

UC San Diego

Presentations and Posters

Title

An agile approach to managing a Data and GIS Lab

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WAML | September 27, 2024

UC San Diego

LIBRARY



An agile approach to managing a Data & GIS Lab

Mike Smith | Amy Work

Credit: UC San Diego

University of California San Diego

Campus Context

- 43,000+ student population & rapidly growing. Expected to reach 50,000 in 10-15yrs
- 140+ majors
- No geography department, multiple departments that teach GIS
 - Urban Studies and Planning
 - Scripps Institution of Oceanography
 - Global Policy and Strategy
 - Anthropology/Archeology
 - Health



Credit: Erik Jepsen/UC San Diego

What is our Data & GIS Lab

Geisel Library

- Patron serving space since the 1990's
- The *only* space on campus for GIS and data general support
- 5 physical machines + 2 monitor stations + 25 Virtual Machines
- A space for drop-in questions, consultations with librarians and where student assistants work on assigned projects
- Historically staffed with 4-6 student employees, 10am-6pm M-F, non-overlapping shifts (6-10 hrs/week)
- 4 support Librarians who are *on-call* for questions



Software

The lab has specialized software which cannot be found anywhere else on campus.

Physical Lab Machines

- Abbyy Finereader
- Agisoft Metashape Standard
- Anaconda Python
- ArcGIS Business Analyst
- ArcGIS Desktop
- ArcGIS Pro
- Google Earth Pro
- QGIS
- SAS 9.4
- SketchUp 2023
- SPSS
- Stat/Transfer
- Stata
- Tableau Public
- **Python can be installed by users*
- **R / R Studio can be installed by users*

Virtual Machines

- ArcGIS Pro
- PowerBI
- NVivo
- QGIS
- SAS
- Stata
- SPSS
- **Python can be installed by users*
- **R / R Studio can be installed by users*

Data & GIS Lab Service Models

Historical service models since 2005

1. Full time staff in the lab with students (starting in 2005)
2. Library staff on-call/Library office hours with students (2011)
Trying to cover hours students weren't working to provide full coverage
3. Part-time manager with no students (2014 for 6 months)
4. Students only until with Library staff on-call (some more advanced students) (2014)
5. Students + hiring of GIS Librarian (2017-pres.)

Student Employee Projects

In addition to supporting drop-ins

Downloading of data

County/city agencies

Creating scripts to assist with this

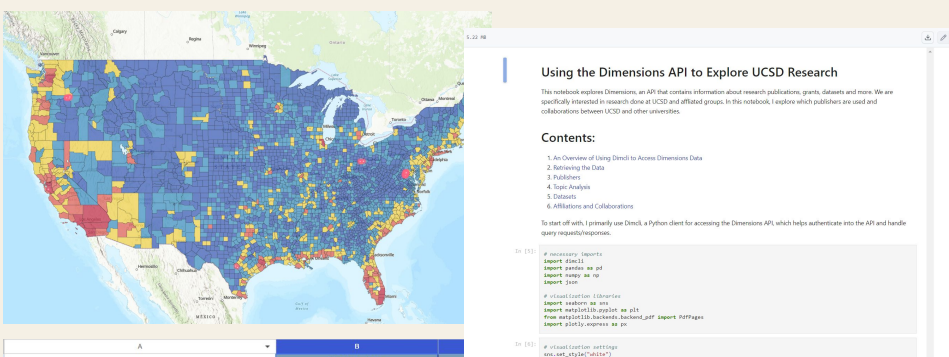
Upgrades to Lab materials - marketing, software

ArcGIS Indoors with Campus Admin

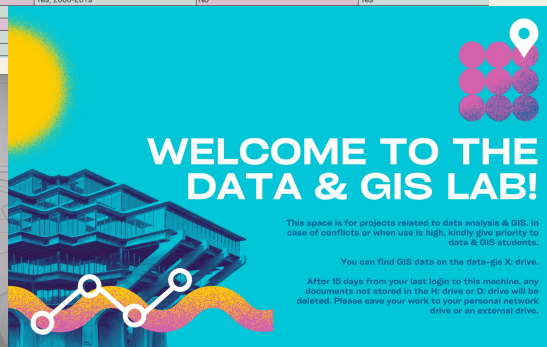
Dimensions Project looking at research collaborations

Enrollment Statistics gathering, Lab statistics (PowerBI)

