Text Input Product Development at Nuance

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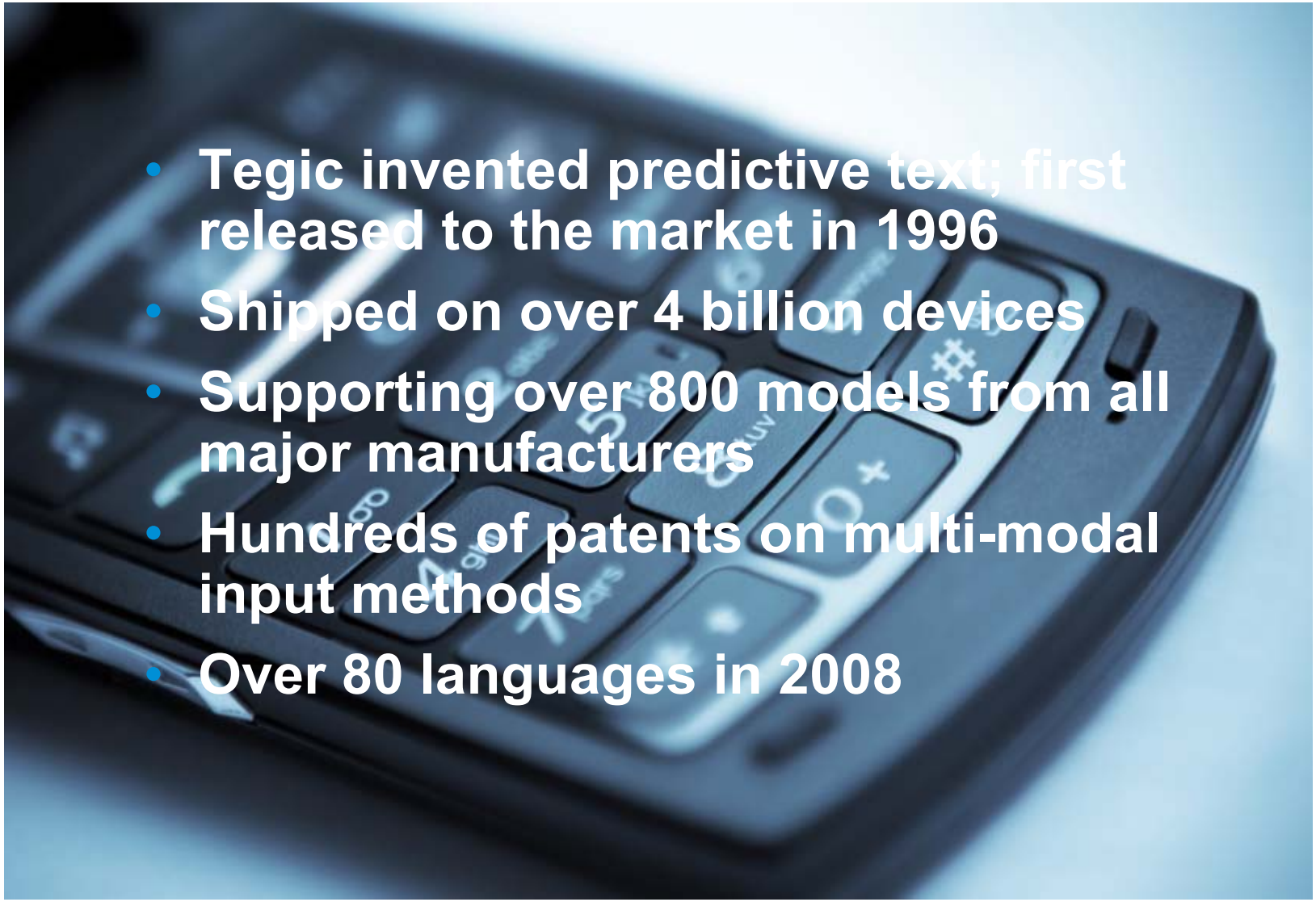
Vice President Product Development

NUANCE

Introduction

- Brad Bargen, Vice President of Product Development
- Nuance Text Input R&D Team located in Seattle, USA
- Support offices in Seattle, Hong Kong, Tokyo, Beijing
- A multi-lingual, multi-cultural team of engineers, designers, and usability specialists

Some Big Numbers



- Tegic invented predictive text; first released to the market in 1996
- Shipped on over 4 billion devices
- Supporting over 800 models from all major manufacturers
- Hundreds of patents on multi-modal input methods
- Over 80 languages in 2008

Usability is Key

"I think part of the total experience lies with the user interface; how easily people can interact with the device; how easily they can find and share their content on the device; and how easily they can participate in online communities."

"Indeed, achieving through simplicity is often a very complicated task."

Consistently Inconsistent

Any press is *not* always good press…

"…accelerometer randomly switches from landscape to portrait mode…"

"…well-spaced keypad makes text messaging faster than a greased cheetah on Red Bull…"

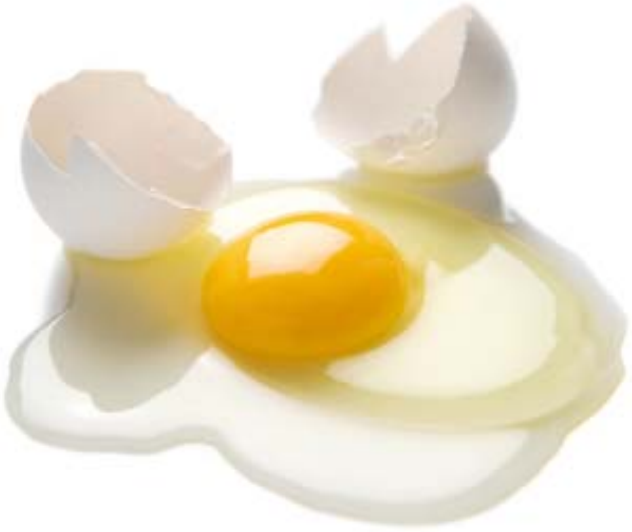
"…lame stylus…"

"…funky, tiresome interface…"

"…had my (device) for about two weeks now and find myself loving the XT9 feature.…"

"…its suggestions are practically idiotic…"

Why Things Go Wrong

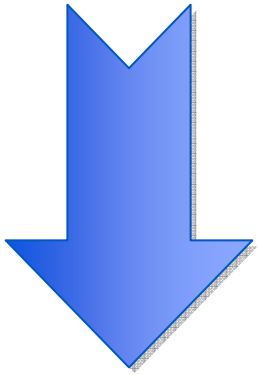


- Usability testing is performed too late in the development cycle
- “Usability testing is not scientific”
- Usability testing is the first to go when schedules compress
- “Customers want features not usability”
- Usability testing is not approached with an open mind

