Materiall

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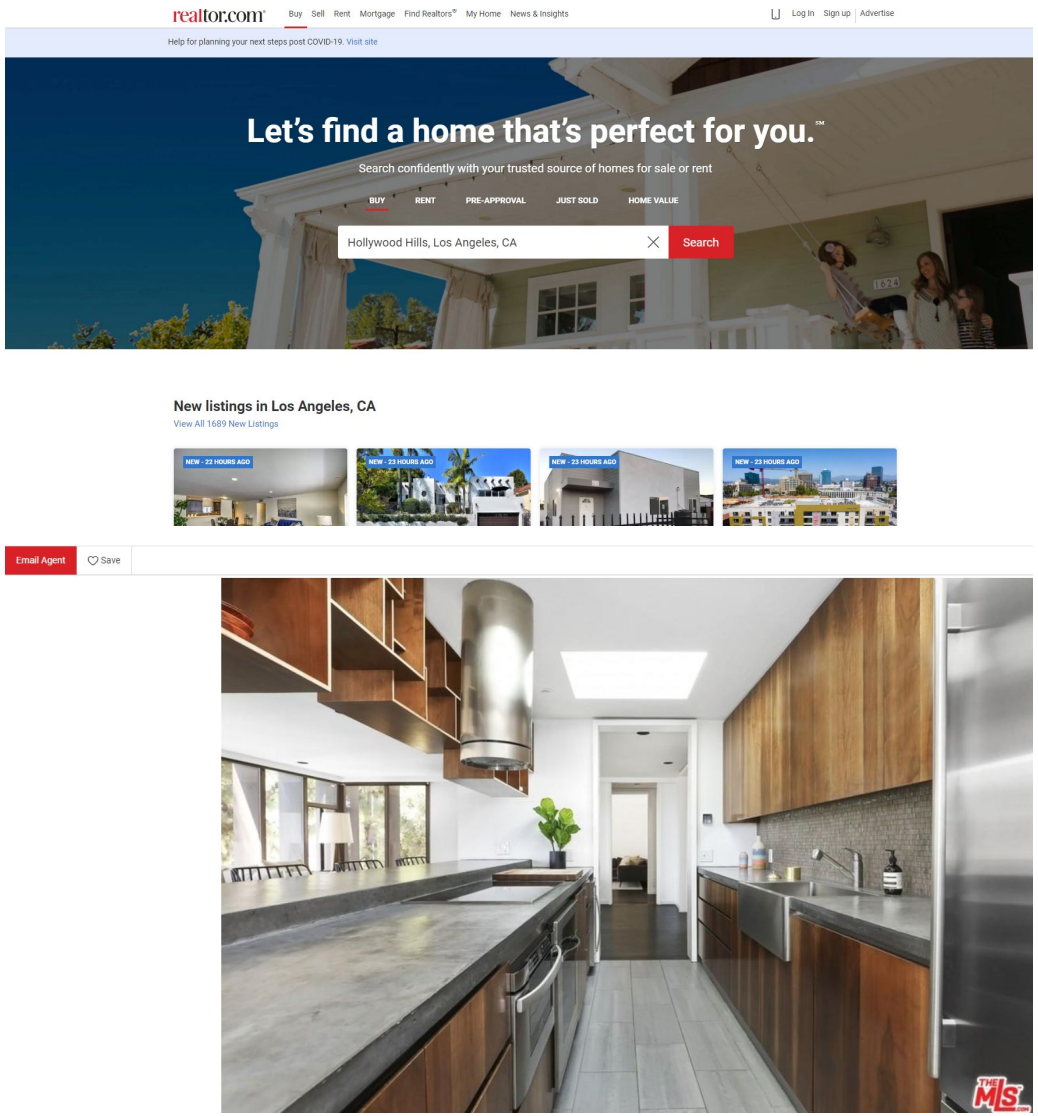
Computer Vision for Home Buying

- **Mission: Bringing science to the art of home buying.**
- Use data science to combine objective and subjective features to provide tailored recommendations for home buyers
- There is a need to ‘fill in the gaps’ for tags on housing images
    - Including that data in Materiall’s recommendation engine is very valuable because specific aspects of the image may be the reason the client likes the house.



