



Prototype Presentation

CS577a // F2018 // September 28, 2018

SYSTEM1

the world's largest independent
marketplace for keyword pay-
per-click advertising

Current problems & pain points

manual content sourcing
expensive content generation
inefficient content management



Tyler Smith

Freelance Content Writer @ System 1
29 yrs old; Venice, CA; BS in English

Tyler spends more time searching for topics on the web than actually writing.

He enjoys publishing content about sports and pop-culture and typically uses Google and Twitter for inspiration.

He has been struggling to come up with fresh ideas lately, and his past articles haven't attracted a lot of users.

He wishes there was a tool out there to help him better source ideas for content.



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**.

Core **capabilities** & system design



identify trending content

filter topics by source/category

search topics by keyword

subscribe to topics by source/category



provide trend performance visualization

aggregate and **group** content by topic

display content within each topic

analyze competitor content

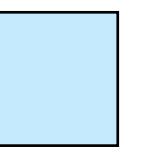


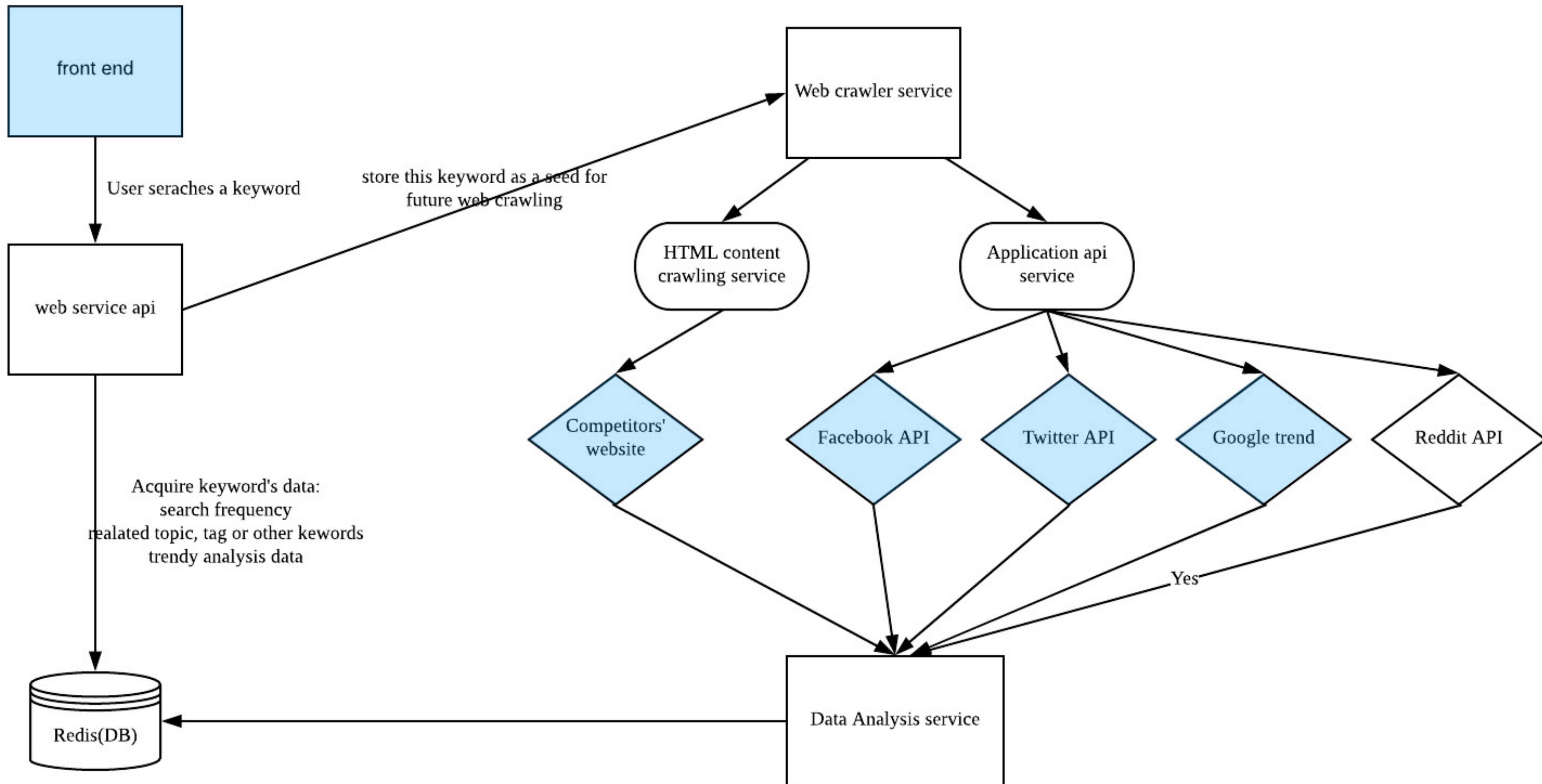
manage ideas for content in the cloud

link ideas to topics and content

reduce redundancy and duplication

speedup content approval process

 risky components



Risk identification & mitigation

Can we **source enough data**?

Are we able to **identify trending topics**?

Can we **measure competitor performance**?

Will content creators **want to use our product**?

UI Design

