

# How to manage complex information value chains for data centric business models



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# —Agenda

Online retail market

Value creation for consumers in e-commerce

- Areas for value creation in shopping lifecycle

- Available data and information

- Technology areas and algorithms

- Apply algorithms and data for example for recommendations

Challenges

Examples



## —Online retail market: Ciao / Bing Shopping Europe

### Fakten

#### Online retail market 2009

Germany: € 31,3b\*

Europe: € 128,6b\*

#### Ciao / Bing Shopping Europe

Comparison Shopping: #1 in DE, FR, IT, ES | #2 UK, NL | #5 SE

> 44 Mio. Unique Visitors\*\*

> 57,5 Mio. Visits\*\*

~ 145 Mio. Page Impressions\*\*

> 7,7 Mio. Products

> 5,5 Mio. Consumer reviews

> 3.200 Merchants

\* Quelle: Forrester Research, „German/EMEA Online Retail and Travel Forecast 2008-2014, 2009

\*\* Omniture / 30. September 2009



from bing

## —Value creation for consumer in e-commerce

Wide area of value proposition with information and data

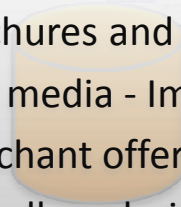


### Buying process from consumer perspective




## —Available online data and information

Broad variety of online data available related to e-commerce



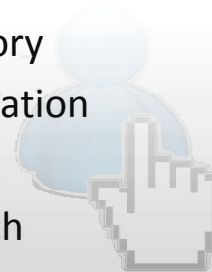
Product catalogs  
Product attributes and specs  
Product associations  
Borchures and manuals  
Rich media - Images/Videos  
Merchant offers  
Overall poularity of products

Facts



Binary opinion ,Like it', ,Own it'  
Product ratings  
Product attribute ratings  
Cagegory / attribute selection  
Product lists

Explicit user preferences



Browsing – click-path data  
User behavior  
Purchase history  
Cookie information  
Referrer/Links  
Queries/Search  
Demographics  
Context (e.g. local)

Implicit user preferences

## —Technology areas

Areas of online information and data storage and processing



Information retrieval	Data structuring	Computational value creation
Feeds Crawling Logs Communities Social networks Real-time feeds	Catalog creation Entity structuring Parsing Data extraction/ normalization Indexing Matching Link calculation	User intent recognition Query classification Search relevancy Ranking Recommendations Opinion aggregation Prediction models Natural language processing

## —User value creation with recommendation

### Examples: Various types of recommendations and algorithms

#### Product-catalog based recommendations

Catalog gives information on products in form of categories, specs, accessories, compatibility, most popular products etc.

### Collaborative filtering utilizes only consumer-product interaction

#### Active Collaborative Filtering

Consumers of similar interest share consumer information (rate products, write reviews) help others making decisions on products - peer-to-peer approach

#### Passive Collaborative Filtering

Consumer preferences are collected implicitly, recommended products (e.g. User or Item-based s

#### Examples for algorithms

- Distance / Similarity Matrices
- Statistical/probabilistic algorithms
- Regression, „Bayesian Network“
- Clustering, Classification
- Rule-based – production-rules and decision-tree algorithms
- Machine learning



## —Challenges

... at processing of massive online data and information

Scale storage and processing of data

Reliability and quality of data

Processing and response times

Precision measurement and optimization

Size of data sets and groups

Different requirements by category

Not overcomplicate

Agile engineering processes



## —Examples

### Recommendations by active collaborative filtering

**Microsoft Xbox 360** from **£167.99** to **£269.00** (5 offers) · Product Information



★★★★☆ User reviews (371) · Video reviews (1)  
[Ask a question](#)



**The Best Games Consoles** (Ciao Hitlist)

Graphics capability ██████████  
Sound capability ██████████  
Range of Extra Features (I.e. email) ██████████  
Value For Money ██████████

#### “Look What Jonny got for Christmas!!!”

★★★★☆ Jan 28th, 2007

76 Ciao members have rated this review on average: ██████████ very helpful

##### Advantages:

Many different improvements, High Definition, XBOX Live .

