Microsoft

# Personalization and Privacy

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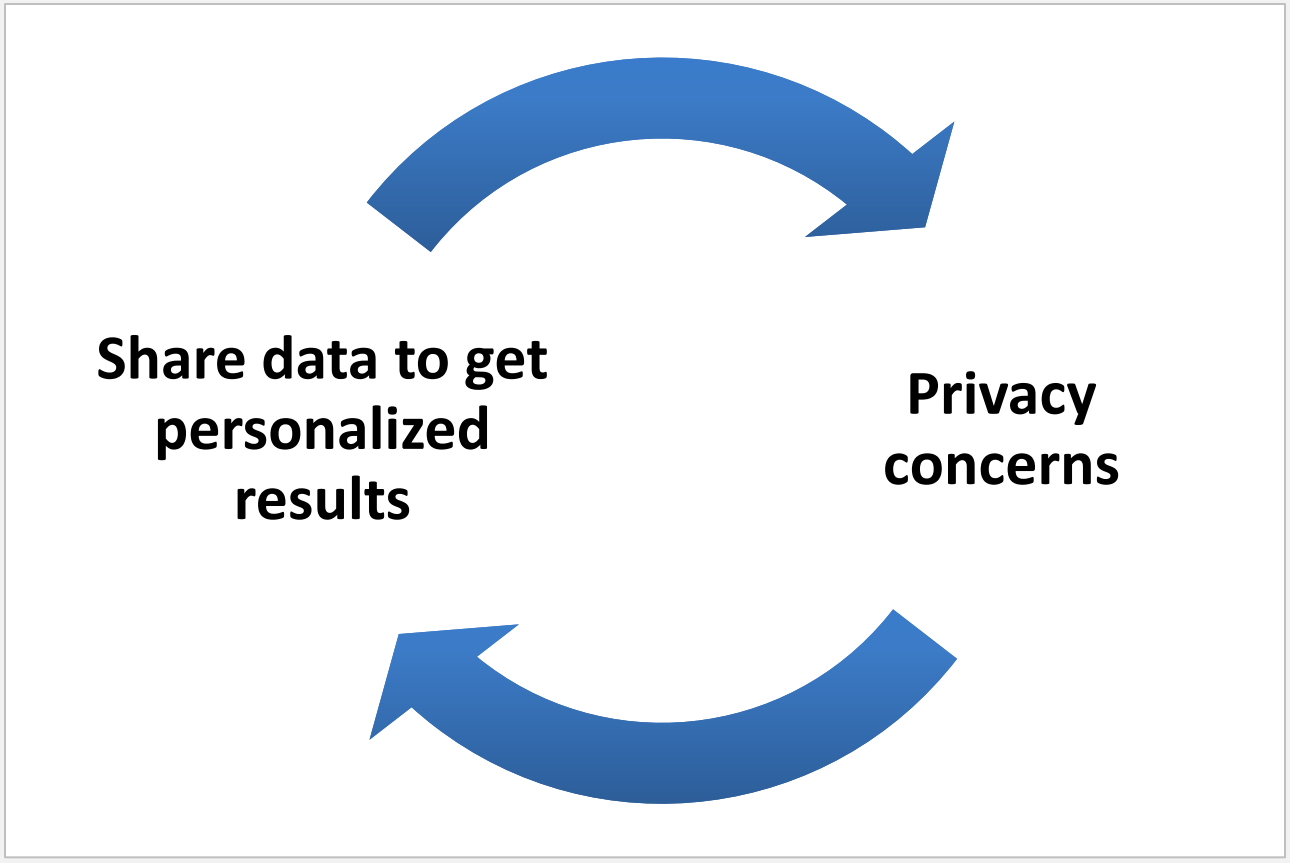
# Big Data? Why Share?

