Implementing SpokenMedia for the Indian Institute for Human Settlements

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July 2010

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SpokenMedia

Case Study of Using SpokenMedia for IIHS

- **Goals**
  - Demonstrate value of transcripts + translations for IIHS
  - Test a process to produce transcripts and translations
- **Describe the process and our experiences**
  - Transcribe -> Edit -> Translate -> Present

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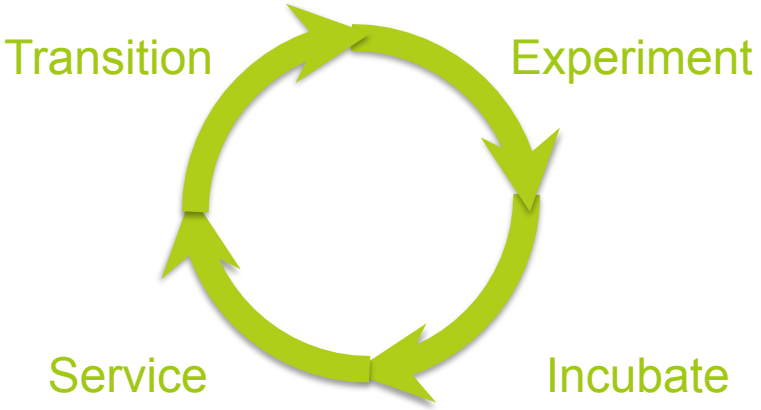
SpokenMedia

MIT Office for Educational Innovation and Technology

- **Dean for Undergraduate Education**
- **Support Innovation Cycle**
- **Novel uses of technology to support teaching and learning**
- **Academic computing without the LMS/VLE**



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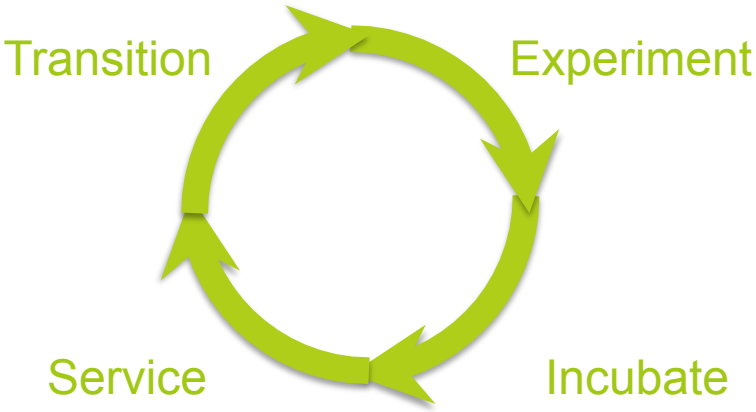
SpokenMedia Project



Service: OEIT Considering
- What would it do?
- Is it valuable?

SLS SPOKEN LANGUAGE SYSTEMS
MIT Computer Science and Artificial Intelligence Laboratory

Experiment: Spoken Lecture Project
- Speech recognition research
- Automatically transcribe video lectures
- Based on 20+ years of research
- Built prototype

Incubate: SpokenMedia Project
- Technology transfer from research lab
- Automatic lecture transcription
- Search
- Player
- Transcript Editor

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The Indian Institute for Human Settlements (IIHS) will… "create India's first independent National Innovation University focused on the challenges and opportunities of its urbanisation."

– Indian Institute for Human Settlements: Curriculum Framework Version 3.0 January 2010

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"The IIHS Website is our commitment to a different way of looking at things."

– Aromar Revi
5 January 2010

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"The Institution will fail or scale based on language."

