



it's all about you

Business Overview (Draft)
July 2013

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Mission

To help people get practically anything done on the web faster and easier than ever before.

Team

Core Team

Our core team has over 100 years' experience in software architecture and engineering, product marketing, business development, and finance.

- **Frank Boosman**, CEO. Frank was COO and co-founder of the simulation training firm 3Dsolve, which was sold to Lockheed Martin in 2007. He served in a variety of executive roles for the alternative operating system firm Be Inc., which went public in 1999. He was the original product manager for Adobe Acrobat, which has now grown to an \$800 million/year business.
- **Rett Crocker**, VP Engineering. Rett has designed and developed over 100 games for mobile devices, personal computers, and video game consoles. He has invented multiple multiuser content and game engines along with multiple programming languages, and has created innovative software technologies in areas ranging from speech synthesis to advergaming and collaborative education.
- **Richard Harris**, VP Architecture. Richard was co-founder of the hybrid broadcast-IP TV firm ConnectTV, which was sold to Arqiva in 2012. He is the co-inventor of the Slipstream media system, which won the BBC Innovation competition in 2008. He was a close collaborator of famed author Douglas Adams, and served as CTO of Douglas' media firm The Digital Village, which was sold to the BBC in 2001.

- **Andy Kell**, VP Finance. Andy was a co-founder of the boutique investment banking firm Trestle Capital Partners. He served as an investment banker with Greenhill & Co. and The Bear Stearns Cos. from 1998-2003, and at those two firms, he completed over a dozen transactions with a combined transaction value of \$8.5 billion.
- **Charles Shook**, VP Corporate Development. Charles was the founder of Trestle Capital Partners. Prior to founding Trestle, he built and led the private equity group of Harbert Management Corporation, focused on middle market buyouts and growth capital investments. Previously, he was an investment banker with Morgan Keegan & Co. and a strategy consultant with FMI Corporation.

The biological inspiration for our technical approach stems in part from the backgrounds of founders Harris (BSc in evolutionary biology, graduate studies in biological computation, and extensive field work, including with the Dian Fossey Gorilla Fund) and Crocker (undergraduate studies and work experience in molecular biology).

Advisors

We are assembling a world-class board of advisors to help us as we design and deploy our service.

- **Joi Ito**, Advisor. Joi, director of the MIT Media Lab, is one of the world's leading thinkers and writers on global technology policy. He founded PSINet Japan, Digital Garage, and Infoseek Japan. He serves on the boards of Creative Commons, the Mozilla Foundation, the New York Times Company, the Knight Foundation, and the MacArthur Foundation, and has been nominated to the board of Sony.

Vision

We envision a world in which smart websites assist individuals by automating complex tasks that involve many steps and disparate resources. To bring about this world, **udu** will build and deploy a novel software platform designed to enable a new type of self-organizing, emergent software system. This platform will attract and empower developers to deliver a radically new class of apps: each one tiny and easy to develop, but collaborating and competing by the thousands to address the specific needs of individual users.

Problem

As the Internet continues to grow, and search technology continues to improve, the proliferation of data sources is actually making it harder and harder to get many things done.

- The Internet has generally made it easy to **search and find things**
- When we try to do things, we spend more and more time **searching within silos**
- We often must **iterate across competing services** to find what we need
- So doing complex things is **difficult and time-consuming**
- This problem is **getting worse**, not better

Searching and finding is easy. In 2012, Google conducted 1.2 trillion searches. That is over 170 searches for every person on the planet. People use Google (and, to a limited degree, other search engines) because it works.

However, as the Internet has grown, more and more firms have built *silos* of information that can be searched but otherwise often do not meaningfully interact. An example of this is restaurant reviews in the US. Yelp has the most comprehensive database of restaurants, Zagat has the most respected reviews, and OpenTable has the broadest and most convenient online reservation system. The result is that people who care about their restaurant choices often find themselves using three different sites to find and book a single reservation. More data in more silos equals more work to get things done.

This problem worsens when we think about doing things more complex than making a restaurant reservation, especially tasks with multiple interdependent components.

