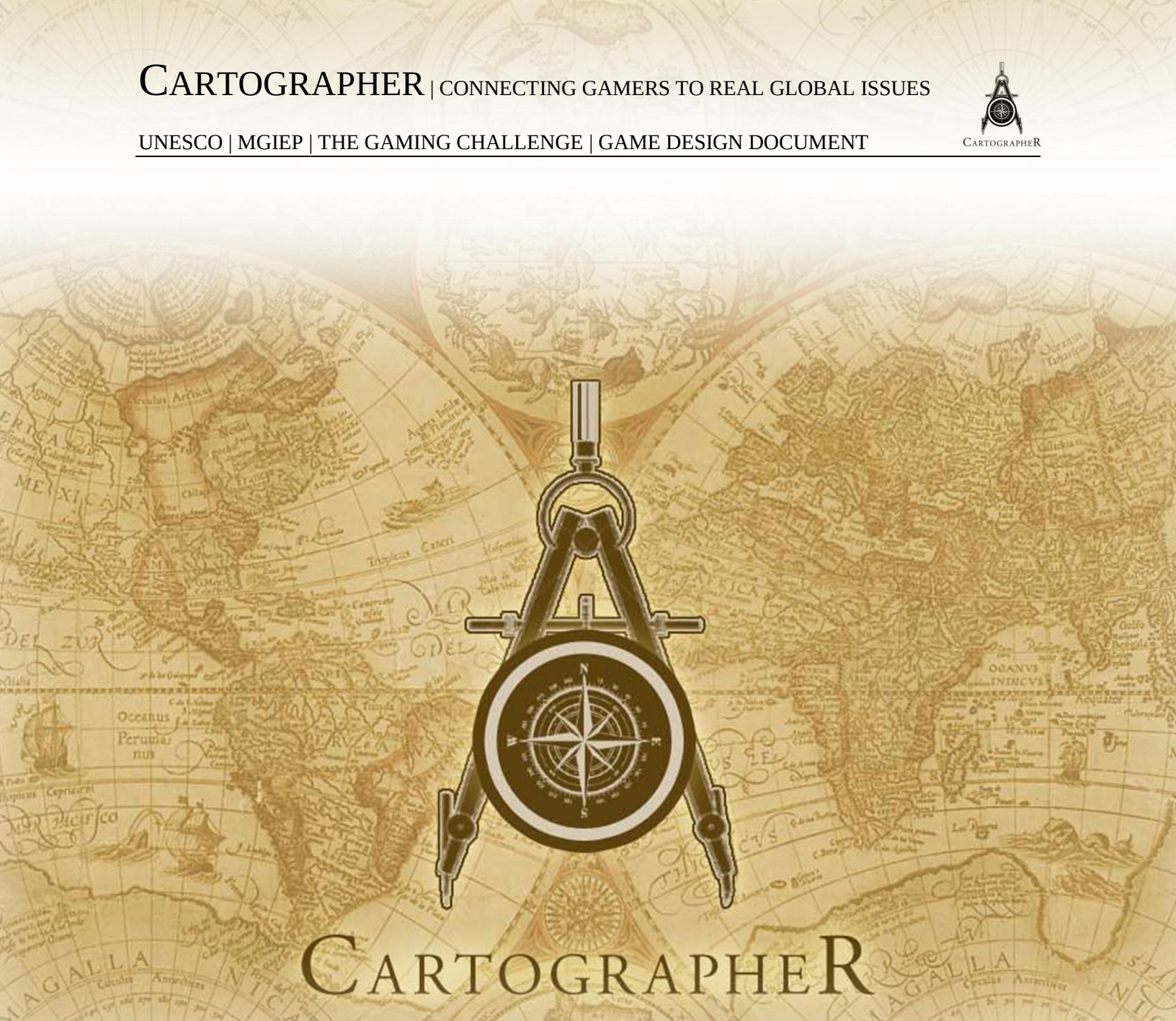

THE 2015 UNESCO & MGIEP GAMING CHALLENGE | GAME DESIGN DOCUMENT | PHASE II

CARTOGRAPHER DEVELOPMENT TEAM
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July 22th, 2015

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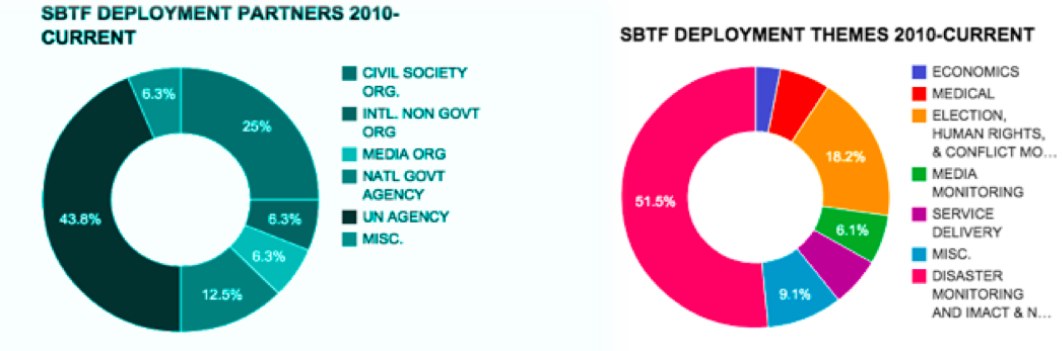
The Cartographer logo responses to general comments provided by mentors, (Also See Appendix for Responses)

1. MISSION: Cartographer seeks to create a community of gamers that will provide geospatial analysis for real world peacebuilding and sustainability projects through engaging gameplay. We strive to connect our gamers to the rich layers of thematic issues and community contexts of our Mission Partner projects while providing evidence that this knowledge is absorbed and applied as our platform transforms gameplay into sustainable data analysis service.

1A. CONTEXT HISTORY: In 2008 when post-election violence erupted in Kenya, Ory Okolloh, and her future co-founders at Ushahidi found a way to gather acurate information on the ongoing violence. Their ad-hoc team created what would become the Ushahidi Platform. It combined Google maps, SMS texting, and crowdsourced reporting (turning the public into "clickers", a collection of many people who performed small actions, such as labeling one data point, typically via the internet) into an easily accessible visual map with real time and geospatial information[1].

1B. CONTEXT EXAMPLES: Today the Ushahidi platform hosts thousands of crisis maps from dozens of organizations and individuals. Standby Task Force (SBTF) uses this platform to connect its volunteers to geotagging projects with organizations like the United Nation's Office for the Coordination of Humanitarian Affairs (OCHA). In 2011, OCHA and SBTF partnered to locate and geotag satellite images of informal Internally Displaced Persons (IDP) settlements in Somalia's Afgooye corridor. SBTF's website notes that 168 volunteers were crowdsourced to provide 253,711 geotags for 3,909 satellite images in five days[2]. This gave OCHA a better grasp of the situation to make programmatic decision during the severe drought and conflict. OCHA has partnered with SBTF in 14 official deployments over the past 4 years. Deployments range from damage and needs assessments after natural disasters to mapping economic data.

1C. CONTEXT RELEVANCE: Supporting UNOCHA and other SBTF partner projects directly supports sustainability and peacebuilding work. This can be seen through the deployment partners and the thematic breakdown of SBTF's deployment projects. These themes include election monitoring, crisis monitoring, and human rights reporting, with the largest portion, around a 50% share, in disaster risk reduction and recovery (DRRR) projects. The work being done is deeply connected to factors that can help or hurt individuals, communities, or a country's ability to adapt and grow sustainably and peacefully.



1D. CONTEXT PROBLEM: During Andrew Mao's 2013 talk at the Intl. Conference of Crisis Mappers (ICCM), he noted that an intense workload was being put on a limited pool of volunteers, contributing to the decline of deployments taken on by the SBTF[3]. Indeed, in 2011 SBTF peaked with 16 deployments but declined to 3 deployments by 2014. This unfortunate trend coincides with the recent announcement from UN Dispatch, the United Nations' News and Commentary website, that crisis mapping will be a new factor that drives the global agenda[4]. This spurs the question, how do we expand the "crowd"?

[1] Ushahidi. "Frequently Asked Questions." *Ushahidi. Available at: http://www.ushahidi.com/mission/faq/. Viewed Feb 10* (2015)
[2] Standby Task Force. "Crowdsourcing Satellite Imagery Analysis for UNHCR-Somalia: Latest Results." *Standby Task Force. Available at: http://blog.standbytaskforce.com/2011/11/10/unhcr-somalia-latest-results/. Viewed Feb 10* (2015)
[3] Mao, Andrew. "Studying Collaboration & Collective Problem Solving through Crisis Mapping" ICCM 2014: Available at: www.youtube.com/watch?v=k59Kh4PybRw. Viewed Jan 05 (2015)
[4] Goldberg, Mark Leon. "10 Stories that ill drive the global Agenda in 2015." *UN Dispatch. Available at: www.undispatch.com/10-stories-will-drive-global-agenda-2015/. Viewed Jan 05* (2015)

1E. INSPIRATION: This question gave rise to Cartographer. In 2011 Justin Lin joined the Standby Task Force team during its Somalia mapping project with UNOCHA. It was a rewarding experience and in 2012 he attempted to utilize an Ushahidi platform for a violence monitoring and data collection system in Burundi. He proposed to geotag and track radio station violence reports but lacked time and funding. This setback drove the imagination for this project. When Justin came across the MGIEP UNESCO Gaming Challenge he reached out to two highly motivated and intelligent friends who could help execute the project: Richard Uy, a brilliant gamer and coder, and Patrick Guerdat, a passionate musician and environment & sustainability practitioner. Together they crafted today's concept for Cartographer.

1F. ARTISTIC VISION & FEELING: THE AGE OF EXPLORATION. We chose a direction that encompassed the "Golden Age of Discovery", when explorers were venturing out of their communities, creating trade routes, and producing new maps. We want to make our players feel like pioneers and explorers without glorifying a past that has been filled with colonization and violence, but by charting a new course that aids peacebuilding efforts and connects global communities as partners. Design-wise, we use palettes of old browns and yellows with highlights of muted dark blue, reds and greens. An orchestral Original Soundtrack will complement the artwork so our players are immersed in this adventurous world.

1G. GAME DESCRIPTION: Cartographer is an immersive Oregon Trail-like voyage simulator and mapping puzzle game. The "Voyages" provide an incentive driven vehicle for Cartographer's educational content that contextualizes the crowdsourced data analysis performed in our mapping puzzles. In addition, our game provides a space for casual and multiplayer mapping puzzle Expeditions. These features combine to form an engaging storyline that connects gamers to real life support analysis and explorative gaming; testing our ability to maintain user engagement and expand the roster of available geotaggers.

Our gamers should feel positive about the impact their play contributes to and interconnected to the communities and projects they support. Below is a series of the key features of our content, game flow, incentives, business plan, and marketing plan. The Cartographer team hopes that this document communicates our dedication to the project, the issues Cartographer seeks to support, the deeper connection of gamers to global issues, and our strategy for a successful launch.

1H. CONTENT DESIGN PROCESS: Cartographer's Content Development Process (CCDP) gathers information on a Mission Partner Project's thematic issues, community contexts and data analysis needs through our partner intake form, research, interviews and partner input, then converts it into storyline information, in game items, Travel Phase challenges and Mapping Puzzles. Voyage storylines and Travel phase challenges will be carefully evaluated by our CCDP for the lessons they teach, the messages they convey and the ways they portray local communities. Mission Partner Projects and the potential risk that our data outcomes could cause will be assessed. Risk levels will be identified through our partner intake forms and reviewed by two Cartographer Team Members. Projects with medium or high risk will require an assessment with Institutional Review Board styled standards[5] and Risk Assessment components review to ensure our work is ethical and keeps in line with Mary Anderson's "Do No Harm" philosophy[6]. This process will be structured and vetted prior to usage.

2B. KEY FEATURE: THEMATIC ISSUES & COMMUNITY CONTEXT: Cartographer gamers are connected to community contexts and thematic peacebuilding & sustainability issues through five layers of gameplay. The first layer includes storytelling and information dissemination through Mission Briefings, Mission Updates, Mission Conclusions, Mission Books, and Partner Profiles. The second layer includes items that can be acquired during some of the Voyages' phases. The third layer is gamer-to-gamer, where existing and partner recruited gamers that are directly connected to missions by geography, culture, identity etc., interact with other Cartographer gamers. Finally, thematic and community context

[5] Buchanan, Elizabeth A., and Charles M. Ess. "Internet research ethics and the institutional review board: Current practices and issues." *ACM SIGCAS Computers and Society* 39.3 (2009): 43-49.
[6] Anderson, Mary B. "Experiences with Impact Assessment: Can we know what Good we do?." *Transforming Ethnopolitical Conflict*. VS Verlag für Sozialwissenschaften, 2004. 193-206.

learning is reinforced and measured through our fourth layer, the player stats mechanism and our fifth layer, the data analysis and Mapping Puzzle gameplay mechanism.

2Bi. COMMUNITY CONTEXT: The community context connects gamers to the individuals, cultures, beliefs, economies, environments, biodiversity, and politics that affect or are affected by the mission project or the issues it tackles. We will utilize our partner's expert local knowledge and resources to create content that shares their efforts and perspectives or the thoughts of local people and experts. This will introduce gamers to the inherent strength, dignity, and intelligence present in distant communities.

2Bii. THEMATIC CONTEXT: The thematic context connects our gamers to the mission's core issues as well as the programmatic and academic frameworks used to understand, articulate, and respond to these issues. Mission classification will draw from UNDP's programmatic work which includes: Conflict Prevention & Peacebuilding, Governance, Rule of Law, Gender, Livelihoods, Disarmament Demobilization & Reintegration, Environment & Energy, and the Disaster Management Cycle. Cartographer's first thematic cycle will focus on the Disaster Management Cycle (Disaster reduction, readiness, response, and recovery); SBTF's most common deployment type.

