INGENIERÍA INDUSTRIAL
UNIVERSIDAD DE CHILE

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Web Mining – IN4522

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Outline

1. Introduction
2. Web Data
3. Knowledge discovery from web data
4. Web Structure Mining
5. Web Content mining
6. Web Usage mining
7. Application

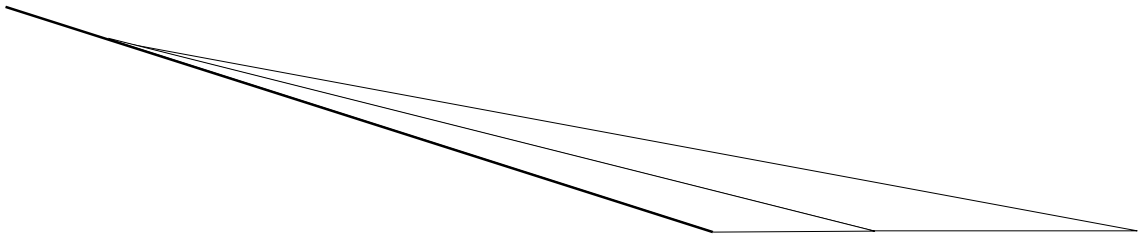
Total = 28 módulos

EVALUATION

- El curso consiste de 2 notas, Tareas (NT), y controles (NC). El cálculo de esas notas se efectúa de la siguiente forma:
- NC = Promedio de controles (C1+C2+C3)/3, donde Ci son notas controles **incluido el examen**, el cual reemplaza la nota mas baja de los controles si es mayor. El alumno puede eximirse de dar el examen si el promedio actual de controles es de un 5.5 y la nota de tarea (NT) es mayor que 5.5.
- NT = Promedio de las entregas de tareas (T1+T2+T3)/3, donde Ti son las notas de tareas.
- La condición para aprobar el curso es:
- NC >= 4.0 y NT >= 4.0
- Si no se cumple la condición y las notas se encuentran sobre 3.7, el alumno tiene derecho a un control o tarea recuperativa para optar a nota máxima 4.0.
- La nota final del curso se calcula como:
- NF = (NT + NC)/2

Calendario

- Las actividades serán avisadas en su oportunidad y comprenderán:
  - Controles
  - Laboratorios
  - Tareas



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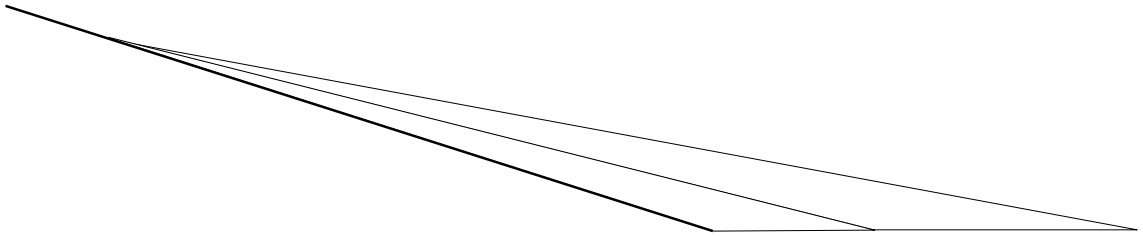
Chapter 1

Introduction

Summary: Introduction

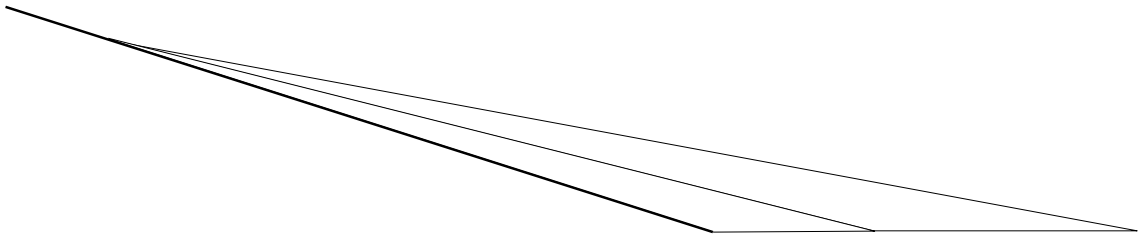
- The World Wide Web
- E-business
- Toward new portal generation
- Objective of the lecture



