Intelligent Wireless Information Access

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Premises

- Computers as tools for information access
- Ubiquity of wireless platforms
  - Cellphones
  - Pagers
  - PDAs (Palm VII, etc.)
  - Laptops with wireless
  - ….

Key Question

How do we build services that can intelligently prioritize and deliver information in a wireless world?

How do we deliver information as a function of both content and context?

Three Types of Necessary Information

Devices User Information

Device Heterogeneity

Wireless information requires information about the user's devices

Device *heterogeneity* is very important

- Connectivity characteristics
- Capabilities
- State

Device Connectivity Characteristics

- How is the device connected to its server
  - Always on/“pushable”?
  - Pagers, cellphones vs Palm VII
- Bandwidth
- Cost

Device Capabilities

What can the client device do?

- "Display" characteristics
  - Text, audio, images, video, etc.
  - Screen size, resolution, etc.
- Local storage? Maximum item size?
- Processor speed
- Ports? (Infrared? BlueTooth?)

Device State

- Battery strength
- Remaining storage
- Connected?
- Price per byte

User Information

Intelligent information access requires information about the user

- User context (e.g., location, time)
- User model (learned vs provided, content-based vs collaborative, device-specific vs device-independent, short-term vs long-term)
- User feedback channels

Information Information

- Data type (text, images, video, audio, etc.)
- Authorship
- Date of delivery
- Other recipients
- Coupled information sources
- …

Recent Research

- iValet: Information Valet
- Learning wireless email reading behavior
- Learning important financial newswire stories from news stories and coupled financial data:
  Sofus Macskassy presentation this afternoon

Information Valets (iValets)

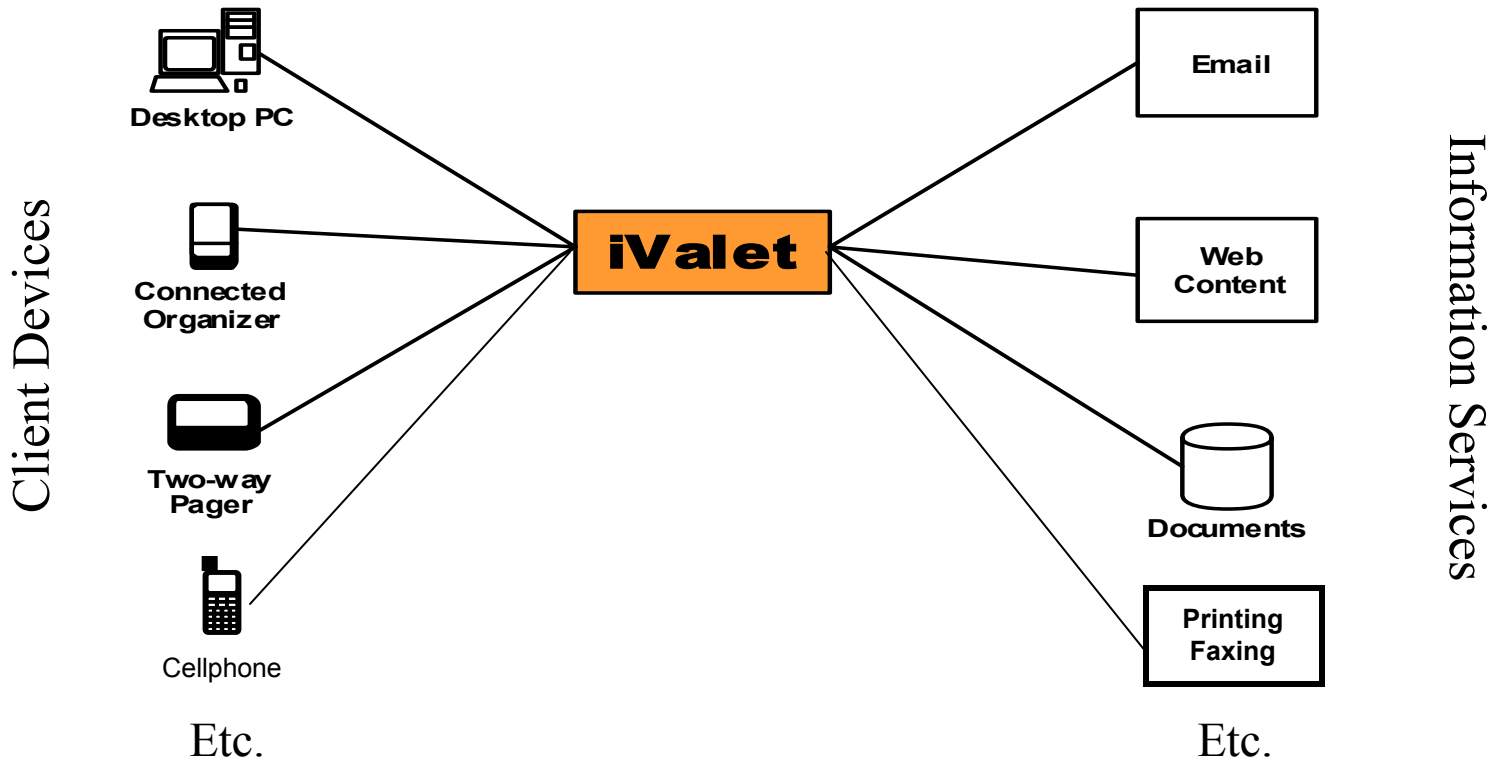
A framework for intelligent information access to information from a range of platforms for a range of information services

iValet: the central conduit for accessing and manipulating information:

