

Kiswahili/English Voice Information System for Banana Growers

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Outside Echo, UK

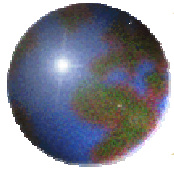
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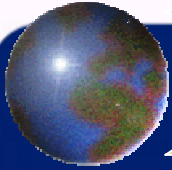


Local Language Speech Technology Initiative

Voice Services accessible by phone in ***local languages*** can provide information for those with

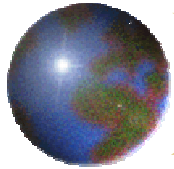
- No access to computers / internet
- No IT training
- No world language (esp. English)
- Poor literacy



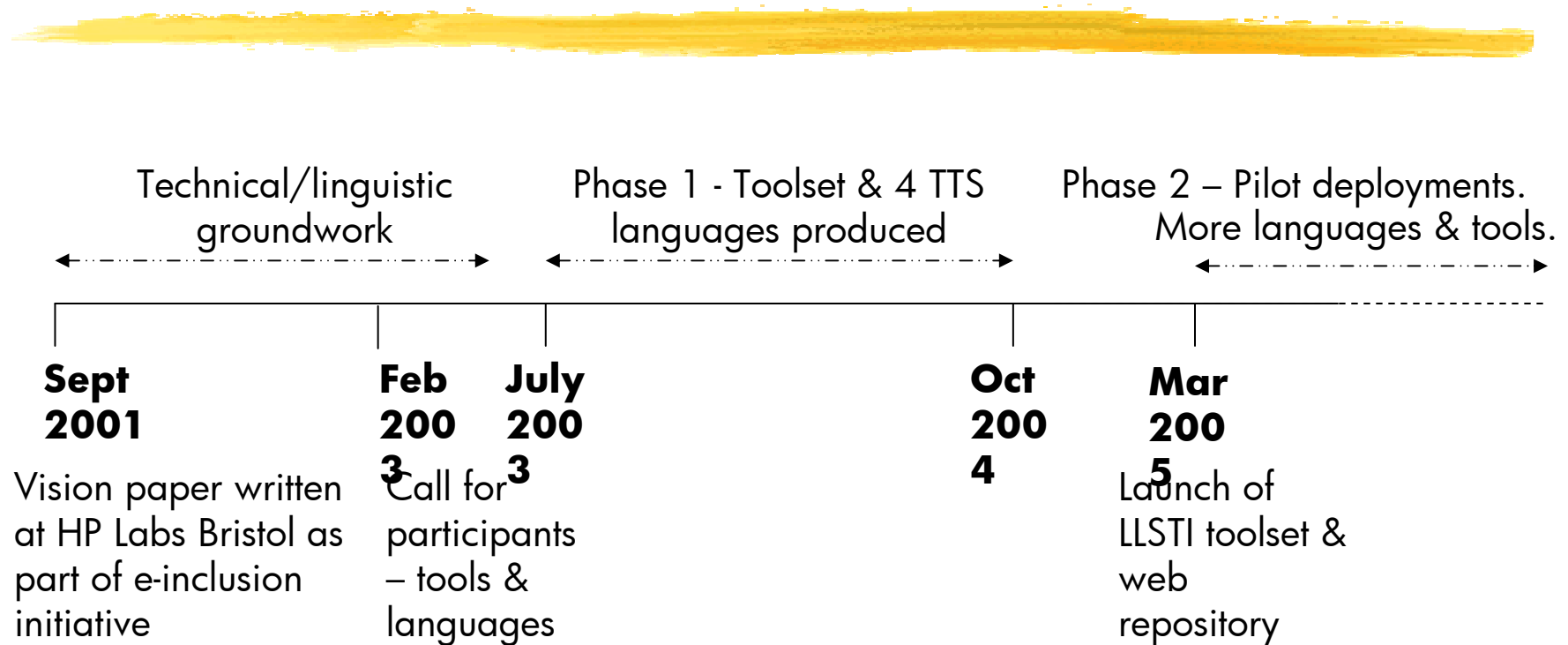


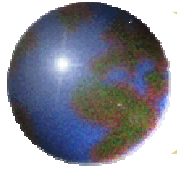
LLSTI partners





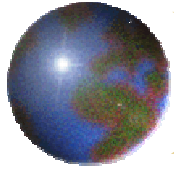
LLSTI Timeline





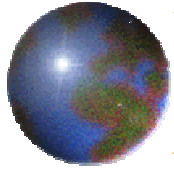
Purpose of pilot

- Demonstrate potential of voice by creating real voice service
- Farming related, since this provides livelihood to 75% of the Kenyan population
- Real and useful information



