Global Web-based Aggregation for Financial Services and Other New Applications

Stuart Madnick  {smadnick@mit.edu}
Michael Siegel  {msiegel@mit.edu}
Harry (Hongwei) Zhu  {mrzhu@mit.edu}

Center for eBusiness@MIT
MIT Sloan School of Management

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Overview

- Aggregator definition, types & examples
- Emerging Global Aggregation
- Enabling Technologies
- Legal, Cultural, and Policy Issues
- Summary
Aggregator Definition

- Transparently collects information
  - with or without prior source arrangement
  - resolves contextual differences
- Performs analysis
  - not merely gather
- Represents user
  - acts as agent for user
# Aggregator Types & Examples

<table>
<thead>
<tr>
<th>Types</th>
<th>Internal</th>
<th>External</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comparison</td>
<td>Benchmarking divisions</td>
<td>Shop for best prices (e.g., books)</td>
</tr>
<tr>
<td>Relationship</td>
<td>Customer Relationship Management (CRM)</td>
<td>Financial account aggregation</td>
</tr>
<tr>
<td>Complementary</td>
<td>Department calendars</td>
<td>Investment analysis, policy analysis</td>
</tr>
</tbody>
</table>
by Michael A. Cusumano, Richard W. Selby (Contributor)

List Price: $38.95
Our Price: $21.00
You Save: $17.95 (30%)

Availability: Usually ships within 24 hours.

Hardcover (October 1995)
Other Editions: Paperback

Amazon.com Sales Rank: 32,674
Avg. Customer Review: ★★★★★
Number of Reviews: 5

Write an online review and share your thoughts with other readers!

Customers who bought this book also bought:

Author: Michael A. Cusumano

**Format:** Hardcover  
**Publisher:** Free Press, The  
**Date Published:** 00:00:00.0  
**Number of Pages:** 416  
**ISBN:** 0028740483  
**List Price:** $30.00

**Tips:** Did you know that results can be SORTED alphabetically or numerically? Click on the column names to sort!

<table>
<thead>
<tr>
<th>Merchant</th>
<th>Price</th>
<th>Shipping Method</th>
<th>Shipping Time</th>
<th>Shipping Cost</th>
<th>Total Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>AllDirect.com</td>
<td>$18.00</td>
<td>USPS Ground</td>
<td>7-21 days</td>
<td>$3.45</td>
<td>$21.45</td>
</tr>
<tr>
<td>Amazon.com</td>
<td>$21.00</td>
<td>Standard Shipping</td>
<td>3-7 days</td>
<td>$3.95</td>
<td>$24.95</td>
</tr>
<tr>
<td>Borders.com</td>
<td>$21.00</td>
<td>Standard</td>
<td>3-7 days</td>
<td>$3.95</td>
<td>$24.95</td>
</tr>
<tr>
<td>Fatbrain.com</td>
<td>$21.00</td>
<td>Standard</td>
<td>3-7 days</td>
<td>$3.95</td>
<td>$24.95</td>
</tr>
<tr>
<td>Books Now</td>
<td>$27.00</td>
<td>USPS Priority Mail</td>
<td>10-12 days</td>
<td>$4.95</td>
<td>$31.95</td>
</tr>
<tr>
<td>Big Words</td>
<td>$18.51</td>
<td>USPS Fast (Less than $35)</td>
<td>3-5 business</td>
<td>$4.90</td>
<td>$23.41</td>
</tr>
</tbody>
</table>
Click on one offer (1st column) to proceed to the respective shop!

Displaying Top Ten offers:

