

How to Setup Infrastructure for Your Project

Introduction

Once you've selected a project to work on and you find yourself part of a project team, many of the most important aspects of making your project a success have nothing to do with implementing data science algorithms. Setting up an effective system of communication — both within your team and between your team and the other essential partners in your project (your Teaching Fellow, Pavlos, and the client) will more than anything else determine the extent to which you succeed. In AC297r we'll be helping you with all aspects of managing an successful project. We've already made available to you some other resources for managing the client relationship (see Isaac's wonderful presentation), and your teaching fellow and Pavlos will mentor you through maintaining effective communication strategies with the AC297r staff. In this document I'd like to focus on some strategies and suggested software to help you setup an effective inter-team communications workflow.

Basic Workflow Overview

You want to think of a communications infrastructure as helping foster workflows to support some of the basic modes of communication you'll engage in within your team. What are some of these modes of communication? They vary from team to team, but in small semi-distributed software and scientific teams we've found that the following modes or patterns frequently repeated

- Synchronized non-memorialized and urgent (phone_text_video)
- Asynchronous, memorialized (email)
- Synchronous, memorialized, group (group chat)
- Organizational, accountability (task/project management)
- Strategic, collaborative (documents)
- File management (files)
- VCS (repositories)

Not all of these modes are needed, and all of these modes can be managed via work-arounds without the need of infrastructure support, but we've found that setting up the right infrastructure can really boost team productivity and the overall likelihood of project success.

Basic Communication

For AC297r, we're going to group a few modes into "basic communication". As a rule, it's probably a good idea for everyone on a team to have everyone else's email and phone number. With a good group-chat infrastructure you can probably get away without email or phone contact info. You'll likely find however that situations will arise ("we have a time sensitive client issue, let's talk immediately", "we're about to present and something's wrong—emergency!!!!") where team members will need to be able to reach each other in a very timely manner. Having the ability to call and/or text each other in a pinch almost always turns out to come in handy. We suggest centralizing your contact info (google doc, Slack profiles , etc.)

In some teams mailing list or forums turn out to be very useful (especially so conversations can be archived and interested parties can go back and look at them for useful information), but in teams of the size that we have in AC297r just having a group email in combined with some of the tools we'll talk about later in this document should suffice.

Accessing Your Group Space in Canvas

Each group has its own space in Canvas. Please have links to all your activities there so the instructors can easily find them. You can use the built-in features such as Discussions or have a link to other collaboration tools that you are using.

To find this space go to the course Canvas website, on the left dark blue menu click on the people icon and choose your group by name of project. That will take you to the group's own Homepage. On the left menu go to Collaborations. There you will find a document named Group Progress Notes. Update this document **before** the meeting with Pavlos and the TF (preferably the night before) with what you will be discussing.

Version Control Systems

Introduction

Version Control needs no introduction in 2017. Use it as part of your regular coding practice or things have the potential to go sideways very quickly. At this point Git is the emperor of version control and [GitHub](#) is its Grand Vizier. [GitLab](#) and [Bitbucket](#) are lesser but still important Viziers. There are groups out there that use mercurial, svn, perforce and TFS. Use git.