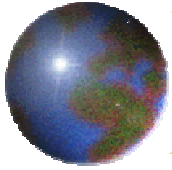
NALEP Voice Information Service

- NALEP focussed on supporting Agriculture
- Agricultural Extension Officers have limited reach
- Service designed as complement to extension workers
- Reference system & Educational Tool
- Why bananas?
 - Grown in many areas
 - Important crop in terms of income and food security perspective



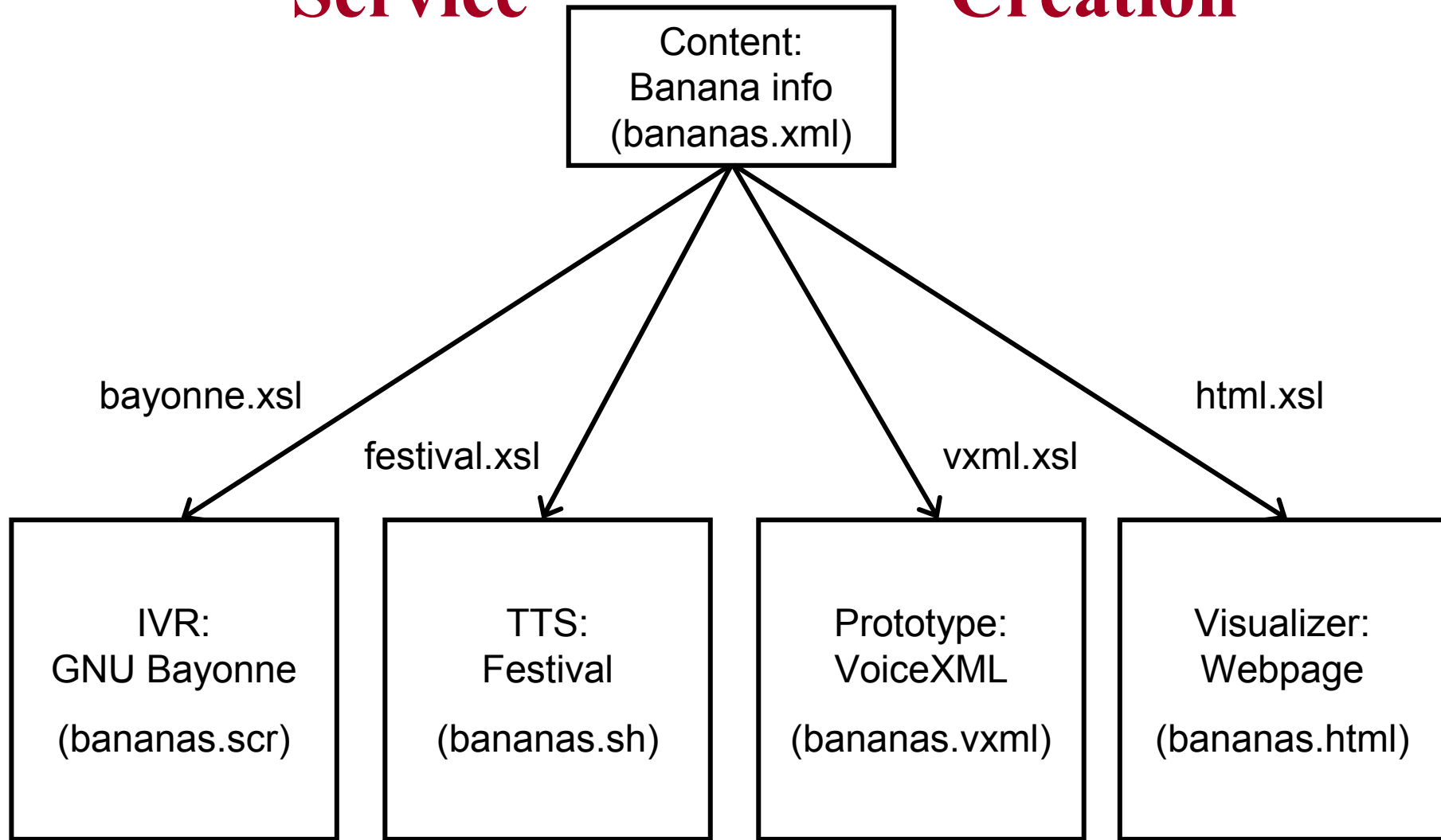
Sources of Information

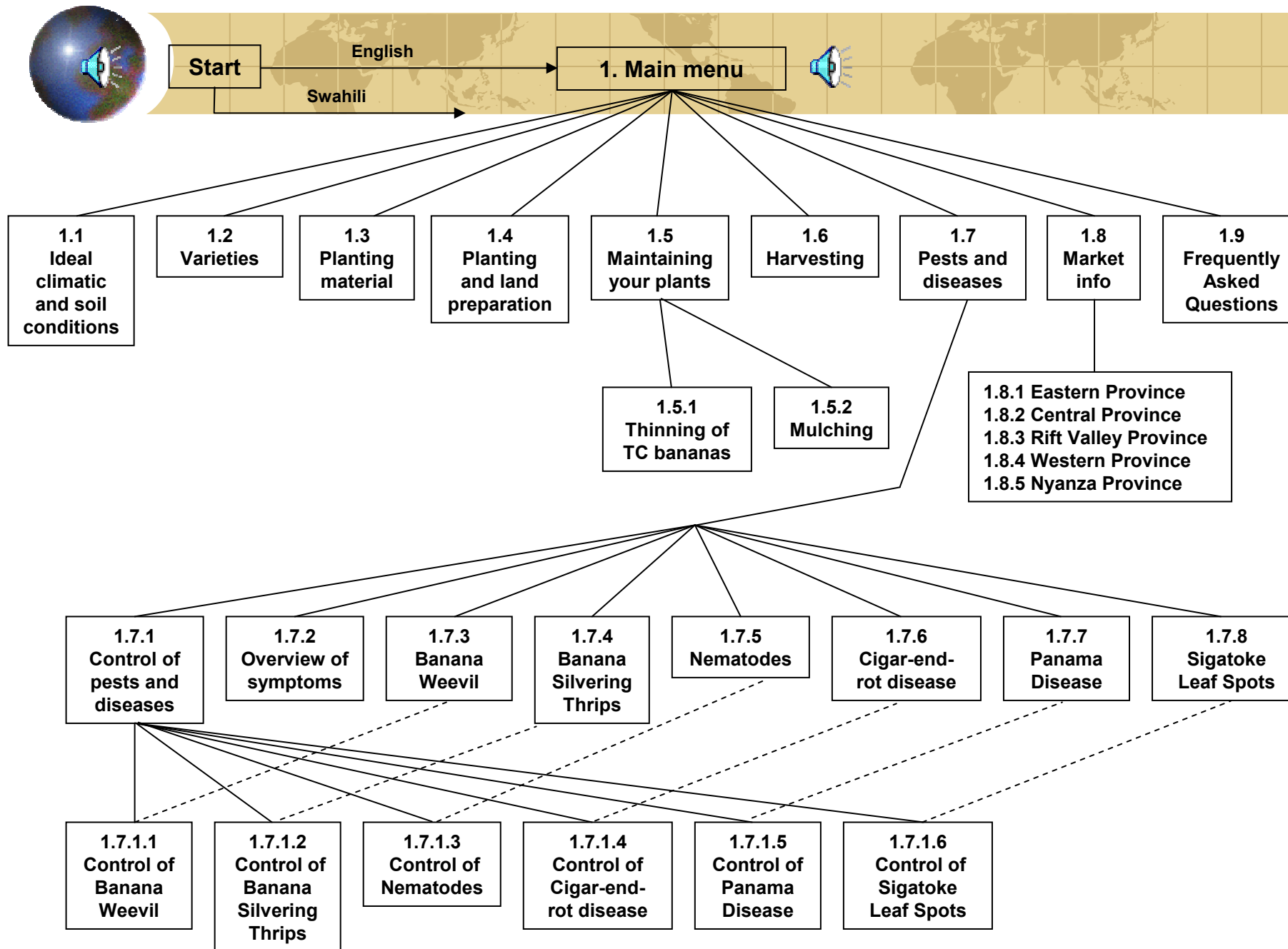
- “Fruits and Vegetables Technical Handbook” from The Ministry of Agriculture and Rural Development
- David O. Nyantika, NALEP
- Prof. Esther M. Kahangi, JKUAT
- Kenya Agricultural Commodity Exchange, KACE

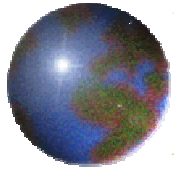


Service

Creation







Usability testing

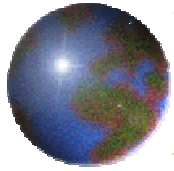
✪ Testing with 10 farmers in Kibirigwi, Kirinyaga

- Phone usage – 3 daily, 5 weekly, 2 more rarely
- PC usage – 1 often, 1 rarely, 8 never
- 7 men, 3 women
- 6 aged 40+, 3 aged 30-40
- 1 illiterate


✪ Each participant was given 3 sheets containing the following:

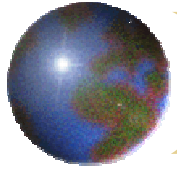
- a consent form giving their personal details
- a task sheet with questions to answer from using the system
- a user satisfaction questionnaire to give their impressions of the system.





