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### **Updated Problem**

# • We are still driven by the same problems as before

- 3D printing is made for a hobbyist market,
   not the average consumer
- O To move forward, 3D printing needs to become as easy as  $\mathbb{H}P$  (or Ctrl + P)
- Combining and automatically handling platforms such as OctoPrint, CuraEngine, and Thingiverse can bring the complexity down to average user level

#### **Quick Refreshers**

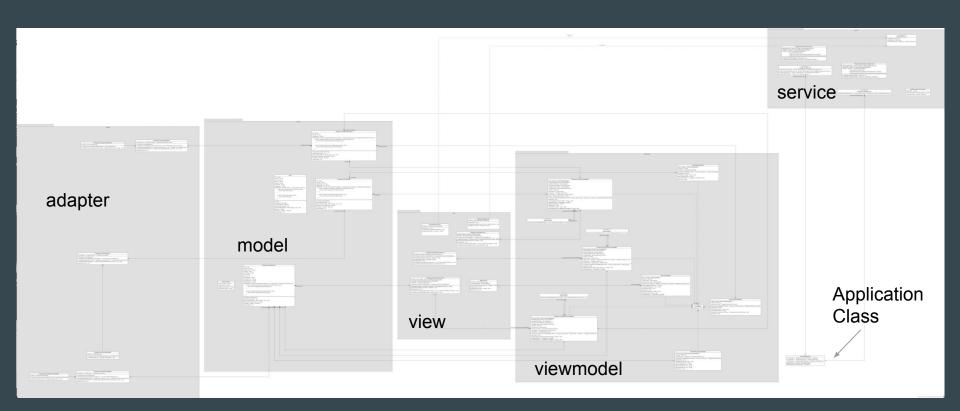
OctoPrint	Web interface for 3D printers (runs on Raspberry Pi or similar computer)
CuraEngine	Engine to convert 3D models (.stl) into printer code (.gcode)
Thingiverse	A large repository of 3D models (.stl)

#### Changes of Scope

- Removed need to integrate CuraEngine into our server
  - After some research, OctoPrint's API allows for utilizing its integrated CuraEngine
    - All that we need to keep track of is printer profiles for CuraEngine configuration
- Dropping support for filament tracking
  - Difficult metric to track from our limited knowledge
    - We can only get an estimate of how much any single print will use we never know the actual amount used

## Detailed class diagram

Prepare yourself...



Let's break it down...

# PrintdApplication <Property>> -defaultSubscribeScheduler: Scheduler <Property>> -thingiverseService: ThingiverseService <Property>> -thingiverseAuthService: ThingiverseAuthService +get(context: Context): PrintdApplication +defaultSubscribeScheduler(): Scheduler

# Adapter Namespace

ThingiverseThingsViewHolder

~binding : ItemThingBinding

+ThingiverseThingsViewHolder(binding: ItemThingBinding)
-bindCollectionThings(collectionThing: ThingiverseCollectionThing): void

ThingiverseThingsAdapter <<Pre><<Pre><<Pre>roperty>> -collectionThings: ThingiverseCollectionThing

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+onEndVerWebfolder; ThingiverseThingsViewHolder, position : int) : void

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ThingiverseFilesAdapter
<<Pre><<Pre><<Pre><<Pre>

Tringverse Flore Collection Test Tringverse Tringverse Tringverse Flore State Tringverse Flore Tringverse Tringverse Flore Tr

CerTopensys - Lonescours - Lone +getItemCount(): int ThingiverseFilesViewHolder -binding : ItemFileBinding +ThingiverseFilesViewHolder(binding: ItemFileBinding)
~bindFiles(thingFile: ThingiverseThingFile): void ThingiverseCollectionAdapter <<Pre><<Pre>roperty>> -collections : ThingiverseCollection +ThingiverseCollectionAdapter()
+ThingiverseCollectionAdapter(collections: List<ThingiverseCollection>)
+OncreateViewHolder(parent: ViewGroup, viewType: int): ThingiverseCollectionViewHolder
+orBindYiewHolder(hadrer: ThingiverseCollectionViewHolder, position: int): void

