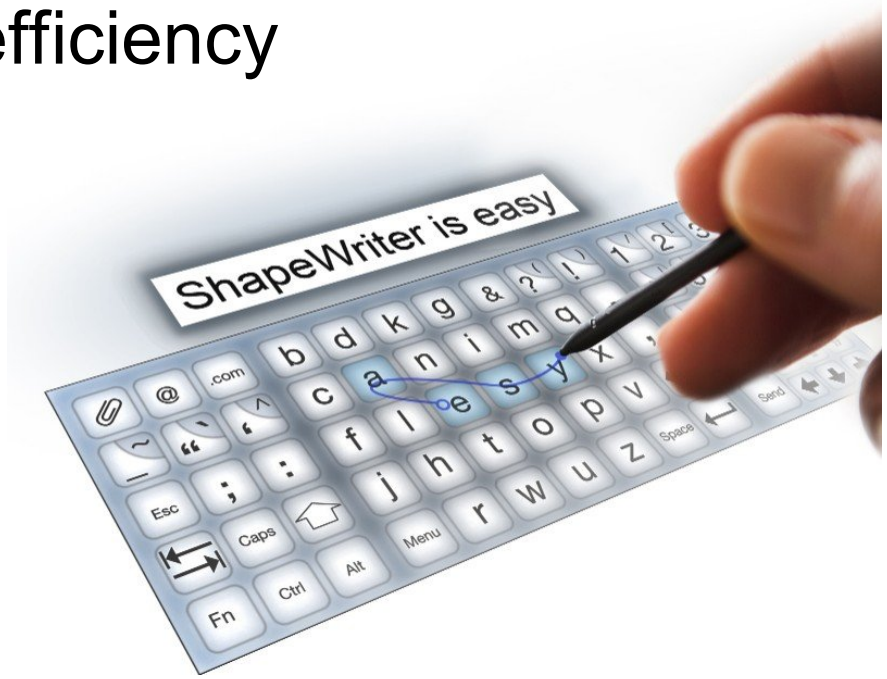
ShapeWriter for mobile text and command input

from ease to efficiency

ShapeWriter

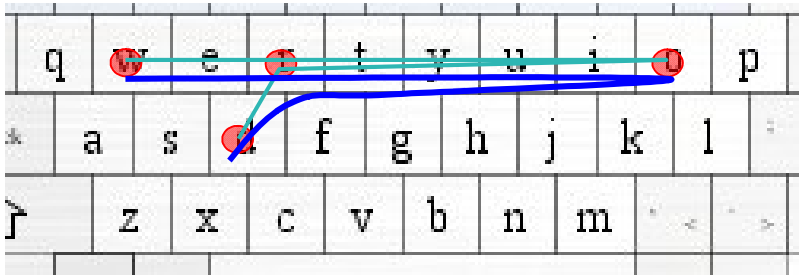


The new wave of touch screen mobile devices

- Touch screen advantages
  - Enabling thin, clean, cool, sleek device design
  - Full sized wide screen
  - Attractive soft buttons
- Challenges
  - Lack of easy and efficient on screen text entry, making email, SMS and other text centric applications difficult

The shape writing solution

- Conceptually simple: trace letters on soft keyboard
- Words are formed by drawing one continuous stroke from letter to letter on a key layout (e.g. from *w* to *o* to *r* to *d*) -- easy to begin
- ShapeWriter uses multi-channel pattern classification based on stroke shape, stroke location and lexical information to find the user intended word
- Due to computational intelligence ShapeWriter is error tolerant; error correction is also easy through alternative choices presented
- Out of vocabulary words can be added easily – tap once, shape write the next time



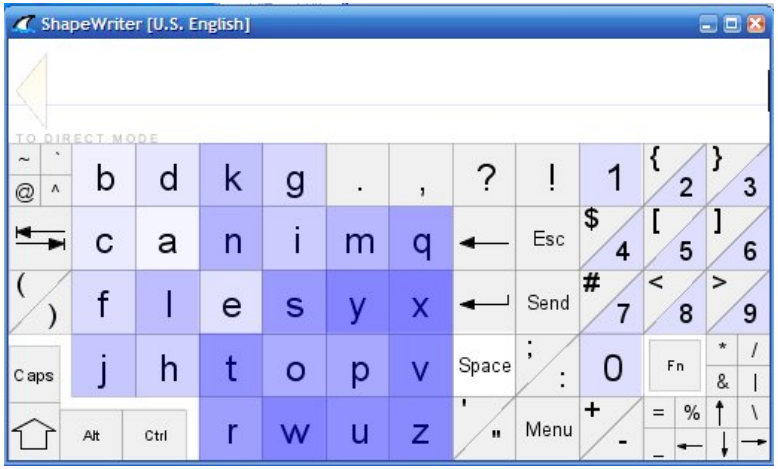
ShapeWriter works on any on-screen keyboard layout

