Syllabus:

1. Why should software be valued?
3. Market value of software companies.
4. Intellectual capital and property (IP).
5. The role of patents, copyrights, and trade secrets.
6. Open source software. Scope. Theory and reality
7. Life and lag of software innovation.
8. Sales expectations and discounting, Licensing.
10. Separation of use rights from the property itself.
11. Risks when outsourcing and offshoring development.
12. Effects of using tax havens to house IP.
13. Money, a distraction – but it closes a loop
Money

• Income, represented by Money, is the objective
• What is money
• It is an owned asset that can be exchanged for other, real goods and the happiness they bring
• What gives money its value
• the money we use is debt-instrument backed by a trustworthy asset
• In the US the faith we have in the US government
Originally most countries were on the gold standard – mixed with silver in the US (bimetallic coinage)

- A ten-dollar coin was tiny, but real gold
  - Spanish doubloons

- Common were silver dollars
  - Joachims' thaler – a silver mine in Bohemia

- Other assets are feasible – they should not be easy to falsify and in limited supply
  - Shells
  - Corn
  - Oil
  - Pork bellies
  - Aluminum lire
  - Milk chits (Italy, 1950)
Paper money

• “Real money” is hard to handle ↓
• “Real money” is hard to manipulate ↑ & ↓

A government can keep gold and silver (specie) in its treasury and issue gold or silver certificates.

• “dollar bills”
  ▪ One on display with the IBM cards on 2nd floor
  ➢ You could take them to federal bank and get gold
  ➢ Gold miners would take their gold to the SF mint and could get gold certificates.
Fiat money

• Being on the gold standard has a problem
  ➢ When more money is needed as in times of war, the government can print more gold certificates
  ➢ But with the same backing the value deflates

• The U.S. went off the gold standard (more than once)
  ➢ 5 April 1933 US citizen could no longer hold monetary gold/silver
  ➢ 15 Aug. 1971 when it no longer allowed foreign countries to exchange US debt

• Now backed by “The Full Faith and Credit” [Article IV, Section 1 of the USC]

• But now not based on a tangible asset, but by the ability of government to levy taxes
Who can create *fiat money*?

- Anyone who has assets and is trusted
  1. The Federal Reserve Bank $ ← taxes & trust
  2. A bank can make loans ← assets held & trust for excess
  3. A government reserve bank (UK BoE, ...) £, ¥, ₹ ← taxes
  4. The European Central Bank € ← trust not taxes directly
  5. Any financial institution with some assets & trust

Since ~1955 City-of-London banks & their offshore branches create

**Eurodollars** ← offshore income based on IP & trust

$2,600,000M in 1988 “*the largest source of capital in the world*” [Kynaston:02, p.696]

Investors don’t care about the color of the money.
Discussion points

1. Role of software and IT in commerce
2. Naivete about the role of IP by economists & politicians
3. Levels of intellectual capital
4. Tax avoidance and tax evasion
5. Repatriation of $$$ and IP
6. Role of standards
7. Corporate Growth – organic vs. acquisitions
Topic 1.1: role

General Technology
Push

Information Technology

Government responsibilities

Business needs

Product building & marketing

Tool building

Research & Innovation

Consumer Pull
T.1.2: IP flow in the Hard-& Software industry

Design & validation in US

Development, testing in the US and at CFCs

Technical IP Investment

- Manufacturing, distribution
- CD creation
- Internet

Product Sales within the US
Income is taxable

Product Sales external to the US
Part of income is due to US contribution & taxable
T.1.3 Flow of IP in the financial industry

say: **INB investment bank**

- **INB system experts in the US**
- **INB finance experts within the US**

**Design & feedback**

**Programming and testing**

**Operations of INB within the US**

**Operations external to the US**

**Service Sales within the US**

**Service Sales external to the US**

- **Financial IP Investment by INB**
- **Technical IP Investment by INB**

Income due to Technical US contribution is taxable

Income is taxable
Naiveté of all politicians and most economists

• Believe in financial-only capital
  ➢ Fed. RB trying to lower rates on capital when there is plenty of money already, while imposing coverage limits on small banks

• Ignoring offshore intellectual property
  ➢ Repatriation of earnings leaves the generating asset offshore

• Dealing with the U.S. in isolation
  ➢ Change U.S. Laws & regulations and ignoring the world

• Ignoring the interaction of semi- & real taxhavens
  ➢ Trying to apply constraints on one aspect and then help the others indirectly
Intellectual Resources

Public & Private

Intellectual Capital
Rights owned by the business

Intellectual Assets
Available for transfer

Intellectual Property
Legally protectable

Patents
Copyrights
Trade secrets
Trade marks
Contracts covering intellectual capital
Topic 4.1: Tax avoidance/evasion

Creator

Rights to tangible

$ Price

Owner

Lease

€ rents

Use

Creator

Rights to intangible

$ IP value ??

