



Danger, Inc.

Powering the Next Generation of Mobile Technology

In the first quarter of 2003, the U.S. economy was in the deepest recession in recent memory. Over the last three years, the collapse of the Internet bubble resulted in an extremely risk averse start-up environment. Corporate scandals such as Enron and WorldCom had caused tremendous mistrust of top executives. The technology sector was performing poorly due to cuts in spending for computing and communications by both enterprises and consumers. New York City had suffered a terrorist attack in September of 2001 that resulted in the collapse of the World Trade Center towers, and in March of 2003, the United States was at war with Iraq. In the midst of this adversity, the high technology community in Silicon Valley and around the world was struggling to get back on its feet.

The wireless industry had been especially volatile, with some analysts predicting doom and gloom, and others promising that a boom in wireless data was just around the corner. For example, the exorbitant costs of 3G licensing auctions in Europe and slow adoption rates of wireless technologies such as Wireless Application Protocol (WAP) made industry observers worry that the wireless industry had been over-hyped. On the other hand, statistics such as the steady increase of cell phone penetration rates worldwide and the tremendous success of short messaging service (SMS) were positive signs of continual growth in this space. For example, SMS text messaging, a form of short, near real-time messaging, had become a \$20 Billion market in Europe, and some European wireless carriers were generating 15 to 20 % of their total revenues from this crude data service. That gave the leaders of Danger confidence that integrated solutions like theirs would have a bright future. In the midst of this market and technological uncertainty, Hank Nothhaft, CEO of Danger, Inc. was in his office on University Avenue in Palo Alto, preparing for a meeting of Danger's leadership team.

Hank had taken the helm of Danger, Inc. in October of 2002. The mission was to bring the company to the next level – to become a profitable business. Danger, Inc. was building “a complete solution that enabled wireless carriers to offer innovative and affordable voice and data products to consumers over next-generation networks.”¹ Hank was impressed by what the company's founders, Andy Rubin, Joe Britt and Matt Hershenson, had created. In a span of just two years, Danger had become one of the hottest start-ups in Silicon Valley. The founding team had successfully implemented a first-generation integrated solution, won numerous awards from the industry for their innovativeness, received amazing consumer reviews for their handheld product, and had signed their first major customer, T-Mobile.

¹ Danger Product Overview from Danger Press Kit, January, 2003.

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Every day since his arrival, Hank had witnessed the extraordinary energy that permeated the environment of this fast-paced start-up. The team at Danger, Inc. was exceptionally talented and committed. In February 2003, Danger had reached a major milestone by securing US\$35 million in Series D financing, bringing total funding to US\$77 million. This included strategic investments from T-Ventures and Orange Ventures, the venture arms of two of the world's major wireless carriers. The founding team had been frugal in spending its cash, and as a result, had almost US\$50 million in funds to finance future operations.

Hank and his teammates knew that to unleash the company's full potential and reach "financial critical mass," Danger needed to build a portfolio of strategic relationships that would help bring its technology to mainstream markets. The leadership team needed to build alliances with manufacturers to ensure continuous hardware innovation and to reduce the costs of handheld devices that were compatible with Danger's software solutions. They also had to convince more carriers to adopt Danger's software solution as a platform to offer wireless services to their subscribers. Partnerships with other technology and content providers would also help to bring more capabilities to the Danger platform.

Hank left his office and moved through the labyrinth of Danger's back hallways to the conference room that had been set up for the leadership team meeting. Assembling around the old, second-hand conference table were some of the best and brightest entrepreneurial minds in the Valley: Andy Rubin, Matt Hershenson and Joe Britt – Danger's co-founders; John Arledge – Vice President of Business Development; James Isaacs – Vice President of Worldwide Sales and Alliances and Les Hamilton – Senior Vice President of Worldwide Operations and Manufacturing. The biographies of Danger's founders and selected executives are provided in **Exhibit 1**.

Danger's leadership team was assembling to discuss three key issues related to their portfolio of business partnerships. Which wireless carriers were the leading candidates for Danger to pursue to increase their market penetration in the U.S. and around the world? Which manufacturers were the most attractive potential partners to create Danger-compatible handheld devices? How could Danger develop trustworthy partnerships with companies that were often in fierce competition with one another?

Wireless Industry Framework

In many developed countries, a wide variety of wireless products and services was available to end-users. In 2003, mobile phones were so popular and affordable in developed nations that they had become a standard accessory for urban living. On the other hand, high-tech companies continued to introduce cutting edge wireless innovations such as UltraWideBand Technology (UWB) that were still very early in their technology adoption life cycles. . The industry had become very large and complex, with players ranging from start-ups to multi-national companies that formed different parts of the value chain. **Exhibit 2** shows a pictorial representation of five wireless segments, which are described below.²

The first segment consisted of the *wireless component providers*. They competed by producing innovations in product categories such as baseband components, radio frequency (RF) components antennas, etc. which allowed devices to communicate using a variety of wireless protocols. Texas Instruments and Qualcomm were the two market leaders in providing baseband components. The major players in the RF components market were Motorola, Philips and Infineon. Other companies were positioned to provide specialized chipsets. For example, Intersil was the leading provider for 802.11 chipsets. Due to the rapid advancements of technology and the wide variety of standards, this segment was a breeding ground for start-ups such as Atheros Communications, Cambridge Silicon Radio and ArrayComm.

The second segment was the *network equipment suppliers* who made the physical infrastructure to make wireless networks function. They designed and manufactured the radio base stations, the receivers, the switches and other components of the network. Ericsson dominated the wireless infrastructure market

² For more information on the wireless industry and a detailed explanation of the framework, refer to "The Wireless Industry in 2002." STVP-2002-004

with a market share of about 34%. Other key players in this market were Nokia, Motorola and Lucent. Traditionally, the network equipment manufacturers had sold primarily to carriers who built extensive wireless networks to serve enterprises and consumers. However, with the increased popularity of Wireless Local Area Networks (WLANs), network equipment suppliers had started to market their products to enterprises and consumers directly. From 2000-2002, a number of startups had also entered the network equipment segment with technological innovations to carve out a piece of the pie for themselves.

The third segment was the *end-terminal manufacturers*. This segment was divided into five sub-segments – Laptop manufacturers, Mobile Phone manufacturers, Personal Digital Assistant (PDA) manufacturers, Automotive Telematics, and Wireless-Enabled Appliances. Mobile phones were traditionally the end-terminals of a wireless transmission and were the key product in this space. Although laptops and PDAs had become increasingly popular over the last five years, most of them had to be plugged into a fixed Ethernet connection for network access. The increasing importance of mobility and connectivity suggested that these two sub-segments could potentially become key growth areas. The automotive telematics sub-segment was still nascent in 2002, and automobile companies had started implementing navigational equipment in their vehicles, using the Global Positioning System (GPS). This was still a very expensive option and thus a relatively rare occurrence. The final segment, wireless-enabled appliances, also was a very new segment. This space included printers or digital cameras that were fitted with a wireless receiver module, thus allowing the equipment to receive wireless data, usually by using the Bluetooth protocol.

The fourth segment consisted of the *carriers*, who were *mobile service providers*. The players in this space were companies that licensed the spectrum from the government, bought infrastructure from the network equipment manufacturers, deployed the infrastructure, and provided wireless services to individual consumers or corporate users. They also served as the distribution channel for mobile phone manufacturers. Examples of mobile service providers in the United States included AT & T, Sprint, Verizon, and Cingular Wireless.

The final segment, *wireless software providers*, was divided into three segments based on the customers they served. These segments were 1) Carrier-Focused, 2) Enterprise-Focused, and 3) Consumer-Focused. This sub division further highlighted the complexity of this space, because of the different services that each segment needed. The carriers needed software applications that could improve the network management and provide value-added services to their customers. Enterprise-focused companies were trying to provide networking software that could help to extend company operations over wireless networks or business software that could leverage the wireless capabilities that corporations had set up. Finally, consumer-focused companies provided mobile applications for individuals, such as mobile gaming, content aggregation, scheduling, and other applications.

In this wireless framework, Danger fits best into the wireless software provider segment, under the sub division – carrier-focused. This was because Danger provided an end-to-end software solution to wireless carriers that would enable them to provide value-added services on high-speed data networks, such as General Packet Radio Services (GPRS). These services were delivered through a hiptop-enabled device.

One major issue for both the handset/device manufactures and the software segment in 2003 was what operating system (O/S) would prevail. The leading contenders included: 1) Symbian, a java based OS controlled by an industry consortium, that many observers felt was really controlled by Nokia; 2) Microsoft Windows CE, .Net and other device oriented software from Microsoft; 3) other Java-based O/S's; and 4) Palm O/S and its derivatives.

Hank Nothhaft appreciated the implications of the wireless Operating systems wars for Danger: “This is very important and very strategic to Danger’s prospects... Danger doesn’t neatly fit into a box since we are an end-to-end client server application, but as a result we do provide the equivalent of an O/S. This is a major point of contention and opportunity for us, because Nokia and Microsoft are viewed as competitors by most participants in the wireless industry.” While Danger was careful not to position its solution as an operating system, it might be viewed by wireless carriers and handset manufacturers as a potential defense against being dominated and commoditized by either Microsoft or Nokia.

Many industry analysts mistakenly put Danger, Inc. in the same category as Personal Digital Assistant (PDA) manufacturers such as Palm or HandSpring. In the wireless framework, that would be in

the end-terminal manufacturers' segment. However, for many of these PDA manufacturers, the key innovations were primarily in the hardware design; i.e. more powerful handhelds, more features and capabilities, better form factor, etc. Although hardware design was an important component of Danger's value proposition, most of its innovations occurred in the software applications on the back-end server. This server powered and supported the software applications that efficiently provided data for the hiptop-enabled device.

A closer look at Danger's business model also revealed that Danger was distinctly different from other PDA manufacturers. Although Danger played a key role in the hardware design for the hiptop[®] handheld, they made 0% margins on the device, and chose to sell the handheld at cost. This was different from traditional PDA manufacturers, who made 20-40% margins on their devices. Although Danger made some revenue from one-time license fees on its operating system, its primary revenue source came from licensing the back-end server software to carriers and the sale of premium software products to end-users.

Company Background

Danger, Inc. was founded by Andy Rubin, Joe Britt and Matt Hershenson in Sunnyvale, California, on Dec 23, 1999. Although they were from different parts of the United States, (Andy – Rochester, New York; Joe – Lumberton, North Carolina; Matt – Pittsburgh, Pennsylvania) they were drawn to California in the 1980s to join Apple Computer, a pioneer in the microcomputer revolution. Since then, they had moved on to work at some of the most technologically innovative companies in Silicon Valley, such as General Magic, Catapult Entertainment, 3DO, and Web TV. Through these experiences, they had become a part of the close-knit community of technology innovators that made Silicon Valley a fertile breeding ground for start-ups. **Exhibit 3** provides a timeline of the industry experience of the three founders and selected key executives at Danger.

