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# **Foundations of Sequential Art Driven Development**

**DIPLOMA THESIS**

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## Declaration

I declare that I am the only author of the presented diploma thesis and that I have stated all used sources and literature, from which I drew.

Prague, April 19, 2015.

Martin Moravec



## Abstract

To develop and deliver an innovative and technologically superior product is not enough to succeed when it does not meet the user's daily needs. To develop such a product, you need an abstract and easy to use communication platform for target users, decision makers, and developers, that can also act as a model of the relevant part of the real world displaced by a possible innovation, auxiliary tool in creating a mind map and documentation, and a way of promoting the final product.

An instance of such a platform is a sophisticated comic book, itself an instance of sequential art. Not only is it a feature rich and intuitive tool for collaboration of interested parties with different backgrounds, skills and roles, but since it essentially reflects the relevant part of the real world displaced by the innovation, it's pretty easy and quick for a new user to learn and master.

Although not limited to such instances, it can be found as an especially useful tool for crowdsourced and open source based projects.

This thesis will lay down the much needed theoretical basis for the Sequential Art Driven Development method and offer a practical application of such method, with an open call for contributions from members of the crowd, in the form of a CC0 licensed comic book series "Who is Secret Agent X-9?", a showcase platform for cutting edge technologies like the Bitcoin network and Nemo Mobile operating system.

**Keywords:** sequential art, comics, development, marketing, lean, minimal viable product, crowdsourcing.



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# 1 Introduction

With the understanding of the distribution of knowledge comes the need for a proper approach to the development regarding or closely connected to complex systems. While a single person is not able of seeing the whole picture of the modeled reality, every additional member of the project team can bring another piece of previously unknown but relevant knowledge.

To make this piece fit into the intermediate model, an easy to use yet powerful communication platform is essential. The possibility of reusing the outputs of the communication as a model of the communicated subject, an input in creating a mind map and project's documentation or in promoting the final product is a marvelous opportunity for increasing the team's productivity while making the work fun again.

As the author of this diploma thesis is a writer, producer and publisher, the thesis itself will be written in a way to best suit his needs, and its outputs will find a real world utilization.

## 1.1 Topic Specification

The purpose of this diploma thesis is to show an alternative approach to the development and innovations regarding, or closely connected to, complex systems of both technological and social nature.

Letting the relevant pieces of the dispersed knowledge find their way into the knowledge base of organization and making it work for it's stakeholders seems to be of a great importance in regard to the success of the project.

Unfortunately, sequential art and its instances seems to be of a little help in developing and deploying a standardized solution in both IS/ICT and non-IS/ICT environment where it can actually be an originator of reduced productivity.

## 1.2 Goals of the Thesis

One of the goals of this thesis is to show a sequential art and its instances as a communication platform for the target users, decision makers and developers which can act as a model of the relevant part of the real world displaced by a possible innovation, auxiliary tool in creating a mind map and documentation and a way of promoting the final product regarding the development of complex systems.

A "copyright" free and open source comic book depicting a time-shifted society, freeing the imagination of the author and any contributor to fully unleash the potential of Sequential Art Driven Development while maintaining the integrity of the story and it's entities, is a great opportunity for practical application of the Sequential Art Driven Development methods. This being said, such an application of Sequential Art Driven Development in the form of a minimal viable product for Who is Secret Agent X-9? comic book series, a showcase platform for cutting edge technologies like the Bitcoin network and Nemo Mobile operating system, is another goal of the thesis.

## 1.3 Approaches Used to Fulfill the Set Goals

After an initial research and clarification of used terminology, theoretical foundations of the Sequential Art Driven Development will be laid down.

An application of the theory will consist of four steps: preparation, where the set of suitable software tools for accompanying the methodology itself, making it more efficient and accessible, will be selected, described and set up; planning, during which the available resources will be allocated and an approach to reach the crowd resources will be chosen, actual execution of the project including reaching the crowd, and evaluation of the project.

Based on the outputs of the project, an evaluation of the methodology as such will be performed, and the methodology may be appropriately adjusted to the needs of the real world applications.

#### 1.4 Thesis Structure

The first chapter will deal with the terminology, primarily in the areas of the sequential art and its instances and marketing, which are just the two most misunderstood areas needed to be cleared up prior to the following chapters. The chapter will also briefly introduce the major elements of the modeled part of the world.

The second chapter will consist of the research on the topic including sequential art studies as such, dispersed knowledge issue and solutions, various approaches to the development, mind map concept, documentation, marketing, and propagation.

The third chapter will lay the theoretical foundations of the Sequential Art Driven Development from the view of different stakeholders, phases and project sizes.

An application of this theory in the form of an experiment verifying the viability of the sequential art driven production of the CC0 licensed comic book series “Who is Secret Agent X-9?” will form the fourth chapter.

In the final, fifth chapter, the author of the thesis will evaluate the methodology from both theoretical and practical views and will in case of need appropriately adjusted the methodology to the needs of the real world applications.

#### 1.5 Outputs of the Thesis

One of the outputs of this thesis will be the Sequential Art Driven Development methodology and related clarification of the relevant terms for the readers of this thesis and users of its outputs.

Another output, closely related to the first one, will be a set of suitable software tools for accompanying the methodology itself, making it more efficient and accessible.

Final output of the thesis will be a practical application of the methodology and the tools in a form of a verified minimal viable product for the CC0 licensed comic book series “Who is Secret Agent X-9?”, which will act as a platform for development and propagation of both technological and social innovations.

The main contribution of the thesis will be the example of combining the seemingly unrelated fields and showing art as a potential driver of change.

Feel free to use the outputs of this thesis in any way you wish. No rights reserved (consider it a CC0 work).

    To the extent possible under law, Martin Moravec has waived all copyright and related or neighboring rights to *Foundations of Sequential Art Driven Development*.

## 2 Terminology

This thesis started as a castle in the air. In order not to let it fall heads, we need to put some foundations under it. And it is what this chapter is about—finding the right kind of foundations needed for the castle to persist for centuries and after.

Since language is a consensual rather than a precise tool, we've to come to a consensus about the terms we're about to use in the work. As the journalist and public school fabricated definitions tend to shift unpredictably, the only safe way to define and ensure a long term validity of the used terms seems to be not to rely on any obscure dictionary definitions.

The concepts in the thesis will be defined etymologically, or, based on their original meaning, where possible, specific implementations using the author's very own definitions and in the case where more than one definition is feasible, the most fitting one for the sake of the thesis will be chosen.

In this chapter, we will focus on the terminology of three main topics: **sequential art**, **marketing**, or, the process of opportunity identification, new product development, customer attraction, customer retention and loyalty building, and order fulfillment and finally **distributed knowledge**.

Sequential art, its instances, and marketing, though much used, seems to be little understood and are some of the most misrepresented terms in the history and are the ones that need the proper definition the most.

### 2.1 Comic Books are not Coloring Books for Kids

If only every single scientific field had it's own Walter Block who can do for their seeming vices what Walter did for *The Drug Pusher*, *The Denier of Academic Freedom* and *The Employer of Child Labor* in his timeless book *Defending the Undefendable* [Block 2008]. The fact that comic books are viewed as a low form of art for the overall low quality of the instances which the broader population might have come into contact with does not say anything about the medium as such.

Luckily, the sequential art does not need a Walter Block since it already has Scott McCloud [McCloud 1994], the writer of the sequential art book *Understanding Comics*, who makes strong points in defending the medium and a clear distinction between the content and its form. Comic books can be of both low and high quality. Or anything between.

The safest way to define the sequential art would be to reprint Scott's book page by page. Unfortunately, it'd not be very practical so we'll have to make do with a much shorter version of it containing only the most important elements of his rigorous study.

That's why will go from the bottom up, instead of the Scott's top-down approach, focusing on whats rather than whys of the sequential art and comic books:

Any idea, person, place or thing is represented by an **icon**. An abstraction is an important part of transforming any of the above-mentioned to a corresponding **icon**. The level of abstraction chosen determines the ease of recognisability of the **icon** in transforming it in the reverse order. While appearance of some **icons** such as letters and numbers or other **icons** representing ideas usually does not affect their meaning, the level of abstraction in representing objects such as human faces can gravely affect the recognisability of such **icon**.

A specific instance of an **icon** is a **panel**, or a frame, acting as an indicator of time or space division in the story. A **panel** can be of any shape and size from a classical rectangular to the wildest one imaginable.

Putting two or more **panels** into a **sequence** gives you an instance of **sequential art**, or **comics**. A **sequence** can represent a shift in time, place or level of the story told.

**Comics** is then the medium itself, not any specific instance of it. It's what **comic books** or **comic strips** are. Even a **sequence** of diagrams which can be found in any IKEA's box is a **comics**.

An important part of the **sequence** is the one not visible to the reader, occupying the space between **panels**. Called **the gutter**, this space represents the mystery of the transition between two or more **panels** and gives the reader's imagination an opportunity to transform the **sequence** into a single idea. The space can bear a different meaning and scale every time giving the creator a freedom of expression and a unique reading experience to every reader.

A **sequence** is not the only way of expressing time lapse. Even though they express it in different way, sound and motion inside the given **frame** can act as the agents of time lapse as well.

**Comics** are not limited to any genre or subject, style of art, materials or tools used. The **message** born by a **sequence** can be born by other media such as written word, music or film. The medium acts as a **messenger** and does not limit the creator any more than a book or film do.