<table>
<thead>
<tr>
<th>Total Price</th>
<th>Shop</th>
<th>Item Price</th>
<th>Discount</th>
<th>US Sales Tax</th>
<th>Shopping Costs</th>
<th>Shipping Time</th>
<th>Shipping Service</th>
<th>Delivery Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>US$ 19.55</td>
<td>barnesandnoble.com, USA, NJ/NY/VA</td>
<td>US$ 15.60</td>
<td>40%</td>
<td>US$ 0.00</td>
<td>US$ 3.95</td>
<td>3-6 days</td>
<td>U.S. Postal Service</td>
<td>4-7 days</td>
</tr>
<tr>
<td>US$ 20.95</td>
<td>A1 Books, USA, NJ</td>
<td>US$ 17.00</td>
<td>35%</td>
<td>US$ 0.00</td>
<td>US$ 3.95</td>
<td>4-6 days</td>
<td>UPS Ground</td>
<td>9-11 days</td>
</tr>
<tr>
<td>US$ 21.37</td>
<td>AlphaCraze.com, USA, NY/CA</td>
<td>US$ 17.42</td>
<td>33%</td>
<td>US$ 0.00</td>
<td>US$ 3.95</td>
<td>3-7 days</td>
<td>UPS Regular Mail</td>
<td>n/a</td>
</tr>
<tr>
<td>US$ 21.54</td>
<td>BCY Book Loft, USA, OH</td>
<td>US$ 17.94</td>
<td>33%</td>
<td>US$ 0.00</td>
<td>US$ 4.00</td>
<td>14 days</td>
<td>USPS 4th Class</td>
<td>n/a</td>
</tr>
<tr>
<td>US$ 21.58</td>
<td>Shopping.com, USA, CA</td>
<td>US$ 17.63</td>
<td>32%</td>
<td>US$ 0.00</td>
<td>US$ 3.90</td>
<td>3-5 days</td>
<td>Economy</td>
<td>6-10 days</td>
</tr>
<tr>
<td>US$ 21.68</td>
<td>Kingbooks.com, USA, WA</td>
<td>US$ 19.24</td>
<td>26%</td>
<td>US$ 0.00</td>
<td>US$ 2.44</td>
<td>14 days</td>
<td>USPS Book Rate</td>
<td>16 days</td>
</tr>
<tr>
<td>US$ 22.00</td>
<td>Books.com, USA, OH</td>
<td>US$ 18.15</td>
<td>30%</td>
<td>US$ 0.00</td>
<td>US$ 3.85</td>
<td>14-42 days</td>
<td>USPS Book Rate</td>
<td>16-45 days</td>
</tr>
<tr>
<td>US$ 22.10</td>
<td>Borders.com, USA, MI/TN</td>
<td>US$ 18.20</td>
<td>30%</td>
<td>US$ 0.00</td>
<td>US$ 3.90</td>
<td>3-7 days</td>
<td>Standard</td>
<td>4-6 days</td>
</tr>
<tr>
<td>US$ 22.10</td>
<td>Books.com, USA, OH</td>
<td>US$ 18.15</td>
<td>20%</td>
<td>US$ 0.00</td>
<td>US$ 3.95</td>
<td>2-10 days</td>
<td>UPS</td>
<td>4-13 days</td>
</tr>
<tr>
<td>US$ 22.15</td>
<td>Amazon.com, USA, WA/NV</td>
<td>US$ 18.20</td>
<td>30%</td>
<td>US$ 0.00</td>
<td>US$ 3.95</td>
<td>3-7 days</td>
<td>USPS Priority Mail</td>
<td>4-8 days</td>
</tr>
</tbody>
</table>

* Now called DealTime.com

Comment: Need for Mega-Aggregators
Concept of a Financial Account Aggregator (FAA)

User

Aggregator

Citigroup Credit Cards

Fidelity Brokerage

Fleet Banking

BancOne Credit Cards
Financial Account Aggregator

Access both Citi and non-Citi accounts in one secure place.

Link directly to your accounts without separate log-in.

Get account details, including transactions and payment due dates.

Consolidate all your investment information.

**Aggregatee**

**Aggregator**
Example FAA Offerings

Account Aggregation Technology Suppliers

- Yodlee
- VerticalOne
- eBalance

Account Aggregation Offerings

- Chase, Fleet, Citibank (myCiti.com), …
- Merrill-Lynch, Fidelity Investments, …
- Yahoo, AOL, …
“Aggregation ... The ‘killer app’ in the e-finance revolution”

http://www.tfconferences.com/conferences/AAG01/index.html
“After Aggregation” Services

**User**
- Asset Allocation
- Excel
- User Information

**FAA**
- Account Analyst
- First Call
- Other Internet Sources
  - Financial Sources
  - Other Internet Sources
  - Financial Sources

**Advisors**
- Advisors
- Wizards
- Agents

**Emergence of Open Aggregation**

**Intranet Sources and applications**
**Wizards: Money Market (MMA) example**

![Image of a website interface](Image)

