

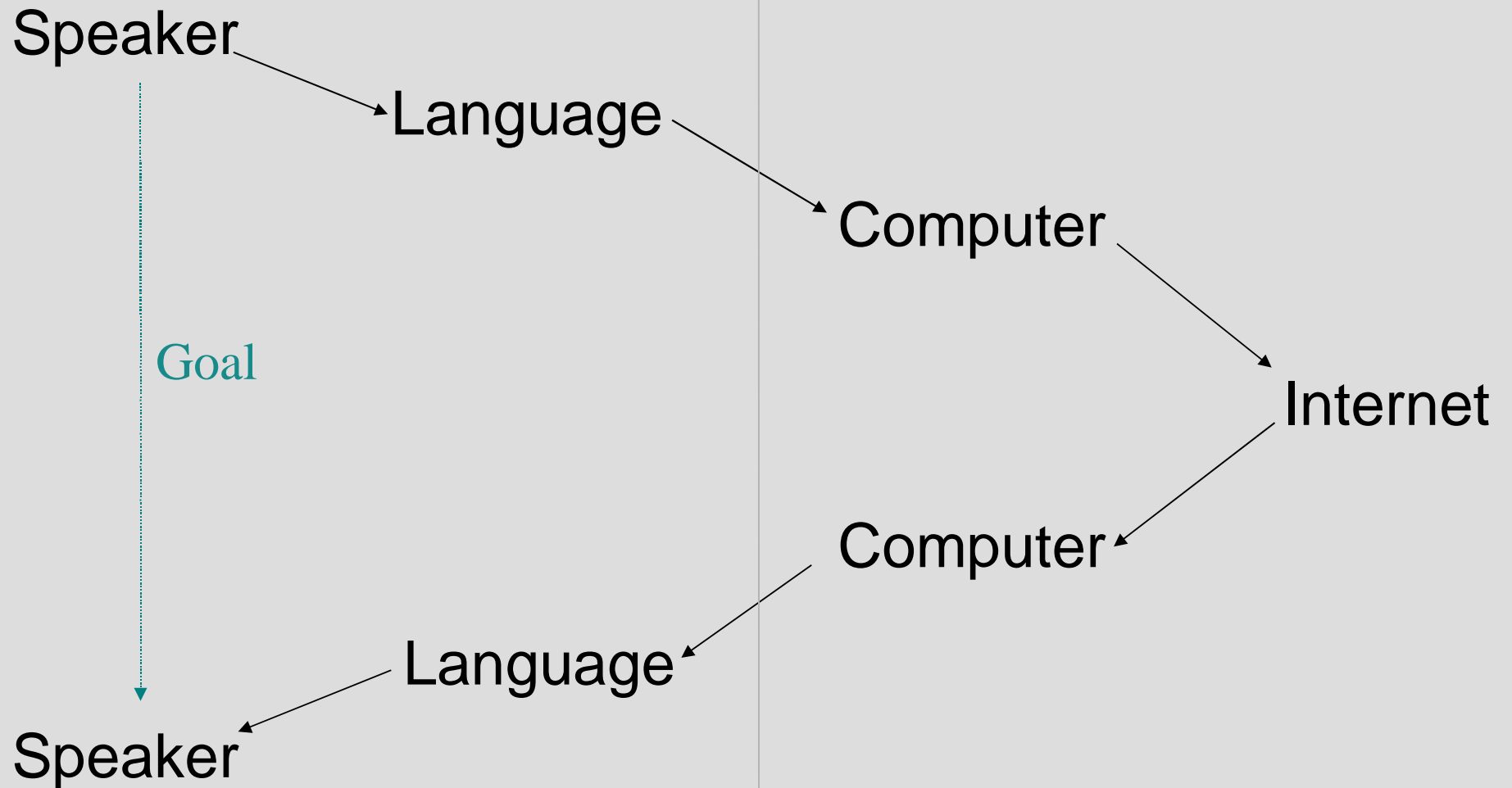
# Technology: a double-edged sword for endangered languages of Native America

- Goal
- Fundamental data
- Current level of integration
- Results

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# Fundamental data

## Information flow



# Fundamental data

## Languages

### World

- 500 years ago, an estimated 13000 languages were spoken
- 6912 are still spoken
- 204 are spoken by 10 or fewer persons (3%)

