MOMENTUM

“JUST DOUBLE IT.”

Anita Leung, Austin Ha, Haley Ruth, Josh Pollock, Leon Pan

BACKGROUND AND MOTIVATION

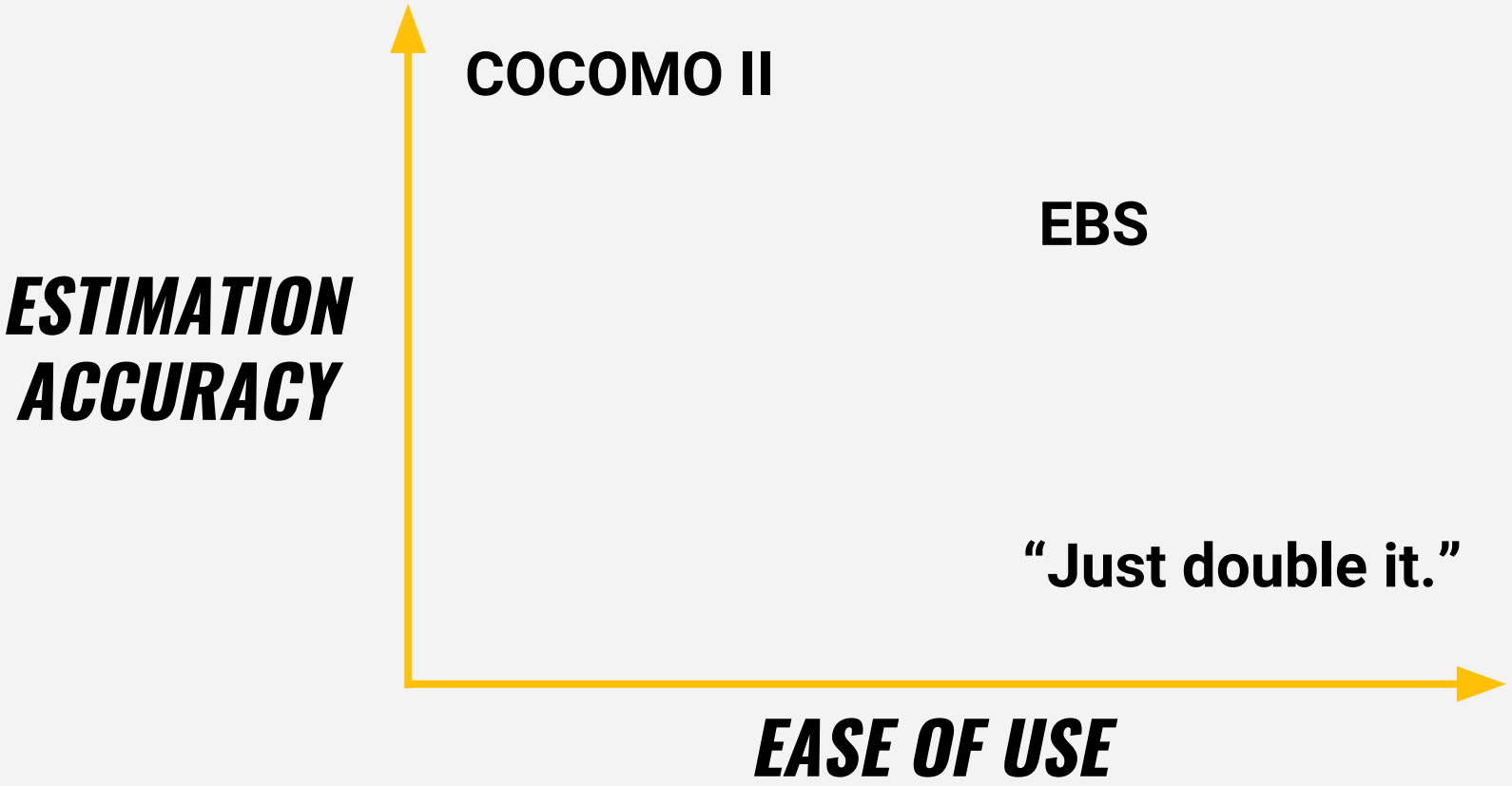
- Development teams want to know how long their projects will take.

effort estimation tool := estimation model + UI

- An **estimation model** should balance the work required by the developer and the accuracy of the estimation.

