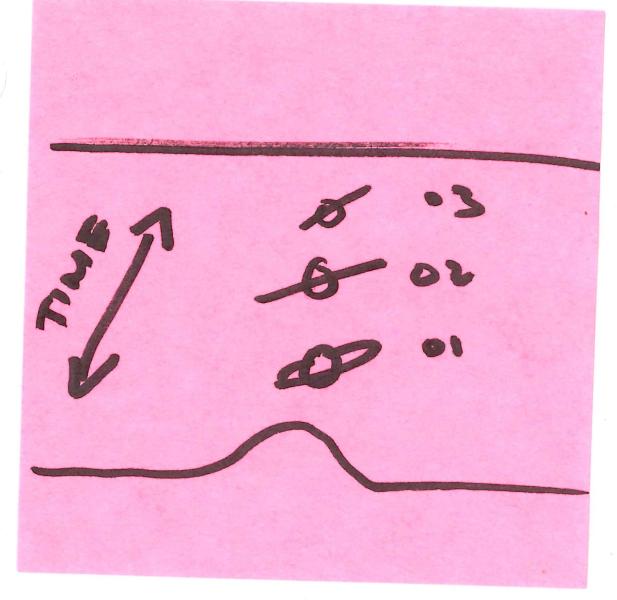
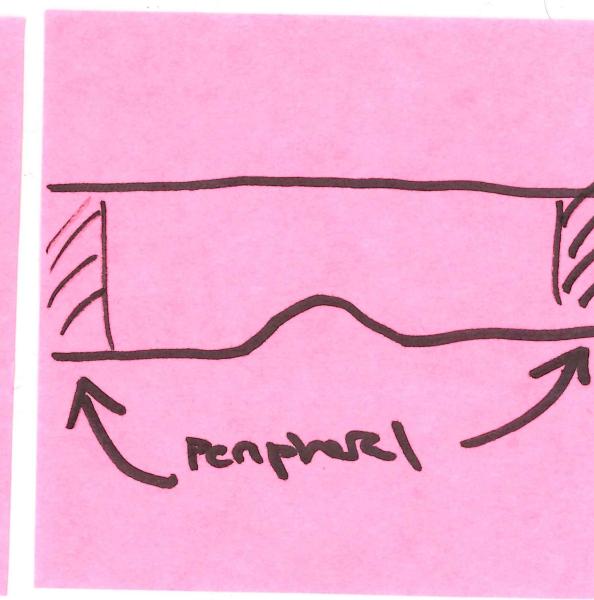
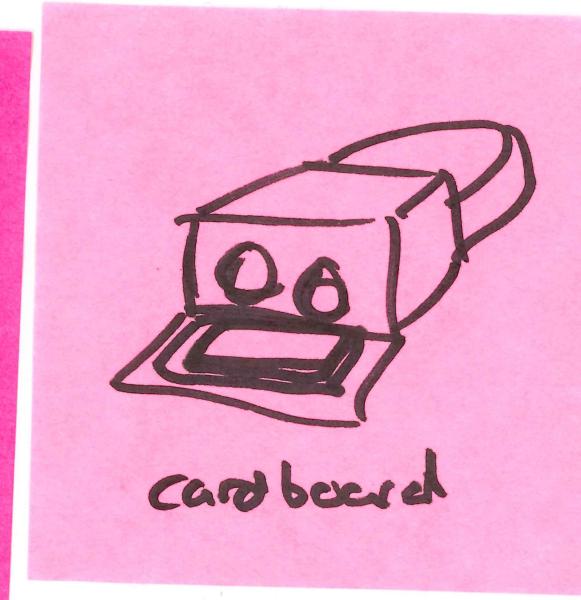
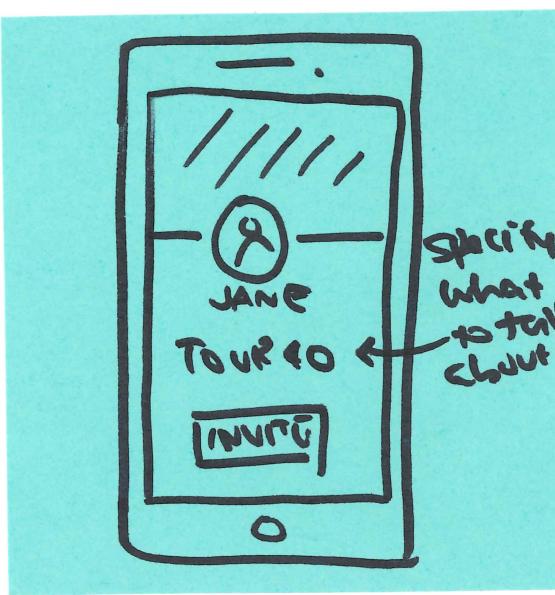
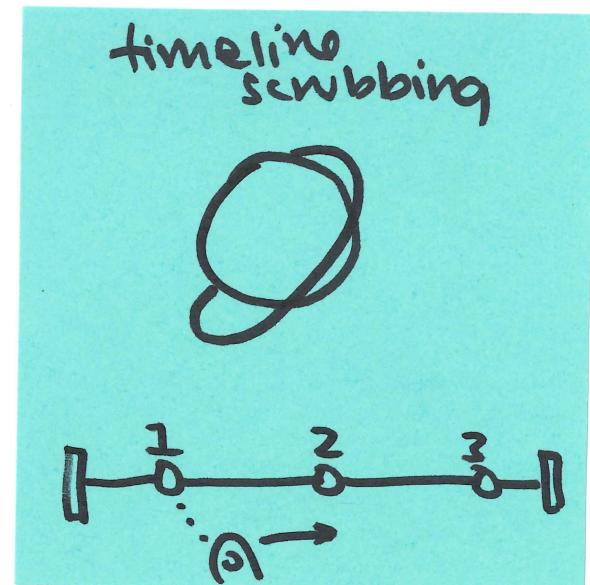
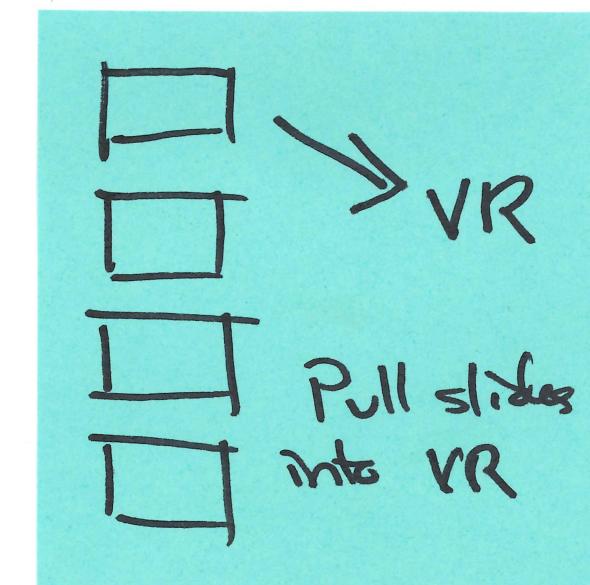
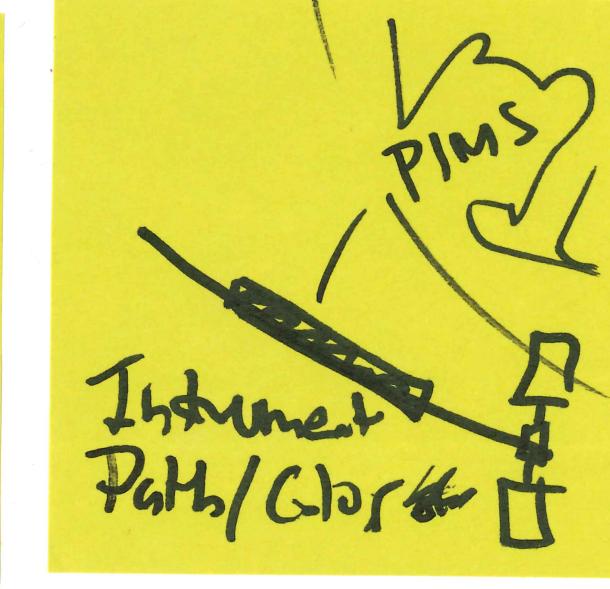
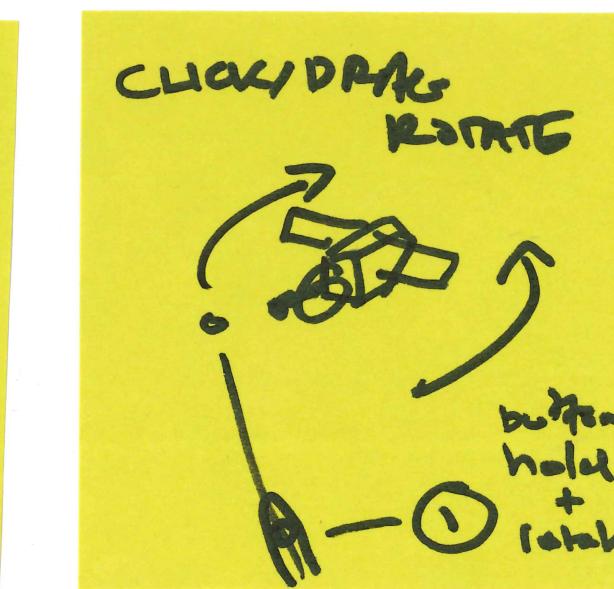
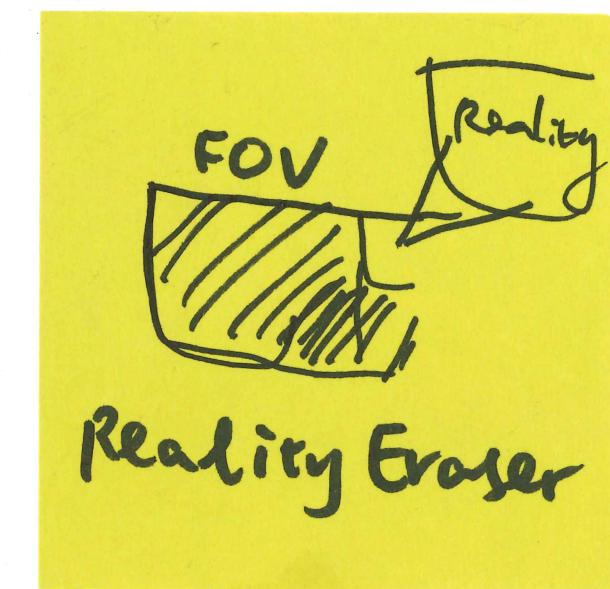
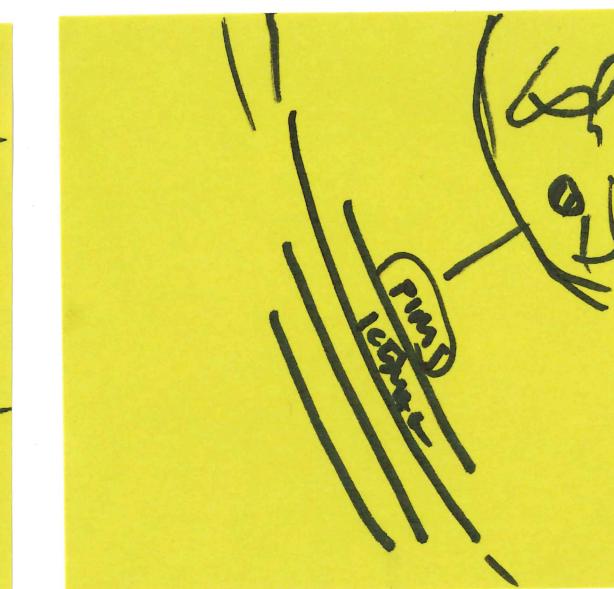
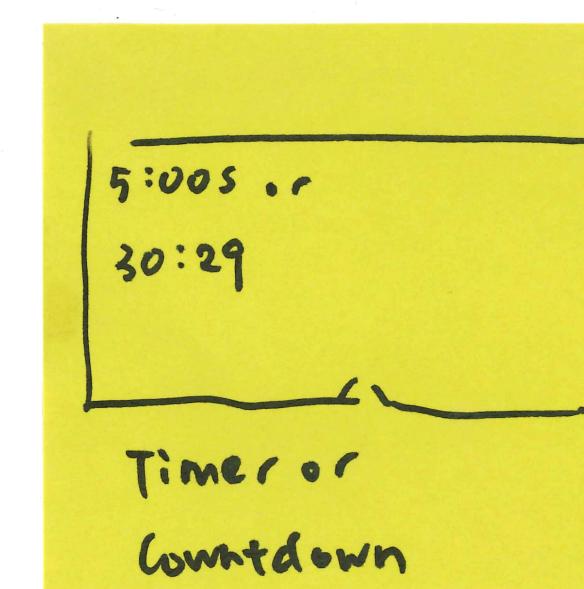
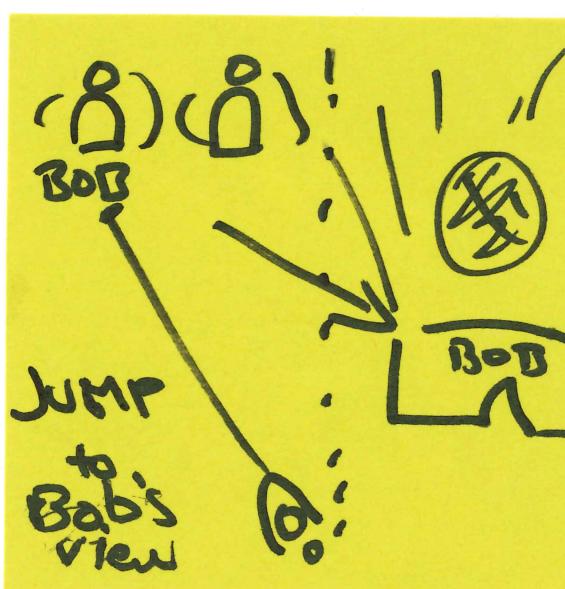
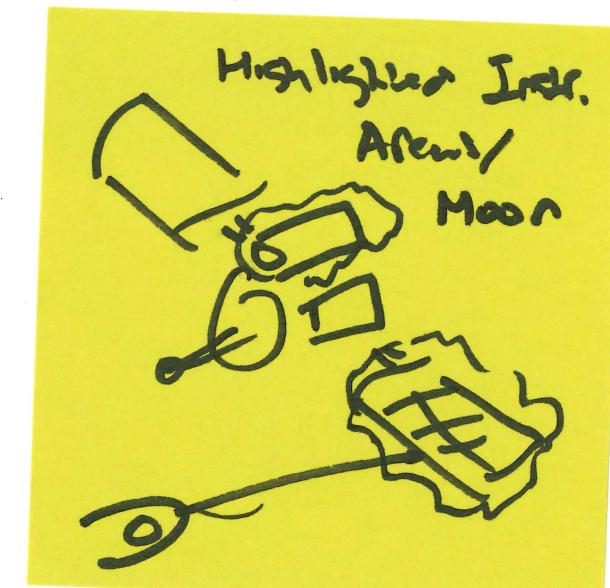
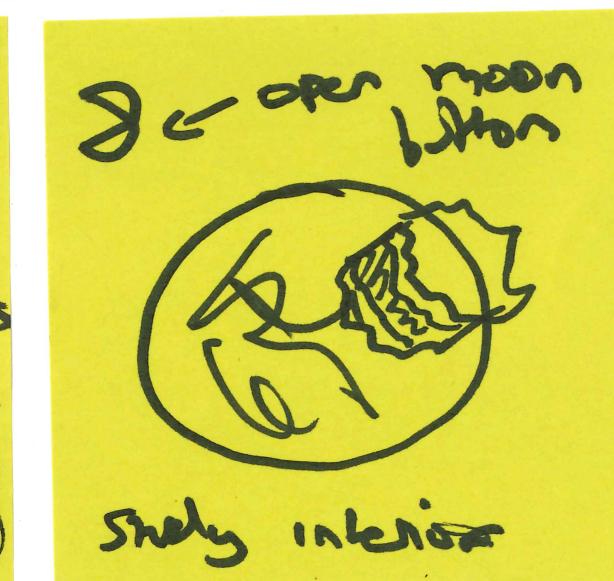
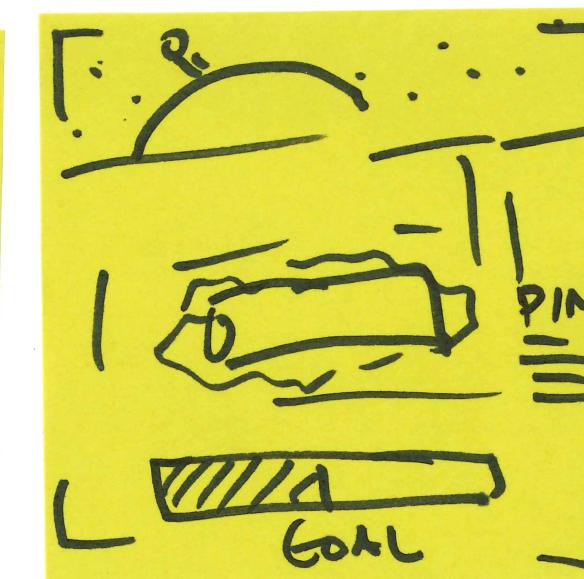
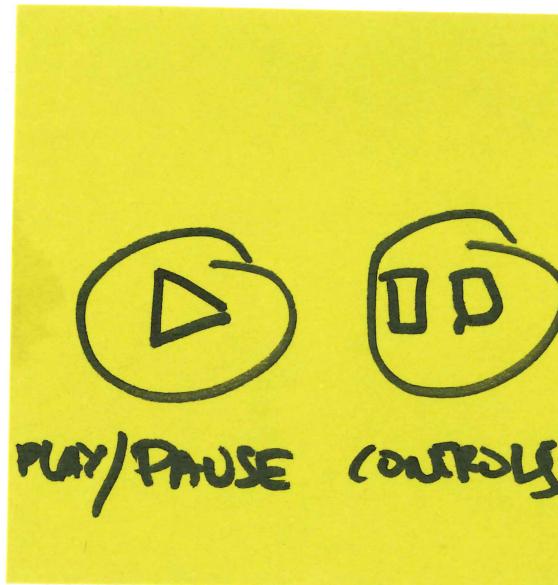


