FINAL REPORT

IPRO 350B - SkyBlue Mobile

Table of Contents

INTRODUCTION

Getting real-time information or entertainment when you want it has been the aim of all kinds of media. TV stations do their programming in such a way that they reach the maximum number of their target demographic. News are always placed at the 9pm or 10pm slot so as to give a summary of the day's happenings to viewers before they sleep. Radio considers the morning and late afternoon slots its primetime because of the number of commuters tuned in at those times. The Internet has websites like Yahoo, CNN, and MSNBC for quick access to news and entertainment. Turning to these media for information requires valuable waiting time and all actually require constant attention.

Time is such a precious commodity nowadays that most people do multi-tasking just to fit all that they have to do. Only an ample amount of time could be set aside for personal needs. We all want to get answers right away and we want these answers to be the latest that we could get. Most of the time, TV sets are located at homes. Radios are confined to the home and car, and the Internet could be accessed at home or office. People now are always on the go. They don't have a TV set, radio, or even access to Internet always at their fingertips. What more than one billion people have with them is their cellular phone.

Mobile devices have gone a long way since its bulky era in the 90s. Mobile devices have become thinner, sleeker, and more powerful with every model that comes out. From simple making and receiving calls to sending messages with text (and even pictures and sounds) to now being possibly an mp3 player, PDA and cellular phone all in one device, mobile devices have come a long way. What has been the concentration of mobile device technology development now is converting your device into your one stop data shop. Steps have been taken to making data access hold more content, easier, and faster.

It has been shown that mobile browsing does not drive data usage therefore does not generate revenue. For 2004 it is predicted that "...WAP and mobile browsing will continue and under-perform both in terms of usage and revenues." (Source: Deloitte Mobile and Wireless Predictions 2004) There is a general consensus in the industry that internet browsing on mobile handsets has been a failure. The industry trend points to basic problems with pull based browsing on mobile handsets. The "sub-optimal man machine interface" is cumbersome, which typically consists of a numeric keypad for user input." (Source: www.mobilemmi.com/whatis.asp) In addition the mobile data network latency hinders access to internet content. These issues do not compel users to actively utilize data applications, other than for simple short text messaging or occasional retrieval of limited web content. (i.e. directions or a stock quote) Mobile browsing has not been a 'killer' wireless data application.

The operators try to overcome the user interface and network latency issues by guiding the user to their optimized WAP portal content. (Verizon getItNow, AT&T Mmode, Cingular MyWirelessWindow) However, largely these "walled gardens" are not utilized and do not show an ROI. The operators need compelling applications to attract users to utilize their data networks and drive (Average Revenue Per User) ARPU.

The SkyBlue Mobile Platform allows operators to leverage their current investment in content partners and infrastructure, however provides a passive dynamic environment for delivery of content to the user.

THE PRODUCT

The SkyBlue Mobile Platform utilizes the home screen of the mobile phone via wallpapers/screensavers to add value to the user. **With the SkyBlue Mobile Platform, when the user opens the flip on their mobile device or glances at the screen they are offered immediate value added content without human interaction.** The home screen of the mobile device is a valuable piece of virtual real estate. Phone operators like AT&T and T-Mobile have home screens customized to give shortcuts for their own extra services. For phones purchased through phone operators, consumers have very little choice on their own custom shortcuts.

The home screen is in the main path of the user which is a key factor in determining the success of a mobile content-based application. SkyBlue Mobile's product is the delivery of content through these home screens. The screen cycles through pages of content similar to a slide show. The content of these pages can be updated periodically based on time of day, location or user preference. In addition, the home screen can be configured to have hyperlinks to launch applications such as the resident web browser or replay the content.

At the CTIA Wireless trade show in March 2004, Steve Largent, the CEO of the CTIA, predicted that the wireless screen would be the "third screen in people's lives, right behind the TV and the computer screen".

Possible Applications

The SkyBlue Mobile Platform could be used for different functions. These functions are beneficial to both consumers and phone operators.

- Advertising
    - Mobile Billboards
    - Brand Recognition Campaigns
    - Mobile Coupons – discount coupons which can be presented at point of sale either visually, Bluetooth, or infrared

- Entertainment Subscriptions
    - Daily animated cartoon strips
    - Horoscopes

- Information Delivery
    - Personalized Channels
    - News, Sports, Traffic, Weather, Stocks

- Subscriber-Defined Personalization
    - Subscriber definable and configurable delivery of wallpapers, screensavers, home screens via the SkyBlue Mobile Studio

- MMS to Wallpaper/Screensaver Conversion
  - The subscriber can email an MMS message to the SkyBlue server and it will be converted into a wallpaper or screensaver. It will then be sent to the customer and configured as the wallpaper.

- Mobile Content Alarms
  - Alarms can be set based on time of day and customized with a ringtone and content. As an example, SkyBlue's product can be configured to wake the customer up in the morning with news like headline, sports, weather, and traffic.

- Mobile Greeting Cards
  - This allows for the customer to create a mobile greeting card and send it to another customer and it is displayed as a screensaver

Product Architecture

The SkyBlue platform consists of a server and client components. The network interface between the client and the server is Short Message Service (SMS) and HTTP. The Server utilizes Short Message Peer to Peer (SMPP) to enable communication with the operator's SMSC (Short Message Service Center). HTTP is used for requests to the content servers. In addition SYNCML (SYNChronization Markup Language) is utilized to send updates to the screensaver requiring little bandwidth to keep content up to date. This standards-based architecture requires no changes to the operators existing network infrastructure.

SkyBlue Mobile Server:

The server component is built on off the shelf hardware and application server software. It utilizes J2EE application server architecture to run the scheduling, transcoding, subscriber management and billing functions of the SkyBlue Mobile Platform. Figure 1 shows a high level network diagram of the SkyBlue Mobile Server. The server can be deployed in multiple configurations dependent on customer requirements:

- SkyBlue Hosted Solution: In the initial stage of deployment and to offer a low cost entry point for operators, SkyBlue offers a hosted service.
- SkyBlue Carrier-Grade Appliance: SkyBlue offers a packaged network appliance which can be easily plugged into the operator's data network.
- SkyBlue J2EE Component: Since the SkyBlue Platform is written to run on any off the shelf application server, it can be deployed to an existing J2EE application server. SkyBlue supplies the shrink wrapped software.