The World Wide Web

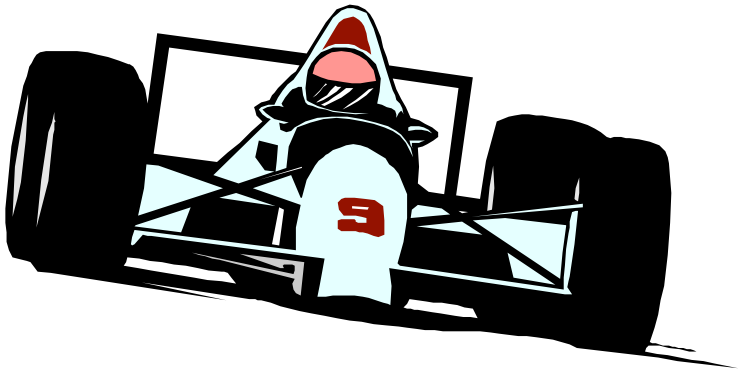
"The World Wide Web (W3) is the universe of network-accessible information, an embodiment of human knowledge. It is an initiative started at CERN, now with many participants. It has a body of software, and a set of protocols and conventions. W3 uses hypertext and multimedia techniques to make the web easy for anyone to roam, browse, and contribute to"

Tim Berners-Lee (1993)