## Currently

- User data aggregated in cloud
- This data is *toxic*
  - Compliance with privacy policies
  - Compliance with laws, local and international
  - Powering the data center
- The only upside is learning more about user

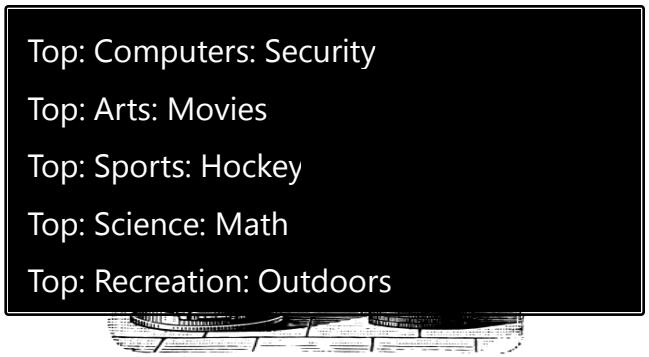
## Our vision

- Keep user data local to user
- Do user profiling on device
- Do it **better** and **cheaper**
- Share very little and only when needed


Share data to get personalized results
Privacy concerns

# Browser: Personalization & Privacy

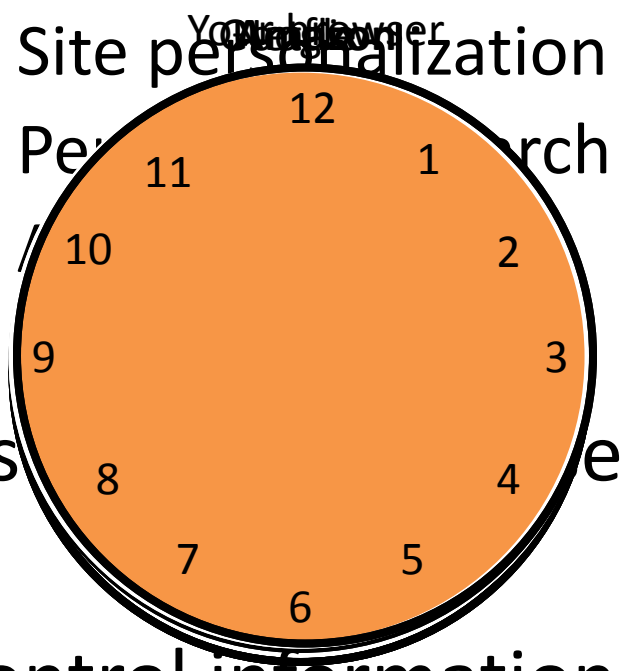
**Browsing history**




**Distill**

**User interest profile**

- Broad applications:
  - Site personalization
  - Pe… …rch
  - …
- Us… …er
- Control information release

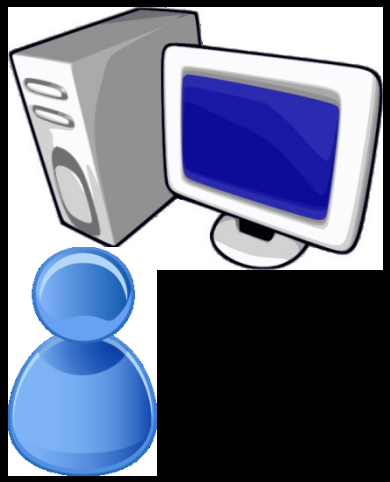


bn.com would like to learn your top interests. We will let them know you are interested in:

- Science
- Technology
- Outdoors

Accept Decline

# RePriv Protocol



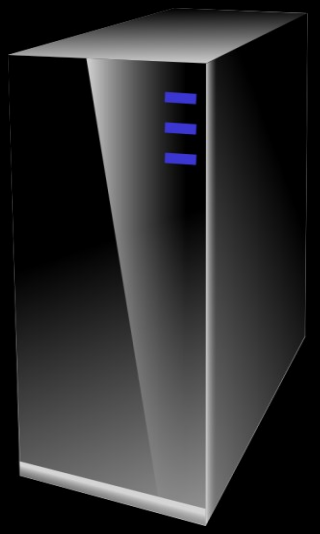
GET /index.html HTTP 1.1
Host: www.example.com
**Accept: repriv …**

