
TIM 50 - Business Information Systems

Lecture 6

Terry Allen
(terry_allen@hotmail.com)
UC Santa Cruz
10/17/2011

Most slides - and the better part of most other slides - are by Professor
John Musacchio

2

Outline

- Announcements
 - Review: Frito Lay
 - Cash Flow
 - Student Presentation (news)
 - Information Management
 - Enterprise Applications
-

TIM 50

Instructor

- Terry Allen (terry_allen@hotmail.com)
 - Office Hours:
 - Monday and Wednesday, 7:00 p.m. to 8:00 p.m. (if necessary),
 - And Tuesday, 4:00 - 5:00,
 - And Tuesday *by appointment*, 5:00-6:00
 - Office# is E2-563

TAs

- TBD
 - Office Hours:
 - Huascar Sanchez (hsanchez@soe.ucsc.edu)
 - Office Hours:
-

3

Announcements

- Folio 1 due today
 - (only those not assigned an oral presentation)
 - Assignment 2 due Monday (in 1 week)
 - Hard-copy, in class
 - Business Paper Proposal (aka "Project proposal) Due Monday 10/24!
 - Groups announced via email
-

4

Announcements

- Project proposals due in 5 days!
 - 1-2 pages
 - Give a plan what you will do
 - Cite some references, and show that you have started your research!
 - Once the website is working there will be more details there.
-

5

Announcements

- Reading for next time
 - Cisco Case
 - NEW: Discussion Topics will be posted on the forum
 - Alternative way to earn participation points!
-

6

Announcements

Student presentations:

- **Oct 17 (tonight)**
 - Kanta Ito
 - ??
- **Oct 19**
 - ??
 - ?? (Cisco) case
- **SEND ME THE SLIDES THE NIGHT BEFORE (till 9 p.m.)**
 - Failing to do so may cause you to lose points...

7

Frito-Lay

Segmentation

- Supermarket merchandiser, account managers
- "up/down street" (route drivers)

Regionalized Micro-Marketing

- Targeted smaller brands to regional customers

Hand-Held Computer

- Small computer for each salesperson to carry around
- Log sale transaction data.

8

Frito-Lay

3 stated objectives

- Replace optical scanner system used now
 - IBM will stop supporting it soon
- Salesperson
 - $\frac{1}{2}$ hour per day per driver paper-work reduction
 - No accounting errors
- Marketing effectiveness (micro-marketing)
 - Detailed sales data
 - will help make regional marketing decisions
 - Negotiate with stores for more shelf space

9

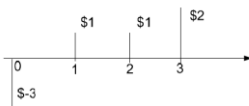
HHC Project pros & cons

- Replaced optical scanner system that IBM would stop supporting soon
- Saves sales force time: 2.5 hours per week per driver
- Detailed sales data supports:
 - Regionalized marketing
 - Negotiations for shelf space with supermarkets
 - Reduce errors
- Expensive (~50 million)
- Risky
 - Might not work technically
 - Sales force might not like it. (already upset about segmentation)
- Equipment vendor might not be reliable

10

Cash Flows

Cash Flow: A series of payments/receipts over a time period



Visualize using timeline

- Current year: 0

11

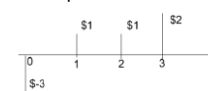
Net Present Value

NPV: A quantity of money which, if received today, would be equally desirable as the cash flow

NPV of \$x received in year $n = x \cdot \delta^n$

A cash flow may have payments/receipts in multiple years

- Compute NPV for each year and add them



$$\text{NPV} = -3 + \delta + \delta^2 + 2\delta^3$$

$$\text{NPV} = x_0 + \delta x_1 + \delta^2 x_2 + \delta^3 x_3 + \dots = \sum_{j=0}^{\infty} \delta^j x_j$$

12

Interest Rate

The discount factor might be based on the **interest rate i** that could be received if investing in bank/other project

$$\delta = 1 / (1+i)$$

$$NPV = x_0 + \delta x_1 + \delta^2 x_2 + \delta^3 x_3 + \dots = \sum_{j=0}^{\infty} \delta^j x_j$$

$$NPV = x_0 + (1+i)^{-1} x_1 + (1+i)^{-2} x_2 + (1+i)^{-3} x_3 + \dots = \sum_{j=0}^{\infty} (1+i)^{-j} x_j$$