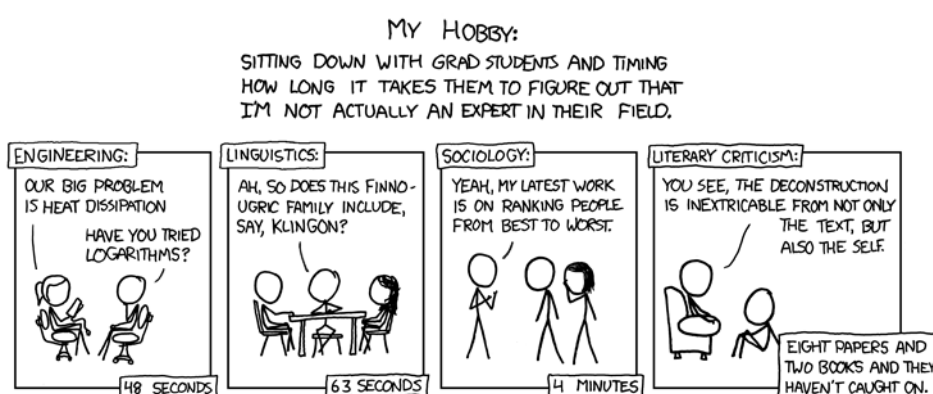


Illustration 2.1: XKCD webcomic series: Impostor. [Munroe 2008]

“**comics** (kom'iks) **n.** plural in form, used with a singular verb. 1. Justaposed pictorial and other images in deliberate sequence, intended to convey information and/or to produce an aesthetic response in the viewer” [McCloud 1994]

## 2.2 Marketing Is Not All about Advertising

While working in marketing the most tricky question one might be asked is what he actually does for living. The right answer then depends on the asker's knowledge of marketing. If his knowledge is limited to what is he told by the press, he may end up thinking you are doing more or less boring, but still a plain advertising.

Contrary to this idea, a lot of people working in marketing for their whole life never come anywhere near to advertising. They don't need to as advertising is only a small and a very specialized part of the most organizations' marketing activities.

### 2.2.1 Marketing is About Satisfying Needs and Wants Through an Exchange Process

Asked what marketing is, Philip Kotler, offers this compact answer:

“Marketing is the science and art of exploring, creating, and delivering value to satisfy the needs of a target market at a profit. Marketing identifies unfulfilled needs and desires. It defines, measures and quantifies the size of the identified market and the profit potential. It pinpoints which segments the company is capable of serving best and it designs and promotes the appropriate products and services.

Marketing's key processes are: (1) opportunity identification, (2) new product development, (3) customer attraction, (4) customer retention and loyalty building, and (5) order fulfillment. A company that handles all of these processes well will normally enjoy success. But when a company fails at any one of these processes, it will not survive." [Kotler 2012]

### 2.2.2 The Lean Startup Methodology: Think Big, Start Small, Scale Fast.

Development of new products is then a part of the above-mentioned process of satisfying needs and wants of customers. In many cases, such process is very long and costly with an unpredictable outcome.

Let's define a startup as an organization in search for a repeatable and scalable business model under conditions of extreme uncertainty.

Eric Ries' Lean Startup Methodology is then a way of eliminating this uncertainty and moving closer to a repeatable and scalable business model where possible through following its core component of the build-measure-learn feedback loop. The first round through the loop starts with the development of a minimal viable product (MVP) which enables the startup to begin the process of learning as quickly as possible. Every following round through the loop brings it closer to the repeatable and scalable business model or the realization of the unsustainability of such model.

The problem this approach solves is that the organization can continuously test the developed product with early adopters and incrementally get to the sustainable business model without wasting significant resources. By the time the product is ready to be widely distributed, the organization already has its validated business model. [Ries 2011]

### 2.3 Anarchism is the very Perfection of Order, the Science of Transforming Chaos into Self-Governing Social Organization [Tucker 1883]

While working on a disruptive innovation, your worst enemies are artificial obstacles. Be it the state enforced regulations, prejudices, traditions or envious friends. Some are easier to evade than others. One way or another, don't add voluntarily to this disorder unless you want to fail because there might be another entrepreneur who won't be limited by it.

Perceive the natural order of things around you faster and in a greater depth instead.

One of your worst enemies in this regard is the artificial concept of intellectual property, or IP, a rather recent attempt of governments to censoring and overall limiting the amount of knowledge it's serfs are allowed to come into contact with, hindering any possible progress and monopolizing certain industries in the process.

While getting into a discussion regarding the unjustified nature of IP is outside the scope of this work, we can, for the sake of our scope, venture to say that enforcing strict IP on crowdsourced initiatives trying to make use of a dispersed knowledge is limiting the amount of possible input to the project and is harmful to the desired ends.

Wait a minute, waiving your copyright? Will it work?

It might not, but there is no reason why it can't work and at the same time, there is no guarantee that your copyright will make it work for you.

Linux, LibreOffice, Firefox or the majority of Bitcoin infrastructure are bright examples of initiatives thriving without their creators and contributors claiming the most strict or even any copyright at all. Commercial companies such as Red Hat even base their operations on open source software that anyone can

copy and use for free. Yet, thanks to the services and first-hand fixes provided by their skilled engineers, Red Hat is a \$1B+ company in revenue. [Red Hat 2014a]

“When the best ideas win, you can’t lose

Technology is knowledge made useful, science applied to solve problems. Science thrives in the open, when people are free to share their ideas and improve or build on the work of others. Every innovation is a modification or extension of a past breakthrough. Every new idea comes from connecting ideas that came before. Every solution comes from the sharing of a problem.

Creation is always an act of collaboration.” [Red Hat 2014b]

Unfortunately, until others are not legislatively allowed to claim IP rights on your work anymore, the creator of a content should act in regard to IP before others do, even if it means waiving all rights to the content in the process.

### 2.3.1 So What Can Creative Commons Do For Me?

Creative Commons is an organization maintaining a set of licenses enabling the sharing and possibly other use of creativity and knowledge while staying compatible with most of the world’s legislature. Yes, that’s right, you have to work by the copyright rules even when you are waiving those rights and every single word matters.

The Creative Commons licenses are presented in three different forms, or layers, which bear the same content. The Legal Code layer is the one that’s binding with respect to a given legislation. Since such wording is not always understandable to those without legal education, the Human Readable layer of the license is. Finally, the Machine Readable layer is the one providing an easily parsable and machine processable version of the given license described using *The Creative Commons Rights Expression Language* specification. [Creative Commons 2013]

By choosing one of the six Creative Commons licenses combining attributes such as free to share and adapt under the terms of attribution, non-commercial usage and the derived work being shared under the same license, the author *allows* you to use his work accordingly. [Creative Commons 2014a]

### 2.3.2 The Moral Basis for the Use of Public Domain.

Sometimes even such tools are not sufficient for your needs and it’s where waiving all your rights connected to the given piece comes in. Why would anyone want to waive all the rights to it? First of all, by using even the most permissive license from the above mentioned, their *violators* are still punishable regardless whether the author feels like a victim or not. [Remember Aaron Swartz 2014]

That is one of the reasons why those in charge should consider waiving a part or all of the “rights” related to outcomes of their intellectual efforts. After all, as shown above, it’s mostly about being the first one, not being the only one with the exclusive access to the information. Sharing knowledge with others including more or less direct competitors is not mutually exclusive with reaching the goals of given subject, be them of financial or another kind.

As the legislative frameworks differ one from another, waiving your copyright for good is not always an easy task. It’s where the seventh member, Creative Commons Zero, of the Creative Commons licenses family finds its use. [Creative Commons 2014b]

### 2.3.3 Knowledge Dispersed in the Crowd

Although not being the core idea of his essay, Leonard E. Read's *I, Pencil* shows the complexity behind even the most simple things such as a pencil. If not a single living man knows how to create a pencil from scratch (though many think about themselves they do), how can anyone know how to create a more complex product like car or plane?

The most mind-blowing thing is the fact that no one needs to know how to make them. By leaving all creative energies uninhibited, such knowledge will emerge from the crowd where accessible. [Read 2010]

Designing a new product or service is without doubts different process than the production of already designed one. Yet the needed knowledge is dispersed in similar way. By limiting the supply of minds only to the inside of an organization, it is letting the outside minds idle in regard to the solved case.

All the needed knowledge might be present inside of an organization, yet pooling the resources with others means taking advantage of using the already solved pieces of the puzzle and letting others polish your own additions.

The next chapter will deal with the dispersed knowledge issue and solutions in more depth.



### 3 Research on the Existing Approaches to the Topics Discussed in the Thesis

The topic being too questionable for a researcher to pick up and too academic for a sequential artist to waste time with, the search for any kind of Sequential Art Driven Development study was not successful.

The research took place in ProQuest, ACM, JSTOR and other resource databases provided by the University of Economics in Prague to its students through the Summon unified discovery service from Serials Solutions. As far as the interest of the above-mentioned sources goes, the topic has not been the subject of any serious academic study.

The search consisted of the terms “sequential art” and “development” and their variations, for example: (*“sequential art” or comics*) and *development*

What was successful is the research on the single topics discussed in the thesis. They just haven’t been mixed together the way intended by the author.

The contribution of the thesis will not be in its content, but rather in the form it will take on.

The initial research was done in an early phase of writing the thesis in September and continuously updated up to the April 11, 2015.

#### 3.1 Comics Studies or Academic Approach to the Sequential Art

An academic approach to studying the comics is already an established discipline. Now that you know what comics is, it should not be such a surprise as comics are no different than books or any other medium in this aspect.

“Comic Art is not just for entertainment, it is a complete field of study by itself and an important medium of communication.

“It has several functions—to impart political messages and humour, to instruct, educate, improve literacy, as well as for use in public service.” [Chuah 2004]

To mention a comics study, one can hardly choose a more appropriate example than the study of authoritarian nationalism and mass culture in the late 1987 Howard Chaykin’s three-part *Blackhawk* miniseries [Costello 2013], a character created by a collective of authors including Will Eisner, an early contributor to formal comics studies.

Jennifer Woolston sees comics as a useful and powerful tool in broadening reading habits, encourage discussion and critical thinking amongst student through all levels of their formal education. [Woolston 2014]

“Incorporating stories with illustrations into your training session gives participants a fresh outlook on new information and helps them see their jobs from different points of view. As a result, they gain a better understanding of how their environment affects their work, and they find ways to improve their efforts. Using sequential art, more commonly known as comic strips or storyboards, is one way that you can show learners the larger picture. Through a visual portrayal of thoughts, sounds, actions, and ideas, you can turn your training materials into effective lessons that keep people engaged. They’ll relate to characters and plots, which increases attention and helps them interpret and retain your message.” [Legum 2004]

#### 3.2 Gathering the Dispersed Knowledge

The much greater amount of information needed for your project to succeed than you might have guessed has already been recorded and made available for you to use. The only obstacle in your way to obtain this information is to find, understand and organize it.

There is no point in developing every single piece of your product or service from scratch all by yourself. And why not let others test and polish the pieces you develop inside of your organization. Google does it; RedHat does it; source code of the whole Reddit is completely open source and yet they run a successful business.