User Perspective

Top 3 User Requirements:

- Expeditious results from ML model
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- Through our deliverables, we will bolster the quality of data we provide Materiall's recommendation algorithm
- Improved data leads to...

  → refined recommendations made by the algorithm

  → improved matchmaking between users and homes

Technical Components of Project

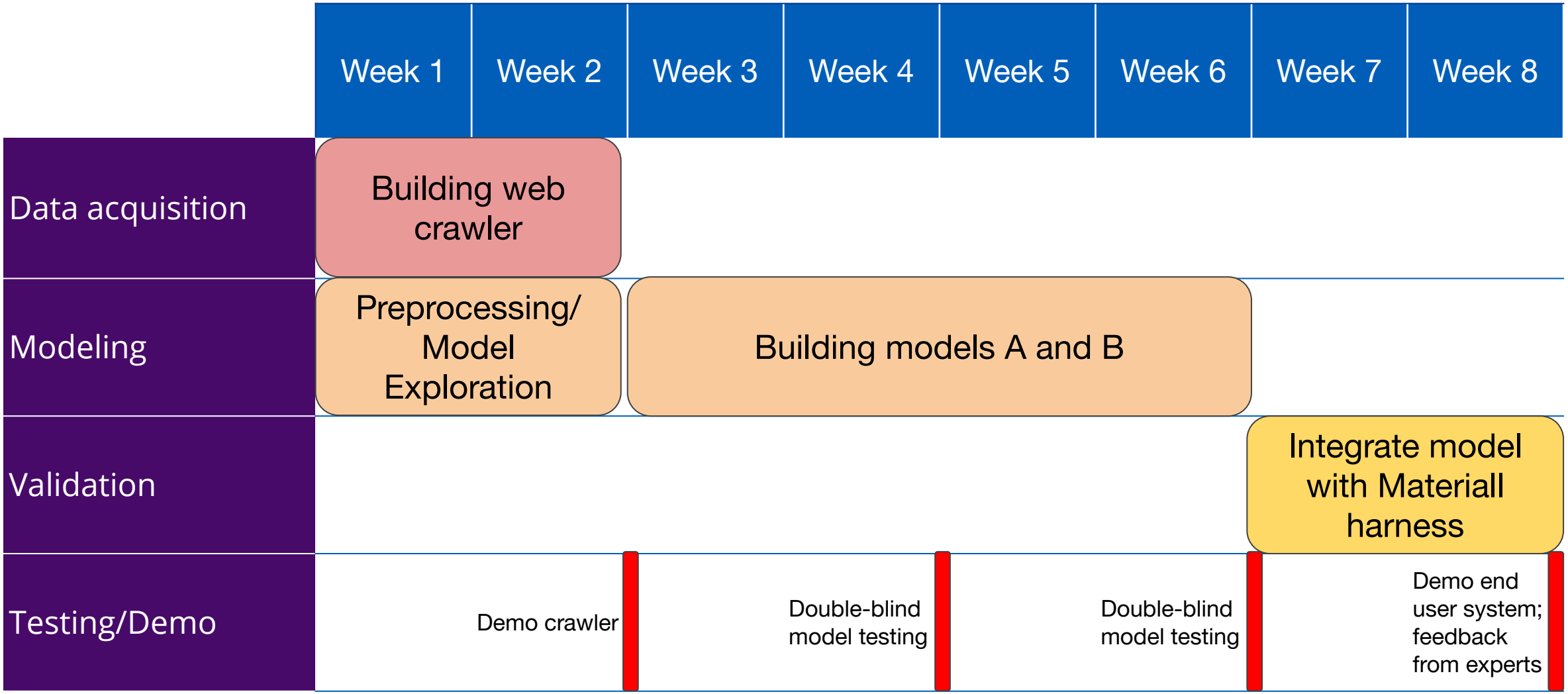
Top Components Required for the Project in Order of Importance

- Construct web crawler to mine for data (images and text)
- Build models to address 2 issues:
  - Model A: Given an image, how can we determine if it is part of a house
  - Model B: Given an image of a part of a house, how can we determine and classify the style of the home and any specific features (i.e. a granite island inside the kitchen)
- Integrate models with Materiall's recommendation engine

- Color Code Orange: Lines you need to learn to do
- Color Code Green: Lines which will be easy to develop

System Architecture

What will you do next?