13

Rate of Return (ROR)

Also known as Return on Investment (ROI)

Is the ratio of money gained/lost in an investment relative to the amount invested

Computing ROR is the inverse problem to computing NPV

- "What would the *interest rate* at the bank have to be in order for me to be neutral about investing in my project?"
- The ROR equals the interest rate for which NPV = 0
- Use this equation (NPV = 0) to find the ROR



14

Cash Flows

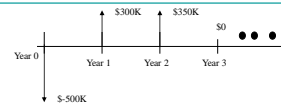
Be able to compute:

- NPV given the discount factor
- NPV given the interest rate
- Interest rate/Discount factor/ROR in order to have NPV = 0
- Compare different investment plans based on their ROR/ROI
- Evaluate whether it is worth investing on a plan given a desirable ROR

Know how to solve simple quadratic equations!!!

- Use of quadratic formula

15



Net Present Value when $i = 0\%$

$$\begin{aligned} NPV &= \sum_{j=0}^{\infty} x_j (1+i)^{-j} \\ &= -0.5 + 0.30 \cdot (1+0)^{-1} + 0.35 \cdot (1+0)^{-2} \\ &= -0.5 + 0.30 + 0.35 = 0.15 \end{aligned}$$

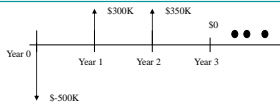
Net Present Value when $i = 10\%$

$$\begin{aligned} NPV &= \sum_{j=0}^{\infty} x_j (1+i)^{-j} \\ &= -0.5 + 0.30 \cdot (1+0.1)^{-1} + 0.35 \cdot (1+0.1)^{-2} \\ &= -0.5 + .273 + .289 = 0.062 \end{aligned}$$

Net Present Value when $i = 20\%$

$$\begin{aligned} NPV &= \sum_{j=0}^{\infty} x_j (1+i)^{-j} \\ &= -0.5 + 0.30 \cdot (1+0.2)^{-1} + 0.35 \cdot (1+0.2)^{-2} \\ &= -0.5 + .25 + .243 = -0.0069 \end{aligned}$$

16



Idea of RoR analysis:

What i makes NPV= 0?

$$\begin{aligned} NPV &= \sum_{j=0}^{\infty} x_j (1+i)^{-j} = 0 \\ &= -0.5 + 0.30 \cdot (1+i)^{-1} + 0.35 \cdot (1+i)^{-2} = 0 \\ &= 0.35 \cdot (1+i)^{-2} + 0.30 \cdot (1+i)^{-1} - 0.5 = 0 \end{aligned}$$

Quadratic Formula: $ax^2 + bx + c = 0 \rightarrow x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

$$\begin{aligned} x &:= (1+i)^{-1} \\ (1+i)^{-1} &= \frac{-0.3 \pm \sqrt{0.3^2 - 4 \cdot 0.35 \cdot (-1)}}{2 \cdot 0.35} \end{aligned}$$

$$(1+i)^{-1} = .8411 \text{ or } -1.69$$

$$i = .188 \text{ or } > 1.50$$

17

Student Talk

18

Information Management

©Copyright David G. Messerschmitt, 2000. This material may be used, copied, and distributed freely for educational purposes as long as this copyright notice remains attached. It cannot be used for any commercial purpose without the written permission of the author.

What is Information?

- **Data**
 - Numbers, Character strings, etc.
- **Information**
 - Recognizable patterns of data organized so as to inform or influence the user in some way
- **Knowledge**
 - Concepts, relationships, truths, principles derived from information
- **Wisdom**
 - Insight or judgment acquired from extensive knowledge

20

Classify these

- "XV", "SF", 34, "CN", 16
- The 49-ers won Super Bowl XV by a score of 34 to 16.
- The National Football Conference wins 17 out of 20 Super Bowl's on average.
- The best team usually wins.

Adapted from slides for *Understanding Networked Applications*
By David G Messerschmitt, Copyright 2000. See copyright notice

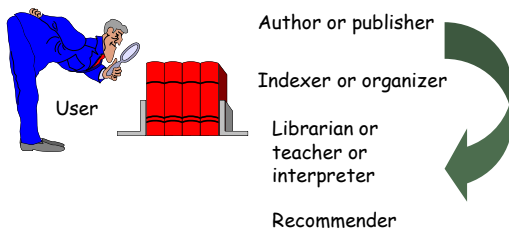
21

Classify these

- 47, 560, 134
- My bank account has 47\$ in it :-)
- My net worth, including my bank account and subtracting the debts is 560\$
- At the rate my net worth is increasing, and given my age and expectations for retirement income, I can't retire until age 134...