SkyBlue Mobile Client:

The client is an over the air downloadable application which resides on the mobile device. Figure 4, shows a pictorial of the transition of the content on the device screen. BREW, J2ME, Windows Mobile Edition, Palm and Symbian devices are supported.

SkyBlue Mobile Studio:

The SkyBlue Mobile Studio is a web based GUI tool for creating content templates. The templates are (Synchronized Multimedia Integration Language) SMIL/XML documents which can be personalized based on user preference. The templates contain the links portals or websites. The templates are hosted on the SkyBlue Mobile Server. The templates are pushed to the SkyBlue Mobile Client when the application is installed on the device. The Studio can also be integrated into existing portals to allow the user to personalize their Theme (Wallpaper and Screensaver).

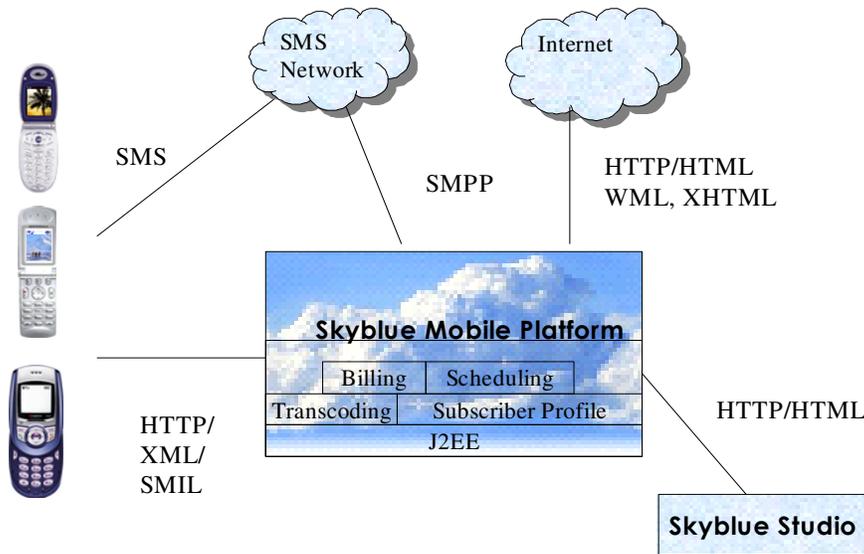

- Figure 1 Dynamic Content Delivery

Figure 2 Network Architecture

MARKET OPPORTUNITY

In 1982, the Global System of Mobile communication (GSM) was established to initiate European telecommunication standards. Since 1992, it has been swiftly adopted by nations around the globe and now incorporates over 616 operators and 200 countries worldwide. It is estimated that the number of GSM subscribers totaled **970m** at the end of 2003, and it is expected to increase to **2.3bn** by 2010.

Mobile telecommunications is becoming one of the most important industries in the world. It is estimated that in 2003, mobile telecom services directly generated over **$426bn** in revenues. Further, the global revenues attributable to GSM totaled circa $277bn in 2003, a 19% increase over 2002. The forecast is for this to increase to $500bn by 2005.

Short Message Service (SMS) or text messaging, a uniquely GSM service, was originally conceived as a paging mechanism for notifying users of voicemail messages. The soaring success and unwavering climb to ubiquity of SMS has largely taken the mobile industry by surprise. The phenomenal growth of SMS traffic is strongly aligned to the worldwide shift to the adoption of GSM, or GSM-like technologies, and now represents a substantial part of overall GSM traffic. This simple and accessible service is growing almost exponentially, with **25bn** messages sent globally each month, and has become a dominant contributor to mobile operators' service revenues (estimated **15%** at the end of 2003). SMS has become the surprise "killer app" as a growing number of users worldwide realize that GSM has more to offer than crystal clear voice calls.
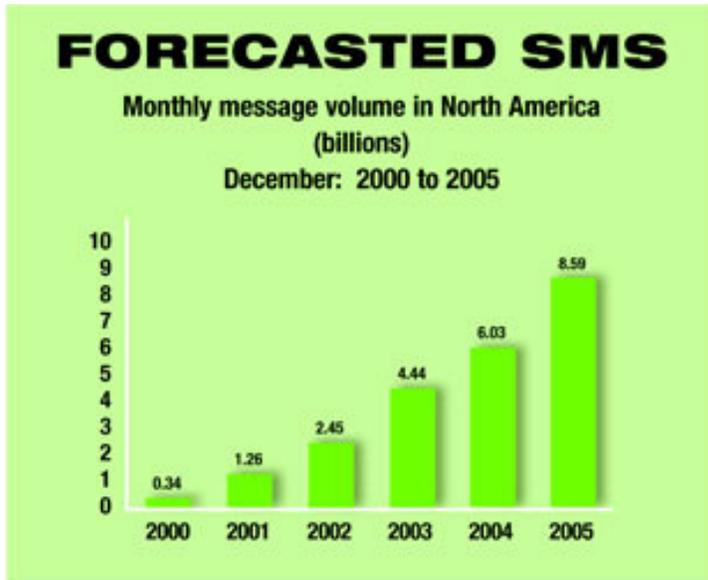
Figure 3

Premium SMS services distribute useful information requested by mobile phone users through the same network used by standard SMS carriers. Now, instead of using SMS only to stay in touch with friends, mobile phone customers can stay connected to what they view as essential information -- be it stock prices, flight delays, World Cup scores, or the latest soap opera plot twist. Premium SMS messages -- which look just like standard SMS messages -- come in three flavors: "blast" messages that are automatically sent by providers as alerts, "be heard" messages enabling the masses to communicate via polls and interactive chats, and "at your request" text that is sent in response to brief user messages.

Delivering this timely information via SMS can help mobile phone users to optimize their time and make last minute plans; for example, premium text messaging which offer traffic and weather updates to help avoid delays. This is the market targeted by SkyBlue Mobile.