Thank you!

Prof Sidhu recommendation:

9 Top Dream House Features Every Homeowner Needs

Open Floor Plan. ...
Tall Ceilings. ...
Outdoor Living Area. ...
Large Kitchen. ...
Plenty of Natural Light. ...
Lots of Storage/Closet Space. ...
Low-Maintenance Landscaping. ...
Garage. If you live in a cold-weather climate, a garage will prevent you from having to scrape ice your windshield every morning.

manually label images say like kitchen size - small-medium-large

could do feature by feature, realator.com pics, text might be rough compared to picture (might be vague descriptions and be from seller trying to sell the house)

or take picures of house and map it to size of house / sq ft (?)

house may seen more upgraded because more $$ because of house/sqt (ooo)

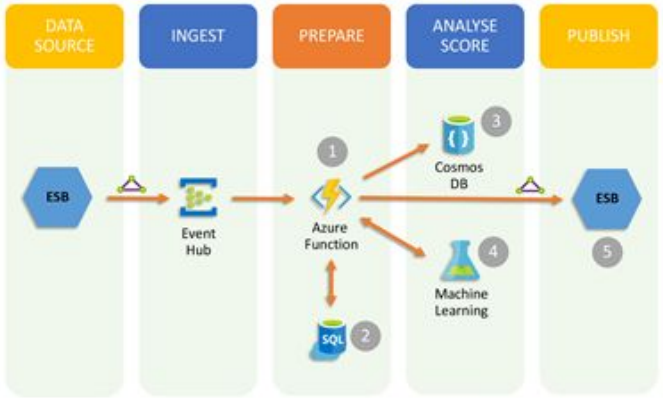
algorthim can pick up something we didn't see :thinking:

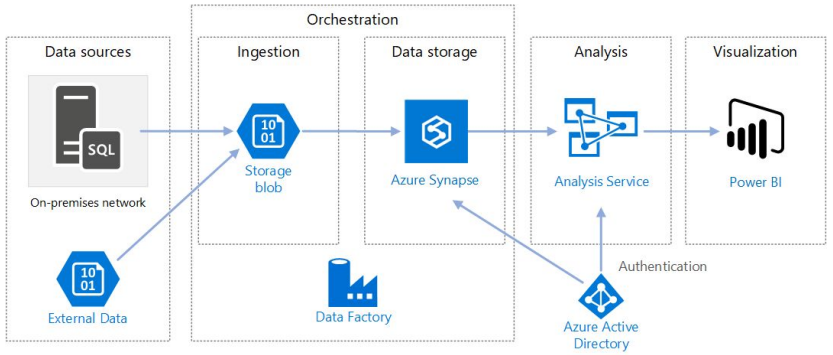
when we lay down the arct. brainstorm other things while the web crawler is crawlin

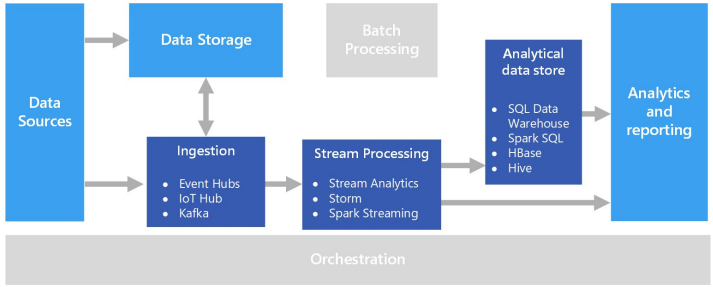
make sure envi running, make sure there is a smooth transition from crawler -> model