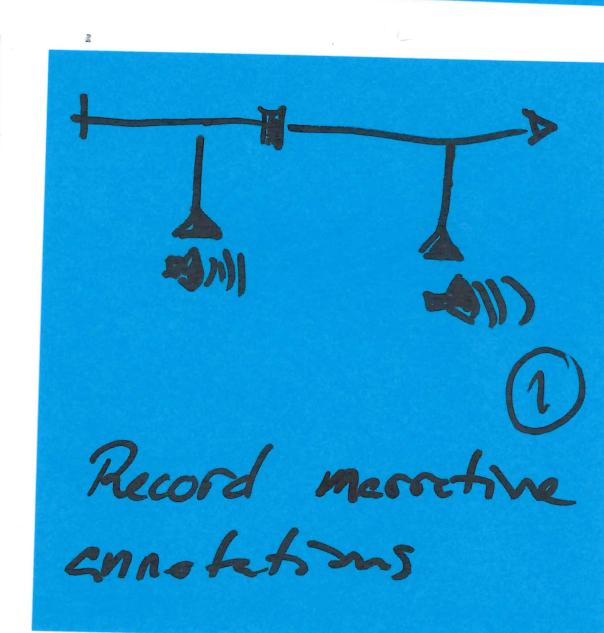
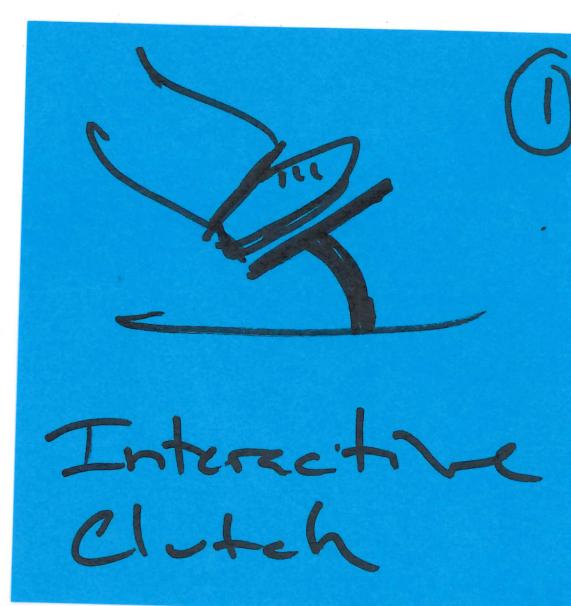
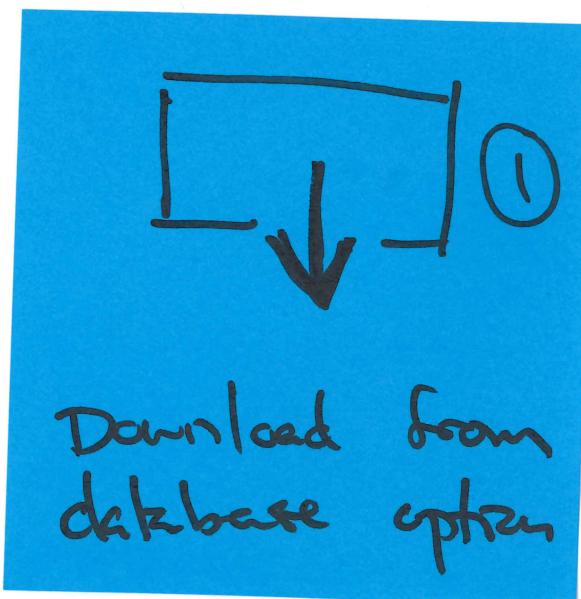
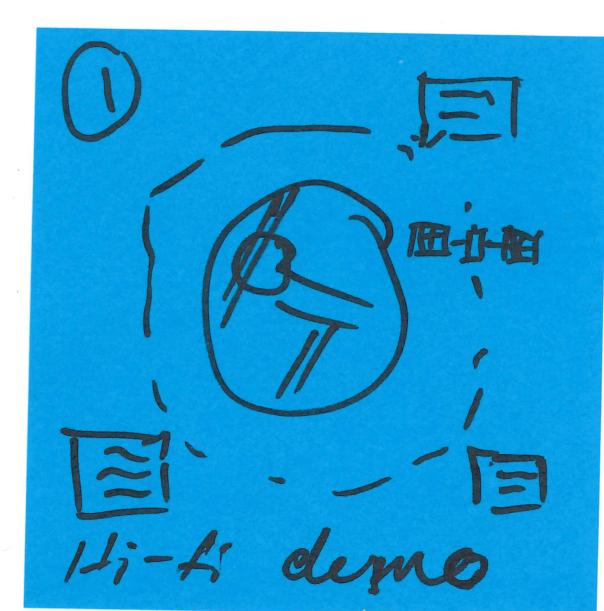
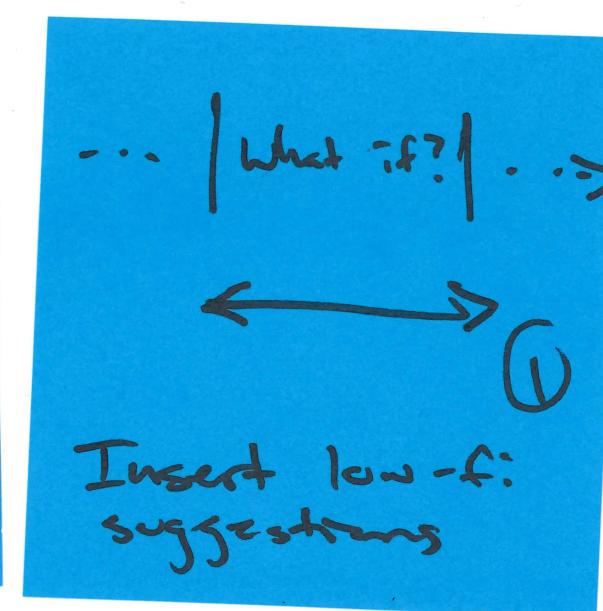
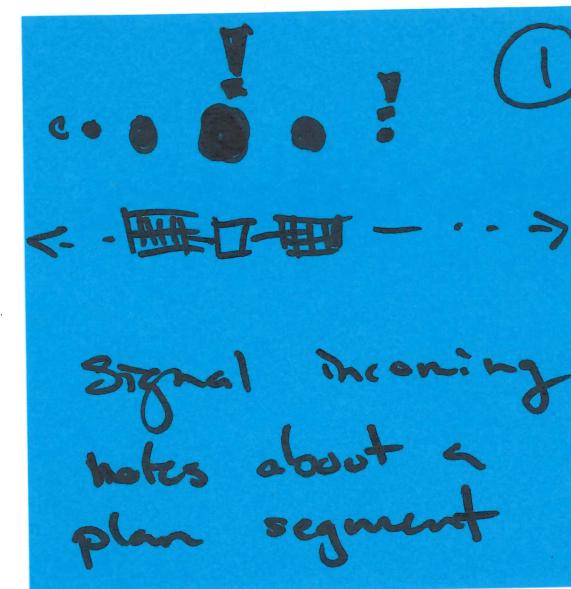
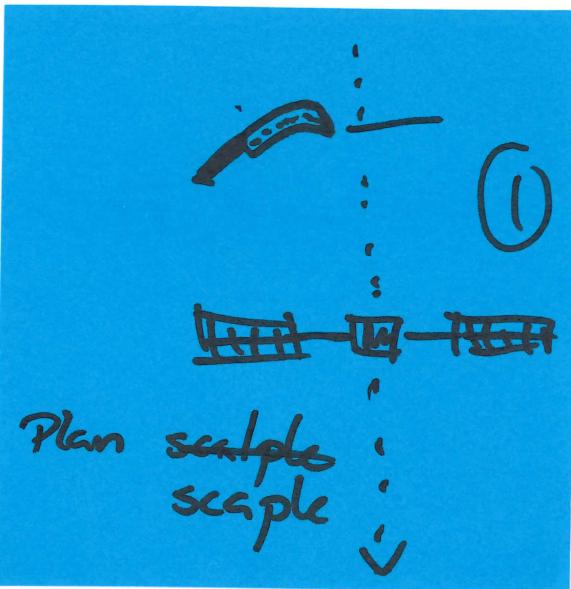
Unknown  
User and  
Context