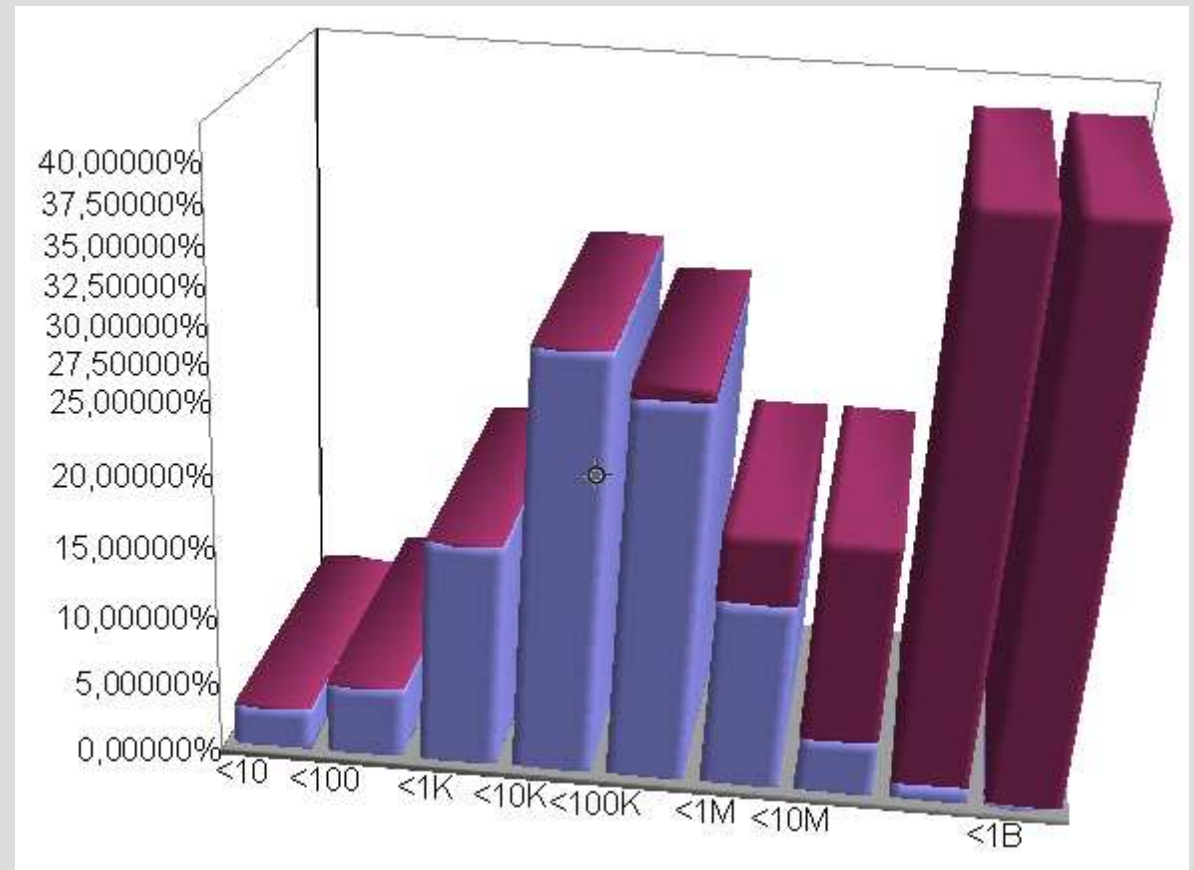
### Native America

- 500 years ago, an estimated 300 languages were spoken
- 154 of those are still spoken
- 35 are spoken by 10 or fewer persons (23%)
- 7 are spoken by only one person

