

An Asynchronous, Personalized Learning Platform: Guided Learning Pathways

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Problem in Introductory Classes

- How to teachers address varied class backgrounds? Varied student interest?
- Can we leverage technology while maintaining good pedagogy?

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Challenge for Educators

- Educators have to juggle challenges of differentiated instruction to meet students' cognitive abilities

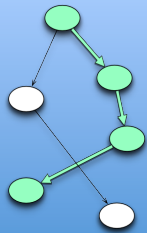
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Students Also Frustrated

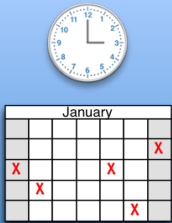
- Students are either bored or behind
 - Have to keep pace with others
 - Have to learn what they already know
- Imagine the alternatives:
 - Learn at your own pace
 - Learn what interests you

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Our Solution: Guided Learning Pathways



Students Pick Learning Goals



Students Learn At Own Pace

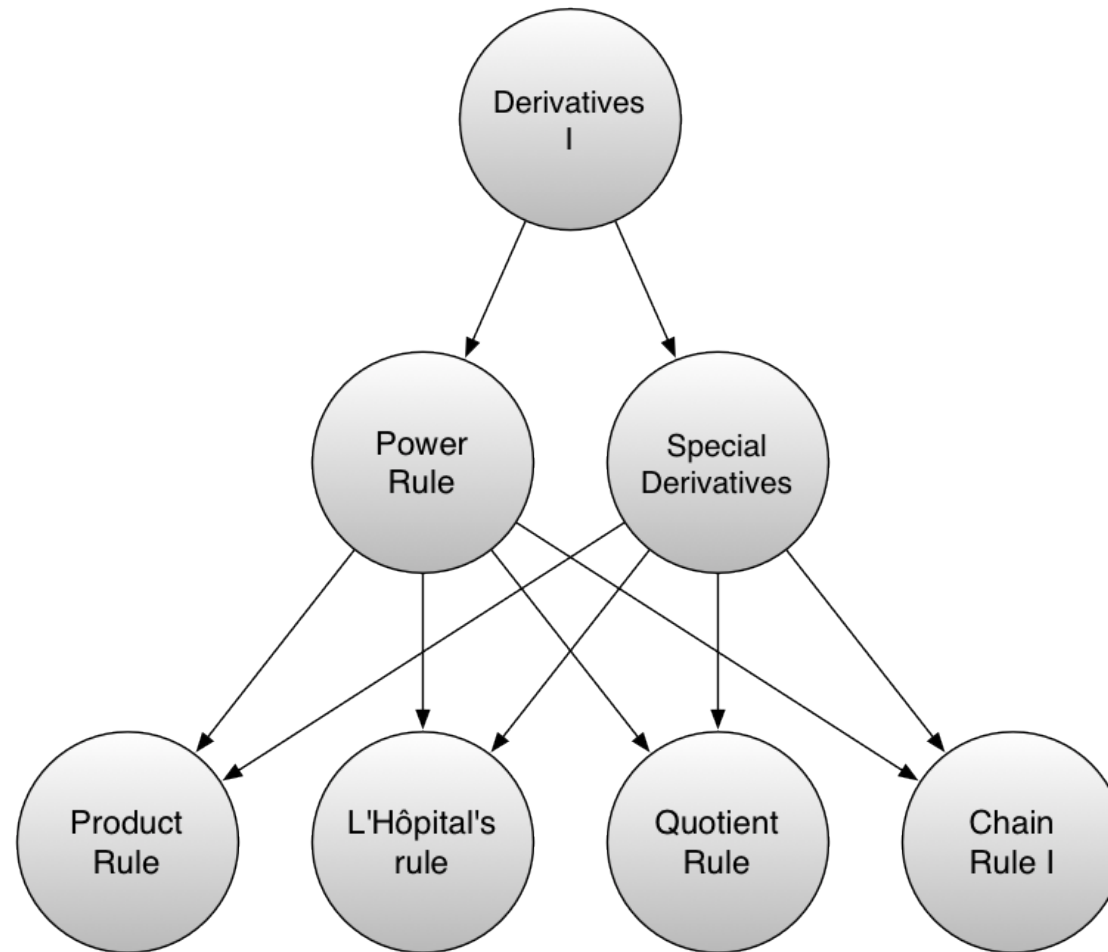


Lecture Notes

Lesson 1: What is a function
Lesson 2: What is slope
Lesson 3: What is a derivative

