



# ISTM 6210: Capstone

Final Presentation

Group D

Keston Crandall, Vinay Verghese, Lei Wang, Gliffton Mendes



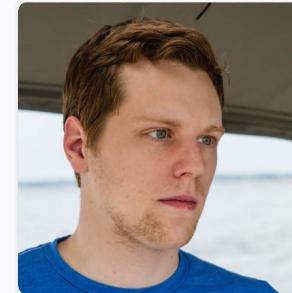
# TEAM MEMBERS

MEET THE TEAM



**Glifton Mendes**

Product Owner  
Development Team



**Keston Crandall**

Data Scientist  
SCRUM Master  
Development Team



**Vinay Verghese**

Business Analyst  
Development Team



**Lei Wang**

Business Analyst  
Development Team



# AGENDA

WHAT TO SHOW



INTRODUCTION



PROJECT MANAGEMENT



DATA FLOW DIAGRAM



OPTIMIZATION MODEL



ACTIVITY DIAGRAM



DEMO OF THE PROTOTYPE



# INTRODUCTION

# ENVIRONMENT

## INTRODUCTION



Designed for universities to facilitate student group project evaluations.



Used by Professors and Students



Can be linked to the Blackboard Learning Management System (LMS)

# ○ NEED FOR THE SYSTEM

INTRODUCTION

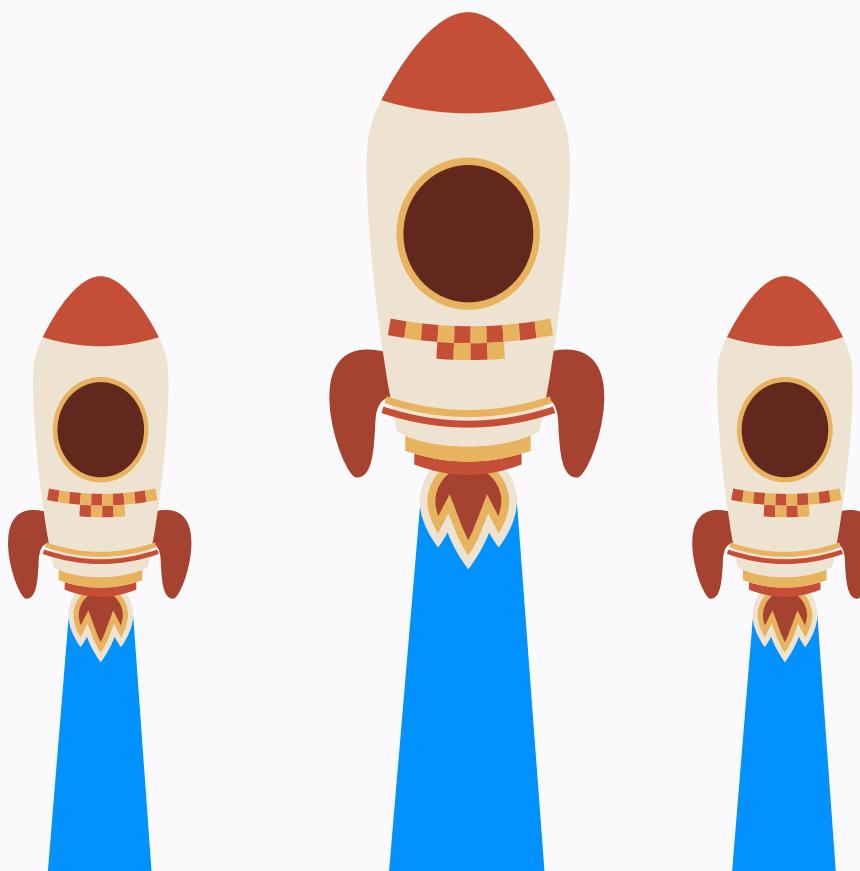


## Professors

- 🚀 Reduce workload
- 💻 View on-going progress

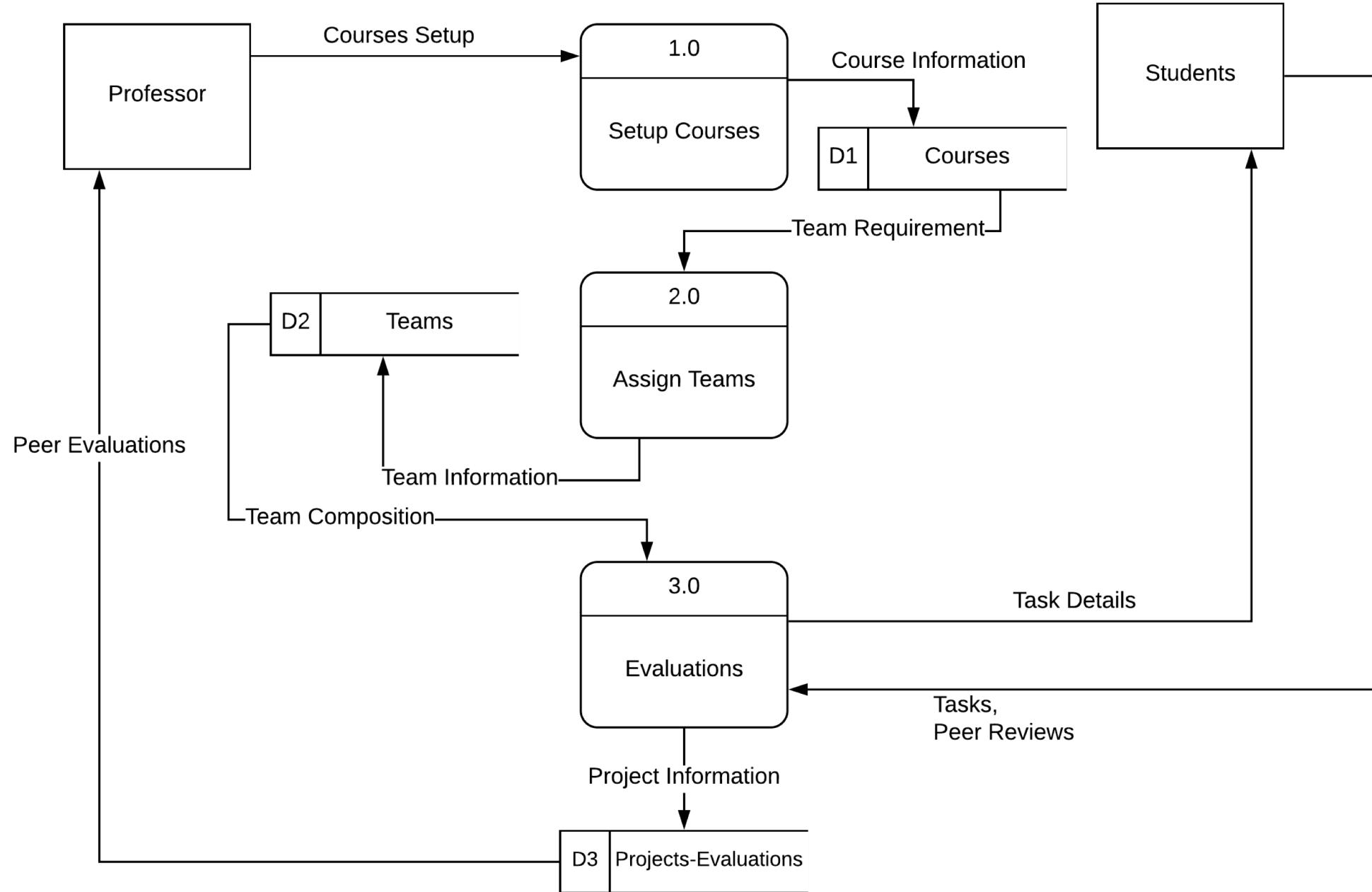
## Students

- 💡 Improve learning - increase student participation in group projects.
- 📋 Accountable - reduce free-riders
- 📊 Evidence-based evaluations
- 🤝 Reduce stress for high performers.