### 3.2.1 Platforms for the Collaboration of Distributed Groups

Collaboration on a common project is much harder, if not impossible at all, when the participants don't have a single, easy to use system for sharing knowledge, progress, and resources.

Though requirements may vary one project and team from another, general requirements are the same—keep record of the changes made to the base of the data, be able to fork the base to an independent line of development and to incorporate the changes made back to the main branch.

Then it does not matter whether you are working on a programming, writing or engineering project and using a simple text editor, word processor or CAD software.

#### Distributed Version Control System for Dispersed Knowledge

Although the client-server architecture of your version control system gives you the absolute control over the base of data, it limits the access to, use of and interconnection of your outputs by and with the outside participants.

A distributed, peer-to-peer (P2P) architecture gives you both the control over your own base of data while allowing the third party participants to take advantage of your achievements and share their own with you.

The distributed character of the architecture means having a full backup of the codebase on every involved user's workstation in case of the main server crash or data corruption.

The more permissive license chosen for your seed base of data, the greater the potential network of contributors.

#### Git --distributed-even-if-your-workflow-isnt

To choose just one tool representing a whole category means choosing one which is a superset of any other.

What makes Git a perfect fit as a platform for working in a distributed environment is its branching model allowing for almost instant forking, merging and deletion of local branches encouraging the contributors to try out multiple ideas independently on the main branch or single forks and to merge the changes made once properly verified and tested.

This enables you to have separate branches for production code, development and several other ones dedicated for day to day work of contributor involved. Once a feature the branch was created to work on is merged into the mainline the branch can be deleted with ease. An experiment not accepted to the main line of code base can be deleted just as well to free resources again making such experiments very cheap to undergo and empowers people to try new ideas without compromising the stability of production code base.

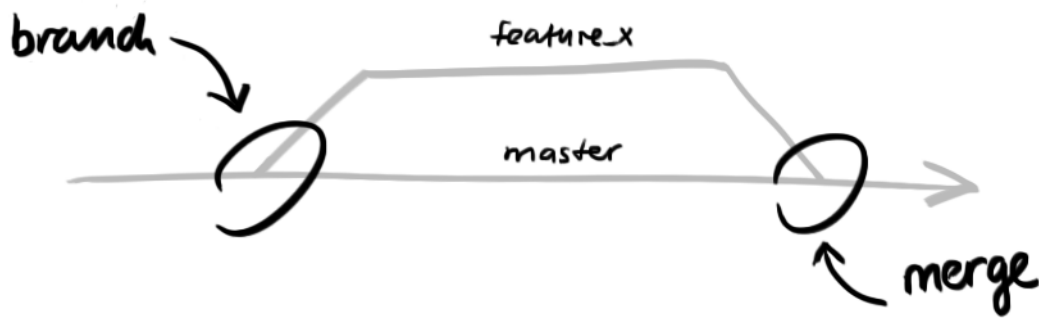


Illustration 3.1: git branching. [Dudler 2012]

The integrity of the whole project is assured by the use of an advanced cryptographic tools embedded in the data model that Git uses making it impossible to change any file or its metadata in a Git repository without changing the IDs of everything after it.

Above that, Git is an open source software released under the GNU GPLv2, making it easy to port to any software or hardware platform and expanding the potential network of contributors. [Git 2014]

Developers from All Around the World Are Building Amazing Things Together on Github

Don't be fooled by the term *social coding*. Github is just as great a tool for the writers and designers as it is for the programmers. The only major difference is that its use seems natural for a programmer while it might seem peculiar to a writer at first. Luckily, you don't have to know the first thing about Git to enjoy the benefits associated with using GitHub.

What makes GitHub distinct enough from vanilla Git to be mentioned on its own is its integration of social tools enabling the contributors and maintainers to discuss any proposed change, issue or feature request, adding a project wiki, viewing a syntax highlighted code and rendered data without the need of local copy, using its platform API and hosting static web pages while at the same time being fully compatible with other Git clients.

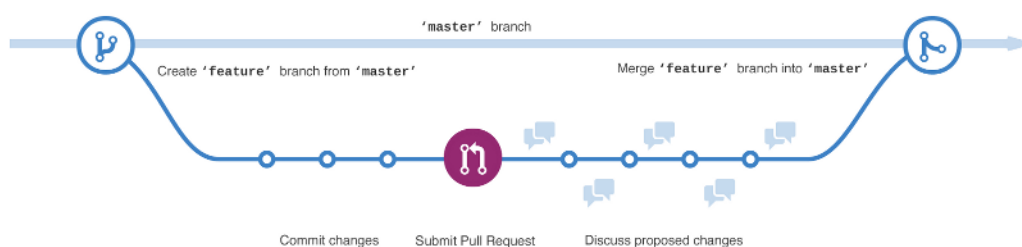


Illustration 3.2: GitHub branching. [Leyden 2014]

Why host a static web page on GitHub you may ask? Hosting on GitHub gives your visitors the power of correcting typos and inaccurate or missing translations without the need of contacting you and describing the issue. With a clear and direct call for action, it makes such tasks quicker, easier and more transparent while making the process of rewarding approachable.

A similar tool makes it easy enough for our needs to contribute to an open source project or to start one on a greenfield.

### 3.2.2 Incentives and Motivation for Participating in Gathering of Dispersed Knowledge

To add the knowledge dispersed in the crowd to a gathering initiative, one must be properly motivated to do so. Ranging from receiving a tip, prestige, joy (the author of this thesis is a contributor to the Bitcoin Core and Bitcore, Firefox OS, OpenBazaar and other open source projects) and hobby to a job description, we can generally classify them as tangible and intangible.

The intangible reasons usually rest in the contribution itself, and the best a maintainer of such project can do is to keep the development as open as possible and to give a credit where credit is due.

There are two major ways in which the contributors can be materially rewarded for their time and effort. The first one being quantitative (based on the number of changes or number of lines contributed), the second one being obviously qualitative.

A qualitative approach to rewarding is clearly more subjective and depends closely on the person evaluating the value added by every single action. This approach is more suitable for bug bounty programs and feature requests such as that featured at BountySource, HackerOne, and CrowdCurity. Bug bounty programs are great incentive for white hat hacking and for turning black and gray hats to white hats in the process, utilizing a body of skilled security experts and preventing them from causing you any damage may a vulnerability be exposed. A reward then depends on the seriousness of such security peril and the completeness of the documentation provided by the hacker.

Such approach is frequently used by organizations that are able to pay a given sum for any foreseeable number of bugs exposed.

A quantitative approach is distinctively more straightforward from this point of view—it is either a fixed amount per accepted contribution or a predetermined percentage of funds allocated for the rewarding. A GitHub integration for such systems is a natural fit, be it tip4commit<sup>1</sup> and its clones or BitHub<sup>2</sup>.

Such approach is frequently used by communities that are not able to predictably accumulate the sum needed to reward every contribution with the same given amount.

One interesting fact should be pointed out above all. It's the common use of Bitcoin as a (non)exclusive method of payment in all of the above-mentioned tools and platforms. Bitcoin's truly open nature, hackability and the overlap between programming and Bitcoin communities make them a predestined companions.

### 3.3 A Wonderful World of Mind Maps

Mind map is a powerful yet easy to use graphical technique for expressing hierarchy and organization of ideas around a central concept, depicting relations within and between related concepts enabling for large amount of data to be sorted, classified, organized and understood.

Tony Buzan, humbly self-appointed inventor of mind mapping, describes the process of mind mapping as follows:

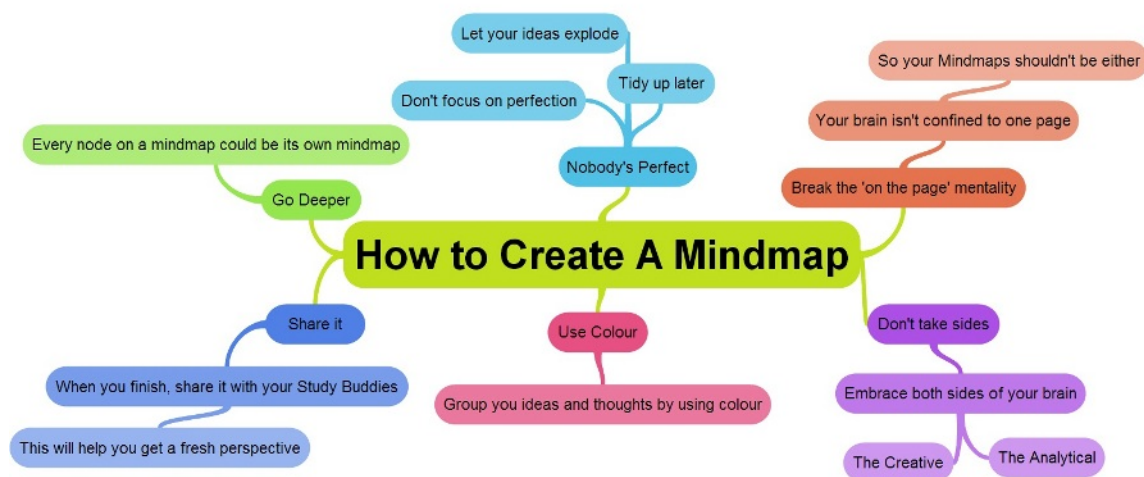
- “The establishment of the subject of the mind map as a central image, word or phrase.
- “Main themes related to the subject radiate from the central image as branches.
- “Branches consist of important words or images located on the lines that radiate from the central image (lesser themes are represented as branches that radiate from the higher level branches).
- “Branches form a connected nodal structure.

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1. <https://tip4commit.com/>

2. <https://github.com/WhisperSystems/BitHub>

“I discovered this intellectual tool as a result of an intensive study of memory and a review of the latest research on the left and right hemispheres of the human brain. The Mind Map is a learning tool and technique that incorporate the traditional mental tools of words, numbers, lines, lists and sequence, with an additional set of mental tools that are especially powerful for improving memory and creative thinking: image, color, dimension, space, and association or linking.” [Buzan 1991]



*Illustration 3.3:* How to create a mind map. [Leyden 2014]

Even though mind maps use graphical representation of concepts, anyone able to use a pen or nowadays generally available mind mapping software with easy to use user interface to express his or her thoughts can create one without having any special drawing skills.