Owner

Use Rights

$ € fees

Use
US total worldwide corporate earnings $1,550B/year (less during 2008-2009)

1,250B from domestic sources

W - F

US-sourced earnings moved abroad = $300B

US corporate earnings sources → destinations

US tax paid on US Corporate earnings $335B

Uncollected US tax on US earnings $100B

Uncollected US tax on foreign earnings $130B

Earnings on $1,800B income from foreign sources = $400B

$620B available for corporate dividends & investment in the U.S.

US corporate tax revenue $340B

$690B available in tax havens for corporate investment
Retained Financial Capital

Non-routine Earnings

IP rights stay

Repatriated financial capital

Home Country

Taxhavens

Foreign Countries

Topic 5: Repatriation
New projects in semi-taxhavens & low cost countries

IP rights held at CONCH.

Right to use the IP

Profit share for CONCH

all untaxed

New projects only at CONCH

Use of funds?

More CFCs

IP available for more new projects

$ available for more new projects

$ for taxes

$ for dividends

$ for tax on Buy-in

$ for Buy-in

Initial IP & $ buy-in

Government

Shareholders

Taxing country

Primary taxhaven

Ongoing IP rights

Use of IP?
• Shared standards create a credible market
• Contain proprietary IP
• Reduce first-to-market advantage
Adobe: Reader

XEROX PARC: Smalltalk OO language nearly dead

We got C++ instead

Industry Group: Standards specifications

Publication in scientific venues ok, not enough

Publication in trade journals ok, little impact

Apple vs Microsoft, Xerox vs all: Look and feel

Apple had licensed earlier version, without overlapping windows. Could protect the trashcan.
1. Internal: Organic growth
   - improve product line - sequential
   - increase penetration, market share
   - broaden market - parallel

2. External: acquisitions
   a. Startups - mainly people - integrate
      a. Improve quality
      b. Broaden
   b. Mature companies
      a. Complementary products
      b. IP exchange low-level technology / management / market
      c. Just as investment -- added management cost
• Advertising

▌ Google Adwords /Adsense to trigger where ads go
  ▪ Show your ad on top or on the side of a search
  ▪ Show your ad on relevant web pages
    ○ Charge by show (eyeballs) or click-through
    ○ Do that until money runs out
    ○ Allocate among competitors according to money made available

▌ Google tools for measuring Google’s ads impact
  ▪ measurements in other media are ad-hoc
  ▪ could be disregarded, but still contribute to the perception.

Perceptions is also IP, embodied in trademarks etc.
T7.2 Growth

• Organic
  a. Product R&D investments
     ➢ New versions
  b. Product Marketing
     ➢ New, broader applications
  c. Fundamental R&D
  d. Trademark promotion
  e. Curiosity-driven R&D?

• Through acquisitions
  a. Additional products
     ➢ novel – first
     ➢ complementary
     ➢ anti-competitive
  b. Product improvements
  c. IP: Patents ... ➢ as with a.
  d. Knowhow of staff

• Paid for by
  a. Profits on existing products (after dividends are paid out)
  b. New investors: venture funders before / stockholders after going public
  c. Loans Interest on loans up to x can be deducted from taxes
T7.3 Generalize success

A. Broaden

- Adobe: After WYSIWIG printing
  1. Pagemaker for Page composition
  2. Dreamweaver for Web composition
  3. Photoshop for Image editing

B. Deepen

- Salesforce.com
  - Customer Relationship service on-line

- Force.com
  - Operating system for on-line business applications

IP shared:
1. Customers
2. Marketing
3. Distribution

IP shared:
1. Concept
2. Technology
3. HW Support
4. Analytic SW
1. **Audience**
   - Focused
     - Salesforce
     - In front of competitors annual sale meetings 3x
     1. Fake demonstrators in SF.
     2. Give coffee, mugs, rides, literature to attendees in NY
     3. Hire all taxis in Nice, give free rides to site in Cannes.

2. **Address**
   - a. Buyers in corporations
   - b. Users and employees
     - Understand motivations for change
   - c. Both

3. **Logo & name**
   - Essential for branding
   - Metaphor
   - Negative?