##### Disadvantages:

Some problems online and console has a tendency to over heat .

Recommendable Yes: +

##### Detailed rating:

Graphics capability ██████████  
Sound capability ██████████  
Range of Extra Features (I.e. email) ██████████  
Value For Money ██████████

● **nereesa85**



##### About me:

broke laptop screen so im offline until i have the funds for a new one... (all donations welcome!) wi...

Member since: 03.08.2005  
Reviews: 42  
Members who trust: 58

Source: [ciao.co.uk](http://ciao.co.uk)

## —Examples

### Catalog- / user-based recommendations

Products you might be interested in »



#### [Microsoft Xbox 360 Arcade](#)

Home Console - Media Format: DVD - Controller Slots: 4 - Release Year: 2005

★★★★★ User reviews (3)

[Buy now for only £ 126.92](#)



#### [Microsoft Xbox 360 Elite](#)

Home Console - Media Format: DVD - Controller Slots: 4 - Release Year: 2007

★★★★★ User reviews (44)

[Buy now for only £ 134.99](#)



#### [Microsoft Xbox 360 Halo 3 Special Edition](#)

Home Console - Media Format: DVD - Controller Slots: 4 - Release Year: 2007

★★★★★ User reviews (3)

[Buy now for only £ 239.99](#)



#### [Sony PlayStation 3 Slim \(PS3\)](#)

(+) many advantages.....

(-) no disadvantage.....

★★★★★ User reviews (15)

[Buy now for only £ 229.95](#)



#### [Nintendo DS Lite](#)

Portable Console - Media Format: Cartridge - Controller Slots: 1 - Release Year: 2005

★★★★★ User reviews (163)

[Buy now for only £ 89.99](#)



#### [Nintendo Wii](#)

Home Console - Media Format: 12cm Wii Optical Disc, 8cm Nintendo GameCube Game Disc - Controller Slots: 4 - Release Year: 2006

★★★★★ User reviews (419)

[Buy now for only £ 139.99](#)

**Shorten the decision path, Increase engagement**

Source: ciao.co.uk

# —Examples

## Fuzzy search for display of relevant recommendations

### Similar reviews »

Reviews which might be of interest for "Microsoft Xbox 360 Elite"

#### [woop](#)

**Advantages:** -

**Disadvantages:** --

\*\*\*\* **Microsoft Xbox 360 Elite System** \*\*\*\* Never go into Tesco's at two in the morning drunk, guaranteed you will come out with a much lighter purse.... \*Choosing a game machine\* This wasn't really hard to decide since i have all the ones out apart from the **xbox 360** and Ps3. I picked **xbox** because it had more games in the shop i wanted to play :-). There are 2 different versions of the **xbox 360** out - one with 20gb memory or one with 120gb memory-for just a little bit more money you got a lot of extra memory. Also the **elite** is a lot nicer to look at (goes with my tv) and has less problems with overheating. \*What you can do\* You can play **xbox 360** game, dvd movies and audio cds. Internet access is also available and you can play online with your friends. \*Setting it up and using it\* Very easy to do-just follow the instructions ...

★★★★★ katie22008m 17.08.2008 · [Read full review](#)

Ciao members have rated this review on average: ■■■■□ helpful

Review of [Microsoft Xbox 360](#)

#### [Playstation 3 Vs Xbox 360](#)

**Advantages:** PS3 is more cost effective

**Disadvantages:** PS3 has less games at present, but this will change

Ok the playstation 3 is expensive weighing in at £425 however if you compare just the Basic Hardware with say **XBox 360**, you will be surprised how cost effective it is. For example the **XBox 360** Premium console, has 20 GB hard drive, headset, wireless controller, AV cable. And costs around £279, if you can wait until 24th August 07 **Microsoft** have planned to release the **Xbox 360 Elite** The **Xbox 360 Elite** is an All new Super Sexy Black, with 120GB Harddrive and a HDMI output + HDMI lead all for an estimated price of £320. However there are some bits missing from the **XBox 360**: If you want to connect wyour **Xbox 360** wirelessly to the internet your going to need the official "Wireless Bridge" this will set you back around £60. The PS3 has built in wireless capabilities, and is enabled from the PS 3 Menu The **Xbox 360** & PS3 ...