Making Things Better

Apply the principles of good usability

Intent



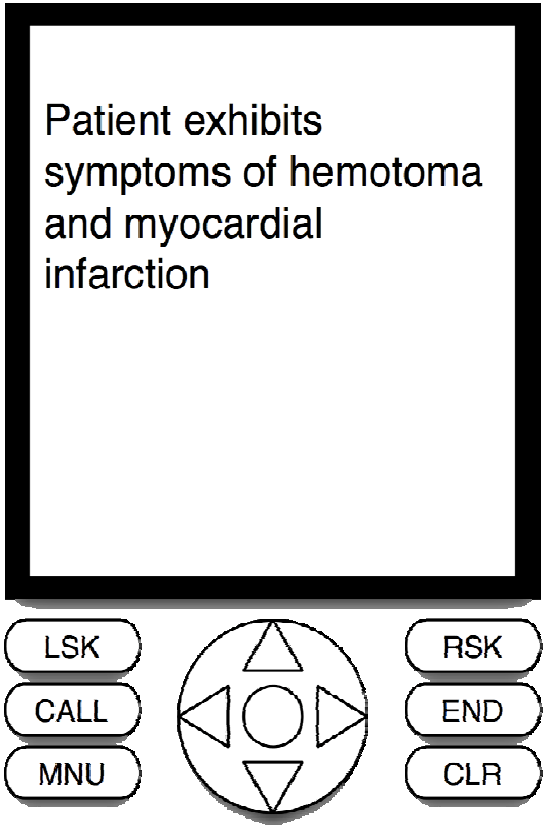
Resolution

Provide Choices

Seamless Modality

Multimodal Flexibility

- ✓ **Dictate, type, write into the input buffer**
- ✓ **Mode sensitive selection lists**
- ✓ **Grammars enhanced by T9Nav Core**



"Select hemotoma"

"Go to end"

"Send"

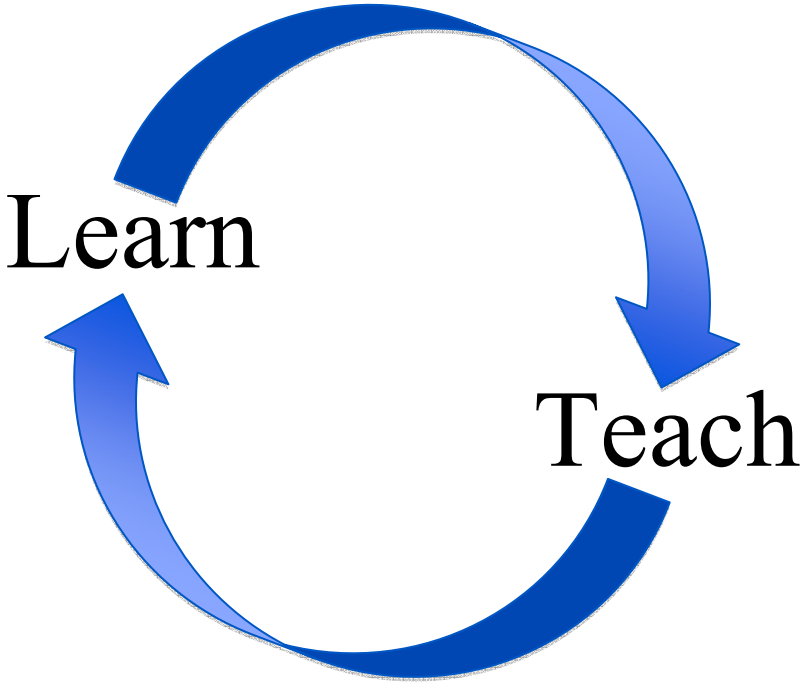
Seamless Modality

A press of the  **key will match:**

- Hiragana, Katakana
  {や ゆ よ ゃ ゅ ょ ヤユヨャュョ}
- Latin Text:
  { A B C }
- Numeric Text:
  {8}

…without switching input modes!

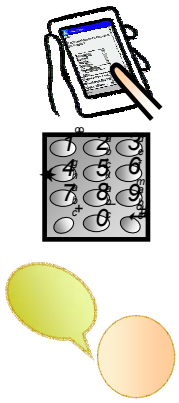
Teach, Learn, Improve



Learn from the User

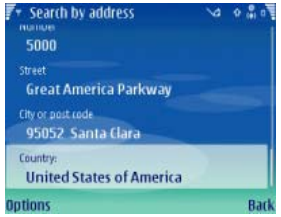
Search, Shop, Navigate

Initiate “Conversation”



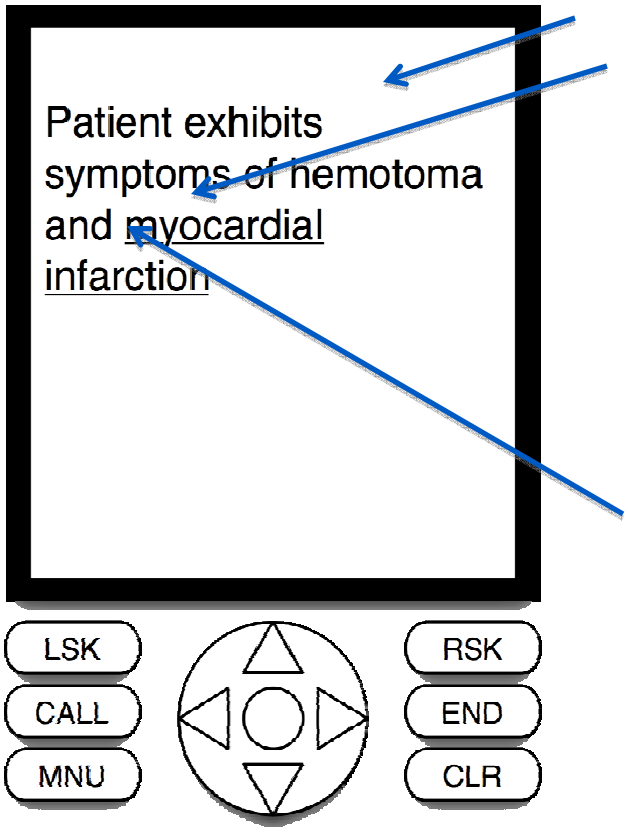
Type “Narnia”
or say “Find
57th Street”

Resolve User Intent



Improve

A Sum Greater than Parts



Incoming messages and other data sources (using T9Nav) are used to augment messaging and search grammars for keyed entry, search, and speech, resulting in more personalized input systems.

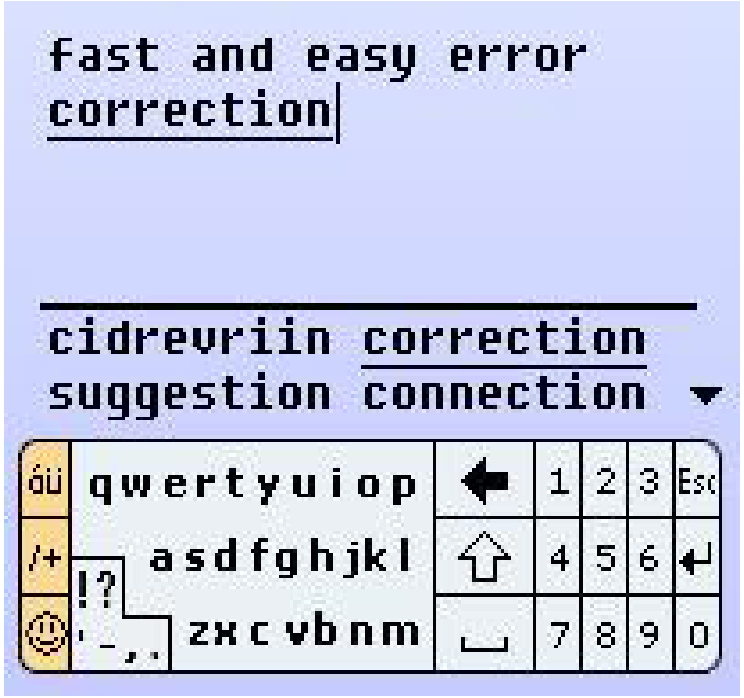
Initiate a search directly from device content

Anticipate

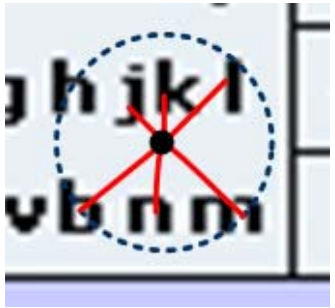
“If computers are so smart, why can’t they just do the ‘right thing’?”