The image shows a UI prototype for a 'DiscoveryTool' application. The interface includes a navigation bar with a menu icon, a title 'DiscoveryTool', a search bar ('Enter a topic or category'), and account management information ('Linda Suen'). A sidebar on the left lists topics like 'Recently trending content'. The main content area displays a table of trending topics with columns for Type, Topic, Total Engagements, Facebook Engagements, Twitter Engagements, Reddit Engagements, and #Ideas. Each row contains a circular engagement icon and a numerical value (e.g., 10k, 8k, 1k). A vertical line separates the sidebar from the main content area. Annotations with arrows point to various UI elements:

- navigation**: Points to the menu icon in the top-left corner.
- content engagement estimations by source**: Points to the first three rows of the table, which represent different news sources.
- topic categorization**: Points to the first three rows of the table, which represent different news sources.
- high level topic grouping**: Points to the first three rows of the table, which represent different news sources.
- sortable headers**: Points to the column headers in the table.
- keyword search**: Points to the search bar at the top.
- account management**: Points to the account info at the top right.
- topic filters**: Points to the filter button in the top-right corner of the table header.
- # of ideas based on a particular topic**: Points to the '#Ideas' column in the table.
- UI/UX prototype**: Points to the bottom right corner of the main content area.

Type	Topic	Total Engagements	Facebook Engagements	Twitter Engagements	Reddit Engagements	#Ideas
list icon	Brett Kavanaugh trial	10k	8k	1k	1k	21
list icon	New York Yankees clinch wildcard	10k	8k	1k	1k	21
list icon	Google Doodle	10k	8k	1k	1k	21
list icon	Donald Trump's newest tweet is ridiculous	10k	8k	1k	1k	21
list icon	Boston Red Sox vs New York Yankees	10k	8k	1k	1k	21
list icon	Brett Kavanaugh trial	10k	8k	1k	1k	21
list icon	Brett Kavanaugh trial	10k	8k	1k	1k	21
list icon	Brett Kavanaugh trial	10k	8k	1k	1k	21