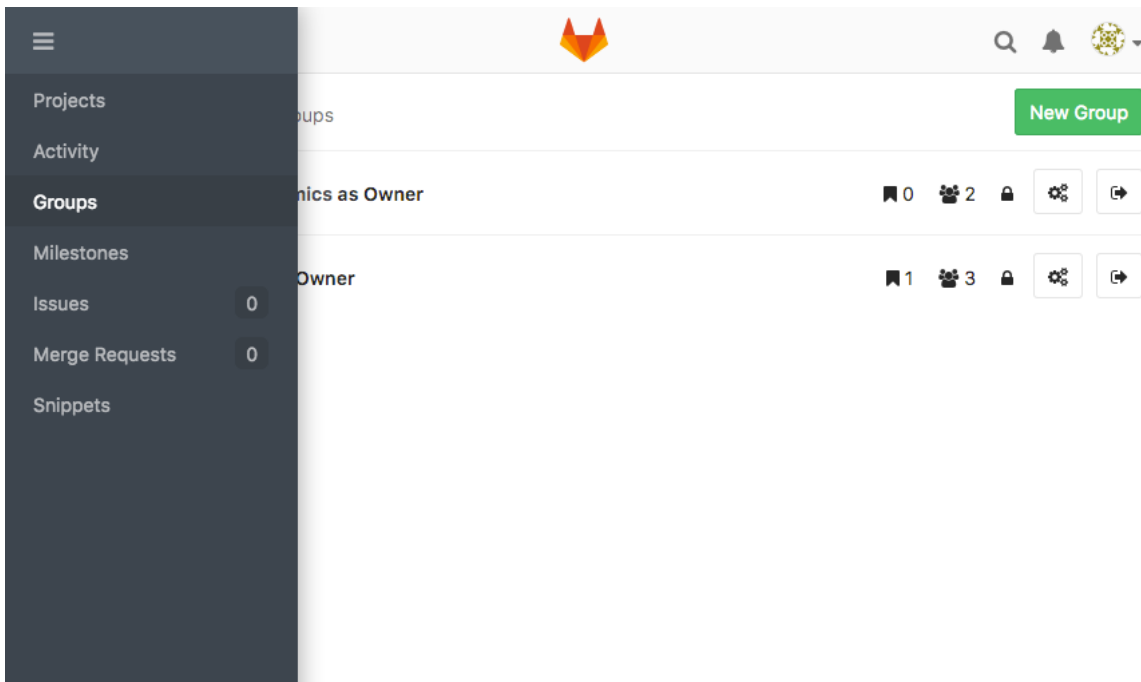
Students (and AC297r) students get free access to Github personal accounts with free collaborators otherwise you can only develop personal projects (no collaboration) or as part of an open source project with the free tier. Bitbucket allows up to 5 team memberscollaborators in its free tier. Gitlab allows unlimited personal collaboratorsteam members in its free tier.

For more information about setting up private Github groups, contact Eleni Kaxiras on the AC297r teaching staff. Since Gitlab.com doesn't need any special procedures for private groups/repositories, has a nice transition to a full blown community edition which can privately support a full organization and is mature and continuously improving, we'll briefly go over setting up accounts on that platform here.

Creating a Gitlab.com Team

You can register for a gitlab.com account directly on the main page at [GitLab](#). Once you've registered you can create a group. That group will be accessible at the top-level of the Gitlab.com url hierarchy so name collision is an important consideration. Please be mindful and use the following naming scheme to prevent future collisions —AC297r2017[Name of your project]. So for example the Tribe Dynamics project should use the name AC297r2017TribeDynamics.

This way we can avoid name collisions both within this year's groups of projects and with projects from future years.



Once you've created a group you can invite your team members as collaborators. Groups (as well as projects, etc) are available in the left side menu. You can see which groups you're part of, select one and go to the Members tab where you can add members, invite new members (with an email address) and update permissions of current members of your group. You should give all team members (and your teaching fellow) at least master permissions.

ac297r2017tribedynamics

Group

Activity

Labels

Milestones

Issues 0

Merge Requests 0

Members

Contribution Analyt >

Add new user to ac297r2017tribedynamics

Search for a user

Search for users by name, username, or email, or invite new ones using their email address.

Guest

[Read more](#) about role permissions

Expiration date

On this date, the user(s) will automatically lose access to this group and all of its projects.

Add to group

Existing users

Find existing members by name

Name, ascending

Users with access to ac297r2017tribedynamics 5

Chin Hui Chew @chinhuic

Joined about 3 hours ago

Master

Expiration date

Patrick @patrickohio

Joined about 3 hours ago

It's you

Owner

echiew@g.harvard.edu

Invited by Patrick about 3 hours ago

Master

Expiration da

Resend invite

Group Chat

Intro to “Group Chat”

While the section heading here is called “Group Chat” the powerful tools available today end up doing a lot more (in fact they’re really full service team collaboration software suites). Most of them started out life with their basic functionality as group chat irc replacements. Even though they still often carry that characterization but they are now full blown messaging platforms with audio and video collaboration, file sharing, search functionality and integrations with myriads of other popular services. The biggest names in this space are Slack ([Slack Website](#)), HipChat ([HipChat Website](#)), and — increasingly for privately hosted data — Mattermost ([Mattermost Website](#)). We’re going to focus on Slack as the industry leader in this section, but a some of what we describe will apply to the other group communications candidates as well.