Figure 4

Only in UK, adults aged 15-34 spent £90m per annum on SMS alerts. According to analyst firm Alexander Resources, premium text-based "infotainment" services revenue will grow from $1.5 billion in 2005 to $2.7 billion in 2008.
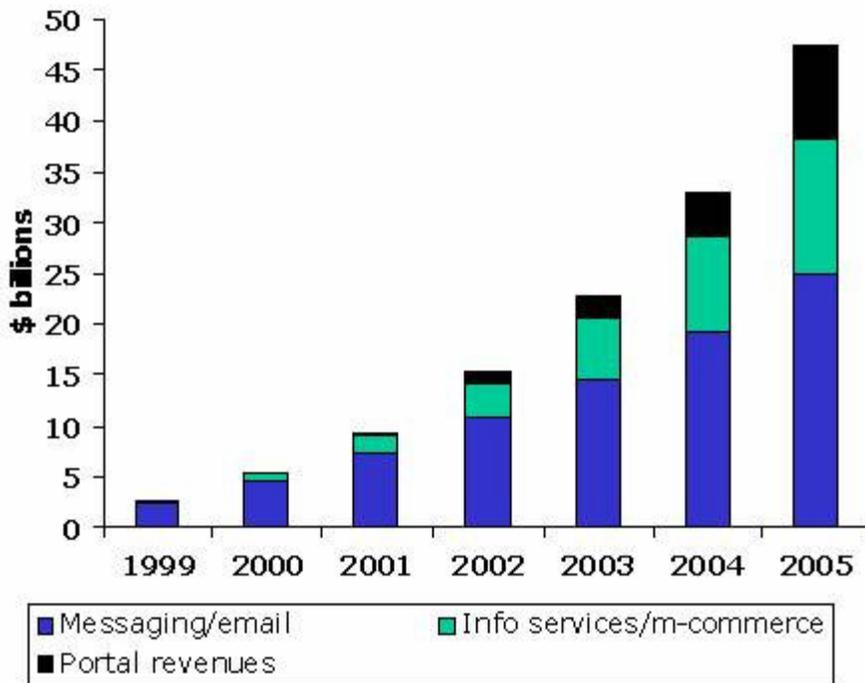

Figure 5 Worldwide Messaging Revenues, Source: Yankee Group

MARKETING STRATEGY

SkyBlue is currently looking into two options for selling the product. The first one is to have a direct partnership with a handheld manufacturer. The other one is to sell the product to a phone operator. Clearly, each has its own advantages.

	Phone Operator	Handheld Manufacturer
submit to company for evaluation	X	X
testing after successful evaluation	X	X
free outright uploading w/out evaluation		X
share in profit	X	X
no continuous monitoring of product	X	
access through menus	X	X
continuous payment of data rates by the consumer		X
monthly fee	X	
team is problem-free after sale	X(if not a partnership, outright purchase of technology)	

Figure 6

Phone manufacturers have their own websites that cater only to wireless application developers. The most active in the search for new applications are Motorola, Nokia, and Sony-Ericsson. These three companies even hold competitions for new applications and lend support and training to the winners. On the other hand, phone operators like AT&T, Verizon, Nextel, and USCellular likewise have their own websites to accommodate developers. These websites are easily visible through their main site. The process with submitting an application to phone operators is to first submit your application to them, they'll test and run it and see whether it could run problem-free with their existing network. Some operators ask developers for a testing fee just to be able to test it. After testing, it depends on the operators on whether they'll buy the application or propose a partnership with the developer. They will offer the application but the support and service

will be done by the developer. Then, a split on the revenue generated will be agreed upon by operator and developer.

The disadvantage if we tie up with phone manufacturers is whether the customer will actually use it or not. Also, a partnership with a phone manufacturer might doesn't mean that the operator will enable that feature. Selling it to an operator might lead to a one-time payment or payment through licensing fees. Selling it to an operator would be better for the end-user because operators just charge a monthly for the service unlike if they pay on a per-access basis which might lead to higher costs for end-users and lesser number of people using it.

THE COMPETITION

The product that SkyBlue offers aims to tap on the information-seeking market of cellular phone users. The current services being offered to this market are internet browsing and multimedia alerts. With Internet browsing, users get to browse information sites like Yahoo! or CNN for the information they way. The problem with getting information this way is that there are only a limited number of sites that have configurations specific for cellular phones. Another problem is the access time. Users spend so much time typing and clicking links before they get to the information they want.

Internet Browsers

Opera – Opera Software ASA is one of the leaders in the development of Web browsers for desktops and devices. The Opera browser for mobile devices has two strong features. First is the Opera mobile accelerator, which is a proxy-based solution, aimed at significantly increasing the browsing speed on mobile devices while also reducing data traffic costs. The second is its small-screen rendering (SSR) technology. The SSR technology reformats today's websites to fit inside the screen width, eliminating the need for horizontal scrolling.

Trigenix – Trigenix has become a leader in the development and deployment of user interfaces for mobile phones. Trigenix has created a platform to allow customization of the user interface on mobile devices.

Text and Multimedia Alerts

Multimedia alerts are information that consumers configure themselves and are sent to their phones. The information sent is constantly updated. Existing services include news, sports scores, weather, traffic, stock market, and horoscopes. SkyBlue plans to penetrate the same market that uses multimedia alerts. SkyBlue offers almost the same information available in these alerts.

Available Alerts:

Alert/**Carrier**	T-Mobile	AT&T	Verizon	Cingular	US Cellular	Sprint
News	**X**	**X**				**X**

Sports	**X**	**X**	**X**		**X**	**X**
Weather	**X**	**X**	**X**	**X**	**X**	**X**
Traffic		**X**		**X**	**X**	
Stocks	**X**		**X**			
Movie Guide				**X**		
City Guide				**X**	**X**	
Horoscope		**X**				

Figure 7

Text Alerts are similar to multimedia alerts but they come only in SMS format. Some operators and many other websites offer this service. More popular non-operator websites that offer this service are Yahoo and MSN. Just like MMS alerts, text alerts are also customizable. The consumer can choose what kind of information is to be delivered to his cell phone. For consumers with the appropriate text messaging plan, text alerts are free but for people no or just the basic plan from their operators, these text alerts might cost them $0.25/message.

Macromedia FlashCast/FlashLite

Another company that is considered our competitor is Macromedia. Macromedia has been developing products that will enable mobile devices to display images similar to Flash images for desktops.

Flash Lite – Macromedia Flash Lite targets mass-market phones that do not have sufficient processing power and memory to support Flash Player 7. Flash Lite can handle content such text, cartoons, games, screensavers, and user interface.

