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Midwest Lotus User Group Conference 2011
Expanding Your Community Through Social Collaboration

A106: The Mobile Application Landscape for Domino

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Disclaimer

Any opinions presented herein are my own



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Agenda

- Mobile Development Landscape & Trends
- Mobile Development Options for Domino Developers (New & Improved)



The Mobile Past: Pre 2007

- Devices had limited capabilities
- Networks were 2.5G (whatever that means)
- Organizations defined themselves by which mobile platform they used:
 - We're a BlackBerry shop
 - We're a Palm shop
 - We're a Windows Mobile shop
- Development options were limited:
 - Mobile Web
 - Native SDK's



Mobile Web Development: Past

- Mostly WML
- Some HTML
- Slow (sometimes painfully)
- Developers had to deal with
 - Very limited screen real estate
 - Limited processor capabilities
 - Limited network speeds
(affects what and how much you can download to a mobile device)



Native Development: Past

- Developers had to deal with most likely a limited number of native SDK's, but required knowledge of each if supporting multiple mobile device platforms*
- Java
 - 'Could' build applications using JME (called J2ME way back then) and run it on almost anything
 - Existing applications could be 'enhanced' to make better use of the BlackBerry platform



Summarizing Development: Past

Developers really had to concern themselves with performance, network bandwidth utilization, battery life, available screen space, roaming charges, and much more.

Applications had to be simple, fast and efficient. Application developers had to get the users to the data they needed as quickly and as efficiently as possible.

Take the BlackBerry for example...



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The Mobile Present

- The world changed in 2007
 - iPhone was released
 - Open Handset Alliance unveiled, Android devices followed
- Soon after, US and worldwide business markets crashed
- “There’s an App for That™” focused consumer (and employee) attention on mobile apps
- Organizations began looking for:
 - Ways to increase efficiencies of remote or mobile workers
 - Ways to reduce cost



The Mobile Present

- Organizations started allowing any device to be used
- Could no longer 'be' a certain type of shop
- Things like platform consistency and often performance & security got moved to the back burner
 - Let me give you some examples...



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Business Impact

- With BYOD comes greater risks for the organization
 - Administration costs likely go up
 - Support costs likely go up
 - Potentially requires implementation of several tools
 - Malware
- Security should become more important
 - Industry regulations
 - Government regulations
 - Don't forget that MA law
- If a BlackBerry shop (how many of them are left) no big deal, otherwise **MUST** be looking at an MDM solution



Mobile Development: Present

- HTML becomes more prevalent than WML on devices
 - Which makes web-enabling your applications simpler since both the desktop and mobile versions can use the same markup language
- Cross platform native development gets even harder
 - More mobile platforms to support
 - More device types (smartphones & tablets) to support
 - No consistency in developer tools
 - Requires both a Macintosh and a Windows PC to develop for most popular platforms



Summarizing Development

- Mobile applications have to be beautiful
- Mobile users and mobile device manufacturers stopped worrying about network bandwidth utilization*
- Developers still have to concern themselves with performance, network bandwidth utilization, battery life, available screen space, roaming charges, and much more, but users don't really care.



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Mobile Application Options

- Mobile Web
- Native Development
- Hybrid Applications
- Mobile Application Platforms



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Mobile Web

- A viable option for many mobile applications
- Allows organizations to leverage existing web development skills
- Slow
- Missing integration options for many mobile device features (camera, address book, calendar and more)
- May not be robust enough for many Enterprise application needs
- HTML 5 provides several mobile friendly features although implemented inconsistently across mobile platforms



Mobile Web: What it Means to the Domino Developer

- Notes application should probably already be web-enabled
 - Mobilizing it then is simply accommodating a smaller screen
- Do you mobilize the entire application?
- If not already web enabled, where's the business logic?
 - Will have to be moved to the back-end



Native Development

- Requires a different set of skills for each supported mobile device platform
 - BlackBerry runs Java
 - Android runs a different 'flavor' of Java
 - iOS runs Objective-C
 - Windows Phone uses C#/Silverlight
- Building native applications for X platforms requires X development teams (or one team at X times a normal team's size)



Native Development

- If the first app costs \$, adding a support for a second mobile platform adds another full \$ to the cost. Adding support for a third platform adds yet another \$.
- Repeat the process for each point release (1.1, 1.2, ...)



