

# Customized Navigation Using SOLR

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# We Have A Simple Business Need

Great! What is it?

We want a Global Navigation with Multiple levels.

Sure no problem.

It should be different for different people!

Hmm.. Ok.

BTW we have @ 60+ ways to group users and a user can belong to many groups at once

What does that mean ?

Also we want to be able to make frequent changes to who sees what and when.

Ok that might be tough to do given our release turnaround times for code related changes

# Simple Needs = Complex Requirements

No. of user types = about 60

No. of Navigation levels = 3

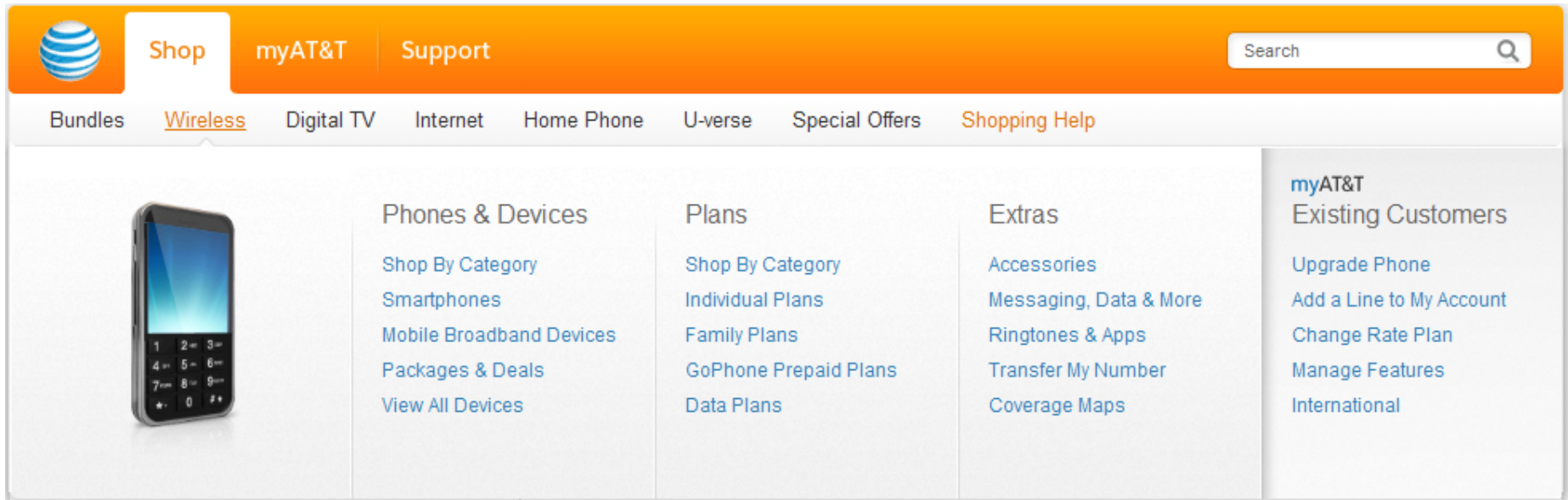
No. of unique URL's = 700+

Hierarchical dependence across levels.

Complex edge cases: If user belongs to Category A/B/C but Not D then show URL

Combinatorial explosion (60! In theory)

# Other small requirements...



- A user can belong to many categories at once
- The tertiary level is further broken up in categories by columns
- Each Column has a heading which may/may not be a link
- The rightmost column should be highlighted differently.
- The same URL can appear at different places for different types of users.