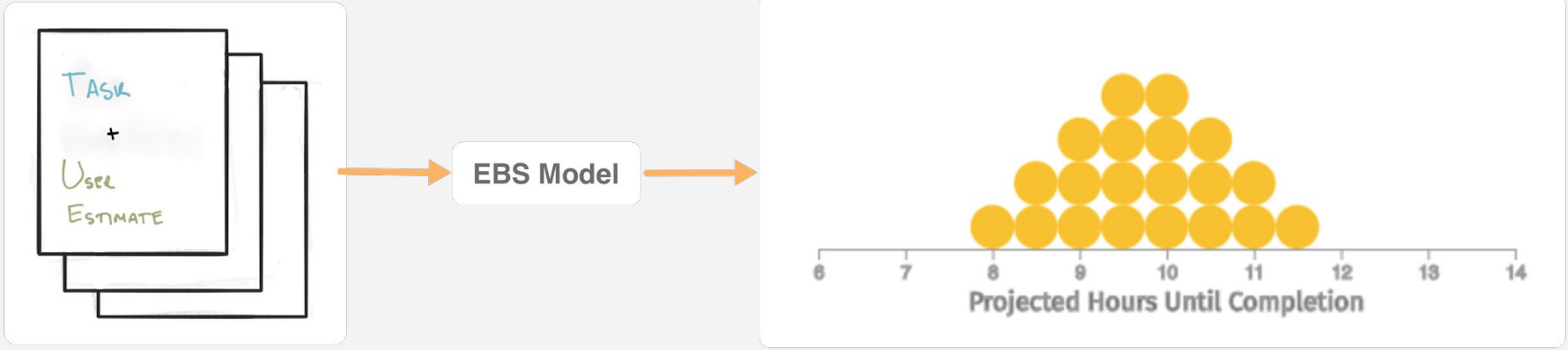
- A **UI** should provide a simple interface to the estimation model.

ESTIMATION MODELS



EVIDENCE BASED SCHEDULING (EBS)

- A statistical technique for estimating project completion time.

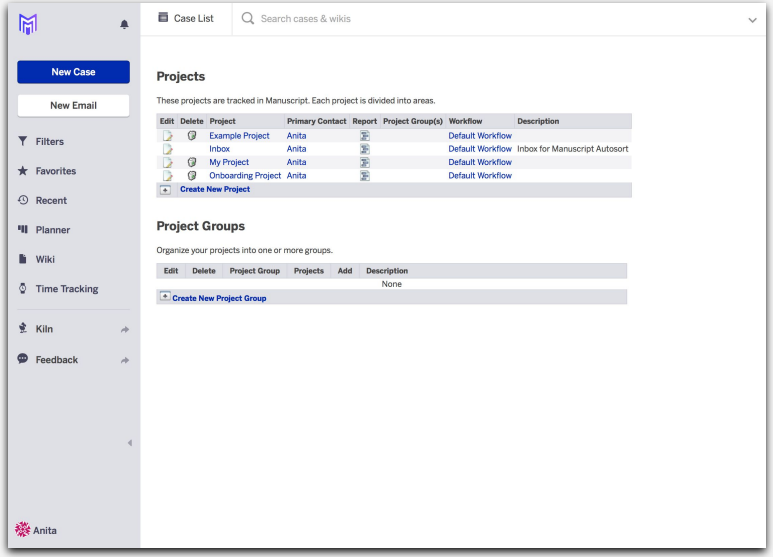


GOAL

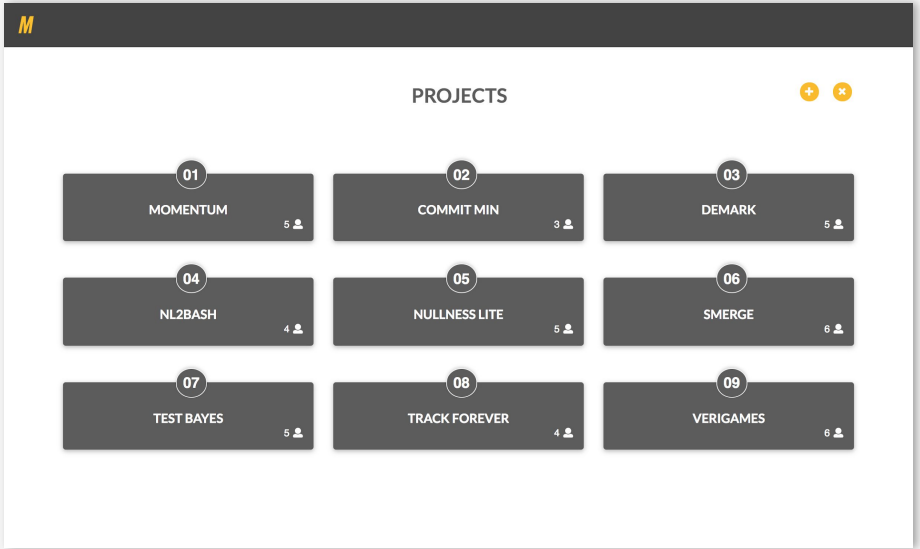
Momentum will be **easier to use** and **more accessible** than existing effort estimation tools.

