

# Discovery Tool

An idea management system

Team 3

# Outline

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- Team strong and weak points
- Operational Concept Description
- Win Conditions
- Prototype demo
- Architecture
- Life Cycle Plan
- Definition of Done
- 3 metrics
- Feasibility Evidence
- Quality Focal Point

# Team Strengths

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## Operational

- Team members are very cooperative and flexible
  - High participation of weekly and ad hoc meetings
  - Open communication on team Slack
- Adaptable with an emphasis on project success
  - Fluid transition to changes in direction and scope
- Good spread of team personalities and programmatic experience

## Technical

- Broad range of technical skills
  - Some team members have significant web-development experience
- Team members are collaborative, quick to learn, and willing to teach and train

# Team Weaknesses

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## Operational

- Concerns of being short on time after pivoting directions
  - New direction has less technical complexity and a more well-defined scope.
- Lengthy meetings lead to lowered team morale
  - Working on improving our meeting process. Potentially adopting a **delegate and review** strategy as opposed to concurrent development.

## Technical

- Inapplicability of initial prototype
  - Slight concern of potential “unknown-unknown”s with the new direction
  - Moving Forward: Prototyped an updated UI/UX with some sample data as a proof-of-concept.
- Not all team members have web-development experience
  - As we move forward, we can better assess the level of development effort and train team members on as-needed basis.

# Operational Concept Design

# System Purpose

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Discovery Tool is a web app based idea management system. It serves as an internal tool to System1. It provides a solution to help System1 content writers and admins to streamline, manage, accelerate their workflow. It gives the admins necessary tooling to quickly scale the team as well as content production. Overall, the system supports the team to work cross-functionally, leveraging resources to meet needs as efficiently as possible.

# Shared Vision

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- Create a web application to streamline current workflow
- Provide the content admin with team management capability
- Provide the content writer faster draft to production speed

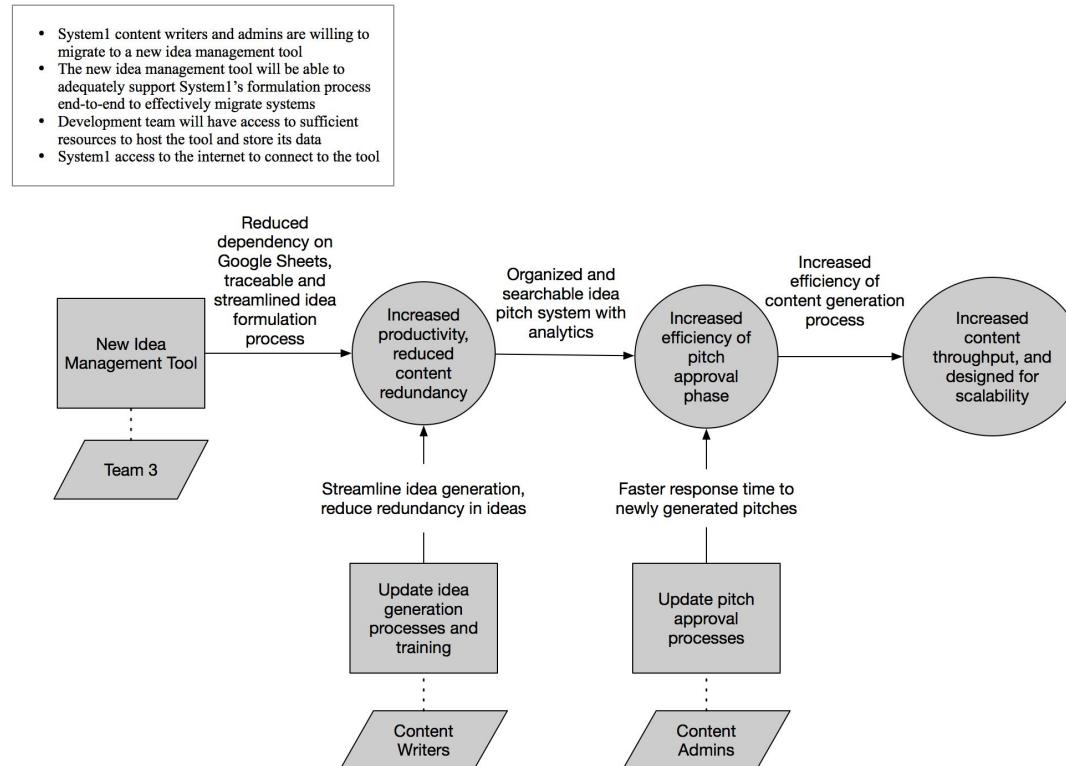
# Program Model

## Assumptions

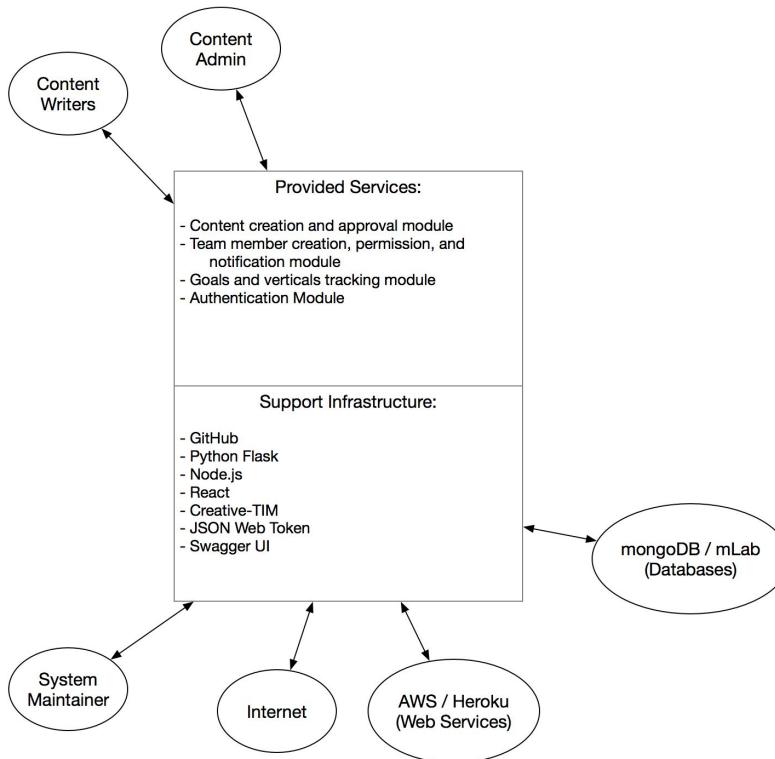
- System1 content writers and admins are willing to migrate to a new idea management tool
- The new idea management tool will be able to adequately support System1's formulation process end-to-end to effectively migrate the system
- Client will have maintainers on staff to take over the project upon handoff
- Development team will have access to sufficient resources to host the tool and store its data
- System1 access to the internet to connect to the tool

Stakeholders	Initiatives	Value Propositions	Beneficiaries
-System1 Content Writer -System1 Content admin -System1 Maintainer -Developers	-Content writer and admin correctly use the app -Maintainers maintain the whole system after handoff occurred -Admin and content writer are responsive to the different stages of content production -Developers implement system to mimic and streamline existing process	-Increased publication speed -Modernized frontend and backend technology -Streamlined process with real-time feedback -Ease of scaling the project and team size -Monitoring team progress and performance with confidence	-Content writer -Content admin

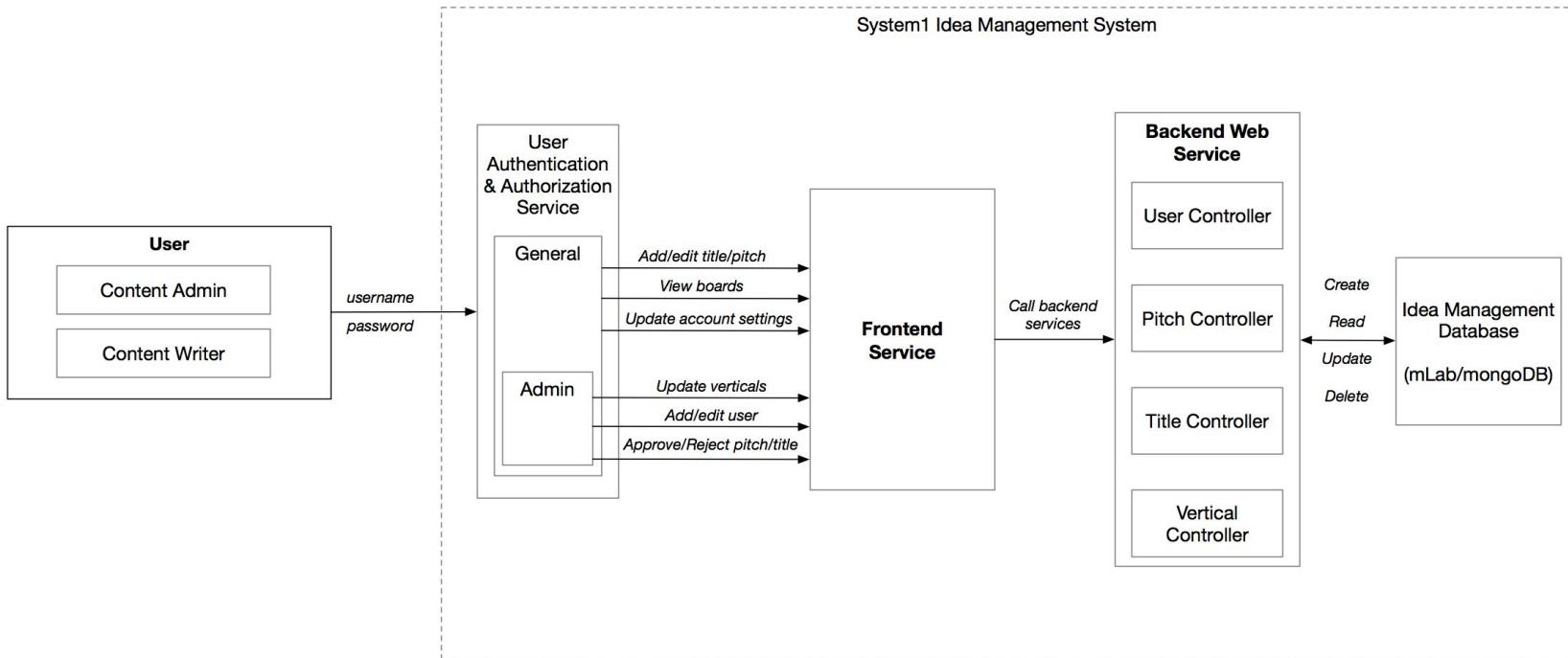
# Benefit Chain Diagram



# System Boundary



# Element Relationship



# Core Capabilities

Capability	Description	Priority
<b>Goal Board</b>	admin can set target vertical and amount of titles desired for current or future months, and also assign content writers to verticals	High
<b>Home Page</b>	admin and writer can view overall project progress, individual vertical progress, and targets of the past, current, or future months	High
<b>Team Board</b>	admin can view team member's performance and progress and change member's account type	High
<b>Draft Board</b>	writer can draft an idea then pitch it for approval	High
<b>Pitch Board</b>	admin and writer can view pitch details, and then admin can approve pitch to move into the next stage of content creation	High
<b>Title Board</b>	admin can view title details, and approve titles to move into the next stage of content creation. Writer can create title for a content piece	High