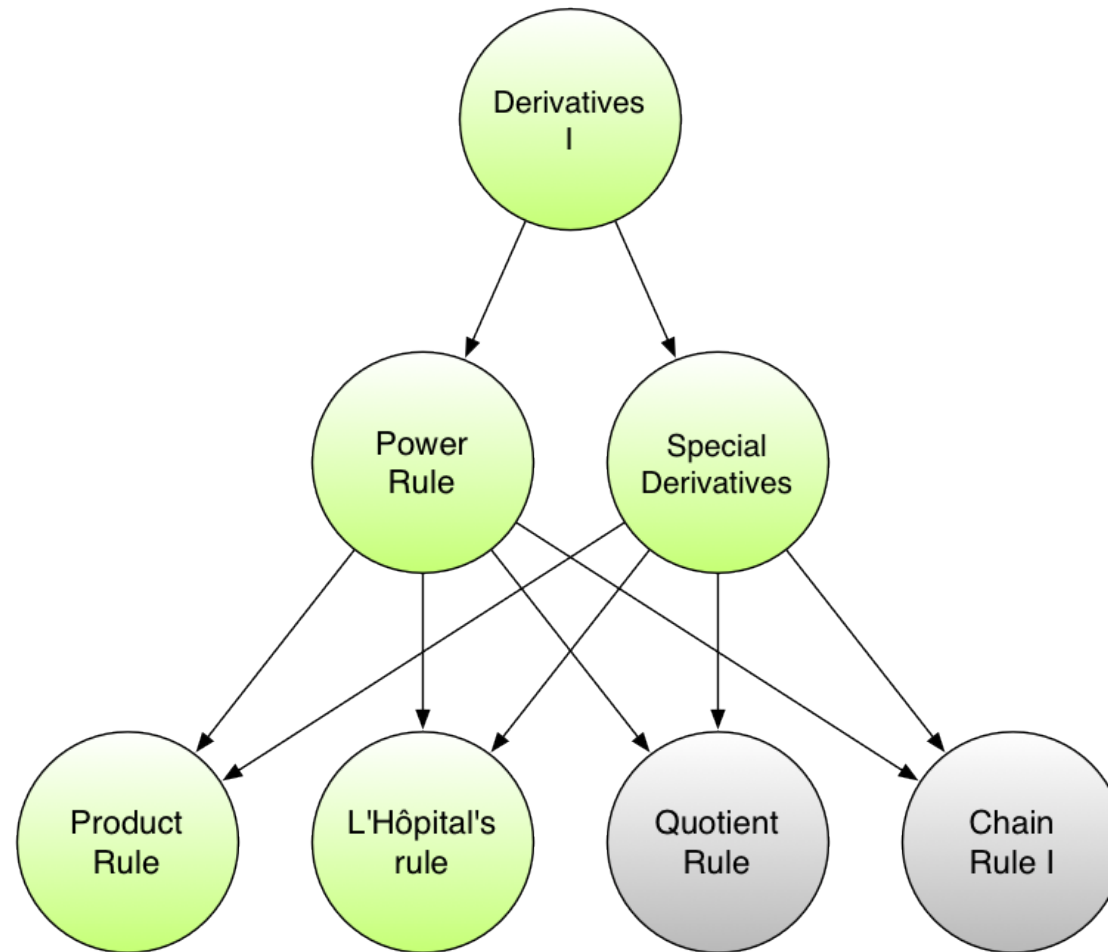
Personalized Learning
Materials

GLP Is Based