The impetus for starting Danger occurred shortly after Microsoft's acquisition of WebTV. Andy and Joe were early employees of WebTV and had enjoyed working in the start-up environment. After the acquisition, WebTV was moved from bustling downtown Palo Alto to a dreary industrial park in Mountain View. Relaxed, casual, open cubicles were replaced by walled offices and long, quiet hallways. This transition changed the culture of the company significantly and as Andy described it, "I would drag myself into Microsoft each morning and reply to email. I really didn't know what I was doing there."

It was not long before the founders decided that it was time to move on to their next venture. Each of the founders had complementary domain expertise in a particular area – Andy in communications, Joe in software and Matt in hardware. From their past experiences in network computing, the founders knew that they needed each of these disciplines to build a great networking product. They also believed that the "thin client" model³ was well suited for consumer products, because it made things much simpler for consumers to use. Andy described the first meeting that marked the beginnings of Danger, Inc:

"In this brainstorming session, we all chimed in and started Danger based on some of those ideas. Of course, the product evolved with time, but the fundamental ideas remained the same. My input was that I needed something to remind me to do things, Joe's was to have a connected device, and Matt's was that '...it's got to be free. It's got to be cheap.'"

The company name – Danger, Inc. had a serendipitous beginning. One of Andy's hobbies was robotics and he had actually helped built a robot for the tech museum in San Jose. To pursue his robotics projects, Andy leased some retail space off California Ave in Palo Alto and named his company "Robots that Kill." After experimenting with different ideas for a domain name for the company website, he settled with Danger.com which he acquired for \$6,000 from a person in Vermont. Since Andy already owned the domain, the founders decided to use it, and worry about the "real" company name later on.

The seed funding of \$1.7 million for Danger, Inc. came mostly from friends and family. Since this was soon after the Microsoft acquisition of WebTV, many of the founders' friends had money from Web

³ In server-client applications, a thin client is a client that is designed to be especially small so that the bulk of the data processing occurs on the server.

TV stock, and were willing to support their venture. Because of their strong credentials and the easy availability of capital, the founders were able to raise money without a formal business plan. Through the first year after its inception, Danger was primarily a technology-driven company, and had made some significant technological progress. Andy described that period:

“The technology was compelling and there was something in the business model, but we didn’t have the full story. There were missing pieces on the business development, sales, and partnerships aspects of the company. We could have gotten funding, but not at a valuation that would make sense for us. So we kept going on seed money, taking \$100,000 chunks from our friends. There were a couple of close calls, but we managed to survive through those times.”

Although Danger’s product had been through several iterations, the concept of using the client-server computing model remained central in its evolution. The founders believed that by using back-end servers to provide most of the computing capabilities, they could build an affordable high performance device on the client-end. The first prototype that they built on the client-end was a NanoPDA called the Peanut that could be used to store important personal information. It could be connected to the Internet, had a small LCD screen, a couple of buttons, and a wheel for easy scrolling. The device could be manufactured for as little as \$10. The second iteration of the product included some experimentation with one-way transmission technology that used FM sideband data transmission, by broadcasting data from radio stations. This additional functionality increased the device cost to about \$16. Through their conversations with potential investors, friends and mentors, the Danger team continued to build more functionality into the device. This included calendaring functions, information storage, basic web surfing and receiving email wirelessly. Things started to take shape when they started to experiment with two-way wireless transmissions, because this technology enabled a host of interactive applications. Andy described that moment:

“At General Magic we had basically developed the same thing years ago. The Motorola Envoy was one of the first wireless PDAs in the market that ran on the Mobitex network. For me, it was too close. I didn’t want to start another company that was so similar to the company that I had previously left. So we started thinking of things that we could do beyond that.”

The founders realized that the next generation data networks created an opportunity for Danger to take wireless applications to the next level. RIM’s wireless PDAs operated on Mobitex that had transmission speeds of only 8 Kilobit per second (kbps). Next-generation data networks included 2.5G technologies such as GPRS, which promised transmission speeds of up to 144 kbps. Future 3G technologies boasted 2 Megabit per second transmission speeds. At that time, GPRS was still in its infancy and had not been deployed by any of the carriers. Danger had to develop a product based on a standard that was still evolving. Through a close technical partnership with Xircom, one of the key developers of GPRS radio technology, Danger successfully implemented one of the first GPRS-enabled devices in the US market - the hiptop[®] device.⁴ This high-speed wireless communicator was “always-connected” to Danger’s back-end server, which formed the backbone of the full Danger product.

In October of 2002, Hank Nothhaft joined Danger, Inc. as chairman and chief executive officer. Hank had been a successful serial entrepreneur in the telecommunications industry over the past 30 years, and had gained deep insights about how carriers operated in the United States and around the world. His experience was particularly important to Danger because the carriers owned the next generation data networks that provided the wireless connectivity for the Danger platform. As a result, Danger needed to form close strategic relationships with the wireless carriers to successfully roll out their product to the mainstream market.

Hank also attracted three of his former business colleagues, James Isaacs, Les Hamilton and George Carr, to Danger. They had worked together at Concentric Network Corporation and had nurtured it from a small start-up to a multi-million dollar operation, executed a successful IPO in 1997 which was then acquired by XO Communications in 2000. Their business experience in working with wireless carriers complemented the technological expertise of the original founders of Danger. Nancy Hilker also joined

⁴ Xircom was acquired by Intel Corporation in 2001 for US\$748 million.

Danger as its chief financial officer during this time period. With this leadership team in place, Danger, Inc. was ready to move into its next phase of development.

Danger's Business Model

Danger identified eight different functions that needed to be performed to provide consumers with end-to-end wireless service: 1) hardware design for the handheld device; 2) client side software and user interface; 3) developing and running a scalable back-end service; 4) manufacturing; 5) consumer marketing (e.g., mass media advertising and brand building); 6) consumer billing; 7) customer support; and 8) product distribution. As a start-up with limited resources, Danger elected not to engage in the capital-intensive functions such as manufacturing or consumer marketing. They focused on their core competencies and partnered with other companies to deliver the full end-to-end solution. Danger's leadership team believed that their core expertise was their technical know-how. As such, it was natural for them to focus on the technical pieces of the solution, which were the hardware design, client side software, and the back-end service. The back-end service was a series of software applications software and developmental tools for both in-house use as well as third party developers. This was Danger's most important intellectual property asset.

In the words of John Arledge, VP of Business Development, Danger "chose to use a hardware-driven service business model." This meant that most of the revenue came primarily from developing software and running the back-end service. They charged their carrier partners a licensing fee for each subscriber that used Danger's back-end service, and that became a recurring revenue stream through the lifetime of that subscriber. The carrier could choose to either host the service at their internal data centers or outsource the service to Danger. There was also a small revenue stream from licensing the software on the client. However, Danger chose to make no money on the hardware device itself. John Arledge explained:

"The hardware is a very important part of what we are doing. Without the hardware, without the slick User Interface and industrial design, we would not have nearly the success that we have today. So hardware design, to an extent, is a core expertise of ours, but we have chosen not to make it a profit center. It is a cost center. It is a cost of doing business. And we use it to get into the door, and to sell carriers and end-users the concept."

By combining a zero hardware margin business model with their technology, Danger enabled carriers to offer their end-users a wireless handheld device at a much more affordable price compared with solutions from other companies such as Palm, HandSpring, Sony, Nokia and RIM. The T-Mobile Sidekick, the first example of a Danger hiptop[®] device, had a recommended retail price of \$199 in October 2002. The functionality of the T-Mobile Sidekick could be compared with other wireless communicators such as the Treo 180 and the Palm Tungsten W that were retailing at a price point of at least \$399. **Exhibit 4** shows a comparison of the different wireless communicators that were available in the market in early 2003. **Exhibit 5** shows some of the wireless service plans that were offered by the carriers for these communicators.

Apart from choosing to sell the handheld device at cost, Danger's product architecture was another key factor that allowed the company to make an equivalent device at half the price. Since most of the processing was done on Danger's software residing on backend servers, the components on the handheld could be kept to a minimum without compromising performance. Suppliers of Personal Digital Assistants (PDAs) and Smart phones, on the other hand, needed to continually innovate their hardware. They often packed new products with expensive components to power compelling features that would encourage end-users to upgrade their old handheld devices. With the Danger hiptop device, innovations could be introduced in its back-end service that would improve the performance and the functionality of the client-side handheld. Hank Nothhaft explained:

"If you were to buy a Motorola phone, you would get the same set of features no matter which carrier you buy the phone from. With us, the carrier gets to decide on the set of features that they want based on the demographics of their target customer. So, we didn't choose to go after the 18-34 year old consumer market. Our first customer, T-mobile decided that they wanted to go after that market

segment, and asked the company to create a specific set of services that would appeal to them. This included e-mail, instant messaging, web browsing, calendaring, SMS, digital camera, and then later on, we added a phone function. We can do this efficiently, because most of the work or the heavy lifting is done in the backend in the data centre.”

This business model and pricing strategy perfectly aligned Danger’s business objectives with those of the wireless carriers. Danger’s zero margin hardware pricing strategy and low-cost licensing fees for their software for handheld devices allowed carriers to reduce their customer acquisition costs. Carriers incurred lower costs when they offered a Danger handset at a discount to entice a customer to sign up for wireless data services. Furthermore, carriers were charged a monthly licensing fee based purely on the number of subscribers that were signed up to the Danger service. This “success-based pricing” gave both Danger and the carrier strong incentives to improve the quality of the data services that they offered, in order to improve customer retention, increase average revenue per user (ARPU), and increase the lifetime value of each customer.

Danger Product Overview⁵

Danger provided an end-to-end solution that enabled wireless carriers to offer next generation wireless applications to their customers. These applications used high-speed, always-on wireless data networks based on the GPRS/GSM standard that were slowly being rolled out in 2003 in different countries worldwide. Danger’s solution consisted of three key components, 1) the hiptop[®] Device Design; 2) the hiptop[®] Development Platform; 3) The hiptop[®] Service Delivery Engine (SDE). This is further illustrated in **Exhibit 6**.

Hiptop[®] Device Design

Danger’s hiptop device was a wireless handheld that was able to take full advantage of high-speed wireless data networks. As a component of its solution for wireless operators, Danger offered the hiptop[®] Device Design to carriers with a set of features and applications that could be further customized for their specific target demographic. Each customized hiptop device design was also branded by the wireless carriers, e.g. the T-Mobile Sidekick. The hiptop device was an “always-on” handheld that was connected to the GSM/GPRS network, enabling end-users with real-time access to email, instant messaging and the Internet simultaneously. The hiptop also incorporated a full-featured phone, personal information management (PIM), entertainment applications, and a camera accessory. **Exhibit 7** shows some snapshots of the application programs that were available on the hiptop device.

