Hello everyone,

Welcome to D1G1TAL AgATH0N 2020. We look forward to seeing you this Thursday. Here is your registration packet. It contains the following:

- **Agenda and links to join meetings (Page 2)**
  Pay attention to the "Click to join the meeting" links in the agenda. These are the MICROSOFT TEAMS meeting links for you to join the kickoff, daily check in, office hours (as needed), and closing events.
- **MICROSOFT TEAMS structure for D1G1TAL AgATH0N 2020 and how to navigate it (Page 4)**
  Note: The word "TEAMS" in this section is not referring to the participating teams, but rather the MICROSOFT TEAMS app that will be used for the event.
- **Summary of the four challenges your teams can choose from. (Page 6)**
  Read about the challenges and see what interests you. You are free to choose any challenge and come up with what question you want to hack on. Some example questions are provided. Your team will be finalizing the challenge/question you want to hack on by Thursday night (after a presentation and Q/A session on the topics), so you can start hacking on Friday. A summary of the challenges is all that is provided in this document. More details are provided in the TEAMS app.
- **Introductory tutorials (Page 8)**
- **Evaluation rubric (Page 9)**
  The rubric criteria based on which you will be evaluated are provided here. There will be cash prizes for winning teams.
- **Code of conduct (Page 10)**

There are two things to do BEFORE the event. The first is due by 5:00 PM Wednesday and should not take more than a few minutes. The second is optional, but highly recommended.

1. You will receive an email invitation to join the D1G1TAL AgATH0N 2020 TEAMS group on the afternoon of Monday, September 28th. Go to that TEAMS link, open the team roster file and find your team assignment. Go to the "channel" for your team and say hello. You can use this "channel" to chat with the team members. Posting a message on your team's channel will be used as indication that you have "completed" the registration. Please do this by 5:00 PM Wednesday September 30. If you have never used TEAMS and are lost on the terminology in this paragraph, don't worry. Page 4 of this document has pointers for how to do this.
2. This event is hosted on Microsoft AZURE. In the "Tutorials" channel in TEAMS, there is "Start Here!!" tab that gives and introduction to Microsoft Azure. This is optional to complete before the event, but highly recommended as going through it would help you be better prepared. Page 9 of this document has pointers.

Let us know if you have any questions!

Thanks!
D1G1TAL AgATH0N Organizing Committee

AGENDA WITH LINKS TO MEETINGS

You will find this information in the Wiki-general tab on the General channel as well.

Day	Time & Meeting Links	Topic	Facilitator/Presenter
Thursday Oct 1	3:00 - 4:00 PM PDT Click to join this meeting (same link until 6:30PM)	Check into TEAMS and get familiar with TEAMS.	Amanda Fox-Levandowski
	4:00-4:30PM PDT (same meeting link as above)	Welcome, overview and kickoff	Kirti Rajagopalan, Von Walden, Deans of Engineering and Agriculture, Chris Keane, Steve Mantle, Jim Bennett, Bharat Shah
	4:30 - 4:50 PM PDT (same meeting link as above)	Icebreaker, team building	Chris Richards
	5:00 - 6:30 PM PDT (same meeting link as above)	Description of scenarios, What you can do with Azure? Tutorials, Q+A with subject matter experts, Consolidation on projects/teams	Kirti, Sindhu, Lav/Steve, Sid Chaudhary Jim Bennett Von Walden All
Friday Oct 2	9:00 AM PDT Click to join this meeting	Check in, Friday kick off, mini game	Kirti and Chris Richards
	9:00 - 11:00 AM PDT Click to join office hours	Facilitator office hours	
	4:30 - 5:00 PM PDT Click to join this meeting	Check in, mini-game end of day activity	Kirti and Chris Richards