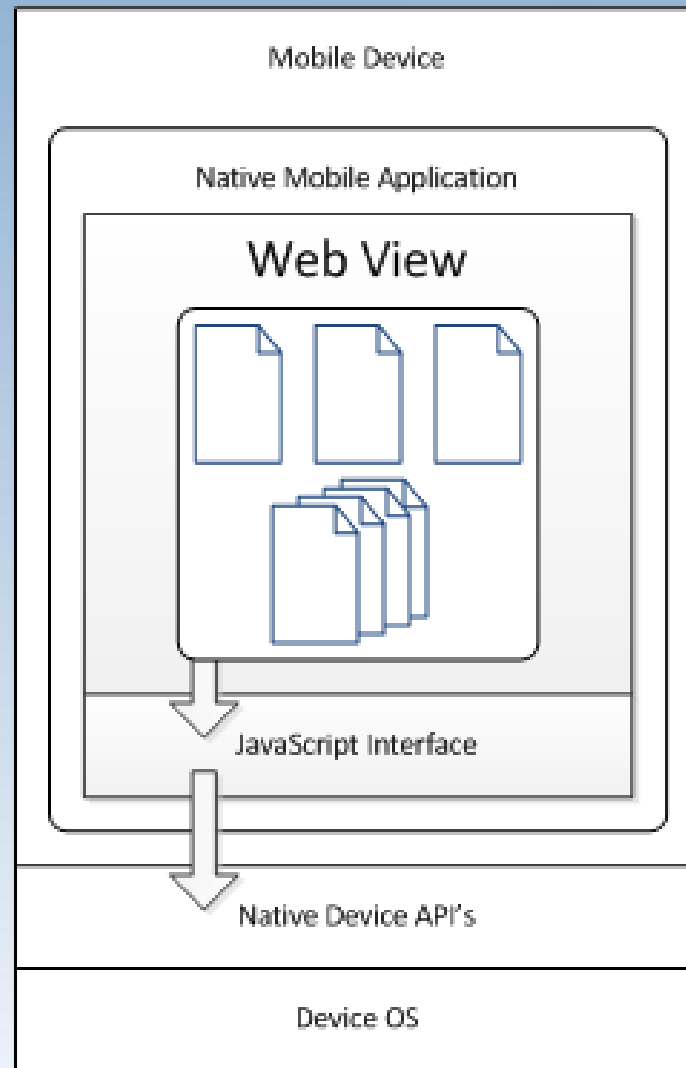
Hybrid Applications

- Leverage existing web development skills with the benefits of native applications (deployment, management, security)
- Web application running inside of a native application container
- Several open-source and commercial platforms leverage this approach



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Hybrid Applications



AT&T WorkBench

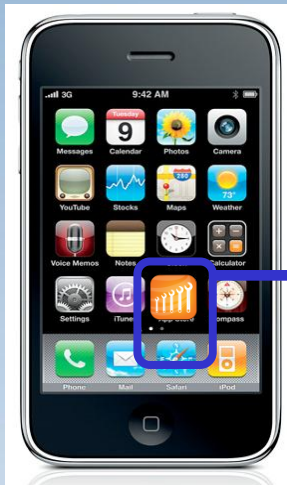


- Dedicated area on device for business applications
- Applications are built using standard web technologies
- Remote provisioning: deploy, upgrade, remove applications or even wipe container
- Run multiple web applications simultaneously and toggle quickly between active web applications for greater productivity
- Ability to access application data while offline



AT&T WorkBench: How it Works

1 Download from the App Store



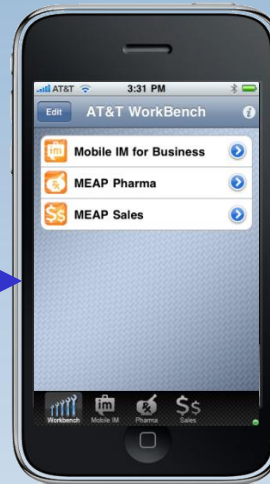
- User downloads WorkBench from the App Store,
- WorkBench as a container to access authorized enterprise web apps

