MASSACHUSETTS INSTITUTE OF TECHNOLOGY
SLOAN SCHOOL OF MANAGEMENT

15.565 Integrating Information Systems:
Technology, Strategy, and Organizational Factors

15.578 Global Information Systems:
Communications & Connectivity Among Information Systems

Spring 2002

Lecture 5
AGGREGATORS: TRAVELLING THE INTERNET "FAST LANE"

MIT eBusiness & Financial Services
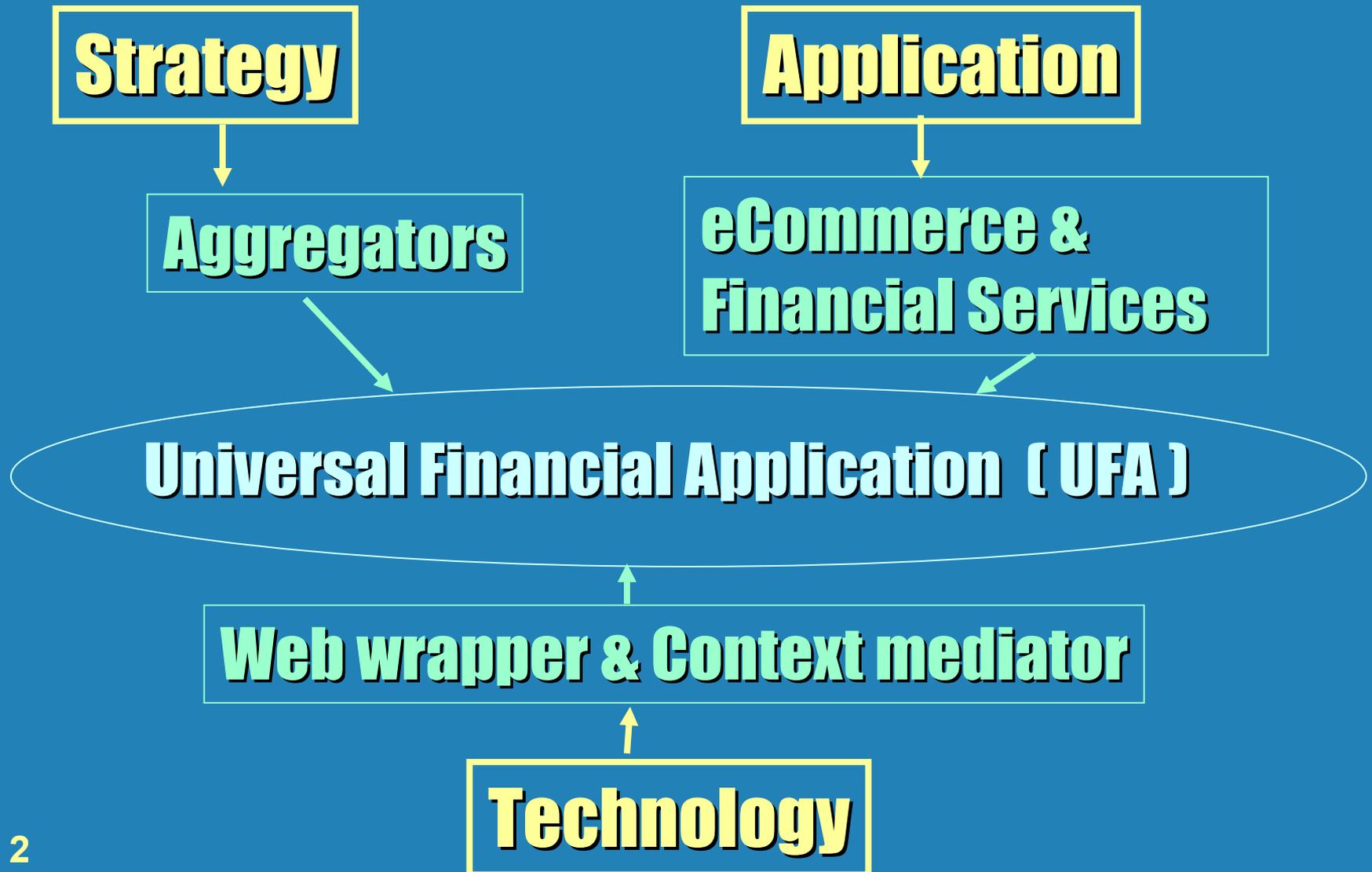
Strategy