★★★★★ crazyconsoles 01.08.2007 · [Read full review](#)

Ciao members have rated this review on average: ■■■■□ very helpful

Review of [Sony PlayStation 3 \(PS3\)](#)

Maximize relevancy of consumer information

Quelle: [ciao.co.uk](http://ciao.co.uk)





## —Examples

### User behavior tracking and recommendations based on implicit data



Similar products | Product Information | Related tags | Compare products | Gift ideas

Products similar to Microsoft Xbox 360 »

 ★★★★★ 39 Reviews <a href="#">Buy now for only £139.99</a>	<a href="#">microsoftxbox 360elite</a> Home Console- MediaFormat: DVD- Controller Slots: 4 - Release ...	 ★★★★★ 18 Reviews <a href="#">Buy now for only £7.99</a>	<a href="#">microsoftxbox 360console and</a> Rechargeyour Xbox360 Wireless Controllerwhile youplay and kis ...	 ★★★★★ 5 Reviews <a href="#">Buy now for only £6.99</a>	<a href="#">microsoftxbox 360console the</a> Genre: Party/Board Game, Kids/Family- Publisher: Microsoft - Dev ...	 ★★★★★ 21 Reviews <a href="#">Buy now for only £44.99</a>	<a href="#">microsoftxbox 360adapter</a> External -IEEE 802.11a,IEEE 802.11g,IEEE 802.11b
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Similar products | Product Information | Related tags | Compare products | Gift ideas

Related tags for Microsoft Xbox 360 »

**MS Xbox 360**   Microsoft Xbox 360 Console   Microsoft Xbox 360 Games Console   Microsoft Xbox 360 Arcade   Microsoft Xbox 360 Console  
with   Microsoft Xbox 360 Wheel   Microsoft Xbox 360 Premium   Microsoft Xbox 360 Controller   Microsoft Xbox 360 Games   Microsoft Xbox  
360 Wireless

Similar products and search queries by other users »

Xbox 360, Microsft 360, Microsft Xbox 360

**Maximize relevancy of consumer information**

Quelle: ciao.co.uk

## —Examples

### Combination of technologies/algorithms for recommendations

The screenshot displays the Bing Shopping interface for the 'Garmin eTrex Legend HCx Expandable Color Hand Held GPS Receiver'. The top navigation bar includes links for Web, Images, Videos, Shopping, News, Maps, More, MSN, and Hotmail. The search bar contains the text 'handheld gps'. Below the search bar, the 'Shopping' tab is selected, showing 'ALL RESULTS'. The product listing includes a photo of the GPS device, its price 'from \$61 (37 stores)', and a 'Bing cashback' offer of '2 - 10%'. It also shows 'user reviews (235)' and a description: 'From the lushest canopies of the Amazon, to the banks of the Colorado River in the Grand Canyon, you'll never get lost again with a new Garmin eTrex Legend HCx from Tiger GPS. Its high-sensitivity receiver holds a GPS signal in... more...'. Below the product listing, there are tabs for 'user reviews', 'product details', 'expert reviews', and 'compare prices'. The 'user reviews' tab is active, showing a 'sort by' dropdown set to 'all', with options for 'highest rating' and 'lowest rating'. Two user reviews are displayed, each with a star rating, a username, a website, and a date. The first review is by 'ben1777' from 'www.ciao.co.uk' dated '5/19/2009', titled 'Garmin eTrex Legend HCx', with 'Pros: Tough, compact, waterproof, accurate, cheaper than bike...' and 'Cons: Expensive maps, Poor bike handlebar mount, slow data...'. The second review is by 'pzoba' from 'www.epinions.com' dated '11/4/2005', titled 'Sophisticated, Comprehensive Tool', with 'Pros: 1,000 ten character waypoints, electronic compass, basemap' and 'Cons: Battery life - carry spare batteries!'. A sidebar on the left lists 'POPULAR FEATURES' with progress bars for Ease Of Use, Size, Affordability, Screen, Reception, Software, Battery Life, Reliability, and Speed.