2 Login and Provisioning



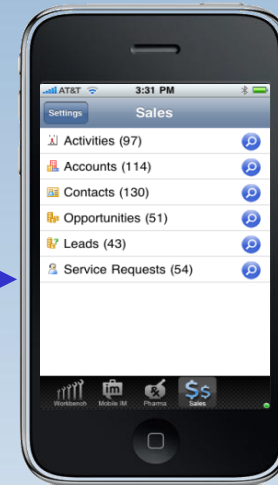
- AT&T MEAP iPhone registers with AT&T MEAP Gateway
- Pre-Defined Device ID & characteristics
- Privileges / policies

3 Authorized Apps



- Authorized apps provisioned to AT&T WorkBench
- Separate instance from personal apps & data (Enterprise Container)

4 AT&T WorkBench App in Use



- The WorkBench bridges the gap between personal and professional use
- Added IT controls



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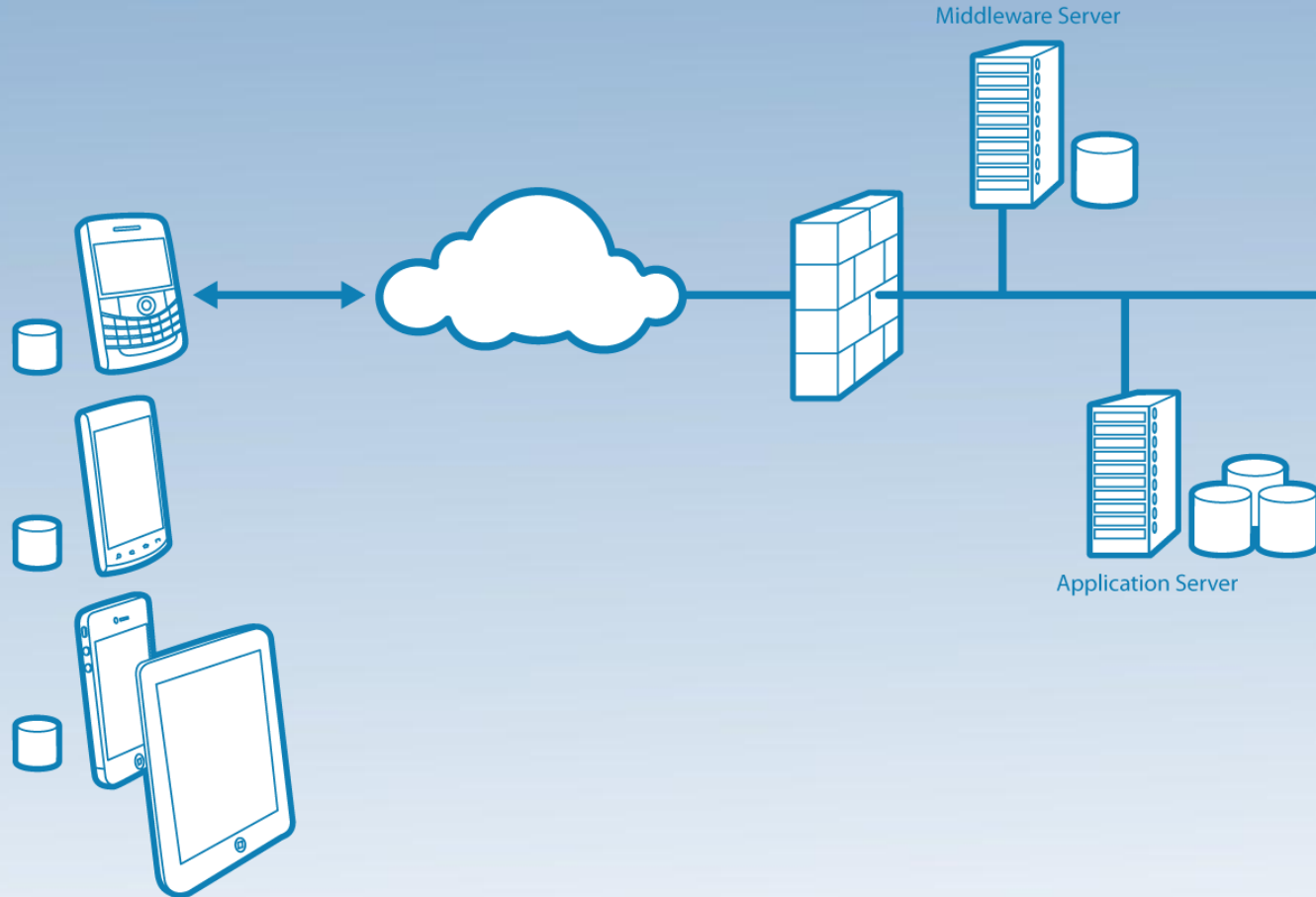
Other Hybrid Application Frameworks