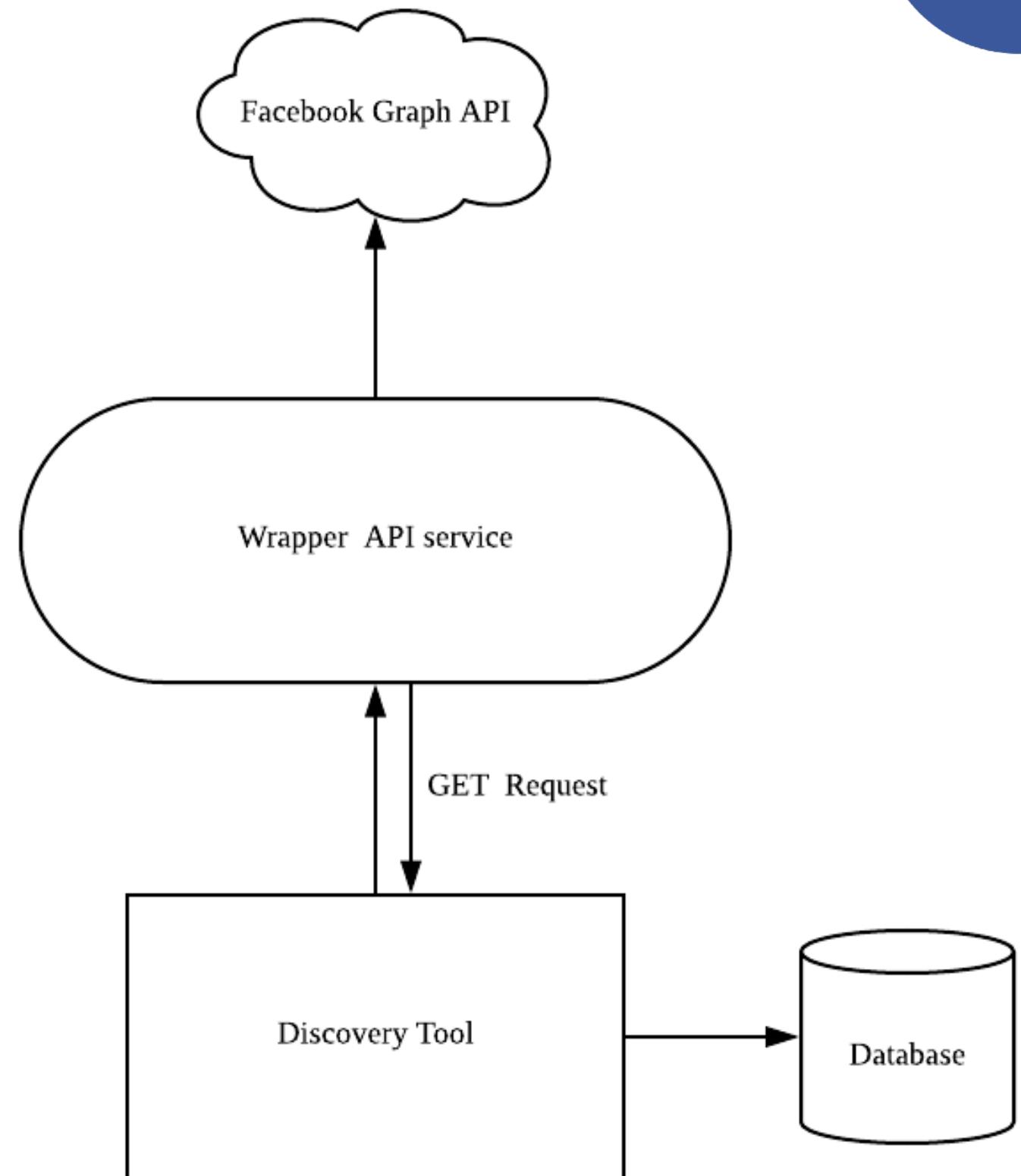
fb API Prototype



leverage public posts endpoint
extract trends and content
monitor competitor performance

Unfortunately...
Cambridge Analytica incident

```
{  
  "error": {  
    "message": "#10 To use 'Page Public Content Access', your use of this endpoint must be reviewed and approved by Facebook. To submit this '  
    "type": "OAuthException",  
    "code": 10,  
    "fbtrace_id": "EVw5UV4aduP"  
  }  
}
```



Google Trends Prototype

RSS feed parser

Thursday, September 27, 2018

DAILY SEARCH TRENDS REALTIME SEARCH TRENDS United States ▾

Rank	Topic	Search Volume	Source
1	Vikings	500K+	SB Nation
2	Devil's Triangle	200K+	CBS News
3	Ryder Cup	200K+	CBSSports.com
4	Lil Wayne Tha Carter V	200K+	Billboard
5	Elon Musk	200K+	CNNMoney
6	Alyssa Milano	200K+	USA TODAY

Competitor Performance Prototype

The screenshot shows a quiz titled "Quiz: Name The Sitcom From One Hint" on the Topix website. The quiz features a photo of two women from a sitcom. Below the photo is a hint: "This is no laughing matter! The situation comedy is just about as old as television broadcasting itself. Although sitcoms actually started on radio, the first U.S. television..." To the left of the main content is a sidebar with a "What's New" section and a "Topix is..." blurb.