HTTP/1.1 **300 Multiple Choices**
index.html
**index.html?top-n&level=m**

POST /index.html HTTP 1.1
Host: www.example.com
Content-Length: *x*
**category1=c1&…**

HTTP/1.1 200 OK

*Personalized page content*



# Privacy-Aware News Personalization

Map RePriv interest taxonomy to del.icio.us topics

Query personal store for top interests

Ask del.icio.us API for “hot” stories in appropriate topic areas from nytimes.com

Replace nytimes.com front page with del.icio.us stories

# Privacy Policy

Change "href" attribute of anchor elements on nytimes.com

del.icio.us

Change TextContent of selected anchor and div elements on nytimes.com

Technolog
Technolog
Science/C
Science/P

- 2,2
- Ov
- Ty
  -
  -
  -

**User profile:**

- Games/Card_Games
- Games/Conventions
- Games/Video_Games

**Do Video Games Equal Less Crime?**

That's one theory for the continuing fall in crime, despite the recession.

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**Gamers Finally Get Their Wheaties Box ...sort of**

Dr Pepper is featuring the Halo 3 player Tom Taylor, who goes by Tsquared, on the labels, which will appear on about 175 million 20-ounce bottles from January to April.

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**Sony To Shut its SF Metreon PlayStation store**

Sony is closing down its one-and-only U.S. PlayStation store at the Metreon mall in San Francisco The recession is clearly to blame, but it's happening at time when Microsoft - which opened and shut its own Microsoft store at the Metreon - is going to open a chain of its own stores.

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**Microsoft Takes on Cable With Xbox Streaming Video**

If talks with Disney work out, the game console could stream ESPN content, making it that much easier to watch TV without cable.

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**Some Video Gamers Leery of Obama's Views**

Gamers are worried that the president-elect's positions on video games may signal new regulations or restrictions on the industry.

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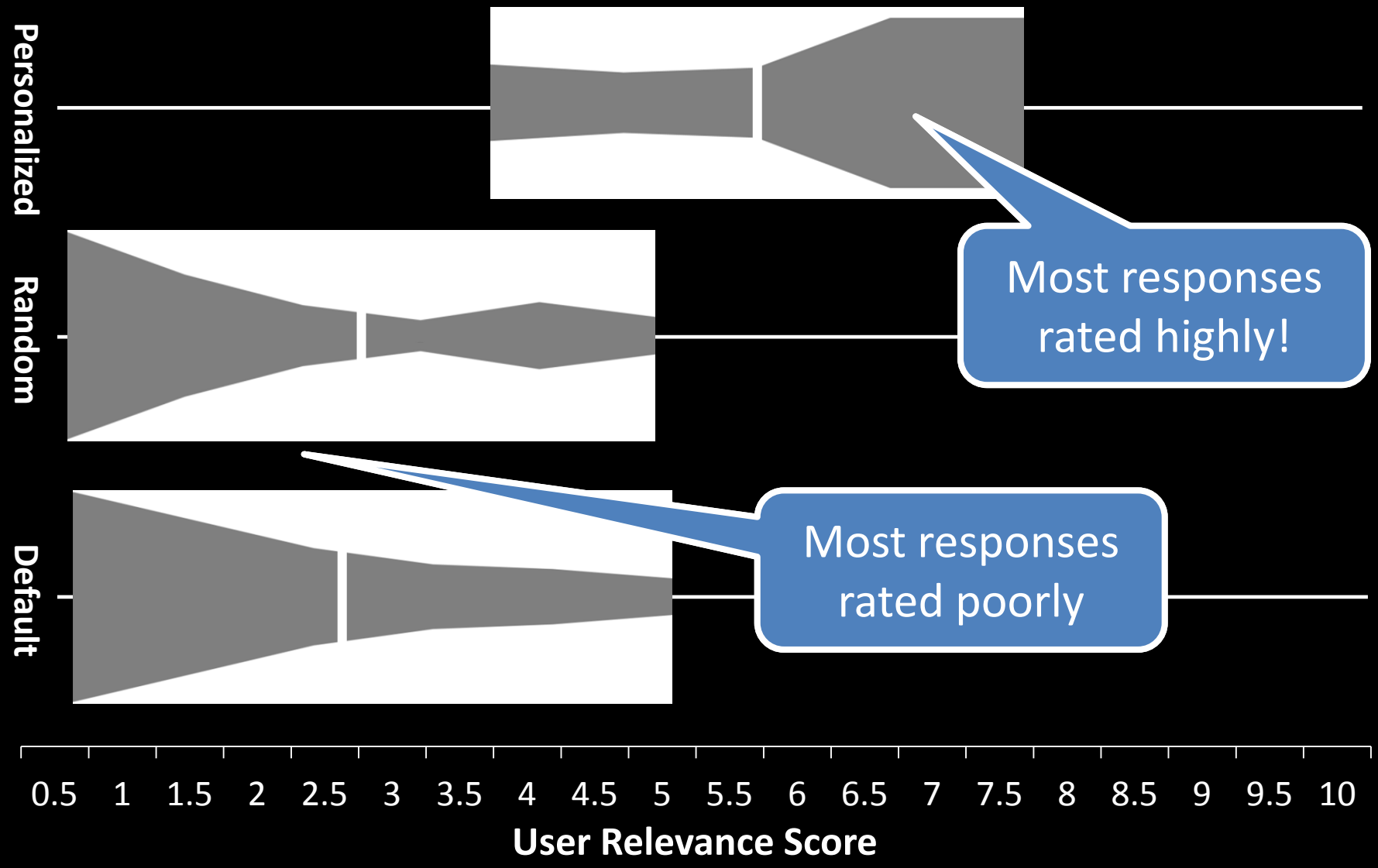
**Relevance:** (required)