FlashCast – FlashCast is an end-to-end, client-server solution that is designed to effectively create, deliver, and use rich data services. The FlashCast service is made up channels, just like pay TV services. Service providers can offer channels on a subscription or pay-per-view basis.

The primary difference between SkyBlue and existing products is the delivery method. To get the information we offer through the existing services, it would require the customer to either browse the Internet or download applications to add to their menu list then access that application then wait for it to load. This method just proves to be too taxing and takes too much time. Another downside to the existing methods is that it stores the information in the customer's inbox. At an example of 4 alerts a day, the customer will have to delete 28 sms or mms message a week.

Even with the presence of these browsers, interfaces, text alerts, multimedia alerts, and similar products, the SkyBlue Mobile Platform still has some advantages over its

competitors. In addition to utilizing standard web technology and open standards, the SkyBlue Mobile Platform will fit into existing content with little integration effort.

- Leverages existing WAP portal content, which operators have already "paid" for. SkyBlue Mobile creates a compelling channel for operators to utilize what they have already invested in

- Dynamic screensaver/home screen as a media channel creates a unique "always on" path to the user.

- Standards based content delivery. This open platform allows third parties to create unique content with minimal cost of entry

- OS agnostic. BREW, J2ME, Symbian, Mobile Windows, and PalmOS are all planned to be supported by the SkyBlue Mobile platform.

- User definable and configurable themes via the SkyBlue Mobile Studio

Expansion Opportunities

SkyBlue Mobile is aware that out product has to be constantly improved to keep up with competition and the continuous development of similar products. Rooms for improvement or expansion are:

- Implementation of audio component

- Consistent compatibility with different phone operating systems and phones

- Improvement in the design of interface

- Addition of delivered content

PROGRESS TO DATE

Product Development

After consultation and brainstorming with some professionals in the industry the SkyBlue team was able to come up with the best possible product architecture. We had the services of an outside consultant and we also consulted with several other professionals, due to their input and the skills that the developers in our team possessed we were able to come up with the best architecture for the SkyBlue application and how we could develop and build a prototype in the given time.

SkyBlue Mobile has successfully built a prototype of the product. The prototype currently delivers three kinds of information content, weather, traffic, and stocks.

For customers wanting to subscribe to the SkyBlue Mobile prototype, the SkyBlue Client software is downloaded to their phones using the operator's data network. The customer will receive a text message containing the link to the downloadable client application. After downloading the application, he then activates the SkyBlue Client application by going to the SkyBlue icon in their phones. Selecting this will then activate the request for updates from the server. The server will then release the updated information to the client in the form of a screensaver.

The prototype could only be downloaded on J2ME-capable phones. Below is the high-level architecture of the prototype.
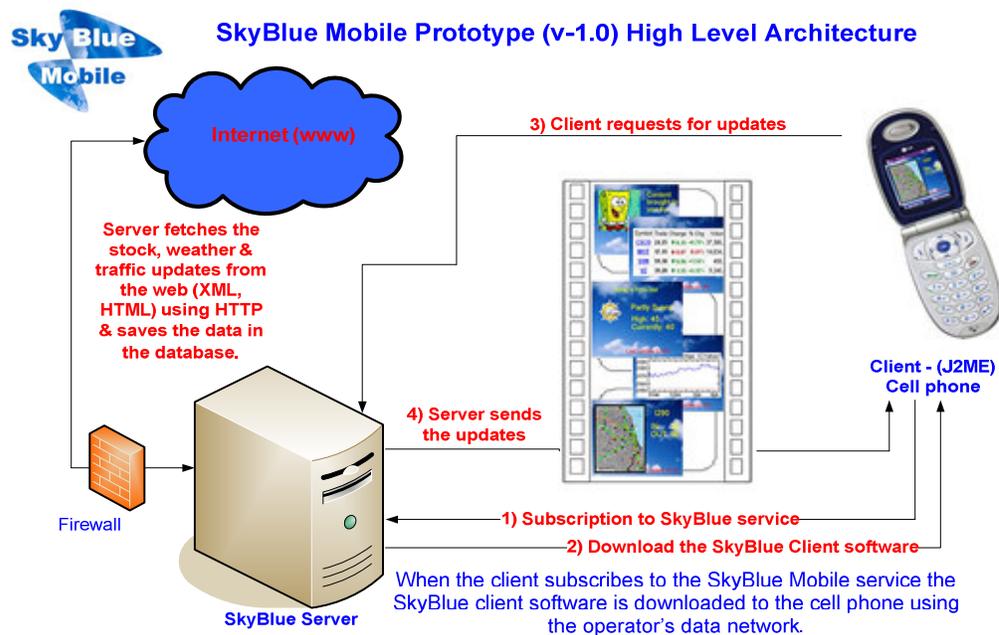

Figure 8 High-Level Architecture

The prototype has the following characteristics:

- It updates the server with real time information every 10 minutes at the very least.

- The SkyBlue prototype once downloaded can work on any phone provided it is running on a J2ME platform

The prototype which was designed and developed by the members of the SkyBlue team is a very important achievement for the semester. The prototype

shows off how the application would run on a mobile phone and can even be downloaded on compatible phones to show off to potential investors to try to get funding for our idea. The prototype consists of both a client and a server side which work together. The server downloads all of the relevant XML feeds for the stocks, traffic and weather. It converts it to a form that the client can store and then updates the information on a request from the client side of the software. There are more functions that can be integrated into the later versions of the application.

The team was also able to define and write up a functional requirement's document for the upcoming version 1.0. The functional requirements document describes how the SkyBlue version 1.0 works and what it does. This document is what we show to the industry professionals to give them an idea of how the product functions and what the client and server side of the application interact with one another.

Competition and Customer Research

The team members were able to successfully carry out a study of the consumer and the competition with our limited resources. Using the available resources, the team was able to find and verify the existence of a potential market for our product. We were also able to find the existence of similar products either under development or in distribution by other companies. Below is a summary of the comparison between SkyBlue and similar services.