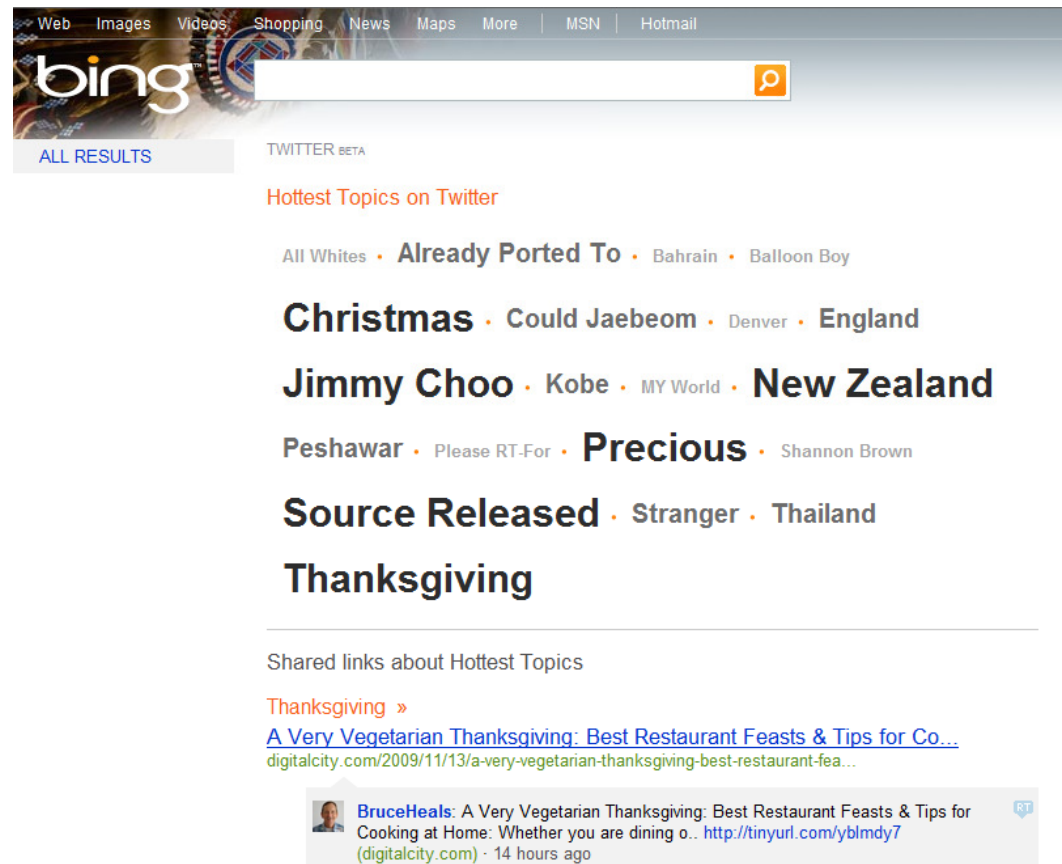
Aggregation and interpretation of informationen



Quelle: bing.com USA

## —Examples

### Real-time data integrated in Bing Twitter Search



Filter user trends trends and news by preferences



Quelle: bing.com USA

# —Thank you!

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**Ciao im Internet**

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<http://www.ciao-group.com>

<http://socialmedia.ciao.de>

<http://www.twitter.com/ciaode>

