

Development of ICT-based Assistive Technology for Minority Languages

Mamoru Iwabuchi

Kenryu Nakamura

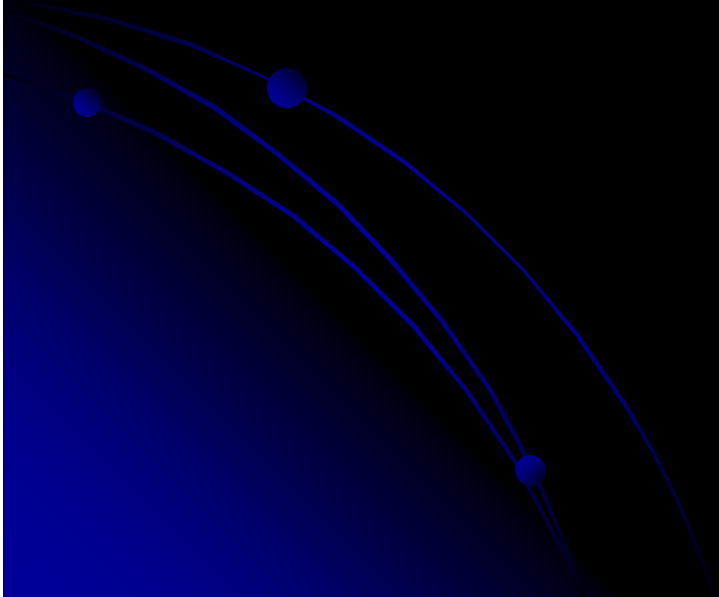
Paul Blenkhorn

RCAST, University of Tokyo, Japan

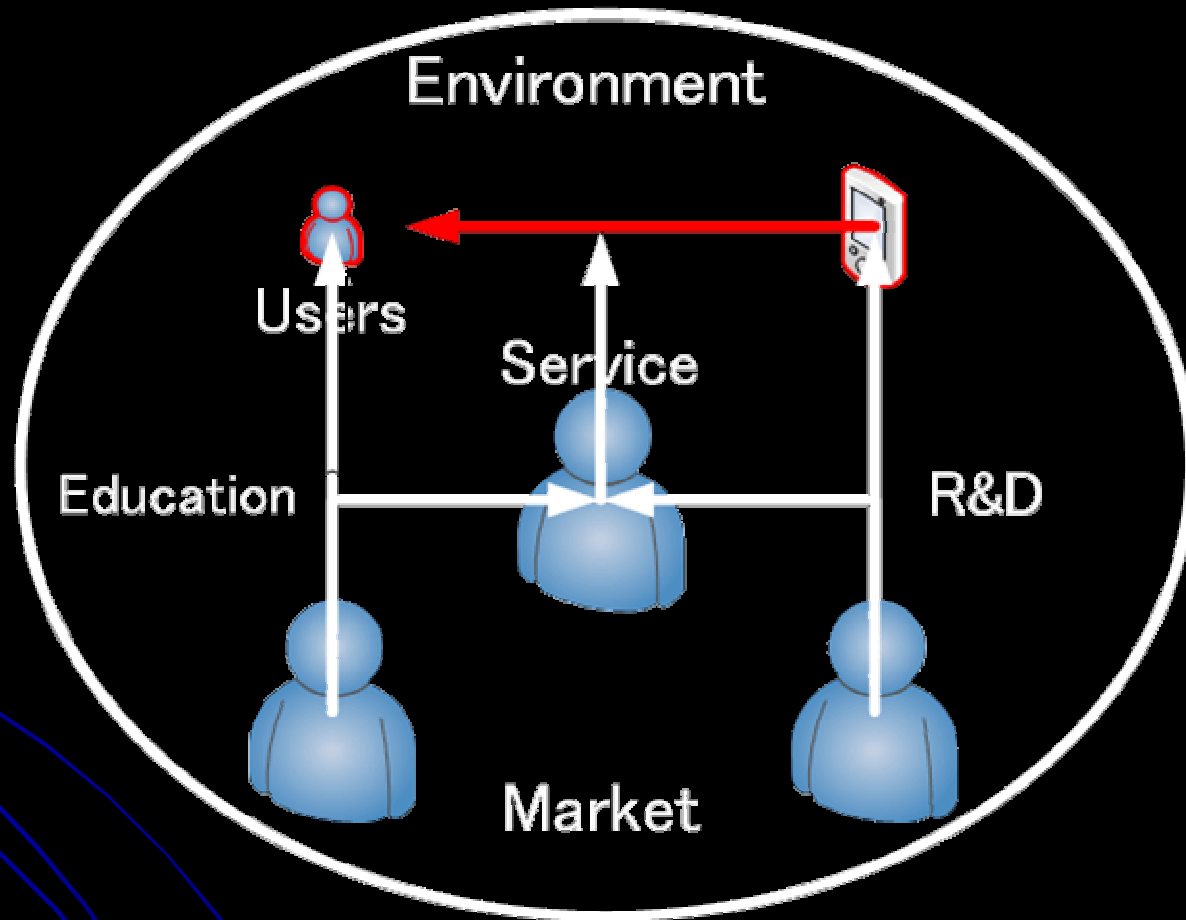


Main Theme

- Promoting the use of ICT-based assistive technology (AT) including in countries where minority languages are used



Present situation of AT



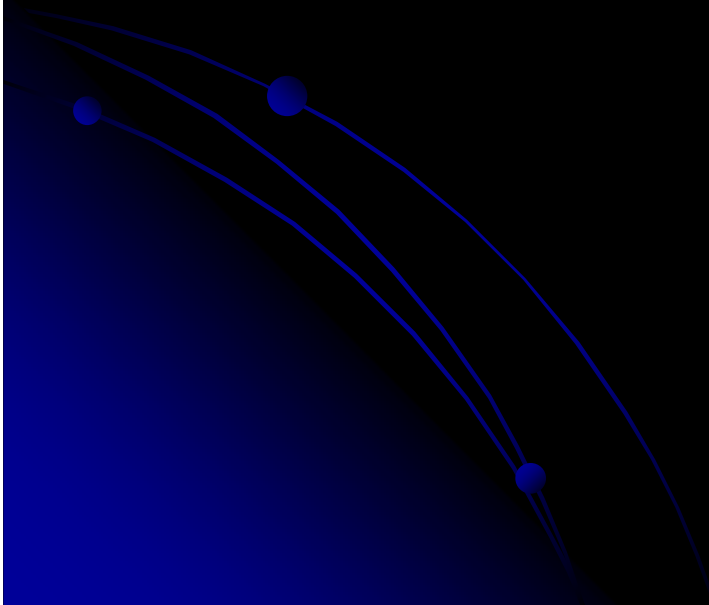
- Small number of users
- Limited range of products