Example

Imagine you are buying a mirrorless digital camera system. Your choice of lenses depends on the system you choose, but the problem is deeper than that. How many lenses do you need to cover the range of shooting situations you're planning for? What are the tradeoffs (cost, quality, etc.) between choosing fewer or more lenses? Do you need an external flash? Which cases are large enough to hold your camera and accessories? All these questions are interdependent, and changing the answer to any one question potentially changes the answers to all the questions. This requires numerous, repeated trips to a variety of websites as one's answer changes.¹

This problem of information silos exists in virtually every industry today. From car parts to airline reservations, from electronic components to cleaning services—it is difficult to think of an industry that does not exist on the Internet in the form of multiple sources of goods, services, and information, all in silos that are difficult or impossible to use in concert.

So while searching may be easy, doing complex things is hard—and the problem is getting worse, not better. As more firms offer more disconnected silos of information, the burden

¹ One of our founders recently purchased a mirrorless camera and two lenses. Conservatively, the research process for this purchase took 30-40 hours spread over at least a month of calendar time, dozens of websites, and hundreds or even thousands of page views.

grows for customers trying to use these silos to get things done. In other words, the very growth of the Internet and the information sources that comprise it compounds the problem. And while the growth in Internet users has slowed, the growth of the Internet itself continues at an exponential pace. If anything, this problem will not only continue to worsen, but it will worsen at an accelerating rate.

Market Examples

We are creating **udu** as a general-purpose platform for addressing the widest range of problems. The vertical markets on which we focus our own resources will depend in large part on broader market trends, on user testing and beta-stage analytics, and on where our developers choose to invest their efforts. That said, we can identify a number of domains where we think **udu** would be ideally suited to reduce customer effort, reduce the friction involved in executing complex tasks, and capture a share of the value that results.

- **Big-ticket shopping.** Any online purchase that involves a significant expense—justifying additional research—is well suited to **udu**. Automobiles, major appliances, expensive audio-video equipment, high-end digital cameras, and other such big-ticket items cause many people to invest significant amounts of time in research to assure themselves of the wisdom of their choice.² Accelerating this process via automation reduces the investment of time by customers and reassures them, making purchases more likely in the first place and improving ultimate customer satisfaction after the sale.
- **System shopping.** By *system shopping* we mean purchasing a series of items that are interdependent. This can often be quite complex in practice. As noted above, digital cameras with interchangeable lenses are an example of system shopping. Other examples include personal computers and their various peripherals, wardrobes, landscaping projects, and many more.
- **Vacations.** We distinguish *vacations* specifically from travel generally. While the travel market is reasonably served today, enabling people to quickly make flight, hotel, and auto rental reservations, the vacation market is not nearly so well addressed. Vacations often include complex combinations of activities, and changing any of these activities can create ripple effects throughout the entire vacation plan. Further, many activities—from walking tours to scuba diving, from pet boarding to theme park tickets—are bookable online only via silos, or not at all. A system that considers all the variables for a given vacation at once, rather than in sequence, forcing customers to do and re-do their plans, would save huge amounts of time and could increase customer uptake of optional activities.

² Although our focus is on B2C transactions, it is useful to note that the description of big-ticket purchases is relevant in many B2B settings. This represents a clear opportunity for future growth, either via expansion or partnership.

Ultimately, our goal is to simplify the lives of our customers by taking on more and more of their complex tasks.