Below the quiz is a table showing engagements by source for competitor content. The table includes columns for URL, Facebook Total, Pins, Stumbles, and SharedCount.

	URL	f Total	p Pins	s Stumbles	SharedCount
<input type="checkbox"/>	https://www.buzzfeed.com/maitlandquitmeyer...	19	21	n/a	40
<input type="checkbox"/>	https://stars.topix.com/slideshow/18937	0	0	n/a	0
<input type="checkbox"/>	https://www.buzzfeed.com/sydrobinson1/we...	419	4	n/a	423
<input type="checkbox"/>	https://stars.topix.com/slideshow/19923	0	0	n/a	0
<input type="checkbox"/>	https://stars.topix.com/quiz/19056	15.48k	0	n/a	15.48k
fb Shares: 11.55k fb Comments: 1.79k fb Comments Plugin: 0 fb Reactions: 2.13k					
<input type="checkbox"/>	https://stars.topix.com/quiz/18481	203	0	n/a	203
<input type="checkbox"/>	https://stars.topix.com/quiz/19384	32	0	n/a	32

Showing 1 to 7 of 7 entries

engagements by source
for competitor content

breakdown of
total engagement

Previous 1 Next

Twitter API Prototype

This is Twitter Trends API demo.

Twitter Trends mainly has two function: Get trends near a location, get locations with a trending topics.

Get trends near a location:

Returns the top 50 trending topics for a specific WOEID (Yahoo! Where On Earth ID), if trending information is available for it.

[Get Trends Near A Location Response Demo](#)

Where On Earth ID Lookup:

Example IDs:

Location	WOEID
United States	23424977
China	23424781
Los Angeles	2442047
Manhattan	12589342
USC	23511629

Get locations with trending topics:

Review UI/UX prototype with stakeholders

- Discuss with product manager 10/2
- Interview content creators and integrate feedback

Further explore data collection techniques

- Test Facebook/Twitter APIs upon approval
- Investigate Reddit API

Develop method of measuring “trendiness”

- Method may vary per data source
- Interview content creators and integrate feedback

QUESTIONS?

Appendix A: UI

Discover Trends

http://trends.system1.com

Discover Trends Enter topic or category

Trending Topics

Type	Topic	Total Engagements	Facebook Engagements	Twitter Engagements	Reddit Engagements	# Ideas Created
Icon	Brett Kavanaugh	10k	8k	1k	1k	21
Icon	New York Yankees	8.1k	5.1k	2k	1k	18
Icon	Google Doodle	1.2k	1k	2k	0	2
Icon	Donald Trump's Tweet	1k	1k	0	0	82
Icon	Boston Red Sox	1k	1k	0	0	1
Icon	Google Doodle	1k	1k	0	0	1
Icon	Donald Trump's Tweet	1k	1k	0	0	1
Icon	Boston Red Sox	1k	1k	0	0	1
Icon	Google Doodle	1k	1k	0	0	1
Icon	Donald Trump's Tweet	1k	1k	0	0	1
Icon	Boston Red Sox	1k	1k	0	0	0
Icon	Google Doodle	1k	1k	0	0	0
Icon	Donald Trump's Tweet	1k	1k	0	0	0
Icon	Boston Red Sox	1k	1k	0	0	0

Discover Trends

http://trends.system1.com

Discover Trends Enter topic or category

Back to trends New idea

Google Doodle

Related Terms Google Draw Google AI Google Tech

Google Doodle is the next big thing news.nbc.com

#googledoodle @russomp

Google doodle is becomes the best AI for generating doodles from scratch news.nbc.com

Google Doodle is final HERE! news.nbc.com

#doodlerocks @kerryonmywaywardson

Discover Trends

<http://trends.system1.com>

DiscoverTrends

My Ideas

Title	Date	Upvotes	Status
11 animals that have changed histor	4h ago	15	Ideation
What candy came out when you were born?	1d ago	4	Working
What disney princess are you?	2018-9-19	4	Done
13 things that have happened on Fri 13th	2018-9-17	15	Ideation