High cost
→ Challenging situation
for industries

Present situation of AT

Many countries, particularly developing countries, have not yet reached widespread use of AT

- Financial difficulty
- Language barrier (OS, text-to-speech)
- Low support for people with disabilities



Our projects

Use of *existing* and generally available *mainstream* technology as a form of AT

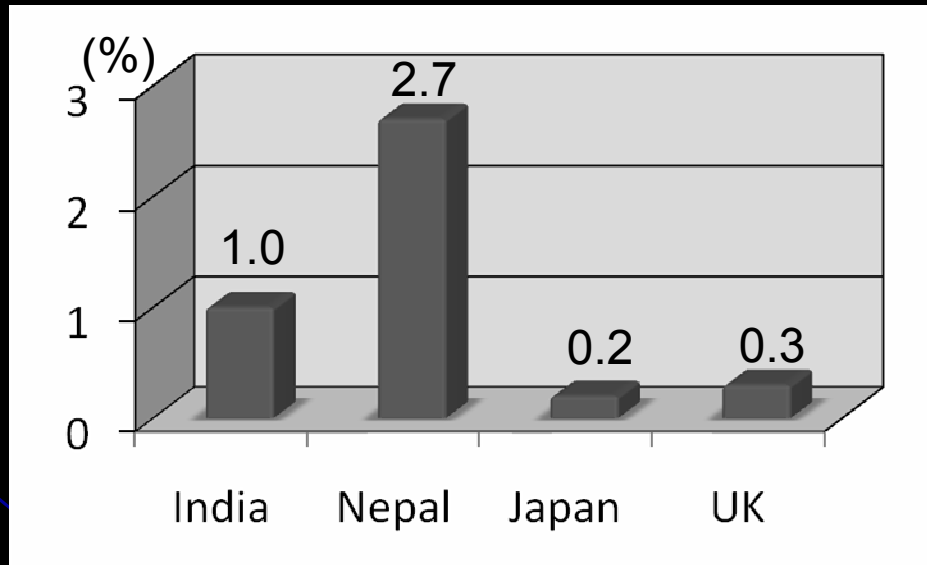
1. **Development** of AT, e.g., screen readers, for minority languages