– Aromar Revi
5 January 2010

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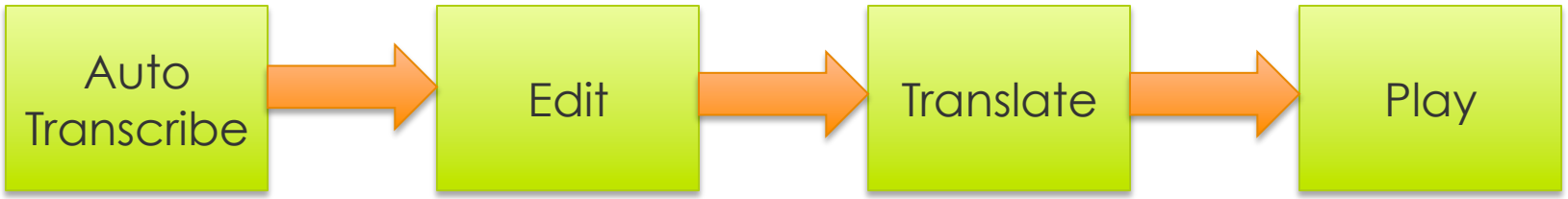
What did we do?



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iihs

INDIAN INSTITUTE FOR HUMAN SET

Challenges of Planning, Critical Challenges facing Cities of Global South, IIHS, and Challenges within the IIHS Curriculum Framework

Prof. Bish Sanyal

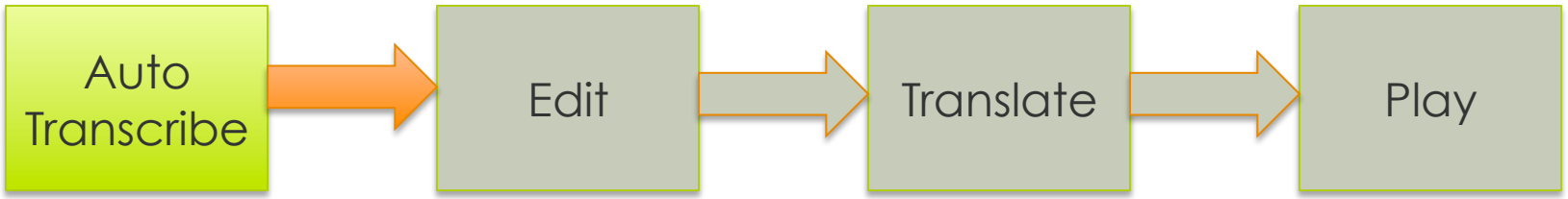
Search transcript

I think one central challenge of planning is legitimacy of government as a key institution that should be involved in bringing the change The legitimacy of the government is under attack in many different parts of the world so that it has to be reestablished as a major planning institution I think the second challenge for planning at least in the US or the west is that the market is

Audio English (US) Transcript English (US)

oeiT

How did we do it?



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How do we do it?
Spoken Lecture Research

James Glass
glass@mit.edu

- Speech recognition & automated transcription of lectures
  - Conversational, spontaneous, starts/stops
  - Different from broadcast news, other types of speech recognition
  - Specialized vocabularies
- Developed recognizer, browser