- There are literally hundreds of hybrid frameworks in market
 - Appcelerator Titanium
 - PhoneGap
- Some commercial platforms built on open source frameworks:
 - Worklight



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Mobile Application Platforms



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Mobile Application Platforms

- Support both Enterprise and Consumer application needs: MEAP vs. MCAP
- Dramatically reduce the effort/investment than building native applications using the native SDK's
- Applications look and feel like native applications (because they are native applications)
- Greater range of capabilities than available with the mobile web
- Secure, reliable connectivity to back-end data sources
- Optimized delivery of data to mobile applications (reduced network and battery load leads to increased performance)



Mobile Application Platforms

- Server-based management and reporting
- Mobile development environment replaces individual software development kits (SDK) for each supported native device platform
- Supports major smartphone & tablet platforms



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Mobile Application Platforms

- Domino-Aware Platforms:
 - DragonRAD
 - Kryos AppXtender
 - Teamstudio Unplugged
 - Wallace Wireless WIC DB
- Industry Leading Platforms
 - Antenna Software
 - Pyxis Mobile
 - Sybase Unwired Platform



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Mobile Development Future

- MEAP continues to be important
- Hybrid applications become more important
- Hybrid convergence within MEAP
- Eventually the web catches up (Device API's)



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Device APIs Working Group

<http://www.w3.org/2009/dap/>

A screenshot of a web browser window displaying the Device APIs Working Group website. The browser's address bar shows the URL 'www.w3.org/2009/dap/'. The page has a blue header with the text 'Device APIs Working Group'. Below the header, there are three sections of links: 'On this page:' with links to Mission, Roadmap, Future Work, Submissions, Participate, Meetings, Minutes, Communications, Documents, and History; 'Nearby:' with links to Information on Implementations, WG Notes and Checklists, DAP wiki, WebApps WG, and HTML WG; and 'Administrative:' with links to Draft and Approved Minutes, 'My Actions', 'My Questionnaires', Participants, Patent Policy Status, Open Issues, Open Actions, Public email list, and Member email list. To the right of these sections is the W3C logo. Below the links is a section titled 'Mission' with a light blue background. The text in this section states: 'As defined in its charter, the mission of the Device APIs Working Group is to create client-side APIs that enable the development of Web Applications and Web Widgets that interact with devices services such as Calendar, Contacts, Camera, etc.'

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Domino Developer Decisions, Decisions, Decisions...

- Is the application mobilizable?
- Application requirements?
- How to expose your data?



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Mobilizable?

- Lots of Client-Side Code?
- Dynamic Forms?
- Lots 'O Lookups?
- Lots 'O Documents?
- Unstable Application?



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Mobile Application Requirements

- Multiple device support?
- Need when remote?
- Network availability?
- Huge (or large) local data sets?
- Hardware or software interaction?
- Performance?