Application

Aggregators

eCommerce & Financial Services

Universal Financial Application（UFA）

Web wrapper & Context mediator

Technology

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Overview

- **Aggregator definition, types & examples**

- **Enabling technologies**

- **New emerging aggregators**

- **Aggregator / Aggregatee strategies**

- **Summary**

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Aggregator Definition

- **Transparently collects information**
  - with <u>or without</u> prior source arrangement
  - resolves contextual differences
- **Performs analysis**
  - not merely gather
- **Represents user**
  - acts as agent for user

Aggregator Types & Examples

- **Comparison Aggregator**
  - aggregates book price information
- **Relationship Aggregator**
  - aggregates frequent flier milage programs
- **Intra-organizational Aggregator**
  - aggregates separate departmental calendars
- **Inter-organization Aggregator**
  - aggregates information about a company from multiple sources (financials, news, etc)

www.amazon.com

www.evenbetter.com *

* Now called DealTime.com

www.books.com *

* Acquired by Barnes & Nobles

www.mysimon.com

Mega - Aggregators

℧ **Note: multiple book price aggregators**

- **using differing sources**

- **giving differing results !**

℧ **What about an aggregator of aggregators**

- **A   Mega- Aggregator   ... more later ...**

℧ **Aggregators not just about prices ...**

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www.usair.com

www.maxmiles.com

What is MaxMiles

- You give it all your frequent flyer info, it . . .
- Does mileage management for you . . .
- Gathers all your frequent flyer info
- Sends a personalized report via email
- Updates reports on web site daily
- Searches for missing mileage credits
- Analyzes most current milage offers

From US Airways site

"Access to this information is subject to the rules in the Dividend Miles Membership Guide. In addition, by using this site to access your Dividend Miles account, you agree that you will use this site in a manner consistent with the Dividend Miles Membership Guide and you further agree not to allow access to this site to any third party by revealing your access code to any third party for any reason. Failure to comply with the foregoing restrictions on the use of this site shall be grounds for the termination of your access to this site and/or your membership in the Dividend Miles program."

"Power of Attorney" on MaxMiles Site

Aggregators are your agents

ß **Note: MaxMiles is merely aggregating your information for you**

ß **More examples of relationship aggregators later**

ß **Many more types of aggregators . . .**

Real time Tibco

Stock Portfolio

	B	C	D	E	F	G	H	I	J	K
1	Available Portfolios:		Attributes form Research Report			Attributes from Edgar SEC Filings				
3	Portfolio #2		Investment Opinion			Net Income				
5	Portfolio #3		52 - Week Range			Interest Expense				
6			Update		Clear					

Portfolio Performance — Portfolio #2, INTC, IEM, GM

Market Value — GM 36%, INTC 22%, IBM 41%

	Stock	Ticker Symbol	Shares held	Purchase Price	Current Price	Market Value	Gain / Loss		Investment opinion	Net Income
21	Intel Crop	INTC	15000	50	93.625	1404375	654375		B-1-1-7	1983
22	Intl Bus Machine	IBM	24000	65	105	2520000	960000		B-3-2-8	1,595
23	General Motors	GM	35000	50	64	2240000	490000		B-2-2-7	1,796
25					Total Value	6164375				

	Latest News:	
27	Intel Crop	PRESS DIGEST - Wall Street Journal - July 29 -2:12 am
28	Intl Bus Machine	Eloquent to offer presentation system for Internet - Sunday November 2, 1997 - 12:32pm
29	General Motors	Suzuki To Appeal Jury Award - Saturday November 1, 1997 - 12:13am