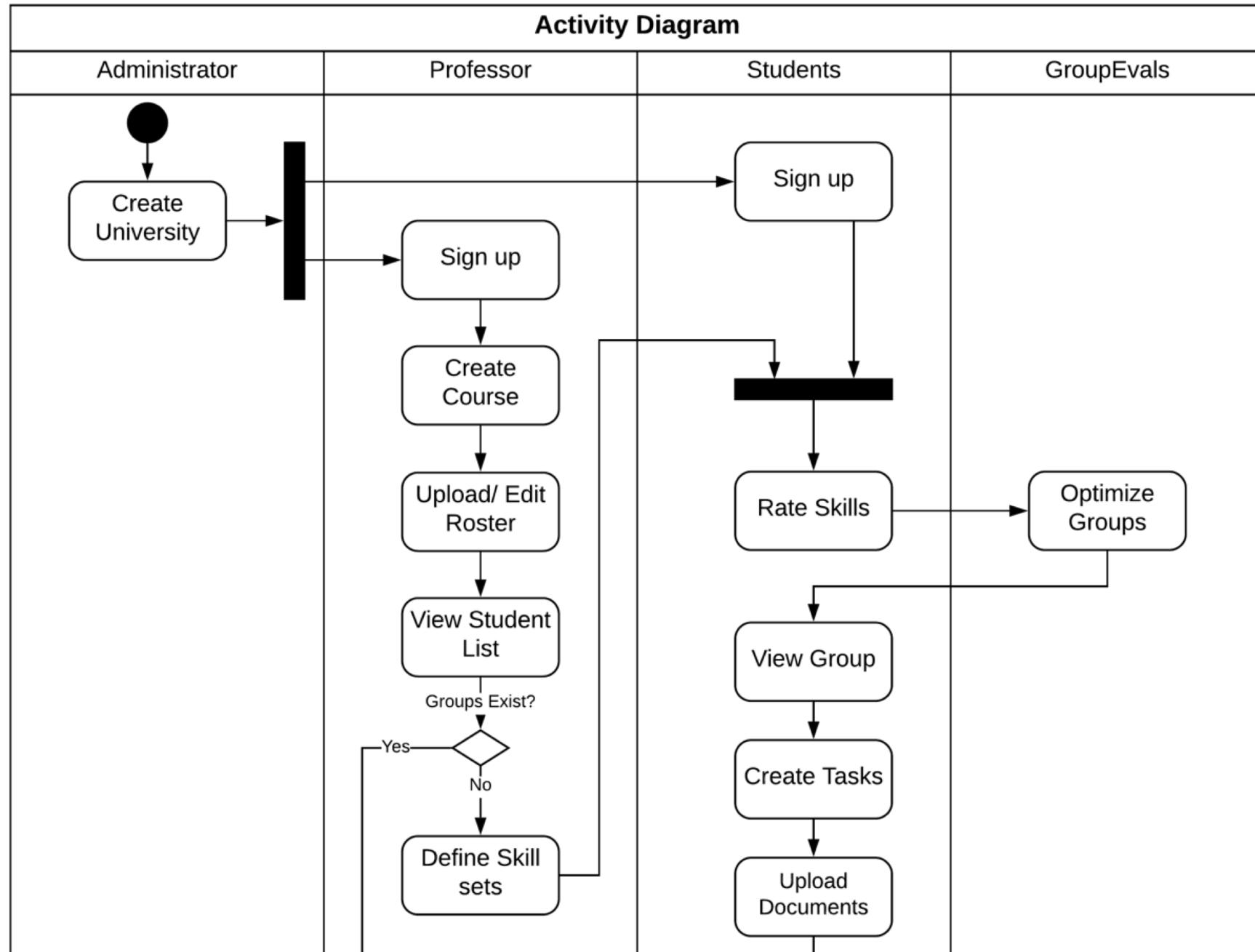


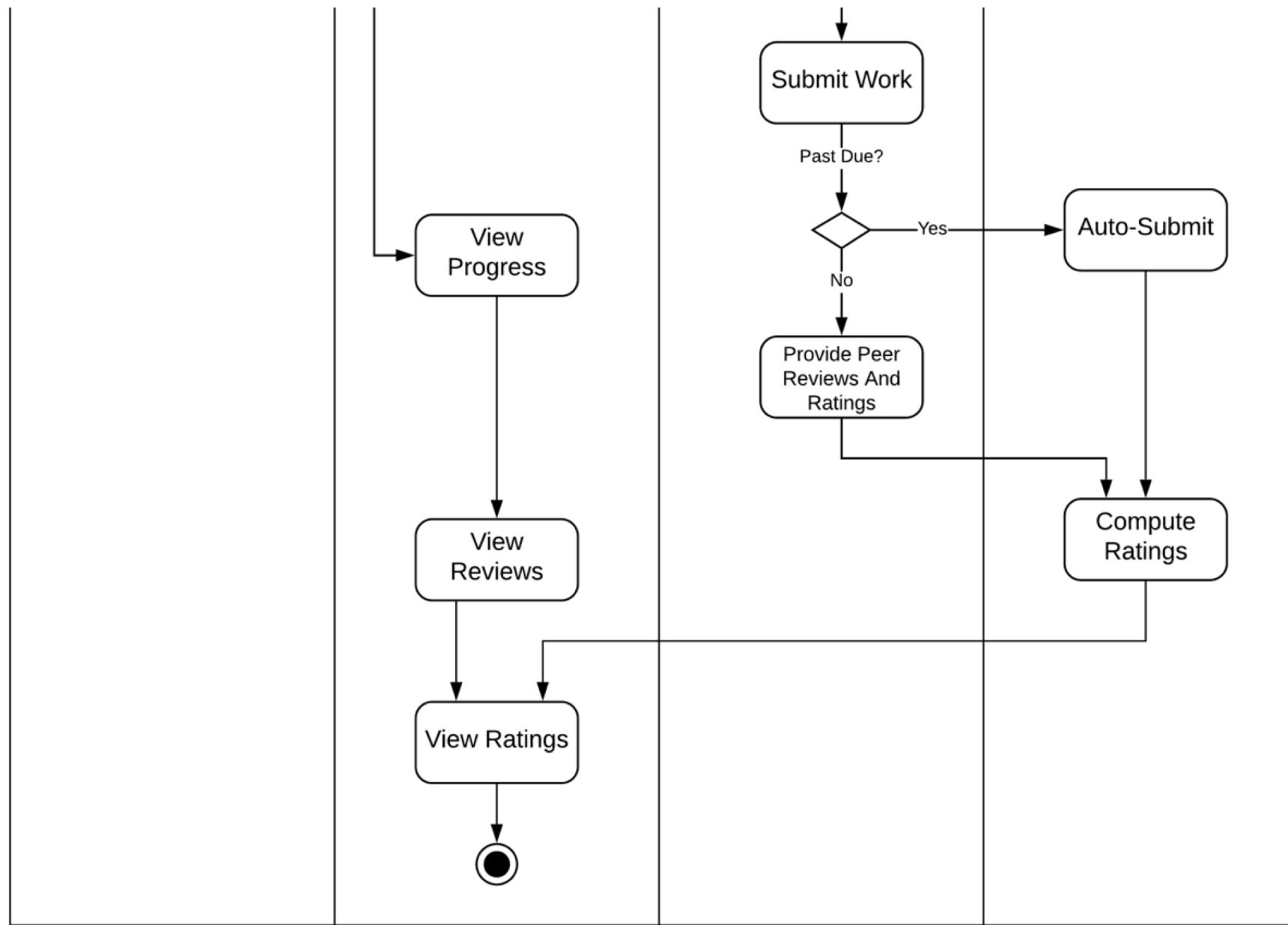
## DATA FLOW DIAGRAM

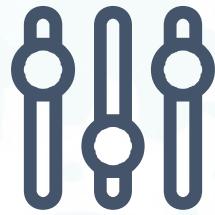




## ACTIVITY DIAGRAM







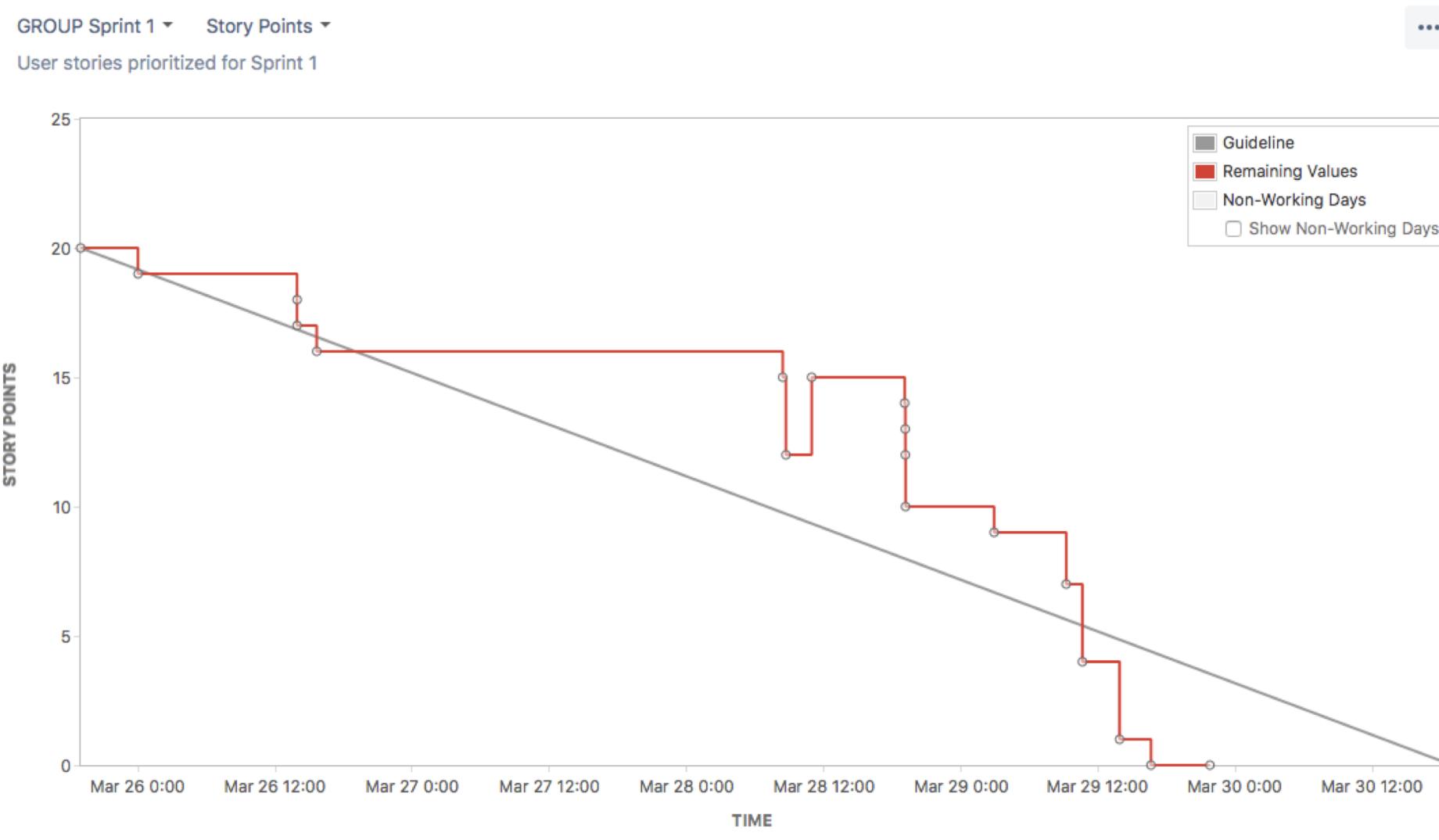
## PROJECT MANAGEMENT



# BURNDOWN CHARTS



SPRINT 1





# ○ BURNDOWN CHARTS

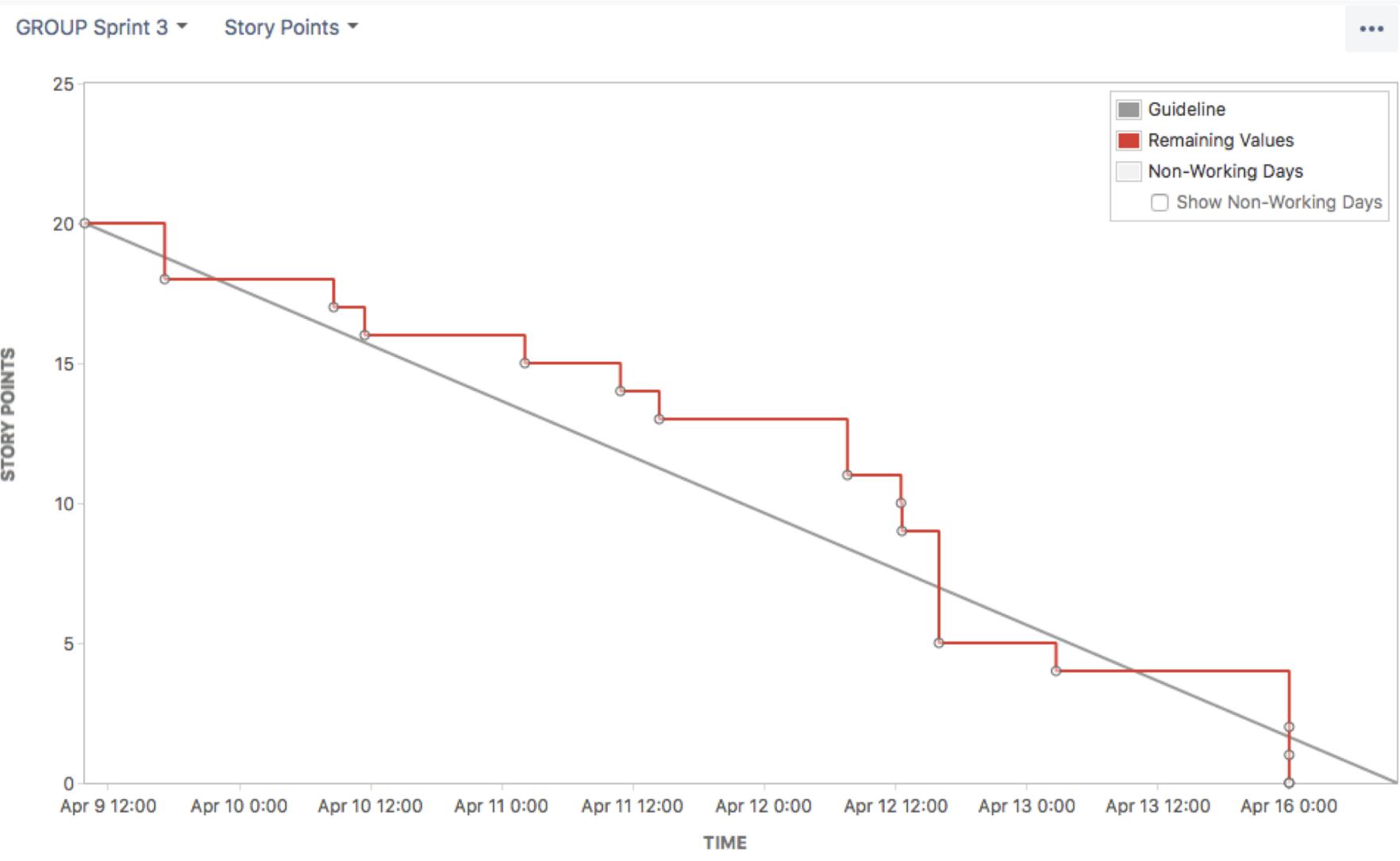
SPRINT 2





# ○ BURNDOWN CHARTS

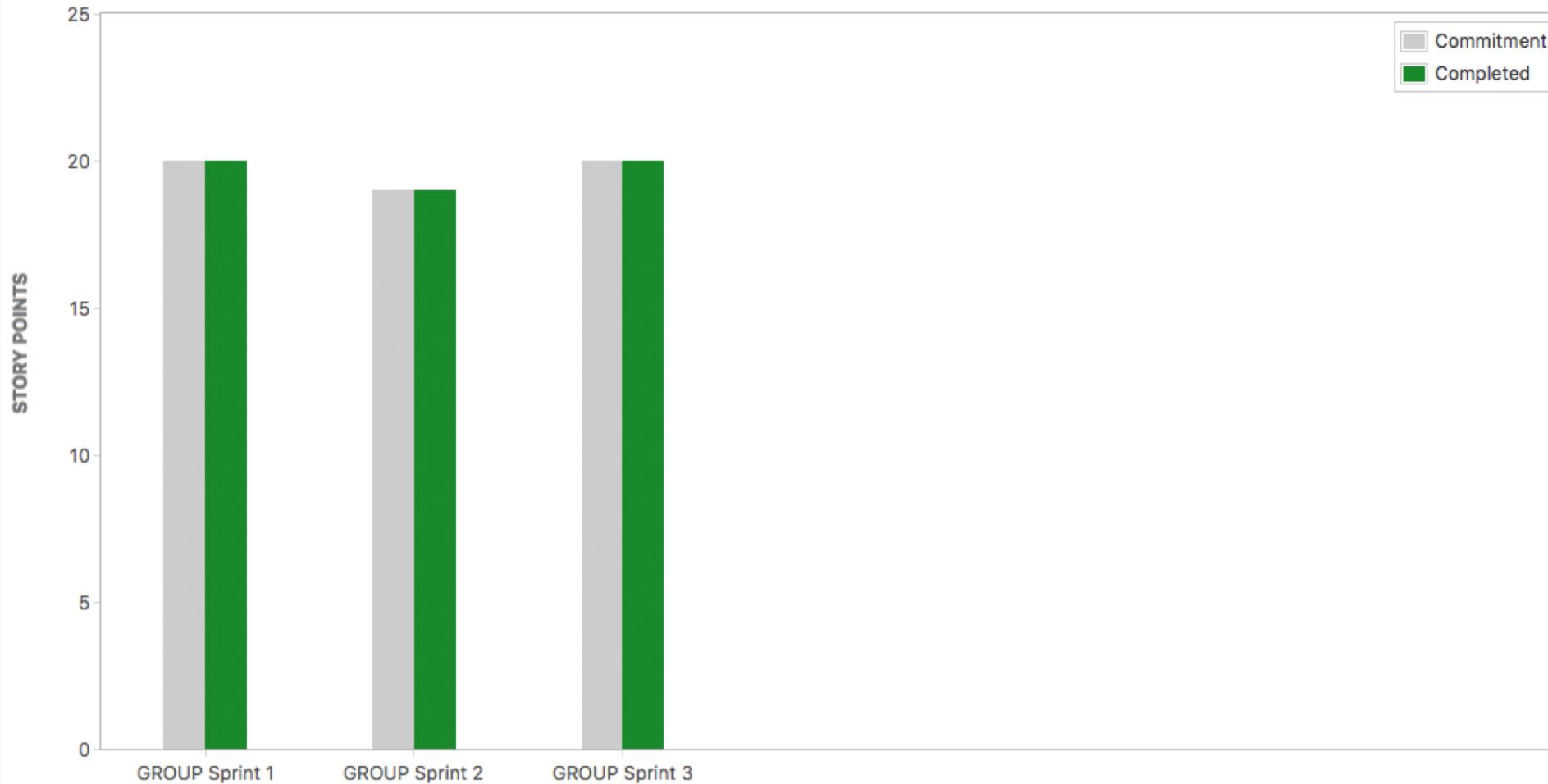
SPRINT 3





# VELOCITY CHART

PROJECT MANAGEMENT