Exposing Your Data

- XML-based or RESTful web services?
 - XML-based not supported by all popular mobile platforms
 - RESTful more efficient



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REST vs. XML-based web services

XML-based:

```
<soapenv:Envelope
xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:urn="urn:DefaultNamespace">
  <soapenv:Header/>
  <soapenv:Body>
    <urn:SEARCHSTR>war</urn:SEARCHSTR>
  </soapenv:Body>
</soapenv:Envelope>
```

```
<soapenv:Envelope
xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:xsd="http://www.w3.org/2001/XMLSchema"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:soapenc="http://schemas.xmlsoap.org/soap/encoding/">
  <soapenv:Body>
    <ns0:GETUSERLISTReturn
xmlns:ns0="urn:DefaultNamespace">
      <USERS>John Wargo</USERS>
      <USERS>Anna Wargo</USERS>
    </ns0:GETUSERLISTReturn>
  </soapenv:Body>
</soapenv:Envelope>
```

RESTful:

```
http://cakln01/bbnames.nsf/domdirlookuprest?openagent&cmd=list&searchstr=war
```

```
{"Anna Wargo", "John Wargo"}
```



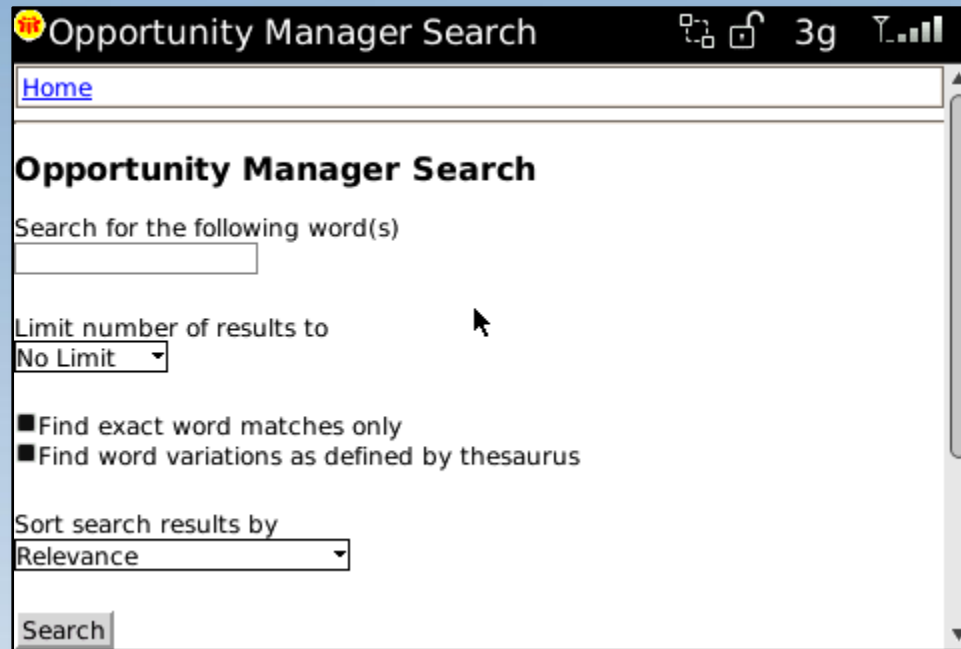
Navigating Large Views

- Search:
- Quick-Pick



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Implementing Search



Opportunity Manager Search

Home

Opportunity Manager Search

Search for the following word(s)