Saturday Oct 3	9:00 AM PDT [Click to join this meeting](#)	Check in, mini-game	Kirti and Chris Richards
	9:00 - 11:00 AM PDT [Click to join office hours](#)	Facilitator office hours	
	4:30 - 5:00 PM PDT [Click to join this meeting](#)	Check in, mini-game end of day activity	Kirti and Chris Richards
Sunday Oct 4	9:00 AM PDT [Click to join this meeting](#)	Check in, mini game	Kirti and Chris Richards
Sunday Oct 4	9:00 - 11:00 AM PDT [Click to join office hours](#)	Facilitator office hours	
	4:00 PM PDT	Projects due	
	4:00 - 4:30 PM PDT [Click to join this meeting](#)	Mini-game end-of-hacking activity	Kirti and Chris Richards
Monday Oct 5	9:00 - 10:00 AM PDT [Click to join this meeting](#) (this same link applies for the two time slots below)	Closing, Final presentations	
	10:00 - 10:30 AM PDT	Speakers	
	10:30 AM PDT	Winner announcements and wrap up	

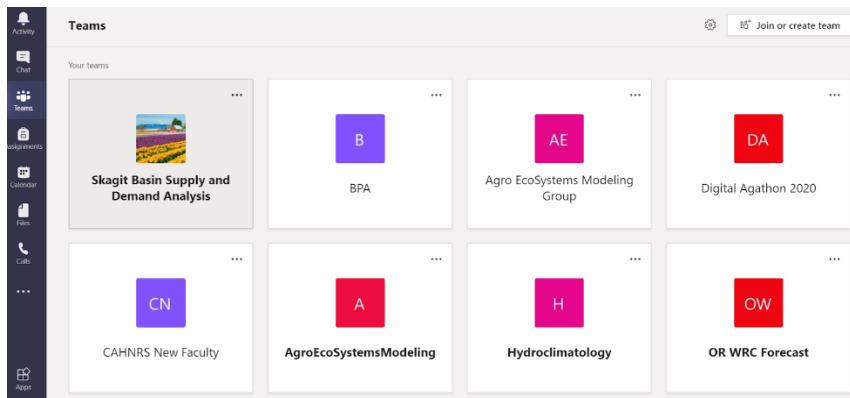## TEAMS STRUCTURE AND HOW TO NAVIGATE

As WSU affiliates, you should have access to the Microsoft TEAMS App. If you have not used it before, no worries. It is easy.

These quick start guides will get you going.

https://download.microsoft.com/download/D/9/F/D9FE8B9E-22F5-47BF-A1AB-09539C41FCD0/Teams%20QS.pdf

https://support.office.com/en-us/article/chat-and-share-files-in-teams-d7978db0-33b5-4ad3-93ac-ef0bd3c2a670

When you get into TEAMS, you will see a list of all TEAMS that you are a member of.