Supported with iCampus MIT/Microsoft Alliance funding

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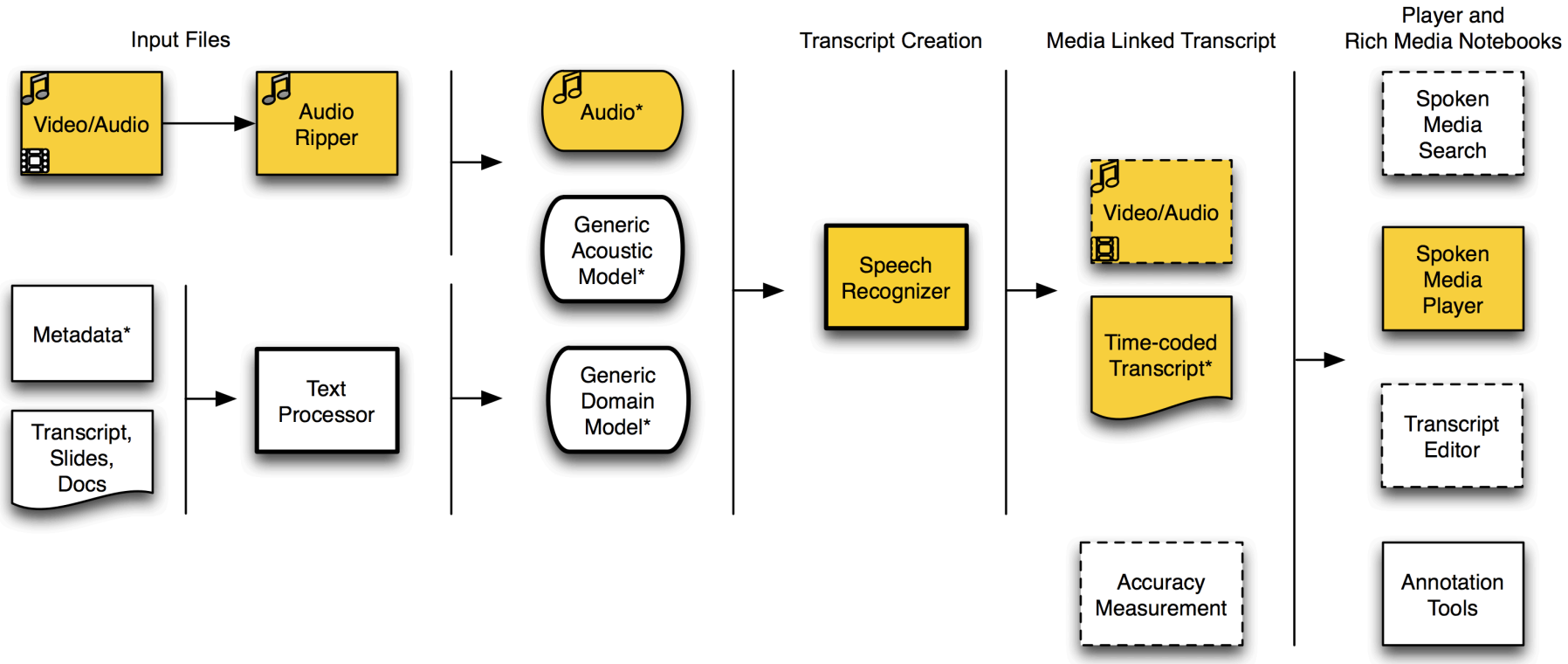
SpokenMedia Process



We used a portion of the SpokenMedia process for the demo

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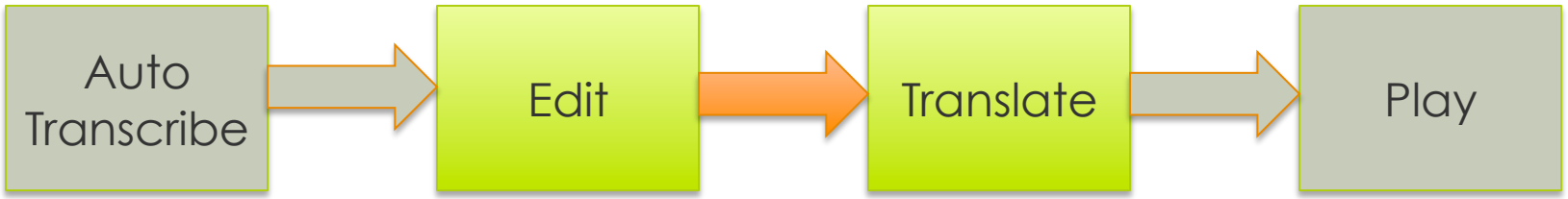
How did we do it?



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SpokenMedia

Edit & Translate: Accuracy

Automatic Transcription	Hand Transcription	Time Adjusted	Translated Hindi
I	I	I	मेरे खयाल से
think	think	think	
once	one	one	नयोजन की एक मुख्य चुनौती है
and	central		
so	challenge	central	
the	of		
challenger	planning	challenge of	
planning	is	planning	
nice	legitimacy	is	
legitimacy	of	legitimacy of	
of	government	government	सरकार की एक ऐसी मुख्य संस्थान के रूप में वैधता
government	as	as	