Technology

Technology Architecture

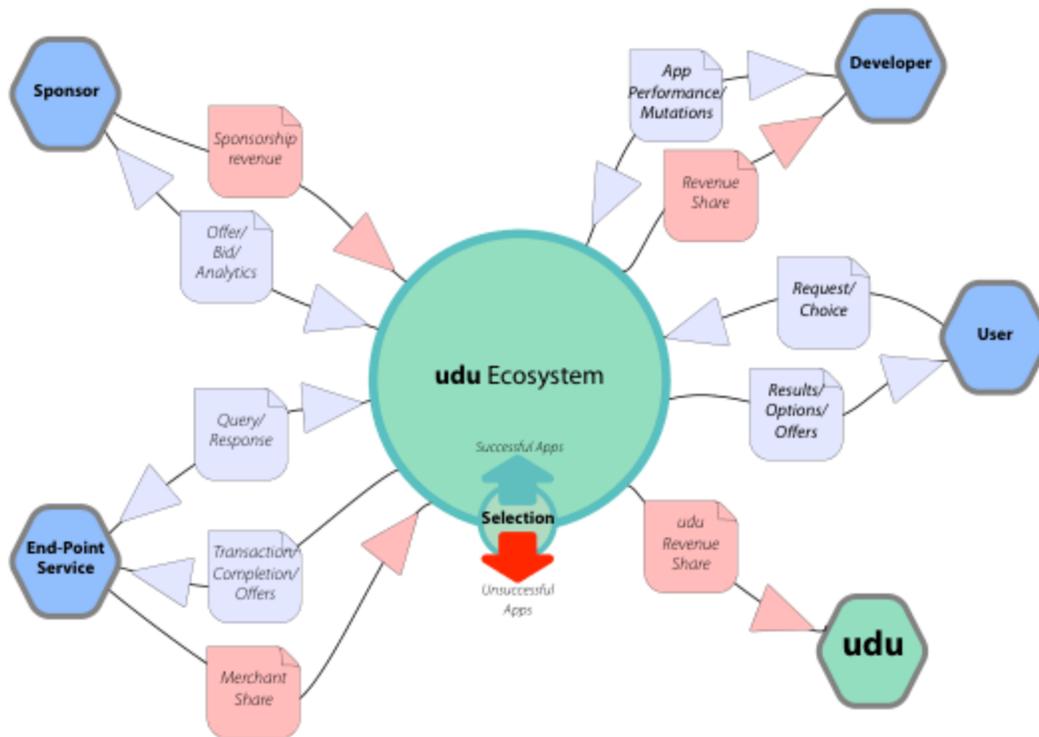
Technically speaking, **udu** is a self-organizing, emergent system for responding to and executing complex task requests.

Definitions

Self-organization is the process where some form of global order or coordination arises out of the local interactions between the components of an initially disordered system. *Emergence* is the arising of novel and coherent structures, patterns, and properties during the process of self-organization in complex systems.

We are using key concepts from biological ecosystems³ to create a platform in which developers both cooperate and compete to answer customers' requests, and in which the system as a whole rapidly evolves to improve its ability to answer these requests.

³ The word *ecosystem* is popular in Silicon Valley, and yet most constructs described as software ecosystems would fail the simplest of tests in the real world. From diversity to selection pressure, from heterogeneity to symbiosis, today's software ecosystems are pale imitations of their biological counterparts.



In the **udu** system, what we call *nano-apps* are tiny by modern software standards, each taking on a small piece of a problem, and they self-organize into *swarms* of hundreds or thousands in order to solve problems as a whole. Our architecture provides the framework for developing nano-apps, tools for problem decomposition and capability of discovery, feedback mechanisms to rapidly evolve the performance of the platform as a whole, payment systems to remunerate developers whose nano-apps participate in successful swarms, and analytics to help developers improve the performance of their nano-apps and thus maximize their return. This framework is where our intellectual property lies and is our technical competitive advantage.

We also provide a set of analytics-based tools that assist our sponsors (described below) in determining the best strategy for spending sponsorship dollars, as well as assisting our developers in refining their pricing strategy for their paid nano-apps in order to maximize their revenue streams.

Although the vast majority of nano-apps will consist solely of code, we also enable a class of nano-apps that turn to humans to solve difficult challenges. These challenges might be small enough that any human responding via a Mechanical Turk-style operation lasting a few seconds would be enough to solve them, or large enough that only specific humans given minutes or longer would be required. This makes **udu** a hybrid computer-human system. The design of the system ensures that software will solve as much of a given

request as possible, turning over only the most difficult pieces of problems to humans for assistance.