ThingiverseFilesAdapter

<<Pre><<Pre>roperty>> -collectionFiles : ThingiverseThingFile

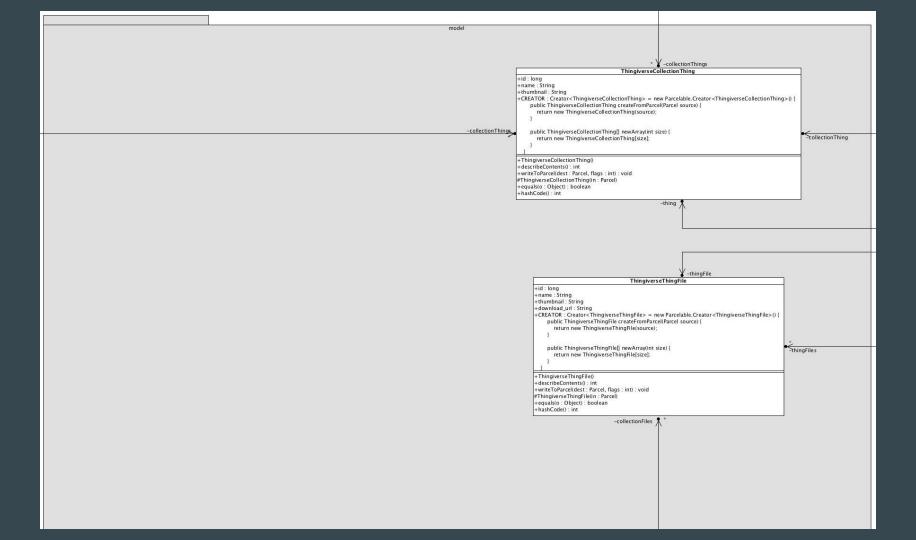
ThingiverseCollectionViewHolder

+getItemCount(): int

+ThingiverseCollectionViewHolder(binding: ItemCollectionBinding)
~bindCollection(collection: ThingiverseCollection): void

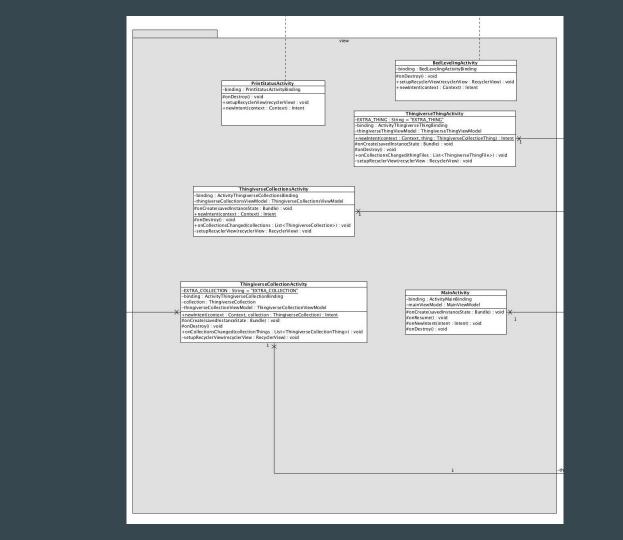
~binding : ItemCollectionBinding

# Model Namespace

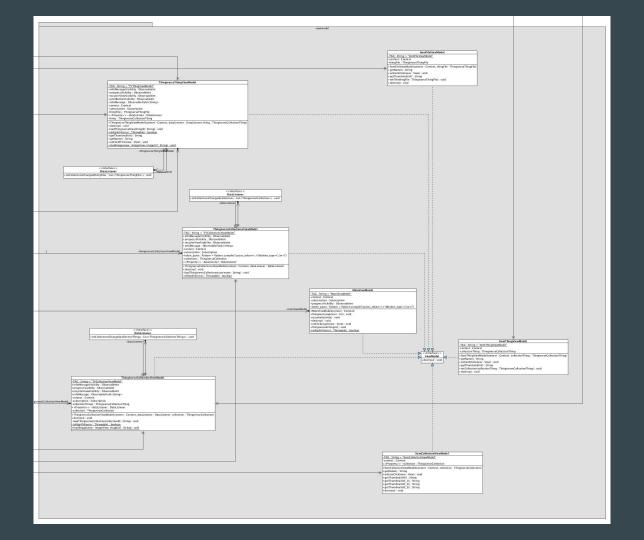


#### ThingiverseCollection +id: long +name: String +description: String +added: String +modified: String +url: String +count : int +thumbnail : String +thumbnail\_1 : String +thumbnail\_2 : String +thumbnail\_3 : String AccessToken +tnumonal\_3 : String +tnumonal\_1 : String +tnumonal -access\_token : String -token\_type : String -collection +getAccessToken() : String +getTokenType() : String public ThingiverseCollection[] newArray(int size) { return new ThingiverseCollection[size]; +ThingiverseCollection() +describeContents(): int +writeToParce((dest: Parcel, flags: int): void #ThingiverseCollection(in: Parcel) +equals(o: Object): boolean +hashCode() : int -collections collection ections collection