2Biia. LEARNING LAYER 1: THE MISSION STORYLINE: Each Voyage storyline is communicated through Mission Briefings, Mission Updates, Mission Pods, and Mission Conclusions. Mission briefings explain the objective and situation, while providing relevant facts and research to inform the players on the community context and thematic issues. The mission briefing will use and articulate "logical frameworks" and "theories of change" to explain the missions' context, two widely accepted sustainability and peacebuilding project design tools. These will explain the relationship between a gamer's geo-tagging support role activities to larger development strategies. Mission Updates will be given throughout a Voyage to provide additional context for the gamers, identify emerging patterns in the data, and connect those patterns to the logical frameworks and theories of change. Mission pods are items that gamers can find in a Mapping Puzzle's explorative mission map. When clicked, a gamer will receive content about a mission's thematic issue or local community. The Mission Conclusion communicates what mission partners do with the data while providing mission closure. Upon completion, players will receive in game items called "mission books" which delivers a summary of the mission.

2Biib. LEARNING LAYER 2: IN-APP ITEMS: In-App items are accompanied with descriptions that convey their relevance to the local and thematic contexts. Items include specialty objects, explorers, gear, maps and mission books that can be used or added to avatars, profiles, quarters, ships, and gameplay. They enhance both the visual and contextual aspects of the game. (SEE SECTION 4D. IN-APP STORE)

2Biic. LEARNING LAYER 3: GAMER-TO-GAMER INTERACTION: Existing and partner recruited gamers that are directly connected to missions by geography, culture, identity etc., will interact with other Cartographer gamers. They can connect through private messages and Voyage Chat Rooms, enhancing the knowledge base of local context. Cartographer will reach out to partner constituents and local gamers to encourage interactions. The information exchanged will be uncontrolled, as it will be directly given and received by our gamers. However, our Mission Boards include a reddit style mechanism for our gamers to promote and share particularly useful information and a reporting system to flag offensive information.

2Biid. LEARNING LAYER 4: MAPPING PUZZLE DATA: Mapping Puzzles provide massive quantities of data from media, databases, maps and research. This real world data will vary in its content and depth, but as players analyze this real world data, thematic issue and community context knowledge will emerge. (FOR MORE INFORMATION SEE SECTION 2D. LAYER 5: MISSIONS & GEOSPATIAL ANALYSIS)

2Biii. LEARNING LAYER 5: EDUCATIONAL ASSESSMENT THROUGH EXPLORER STATS & THE TRAVEL PHASE: This phase's challenges provide a mechanism to assess and indicate thematic issue and community context knowledge absorption and application. During the course of the Travel Phase players face a series of Challenges to complete the voyage. Challenges are events or encounters that affect a player's stats based on their game decisions. In turn a player's Stats will determine a player's Karma Point rewards (in-game currency) upon completion of a Travel Phase.

2Biiia. LAYER 5: TRAVEL PHASE CHALLENGES: The first type of challenge includes thematic issue and community context based questions where gamers "choose their own adventure" by providing responses based on the first four learning layers. The accuracy of player responses will determine a gain or loss of Explorer Stat points and how future Travel phase will progress. The second type of challenge interprets how players have applied the four layers of knowledge (voyage specific) through their selection decisions of items, supplies, knowledge, cargo and resources. Here, the events and encounters will be used to explain why players are gaining or losing Stat points. This will serve to reinforce or remediate accurate knowledge and information. Finally the difficulty level can be adjusted by the amount of inference, deduction, research, or information required to perform well or answer correctly.

2Biiib. LAYER 5: PLAYER STAT INDICATORS: Gamers have 5 Stat indicators, and a possible Passive: Gut, Fortitude, Resilience, Aptitude and Navigation. The Challenges will reflect the following knowledge: Gut reflects the local context knowledge of ecological systems, local flora, fauna, and food. Fortitude reflects understanding the Mapping Puzzle indicators and development. Resilience reflects knowledge of community context, local people, economies, religions, languages, cultures, and customs. Aptitude reflects knowledge of the specific thematic issue and Navigation reflects understanding the trends and significance of Mapping Puzzle data and data analysis. Together, the Travel Phase and the Player Stats create an assessment mechanism that provides indicators for the player's knowledge absorption and application and for the Cartographer's gaming incentive effectiveness and knowledge presentation. Passives are special skills for special characters that give stat bonuses or extra rewards.

2C. MAPPING PUZZLES, SKILLS & SKILL LEARNING ASSESSMENTS: Cartographer's Content Development Team (CDT) will create Training, Stock, and Live Mapping Puzzles internally or from partner projects. They provide gamers training, performance feedback, and challenging gameplay that contributes to real world projects while measuring accuracy across four data analysis skills: Media Monitoring, Relevance Determination, Geotagging and Data Categorization. Additionally, Indicator Development will be qualitatively measured by gamer votes. Mapping Puzzles include:

2Ci. TRAINING MAPPING PUZZLES are created from pre-analyzed datasets or from Stock and Live datasets that have previously been crowdsourced geotagged. Working from pre-analyzed datasets allows Cartographer to teach skills by confirming a player's accuracy (learning through doing), while providing continual performance feedback (for improvements), then adjusting difficulty or retraining based on performance indicators. An increase or decrease in difficulty will include a change in the volume of data to be processed and the number of data analysis skills required.

2Cii. STOCK MAPPING PUZZLES are created content or finished Live Mapping Puzzles with datasets that have already been analyzed. They include two skill levels: "Advanced Training" with live feedback and "Simulation" with feedback that is provided at the end of a complete Voyage. Advanced Training gives gamers a feel for Live Mapping Puzzles while providing performance feedback for adjustment. No difficulty adjustment or retraining is provided. Simulations provide gamers with a complete Live Mapping Puzzle experience by tracking a their performance without providing retraining or feedback. Simulations provide the best indicators for gamers' skill absorption and performance prediction.

2Ciii. LIVE MAPPING PUZZLES are projects created by our CDT or as collaborations between our CDT and mission partners. These Mapping Puzzles have not undergone data analysis or are still undergoing data analysis. This means live feedback is not available for gamer adjustments. Once enough gamers have completed these missions, performance feedback and awards can be provided to gamers and the Live Mapping Puzzles can be converted to Stock or Training Mapping Puzzles. Our team believes that this progression of skills training, learning, and application will create an engaging and educational feature that incentivizes return play to support real world projects.

2D. DATA ANALYSIS SKILLS ASSESSMENTS & DATA SOURCES: Cartographer gamers will be provided with, or asked to provide, large amounts of user-generated data. Data may require different layers of analysis that translate into different Mapping Puzzle skills; analyzed on our micro-tasking

platform. Skills include Media Monitoring, Relevance Determination, Geotagging, and Data Categorization. Our Puzzles allow players to categorize, filter and tag the datasets.

2Di. MAPPING PUZZLE SKILLS: MEDIA DISCOVERY & DATA RELEVANCY: Prior to geotagging and data categorization, data may need to be discovered through Media Monitoring or receive a Relevance Determination. Media Monitoring requires finding data across different social media platforms and web resources. Once data is discovered, its mission relevance can be determined. For example a player in a Disaster Management Cycle Mapping Puzzle could be asked to find social media posts that refer to damaged buildings or infrastructure, then determine if the data provides clear geospatial information or if the data is refereeing to the current disaster, utilizing Relevance Determination.

2Dii. DATA SOURCES: SOCIAL MEDIA: Whenever a disaster strikes, a large amount of user-generated multimedia content gets quickly posted on all social media. This can be collected by Cartographer's mission partners, the Content Development Team, or by gamers. Once the information is collected through gameplay, automatically scraped from social media, or pre-filtered by keywords or hashtags from social media and consolidate into datasets of pictures, videos, messages, and tweets, it can undergo Relevance Determination, Geotagging, or Data Categorization depending on Mission Partner needs.

2Diii. MISSION SKILLS: GEOTAGGING & DATA CATEGORIZATION: The primary Mapping Puzzle data gamers encounter is satellite images. Satellite image based Mapping Puzzles will test a gamer's data geotagging and or data categorization skills. For example a player doing a Disaster Management Cycle mission could be asked to provide Post Typhoon damage assessments by finding damaged buildings and infrastructure, data geotagging, then categorizing the magnitude of damage, data categorization.

2Div. DATA SOURCE: SATELLITE IMAGES: Cartographer can pursue a variety of Satellite Image options. In addition to the free stream of lower-resolution, specialized satellite photography released by the U.S. government, space-based products are widely available at no cost, especially during emergencies. Mechanisms such as the Humanitarian Info. Centres (HICs), ReliefWeb, AlertNet, UNOSAT portal, and the Intl. Charter on Space and Major Disasters can be invoked through UNOOSA during major disasters[7]. Private companies have also started offering satellite-derived services: 'Skybox for Good', offered by Google's Skybox, provides free up-to-date open source high resolution satellite images and high definition videos to people and organizations to help support projects that save lives, protect the environment, promote education, and positively impact humanity[8]. The data is under Creative Commons copyright so its use is permitted and free under the condition of attributing the source. Finally, DigitalGlobe provides high-resolution satellite imagery for free for academic projects. These data sources give Cartographer a range of choices to optimize our gamer experience and data analysis.

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Gameplay is not particularly compelling beyond connecting to world (ie not very "fun" to play this game in and of itself)

3. KEY FEATURE: VOYAGES: IMMERSIVE SINGLE PLAYER: Cartographer's core gameplay concept merges Oregon Trail mixed with RPG elements and crowdsourced Mapping Puzzles called "Voyages". Players launch "Voyages" by selecting a level-map, which can be visualized as a geographically relevant pirate map, in order to acquire Crewmembers, Karma Point (Currency), Experience, Items, and Supplies. They must carefully navigate the level-map while managing time and resources and facing challenges and encounters that may deplete or enhance crewmember stats. These challenges are project specific and simulate the relevant political, economic, environmental, climactic, cultural, and physical terrain dynamics. Along the way, they must solve Mapping Puzzles that will determine their performance for the rest of the journey and how much they are awarded in the end. Each Voyage contains 6 phases: 1. Mission Briefing, 2. Crew Assignment, 3. Preparation & Supplies, 4. Travel, 5. Mapping Puzzle, 6. Voyage Completion.

[7] http://www.un-spider.org/space-application/emergency-mechanisms/international-charter-space-and-major-disasters
[8] http://www.skyboximaging.com/blog/introducing-skybox-for-good

3A. EXPEDITIONS: MULTIPLAYER FEATURE: Multiplayer gamers must first fulfill training requirements to participate in "Expeditions". During Expeditions gamers are auto or self sorted into competing Fleets. Each Fleet consists of gamers who specialize in specific Mapping Puzzle skillsets and progress is dictated by the quantity and accuracy of completed Mapping Puzzles. Fleets receive performance ratings and accuracy ratings and then progress through the Expedition map once enough data has been generated for statistical accuracy. This gameplay consists of four phases: 1. Mission Briefing, 2. Fleet Selection, 3. Mapping Puzzle, and 4. Mission Conclusion.

3B. EXPEDITIONS: CASUAL SINGLE PLAYER: Casual gamers play an abridged. They are still given thematic and Community contexts, but they are not evaluated for knowledge absorption and application during Crew Selection, Preparation & Supplies, or Travel phases. They join at the Mapping Puzzle phase, receive in game training, then contribute to the real world data analysis; receiving skill rank performance incentives and feedback. This gameplay consists of three phases: 1. Mission Briefing, 2. Mapping Puzzle, and 3. Mission Conclusion.

3Ci. PHASE 1: MISSION BRIEFING: In this stage, players are shown a level-map and given an explanation of the mission partner project, contexts, objectives, and the Voyage. Here, players start to formulate plans depending on how long the journey is and the expected challenges. Relevant item purchases or applied knowledge may unlock additional clues and information. (FOR MORE INFO. SEE SECTION 2Ciia LAYER 1: THE MISSION STORYLINE)

3Cii. PHASE 2: CREW ASSIGNMENTS: In this stage, players select a Voyage crew from other gamers or Explorers. Explorers are potential Crewmembers based on historical figures, which can be unlocked or purchased in the In-App store. As detailed in Section 2 on Explorer Stats, the crew's individual stats will determine the success rate of random encounters during the Travel phase and the penalty or reward depending on the outcome. (FOR MORE INFO. SEE SECTION 2Ciii. LAYER 4: EXPLORER'S STATS).

Once you decide on crew, you need to place them into their craft positions. These positions are Leader, Adventurer, Mechanic, Navigator and Culturalist. The Leader gains an all-around stat boost, the Adventurer gains bonuses to their Fortitude and Resilience, the Mechanic gains bonuses to their Aptitude, the Navigator gains bonuses to their Navigation and the Culturalist gains bonuses to their passives. Position assignment allows gamers to choose whether they would like to buff someone's weaker stat to up their chance for survival or to enhance someone's natural skill levels to survive difficult challenges.

3Ciii. PHASE 3: PREPARATION STAGE: In this stage, players choose their Voyage's transportation craft and purchase supplies needed for the length of their voyage. They need to make informed decisions on the craft such as its speed, how strenuous it is to operate, how much cargo and supplies it can hold and how resistant it is to damage. Better craft or craft upgrades can be purchased with Karma Point. Next, they must carefully spend their Karma Point to purchase supplies such as food, clothes, medicine, spare parts, cargo, and local knowledge. They will have to balance the advantage of a light craft with providing enough resources for their crew; the cargo amount determines how much Karma Point and Goodwill is awarded upon completion. This way, players can balance risk and reward.

3Civ. PHASE 4: TRAVEL: This is the first part of the Voyage's Travel-Mapping Puzzle cycle. There may be several Travel phases on any given Voyage depending on the speed of the vessel/pace of travel, depending on player craft selections, and the distance of the Voyage (a function of Mapping Puzzle data reqs). The type and rate of challenges depends heavily on the storyline and data analysis requirements. Challenge performance depends on crew and craft Stats. Challenges can include: brigands, pests eating supplies, getting lost and disease afflicting crew; buying the right supplies and meeting the right people can mitigate these trials. The success rate of the encounter depends on Mapping Puzzle accuracy as well as application of thematic and community context knowledge application. If an explorer is taken out of commission, they will be incapacitated for the rest of the Voyage or if they purchase continues from our store (SEE SECTION 2Ciii. LEARNING LAYER 5).