# Constraints

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- CO-1: **Cloud based web application** - the system shall be deployed on AWS for production.  
Note that Heroku will be used for prototype purpose
- CO-2: **Limited Access**: The system shall only be available to our client System1 with their employee credentials and the authentication module will be implemented based on JWT
- CO-3: **Preferred backend technology**: Backend shall be implemented using python flask and documented by Swagger UI. Database will be hosted on mongoDB mLab for production, but AWS is also also in consideration
- CO-4: **Preferred frontend technology**: Frontend shall be implemented using React JS, Node JS, Creative TIM, material, and webpack

# Organizational Goals

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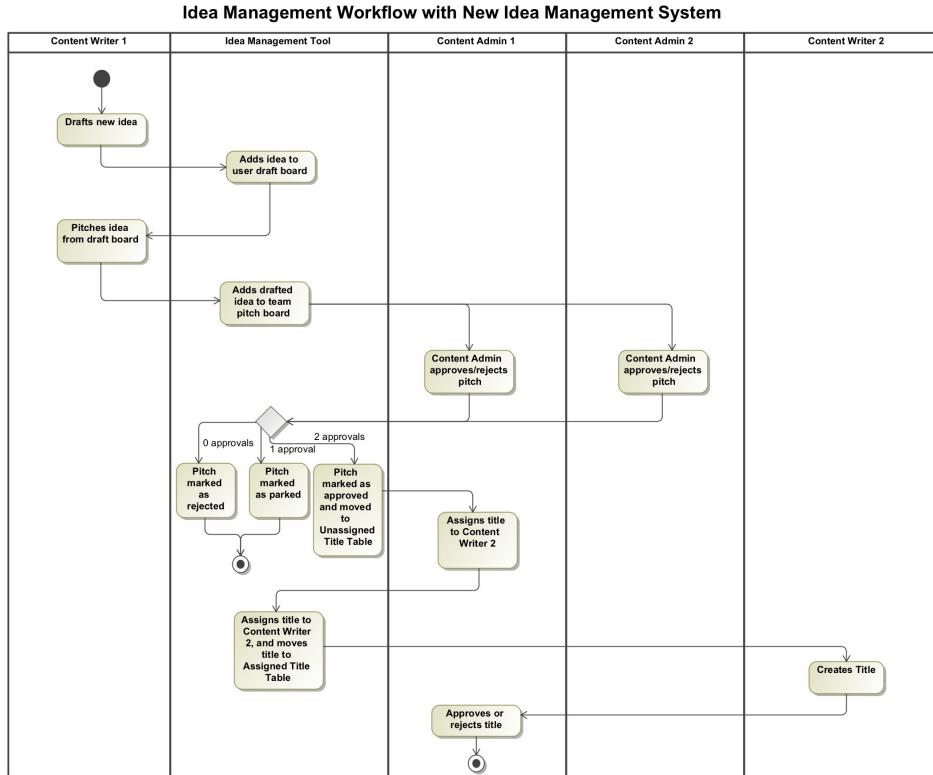
- OG-1: Manage the team more easily by content admins through implementing privilege control
- OG-2: Speed up content idea formulation for content writers and content admins by streamlining current workflow
- OG-3: Scale content production and traffic acquisition via modern database hosting and management

# Level of Service Goals

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Level of Service Goals	Priority Level	Referred WinWin Agreements
<b>LOS1:</b> System shall mimic and streamline the entire idea formulation workflow currently practiced by the client	Must have	WC_4947, WC_4955, WC_4964, WC_4969, WC_4970, WC_4977
<b>LOS2:</b> System shall be easy and pleasant to use by a typical team size of 50 content writers and 5 content admins and with the ability to scale up or down	Nice to have	WC_4978
<b>LOS3:</b> System should be designed in a way such that the handoff to client will be smooth	Nice to have	WC_4832

# Business Workflow



# WinWin Agreement

Draft Idea

Pitch Idea

Reject Idea

Approve Idea

Park Idea

Assign Idea

Develop Title

Publish Title

Reject Title

Approve Title



Categorize

Show/Hide ▾

Equilibrium

Export TSV

Prioritize



Win Condition (WC\_4978) :

System shall be easy and pleasant to use

Agree · Comment · Raise Issue/Concern/Risk

Kerry Deng



Win Condition (WC\_4977) : Admin goals board page

As an admin, I can assign a content writer to a vertical to work on

Agree · Comment · Raise Issue/Concern/Risk

Kerry Deng



Win Condition (WC\_4975) : Admin goals board page

As an admin, I can set target verticals for current month or future months, and number of titles needed by each vertical

Agree · Comment · Raise Issue/Concern/Risk

Kerry Deng



Win Condition (WC\_4974) : Account management Admin team board page

As an admin, I can change the type (privilege) of a team member's account

Agree · Comment · Raise Issue/Concern/Risk

Kerry Deng



Win Condition (WC\_4973) : Admin team board page

As an admin, I can see a list of all the team members, and their information such as account type, name, number of draft pitched, number of titles assigned, number of titles approved, assigned vertical, number of title needed for that vertical, success rate, contact info.

Agree · Comment · Raise Issue/Concern/Risk

Kerry Deng



Win Condition (WC\_4972) : Admin global title pa...

As an admin, I can export global title list into a spreadsheet

Agree · Comment · Raise Issue/Concern/Risk

Kerry Deng



Win Condition (WC\_4971) : Admin global title board pa...

As an admin, I can filter titles by criteria such as status, creator etc

Agree · Comment · Raise Issue/Concern/Risk

Kerry Deng

Admin global pitch board page

Admin global title board page

Admin home page

Content writer draft board page

Content writer global pitch board page

Content writer home page

Content writer local title board page

Account management

Admin goals board page

Admin team board page

Login page

# Backend Prototype Demo

## default Default namespace

**POST** /auth/login

**POST** /auth/logout

**POST** /ideas/

**GET** /ideas/

**PUT** /ideas/{idea\_id}

**DELETE** /ideas/{idea\_id}

**GET** /ideas/{idea\_id}

**GET** /ping

**POST** /users Create a new user

**GET** /users Return a list of users

**PUT** /users/{user\_id} Update a user entry

**DELETE** /users/{user\_id} Delete a specific user entry

**GET** /users/{user\_id} Return a specific user entry

Models

mLab

WELCOME PLANS & PRICING DOCS & SUPPORT ACCOUNT LOG OUT

(user: "russomp", account: "Michael Russo")

Home : {db: "13-dev"} Collection: users

Documents Indexes Stats Tools

Documents

— Start new search —

Delete all documents in collection Add document

All Documents

Display mode: list table (edit table view)

records / page: 10 [1 - 1 of 1]

```
{ "_id": { "oid": "5bc6731248c81acf6194e901" }, "public_id": { "uuid": "e5491a01-ac26-c361-d683-cb3d1c53ce8c" }, "email": "test@gmail.com", "password": "$2b$12$eEUvJ1gHwLSp3YdaamV7xecf0J.QfD.tvW8c56XsAY/y1sVQ8w6*", "role": "writer", "created_at": { "date": "2018-10-16T23:24:02.677Z" } }
```

records / page: 10 [1 - 1 of 1]

Documents (aka Objects)

From the "Documents" tab you can browse and search for objects in this collection. All standard query constructs are supported except for map/reduce queries. To use map/reduce, use the MongoDB shell (note that temporary result collections will be viewable in mLab).

You can also add, edit, and delete individual documents from here. Bulk collection updates are not yet supported in this UI (although they are supported in the shell).

# Frontend Prototype Demo

# UI Layout

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- **Content writer user interface**

**Homepage:** display monthly task and current work progress

**Draft board:** workspace to create an idea draft

**Title board:** workspace for title assigned

**Global pitch board:** display all pitches created

- **Admin user interface**

**Dashboard:** display monthly work progress and KPI

**Goal board:** display and propose month goal la

**Global pitch board:** display all pitches created

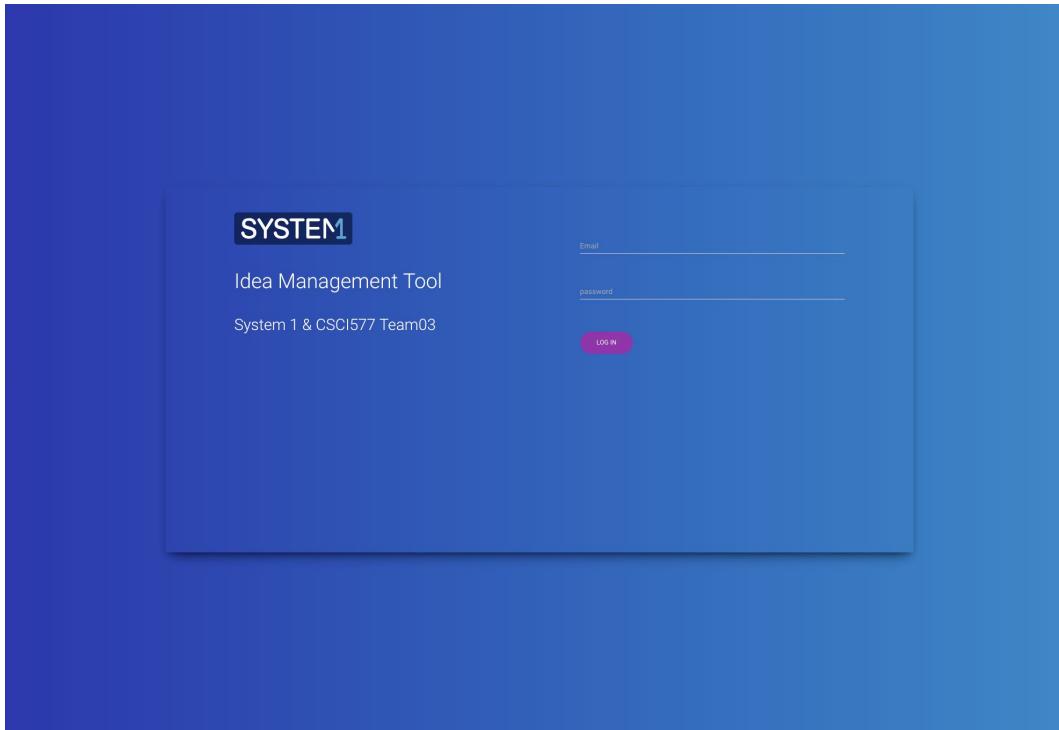
**Global Title board:** display all titles done by content writer

**Team member management board:** display and manage team members

# Login Page

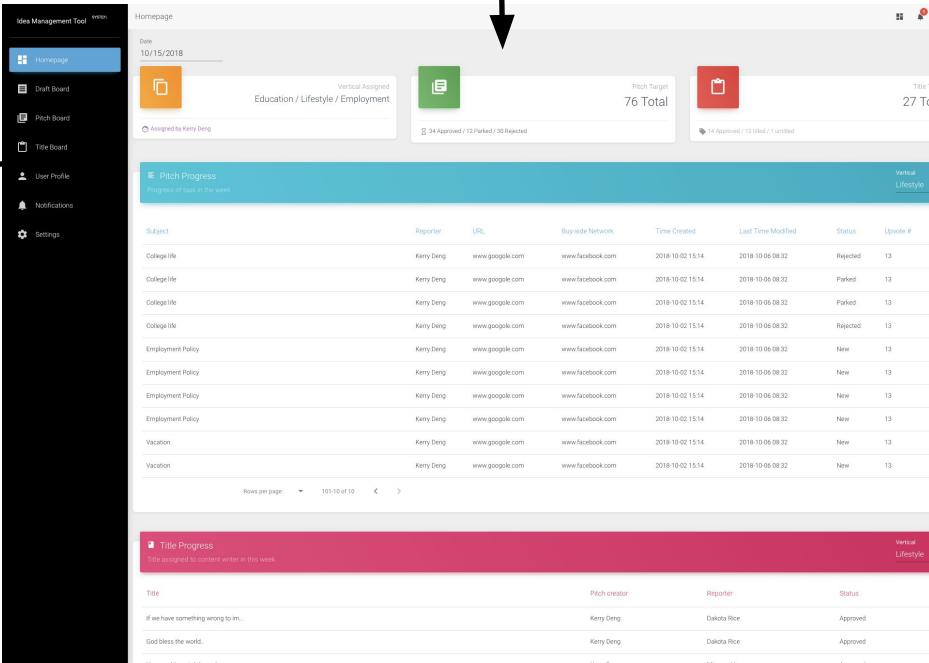
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Auto redirect to admin dashboard or content writer homepage