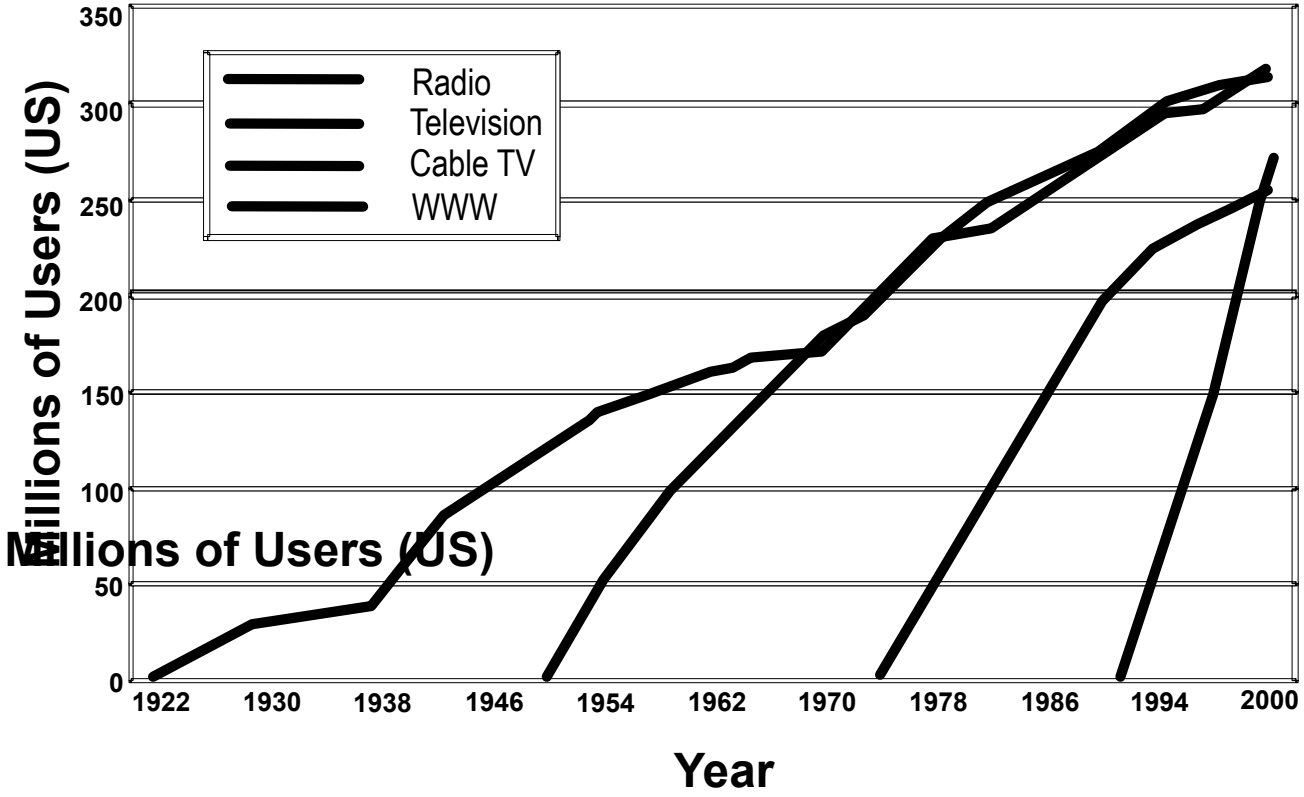


The NET

- Toward the high speedway Of the information.
- ¿Who is the owner?
- Network of Network
- Exponential growth



Learning adoption curve



Time to reach 200 Million Users:

Radio ….55 Years

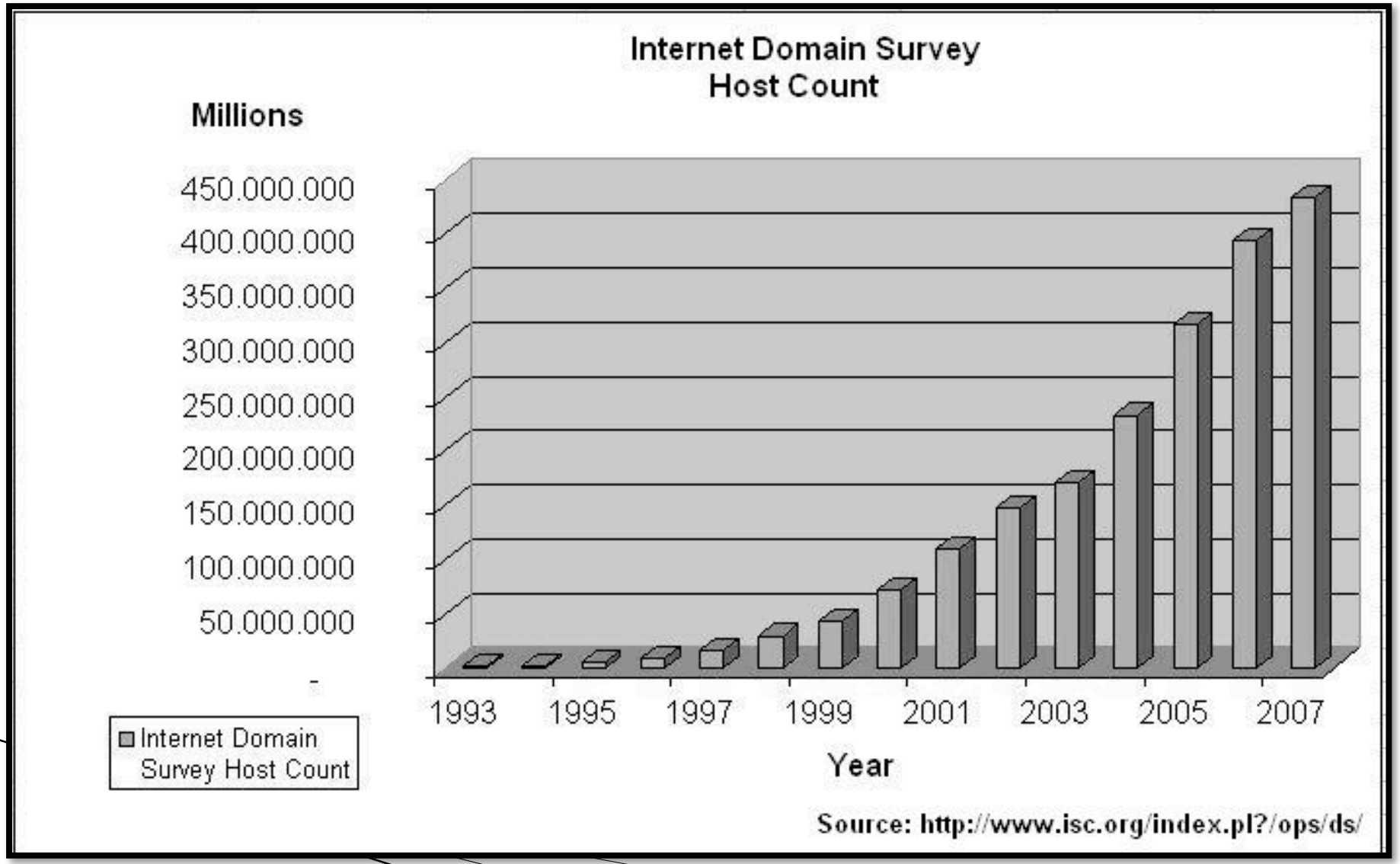
TV ……. 25 Years

Cable ... 12 Years

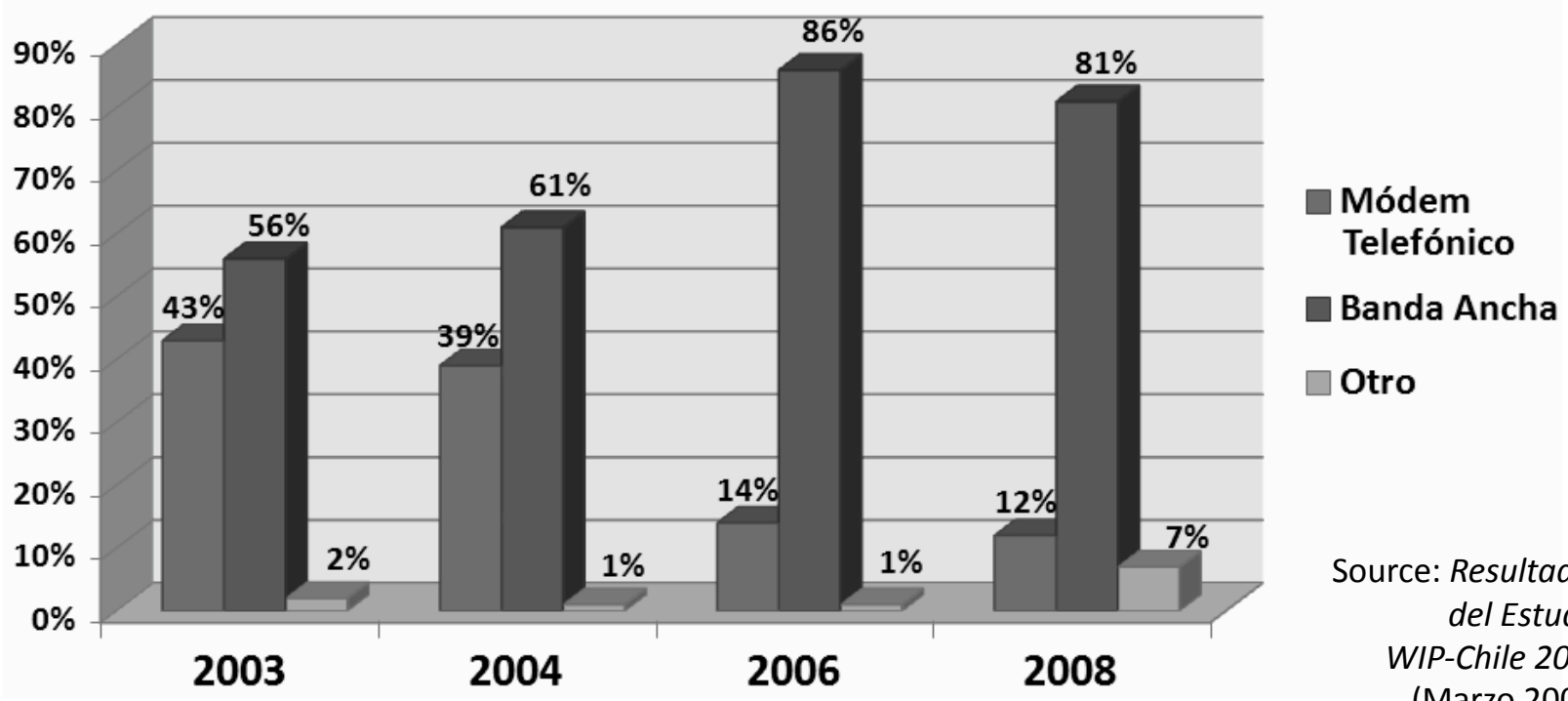
WWW…. 5 Years

Source: Morgan Stanley Technology Research