Click on the Team "Digital Agathon 2020", and you will get to an interface such as below. On the left you will see a list of "channels". These are places where you can post messages and have a conversation, save files and look up files, and look up other things like WIKI pages. You can see tabs for those options (posts, files, Wiki-general) in the yellow highlight area in the top. In the Digital Agathon 2020 TEAMS, you will mostly use the "General" channel for general announcements, "Ask a question" channel to ask questions and get answers, the "Tutorials" channel for some useful information, and most importantly, your own Teams channel (e.g. WSU Team X) to collaborate.
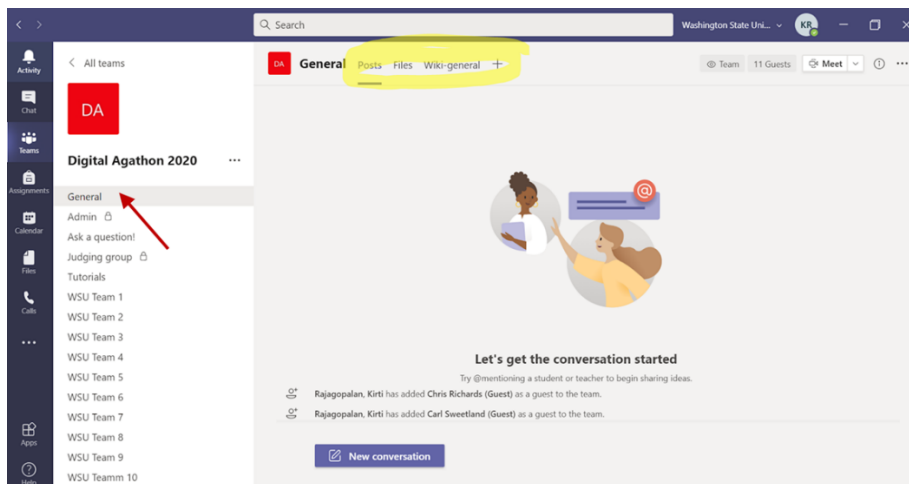
In the "General" channel, if you click on "Files" (yellow highlight in the above image) you will see an excel file TeamRosters.xls (see below). Open the file, find your team number (X), go to your team's channel WSU Team X and post a message to your team. This is considered your "registration". Please do this by 5:00 PM on Wednesday, September 30th. You can continue to chat here to get to know each other, discuss what challenge interests you etc. At the kickoff event you will learn more about TEAMS features.
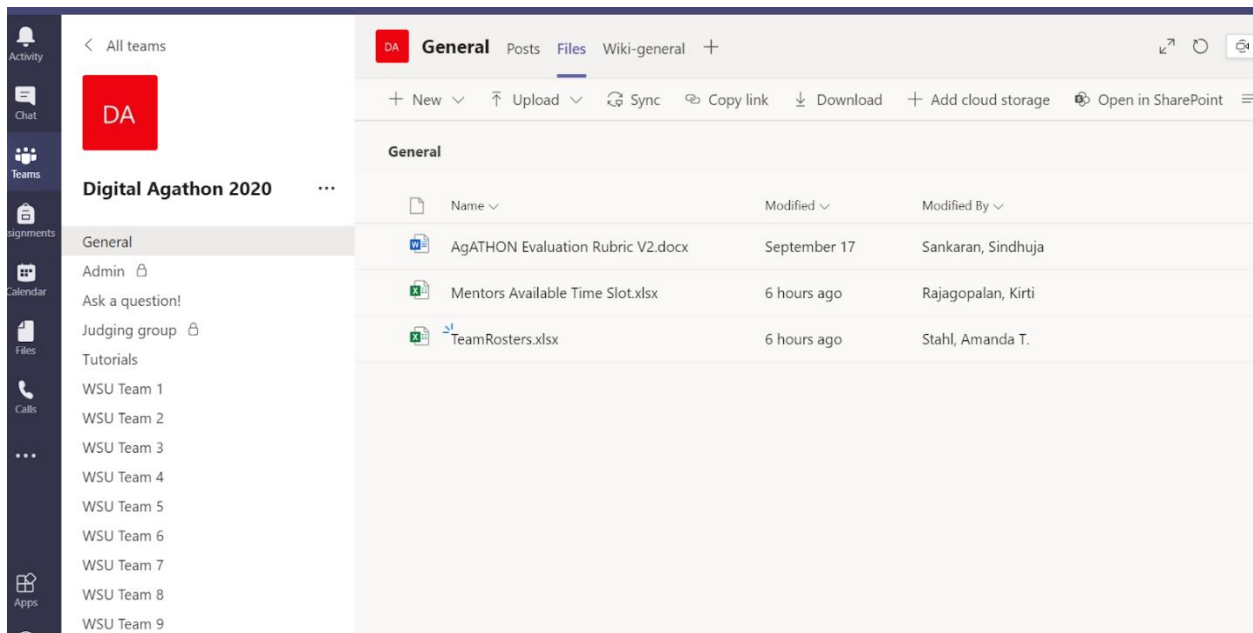
The Wiki-general tab (right next to files) has the agenda and all information about the event. Please check that out as well.

Rest, you can figure out as needed during the hackathon.

SUMMARY OF THE FOUR BROAD CHALLENGE AREAS

Your team can choose whatever challenge area and question that interests you, as long as it uses the data provided and is within the broad topic area of Digital Agriculture. Data (and example questions that can be answered with the data) are provided with each challenge area. You can choose one of the listed questions or come up with your own question based on the data.
A brief description is provided below. Details can be found in the "Challenge" channel on TEAMS.