Anticipate

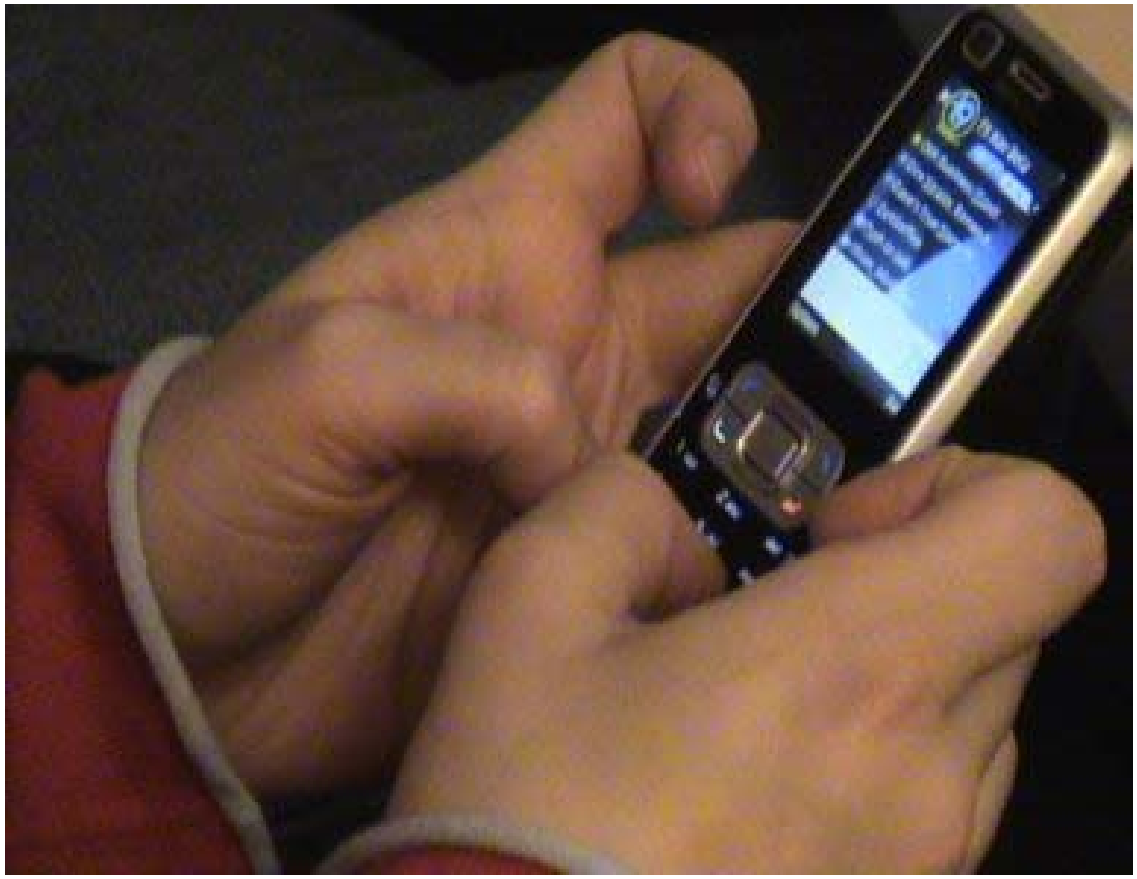
- Rapid-entry soft keyboard
- Measure and match inputs against linguistic data
  - Likelihood of letters near each tap location
  - Likelihood of word being typed
  - Regional and linguistic spelling correction
- Select alternate matches, word completions, etc. from word list



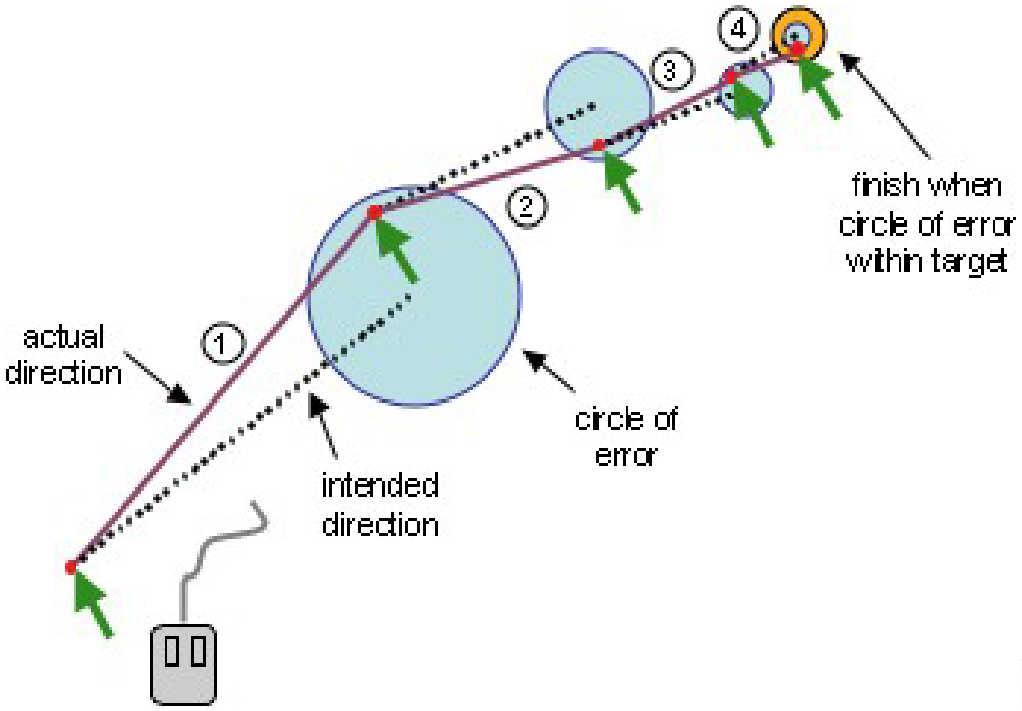
Probabilities based on distance from the tap



