

Assignment 6 - InnoNation 3D Engineered

1. Rationale behind picking up the idea

List of ideas

- Parking space guidance service: We will make a service available on all major platforms that would help people who own cars to find parking space in crowded spaces easily.
- A web platform for hiring verified freelancers: We will provide a service which will help companies hire freelancers to work on their project. Our service will verify freelancers therefore give an assurance to organisation of completion and quality work.
- Distributed network servers and backup service: We will provide services which will help users monetize their free storage and processing at the same time we will also provide a service which will provide an AWS like cloud storage services at low cost, more secure and reliable.

For picking up the idea we had a meeting where each one of us presented our idea and convinced others about scalability, sustainability of the idea, why this idea is a necessary addition to be in the market at this time? We also discussed business models of our ideas and how it would help scale in the future. We presented our ideas to our friends and fellow students and gathered their opinions. Based on all the gathered data we made an objective list of pros and cons taking in consideration the current market trend. After all this discussion we came to the conclusion to take up the third idea and go further with it. Although other ideas are remarkable and provide an improvement in their respective application domain, the third idea has not been explored and it's best to be first in the market and make an impact.

2. Initial Innovation Assessment

	Positive	Negative	Recommended Actions
Team	<ul style="list-style-type: none">• Strong Technical background• Self Sufficient• Enthusiasm and motivation	<ul style="list-style-type: none">• No prior business or entrepreneurial experience• No prior marketing experience	<ul style="list-style-type: none">• Define roles• Define timeline• Acquire business expertise
Technology	<ul style="list-style-type: none">• Major step forward over current technology deployed by competition• Offers improvement over several areas such as cost, security, monetization, storage and encryption• Patent in software	<ul style="list-style-type: none">• Competitors might be working on the same technology• No timeline determined for prototype development	<ul style="list-style-type: none">• Define timeline for prototype development• Get to know about competition and their timeline• Patent protection

Market	<ul style="list-style-type: none"> • Unmet needs- <ul style="list-style-type: none"> ✓ Current storage server providers are costly ✓ Not secure enough ✓ Most of them are centralized server providers ✓ Saturated and no growth ✓ No payment to customers having extra space or computation power to share 	<ul style="list-style-type: none"> • Impact of Distributed network servers and backup service in long and short term. • Rate of growth 	<ul style="list-style-type: none"> • Determine growth rate • Determine market segments to target • Define market value
Revenue / Customer Base	<ul style="list-style-type: none"> • Large scale customers already using alternate available technologies • Industry with high revenue owing to large customer base 	<ul style="list-style-type: none"> • Willingness of customers to switch • Willingness of customers to subscribe to lending their storage • Demand of customers not evaluated 	<ul style="list-style-type: none"> • Survey to create a sample database of customers to • Talk to people and customer perspective
Ability to Execute / Operations	<ul style="list-style-type: none"> • Expertise to adapt to changes to customer needs • Clear idea on product development and execution 	<ul style="list-style-type: none"> • Prototype development deadline not decided • Cost not determined • Marketing role not fixed 	<ul style="list-style-type: none"> • Define technological barriers and timeline to resolve them • Determine exact cost and time for prototype development • Define marketing role and assign task

Table 1

3. Team

We are a team of 3 members, currently enrolled as graduate students of computer sciences at the University of Florida. Below is a summary of our experiences and expertise.

Rishabh Pandita – worked for 3 years as a software developer in the Barclays Technology Center.

Tarun Gupta – worked for 3 years as a software developer in the Harbinger group.

Harish Ravishankar – worked 4.5 years as a systems administrator in consulting firms like Tech Mahindra and Tata consultancy services.

Between us we share over 10 years of industrial experience in IT covering diverse areas like software development, web application development, server management, systems engineering, database implementation. Our core strength as a group is being very conversant in the latest trends of the industry like cloud computing, distributed systems etc, and possessing strong technical nous due to our 6+ years computer science education. This is very useful considering the complexity of creating this architecture and scaling once it starts growing.

Future Consideration

The core competency of our group is technical. So as the product expands and grows, we will need people with skills like business development, marketing, brand management and backgrounds in management. We will put requisitions on our career page, open a university recruiting division, offer referral incentives to existing employees to further empower our employee base in these areas.