Prev 1 2 3 4 Next

Trending Now

Type	Topic	Trend
Icon	Brett Kavanaugh	+ 341%
Icon	New York Yankees	+ 287%
Icon	Google Doodle	+ 419%
Icon	Donald Trump's Tweet	+ 101%
Icon	Boston Red Sox	+ 101%
Icon	Google Doodle	+ 101%
Icon	Donald Trump's Tweet	+ 101%
Icon	Donald Trump's Tweet	+ 101%
Icon	Boston Red Sox	+ 101%
Icon	Google Doodle	+ 101%
Icon	Donald Trump's Tweet	+ 101%
Icon	Boston Red Sox	+ 101%
Icon	Google Doodle	+ 101%
Icon	Donald Trump's Tweet	+ 101%

All trends

Subscription Activity

- Google Doodle is the next big thing <news.nbc.com>
- #nyrangers [@russomp](#)
- Tesla announces the next big thing in self driving cars <news.nbc.com>

Discover Trends

<http://trends.system1.com>

DiscoverTrends

Ideas Board

Idea	Date	Upvotes	Creator	Status	Trend
10 crazy things drawn with AI	2m ago	0		Ideation	+ 419% <input type="button" value="View details"/>
11 animals that have changed hist	4h ago	42		Working	+ 113% <input type="button" value="View details"/>
What candy came out when you were born?	1d ago	4		Ideation	- 2% <input type="button" value="View details"/>
What disney prince are you?	2018-9-19	4		Ideation	- 32% <input type="button" value="View details"/>
13 things that have happened on Fri 13th	2018-9-17	15		Working	+ 257% <input type="button" value="View details"/>
11 animals that have changed hist	2018-9-17	42		Working	+ 113% <input type="button" value="View details"/>
What candy came out when you were born?	2018-9-17	4		Ideation	- 2% <input type="button" value="View details"/>
What disney prince are you?	2018-9-16	4		Ideation	- 32% <input type="button" value="View details"/>
13 things that have happened on Fri 13th	2018-9-15	15		Working	+ 257% <input type="button" value="View details"/>
11 animals that have changed hist	2018-9-15	42		Working	+ 113% <input type="button" value="View details"/>
What candy came out when you were born?	2018-9-15	4		Ideation	- 2% <input type="button" value="View details"/>
What disney prince are you?	2018-9-15	4		Ideation	- 32% <input type="button" value="View details"/>
13 things that have happened on Fri 13th	2018-9-14	15		Working	+ 257% <input type="button" value="View details"/>

Prev 1 2 3 4 .5 Next

Appendix B: Program Model

Program Model

Assumptions:			
<ul style="list-style-type: none">• Content is trending on the web• The data in the web-based information sources are electronically accessible (APIs, scraping)• The System1 staffing exists to maintain broken crawlers or outdated APIs• This web-based discovery tool will provide a more efficient means of identifying trends than the current Excel based system• Development team will have access to sufficient computing and cost resources to access and score web content, and discover trends			
Stakeholders	Initiatives	Value Propositions	Beneficiaries
<ul style="list-style-type: none">• Team 3 developers• System1 Content Creators• System1 Software Maintenance Staff• System1 Management	<ul style="list-style-type: none">• Display capability of collecting web data relevant to content creators (Facebook, Twitter, etc.)• Work with content creators to clearly define what is a trend• Display capability of identifying trends• Provide adequate documentation to System1 to be able to update/maintain the product	<ul style="list-style-type: none">• Increased productivity of content creators• Reduce redundancy of created content• Increased applicability and effectiveness of created content, therefore increasing total traffic time	<ul style="list-style-type: none">• System1• Advertisers• Content consumers• Content creators• Content managers
Cost: <ul style="list-style-type: none">• Web hosting costs• Web server costs• Maintenance costs		Benefit: <ul style="list-style-type: none">• Net time spent on created content increased, increasing ad revenue	

Appendix C

COTS / GOTS / ROTs / Open Source / NCS

NDI/NCS Products	Purposes
BULMA	CSS framework
Scrapy	Python web crawler framework
Crawler4J	Java web crawler framework
Django	Python web framework
Apache Solr - Apache Lucene	Search engine framework
Elasticsearch	Search engine framework
MySQL / PostgreSQL / MongoDB	Database
Spring Boot	Java web framework
Apache Nutch	Production Java web crawler
Twitter API	Data source access
Facebook API	Data source access
Flask	Python web framework

