INFO 202 CASE STUDY
Slack as an Organizing System
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Overview
Apart from talking in person, people leverage modern technologies to communicate with each other in both social and professional situations. Applications like Gmail, SMS, and Facebook Messenger have become an integral component of our daily life. In work settings, an efficient and effective organizing system for team communications is quintessential for a team’s productivity, and even its success.

Slack, a team communication app, recently reached 400 million daily active users since its founding in 2014. [1] How did Slack excel among its competitors? What are the unique challenges of designing interactions for team communications? This case study examines Slack as an organizing system for team communications in enterprises, and discusses how it organizes resources and designs interactions to support the needs of its users.

What is being organized?
As people communicate with each other on Slack, they organize their messages into different channels and direct messages in order to reach the intended audience. When others see a message, they can respond with more messages, or add emoji reactions to the original post. Each individual message is an information resource, and its location, sender, sent time and emoji responses constitute the description resources of that message. Users not only interact with the messages directly by reading them and typing responses, but also interact with the description resources through activities such as search, channel creation and archival. When people use emoji responses to poll audience’s interest in a topic, the description resources themselves become the primary resources.

Why is it being organized?
To collaborate effectively at workplace, people need to exchange information and share status updates with each other efficiently. How does one get the right information to the right audience at the right time to enable the right action? Slack is designed to help answer this question. The system provides users with high degree of flexibility in group formation and topic categorization. This allows users to share their messages to the desired individuals or group of people, while minimize spamming. More than just a passive communication platform, Slack organizes the messages in the backend to support search interaction. The information retrieval capability is a great value creation for the system, as now the users benefit not only from the information exchange during current conversations, but also from searching and identifying useful information from the past. Additionally, the openness of Slack’s public channels encourages all team members to explore and participate, which helps create a supportive and welcoming community. This enables people to discover new information without getting overwhelmed, and fosters a collaborative culture within the organization.
How much is it being organized?
Organization of messages in Slack follows a hierarchical structure. The highest level is team, which contains all messages from members of that team (usually people in the same organization or a community of common interests). Two users have to be on the same Slack team in order to exchange messages. All conversations between the members of the team reside in the same team instance. The next level below includes channels and direct messages. A channel is a virtual chat room for a subset of people on the same team, and usually hosts conversations around a specific topic, e.g. sports, project XYZ, or even the planning of a surprise birthday party. A team can have 1 to 100+ channels, depending on the size of the team and how long the team has existed. Even though each channel typically has an overarching topic, the boundaries between different channels are often not clearly defined. A message therefore is usually posted (classified) into one or more channels based on some measure of topic similarity. There are few hard and fast rules guiding the classification of a message, and most of it relies on the sender’s own judgement. At the same level as channel, there are also the direct messages, which are private conversations between 2 people (or a small group). Direct messages are often less topic specific. Messages sent there are classified by its property of intended audience. The next level below is the message itself. In a channel or direct message, messages are arranged in a chronological order by their sent time. When a user responds to someone else’s post with an emoji reaction, they add a resource description to a single message.

While users most often interact with messages at the team (who is target audience of the resource), channel (where and how to organize the resource), and message (viewing a resource) level, sometimes they interact with messages at an even lower level of granularity. When someone performs a search, Slack supports search at the words and phrases level.

When is it being organized?
Messages are organized both ‘on the way in’ and ‘on the way out’. Before a user sends a message, they need to decide its desirable audience and classify the message into one or more categories (channels and direct messages). This step of ‘on the way in’ organization is done manually by the user. Upon message creation, the organizing system automatically generates resource descriptions for the message, e.g. its sender and sent time. The ‘on the way out’ organization happens when a user searches for a message and the system returns a list of search results.

An additional step of organization happens when a channel and its associated messages are archived. When a channel is no longer active, a user can take explicit action to end the effectivity of the resources within that collection.

How (or by whom) is it organized?
Users organize the messages in a couple ways: deciding where to post a specific message (classification), creating new channels (categorization), responding to a message with emoji reaction or pinning it to a channel (adding resource description), and archiving a channel. Most people are not professional organizers, and they organize the resources based on their own habits.
and judgement rather than following some formal principles. It is worth noting that Slack does periodically post guidelines and suggestions of best practices, in order to foster some level of standardization within and across teams.\textsuperscript{[2]}

The system also organizes messages in an autonomous fashion. In the backend, it stores the messages with their respective descriptions, so the messages can be easily searched for and usage reports easily generated. In the frontend, the system displays the messages in chronological order, so users can view the conversations in a natural order.

**Where is it being organized?**

Users normally interact with messages through the Slack user interface. While the users organize the information resources on the frontend, the actual physical implementation of the organizing system is abstracted away. As suggested in TDO, ‘an abstract or architectural perspective on interaction design and value creation can create more flexibility in carrying out the interactions while still producing the expected value for the user.’ \textsuperscript{[3]} Users of Slack enjoy functionalities of Slack through its user interface without having to worry about how the messages are stored and retrieved in the backend.