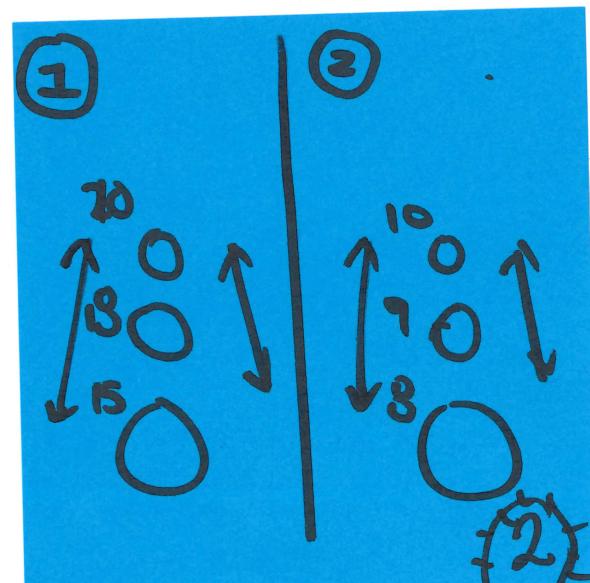
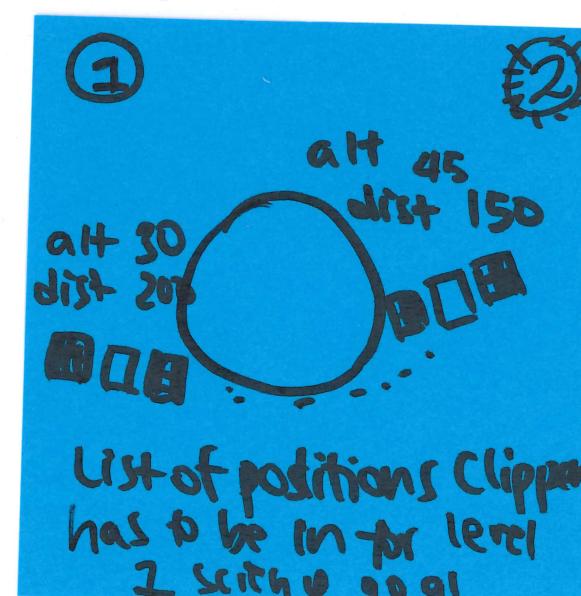
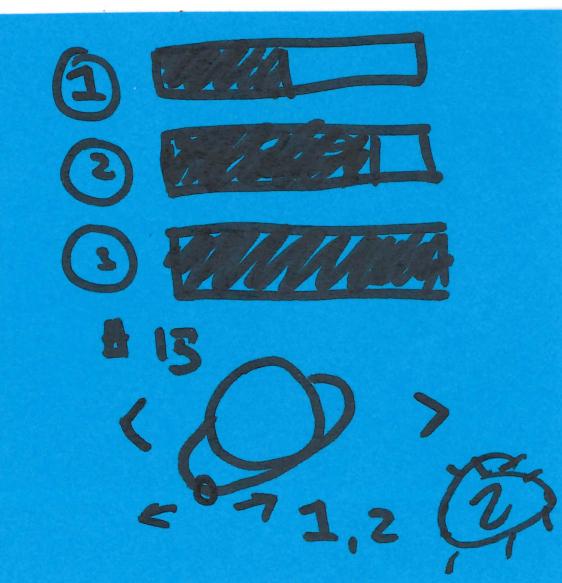