### My Account Summary

**as of Thu, 10 Feb 2000 22:11:08 -0600**

#### Deposit Accounts

<table>
<thead>
<tr>
<th>Bank Name</th>
<th>Account Number</th>
<th>Nickname</th>
<th>Account Type</th>
<th>Available Balance</th>
</tr>
</thead>
<tbody>
<tr>
<td>BankOne</td>
<td>426642545</td>
<td>234234</td>
<td>Checking</td>
<td>2200.00</td>
</tr>
<tr>
<td>Security First Network Bank</td>
<td>1298145662</td>
<td>My general account</td>
<td>MMA</td>
<td>2000.00</td>
</tr>
<tr>
<td>Citibank</td>
<td>785149476</td>
<td>school 1</td>
<td>Checking</td>
<td>957.00</td>
</tr>
</tbody>
</table>

**Total: 5157.00**

#### Credit Cards Accounts

<table>
<thead>
<tr>
<th>Issuer</th>
<th>Account Number</th>
<th>Nickname</th>
<th>Available Credit</th>
<th>Balance</th>
</tr>
</thead>
</table>

![Image of a website interface](Image)
MMA is also an aggregator, of MM rate sources

The MMA Wizard has examined your account. If you put your money in:

**Republic Bank and Trust**
for **12 months**
you can make an extra: **$173.38***  
*at the current rate*

Here's what you would have saved using the Money Market Aggregator!

The following are the Top 3 options available to you:

<table>
<thead>
<tr>
<th>Bank Name</th>
<th>APY</th>
<th>Minimum Deposit</th>
<th>Possible Earnings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Republic Bank and Trust</td>
<td>5.36</td>
<td>5000</td>
<td>$173.38</td>
</tr>
<tr>
<td>Domestic Bank</td>
<td>5.30</td>
<td>5000</td>
<td>$163.04</td>
</tr>
</tbody>
</table>

**Better rates**
Multi- Mega- Aggregator!

- Our Universal Financial Aggregator (UFA) is:
  - Relationship Aggregator:
    - Aggregates your financial information
      - several ways: totals and stock holdings
  - Comparison Aggregator:
    - A Money Market rate Mega-Aggregator
      - draws on multiple MM sources
      - including sources that are, in fact, aggregators of some MM sources
Complementary Aggregator (Internal & External Sources)

Integrated Spreadsheet

Real time
Tibco Sources

Internal

External

Merrill Lynch Research Report: General Motors

Long Term Recommendation: ACQUIRE

Price: $57

12 Month Price Objective: $68


EPS: $7.44 $7.57 $7.63

P/E: 27.63x 7.67x 6.03x

Investment Opinion: B-2-2-7

Net, Value / Shares Outstanding (m): 220,011

Intel Corp

Press Digest - Wall Street Journal - July 29 - 2:12 am

Yahoo! Finance

Press Digest - Wall Street Journal - July 29 - 2:12 am

Integrated Spreadsheet

Portfolio Performance

Market Value

INTC 25%
IBM 41%
GM 34%

Sources

Internal

External

Real time
Tibco Sources

Integrated Spreadsheet

Portfolio Performance

Market Value

INTC 25%
IBM 41%
GM 34%

Sources

Internal

External

Real time
Tibco Sources
There may be value in aggregation but...

The REAL VALUE is after aggregation services

- **Books.com** - How to price my books?
- **MaxMiles.com** - Who flies where and when?
- **Intershipper.net** - Who ships, from where, to where, how much?
- **Money Market/CD rates** - Will my offering be effective? Are the holes in the market?
- **UFA** - Can I manage my finances better?
Everyone is impacted:

If you are not an Aggregator, you are an Aggregatee

- Books.com, MySimon.com, EvenBetter.com
  - Barnes and Noble, Borders, Amazon, ...
- MaxMiles
  - United, American, TWA, US Air, ...
- Universal Financial Aggregator (UFA)
  - your banks, your brokers, your billers, ...