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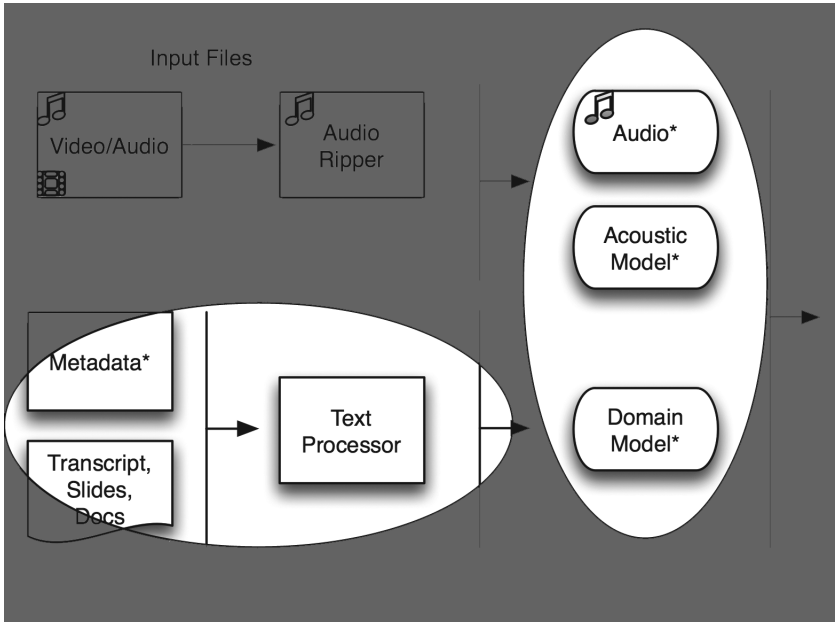
Automatic Speech Recognition Accuracy

- **Accuracy**
  - Domain Model and Speaker Model
  - Internal validity measure
  - Seed with transcript

Ongoing research by Jim Glass and his team @ MIT



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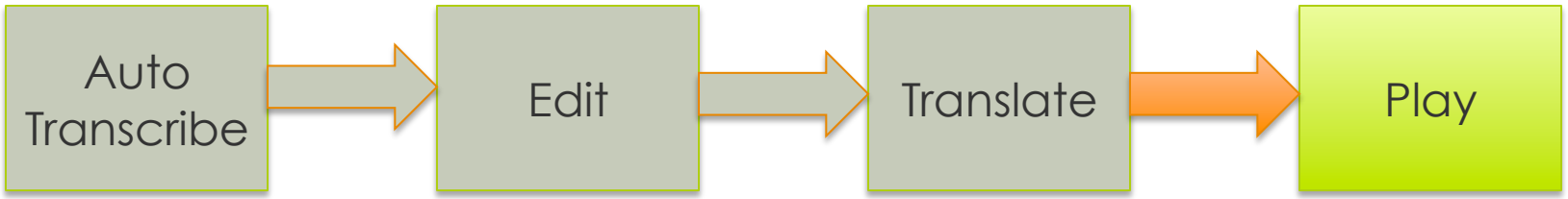
How did we do it?



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iihs

INDIAN INSTITUTE FOR HUMAN SET

Search within Transcript

Challenges of Planning, Critical Challenges facing Cities of Global South, IIHS, and Challenges within the IIHS Curriculum Framework

Prof. Bish Sanyal

Search transcript

Highlight text as spoken

I think one central challenge of planning is legitimacy of government as a key institution that should be involved in bringing the change The legitimacy of the government is under attack in many different parts of the world so that it has to be reestablished as a major planning institution I think the second challenge for planning at least in the US or the west is that the market is

Audio English (US) Transcript English (US)

Switch transcript to different language(s)

SpokenMedia (circa January)

- **Features**
  - Automated Lecture Transcription
    - Create a transcript from English lecture videos
  - SpokenMedia Player
    - “Bouncing Ball” (underline text) follow along
    - Search within a video
    - Multiple transcript language support

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SpokenMedia

Challenges

- **Accuracy!**
  - We've seen as high as 90% accuracy, but its not going to be 90% for everyone
  - Goal is to do this without special training, and be useful for any lecture video
  - Developing an editing tool to correct transcripts by hand
- **Applicability of speech recognition**
  - Indian context and speech require customization of underlying speaker models and speech recognizer