# News Personalization: Effectiveness



# RePriv Summary

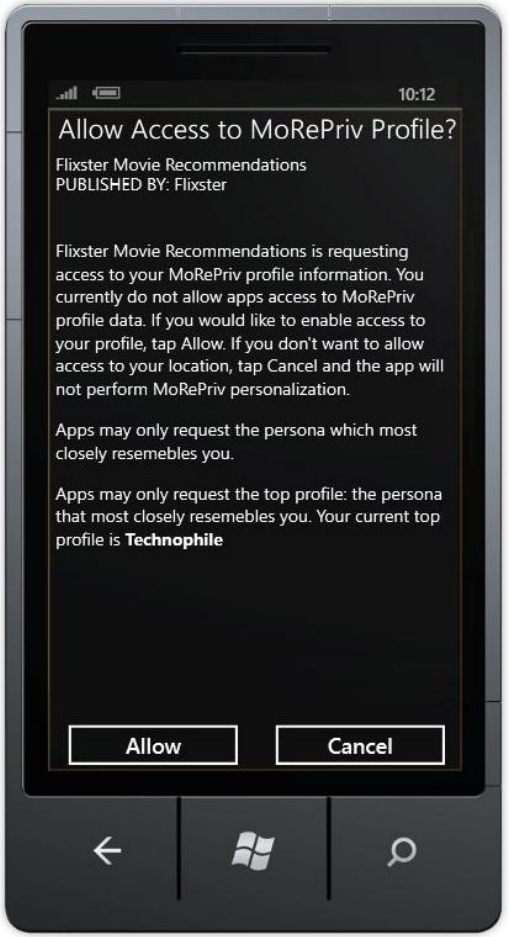
- Existing solutions require privacy sacrifice
- RePriv is a browser-based solution
  - User retains control of personal information
  - High-quality information mined from browser use
  - General-purpose mining useful & performant
  - Flexibility with rigorous guarantees of privacy
- Personalized content & privacy can coexist

MoRePriv
Aggressive, privacy-conscious
personalization for
Windows Phone

# Powerful Insight About User on Mobile

# Analogy: Location Access

- Location/GPS access has changed mobile apps as we know them today
- Location APIs are widely used by 3rd-party apps
- Want to do the same for persona data