# Fundamental data

## Languages vs speakers

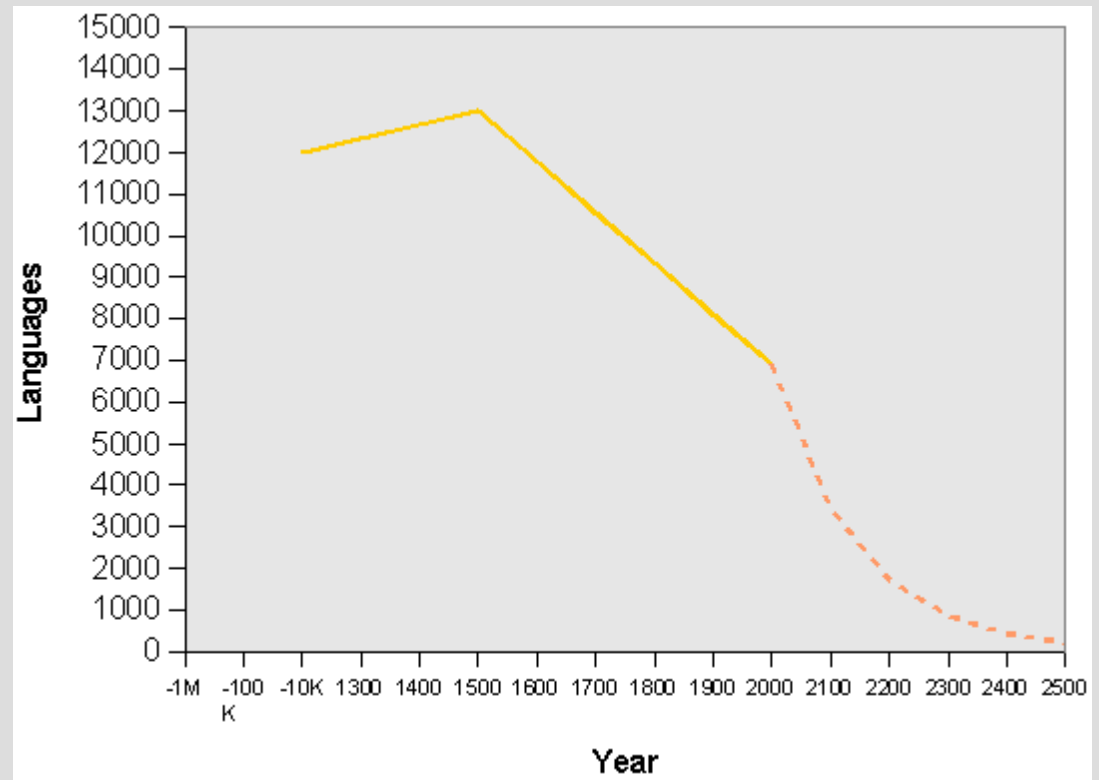
- 1% of World languages are spoken by 79% of World population (mother tongue)
- 95% of World languages are spoken by 6% of World population (mother tongue)
- 50% of World languages are spoken each by less than 6000 speakers



# Fundamental data

## Languages vs time

- Number of World languages will drop in our century by between 50% (optimistic version) and 90% (pessimistic version)
- Past: trade, colonization, industrialization and education; and
- Present: weight of economy, globalization, communication and transportation networks.



# Fundamental data

## Technology

### World

- 903M computers installed (2005)
- 1,114M Internet users (2007)
- Internet growth 209% (2000-2007)