on Concept Maps

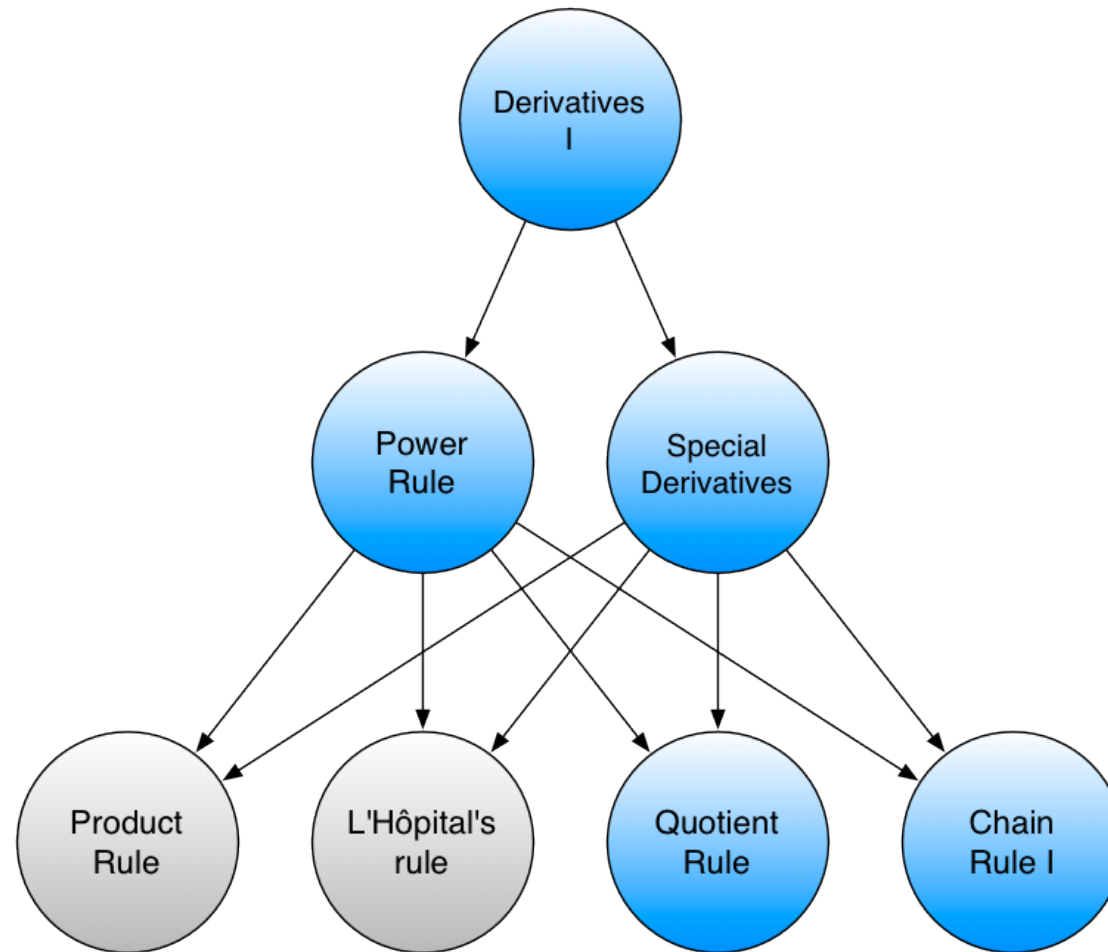


From Khan Academy