Mission planner wants to post a revised plan into Sandbox to easily demo a proposed change ①

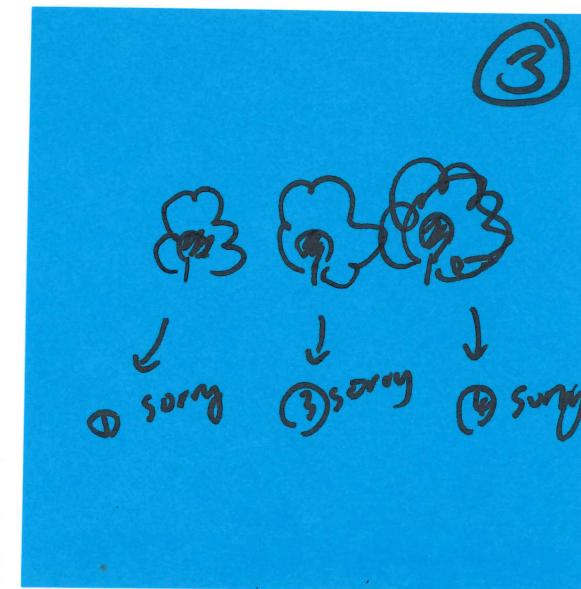
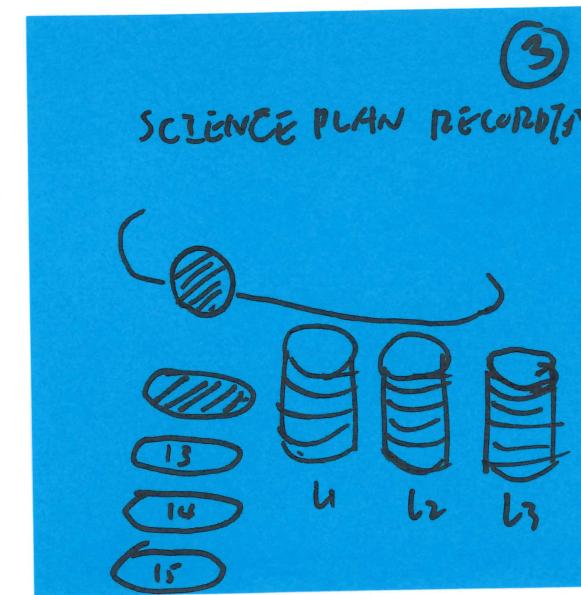


mission planner assessing how each trajectory (ie) support mission science goal(s)

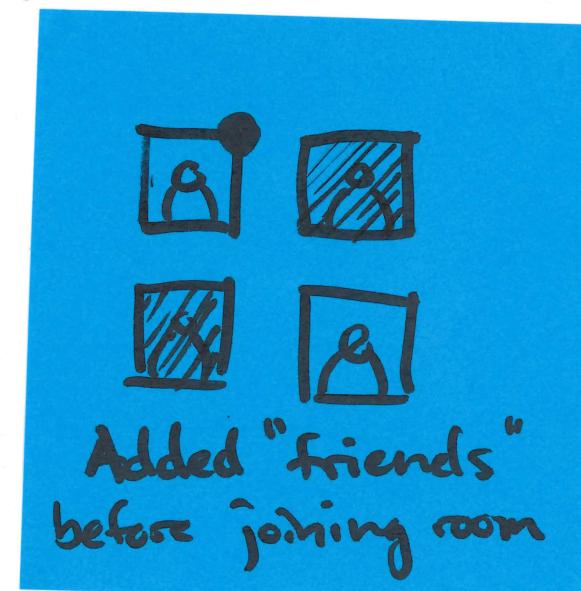
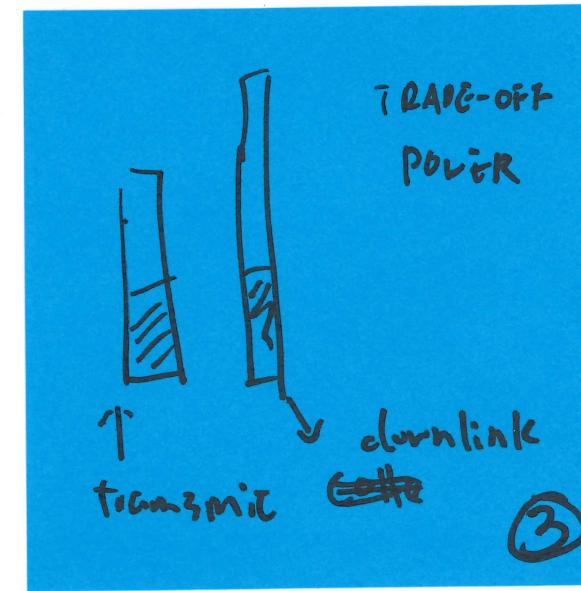
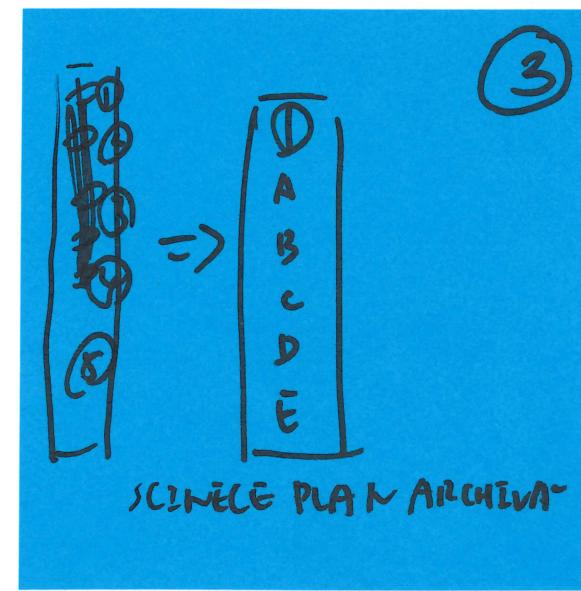


Mission Planner (3)  
communicates to  
Science Planners about whether to do  
change the trajectory  
designing one flyby or not

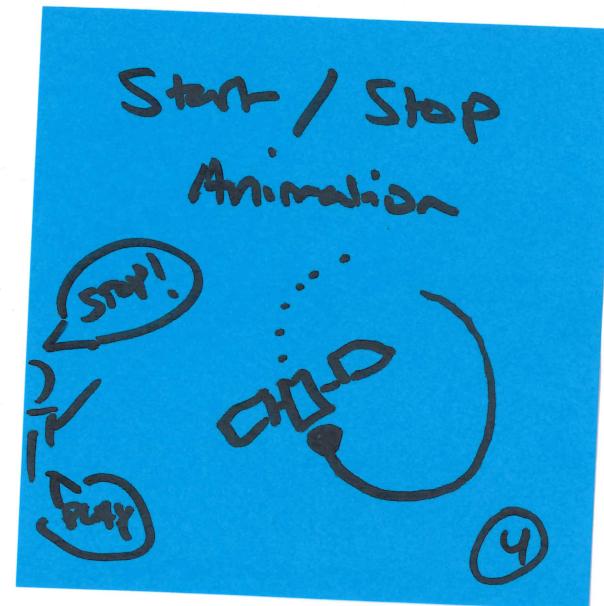
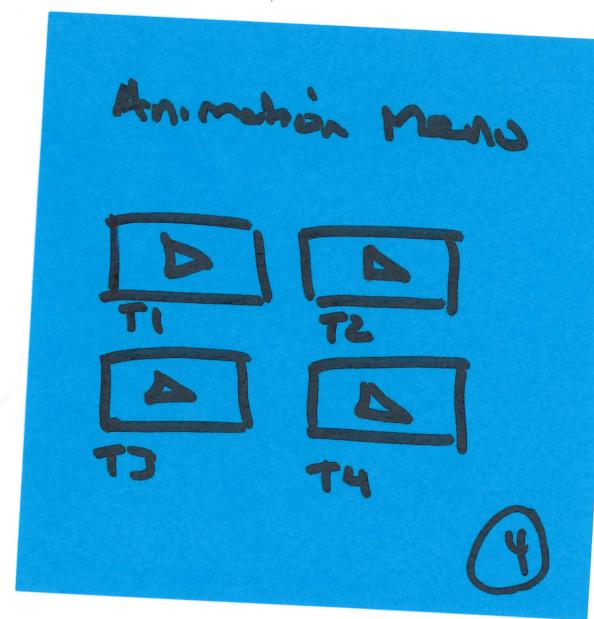
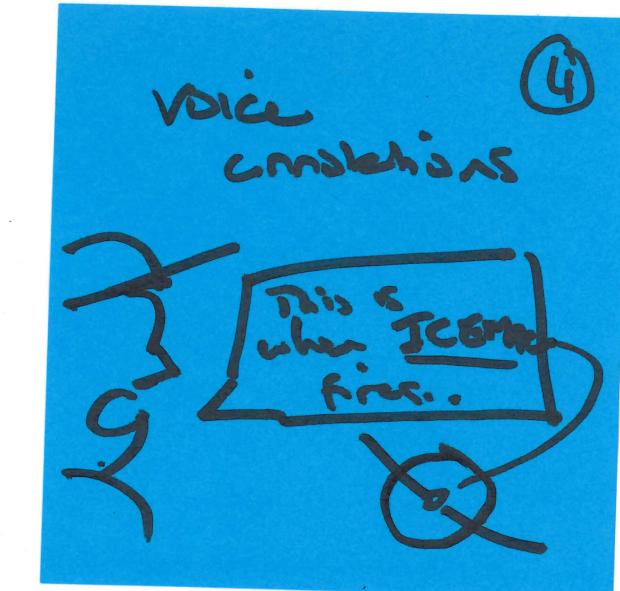
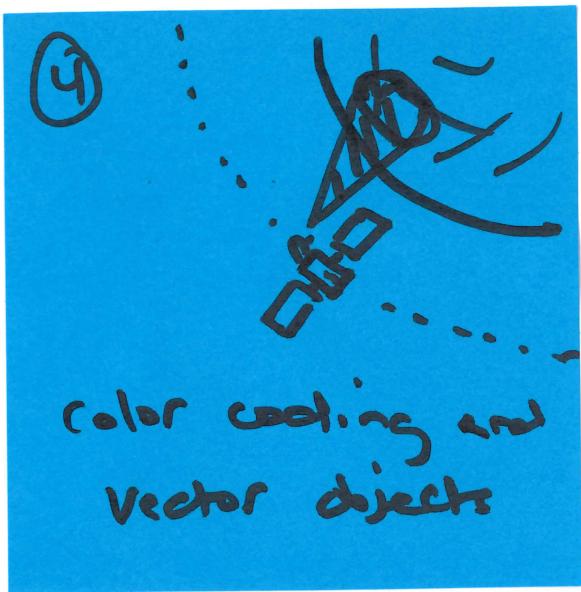
Time Count: ↑ (3)  
Difficulty ↑  
REAL TIME SIMULATOR.  
cost ↓  
Count Down: ...