- NOTE: Aggregatees -> Aggregators
Overview

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# Global Aggregation

<table>
<thead>
<tr>
<th>Inter-organization</th>
<th>Domestic e-business</th>
<th><em>Global e-business</em></th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Most online shopping today</em></td>
<td>- Global Financial Account Aggregator</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Global Comparison Aggregator: Comparing prices of domestic and foreign vendors</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Intra-organization</th>
<th>Domestic internal e-business</th>
<th>Global internal e-business</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Cross-selling between domestic divisions</em></td>
<td><em>Exchanging information between branches in different countries</em></td>
<td></td>
</tr>
</tbody>
</table>

## Intra-nation (domestic)

## International

### Transaction flow:
- Information/service
- Physical goods
Global Comparison Aggregator

Want to find the best online price?

Are you interested in shopping for a SONY DCR-IP5, a pocket-sized digital camcorder that weighs only 12 oz (367g), records in MPEG format, and looks like the one shown here?

Yes!

OK, we will help you find the best prices online!
Which country are you from or would you like to do your shopping in?

http://soursop.mit.edu/global
Best global online price

Best Prices Found …

We searched 16 online stores in Sweden and the lowest price was $1750.

Even better:

We also searched stores outside Sweden. We searched a total of 172 stores worldwide and the lowest price was $783 from a store in The Netherlands.

In case you are interested, the highest price was $2237 from a store in Sweden.

Is that cool to find out the world best prices when you shop online? Out of curiosity, you may have a few questions, such as:

How prices of the camcorder differ in various parts of the world?
- Take a guess. Then go to Price Dispersion for some hint.

Is there a global bargain finder like this for me to use?
- Not really. Although there are tools that search prices regionally.

Does the lowest price from the Netherlands include shipping?
- Great question! See “Price - What is it, really?” for explanations.

What are the challenges for building a global bargain finder?
- See the Design section for our approach and a live demonstration.
<table>
<thead>
<tr>
<th>Source</th>
<th>Price</th>
<th>Price Total</th>
<th>Shipping</th>
<th>In Stock</th>
</tr>
</thead>
<tbody>
<tr>
<td>US</td>
<td>$999.00</td>
<td>$869.39</td>
<td>1798.00€ (11 794 FF)</td>
<td>Check with retailer</td>
</tr>
<tr>
<td>Sweden</td>
<td>$1195.00</td>
<td>$869.39</td>
<td>1798.00€ (11 794 FF)</td>
<td>Check with retailer</td>
</tr>
<tr>
<td>France</td>
<td>$1199.99</td>
<td>$899.95</td>
<td>1999.00€ (13 113 FF)</td>
<td>Check with retailer</td>
</tr>
<tr>
<td>UK</td>
<td>$1199.99</td>
<td>$926.16</td>
<td>1802.00€ (11 820 FF)</td>
<td>Direct link</td>
</tr>
<tr>
<td></td>
<td>$1199.99</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>$1199.99</td>
<td></td>
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<tr>
<td></td>
<td>$867.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>$893.99</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Benefits of Global Aggregation

- A tool for market study
  - Timely and specific pricing information
- Reduce search cost
- Increase competition in market
  - Increase efficiency
  - Evidenced by lower price on the Internet (6-16% lower according to Brynjolfsson and Smith, 2000)
  - Estimated potential of $23 Billion surplus in consumer electronics market in U.S. and Western Europe.

\[ CV = - \frac{(1 - \phi) p_0 (1 - \phi \alpha) x_0 - p_0 x_0}{1 + \alpha} \]
Aggregation in Other Domains

Q: How did CO2 emissions (total, per GDP, per capita) change over time (between 1990 and 2000) in Yugoslavia?

- User 1: YUG as a geographic region bounded before the breakup
- User 2: YUG as a legal autonomous state

New related efforts:
- Laboratory for Information Globalization and Harmonization Technologies (LIGHT)
- Computational Politics project
World Bank's World Dev. Indicator DB; UN Statistic Division; Statistics Bureaus

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>YUG</td>
<td>698.3</td>
<td>1627.8</td>
<td>23.7</td>
<td>10.6</td>
</tr>
<tr>
<td>BIH</td>
<td>13.6</td>
<td>3.9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HRV</td>
<td>266.9</td>
<td>4.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MKD</td>
<td>608.7</td>
<td>2.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SVN</td>
<td>7162</td>
<td>2.0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

OAK Ridge's CDIAC DB; WRI; GSSD; EPAs

<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>YUG</td>
<td>35604</td>
<td>15480</td>
</tr>
<tr>
<td>BIH</td>
<td>5405</td>
<td>1279</td>
</tr>
<tr>
<td>HRV</td>
<td>3378</td>
<td></td>
</tr>
<tr>
<td>MKD</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SVN</td>
<td>3981</td>
<td></td>
</tr>
</tbody>
</table>