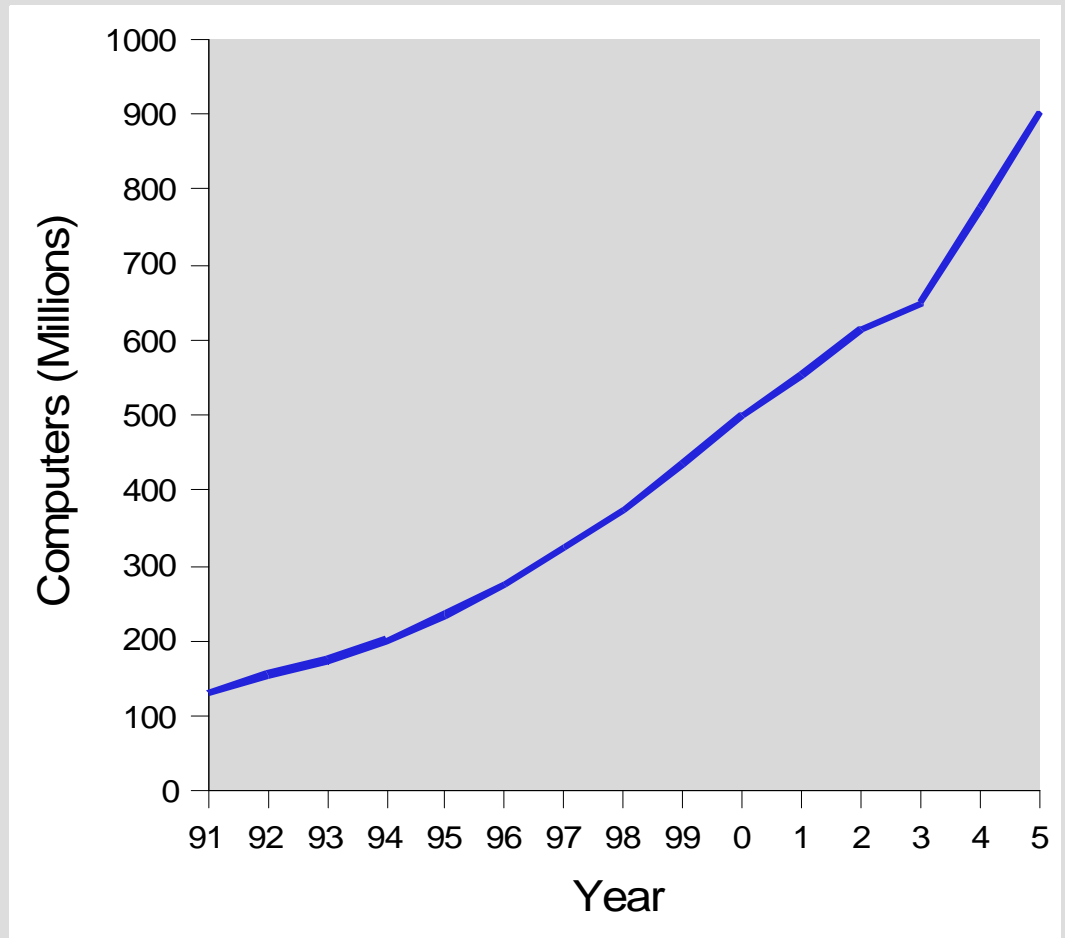
### Native America

- 230M computers installed (2005)
- 233M Internet users (2007)
- Internet growth 116% (2000-2007)
- 5% of World population representing 25% of World computers base and 21% of Internet World usage