3Cv. PHASE 5: MAPPING PUZZLES: This is the core puzzle mechanic. Here, players will be trained for and perform data analysis skills based on Training, Stock or Live Missions. Data from multiple gamers is then aggregated by Cartographer algorithms and converted into gamer performance and real-

world data analysis. Players will be graded on accuracy and speed (to a lesser extent) resulting in the rate of success for further travel, Karma Points and Experience Points. (SEE SECTION 2D. MAPPING PUZZLES, SKILLS & SKILL LEARNING ASSEMENT)

3Cvi. PHASE 6: VOYAGE COMPLETION: After several legs of Travel and Mapping Puzzles, players will be awarded Karma Point and Experience based on their accuracy in puzzles, the amount of cargo and supplies that they have, the length of time it took to travel and any passive Crewmember bonuses. Experience is applied to players' accounts, the explorers used and any relevant medals, achievements or skill trees. For example, completing geotagging puzzles will give you experience to increase the bonuses you get from those puzzles in the future. This will also give you experience towards the Intrepid Explorer skill/title which unlocks bonus pins and stat bonuses. Players can also earn items or extra Crewmember spaces. Completion of levels also unlocks additional levels or secret maps to new Voyages.

4. KEY FEATURE: IN GAME SPACES & ITEMS: In addition to the primary game flow, Cartographer gamers will have the option to visit their Player Profile, Mission Chat Rooms, Global Leader Boards, and the In-App Store. These spaces are important for the reward structure of different incentive drivers (SEE SECTION 5. KEY FEATURE: INCENTIVES FRAMEWORK) because they provide space for players to trade-gift-buy-sell items (as memorabilia), revisit old missions, check out mission partner profiles, and socialize.

4A. THE PLAYER PROFILE/PLAYER'S STUDY showcases a gamer's avatar, performance indicators, mission badges, collected items, library, desk, and friends. The art concept revolves around a "study" with a separate avatar display. The personalized avatar can be adored with a limited number of vestments and accessory items collected throughout a player's gameplay. Next to the avatar are the players aggregated Skill and Stats Performance Indicators across missions, Mission Badges, and Rank. The item section displays and holds a limited number of items. The Library section displays unlimited Maps and Books. Maps are rewarded after Voyages are completed and they show a player's skill and stat performance during the Voyage. Books are complete Voyage overviews that include all aspects of a Mission's Storyline, a player's stat and skill performance, a final map, a "yearbook" of players who participated, Partner Profiles, details of the real world project, what will be done with the mapping information, and any subsequent partner follow ups. Additional adornments and item space can be purchased or awarded.

4B. THE VOYAGE CHAT ROOMS & GLOBAL LEADER BOARDS are designed to improve data analysis and socialization. Voyage chat rooms allow group and private messaging, as well as the ability to receive updates and advice from the Cartographer team, mission partners, and other players. A Voyage Indicator board allows players to provide suggestions on data analysis methods and strategies. A Voyage Comments Board allows for discussion, comments and questions. Both have a reddit style up-down vote ranking system[9] but based on utility rather then interest. This allows Cartographer to identify common issues, questions, trolls[10], or successful indicators while encouraging social pollination between players. Lastly, Voyage Leader Boards showcase the top three performers for each Analysis Skill, Player Stats, and Indicator post. Global Leader Boards will rank and reward the game wide top ten players for each Data Analysis Skill, Player Stat, and Indicator. This will be based on aggregated performance across all Voyages and Expeditions. In addition spaces for group chat will be provided.

4C. GAMING ANALYTICS: Throughout the development of the game and after its launch, we will monitor a steady stream of gaming analytics to enhance our experience. We will use these metrics to adjust our in-game economy, how effective our sources, sinks and flows are, the progression of the players throughout the different phases, and particularly the Entry Event Distribution (EED) or what players do in the first few seconds of the game, will provide us with information to better understand our players' behaviors and to improve metrics such as acquisitions, retention rate, churn rate and conversion rate.

[9] Reddit. "Voting" & "Voting on Comments." *Available at: www.reddit.com/wiki/voting.* Viewed June 2015
[10] Wikipedia. "Internet Troll." Available at: en.wikipedia.org/wiki/Internet_troll. Viewed June 2015

4D. THE IN-APP STORE & KARMA POINTS: Karma Points, the game currency, can be used at the In-App store to buy, sell, or trade items and supplies for a gamer's Profile, Voyages, and Expeditions. Karma Points are earned as gamers complete voyages and are awarded as a function of skills performance and player Stats. This feature is important because it allows gamers to fit their Avatar or Vessel with local or thematically appropriate items that provide bonus Stat points. Voyage storylines will provide context clues to optimize purchases and gear.

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How to sustain or incentivize player interest & engagement, this might be a challenge?

5. KEY FEATURE: INCENTIVES: CHARACTER THEORY INCENTIVE FRAMEWORK & ANALYTICS: Cartographer uses the Character Theory Framework[11], as applied in the Bartle Quotient, to guide its initial incentive structure design. This classifies player drive into four categories: Achievers, Explorers, Socializers, and Killers and explains player motivations and optimal reward types. Once a meaningful data set of player behavior is accumulated, our data analytics will guide adjustments to ensure player engagement and efficiency in our incentive system.

5A. INCENTIVES: ACHIEVERS AKA DIAMONDS are known for enjoying performing well, clinching wins, and receiving rewards that communicate their success. These rewards do not need to provide additional utility or a gaming advantage. This suggests that a clear performance-feedback-achievement reward mechanic would incentive Diamond game play. Cartographer's Mission Skill Ranking & Performance Mechanic (MSRP) and Player Stat Ranking & Performance Mechanic (PSRP) reflect this incentive structure. The MSRP indicates a player's within-Mission Media Monitoring, Relevance Determination, Geotagging, and Data Categorization abilities. For training missions and stock missions, scores are continuously provided with a final score across voyage missions given upon mission completion. This is done by comparing a gamer's performance with existing aggregated Mapping Puzzle datasets. Live Missions are an exception since data analysis is incomplete. PSRP indicates a player's stats along 5 indicators (SEE SECTION 2Ciiib.PLAYER STAT INDICATORS). Performance feedback is provided during the Travel Phase. As an award, high performers receive a high, and correlated, sum of Karma Points, which Diamonds can use to purchase exclusive In-App Items that require a minimum sum of Karma Points and Accuracy. Items are also rewarded for achievement milestones. As diamonds collect these rewards they can display them on their avatar or profile page. The highest performers are placed on Voyage and Overall leaderboards, providing a publically validated status. In addition displayable badges are awarded for performance, participation and completion of Voyages with Live Missions. Finally, achievements can be broadcasted on external social media—the ultimate bling for a true Diamond.

5B. INCENTIVES: EXPLORERS AKA SPADES are known for enjoying exploration, discovery, in-depth learning, sharing unique knowledge, and creation. This suggests that game mechanics that allow Spades to explore, gain/share unique knowledge, and allow for creation incentivize Spade play. Cartographer's Geotagging Missions, Indicator Development, Story Pod Mechanic, Voyage Storyline, and future mission completion feature reflect this incentive structure. Geotagging Missions allow gamers to explore real maps through high quality satellite images. This is accompanied by a storyline that reflects real world knowledge and mission partner projects. This provides Spades a framework to explore their new environment; incentivizing a Spades desire for knowledge and exploration. Spades can also create novel indicators to assist fellow gamers and communicate this through a Voyage Message Boards; validating a Spades desire to have and share special knowledge. Finally Story Pods and hidden maps, placed throughout maps to incentivize exploration, contain unique information or Items, drive a Spade's desires for surprise. As Cartographer's capacities grow we plan to offer gamers an opportunity to design missions—expanding our content capacity, educational process, and fulfilling a Spade's drive to create.

5C. INCENTIVES: SOCIALIZER AKA HEARTS are known for enjoying socialization, team interaction, and direct communication. This suggests that game mechanics that require or facilitate interaction between gamers incentivize Heart gameplay. Cartographer's Trading Post (part of our In-App Store), Voyages and Expedition team play provide gaming advantages when information and items are shared. The Trading Post allows for direct messages between individuals and is driven by the need for specific Stats, which can be improved with specific items, or information. Voyage communication

[11] Wikipedia. "Bartle Test". Available at: en.wikipedia.org/wiki/Bartle_Test. Viewed on June 2015

provides information that can increase a player's performance and hence increase their Karma Points. Expeditions rank group performance in data analysis, increasing the call for intra-team communication to tackle a particular skill test. Finally socializers are instantly part of a great cause as they provide data analysis support to real communities and mission partners across the globe.

5D. INCENTIVES: KILLERS AKA CLUBS are known for enjoying direct competition against other players, controlling gaming markets/environments, and potentially creating chaos or providing leadership within a gaming environment. Cartographer's Expedition team play and Karma Point Economy provide the best incentives for Clubs. Expeditions allow Clubs to take on leadership roles while competing directly with other crews for high performance rates. The Karma Point currency in conjunction with Item rarity allows Clubs an opportunity to corner the market on specific in demand items. One Risk to consider based on the Club's enjoyment of creating chaos is false data analysis. Crowd sourcing should already minimize a Club's efforts to create false data or provide misinformation on Message Boards. In addition, Cartographer will build in the ability to flag and suspend accounts, as well receive alerts form players that generate outlying data (SEE SECTION 8. RISKS).

6. BUSINESS PLAN: OVERVIEW: Cartographer's business plan describes our strategy for becoming a sustainable and revenue positive company while providing meaningful customer content, engaging gameplay, and accurate partner services. Our focus is to overcome our barrier to entry, demonstrate a proof of concept, develop our unique duel market revenue streams, and then expand our services and gameplay features and content. Our passion for the platform has been driven forward by our work ethic and we hope you join our voyage.

6A. BUSINESS PLAN: BARRIER TO ENTRY: Cartographer's barrier to entry is currently the cost and time required to build our platform while developing meaningful gaming content. The 10K Phase 2 reward of the UNESCO MGIEP Gaming Challenge would allow our team to begin building a prototype and developing live pilot missions with mission partners. During this time we would seek out inventors, continue a case study review of our revenue stream return, pursue appropriate grants, and determine the feasibility of launching a Kickstarter. The 100K Final reward of the UNESCO MGIEP Gaming Challenge would give our team the time and resources to building a platform, developing content, and finding paying mission partners as we grow our gamer base. Our current budget and timeline are based on winning the Gaming Challenge and can be viewed below [SEE APPENDIX: CARTOGRAPHER PROJECT BUDGET & TIMELINE].

6B. BUSINESS PLAN: PROOF OF CONCEPT: PILOT PROJECTS: To develop our proof of concept our team is using its existing professional networks to create pilot projects with Universities, Non-Profits, and Government organizations and populate our gamer pool with test subjects from the gaming. Our network provides a base of exciting missions. Our current pilot partner projects include: 1. A government agency, Sacramento Area Council of Governments[12] (California, USA connected through Justin's previous classmate), thematically themed service delivery, infrastructure and accountability project with Sacramento Area Council of Governments. We are currently in talks with a Senior Research Analyst to provide a constituent based pothole mapping project that allows citizens to geotag potholes and receive confirmation by city services. 2. An international governmental agency, UNDP BPPS Rapid Response & Preparedness[13] (a global project, connected through Justin's colleagues in the Rapid Response & Preparedness team), thematically themed around crisis response in multiple developing countries, we are in talks with the Unit head to develop a temporal and geospacial map of their previous and existing worldwide deployments. 3. A Non-Profit, Search for Common Ground Burundi[14] (Bujumbura, Burundi, connected through Justin's roommate at Search for Common Ground Burundi), and local radio stations, thematically themed around peacebuilding and rule of law, we are currently in working with a Conflict Sensitivity Specialist to develop a sensitive crime reporting and mapping system. 4. Universities, The City University of New York's Office of Environmental, Health, Safety and Risk

[12] Sacramento Area Council of Governments. *Available at: www.sacog.org/about/*. Viewed on June 2015
[13] UNDP, Rapid Response & Preparedness, CRU. *Available at:info.undp.org/global/popp/mc/Pages/Experts-Roster-for-Rapid-Response.aspx*. Viewed on June 2015
[14] Search for Common Ground Burundi. *Available at: www.sfcg.org/burundi/*. Viewed on June 2015

Management[15], and Columbia University SIPA's sustainability management program[16] (New York, USA, connected through Patrick's previous employer), both thematically themed around disaster risk assessment and governance, we are currently sending a proposal to the Director to develop a constituent reporting system for potential disaster risks on campus. Finally we will turn to our resident gamer and platform technology expert Richard Uy to draw in classic gamers from his over 12k large community based gaming website[17], to provide early testers to demonstrate functionality of the Cartographer platform. We believe that these projects, and early pro-bono work from our team, will establish our credibility, utility, accuracy, and a service price point for Mission Partners. This will provide both constituent gamers and turn our collaborations into paying Mission Partners.

6D. BUSINESS PLAN: DUEL CUSTOMER TYPE REVENUE STREAMS: Cartographer's duel customer market strategy includes a traditional approach of gamer monetization through In-App and retail purchases and a non-traditional partnership service provision strategy. We base our projected marketing targets off of existing In-App purchase research while we navigate through revenue stream terrain with crowd sourced data analysis services. Below you'll find our strategies and approaches.

6Di. REVENUE STREAMS: IN-APP STORE & IN-APP PURCHASES will consist of micro-transaction purchases of Karma Point, Cartographer's in-game currency. Real money can be traded for Karma Points, which in turn can be used to purchase an assortment of in game benefits and items. Based on the EEDAR report, and the UNESCO mentor sessions, the most profitable in-app purchases are resource replenishments, permanent in-game items, consumables that increase experience growth, unlockable levels, consumables that boost stats, consumables that lower wait time, and cosmetic items so our gameplay was designed to allow for multiple opportunities to tap into those needs.