- iValet interacts with user via multiple client devices
- iValet interacts with multiple information resources

Understands heterogeneity of information and devices

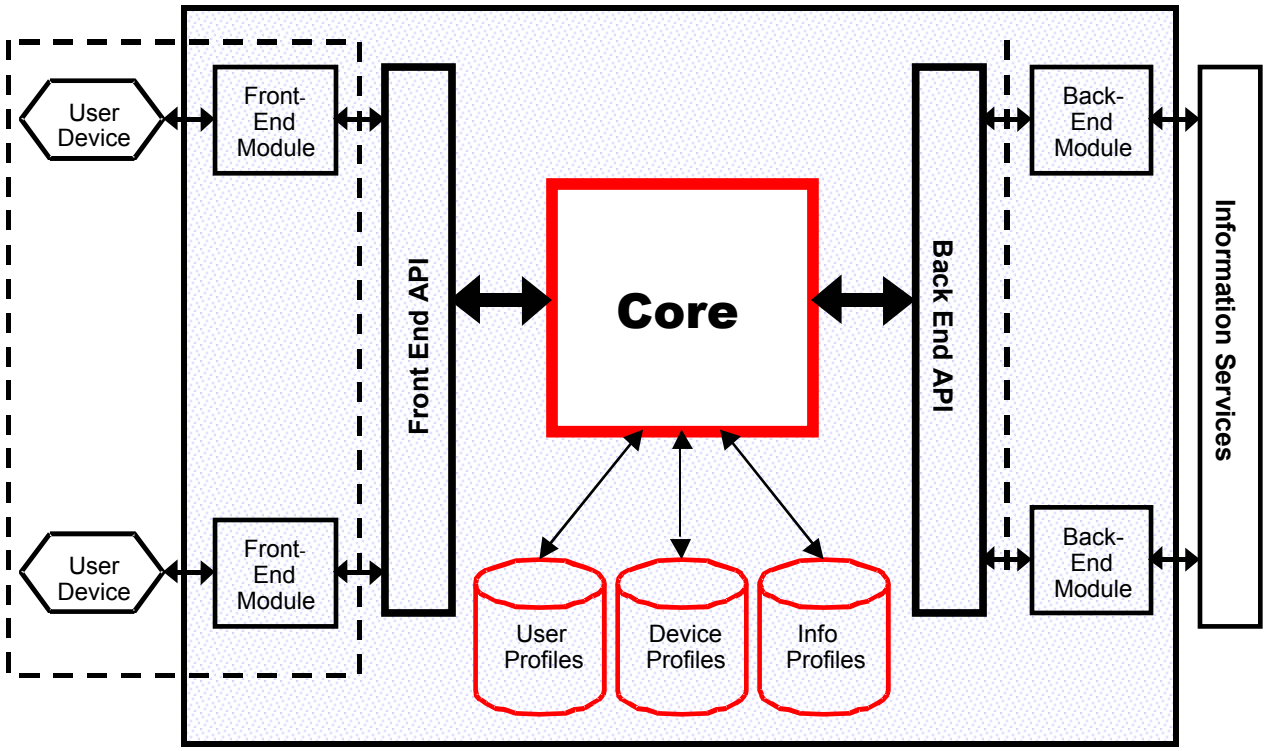
iValet Framework



Design Goals

- Incremental addition of devices
- Incremental addition of information services

iValet Architecture



The Rutgers iValet

- User devices:
  - RIM 950 two-way pagers
  - Palm VII
- Information services
  - Email
  - Web
  - Files

Front Ends

RIM 950

- BellSouth Wireless Data Inter@ctive Paging Service
- Communicates with iValet via email

Palm VII

- Web-based front-page

Back Ends

- Reading, writing, and searching email
- Searching files by name and content
- Text-based URL browsing
- Printing

Rutgers iValet Core

- Allows cross-device functionality
- Location where *intelligent* wireless information access happens

Learning Users' Wireless Information Access Preferences

- Can we predict what to do with new incoming information?
- What kinds of user feedback can be helpful?
- What context helps with learning user preferences?
- What learners are well-suited to this task?
- Earlier IABs

Learning to Exploit Multiple Information Sources

- How can we learn to prioritize one source of information by correlating it with a second source?
- How do we resolve multiple information sources with a user's preferences?
- "Intelligent Information Triage", Sofus Macskassy, later today

Summary

- Information Valets as a framework for multi-platform intelligent wireless information access
- Learning has the potential to model users' information-access preferences

Future

Location-based services

More wireless services

More devices