UI COMPARISON: PROJECTS PAGE

Manuscript

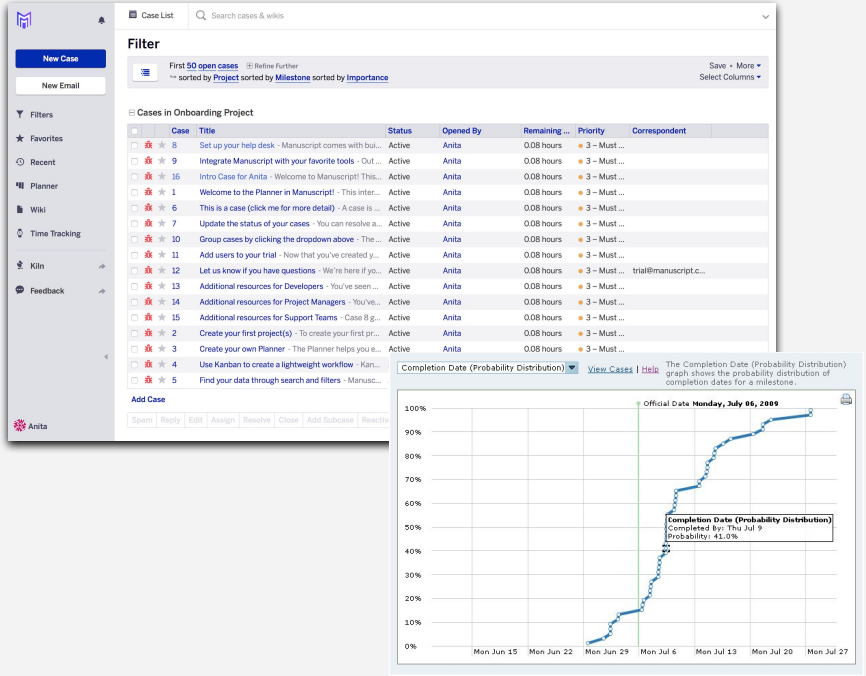


MOMENTUM

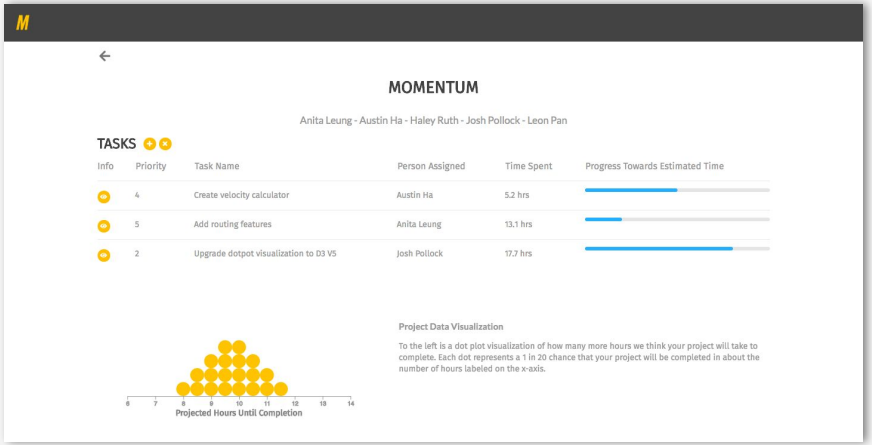


UI COMPARISON: TASKS PAGE

Manuscript

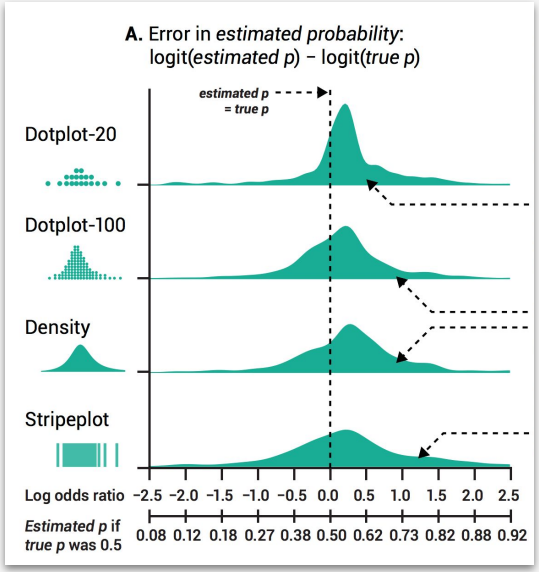


MOMENTUM



QUANTILE DOTPLOTS

- Discrete version of a continuous probability distribution.
- People can more accurately estimate probabilities from a dotplot with 20 points than from a density plot.



When (ish) is My Bus? User-centered Visualizations of Uncertainty in Everyday, Mobile Predictive Systems. Kay, Matthew *et al.* (2016)

USER RESEARCH: USERS

Current Job/Student Status	Years on project development teams	Years spent programming	Major/Degree
4th Year UW Student	1	6	CSE/HCDE
3rd Year UW Student	1	4	CSE
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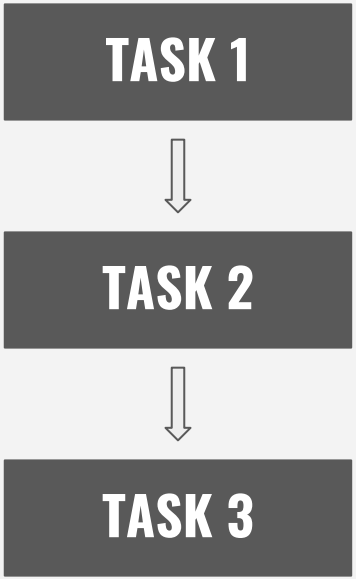
Two users tested Manuscript first, then version one of momentum. The other two users tested these in the opposite order. All users tested version two of momentum last.

USER RESEARCH: TASKS AS A USER STORY



Creating a new project

Creating a new task/case and entering estimations