Having a steady hand and a sense of color is an advantage though. Such person is abler to represent the ideas and to give a proper form to the content created.

Though not intended to be so, any sequence of mind maps displaced by time, place or central concept forms an instance of sequential art.

### 3.4 A Product Is Only as Good as Its Documentation

Learning to use a new product is way easier with an exact and complete documentation. It may be more fun to learn it without using one and you might be able to master the product anyway, or you can break it without knowing why and lose part of your sanity in the process.

A proper documentation should be “technically accurate, grammatically correct, and easy to read; it must be usable, that is, the reader must be able to find and use the instructions quickly, easily, and without error.” [Atlas 1998]

#### 3.4.1 The Documentation Is Only as Good as Its Ability to Pass the Knowledge of Using and Maintaining the Product on Its Reader

If product is only as good as its documentation, then the documentation is only as good as its ability to pass the knowledge of using and maintaining the product on its reader.

It’s apparent that readers and their expectations will vary with their needs, experience and time.

From the creation to the usage of the product, we may identify three target groups for whom will the documentation be created.

The first one is obviously the business documentation of the organization where the product originates from, created by its employees or contractors, depending on the level of outsourcing used in the development.

It usually has a high level of formality and comes in rather standardized form, providing an easy and easy way of finding the information regarding the product guarantee, contacts for all involved, or a backup of your original product vision.

A technical documentation is intended for use by those involved in the deployment and maintenance of the product. This includes tech staff and their equipment as well which call for both human and machine readable documents.

A user documentation is such created with a purpose of teaching the end user how to use the purchased or otherwise attained the product.

While the business documents are standardized in their form, the user and technical documents may come in many forms ranging from beginner to expert levels of expertise needed to understand and effectively use the documentation.

To make user documentation easier to use, we first have to know who the intended user is and what he needs. And the most straightforward way of doing it is letting him use the product with only the technical documentation on hand. This way, we can through few iterations edit the technical documentation into a user documentation, without omitting an important piece of information or wasting time and other resources on building a documentation feature no one needs.

### 3.4.2 Approaches to Documentation Generating

The easiest way of creating product documentation is to employ tools enabling machine-generated document based on structured or semi-structured data, leaving little to no space for errors and differences compared to reality. Once set up, documenting new release or creating a revision is a matter of running the tool again (see *apiary: Next Version of API Documentation*<sup>3</sup>).

Properly documented product development process allows for a compilation of product development outputs into a set of documents ready to be shipped with just a few tweaks needed.

A separate document, created specifically for the purpose from the ground up yields professional outcome yet may be detached from reality as it is not directly connected to the outputs of the product development efforts and creates a space to differ from the actual state of things.

### 3.4.3 Forms in Which the Documentation Might Come

A text documentation is a timeless classic. It can be printed and distributed alongside a physical product without a need for any kind of tool or device to use it. Or it can rest in an electronic form, save the trees and be easily searchable.

But how do you describe a challenging operation or create documentation for illiterate people? Create a visual guide that is simple and clear, with exact steps showing benefits relevant to the consumers.

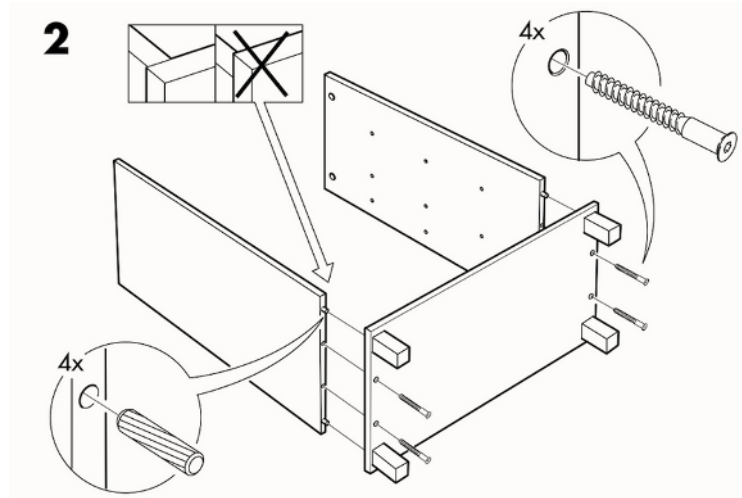
Then there are activities that you need see being done in order to repeat them yourself. A video documentation is a perfect fit for such a case.

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3. <http://blog.apiary.io/2014/12/04/Next-Version-of-API-Documentation/>

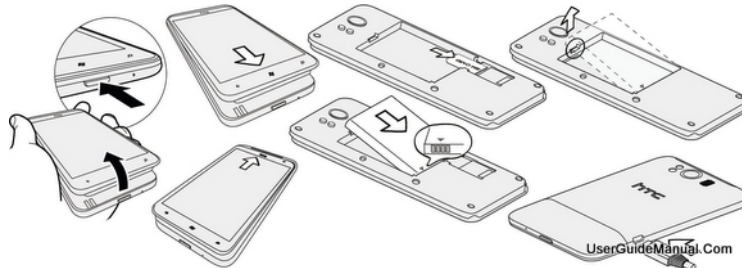
All of the so far mentioned forms are recorded ones, meaning you can't get more out of them may some important part be missing. That's where in-person demonstration and telephone helpline comes handy.

A combination of the above mentioned can be seen as well, be it the combination of graphics and text or a helpline addition to any other form.



*Illustration 3.4:* Instructions for a 2x4 IKEA Expedit (Kallax) shelf. [Homeli 2014]

Usage of sequential art as a form of user documentation is nothing uncommon, be it world famous IKEA assembly instructions<sup>4</sup>, Nokia feature phones for the next billion<sup>5</sup> or HTC Titan AT&T quick start guide<sup>6</sup>.



*Illustration 3.5:* HTC Titan Manual User Guide AT&T. [Suluh 2011]

Such documentation and the corresponding product or service can be used by anyone, anywhere, no matter the language they speak or the level of their literacy.

In such cases where no accompanying text for the sequences is provided, the level of abstraction is extremely important for it can significantly change the message received by the user.

#### 3.4.4 Distribution of the Documentation

The suitability of documentation distribution method depends on the nature of the product as well on the form of the documentation itself.

For sure, online distribution is the cheapest, most comfortable and easiest to maintain from all the available methods. When needed, the most recent version is always available which facilitates the correction of errors in previous versions.

4. [http://www.ikea.com//ms/en\\_US/customer\\_service/assembly/A/A90121762.pdf](http://www.ikea.com//ms/en_US/customer_service/assembly/A/A90121762.pdf)

5. [http://nds1.nokia.com/phones/files/guides/Nokia\\_101\\_UG\\_en.pdf](http://nds1.nokia.com/phones/files/guides/Nokia_101_UG_en.pdf)

6. [http://www.htc.com/us/content/documents/HTC\\_TITAN/20110930HTCTITANATTEnglishQS.pdf](http://www.htc.com/us/content/documents/HTC_TITAN/20110930HTCTITANATTEnglishQS.pdf)

There are of course conditions under which is the online distribution not possible or insufficient for legislative reasons, computer illiteracy or unavailability of its users. It's where distributing the documentation as an attachment makes it most accessible as it is available anywhere the product is being sold.

Automatic distribution is sometimes not preferred by the distributor (GNU GPL based source codes) or not possible (telephone helpline when the available documentation is not sufficient). In such cases, it is distributed on demand.

### 3.5 The Current State of Marketing

A clear definition of the marketing in one of the previous chapters will make this chapter much easier to write. The address will focus on the topics with a connection to the topic of the thesis, namely product development and its propagation.

Not only do new technologies change the media and approaches, they also redefine the position of marketing in the organizations as such.

#### 3.5.1 The Minimality of Viable Products

The MVP does not have to be perfect, complete or even have the qualities of the desired final product or service.

Even such \$1B+ companies as Dropbox<sup>7</sup> (a video demonstration of desired capabilities<sup>8</sup>) and Groupon<sup>9</sup> (the simplest WordPress<sup>10</sup> site featuring hand-picked offers and manually generated PDF coupons) started very modestly. [Ries 2011]

There are virtually no limits to what an MVP can look and be like. Even a mere idea presented well may act as a MVP in case someone is willing to accept it as such.

There is, of course, a vast difference between what are investors and customers willing to accept as a viable product and the only indicator is the human action in the end.

#### 3.5.2 Product Development under Conditions of Extreme Uncertainty

In this chapter, we are talking about approaches to product development rather than project management methodologies like PRINCE2<sup>11</sup> or PMBOK<sup>12</sup> focusing on whats instead of hows. Under the conditions of extreme uncertainty, resulting from the complexity of human created systems, producing based on a pure intuition is a direct road to the failure.

A much safer way is one based on the incremental development, verification and elimination of uncertainty.

The most basic approach to reducing the uncertainty in product development is a set of tests, checking the availability of technologies and resources needed for solving the issue in question. Such tests may range from the most elementary ones incrementally to the interoperability of the elements to the final solution.

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7. <https://www.dropbox.com/>

8. [https://dl.dropboxusercontent.com/u/27532820/original\\_screencast.html](https://dl.dropboxusercontent.com/u/27532820/original_screencast.html)

9. <http://www.groupon.com/>

10. <https://wordpress.org/>

11. <https://www.prince2.com/>

12. <http://www.pmi.org/PMBOK-Guide-and-Standards.aspx>



An abstraction of the product or its part without any practical functionality is a mockup, acting as a visual, textual, virtual or physical representation of the desired output. The mockup is usually built using inexpensive materials in order to verify a design, not offering any of the functionality of the final product.

A prototype is kind of functional yet still less elegant and not production ready version of the product. It does not offer the full feature set or the quality of the desired final product. What's more important is that it can be already tested in its intended environment by the representatives of the target group who can provide valuable feedback that will enable you to improve your product without wasting resources on useless features.

A release candidate or even the final form of the product offers both desired quantity and quality of desired product's feature set.

