

Knowledge Capitalization in Organizations: A Multimedia Approach

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Outline

- Introduction
- Our approach
- Demo
- Remarks

What is Knowledge?

Even in absence of an explicit definition, there is **consensus** about a certain number of statements about knowledge.

- it is widely believed that it is something **important**:
If HP knew what HP knows, we would be three times as profitable

(Lew Platt, old CEO of Hewlett-Packard).

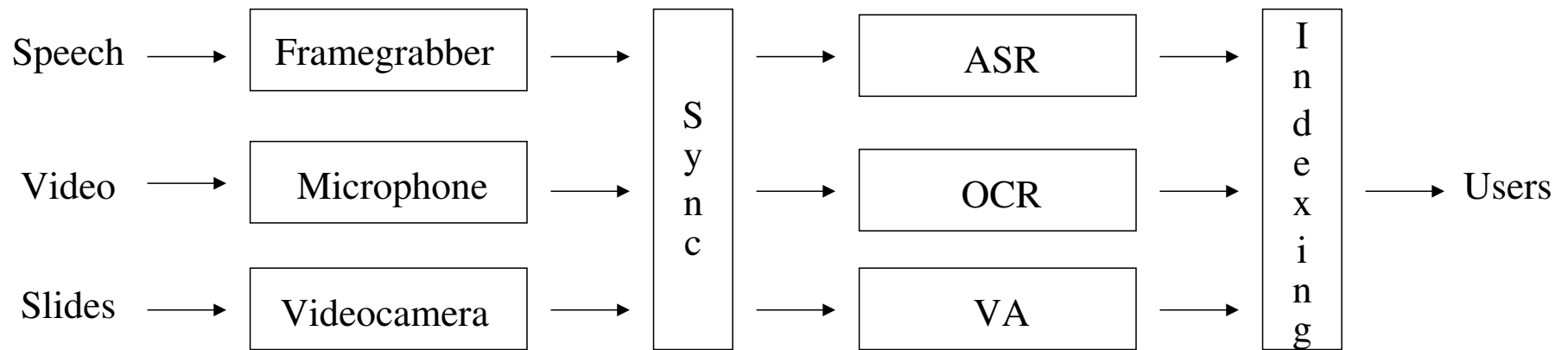
- However, a survey of **431 organizations** in Europe and United States by **Ernst & Young** (1998) shows that only **13 percent** of them is effective in:
 - capturing
 - disseminating
 - sharingknowledge.

What are the Obstacles?

Nobody knows what knowledge is, but the **obstacles to capture, dissemination and sharing** of knowledge are well known:

- *Cognitive obstacles:*
 - Knowledge is not always easy to **communicate**.
 - Knowledge is often **tacit**.
 - Knowledge gaps are hard to bridge.
- *Motivational obstacles:*
 - Knowledge is an **asset**.
 - Knowledge sharing requires **cooperation**.
- *Technological obstacles:*
 - Knowledge is hard to **materialize**.
 - Knowledge **support** are people.

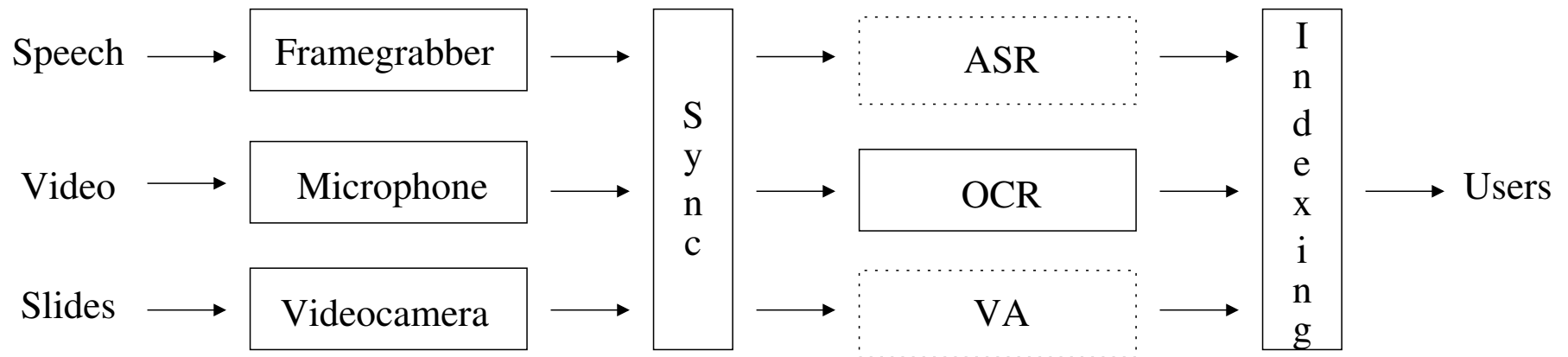
Presentation Acquisition System



The system is **passive**, speakers and organization are not required to change their behavior to make the acquisition work.

- OCR is *Optical Character Recognition*
- ASR is *Automatic Speech Recognition*
- VA is *Video Analysis*

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Why the Slides?

The slides have several advantages with respect to the other channels:

- *The Channel is clean.* The signal never leaves the machine and the acquisition is not affected by **environmental effects** (lighting, echoes, background noise, etc.)
- *The slides are a good approximation of the content.* The slides contain the **main messages** the speakers want to convey.
- *OCR technologies are easier to manage.* OCR systems are more robust than ASR and VA systems and are easier to use for **non-experts**.

This does not mean that the other channels are not necessary and must be neglected, but simply that they are less **robust to reality**.