Platforms

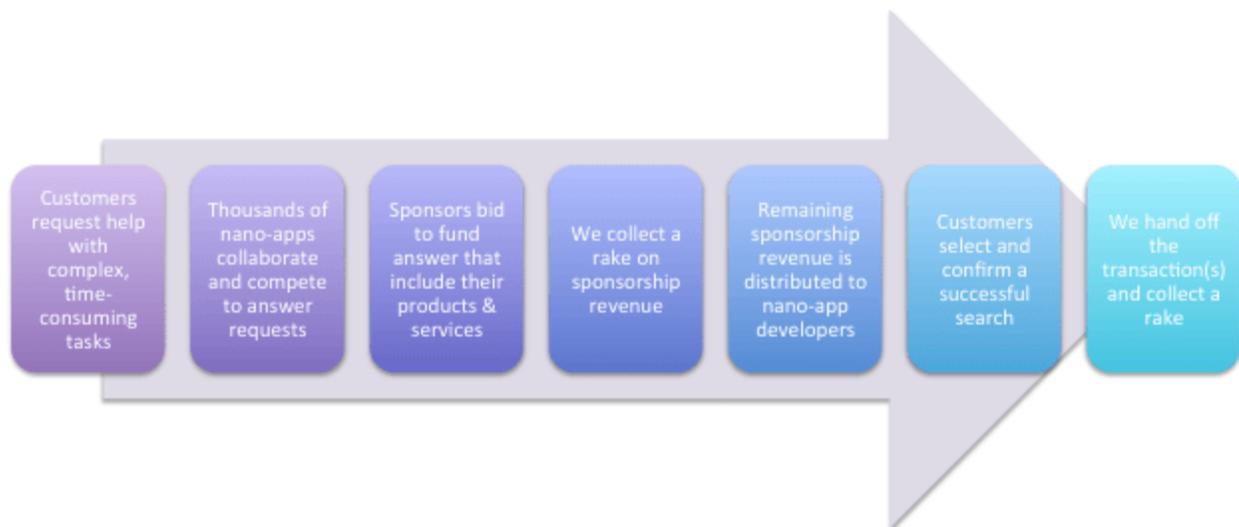
Mobile support is our top priority in terms of how our customers can access us. We will provide free **udu** client apps for iOS and Android, and we will evaluate other mobile platforms on a case-by-case basis.

The **udu** website will be straightforward and will work well in virtually any modern browser, both mobile and desktop.

The net result will be that it will be simple for customers to access **udu** from virtually any modern smartphone, tablet, desktop computer, or laptop computer.

Business Model

We generate revenue by creating value for customers and sponsors alike, then capturing a share of that value for our developers and ourselves.



Our revenue stream is derived from two key sources:

1. **Sponsorship:** companies whose products and services are represented in searches (paid search, as with Google).
2. **Transactions:** companies whose products and services are represented in completed transactions (affiliate transactions, as with Commission Junction).

We enable and encourage companies whose products and services are represented in searches to fund these searches via an analytics-based system similar to Google AdWords. Many (though not all) nano-apps will carry per-execution costs, and so many (though not all) successful searches will require funding in order to complete. We expect sponsors to fund most or all of this. Companies who choose to sponsor searches will appear in more successful searches and so will have a greater chance of their products or services being selected. We collect a rake on this sponsorship revenue—between 10-30 percent, subject to pre-launch modeling and analytics—and distribute the rest to the paid nano-apps comprising the search response.

In situations where a search results in a transaction, we will initially leverage existing affiliate networks within the market to fulfill the ultimate transaction. In exchange for delivering the transaction, **udu** will collect a rake of the standard transaction fee charged to sellers by these networks. This strategy will allow us to fulfill customer requests without investing in additional infrastructure or assuming any liabilities related to ultimate fulfillment. As the **udu** network continues to grow, we will have the ability to either negotiate more lucrative contracts with specified affiliate partners or bypass these networks by negotiating direct agreements with the ultimate sellers. Since a typical **udu** transaction will often lead to multiple user purchases from different sellers, this aspect of the business model will allow for multiple revenue opportunities in a single successful search transaction.

Market Size

We estimate our market size for transactional revenue as follows:

| | | | |
|-------------------------------|--------------------------------------|-------------------------------|----------------------------------|
| \$279B | \$70B | \$14B | \$140M |
| US e-commerce market (2015E) | Complex transactions (25% of market) | udu share (20% of SAM) | udu net fee (1% of share) |
| Total available market | Serviceable available market | Share of market | udu net revenue |

According to comScore, e-commerce spending in the US⁴ reached \$50.2 billion in Q1 2013, and the year-over-year growth rate in e-commerce spending has grown by double digits in each of the previous 10 quarters. Digital marketing firm eMarketer projects that overall US e-commerce spending will continue to grow at a CAGR of 14% through 2017.