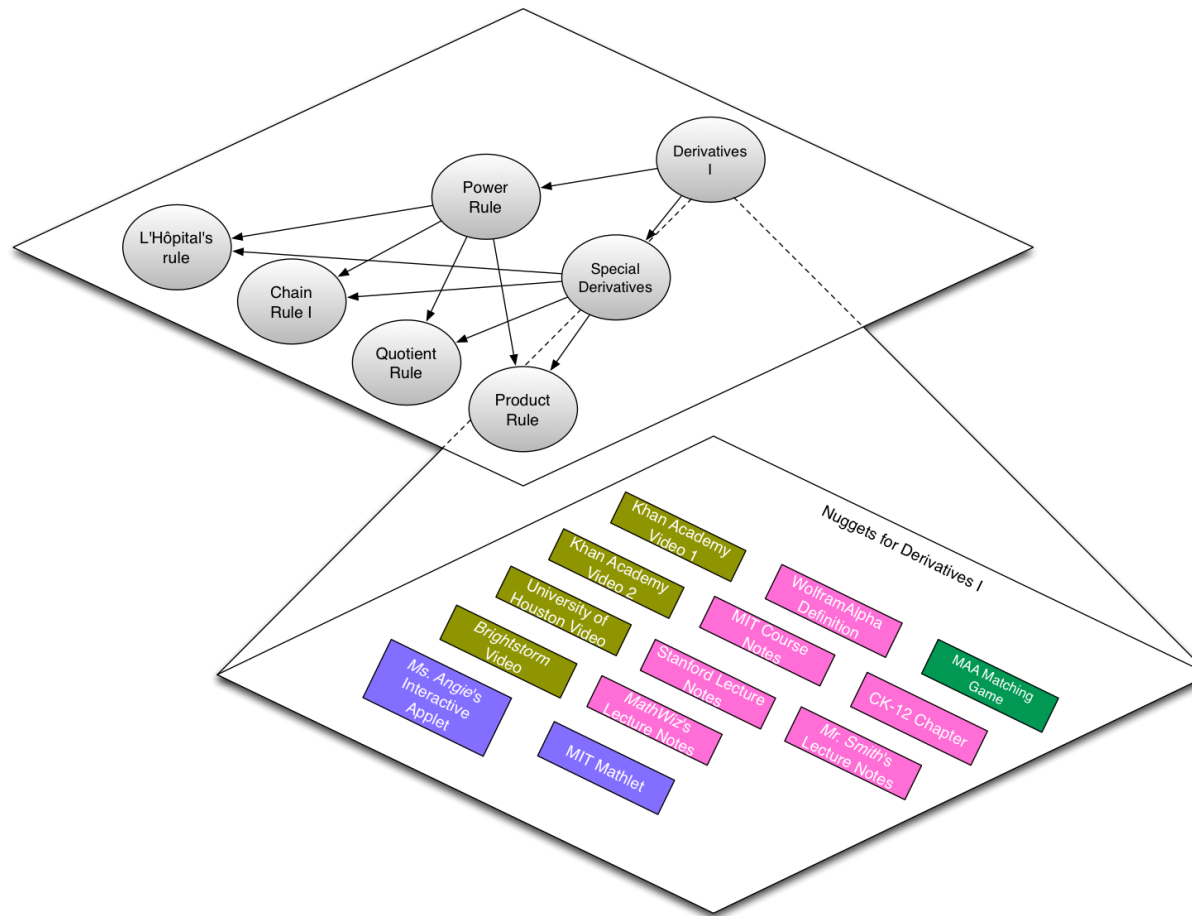
Students With One Major Might Focus On These Topics