# Content Writer Homepage

Work progress indicator  
indicate assigned vertical, pitch and title



# Sidebar

nav to other board

## Pitch table

Current published pitches

### Current assigned title

# Content Writer Draft Board

## Draft Table

display all pitch draft's detail

The screenshot shows the 'Draft Board' section of the 'Idea Management Tool'. On the left, a sidebar menu includes 'Homepage', 'Draft Board' (which is selected and highlighted in blue), 'Pitch Board', 'Title Board', 'User Profile', 'Notifications', and 'Settings'. The main area displays a table of 'Meditation Draft' entries. Each entry has columns for 'Vertical' (set to 'Lifestyle'), 'Time created' (e.g., '2018-10-02 13:55'), 'URL' (e.g., 'www.google.com'), 'Buy-side network' (e.g., 'www.facebook.com'), 'Tags' (with a 'tag x' button), 'Log' (button), 'Edit' (button), and 'Pitch' (button). A modal window titled 'Edit Draft' is open over the table, showing the current draft details: 'Draft Title' (This is a draft title), 'Vertical' (Lifestyle), 'Tag' (tag1, tag2), 'URL' (www.google.com), 'Buy-side network' (www.facebook.com), and 'Description' (Lamborghini Murcielago. Your chick she so thirsty, I'm in that two seat Lamborghini Murcielago. Your chick she so thirsty, I'm in that two seat Lamborghini Murcielago. This is a test description for editing draft.). At the bottom of the modal are 'CANCEL' and 'CONFIRM' buttons.

Edit Draft  
edit a draft's detail

# Content Writer Pitch Board

The screenshot shows a web-based application titled "PitchBoard" under the "Idea Management Tool". The left sidebar contains navigation links: "Homepage", "Draft Board", "Pitch Board" (which is highlighted in blue), "Title Board", "User Profile", "Notifications", and "Settings". The main content area is titled "Pitch Table" and displays a table of pitches. The table has columns for Subject, Vertical, Asigner, Reporter, URL, Buy-side Network, Time Created, Last Time Modified, Expectation, Finished Rate, Status, and Upvote. The data in the table is as follows:

Subject	Vertical	Asigner	Reporter	URL	Buy-side Network	Time Created	Last Time Modified	Expectation	Finished Rate	Status	Upvote
College life	Education	Dakota Rice	Kerry Deng	www.google.com	www.facebook.com	2018-10-02 15:14	2018-10-06 08:32	100	75%	Rejected	1 like 6 ups
College life	Education	Minerva Hooper	Kerry Deng	www.google.com	www.facebook.com	2018-10-02 15:14	2018-10-06 08:32	70	45%	Parked	1 like 6 ups
College life	Education	Sage Rodriguez	Kerry Deng	www.google.com	www.facebook.com	2018-10-02 15:14	2018-10-06 08:32	60	35%	Parked	1 like 6 ups
College life	Education	Philip Chaney	Kerry Deng	www.google.com	www.facebook.com	2018-10-02 15:14	2018-10-06 08:32	90	55%	Rejected	1 like 6 ups
Employment Policy	Employment	Dakota Rice	Kerry Deng	www.google.com	www.facebook.com	2018-10-02 15:14	2018-10-06 08:32	100	75%	New	1 like 7 ups
Employment Policy	Employment	Minerva Hooper	Kerry Deng	www.google.com	www.facebook.com	2018-10-02 15:14	2018-10-06 08:32	70	45%	New	1 like 6 ups
Employment Policy	Employment	Sage Rodriguez	Kerry Deng	www.google.com	www.facebook.com	2018-10-02 15:14	2018-10-06 08:32	60	35%	New	1 like 6 ups
Employment Policy	Employment	Philip Chaney	Kerry Deng	www.google.com	www.facebook.com	2018-10-02 15:14	2018-10-06 08:32	90	55%	New	1 like 6 ups
Vacation	Lifestyle	Dakota Rice	Kerry Deng	www.google.com	www.facebook.com	2018-10-02 15:14	2018-10-06 08:32	100	75%	New	1 like 6 ups
Vacation	Lifestyle	Minerva Hooper	Kerry Deng	www.google.com	www.facebook.com	2018-10-02 15:14	2018-10-06 08:32	70	45%	New	1 like 6 ups

At the bottom of the table, there are pagination controls: "Rows per page:" (dropdown menu), "101-10 of 10", and navigation arrows.

Pitch table  
display all pitches published  
by current user

# Content Writer Title Board

Title board  
display all assigned title

The screenshot shows a user interface for a 'Title Board' feature within an 'Idea Management Tool'. On the left, a sidebar menu lists 'Homepage', 'Draft Board', 'Pitch Board', and 'Title Board' (which is highlighted). Other menu items include 'User Profile', 'Notifications', and 'Settings'. The main area is titled 'Title Board' and contains a sub-section titled 'Assigned Title Table'. This table lists several entries:

Content creator	Assignee	Vertical	Status	Operation
Dakota Rice	Kerry Deng	Lifestyle	Titled	<button>EDIT</button>
Minerva Hooper	Kerry Deng	Lifestyle	Titled	<button>EDIT</button>
Sage Rodriguez	Kerry Deng	Lifestyle	Approved	<button>EDIT</button>
			Approved	<button>EDIT</button>
Untitled			Untitled	<button>EDIT</button>
Untitled			Untitled	<button>EDIT</button>

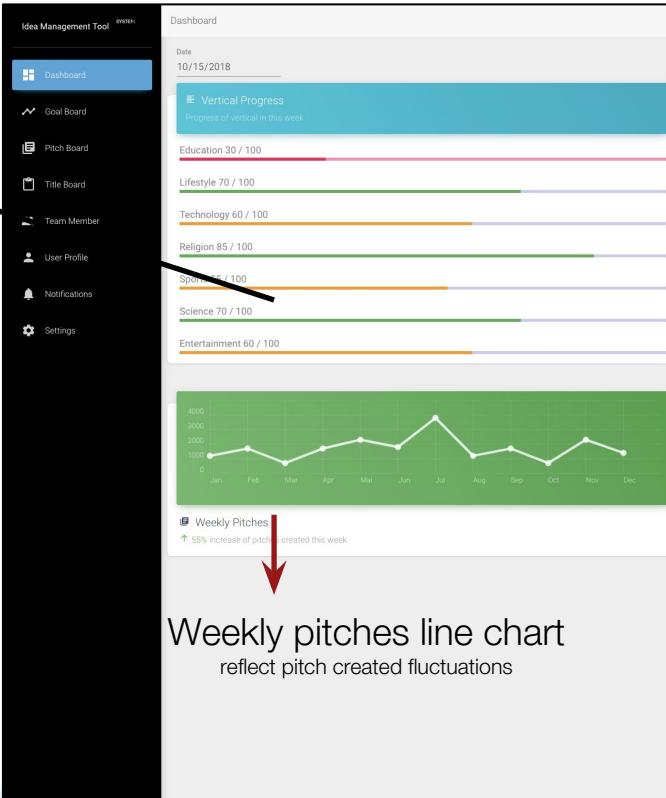
A modal window titled 'Edit Title' is open in the foreground. It contains fields for 'Title' (with placeholder text 'Only straight A student can have such chance to compete with top...') and 'Description' (with placeholder text 'This is test description of edit a title of ....'). At the bottom of the modal are 'CANCEL' and 'CONFIRM' buttons.