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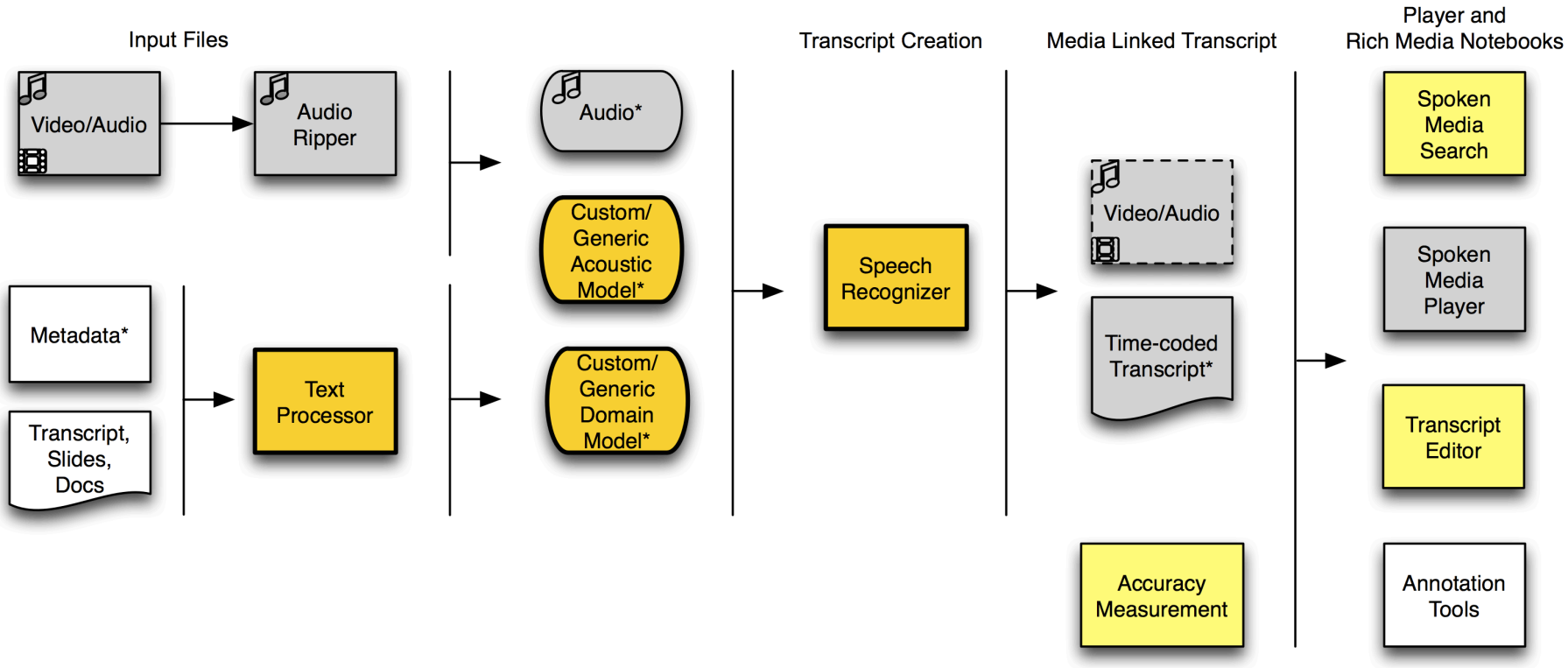
SpokenMedia (July 2010)



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Where are we heading?

- **Improved accuracy**
  - Automated accuracy measurement
- **Search across multiple video transcripts**
- **New players with bookmarking, annotation, “paper-based video”**
- **Automate and improve processing**
  - > Starting a lecture transcription service

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Check it out for yourself

- **IIHS Demo:**
  http://spokenmedia.mit.edu/demo/iihs/
- **SpokenMedia Website:**

  http://spokenmedia.mit.edu/

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SpokenMedia

Thank You!

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