Sample System Architecture

Replace the diagram below with your rough System Architecture and/or Data Models (it is okay to use two or more slides in this section)







Example: Data Pipelines from Microsoft

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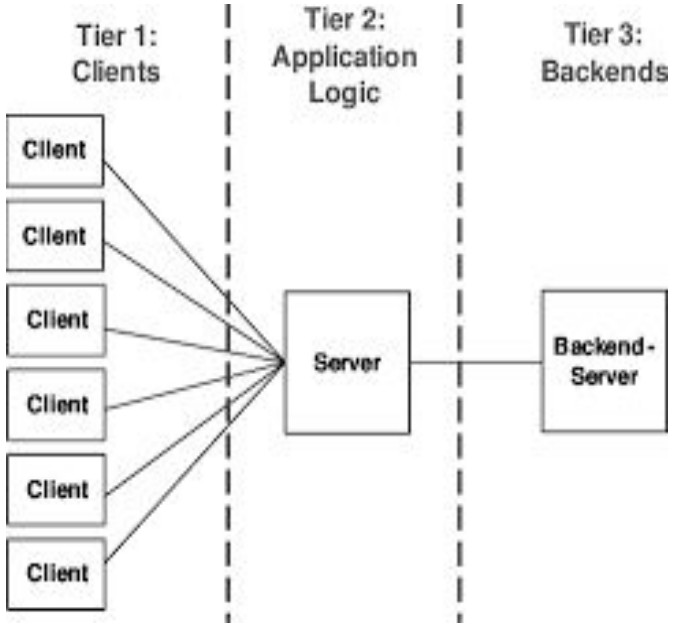