Challenge area 1: Land use Classification and Monitoring (open-source satellite imagery)

How can we facilitate land use identification and monitoring strategies that leverage open-source satellite imagery and machine learning models? You will have two sets of data to work with - (a) open source satellite imagery at a 30m spatial resolution and approximately 5 day temporal resolution and (b) ground truth data (field boundaries with associated information about the crop grown in a particular year in a particular field, whether the field is irrigated or not, and the irrigation technology type). The data correspond to Yakima and Grant county spatial extents of Washington State for the years 2017 and 2018.

Some example problems you can choose include:
a.   Automated crop classification
b.   Automated irrigated technology identification
c.   Automated irrigated versus dryland area classification
d.   Automated crop phenology detection

Challenge area 2: Breeder Decision Support for Crop Improvement (drone imagery)

Develop decision aid tools to assist a crop breeder in the selection of high-performing crop varieties that are abiotic/biotic stress tolerant.

Data: Unmanned aerial vehicle (UAV)-based multispectral images were collected to phenotype two panels of dry bean breeding trials for tolerance under multiple stress (low nitrogen, low phosphorus, deficit irrigation, reduced tillage - compacted soil, short crop rotation, soil root rot pathogen) conditions. The two panels have different stress responses. The Andean Diversity Panel (ADP) is known to be sensitive to stress and the Durango Race Diversity Panel (DDP) is less sensitive to stress. Data provided correspond to a couple of hundred genotypes.
The ground-truth data are also provided: emergence (EM), days to flowering (FM), days to harvest maturity (HM), canopy height (CH), biomass rating (Biomass), seed yield (g.100.sd), and overall yield (kgha) were collected for each genotype. The field site is located at the Washington State University's Roza Research Farm in Prosser, WA and the data corresponds to two years of field trials.

Examples of approaches can come in the form of:
- Improving selection efficiency/reducing rejection efficiency utilizing phenomics data

- Identification of top 10 or 25 percentile high-performing varieties
- Phenomics data-based yield prediction

Challenge area 3: Data-driven Orchard Management (sensor data)

Develop data products/decision aid tools to understand soil/tree/water interaction, enabling growers to optimize crop management.

Example prescriptive crop management categories include:
- Block specific stress maps (actionable intelligence to growers)
- Irrigation scheduling
- Nutrient/chemical application prioritization & scheduling
- Crop load management
  - Vigor-based thinning & pruning applications
 - Fruit size & quality optimization

The dataset provided is from a Smart Orchard pilot project being implemented by Innov8ag in collaboration with WSU-CAHNRS (CPAAS Precision Ag Group, AgWeatherNet, Tree Fruit Extension) researchers and Washington Tree Fruit Research Commission (WTFRC). The field site is one of Columbia Reach Orchards' 20-acre blocks at 1741 Auburn Rd, Pasco WA. The data provided is for the 2020 season (starting in May till date). Data consists of time-series sensor data, and imagery data early, mid, & late season. More than 30 sensors are installed to capture live weather and soil conditions. The sensors are provided by 5 hardware manufacturers participating in this project: Tuctronics (AgriNet), Davis Instruments, Meter Group, AquaSpy, Teralytic and Phytech. WSU AgweatherNet has in-field and open field weather stations installed in this orchard block. WSU CPAAS Precision Agriculture Group has also imaged this orchard block using drones to acquire RGB, 5-band multi-spectral and thermal imagery at high spatial (7 cm/pixel) and temporal resolution. Additional data include satellite imagery from Planet.

Challenge area 4: Automated Road Digitizing (high resolution satellite imagery - 50cm resolution)

Problem statement: Automating road digitizing from high spatial resolution satellite imagery. In developing/underdeveloped countries, travel time from home to fields is a major factor affecting agricultural and farmer productivity. Often crude assumptions need to be made regarding travel time in economic analysis of productivity, because roads are often not digitized. Digitization allows more accurate analysis. Very high spatial-resolution (50cm) satellite imagery is provided for a 25,000 sq km area in Ethiopia (tile grid of 256x 256). Object-based machine learning approaches could be used to attempt automated digitizing of roads which can vastly improve agricultural and farmer productivity analysis in developing/underdeveloped regions.

