read-never" database. So they began writing software to mimic the way the human mind recalls things. Now the system can play back a phone conversation while simultaneously displaying any Web pages **Bell** was viewing at that time plus E-mails and documents relevant to the conversation. "Your mind works by association," notes Rick Rashid, a senior vice president at Microsoft and head of its research division. "People recall information in part by remembering where they were, what else was happening, and who they were with."

Eventually, Rashid believes, people will begin using this "add-on personal memory" to order up instant audio replays--digital double takes, if you will-- during their daily lives. Years after the material was collected, such a database could be used to refresh a failing memory, revive a stalled project, or educate future generations about what today's lives were like. Microsoft plans to weave the computer-based portions of the MyLifeBits project into a software product, possibly as early as 2008. "It will be in the operating system, gathering data as you work," says Gemmell.

DARPA's LifeLog would pick up from there. The project is aiming for portable sensors that would record daily life in exhaustive detail and data processors that would search for patterns and sift for information likely to prove useful later on. **Bell** speculates that LifeLog's first beneficiaries might be high-level military officers trying to keep track of multiple projects unfolding at the same time in many parts of the world.

A practical, powerful, consumer version could be decades off. And the very idea may seem unpalatable: Who wants a computer watching your every move? Retired IBM Fellow Dave Thompson coined the term "memory prosthesis," and he wouldn't mind. "I've observed the captains of industry and they have handlers who prompt them about you as you go to shake hands," he says. "Why should the rich people have all the fun?"

Digital memory aids could capture and recall everything you experience

Drawing: no caption (SUSAN SANFORD FOR USN&WR)

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