4. The Unmet Need and Our Solution

4.1 Unmet Need (Problem) and Our Solution:

The problem:

Personal data generation is ever expanding. By one estimate [1] we are generating 20 billion terabytes every second. By 2020, there will be 5,200 gigabytes of data for every person on Earth, totalling over 40 zettabytes.[2] . People are uploading their personal files to the cloud, refusing to delete them, and despite a concentrated effort from industry leaders like Google to compress file size to allow space on the cloud for everyone, we are still headed towards a datageddon. There will be so much data, and no space left on the cloud to save it. Given the limited number of players in the cloud storage scene, there will be a monopoly of providing storage services and lead toward a future where we are charged to access our own data.

Current Industry Standard:

The cloud storage market is expected to grow from **USD 23.76 billion** in 2016, to **USD 74.94 billion** in 2021 at a growth rate of **25.8%** across these 5 years. [3]. Some major providers of this service are Amazon web services, Google, Dropbox, IBM Corporation, Rack space, Oracle, Microsoft, VMware. The number of servers (virtual and physical) worldwide will grow 10-fold and the amount of information managed directly by enterprise data centres will grow by a factor of 14. [4]. While some of these players offer limited cloud space for free to users, such as Google(Drive), Microsoft (One Drive) and Dropbox, most of the players offer enterprise cloud services at costs to other major corporate firms. The cloud storage industry operates by providing limited free-space on the cloud, what many people call the “**Freemium**” model, and charge if one needs more space to store data. Data is saved on a centralized, controlled data-centres and available for access over the internet through websites and apps, which can be integrated with other web applications and technologies quite easily.

Our Solution:

All of us are looking at the cloud and the almost oligarchic group of companies offering this service. But are we looking the right direction? An estimated 54% of a single user's mobile phone space remains unused. We are talking about a phone's internal storage capacity, which is ever increasing in today's world, available in multiples of 8, (16, 64, 128GB). Through Micro-SD cards, a phone's storage capacity can be boosted even further. Due to cloud storage suites, much of this space remains free. We propose a completely decentralized P2P crowd sourced storage solution. By decentralizing the data storage, our team aims to build a cheaper, faster and more secure service. People can sign up to rent space on their phones or computers, which in turn help building a distributed storage network. When you upload your data on our platform, we encrypt it so only you can read your data and distribute pieces of it across the network. We offer also financial incentive for users to rent out their devices space. It is also extremely reliable, because users themselves control their encryption keys, files reside distributed across multiple devices and to lose a file, most of the hosting systems would have to go offline, which negates a big

4.2 Current Industry Standard and Our Impact

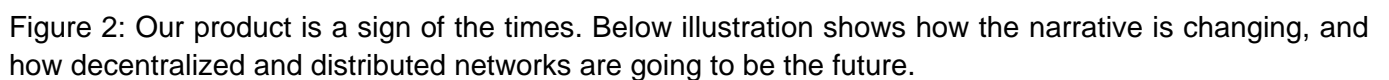




Figure 3: Elaboration about types of networks.

Potential impact and service differentiator:

A great chunk of services today are heavily dependent on centralized cloud storage platforms like Amazon S3, Google Drive etc. For instance when Amazon S3 went down, it took a huge chunk of internet services down along with it. As we become more connected, our reliance on these platforms increases and failures bring about out huge negative impacts on people's lives. Our platform is a more durable, distributed system for storage. The Cloud could be anyone's rented system or mobile device, not just Google's or Amazons. Because we do not host any infrastructure, and use a distributed and decentralized grid of devices, we have the unique advantage that no traditional current storage provide can offer- **Even if the service fails, users can still recover data.** Services will not fail due to one single error or human mistake. The real innovation here is the platform itself is built not to fail, not on the promise that it will not.