In 1000 tons per year

<table>
<thead>
<tr>
<th>From</th>
<th>To</th>
<th>1990 USD</th>
<th>2000 USD</th>
</tr>
</thead>
<tbody>
<tr>
<td>USD</td>
<td>YUG</td>
<td>10.5</td>
<td>67.267</td>
</tr>
<tr>
<td>USD</td>
<td>BIH</td>
<td>2.086</td>
<td></td>
</tr>
<tr>
<td>USD</td>
<td>HRV</td>
<td>8.089</td>
<td></td>
</tr>
<tr>
<td>USD</td>
<td>MKD</td>
<td>64.757</td>
<td></td>
</tr>
<tr>
<td>USD</td>
<td>SVN</td>
<td>225.93</td>
<td></td>
</tr>
</tbody>
</table>

User 1

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>YUG</td>
<td>1.5</td>
<td>1.28</td>
<td>66.5</td>
<td>104.8</td>
</tr>
<tr>
<td>BIH</td>
<td>1.5</td>
<td>1.46</td>
<td>535</td>
<td>640</td>
</tr>
<tr>
<td>HRV</td>
<td>1.5</td>
<td>1.10</td>
<td>2800</td>
<td>4560</td>
</tr>
</tbody>
</table>

User 2

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>YUG</td>
<td>1.5</td>
<td>1.28</td>
<td>66.5</td>
<td>104.8</td>
</tr>
<tr>
<td>BIH</td>
<td>1.5</td>
<td>1.46</td>
<td>535</td>
<td>640</td>
</tr>
<tr>
<td>HRV</td>
<td>1.5</td>
<td>1.10</td>
<td>2800</td>
<td>4560</td>
</tr>
</tbody>
</table>

Total CO2 in 1000 tons per year; GDP in billions USD; CO2/Capita in tons per person; CO2/GDP in tons per million USD; GDP/Capita in USD per person

Many sources needed: Meanings in sources & users might differ
Challenges to Global Aggregation

- **Technical**
  - Data Collection
  - Screen Scraping
  - Direct Data Feed
  - Semantic Integration
  - Security

- **Legal**
  - Data Reuse
  - Privacy
  - Liability
  - Jurisdiction

- **Cultural**
  - Internet Penetration
  - Trust
  - Online Shopping
  - E-Banking Adoption

Some of these addressed in Our eReadiness studies
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MIT COnext INterchange (COIN) Project

APPLICATIONS: Financial services, electronic commerce, asset visibility, in-transit visibility.
Emerging Technologies

Web wrappers
- Extract selected information from web
- Allows web to be treated as large database

Context mediators
- Resolve semantic (meaning) differences
- Enable meaningful aggregation
& comparison
Role Of Context

- **CONTEXT VARIATIONS:**
  - GEOGRAPHIC (US vs. UK)
  - FUNCTIONAL (CASH MGMT vs. LOANS)
  - ORGANIZATIONAL (CITIBANK vs. CHASE)

Data:
- Databases
- Web data
- Email
Example: Context Differences
(from multiple web sources)

Daimler Benz (DAI) Key Ratios

<table>
<thead>
<tr>
<th></th>
<th>P/E Ratio</th>
<th>EPS</th>
<th>Dividend</th>
</tr>
</thead>
<tbody>
<tr>
<td>ABC</td>
<td>11.6</td>
<td>0.29</td>
<td>11.6</td>
</tr>
<tr>
<td>Bloomberg</td>
<td>5.57</td>
<td>15.32</td>
<td>8.127</td>
</tr>
<tr>
<td>DBC</td>
<td>19.19</td>
<td>4.36</td>
<td>0.899</td>
</tr>
<tr>
<td>MarketGuide</td>
<td>7.46</td>
<td>10.83</td>
<td>0.47</td>
</tr>
</tbody>
</table>
The 1999 Overture

Unit-of-measure mixup tied to loss of $125 Million Mars Orbiter

“NASA’s Mars Climate Orbiter was lost because engineers did not make a simple conversion from English units to metric, an embarrassing lapse that sent the $125 million craft off course. . . .