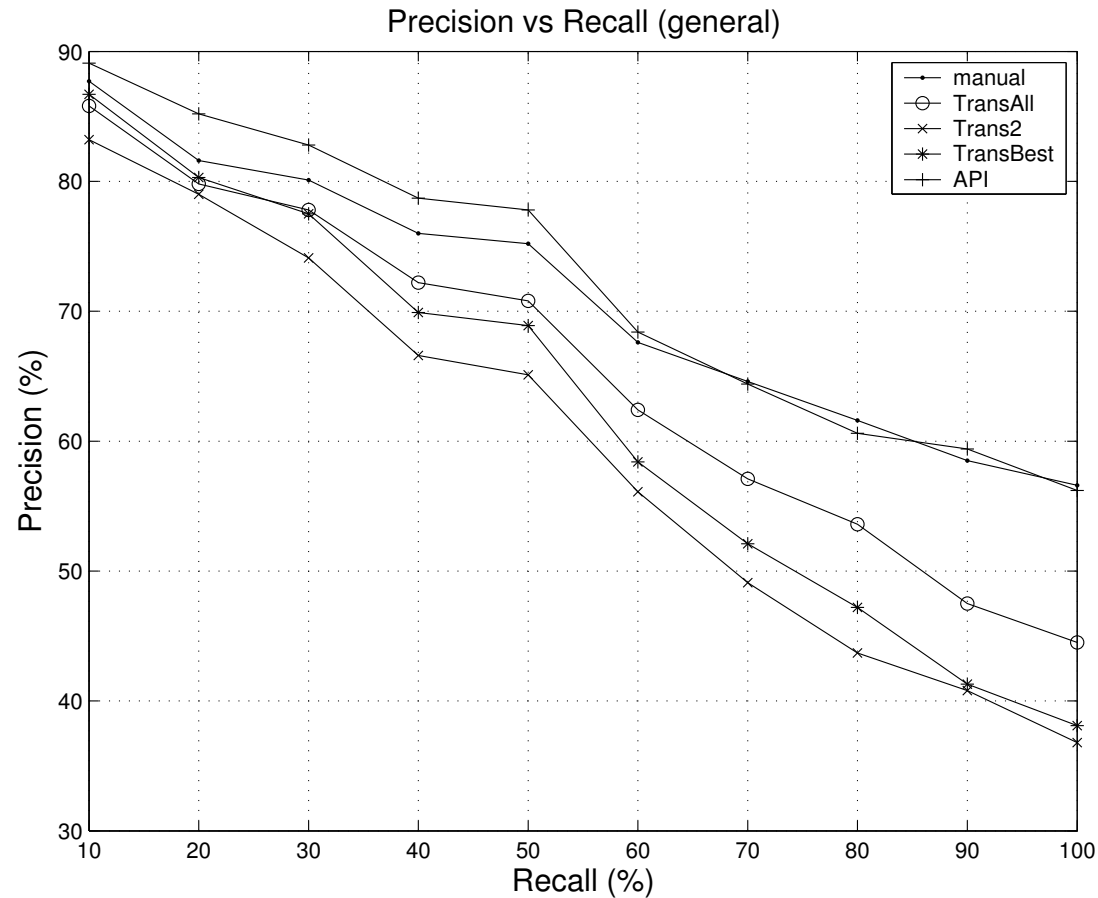
Slides as Content Approximation

The slides are a good **approximation** of the presentation content:

- On average, a slide is projected for around **1 minute** and it contains around **40 words**.
 - → At an average speaking rate, the same time interval contains no more than **100 words** (including repetitions and hesitations).
- The slides provide the **author view**, i.e. they show how the author has **structured** the content.
 - → The split into **meaningful** segments is important to obtain a **global view** of the content.

By approximation it is meant that they capture only part of the presentation content, but such part is sufficient for some tasks.

Some Retrieval Results



Precision is the probability that a document identified as relevant is actually relevant, Recall is the probability that a relevant document is identified as such by the system.

Cognitive Obstacles Addressed?

It is hard to measure whether our approach addresses cognitive obstacles or not. However, we observe the following:

- Presentations are conceived as a **communication** moment, and many tools are available to overcome **communication** barriers.
- There is evidence that **tacit** knowledge is captured through non-verbal communication available in videos.
- The audience helps to **bridge the gap** by posing questions and by showing the speaker what are the less clear points.

No quantitative measures are available, but the above is the result of extensive field observations (see *Sharing Expertise*, Ackerman, Pipek and Wulf (eds.), MIT Press, 2004).

Motivational Obstacles Addressed?

The main motivational obstacles are related to the fact that knowledge is an asset in competition based organizations. In such a context, the delivery of knowledge in presentations is more acceptable because of the following:

- Knowledge is strictly linked to a **person** in a public event, then cannot be stealed and cannot be simulated.
- Presentations orient the competition towards **more effective communication** rather than towards **protecting knowledge** from others.

As an example, consider the scientific community where the race towards publication is a clear effect of such an approach.

Technological Obstacles Addressed?

The use of multimedia technologies for storing presentations has some advantages with respect to other media (articles, surveys, repositories, etc.):

- Even if presentation recordings do not **materialize** knowledge, at least they capture **persons** that try to do it. No better *devices* are available today.
- As **people** are the support of knowledge, **recording people** is an effective approach, especially when presentations are a natural activity in an organization.

The theory of **Thin Slices** suggests that people videos are more informative than how we consciously perceive, especially for what concerns **confidence** and **trust**.