1. Preface

We live in an exciting time. Throughout the last decade, the internet has found its way into homes and pockets all over the world. Latest statistics[1] estimate that over a third of the world population has access to the internet – in developed countries percentages range from 53% in Greece to up to 97% in Norway, avering at about 73%. In addition to this, there are more than 1 billion smartphones in use worldwide, according to a report released by Strategy Analytics in October 2012[2].

At the same time, modern societies are right in the middle of a massive shift in consumer behaviour. Pressing unresolved environmental concerns and a global recession that has fundamentally shaken people's confidence in existing economic structures have brought us to a point at which we started to rethink our consumption behaviours. Online marketplaces that encourage and enable sharing, redistributing and swapping goods offer people a sustainable alternative to the hyper-consumerism that dominated the 20th century. "Collaborative consumption" has become one of the new big buzzwords in the start-up scene, referring to a social phenomenon that shows itself in the shape of countless new enterprises and platforms with many different concepts but one shared goal: redefining the way we interact, cooperate and consume. Whether it's peer-to-peer travel platforms such as Airbnb and Couchsurfing or redistribution platforms for used goods like eBay, Craigslist or Kleiderkreisel – technology has opened people's minds towards a more sustainable lifestyle and given them the possibility to connect and organize in order to establish new consumption behaviours.

This kind of development is particularly interesting in the area of transportation. Traditionally, the only alternative to car ownership was using public transportation, particularly for longer distances that can't be travelled by biking or walking. With more and more people gaining access to the internet, a quickly growing community for ride sharing evolved that connected people who own a car and plan to drive from one place to another with other people who don't have a car but want to travel the same route and fill up the empty seats in the driver's car in exchange for a contribution to the gas expenses – a win-win situation. In the last couple of years, even more new concepts of shared transporation appeared: from car sharing enterprises such as Zipcar, Flinkster or car2go that offer their members a fleet of vehicles to be available on demand to peer-to-peer car sharing models like Getaround or Nachbarschaftsauto where car owners can list their cars to be rented by others at cheap hourly or daily rates – traditional car ownership is becoming less desirable, particularly in urban areas, and people are starting to embrace the idea of sharing.

There is another dimension to the modern age that many consider problematic: While the internet has enabled us to connect with practically anyone in the world and we may now be avidly swapping our used clothes, books and DVDs with strangers all over the country, many people don't even know their next door neighbor. Especially in large cities, individuals easily become isolated and lonely. Big apartment buildings often completely lack a sense of neighborship and mutual support. In a time where everyone is virtually

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[1] http://www.internetworldstats.com/stats.htm

[2] http://blogs.strategyanalytics.com/WDS/post/2012/10/17/Worldwide-Smartphone-Population-Tops-1-Billion-in-Q3-2012.aspx

connected to the entire online community on a regular basis, many people feel a strong need and desire to reconnect with real people, with the actual world that surrounds them.

A lot of the new enterprises that appeared within the wave of the collaborative consuption claim it their mission to revive people's engagement in their own community. However, in the very most cases, the primary goal of a business is, naturally, to generate revenue. I believe that an honest attempt in renewing the belief in the importance of community should remain a non-profit venture. Neither the people engaging in the process, nor the organization behind it should be motivated by the prospect of accumulating wealth. Nevertheless, in a profit-oriented society like ours where time is known to be money, it would be naive to assume that a huge mass of people would be willing to sacrifice their time and resources to help others out of sheer altruism.

This thesis is an attempt to to conceptualize an online platform in which people can connect to exchange services and favors within their community without the use of money. Instead of doing this on a one-to-one basis where one favor is traded directly for another ("I do someting for you and in return, you do something for me"), the community as a whole creates a network in which liabilities and gainings resulting from a deed can be abstracted to credit and debt towards the community itself. After two people engaged in a transaction of service, the person providing the service can claim something back from the community, while the person utilizing the service owes something to the community – in other words: "I do something for you and therefore I can ask somebody else to do something for me". A virtual currency or point system is used to account for what members have contributed vs. what they have taken, thereby encouraging everyone to give and take in a balanced manner. The services offered can be anything from simple errands like grocery shopping or transportation of bulky objects, jobs like dog walking or baby sitting to rather skill-based tasks like assembling furniture or fixing a car.

Systems like this have existed for a long time, as the following chapters will outline in further detail. However, most of these communities still operate "offline" and have failed to take the leap into the digital age and avail themselves of the possibilities that modern technologies offer to facilitate such a system, particularly in simplifying processes and attracting new members.

This project is not attempting to reinvent the wheel, but merely to suggest an approach of taking a proven concept, a wheel that appears to be stuck in the past, and redesign it into a dynamic and appealing shape that has the potential of making the old wheel roll again in a new era.

A community based on this idea can only work properly if enough people participate to generate a large pool of offers and requests. The larger the amount and variety of people participating, the more flourishing the trade will be and the more likely it is that people will see and appreciate the value in the system – if they find their wants sufficiently met by what skills and services other members have to offer, they will have a motivation to apply themselves within the community to earn the credit they need for employing somebody's services.

