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Science Dynamics has the skills to develop a global network moving telephony to the Internet

By Joseph Busler, *Courier-Post staff*

For a company that's more than 22 years old, Science Dynamics is acting a lot like an Internet start-up:

- It's main strategy is to produce cutting-edge software, which offers worldwide, simultaneous talking, faxing and data exchange at almost no cost.
- It has raised capital and is looking forward to being listed on Nasdaq.
- It is forming partnerships with other Internet companies.
- It is losing larger amounts of money as its stock price climbs dramatically.

For all its existence, Science Dynamics has been a telephony company - not a telephone company, but a technology company that develops hardware and software telephone carriers needed to deliver service.

The reason that this company, a stock market laggard for more than half a decade, is beginning to attract interest is its vision for the future and its skills from the past.

It sees communications - including telephone communications - moving to the Internet and Internet-like networks.

"There are 3,000 functions used in the transmission of voice that are

not used to transmit data," said Alan Bashforth, until recently Science Dynamics' president and now president of its partner and primary customer, @IPbell.

"Science Dynamics, with its background in telephony, has expertise that data companies lack. It can deal with voice recognition and knows, for example, that while 9-1-1 is for emergencies in the U.S., It's an area code in China."

The 26-employee company has successfully made this case to such leaders in the telecommunications and computer industries as Cisco Systems, Oracle, Hewlett-Packard and GTE, which together have ponied up \$50 million in cash and equipment to help Science Dynamics develop an advanced global data and telecommunications network.

But the company's rebirth, which has seen its stock price climb more than 40-fold in the past year, followed a harrowing, near-death experience.

Until the end of 1996, Science Dynamics was an old-line telephony company that made such things as central-office voice-response systems - phone company systems that generate recorded voice messages that tell

you, for example, that you have dialed a nonworking number or area code.

It also developed and markets the Commander Inmate Telephone Control System, a phone system designed for prisons that allows administrators to control how inmates use the telephone. These systems continue to be a major contributor to sales.

But in 1996, Science Dynamics was in deep trouble, trouble that would see it delisted from Nasdaq, turned into a penny stock and not far from insolvency. Trouble that kept the company stock so low that, until late last summer, a share was worth the price of a cup of coffee.

"I can tell you what happened and the story's not pretty!" said Lyndon A. Keele, the company's 71-year-old founder and chairman.

In 1993-95, Science Dynamics partnered with a Japanese company to produce a public telephone that would use prepaid phone cards rather than coins for NYNEX, New York state's regional Bell operating company (since acquired by Bell Atlantic). The cashless pay phones would deter theft and vandalism by those after the money in the coin box, a major problem in urban areas.

But poor marketing and the growing popularity of cell phones caused NYNEX to cancel the project. "That hurt us," said Keele.

On the heels of the cancellation, a patent infringement lawsuit was filed against a Science Dynamics supplier that crippled sales of its most profitable product, its prison phone system, for a year.

Sales fell, and for the second half of the 1990s, the company's stock price hovered between 40 and 75 cents, occasionally hitting \$1 a share.

In 1998, the company lost \$1 million on sales of \$4.4 million - about the same as in 1997.

The turnaround began in 1996, when Science Dynamics bought the intellectual property of a Jersey company - located in old Jersey, in Britain's Channel Islands - Innovative Communications Technology (ICT) Ltd. And Lyndon Keele stepped down as president, replaced by Bashforth, ICT's president and a British electronics engineer.

The deal launched a fundamental change in direction for Science Dynamics, a move toward the Internet, or, more precisely, toward Internet Protocol telephony and away from traditional circuit-switched telephony.

For reasons having to do with how they transfer information, Internet Protocol networks make much more efficient use of the expensive cables, routing and other equipment that make up a telecommunications network.

A traditional, or circuit-switched, telephone network must create a dedicated circuit - an open line - for the length of a data or voice connection, even though the link's capacity may go mostly unused.

An Internet Protocol network, on the other hand, breaks information into little packets, sent separately by whatever route has available capacity.

Telecommunications types call all these linked networks and the packets of information flowing through them the "Internet cloud".

Science Dynamics' new direction is to develop software to facilitate this hybrid telephone-Internet form of communication for the lucrative corporate global-villager market.

It's even changing its name, at least on business cards. "We like to be called SciDyn now," said Sarah Hackforth, director of sales and marketing.

Most intriguing is its relationship with @IPbell, an entity created last year and still owned by British venture capitalists and investment banks. It was the idea of Bashforth, who recently took

over its presidency, and Graham Butler, who joined @IPbell from Deutsche Telekom. Both Bashforth and Butler are based in Britain, where Science Dynamics now has a subsidiary.

Using equipment and software developed by @IPbell's partners and Science Dynamics, the latter is creating the network that @IPbell - described as a "next generation global operator" - is poised to launch. @IPbell is, essentially, a carrier. It will lease bandwidth and use its specialized equipment to provide telecommunications services to corporate customers.


"Science Dynamics will be @IPbell's equipment provider," said Joy C. Hartman, Science Dynamic's president and CEO since February and an 18-year veteran. But Science Dynamics may also seek other customers for its products, she said.

Initially, the @IPbell network will have nodes in London, New York and Los Angeles, increasing the number of nodes to 50 in the first year of operation and then to 1,000.

But, sensitive to its history of dashed hopes, Hartman isn't ready to make any firm predictions about the company's bottom line.

"We don't have any financial forecasts," she said, "but we plan to down the road."

How the Internet Protocol works



In a traditional telephone system that uses a circuit-switched system, the two parties at the end of a conversation or other data exchange are connected by a circuit devoted to that conversation alone. It's as if there were on string linking two tin cans together and no one else can use it.

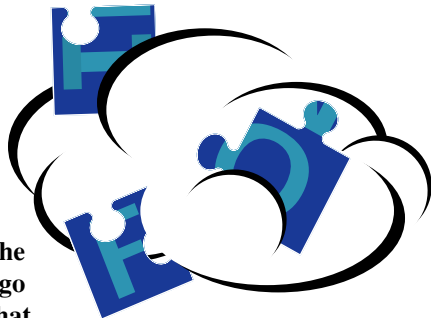


The Internet Protocol, the communications protocol used by the Internet, private intranets and other data networks, operates differently. The Internet Protocol is a packet-switched network, because data, including voice data, are broken down into small pieces, called packets, which are sent to their destination by different routes.

It's as if you wrote information, then tore it into pieces and on the back of each one wrote the destination address, your return address and a number indicating where the pieces went in relation to each other.



Then the pieces go into what engineers call the "Internet cloud."



As people - computer servers, really - find the pieces, they pass them on to others, who pass them on to yet others, until they reach their destination.



They are reassembled like a jigsaw puzzle. If any pieces (packets) don't arrive, the recipient sends back a request for the missing data.



This goes through the same Internet cloud until all the pieces are assembled. Because this happens so fast, even real-time voice or pictures can be sent over an Internet Protocol.