4.3. Market size and Trends

Size of our addressable market :

According to statistics [5] there are currently 3.7 billion people using internet on some form of device. All these people are our potential customers as these people can provide us with storage or processing power over the internet as well as can use our technology to access these services. Currently there are 1 million Amazon AWS users [6] and these consist of primarily companies and other individuals who have big businesses as these require large computation power and servers to host. These can be our potential customers as currently there is no one giving competition to AWS. Also DropBox has over 500 million users [7] and these numbers are expected to grow exponentially over the coming years. According to statistics provided by statista.com [8] there are currently 1.8 billion users who are using personal cloud storage services. In addition to these already existing customers there are many people who cannot afford these services due to the high pricing of the exiting services which can be our potential customers. Pricing of our services will be based on pricing of our competitors and we will try to provide cheaper services than them as we will not require to maintain our own servers or storage unit facilities. For example AWS offers its services ranging from \$0.001 to \$10 per hour based on the configuration of the servers. We can initially provide the service in 50% from what they are offering to attract potential customers. We can pay 20% of these billings to our customers who are providing us with the servers. In this way we can gain 30% as we have no extra maintenance costs. Cloud Storage providers provide unlimited data in \$5-\$10 per month. Similar strategy can be applied here.

Market Growth:

Market growth in cloud services are growing very fast whether it is storage or servers. The following graph shows the predictions of cloud storage users from 2014-2020.

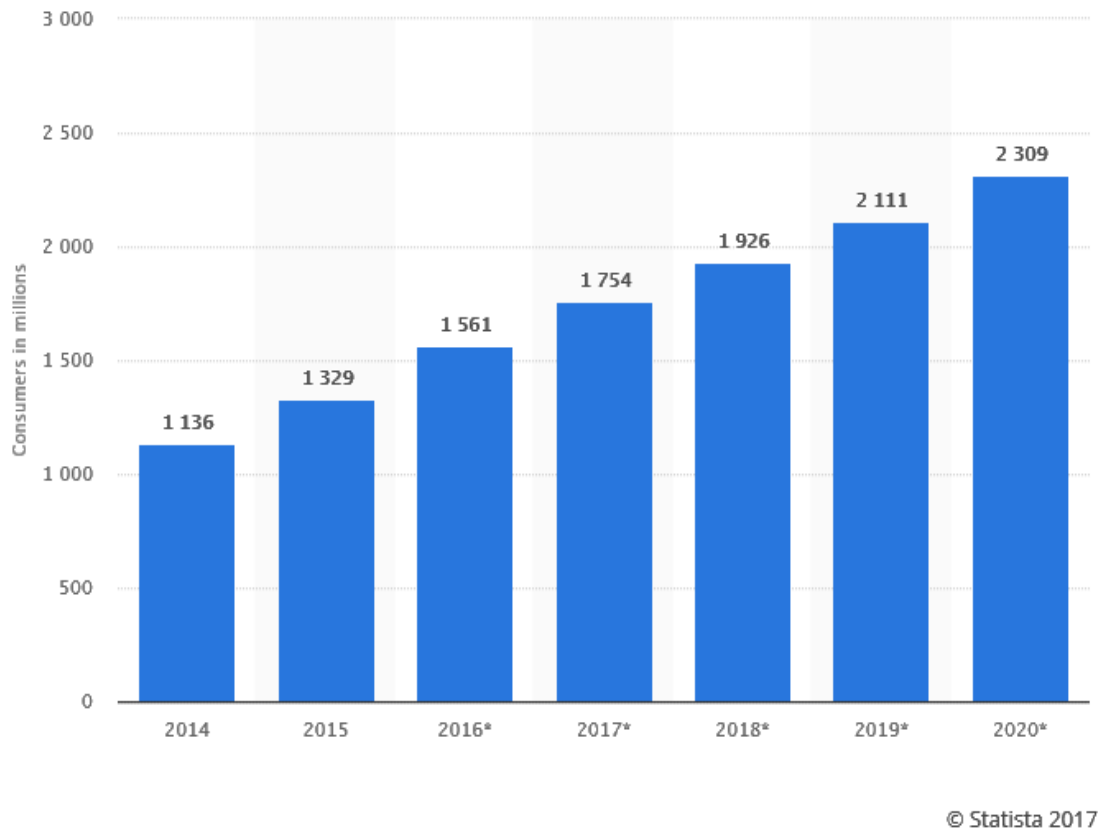


Fig 4

According to the data provided by Statista [8] in 2020 there will be approximately 2.3 billion users using cloud storage services. Hence we have a pretty huge market and growth rate is very good.