**Edit title**  
workspace for editing title

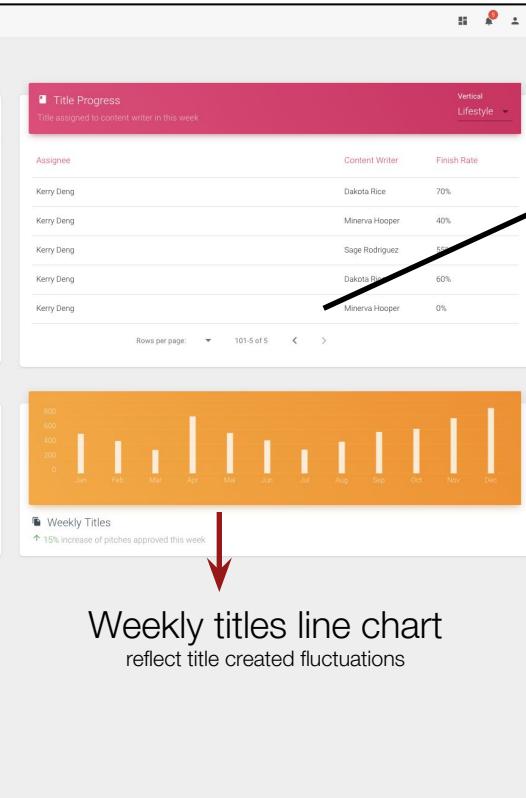
# Admin Dashboard

Vertical(pitch) overview

display all verticals work progress



Weekly pitches line chart  
reflect pitch created fluctuations



Title overview  
display all title work progress



# Admin Goal board

Goal board  
display monthly goal and plan

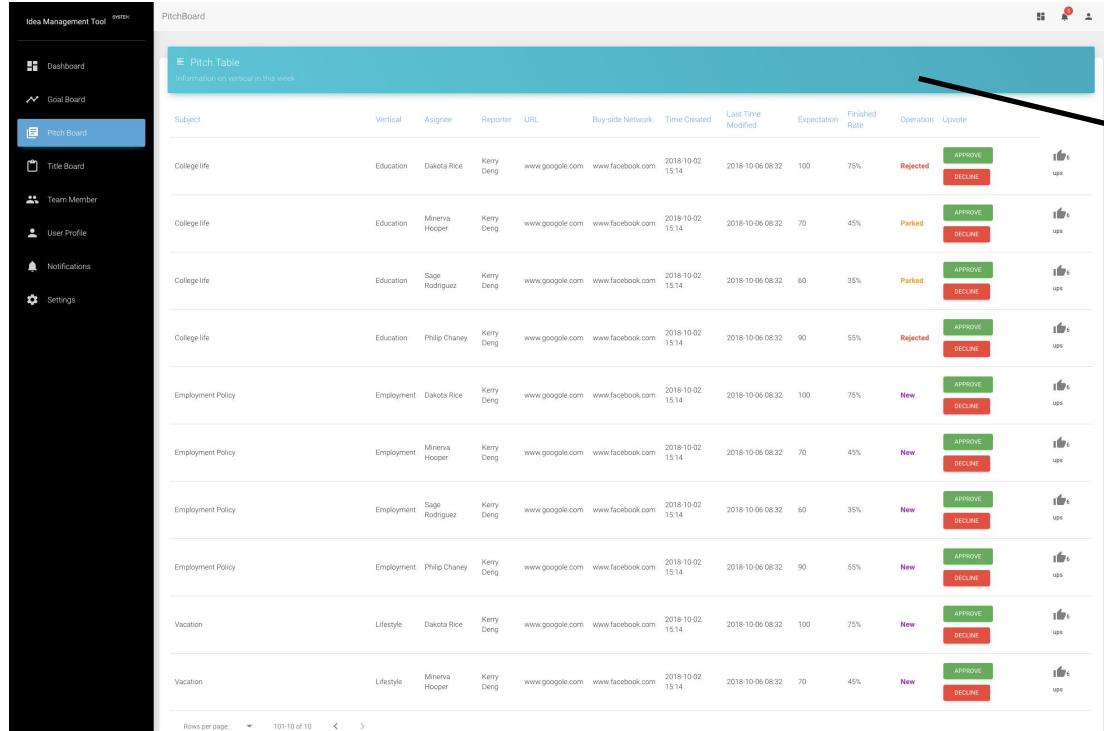


The screenshot shows the 'Goal Board' section of the Idea Management Tool. On the left, a sidebar lists various boards: Dashboard, Goal Board (selected), Pitch Board, Title Board, Team Member, User Profile, Notifications, and Settings. The main area displays a 'Goal Board' with a green header bar containing the text 'Display history task Goal and make a new plan'. Below this is a date input field set to '10/15/2018'. A table lists goals categorized by vertical (Education, Science, Sports, Lifestyle, Employment) and assigned to users (Dakota Rice, Minerva Hooper, Sage Rodriguez). A modal window titled 'Create new goal' is open, showing a table with columns: Vertical, # of Title Needed, # of Title Completed, and Assignee. The table data is identical to the main board. At the bottom of the modal, there are fields for 'Vertical' (set to 'New vertical'), '# of title-needed' (set to '13'), 'Assignee' (set to 'Kerry Deng'), and a green 'CONFIRM' button.

New goal creation  
create a new goal for a month



# Admin Global Pitch board



The screenshot shows a web-based application interface for managing pitches. On the left is a vertical sidebar with a dark background containing the following menu items:

- Idea Management Tools
- Dashboard
- Goal Board
- Pitch Board (highlighted in blue)
- Title Board
- Team Member
- User Profile
- Notifications
- Settings

The main content area is titled "PitchBoard" and contains a "Pitch Table". The table has a header row with the following columns: Subject, Vertical, Assignee, Reporter, URL, Buy-side Network, Time Created, Last Time Modified, Expectation, Finished Rate, Operation, and Upvote. Below the header, there are ten data rows representing different pitches. Each row includes a "Status" column (e.g., Rejected, Parked, New) and two buttons: "APPROVE" (green) and "DECLINE" (red). A large black arrow points from the text "Pitch table" to the "APPROVE" button in the first row.

Subject	Vertical	Assignee	Reporter	URL	Buy-side Network	Time Created	Last Time Modified	Expectation	Finished Rate	Operation	Upvote
College life	Education	Dakota Rice	Kerry Deng	www.google.com	www.facebook.com	2018-10-02 15:14	2018-10-06 08:32	100	75%	Rejected	<button>APPROVE</button> <button>DECLINE</button>
College life	Education	Minerva Hooper	Kerry Deng	www.google.com	www.facebook.com	2018-10-02 15:14	2018-10-06 08:32	70	45%	Parked	<button>APPROVE</button> <button>DECLINE</button>
College life	Education	Sage Rodriguez	Kerry Deng	www.google.com	www.facebook.com	2018-10-02 15:14	2018-10-06 08:32	60	35%	Parked	<button>APPROVE</button> <button>DECLINE</button>
College life	Education	Philip Chaney	Kerry Deng	www.google.com	www.facebook.com	2018-10-02 15:14	2018-10-06 08:32	90	55%	Rejected	<button>APPROVE</button> <button>DECLINE</button>
Employment Policy	Employment	Dakota Rice	Kerry Deng	www.google.com	www.facebook.com	2018-10-02 15:14	2018-10-06 08:32	100	75%	New	<button>APPROVE</button> <button>DECLINE</button>
Employment Policy	Employment	Minerva Hooper	Kerry Deng	www.google.com	www.facebook.com	2018-10-02 15:14	2018-10-06 08:32	70	45%	New	<button>APPROVE</button> <button>DECLINE</button>
Employment Policy	Employment	Sage Rodriguez	Kerry Deng	www.google.com	www.facebook.com	2018-10-02 15:14	2018-10-06 08:32	60	35%	New	<button>APPROVE</button> <button>DECLINE</button>
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Vacation	Lifestyle	Dakota Rice	Kerry Deng	www.google.com	www.facebook.com	2018-10-02 15:14	2018-10-06 08:32	100	75%	New	<button>APPROVE</button> <button>DECLINE</button>
Vacation	Lifestyle	Minerva Hooper	Kerry Deng	www.google.com	www.facebook.com	2018-10-02 15:14	2018-10-06 08:32	70	45%	New	<button>APPROVE</button> <button>DECLINE</button>

Pitch table  
Admin can view, evaluate global pitches

# Admin Global Pitch board

Unassigned title table  
admin can view, assign untitled title to content writer

The screenshot displays two tables side-by-side under the "Title Board" section of the "Idea Management Tool".

**Left Table: Unassigned Title Table**

This table lists multiple entries under the heading "Pitch subject" all labeled "Work and life balance". Each entry includes columns for "Assignee" (Kerry Deng) and "Operation" (a green "ASSIGN" button). A purple header bar at the top of this table reads "Unassigned Title Table" and "Title need to be assigned".

Pitch subject	Assignee	Operation
Work and life balance	Kerry Deng	ASSIGN
Work and life balance	Kerry Deng	ASSIGN
Work and life balance	Kerry Deng	ASSIGN
Work and life balance	Kerry Deng	ASSIGN
Work and life balance	Kerry Deng	ASSIGN
Work and life balance	Kerry Deng	ASSIGN
Work and life balance	Kerry Deng	ASSIGN
Work and life balance	Kerry Deng	ASSIGN
Work and life balance	Kerry Deng	ASSIGN

**Right Table: Assigned Title Table**

This table lists entries under the heading "Title" with descriptions such as "Only straight-A students can..." and "If you can get every one...". Each entry includes columns for "Content Writer" (Dakota Rice, Minerva Hooper, Sage Rodriguez, Philip Chaney), "Assignee" (Kerry Deng), "Status" (Approved, Declined, Pending), and "Operation" (green "APPROVE" or red "DECLINE" buttons). A yellow header bar at the top of this table reads "Assigned Title Table" and "Title assigned to content writer in this week".

Title	Content Writer	Assignee	Status	Operation
Only straight-A students can...	Dakota Rice	Kerry Deng	Approved	APPROVE DECLINE
If you can get every one...	Minerva Hooper	Kerry Deng	Declined	APPROVE DECLINE
Only people in the English...	Sage Rodriguez	Kerry Deng	Approved	APPROVE DECLINE
Can you pass the EMT Certification...	Philip Chaney	Kerry Deng	Approved	APPROVE DECLINE
Can you translate these...	Dakota Rice	Kerry Deng	Approved	APPROVE DECLINE
Can you make it through...	Minerva Hooper	Kerry Deng	Pending	APPROVE DECLINE

Assigned title table  
admin can view and operate on titled title

# Admin Team member List

Team member  
table  
display all users  
profile

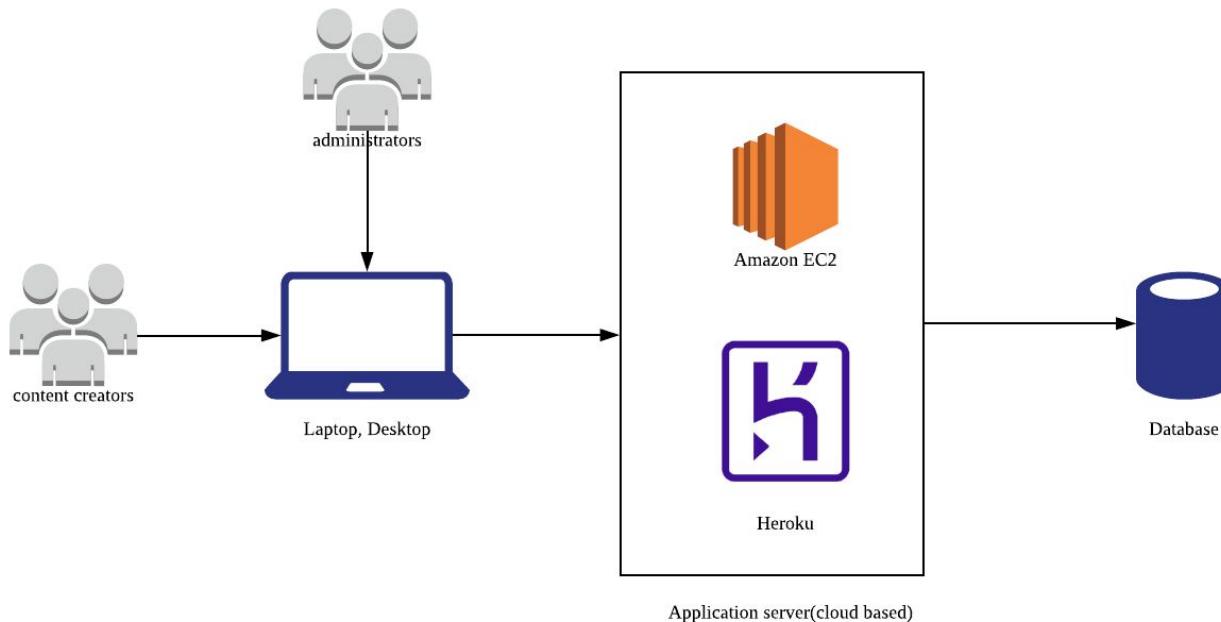
The screenshot shows the 'Team Member List' page of the 'Idea Management Tool'. On the left, a sidebar menu includes 'Dashboard', 'Goal Board', 'Pitch Board', 'Title Board', 'Team Member' (which is selected and highlighted in blue), 'User Profile', 'Notifications', and 'Settings'. The main content area displays a table titled 'Team Member List' with columns for Name, Email, and Role. A modal window titled 'Add new member' is open, prompting for 'Email', 'Name', and 'password', with an 'AVATAR' upload field. In the bottom right corner of the main content area, a detailed user profile for 'David Hill' is shown, highlighting his role as a 'CONTENT CREATOR' and providing statistics like 'Number of draft pitched' (3200), 'Number of titles assigned' (1400), 'Number of titles approved' (700), and 'Assigned vertical Education' (20).