Number of Internet Hosts



Internet in Chile



Source: *Resultados del Estudio WIP-Chile 2008* (Marzo 2009)

Chile

- 2008, in Chile we had 7.9 million of Internet users

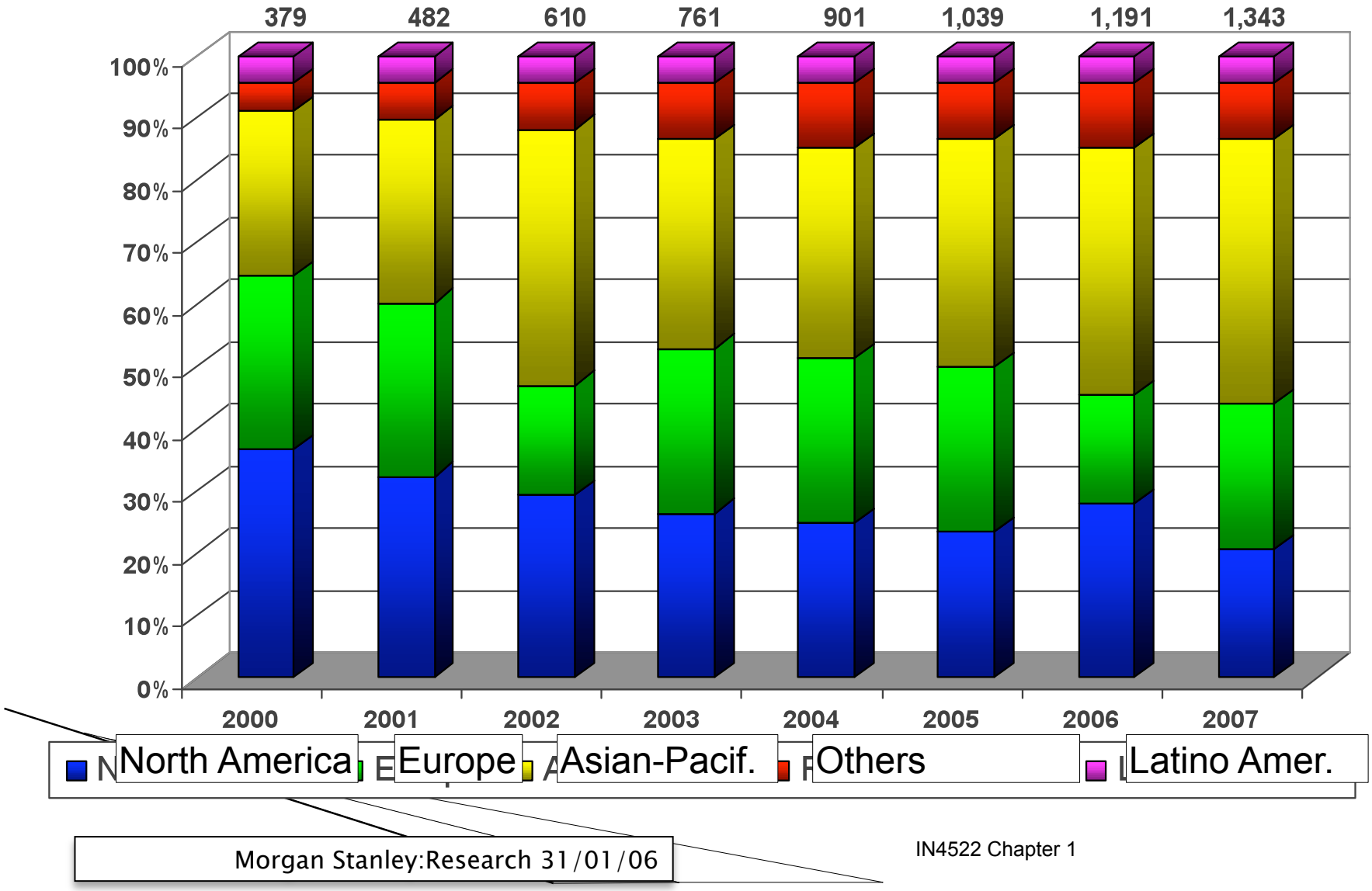
- The e-commerce got sales by USM$ 14.558 during 2008, growing a 20% respect 2007,being:
  - 97% B2B y B2G.
  - B2C: 3%