Characteristics/Vendor	Opera	Flash lite 1.1	SkyBlue	Trigenix	FlashCast
Compatibility with OS					
• Symbian • J2ME • BREW • Linux • Palm OS • Mobile Windows	X	X X	X(Spring 2005) X(Fall 2004) X(Spring 2005) X(2005) X(2005) X(2005)	X X X X	X X X
Compatibility with Market					
• Northern America • Asia • Europe	X X X	X X X	X X X	X X X	X X X
Standards Based					
* SyncML, SMIL		X (proprietary Flash format)	X		**J2EE, XML, Web Services**
User Definable Theme			X	X	
Dynamic Screensaver/		X	X		

Wallpaper					
Animated Media Channel (Slideshow)		**X**	**X**		**X**
Real time updates		**X**	**X**		**X**
Internet browsing	**X**				**X** **(depends)**
Expandability • Shopping • Photo Albums • Games	**X** **X** **X**	**X** **X** **X**			* testing stage *
Automatic Screen compatibility	**X**		**X**	**X**	**X**
Text line limit	**X**	**X**	**X**	**X**	**X**
Company • base • existing partnerships • previous tested products	**Norway** **14** **Desktop browser**	**CA, USA** **10+ (info not available)** **Developer products, business use products**	**IL, USA** **0** **N/A**	**Cambridge, UK** **10 +** **Dynamic user interface software**	**CA, USA Symbian** ***testing stage so far*** **Developer products, business use products**
Independent Developer base		**X** (Flash has more than 1M developers)		**X (dependant)**	**X** (Flash has more than 1M developers)
Possible partners with: • handset manufacturer • operators	**X** **X**	**X** **X**	**X** **X**	**X** **X**	**X** **X**
Navigation and Input • *directional navigation* • capable of text input • specialized keys for clicking	**X** **X** (browser) **X**	**X** **X** **X**	**X** ***** **X**	**X** **X** (browser) **X**	**X** *** limited for demo version** **X**

Figure 9

characteristic/service	SkyBlue	SMS Alerts	Multimedia Message (MMS) Alerts	Macromedia FlashCast
customizability	X	X	X	only sports, news, weather, and showbiz news
frequency of delivery	user-defined	user-defined	user-defined	2x/day + breaking news
phone compatibility	J2ME phones (current)	text-capable phones	MMS-capable phones	3 phones: Nokia 3650, 6600, and 7610
content	graphics + text	text	graphics + text + sound (some)	Flash-capable content; graphics + text
stored in inbox	No	Yes	Yes	No