Voyages require energy resources, which can be replenished in the In-App store and in game items that are dropped from other voyages or purchased with Karma Point. If during the course of a Voyage, Crew members are incapacitated, supplies run out or if you lose completely, you may choose to purchase a continue or supplies and reinvigorate a single or several Crew members.

Next, Explorers are purchasable in game packs of different values. Each pack contains a random assortment of potential Crew members which can contain normal Explorers like airplane pilots, caravan merchants, etc. or it can contain rare and super rare Mythical Explorers which are based on real historical figures. These Mythical Explorers have increased stats and hidden passives that distinguish themselves from normal Explorers.

During the Preparation and Supplies phase, you may choose which Ship/Transportation Upgrades to equip. These are also purchasable in the store but these won't avail of the lottery type system. Various Consumables may also be purchased and activated that will boost experience gain or Karma Point gain. Each voyage has a set budget that is pre-invested but players may add Karma Point to buy extra supplies to increase the odds of their success.

The primary Karma Point acquisition route will remain accuracy based game play to ensure Mission data analysis is complete and remains the primary focus, but our team will rigorously collect and analyze Karma Point metrics [SEE SECTION ON KARMA POINTS ANALYTICS] to maximize potential revenue. This revenue stream will be automated through Cartographer's gaming platform.

6Dii. BUSINESS PLAN: REVENUE STREAMS: PARTNERSHIPS & SPONSORSHIPS: will consist of Missions funded by the organizations or individuals that are interested in our data analysis service. Partners include Universities, Government Agencies, and NGOs. Costs will depend on the Mission's difficulty level. One potential risk is that the revenue stream will require substantial time for development and due to the novelty of the service, provide little revenue return. However, our content demands live Mission Partners so the work would piggy back essential mission development costs. In

[15] City University New York. Available at*:* *www.cuny.edu/about/administration/offices/ehsrm.html.* Viewed on June 2015
[16] Columbia , SIPA. Available at: *bulletin.columbia.edu/sipa/programs/empa/environmental-policy-sustainability-management-concentration/.* Viewed on June 2015
[17] Gay-Nerds.com. *Available at: http://gay-nerds.com/site/.* Viewed on June 2015

addition we will seek out mission Sponsors, individuals, foundations, and corporate sponsors that seek to advertise on a specific Mission or Mission Theme. Sponsors will receive tiered advertising benefits, that we will develop as we gauge interest and examine other tiered sponsorship strategies. Sponsors would have their logo and name added to mission game play and documents as well as a brief note as on their relationship to the mission. Any Sponsorship will require approval by mission partners and under go an ethics review—it is Cartographer's intent to veer away from any form of corporate "washing" and maintain its credibility to speak clearly on obstacles to peace and sustainability. This revenue stream will require active marketing and outreach. [SEE MARKETING STRATEGY]

6Diii. BUSINESS PLAN: OTHER SOURCES OF REVENUE Cartographer will create YouTube content such as trailers, tutorials and recaps that will be monetized. These monetization strategies include Ads and Directed Product Sales. Cartographer would use TVA's Cost Per View (CPV) advertising model and Amazon's "Affiliate links and banners" and Apple's music "Affiliate Program", and other directed sales programs, to connect our gamers to relevant books, world music, and products.

We also intend to open a web store that sells physical versions of In-App Items. This includes achievement badges, Cartographer Books, and Mission Posters. To ensure low overhead and zero inventories, items will be ordered on a "Kickstarter" model that requires achieving a minimum target for an order to be placed. Mission Posters will work on Zenfolio's platform, which charges customers directly. This revenue stream will be automated through Cartographer's website and managed by Cartographer's Core Team.

6Div. BUSINESS PLAN: EXPANDING SERVICES & GAMEPLAY FEATURES. During potential Mission Partner outreach for this project, we saw a long-term opportunity to build an Assessment, Monitoring, and Evaluation service company centered on our gaming platform, Cartographer Analytics[18]. It is not essential to the success and sustainability of the platform, but rather a natural outgrowth of the existing work need to develop and services provided by Cartographer. We hope to develop a pipeline of our best and driven gamers to join us for more substantial work as they master the skills needed to first analyze basic data, then lead teams of data analysis through the gaming environment.

6Dv. BUSINESS PLAN: RISK: SKILL GAPS & ADVISORS: Cartographer is confident in its abilities to develop our platform, in-depth content, and duel revenue markets. A clear risk is that the platform's complexity will create clear skills gaps. To address this we have reached out to colleagues interested in equity compensation to service as task based Advisors. The skills we have augmented our team with include business, legal, statistical, user experience, apple application, and android app developers. [SEE APPENDIX: CARTOGRAPHER ADVISORS]

Our core concept of connecting gamers to real world projects creates two potential markets/revenue streams, gamers and partners, to sustain our passion in delivering powerful real world content and participatory gaming. We believe this unique feature of our game to transcend into real world issues, tap into non-traditional gaming markets, our commitment to our vision, and ability to reach out to a talented network will contribute to a deeply educational game that goes beyond gaming.

7. MARKETING PLAN: Our marketing plan details our objectives, market segments, and the strategies that Cartographer will use to acquire, engage and retain players. It also elaborates on our approach to find mission partners, and projects revenue estimates that will ensure our game's financial sustainability.

7A. MARKETING STRATEGY: Our first objective is to have people play the game and have a sense that they are making a real-life contribution while having fun. The contribution is in the form of geotagging, which will generate data that organizations will be able to use to better allocate their resources. For the data to be useful, and for the game to be sustainable financially, we'll need to acquire and engage a certain amount of players. Our second objective is to partner with a certain number of organizations that need this type of crowdsourced information to create new missions for our community of players and keep the game engaging over time. We discuss these two objectives in further detail below.

[18] Cartographer Analytics. *Available at: http://cartographer.strikingly.com/*. Viewed on July 2015

Succeeding in these objectives will serve to prove the concept of the game in order to generate good reviews, but also, since both of our goals are interlinked, to catch the interest of other potential organizations, which will increase the number of players, thus creating a positive feedback loop.

While there are crowdsourced mapping competitors out there, most notably Tomnod, they are not games and rely on volunteers without providing incentives. Our platform differentiates itself in that it will connect gamers with real-life sustainable development issues, creating a tremendous opportunity to increase involvement and education in these issues. Our platform will also have the advantage of being distributed as a mobile app. Cartographer is therefore unique in its category and will be marketed as such.

7B. GAMER OUTREACH AND MARKETING STRATEGY (GOMS) OVERVIEW: The Cartographer adventure game, which has both immersive (RPG) and casual features (puzzles, trivia), and can be played individually or as part of a team, will be initially released on iOS devices, and it will target primarily men and women, ages 25-35. This initial target market is based on the content of our game and statistics provided by the EEDAR report on North American mobile gamers (2014).

According to EEDAR, over half (56%) of gamers are women, with puzzles and adventure games being the most popular ones. In 2014 the average age of gamers was 27.7 and the average spending was $32.65/user/year. Heavy spenders (more than $10/month), represent only 6% of all gamers but generate 51% of the revenue. They are more likely to be male, mid 20s-mid 30s, and they tend to play on both tablets and smartphones. The report also tells us that casual gamers represent 56% of all gamers, with 70% of them being female. Finally, of the 73% of smart device owners who are active gamers, a larger share plays on the Android platform, but more revenue comes from iOS devices. We'll refine our target market and divide it into smaller more specific segments once we start testing and getting data feedbacks.

When it comes to how people discover games, EEDAR identified the following: 53% from top of the charts, 36% word of mouth, 35% featured app, 33% saw someone play, 21% friend's Facebook post, 18% Facebook ad, 15% other social network, 13% mainstream media. Addressing the number one discovery source, analytics firm Distimo estimated in 2014 that it takes about 23,000 downloads/day to reach the top 50 on the free game chart in the App Store. While we cannot directly design a marketing strategy for our game to reach the top of the chart, we can however target the other identified discovery sources in our overall strategy, and by being successful at them, increase out chances for moving our game up the chart.

7Bi. GOMS I: **TESTING & FEEDBACK:** Our outreach and marketing strategy for gamer acquisition will start with a word of mouth campaign. We will begin by beta testing our product with a closed group of friends, colleagues, and early fans that are part of gaming, crisis mapping, and peacebuilding communities. These personal connections will help our team flush out functional, content, and appeal gaps/errors. A process of continued adjusting and reassessing will help refine the produce prior to any public or broader launch. After the initial process, this group will be the first to "invite" additional users to test the game.

7Bia. GOMS II: PRESS KIT & PRESS OUTREACH: Weeks before the launch, we'll reach out to many press outlets, online publications, gaming blogs, newspapers or even YouTubers to make a profile of the game, write reviews and schedule interviews to gain more exposure. We intend to specifically target gamer websites and use our contacts at places such as Kotaku, Destructoid, Joystiq, and jayisgames. Due to our unique gameplay, we can simultaneously offer two angles for news articles such as nostalgia with our upgraded Oregon Trail gameplay and our "Gamers are a force of good" angle. These approaches work well as gamers love to see themselves as a benevolent force in mainstream media such as the PS3 DNA Mapping network stories and charities such as Child's Play. In order to explain the game to our media contacts, we'll create our landing page and prepare a press kit containing Press Release, Biography, Screenshots, Trailer Video, Gameplay Videos, Fact Sheets, Press Coverage and a Demo Link.

7Bib. GOMS III: SOFT LAUNCH: Our general launch, or soft launch, will not require marketing capital. It will entail a general release of targeted, referred, and requested invitations to join Cartographer. These invitations will go to potential gamers from broader gaming, crisis mapping, and peacebuilding communities. We hope to achieve a manageable and controlled gamer growth rate by providing users

with the ability to "invite" additional gamers and controlling the number of invites a gamers can distribute. If this does not provide enough players we will begin social media and public engagement.

7Bic. GOMS IV: FEATURED APP: Given the uniqueness of the cartographer game and its real-life application to help humanitarian and sustainability missions, we believe that we can make a strong case to Apple to be a featured app on the App Store section, which is 100% hand curated, and localized depending on current events. Ideally our reach out to the press will have generated some good reviews already by the time we contact the App Store. While the curation team of the App Store does not meet directly with developers, they do take emails and want to hear about new games and their progress.

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Outreach & marketing strategy needs further refining to attract mainstream players.

7Bid. GOMS V: SOCIAL MEDIA: Because social media marketing is one of the most effective way to acquire and engage new users, we will heavily utilize it for our online strategy that will include campaigns based on content creation (photos, videos, music, blogs, articles) diffused across many platforms. The game itself will have social media integrated in it with prewritten messages and tweets to allow players to share with their friends what missions they are playing, their achievements, and invite them to join in. Facebook Ads and Twitter Ads will be used to further our reach and target specific markets. We'll also use social media to communicate tips, offers and updates with the community, and through analytics, gain better insights on our users.

7Bie. GOMS VI: PUSH NOTIFICATIONS: We'll use mobile push notifications to send customized targeted scheduled messages promoting new missions, create brand awareness, and keep the users engaged.

7Bif. GOMS VIII: LIFETIME VALUE (LTV) & COST PER INSTALL (CPI) ADVERTISING: Our goal is to turn users into purchasers and attract as many high spenders as possible over the first few months. To drive even more awareness and installations after the launch, we'll consider adding CPI advertising to our strategy. CPI costs for mobile games were said to be between $1 and $1.50 at the end of 2014. To maximize this part of our advertising strategy, and to ensure a long-term acquisition and ROI, we'll look at the Lifetime Value metric, which is dependent on the churn rate. Once the LTV metric is higher than the CPI, this option becomes profitable and less risky.

7C. PARTNER OUTREACH AND MARKETING STRATEGY (POMS) OVERVIEW: Cartographer's Partner Outreach and Marketing Strategy will mirror classic outreach coordination tactics. We believe that we are uniquely situated to take advantage of our community knowledge as our team has deep roots with International Orgs, Research Universities, Civic Agencies, and Non-Profit Communities. Our methods will include pilot projects, informational interviews, social media engagement, and engagement in community spaces. In addition we bring an analytic approach to the to the organizations we reach out to as we look at our response rates.

7Ci. POMS PART 1: PILOT PROJECTS: The key to our first POMS is to demonstrate the efficacy and benefit of using Cartographer's data analysis services. We want to showcase the accuracy and speed of crowdsourcing through the Cartographer platform along with the added benefit of constituent participation. We are committed to finding pilot projects in each our target Partner markets to demonstrate utility for: local governments, Universities, Non-Profits, International Organizations and Corporations. Our market research shows that these types of organizations already have potential budgets for a diverse range of geospatial projects.

7Cii. POMS PART 2: DESK REVIEW OF SIMILAR CONTRACTS: The Cartographer has begun its second POM Strategy and started looking at contract distribution for geospatial data analysis services. We have found that cities, national level agencies, and UN orgs spend a considerable amount of capital on these services (BCPR Annual Report). This initial desk review has shown that there is potential for revenue, parallel revenue streams, and we will continue to investigate in our other target markets to assist in structuring our proposals as we reach out to potential markets.

7Ciii. POMS PART 3: **CONVERSION RATE:** Cartographer believes that partner projects will mutually reinforce our GOMS by drawing in a Partner's constituent as gamers who join the platform and

then stay on for additional projects. Identifying the conversation rate and monetization for this demographic will allow us to measure the additional "boost" to our GOMS strategy.

7Ciii. MARKETING ANALYTICS: As we move forward, the Cartographer team will begin to collect data from our 5 revenue streams and from our marketing strategy elements. The key indicators for each one of these will be used to determine changes and prioritization in our marketing strategy. For all revenue streams we will be determining the demographic, the cost per acquisition (user/viewer/partner/sponsor), the amount of revenue a user generates, and the type of purchase users make. For In game purchases, our main source of revenue, we plan to use gaming analytics to examine what behaviors are driving purchases, and how it affects data, in order to bolster our marketing and monetization efforts.