Interacting with a created task

Users were asked to answer questions about their experience completing the tasks in a conclusion segment.

USER RESEARCH: TASK RESULTS- 90 SECOND COMPLETION

NEW PROJECT
(Task 1)

	User 1	User 2	User 3	User 4
Manuscript	✗	✗	✗	✗
Momentum 1.0	✓	✓	✓	✓
Momentum 2.0	✓	✓	✓	✓

NEW TASK/CASE
(Task 2)

	User 1	User 2	User 3	User 4
Manuscript	✗	✗	✗	✗
Momentum 1.0	✗	✓	✓	✓
Momentum 2.0	✓	✓	✓	✓

ALTER TASK
(Task 3)

	User 1	User 2	User 3	User 4
Manuscript	✗	✗	✓	✓
Momentum 1.0	✓	✓	✓	✓
Momentum 2.0	✓	✓	✓	✓

USER RESEARCH: CONCLUSION RESULTS

Users were asked “How would you rate your experience with [the tool] with 1 being the lowest and 5 being the highest?” The average user response for each tool was:

Manuscript	MOMENTUM 1.0	MOMENTUM 2.0
2.0/5	4.3/5	4.6/5

DEMO

LIMITATIONS

- Limited number of user studies
- Limited time to evaluate the effectiveness of our tools on long-term projects
- Limited time to complete user studies on small teams

CONCLUSION

- Momentum is easier to use and more accessible than Manuscript.
- Momentum lowers the barrier to entry for software effort estimation.