Some of key applications that were available on the hiptop[®] device design were:

- **Mobile Phone** – Users could send and receive phone calls, store phone numbers, speed dial, customize ring tones, voice mail, call log. The phone could be used by placing it against one’s ear or by using a hands-free headset. Users could send and receive messages from friends whose phones supported Short Message Service (SMS) text messaging.
- **Email** – Email could be sent and received with PDF, Word and image attachments for up to three external POP accounts.
- **Instant Messaging** – Users could use their existing instant messaging screen names to chat with their friends. Multiple Instant Messaging programs (including AOL) were supported by the hiptop device.
- **Web Browsing** – Built-in browser enabled access to the Web with native HTML pages. Site text and graphics were optimized for viewing on the device.
- **PIM** – Included a full-featured personal information manager including Calendar, Address Book, Notes, and To Do. All PIM functionality was fully integrated with messaging and phone applications.

⁵ This section is adapted from Danger Product Overview found in the Danger Press Kit.

- **Snapshot Gallery** – Stored and managed low-resolution snapshots that were taken with the digital camera accessory. These images could be instantly emailed to family and friends.
- **Games** – A selection of games that used quality sound, vibration and color scroll wheel to provide multimedia entertainment.

The hiptop device was the most visible component to the market. This was partly because the hiptop device could be purchased at carrier store outlets and be carried around in the streets. Furthermore, the hiptop device had been featured on numerous consumer technology magazines and television programs and had garnered excellent reviews. **Exhibit 8** shows the reviews given by the media.

The hiptop design had also won numerous industry awards. One of these awards was TechTV's 2002 Best of Consumer Electronics Show (CES), which honored the most outstanding new consumer technology product each year. Danger's hiptop won the best product in the "PDA, Handheld and Mobile Wireless" category when the device debuted at this show in January 2002. It also won the Best Industrial Design at WIRED Magazine's Rave Awards, and Best Products of 2002 (PDA Category) by Handheld Media Group. While these numerous awards generated positive press and word of mouth about the company, they also had the potential to confuse Danger's future customers – wireless carriers – about Danger's business model and potential value to them as a software and services provider. They also had the potential to confuse potential allies – branded hardware manufacturers – who might view Danger as a possible competitor.

Hiptop[®] Development Platform

The hiptop[®] development platform enabled third-party application developers to use standard development tools such as Metroworks CodeWarrior-J[™] and Microsoft Visual J++[™] to write mobile applications for the hiptop device, which used the proprietary hiptop[®] Operating System (HTOS). The hiptop device itself did not run the Java program directly. Instead, a piece of software running in the backend service took the class files coming out of a Java compiler and modified it so that it could be sent to the device. This conversion and compression technology made the program more compact and efficient on the hiptop device. At the same time, it allowed third-party application developers to use the normal Java 2 Micro Edition (J2ME) environment that they were familiar with to write programs for the hiptop device.

Danger provided a complete Software Developers Kit (SDK) that included all the required software libraries, a resource compiler, a device simulator, sample code, and HTML-based documentation to assist developers in their development efforts. A complete set of application programming interfaces (APIs) was included to enable development of applications. The hiptop[®] development platform included an integrated download management system to enable the vending capabilities of third-party applications. This would enable carriers to offer revenue-generating after-market premium services and content provided by third party software developers.

Hiptop[®] Service Delivery Engine (SDE)

The hiptop[®] Service Delivery Engine (SDE) was a suite of server-based software hosted as a service for wireless operators, enabling them to quickly deploy new applications over their next-generation data networks. SDE was designed to evolve with advancements in hardware, software and network standards. In a space where wireless standards were still evolving, this design reduced the risk of adopting this service and provided a "future-proof" platform for wireless content and service delivery. Key features of the SDE included:

- **Session management and load balancing** – The SDE provided individual session management, enabling the seamless transition and preservation of user settings and data between the hiptop device and the SDE as the user moved in and out of wireless network coverage. For example, with session management, if a user were engaged in an Instant Messaging conversation and lost network coverage, the hiptop device would be updated with any messages that were missed when the user re-entered a coverage area.
- **Wireless Synchronization** – With wireless synchronization, any data entered on the hiptop device was automatically synchronized instantly to the Web portal via the SDE, without the need for user intervention. Any browser-enabled PC could then access this information through the Web portal.

- **Application servers and proxies** – Application servers and proxies provided server-side processing for the applications running on hiptop devices. In early 2003, the SDE had an email server, an IM proxy, web proxy, as well as a full PIM server.
- **Content and application vending** – The SDE provided an integrated download management system, the Premium Download Manager (PDM), which enabled over-the-air (OTA) delivery of software and content to hiptop-enabled devices.
- **Flexible and modular framework** - The framework had a modular architecture with interfaces based on industry standards. This enabled carriers to integrate their existing systems and applications with the SDE software.

All three components of Danger's whole product were critical to enhance the carriers' ability to attract and retain customers.

Mobile Internet for the Mass Market

Danger believed that the Internet had become a necessary source for information, communication and entertainment in the daily lives of ordinary consumers. The Internet had billions of pages of web content that could be easily accessed when consumers logged onto the Internet. The personal computer served as an effective gateway to the Internet, but its mobility was limited. Joe Britt, CTO of Danger, explained,

"I like to use the analogy of the telephone. When telephones were only available as landlines, people knew that the value of the phone was in the content - other phone users. However, you couldn't carry the phone with you because it had a fixed connection. That was the great thing about cell phones. People got it instantly. People knew what the phone was used for, and knew the value of having it with them all the time. We applied that same school of thought to the Internet: people already knew the value of the Internet, but there were no really good consumer-focused mobile Internet access devices. Through our software and networking innovations, we have created a compelling solution with a rich graphical interface that makes Internet content available all the time."

From their experiences, the founders knew that the thin client model was well suited for consumer products, because it made a complicated device easy to use. The successful implementation of WebTV was a clear example of this. Users could surf the web easily with a simple remote control and did not have to worry about TCP/IP addresses, POP servers, SMTP or even phone numbers. All of this was hidden because there was a backend data center that was processing the data for the user. In the case of Danger, a complicated machine such as the personal computer that was required for accessing Internet content, could be reduced to a relatively simple handheld with an intuitive user interface. The technical configurations and processing could be done in the back-end server and pushed to the device when necessary. From Hank's perspective:

"Danger's founders understood this business model very well. In a way, you could call Danger *WebTV on steroids*, or *WebTV on wireless*."

One of the key benefits of this system was that it significantly reduced the amount of bandwidth required to have the Internet available on a mobile device. If a user were to wirelessly download the actual Internet page onto a mobile device, a lot of bandwidth would be required. Following that, the device would have to process the webpage and scale it down to a size that fit its screen, and discard the majority of downloaded information. There was tremendous waste in terms of processing power, battery power, and bandwidth. By using a client-server model, where most of the processing was done on the server, the interaction between the hiptop device and the target website became much more efficient. When a user logged onto a website from the hiptop device, a small request would first be wirelessly transmitted to the back-end service. The server would then download the HTML webpage, re-format and configure its contents to suit the device, before compressing the data and transmitting it back to the hiptop device. In this way, the hiptop was able to access any webpage that was available on the Internet, yet maintain efficient bandwidth and power usage.

This model also provided a significant amount of protection against obsolescence for the consumer. During a time when Internet standards were still rapidly evolving, consumers were more careful about investing in a product that was unable to support new messaging protocols, attachment types or even new types of web content. By having most of the processing done at the data center, bug fixes and enhancements could be updated at one central location, instead of pushing software updates out to each device.

In commenting about the consumer market, Joe remarked:

"In the enterprise market, you can get away with a poor user interface; you can even have some bugs. The users view products purely as tools. In the consumer market, users take a more personal interest in the products they choose. Most successful consumer products are sexy and engaging. Consumers want to buy products that are inexpensive, fun to use, and that will impress their friends."

Competition

As mentioned earlier, industry analysts often considered Danger, Inc. to be a PDA manufacturer. This was an inaccurate categorization of the company because it did not reflect the end-to-end solution that Danger offered to the carriers. Research in Motion (RIM) and Good Technology were two companies that provided better comparisons because they also had end-to-end solutions. However, their solutions were focused mainly on secure email synchronization and did not have the versatility of the Danger platform. Furthermore, their solutions were primarily targeted at enterprise users.

Some potential customers such as AT&T and Vodafone were also trying to construct their own end-to-end wireless data systems, which overlapped with Danger's product offering. For example, AT&T Wireless had 400 in-house employees focused on content development for Wireless Application Protocol (WAP). As a result, they were less willing to invest in the Danger platform because it posed as a competitive threat to their own development efforts. Other carriers could also conceivably choose this route and build their own internal systems. On the other hand, AT&T's in-house development project could also be used to convince other carriers that Danger could enable them to rapidly deploy revenue generating wireless data solutions and gain market share without incurring the cost and risk of an in-house, custom system.

There were other sources of competition that concerned the Danger team. Nokia was a potential competitor because they had extended their business model beyond hardware to include services as well. Club Nokia was an online community and loyalty program that offered WAP services to Nokia phone owners. Nokia also created a smart-phone reference design called the Nokia Series 60 that it licensed to other mobile handset manufacturers, including Matsushita and Samsung Electronics. This platform used the Symbian OS and supported Multimedia Messaging Service (MMS), JAVA applications and content downloads. Nokia could be contrasted with Samsung Electronics who was a pure hardware provider, who had licensed software from Nokia, Palm, Symbian and Microsoft. Another potential competitor was Microsoft, who had introduced a new operating system – the Microsoft Smartphone 2002, designed specifically for next generation phones. The first mobile phone that used this new operating system was the Orange SPV that was co-launched by Orange and Microsoft in November of 2002. Analysts believed that Microsoft intended to extend its software application capabilities into the services space through this new operating system.

Carrier Relationships

Danger's business model required it to attract wireless carriers to become both customers and business partners.

Danger had strong incentives to develop partnerships with the wireless carriers. In addition to wireless connectivity, carriers could also perform several of the eight functions that were described earlier in the Danger business model. Carriers had significant experience in consumer marketing/brand building, and committed a substantial budget each year for that function. Danger could ride on the coattails of their

partners' multi-million dollar marketing campaigns, and avoid many of the costs and risks of big-ticket brand building. They had already implemented complex billing systems for their customers, so Danger could simply develop interfaces to those systems and let the carriers do the end-user billing. Carriers already employed thousands of Customer Support Representatives (CSRs) who answered the phones 24/7 to provide support to end-users. Carriers also had an extensive distribution system. They purchased handsets from end terminal manufacturers and distributed them, bundled with a variety of wireless service packages, through their own stores and independent retailers. In other words, the carriers were able to provide all the functions that Danger wanted to outsource except handset manufacturing. As a result, Danger's leaders saw the carriers as more than customers. They had the potential to be strategic business partners, complementing Danger's strengths, and reducing costs and risks as Danger took its new technologies to market.