7D. MARKETING FORECAST: Looking at our budget and revenue estimates, and based on the EEDAR report's numbers on what percentages of gamers spend and how much they spend on average each year, we have established the following realistic goals by the end of year one: 1. Get 1530 active users[19] (832 paying users, 92 heavy, 750 moderate), 2. Get 10 missions partners, 3. Generate $50,000 amount of revenue (from in-app purchases). A 3-year projection for these figures along with a cost vs. revenue graph can be found as an appendix. [SEE APPENDIX: MARKETING FORECAST]

8A. PRIMARY RISKS & ETHICS: As we consider how to expand our product and the nature of crowdsourcing's fast, effective, and open sourced data delivery for a variety of sensitive materials, our team reflects on Mary Anderson's "Do no harm" principles. In addition to our Review of medium and high-risk mission partner projects, we examine three potential Risks areas and mitigation strategies: the risk of an overloaded server, the risk of inaccurate data, and the risk of confidentiality breaches.

8B. RISK OF SERVER FAILURE: There is a risk of being unable to consistently support a crisis-mapping mission, particularly if our maps are inundated by a large shift in web traffic. These crashes, in the form of MySQL server failures and memCache malfunctions, are common for servers not used to heavy traffic. As a consequence this could impact human life during crisis mapping mission, versus data monitoring, geotagging, or verification missions, because individuals could be using the information to save their lives or the lives of other people. We will not service the "response" form of geotagging, in this capacity until our system is well vetted, and we have not decided if we will serve as a primary map to the general public, versus being a closed system that delivers information to other service providers. When we are ready to fill this role, we will be sure to test our systems and run quality simulations.

CARTOGRAPHER
MENTOR COMMENT: What are the risks involved in having civilians report this type of data?

8C. RISK OF INACCURATE DATA: Accurate data assessment and generation is one of Cartographer's primary services for Mission Partners and Sponsors. This makes it a critical feature for steady revenue generation and growth. Cartographer has thus provided an extensive risk assessment and mitigation strategy to address concerns and ensure quality control of data generation.

The first risk of concern is the use of non-expert data analysis that creates inaccurate results that could be used for real world decision-making. This risk is minimized, due to the redundancy aspect of crowdsourcing; players are performing the exact same tasks, and our platform will use a comparative statistical analysis and average the submissions to move towards more accurate results. This requires a certain amount of players to be effective which we will determine during our beta testing. Available crowdsourcing platforms such as SBTF also show efficacy with 150-250 geotaggers, giving us a baseline number to target. Second, articles on remote sensing have shown that the type of non-expert data analysis that Cartographer supports can be effective regardless of redundancy. Third, over time, gamers will develop a "baseline" as missions will have similar mechanics and game play, hence a baseline of the expected result and trends can be used as a comparison. Fourth, training missions will require gamers to go through training that imitates mission actions prior to live missions. This will ensure that players understand the game, how to play it, and what type of information they are submitting. Fifth, player data will be collected, compared, and converted to accuracy and performance ratings that players can use to improve their own game play and administrators can use to guide or retrain players. This provides an

[19] We reached that number by dividing our estimated year one revenue with the EEDAR 2014 average $32.65/user/year

opportunity to identify, categorize, and rank players based on their capacities, giving them access to more difficult missions. This system will be complimented by incentives that reward accurate game play.

8C. RISK OF INACCURATE DATA DUE TO ARTIFICIAL INCENTIVES: Our model is further complicated, compared to existing crowdsourcing geotagging platforms, because our gaming incentives have the potential to incentivize inaccurate geotagging or "gaming of the system". Our first method to understand this behavior and teach against it is our training missions. Training missions will be based on existing missions with data collected from non-gaming crowdsourced geotagging platforms, such as Ushahidi, and compared with the data we generate. From here we will analyze our play incentives and readjust to provide comparable or better results. Second, through out our training we will have inserted "gold standards" which are inserted in a gamer's workflow and are "checkpoints" which require a predetermined type of answer for the gamer to progress. Starting with very basic tasks and increasing gradually their difficulty, this type of test tells early on whether the player intends to provide false or inaccurate answers just to get the reward. This filters users' responses and encourage them to play the game as intended. This means we intend to combat this by subtracting points for inaccurate geotagging and comparing our training mission data with the original data collected from non-gaming crowdsourced geotagging platforms. We also plan to add a layer of crowd verification (gamer to gamer) when appropriate, a player accuracy factor that affects player ranking, and an external data comparison to ensure that data is valid (when needed). Finally a crowdranking algorithm can be employed to triangulate data and the consistency of reporting on a given dataset. Cartographer will also seek out strategies that will provide a statistically significant check and balance system to ensure speed with accuracy.

8D. RISK OF PARTNER CONFIDENTIALITY BREACHES: The final risk we explored was compromised security due to confidentiality breaches by potential deployments. To help mission partners weigh their potential risk, we will provide transparent data on our performance and platform, and allow them to gauge their own risk. In addition, the Cartographer team will provide pre and post reviews identifying potential threats through our mixed IRB and risk assessment review.

9. PLATFORM: The initial target platform for our demo is going to focus on browsers. The game will be coded in HTML5, CSS3, and Javascript with the back end being in SQL. Because of the portability and adaptability of HTML5, players can test out the game on their iOS and Android devices before installing and playing our finalized app in the app store. Usability for different devices and browsers will need to be adjusted as well as touch implementation and motions need to be taken into consideration. Our pared down version of the game will feature some of our basic Explorers and a sample Voyage. This version of the game will not need to be played online.

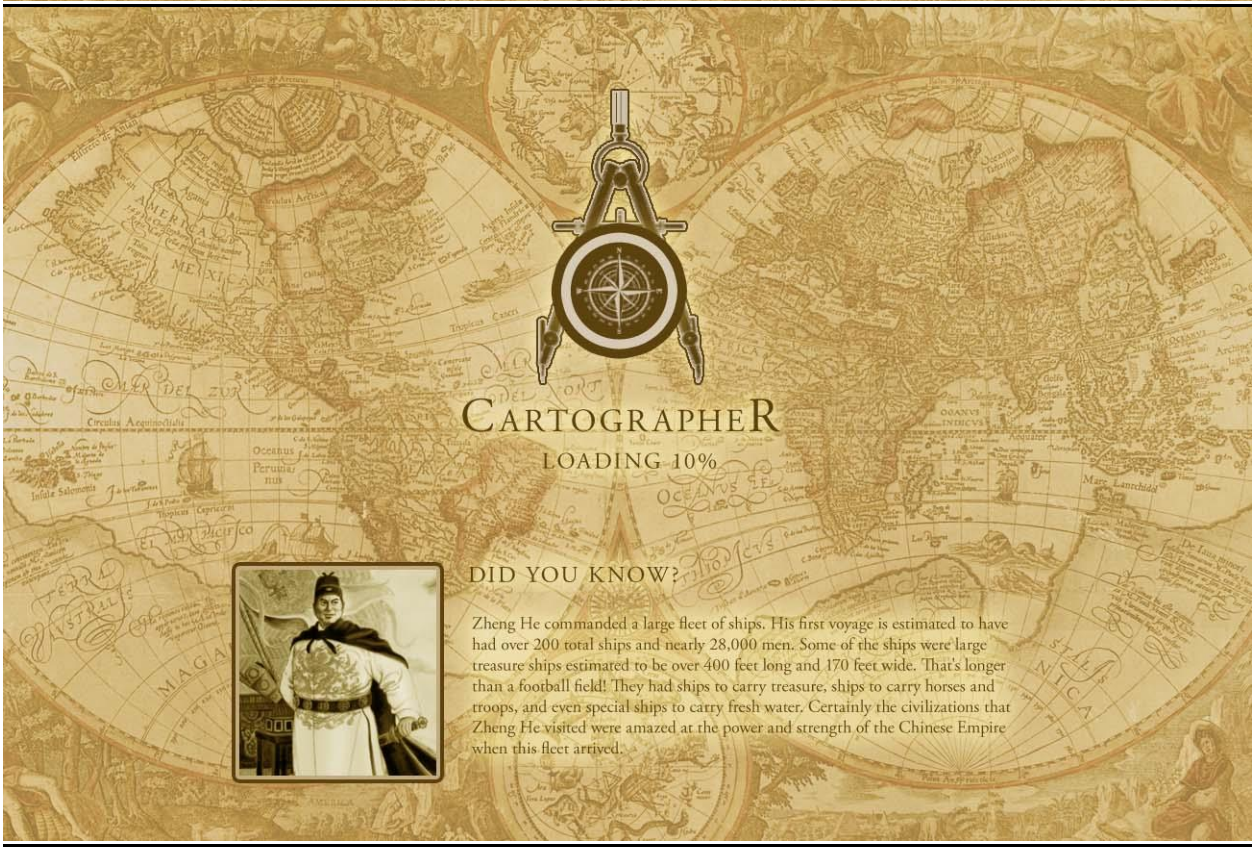
After successful development of our demo, we will focus our efforts on our Apple app due to the bigger source of revenue. After hitting certain benchmarks and milestones, we will develop an Android version.

10. SCHEDULE: In 4 months, our aim is to complete the base app prototype. This includes the user profiles, a basic interface, a repository of completed missions, and a repository of missions that need to be worked on, social media integration. In the next 2 months, focus will be on refining the game based on testing and feedback and creating content and base missions with the intention to have an alpha release. 1 month will be given as a grace period in case of unforeseen problems with development. [SEE APPENDIX: CARTOGRAPHER PROJECT TIMELINE]

11. FINAL THOUGHTS: The Cartographer team is dedicated to social justice, digital technologies, and leaving a positive mark on the world. Our diverse experiences and skill sets will help us steer the success of this hybrid product. We look forward to hearing your decision and hope to have you join the Cartographer team in unleashing the power of gaming on real world issues.

APPENDIX: ART DESIGN THROUGH WIRE FRAMES:

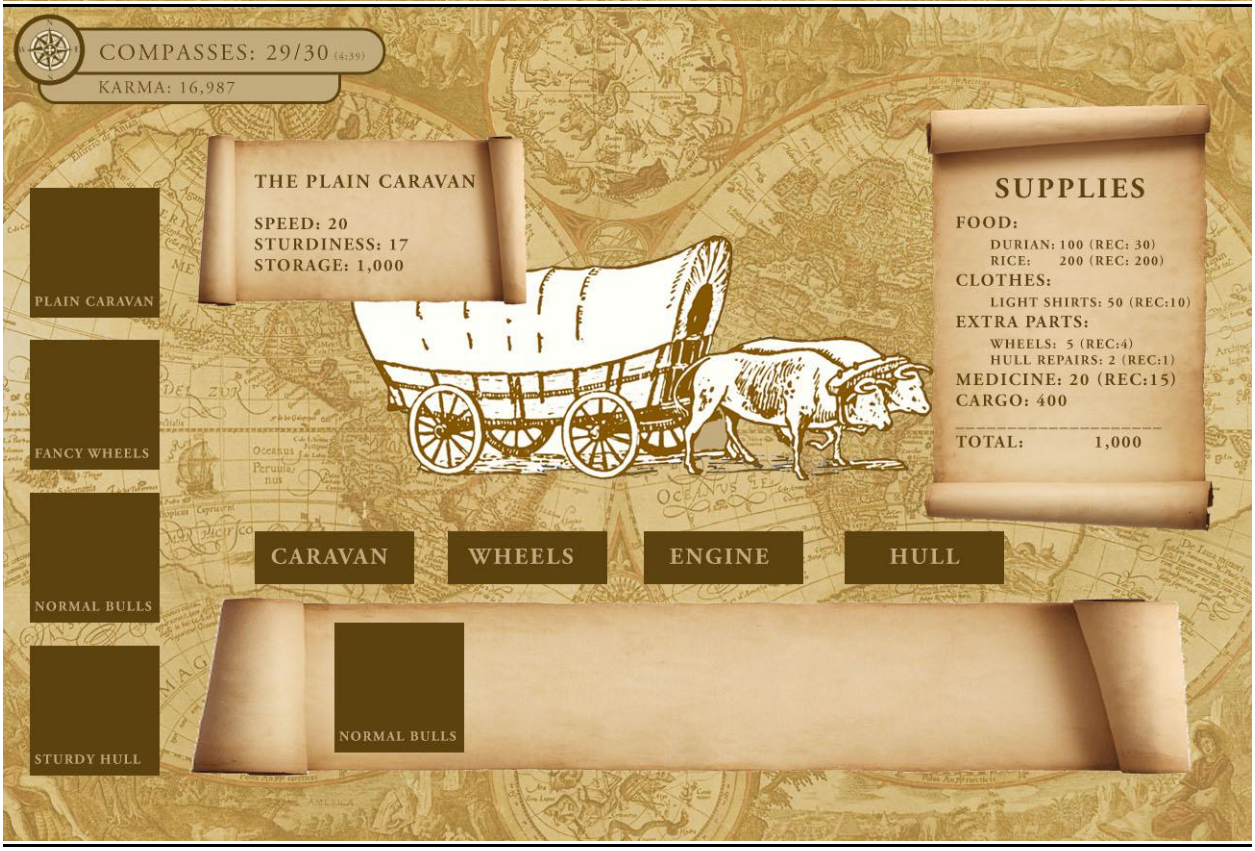

CARTOGRAPHER
SIGN IN
Sign in with Facebook
Sign in with Twitter
Sign in with Google
OR
USERNAME:
PASSWORD:
PLAY NOW
CREATE NEW ACCOUNT
Sign in with Facebook
Sign in with Twitter
Sign in with Google
OR
USERNAME:
PASSWORD:
REGISTER


CARTOGRAPHER
LOADING 10%
DID YOU KNOW?
Zheng He commanded a large fleet of ships. His first voyage is estimated to have had over 200 total ships and nearly 28,000 men. Some of the ships were large treasure ships estimated to be over 400 feet long and 170 feet wide. That's longer than a football field! They had ships to carry treasure, ships to carry horses and troops, and even special ships to carry fresh water. Certainly the civilizations that Zheng He visited were amazed at the power and strength of the Chinese Empire when this fleet arrived.