EXPORT: (3)  
Email Notification to All ...  
~~DATA XXXX~~

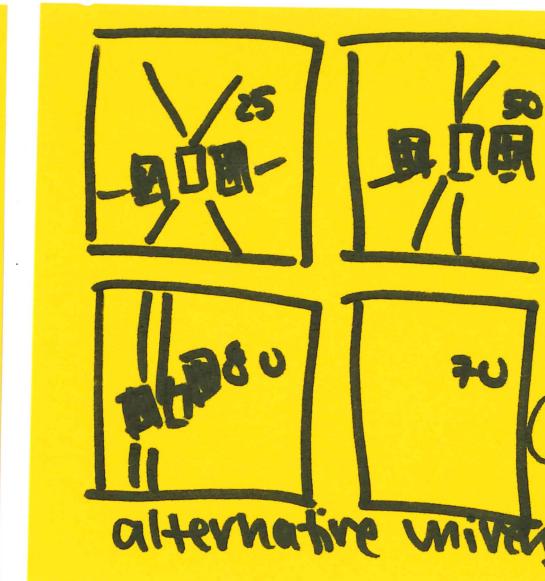
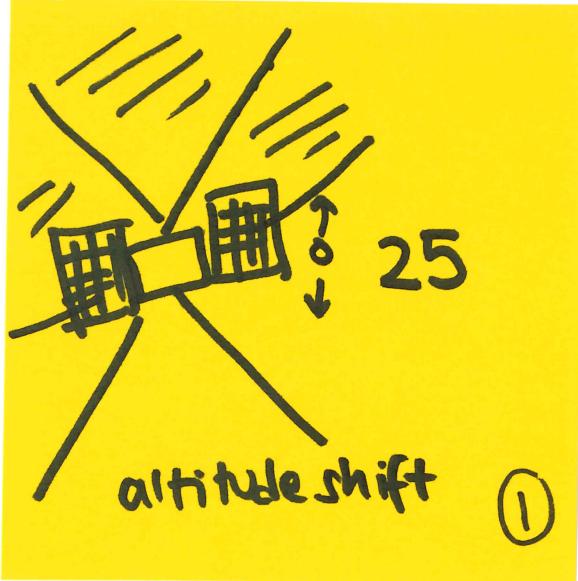


Create a quick  
animated  
simulation of  
when instruments  
activate in the  
tour. (4)

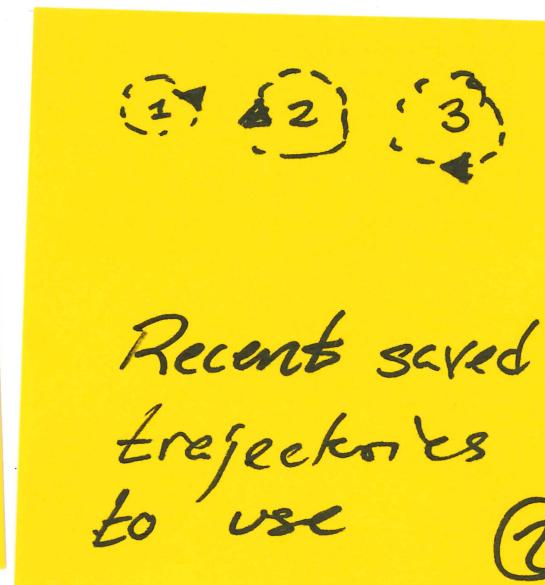
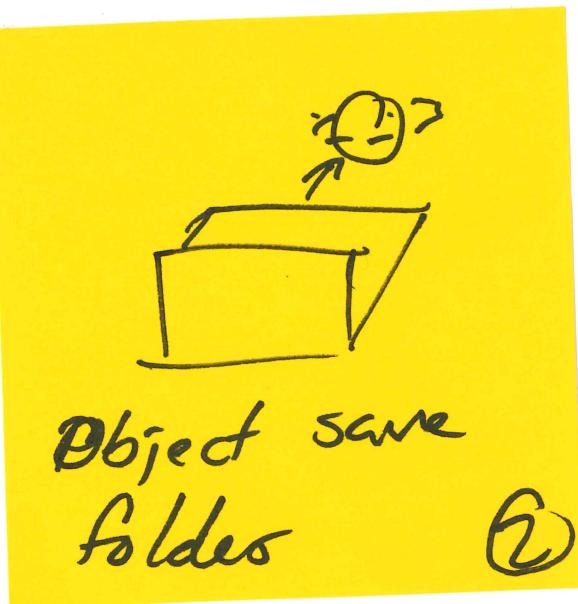


Traj.  
Engineer

Trajectory Engineers need to ask a specific Q around altitude to the mission planner during planning stage ①



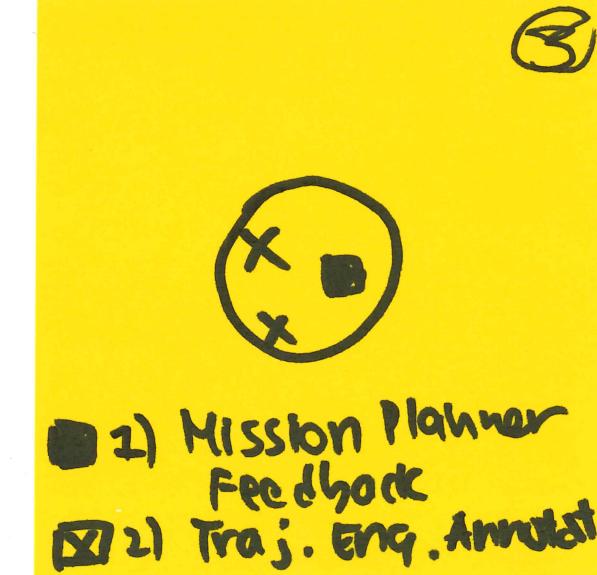
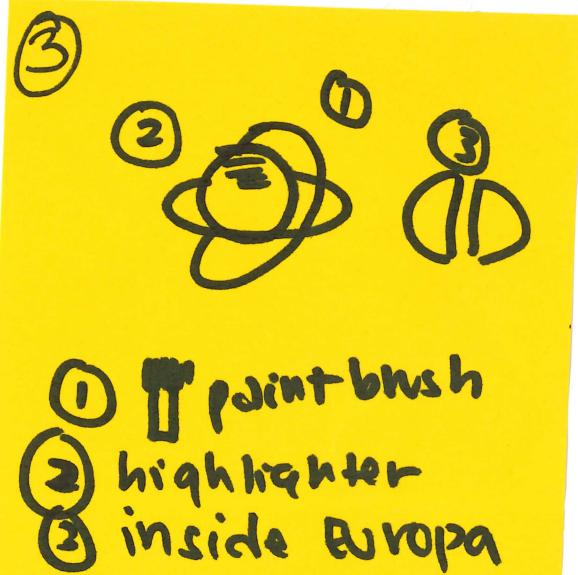
Trajectory Eng. checks w/ PIMS to ensure new trajectory is adequate ②