### 3.5.3 Propagation Methods, Tools, and Approaches of the 21st Century

Social media, global computer networks and mobile devices are just a few of the additions to the world of **Above the Line** advertising using mass media (television, radio, print) and **Below the Line** interaction based advertising (leaflets, stickers, point of sale, samplings at local mall) blurring the clear lines, enriching the options portfolio and making the communication fun again.

If the technology made the existing approaches more colorful, it made the new approaches utilizing the network effect possible.

One of the most effective of the new approaches is the guerrilla marketing, an umbrella term for unconventional and clever use of the communication channels to reach the target audience. Both form and content of the message should be contentious, nailing, helpful or funny, leading to an organic growth of its reach (e.g. a viral marketing) resulting in cheaper achievements of the originator's marketing objectives in comparison to the traditional communication.

The use of technology in advertising makes it possible for a collaborative propagation and helps to build a unique culture around the product in the process.

## 4 Perspectives of the Sequential Art Driven Development

As sequential art driven development as meant to be by the author of this thesis is a modular technique, we'll distinguish between the sequential art aided and driven development, where in the former, the sequential art is not a structural part of the process while in the later, the process is closely tied to the use of sequential art.

*The sequential art aided development* uses sequential art based tools only in carefully picked phases and activities while not using them in others. Based on the product development's specifics, this might be seen as effective or wasteful.

*The sequential art driven development* uses sequential art throughout the whole process in every phase to its full potential. All of the stakeholder clusters are thus connected through a simple yet powerful platform and always up to date.

The role of openness in sequential art driven development will be shown on many occasions, and its possibilities will be explained.

Based on the project scope, budget, phase or simply preferences, every project team differ one from another in their size, team members composition and dynamics. In the following part, we will focus on how the use of sequential art affects various groups of stakeholders, phases of development, and use cases.

### 4.1 Groups of Stakeholders Affected by the Use of Sequential Art Driven Development

Instead of listing through every single conceivable individual position, we will focus on major groups of stakeholders, leaving the distribution of the competences and duties to the management of the product development.

Such effort will not only be wasteful due to the impossibility of the task, it might be harmful as well due to the possible feeling of the need to apply the outlined positions to a working, unique team.

Being different doesn't mean being wrong and the other way around. Being different is an integral part of discovering new opportunities and creating value where none was present before.

Not every stakeholder is affected by the use of sequential art based tools during the development of the product. The following part will follow up those groups of stakeholders, which are. Stakes and part in the development of the single groups will be show and explained where applicable.

#### 4.1.1 Product Management Group

The use of a certain technique such as the sequential art driven development should be a call of the product management structure.

Depending on the delegation of authority in the given organization, the Chief Marketing Officer, brand manager, group product manager or manager of the given product himself chooses the framework and establishes rules for the usage of such tools.

#### Part of the Sequential Art in Product Development Process

One of the decisions made by the responsible manager is what part will the sequential art play in the process of development.

As sequential art framework is pretty much modular, we can divide his options into three main parts:

- Sequential art will not be used at all. This is where the line of our interest ends. Advantages of sequential art used in development are not universal nor objective, thus such decision is always justified.
- Certain independent modules will be chosen and used to aid the development process. This is the option we've mentioned in this chapter's introduction as *the sequential art aided development*.
- Sequential art will be made a structural part of the development process. This is the option we've mentioned in this chapter's introduction as *the sequential art driven development* and it's also where the magic of the use of sequential art in product development process happens.

#### Openness of the Development Process

One of the conditions of unlocking the full potential of the technique is the open development of the product. In such case, the knowledge, needed to finish the development and make the product successful, distributed in the crowd can find its way to the organization's knowledge base. From this point of view, we can label the manager's options as follow:

- *A stealth approach to the development process.* The whole process takes place behind closed doors, not allowing any outsiders access to the sources or to participate in it. Such approach limiting the amount of dispersed knowledge which can find its way to the organization and thus not using the sequential art driven development to its full potential, but still can be the right call for the given project.
- *An open approach to the development process.* An open development is an important part of the sequential art driven development yet not mandatory for anyone to embrace. An open development does not mean giving up on commercialization of the product. Having an access to the products complete blueprints and being able to provide comparable services to the original organization or finding enough customers to utilize the economies of scale are two very different situations and very unlikely to happen simultaneously.
- *A mixed approach to the development process.* The sequential art driven development is not a world of black and white (though black and white are two of its many colors), so only a few of the components can be open (documentation or propagation for example) while the rest may remain closed (the product itself).

#### The Use of Traditional vs. Digital Art in Product Development Process

Though it might seem like a petty issue at first, this choice significantly affects the potential of the whole development process. A clear advantage of the use of digital art in this regard is the hackability of the development's outputs, ease and cheapness of forks and exploration of new ideas.

A possibility to redraw or reuse specific parts without any limitation are crucial under conditions of extreme uncertainty for quick and efficient progress and thus being flexible in the best lean development tradition.

It's made possible by the distinction between the exported image and its sources. Where separating single layers and lines in the traditional art-based image is limited to impossible, the digital art-based image, when the layers are properly separated, and the changes are kept trace of, can be fixed in any way imaginable.

Mapping of lines and their clusters to the objects they represent makes it possible to set callbacks may they change and either reflect the changes to the rest of the project automatically or at least inform the relevant parties of the changes made.

Long story short, there are no clear advantages of the traditional art over the digital art from the sequential art driven development's point of view. At best they can be seen as equal in some cases leaving the decision to the availability of a fit artist.

#### 4.1.2 Engineering Group

A common drawback in implementing the desired product is the crew, dedicated to do so, detached from the purpose of the product and its intended use. Such detachment can lead to incorrect implementation when one can be evaded by the better explanation and understanding of the product by an adequate model provided by the creative and product management teams. A proper model then might be the difference between a useless object and a useful product a customer is cheerfully willing to pay for.

The engineering stuff in some organizations is already accustomed to working with sequences of graphics to model the intended reality even if they aren't aware of or admit it. A use case, dataflow or class diagram, when in at least a pair, forms a sequence. Such graphics are purely technical and of little to no use to anyone outside of the engineering.

There are three distinct options for engaging the engineering in the use of sequential art tools:

- *An envoy of the engineering or the whole team is involved in creation and adjustment of the main sequential art based document through its whole life cycle.* This approach is comfortable for not employing redundancy and maintaining the consistency of a single document. Yet it is definitely not suitable for complex products and large teams as the information may get lost in all the non-tech distraction and noise of the creative team.
- *The engineering diagrams are an underlying layer of the main document and any change done in it must be transferred back into the main document.* A drawback can be seen in the process of the transfer of the changes, where the artist should have at least a basic understanding of the diagrams used by the engineering department.
- *The engineering department either does not use the sequences of diagrams or keeps them separated from the main document.* Both technicality and readability for non tech men is provided by two separate documents. A consistency of the two documents might get loose though.

#### 4.1.3 Creative Group

Based on the product's manager decision regarding the style of the art used in the sequences, the cartoonist positions are occupied by an adequate combination of a penciler, inker, colorist, digital artist and letterer in addition to a writer common to both options. This being said, the positions might be held by the current creative staff.

The creative workers are the ones who hold the whole development consistent and thus are an integral part of the development effort. This may be difficult for the other parts of the product development team that are not used to work with such an entity.

#### 4.1.4 Group of Customers

For a customer, anything that makes it easier to understand, purchase and use the product is a clear positive.

We can identify two main groups of potential customers from the organization's point of view in sequential art driven product development projects. One consisting of those involved in product

development, the other being the target group and everyone else reached by the execution of the communication strategy.

#### Potential Customers Participating in the Process of Product Development

Keeping your doors closed to the third party opinions for the whole time of development and getting the first feedback only after you start producing is a rather risky strategy which might lead to a total disaster where one is easily avoidable by inviting representatives of the intended product's users to participate on the development from an early stage.

Such potential customer is then made a member of the product development team, assigned a role and allowed to use the collaboration tools and other means of communication and development as seen fit by the manager.

Unless he is skilled in the field connected to the product, abstraction from the technical stuff that are of no interest to him is important whenever he comes to contact with the documents.

An input from the nontechnical customer can bring common sense as a counterpoint to the technical and creative thinking.

During the development phase, a participating customer has an opportunity to relate to the product, and is likely to become a regular customer, user and promoter; all thanks to adding a little *my* to the given product.

#### Target Group Members and Everyone Else Reached by the Execution of the Communication Strategy

A clear majority of target group members are usually, unless the project is very specific, not directly involved in the development process. An end user rather comes into contact with three outputs of the sequential art driven development:

- The developed product itself, obviously.
- MVP and propagation materials, which purpose is to inform and acquire a customer.
- User and technical documentation, which purpose is to ease the use of the product.

#### 4.1.5 Group of Sponsors

The most important indicator for the sponsor of the project is always the success rate in reaching its goals (the goals set by the sponsor can be of any form; be them quantitative or qualitative).

Sponsor typically doesn't come to contact with the technicalities of the product development and prefers abstraction from the technical stuff. What the sponsor, on the other hand, requires is an understandable business documentation in which he can easily orient and present it to his partners.

The most important aspects of the sequential art for the sponsor is the multipurpose character of the created documents and higher effectivity potential of the whole process.

#### 4.1.6 Group of Third Parties

Resources available for your product's development are not limited to employees and contract workers. There are parties outside your organization who may benefit from your activities and contribute to them as well.

When you decide to let voluntary contributors join your development effort, you need to:

- let them know your project exists and acquire them,
- introduce them to the goals and rules of the development,
- make it easy for them to start contributing.

A direct hit for you, in this case, is to astound the opinion makers of your industry with your product presentation, or better, an MVP enough for them to cover your product and reach the potential contributors.

A common set of practices for the second and third step is to have a developer documentation prepared, use of easily accessible DCVM repository, a permissive license (Creative Commons, MIT, BSD), employing open standards and availability of product development tools used.

An important topic that we've already discussed before in this thesis and is relevant again is the one regarding incentives and motivation for the voluntary project's contributors.

## Forkers of Your Product's Development Achievements

Unlike contributors, plain forkers don't push the changes made to the mainline product development efforts and rather work in a private alternative product branch. This doesn't mean they can't influence the product indirectly, only that the inspiration comes in the form of released product features, not their sources and have to be redeveloped or reverse engineered before making part of the given product.