Getting Started with Slack

Slack has both free and paid for options. In AC297r the free tier should cover all the needs for any of the teams. For an introduction and overview of the service see the help page [Video Guides – Slack Help Center](#). That page covers a lot of useful getting started information including:

- [Creating a team – Slack Help Center](#)
- [Using channels – Slack Help Center](#)
- [Sending messages – Slack Help Center](#)
- [Using search – Slack Help Center](#)
- [Sharing files – Slack Help Center](#)
- [Customizing notifications – Slack Help Center](#)

Creating a Team

The first thing you’ll need to do is create a team. Please be mindful and use the following naming scheme to prevent future collisions. AC297r2017[Name of your project]. So for example the Tribe Dynamics project should use the name AC297r2017TribeDynamics. This way we can avoid name collisions both within this year’s groups of projects and with projects from future years.

You can create a team directly on the Slack main website [Slack Website](#). This video is a quick and easy guide through the process — [Creating a team – Slack Help Center](#).

Once you've created a team make sure to invite the other members of your project and your teaching fellow. You should have designated admins. If you don't designate admins you should make everyone on the team an admin. Once the other members of your team have accepted their invites, you can make them admins using the Manage Your Team menu item. You can manage team the teams directly via the url [https:\[teamprojectslacksite\].slack.com/admin](https:[teamprojectslacksite].slack.com/admin) where [teamprojectslacksite] should be replaced with your project site name.

Slack

#general

Carl Bunting 2:45 PM
actually it's about ethics in game journalism

Suzie McGeuze 2:50 PM
hey everyone, our all-hands will be starting in 10 minutes
amy has some exciting updates about our engineering team hiring and JR will be covering last quarter's sales report

Amy Grint 3:15 PM
If anyone has any questions about the new additions to engineering, give me a shout!

Carl Bunting 3:23 PM
Question 1: Can they juggle work? I mean literally. Like paper and staplers. 📄 📌 📎

Lauren Ortiz 4:10 PM
<https://static-ssl.businessinsider.com/image/54dc4ee369bedd4775ef2753/slack-1ye-feb12-2015-dau.gif> (2MB)

Daily Active User Growth

50k
25k
20k
15k
10k
5k

Aug 2013 Sep Oct Nov Dec Jan 2014 Feb

Bruce Stuttenfeld 4:26 PM
Let's do this again sometime!

Getting Slack

Slack has free web, desktop and mobile clients. You should download the desktop and mobile clients. The desktop clients can be downloaded from [Download Slack for Desktop | Slack](#). Mobile clients can be downloaded from the appropriate App Store for your mobile platform.

Channels

By default you get two created channels — #general and #random. You'll probably want to create some additional channels (including one for literature) for particular categories of topics that you want to memorialize (e.g. literature and information resources for your project topic, meeting notes). [Using channels – Slack Help Center](#) contains some basic information on getting started with Slack channels.

File Sharing

Your slack project group can make a quick starting place for sharing useful files and links and a de-facto replacement for more extensive document management systems. [Sharing files – Slack Help Center](#) contains some basic information on getting started with sharing files in Slack.

Posts

One of Slack's useful features for communicating and memorializing more stable, structured, long-form content is called Posts. Posts can help organize information that you want to reference in the future. Slack provides a couple of pages that discuss Posts functionality — [Composing a post – Slack Help Center](#) [Formatting for posts – Slack Help Center](#). Posts are a great optimization in Slack and we recommend you taking advantage of them.

