Thumbs up for clever texting

What do Arabic, Hindi, Finnish, Russian and Swahili have in common? Just that if you try to send a text message from your mobile phone in any of those languages you are likely to end up with sore thumbs. You need to tap keys repeatedly in order to find the right letter. The complex languages of Asia and many other regions have large numbers of characters. The many key-taps that are needed make the texting option on mobile phones practically unusable in these languages.

The process is so cumbersome and time-consuming that in India, for example, three out of five owners of mobile phones have never sent a text using the short message service (SMS). Even the Latin script languages of the world that use accents or diacritics, such as French or Spanish, are poorly supported.

One way of getting round this problem would be for phone manufacturers to produce customized keypads for each language. But that does not make economic sense because it would tie devices to speakers of a particular language. Around four out of five mobile phone subscribers throughout the world today are unable to type on their mobile phones or do so only with great difficulty. The good news is that help is at hand.

Clever texting has arrived!

Clever texting is a new technology that makes it possible to type easily in any script on existing, basic mobile phones. There is no need for a different keypad. This technology offers a means of typing extremely fast, pressing the keys just once for each character on aver-

age, even for the complex scripts of Asia. The texting method is ergonomic, and simple to learn and use.

The technology has been developed for many languages and is already running on phones in Arabic, Hebrew, the major languages of India (including Bengali, Gujarati, Hindi, Kannada, Malayalam, Punjabi, Tamil and Telugu), Korean and Russian, as well as the Latin scripts of English, Finnish, French, Portuguese, Spanish and Swahili. Work is in progress to add Japanese and Mandarin. Clever texting can support all of these languages on the same phone. It works in the same user-friendly way both on a keypad and on a touchscreen.

How does it work?

Clever texting is an intelligent and dynamic virtual keypad, which appears on the screen of the mobile phone. It offers a limited number of characters in the chosen language, together with a keypad number for each character. The clever part is that the required characters are predicted with great accuracy, based on work done on corpora linguistics in the language concerned.

The user uses the numeric keypad to choose the characters to enter. Then the system makes a fresh prediction and displays only the limited number of characters that the user is likely to want to enter next. And so on. If the required character is not displayed — a rare occurrence — the user chooses "Next List" for the next set of predictions. This predictive capacity is based on pre-estimated statistical probabilities of character combinations that relate well to the phonemic nature of each language.

Because clever texting predicts characters on the basis of linguistics rather than dictionaries, it works well for non-dictionary words, such as names of people and places. "Every language has its own phonetic patterns, which are maintained through its words within or outside the dictionary," says Abhijit Bhattacharjee, Founder and Chief Executive Officer of Luna Ergonomics, an Indian start-up company and a Sector Member of ITU. Luna Ergonomics are the inventors of this new technology. Mr Bhattacharjee cites the example of his own name, which has the phoneme "bh" occurring twice, a common occurrence in all Indian languages but completely absent in English.

The technology can be implemented as an app on a smart device or embedded into the hardware of a low-cost basic phone or even provided in a SIM card. The technology has already been developed for Java, Android, iPhone, Windows and other platforms.

A demonstration of the English and the Arabic product running on an iPhone touchscreen is quite amazing — characters keep coming up on the very same key or a neighbouring key. This ergonomically desirable facility offers a remarkable improvement over users' current experience with hunt and peck typing of tiny letters on the congested virtual keypad of a touchscreen.

Luna Ergonomics has done the corpora linguistic research for 22 major languages from diverse linguistic families. The clever texting strategy works equally well for each of them. This indicates that clever texting could support the hundreds of micro-languages of the world, which today are endangered. The speakers of these micro-languages — sometimes numbering less than a hundred thousand, perhaps living on an island or in a

remote region — currently have no hope of digital inclusion. "The methodology of corpora linguistics is productive and cost-effective because it is not a rule-based approach and does not require a permanent role of linguists. The process from corpora collection to product development is now completely automated. The algorithm and data are isolated from each other, freeing the process from errors and bugs and offering the possibility of a pluggable language support on a device", adds Bhattacharjee.

All languages on an equal footing?

The technology has attracted wide-ranging interest from across the industry. The award-wining Panini Keypad — the suite of products for Indian languages — offers immediate conversion between any one of those languages into any other.

CleverTextingTM — the trade name of the process developed by Luna Ergonomics — has been described as a paradigm shift in how languages could be supported on digital devices in the future. It is applicable not only to mobile phones, but also to all other digital devices, such as the tablet, Internet protocol television (IPTV), automated teller machines and gaming consoles. The technology was showcased at the Oracle Pavilion, during the Mobile World Congress held in Barcelona in February 2011, as a key Java offering for mobile phones in the BRIC countries: Brazil, the Russian Federation, India and China. During the World Telecommunication Development Conference in Hyderabad, India, in May-June 2010, ITU Secretary-General Dr Hamadoun I. Touré congratulated Luna Ergonomics on developing the technology.

A phone in every hand in the developing countries is an opportunity for digital inclusion. Although mobile phones were once primarily used to make voice calls, today they can do much more. Some allow users to send text messages, store address details, access the Internet and send e-mails. Each of these actions requires typing on the phone. Clever texting could make these services available to speakers of all the world's tongues.