The fact that the forkers don't directly contribute to the product development efforts doesn't mean they should have restricted access to the information and achievements of the product development team. Along with the indirect inspiration provided by them, they might as well become regular contributors on the day when the right time comes; don't push them, otherwise you can scare them off!

Why would they change their mind about (not) contributing to the mainline? The reason will be purely economic—your new product features and bug fixes may not be compatible with their product and can't benefit from your efforts any more.

By joining forces, both parties can share the common parts and then focus on distincting their own product from yours while maintaining compatibility with the common core.

## Promoters of the Product Development Efforts and the Product Itself

When some nice people decide to promote your product, be it for financial reasons or for pure joy of doing it, don't scare them off by not allowing them access to your promotional materials or prohibiting such activities at all.

A media kit consisting of the preferred materials prepared and easily accessible for anyone to use can be these days considered a good practice. Such package will not only make it easier to the third party promoter to start promoting your product, but will save your precious resources thanks to not having to communicate with every single interested party.

As to the incentives for the bloggers, media, opinion makers or happy customers, they vary with the group, product and time. The best you can usually do is not to stand in their way, offer them the tools to do so (a media kit, a referral program and a great care for your partners) and always be honest. The best promotion after all is the first-hand experience of someone you trust.

## 4.2 Phases of the Development Influenced by the Use of Sequential Art

Based on the framework set by the responsible manager as described in the corresponding part of the thesis, the sequential art will be either a part of the whole process or only certain product development phases.

Some of the phases might not be a part of the certain development process at all, yet we still may see it as a fully sequential art driven one when it's used during its whole lifecycle.

### 4.2.1 Feasibility Study and a Minimal Viable Product

As stated before, a minimal viable product can take many and any form, be it a well delivered presentation, an email subscription landing page with a one line promise of a product, a first iteration of the product development or a sequential art based on the idea of a product.

One of the advantages of choosing the sequential art option as an MVP is that it can drive initial interest and traction from a non-tech audience. Where a technologically advanced first prototype or a press conference can bring the early adopters and potential collaborators, a comic book can bring a queue of non-tech customers even before the product's launch.

Both sequential art based feasibility study and a minimal viable product can be the first iteration of the document used during the whole development process all the way to the promotion, documentation, and usage.

### 4.2.2 A Sequential Approach to the Mind Mapping

From what we know about mind maps and how they work, an instance of sequential art can act as a subset or a whole mind map for a given central topic. Since sequential art based mind maps use results of previous work and results of mind mapping can be further used in the development process as you can find out yourself in the next chapter, the use of mind maps can pay off even for projects, where the decision makers previously decided not to employ them as a wasteful activity.

#### Mapping Between Sequential Art Entities and Those of Mind Maps

Before mapping any two sets of entities, we have to know what they contain. In this part, we will map sequential art entities to the mind map entities:

- sequential art entities {icon, panel, gutter, sequence, page, issue, story arc, series, spin-off, cross series}
- mind map entities {concept, relation, branch, mind map}

As *page*, *issue*, *story arc*, *series*, *spin-off* and *cross series* are all a very specific instance of a *sequence*, we will use the *sequence* as a representative of them all.

	icon	panel	gutter	sequence
concept	x	x	x	x
relation	x	x	x	x
branch	/	x	/	x
mind map	/	x	/	x

*Illustration 4.1: Mapping sequential art entities to those of mind maps*

When using the mapped entities in the real world, we have to respect their hierarchical order. If an icon represents a concept, then a branch can be represented by either a panel or a sequence. In case a panel represents a concept, then a branch can be represented by a sequence of any kind.

A single mind map is not a final frontier. Tools and techniques used makes it easy for adding sequences of mind maps displaced by time, topic or point of view.

#### 4.2.3 Modeling the World in Sequences

Models in the sequential art based projects can be seen as a continuation of and be based on the mind map as described in the 4.2.2, ensuring to feature relevant parts of the environment as revealed in the process of mind mapping using the product as a central concept.

There are obviously products and phases of their development, for which a sequential art based model or mockup are of little to no use and then there are others, for which such model or mockup are just fine.

The combination of sequential art based mind maps and models is a great fit for a lean development, making extremely cheap changes possible and their impact quickly accessible through digital art and its source forking and editing rather than creating a new instance from the ground up.

Seeing the model or mockup in their current form can trigger an idea for improving or completing corresponding mind map and makes it easy to do so. A missing or incorrect part of a mind map can be present without anyone realizing it and having a comfortable way of going through several iterations without completely reworking both mind map and model is a must for lean development.

A sequential art based model and mockup are no substitute for tangible ones where the nature of the product asks for them. They should rather be seen as an alternative or preceding graphical or textual versions of models and mockups.

#### 4.2.4 Communicating Through Sequences During the Product Development Process

With the increasing size of the product team grows the need for a common communication platform for all involved parties, enabling them to be in touch with each other without the overhead of using multiple languages for workers with different backgrounds.

A sophisticated decentralized control version system such as already mentioned GitHub or image-centric Pixelapse<sup>1</sup> will enable your product team to efficiently plan, track and discuss changes, commits, branches and ideas throughout its whole development process. Choosing a tool with a decentralized and open nature that offers a web front end lowers barriers for participation and involvement of third parties as well.

Having one common line during the whole development lifecycle can help to evade unnecessary misunderstandings, have all the changes documented and save both time and money on unnecessary activities and focus on building or improving desirable features instead.

#### 4.2.5 Re-using Product Development Outputs for Product Documentation

One document valid for the whole lifetime of the product ensures the consistency of the past's what should be and present's what is, shrinking a space for and easing early elimination of any inconsistencies.

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1. <https://www.pixelapse.com/>



There are two possible kinds of the sequential art based documentation; one with the pure purpose of documenting the reality, the other featuring a story on top of the documentation (we will call the later *comic book*, or simply *comics*, from now on).

The story can be seen as both an important part of the documentation, introducing the purpose of the product, and a distraction from the primary purpose of the documentation at the same time. Let's make a clear distinction between the documented reality and the story of the comics where the two can be both closely related and not related at all.

Embedding a single use case or a limited variation of product features into a comics' story can typically be very casual while working as a simple user documentation for the given situation as well.

Documenting the whole, wide and complex, feature set and defining all intended use cases while preserving continuity of the story is a rather difficult task and the outcome is rather uncertain, spoiling one of the main purposes of the sequential art driven development—reducing the uncertainty.

Again, the options for the use of sequential art in documenting the product are as follows:

- The whole feature set and use case scenarios are documented using the sequential art tools. Based on the size of the project and the product's feature set, we can further divide this option into two sub ones:
  - The product feature set and use case scenarios are such that they can be easily documented in a simple set of sequences or a single comic book without sacrificing the simplicity and understandability of its story.
  - The documentation consists of a collection of simple stories, stripes, and/or spin-offs for single product features and their use cases or their sets.
- The sequences provide an assistance for a quick start or selected topics and leave the later or more detailed questions to a purely textual or non-sequential images supplemented documents.
- The use of sequential art is none whatsoever.

Any sequential art based document can be accompanied by a text parts that can directly relate to the sequences or relate to the documented topic as such.

#### 4.2.6 The Part of Sequences Played in Promoting the Product

If no one knows about your product, no one will buy it. A simple truth which makes it essential for the product to be promoted in order to be bought in volume. Yet a promotion alone is not enough when it does not address the potential customers. The sequential art driven development allows for a creative use of the product development outputs in promoting the product.

Promotion of the product can occur during one of the following phases:

- preproduction with the intention of getting an initial user base, inform the general public about the initiative and make them wait for your product,
- production with the intention to offer information about the progress and more accurate information about the product itself and changes done to it,
- postproduction phase, when the output documents in the form of a comic book can fulfill an infotaining promotional function, combining informative and entertaining role at the same time, offering a pleasant user experience.

Distribution of such a comic book may be carried out through various channels, with various pricing models. Both distribution channel and pricing model should be consistent with the intended message of the promoted product and the comic book itself as well as consistent one with the other.

*An electronic distribution of the comic book.* The most comfortable as the distribution is nearly automatic, and most of the costs related to it are fixed, and precious resources can be used elsewhere in product development. It does not matter whether the book is downloaded one or one million times.

It's of course possible to delegate the distribution on a general digital content platforms, a platform dedicated strictly to comic books, or to self-distribution it and have an absolute control over it including the analytics collected, which facilitate A/B testing of the distribution and running referral contests.

Common digital comics formats include *comic book archive* such as *.cbr* and variants, consisting of an image archive, optionally compressed, *Portable Document Format*<sup>2</sup>, *ePub*<sup>3</sup> & *Mobi*<sup>4</sup> for electronic book readers such as *Amazon Kindle* and *Barnes & Noble Nook* with the current limitations of the black and white electronic ink display technologies, *raw images* and variants of *online* formats including *HTML* or *Adobe Flash*<sup>5</sup>.

*A physical distribution of the comic book.* As distribution of physical copies is a rather complex process and usually out of the scope of any organization, we will omit such option altogether and focus on the remaining two alternatives instead:

- Self-published and distributed by a print-on-demand platform such as *Blurb*<sup>6</sup>.

In the best lean tradition, there are no upfront costs linked to the distribution of the book—someone either orders a copy and get the order fulfilled by the print-on-demand provider, or no copies are printed.

All you have to do is to adjust the digital book for print, choose the print size, paper quality and cover style to match the content and message as intended by the creator.

- Outsourced publishing and distribution to an established publishing house.

As the uncertainty of sales is not an issue in the self-publishing option, outsourcing brings no advantage in this regard. Finding a contracting publishing house may be more difficult with the increasing level of product placement in the book. Balancing the amount of product placement is thus important not only to efficiently address the readers, but to find the publisher and distributor for it as well.

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When dealing with the question of pricing, it's essential to know the business model of the product and make the pricing strategy of the comic book an integral part of it.