User profile detail  
show a specific user's work  
progress

New member  
the only way for admin to add  
new users

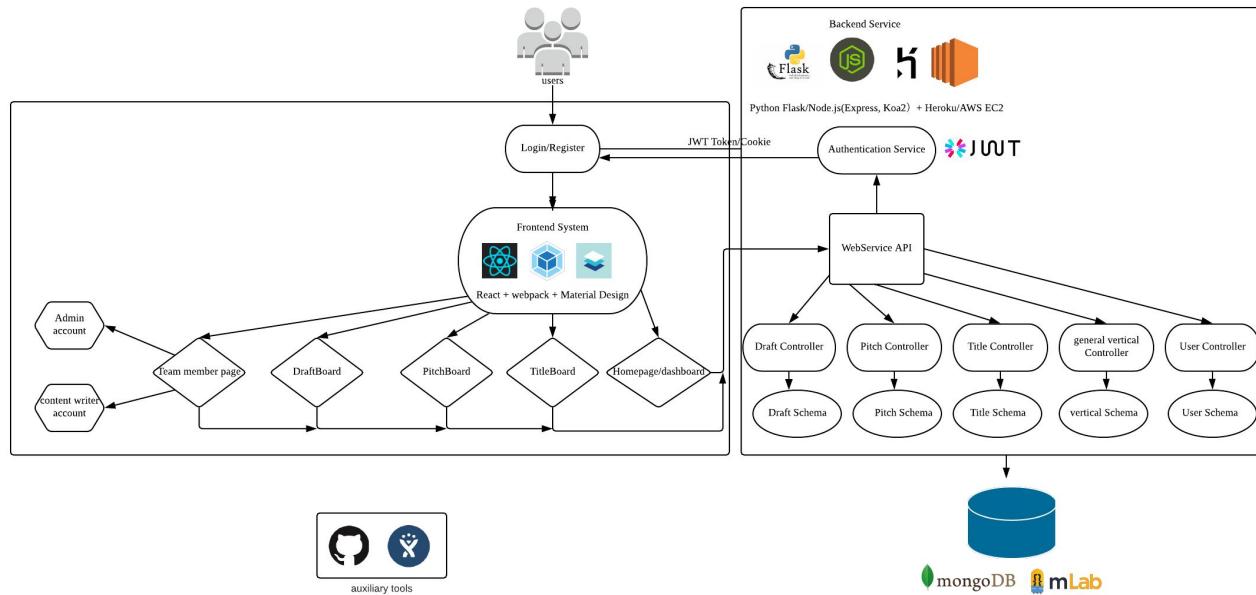
# Architecture

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# Top Level Physical Architecture

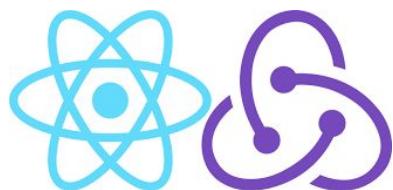
- Frontend: React/Redux + webpack + Material Design
- Backend: Python Flask/Node.js(Express/Koa2)
- Database: mLab(mongoDB)
- The whole architecture is based on RESTFul API, MVC pattern and microservices, realize frontend and backend separation
- High performance on scalability, availability and usability based on mature cloud services(AWS EC2 Auto Scaling, Heroku distributed dynos, mLab DAAS features, etc)



# NDI/NDS Integration for ARB prototype

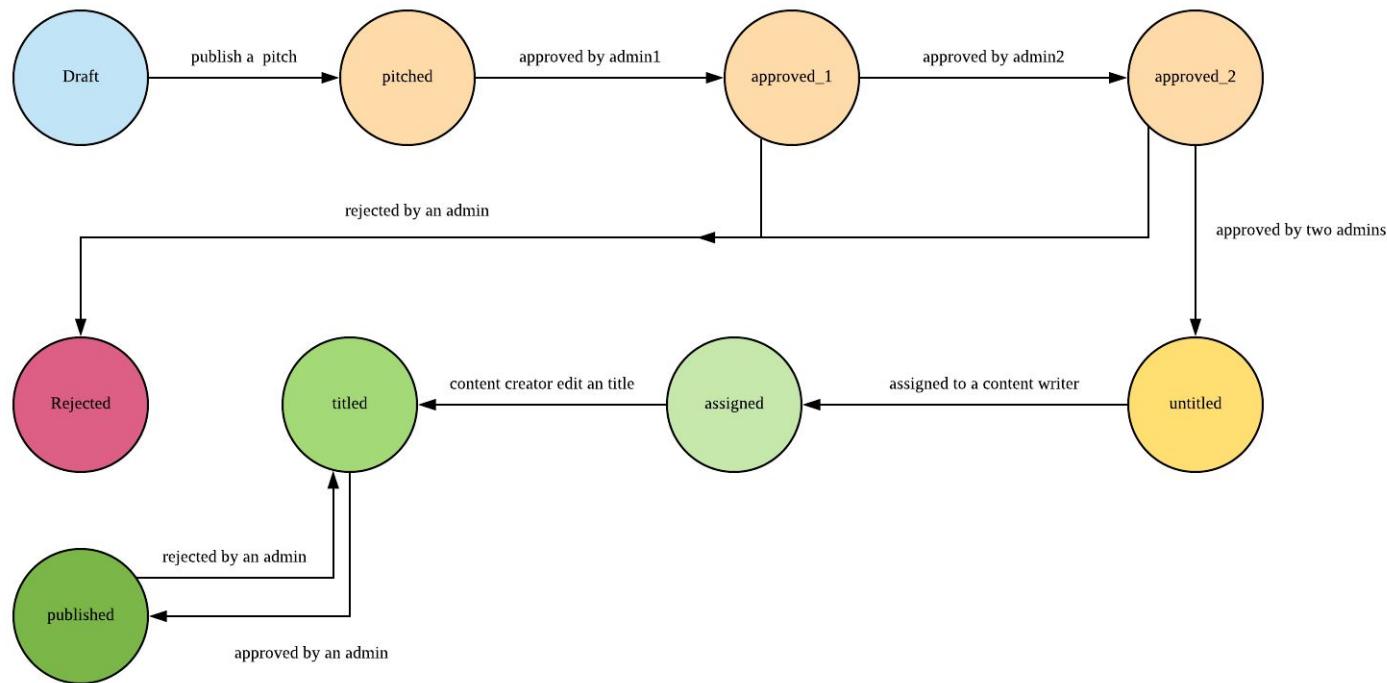
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- React/Redux Javascript Framework
- Material Design (Material Dashboard React created by Creative Tim)
- Heroku (Deployed on free Heroku cloud server temporarily)



# Top Level Logical Architecture

## State machine of an Idea



# Life Cycle Plan

# Life Cycle Plan Overview

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**Purpose:** document and manage the lifecycle of the idea management system. The LCP artifact is designed to provide descriptions of deliverables, define workflow, identify individual and team responsibility, and track progress over each iteration of the project.

**Overall Strategy:** NDI/NCS

**Duration:** 12 weeks

**Team:** 8 members (6 on-campus members, 2 DEN members)

# Key Stakeholders

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Stakeholder	Roles	Stakeholder	Roles
<b>Linda Suen</b>	Client representative		
<b>Joshua Bendig</b>	IIV&V, Requirement engineer	<b>Michael Russo</b>	Prototyper, Software architect
<b>Xizhao Deng</b>	Project manager, Life cycle planner	<b>Shenghao Tang</b>	Feasibility Analyst, System Architect
<b>Jingzhou Hong</b>	Requirement engineer, Prototyper	<b>Fan Zhang</b>	Software Architect, Project manager
<b>Guancheng Liu</b>	Tester, Quality engineer	<b>Yiming Zhang</b>	System architect, Prototyper

# Life Cycle Strategy

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Iteration I 9/3/18 - 9/28/18

Phase	Exploration Phase I	Valuation Phase I	Foundation Phase I	Development Phase I
Durantion	9/3/18 - 9/23/18	9/21/18 - 9/23/18	9/24/18 - 9/28/18	N/A
Deliverables	Client meeting notes, Progress report, Project plan, Team site, Use cases	Win-win agreement, frontend and backend prototypes	Frontend and backend prototypes	N/A
Milestones	VCR	FCR	N/A	N/A

# Life Cycle Strategy Cont.

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Iteration II 10/2/18 - 11/30/18

Phase	Exploration Phase	Valuation Phase	Foundation Phase	Development Phase
Durantion	10/2/18 - 10/17/18	10/10/18 - 10/22/18	10/10/18 - 10/22/18	10/23/18 - 11/30/18
Deliverables	Client meeting notes, progress report, project plan	Updated use cases, updated win-win agreement	DC Package, frontend and backend prototypes	Functional system, CCD report, documentation
Milestones	Content manager meeting	None	DC ARB presentation	CCD, TRR

# Development Phase Detailed Plan

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- Implement frontend UI per spec
- Setup database hosting on mLab
- Implement backend system, host the system on AWS EC2
- Integrate subsystems
- Conduct software testing
- Implement documentation

# COCOMOII: Scale Drivers

Scale Driver	Value	Rationale
Precedentedness	Low	No existing system available, team is making the first initiative
Development flexibility	Nominal	Client expects the system to mimic current workflow with small tweaks and improvement
Architecture / risk resolution	Nominal	Most risks can be mitigated by more client interaction and dev team time investment
Team cohesion	Very High	Team communication and interaction occur in a responsive and timely manner
Process maturity	Nominal	Team is comfortable and consistent with ICSM guidelines

# COCOMO II: Cost Drivers

EAF - Authentication					
base + Incr % = rating					
Product:	RELY	DATA	DOCU	CPLX	RUSE
base	HI	NOM	NOM	NOM	LO
Incr%	0%	0%	0%	0%	0%
Platform:	TIME	STOR	PVOL		
base	NOM	NOM	LO		
Incr%	0%	0%	0%		
Personnel:	ACAP	PCAP	PCON	APEX	LTEX
base	NOM	HI	VLO	HI	HI
Incr%	0%	0%	0%	0%	0%
Project:	TOOL	SITE			
base	NOM	XHI			
Incr%	0%	0%			
User:	USR1	USR2			
base	NOM	NOM			
Incr%	0%	0%			
EAF is also affected by Schedule					
EAF:	0.66				
OK	Cancel	Help			

EAF - Content					
base + Incr % = rating					
Product:	RELY	DATA	DOCU	CPLX	RUSE
base	HI	HI	NOM	HI	LO
Incr%	0%	0%	0%	0%	0%
Platform:	TIME	STOR	PVOL		
base	VHI	HI	LO		
Incr%	0%	0%	0%		
Personnel:	ACAP	PCAP	PCON	APEX	LTEX
base	NOM	HI	VLO	HI	HI
Incr%	0%	0%	0%	0%	0%
Project:	TOOL	SITE			
base	NOM	XHI			
Incr%	0%	0%			
User:	USR1	USR2			
base	NOM	NOM			
Incr%	0%	0%			
EAF is also affected by Schedule					
EAF:	1.19				
OK	Cancel	Help			

## COCOMO II: Cost Drivers Cont.

EAF - Goal

base + Incr % = rating

Product:	RELY	DATA	DOCU	CPLX	RUSE
base	HI	NOM	NOM	NOM	LO
Incr%	0%	0%	0%	0%	0%

Platform: TIME STOR PVOL

base	TIME	STOR	PVOL
base	HI	HI	LO
Incr%	0%	0%	0%

Personnel: ACAP PCAP PCON APEX LTEX PLEX

base	ACAP	PCAP	PCON	APEX	LTEX	PLEX
base	NOM	HI	VLO	HI	HI	NOM
Incr%	0%	0%	0%	0%	0%	0%

Project: TOOL SITE

base	TOOL	SITE
base	NOM	XHI
Incr%	0%	0%

User: USR1 USR2

base	USR1	USR2
base	NOM	NOM
Incr%	0%	0%

EAF is also affected by Schedule

EAF: 0.77

OK Cancel Help

EAF - Team/User

base + Incr % = rating

Product:	RELY	DATA	DOCU	CPLX	RUSE
base	HI	NOM	NOM	NOM	LO
Incr%	0%	0%	0%	0%	0%

Platform: TIME STOR PVOL

base	TIME	STOR	PVOL
base	HI	HI	LO
Incr%	0%	0%	0%

Personnel: ACAP PCAP PCON APEX LTEX PLEX

base	ACAP	PCAP	PCON	APEX	LTEX	PLEX
base	NOM	HI	VLO	HI	HI	NOM
Incr%	0%	0%	0%	0%	0%	0%

Project: TOOL SITE

base	TOOL	SITE
base	NOM	XHI
Incr%	0%	0%

User: USR1 USR2

base	USR1	USR2
base	NOM	NOM
Incr%	0%	0%

EAF is also affected by Schedule

EAF: 0.77

OK Cancel Help

# COCOMO II: Results

SLOC: 3800

Estimated Most-likely effort by COCOMOII: 11.4 person-month

Effort per person: 18 hours/week

Total time available:

Monthly team efforts: 18 hr/(person-week) \* 8 members \* 4 weeks = 576 hr/month

Time required as per COCOMOII:

Total time: 11.4 person-month \* 152 hr/person-month / 576 hr/month = 3.0 months

Interpretation: According to the above calculation, the project is estimated by COCOMOII to take 3.0 months to complete, which is inline with our estimation based on the assumption of 8 members working 18 hours per week for 12 weeks.