## View Namespace

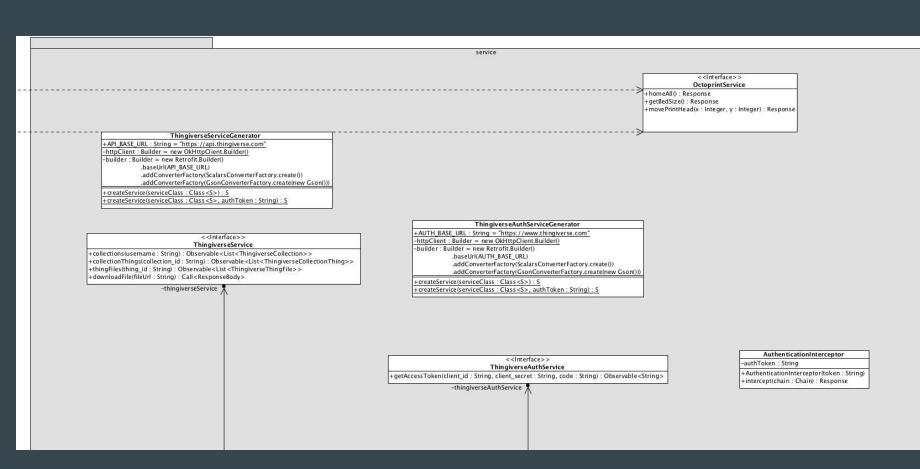


# ViewModel Namespace



Service Namespace

(last one)



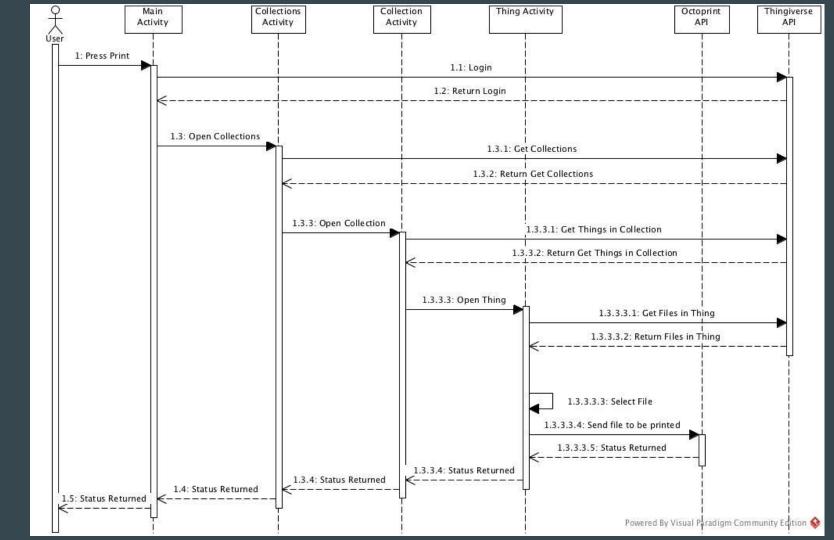
#### Server

# -Connection +getPrinterSettings(): void +updatePrinterSettings(): void +addPrinterSettings(): void +removePrinterSettings(): void +getPrinterProfile(): void +updatePrinterProfile(): void +addPrinterProfile(): void +addPuser(): void +addUser(): void +updateUser(): void +removeUser(): void +removeUser(): void +sendPostConfirmation(): void

## Sequence diagrams

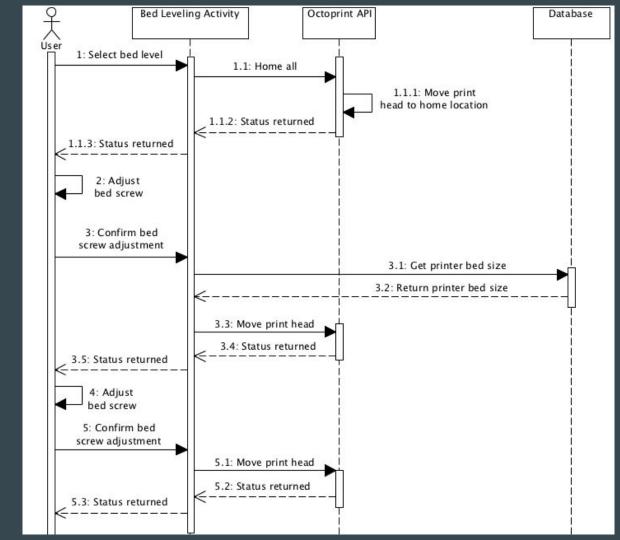
We don't have many, hang in there with us - we won't take too long