⁴ We believe that the **udu** platform and business model will be applicable to foreign countries as well, but we have chosen to initially concentrate on the domestic market opportunity for reasons of both focus and conservatism.

On the transaction level, comScore reported that there were 584 million e-commerce transactions in the US in Q2 2012, up 8% from the previous year and representing an annual rate of 2.3 billion transactions. This transaction volume represents the clear available market for **udu**.

One additional relevant point is the rise of smartphones and tablets in the e-commerce arena. In Q4 2012, m-commerce accounted for 11% of all US e-commerce sales. We believe that the proliferation of mobile platforms will make complex search across various information silos even more difficult and potentially create greater demand for **udu**.

Developer Platform

We attract developers to our platform by radically simplifying the development and deployment of our nano-apps. The **udu** development platform is orders of magnitude more efficient than existing operating systems when it comes to the speed of developing and deploying software. Our goal is to enable experienced Web services developers to go from their first visit to our site to deploying their first **udu** nano-app and seeing it generate revenue in under an hour.

To achieve our desired orders-of-magnitude improvement in development and deployment, the **udu** model is based on a radical rethinking of the nature of the app. To understand just how radical, it is useful to look at mobile operating systems such as iOS and Android as a reference point.

| | Mobile OS | udu |
|---------------------------|-------------------------------------|---|
| Development substrate | Platform-specific, 10-25K functions | JavaScript + Node.js + NoSQL + udu API |
| App source code size | 25-100 Kloc | 25 loc-1 Kloc |
| Initial development cycle | 6-12 months | 30-60 minutes |
| Platform vendor review | Days to weeks | Seconds to minutes |
| IDE | Stand-alone, install required | Cloud-based, instant |

Some developers will choose to release nano-apps for free; others will choose to charge for their nano-apps. Developers will set their own pricing, and this pricing will adapt to the **udu** ecosystem as it evolves, but generally speaking, we expect nano-apps to carry per-execution charges in the range of pennies or less. The goal of a typical nano-app developer is not to attract customers directly; rather, the goal is to provide tangible benefits to other nano-apps at a price such that revenue from the nano-app is maximized.

We do not anticipate paying developers to adopt our platform, whether directly or indirectly. Our focus will instead be on the early adopter segment of the developer

community. Such developers are typically motivated by a number of factors, all of which apply to **udu**:

- Technical innovation in the platform
- Opportunity to build and deploy new types of products
- Ease of development compared to existing platforms
- Relative lack of established, dominant competition

Market Adoption

Our top-level strategy for market adoption is to leverage our partnerships to the maximum extent possible. This will not only preserve our resources, but will ensure that our partners have even more 'skin in the game'.

| | Developers | Product / service vendors | Experts & influencers |
|--------------------|---|--------------------------------|-----------------------|
| Marketing type | Co-marketing via udu -supplied tools | Vendor-driven | Affiliate links |
| udu support | Activity-driven co-marketing budgets | Link marketing to reduced rake | Commissions |

We will create technical solutions and marketing programs that make it easy for our developers to use their awareness generation tools (Twitter, Facebook, et. al.) to drive their customers to our site. Our value proposition to developers will be to use low-cost awareness tools to increase the flow of users seeking help with specific categories of problems solved in part by their nano-apps.

We will also create technical solutions and marketing programs to encourage our sponsorship partners to use a variety of marketing channels to drive their customers to our site. Our value proposition to our sponsorship partners will be to emphasize our focus on delivering useful search results that lead to immediate opportunities to convert results into payment. We will also emphasize the idea that, for complex searches, any one product or service vendor cannot solve a customer's request, whereas we offer a tool that enables sponsorship partners to offer their products and/or services as part of complete search results that include all necessary components.