The screenshot shows the USC-COCOMO II 2000.3 software interface. The main window title is "USC-COCOMO II.2000.3 - C:\Users\kerry\Desktop\t3-cocomoii.est". The menu bar includes File, Edit, View, Parameters, Calibrate, Phase, Maintenance, and Help. Below the menu is a toolbar with icons for opening files, saving, printing, and other functions. The central area displays project details for "Discovery\_Tool". The "Project Notes" tab is selected. The "Development Model" is set to "Post Architecture". A "Scale Factor: 18.02" is applied. The main table lists four modules: Authentication, Content, Goal, and Team/User, along with their respective estimates. At the bottom, summary tables show estimated values for Optimistic, Most Likely, and Pessimistic scenarios, and a note indicating the project is saved to file C:\Users\kerry\Desktop\t3-cocomoii.est.

X	Module Name	Module Size	LABOR Rate (\$/month)	EAF	Language	NOM Effort DEV	EST Effort DEV	PROD	COST	INST COST	Staff	RISK
	Authentication	S:500	0.00	0.66	Object-Orient	1.7	1.1	456.1	0.00	0.0	0.1	0.0
	Content	S:1300	0.00	1.19	Object-Orient	4.3	5.1	252.4	0.00	0.0	0.7	0.0
	Goal	S:1000	0.00	0.77	Object-Orient	3.3	2.6	391.3	0.00	0.0	0.3	0.0
	Team/User	S:1000	0.00	0.77	Object-Orient	3.3	2.6	391.3	0.00	0.0	0.3	0.0

Total Lines of Code:	3800	Estimated	Effort Sched	PROD	COST	INST	Staff	RISK
Hours/PM:	152.00	Optimistic	9.1	7.4	418.2	0.00	0.0	1.2
		Most Likely	11.4	7.9	334.6	0.00	0.0	1.4
		Pessimistic	14.2	8.5	267.7	0.00	0.0	1.7

Project Is Saved To File : C:\Users\kerry\Desktop\t3-cocomoii.est

# Definition of Done

---

- System implemented
- Functional tests implemented
- Documentation implemented and reviewed
- Known bugs fixed
- Code review completed
- Acceptance tests passed 100%
- System is live and functional on hosting service per spec
- Client demo passed

# 3 Metrics

---

Metric	Objective	Benefits
Use case implemented per progress report	Implement all use cases by the end of development phase	Offers an alternative way to track progress
Defect search and destroy ratio	Maintain a ratio of 1 or close to 1	Shows how well the team is responding to defects
Task completion time / planned time ratio	Maintain a ratio of sub 1	Shows how well the team is performing on accomplishing tasks and reaching dues

# Feasibility Evidence

# Business Case Analysis

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## Cost Factors

- Development costs
- Database hosting service costs
- Maintenance costs

## Benefits/Important performance indicators

- Increase publication speed of content writers
- Create an easy way for content admins to manage the content writers

# Business Case Analysis Cont.

## Cost Analysis -- Personnel Costs

Activities	Time Spent (Hours)
<b>Exploration Phase (1 week)</b>	
Client Meetings	1
Win-Win Negotiation 1	1
<b>Valuation and Foundation Phase (3 weeks)</b>	
Win-Win Negotiation 2	1
Prototype Analysis Meeting	1
Requirement Negotiation	1
Content writer Meeting	3.5
Content admin Meeting	3.5
Meeting by email, slack, skype or in person	1 per week
<b>Development and Operation Phase (8 weeks)</b>	
Interface review	1
Meeting by email, slack, skype or in person	1 per week
Process Meeting	1 per week
<b>TOTAL</b>	<b>32</b>
<b>Maintenance Period (1 year)</b>	
Maintenance (4h per month * 12 months * 1 person)	48
	50

# Business Case Analysis Cont.

## Cost Analysis -- Software and Hardware Cost

Type	Cost	Rationale
AWS EC2	1 year free trial / 54\$ per month	Backend Service
mLab AWS M2	\$360 per month	Database solution (Enterprise advanced version available but no need)
React	Free	Open-source javascript framework
Webpack	Free	Javascript module bundler
Flask	Free	Python web framework
Creative TIM	\$59 one time purchase	Frontend library

# Business Case Analysis Cont.

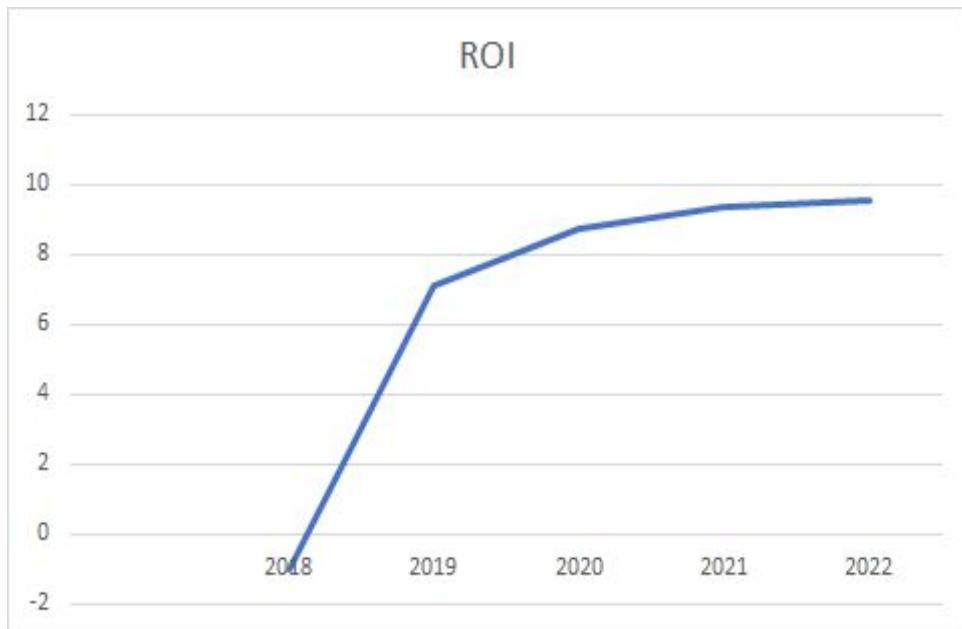
## Cost Analysis -- Benefit Analysis

Current activities & resources used	% Reduce	Time Saved (Hours/Year)
<b>Content Writer side</b>		
Create pitches and submit	10	4hrs/week * 52 weeks = 208
<b>Content Admin side</b>		
Admins review the pitches of all content writer	80	6.5hrs/week * 52 weeks = 338
Admins assign verticals to content writer	10	0.5hrs/week * 52 weeks = 26
<b>Total</b>		<b>572</b>

# Business Case Analysis Cont.

## Cost Analysis -- ROI Analysis

Year	Cost	Benefit (Effort Saved)	Cumulative Cost	Cumulative Benefit	ROI
2018	32	0	32	0	-1
2019	48	572	80	572	7.15
2020	50.40	572	130.40	1144	8.77
2021	52.92	572	183.32	1716	9.36
2022	55.57	572	238.89	2288	9.58



# Level of Service Feasibility

Level of Service Requirement	Product Satisfaction
LOS-1: System shall mimic and streamline the entire idea formulation workflow currently practiced by the client	<p>Product Strategies: Descoping, eliminate added-on if needed</p> <p>Process Strategies: Perform prototyping and modeling, cross-check the simulation with the client frequently</p> <p>Analysis: With the help of content writer meeting and content admin meeting, a prototype that mimics current workflow can be built. Keep updating according the client requirements</p>
LOS-2: System shall be easy and pleasant to use by a typical team size of 50 content writers and 5 content admins and with the ability to scale up or down	<p>Product Strategies: Optimization (MongoDB, AWS EC2)</p> <p>Process Strategies: Perform simulation and pressure testing</p> <p>Analysis: Test the capability of the system to handle the scale</p>
LOS-3: System should be designed in a way such that the handoff to client will be smooth	<p>Product Strategies: Consistency, Understandability (Google style guide, Swagger UI)</p> <p>Process Strategies: Provide comments to the code and makefile</p> <p>Analysis: Use style guide to regulate the comments and build HTML documentation by Swagger UI</p>

# Capability Feasibility

Capability Requirement	Product Satisfaction
CR-1: Content admin can set target vertical and amount of titles desired for current or future months, and also assign content writers to verticals.	Software/Technology used: MongoDB, Flask, Creative Material Design
	Feasibility Evidence: Build tidy and clear UI with Creative-TIM library. Connect MongoDB and Backend to implement the workflow.
	Referred use case diagram: UC-39, UC-45, UC-46, UC-48
CR-2: Content admin can view overall project progress, individual vertical progress, and targets of the past, current, or future months.	Software/Technology used: MongoDB
	Feasibility Evidence: Build an ER-Diagram of the database to implement the workflow
	Referred use case diagram: UC-3
CR-3: Content admin can view team member's performance and progress and change member's account type.	Software/Technology used: JSON web token (JWT)
	Feasibility Evidence: use JWT for Authentication service then update the data in MongoDB
	Referred use case diagram: UC-43, UC-44
	Referred use case diagram: UC-23, UC-24, UC-25

# Capability Feasibility

Capability Requirement	Product Satisfaction
CR-4: Content admin can view pitch details, and approve pitch to move into the next stage of content creation	Software/Technology used: MongoDB, Flask, Creative-TIM
	Feasibility Evidence: use AJAX to request data from MongoDB, and then display data to User-end using Flask.
	Referred use case diagram: UC-17, UC-18, UC-19, UC-20
CR-5: Content admin can view titles details, and approve titles to move into the next stage of content creation	Software/Technology used: MongoDB, Flask, Creative-TIM
	Feasibility Evidence: use AJAX to request data from MongoDB, and then display data to client using Flask.
	Referred use case diagram:UC-23, UC-24, UC-25
CR-6: Content writer can draft an idea then pitch it for approval	Software/Technology used: MongoDB, Flask
	Feasibility Evidence: Build up a prototype with MongoDB and Flask
	Referred use case diagram:UC-23, UC-24, UC-25