Internet in the World

Region	Internet User 2004	Internet Users 2007	Anual rate growth (CAGR) 3 Year
Asian Pacific	308MM	588MM	24%
Europe	236	312	10
North America	224	268	6
Rest of the World	87	120	11
Latin America	47	55	6
Total	901MM	1.3B	14%

Morgan Stanley:Research 31/01/06

Geographic Distribution of Internet Users



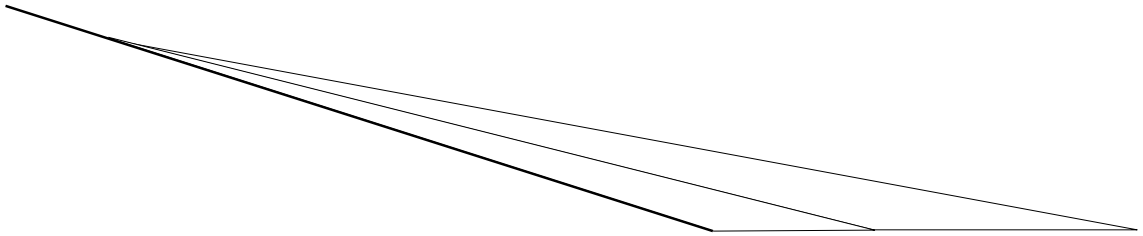
Morgan Stanley:Research 31/01/06

The computer is the network, the network is the computer

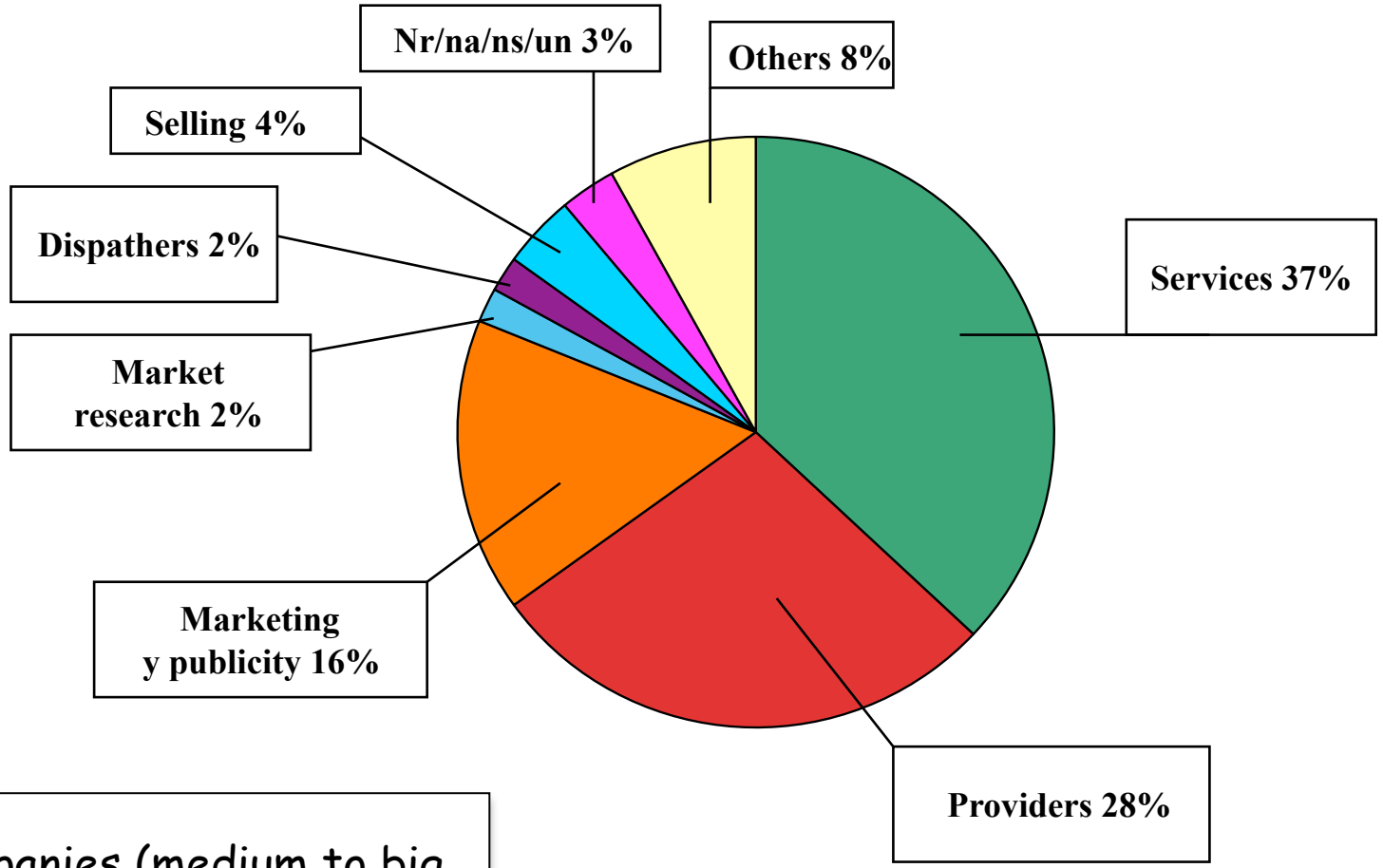
- The web is changing everything.
- The new economy: Google Model, Amazon, e-Banking.
- Change in the Supply Chain.
- Consumer directly perform OnLine product request.
- Reducing Information asymmetry gap.
- New kind of problem: Retain consumer in a web environment, The new web consumer profile, the web site as the e-commerce "service".

E – Business

- Business to Business (B2B)
- Business to Consumer (B2C)
- Peer to Peer (P2P)



E-business distribution

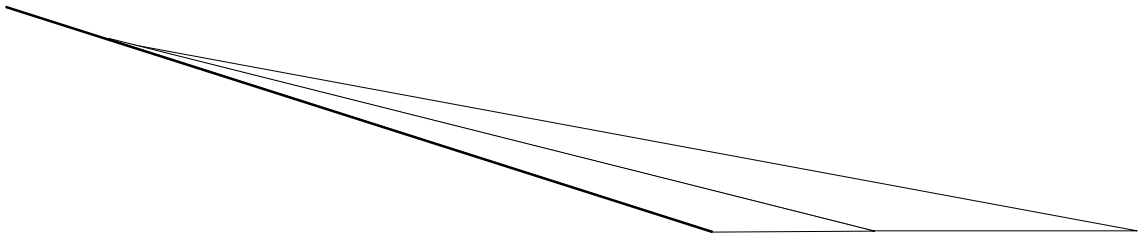


- 134 companies (medium to big ones).
- 48% with 100 to 500 employes
- 52% over 500 employes

Source: IDC

E-business

- Something change abruptly.
- Supply chain was altered.
- If an Intermediary doesn´t add value to produts, then they will be erased.
- The new business model based on the new internet channel, lowers the chain costs.