2. **Teaching** people about AT

- Promotion of the use of accessibility features of PC
- Use of mobile phones for PWD

Development of screen readers for minority languages

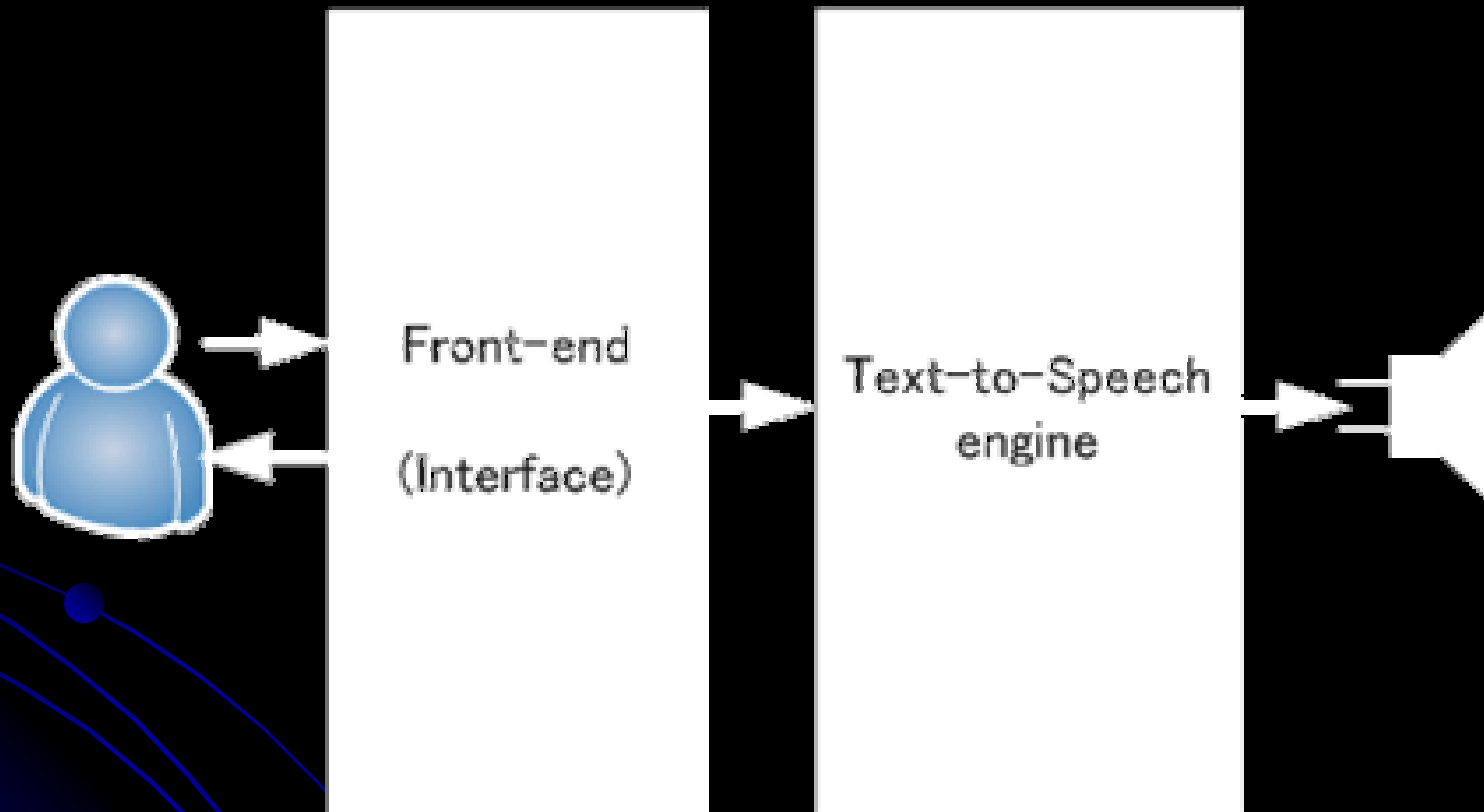
- Development cost in general:
from US\$100,000, or over US\$1 million



Ratio of people with visual impairment
in India, Nepal, Japan, and the UK (%)

**Screen reader is particularly Important
for developing countries**

Basic structure of screen readers



Front-end of screen readers

- Sends on-screen text to the text-to-speech engine
- Includes phonetic adjustment
 - e.g., 2: do:→dui
 - 6: che→cha
- Requires additional feature according to each language
- Can handle Unicode in recent years
 - Applicable to many languages in the world
- Can be free for basic functions

Text-to-speech engine

It is desirable to provide TTS engines as a basic function of OS.