# Risk Assessment

	Risk Exposure			Risk Mitigations
	Potential Magnitude	Probability Loss	Risk Exposure	
<b>User being misled by our interface UI/UX design:</b> User confused by our design, and do operations that is not what they intended to do.	8	5	40	<ol style="list-style-type: none"> <li>1. Chat with actual users after we finished development, redesign unreasonable and ambiguous terms or UI/UX component</li> <li>2. Comply with Material Design logic</li> </ol>
<b>Potential high learning curve for maintainers:</b> Majority of the team do not plan to take CS577B. Need to have smooth handoff.	5	4	20	<ol style="list-style-type: none"> <li>1. Provide documentation to ensure smooth knowledge transfer</li> <li>2. Build the system using technologies which the client is familiar with</li> </ol>
<b>Inability to handle multiple users:</b> If various users are accessing the web application, the system may not be able to resolve requests.	5	4	20	<ol style="list-style-type: none"> <li>1. Discuss with client about their expected amount of users</li> <li>2. Prototype system and show how many user can operate on it simultaneously</li> </ol>
<b>Concurrency Issue:</b> Multiple users upvote or edit at the same time.	4	3	12	<ol style="list-style-type: none"> <li>1. Handle each request one at a time</li> </ol>
<b>Inaccessibility of Cloud Database (AWS):</b> If the cloud service is not available due to net problem or server break down, the web application will not be able to work.	4	3	12	<ol style="list-style-type: none"> <li>1. Use progressive web app (PWA) with service workers to serve cached data</li> </ol>

# NDI/NCS Interoperability Analysis

NDI/NCS Products	Purposes	Comments
React	Front-end Framework	<p>Positive Points:</p> <ul style="list-style-type: none"><li>• Better performance</li><li>• Better compatibility among web browsers</li><li>• Better ecosystem</li></ul> <p>Negative Points:</p> <ul style="list-style-type: none"><li>• Learning curve</li></ul>
Flask	Back-end Framework	<p>Positive Points:</p> <ul style="list-style-type: none"><li>• Open source</li><li>• Light Weight</li><li>• Familiar by the client</li></ul> <p>Negative Points:</p> <ul style="list-style-type: none"><li>• Have to use third party extensions</li></ul>

# NDI/NCS Interoperability Analysis

NDI/NCS Products	Purposes	Comments
MongoDB	Database	<p>Positive Points:</p> <ul style="list-style-type: none"><li>• Flexible and schemaless</li><li>• Support large scale of data</li></ul> <p>Negative Points:</p> <ul style="list-style-type: none"><li>• Lack of community support with respect to Flask integration</li></ul>
AWS	Cloud Server	<p>Positive Points:</p> <ul style="list-style-type: none"><li>• Easier than building local server</li><li>• Cheaper when having small data scale</li><li>• Safe</li></ul> <p>Negative Points:</p> <ul style="list-style-type: none"><li>• More complex setup compared to alternatives (Heroku)</li></ul>



# Sheryl Thomas

Freelance Content Writer @ System 1

34 yrs old; Palo Alto, CA; BS in Marketing

Sheryl is an **avid internet user**, and loves to write trendy quizzes.

She frequents websites such as **Reddit, BuzzFeed, and Pinterest** looking for quirky MEMEs and stories.

She currently uses a **notebook, excel, and a bookmarking tool** to mange ideas but **has trouble keeping track of everything**.

This is especially true on her team of **100+ writers using shared spreadsheets**.



# Tyler Smith

Content Admin @ System 1

29 yrs old; Venice, CA; BS in English

**Tyler spends a lot of time managing and tracking all of his team's content ideas.**

**He uses several Google spreadsheets for this but has trouble tracking content goals and ideas between sheets.**

**He has been frustrated with the content management process and is looking for a tool to streamline and centralize his workflow. Especially as System 1 looks to scale their content generation.**



# Leah Smithers

Full-stack Engineer @ System 1

27 yrs old; Venice, CA; BS in Computer Science

Leah has been with System 1 for 2 years and has been working as a web engineer for over 5 years.

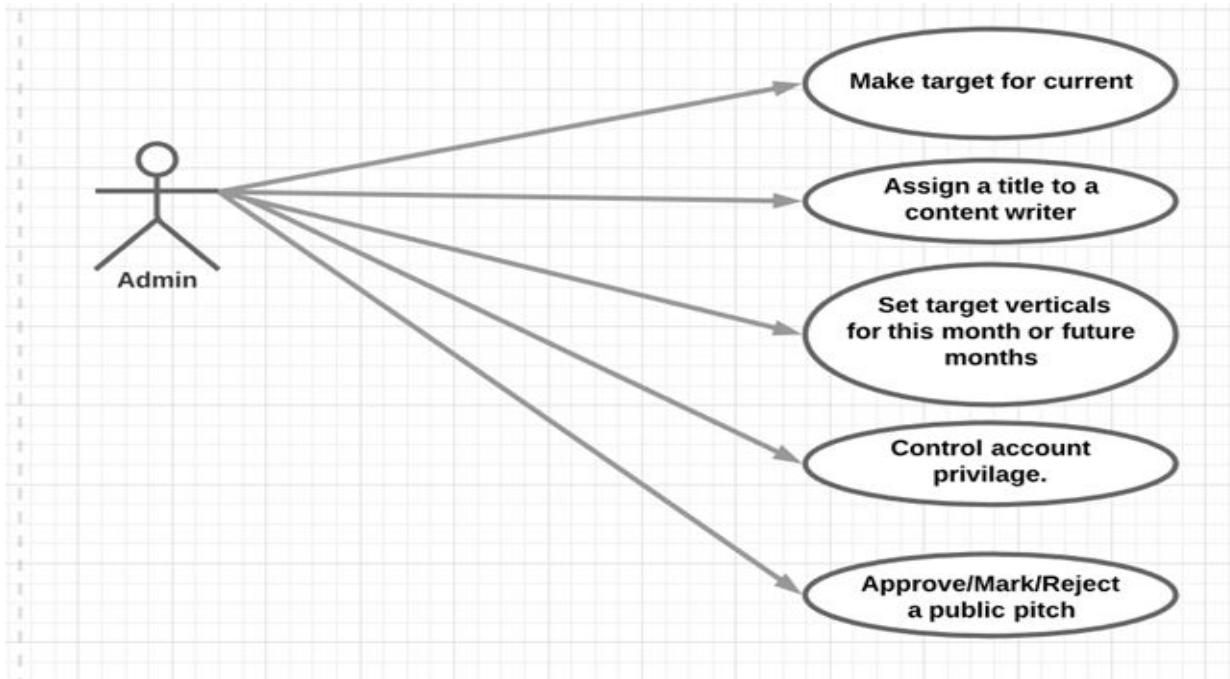
She currently helps maintain System 1's back-end services which are primarily written in Flask.

When coming on to new software projects she loves having well documented code. She is strongest in Python, but can pick other languages up quickly.

# Quality Focal Point

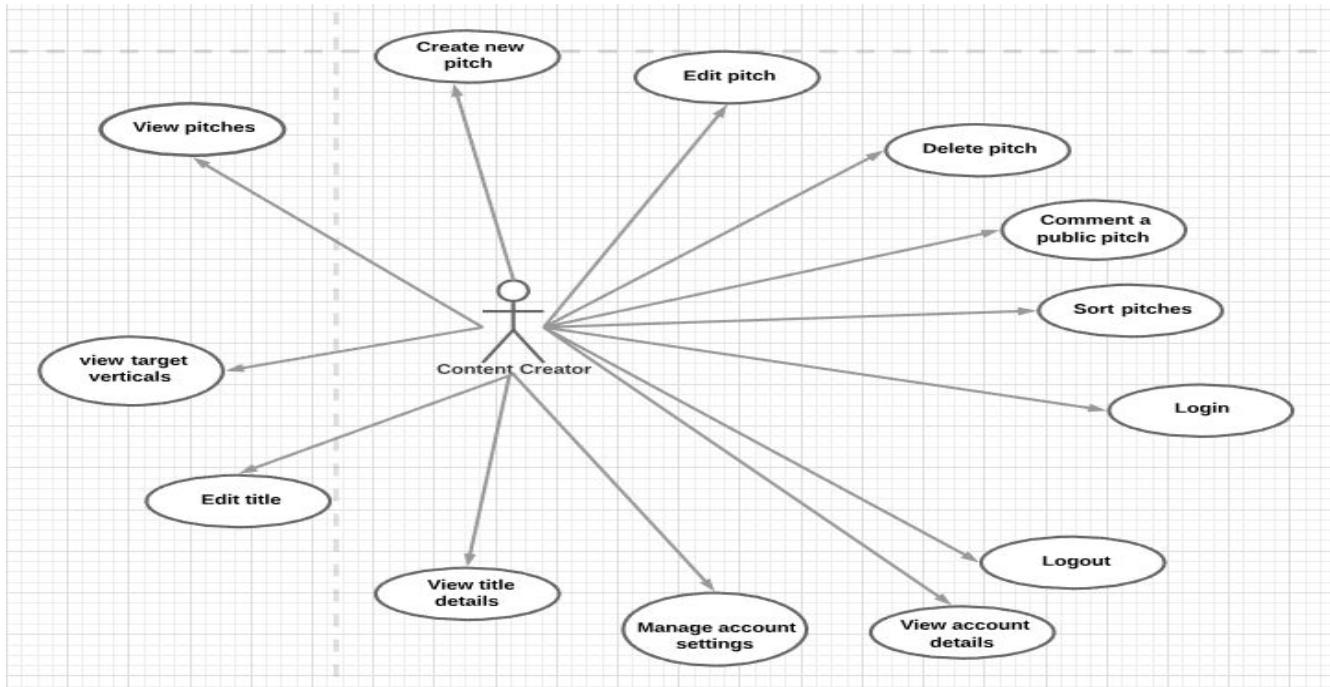
# UML model && Database Design && QFP

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# UML Model

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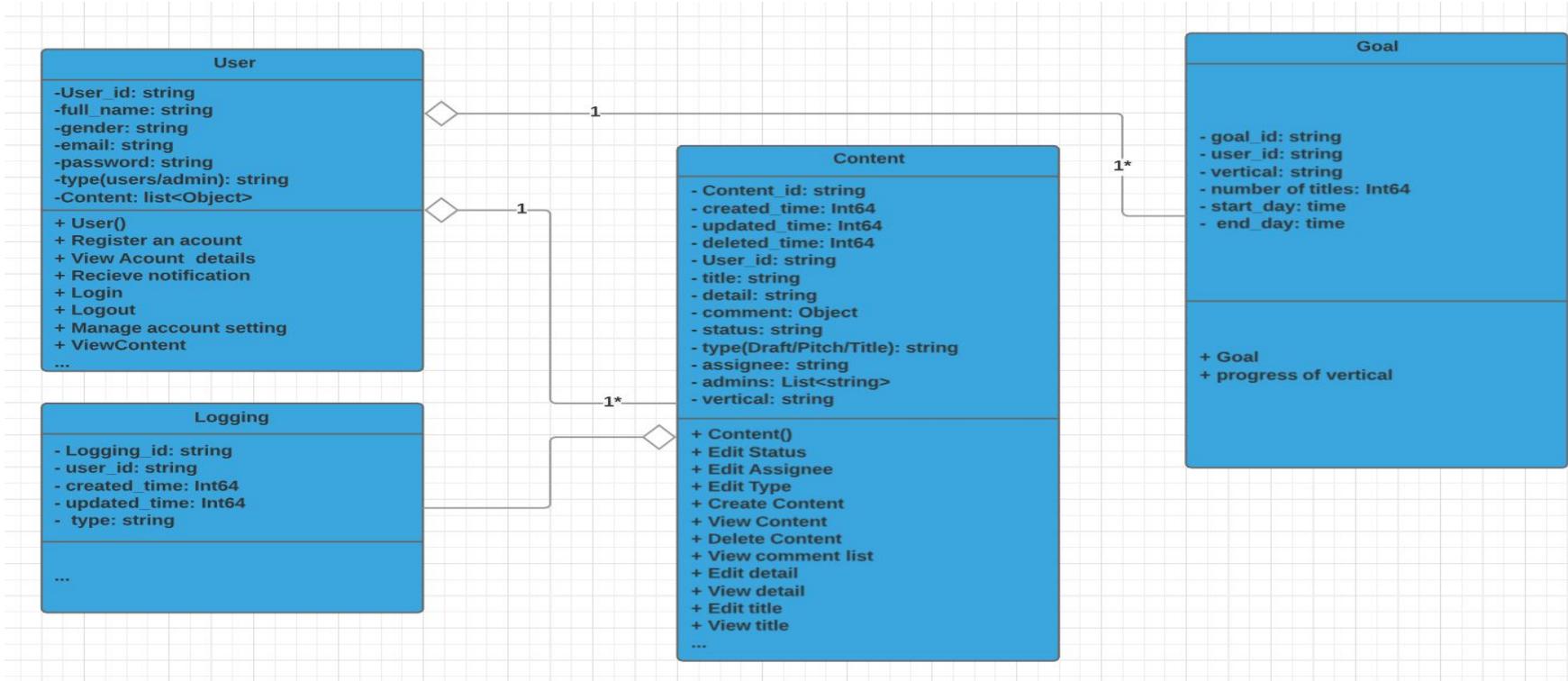
# Database Design