Carrier Industry Background

The wireless carriers owned the next-generation data networks for consumers who wanted to use handheld devices to improve their lifestyles or become more efficient on the job. These wireless providers, especially the European carriers, had spent an estimated US\$100 billion for 3G licenses in government auctions, and were expected to invest an equivalent amount to build out the 3G infrastructure. GPRS investments were significantly lower because GPRS ran on existing GSM network infrastructure.

In 2003, there were very few applications in the market that required high-speed wireless data networks. Although most industry analysts believed that wireless data was the next big opportunity for the carriers, there was still a great deal of uncertainty about how the opportunity would be realized. Danger's leadership team believed that their solution could demonstrate the full potential of high-speed wireless networks and deliver data services that were compelling to end-users. By working with Danger, a carrier could generate additional revenues from existing customers, and attract new ones, thereby providing a higher return on its network investment.

The hiptop Service Delivery Engine (SDE) allowed the carriers to characterize and control the data usage of each subscriber. Since most of the computing work was done in a central back-end server, the amount of wireless data that was transmitted to users' handsets was significantly reduced. This made it possible for carriers to estimate the maximum amount of wireless data usage per user each month. Contention for wireless bandwidth made this factor particularly important because it prevented subscribers from clogging up the entire network. Thus the hiptop Service Delivery Engine (SDE) made it possible for carriers to offer unlimited data usage to their subscribers at a fixed rate, without having to worry about slowdowns and crashes due to network congestion. Fixed prices and more reliable service availability would make wireless data more appealing to subscribers, and thereby increase their appetite for wireless applications.

The carrier business was extremely competitive and capital intensive. In addition to acquiring licenses in government auctions, carriers had to invest millions of dollars to purchase telecommunications equipment and software from their vendors before they could start offering services to their customers. Since they bought the same hardware from network equipment providers such as Cisco and Nortel, the services that they were able to offer were very similar. If two or more carriers provided the same coverage in an area, they usually wound up competing primarily on price. This was a cutthroat business, and some carriers were looking for ways to differentiate themselves.

T-Mobile: Danger's First Carrier Partner

In describing their first carrier customer, James Isaacs, VP of Worldwide Sales and Alliances, explained:

"T-Mobile was a combination of luck and fortuitous meetings, but also some amount of calculation. This was because T-Mobile was behind the leaders like Verizon and AT&T, in terms of the number of subscribers. They were willing to gamble a bit on a breakout strategy and that was what Danger represented for them. And most of the other carriers would not do what T-Mobile did, which was to commit to buying a significant number of units, which amounted to a high capital expenditure. They were basically sponsoring us into existence, putting their bets on an unknown unproven startup. Don't

mistake the first big customer for your market. The other carriers are much more risk-averse, more methodical.”

The financial statements for T-Mobile are shown in **Exhibit 9**. Danger understood that helping T-Mobile to improve its financial performance was critically important to the continued success of that partnership, and also to encourage other carriers to do business with Danger. Since the market for wireless data was still in its infancy, it was a challenge to forecast how working with Danger might actually improve T-Mobile’s bottom line. However, most wireless carriers were skeptical of technological innovations, and wanted credible evidence that working with Danger would help them to increase revenues, reduce costs, and improve their profitability.

Challenges in partnering with carriers

The selling process to carriers was a long one. It took between 12-18 months to complete a sale with a potential carrier customer. The Danger team designed a standard selling process to help keep track of the prospects. This process is shown in **Exhibit 10**. Since there were only about 50 major carriers worldwide, the list of prospects was fairly straightforward. Danger had to decide which carriers that they wanted to target and then make themselves attractive to those carriers. James explained:

“One of the things that we need to do is to figure out a way to reduce the upfront commitment and the perceived opportunity cost of launching with Danger. We are introducing a rapid deployment guide, where there are fewer configurable and customizable elements, and where the back-end authentication and systems are more easily hooked up to the carrier’s software systems. We want to make it easy, make it comfortable, while at the same time, extracting enough of a commitment that it is worth Danger’s while. We believe that Danger’s services will sell well, but we really need to get over a hump so that the carriers will work with us. That’s the challenge.”

Danger’s first challenge was that carriers were unwilling to commit to partnership agreements that might threaten their long-term competitiveness. For example, Danger realized early on that carriers were reluctant to wholesale their networks to third parties. Carriers would not agree to allow a startup like Danger to buy capacity from them, and resell it along with value added services to end-users. Andy explained:

“We did think about going it alone, but it took a couple of phone calls to realize that the carriers would not be willing to wholesale their network. We could not call the wireless carriers and say that we wanted to buy the data at \$1/MB and sell it for \$2/MB. This was because they did not want to be dumb pipes. They wanted to have a key role in developing next generation wireless services and applications. We had to think of a way to partner with the carriers so that we were able to effectively help them with the innovation.”

Second, carriers also wanted to protect the investment they had made in building their brands, and were reluctant to promote other brands that might compete for the loyalty of their customers. As a result, many carriers felt threatened if a third party offered a branded service for their end-users. They guarded their customer relationships jealously, and wanted their own brands to be associated with any innovative services provided over their networks.

To address this concern, Danger decided to remain unbranded, and allow the carriers to put their brands on Danger-enabled devices. In this way, Danger acted as a “silent partner,” working behind the scenes to build the brands of its carrier partners. Incidentally, the company name “Danger” became an advantage in carrier relationships, because it clearly demonstrated that Danger had no desire to put their brand on the devices for end-users. After all, who would want to buy a wireless product marked “Danger?”

The third challenge facing Danger was the fact that some carriers demanded exclusivity. For example, Danger granted its first customer – T-Mobile, some elements of exclusivity over the hardware form factor and design in the United States for one year. This meant that end-users in the US who were interested in a hiptop-enabled device had to sign up for a wireless plan with T-Mobile. The exclusivity agreement enabled T-Mobile to differentiate its offer from its competitors, and gain market share relative to other wireless carriers during the period of exclusivity.

However, exclusivity came at a high cost to Danger, because it created difficulties when the sales team engaged with other carriers who operated in the same geography. As the market demand for hiptop-enabled devices increased, and as wireless carriers migrated to new geographic regions via mergers and acquisitions, Danger's opportunity costs and risks in offering exclusivity would increase substantially. Offering exclusivity would also automatically prevent Danger's software solution from becoming an industry standard, thereby making both Danger and its carrier partners more vulnerable to competition from other software platforms. What appeared to be a short-term advantage for a carrier could actually become a major disadvantage in the long term. For these reasons, Danger needed to formulate an effective response for situations when a carrier requested exclusivity as a condition for entering a partnership. How could Danger convince carriers that it could help them to differentiate themselves from their competitors *without* granting them exclusivity?

The fourth challenge facing Danger was the lack of uniform standards among U.S. carriers with regard to wireless protocols. As was mentioned earlier, some wireless carriers in the United States had adopted GSM/GPRS, while others supported CDMA. This meant that because Danger supported only GSM/GPRS in 2003, it could only address about 50% of the U.S. market. Because all of the European carriers had adopted GSM, Danger's solution could potentially address 100% of Europe's end users. **Exhibit 5** provides examples of carriers that were supporting GSM/GPRS and CDMA in 2003.

The fifth challenge facing Danger was how to manage relationships with sworn enemies. Danger had to be both diplomatic and strategic in their interactions with the different carriers. The carriers were intensely competitive and were on "a mission to grab, steal, rob market share from one another." The executives leading one of Danger's carrier partners might be personally offended if they perceived that Danger was helping their competitors to gain market share at their expense. As a result, Danger had to be very careful in managing their portfolio of current and potential carrier customers. James gave an analogy:

"One of my friends described the wireless space is like being on a chess board with four queens. You know that if you go this way, you will get your legs sawed off, or that if you go that way, you will get run over. For a small company like us, we need to figure out how to go in between the white and black squares on the chess board, and try to ooze our way through."

From Danger's point of view, establishing partnerships with multiple carriers was necessary to survive. From some carriers' perspective, if Danger was doing business with their most direct competitors, the notion of partnership was unthinkable. They demanded fidelity as a requirement for a true partnership. Ironically, some of these same carriers had no qualms about working with Danger, and also with Danger's competitors. Most carriers were unwilling to consider making Danger's software solution their exclusive platform for wireless data, because they had to hedge their bets.

Potential carrier partners worldwide

Although Danger had offered T-Mobile limited exclusivity for one year, the time had come to begin courting other wireless carriers in the United States. In addition, Danger was also pursuing partnerships with several European carriers. They were in active conversations with major players such as Vodafone, Orange, O2, Telefonica, etc. Some of the carriers wanted specific software applications such as multimedia messaging service (MMS) that the technical team was in the process of developing. Danger was hoping to launch a European carrier by the summer of 2003. Danger had been less active in marketing to carriers in Asia, primarily because it did not yet have a large enough sales force to effectively cover that region. They were considering the possibility of expanding their sales operations in Asia in the future.

Exhibit 11 shows the financial highlights for a representative sample of wireless carriers who some industry observers believed had the potential to become Danger's partners in the long term. It was not obvious how many of the companies in Exhibit 11 Danger could enter into partnerships with, because some were fierce competitors with others. Was it possible for Danger to manage trustworthy partnerships with two carriers that were bitter enemies?

Manufacturing Relationships

Developing partnerships to manufacture hiptop-enabled handheld devices was another critical element of Danger's business model. Manufacturing was extremely capital intensive, and it was unrealistic for a start-up to perform it in-house. Danger was exploring partnerships with three different types of manufacturers: 1) Contract Manufacturers (CMs), 2) Original Design Manufacturers (ODMs) and 3) Branded Original Equipment Manufacturers (Branded OEMs). **Exhibit 12** gives a breakdown of the manufacturers and the vendors in this space.

Contract Manufacturers (CMs) provided the least number of services of the three categories. They were focused on one basic function, which was to assemble hardware. With a reference design furnished by their customer, their job was to order the components from their suppliers, to assemble the hardware in their factories, and to ship the final product to their client. They undertook no design risk and no warranty risk. Materials risk and inventory risk were usually underwritten by the CM's customers. In good years, CMs had gross margins of 3% or less, and needed to generate high volume contracts to remain profitable. Examples of CMs in the market were Solectron, Benchmark and Jabil Circuit.

Original Design Manufacturers (ODMs) offered more services than the CMs. They had the capabilities to do design work, and thus assumed some design risk and warranty risk. Many Taiwanese CMs were moving into the ODM category because of the fear that contract manufacturing would become completely commoditized and drive down profit margins even further. In good years, ODMs usually had gross margins of 15%. Examples of ODMs included Quanta, Flextronics and HTC.