Manuscript

2.0/5

MOMENTUM

4.6/5

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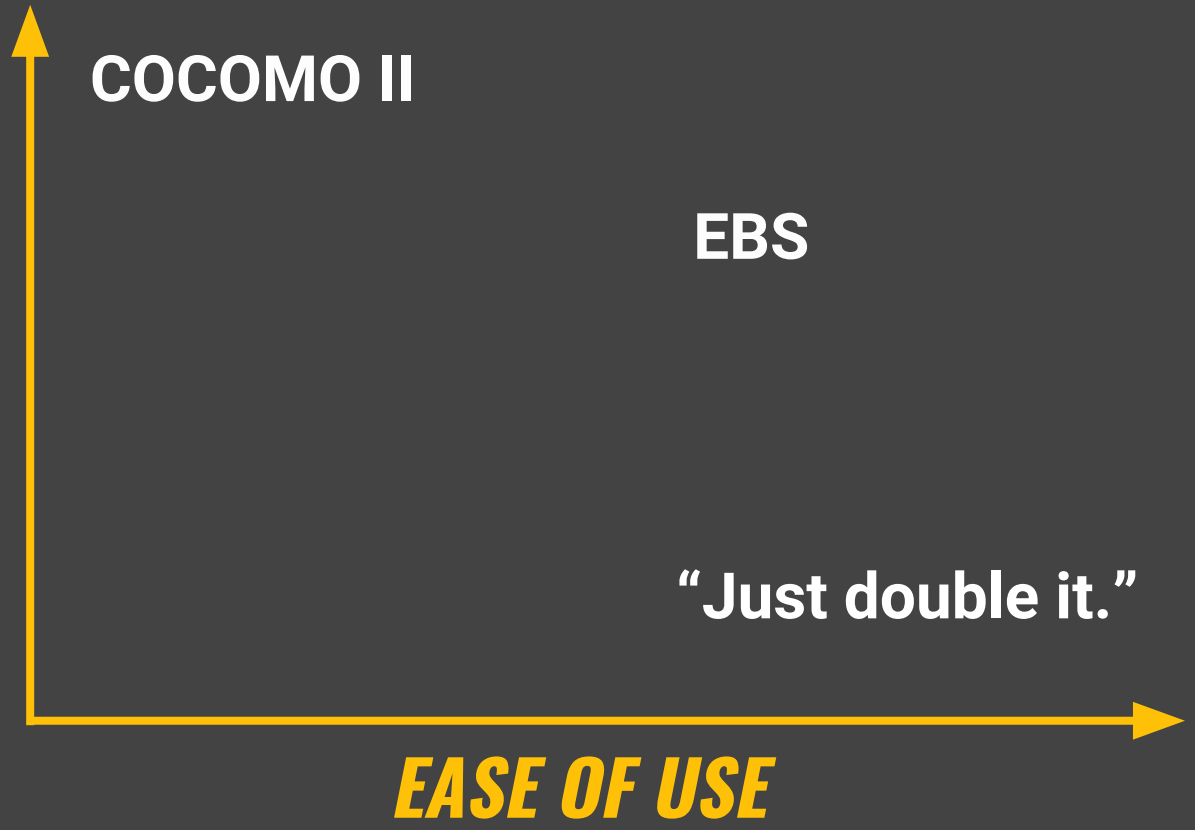

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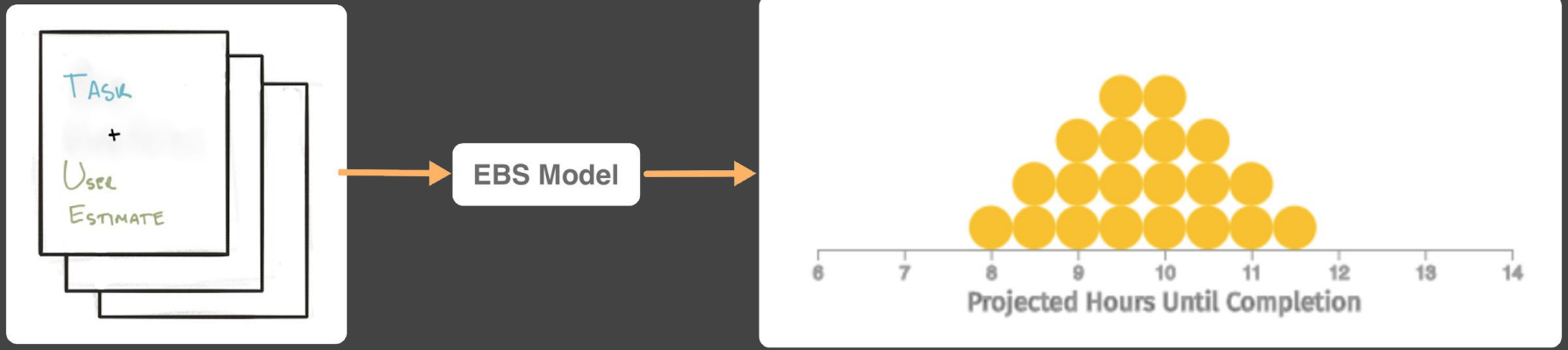