Getting Hololens ready before meeting another person. ②



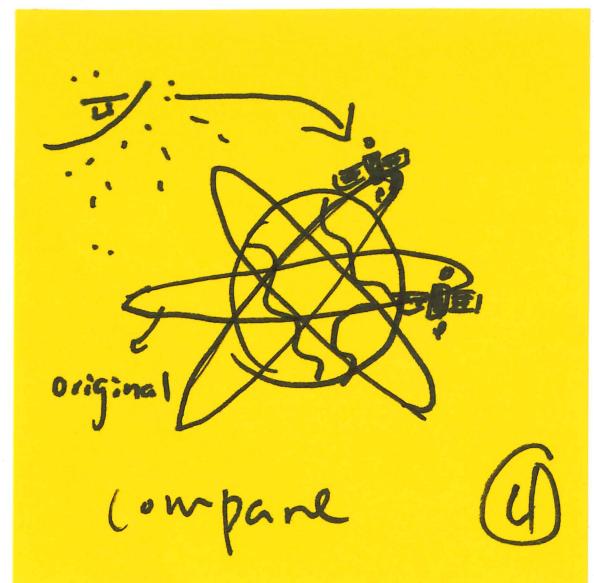
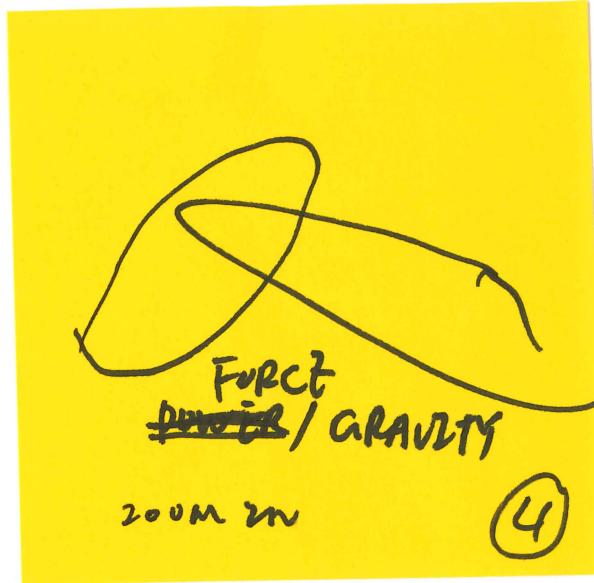
Trajectory Engineers planning new trajectories after a plume was discovered and needs Mission + Science Planner approval ③



- ① Mission Planner Feedback
- ② Traj. Eng. Approval

ENGINEERS WALK  
THROUGH THINKING  
PROCESS

④



EARTH TRIP  
EUROPA TRIP  
TOOL LST TRIP

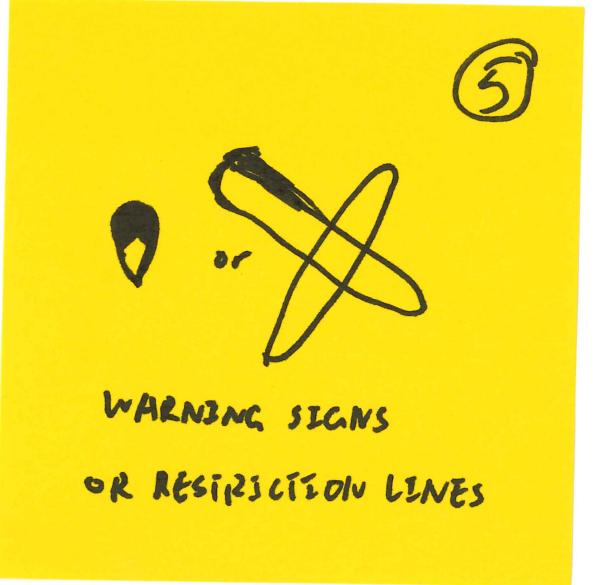
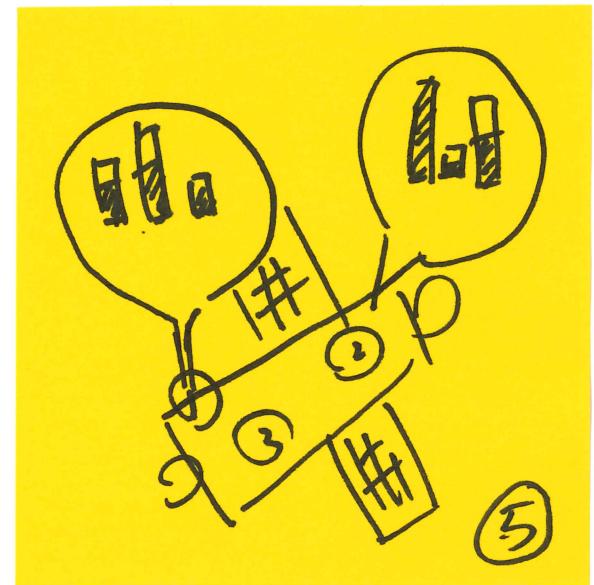
④



(ONTEXT:

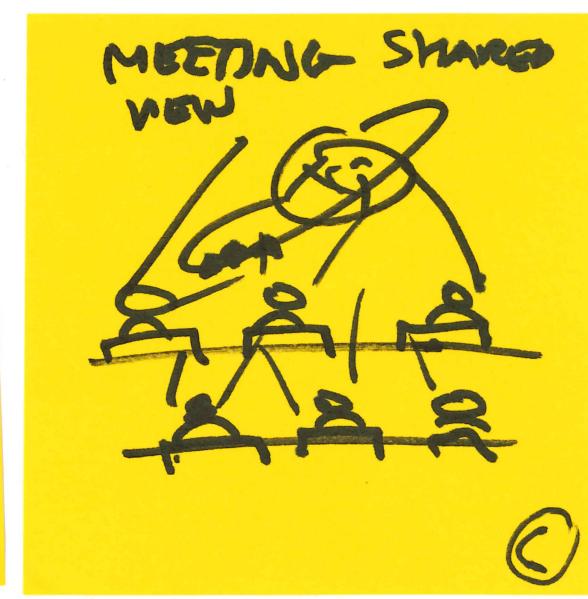
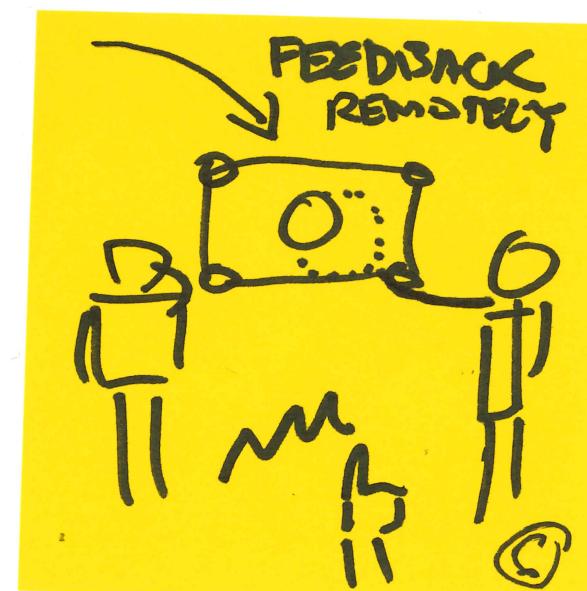
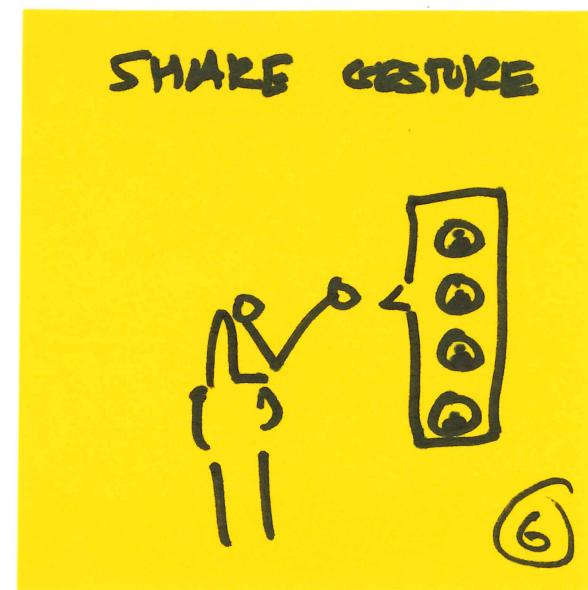
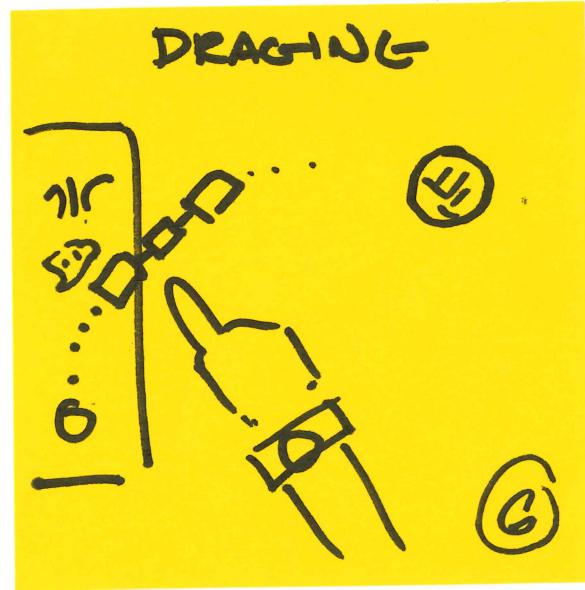
Explain what challenges  
the spacecraft will go  
through

⑤



WARNING SIGNS  
OR RESTRICTION LINES

Translating science requirements into a visualization to share with the mission team and get feedback. (6)