Therefore, the main and foremost concern in building such a platform has to be the effort of attracting as many members as possible. There are several different aspects to this that will serve as the basis for this project's fundamental criteria:

- **Low entry barrier**

  Getting people to participate in the first place must be as uncomplicated as possible. This includes communicating the idea in a concise and appealing way so people know what they sign up for and will be excited to do so.

- **Usability**

  The platform has to be easy and fun to use for people with all kinds of different levels of computer and internet expertise. Digital natives have to find their way around just as well as retirees that maybe just recently started their journey into the world wide web and might not yet be familiar with with all the concepts and methaphors that others are taking for granted.

- **Visual appeal**

  This may be highly subjective, but it is also closely related to the aspect of usability. A clean and well-structured visual design will undoubtedly enhance the level of usability. Especially for users that consider the internet their second home, this will also be a key factor in the initial attraction of attention and interest – with all those hip and sleek-looking platforms out there, none of the "cool kids" will want to sign up for something that looks too dull, too noisy or just simply outmoded.

- **Security and trust**

  Protection of personal data and securing the system against malicious attacks must be a primary concern for any platform that deals with user's private data. Especially older people are typically more hestitant to give out their personal information, so reassuring promises that their data is in good hands must be adequately backed by high security standards.

  Furthermore, appropriate measures to establish and support user's trust in the system as a whole and especially in each other must be taken – afterall, it will be a common scenario for somebody to let a complete stranger into their own home, for example to paint their wall.

- **Mobile availablity**

  With more and more people accessing the internet from portable devices, an appropriate mobile solution in addition to the conventional web version is a key factor in the success of any online platform. Especially a system like this can benefit it many different ways from the features that modern smartphones provide. Concepts to make productive use of device features such as location services and push notifications will have to be incorporated into the system in ways that makes sense.

Provided that the abovementioned criteria are fulfilled, the platform will have the potential of drawing enough participants to get a brisk econmy started. Considering what a highly dynamic environment the internet is and how the snowball principle can make interesting things go viral in a matter of days, it is hard to predict how the amount of users and traffic will develop. In the best case scenario, the idea will catch on and spread quickly. This means that during peak growth periods, the number of users and server requests could increase nearly exponentially. A system collapsing from server overload due to high traffic could damage people's and enthusiasm and trust, likely resulting in loss of a considerable amount of users. Therefore, another important criteria for this project is:

- **Scalability**

    The system must be be designed stable enough to handle such an unexpected success and flexible enough so that the adjustments required to serve a fast-growing userbase are unproblematic and easy to perform without major modifications to its basic architecture.

While all of the above-mentioned criteria are essential to the platform's success, the key focus of this thesis will be set on usability engineering. An immensely important aspect of this project is the fact that it is intended to be for everyone. There is no specific target group to cater to – in fact, the diversity of the platform's user base in regard to age, interests, capabilities and talents will be directly reflected by the varierty of offers and requests. The broader and more diverse the pool of participants is, the larger the benefit for everyone. This is especially true because participants will have to be both givers and receivers. If Adam is great with computers but doesn't know how to drill a hole, Beth is versatile with using tools but hates gardening and Carl is an avid gardener but helpless when it comes to removing a virus from his computer, the system will only make sense if there are enough Adams, Beths and Carls signed up who are able to fulfill someone's particular needs, but also have needs of their own.

Therefore, the highest priority has to be designing the platform in a way that makes it fun and easy to use by all kinds of user classes, regardless of their technical expertise. An intuitive, well-structured user interface and a consistent interaction model are the basis for achieving this goal. The overall challenge is to optimize the user experience for a broad audience but at the same time "sprinkle some sugar" that will make specific user classes happy without distracting or confusing others.

The following chapters will give insight into the history of moneyless exchange systems and provide three case studies of currently operating platforms that are thematically related. Subsequently, relevant technological solutions and standards will be examined and evaluated regarding their suitability for being applied within the platform. On that basis, a concept of the technical implementation will outline the overall approach, concretely determine the chosen technologies and give reasons for their selection. Following that, the platform's range of functionality and its underlying economy will be specified in further detail. This part will focus on external processes, describing how the platform presents itself to the user and how the user interacts with the

platform. It will also constitute the rules and restrictions that have to be applied to the system in order to ensure fairness and establish trust between users and in the community as a whole.

In addition to to the conceptual part, this thesis will include a prototype mobile application as well as some wireframes and screen designs for the desktop web platform. These practical parts will be serving as a suggested solution to the criteria established above, with particular focus on the challenge of catering to a highly diverse target audience. A chapter accompanying the practical implementation will outline the basic code structure and explain fundamental design decisions regarding visual layout, user flow and code architecture in greater detail.

Finally, a closing chapter will evaluate whether the provided solution meets the established criteria and what aspects of the prototype can be applied to an actual production version. It will sum up all the previous findings, draw a final conclusion regarding the project's feasibility and discuss the future prospects for a possible real-world implementation.