FEATURES COMPARISON

Features	Manuscript	MOMENTUM
EBS Model	✓	✓
Projection Visualization	✓	✓
Priority System	✓	✓
Progress Indicator	✗	✓
Iteration Planner	✓	✗
Kanban Board	✓	✗
Integration with Slack, Github, and Google Docs	✓	✗

GOAL

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UI COMPARISON: PROJECTS PAGE

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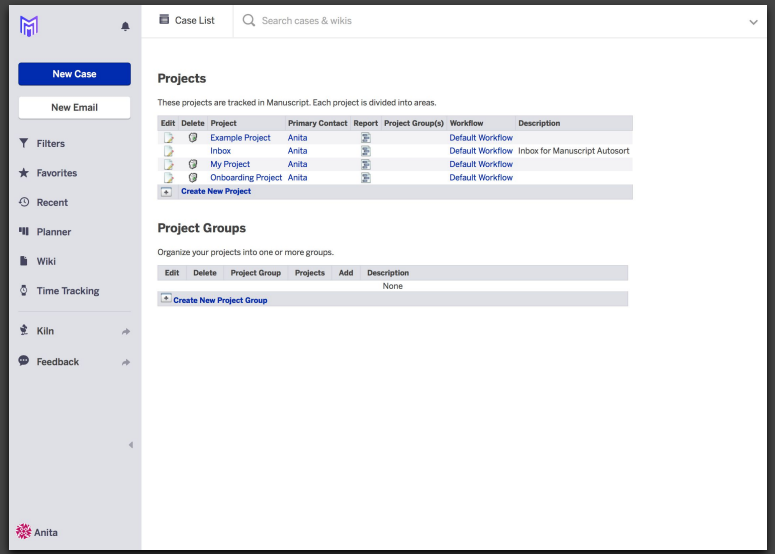

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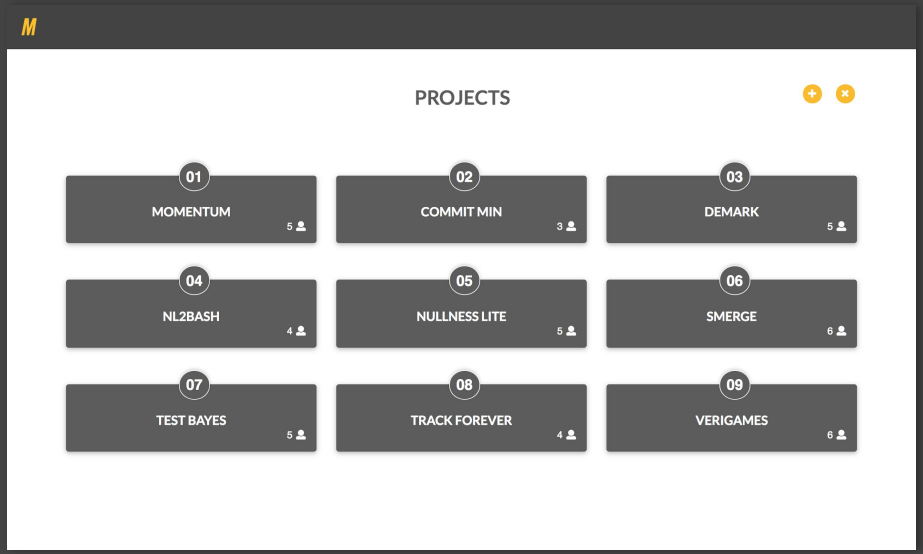