CARTOGRAPHER
MENU
TUTORIAL
VOYAGES
EXPEDITIONS
EXPLORERS
HELP & SETTINGS
17
USER: J-Dawg2015
TITLE: The Intrepid Wanderer
GOODWILL: 5,045
GLOBAL RANK: 131st
SHARE PROFILE:


COMPASSES: 29/30 (4;39)
KARMA: 16,987
VOYAGE:
JOURNEY TO TACLOBAN
LOCATION: LEYTE, PHILIPPINES
MISSION BRIEF: DELIVER AID TO PEOPLE
MISSION: In November 2013, this area was ravaged by Typhoon Haiyan. Our mission is to gather together a crew and deliver care packages and relief goods to the people there. Along the way, we'll need to map out damaged buildings for future aid efforts and damage assessment
RISKS: From what we know, roads and infrastructure were heavily damaged and littered with debris so Explorers with high Navigation are recommended to prevent delays and find alternate paths. High Aptitude is also recommended as debris increases the likelihood of our tranportation breaking down along the way
SKILLS NEEDED: DAMAGE ASSESSMENT, GEOTAGGING
REWARD: 5,000 KARMA
ACCEPT MISSION?
17
USER: J-Dawg2015
TITLE: The Intrepid Wanderer
GOODWILL: 5,045
GLOBAL RANK: 131st
SHARE PROFILE:


COMPASSES: 29/30 (4:39)
KARMA: 16,987
EXPLORER:
MANSA MUSA I
LEVEL
3
GUT: 10
FORTITUDE: 9
RESILIENCE:5
APTITUDE: 12
NAVIGATION: 11
LEADER
NAVIGATOR
MECHANIC
ADVENTURER
3
3
3
3
MANSA MUSA
PIONEER
PIONEER
PIONEER


COMPASSES: 29/30 (4:39)
KARMA: 16,987
THE PLAIN CARAVAN
SPEED: 20
STURDINESS: 17
STORAGE: 1,000
SUPPLIES
FOOD:
DURIAN: 100 (REC: 30)
RICE: 200 (REC: 200)
CLOTHES:
LIGHT SHIRTS: 50 (REC:10)
EXTRA PARTS:
WHEELS: 5 (REC:4)
HULL REPAIRS: 2 (REC:1)
MEDICINE: 20 (REC:15)
CARGO: 400
TOTAL: 1,000
PLAIN CARAVAN
FANCY WHEELS
NORMAL BULLS
STURDY HULL
CARAVAN
WHEELS
ENGINE
HULL
NORMAL BULLS


COMPASSES: 29/30 (4:39)
KARMA: 16,987
DAY
14
TRAVEL PHASES LEFT
1
SUPPLIES
FOOD:
DURIAN: 100 (REC: 30)
RICE: 200 (REC: 200)
CLOTHES:
LIGHT SHIRTS: 50 (REC:10)
EXTRA PARTS:
WHEELS: 5 (REC:4)
HULL REPAIRS: 2 (REC:1)
MEDICINE: 20 (REC:15)
CARGO: 400
TOTAL: 1,000
MANSA ROLLS:
6
MANSA MUSA I HAS BEEN AFFLICTED WITH DENGUE FEVER
DISEASE ENCOUNTER:
8


CARTOGRAPHER
MISSION: TAG DAMAGED BUILDINGS AND STRUCTURES
HINTS:
* Zoom in! Some buildings are really small and difficult to see
* If there are several destroyed structures nearby, just tag the general area, covered by the pin
* Careful! Sometimes debris looks like destroyed buildings. Compare before and after shots carefully
* Roads usually lead to structures so if you see a road but not buildings, chances are, something there was destroyed
COMPLETE PUZZLE
SAVE AND EXIT


CARTOGRAPHER
CONGRATULATIONS!
Cargo Delivered.....231
Overall Puzzle Accuracy.....85%
Karma Earned.....5,450
Goodwill Earned.....800
Items Found:
NONE
Achievements unlocked:
Eagle Eye - Identified 80+% of all Targets on a map
What's your damage? - Completed 100 Damage Assessment Puzzles
Share your results on social media:
VOYAGE: JOURNEY TO TACLOBAN
LOCATION: LEYTE, PHILIPPINES
MISSION SUMMARY:
More than 700 residential buildings were completely destroyed and more than 1200 were damaged by the Haiyan typhoon in the Tacloban city alone (Philippines). Thanks to your efforts, the damage assessment maps that are being generated are expected to support response activities and, in the longer term, reconstruction efforts.
That is the total number of tags created by 168 volunteers after processing 3,909 satellite images in just five days. A quarter of a million tags in 120 hours; that's more than 2,000 tags per hour.
MAIN MENU

APPENDIX: UNESCO | MGIEP | GAMING CHALLENGE CONSOLIDATED FEEDBACK

We have consolidated our feedback responses in order to provide an easy way for judges to review and find our responses to their questions. Further details are integrated without our document.

1. SUBJECT: DATA
    a. MENTOR COMMENT: Somewhat unclear where data comes from (partners provide and analyze results, but how do players get to this data etc.)?
    b. **CARTOGRAPHER'S DATA SOURCES: MAP DATA**: The primary data players encounter is satellite images. Players then generate geographic information, by tagging and identifying phenomena from the satellite images—also known as remote sensing. In addition to the free stream of lower-resolution, specialized satellite photography released by the U.S. government, there are space-based products that are made widely available at no cost, especially during emergencies, through mechanisms such as the Humanitarian Information Centres (HICs), ReliefWeb, AlertNet, UNOSAT portal, and and the International Charter on Space and Major Disasters can be invoked through UNOOSA during major disasters (This asks participating space agencies to release satellite data at no cost. Furthermore, private companies have started offering their own satellite-derived services: 'Skybox for Good', the company Skybox (owned by Google), provides free up-to-date open source high resolution satellite images and high definition videos to people and organizations in order to help support projects that save lives, protect the environment, promote education, and positively impact humanity. The data is under Creative Commons copyright, meaning that its use is permitted and free under the condition of attributing the source. DigitalGlobe: provides high-resolution satellite imagery for free for academic projects. FirstLook is their subscription online service for emergency management.
    c. **CARTOGRAPHER'S DATA SOURCES: SOCIAL MEDIA:** The second data type that players will encounter comes from social medial. Whenever a disaster strikes, a large amount of user-generated multimedia content gets quickly posted on all social media. Cartographer's mission partners and our Content Development Team will collect and consolidate datasets of pictures, videos, messages and tweets that are submitted on social networks via. Then players will analyze this data by using our microtasking platform (also known as a clicker), Cartographer's puzzle games. Our Puzzles allow players to categorize, filter and tag the datasets, which can be automatically scraped from social media or even pre-filtered by keywords or hashtags, based on the needs of the organizations.
2. SUBJECT: PLAYER ENGAGEMENT: FUN
    a. MENTOR COMMENT: Gameplay is not particularly compelling beyond connecting to world (ie not very "fun" to play this game in and of itself)
    b. SECTION: IMMERSIVE GAME FLOW
3. SUBJECT: PLAYER ENGAGEMENT: INCENTIVES
    a. MENTOR COMMENT: How to sustain or incentivize player interest and engagement, this might be a challenge?
    b. RESPONSE:
        i. [SEE INCENTIVES SECTION]
4. SUBJECT: LEARNING:
    a. MENTOR COMMENT: PART 1: The idea of having real-world impact is great, but the player never seems to get deeper levels or learning, level up, or make progress in skills or critical thinking.
        i. In order to tackle this, we redesigned our game to work on two different layers. The first layer is the Oregon Trail game aspect and the second layer is our Mapping Puzzle game. For the Oregon Trail aspect, there are multiple levels of

difficulty such as making smart decisions based on the specific map and adapting their Voyage strategy. For example, a marshland map may have higher chances for disease so players will need to adapt their supply choices with more medicine and pick explorers with higher Fortitude. Second, there are clear benchmarks of progress as each Player account as its own level, skill levels, explorer levels and unlocked Voyages. For the second layer, skill levels progress depending on the type of Mapping puzzle they complete and we can ramp up difficulty by adding a time limit to missions or by adding thematic objects to find on top of their given task such as identifying local flora or fauna.

b. MENTOR COMMENT: PART 2: It's unclear how geotagging will work (who can play? Do you have to be in the area where the crisis is happening in order to contribute information/tag?).
    i. You do not need to be a local or be in the affected area to geotag. Being a local gives you knowledge benefits but it is not a requirement. In a crisis mapping example, we would translate social media into English so people can sort and tag it while also providing the original text for people who understand the language. People from all over the world can provide corrections and geotag information based on what they see on the maps/data that we give them.
c. MENTOR COMMENT: PART 3: "…Part of the execution also relies on partner organizations, which makes the feasibility and sustainability of this game unclear."
    i. RESPONSE: [SEE CARTOGRAPHER'S MISSION DESIGN PROCESS]: Cartographer's Content Development Team (CDT) will create Training, Stock, and Live Missions. Training and Stock missions do not require mission partner research projects and will be developed based on existing crowdsourced geotagged deployments by organizations such as SBTF and Tomnod. This will allow new users to receive instant performance feedback and learn the mechanics of gameplay through practice. Stock missions that have already been geotagged and completed will be recycled for new users. Finally live missions will be created with partners, incorporating their projects and research, or can be created based on user requests or Cartographer's CDT

5. SUBJECT: LEARNING OUTCOMES
    a. MENTOR COMMENT: What are the learning outcomes of this game? How can players connect their activities to structural inequalities and violence, and take action themselves to help prevent violence rather than simply report it?
        i. THREE LEARNING OUTCOMES:
            1. Community Context
            2. Thematic Context
            3. Data Analysis
6. SUBJECT: RISK:
    a. MENTOR COMMENT: What are the risks involved in having civilians report this type of data?
        i. RESPONSE: The first risk of concern is the use of non-expert data analysis that creates inaccurate results that could be used for real world decision-making. This risk is minimized, due to the redundancy aspect of crowdsourcing; players are performing the exact same tasks, and our platform will use a comparative statistical analysis and average the submissions to help move towards a more accurate result. This requires a certain amount of players to be effective which we will determine during our beta testing. Available crowdsourcing platforms such as SBTF also show efficacy with 150-250 geotaggers, giving us a baseline number to target. Second, articles on remote sensing have shown that the type of non-expert data analysis that Cartographer supports can be effective regardless of redundancy. Third, over time, gamers will develop a "baseline" as missions

will have similar mechanics and game play, hence a baseline of the expected result and trends can be used as a comparison. Forth, training missions will require gamers to go through training that imitates mission actions prior to live missions. This will ensure that players understand the game, how to play it, and what type of information they are submitting. Fifth, player data will be collected, compared, and converted to accuracy and performance ratings that players can use to improve their own game play and administrators can use to guide or retrain players. This provides an opportunity to identify, categorize, and rank players based on their capacities, giving them access to more difficult missions. This system will be complimented by incentives that reward accurate game play.

7. SUBJECT: MARKETING:
    a. COMMENT: Outreach and marketing strategy needs further refining to attract mainstream players.
        i. RESPONSE: [SEE MARKETING SECTION]

APPENDIX: PROJECT TIMELINE

CARTOGRAPHER PROJECT TIMELINE

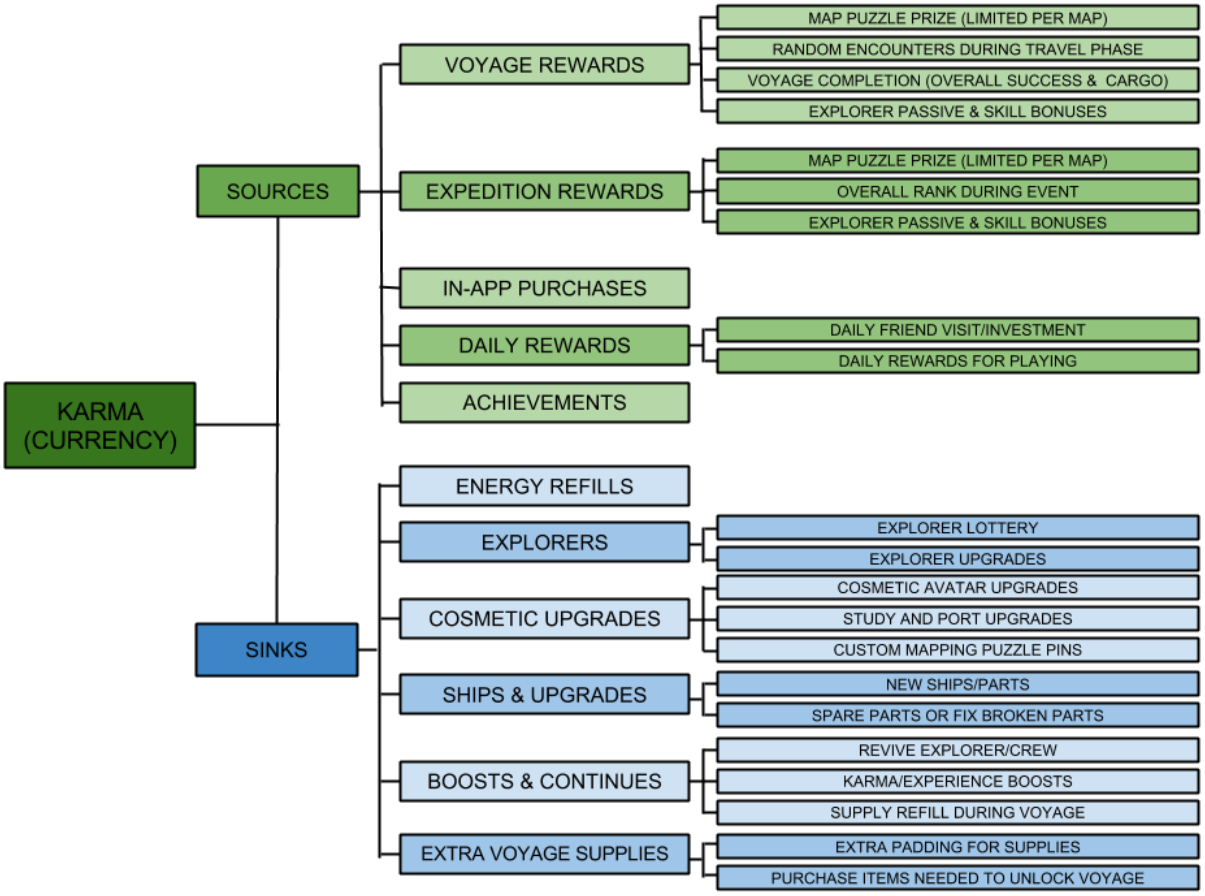
	Deliverables	Time	M1				M2				M3				M4				M5				M6				M7			
			W1	W2	W3	W4	W1	W2	W3	W4	W1	W2	W3	W4	W1	W2	W3	W4	W1	W2	W3	W4	W1	W2	W3	W4	W1	W2	W3	W4
PHASE 1	Set up server, testing environments, production environments	2W																												
	Sort out copyright and trademarks	2W																												
	Determine Game Player Pattern & Appropriate Incentive Structure	2W																												
	Design Accurancy and Accountability Mechanisms	3W																												
	Develop Indicators for Common Mission Types	1W																												
	Create basic wireframes and coding schematics	3W																												
	Partner Briefing Guidelines & Template	1W																												
	Sample Briefing Packages	1W																												
	Business Model Development	1W																												
PHASE 2	Create and refine basic art assets for the game	3W																												
	Get sound effects, music and image licenses.	2W																												
	Identify Alpha Testers	4W																												
	Refine Protoype Demo	3W																												
	Debug, Refactor and Optimize	1W																												
	Accuracy Requirements and Guidelines	1W																												
	Business Model fine tuning	1W																												
	Content Creation Guidelines for Alpha Missions	1W																												
PHASE 3	Develop Apple App	16W																												
	Debug, Refactor and Optimize	9W																												
	Test on Different Devices	5W																												
	Alpha Launch	4W																												
	Media Marketing	3W																												
	Alpha Partner Mission Research & Development	9W																												
	Online Persona Building and Coding	3W																												
	Press Kits and Youtube Content	4W																												
PHASE 4	Beta Testing	3W																												
	Broad Media Outreach	3W																												