Mapping Data Centers and climatic variables



	Social Explorer	PolicyMap	StratifyAnalytics	Sage Data (State Planner)
Advocacy data KY Unregistered	No	No	No	
Advocacy data IA	Yes	No	No	
Annual Homeless Assessment Report (AHAR)	No	Yes, 2007-2020	No	Yes, 2011-2023
Appalachian Regional Commission Distressed Areas	No	Yes, 2012-2019	No	
Area Deprivation Index	No	Yes, 2015, 2020	No	No
Areas likely to fall within the path of flights as they take off and land	No	Yes, 2012	No	
Australian Bureau of Statistics	No	Yes, 2019	No	Yes
Available ICU beds (Kaiser Health News)	No	Yes, 2008-2016	No	
Average UV Index	No	No	No	
Barchart	No	No	No	Yes
Baseline Resilience Indicators for Communities (BRIC) Index	No	Yes, 2010, 2015, 2020	No	
BI CENSOIS (Brooms and Herzogovna)	Yes	No	No	
Black Knight Home Sales	No	Yes, 2008-2023	No	
Black Lives Matter Protests, 2020 (New York Times)	Yes	No	No	
Bridge Conditions	No	Yes, 2020	No	
Brownfields Sites Reports	No	Yes, 2021	No	
BSE Limited	No	No	No	Yes
Building Permits	Yes, 2017-2019	No	No	
Bureau of Economic Analysis: Personal Income	No	Yes, 2000-2020	Yes	Yes
Bureau of Economic Analysis: SNAP Benefits	No	Yes, 2000-2011	No	Yes (from USDA)
Bureau of Labor Statistics Quarterly Census of Employment and Wage	No	Yes, 2000-2019	No	
Business Dynamics Statistics	No	Yes, 2006-2020	No	Yes
Business Incubators	No			
California Favorability Data	Yes			
Canadian Census 2011	Yes			



Why this agile approach?

A way of organizing things

Students late or not showing up to shifts | Librarians in meetings

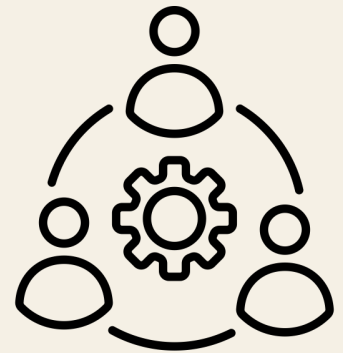
More in-depth questions from student employees | two minute staff drop-in

Previous support focused on supporting patrons, less on Library projects

The introduction of Zoom + hybrid work

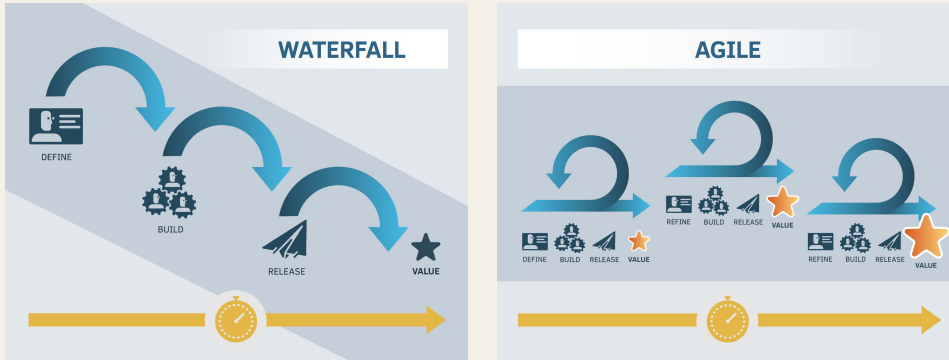
Scheduling of Lab meetings (students + staff)

Other Library projects using Agile (Project Surfliner/GeoBlacklight)



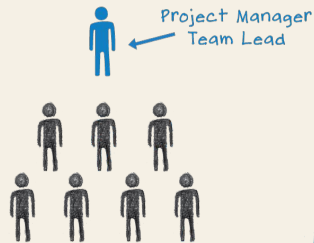
Created by Faizal khusein
from Noun Project

What is Agile?

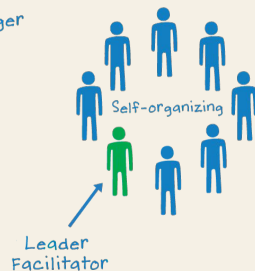


<https://resources.scrumalliance.org/Article/differences-agile-scrum-differ-waterfall>

Traditional Teams



Agile Teams



<https://sivacharangireddy04.wordpress.com/2014/09/21/the-agile-team-and-backlogs/>