# Fundamental data

## Personal computers vs time

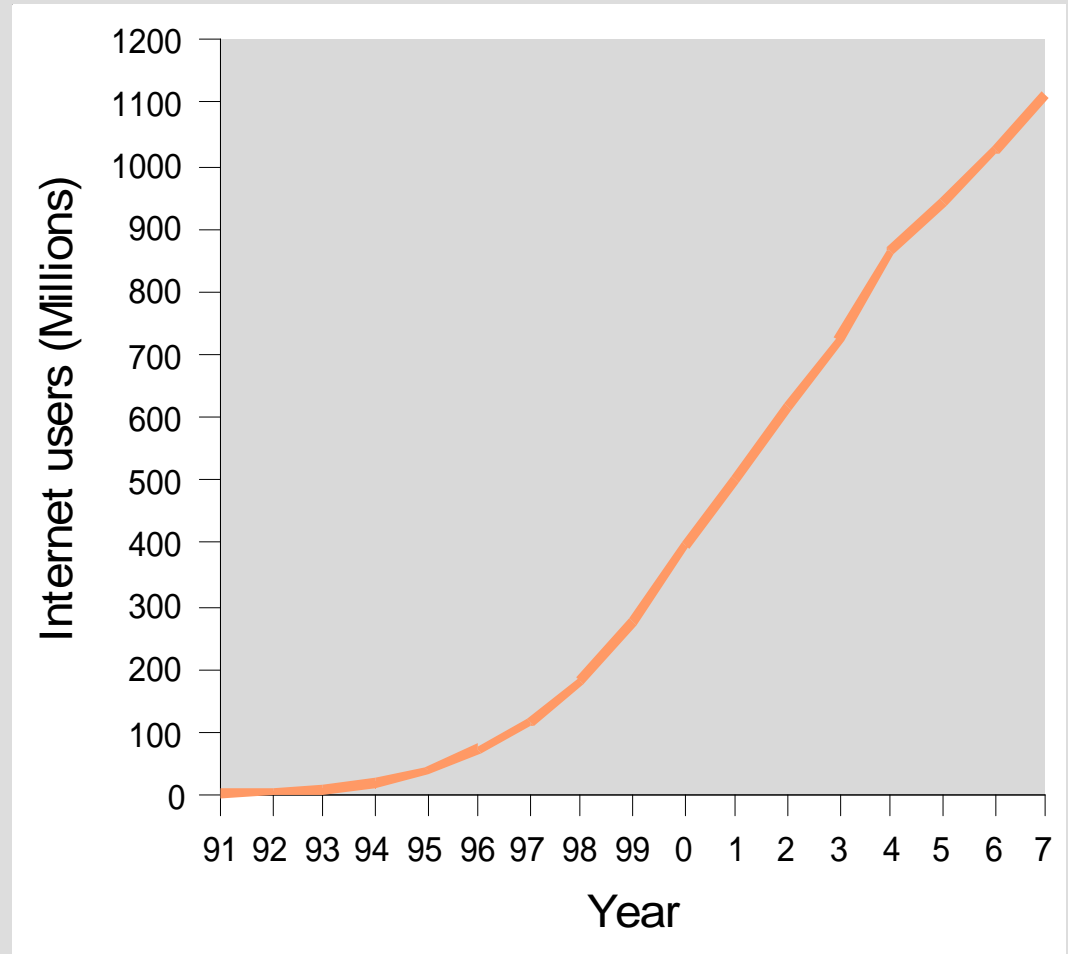
- 130M in 1991
- 903M in 2005



# Fundamental data

## Internet vs time

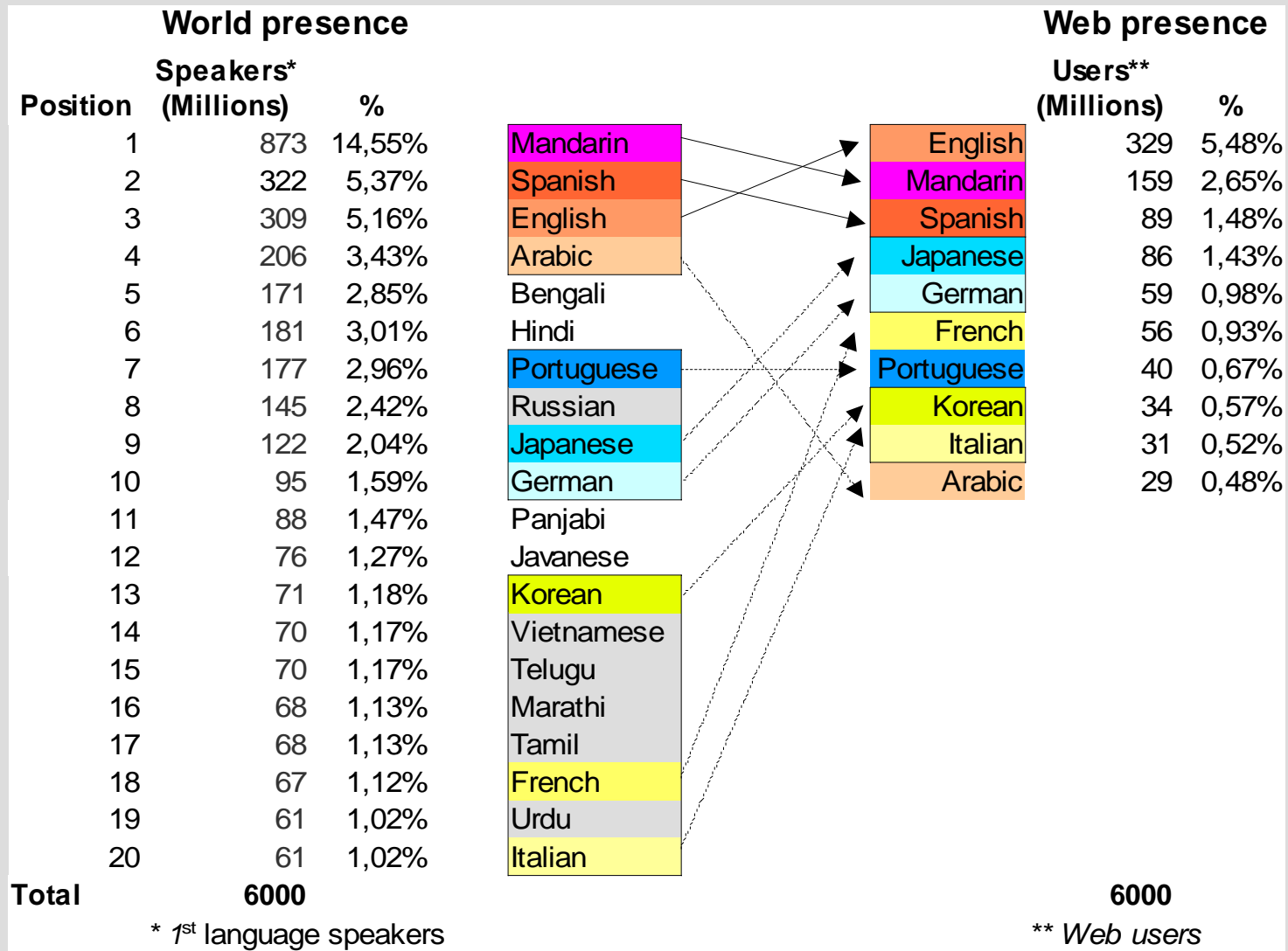
- 0.46% penetration in 1991
- 16.9% penetration in 2007