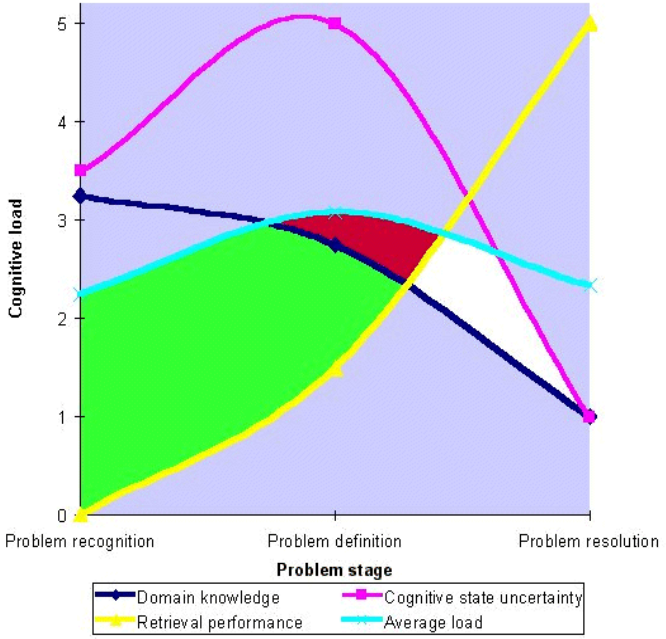
Understand



Usability is a Science



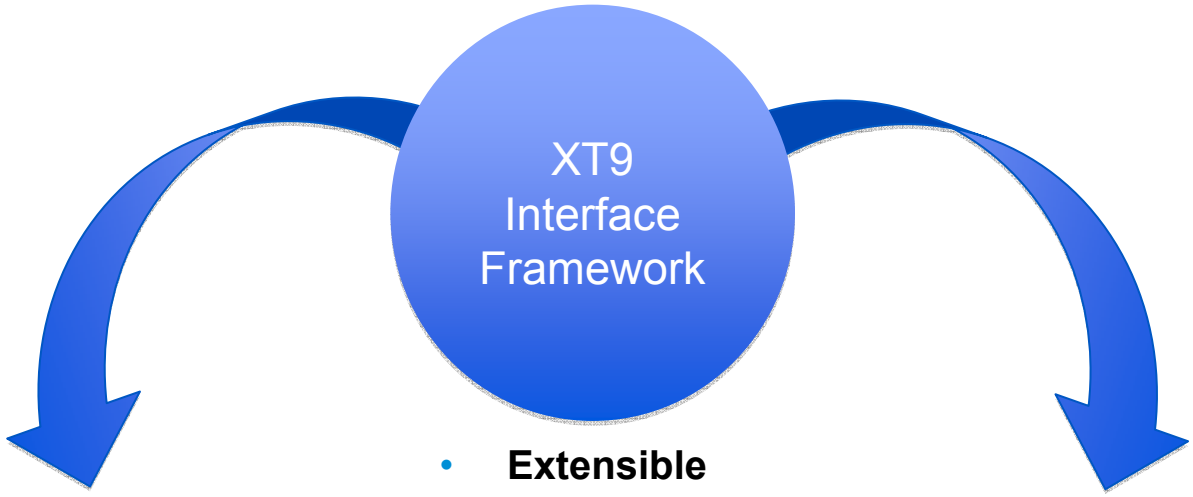
- Usability testing can be objective and quantifiable as well as subjective



- Described by scientific principles like Fitt's Law and Cognitive Loading

How Nuance can Help

The XT9 Interface Framework



- **Extensible**
- **Agile**
- **Innovative**

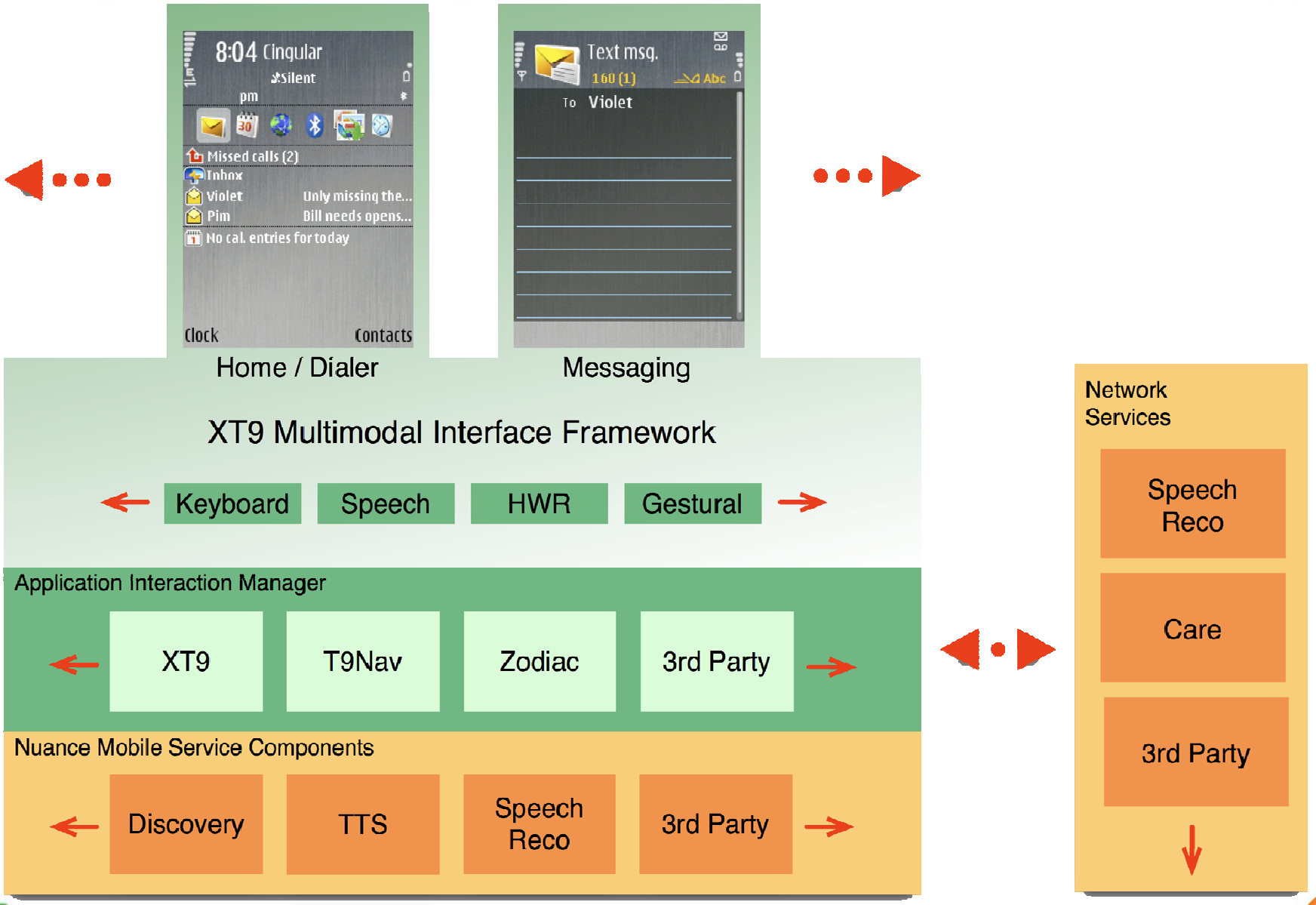
For the OEM

- **Reduced time to market**
- **Streamlined integration process**
- **Reduced product footprint**