Conventional QWERTY

Alphabetical layout

a b c d e f
g h i j k l
m n o p q r
s t u v w x
y z

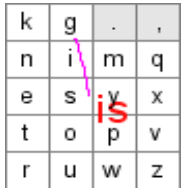
Optimized layout ATOMIK



ATOMIK is optimized for motion, and the letters follow the trend from A (upper left) to Z (lower right corner)

Shape writing is highly efficient

- One stroke one word – a form of shorthand
- 4-5 folds of motor efficiency increase over longhand



Key design rationale — from ease to efficiency

ShapeWriter embeds learning in use – beginning with “look and trace” evolving to “shape recall”

Consistent movement pattern between initial use and proficient use

The keyboard serves as the training wheel / guide map

Gradual continuous shift
Skill acquisition

Initial use:

Tracing letter to letter

Visually guided action

Recognition based

Closed-loop performance

Slow & accurate

Proficiency:

Gesturing shape patterns

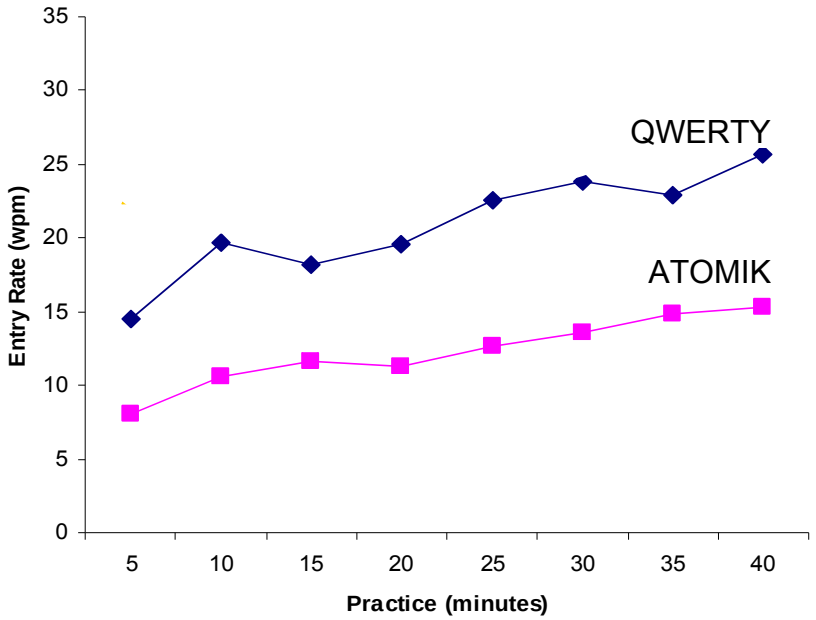
Memory recall based

Open-loop performance

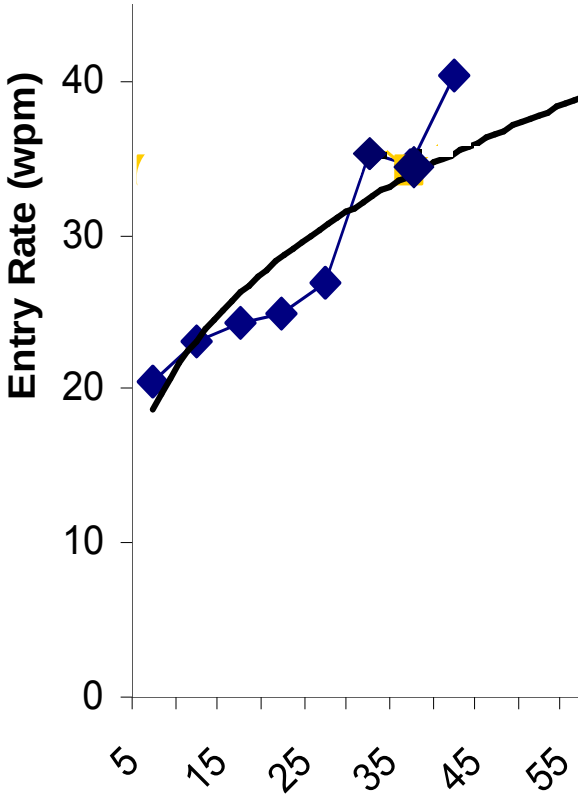
Fast& inaccurate

Falling back and relearning

User Study: Initial Performance

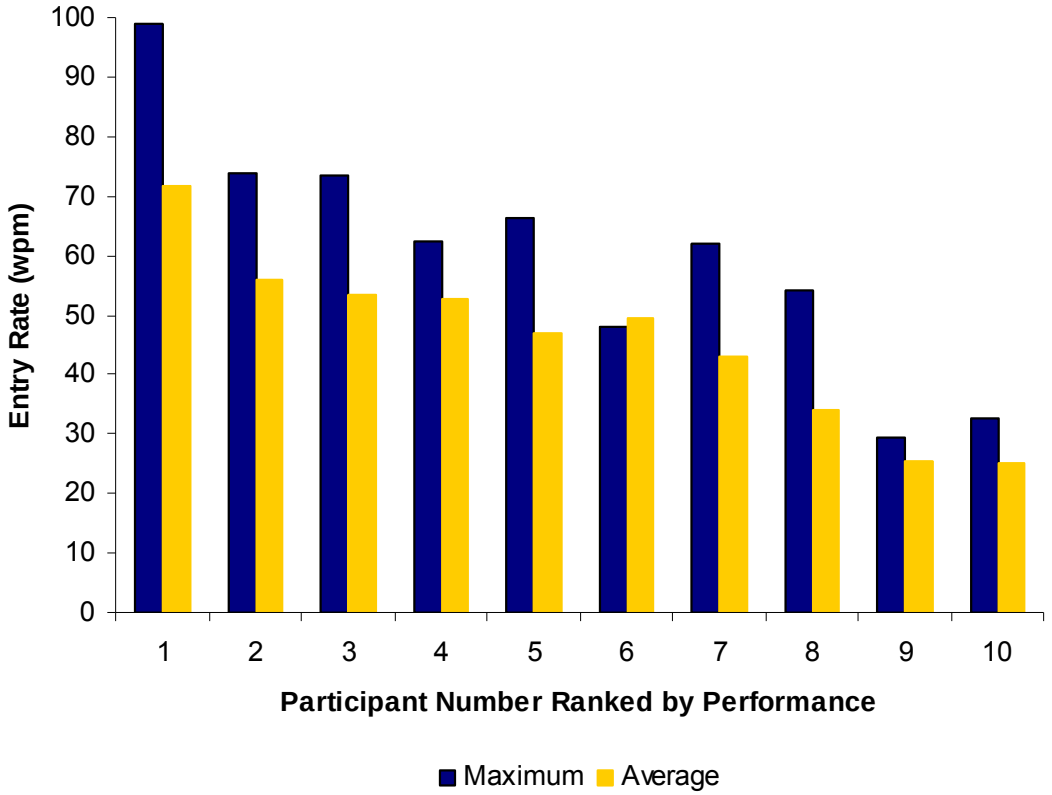


Data from the *first 40 minutes* shape writing, random common sentences, 10 novice subjects, error rate around 1%.
The average speed is already higher than the long term highest average speed of Graffiti or other letter-based handwriting methods. Qwerty is more familiar hence faster initially, but ATOMIK is superior in the long run.