Free EDGAR℠ COMPANIES [FILINGS] WATCHLIST ANALYSIS REFERENCE CONTACT HELP

Start a new Filings Search
Filings for INTEL CORP
View Company Profile for INTEL CORP
Today's SEC Filings
Content's...
Header
Body:
10-0
Part 1
Item 1 : Financial Statement

Interest income and other, net	215	76
Income before taxes	3,075	1,376
Provision for taxes	1,092	482
Net income	$ 1,983	$ 894
Earnings per common and common equivalent share	$ 2.20	$ 1.02
Cash dividends declared per common share	$ 0.05	$ 0.04
Weighted average common and common equivalent shares outstanding	900	880

</TABLE>

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Intel Corp

[Company Profile - Current Stock Price]

Tuesday July 29, 1997

PRESS DIGEST - Wall Street Journal - July 29 - Reuters - 2:12 am

External

Merrill Lynch Research Report: General Motors

Long Term Recommendation			ACCUMULATE		
Price:				$57	
12 Month Price Objective:				$68	
Estimates (Dec)		1996A	1997E		1998E
EPS:		$7.44	$7.57		$8.23
P/E:		7.63x	7.87x		8.03x
Opinion & Financial Data					
Investment Opinion			B-2-2-7		
Mkt. Value / Shares Outstanding (mn) :			$89,011		

Internal

Aggregatees

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

Heard-on-the-Street (Hypothetical)

"Last year we rushed to develop a website and release our Mortgage Rates on the Web, . . . this month we no longer sell mortgages. Isn't e-commerce great."

--- an unemployed financial services aggregatee

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Emerging Technologies

℧ **Web wrappers**

- <u>Extract</u> selected information from web
- Allows web to be treated as large database

℧ **Context mediators**

- <u>Resolve</u> semantic (meaning) <u>differences</u>
- Enable meaningful aggregation & comparison

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Concept of a Universal Financial Aggregator (UFA)

