Whirlscape, Inc.

BACKGROUNDER: VIRTUAL KEYBOARD MARKETS

Whirlscape has positioned itself to take advantage of opportunities to provide text entry methods via Minuum virtual keyboards in the following markets:

- Touschscreen mobile phones and tablets
- Non-mobile-phone, non-tablet touchscreens
- Wearable technology

Assessing the total addressable market (TAM) for technology products is notoriously difficult, a problem more pronounced when a relevant market segment—in this case, wearable tech—is in its infancy. Nevertheless, the following passages should give a sense of the possibilities, and the opportunities.

Mobile Phone Touchscreens

Device Penetration

- A MobileSyrup.com story on research by ABI reported ABI's prediction that touchscreens will represent 97% of all smartphone shipments by 2016. This leaves aside how many of those smartphones will be touchscreen-only and how many will have physical QWERTY keyboards.
- MobileSyrup.com also reported Juniper Research's estimate that by 2016, touchscreen-only smartphone shipments will be 700 million, 72% market share, meaning the remaining 28% or 300 million will have physical QWERTY keyboards.
- The same story also reported Juniper Research's estimate that 3D-capable phones will represent 8% of the market by 2016.
- A Digital Journal article from February 2013 reported an estimate from IDTechEx that the market for touchscreens in 2012 was $14 billion, "[t]he largest share [being] the general application of touch screens in smartphones and tablets."
- IDTechEx also estimated touchscreen mobile phone market penetration at more than 40% in 2012. It projects touchscreen market penetration to be near-total "in the next decade." According to IDTechEx, shipments of touchscreen tablets were estimated at 100 million units in 2012.

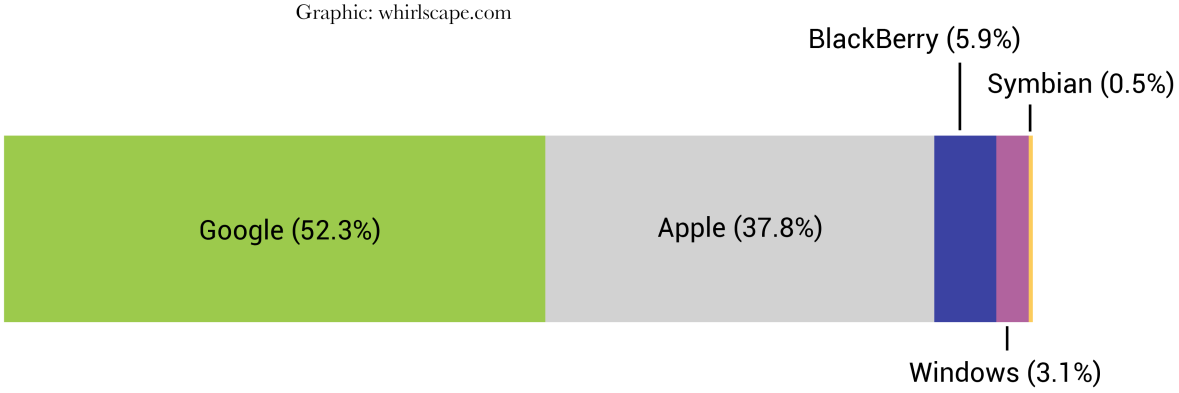
Platform

Whirlscape plans to address the Google Android touchscreen market initially since the Android ecosystem is the only one that currently allows the replacement of the native virtual keyboard with an alternative. (Nevertheless, Whirlscape's Minuum virtual keyboard can work in other operating systems, and iOS developers can choose it as the default keyboard for their apps.)

- According to Canalys, Google Android became the most widely used smartphone platform in Q4 2010.
- A comScore report from January 2013 indicated that Android had the largest share of the smartphone market. The market for primary smartphones (that is, excluding phones given to employees by their employers) was 129.4 million users in the United States, representing 55.3% of the 234 million Americans over age 13 who have mobile phones.
- According to the data, Android users in January 2013 totalled 67.7 million, a rise of 18.5 million over the 49.2 million users at the start of 2012.

Smartphone Platform Market Share, as of January 2013

Source: comScore MobiLens
Graphic: whirlscape.com



Non-mobile-phone, Non-tablet Touchscreens Worldwide

Minuum virtual keyboards can exploit recent trends for manufacturers to place touchscreeens not only in smartphones and tablets but also in home appliances, cameras, tablets, wristwatches (including smart watches), home automation devices, and a wide range of other products.

Engadget reported on DisplaySearch estimates that touchscreen demand will increase by 90% between mid-2011 and mid-2015, and surpass sales of $24 billion by 2017. Mobiles and tablets should account for most of this growth, but we can expect larger display devices such as PCs to increasingly adopt touchscreens as well.

Wearable Technology Prospects

Estimates of the market for wearable technology are, of course, completely speculative. It is interesting to note, though, that mainstream news media have started reporting on the problems and opportunities presented by wearable tech and ubiquitous computing (Ubicomp). Consider:

- In February 2013 *The Guardian* reported extensively on wearable technology, featuring smart watches. "Last year analyst Forrester issued a report describing wearable computing as 'the new platform war'. Tech analyst Juniper Research estimates that wearable computing will generate $800m (£500m) in revenue this year and $1.5bn in 2014. Annual unit sales of wearable computers will rise from 15m this year to 70m by 2017."
- In February 2013, the *New York Times* reported on Google's efforts to engage fashion designers to make its Ubicomp Google glasses stylish.
- The *New York Times* also reported in February 2013 on Apple's quest for bendable glass to incorporate in its upcoming smart watch product.
- In February 2013 the *Toronto Star* reported on the wearable technology market and included estimates of the market size. "Juniper analyst Nitin Bhas estimates the global market for wearable technology such as glasses, scanners and tracking devices will expand from 15 million sales this year to nearly 70 million in 2017, still a pittance compared to the more than one billion smartphones in use today. Juniper estimates the smart wearable market will be worth $1.5 billion in 2014 compared to the current $800 million."