IE/  
IS

IE & IS

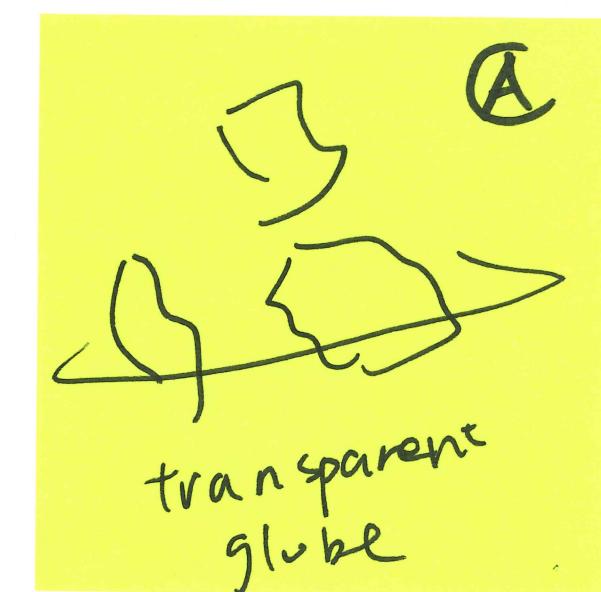
negotiate before they  
report back to remote  
science groups



••• Voice  
Narration



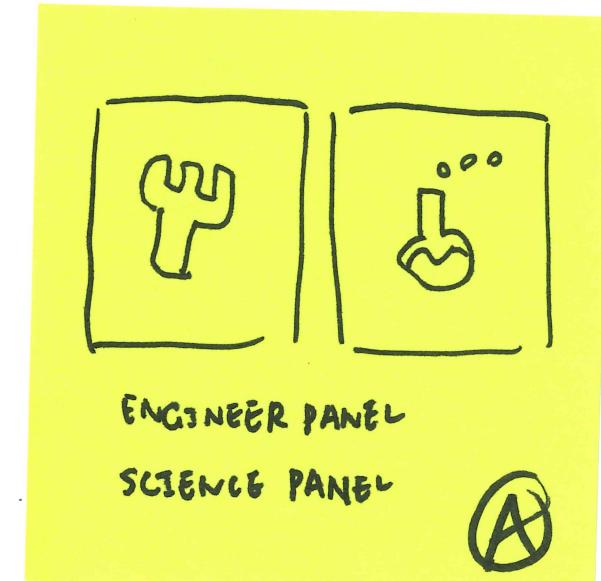
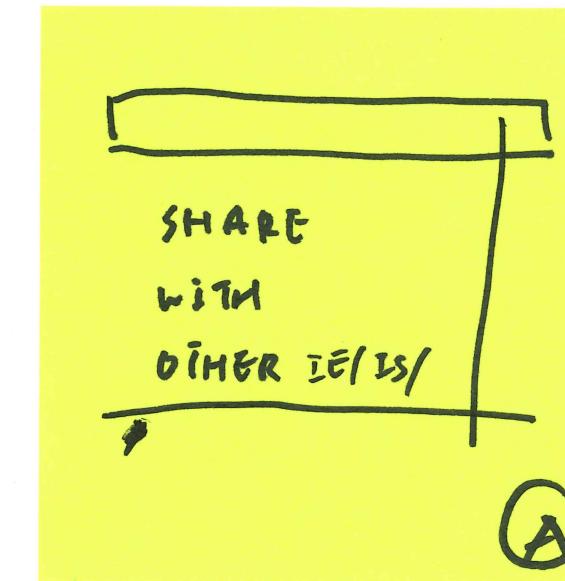
INSTRUMENT CHANGE  
SIMULATION



transparent  
globe

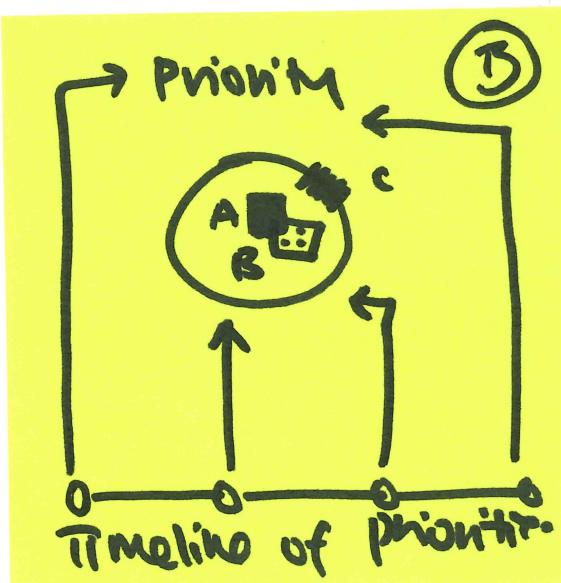
EXPORT:

list of science that  
we can do.



IE + IS

communicating  
requirements  
into actionnable  
items for  
NASA engineers



IE/IS checks  
with engineer to  
confirm understanding  
is correct.



1	2	3	4
█	○	○	○
○	█	○	○
○	○	○	█

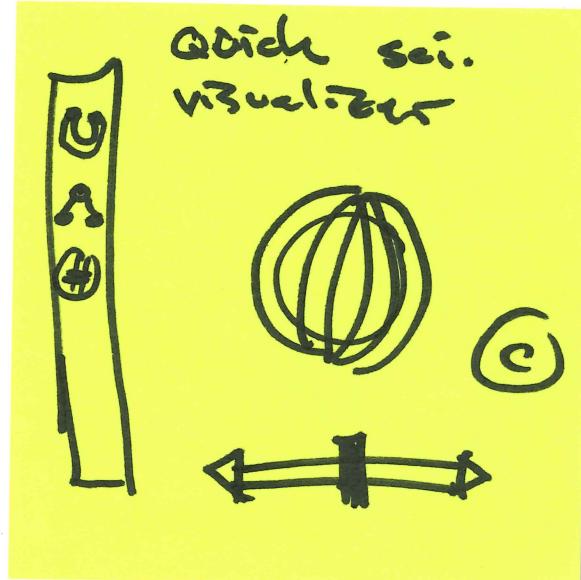
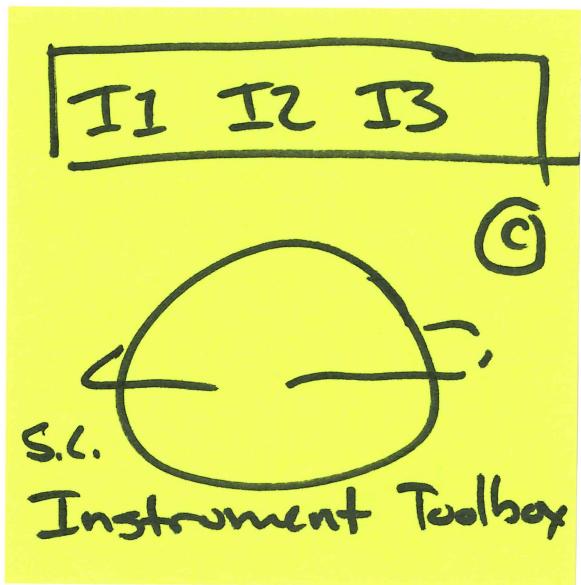
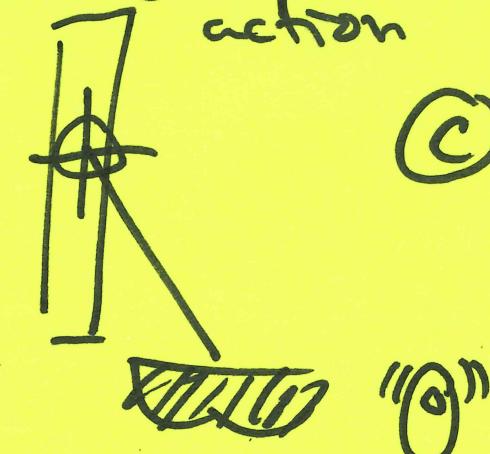
Viz saves for  
each instrument

Bob	Jim
a	c
a	c
c	a
c	c

See other's  
saved models



single possible  
action



After finishing a **D** science group meeting, the IK-T 15 communicate the new discussed trajectory to share with the whole team.

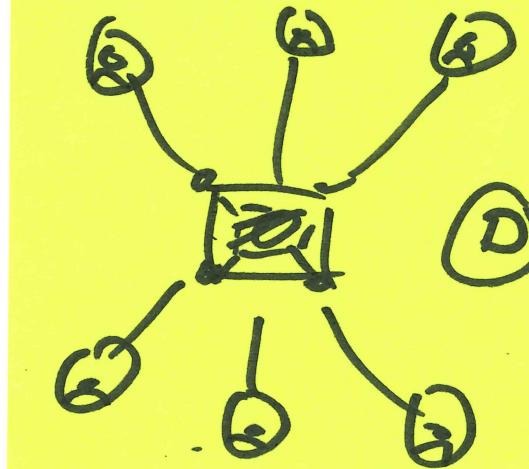
Timeline/  
ORBIT target



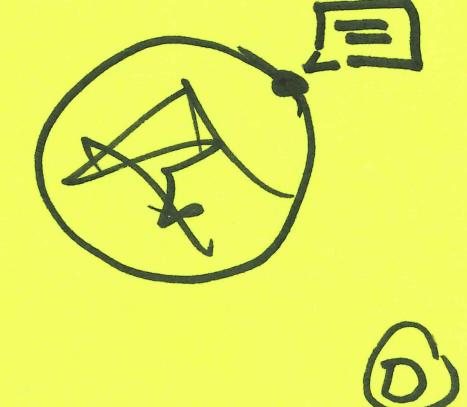
RESEARCH GOAL  
PROCESS



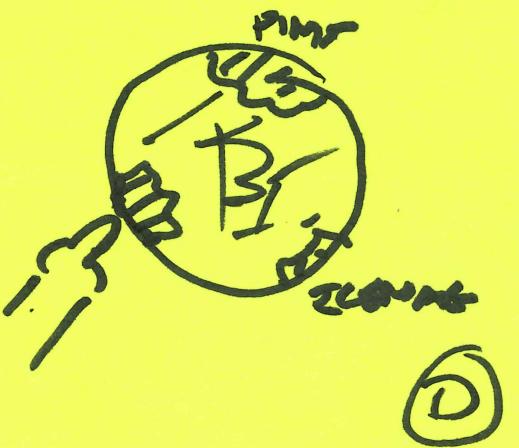
# channels



ADDING ANNOTATIONS



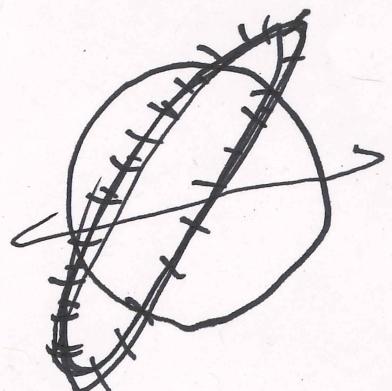
SHADING AREAS



Science  
Group

science group is making emergent/urgent/visual  
new request of science plan when new discovery happens.