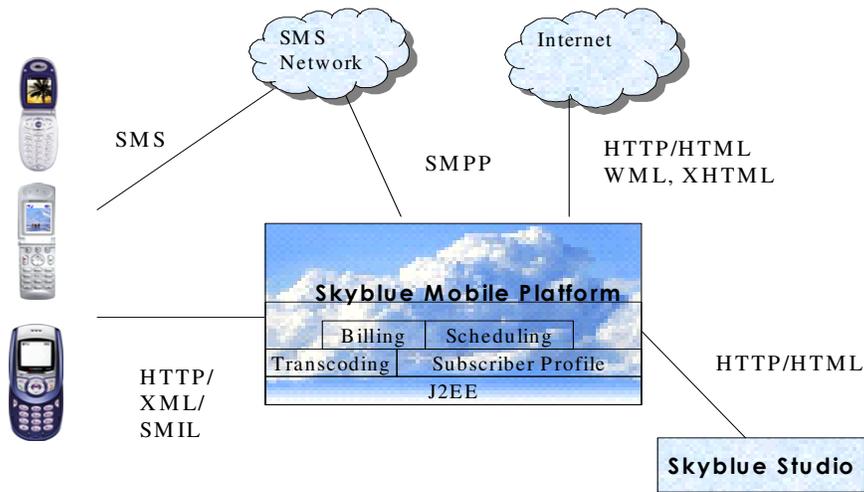Figure 10

Architecture Comparison:
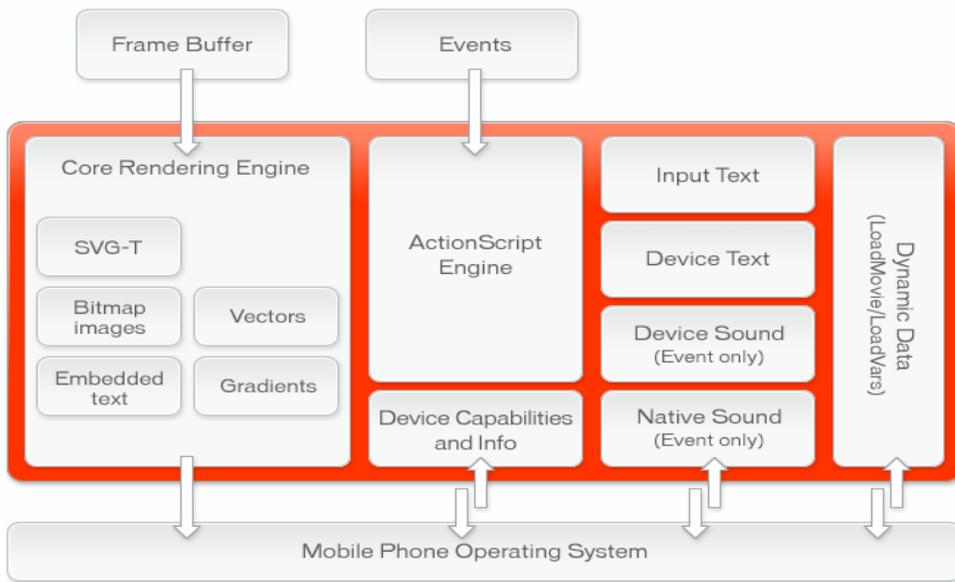

Figure 11 - SkyBlue Architecture

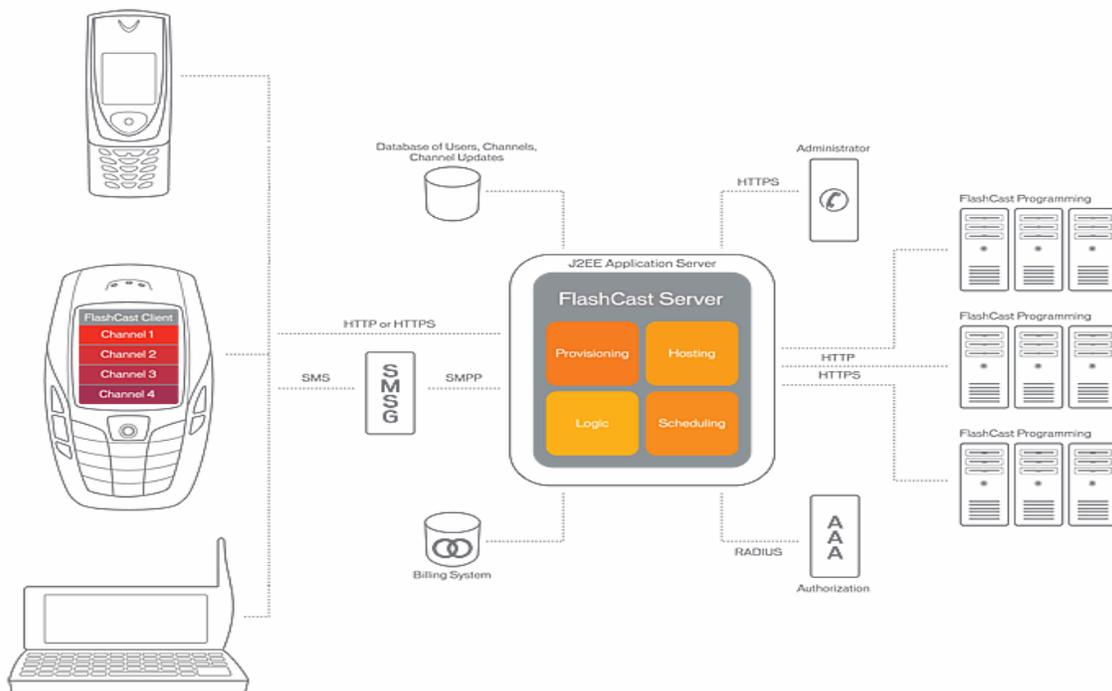Figure 12 - Macromedia FlashLite architecture

Figure 13 - Macromedia FlashCast architecture
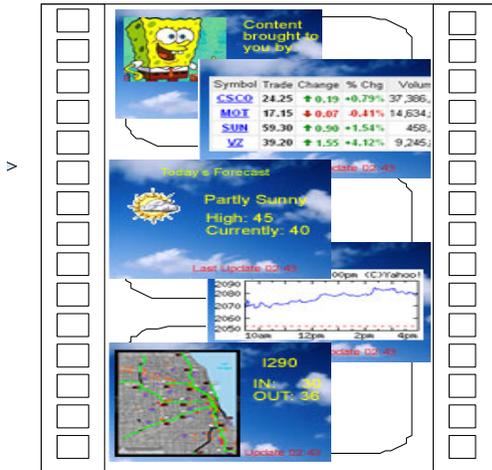
Image Comparison:

Fig. 14 - SkyBlue

Figure 15 – Macromedia FlashCast utilizing FlashLite

Figure 16 - screenshot using Opera's small-screen rendering (SSR) technology

Addressing the Competition

SkyBlue Mobile has committed to being constantly up to date with what the competition has to offer. So far, we have identified key competitors in the delivery of information to mobile devices. These competitors are composed of text and multimedia alerts, and Internet browsing. Companies developing similar products like Macromedia are also under watch. Research made on these competitors and companies are helping the product development team in building a better product.

Competitive research was done in parallel to prototype development due to lack of time. Results from studying the competition have made changes in the development of our product. The fact that we are not the only company targeting information-seeking mobile device users means that there is an untapped market out there.
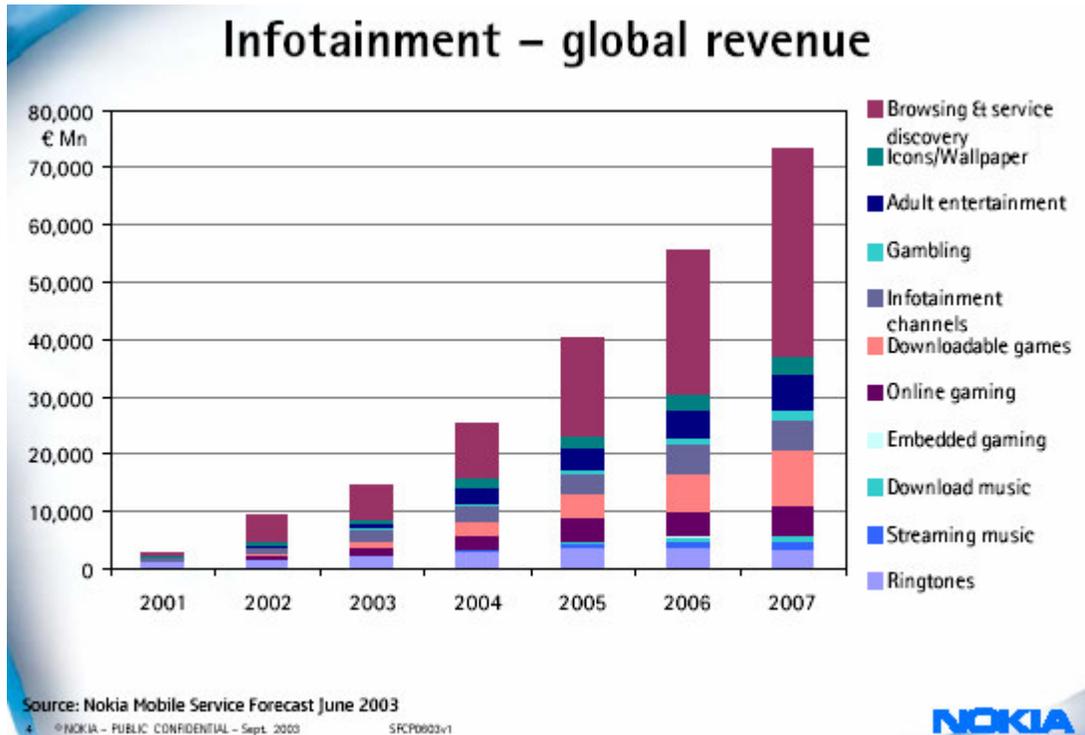

Figure 17 Global Revenue Data Services

Recent news uncovered was the sale of Trigenix to Qualcomm for $36 million in cash. The obvious interest of Macromedia, a company which had $370 million in sales last year, in developing a channel-like application for mobile makes the idea of developing information delivery software for mobile devices more valid.