- *The comic book should make a direct contribution to the revenues.* Comic books will be commercially sold for a price higher than is the cost of manufacture and distribution, or a mixed model of free electronic books and commercially sold printed books. A danger in this situation is the alienation from the product and its message. Another possibility is having the comic book and other products connected to the main one as a primary source of incomes and the main one acting like an attention grabber.
- *The comic book should make an indirect contribution to the revenues.* Comic books will be distributed for free or for a price lower or equal to its cost of manufacturing and distribution, acting as a supporting product to the main one and raising the sales of it. Instead of making an instant

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2. [https://www.adobe.com/devnet/pdf/pdf\\_reference\\_archive.html](https://www.adobe.com/devnet/pdf/pdf_reference_archive.html)

3. <http://idpf.org/epub>

4. <http://www.mobipocket.com/en/Corporate/AboutMobipocket.asp?Language=EN>

5. <https://www.adobe.com/products/flashruntimes.html>

6. <http://www.blurb.com/>

profit, you rather focus on building relation and trust with the target audience and other third parties. Such move is more likely to make aware new potential users of your product's existence and features, attract PR articles creation and encourage organic sharing of the content with the potential for the content of becoming viral.

Similarly to other cases, openness of the promotional material broadens their possibilities and adds to their viral factor as fewer obstacles are put before anyone interested in reading, sharing, editing and selling the work (selling a non-copyrighted material makes it more accessible, a fortunate state of things for promotional materials).

#### 4.2.7 Easier Usage and Feedback Through the Sequences

A sequential art based documentation can make it easy and quick to start using the product for the very first time; how easy and quick in contrast to a purely textual documentation depends on how different is the product from the ones its users are used to use.

In the case of a cell phone and similar electronic devices, a simple sequence of very few images can tell you how to complete the device from its shipping state, turn it on and start using it.

For the same model or one from the same or similar model range, it's usually a matter of seconds to start using the device and moments to adapt to its differences from the previous experiences and a quick documentation lookup is all you need to make this adaptation happen. Such devices may have a different way to remove the back cover, insert a SIM card or change a battery, a difference easily covered by a sequence based image documentation.

For a radical change in device's features and input/output architecture, such as from a simple cell phone to the latest smartphone, detailed study of a sequence of use cases may be needed in order to understand and master your new device.

A proper introduction to the usage of a new product can lower the costs of support for the users, based on the fact that properly informed user is less likely to get into a situation with which he might need help.

To cover all of the possible use cases, features, and other possible issues, a detailed textual documentation may be apter than the pure sequential art based one. An existence of such a case does not null the benefits of a parallel, sequential art based structures.

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Some people can't care less about providing feedback based on their to date experience with the product. Fortunately for the stakeholders, others fall into a category of a possible feedback providers, making it easier for the product team to find and fix bugs, adapt features to the current needs of its users and design and develop a next-generation product.

To make it easier for the users to provide feedback in advance, a sequential art based documentation hosted at a communication and collaboration platform is a perfect fit for such a task.

In case the documentation represents a model of the relevant part of reality, features basic use cases and its abstraction level is understandable for the user to map it to the actual product, the user can easily choose the part his feedback is related to and open a new line of conversation with both the product team and possibly other users keen to provide a similar feedback.

At this time, the user providing feedback should be treated as a contributor which means running a motivation program as described in 4.1.6 is an option worth considering.

### 4.3 The Use of Sequential Art Based on the Project's Scope and Goal

The sequential art based tools are applicable to projects of distinctive types and their unique instances. Aptness of the sequential art support for the product development is based, among other factors, on what the goals and scope of the project are; whether it's a new product development, update of an existing one or its deployment, each having its own specifics.

#### 4.3.1 Feasibility Study and New Product Development

The greatest danger for stakeholders in new product development is uncertainty; be it an uncertainty in regard to the technological or market side of the product development.

A feasibility study followed by a minimal viable product and a use of models, mockups and tiny iterations with continuous testing and verification by target audience can lower the involved uncertainty to a level acceptable by product management.

Using one document during all of the steps can speed up the development and thus evading the expiration of the research validity and reintroduction of the uncertainty.

Even though an existing technology is given and will usually be available from its inception on, a market is an aggregate consisting of its participants' actions and thus is predictable only to a certain degree. This means that a market research done now may not be valid the next month and timely delivery is crucial.

#### 4.3.2 Update of an Existing Product

An update of a product consists of updating both the technological foundation of the product and its features according to the new customer expectations.

A rather different will be the approach in case the update is a pure iteration or a bug fix and when it's a next generation product developed from the ground up. The former case offers an opportunity of using and adapting all of the relevant documents in the way of the intended update not any different from a conventional product development. The possibility of updating only a small amount of documents common to many phases is an advantage none the less.

The next gen product update process will typically be similar, if not equal, to the new product development process, offering only limited, if any, reusability of existing documents from the previous product development process.

In case of an open and permissibly licensed core of the product, an update might be performed by another subject, transferring most of the uncertainty to it. Involvement of the third party, not contractually obligated to certain level of quality of their work, is always a security risk and an audit of the relevant part and its effect on the whole product is highly recommended.

#### 4.3.3 Deployment of Sequential Art Driven Developed Product

The product can be deployed in its vanilla form, or can undergo a process of personalization and adjustment to fit the needs of the purchaser, respectively its final user. The options, of course, depend on the possibilities of the product itself and the product team's offer.

In case of an open source product, it's personalization and adjustment possibilities are only limited by the resources and imagination of the product team and not dependent on the original product team's offer.

Such a shift may void any services provided by a now incompatible product developers including updates and warranty.

A sequential art based product can make it possible for a smaller amount of documents with an equal informative value that makes it easier to start with the deployment and usage of the product.

Utilization of the digital and open nature of the project including the documentation makes it easy to customize the whole product, editing all the relevant parts in the new edition of documents, making it a white label one. Such customized documents can be then added to the pool pro promotional materials featuring the organization's identity rather than a generic or producer's one.

Deployment in question can be of course of either product or its update.

#### 4.4 Suitability of Sequential Art Tools by the Project Size, Organizational Culture, and Structure

You won't find two projects that are exactly the same and it's safe to say that *one size doesn't fit all* apply to the sequential art driven development as well. Yet a set of practices and suggestions can be assembled to aid in the manager's decision whether to use the tools and techniques or not in the current project.

To sort and describe them, we'll split them into three categories.

##### 4.4.1 By the Size of a Resource Pool (Money, Time, Other Resources)

A valid question is whether adding sequential art to the pool of tools used in the development project is worth it (be *it* the time, money or other resources) and is suitable for projects of all sizes.

Well, there is no reason why both scenarios should not be possible. It's the execution, not the tool itself that prevails in the outcome.

There are tiny internal projects for which such a tool is obviously an overkill. Choosing to use it despite this warning can create a bad experience and prevent the decision makers from employing it while working on other, more fit projects.

So to answer the original question of this part, we will split it into two first.

*Can it save resources?* Sure, it can. Just recall the possibilities already discussed earlier in the thesis:

- you can reuse the documents through the whole product development lifecycle,
- you can evade unnecessary misunderstandings and save both time and money on useless features.

*Can it increase revenues?* Sure, it can. In many ways actually:

- you can use the polished outcome as a means of propagation,
- you can offer an understandable and easy to use technical and user documentation.

Before you decide whether or not to use the sequential art tools as a part of your product's development process, a cost-benefit analysis might be needed prior to making the decision.

##### 4.4.2 By the Number of People Involved

There's no minimal or maximal number of people that can effectively use sequential art tools during any of the product development phases.

Higher the number of people involved, higher the need for a more apt communication tools. The total of workers is but a one factor influencing this need; the number of clusters from chapter 4.1 involved and specialized languages they speak are examples of another two.

Similar to the communication needs, a commonly shared visualization of single steps, milestones and final goals is more important when more people are involved, though the importance of such visualization is always high be it 1 or 100 stakeholders involved; the difference between the sophistication of communication tools needed for 1 and 100 involvees is obviously much larger.

Another factor we'll mention is the organizational structure of the project, both formal and informal, predetermining the number of relations between the involvees, as described in the following part.

#### 4.4.3 By the Organizational Culture and Structure, or, Startup's Playfulness Vs. Corporate Bureaucracy

As startups, by definition, operate under conditions of extreme uncertainty, they are, in general, more apt to unconventional approaches and methods than established organizations or corporations while searching for a repeatable and scalable business model.

So whereas for an established organization the use of unconventional approaches can be seen as a risk in the negative sense, for a startup such a way of thinking can be seen as a risk in the positive sense.

This does not mean any or all of the tools and techniques of the sequential art driven development are not suitable for an established subject under certain conditions. Quite the opposite. Yet its adoption and mainstream usage make take significantly more time and effort to convince the decision makers that such move is rational and will pay off.

## 5 An Experiment in the Sequential Art Driven Development

The content of the practical part of this thesis will be a sequential art driven development of a comic book demonstrating the use of the sequential art driven development.

As the author of this thesis is a producer in the *MiceEatCheese.co* and the Chief Marketing Officer & member of the Justice League in the *Benjamin Tucker Institute, z.s.*, this experiment is a part of an actual comic book production process.

Who is Secret Agent X-9? is a CC0 licensed comic book series whose story takes place in a pacifist (non-aggressive, voluntary, stateless) society which is a result of a worldwide disaster caused by the UN and it's member governments.

From the very beginning, the series was meant to act as a showcase platform for cutting edge technologies like the Bitcoin network & Hive wallet or Nemo Mobile operating system, and created in collaboration with Reddit and GitHub communities known for a high concentration of open-minded people if one knows where to look.

As the sequential art driven development is apt for solving complex social and technological issues, the series is a perfect fit for the experiment.

This experiment won't cover every scenario mentioned in the theoretical part and rather act as a proof of work for the earliest phases of the development, namely a proof of concept, a minimal viable product and a preproduction propagation.

The MVP used is a rare instance of sequential art, for a sequence can be found in the script rather than in the art itself; to this date, a single concept art frame is available for use in the thesis. This should not in any way negatively affect the experiment. It's still a sequential art, even though it's not a classic one.

### 5.1 Building Blocks of the Experiment and the Minimal Viable Product

As the content of the experimental comics consists of cutting edge ideas and technologies, we will use this space to introduce these concepts to the readers of this thesis.

This comic book is of the type where a story and the innovations are an integral part of the script.

For the experiment to be built upon solid foundations, we will dive into the three main blocks of the script to understand its reach and target groups.