Branded Original Equipment Manufacturers (Branded OEMs) provided even more services than the ODMs. Apart from assembly and design, they also provided marketing and logistics services. They maintained close relationships with retailers and had the ability to perform reverse logistic processes where they collected broken handsets, repaired them, and returned them to the channel. A Branded OEM also provided value because of its brand name, which could be appealing to the end-user. Most of these companies also managed a complex inventory system and thus assumed a certain amount of inventory risk. They usually had gross margins of 30%. Examples of Branded OEMs were Nokia, Samsung and Sony-Ericsson.

Exhibit 13 shows a pictorial representation of how Danger and the carriers would interact with manufacturers using each of these models.

Danger wanted to have relationships with each of these types of manufacturers to best meet the needs of different carrier customers. For some carriers such as T-Mobile who were very flexible but very price-sensitive, a CM that provided few services at a low price would be most attractive. Other carriers such as AT&T had a selected list of approved vendors, such as Nokia or Motorola, and wanted more services, and thus they preferred to work with a branded OEM. John described this situation:

"We don't want to push any of our partners out of their comfort zone. We realized that every time we try to change a company's momentum to fit some other business model, even if it may suit us in the short term, ultimately, it will regress back to their standard business model, and we get into trouble. So, the idea is to keep everybody in his comfort zone. So if AT&T doesn't want to buy from a CM, let's not force a CM into AT&T's model, let's go get an OEM that they are familiar with."

In the first quarter of 2003, Danger's business development team was considering three different partnership models with the manufacturers. In the CM model, Danger would enter into a contract manufacturing relationship with a CM such as Solectron who would produce hiptop devices for the company. Following that, Danger would then sell the handhelds and provide the back-end services to the carrier customer. There were two disadvantages of this model for Danger. First, it meant that Danger had to assume hardware and inventory risk. Second, Danger had to enter into a complex handset relationship with the carrier.

In the ODM model, Danger would license the hardware reference design it had created to an ODM and provide back-end services to the carrier customer. The ODM and the carrier would then enter into a direct relationship to manufacture handsets to the carrier's specifications. This relationship was less costly and risky for Danger than working with a CM, because Danger only needed to provide consulting services

to the ODM and back-end services to the carriers. Assuming that the carrier was willing to deal with the ODM, they would issue a standard contract to the ODM, and treat them like another handset vendor, like Sony-Ericsson or Nokia. This model might be less attractive to an ODM such as Flextronics because they would have to deal with the intricacies of retail, such as marketing co-op dollars, seed stock, inventory turns, price protection, etc. that they were typically isolated from when they manufactured handsets for branded OEMs.

In the branded OEM model, Danger's relationship with the manufacturer would be similar to the ODM model. However, in this case, a branded OEM such as Samsung would already have an established handset relationship with the carrier, with all of the intricate terms and conditions worked out. The hiptop device would simply become another stock-keeping unit (SKU) in the purchase order from the carrier. Some branded OEMs such as Sony-Ericsson did not have any manufacturing facilities and differentiated themselves purely by the design capabilities. In this case, Danger would provide the reference design to a CM who would then sell the units to the branded OEM. Another possibility was to have the branded OEM subcontract the manufacturing to one of their CMs. This model allowed each player to maintain any existing relationships, thereby saving time, reducing costs, and reducing implementation risk for all parties.

To attract ODMs or branded OEMs to manufacture hiptop-enabled devices, Danger decided that they would license the hardware reference design royalty free to the manufacturers. This would encourage the major manufacturers to consider Danger as a potential partner, especially if they believed that the hiptop device could become a profitable line item into their product portfolio. The manufacturers could also create derivatives of the basic design, such as adding an MP3 player, in-built cameras, different form factors, etc. Danger would then engage with the manufacturer in a design-focused partnership where it could help develop software to support new hardware features and capabilities. Matt, explained:

“The great thing about our architecture is that it makes minimum demands on the hardware. Even though we have a captivating hardware design, our unique point of value is not about advancing the hardware on all fronts. Although hardware design is not trivial, there are a lot of companies that understand it well, so instead of competing against them, why don't we simply turn them into our partners by licensing them the reference design?”

Decision Time:

As Danger's leadership team assembled in a company conference room, three issues related to developing their portfolio of partnerships were on everyone's mind. First, which wireless carriers were the leading candidates for Danger to pursue to increase their market penetration in the U.S. and around the world? Danger had to walk a fine line to ensure they could deepen and expand their existing carrier relationships while also adding new carriers.

Second, which manufacturers were the most attractive potential partners to build handheld devices compatible with Danger's hardware design and software architecture? In particular, which branded OEMs could best serve Danger's potential wireless carrier partners? Could partnering with a particular handset manufacturer make it more difficult to attract some wireless carrier partners?

Third, how could Danger develop trustworthy partnerships with companies that were often in fierce competition with one another? As a small startup, Danger had a great deal to gain if it could earn the trust of bitter rivals in the wireless carrier market. They also had a great deal to lose if signing up a few carriers caused others to align with Danger's competition.

Back in Danger's conference room, it was time to decide.

Hank: Our first launch with T-Mobile has been very successful and the sales of T-Mobile Sidekicks are exceeding expectations. As we had predicted, there is significant demand for a low-cost high-performance wireless data device. However, more work needs to be done. It's time to negotiate partnership agreements with other carriers.

Andy: I agree. We need to convince the carriers that we have a service that appeals not only to the early adopters but also to the mass market. Both Danger and our carrier partners will benefit from getting as many hiptop devices out into the market as possible. To maintain a ready supply of hiptop

devices, we need to partner with several large manufacturers. In addition, branded OEMs will also introduce hardware innovations to the hiptop product line that will appeal to a wider variety of consumers. Our two most important partners are wireless carriers and handset manufacturers. We need to have a clear game plan for how to engage them going forward.

James: The carrier space is extremely competitive and so we need to be very careful in our interactions with them. We don't want to incur the wrath of a potential partner or sign too many exclusive deals that could shut us out from future opportunities. The list of prospects is pretty straightforward. There are only 6 carriers in the US that have a national footprint. Given that we already have an alliance with T-Mobile, which of the other U.S. carriers should we target as our highest priority? The other two regions that have a significant number of wireless users are in Europe and in Asia. What approach should we take in those regions? Which specific carriers should we target in each region? I have my own ideas on priorities, but I'd like to hear from the rest of you.

John: With regard to the manufacturers, we already have deals with a CM and an ODM, but not a branded OEM. What do we need to do to secure a contract with a branded OEM? Nokia is the clear market leader in the branded OEMs space, and a deal with them would definitely give our company a lot of exposure. However, Nokia has a competing platform and seems to have interest in extending their business to wireless service. Perhaps a Branded OEM like Sony-Ericsson that is focused primarily on differentiating based on innovative hardware design might be a better potential partner for Danger.

Matt: Some, manufacturers like Samsung, have both design and manufacturing capabilities. A partnership with them will be reasonably straightforward. On the other hand, they are completely agnostic to software and have done deals with everyone, including Palm, Symbian, Windows CE and Nokia's Series 60. They might be willing to work with us, but it might be quite difficult to cut a deal that gives us preferential treatment.

Joe: Many of the branded OEMs already have existing relationships with the wireless carriers, and so we have to take that into account when analyzing potential partnerships. These OEM – carrier relationships are very sensitive and we need to be aware of the implications that a Danger relationship with one partner might have on other relationships. In a market where there is such fierce competition, we need to think of ways to develop trust and collaboration with all of our prospective partners. We don't want to make it difficult for them to partner with us.

Hank: We have identified some critical factors that will affect our future partnerships. Now let's put together a game plan for building Danger's portfolio of partnerships.

Exhibit 1: Biographies of selected key executives in Danger, Inc.

**Hank Nothhaft, Chairman and Chief Executive Officer**

As Chairman and Chief Executive Officer, Hank Nothhaft is responsible for managing all functional areas of the company—including sales, marketing, business development, finance, and engineering.

Hank has been a pathfinder in the telecommunications and networking industries, growing pioneering startups, such as Concentric Network Corp., DSC Communications and GTE Telenet Communications (now Sprint), into mature industry leaders. Hank most recently was the chairman, president and chief executive officer of startup SmartPipes, Inc., a leading provider of policy-based software that simplifies and automates the design, deployment and management of IP VPN networks, firewalls and remote-client software.

Before joining SmartPipes, Hank served as President and CEO of Concentric Network Corporation from 1995 to 2000, where during his tenure he raised \$380 million in equity financing, created \$2 billion in shareholder value, and drove the company's rapid growth through strategic distribution agreements with major telecommunications and technology companies such as SBC Communications and Microsoft.

Prior to Concentric, Hank held several roles at DSC Communications Corporation, including Senior Vice President of Marketing, and Group President, in addition to serving as a Member of the Board of Directors. During his tenure, Hank helped grow DSC from a \$10 million startup to a \$650 million business that was eventually sold to Alcatel for \$4 billion.

Hank also held the roles of Vice President of Marketing and Vice President of Sales for GTE Telenet Communications Corporation (now Sprint), which pioneered x.25 networks, the initial public data networking protocol.

Hank has an M.B.A. from George Washington University and a B.S. degree from the U.S. Naval Academy, and he is a former officer in the U.S. Marine Corps.

**Andy Rubin, President and Chief Strategy Officer**

As President and Chief Strategy Officer, Andy Rubin brings more than a decade of experience in consumer products and technology to Danger. Andy is the visionary behind the corporate strategy and manages Danger's product and technology roadmap.

Before co-founding Danger, Andy led the communications engineering team at WebTV Networks. He was instrumental in building and shipping WebTV, the first interactive television-based Internet service, which was acquired by Microsoft in 1995.

Prior to WebTV, Andy designed and implemented the communications capabilities for General Magic's handheld devices. In 1993, Andy led the effort to ship the Motorola Envoy, one of the first wireless PDAs (personal digital assistants). Andy has also held various leadership roles focused on communications technology with Apple Computer, where he and his team shipped the world's first host-based software modem.

In his spare time, Andy enjoys tinkering with his mobile robot. Some of his robotic creations can be found wandering the galleries at the Tech Museum of Innovation in San Jose, California.

Andy holds a B.S. in Computer Science from Syracuse University.

**John Arledge, Vice President of Business Development**

As Vice President of Business Development for Danger, John Arledge is responsible for establishing and maintaining relationships with content partners, wireless carriers, consumer electronics manufacturers and technology providers.

Prior to joining Danger, John was director of business development at TiVo, where he managed the company's relationships with pay television service operators, consumer

electronics manufacturers, and technology suppliers. While at TiVo he signed major agreements with Philips, Sony, Thomson Multimedia, Quantum and Liberate.