Appendix D

Risk Analysis

Risk Description	What causes this risk?	Risk Mitigation Action Items	P(L) 1-10	S(L) 1-10
Trend identification, are we able to identify trending content (rank the topics by frequency?)	Vague definition of trend from the client, Computational complexity of trend identification: underlying algorithm design / architecture design (How to bin trends by topics)	Figure out current workflow in system 1 on identifying trends (including interviewing the content creators)	5	10
The product developed may not meet client's needs	Potentially unbounded scope, vague project description, no direct access to end-users (content creators)	More discussion with the client, conduct usability testing to gain end-user feedback on product design (use Validately.com to conduct a survey or at least use google survey)	4	10
Team3 lacks technical skills / knowledge to deliver the product within one semester	Personal schedule conflicts with project schedule (personal skill dependency), insufficient training time, team skill set may not cover the development of all the required functionality in the product	Individual make commitment to declare ownership on certain tasks, map out the full functionality and revisit team skill set coverage	5	7
Data access (Can I get the data to find trends?)	API capability / availability	Will investigate Facebook API for prototype	3	10
Client may have difficulty on integrating and maintaining the system	Missing the skilled personnel	Provide documentation, maintain transparency with the client, select COTS that the client-side staff are familiar with	2	4
Insufficient funds to provide functionality	Depend on the complexity of the system, we may need an actual budget to rent AWS etc	Client will provide funding once the needs are determined	1	2

Appendix E

1. Use case and description

Use Case ID	Use Case Name	Description
UC-1	Default/Recommended Trends	Website provides a default view of what's trending.
UC-2	User input trend search	User specifies a search criteria, and the system returns related trends
UC-3	User login	User logs into the system using username and password
UC-4	User dashboard	Based on user's favorite/saved trends, the system provides a tailored view of related trends
UC-5	Trend visualizer	Displays a set of data from the trend info db
UC-6	Results filtered by source	Users can narrow the search results down to a selected range of sources (Facebook only etc)
UC-7	Share a trending topic	User 1 shares a trend with User 2. User 2 is notified and provided a link to view the trend.
UC-8	Export search result	Download / Export the trends as a spreadsheet
UC-9	Filtered by time	Users could filter the trends by time. e.g week, month

UC-10	Users can filter the trends by topics, like games, movies	The users may want trends rankings grouped by topics
UC-11	Trends Recommendations	Users may view the trending topics recommended by the system
UC-12	Keyword Subscription	User can subscribe to a list of keyword to receive periodical email of the trends
UC-13	Weekly trend report	Every week, system will automatically send a trend report to all of users.
UC-14	Account Setting	In setting, user can pre-decide what kind of trend they are interested in, or what data source they prefer.
UC-15	Trend compare	In a Trend plot, show several different trend topic in the same graph, with the same range of time
UC-16	Trend plot	Show a trend with a line chart that can customize its date range to show its popularity over time
UC-17	Create a new idea	A content creator can generate an idea based off a trend he/she is interested in writing about.
UC-18	View a list of ideas	A content creator can view all their working ideas.

UC-19	Access a public list of company ideas	A content creator can view a list of ideas created by any content creator in the content creation team board. The team board is a public list of ideas and their details.
UC-20	View idea details	A content creator can view the title, description, date created, creator, etc for a selected idea
UC-21	Edit an existing idea	A content creator can edit one of their existing ideas in order to update its title or description.
UC-22	Delete an existing idea	A content creator can delete an idea from his/her list of working ideas
UC-23	Relate a trend to an idea	A content creator can relate one or more trends/articles/pieces of content to one of his/her ideas. This happens automatically if a content creator creates a new idea.
UC-24	View trends associated with an idea	A content creator can view all the trends associated with any idea. This should be true of an idea in their working list of ideas or the master team board.
UC-25	Dissociate a trend from an idea	A content creator can remove a trend/topic/piece of content from an idea on his/her working ideas list.
UC-26	View the number of ideas a trend is associated with	A content creator can view how many ideas the trend they are currently looking at is already associated with an idea
UC-27	View the ideas associated with a trend	A content creator can view a list of ideas already associated with a particular trend they are interested in writing about
UC-28	Upvote an idea	A content creator can upvote an idea that he/she likes as a way to crowdsource good ideas