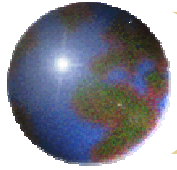
Test Results

- Easy to use : 9 / 10
- Could easily tell which option to select from menu : 8 / 10
- Speech very clear to understand:
 - Kiswahili: 3 / 3
 - English: 3 / 7
 - Kenyan English “clearer than Kiswahili” – grammar issue 
- Prefer speaker to be of the same gender as them: 7 / 10
- Would use this system instead of other resources: 10 / 10
- BUT
- 36% of questions answered *incorrectly*
 - More Design Work Needed!



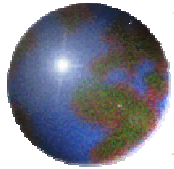
Other findings

- All participants stated that the system would be useful for banana farmers.
- They also expressed a wish to extend the system to other crops, and especially – to livestock.
- 9/10 participants stated that if they had an issue about growing bananas, they would usually seek help from Agricultural Extension Officers
- 1/10 stated that they usually sought help from other farmers.
- They commented that there are not enough officers available.



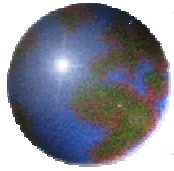
Reactions from NALEP

- The system would fill an information gap and increase the interest for extension services
- The system was well received by 30 extension officers
- British English accent not clear – need to use Kenyan English TTS
- Difficult Kiswahili grammar – need to make translation informal



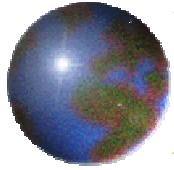
Extensions 1

- Different crops with separate phone numbers
- Simple update of information
 - Website where anyone can update or enter new information
 - immediately becomes available in the telephone system
 - Updating at district/provincial level by extension workers
 - Farmers can also add information or post questions to the system
- Up-to-date info
 - Commodity prices and other market information
 - Weather
 - Urgent announcements
 - Disease outbreaks, e.g. bird flu



Extensions 2

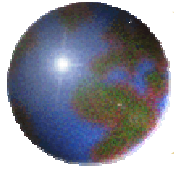
- Local information
 - Local market information
 - Suitable crops to grow in a specific area
 - Contact information to the local agricultural extension officers
- Personal information
 - Enter acres of land -> get calculations of possible revenue, required investments etc.
 - Enter time of planting -> get instructions suitable for the stage your plants are in
 - Caller-id and pin-code for ID so info doesn't have to be re-entered.
- Option in the voice system to get key information sent by SMS or e-mail



Checklist for successful ICT projects

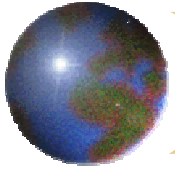
- ✓ Scalable
- ✓ Sensible
- ✓ Simple ICT components
- ✓ Involvement of local community and professional people
- ? Self-sustaining
- ? Affordable

Greenberg, A. (2005). *ICTs for Poverty Alleviation: Basic Tool and Enabling Sector*. Sida ICT for Development Secretariat, Stockholm, Sweden. Online version: <<http://www.sida.se/publications>>.



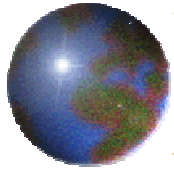
Drawback: Affordable?

- Premium rate service:
 - Normal calling rate + ~5 KSh
- Can take 2-5 minutes from beginning of the call to finishing listening to a section
 - Shortcuts feasible for repeat calls
- Cost of speech vs SMS
 - Even though time to read 160 characters is ~15 sec. which translates to half the cost of an SMS



Ways of cutting costs

- Information Desks can provide
 - landline phone where people can call themselves
 - multimodal off-line version of the service on a computer
- One call per Common Interest Group
- Convince mobile operators to make service very cheap off-peak (eg early morning hours)
- Get government and/or donors to subsidise calling rates
 - Nominal cost per minute OR
 - Flat rate per call so cost is known before calling



Conclusions

- Very positive reactions to a voice service
- Kiswahili and Kenyan English TTS need improvement
- Service needs very careful design
- Grammar used should not be too formal
- More compelling with local, personal information
- Affordability needs creative solutions

Full report available on publications page of LLSTI website
www.llsti.org