Before TiVo, John was responsible for product marketing at OpenTV, Inc. overseeing the OpenTV operating system, which now resides in 11 million set-tops. He also secured and maintained key partnerships with corporations such as IBM, LSI Logic and Pace. John has also held marketing positions with Pacific Bell in the broadband networking group and with Nissan North America in the product-planning group for the Nissan Truck line.

John holds an M.B.A. from the Stanford Graduate School of Business and a B.A. in Political Science from the University of California, Los Angeles.



Joe Britt, Chief Technology Officer, Senior Vice President of Software

As Chief Technology Officer and Senior Vice President of Software for Danger, Joe Britt is responsible for the intellectual property and software aspects of Danger's technology. Joe brings more than 13 years of experience building consumer products to Danger. His specialty is designing system software for consumer electronic devices.

Prior to co-founding Danger, Joe spent over four years at WebTV Networks, which was acquired by Microsoft in 1995. As the first non-founding employee, he was responsible for the architecture and creation of the system software used in the WebTV set-top boxes. Joe was involved in the design of every hardware product shipped by WebTV and has been awarded nine patents as a result of his work.

Before WebTV, Joe worked at Catapult Entertainment, since acquired by Hearme. Joe was part of the team that created the Xband Video Game Network that enabled multi-player gaming over the Internet. Joe contributed to the system software as well as the technology required to enable video games for network play. Before Catapult, Joe worked at the 3DO Company, contributing to the design of a game console powered by a PowerPC CPU.

Joe started his Silicon Valley career at Apple Computer at age 20, working in the RISC (Reduced Instruction Set Computer) Products Group. Joe was a core member of the ROM (Read Only Memory) development team for the first generation PowerPC-based Macintosh.

Joe holds a B.S. in Computer Engineering from North Carolina State University.



Les Hamilton, Senior Vice President of Worldwide Operations and Manufacturing

As Senior Vice President of Worldwide Operations and Manufacturing, Les Hamilton has global responsibility for Danger's data centers, and he will oversee Danger's outsourced manufacturing processes.

Les has more than thirty years of experience in building and managing complex information services and network operations, working for companies such as Infonet Services Corp., TRW Information Services (now Experion), and Lockheed. Before joining Danger, Les was Senior Vice President of Network Services for GX Networks UK Ltd, a spin-off of XO Communications Europe. At GX Networks, Les was responsible for operations, including information systems, network and data center operations, security, provisioning, systems development and customer care.

Prior to assuming his position at GX Networks, Les was Senior Vice President of Network and Systems for Europe for XO Communications. Prior to the merger of Nextlink and Concentric Network Corp., which resulted in the formation of XO Communications, Les was the Senior Vice President of Engineering and Operations for Concentric.

Previously, Les Hamilton managed network services and engineering operations for Infonet Service Corporation, and served as Director of Customer and Technology Services for TRW Information Services (now Experion). Les began his career at British Aerospace Corporation as a technical programmer analyst.

Les Hamilton holds a bachelor of science degree in mechanical engineering from Teesside University in the United Kingdom and an M.B.A. from the Peter F. Drucker graduate school in Claremont, California.



Matt Hershenson, Senior Vice President of Hardware and Operations

As Senior Vice President of Hardware and Operations, Matt Hershenson brings a wealth of experience to Danger. He is responsible for the day-to-day operations of the company, as well as Danger's hardware engineering, development and design efforts.

Before co-founding Danger, Matt managed the hardware group at Mainbrace Corporation, a Windows CE systems integrator. Prior to Mainbrace Corporation, Matt served in various roles at Philips Electronics. During his tenure with the Philips Mobile Computing Group, he was responsible for the hardware of the Velo-1 handheld PC, one of the first Windows CE devices. While at Philips Semiconductors, Matt served as a systems architect, where he played an integral role in the design of numerous consumer handheld devices, including the Sharp Mobilon, Philips Nino, and the Compaq C-series.

Before Philips, Matt was a hardware engineer with Catapult Entertainment, since acquired by Hearme. He was part of the team that turned the vision of multi-player gaming over the Internet into a reality. He handled all aspects of product development and design for the XBAND Video Game Modem.

Matt also played a key role in the product development and design of the Apple Powerbook 150, then Apple's most affordable PowerBook computer. Matt also co-founded MOTO Development Group, a product design consultancy firm specializing in product development. MOTO aided in the design of many technical products, such as remote controls for Apple Interactive TV.



James Isaacs, Vice President of Worldwide Sales and Alliances

As Vice President of Worldwide Sales and Alliances, James Isaacs is responsible for sales to wireless operators and for building a world-class organization for long-term support of Danger's wireless operator customers. James is also responsible for establishing alliances that will further Danger's market penetration and growth.

Before joining Danger, James served as a Vice President at XO Communications, Inc., formerly Concentric Network Corporation. At XO and Concentric, James led product management for the company's hosting and application services, where he was the key driver in the growth of the private-label distribution arrangements with carriers and large partners for shared hosting, a software-based services platform. While with Concentric, James led several of the company's mergers and acquisitions and strategic partnerships, and developed the company's product management effort.

Previously, James was with Apple Computer, Inc. While at Apple, he managed marketing for the company's online services division and served in a business strategy role for the Apple U.S.A. Sales and Marketing division.

James has an M.B.A. degree from the Haas School of Business at U.C. Berkeley and a B.A. degree from Stanford University.

Source: Danger website.

Exhibit 2: Pictorial Representation of Wireless Segments.

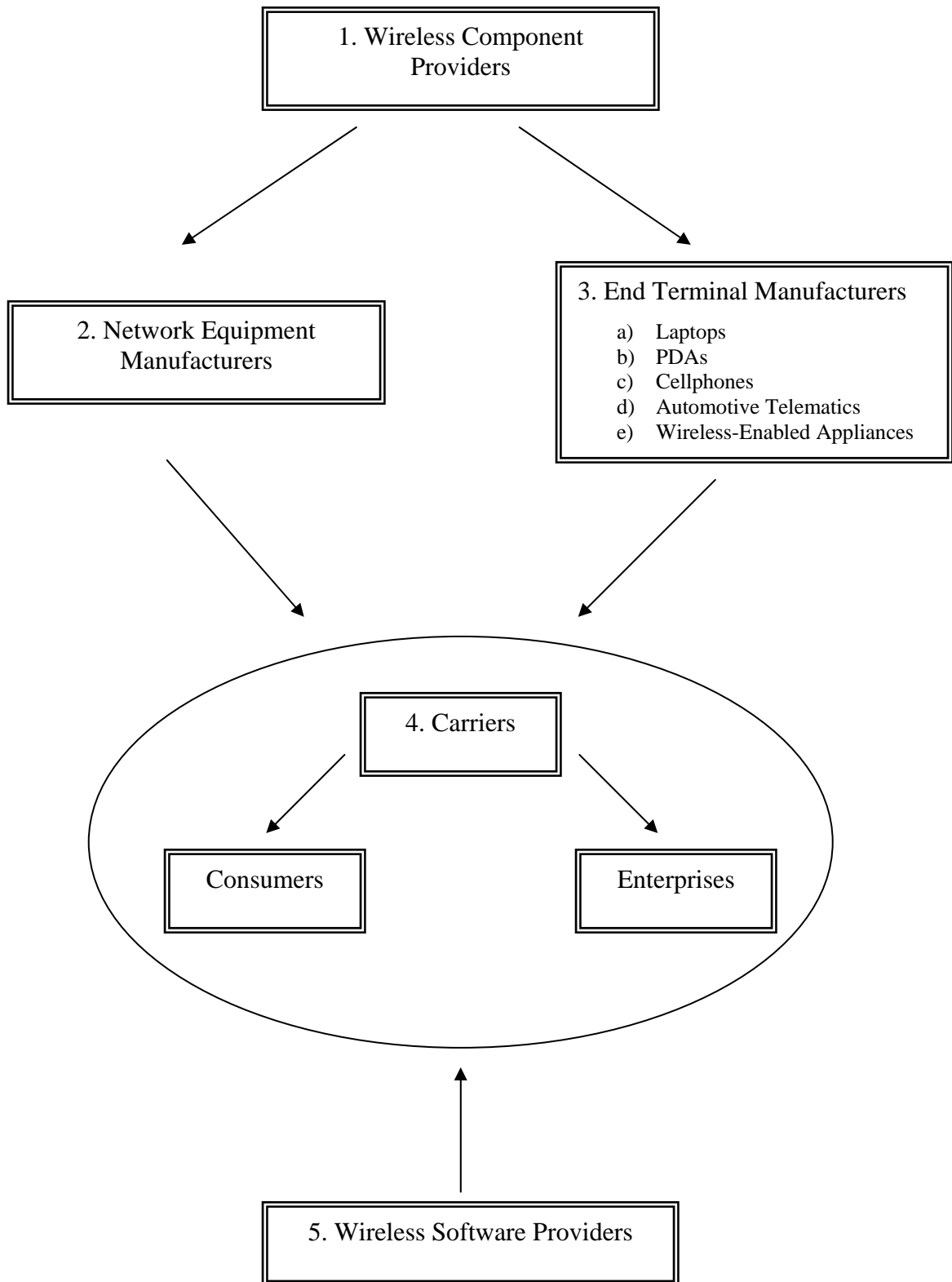
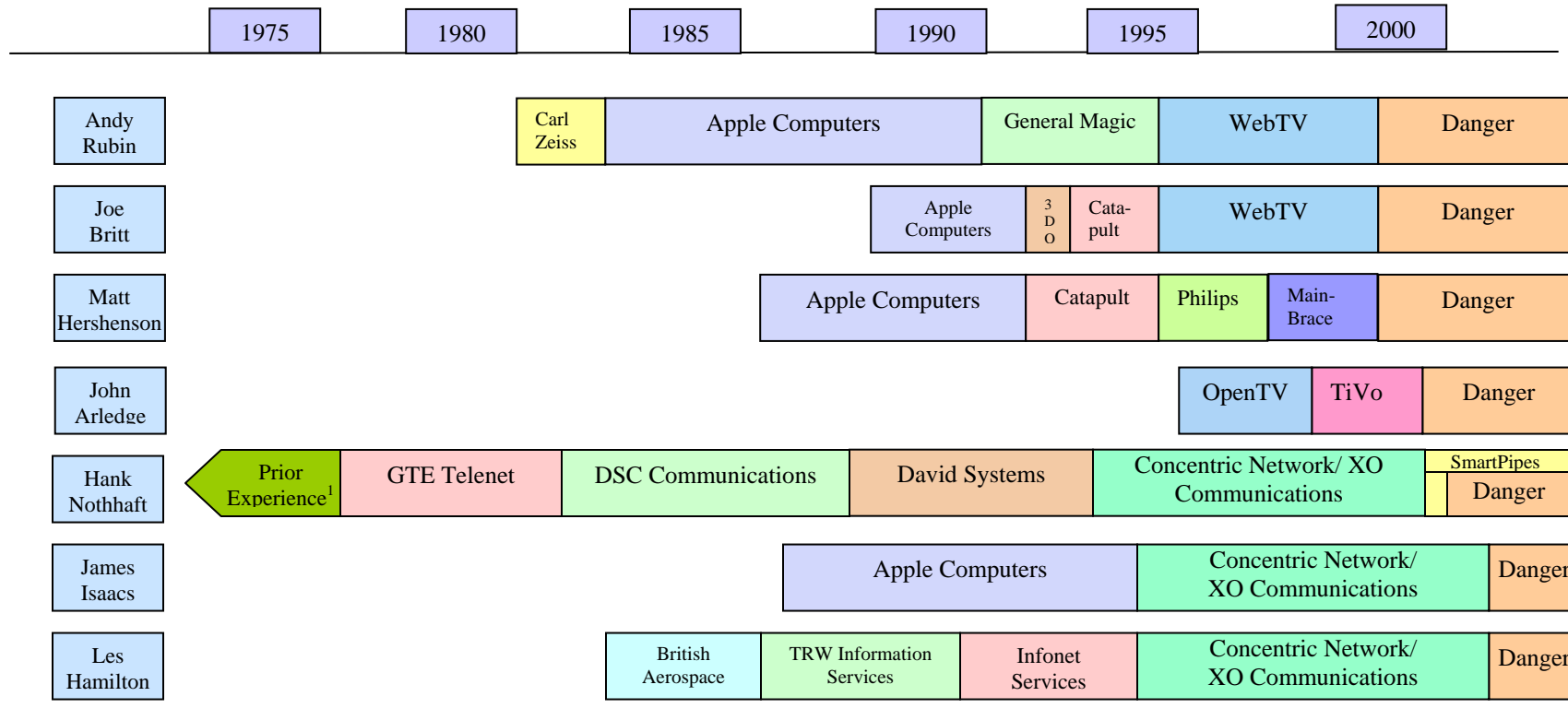