- This is true for English environment.
- It promotes the use of speech/reading software for PWD.

But TTS engines do not exist for minority languages yet.

- Existing TTS engines also has a barrier for end users.
The engines are bundled in other application packages.
 - License problem
 - High cost
 - Non-standard interface (non-SAPI)

Development of screen readers for minority languages

- Collaborative research with UK
 - Hindi text-to-speech
 - Thunder (free screen reader for Windows)
 - Phonetic adjustment using regular expressions
 - Collaboration with a graduate Nepali student who is blind

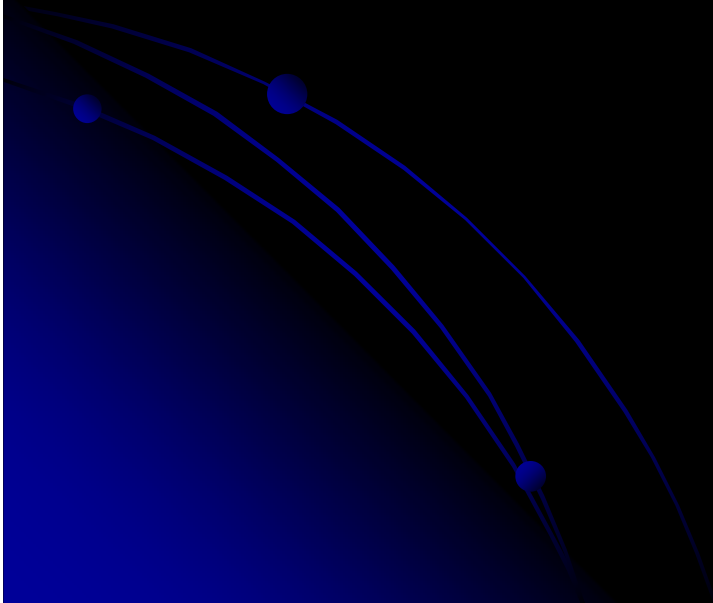


- Infrastructure procurement

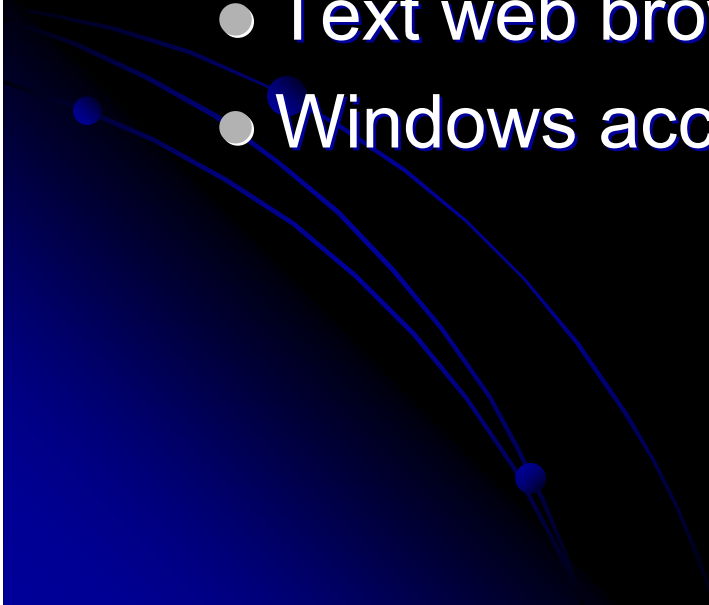
- PC reuse

→ A model case of developing AT
for minority languages

Demonstration of Nepali screen reader



Joint workshop

- Held with the Nepal Association for the Welfare of the Blind (*NAWB*) in July 2010
 - Contents
 - Nepeli screen reader for Windows
 - Text web browser (*Webble*)
 - Windows accessibility
- 

Toward promising practices

- Development of assistive technology using existing technology
- Teaching people about AT
- Collaboration network

→ a good scheme to reach
a widespread use of AT

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Contact address:

mamoru@bfp.rcast.u-tokyo.ac.jp