User

UFA

Citigroup
Credit Cards

Fidelity
Brokerage

Fleet
Banking

BancOne
Credit Cards

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What we do
Aggregator Home
Demos
Publications
News
Current Team
Alums
Acknowledgements
Related Efforts
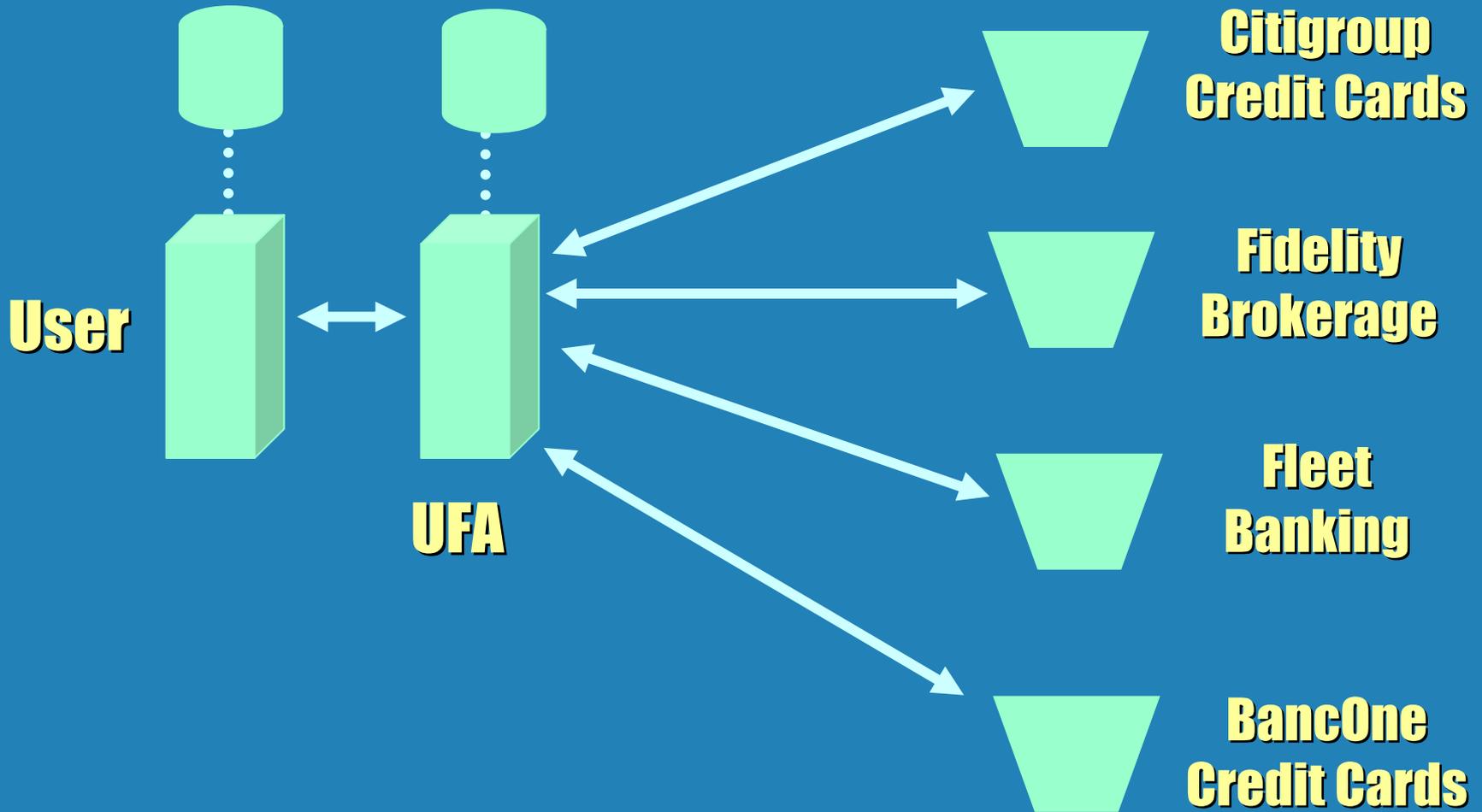
COntext **IN**terchange
Project

Home of Aggregator Research

Current UFA Offerings (examples)

Account Aggregation Technology Suppliers
- Yodlee
- VerticalOne
- eBalance

Account Aggregation Offerings
- Chase, Fleet, Citibank (myCiti.com), . . .
- Merrill-Lynch, Fidelity Investments, . . .
- Yahoo, AOL, . . .

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"Aggregation . . . The 'killer app' in the e-finance revolution"