Exhibit 3: Industry Experience of key executives at Danger, Inc.



- Note:
- 1) Hank Nothhaft was an officer in the U.S. Marine Corps. between 1966 and 1970. He was a marketing and sales executive in the 70s.
 - 2) The Exhibit is arranged according to the starting date at Danger for each executive.

Exhibit 4: Comparison of Wireless Handhelds available in Market.

Handheld Device	Microsoft Siemens SX56	Nokia 9290 Communicator	Handspring TREO 300	Samsung SPH-I330	Audiovox Thera	RIM 5810	Palm Tungsten W	T-Mobile Sidekick
								
Price w/o service w service	\$650 \$450	\$600 \$400	\$700 \$400	NA \$400	NA \$800	NA \$200	\$550 \$500	NA \$200
Processor	Intel Strong ARM 32 bit	Intel Strong ARM 32 bit	Motorola DragonBall 33	Motorola DragonBall 33	Intel Strong ARM206 MHz	Custom	Motorola DragonBall 33	NA
Operating System	Microsoft PocketPC 2002	Symbian	Palm OS	Palm OS	Microsoft PocketPC	Blackberry	Palm OS	Danger
Memory RAM ROM	32MB 32MB	56 MB NA	16 MB NA	8 MB NA	32 MB 32 MB	1 MB (SRAM) 8 MB (Flash)	16 MB NA	16 MB NA
Display Colors Resolution	4096 240x320	4096 640 x 200	4096 320 x 240	256 160 x 240	65 K 240x320	None 160x160	65 K 320x320	None 240x160
Battery Life Talk Standby	3.5 hours 150 hours	10 hours 240 hours	3 hours 150 hours	4 hours 100 hours	1.5 hours 8 hours	3 hours 10 days	NA NA	3 hours 60 hours
Size (inches)	4.6 x 3.1 x 0.7	6.2 X2.2x 1.0	4.4x2.8x0.8	4.9x2.3x0.8	5.0x3.0x0.8	4.6x3.1x0.7	4.8x3.1x0.7	2.6x4.5x1.1
Weight (ounces)	4.7	8.6	5.7	6.0	7	4.7	6.5	6.0
Network	GSM/GPRS	GSM	CDMA 1xRTT	CDMA 1xRTT	CDMA 1xRTT	GSM/GPRS	GPRS	GPRS
Carrier	AT&T	Cingular/ T-Mobile	Sprint PCS	Sprint PCS	Sprint PCS/ Verizon	T-Mobile/ AT&T	AT&T	T-Mobile

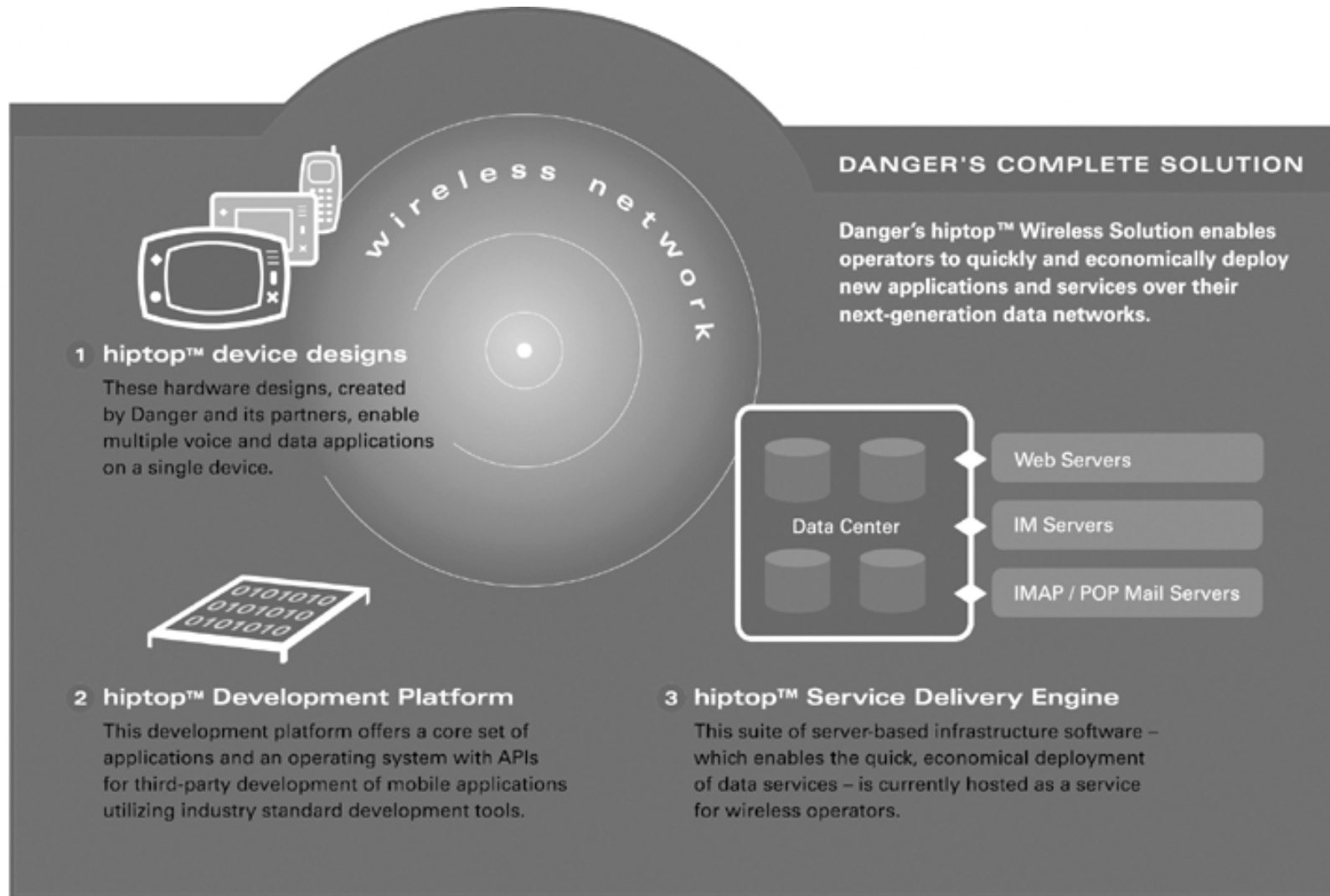
Sources: Company Websites accessed on 3/18/03

Exhibit 5: Sample Wireless Data Service Plans for wireless handhelds

Handheld	Carrier	Network	Plan Name	Voice Plan	Data Plan	Cost /month
T-Mobile Sidekick	T-Mobile	GPRS	Sidekick \$39.99 plan	200 Anytime Min. 1000 Weekend Min 35c/min overage	Unlimited	\$39.99
T-Mobile Sidekick	T-Mobile	GPRS	Sidekick \$59.99 plan	500 Anytime Min Unlimited Nights and Weekend 35c/min overage	Unlimited	\$59.99
Handspring Treo 300	Sprint PCS	CDMA 1xRTT	PCS Free & Clear with Vision	300 Anytime 1000 Night and Weekend	Unlimited	\$45
Handspring Treo 300	Sprint PCS	CDMA 1xRTT	PCS Free & Clear with Vision	500 Anytime Unlimited Night and Weekend	Unlimited	\$55
Handspring Treo 270	Cingular	GPRS	13MB Wireless Internet Express	None	Up to 7MB Overage: \$20/MB	\$29.99
Handspring Treo 270	Cingular	GPRS	7MB Wireless Internet Express	None	Up to 13MB Overage: \$20/MB	\$49.99
Samsung SPH I330	Sprint PCS	CDMA 1xRTT	PCS Vision	None	Up to 20MB Overage: \$0.002/KB	\$40
Samsung SPH I330	Sprint PCS	CDMA 1xRTT	PCS Vision	None	Up to 20MB Overage: \$0.002/KB	\$60
Audiovox Thera	Verizon Wireless	CDMA 1xRTT	Express Network 10MB	None	Up to 10MB Overage: \$0.008/KB	\$35
Audiovox Thera	Verizon Wireless	CDMA 1xRTT	Express Network 20MB	None	Up to 20MB Overage: \$0.006 c/KB	\$55
Palm Tungsten W	AT&T Wireless	GPRS	Mobile Internet Plan	None	Up to 8MB Overage: \$0.006/KB	\$19.99
Palm Tungsten W	AT&T Wireless	GPRS	Mobile Internet Plan	None	20MB data Overage: \$0.002/KB	\$39.99
BlackBerry 5180	AT&T Wireless	GPRS	BlackBerry Access Plan	None	Up to 4MB Overage: \$0.0048/KB	\$34.99
BlackBerry 5180	AT&T Wireless	GPRS	BlackBerry Access Plan	None	Unlimited	\$44.99

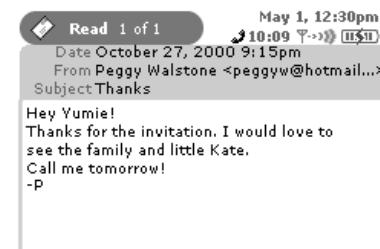
Source: Carrier Websites accessed on 3/19/03

Exhibit 6: Danger's Complete Solution



Source: Danger Company Resources

Exhibit 7: Screenshots of the T-Mobile Sidekick.