Appendix F

2. Use case business value and rationale

Use Case ID	Business Value (1-100)	Rationale
UC-1	100	Client suggested that the site should be able to find/display trends without the need of a user search
UC-2	75	Client suggested that a searching feature would be helpful
UC-3	50	Users need to log into the system to save favorite trends and so the system can tailor their dashboard
UC-4	50	Some users may only be interested in certain types of trends, or just want a quick way of navigating to their favorites
UC-5	100	Users need to be able to visualize trend data
UC-6	50	Users may show special interests in certain sources where trends are collected

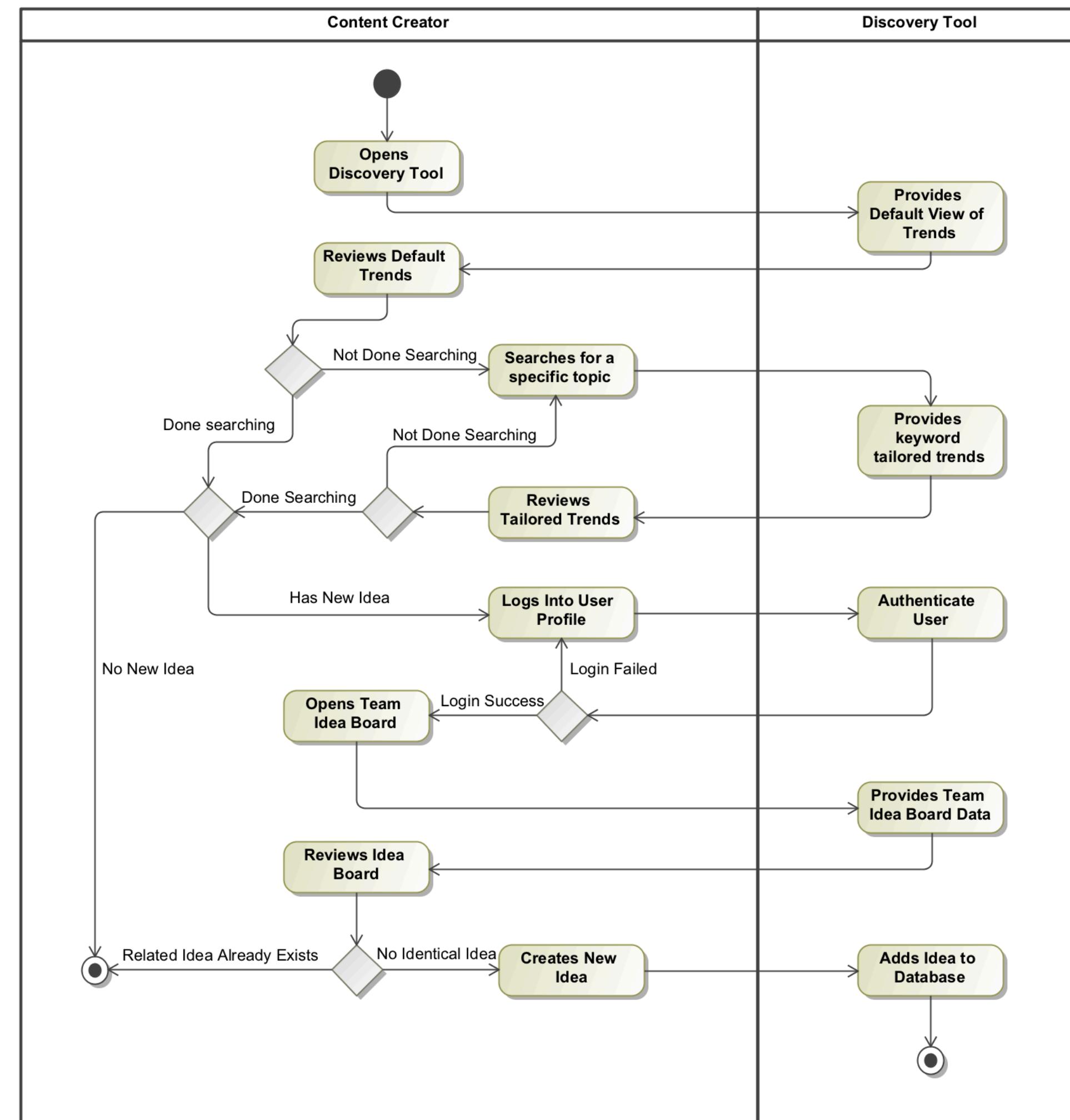
UC-7	25	The team has identified that trend sharing would be a useful feature for the "User" experience
UC-8	25	Content creators can mimic their existing workflow by having the spreadsheet
UC-9	50	The content creator may want to see the trends rank within a specific time
UC-10	50	The users may want trends rankings grouped by topics
UC-11	30	Users sometimes don't really know what they want to search, therefore we provide default trends here. Ensure the trends are in fact desired by conducting survey to collect creators' preference
UC-12	50	Save a lot of time for users to manually search a trend periodically
UC-13	25	Save a lot of time for users to make a weekly summary report
UC-14	10	By customizing users' taste, we are able to get better search result
UC-15	25	User may want to compare different topic to decide which topics are important than others, the Trend Compare will help them to decide what is their pick
UC-16	25	In order to get the historical data about a trend, see how it gain its popularity over time, or how it faded
UC-17	20	The client wants to create a trend discovery tool for content idea generation. Therefore, a content creator should not only be able to view a list of trends, but also be able to quickly save an idea based on the trend. This would involve simply creating a title for the idea and an optional description fleshing the idea out further.