The team has determined some advantages that SkyBlue holds over the current methods of information delivery. There are advantages to both phone operators and consumers. For the operators, SkyBlue offers these advantages:

- Increased revenue per user

- Addition of valuable content to phone's home screen

- Low licensing fee

- No hassle solution

- Replace information delivery through text and multimedia alerts

For the consumers, using SkyBlue's product will offer them:

- No filling up of inbox

- Minimum interaction

- "Set – and - Forget" type of configuration

- Instantaneous delivery

- Minimized downloading of data (updates are less than 1Kb)

Comparative Study

A product very similar to SkyBlue's was done before for desktops. PointCast was predicted to be one of the hits of the Internet boom but it soon collapsed. Poor management and technical decisions contributed to its downfall. A complete analysis of PointCast could be fond at the end of this document.

Financing

A few presentations are already lined up for SkyBlue for possible financing. The team has already started communicating with the Early Stage Accelerator and IDEN group of Motorola. Team members have also attended workshops and conferences that have further broadened their network. The team is in constant communication with people met in these workshops and conferences and have since asked them for help and guidance. Another source of financing that the team will explore in the near future are government grants like the National Collegiate Inventors and Innovators Alliance. Financing from venture capitalists is also one of the main options. When the teams already has a competitive prototype, SkyBlue will then explore presentation opportunities with venture capitalists.

CRITICAL BARRIERS AND OBSTACLES

A major problem encountered was the lack of manpower and time to work on the product. Having been on an IPRO that wasn't offered previously, the team was limited to five full-time students as members plus Bruce Wiatrak who, aside from developing the client-side of the application, is also working with Bridgeport Networks.

Technical Problems

Aside from the lack of developers, the team lacked a development kit to work with. This hindered the team from building a prototype that delivers content through a wallpaper or screensaver of the mobile device. Because of this, the prototype is of a downloadable application type. This makes the prototype requiring a little more work for the customers as planned. Every time a user clicks on the application icon, the slide show is updated with information and the slide show starts. This is just to give an idea on how the screensaver would look

Market and Competitive Issues

The market and competitive subteams of SkyBlue experienced almost the same problems. SkyBlue doesn't have access to relevant data in terms of customer behavior and number of customers of our competitors. Since access to these data require either being in the professional world or paying market research companies for every bit of information, SkyBlue's only source was the Internet and personal contacts.

Even the business development part of the project also needs more manpower. Only three people worked on the research needed to be accomplished first. With the upcoming need to study intellectual property rights, checking on trade shows and conferences, research on other sources of funding (ex. grants), and usability testing of the product, more people with the appropriate skills are needed.

Regulatory Issues

Since SkyBlue is not yet affiliated with any phone operator. SkyBlue has no choice but to continuously pay the data rates of phone operators when testing the prototype or when interested customers download the prototype. Also, certain phone operators block the running of third-party applications. During the testing of the prototype, the team wasn't able to run it through the Cingular network for it has blocked the process of downloading for the application. A problem like operator blocking is one situation that SkyBlue doesn't have much control of at the moment.

Licensing issues have also hindered the inclusion of sports updates to the service. All professional leagues require that permission is granted to any company using information from the league. Lack of source sites to get information from has also been a problem in the development of the product.

Addressing the Issues

The first step SkyBlue is taking in solving these issues is identifying the people the team has to add for the next semester. With specific roles in mind, the team leaders and IPRO advisor will choose from students interested in joining the team. With the upcoming presentation with Motorola, a successful venture with them would open doors to access

relevant data which we really need. Contacting people from the school's network could also lead us to market research studies that are vital in our own study of our market.

THE TEAM

Bruce Wiatrak - Founder

Bruce Wiatrak has over 14 years of experience in wireless telecommunications and wireless data communications. He started his career at Motorola Cellular Infrastructure as a college intern programming the core threading for Motorola's GSM switch. He was hired as a full time engineer before completing his degree and led inter-vendor testing with US West (now Quest Communications), and Bell Atlantic Mobile (now Verizon Wireless) for Motorola's ANSI41 CDMA network converter. Subsequently Mr. Wiatrak moved into lead development roles on Motorola's ANSI 41 HLR and VLR.

Mr. Wiatrak subsequently moved into the Architecture team for Motorola's Next Generation Aspira™ VoIP network. He represented the Softswitch Team on the committee for the Common High Availability platform. He was on the Softswitch Technical Evaluation Team of major VoIP telecom vendors such as Telecordia, Telesoft and Netspeak.

Mr. Wiatrak joined Novarra, a venture backed wireless microbrowser company, in March of 2000. Mr. Wiatrak was the Senior Architect for server side Media Conversion, and J2ME development at Novarra. Mr. Wiatrak lead the design of the content adaptation layer and media conversion layer of the server which was instrumental in Novarra being selected as the vendor for the Palm Webpro browser currently deployed on all PalmOS devices.

Recently Mr. Wiatrak has joined Bridgeport Networks, a venture backed Cellular to WiFi VoIP product company. He is the Lead Cellular Developer designing the VoIP call processing bridge between the cellular and WiFi networks.

Mr. Wiatrak has 4 patents pending in the areas of Wiretap on VoIP networks and content conversion algorithms for handheld devices.

Mr. Wiatrak has an undergraduate BS degree in Computer Engineering from University of Illinois.

Kumar Abhijeet (India) – Kumar is a senior at the Illinois Institute of Technology taking up BS Electrical and Computer Engineering. Kumar has had numerous internship experience including working for the Chicago Transit Authority and Bridgeport Networks. He is active in IIT's Leadership Academy wherein he is one of the few chosen scholars.

Seun Craig (Nigeria) – Seun is a junior at the Illinois Institute of Technology taking up BS Mechanical Engineering. His work experience includes an internship at the Chevron offices in California.

Dr. Ioana Nicolaescu, M.D. (Romania) – Ioana is a senior at the Illinois Institute of Technology taking up BS Computer Science. She has also managed to get a medical degree from a Romanian university in parallel with her studies in IIT. Ioana has worked with Medtronic, based in Minnesota, and will be continuing her internship there this coming Spring 2005. She is also one of the scholars of IIT's Leadership Academy.