TUTORIALS CHANNEL

In the D1G1TAL AgATH0N 2020 Microsoft Teams group, there is a "Tutorials" channel. For now, go through the "Start Here" tab in the channel (see below). Make sure you click the menu (three lines) (see below) to view all pages. Going through this ahead of the event is highly recommended, so you can come into the event with general background information related to the Azure platform.
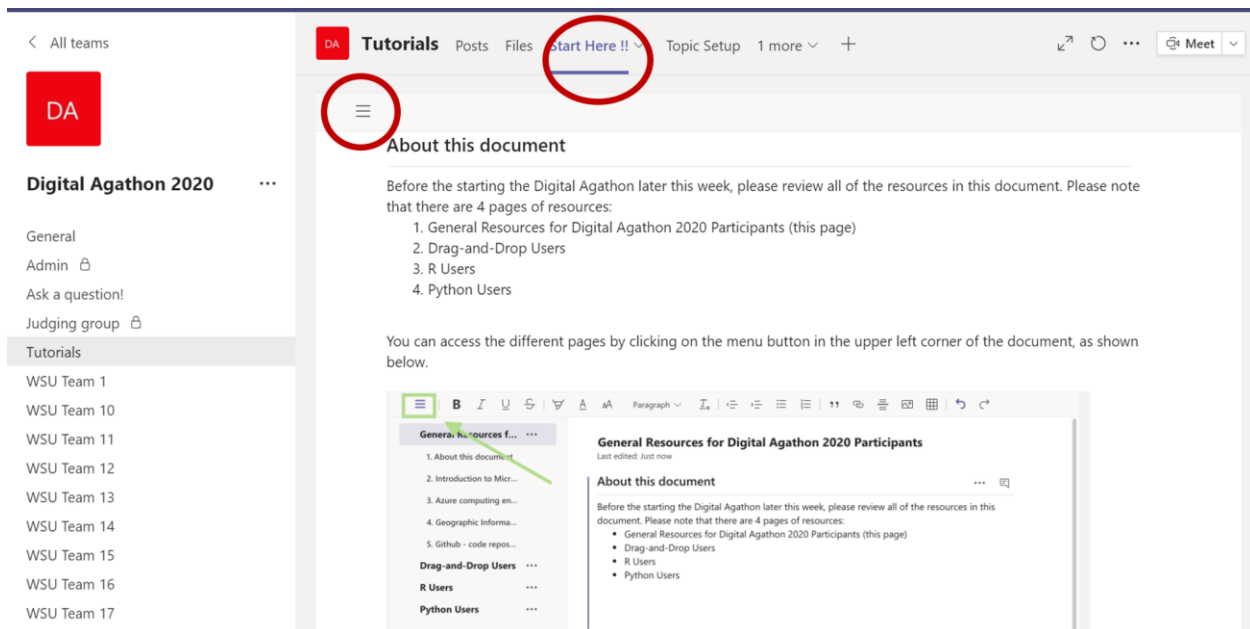
After clicking on the "menu" you will see all the pages as a sidebar (see below).
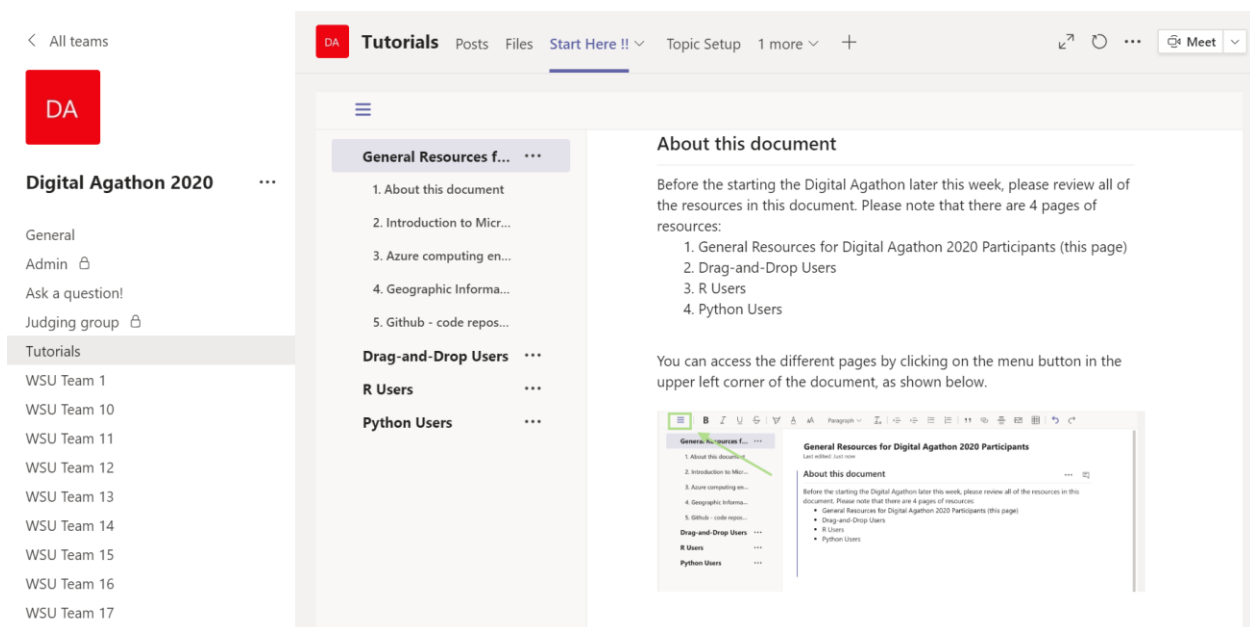
2020 D1G1TAL AgATH0N EVALUATION RUBRIC