UC-18	20	Content creators are ultimately trying to develop unique ideas for content. They can save ideas as they view trends, but ultimately would need a display/list view for reviewing their saved ideas. They can manage all working ideas from this list.
UC-19	10	The existing solution involves a shared spreadsheet for managing content ideas. A team-wide, public, idea board would replace this existing solution, and would automatically aggregate ideas from all content creators in easily accessible, central location. This would save content creators time (no need to separately generate an idea and populate the master spreadsheet) and streamline the content management process.
UC-20	15	A content creator can revisit their own ideas and refresh their memory regarding concepts they thought of earlier. They can also view the details of other content creators ideas to get a better sense for the idea and its context. This will make idea management easier.
UC-21	10	A content creator can change one of their existing ideas as the concept is developed further. This will make idea management easier. It will also allow the content creator to keep their ideas list updated.
UC-22	10	A content creator can remove ideas that are duplicates or are no longer fresh or that they themselves are no longer interested in pursuing. This will make idea management easier. It will also allow the content creator to keep their ideas list updated.

UC-23	15	A content creator can relate trends to ideas to backup their idea. By relating trends to ideas they are able to provide traceable proof to content decision makers that their idea has merit. This would also allow content creators to review the source of inspiration for their idea as a reference when producing actual content.
UC-24	10	A content creator can view trends associated with a given idea to investigate its source of inspiration. Content decision makers can use associated trends and their trendiness to make decisions to greenlight/approve content.
UC-25	5	Ideas can be crowdsourced by content creators. Ideas that seem clever/good can be upvoted by the creators themselves providing another metric for determining whether to approve ideas. This will tap into the content creators' experience and intuition about content, and provide another way to measure potential idea success.
UC-26	10	Content creators can easily determine how many other content creators are interested in writing about a given trend. Trends with a lot of ideas associated with them might not be worth exploring further, as System 1 wants to avoid duplicate or similar content.
UC-27	5	Content creators can view what ideas have already been generated off a trend they are interested in, and determine if their idea has already been thought of. This would prevent duplicate ideas and help content creation management efforts.
UC-28	10	Content creators can vote for an idea they like to increase the likelihood that the idea gets approved. This will make it easier for content creators to get good ideas approved, and allow everyone to contribute in the selection process.

Appendix G

Content Creator Creates a New Idea



Product Manager Reviews Ideas Board