It is technically feasible to weight search requests such that certain nano-apps are given priority and/or to weight search results such that certain products or services are more likely to appear. Whether we will offer such options to our developer and sponsorship partners is something we will explore in our pre-launch phase.

Competition

Overview

Generally speaking, our competition in the “solve this for me” space is either a) domain specific and automated or human powered, or b) general purpose and human powered.

| | Domain specific | General purpose |
|---------------|---------------------------|-----------------------|
| Automated | Kayak Snapsort | udu |
| Human powered | crowdSPRING Freelancer | TaskRabbit Zirtual |

udu is unique in being an automated general purpose task solver. Our system of thousands (and, someday, millions) of independently developed apps collaborating and competing to respond to customer requests enables us to address an incredibly wide range of domains without requiring the **udu** team to become experts in those domains, or even to necessarily pay attention to them ourselves.

Our ability to incorporate human expertise into app swarms as needed also enables us to take on some tasks that would traditionally fall within the realm of purely human powered tasking services. However, by its very nature, our system ensures that such human expertise is only used where needed, leaving the vast bulk of computation to machines. This means that our results will be faster, cheaper, and more repeatable than those obtained from purely human-based competitors.

Competitive Advantage

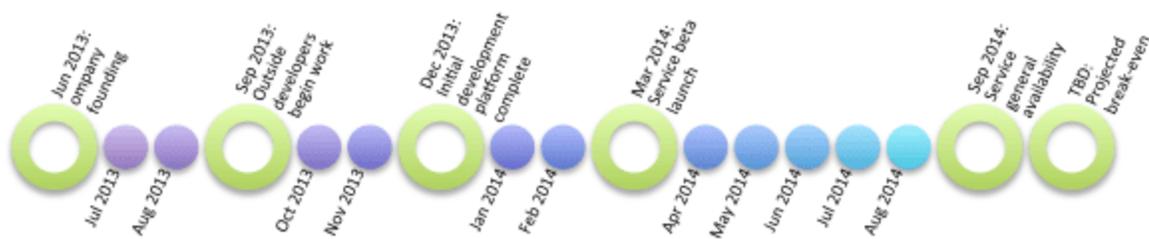
We believe that we will have a first mover advantage in terms of general-purpose automated services for responding to complex task requests.⁵

We also believe that we will have a first mover advantage in terms of an open developer platform with broadly the characteristics of the **udu** development environment: lightweight software architecture, extremely small code size, near-immediate review cycles, and less than an hour from first look to published, revenue generating apps.

We are investing considerable effort and resources into our core technology and are protecting it accordingly. We are in the process of filing a provisional patent that will cover the broadest possible definition of our underlying system. We will file at least one patent on this system within one year of the provisional patent filing.

Milestones

We are committed to both beta and general launches of our service in 2014.



Our plan calls for three six-month development cycles leading to general availability. The first cycle is a six-month developer platform build-out process. At the midway point of this cycle, we will begin enabling selected outside developers to work under non-disclosure; at the end of the cycle, we will be ready to provide our platform to developers on an open basis. This is followed by another six-month cycle in which we build out and launch the beta version of the service to customers. A third six-month cycle is our refinement of the overall service from beta to 1.0 quality.

⁵ This may sound esoteric, but it is useful to note that Google's first mover advantage was not in search, but rather in improved search using a link-based ranking algorithm.

Investment

The corporate entity in which we are seeking investment is **udu** Inc., a Delaware C Corporation. (This entity also has a wholly-owned subsidiary within the United Kingdom in order to allow the Company to take advantage of certain research grants.) As veterans of previous start-ups, the management team is focused on minimizing initial cash burn while advancing as rapidly as possible to a stable development platform. In an effort to accomplish this, we are initially running the Company in a virtual manner until the development platform milestone.

We are seeking an initial seed round of \$900,000 that will provide sufficient funds to create and launch the development platform. Once that milestone has been achieved, we will seek a Series A round that will provide sufficient funds to bring **udu** to profitability.

Once the initial investment in building the platform has been completed, the operating leverage in the model is tremendous. Not only is the business highly scalable with little capital investment, but our partner developers are also incented to continually evolve the system as a whole through the development efforts of their own individual contributions.