. . . The navigators (JPL) assumed metric units of force per second, or newtons. In fact, the numbers were in pounds of force per second as supplied by Lockheed Martin (the contractor).”

COntext Interchange (COIN) Technology

Concept: Length

Meters  Feet

Shared Ontologies

Conversion Libraries

Source (s)  Receiver (s)

Source Context  Receiver Context

Context Mediator

Context Transformation

function( )
meters  feet

Shared Ontologies

Context Management

Receiver (s)

Concept: Length

Meters       Feet

Conversion Libraries

Context Management

Source (s)  Receiver (s)

Source Context  Receiver Context

Context Mediator

Context Transformation

function( )
meters  feet
COIN Implementation of Global Comparison Aggregation

Regional Aggregators

USA  France  UK  Sweden

Cameleon Web Wrapper

Context KB  COIN Mediator  Ontology, Elevation Axioms  Optimizer

Users get meaningful aggregated results
# Sample Contexts and Conversions

<table>
<thead>
<tr>
<th>Sources</th>
<th>Users/Receivers</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Currency</strong></td>
<td><strong>USD</strong></td>
</tr>
<tr>
<td>US</td>
<td>France</td>
</tr>
<tr>
<td>USD</td>
<td>Euro</td>
</tr>
<tr>
<td><strong>Tax</strong></td>
<td>Included, rate is 19.5%</td>
</tr>
<tr>
<td><strong>Shipping</strong></td>
<td>domestic: $50 Int'l: $100</td>
</tr>
</tbody>
</table>

Suppose you are from U.S. and would like to know price in terms of cost. Your context is described by **US_Cost** column. The following shows necessary conversions:

<table>
<thead>
<tr>
<th>Source Context</th>
<th>Target Context</th>
<th>Conversions</th>
</tr>
</thead>
<tbody>
<tr>
<td>US</td>
<td></td>
<td>Add domestic shipping</td>
</tr>
<tr>
<td>France</td>
<td>US_Cost</td>
<td>Deduct 19.5% French tax; add 3% import tax; add €100 shipping; convert € to $</td>
</tr>
<tr>
<td>UK</td>
<td></td>
<td>Deduct 17.5% UK tax; add 3% import tax; add £50 shipping; convert £ to $</td>
</tr>
<tr>
<td>Sweden</td>
<td></td>
<td>Deduct 25% Swedish tax; add 3% import tax; add 800kr shipping; convert kr to $</td>
</tr>
</tbody>
</table>

Live Demo: [http://soursop.mit.edu/gcms/demo/Demo.jsp?app_id=431&qindex=0](http://soursop.mit.edu/gcms/demo/Demo.jsp?app_id=431&qindex=0)
Overview

- Aggregator definition, types & examples
- Emerging Global Aggregation
- Enabling Technologies
- Legal, Cultural, and Policy Issues
- Summary
Legal, Cultural, and Policy Issues Regarding Aggregation

- **Protection of investment in data vs re-use**
  - EU Database Directive
  - 4 proposed bills in US

- **Protection of consumer privacy**
  - EU Data Directive
  - GLBA most relevant to account aggregation
  - and many other related laws

- Liability, consumer protection, jurisdiction
Database Re-Use Lawsuits and Claims

**Example Cases**
- eBay vs. Bidder’s Edge
- HomeStore.com vs. Bargain Network
- First Union vs. PayTrust
- mySimon vs. Priceman
- Register.com vs. Verio
- Ticketmaster vs. Tickets.com

**Principles Used**
- Copyright infringement
- Trespass to chattels
- Breach of contract
- Misappropriation
- False advertising
- Violation of the Computer Fraud and Abuse Act
- ...

“Copyright infringement”

- Protects original works of authorship
- Usually not applicable to data re-use

“Trespass to chattels”

- eBay vs. Bidder’s Edge
  - Injunction on May 24, 2000

- Ticketmaster vs. Tickets.com
  - “It is hard to see how entering a publicly available web site could be called a trespass”
Battle over Database Re-Use - continued

New Paradigm – “sweat of the brow”

- Collections of Information Antipiracy Act, H.R.354 (1999) – Coble bill
- Two other failed bills in 1996, 1997
- EU Database Directive
Privacy Protection

- 63.6% users and 76.1% non-users believe that online users put their privacy at risk.