A set of values and guiding principles

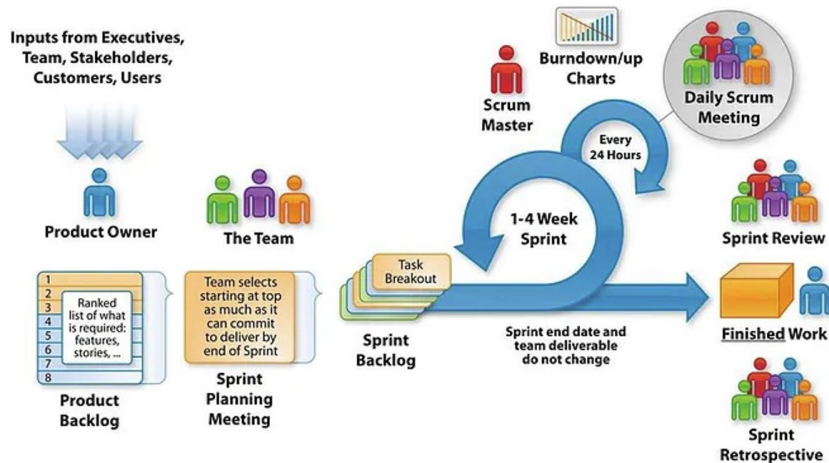
- A response in the software development community to “waterfall development”.
- It is a mindset or philosophy that values *adaptability* and *responsiveness* to change throughout.
- Focus on the people doing the work and how they work together--collaboration.
- Prioritizes delivering working software in shorter timeframes, gathering feedback, and making continuous improvements.

Shead, Mark, (2016, March 3). What is Agile? *The Musing of Mark W. Shead*
<https://blogs.harvard.edu/markshhead/what-is-agile/>

Agile Manifesto <https://agilemanifesto.org/>

Agile Methodologies

The Agile - Scrum Framework



Scrum is a specific Agile framework

- Breaks work into smaller, manageable chunks - workcycles and sprints
- Specific roles (Product Owner, Development Team)
- Events (Sprint Planning, Daily Standups, Sprint Review, Sprint Retrospective),
- Artifacts (Product Backlog, Sprint Backlog, Increment) to guide the development process.

<https://medium.com/@pamardolly/chapter-2-scrum-roles-2276f95bdef>

Scrum Alliance (2023, January 1), Scrum Essential in 10 minutes

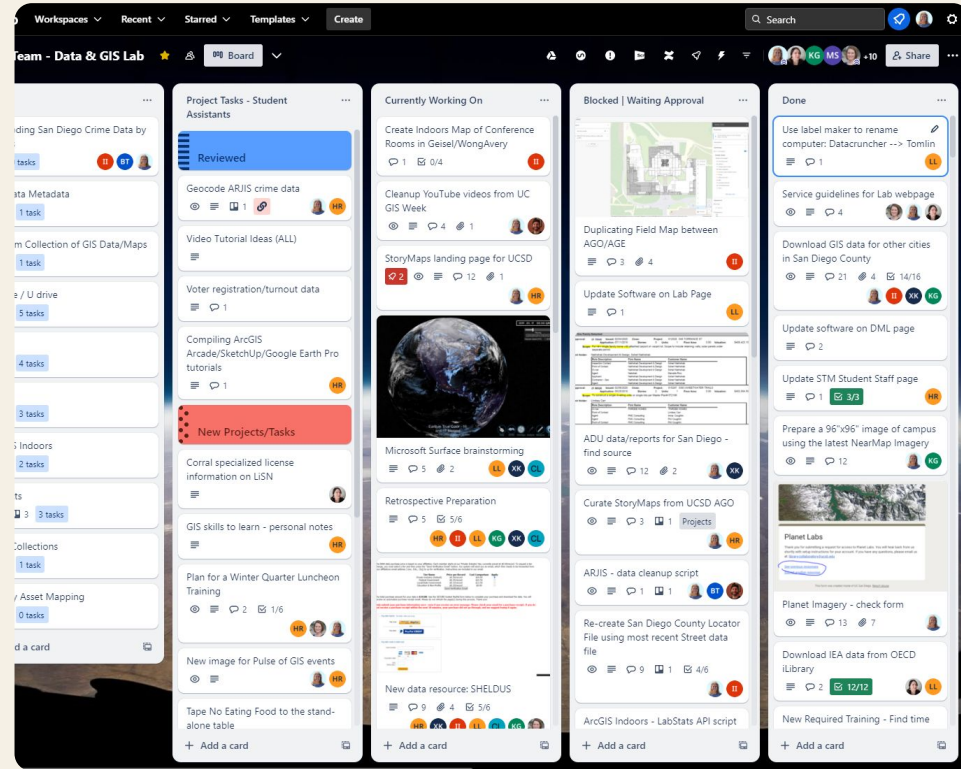
<https://www.youtube.com/watch?v=RtQ3tpq-RuE&t=413s>

Agile Frameworks (2024, September 20),

<https://www.roweb.ro/blog/agile-vs-waterfall/>

agile implementation in Data & GIS Lab

- Trello board & Slack
- Quarterly workcycles
- Weekly virtual stand-ups/meetings (30min)
 - What are you working on? Are you stuck? Do you have enough work?
 - Quarterly in-person meetings
- Formal retrospectives (Miro or Retrium)
 - 4L: Like, Learned, Lacked, Longed for
- Backlog refinements as a group (ad hoc)



Retrospective

Liked

Add notes about what you or your team enjoyed about the iteration. In particular, what went better than expected? Emphasize the positive.