Category	Weak-Moderate (1-3)	Decent-Good (3-7)	Very Good-Excellent (8-10)	Score
Creativity/Innovative Thinking [Approach, practicality]	Simple concept/standard approach Not a very practical solution	Approach has one or more creative aspects Solution has gaps for easy and practical implementation	Very creative solution Solution can be easily and practically implemented	
Teamwork [Roles and responsibilities]	Not all members were engaged	Members were engaged, but all team members do not understand the problem/solutions	All team members contributed to the proposed solution and shared responsibilities	
Technical Outcomes [Research understanding, questions, results/metrics - prediction/classification accuracies, mean average precision (MAP), F score, etc.]	Team was unable to understand and critically think through the research questions Results metrics were average or lower Team was unable to derive promises and limitations of the approach	Team was able to understand but unable to critically think through the research questions Results metrics were above average Team was able to weakly derive promises and limitations of the approach	Team was able to understand and critically think through the research questions Results metrics were highly desirable Team was able to derive promises and limitations of the approach	
Reporting/Presentation [Professional presentation – clarity + flow, visualization]	Presentation was unclear, lacked flow, and no integration of creativity Visualization was poor	Presentation was somewhat clear with decent flow of information, and some integration of creativity Visualization was decent	Presentation was very clear with excellent flow of information, and strong integration of creativity Visualization was excellent	

2020 D1G1TAL AgATH0N CODE OF CONDUCT

D1G1TAL AgATH0N 2020 is committed to diversity, equity and inclusivity, and providing a safe and enjoyable experience for all participants consistent with WSU's Executive Policy 15. Maintaining an environment where ideas can be exchanged free of harassment, discrimination, and hostile conduct is a shared responsibility for all of us.

Harassment includes but is not limited to offensive verbal or written comments related to gender, age, sexual orientation, disability, physical appearance, body size, race, religion, sexual images in public spaces, deliberate intimidation, stalking, following, harassing photography or recording, sustained disruption of talks or other events, profanity, inappropriate physical contact, and unwelcome sexual attention. To report inappropriate conduct please contact Von Walden (v.walden@wsu.edu) or Kirti Rajagopalan (kirtir@wsu.edu) and they will follow-up with the Office of Compliance and Civil Rights. You can also file a complaint directly at ccr.wsu.edu/file-a-complaint. Participants violating the code of conduct will be removed from the event.