Task Management

Intro to “Task/Project Management” alternatives

There are a lot of alternatives in the task/project management category for small teams. Paid solutions include Jira, Rally, Microsoft Project, BaseCamp and FogBuz. “Free” solutions include Trello, Asana, Todoist and ScrumDo. Other free solutions are tied to products (Gitlab and Github are examples) that are primarily focused on other things (e.g. version control systems). The free solutions are powerful and featureful and while some have team size restrictions (Asana) others allow (Trello and ScrumDo) have only feature restrictions for the free product.

- [Trello](#)
- [Asana](#)
- [Scrumdo](#)
- [Todoist](#)
- [Basecamp](#)

We're going to discuss Trello in this document because it comes with mobile clients, doesn't have team size restrictions in its free version and has all the features needed for use by a small distributed team.

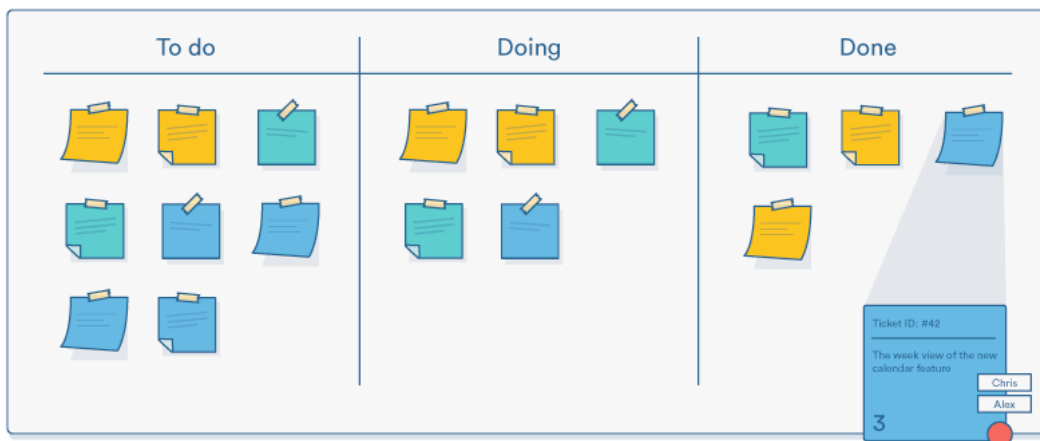
Intro to Kanban

Trello uses the Kanban approach to process management as its central organizing premise. Here's a description of Kanban from Wikipedia:

“Kanban is a method for managing knowledge work which balances demands for work with the available capacity for new work. Work items are visualized to give participants a view of progress and process, from task definition to customer delivery. Team members "pull" work as capacity permits, rather than work being "pushed" into the process when requested.

In software development, Kanban provides a visual process-management system which aids decision-making about what, when and how much to produce. Although the method (inspired by the Toyota Production System and lean manufacturing) originated in software development and IT, it may be applied to any professional service whose work outcome is intangible rather than physical.”

Here's a visualization of a Kanban board from a Atlassian's description of the Kanban process (stolen from the article at [Kanban The Agile Coach](#)):

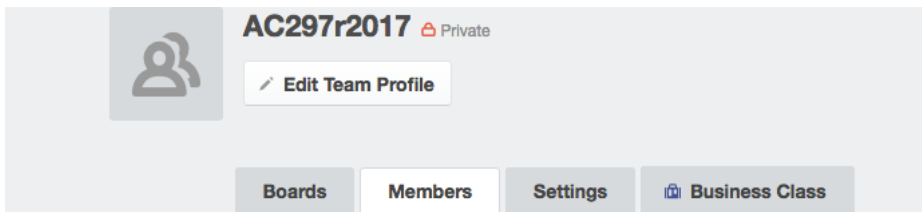


Setting Up Trello

You can sign-up for Trello directly from the main page at [Trello](#). Once you've signed up and verified your email address, you can set up a team by adding a Private Team (for the free version). [Creating a new team - Trello Help](#)

You'll be asked for a name — once again use the same naming convention that we described in the discussion on Slack — “Please be mindful and use the following naming scheme to prevent future collisions. AC297r2017[Name of your project]. So for example the Tribe Dynamics project should use the name AC297r2017TribeDynamics. This way we can avoid name collisions both within this year's groups of projects and with projects from future years.”