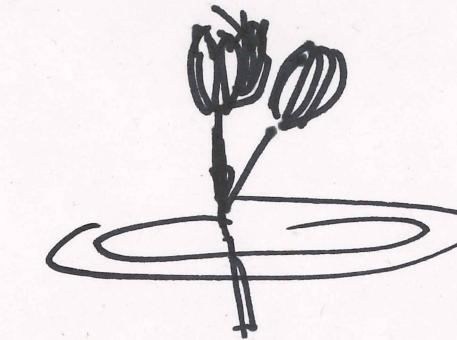
①



①

Progress bar = trajectory

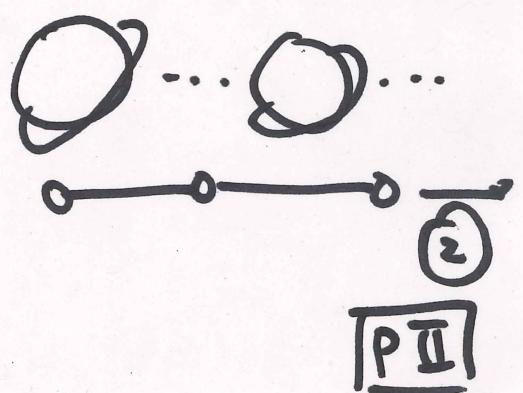
①



Science Darts ①

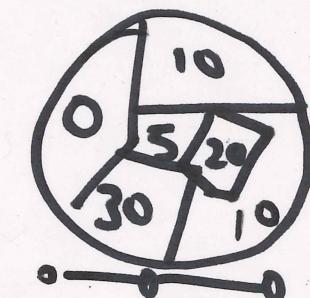
Science groups curious about what other scientists are doing to collaborate on trajectory ②

+ time dimension



②

P II



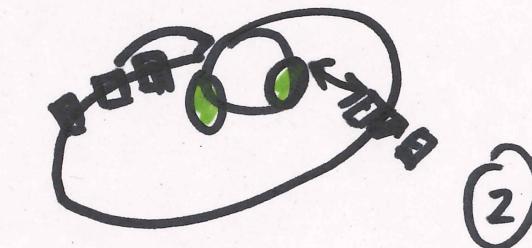
Areas of compromise - for both scientists ②

Album of other scientists



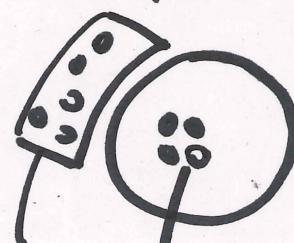
②

hardware + software limitations to understand the



②

Visualize science hypothesis

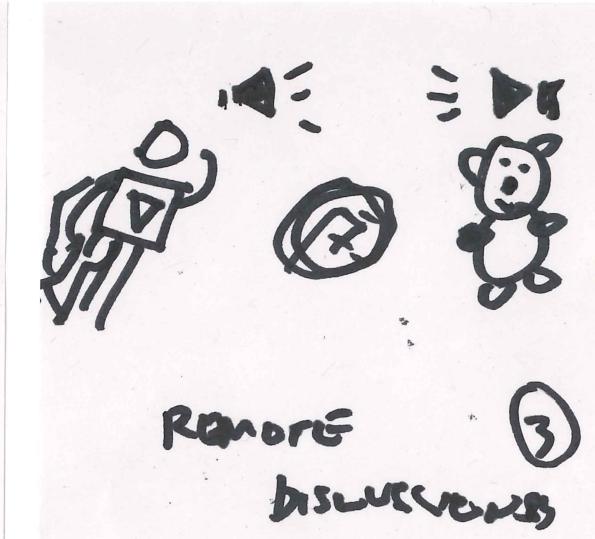
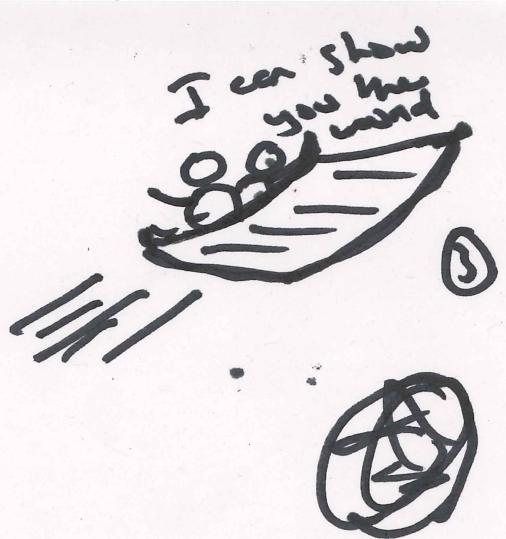
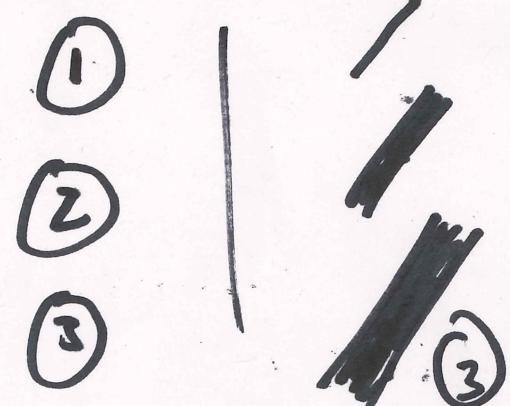


②

exploring diff. chemical compounds

Science groups  
sharing with  
each other what  
science they're  
interested in, and  
the sending to frag-eng.

### PRIORITY



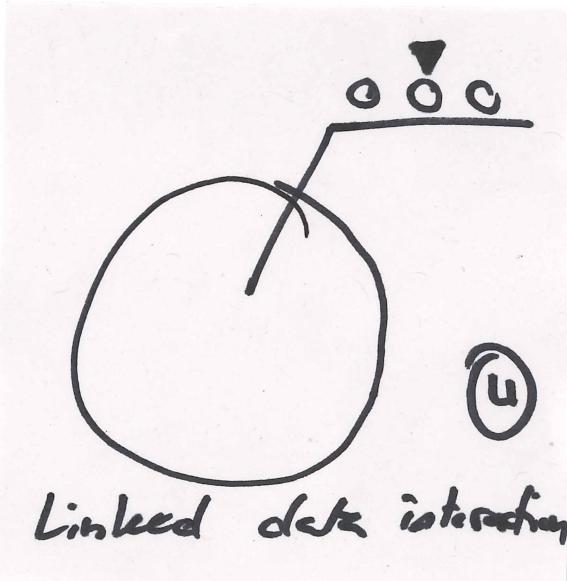
### SCIENCE GOAL icons



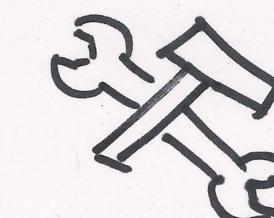
Scientist  
discovers life  
on Europa &  
the opportunity  
of a life tree.  
④

④ ③ ② ①

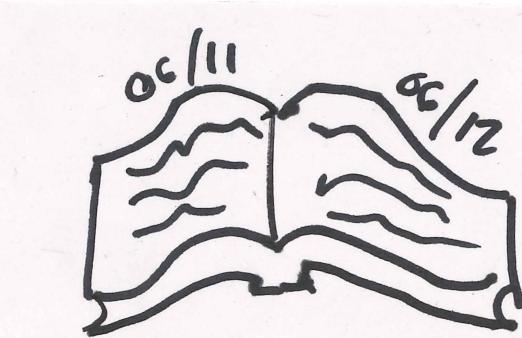
Recent downlinked  
data packets  
tool bar  
④



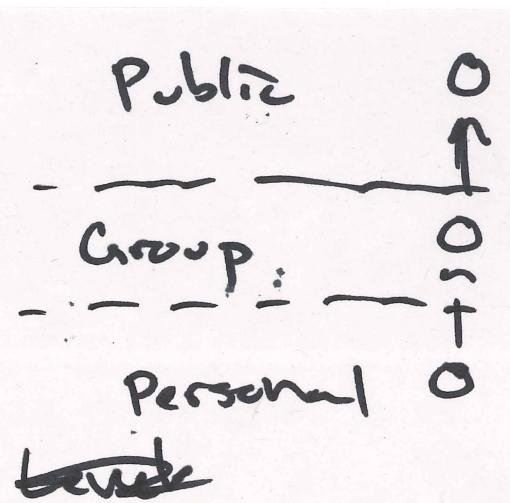
Linked data interface



Downloadable  
Mobs ④



Investigation  
Diary ④



- Private ④  
 Demo  
 Public

Degrees of Intimacy