http://www.tfconferences.com/conferences/AAG01/index.html

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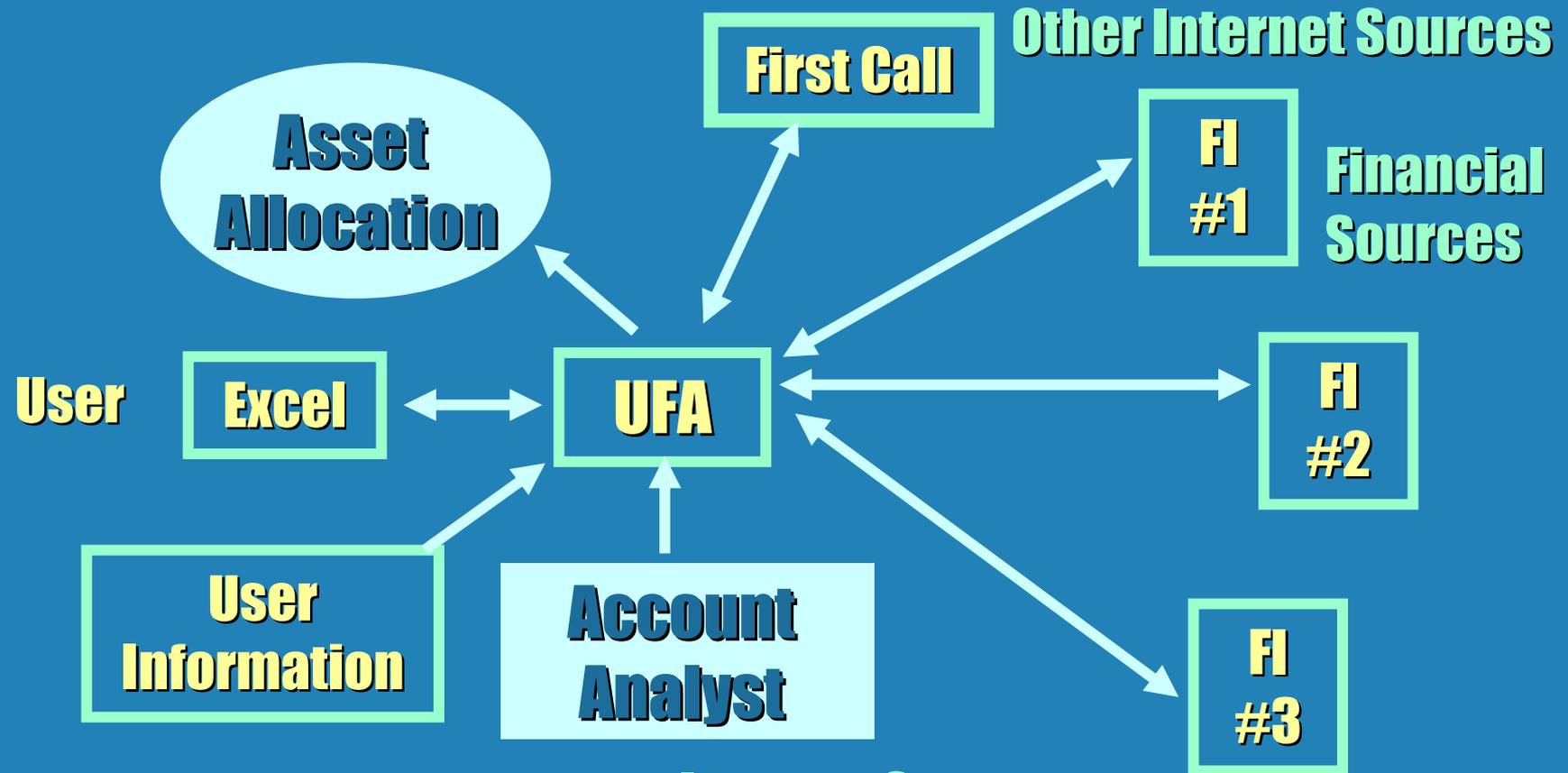
"After Aggregation" Services

Advisors: Stock holdings re-aggregate

Account Summary

Brokerage	Account Number	Total Value
		37695.00
		23449.16
		0.00

Money Market Balance 0.00

Stocks

Symbol	Quantity	Price	Value
	100.00	41.33	4133.00
	256.00	49.87	12766.72
	100.00	10.55	1055.00
	300.00	64.16	19248.00
	100.00	39.13	3913.00
	300.00	7.74	2322.00
	200.00	71.56	14312.00
	0.00	5.21	0.00
	200.00	17.08	3416.00
		Total:	61165.72

25
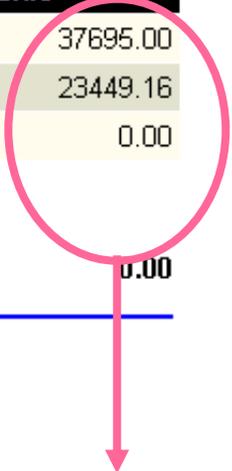
Wizards: Money Market (MMA) example

MMA is also an <u>aggregator</u>, of MM rate sources

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Multi- Mega- Aggregators !