Limit number of results to
No Limit

Find exact word matches only
 Find word variations as defined by thesaurus

Sort search results by
Relevance

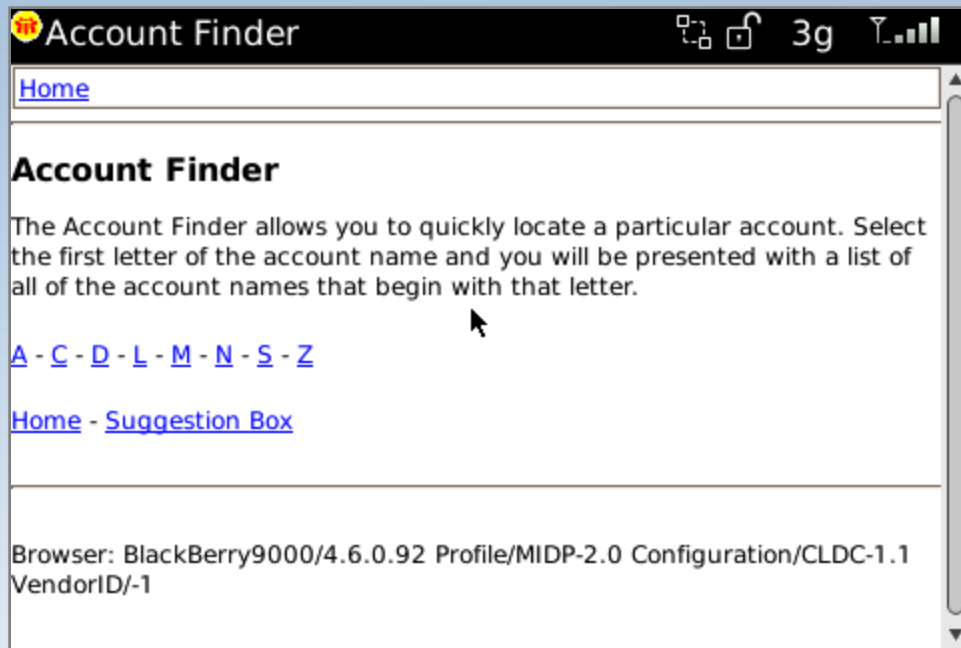
Search

`http://server/database/vs?openagent&vn=VIEW_NAME&ss=SEARCH_STRING&nc=NUM_COLUMNS`



Account Finder – Part 1

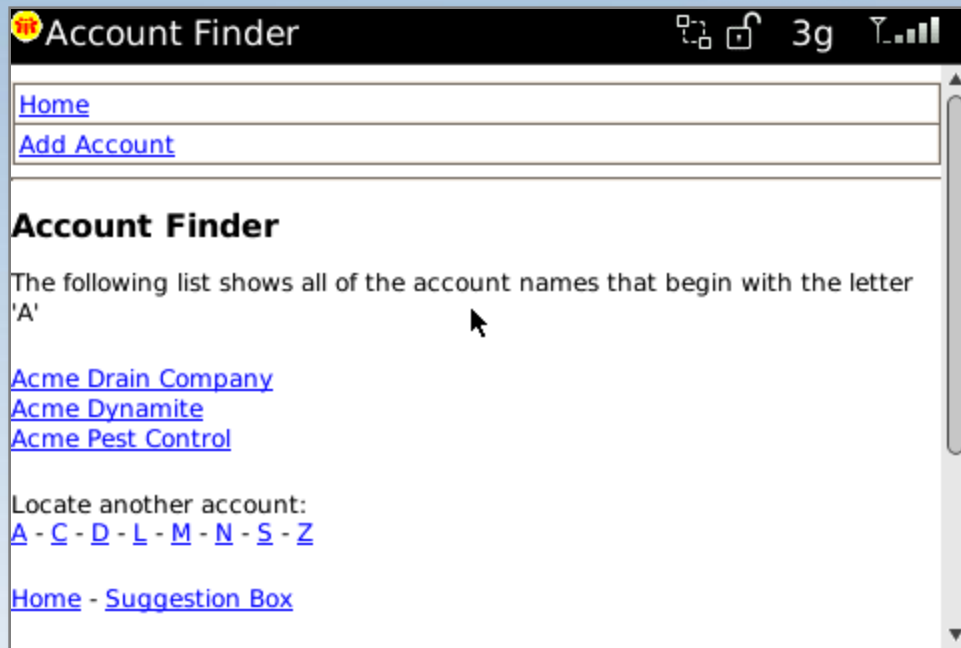
Grab the first character from every entry in a categorized view and render it on a form



Account Finder – Part 2

When the user clicks on a letter, the list of all view entries that begin with the selected letter appear

Notice how you can repeat the process without leaving the form



Quick-Pick via Code

- Initial Call
 - `http://server/database/qp?openagent&vn=VIEW_NAME`
- After Selection
 - `http://server/database/qp?openagent&vn=VIEW_NAME&sv=SELECTED_VALUE&nc=NUM_COLUMNS`



Questions?

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