For for the Customer

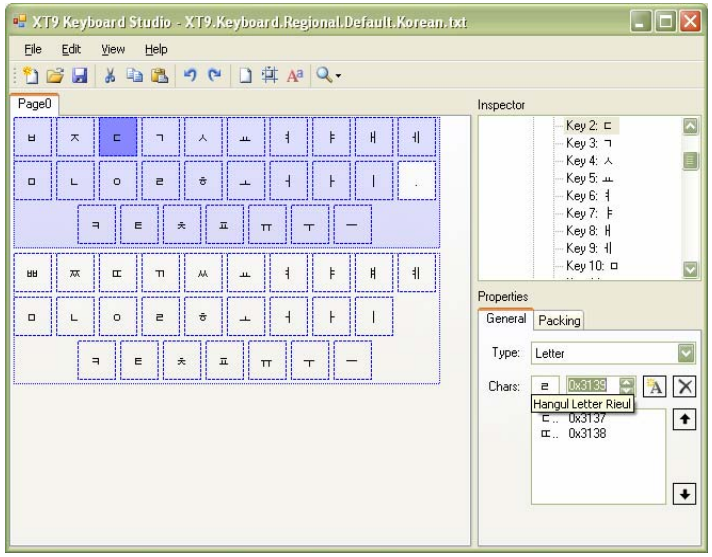
- **Integrated user experience**
- **A whole that is more than the sum of its parts**
- **Multimodal input**

The XT9 Interface Framework



Provide the Tools for Success

Improved Cooperation at the Engineering Level



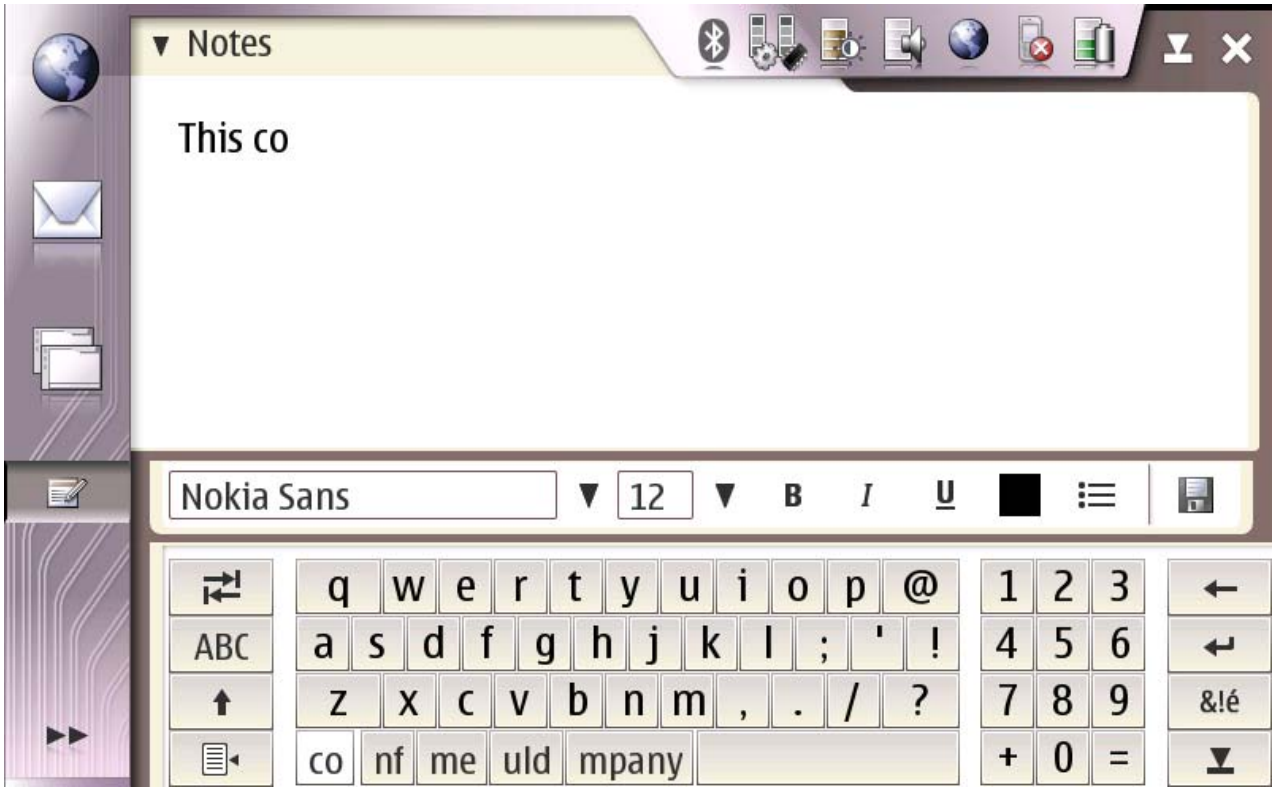
- ✓ **Toolchains**
  - Common toolchains optimized for integration into your build cycle
- ✓ **New Tools**
  - Additional tools to lower integration workload
- ✓ **Usability Teamwork**
  - Additional participation to deliver products more closely aligned with your usability vision
- ✓ **“Campuses” and “Tiger Teams”**
  - Quicker product integration cycles