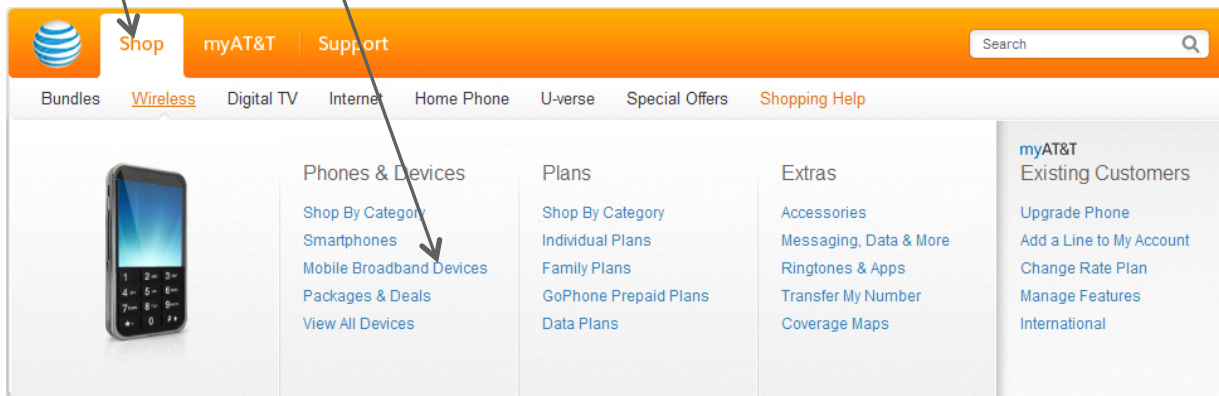
# Modeling The Hierarchy...

Encode the hierarchy using a 6 digit number to capture the relation between levels.

2 digits per level (xxyyzz)

So **Shop** has a encoding of **010000**

Whereas **Mobile Broadband Devices** has a encoding of **010206**



# Modeling the customization

- Hard to code all possible conditions (60!).
- Could use some rules engine to figure it out.

Aha moment...

- Can we model it as a search problem ?

*Give me all the URL's that I should see and none that I should not.*

*After all the URL's are already capturing hierarchy using flat encoding*

- Have them also capture their category/group affiliations:  
Each URL also has a bunch of showgroups/hidegroups associated with it.

# Data that gets indexed

A flat list of URL's (search documents).

Each document contains:

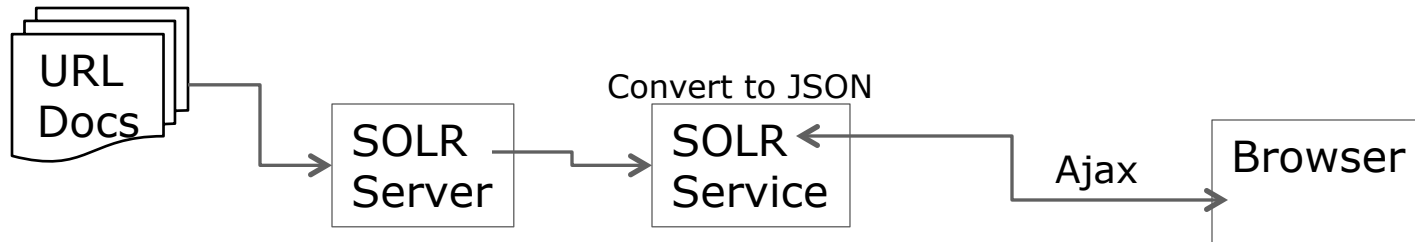
- A URL
- Its positional encoding
- Its list of user groups for which it can appear in that position
- Its list of user groups for which it is hidden
- Other attributes that address the other small requirements associated with the tertiary level (eg. Column heading etc)

The same URL may appear multiple times, but its set of User Groups is unique.

# Why SOLR

- Very easy to setup and start using
- Robust and Scalable
- Proven stability in our own Production environment for over a year as our primary search for phones.
- So already in our production environment (no internal hoops to jump through)
- FAST

# Architecture Diagram



# Advantages of Search Based Approach

- Able to avoid coding complex logic and shorten development time
- Avoid the need to make code changes everytime there is a change in the groups or new URL's are introduced – Simply re-index new data and begin rendering
- Deploy quickly in existing SOLR infrastructure
- Only needed to write a simple service to recreate the hierarchy using the encoding to provide a simple JSON.

# Acknowledgments?

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- Shantanu Deo
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- Pratap Cheruvu

# Questions / Demo