APPENDIX: CARTOGRAPHER PROJECT BUDGET

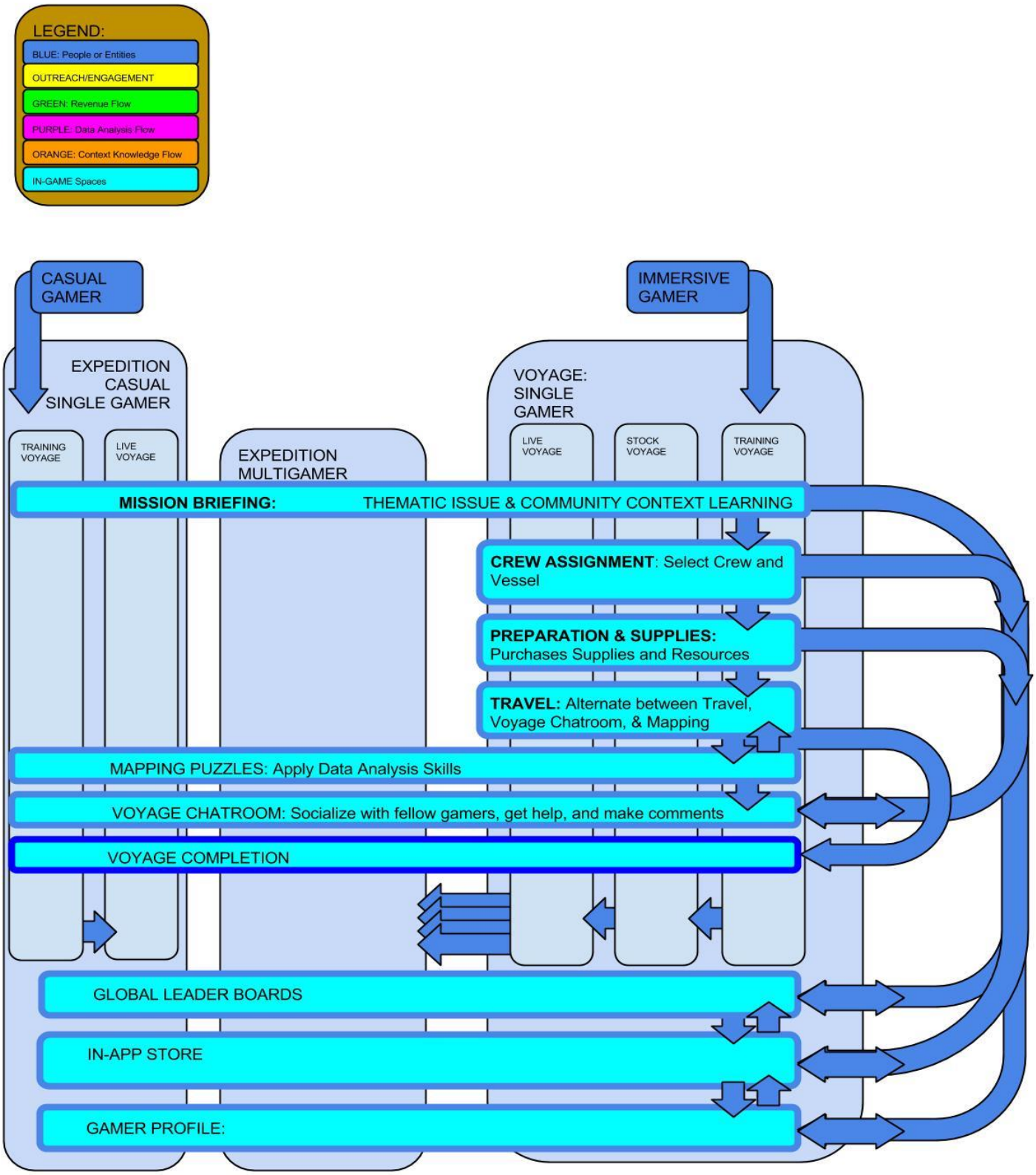
Breakdown:	Total Hours	Allocated Budget
Platform Development	1,213.50	57,000
Content Development	395	20,000
Art Design	271.5	8,000
Music Design	50	3,000
Sound effect licensing		1,000
Code & Art Asset licensing		5,000
Server Maintenance for 6 months		5,000
Incorporation		1,000
Total:	**1,930**	**100,000**

Stage	Component	Expected Hours
Planning	Research and discovery	40
	Scope definition	27
Design	Wireframe design - seven screens	56
	Visual Design - seven screens	87.5
	User experience design	28
	Character & Explorer design	80
	Music Composition	50
Features	Native device features	29
	User engagement, such as SMS, Email, Push, Social	30
	Game Center Achievements	20
	User login	28
	Use of location data	24
	Payments	40
	Sync across devices	62.5
Infrastructure	Initial setup/Basic controls	20
	Data storage	40
	Third-party API integration	50
	Access to enterprise data	100
	Data encryption	40
	Skill/Achievement/Goodwill System	40
	In Game Economy Balancing	40
	Voyage System	60
	Character System	40
	Explorer System	60
	Scatterplot/Accuracy Check	30
	Scalability/Large number of users	130
	Web portal or CMS to manage application	120
Content Development	Pilot Project Outreach: University, Non Profit, Civic,	10
	Mission Partner/Sponsor Outreach	40
	Stock Missions Thematic Review (10x5)	50
	Stock Missions Community Review (10x5)	50
	Stock Missions Indicator & Item Dev (5x5)	25
	Stock Missions Item Development (10x5)	25
	Storyline Development	50
	Process Review	5
	Effectiveness Metrics	2
Web Presence	Website Design	30
	Social Media Coordination	30
	YouTube Video production & design	40
	Website Development	30
Testing	Internal, user, and deployment testing	160
Deployment	Licensing	11
Total Hours		**1,372**