22

Roles in information access



Adapted from slides for *Understanding Networked Applications*
By David G Messerschmitt, Copyright 2000. See copyright notice

23

In the Networked Era...

User
Author or publisher
Indexer or organizer
Librarian
Recommender

How are these roles being changed by networked computing?

Adapted from slides for *Understanding Networked Applications*
By David G Messerschmitt, Copyright 2000. See copyright notice

24

Finding useful information..

- **Search**
 - Item search
 - Topic search
- **Browse**
 - Explore in order to find useful information
- **Navigate**
 - Follow directions/links to find information
 - In web: you do both!

25

Others can help...

- **Author:**
 - Hyperlink
(Reference to related information)
- **Author or third party:**
 - Index
(List of content)
 - Metadata
(Description of content)
- **Third party:**
 - Reviews or recommendations
(judgment of content)

Adapted from slides for *Understanding Networked Applications*
By David G Messerschmitt. Copyright 2000. See copyright notice

26

Exercise

Give an example of the following functions in the context of movie rentals:

Hyperlink

Index

Metadata

Recommendation

Adapted from slides for *Understanding Networked Applications*
By David G Messerschmitt. Copyright 2000. See copyright notice

27

Authors - Publishers

Creates information - verifies, makes available



28

Indexers

Classifies information



29

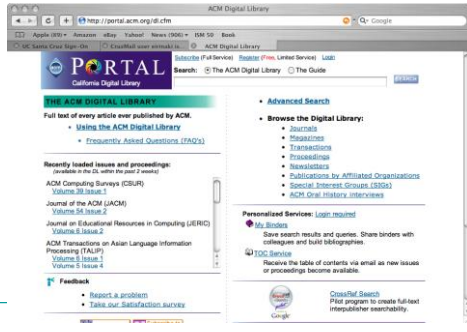
Indexers/Organizers - Librarians

(assists and guides user to needed info)



30

Librarians



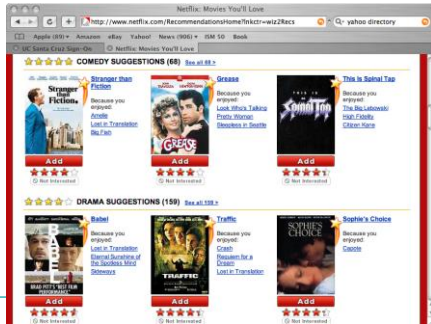
31

Librarians



32

Recommenders



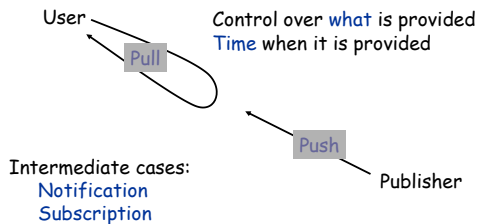
33

Recommenders



34

Push vs. pull



Adapted from slides for *Understanding Networked Applications* By David G Messerschmitt. Copyright 2000. See copyright notice

35

Question

What are some differences between push and pull with respect to:

- invasiveness on the user?
- refinement of the information received?
- timeliness with which information received?

Adapted from slides for *Understanding Networked Applications* By David G Messerschmitt. Copyright 2000. See copyright notice

36

Characteristics of information pull and push

	Push	Pull
Control	User requests specific information	User subscribes to information on general
Notification	User submits question- publisher answers	Publisher provides useful notifications- user decides what to do
Timing	Information to user directed	Information provider directed

37

Enterprise Applications

Applications

- **What is an application?**
 - Computer software that performs useful capabilities for a user or organization
 - Incorporates storage, manipulation, and communication of information.
- **An organizational application**
 - Supports an organization
- **Often called enterprise application**
 - (An enterprise is an organization with a commercial mission)

41

Types of organizational applications

- **Departmental**
 - Supports a single functional department
 - Example: An accounts management application for an accounting department.
- **Enterprise**
 - Support enterprise-wide processes and goals.
 - Example: coordinate information between functional departments involved in fulfilling an order.
(or other cross-functional process.)

42