## **DETERMINISTIC ANALYSIS: OPTIMIZATION MODEL**



# PROBLEM STATEMENT AND DEFINITIONS



DETERMINISTIC ANALYSIS: OPTIMIZATION MODEL

## Problem Statement

This problem attempts to make sure groups have members that have skills that are all above a certain threshold or minimize the total deviations.

### Sets

$P$  = set of people

$S$  = set of skills

$G$  = set of groups

### Parameters

$r_{p,s}$  = skill score of person  $p$  under skill  $s$ ,  $\forall p \in P, \forall s \in S$

TargetMean = The target min mean wanted to be achieved in all groups

GroupSizeMin= The minimum team size

GroupSizeMax= The maximum team size

### Variables

$x_{g,p}$  = binary, 1 if person is in this group, 0 otherwise

$y_{g,s}$  = binary, 1 if skill mean is below target level for group, 0 otherwise



# OBJECTIVE AND CONSTRAINTS

DETERMINISTIC ANALYSIS: OPTIMIZATION MODEL



## Objective

Minimize the total group skill means below the thresholds:

$$\min_x z = \sum_{g \in G} \sum_{s \in S} (TargetMean - \frac{\sum_{p \in P} r_{p,s} x_{g,p}}{\sum_{p \in P} x_{g,p}}) y_{g,s}$$

## Constraints

Groups can't have more than the min size:

$$\sum_{g \in G} (\sum_{p \in P} x_{g,p} \geq GroupSizeMin), \forall g \in G$$

Groups can't have less than the max size:

$$\sum_{g \in G} (\sum_{p \in P} x_{g,p} \leq GroupSizeMax), \forall g \in G$$

Every person needs one and only one group:

$$\sum_{p \in P} (\sum_{g \in G} x_{g,p} = 1), \forall p \in P$$

Switching constraint for var y:

$$\sum_{g \in G} \sum_{s \in S} (\frac{\sum_{p \in P} r_{p,s} x_{g,p}}{\sum_{p \in P} x_{g,p}} \geq y_{g,s} TargetMean), \forall g \in G, \forall s \in S$$



## DEMO OF PROTOTYPE



# WELCOME TO GROUP EVALS

DEMO OF PROTOTYPE



Lei Wang

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## View Course

Semester ^	Course Code/Section ▾	CRN ▾	Course Title ▾	Group Name ▾	Rate Skills ▾
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201810	ISTM 6201_10	12363	Information Systems Development	B	

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# Thanks For Watching

Questions?