# Profiling the User on the Device

- MoRePriv was built into WP 7.5:
  - Persona mining
  - Universal personalization
  - Persona APIs for apps

**Political junkie**

**Soccer Mom**

**Bachelor**

**Tween**

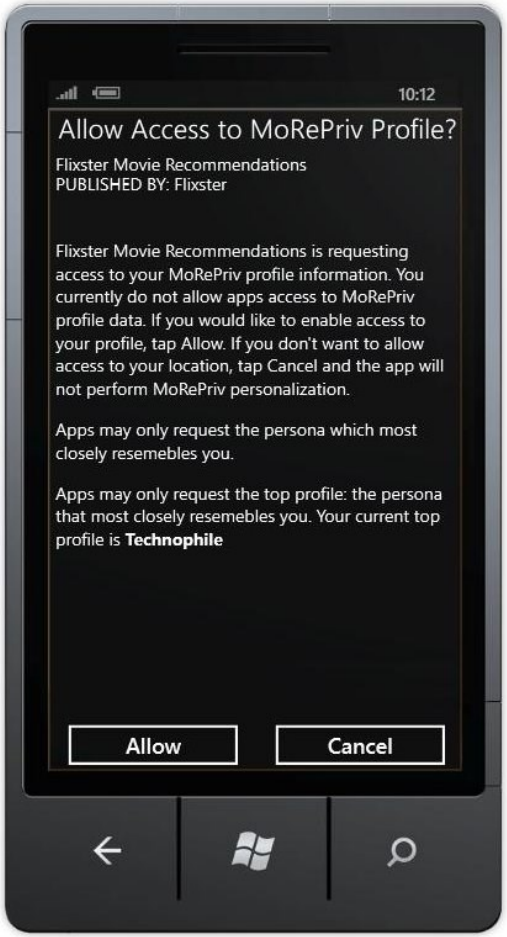
**Professional**

**Retiree**

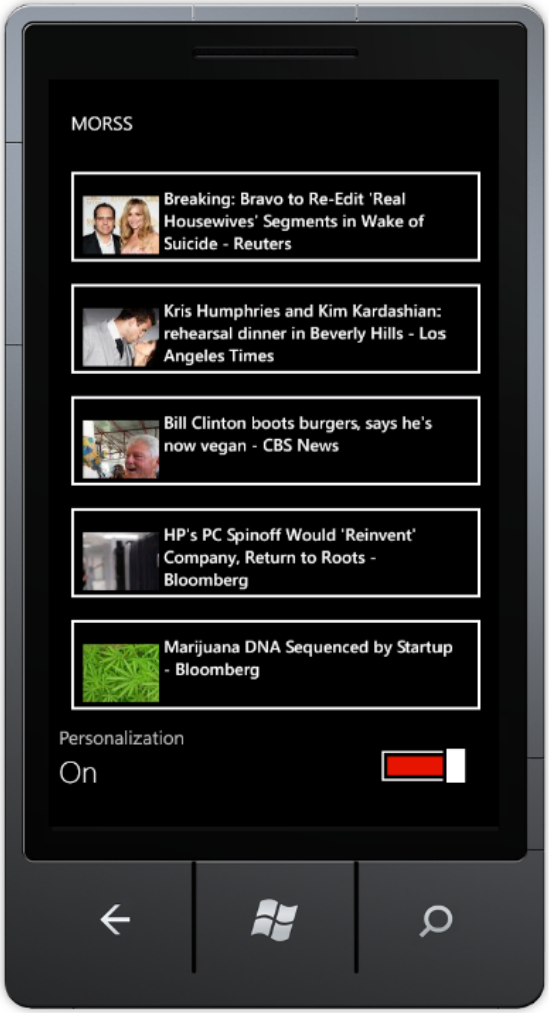
**Football Dad**

**Technophile**

# Personae in Use

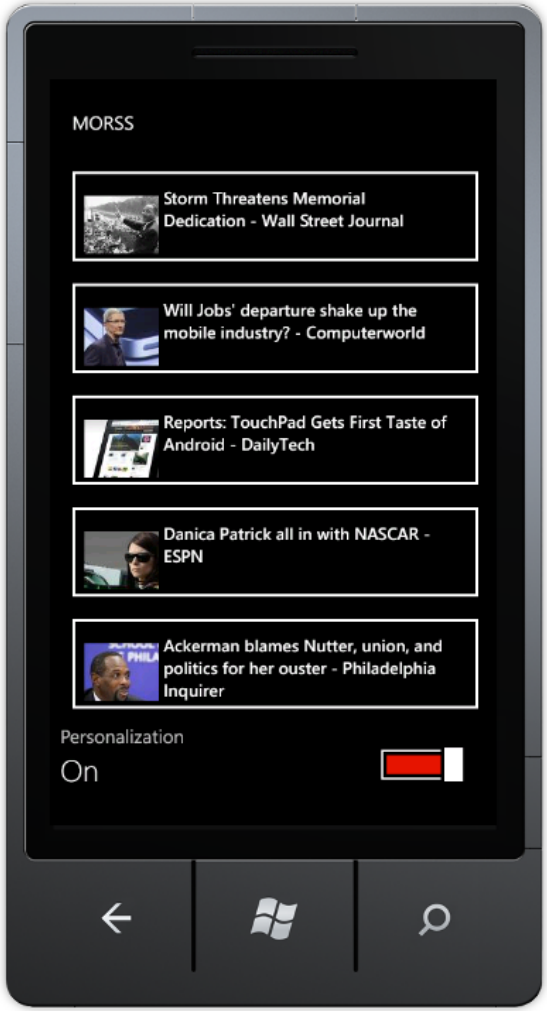


# Mobile Personalization: Example




Soccer Mom

No Personalization




Technophile

# Personalizing Yelp Listings

## Executive

**Duos Lounge**

I'm going to throw my 30th birthday here! Great small plates and tapas lounge right off the West Seattle Bridge on Avalon Way. The interior is a cozy,...

**Tapas Bars, American (New), Lounges**

**Phoenecia**

A couple good friends of ours live right off Alki, just a block or two up from Phoenecia, and they had been raving about this place for months. They...

**Tapas Bars, Wine Bars, Pizza**

**Bottlehouse**

I cannot wait to go back. I live in LA and I wish there anything remotely like BOTTLEHOUSE here. But alas, I have to wait for my annual trip up north to...

**Wine Bars, Tapas/Small Plates**

**The Harvest Vine**

Snagged a last minute reservation here for Christmas eve dinner. When we walked in, the narrow dining hall gave a false impression that we had to wait....

**Tapas Bars, Spanish, Basque**

## Student

**Ballard Smoke Shop**

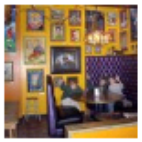
Cheap, stiff drinks. Great people watching. Awesome bartenders. Those ladies are sweet AND sassy. Free soup and just an all around good time. Ballard...

**American (Traditional), Dive Bars, Breakfast & Brunch**

**Pacific Inn Pub**

Fish and chips are great and all the sandwiches I have tried have been yummy including the Rueben in particular. They always have Fremont IPA on tap which...

**Dive Bars, American (Traditional)**



**Cafe Racer Espresso**

My go to breakfast place for a Sunday. Love the combination of cheese and cool obscuro music videos they play on the old CRT tv - always good for a chuckle...

