Dynamic Capabilities at IBM

Virginia Rometty, CEO of IBM
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At its core, IBM is a solutions company. It solves data-based problems for its business clients, but the technology and problems both change over time. As an example, IBM helped kick-start the PC revolution in 1981 by setting an open standard in the computer industry with the introduction of the IBM PC running on an Intel 8088 chip and a Microsoft operating system (MS-DOS). Ironically, in the years following, IBM nearly vanished after experiencing the full force of that revolution, because its executives believed that the future of computing lay in mainframes and minicomputers that would be produced by fully integrated companies. However, with an open standard in personal computing, the entire industry value chain disintegrated, and many new firms entered its different stages. This led to a strategic misfit for IBM, which resulted in a competitive disadvantage.

Rather than breaking up IBM into independent businesses, newly installed CEO Lou Gerstner refocused the company on satisfying market needs, which demanded sophisticated IT services. Keeping IBM together as one entity allowed Gerstner to integrate hardware, software, and services to provide sophisticated solutions to customers' IT challenges. IBM was quick to capitalize on the emergence of the Internet to add further value to its business solutions. The company also moved quickly to sell its PC business when substitution from tablet computers was just beginning to impact demand. More recently, IBM also sold its server business, further shedding its legacy in hardware.

Exhibit 4.6 shows IBM's dynamic capability to successfully transform itself multiple times over its more than 100-year history—a history with periods of major disruptions in the data information industry, from mechanical calculators to the Internet. In contrast to IBM, note how at the bottom of Exhibit 4.6, strong competitors in one period drop from significance when a new wave of technology emerges.

Led by CEO Virginia Rometty, the IBM of today is an agile and nimble IT services company.[41] Rometty was promoted to CEO in 2012 from her position as senior vice president of sales, marketing, and strategy. Rather than just facing one technological transformation, IBM and its clients are currently facing three disruptions at once:

1. *Cloud computing:* By providing convenient, on-demand network access to shared computing resources such as networks, servers, storage, applications, and services, IBM attempts to put itself at the front of a trend now readily apparent in services that include Google Drive, Dropbox, or Microsoft 365. Increasingly, businesses are renting computer services rather than owning hardware and software and running their own networks. One of the largest cloud computing providers for businesses is Amazon Web Services (AWS), which beat out IBM in winning a high-profile CIA contract. This was seen as a major embarrassment given IBM's long history of federal contracts.

2. *Systems of engagement:* IBM now helps businesses with their systems of engagement, a term the company uses broadly to cover the transition from enterprise systems to decentralized systems or mobility. IBM identifies the traditional enterprise system as a "system of record" that passively provides information to the enterprise's knowledge workers. It contrasts that with systems of engagement that provide mobile computing platforms, often including social media apps such as Facebook or Twitter, that promote rapid and active collaboration. To drive adoption of mobile computing for business, IBM partnered with Apple to provide business productivity apps on Apple devices.
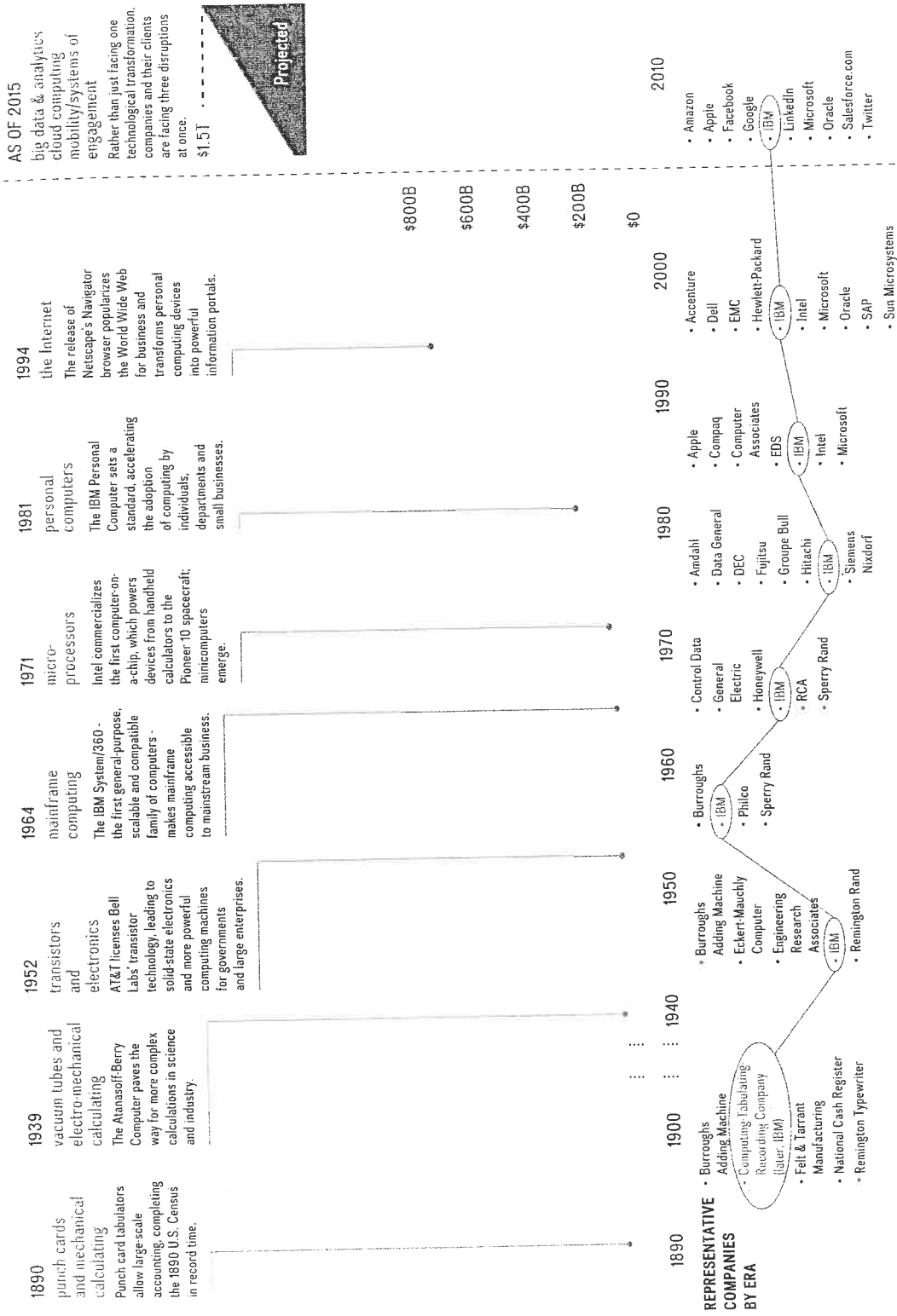
3. *Big data and analytics:* IBM now offers smarter analytics solutions that focus on how to acquire, process, store, manage, analyze, and visualize data arriving at high volume, velocity, and variety. Prime applications are in finance, medicine, law, and many other professional fields relying on deep domain expertise within fast-moving environments. IBM partnered with Twitter to provide IBM's business clients big data and analytics solutions in real time based on the vast amount of data produced on Twitter.