Early adopters of our technology:

For our customers who are willing to provide their servers and storage to us, we would look at people who could provide us with greater computation power and large storage as initially we will have huge inventory to provide our customers with. For our service users we would target small companies/start-ups or individuals who pay huge amounts of money to other competitors as these will customers will be more willing to shift services. Larger corporations look into the success of the idea/firm before investing and hence will be our later adopters.

4.4. Our Product and Technology

Our end product will be a pair of services. First service will be offered to users who have some kind of storage, processing device with maximum up time and are willing to rent it in exchange of backup service or in exchange of money. The advantage they will get by renting their storage, processing power for backup service is that they will get way more storage than their phone or any mobile device could provide. This will be possible due to other similar users who want to earn money or want to use backup service. Second Service will be offered to those users who want to rent cloud space for hosting their services, this is similar to what AWS does. The big difference will be that their data of service will be distributed in the mesh network of network1 user devices. This data will be fragmented, encrypted and compressed so that their data will not be compromised. Currently we are in the stage of ideation where we have process flow and need to research more on algorithm for fragmenting encrypting compressing

indexing and retrieving data and discussing on how to go about creating a cloud like platform on this distributed mesh network. Following is the flow diagram visualizing each step in detail.

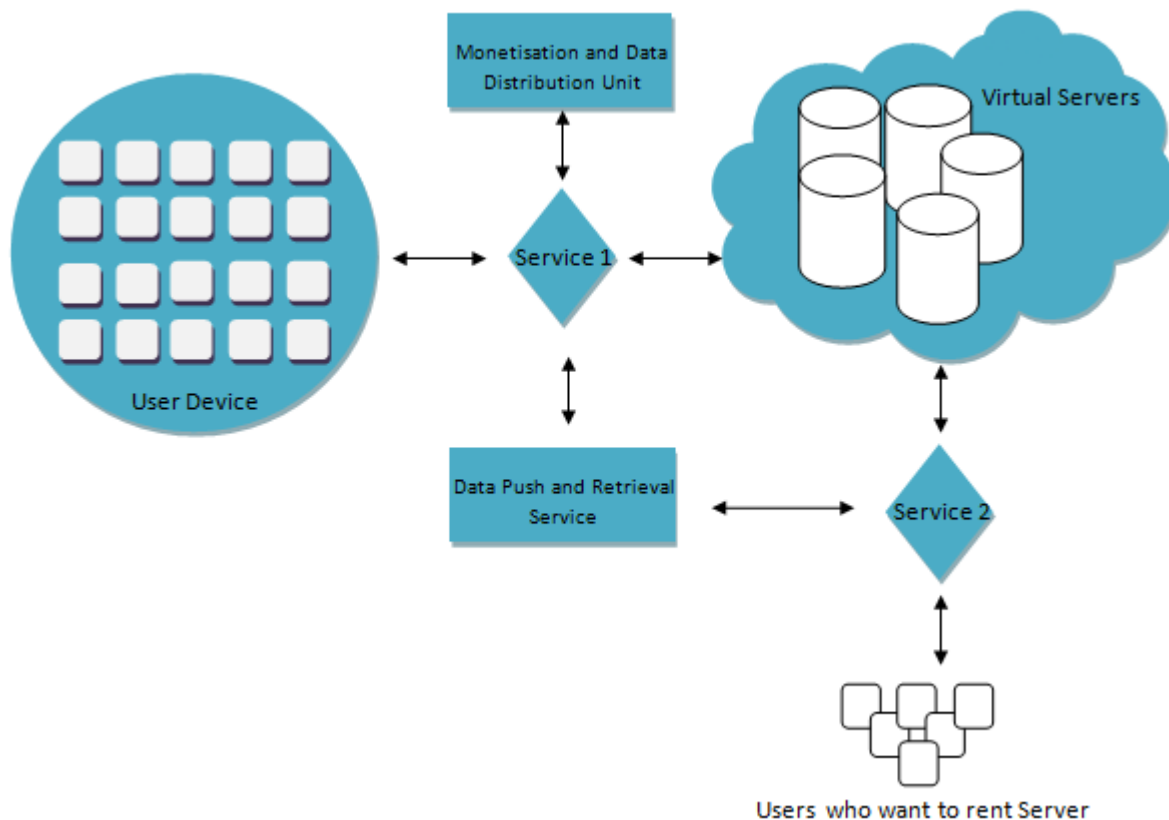


Fig 5

As shown in the diagram main components are service1 , service2 ,Monetisation and Data Distribution Unit and Data Push and Retrieval Service. Service 1 talks to user devices and helps in encryption, compression, fragmentation and indexing servers . It talks to Monetisation and Data Distribution, process distribution unit which decides how users want to monetize their rented space, processing power , how to distribute data how much data to distribute on which devices,how many redundancies to make of a data to keep them safe, how to break up processes and distribute the tasks. Service 2 talks to those users who want to rent servers, it gives those users an interface so that it seems to them that their data is at one place, they can talk to virtual servers using service 2. Service 2 also talks to Data Push and Retrieval Service which breaks up user data encrypts them, breaks up user queries and sends to service 1 which send them to data distribution unit and results back to service 2 after getting them from upstream.

4.5. Competitive Analysis

This section will cover what existing competitions do we have in market, what emerging competitions do we have in market and how we compare in technical implementation services to users and business model vise to those competitors.