Lab Tech/Software

EXPAND GROUP

liked how we are always exploring new applications (like this one) and just a lot of new stuffs!!

Weekly Lab Meetings

EXPAND GROUP

Like our weekly checkins

the Team

EXPAND GROUP

I like how we student assistants have been working together more on Trello tasks lately. I think it may partly be due to the fact that there are more of us this quarter, but nevertheless it has been good

Learned

Add notes about what new things you or your team learned during the iteration. These can be technical or nontechnical.

Learned

EXPAND GROUP

LLMs, network analysis and other work that you've all talked about

Layout of the back room offices

honestly I learned a lot about scoping project from those brainstorming/research projects

Trello

EXPAND GROUP

I really enjoy working on the small tasks and the discussion on trello for sharing ideas

Lacked

Add notes about the things you or your team could have done better during the iteration.

More training on finding data

More equitably distribute projects

More clarity

EXPAND GROUP

More clear about what is higher priority on the Trello board so people can tackle the most urgent priorities first

How can we better connect Data & GIS Lab students with other services/functions in the Library for referrals or collaboration?

Project close out - process to

Longed For

Add notes about the things you or your team desired to have during the iteration that were not available. These can be technical or nontechnical.

More librarian/student connection

EXPAND GROUP

As a librarian, I don't feel like I have enough time to connect with the student employees. Do you feel like you have enough face time with and guidance from us?

More demos from all to see what great work everyone is doing.



Credit: UC San Diego Library

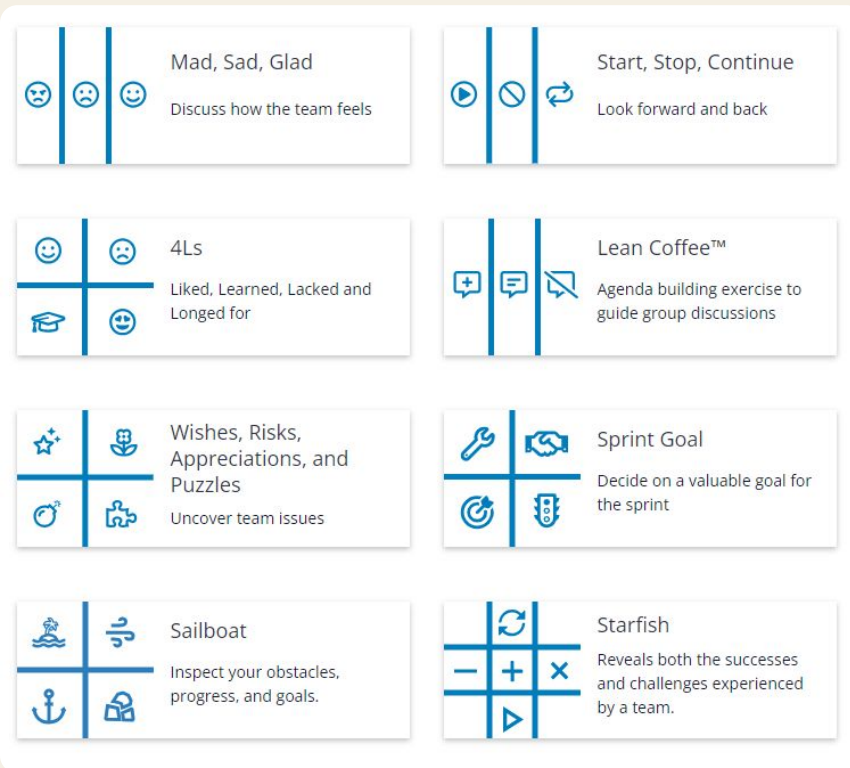
Results of agile approach

- With constant employee turnover, our Trello board and weekly meetings makes it easier for new students to get into the flow of things
- Weekly virtual meetings result in a more cohesive group who are willing to support each other
- Improved communication through Slack resulted in fewer missed shifts, and faster troubleshooting of patron questions
- Students are self-starting new projects by adding cards to the Trello board
- Retrospectives provide feedback that we can use to make continuous improvements

What's Next?

Fewer students for next 2-3 years due to budget cuts

- Continued retrospectives (examples→) in addition to the 4Ls
- More demos from students and staff
- More dedicated time for backlog refinement and planning
- Adapt, adjust, learn, and move forward to make a better space for students, staff and patrons



Example Retrospective Templates from Retrium

www.retrium.com/retrospective-techniques

Thank you

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lib.ucsd.edu/data-gis-lab