# Fundamental data

## Languages vs Internet



# Fundamental data

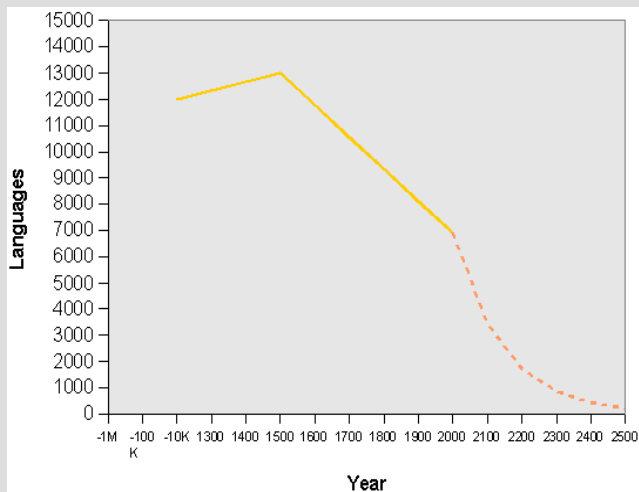
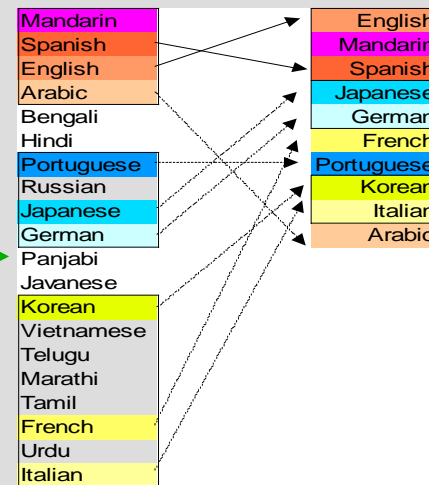
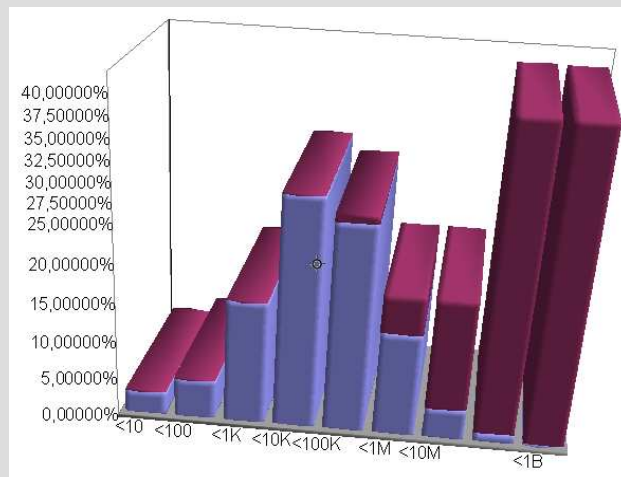
## Metainfluence

### •Deduction from *Present*

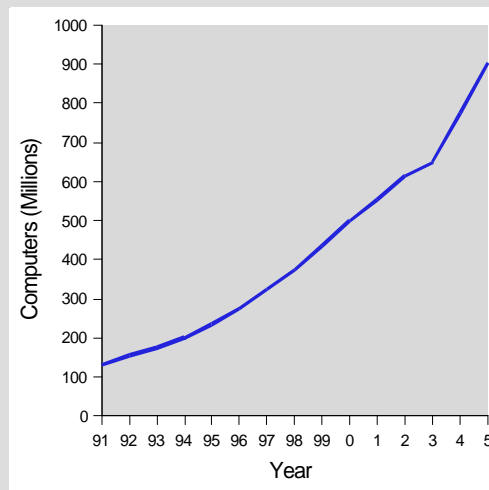
Language imbalance transfers pretty well from the real world to the virtual world