An Example

XT9 Edition

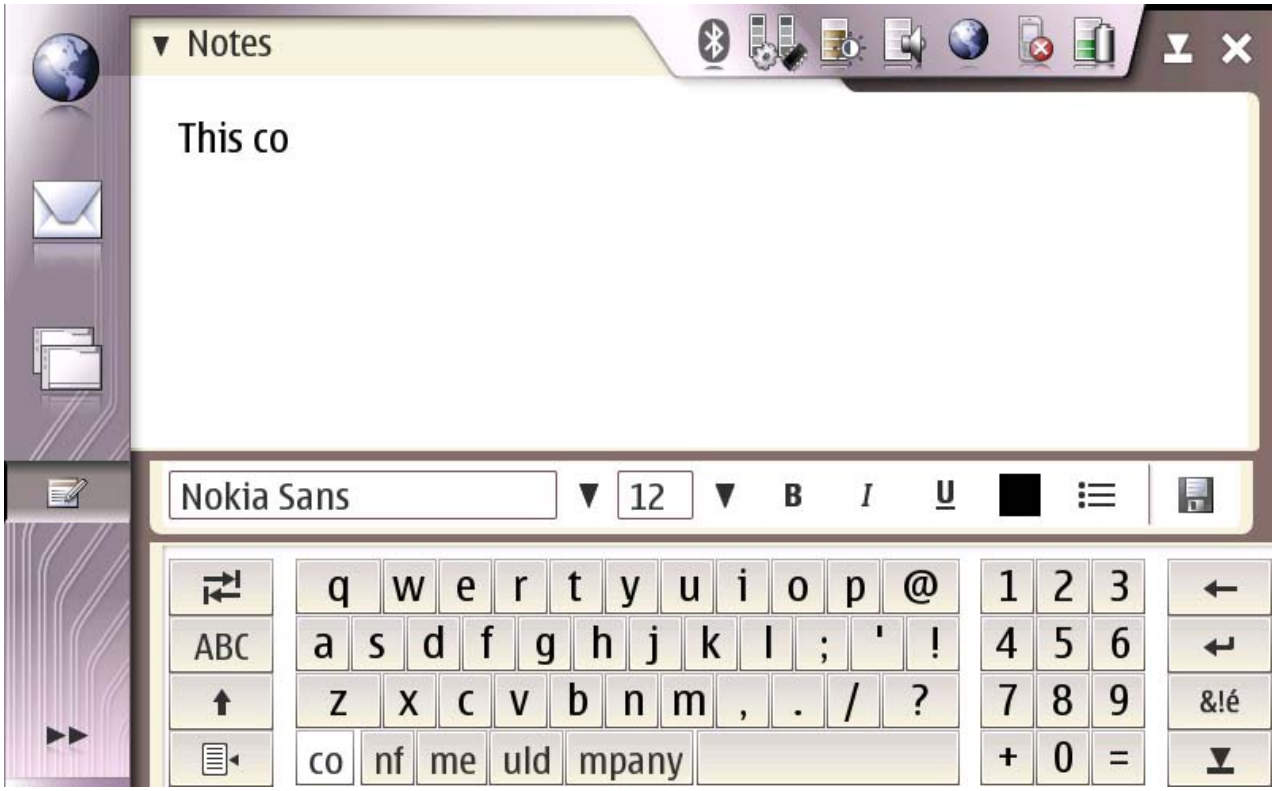
Our Makeover Subject

Out of the Box



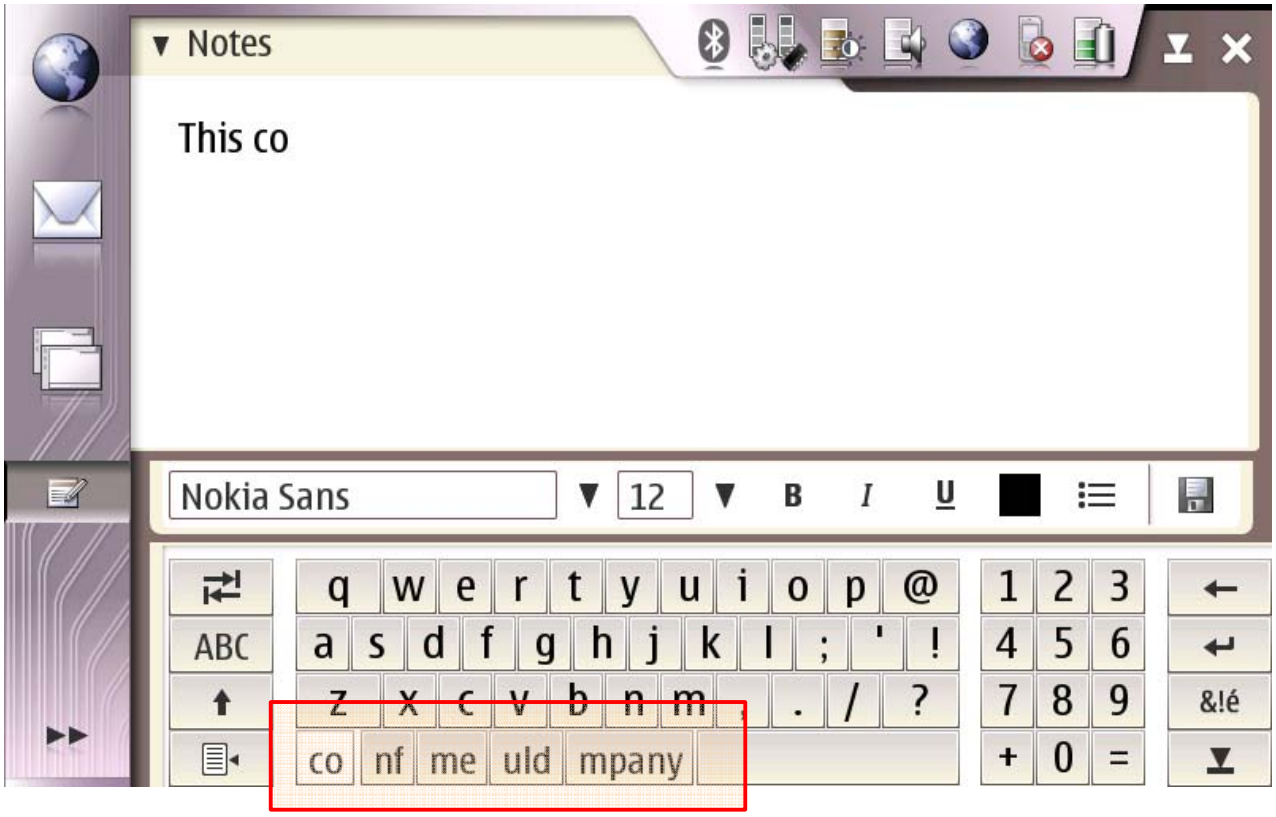
- **Virtual keyboard and handwriting recognition**

Out of the Box



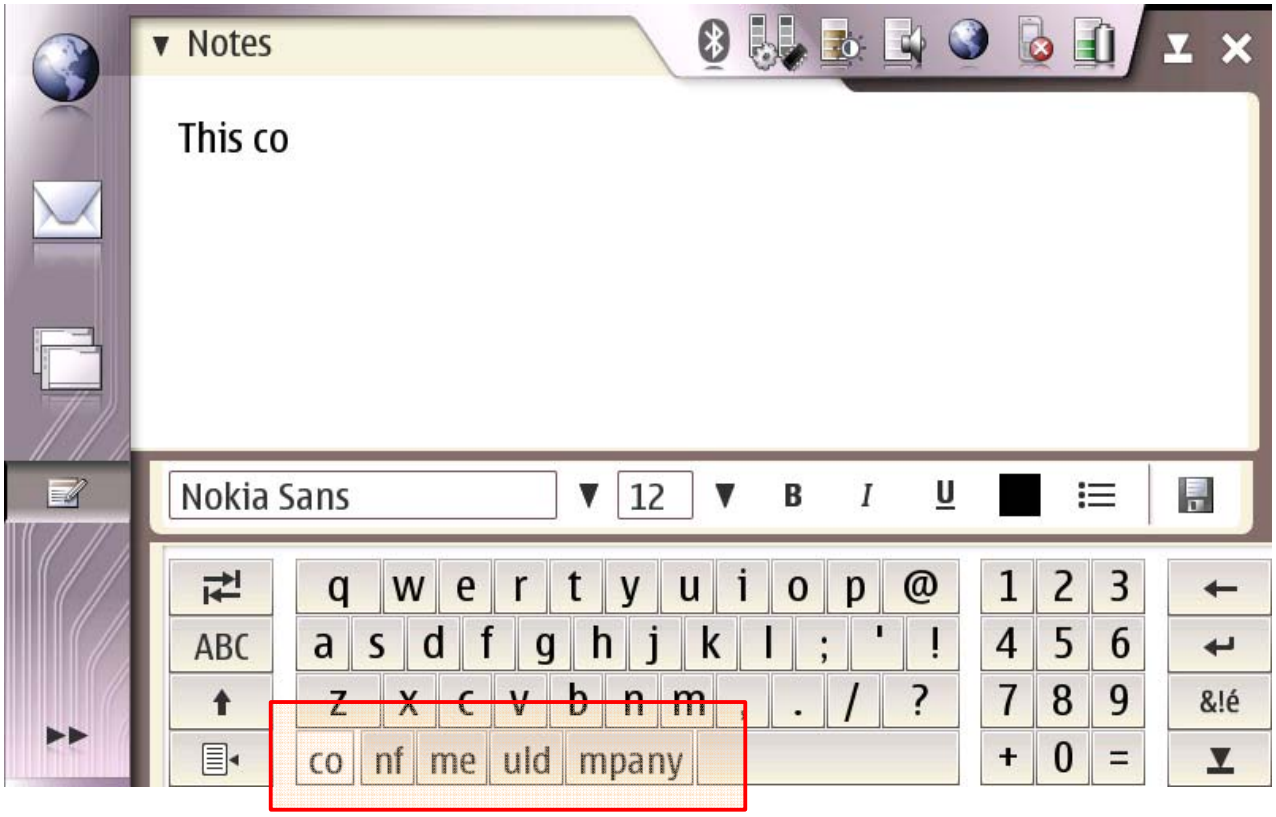
- **Bigger is not always better**
- **A smaller keyboard enhanced by XT9 error correction would reduce excessive pen movement and increase typing speed**