4. **Timing**
   - Have Product ready
     - Few bugs
     - Clear operation
     - Useful

---

**Vs. Superbowl?**
- Much buzz
- Huge audience
- Your audience?
Customer Segmentation

• Getting a broad market presence is very hard
  ▪ Superbowl advertising: 30 seconds costs $3M
    o Apple 1984: *Macintosh*
    o Hulu 2009: *Internet video player*

➢ Find narrow markets that are now not well served
  ▪ Professional groups
    o Use professional magazines
    o Establish credibility through publishing
  ▪ Social networks
    o Participate
  ▪ Health concerns by symptoms or diagnoses
  ▪ Educational specialties
`Buzz’

Customer and potential customer interaction

• In the relevant community
  ➢ The most powerful sales tool
  ➢ Novelty and quality drive buzz
  ➢ Advertising effect is complementary

• Simple stories for the press
  ▪ Writers look for good guys vs bad guys stories
  ▪ Don’t have time to dig deep
  ▪ Match public events
    o Be ready - *security SW when there is a big break-in; ...*

• Direct mail?
  ➢ Sometimes for a specific off-the-net audience
Use your income to grow IP: R&D and Advertising

25% of business spending

- Google Adwords /Adsense to trigger where ads go
  - Show your ad on top or on the side of a search
  - Show your ad on relevant web pages
    - Charge by show (eyeballs) or click-through
    - Do that until money runs out
    - Allocate among competitors according to money made available

- Google tools for measuring Google’s ads impact
  - Measurements in other media are ad-hoc
  - Could be disregarded, but still contribute to the perception.

Perceptions is also IP, embodied in trademarks etc.
Acquisitions

• A common path for
  a. Exit from a startup venture → seller
  b. Growth of a larger company → buyer

• 2 parties at ‘Arms-length
  1. Willing seller
  2. Willing buyer

  ▪ Assumption here: no funny business
    o Buyer has funded seller, formal/ informal restrictions
    o Selling a non-exclusive license
    o Seller is object of a legal proceedings, as patent suit
    o Seller is bankrupt

➢ Both parties must agree on the value
  ▪ Both parties should understand intellectual property
1976 Xerox Parc uses Press language to drive its new Dover laserprinter

1978 John Warnock joins Parc

1984/1985

1982

12/2/2011

CS207

1982 Xerox Parc uses Press language to drive its new Dover laserprinter
1978 John Warnock joins Parc

Acquisitions:

Mac & PC

Aldus, Frame

Mac & PC

Mac & PC

Acrobat

Mac & PC

ImageReady

InDesign

IRS adopts free Reader

type=Reader

Dreamweaver

Free reader

PPT

Internal products:

Peter Deutsch Alladin OpenSource PostScript reader

Unix

Mac

PC

Jonathan Gay → Flash, Dreamweaver

Nick Corfield founds Frame Tech. for WYSIWYG

Paul Brainard (Stanford) develops PageMaker, founds

Acquisitions:

Mac & PC

Aldus, Frame

Mac & PC

Mac & PC

Acrobat

Mac & PC

ImageReady

InDesign

IRS adopts free Reader

type=Reader
Consistency in plans

When comparing business alternatives
• Give each choice the same chance

1. Temporal consistency
   ➢ Computing versus communication
     ▪ Local versus Cloud in 2012
       ○ *Skate to where the puck is going* [Gretsky]

2. Discount rate

3. Resource prices
   ➢ Green alternatives
     ▪ Benefits may depend on price of oil –
       ○ if 3 x now, why not invest in oil instead
Opportunities

• There are big waves where much changes
  1. Introduction of automation into manufacturing
  2. Introduction of data processing in business
  3. Introduction of the Internet into communication

• Within a big wave there are many small waves
  1. Management of feedback
     ▪ Product improvement, advertising
  2. Locality of computing
     a. Timesharing - many users use a large computer
     b. Personal computing – local computing is cheap
     c. Cloud computing – remote computing is flexible

All waves create opportunities
I hope that you have learned in this course a bit about a topic which is currently ignored in the CS and Engineering curricula.

Much success in your futures

Gio Wiederhold

Business models and finance topics can be discovered when experienced entrepreneurs present their history. A good resource is of the Stanford Entrepreneurship Corner, with viseos at <A HREF="http://ecorner.stanford.edu">http://ecorner.stanford.edu</A>. I recommend searching for authors as Hawkins, Ries, Kaplan, Siebel, Estrin. Some of their views differ greatly, illustrating the complexity of translating IP to success. You can also search by topics.