## Print

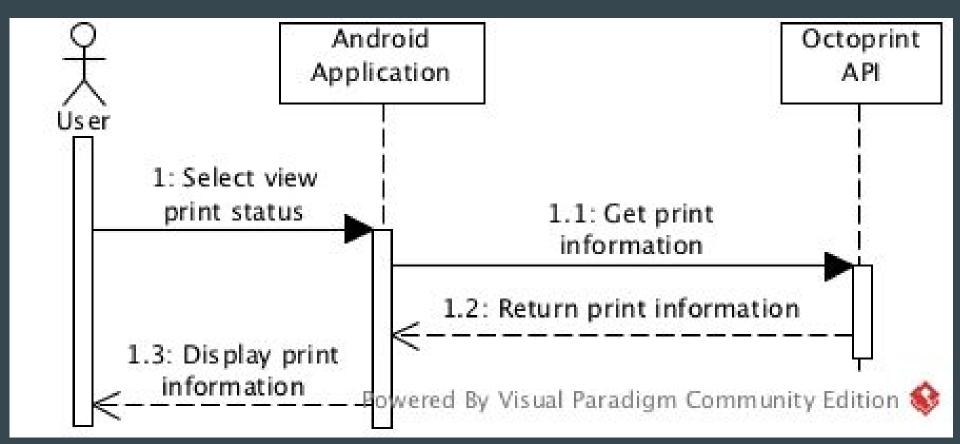


#### **Bed Leveling**

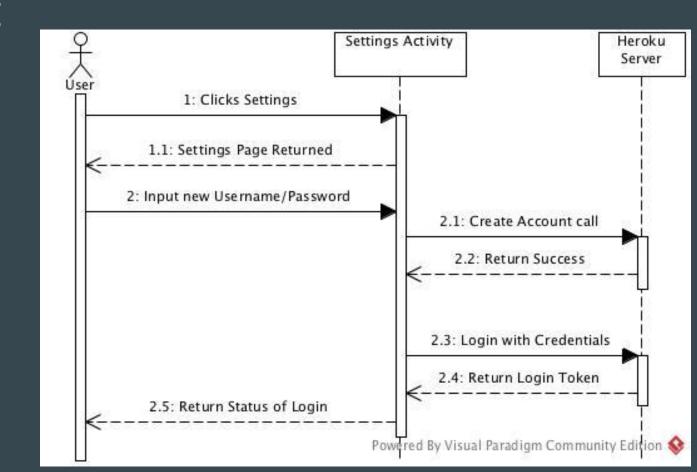
Steps 3.5 - 5.3 repeated 2x



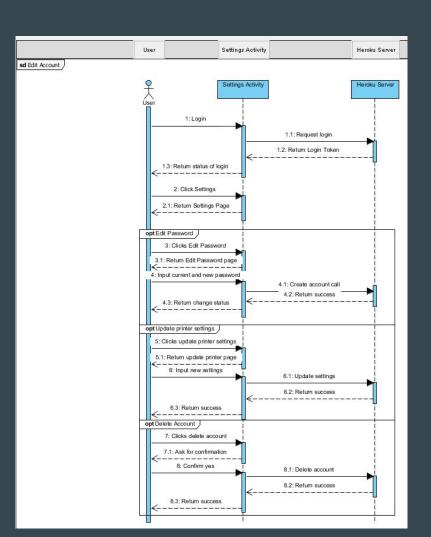
#### **View Print Status**



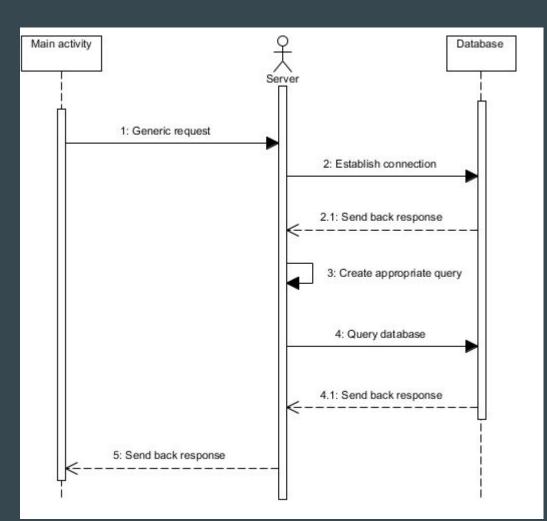
#### Create Account



#### **Edit Account**



#### Server call



#### **Project changes**

- As discussed, we will be dropping support for filament tracking
- Removing CuraEngine from our Heroku server to utilize OctoPrint's CuraEngine

### Great, so how does that affect the project? (focus changes)

- Filament tracking was low priority, so that doesn't affect progress
- Reorganizing to utilize the built in CuraEngine removes emphasis on the server portion of the project
  - This allows us to refine the app further
  - The server basically becomes a remote database with an accessible interface

#### Our Perspective

- The initial prototype is progressing smoothly
  - After wrangling with OAuth, the Thingiverse API is super simple to use
- MVVM data bindings are amazing
  - Take a lot of hassle out of updating Activities
  - Pain to set up, but that's done now... thank goodness
- We are on schedule to finish the app within the time frame
- Andrew is super excited about being able to use print(d)

# Thank you!

Questions?