Out of the Box



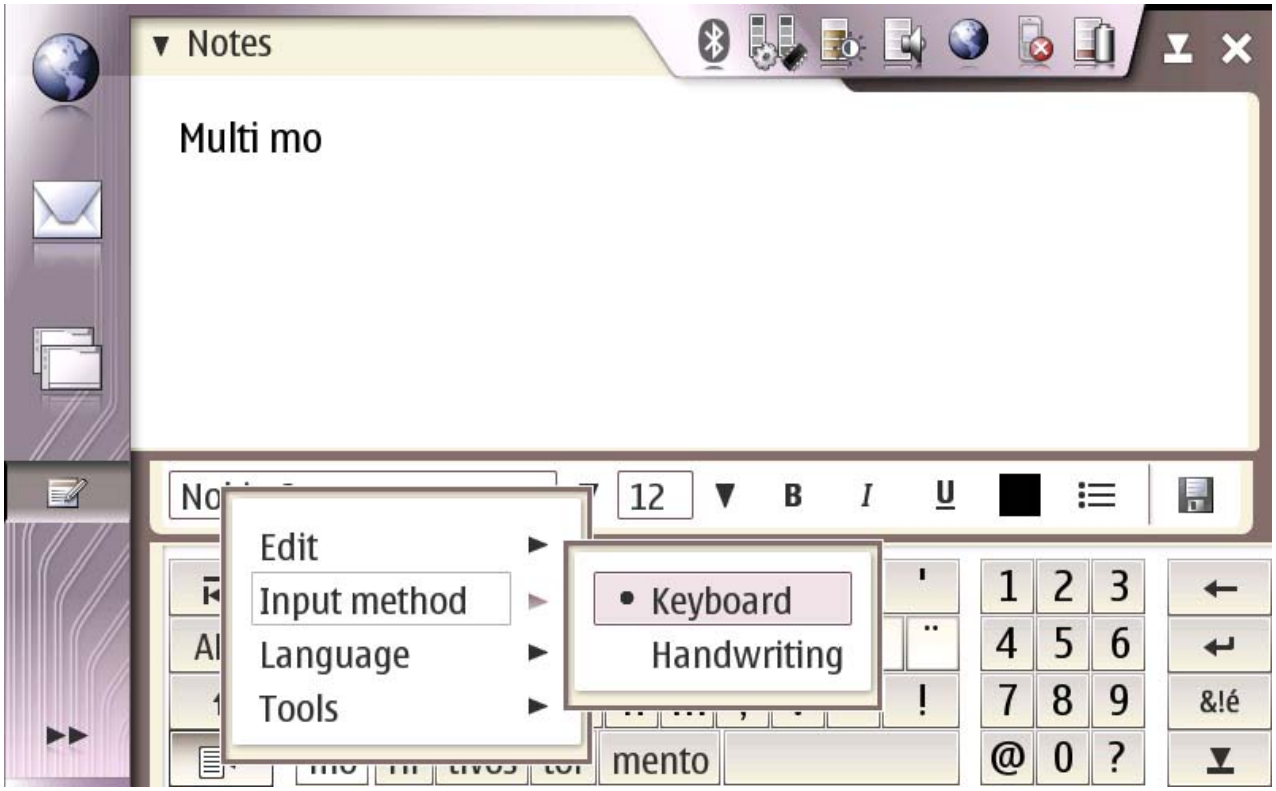
- **Completion options shown as fragments**
- **Showing complete word options would reduce cognitive load**

Out of the Box



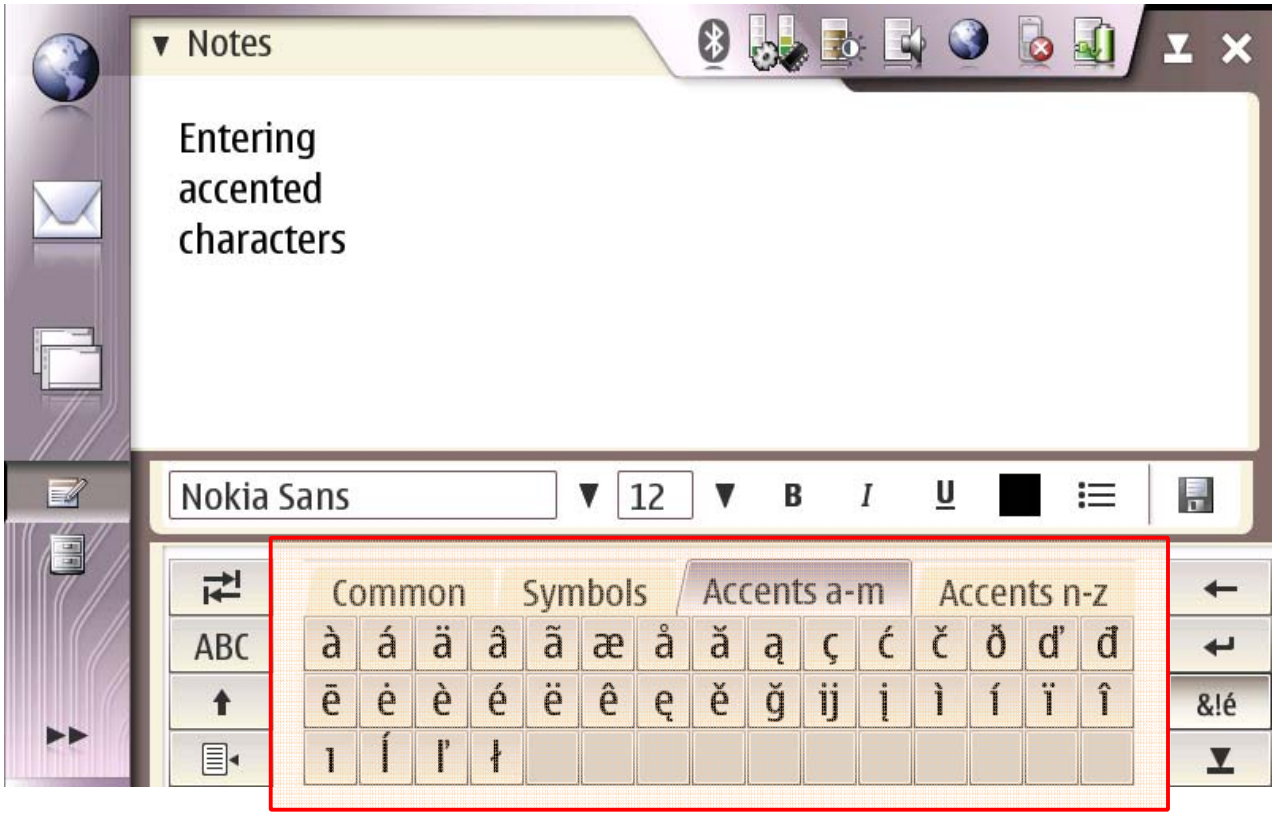
- **Showing completion options as part of space bar causes the space bar to change size – only "safe" place to hit it is in lower right**
- **Completion choices obscured by pen/hand when typing**