Some individuals are faster.
Here is the top half performers' average, regardless layout

User study: accelerated novice performance



WPM speed (no error) of entering one phrase after *15 minutes* of practice

Experience users can reach over 100 words per minute

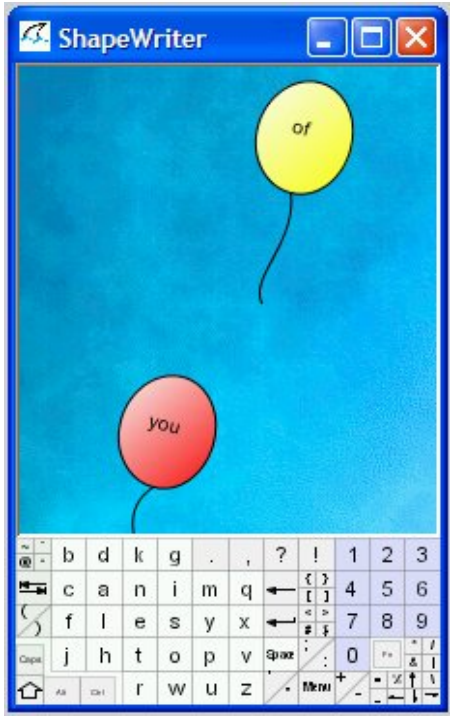
Unified command and text input

– Command strokes as menu shortcuts

- A stroke starting from Cmd key sends a command instead of a word
- Much faster than pull-down menus
- “Random access” to a large number of commands, making ShapeWriter and general UI solution

There is more to ShapeWriter …

- Support many languages
- Real time and small footprint on mobile phones
- Fun
  - Fluid strokes
  - Learning shape writing by game playing



ShapeWriter balloon game

Reactions from reviewers and trial users

- "Text Entry Epiphany …"
  - "I am happy to report what I feel is a revolutionary breakthrough…it is phenomenal…It is almost faster than touch typing on a keyboard…This method is so simple and accurate it amazes me every time I use it"
- Trial users
  - "I just wanted to drop you a line to say.. "GENIUS !!! " ... The biggest step forward in computer interaction I have ever seen, and a completely new way of looking at how we think of words."
  - "I plugged in my Wacom tablet on my desktop and I am an instant convert"
  - "I am a happy user of SHARK, and I saw that it has been upgraded to ShapeWriter. Where can I find a place to download, or buy, the new shapewriter …. Congratulations on a brilliant concept well executed."
  - "I've grown dependent on it as my sole way of entering text into my tablet"

Press reviews

“may revolutionise how we use touch-screen computers” ─ Financial Review

“one of those rare eye-opening moments when you suddenly see what could be the answer to a long-festering problem.” ─ San Jose Mercury News

"Total recall boosts PDA writing” ─ BBC News

“ShapeWriter is going to revolutionize communication between human beings and all kinds of electronic devices” ─ bild der wisseschaft (Image of Science, Germany)

Over 100 media and press articles written on ShapeWriter

ShapeWriter's design benefits from many years of deep research and exploration, which resulted in many patents and scientific publications

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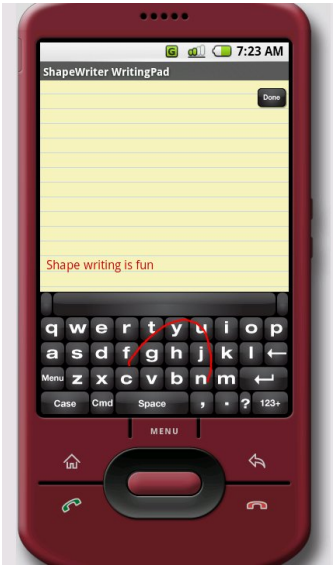
ShapeWriter Inc

- An IBM technology spin-out company focused on shape writing technology
- Dedicated to development, customization, service and delivery of ShapeWriter technology

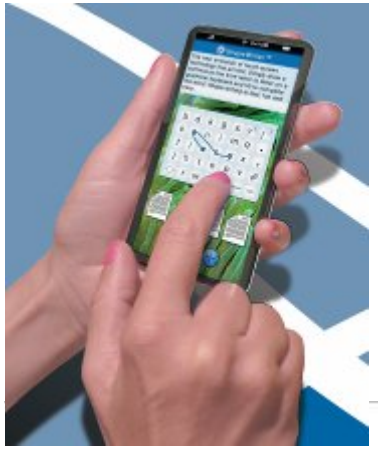
Current ShapeWriter Implementations

ShapeWriter has been implemented and tested on Windows XP, Windows Vista
Windows Mobile, Linux and Android



ShapeWriter design illustrations

ShapeWriter can be implemented on a variety of devices in various forms



ShapeWriter video demo at:

http://www.shapewriter.com/video.html