- ℒ The Universal Financial Aggregator (UFA) :
- ℒ <u>Aggregates</u> your financial information
  - several ways: totals and stock holdings
- ℒ Also uses the Money Market <u>Aggregator</u>
  - which draws on multiple MM sources
  - including sources that are, in fact, <u>aggregators</u> of some MM sources

UFA Goals

- Consumers and Financial Institutions:
  - Can do what they do better
  - Can do things they could not do before
  - Redefine the use, role, and relationship of financial service
- Business-to-Business examples also

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Key Conclusion - Everyone Impacted

- **Aggregator / Aggregatees:**
  - **Aggregators** create new marketplaces
  - **Aggregatees** need to be in these marketplaces (external impact)
  - **Aggregatees** need data from these marketplaces (internal impact)

- **Aggregation** needs to be part of every eBusiness and core business strategy.

How Do I Play?

 b Decide <u>if</u> and <u>where</u> you want to be an aggregator.

b Determine ways <u>you might be aggregated.</u>

b Define your strategic advantages in both situations and use them.

b Decide your "relationship state" with aggregatees and aggregators.

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Aggregator & Aggregatee Relationship States

Aggregator Perspective

Independent Agent

Aggregate withOUT agreement

Ind.Aggregator

Eliminated

Aggregated

Aggregate FEW with agreement

REFUTE aggreement with others

Aggregate some Aggtee with agreement

Aggregate ALL Aggtees with agreement

Ind. Aggregator / Limited Alliance

Aggregate FEW with aggrement

REFUTE aggreement with others

Partial Collaborative Aggregator

Aggregate ALL Aggtee with agreement

Full Collaborative Aggregator

Spin-Off

Spin-Off

Receive investment

Receive investment from ONE Aggted

Eliminated

Dep Aggregator / Consortium

Receive investment

Dep. Aggregator / Dominant

Obs:
• The most relevant transitions are represented
• An Aggregator can stay on any state without evolving to another aggregation state

Eliminated

www.intershipper.net

www.iship.com

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Aggregator "states" example

Intershipper

↓

Independent Agent (BITS, Inc.)

↓

Independent Aggregator

↓

iShip

Partial Collaborative Aggregator

↓

↓

Dependent Aggregator / Dominant (UPS)

Dependent Aggregator / Consortium

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Revenue Models: Business-oriented (beyond advertising)

- **Application Service Provider**
- **Lead / Sales Generator**
  - Identify buy opportunities for user
  - Assemble packages
  - Increase trust & reduce uncertainty
- **After-aggregation knowledge provider**
  - To aggregatee and/or 3rd party

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Revenue Models: Consumer-oriented

- **Information management services**
  - Relationship management
  - Specially aggregated information
- **Consumer agent**
  - Comparison shop
  - Create compound product / package
- **After-aggregation services**
  - Provide insights and/or take actions

There may be value in aggregation but...

The REAL VALUE is <u>after aggregation</u> 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?

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Key Insights and Implications

Insights

- **Everyone impacted**
- **Aggs not limited to price comparison**
- **Aggs can be combined and aggregated**
- **Aggs create new info spaces**
- **After-agg even more important**
- **Aggs changes relationships**
- **Business models and market conditions continue to change**

Implications

- **Be part of strategy planning**
- **Identify new Agg applications and business opportunities**
- **Entirely new types of applications can be defined**
- **Who will own this space**
- **This must be exploited**
- **What relationship do you want**
- **Must be prepared for changes**

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Current Projects (partial list)

- Aggregation strategies (e.g., Account aggregators)
- 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 <u>not</u> do
- Internal data standards efforts (e.g., EDSI)
- Other new technologies (e.g., Mobile aggregation)

* Patents awarded in 1999

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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:**
  - http://www.arsdigita.com/products

  –

Summary

- b **Understand Aggregation Opportunities**

- b **Aggregator Tools**

- b **Strategies for Aggregators**

- b **Strategies for Aggregatees**

- b **After Aggregation Opportunities**

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Acknowledgements

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