Critics of this strategic approach point out that IBM was slow to take advantage of these mega-opportunities, and they continue to watch IBM's stock performance with skepticism. The critics grew louder when Rometty received a pay increase and a $3.6 million bonus for her 2014 performance, during which revenue dropped about 6 percent and net income 27 percent. Overall, IBM's market cap plummeted by more than 60 percent: from a high of $240 billion in the spring of 2013 to some $150 billion early in 2015. And revenues for IBM have fallen for three straight years, from a high of $107 billion when Rometty became CEO to $93 billion by early 2015. During the same period, IBM's stock price fell by almost 10 percent, while the S&P 500 index rose by 67 percent.

Rometty, however, stays committed to IBM's new strategic focus and argues that she is transforming IBM for the long run. She views the most recent waves of technology disruptions as creating major business opportunities and has made sure that IBM invests heavily to take advantage of them. IBM has trained all of its consultants—over 100,000—in these three areas to help its business clients with their own transformation. If history is any guide, IBM is likely to master this three-pronged tech transformation also.[42]

EXHIBIT 4 / IBM Navigates Wave after Wave of Technological Change

[IBM's Representation of the Evolution of the IT Industry c. 2004]

1890
punch cards and mechanical calculating
Punch card tabulators allow large-scale accounting, completing the 1890 U.S. Census in record time.

1939
vacuum tubes and electro-mechanical calculating
The Atanasoff-Berry Computer paves the way for more complex calculations in science and industry.

1952
transistors and electronics
AT&T licenses Bell Labs' transistor technology, leading to solid-state electronics and more powerful computing machines for governments and large enterprises.

1964
mainframe computing
The IBM System/360 - the first general-purpose, scalable and compatible family of computers - makes mainframe computing accessible to mainstream business.

1971
microprocessors
Intel commercializes the first computer-on-a-chip, which powers devices from handheld calculators to the Pioneer 10 spacecraft; minicomputers emerge.

1981
personal computers
The IBM Personal Computer sets a standard, accelerating the adoption of computing by individuals, departments and small businesses.

1994
the Internet
The release of Netscape's Navigator browser popularizes the World Wide Web for business and transforms personal computing devices into powerful information portals.

AS OF 2015
big data & analytics
cloud computing
mobility/systems of engagement
Rather than just facing one technological transformation, companies and their clients are facing three disruptions at once.

$1.5T

Projected

$800B
$600B
$400B
$200B
$0

1890 1900 1940 1950 1960 1970 1980 1990 2000 2010

REPRESENTATIVE COMPANIES BY ERA

1890
- Burroughs Adding Machine
- Computing Tabulating Recording Company (later, IBM)
- Felt & Tarrant Manufacturing
- National Cash Register
- Remington Typewriter

1950
- Burroughs Adding Machine
- Eckert-Mauchly Computer
- Engineering Research Associates
- IBM
- Remington Rand

1960
- Burroughs
- IBM
- Philco
- Sperry Rand

1970
- Control Data
- General Electric
- Honeywell
- IBM
- RCA
- Sperry Rand

1980
- Amdahl
- Data General
- DEC
- Fujitsu
- Groupe Bull
- Hitachi
- IBM
- Siemens Nixdorf

1990
- Apple
- Compaq
- Computer Associates
- EDS
- IBM
- Intel
- Microsoft

2000
- Accenture
- Dell
- EMC
- Hewlett-Packard
- IBM
- Intel
- Microsoft
- Oracle
- SAP
- Sun Microsystems

2010
- Amazon
- Apple
- Facebook
- Google
- IBM
- LinkedIn
- Microsoft
- Oracle
- Salesforce.com
- Twitter