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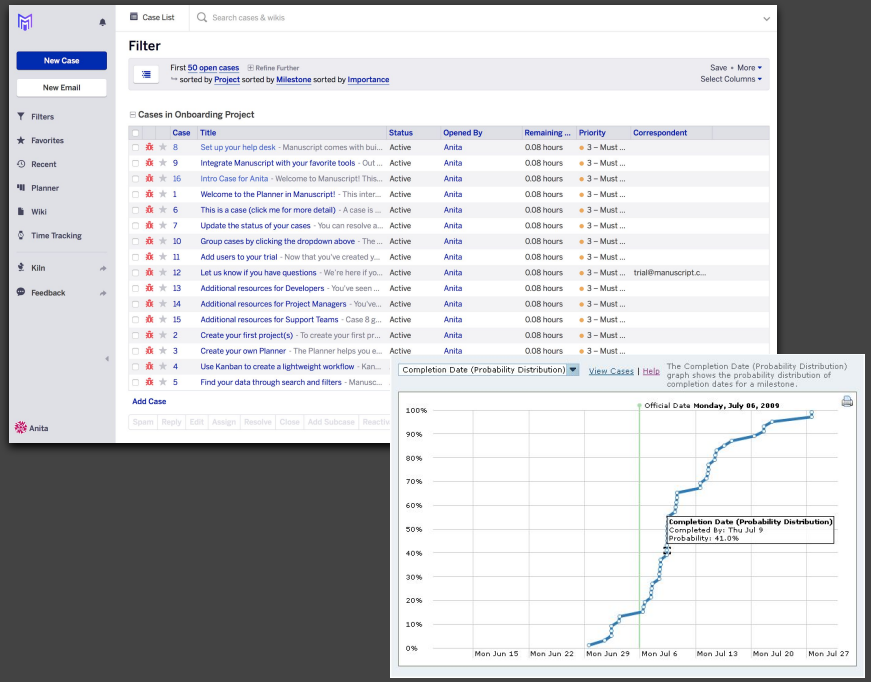

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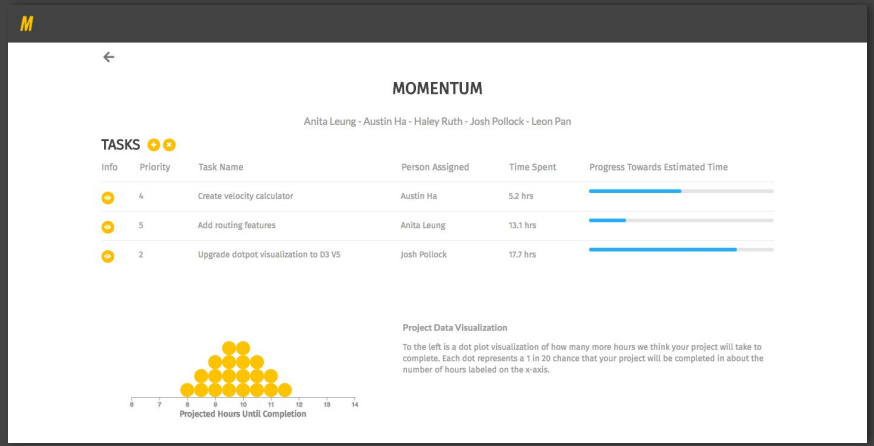

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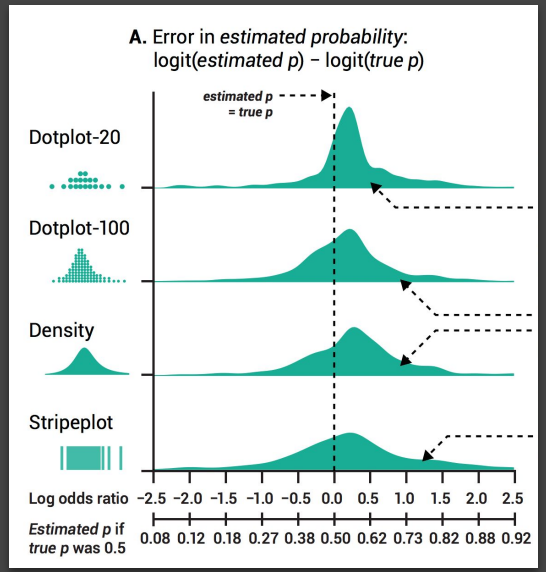

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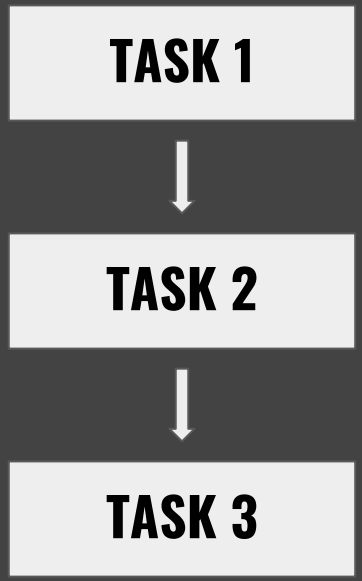

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