Hackathon Weekly Checkpoints

Week 1 September 7 - September 14: Defining assumptions

- **Confirm your team members** (*in no particular order*): Dan Schott, Dang Du, Nic Wagner, Jake Gillberg, Paul Brikis, Luis Dominguez.
- **Choose which challenge you are going to be working on:** population health incentives and financial inclusion
- **Define specific problem you're addressing:** a blockchain-based platform to improve population health through incentivization and providing new healthcare payment mechanisms for the unbanked. In healthcare management, a combination of massive inefficiencies and misaligned incentive structures are contributing to higher costs for the economy and poorer health outcomes, particularly for underserved demographics such as the unbanked and underbanked. These sore points call for greater transparency, scalability, personalized data, and real-time information access.
- **Why is blockchain needed to solve this problem?** Blockchain empowers the patient with secured data and real-time access, within their control. With existing blockchain proposals biomarkers are stored on the blockchain and used to evaluate a patient's progress. We will differentiate by working directly with providers who will signal to us the start, success, and fail of a smoking cessation incentivisation participant. Further data on the smoking cessation can be provided via an API to the HIS system when authorized by the Patient, Health System, and HIS.
- As a tamper proof data structure, the blockchain serves as a hub for neutral patient owned, provider verified data, reducing the risk of fraud and partiality that may skew evaluation results. As a central point of trust, the ledger allows multiple parties to participate in incentivizing a patient toward a health goal. A*daptive machine learning and predictive analytics can identify patterns in smoking cessation that we did not anticipate, which will feed into incentive design. The patient will have an opt-in right before being including in this analysis.]*

  An innovative incentive design rewards patients with crypto tokens for meeting health goals. Incentives create a positive network effect by encouraging longer term patient-caretaker participation, while addressing the difficulty of first-time onboarding. A patient-centered design will allow patients to choose and invest in health goals that matter to them.To increase economic impact, tokens are redeemable, and can be used to pay for health services, as well as non-health goods. Tokens can be used as upfront deposits for a health service or as collateral against external funding. External funding can be in the form of collateralized lending, grants, or donations.
- **What is the size of the market?** This early idea stage will test pilot a smoking cessation intervention within the health management sector. According to estimates from Grand View Research, Inc., the global smoking cessation and nicotine de-addition market could exceed a value of $21.8 billion by 2014.[1] While Asia Pacific is the quickest growing market,

[1] See http://www.grandviewresearch.com/press-release/global-smoking-cessation-nicotine-de-addiction-market

North America accounts for the largest market share of over 35 percent in 2015 due to a wider availability and diversity of vendors such as flavored products and e-cigarettes. A forecast by Persistence Market Research ranks the North American market as the leading revenue driver, as a result of increased patient awareness, wider access to de-addiction products, and information disseminated online.[2]

- **What other solutions are currently being used to address this problem?** There are two prominent blockchain-enabled prototypes that are in pre-launch stage: HealthCombix and HealthCoin. HealthCombix relies on an incentive design that rewards both caregiver groups and the patient for reaching health goals, with rewards being redeemable at network vendors. They incorporate disease prediction analytics, a decentralized ecosystem platform network and decentralized digital identity. HealthCoin's test pilot is diabetes prevention by using incentive payouts, triggered by biomarker metrics such as heart rate, weight and sugar level. Their algorithm computes the change in the patient's health, which are linked to HealthCoin distributions, which are then used to help defray insurance costs. Patients control and manage their data on the blockchain. While these two prototypes both use an incentive system to foster behavior change, our solution has an innovative incentive scheme to sustain health behavior change while strengthening the network of participants.

[2] See https://www.reportlinker.com/p05084806/Global-Market-Study-on-Smoking-Cessation-and-Nicotine-De-addiction-Products-Electronic-Cigarette-Product-Type-Segment-to-Register-a-Value-CAGR-of-14-1-During-the-Forecast-Period.html