Once you've created a team you can add members from the team page.



Search Team

Find members by name...

Add Members

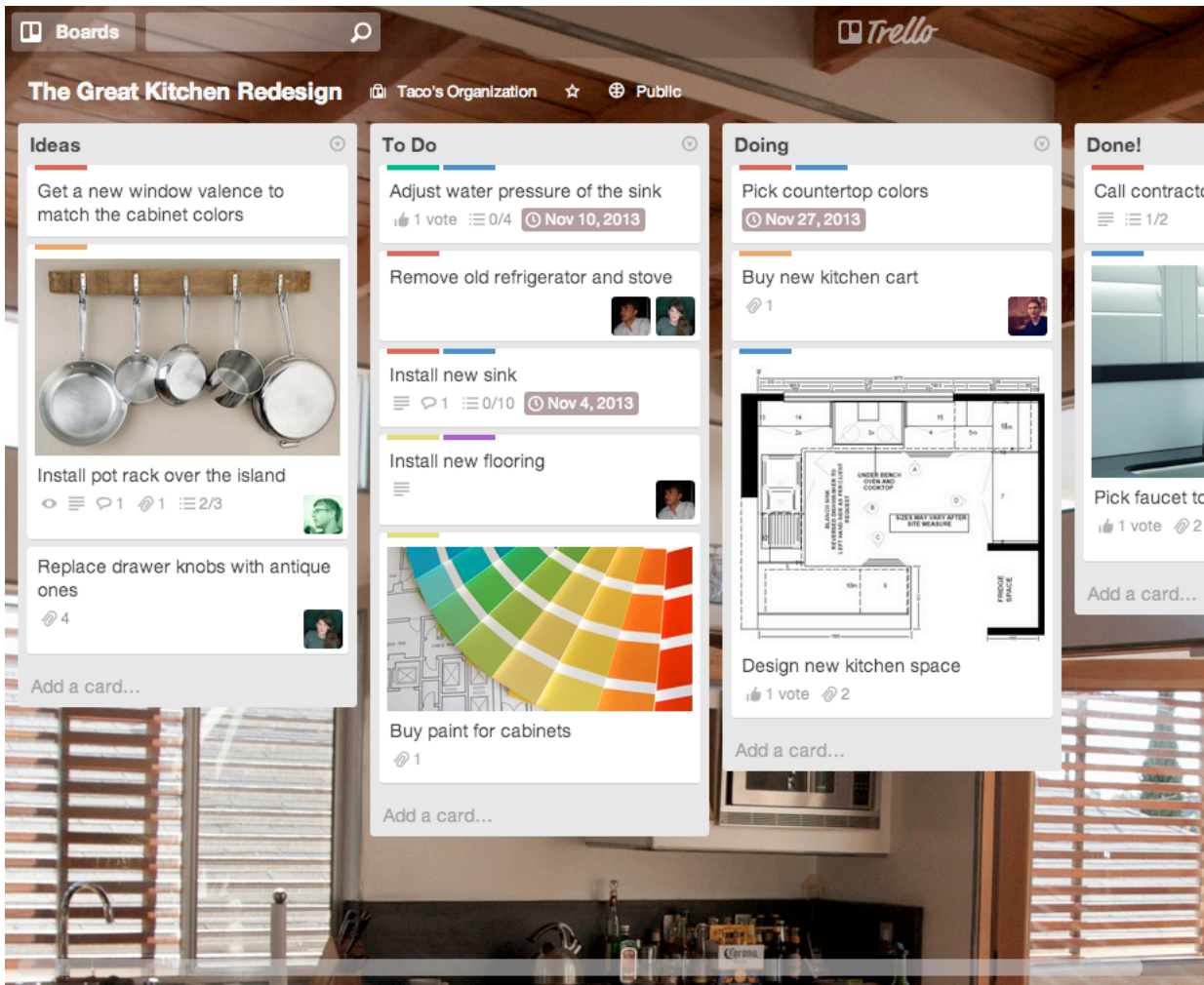
 Add by Name or Email

 Bulk Add Members

Use the Bulk Add Members or the Add by Name or Email to add members to your team (use your project members' email addresses). If your team members haven't already created Trello Accounts, they will be invited to join. You can at any point add members to the team. [Inviting people to a team - Trello Help](#)