- Privacy law is highly decentralized:
  - Title V of Gramm-Leach-Bliley Act
  - Fair Credit Reporting Act
  - Right to Financial Privacy Act
  - Electronic Communications Privacy Act
  - Computer Fraud and Abuse Act
  - Federal Educational Rights and Privacy Act

- Trade-off: Industry relies on information sharing and re-use:
  - Over protection will cause reduction in efficiency, fraud detection capability, and quality of services (call centers, pre-filled applications, relationship pricing, proactive offers, targeted marketing, 3rd party services)

- Financial Service Roundtable estimate impact: $17B; 320 M Hrs
## International Differences

<table>
<thead>
<tr>
<th>U.S.</th>
<th>E.U.</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Decentralized</td>
<td>- Centralized</td>
</tr>
<tr>
<td>- Self-regulation</td>
<td>- Specific, strict regulation</td>
</tr>
<tr>
<td>- No DB protection law</td>
<td>- DB Directive</td>
</tr>
<tr>
<td>- Opt-out for privacy</td>
<td>- Opt-in for privacy</td>
</tr>
</tbody>
</table>

### Reciprocity provision
- Not protected if home country does not have similar law for DB protection
- No data flow to countries without similar privacy protection law

### Harmonization is needed
- Safe Harbor Agreement between US and EU
Other Trade Barriers

10 Categories identified by Office of U.S. Trade Representative:

1. **Import policies** (e.g., tariffs, customs barriers)
2. **Standards, testing, labeling and certification**
3. **Services barriers** (e.g., limits on financial services offered by foreign financial institutions, regulation of international data flows, restrictions on the use of foreign data processing)
4. **Trade restrictions affecting electronic commerce** (e.g., tariff and nontariff measures, burdensome and discriminatory regulations and standards, and discriminatory taxation)
5. **Government procurement**
6. **Export subsidies**
7. **Lack of intellectual property**
8. **Investment barriers**
9. **Anticompetitive practices with trade effects tolerated by foreign governments**
10. **Other barriers** (barriers that encompass more than one category)
Overview

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## Key Global Aggregation Insights & Implications

<table>
<thead>
<tr>
<th>Insights</th>
<th>Implications</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Everyone impacted</td>
<td>• Be part of strategy planning</td>
</tr>
<tr>
<td>• Aggs not limited to price comparison</td>
<td>• Identify new Agg applications and business opportunities</td>
</tr>
<tr>
<td>• Aggs can be combined and aggregated</td>
<td>• Entirely new types of applications can be defined</td>
</tr>
<tr>
<td>• Aggs create new info spaces</td>
<td>• Who will own this space</td>
</tr>
<tr>
<td>• After-agg even more important</td>
<td>• This must be exploited</td>
</tr>
<tr>
<td>• New technologies emerging</td>
<td>• Exploit these technologies</td>
</tr>
<tr>
<td>• Business models and market conditions continue to change</td>
<td>• Must be prepared for changes</td>
</tr>
</tbody>
</table>
In 1805, the Austrian and Russian Emperors agreed to join forces against Napoleon. The Russians said their forces would be in the field in Bavaria by Oct. 20.

The Austrian staff planned based on that date in the Gregorian calendar. Russia, however, used the ancient Julian calendar, which lagged 10 days behind.

The difference allowed Napoleon to surround Austrian General Mack’s army at Ulm on Oct. 21, well before the Russian forces arrived.

Current Projects (partial list)

- **Aggregation strategies** (e.g., Open aggregation)
- **Regional & Global Aggregation:** Cultural & legal
- **Multi-enterprise eBusiness:** Trust & relationships
- **Financial services/Internet support for SME’s**
- **Future Financial Services** (e.g., Wireless aggregator)
- **Context Mediation & Web data extraction** *
- **Data Quality & What XML will and will not do**
- **Internal & Industry data standards efforts**
- **Other new technologies** (e.g., Mobile aggregation)

*Patents awarded in 1999*
For Further Information and Contacts

MIT Research:
- http://context2.mit.edu and http://context2.mit.edu/aggregation
- http://web.mit.edu/tdqm

MIT Technology Licensed Software:

Email Contact:
- Stuart Madnick at smadnick@mit.edu
- Michael Siegel at msiegel@mit.edu
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