Tim Saylor (USA) – Tim is a senior at the Illinois Institute of Technology taking up BS Computer Science. His work experience includes an ongoing internship at Hostway. Tim also has more than five years experience in systems programming and development.

Celeste Zapanta (Philippines) – Celeste is a senior at the Illinois Institute of Technology taking up BS Computer Science. Her work experience includes internships at LA Department of Water and Power and the Philippine Weather Bureau.

PATH FORWARD

The following are the team's plans for next semester:

Development Expansion

Expand the applicability of SkyBlue's application by making it available to other phone operating systems like BREW. It is important for us to expand the functionality of the SkyBlue application by developing it such that it operates on the other application platforms aside from the J2ME platform. This includes the BREW platform and the reason for this is to increase the customer base for the application.

Member Recruitment

Recruitment of additional team members. Currently, SkyBlue has a team of six people, including its mentor, Mr. Bruce Wiatrak. SkyBlue needs additional members with the necessary skills such as application development, analysts, and researchers. It is going to be very crucial that we have an adequate number of developers or research people if we want to work on expanding the application. We are also trying to expand the product and it takes more people than we have to effectively campaign and try to distribute the application to potential customers.

Application Development

We need to update our application from a working prototype version 0.0 to an actual functional version 1.0 as well as look for ways to sell our product and distribute it to the customers. This is also directly related to the first point made concerning expanding the application such that it can be run on other operating software platforms, we have to include the full functionality of the application on both the server and the client side. This includes the menus and other options that could not be integrated into the prototype version. We also have to start discussions with operators/manufacturers and distributors so as to find ways to get our application distributed to the customers. These 3 options are the easiest ways to reach the market and although there are other routes, these are the most viable to use to reach the customer. There are also benefits to them especially to the phone operators who

get to charge an internet access fee for every time customer uses the internet to run SkyBlue. The mobile phone manufacturers also benefit from having the SkyBlue application running on their mobile phones.

Functional Requirements

Consistent revision of the functional requirements is needed so the team is ready whenever a potential investor asks for a presentation. Having documentation is necessary when presenting to companies like Motorola.

Networks

Build more networks in the mobile device industry. This is vital to the team's success. Included in plans are attendance of trade shows and conferences regarding mobile devices, and also strengthening the current relationships we have right now.

Complete Plan

Have a strong financial analysis of the business. At this point, SkyBlue doesn't have a financial analysis part in the report. This is due to lack of time, team members, and sufficient data. Financial analysis is a big part of the business plan that is to be accomplished by the end of next semester.

Management missteps, poor execution, and frenetic technological changes as well as the capital it took to run the company every month was faster than the cash flow back into the company (In mid October 1998, the company was spending about $2 million a month). The company had to lay-off one third of its work force as well as sell some of its major assets all leading to an eventual sale of the company for a lot less than it was valued at.

PointCast's first problem was with News Corp. during the peak of Pointcast. James Murdoch who was in charge of News Corp's new media strategy department set up a deal with Chris Hassett in January 1997 in which News Corp would acquire Pointcast for $450 million. However nothing ever came out of the deal and it was withdrawn due to rumors about the revenue projections for Pointcast.

Right after the failed deal, Pointcast ran into a bunch of technical problems. These included the bandwidth as well as the speed at which the information got to the customers. At this time, some of their customers decided to change services to Yahoo and Excite. This was a bad sign for Pointcast.

Some Professionals are also of the opinion that Pointcast's entry into the market was premature. It based it's product on proprietary network and infrastructure at about the same time the web was fully developed and it's infrastructure which cost millions of dollars to set up was outdated really fast by the ever expanding web and web based companies. There was also an internal debate by the management on the decision to switch to a web based service. At the same time this was going on, there was a movement by board members to replace Chris Hassett with a new CEO. They were unsuccessful for several months and the company deteriorated under this additional pressure.

A new CEO, David Dorman Ex CEO of Pacific Bell finally took over the reins and tried to get Pointcast acquired by or partnered with either Time Warner, Yahoo!, NBC, and Softbank all to no avail. He was finally able to convince the Bellsouth Corp. executives to evaluate PointCast. BellSouth, joined by Microsoft, Bell Atlantic (BEL), US West (USW), and Bell Canada, launched a secret project, dubbed Newnet. The group put up about $400 million on the venture and agreed to buy PointCast for $100 million and use it as an entry point for the new service. It was rumored at that time that Newnet was likely to be AOL's major online competitor. The partners signed a letter of intent on Dec. 16 1998 and set a target launch date of April, 1999. PointCast also signed an agreement preventing it from seeking other business opportunities for several months (till January) and kept it maintaining 90% of its workforce which was a major cash crunch. At the end of the agreement period, Microsoft which was frustrated with the pace of the deal and some of the details dropped out of the partnership. The other minor

partners worried with the loss of Microsoft tried to recruit SBC Communications Inc. to no avail. David Dorman frustrated with the whole situation resigned as CEO of PointCast on March 4, 1999. 2 weeks after that, the rest of the partnership announced their intent to drop the project and project Newnet was cancelled.

This was a major blow to Pointcast and was basically the nail in the coffin. They immediately had to lay off a third of their workforce. At the same time, they were unable to properly serve their 1.2 million users, 6 million unique E-mail addresses, and 700 content partners due to a lack of cash. They needed at least $20 million to stay afloat as a business. They had to start considering accepting bids from companies and individuals including ex CEO Christopher Hassett. PointCast was picked up by venture capital firm Idealab Inc. in May, 1999. The firm integrated PointCast with another of its acquired firms, Launchpad Technologies. Launchpad sells e-commerce software for online shopping called eWallet. Pointcast was acquired for a meager $10 million and stock options which are a small fraction of what it was valued at in mid 1996. The merged firm is now called EntryPoint and is based in San Diego. PointCast's push technology has been slowly integrated into an EntryPoint toolbar product, which allows Net users to receive targeted portfolio information and personalized news online. In late 2000 EntryPoint merged with Internet Financial Network Inc. to form InfoGate.

Please check the CD for the following:

Full Competitive Research

Full Customer Research

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