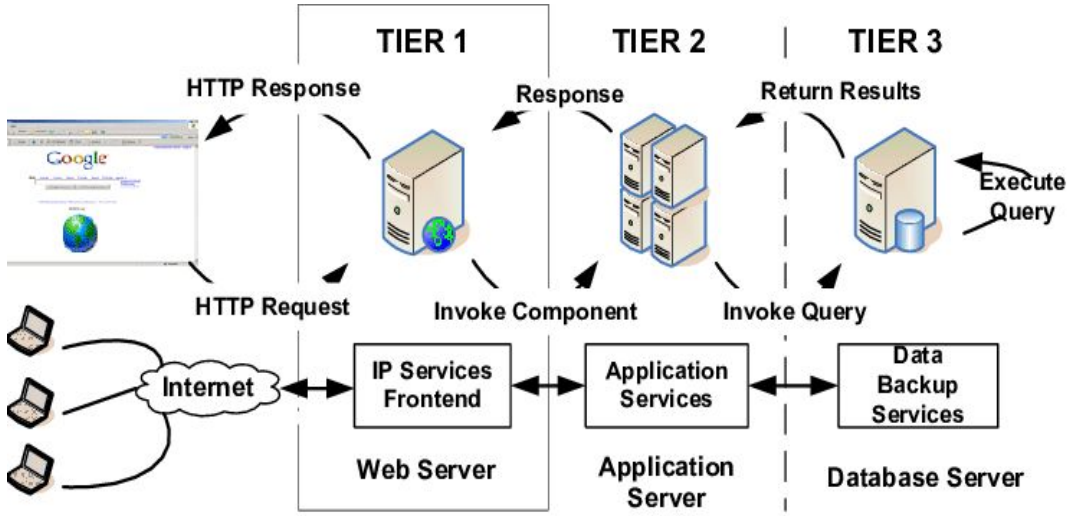

Trevor N. Mudge

Example: Client Server Architectures

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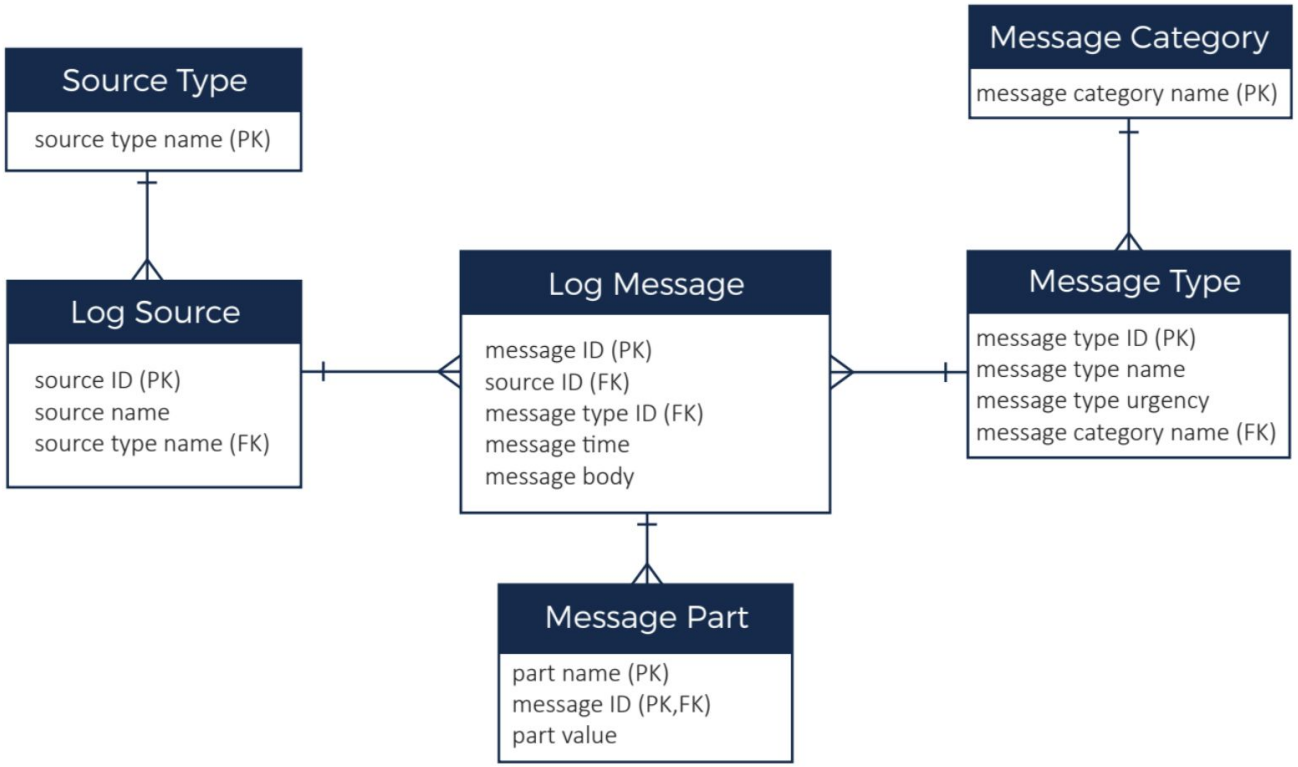
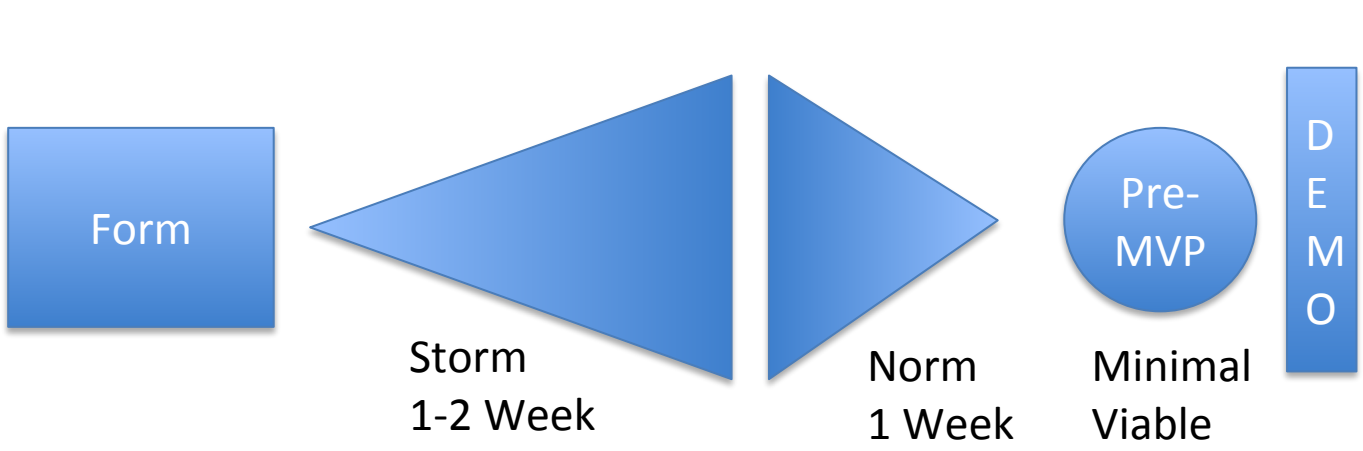
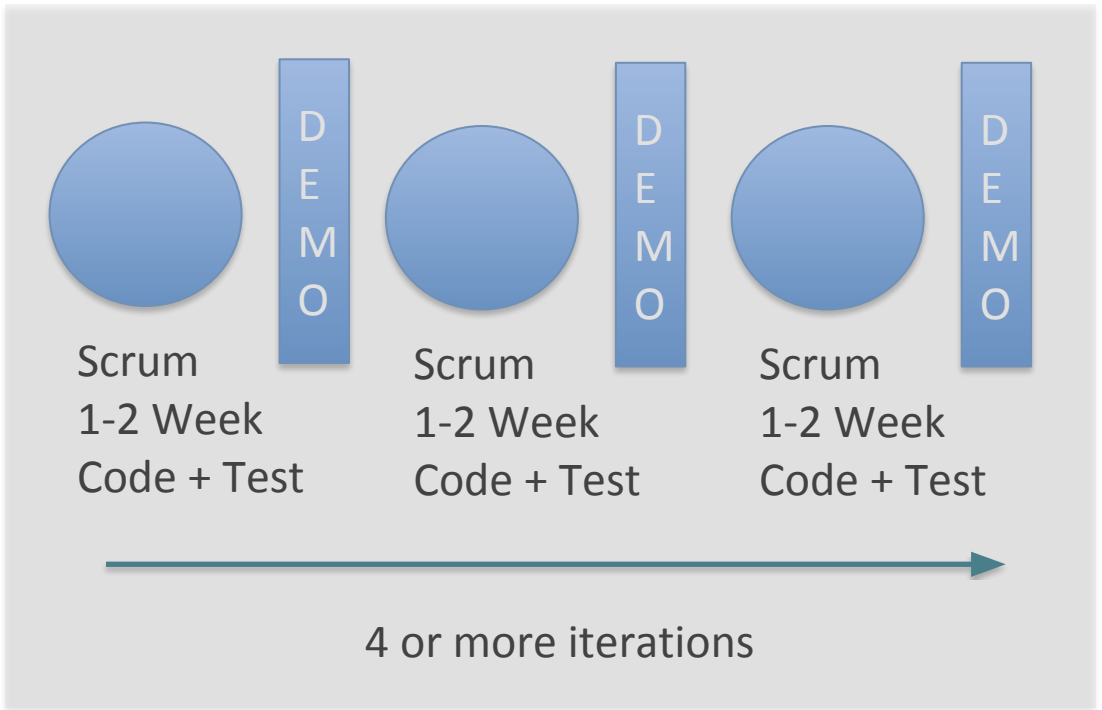


Example: Data Model for Social Media Data from Cassandra

What will you do next?





- What is the initial set of tasks (3-5) tasks
- Put initials or a name next to each
- Hint: start with the red items on your list of technical components
- Brainstorm/Research → Normalize Concepts → Simplest Minimal Demonstrable Version
- Consider using “Swim Lanes” to organize the team