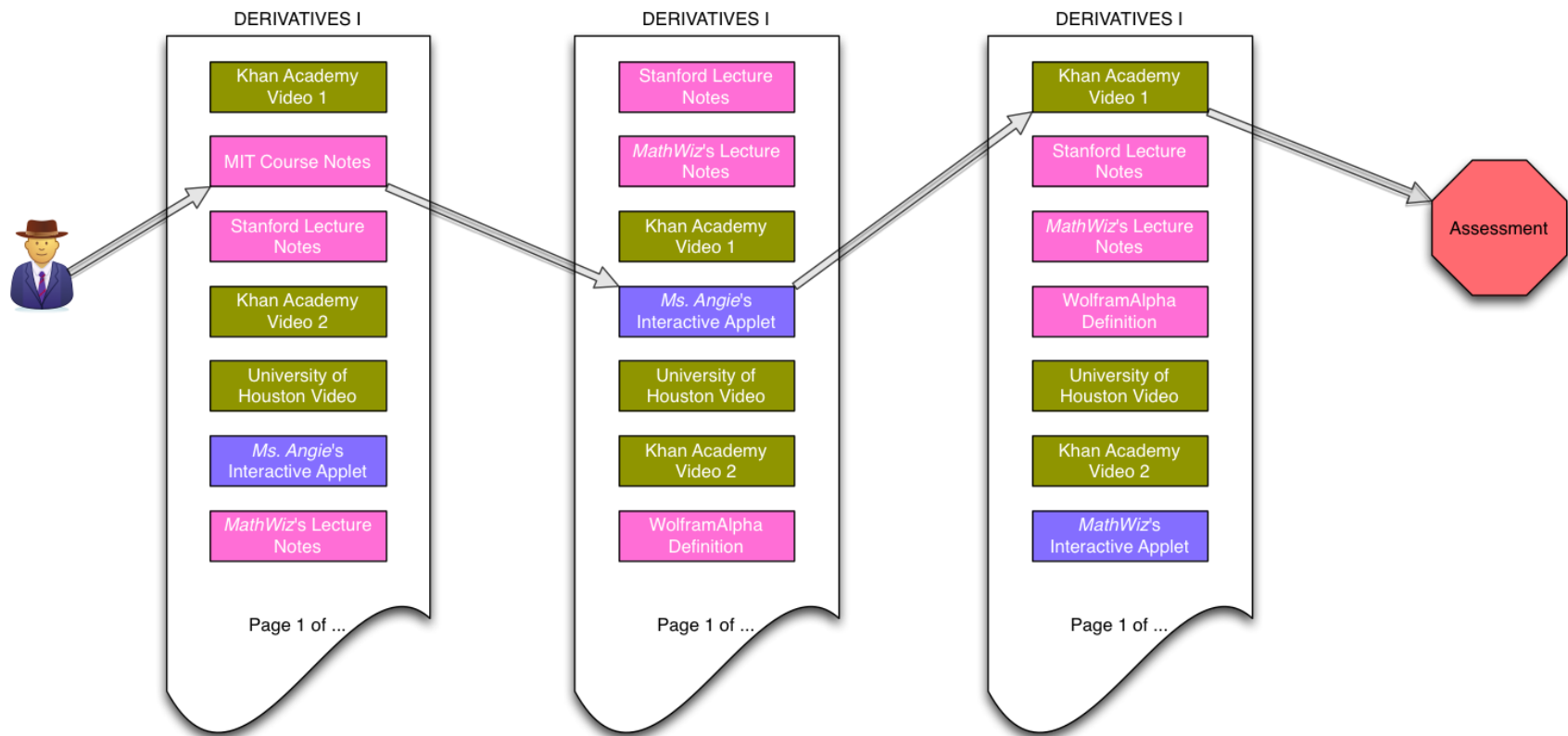
Students With Another Major Might Focus On Different Topics



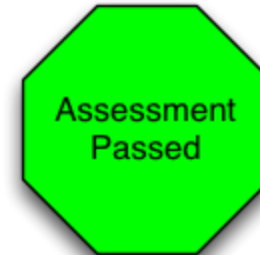
Learning Materials Teach Each Individual Topic