E-business (2)

- Transactions Cost

Business	Transaction type	Cost (US$)
Costo by transaction		
	Cashier	1,07
	Phone	0,52
	ACM	0,27
	Internet	0,13
Cost of plane ticket		
	Travel Agency	8,0
	Internet	1,0
Insurance		
	Agent	550
	Internet	275
Software		
	Reseller	15
	internet	0,35

But … there are some warnings

NASDAQ index evolution dotcom

The web portal: Our Point of Sale

→ What is the **ideal structure and content** of a web site?

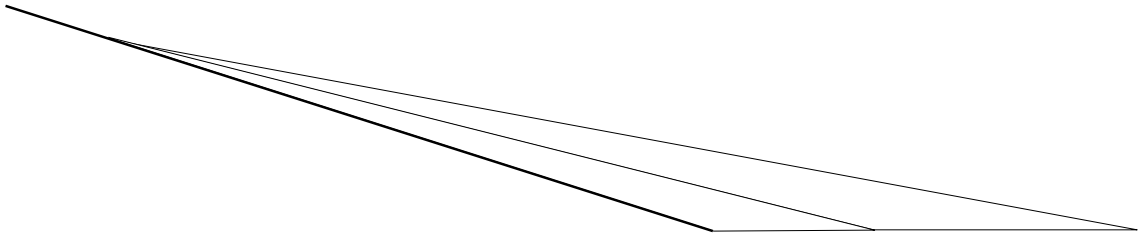
- **Different users** have **distinct goals**
- The **behaviour** of users **changes over time.**
- **Sites must be restructured** as they **grow** to meet current needs, typically by accumulating pages and links.

The Adaptive Web Site (AWS)

- Based on **user behaviour**
- Web Site **recommendation**
- Use of Web Intelligence (WI)
  - http://wi.dii.uchile.cl
  - Understanding **user preferences**
  - **Applications**
  - Web Usage Mining
  - Web Structure Mining
  - Web Content Mining
- Use of **Information Retrieval**

Objectives of this lecture

- To known about **data mining techniques on the web**.
- Why web mining is important in the **e-business world**.
- How to perform a **web mining project**
- What are the **different application fields** of web mining

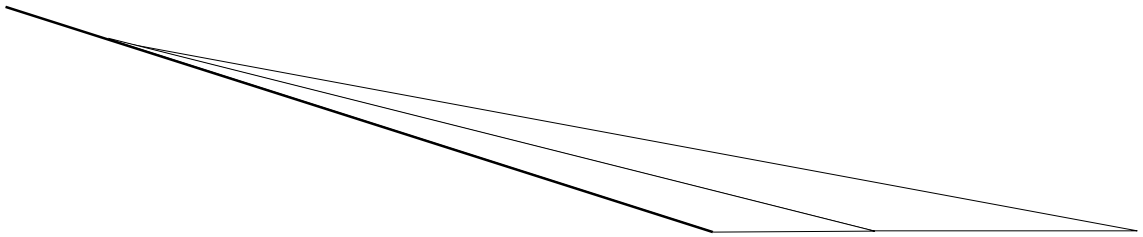


Data Mining techniques on the Web and benefits

- Web *Intelligence (WI)*
- Web Data: Very large amount of
  - Logs
  - Text and multimedia content
  - Structure of links
- Several tools of data mining apply to this field:
  - Clustering, regressions, association rules.
- Important benefits returns from the mining process:
  - Google growth, e-business, e-market campaigns, CRM applications.

How to perform webmining projects

- **Learning by doing**
- 3 programming projects to be performed by student during the semester.
  - **Web Structure Mining**:
    - Mini Crawler.
  - **Web Usage Mining.**
  - **Web Content Mining.**



Applications of web mining

- Recommendation System
- System for personalization
- Web Personalization
- Adaptive Web-based system