Out of the Box



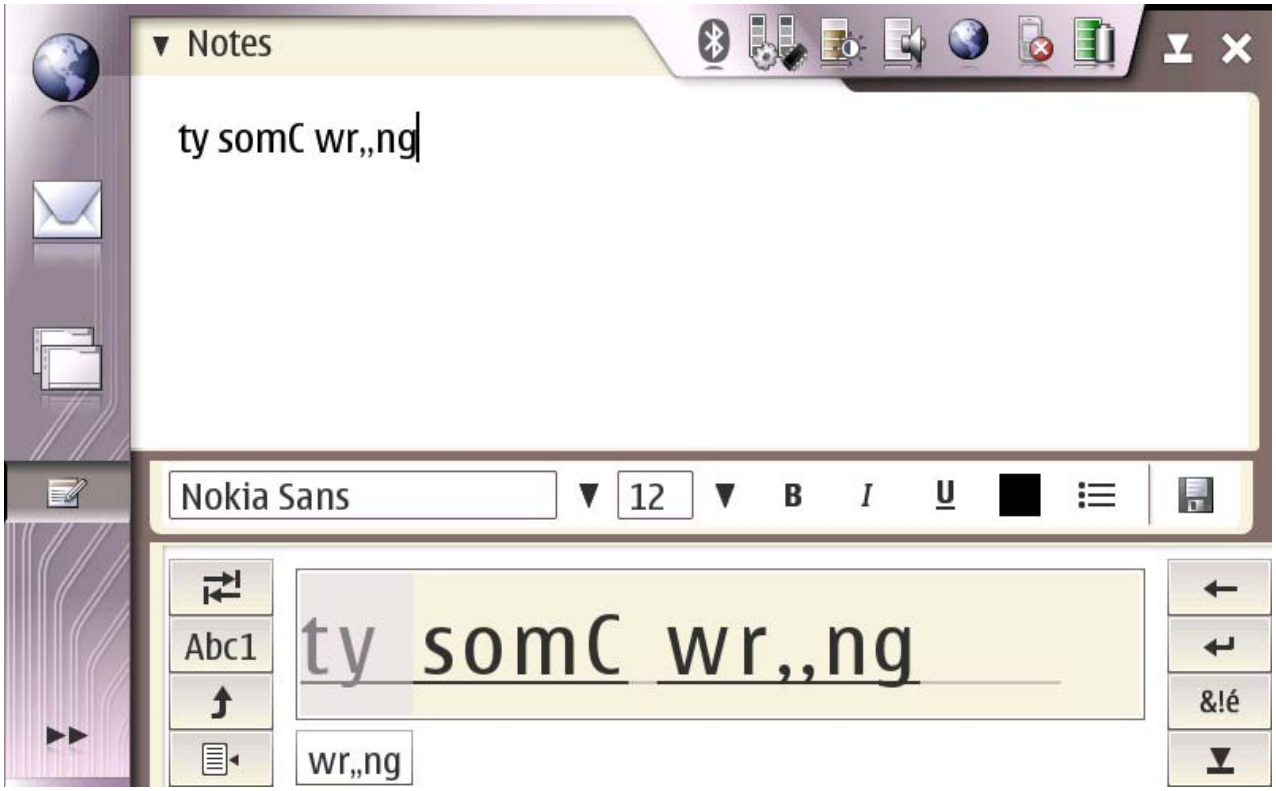
- **Input mode change (keyboard <-> HWR) requires three pen taps**

Out of the Box



- **Entry of special accented characters requires multiple taps**

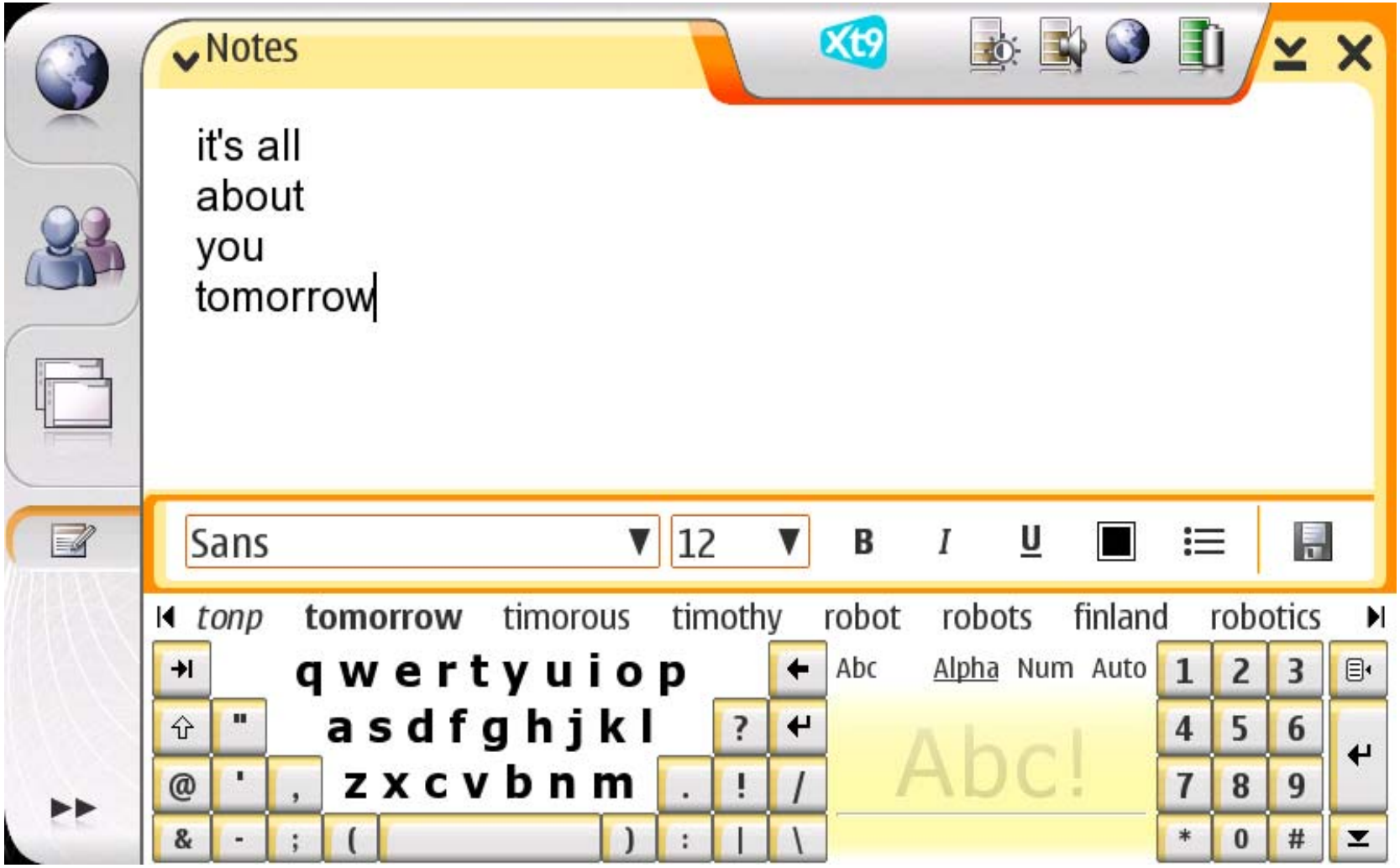
Out of the Box



- **Accuracy of HWR could be substantially improved**

An the result is…

The Makeover



Q&A