Using Trello

Once you have Trello set up, you'll need to be familiar with the three Kanban primitives that Trello uses to organize everything.



A **board** (i.e. a Kanban board) is generally a top-level organizing primitive. It usually is used to represent a project or a serious high-level milestone or set of milestones that are being worked on which contain lower level organizational primitives. Your team should have one or at most a very few boards related to the duration of this project.

Typically in Kanban your board is divided into different **lists** that represent stages of the project. Tasks migrate from one list to another (or are closed as being completed) as they progress through their completion cycle. A common basic Kanban board organization of lists is "To Do", "In Progress", "Completed". Other possible organizations may be time or stage based, but the main thing is that the lists organize the board.

A **card** represents the basic element of Kanban often representing an individual task or concrete piece of a project. Trello gives cards the ability to have more extensive visualization functionality, due dates, comments, and even checklists. Cards can be assigned to team members (and also subscribed by team members).

There are many different ways to take advantage of the Kanban paradigm within Trello while also utilizing the nice visualization properties of the boards. I suggest that you make your board a major milestone (say Phase 1), divide it into stages, and make each card a task assigned to team members.

Here's a getting started video for working with Trello. [Getting started with Trello video demo - Trello Help](#)

Integrations

Trello allows for extensive integrations (part of its Power-Ups system). I would suggest that you take advantage of the Slack integration in particular. To use this integration, someone who's an admin in both Trello and Slack should set it up.

First of all set up [The Trello App for Slack - Trello Help](#). This will allow you to view and manipulate your Trello boards directly from Slack so that you won't have to open up Trello.

Next configure the Trello Alerts Slack App [Trello Alerts | Slack](#). This will allow you to get all your Trello notifications on updates to your Kanban board in a particular channel (you may want to turn off Slack notifications for that channel in your mobile Slack app) so that you can stay updated on what changes are happening (e.g. new cards/tasks, etc...)

Slack

Travidux, Inc ▾
● brian

CHANNELS (9) +

- # design
- # general
- # random
- # sales
- # taco-time
- # the-big-picture
- # think-tank
- # website-design

DIRECT MESSAGES (8) +

- ♥ slackbot
- amy
- andre
- beth
- chris
- trello

+ Invite people

#website-design
5 members | Add a topic

Today

beth 10:24 AM
@chris Would love feedback on these designs by Friday.
<https://trello.com/c/NkU6g8E4/3-website-redesign>

trello BOT 10:24 AM

Card

Website Redesign

In list **Current Projects** on **Project Planning Overview**

🕒 Jun 17 📌 5 🗳️ 2/6 👤 Beth Orthman, Chris Temperson

Labels: Marketing, Product

Goals: Our brand & product have evolved over the past two years, and our website should be updated to reflect this. The new site will be mobile-first, responsive and lightweight. [Show more...](#)

Join Subscribe Due Date Labels Attach Conversation

chris 10:24 AM
@beth on it!

Trello BOT 10:24 AM
@chris changed the due date of **Website Redesign** to Jun 17th at 12:00pm EDT.

chris 1:22 PM
@beth Love these mockups! Let's get them live so we can test them.

File and Document Management

Trill and Slack (and email) allow you to do a fair bit of document and file management. In teams as small as the ones working on the AC297r any further file/document management (if necessary) can be taken care of by any combination of Dropbox, Google Docs, Sync.com, Box.net, or even your git repositories (if versioning is important) etc. Pick whatever tool you're comfortable with and run with it.