### •Induction for *Future*

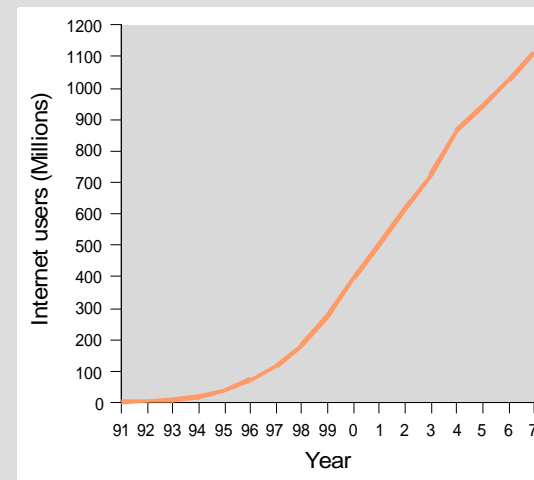
Can we visually « solve » the equation of how time influences languages thru technology?



X



X

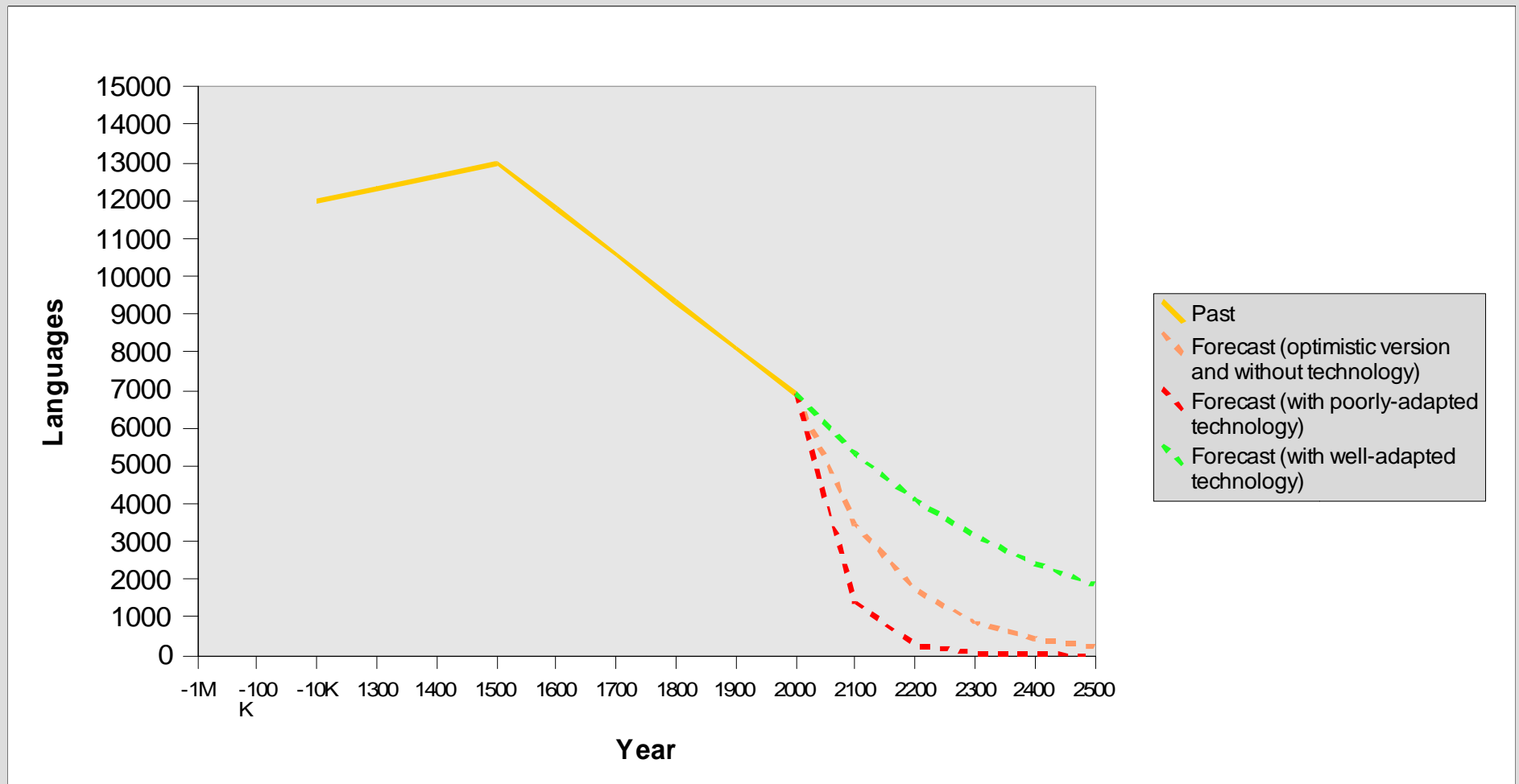


= ?

# Fundamental data

## Metainfluence

Two possible solutions (among others) show both edges of the sword



# Current level of integration

- Systemic view
- Case study: 4 languages

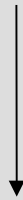
# Current level of integration

## Systemic view

Input



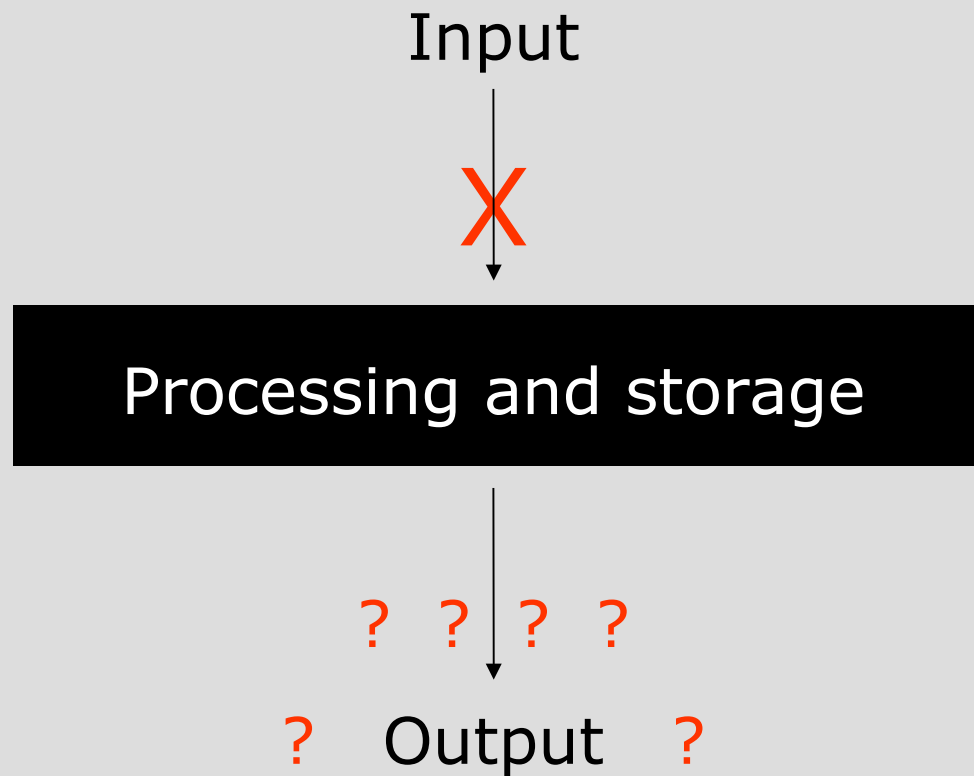
Processing and storage



Output

# Current level of integration

## Systemic view



# Current level of integration

## Case study: keyboard mappings

How to input « na ni nu »

Cree

ᑎ ᑎ ᑎ

p o u

Cherokee

Cherokee font

Ꮞ Ꮞ Ꮞ

N / 0

Cherokee

CherokeeLS font

Ꮞ Ꮞ Ꮞ

Alt+128 – £

Inuktitut

ᑎ ᑎ ᑎ

N i k

# Results

- Software tools

=> Demo



# Results

- Hardware tools

=> Demo

# Conclusion

- Technologies that can:
  - Seamlessly integrate languages of Native America (short-term goal)
  - Preserve them (mid-term goal)
  - Revitalize them (long-term goal)
- Technologies that are:
  - Easy to use
  - Affordable
- Technologies that will:
  - Recognize voice
  - Synthesize speech

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# One last word

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( A big « Thank You » in Inuktitut )

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CELICNA 2007, April 14, Salt Lake City