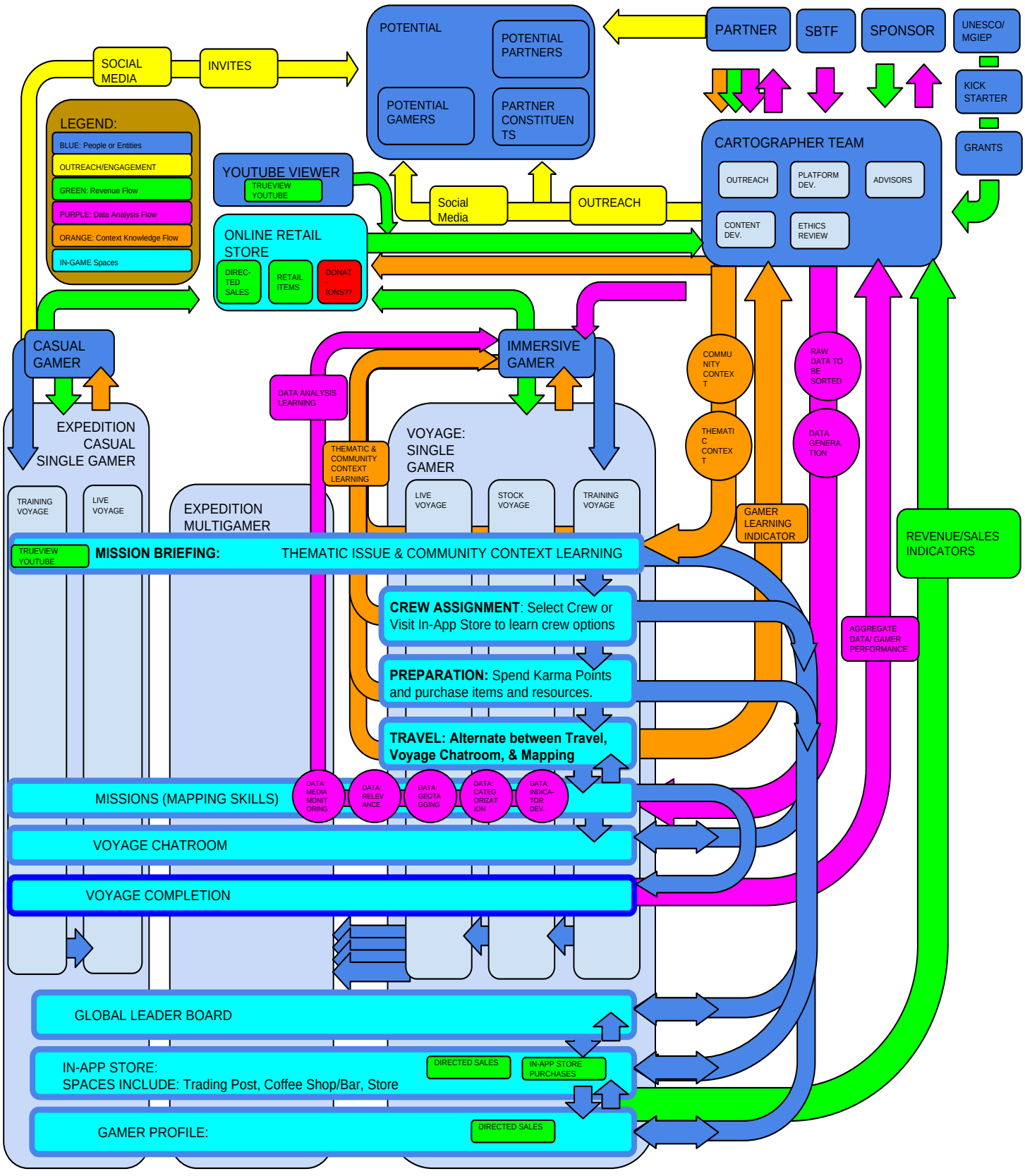
APPENDIX: CARTOGRAPHER KARMA ECONOMY



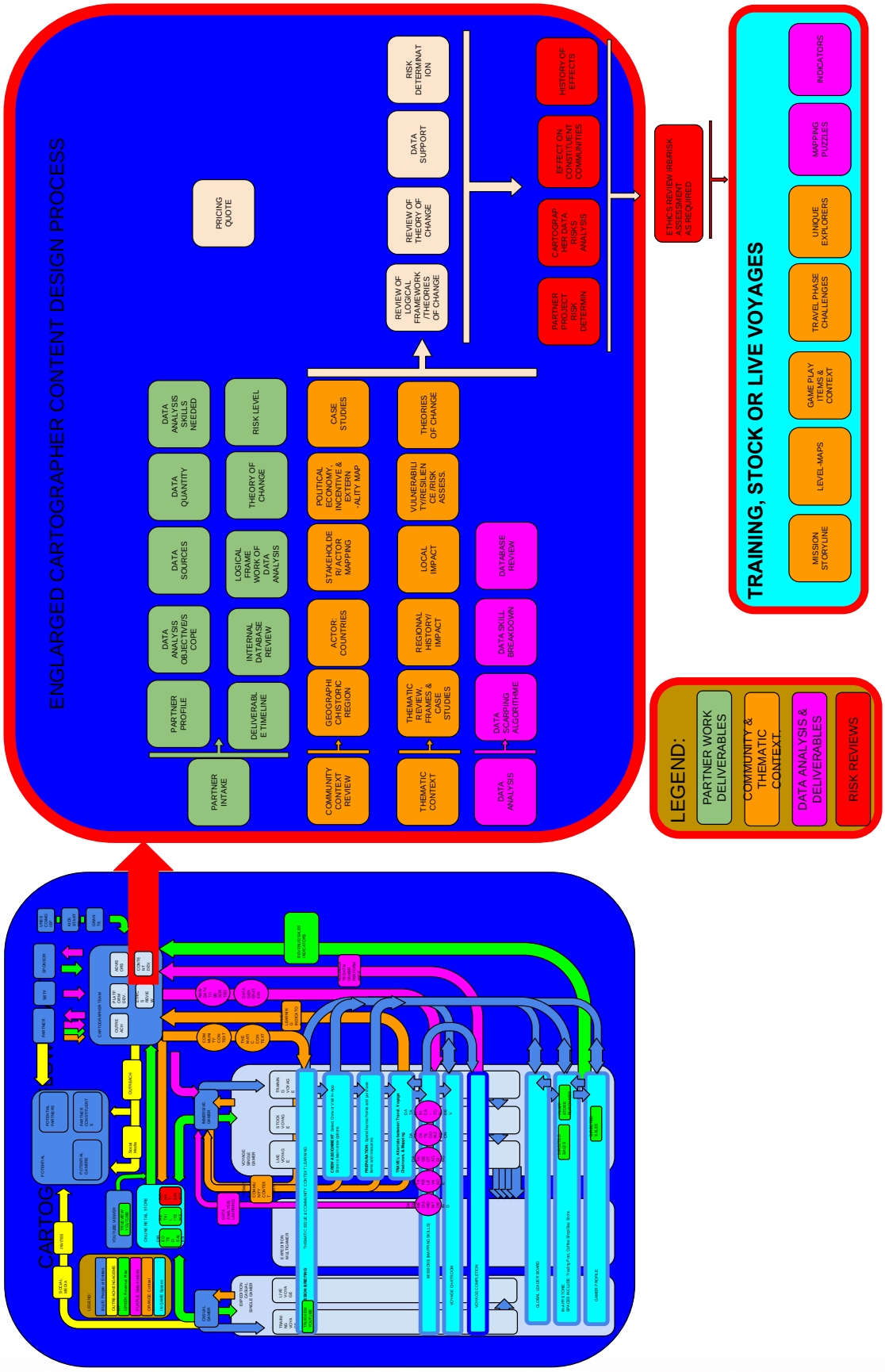
APPENDIX: CARTOGRAPHER GAMER PLAY FLOW CHART



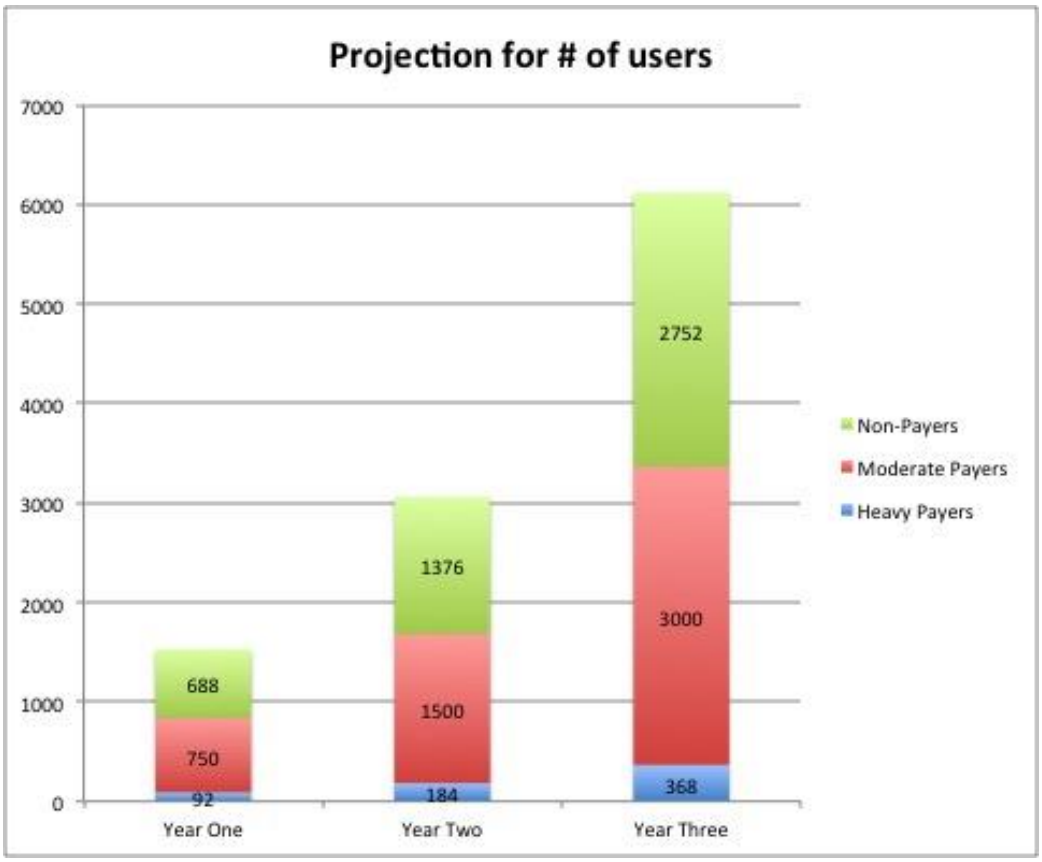
APPENDIX: CARTOGRAPHER CONTENT DESIGN PROCESS

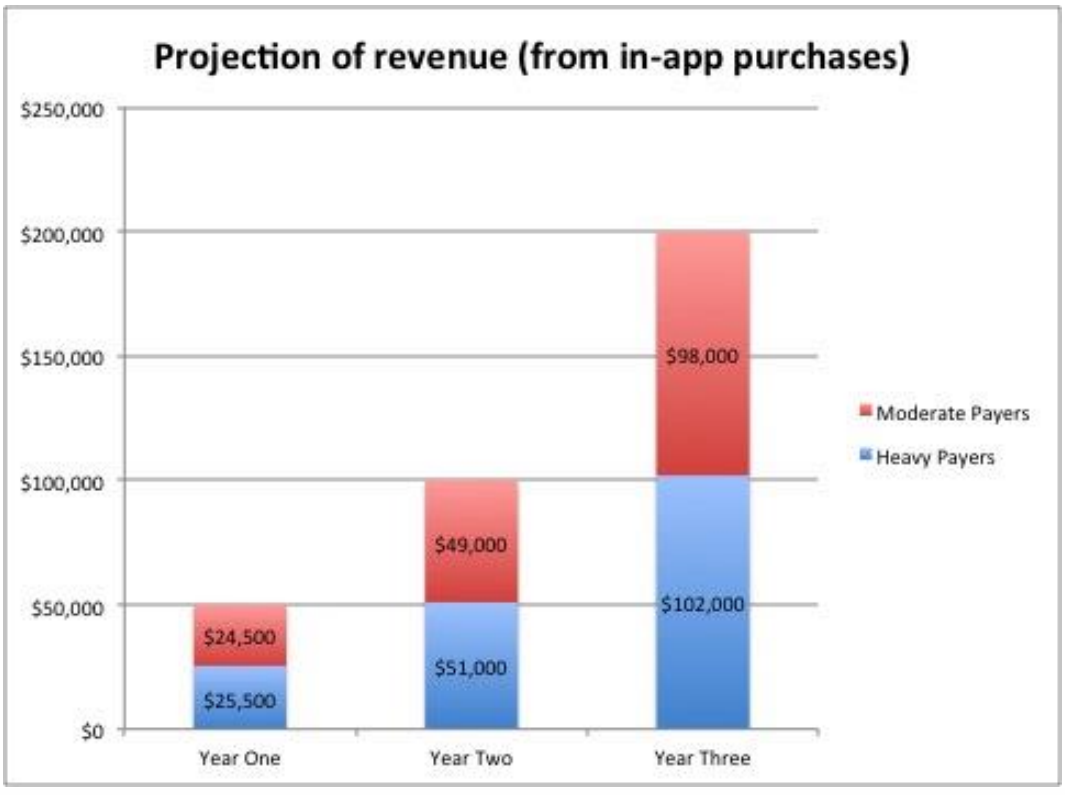


APPENDIX: CARTOGRAPHER CONTENT DESIGN PROCESS

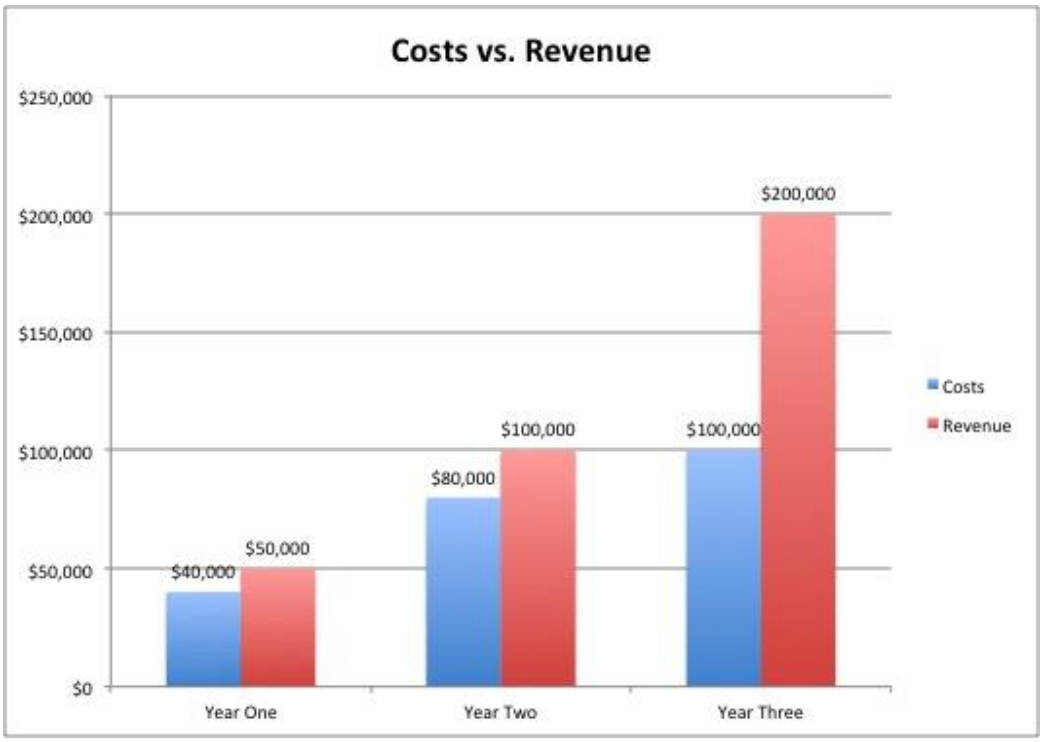


APPENDIX: CARTOGRAPHER MARKETING FORECAST PART 1 of 2





APPENDIX: CARTOGRAPHER MARKETING FORECAST PART 2 of 2



APPENDIX: CARTOGRAPHER BIOGRAPHIES

Justin Jee-Zen Lin | Masters of International Affairs, Columbia University, SIPA, 2013

Justin is a dedicated Peacebuilding and Humanitarian aid practitioner focused on gaining field experience and honing and his intervention design skills. He currently facilitates and coordinates Anti-Violence workshops with and for inmates in the California Prison System as part of the Anti-Violence Project. From 2013 to 2014 he served as the associate researcher for the Rapid Response Support Unit at the UNDP's Bureau of Crisis Prevention and Recovery. During this time he was the technical manager for the expert roster and supported research for UN Country Office intervention and recovery plans in the Central African Republic, Mali, and the Philippines. In his spare time Justin is a white water rafting guide that connects HIV/AIDS+ communities with wilderness adventures.

Patrick Guerdat | MPA Environmental Science and Policy, Columbia University, The Earth Institute

Patrick is passionate about sustainable development and education. From 2013 to 2014, he worked for the City University of New York in the Office of Environmental, Health, Safety and Risk Management, where he primarily worked on risk management plans and assisted on physical audits of the campuses. Prior to that, he received his MPA in Environmental Science and Policy from Columbia University, leading many projects focusing on energy and sustainability issues. He also has prior experience working for the UN in Panama, in the Office for the Coordination of Humanitarian Affairs as a part of the information management team. As a fun fact, Patrick has been a lifelong jazz and classical educator and pianist, touring around the world and performing at many prominent venues in New York City.

Richard Uy | BA Computer Science, New York University 2010

Richard has a heart that beats in binary and a head that's filled with dreams. Currently as a freelance web developer and graphic designer, he has helped multiple organizations set up their online presences and branding such as the Philippine Tarsier Foundation, a foundation dedicated the preservation of the Philippine Tarsier and the promotion of travel to the Philippines and the HomeReach Foundation, a foundation dedicated to providing medical care and socio-economic assistance to the poor and indigent in the Philippines. His current pet project, he founded a global online organization called Gay-Nerds that provides community, content and guidance to LGBT people. As an avid technophile, videogamer and board gamer, Richard is always up for a game and the challenge. Just don't try to beat him to Tetris. You've been warned.

APPENDIX: CARTOGRAPHER ADVISORS

Our team of advisors provides expertise guidance and tasked based support to our work as we venture into uncharged territory.

1. Christine Vilar | Web Development Expert
   a. Current: Senor Web Developer at Hello Next Step: hellonextstep.com/
   b. Linkedin: https://www.linkedin.com/in/christinevilar
   c. Contact: christine@hellonextstep.com, chvilar@gmail.com

2. Jeannie Yang | Apple/iOs Mobile App and Product Design Expert
   a. Current: Chief Product and Design Officer at Smule: www.smule.com
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   c. Contact: jeanniey@gmail.com

3. Jeffery Paik | Legal Expert
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   b. Previous: Former CFO Zuckerberg Media
   c. Contact: jgpaik@gmail.com

4. Judith Meuller | Statistical & Monitoring and Evaluation Expert
   a. Current: Head of M&E at Projects for All: www.projectsforall.org,
   b. Current: Managing Director for Data Grid: www.datagridglobal.com
   c. Linkedin: www.linkedin.com/in/muellerjudith
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5. Justin Maples | Mobile Gaming Business & Development Expert for iOS and Android
   a. Current: Free Lance Consultant
   b. Previous: CEO at Broken Thumbs: www.facebook.com/brokenthumbsapps
   c. Linkedin: www.linkedin.com/in/justinmaples
   d. Contact: justin.maples@gmail.com

6. Olga Antonienko Young | User Experience and Testing Expert
   a. Current: User Experience Researcher at Optimizely: www.optimizely.com/
   b. Linkedin: www.linkedin.com/pub/olga-antonenko-young/4/979/977
   c. Contact: olga@optimizely.com, oantonenko@gmail.com