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Database choice: Mongodb

- More flexible to change/add schema
- NoSQL database has large scale than relational database

# Database Design



# Test Cases

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- Admin global pitch board page
- Admin global title board page
- Admin home page
- Content writer draft board page
- Content writer global pitch board page
- Content writer home page
- Content writer local title board page
- Account management
- Admin goals board page
- Admin team board page
- Login page

# Test Cases

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Use Case ID	Use Case Name	Test case
<b>Pitch board use cases</b>		
UC-1	View pitches in global pitch list	TC-01-01 A content writer or admin can view a high-level list of all the working pitches created by the organization
UC-2	View pitches in user's personal pitch list	TC-02-01 A content writer can view a list of pitches created by themselves
UC-3	View pitch details	TC-03-01 select a working pitch TC-03-02 view its details
UC-4	Create new pitch	TC-04-01 create a new pitch TC-04-02 add details, notes, and tags to document the pitch
UC-5	Edit pitch	TC-05-01 update any pitch details
UC-6	Delete pitch	TC-06-01 remove an pitch TC-06-02 delete it from the global pitch list
UC-7	<b>Approve/Mark/Reject a public pitch by admin</b>	TC-07-01, TC-07-02, TC-07-03 <b>Approve/Mark/Reject a public pitch by admin</b> <b>TC-07-04 After the pitched status, it cannot be changed anymore</b>
UC-8	Comment a public pitch	TC-08-01 comment a pitch
UC-9	Filter pitches by status, assignee, time created, writer, etc	TC-09-01 filter pitches by status
...	...	...

# Test Cases

Use Case ID	Use Case Name	Test case
<b>Account use cases</b>		
UC-11	Login	TC-11-01 logs into the system with correct username and password TC-11-02 fail to login with wrong username and password
UC-12	Logout	TC-12-01 logs out of the system
UC-13	Register for account	TC-13-01 create a new account profile
UC-14	Track content success rates by pitch to title conversion rate	TC-14-01 track the success rate of pitches by the pitch TC-14-02 view a high level summary of article performance
UC-15	Manage account settings	TC-15-01 control notification and profile settings
UC-16	View account details	TC-16-01 view account details
UC-17	Track pitches created	TC-17-01 track the number of pitches
UC-18	Track published titles	TC-18-01 track the number of title published
UC-19	Receive notifications	TC-19-01 receive notifications)

# Test Cases

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Use Case ID	Use Case Name	Test case
Admin page use case		
UC-20	Account privilege setting	TC-20-01 change individual account access privilege
UC-21	Admin can set target verticals for this month or future months	TC-21-01 set desired verticals for content writer
UC-22	Admin can assign verticals to content writers	<b>TC-22-01 assign verticals to individual content writers</b> <b>TC-22-02 fail to assign verticals if the verticals have been assigned</b>
UC-23	Admin can assign a title to a content writer	TC-23-01 assign <b>titles</b> to individual content writers to write content
UC-24	Admin can make target for current and future months	TC-24-01 set the target number of titles needed for this month or future months

# Test Case

Use Case ID	Use Case Name	Test case
Title board use case		
UC-25	View title details	TC-25-01 select a title TC-25-02 view its details inherited from the pitch
UC-26	Edit title	TC-26-01 edit title detail
UC-27	Approve title by admin	TC-27-01 approve titles
Home page use case		
UC-28	Users can view target verticals for past, current, future months	TC-28-01 view what verticals are desired
UC-29	Users can view a list of vertical assignee status	TC-29-01 show which vertical is assigned to which content writer visible to all users.
UC-30	Users can view past, current, future targets	TC-30-01 view the target number of titles needed for this month or future month, or view past targets
UC-31	Users can view a list of title assignee status	TC-31-01 Show which title is assigned to which content writer visible to all users.

# Traceability Matrix

OCD	Requirements	Use Cases	Test Cases
Content writer home page Admin home page	WC_4962, WC_4961, WC_4960, WC_4959, WC_4958, WC_4946, WC_4945, WC_4943, WC_4942, WC_4941, WC_4940	UC-28, UC-29, UC-30, UC-31	TC-28-01, TC-29-01, TC-30-01, TC-31-01
Admin global title board page, Content writer local title board page	WC_4957, WC_4956, WC_4955, WC_4954, WC_4972, WC_4971, WC_4970, WC_4969, WC_4968, WC_4957, WC_4956, WC_4955, WC_4954	UC-25, USC-26, UC-27	TC-25-01, TC-26-01, TC-27-01
Admin team board page	WC_4972, WC_4971, WC_4970, WC_4969, WC_4968	UC-20, UC-21, UC-22, UC-23, UC-24	TC-20-01, TC-21-01, TC-22-01, TC-23-01, TC-24-01
Account Management	WC_4936, WC_4937, WC_4938, WC_4939, WC_4974,	UC-11, UC12, UC13, UC14, UC15, UC-16, UC-17, UC-18, UC-19	TC-11-01, TC12-01, TC13-01, TC14-01, TC15-01, TC-16-01, TC-17-01, TC-18-01, TC-19-01
Admin global pitch board page, Content writer global pitch board page	WC_4952, WC_4951, WC_4950, WC_4949, WC_4948, WC_4967, WC_4966, WC_4965, WC_4964, WC_4963	UC-01, UC-02, UC-03, UC-04, UC-05, UC-06, UC-07, UC-08, UC-09, UC-10	TC-01-01, TC-02-01, TC-03-01, TC-04-01, TC-05-01, TC-06-01, TC-07-01, TC-08-01, TC-09-01, TC-10-01

# Traceability Matrix Summary

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	Passed	Failed	Untested	Total
Requirement/Test Identifiers	8	0	40	48

	Completed	Incomplete	Total
Requirement/Test Identifiers	8	40	48

# Current Defection

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	<b>Avoidable Defects</b>	<b>Proposed Solution</b>
1	Team members could have been more careful with Jira tickets	Conduct more standardized practice on Jira ticket management. IV&V person will review the tickets and notify the assignee to react before the deadline
2	We could have been more careful with github commit message and Jira ticket ID	Be MORE CAREFUL when writing commit message

	<b>Unavoidable Defects</b>	<b>Proposed Solution</b>
1	Pivoted to idea management tool	Go with the pivoted direction and revisit win conditions
2	Use cases changed	Modify existing design to adapt to the changes

# Quality Management Strategy: Defect Detection

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## Testing

- Unit
- Integration
- Verification
- Monitor

## Review

- Peers
- Client
- ARB

# Quality Management Strategy: Defect Removal and Tracking

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## Jira

- Create tickets to record current defects
- Make sure that the team continues to make progress in resolving them to improve the code quality

## Bi-Weekly Risk and Defect Report

- All team members contribute to list of ongoing defects and proposed solutions
- Periodically review the identified defects and ensure that team remains on track in pursuing the proposed solutions

# Quality Management Strategy: Defect Prevention

---

Strategy	Priority	Level	Description
Buying Information	Medium	Team, Personal	Thoroughly research software requirement, methodology and architecture, cloud service and database choice before coding and prototyping.
Peer Review and Team Programming	Medium	Team, Personal	Do code review frequently to improve the code quality.
Version Control	High	Team, Personal	Use github.
Team Meetings	High	Team	Meet often to check progress, evaluate risks, and adjust tasks.
Client Feedback	High	Team	Periodically check with client for assurance that the project remains on the right track with regard to his expectations.

# Technical Debt

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Description	Category 1	Category 2	Fixed	How to fix it	Active
Hierarchy level limited by DB design	Rapid prototyping	-----	YES	Fixing the database model	2
High volume of undocumented code	Rapid Prototyping	Personnel Shortfall	NO	Reviewing all codes	2

# Appendix

# Appendix 1 Database Hosting Cost

**Dedicated Cluster**

Our Dedicated Cluster plan allows for multiple databases on a multi-node replica set configuration. Each node processes on a dedicated VM. With these plans, all resources available to the VM (CPU, RAM, disk, I/O) are exclusively process on a dedicated VM. With these plans, all resources available to the VM (CPU, RAM, disk, I/O) are exclusively process on a dedicated VM. With these plans, all resources available to the VM (CPU, RAM, disk, I/O) are exclusively process on a dedicated VM.

*This plan is pro-rated daily although prices shown below are monthly. We also offer Dedicated Single-node plans for analytics, testing, and development.*

**PLAN HIGHLIGHTS**

- ✓ Includes all Shared Cluster features plus...
- ✓ Dedicated VMs (guaranteed RAM, CPU & I/O)
- ✓ Full database administrative privileges
- ✓ 24x7 emergency contact
- ✓ Availability SLA (M2+)
- ✓ Unlimited free custom backups
- ✓ Zero-downtime vertical and horizontal scaling
- ✓ Advanced networking (e.g., VPC Peering)
- ✓ More security options (e.g., firewalls)

[View detailed feature matrix](#)

**CLOUD HOSTING LOCATION (select one)**

Amazon Web Services (AWS)    Google Cloud Platform    Microsoft Azure

Available in most AWS regions with prices (in USD) varying across regions. Prices below are for the US East.

**DEDICATED CLUSTER Standard**

This line offers the most economical plans for production applications running on AWS.

Each Replica Set comes standard with 2 data-bearing nodes and high-availability via auto-failover.

	RAM	vCPUs
M1	2 GB	①
M2	4 GB	①
M3	8 GB	①
M4	16 GB	①
M5	32 GB	①
M6	64 GB	①
M7	122 GB	①

**DEDICATED CLUSTER High Storage**

This line offers a higher storage-to-RAM ratio than our Standard line and is geared towards applications that need to store large amounts of data but have more modest performance requirements.

Each Replica Set comes standard with 2 data-bearing nodes and high-availability via auto-failover.

	RAM	vCPUs
M1	2 GB	①
M2	4 GB	①
M3	8 GB	①
M4	16 GB	①
M5	32 GB	①
M6	64 GB	①
M7	122 GB	①

**DEDICATED CLUSTER High Performance**

	RAM	vCPUs
M5	30 GB	①
M6	60 GB	①

# Appendix 2 Existing client workflow