**Other considerations**

Slack recently made news headlines with its letter to Microsoft on the launch of Microsoft Teams, a direct competing product of Slack.\textsuperscript{[4]} Earlier in October, Facebook released its enterprise version of the social network - Workplace. \textsuperscript{[5]} As more companies start competing in the team communication / collaboration space, users now have the options to pick and choose what best suits the needs of their organizations. When designing their products, companies need to consider the potential trade-off between the quantity and quality of the interactions their products support. One can offer a greater variety and more customizable interactions, but that might come at the cost of reduced usability and slower performance. There is also the potential trade-off between the interoperability and system complexity of the product. In order to open up a closed-off system to third party software integration and external users, e.g. in the case of Microsoft Teams, significant architectural changes might be required. A well designed organizing systems aims to find the optimal balances between these trade-offs, and works with the constraints in order to create maximal value for its users.

**Reference**

[1]: Slack passes 4 million daily users and 1.25 million paying users
[2]: Some of the ways we use emoji at Slack
[3]: TDO, Chapter 3.4.2.1
[4]: Slack vs. Microsoft Teams
[5]: Facebook at Work officially launches as ‘Workplace’
ARTIFACTS

1. JSON Object of Individual Messages

Below is a sample Slack message object in JSON format that a user would get when they download the raw data from Slack. In addition to the text of the message, a twitter link in this case, the object also contains other resource descriptions such as the type, sender (user) and timestamp (ts) of the message. These additional descriptions allow the system greater flexibility to support other interactions, albeit at the cost of greater storage requirement.

```json
{
    "type": "message",
    "user": "U1HAU35L1",
    "text": "<https://twitter.com/drewconway/status/801431817807155200>",
    "attachments": [
        {
            "fallback": "<https://twitter.com/drewconway"@drewconway>:<https://pbs.twimg.com/media/Cx9B_P5XUAEper5.jpg>,
            "ts": 1479911209,
            "author_name": "Drew Conway",
            "author_link": "https://twitter.com/drewconway/status/801431817807155200",
            "author_icon": "https://pbs.twimg.com/profile_images/789251981613432832/HvSF84ge_normal.jpg",
            "author_subname": "@drewconway",
            "text": "<https://pbs.twimg.com/media/Cx9B_P5XUAEper5.jpg>",
            "service_name": "twitter",
            "service_url": "https://twitter.com/",
            "from_url": "https://twitter.com/drewconway/status/801431817807155200",
            "image_url": "https://pbs.twimg.com/media/Cx9B_P5XUAEper5.jpg",
            "image_width": 972,
            "image_height": 1024,
            "image_bytes": 59714,
            "id": 1,
            "footer": "Twitter",
            "Footer_icon": "https://a.slack-edge.com/6e067/img/services/twitter_pixel_snapped_32.png"
        }
    ],
    "ts": "1479924275.000019",
    "reactions": [
        {
            "name": "joy",
            "users": [
                "U1V17D2K1",
                "U1UK61FK7"
            ],
            "count": 2
        }
    ]
}
```

Source: a randomly selected post (slightly modified) from the I School Berkeley Slack team
2. Example Team Service Usage Summary

Below are some summary usage statistics from the Berkeley I School Slack team as of Dec 2, 2016. Some insights on the kinds of interactions people have on this Slack instance …

- Majority (59%) of messages are sent as private direct messages
- Number of messages posted each day vary greatly, and the variation is potentially driven by the events happening on a given day
- A moderate amount of external integrations are used in the team (38 integrations and 240 integration messages from the previous day)
- On average half of the users are actively reading messages and a third are actively posting

![Total Messages](Image)
21% public channels, 19% private channels, 59% DMs

![Storage Used](Image)
For 9,306 files.

![38 Integrations Used](Image)

5,721 messages have been posted by people (plus another 240 messages from integrations) and 170 files have been uploaded. There are 388 people reading and 292 people posting, out of 840 people on your team.

![Messages & Files](Image)
Over the past 10 days.

![Readers & Writers](Image)
Over the past 10 days.

Note: Stats computed up to Fri, 02 Dec 2016 18:00:00 -0800 and they were last updated 11 hours and 14 minutes ago.

Source: [https://ucbischool.slack.com/stats](https://ucbischool.slack.com/stats)
3. Communication Tool Comparison

The following matrix diagram shows a comparison of some communication apps I have used in personal and professional settings. The x-axis shows the relative level of effort required for an average user to organize information in the system (left: low → right: high). The y-axis shows the relative level of effort required for an average user to retrieve information from the system (bottom: low → top: high). An organizing system is generally more desirable if it is near the bottom left of the diagram, i.e. it requires little effort from users to perform either task. A good example that is outside the realm of communication tools would be Google search, where the search engine is intelligent and powerful enough to do most of the heavy lifting of both the information organization and retrieval tasks.

Compared to Slack, the level of effort for traditional emails is high on both ends. A user needs to manually type the recipient’s email address and apply tags / labels for each email, whereas in Slack once a channel is set the ongoing effort is relatively small. Inbox for Gmail is an revamped email program that aims to reduce the amount of work needed from the user to organize their email inbox. It does so by automatically bundling and archiving emails, and surfacing important information otherwise buried in the email threads.
4. Interactions Summary

The following flowchart showcases some key resource interactions supported by the Slack system. Beyond the core reading and posting activities, a user can interact with a message in many other ways, both directly and indirectly. These interactions complement each other and together offer users a rich and flexible set of functionalities.