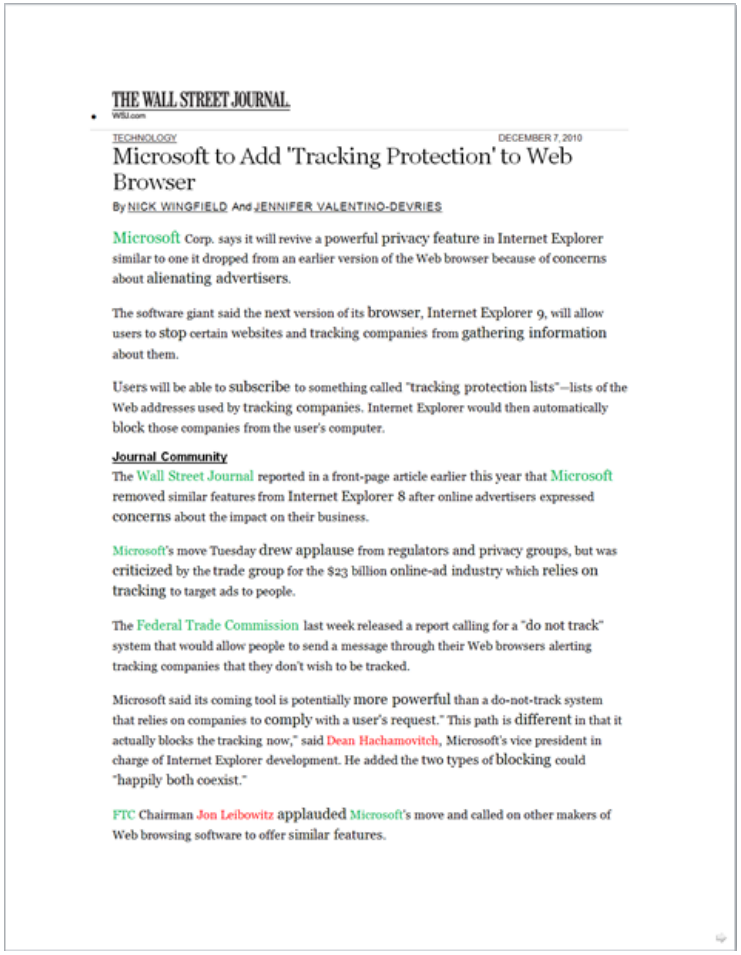
**Coffee & Tea, Breakfast & Brunch, Sandwiches**

**The Twilight Exit**

I love Twilight Exit. I live a couple blocks from this place and I'm here at least once a week. It's a neighborhood bar and nothing more than that - I...

**Dive Bars, American (Traditional)**

# Text Summarization



THE WALL STREET JOURNAL.
WSJ.com

TECHNOLOGY DECEMBER 7, 2010

## Microsoft to Add 'Tracking Protection' to Web Browser

By NICK WINGFIELD And JENNIFER VALENTINO-DEVRIES

Microsoft Corp. says it will revive a powerful privacy feature in Internet Explorer similar to one it dropped from an earlier version of the Web browser because of concerns about alienating advertisers.

The software giant said the next version of its browser, Internet Explorer 9, will allow users to stop certain websites and tracking companies from gathering information about them.

Users will be able to subscribe to something called "tracking protection lists"—lists of the Web addresses used by tracking companies. Internet Explorer would then automatically block those companies from the user's computer.

**Journal Community**

The Wall Street Journal reported in a front-page article earlier this year that Microsoft removed similar features from Internet Explorer 8 after online advertisers expressed concerns about the impact on their business.

Microsoft's move Tuesday drew applause from regulators and privacy groups, but was criticized by the trade group for the $23 billion online-ad industry which relies on tracking to target ads to people.

The Federal Trade Commission last week released a report calling for a "do not track" system that would allow people to send a message through their Web browsers alerting tracking companies that they don't wish to be tracked.

Microsoft said its coming tool is potentially more powerful than a do-not-track system that relies on companies to comply with a user's request." This path is different in that it actually blocks the tracking now," said Dean Hachamovitch, Microsoft's vice president in charge of Internet Explorer development. He added the two types of blocking could "happily both coexist."

FTC Chairman Jon Leibowitz applauded Microsoft's move and called on other makers of Web browsing software to offer similar features.

**Generic excerpt**

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# MoRePriv Summary

- Profile users on the device itself
- MoRePriv uses personas to represent user
  - Allow for personalization
  - Can be as ubiquitous as location info is now
  - Leaking personas is not such as big deal
- Personalized content & privacy can coexist

MoRePriv: Mobile OS Support for Application Personalization and Privacy

Drew Davidson, Matt Fredrikson
University of Wisconsin-Madison

ABSTRACT