Learners Receive Personalized List of Recommended Materials



GLP Updates Effectiveness Ratings of Learning Materials



MIT Course Notes

- 0.2

MIT Course Notes

+ 0.7

Ms. Angie's
Interactive Applet

- 0.8

Ms. Angie's
Interactive Applet

+ 0.1

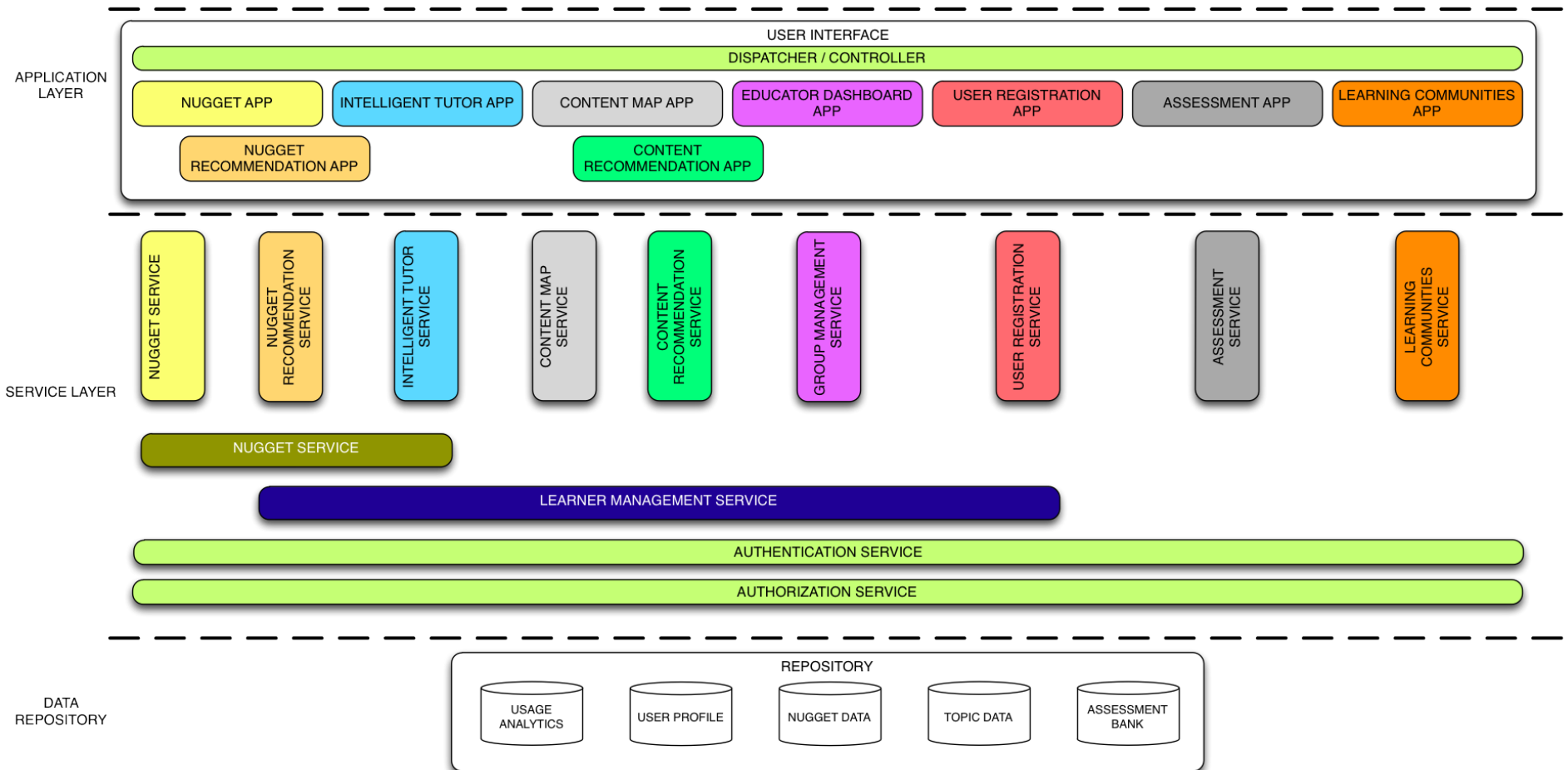
Khan Academy
Video 1

- 0.1

Khan Academy
Video 1

+ 0.4

We Defined the System Architecture



We Developed Simulation To Evaluate Recommendation Algorithms

GLP Simulation and Model, v0.0.1

23.23.59.22:3000/learners

Run Simulation

Set number of learners in the simulation
Number of Iterations at Each Configuration:

Pick Configuration Items:
At least one of the following two must be checked:
Directed ☒
Isolated nodes ☐
At least one of the following two must be checked:
Coldstart ☒
No coldstart (seed with virtual students) ☐
At least one of the following two must be checked:
Include quality effect ☒
No quality effect (all nuggets are the same) ☐

Number of Learners:
Number of Nodes:
Number of Learning Nuggets per Node:

Pick At Least One Algorithm To Test:
recommendStyleOnly ☒
recommendNoPreference ☒
recommendWeighted ☒

- [Main Menu](#)
- [Create Content Map](#)
- [Run Simulation](#)

TMN: 'lawmakers' Google Sharing Enabled