There are not many products in the market which revolve around decentralised server offering by helping customers monetize their personal storage. A few which are working around the same idea are Deego and a few who offer similar services are dropbox, amazon web services although they have a different approach to solve the same problem. So existing competitors are

dropbox, amazon web services, google drive box and emerging competitor is Deego although it in market its relatively new. It should be noted Deego is a cloud backup service, the service we are proposing goes beyond backup. Below is the comparison table with existing competitors.

Criteria	Our New Service	Dropbox,Box, AWS, Google Drive and various other backup services	Deego
<u>Network Type</u>	Decentralised serverless network	Server based centralised network	Decentralised and server based model
<u>Cost</u>	Cheap since model has no servers to main, just one to index.	Server based models cost for maintenance and scaling	Serverless model but limited functionality so costs more overall.
<u>Security</u>	Most secure	Vulnerable to data breaches	Not vulnerable
<u>Monetization for users</u>	Yes	No	No
<u>Storage type</u>	Fragmented	Monolithic	Monolithic
<u>256 Encryption</u>	Yes	No	Yes
<u>Probability of DOS/DDOS</u>	Very low	Very high	Low
<u>Are users able to earn ?</u>	Yes	No	No

Table 2

Comparison Table

Lets dive into the comparison details explained in above table. Our new Service lets call it S1 will be cheap, secure and robust given a large user network. S1 is based on a decentralised serverless network on devices of users who contribute to the network. Other services have a server based models which incurs cost for maintaining servers procuring new servers hiring server managers and having big warehouses for storing servers. All this will be gone with our new serverless model. Most of servers are prone to data breaches in case of hacks but S1 will be safe from all these hacks because data will be fragmented and encrypted hacking one node will result in nothing but gibberish, in order to breach the security all the nodes in the network will be needed to be hacked which is virtually impossible and cost inefficient. None of the services which are mentioned as competitors offer the users to earn money. Our service S1 will help users to earn money by sharing their storage space, processing power and keeping it online.

Appendix

[1] <http://inventorspot.com/articles/silicon-valleys-datageddon-coming-or-will-our-modern-day-florence>

[2] <https://cointelegraph.com/news/decentralizing-data-storage-with-storj-10-times-faster-50-percent-cheaper>

- [3] <https://www.wired.com/2017/06/pied-pipers-new-internet-isnt-just-possible-almost/>
- [4] <http://www.marketsandmarkets.com/PressReleases/cloud-storage.asp>
- [5] <http://www.internetlivestats.com/internet-users/>
- [6] <https://arstechnica.com/information-technology/2016/04/amazon-cloud-has-1-million-users-and-is-near-10-billion-in-annual-sales/>
- [7] <https://expandedramblings.com/index.php/dropbox-statistics/#.WeP7ZoWcHDc>
- [8] <https://www.statista.com/statistics/499558/worldwide-personal-cloud-storage-users/>