Source: Danger Company Resources.

Exhibit 8: Media Highlights from Danger's Press Kit.

"Danger has come up with a product that can teach a few things to those making handhelds for the corporate set...At such reasonable prices, Sidekick may have what it takes to make the wireless handheld a true mass-market product."

– Steve Wildstrom, Business Week, September 16, 2002

"But the big winner could be T-Mobile's plan for Sidekick...That kind of no-surprises package is just the sort of thing that might finally drag ordinary consumers into the mobile data world."

– Forbes Magazine, Stephen Manes, September 16, 2002

"Three of the Sidekick's attributes are particularly admirable: a no-nonsense service fee of \$40 a month...; an intuitive user interface that's ideal for people who are all thumbs; and a server-based storage system that speeds mail handling and prevents data loss, even if the Sidekick itself is destroyed in an X- Games accident."

– Fortune Magazine, Peter Lewis, October 14, 2002

"Sidekick represents a departure from the widening field of handhelds targeted at the corporate crowd. Instead, T-Mobile is training its sights on a mass market of 18-to-34-year-olds, not that those of us with a few more rings around our trunks might not crave the device as well."

– USA Today, Ed Baig, September 18, 2002

"...the Sidekick is a fantastic success, thanks to the most thoughtfully conceived hardware and software since the original Palm Pilot...service price is right, too."

– The New York Times, David Pogue, October 3, 2002

"The Sidekick is a well-designed, very usable gadget that looks like nothing else on the market and that is packed with clever features...As an e-mail, Web and instant-messaging device, I found the Sidekick highly usable and effective, even addictive... the Sidekick is a true breakthrough...."

– The Wall Street Journal, Walter Mossberg, August 7, 2002

Source: Danger Company Resources.

Exhibit 9: Financial Statements for T-Mobile USA. (Figures in thousands of U.S. Dollars)

Income Statement		Balance Sheet	
	Year ended Dec 31, 2002		Year ended Dec 31, 2002
Revenues:		ASSETS	
Post pay revenues	3,629,052	Current assets:	
Prepaid revenues	386,871	Cash and cash equivalents	36,510
Roaming revenues	229,312	Accounts receivable,	911,726
Equipment sales	690,174	Inventory	299,237
Affiliate and other revenues	68,436	Other current assets	226,070
Total revenues	5,003,845	Total current assets	1,473,543
Operating expenses:		Property and equipment	4,427,115
Network costs	913,509	Goodwill	9,868,082
Cost of equipment sales	1,078,582	Spectrum licenses	9,951,288
General and administrative	1,029,906	Other intangible assets	380,047
Customer acquisition	1,657,722	Investments in and advances to unconsolidated affiliates	885,470
Depreciation and amortization	1,079,965	Other assets and investments	135,666
Impairment charges	15,628,000	Total Assets	27,121,211
Stock-based compensation	14,852	LIABILITIES AND SHAREHOLDER S EQUITY	
Total operating expenses	21,402,536	Current liabilities:	
Operating loss	(16,398,691)	Accounts payable	336,440
Other expenses, net	(501,143)	Accrued liabilities	856,281
Income tax benefit	272,489	Construction accounts payable	344,953
Net loss	(16,627,345)	Deferred revenue	157,190
Adjusted EBITDA (loss) (2)	324,126	Total current liabilities	1,694,864
Cash flows provided by (used in):		Long-term debt	1,274,638
Operating activities	(254,647)	Long-term notes payable to affiliates	7,041,944
Investing activities	(2,015,835)	Deferred tax liabilities	3,259,452
Financing activities	2,306,992	Other long-term liabilities	98,861
Other data:		Total long-term liabilities	11,674,895
Population covered by spectrum licenses	248,338,000	Minority interest in equity of consolidated subsidiaries	8,480
Population covered by network	198,945,000	Voting preferred stock	5,000,000
Customers:		Shareholders equity:	
Post pay	7,689,400	Common stock	26,851,821
Prepaid	1,002,500	Deferred stock compensation	(21,039)
		Accumulated other comprehensive income (loss)	(264)
		Accumulated deficit	(18,087,546)
		Total shareholders equity	8,742,972
		Total Liabilities and Shareholders Equity	27,121,211

Source: T-Mobile 10K Report filed 03/11/2003

Exhibit 10: Danger Selling Process to Carriers

	Carrier 1	Carrier 2	Carrier 3
1. Account Qualification			
1A Preliminary sales activities	X	X	X
1B Internal champion identified	X	X	X
1C Executive sponsor in place	X	X	X
1D Product manager assigned	X	X	X
2. Marketing Evaluation			
2A Marketing evaluation units sent (monochrome)	X		X
2B Consumer and/or business product offer teams briefed	X		X
2C Product offer (or handsets) team prepares volume forecasts	X		X
2D 3 rd -party manufacturer introduction	X		X
2F IM vendor introduction	X		
2G Business case prepared	X		
2H Product committee or business unit approval			
3. Technical Evaluation			
3A Technical evaluation units sent	X		
3B Terminal due diligence	X		
3C Infrastructure and integration due diligence	X		
3D Terminal signoff	X		
3E Infrastructure and integration signoff	X		
4. Commercial Negotiations			
4A Carrier identifies individual to drive commercial terms	X	X	
4B Commercial discussion underway	X		
4C Project plan drafted with carrier deployment team	X		
4D 3 rd -party mfr LOI in place or no outstanding issues	X		
4E Carrier has IM solution in place or no outstanding issues	X		
4F LOI or term sheet signed	X		
5. Contract Negotiations			
5A Draft contract issued to carrier	X		
5B Contract discussion underway	X		
5C Customization requirements – client			
5D Customization requirements – service			
5E Contract in place with 3 rd -party manufacturer			
5F Danger/carrier contract signed			

Source: Adapted from Danger Inc. internal records.

Exhibit 11: Financial Data for a representative sample of wireless carriers (US\$)

North American Carriers	AT&T Wireless (Redmond, WA)	Sprint PCS (Overland Park, KS)	Nextel (Reston, VA)	Verizon WS (Bedminister, NJ)	Cingular (Atlanta, GA)
Total Revenue (millions)	12,544	8,579	6,560	16,011	13,216
EBIDTA (millions)	2,859	1,513	1,900	5,783	4,505
Net Income after tax (millions)	(306)	(1,268)	(745)	1,300	1,669
# of mobile subscribers ('000s)	18,047	13,555	8,667	29,398	21,596
Mobile ARPU	63	61	71	48	52
Mobile Minutes of Use	382	506	563	262	308
2000-2001 Revenue Growth	34%	58%	32%	NA	NA
2000-2001 Net Income Growth	-155%	-33%	80%	NA	NA

European Carriers	Orange (Paris, France)	mm02 (Slough, UK)	Vodafone (Berkshire, UK)	Telecom Italia Mobile (Turin, Italy)	Telefonica Moviles (Madrid, Spain)
Total Revenue (millions)	15,992	6,696	35,775	10,878	8,916
EBIDTA (millions)	3,485	678	12,451	5,046	3,534
Net Income after tax (millions)	(938)	(1,132)	5,478	1,007	1,111
# of mobile subscribers ('000s)	37,951	17,194	83,381	23,950	16,793
Mobile ARPU	36	49	NA	30	33
Mobile Minutes of Use	NA	NA	NA	NA	NA
2000-2001 Revenue Growth	25%	11%	52%	9%	14%
2000-2001 Net Income Growth	-33%	-12%	80%	-48%	54%

Asian Carriers	NTT DoCoMo (Tokyo, Japan)	China Mobile (Beijing, China)	SK Telecom (Seoul, S. Korea)	TCC Taiwan (Taipei, Taiwan)	China Unicom (Beijing, China)
Total Revenue (millions)	34,211	12,140	6,016	1,401	3,557
EBIDTA (millions)	14,011	7,100	3,157	615	1,635
Net Income after tax (millions)	8	3,390	899	481	539
# of mobile subscribers ('000s)	40,783	90,566	15,179	6,589	27,030
Mobile ARPU	70	18	NA	21	11
Mobile Minutes of Use	178	NA	NA	NA	NA
2000-2001 Revenue Growth	NA	54%	14%	8%	24%
2000-2001 Net Income Growth	NA	55%	-100%	18%	39%

Source: Salomon Smith Barney *Global Telecoms Outlook*, Jan 1 2003.

Note: Deutsche Telekom, one of the largest carriers in Europe, is not included in this exhibit because Danger already had a relationship with T-Mobile, a U.S. subsidiary of Deutsche Telekom.

Exhibit 12: Global Handset Outsourcing

Handset OEM	Tier 1 Partner	Tier 2 Partner	OEM units (millions)	OEM Market Share	Out-sourced ¹ (%)	CM ²	ODM ³
Nokia	Elcoteq	Celestica, Jabil, Solectron, Telson, Hon Hai	165	35.1%	<20%	<20%	0%
Motorola	Flextronics, BenQ, Pantech	Solectron, Celestica, Compal, Telson	65	13.8%	<60%	<10%	50%
Samsung			65	13.8%	0%	0%	0%
Sony-Ericsson	Flextronics	Elcoteq, Arima, LiteOn	29	6.2%	100%	40%	60%
Siemens	Flextronics, Sanmina-SCI	Quanta	27	5.7%	>60%	30%	30%
LG Elec			25	5.3%	0%		
Panasonic		Celestica	16	3.4%	<25%	<5%	20%
NEC		Celestica, BenQ, Arima	14	2.9%	<20%	<5%	15%
Mitsubishi		Solectron	11	2.3%	<10%	<10%	0%
Kyocera	Solectron		10	2.1%	<30%	<30%	0%
Alcatel	Flextronics	GVC	4	0.9%	100%	40%	60%
TCL (China)			12	2.6%	35%		35%
Others			28	6.0%	80%	10%	70%
Asian			22	4.7%			
Non-Asian			6	1.3%			
Total			470	100%	25%-26%	13%	19%

Source: Morgan Stanley Research, *Asia/Pacific Handsets*, Feb 25, 2003.

Note: 1) This refers to the percentage of OEM units that were outsourced to Tier 1 and Tier 2 partners.

2) This refers to the percentage of OEM units that were outsourced to Contract Manufacturers.

3) This refers to the percentage of OEM units that were outsourced to Original Design Manufacturers

Exhibit 13: Manufacturing Relationship Models available to Danger, Inc. (Source: Danger White Board)