#### 5.1.1 Who is Secret Agent X-9?

In the world where war is peace and freedom is the police state, a non-aggression initiative is a rather radical notion. Contemporary people generally can't imagine a society free of violence and coercion, seeing the customary acts of violence as necessary for a "civilized" society (notice the contradiction in terms).

For an illustration, great examples of coercion-free societies can be found in works by Murray Rothbard [Rothbard 2011], David Friedman [Friedman 1989] or Terry Anderson and P.J. Hill [Anderson and Hill 2004], be it medieval Iceland and Ireland, American Old West, Quaker Pennsylvania or modern day Neutral Moresnet and "The Republic of Cospaia".

These examples of coercion-free societies will serve as a basis for our study of the society as intended in the original idea for the series and will thus stand on empirical ground rather than be built as a castle in the thin air.

The story of this comic book series continue in this noble tradition and will set such a society in a modern age and further into an alternative future. This fact should free the imagination of the author and any contributor to fully unleash the potential of sequential art driven development while maintaining the integrity of the story and it's entities.

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Even though the series was developed before there was even the first thought about this thesis, it's a perfect fit for such occasion for its blank page environment and open minded society.

This instance of the comics based on the script is just one among all possible instances for anyone can adapt it to their own likening.

In the case the experiment is successful, the comic book based on the minimal viable product will be produced and made available in PDF, CBR, ePub and Mobi electronic formats and in a yet to be chosen print format, all under the CC0 license, making it a book free for anyone to read, share, edit and sell (selling a public domain work makes it more accessible).

A closed story arc of twelve issues and 144 pages is planned to be produced and published in the same or similar manner as the first issue. The story is then divided into four three-issue sub-story arcs, each following a slightly different goal.

The concept art featured in the campaign was created by Corey Smith<sup>1</sup> during the summer of 2013 as a proof of concept for the series.



*Illustration 5.1: Concept art for Who is Secret Agent X-9? by Corey Smith [Smith 2015]*

Draft scripts for the first, as well as subsequent issues of the series, are available at its GitHub repository<sup>2</sup>.

**Disclaimer:** The author of this thesis is the writer and producer of the Who is Secret Agent X-9? series.

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1. <http://curroherrero.deviantart.com/>

2. <https://github.com/MiceEatCheese/WhoIsSecretAgentX-9>



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The series will act as a foundation stone for the development of legal systems for voluntary arbitration and security agencies in decentralized society and search for a solution to complex social and technological issues in such society. Some of the issues, for example finding, exploring and eventually embedding an incentivizing factor for running the infrastructure elements of distributed communication networks or developing trustless financial systems and smart contracts, are mentioned and further explored later in this chapter.

The use of a decentralized version control management platform, such as git and Github is perfect for such occasion, where a blueprint of solutions to such issues can be developed as a layer of the series and freely edited or contributed to by nearly anyone.

### 5.1.2 Bitcoin: A Peer-to-Peer Electronic Cash System

Banking is arguably one of the most inefficient industries of today. It's centralized, heavily regulated and thus preventing any significant innovation, and money supply it produces is not scarce nor predictable. Not only is it the cause of business cycles, financial and economy crisis; it's the cornerstone of the *modern* war state. [Mises 2009] Luckily, technology and human action come to rescue.

"A purely peer-to-peer version of electronic cash would allow online payments to be sent directly from one party to another without going through a financial institution. Digital signatures provide part of the solution, but the main benefits are lost if a trusted third party is still required to prevent double-spending. We propose a solution to the double-spending problem using a peer-to-peer network. The network timestamps transactions by hashing them into an ongoing chain of hash-based proof-of-work, forming a record that cannot be changed without redoing the proof-of-work. The longest chain not only serves as proof of the sequence of events witnessed, but proof that it came from the largest pool of CPU power. As long as a majority of CPU power is controlled by nodes that are not cooperating to attack the network, they'll generate the longest chain and outpace attackers. The network itself requires minimal structure. Messages are broadcast on a best effort basis, and nodes can leave and rejoin the network at will, accepting the longest proof-of-work chain as proof of what happened while they were gone." [Nakamoto 2008]

This excerpt from the Satoshi Nakamoto's whitepaper shows how a human action and an inventive use of existing technologies can solve such a seemingly complex issue such as that of banking infrastructure. Though the technology around evolved and the use of CPU<sup>3</sup> mentioned in the paper was gradually replaced with GPU<sup>4</sup>, FPGA<sup>5</sup> and finally ASIC<sup>6</sup>, the concept remained true to the original idea expressed in the paper.

Rather than describing every single part of the Bitcoin protocol, infrastructure and its mathematical foundations, we'll focus on showing its potential in regard to solving the faults of the current banking system.

*Bitcoin* (with an upper case "B") is an open consensual network for digital cash and its transaction without the need for any central authority, where *bitcoin* (with a lower case "b") represents a unit of its currency. Any coin is a chain of digital signatures determining the current owner of the coin.

To determine the ownership and prevent double spending, an open ledger in the form of a chain of blocks consisted of recent transactions is maintained by the network. This ledger is called *Bitcoin blockchain*.

For a blockchain to remain secure and for a block to be accepted at the end of the blockchain, a mathematical problem very difficult to solve but easy to verify is being solved for every block. This continuous

- 
3. Central Processing Unit
  4. Graphics Processing Unit
  5. Field-programmable Gate Array
  6. Application-specific Integrated Circuit

process is called *mining* and those who participate are being incentivised by a *block reward*, or a sum of new bitcoin awarded to the first one to solve the upcoming block's mathematical proof of authenticity.

In accordance with the protocol, which adapts the difficulty of solved mathematical problems based on the size of the mining network, a new block is generated on average once every 10 minutes and the reward gradually halves roughly every four years from the 50 bitcoin in 2009 to 0 in 2140 (when it's rounded to 0 to be exact). After the last coin is mined, the former miners will be kept incentivised by collecting *transaction fees*, an amount added to the transaction by the payer in order for the transaction to be quickly picked for the next block and verified.

In the network continuing in the tradition started by Satoshi Nakamoto, no more than 21 million bitcoin will ever exist, making its supply both scarce and predictable. Any coin is easily divisible, currently up to 8 decimal places (1 BTC = 1,000 mBTC = 1,000,000 bits = 100,000,000 satoshis; bit is also known as micro BTC or uBTC). In the future, may such change be needed, a further division of bitcoin is possible by a simple software change and its adoption by the majority of the network.

Though a majority of the mathematical foundations of Bitcoin are beyond the scope of this thesis, one aspect of it might help to convince some readers that there is no magic behind Bitcoin, only advanced and pretty sophisticated technology. The bit we will venture to introduce is one known as asynchronous, or public key cryptography.

“*Encryption* is the process of transforming information so it is unintelligible to anyone but the intended recipient. *Decryption* is the process of decoding encrypted information. A cryptographic algorithm, also called a *cipher*, is a mathematical function used for encryption or decryption. Usually, two related functions are used, one for encryption and the other for decryption.

“With most modern cryptography, the ability to keep encrypted information secret is based not on the cryptographic algorithm, which is widely known, but on a string called a *key* that must be used with the algorithm to produce an encrypted result or to decrypt previously encrypted information. Decryption with the correct key is simple. Decryption without an incorrect key is very difficult, if not impossible.” [Lackey 2012]

When symmetric-key encryption algorithms are employed, then the same key is used for both encryption and decryption. In this case, both communicating parties have to keep the shared key a secret from the rest of the world in order for their communication to remain secure.

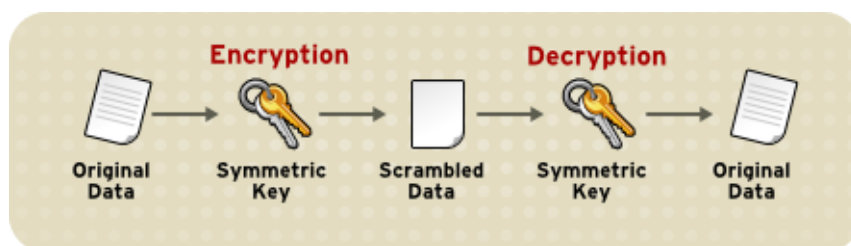
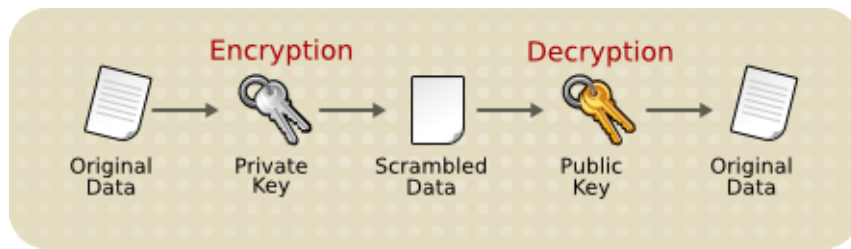


Illustration 5.2: Symmetric-key Encryption [Lackey 2012]

The process of encryption and decryption using symmetric key is usually quick to the extent that the communicating parties are not delayed due to the complexity of cryptographic calculations. This unfortunately brings many drawbacks, such as the issue of safely exchanging the keys in the first place and the fact that it is of a little use beyond keeping communication secure between two parties.

Public-key, or asymmetric, encryption uses a pair of keys, rather than a single one; a public key and a private key for a given situation. While the public key can be freely published without compromising the security, the private key has to be kept secret.



*Illustration 5.3: Asymmetric-key Encryption [Lackey 2012]*

There are two basic scenarios in using the asymmetric encryption, the first is encrypting a document using the public key and being decryptable by the private key only; the other being signing the document with the private key and being easily verifiable by anyone through the public key.

With this being said, public key cryptography can be, among other, used to ensure message integrity, user authentication, and digital signatures.

A specific feature of public key cryptography is multi-signature, requiring a combination of  $n$  out of  $m$  private keys, where  $n$  is less or equal to  $m$ , to sign the message, making the signatures both more secure and safe from the loss of private keys.

The multi-signature feature allows for such security setups such as combining the keys provided by what you know, what you have and who you are; or preventing a rough keeper of funds to misappropriate them without the cooperation of other trusted keepers.

For other technical details, should you be interested, please see the original whitepaper, which is easily readable for anyone with basic technical knowledge.

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For a still very young technology as Bitcoin is, it already outpaces any prior banking and payment system when it comes to efficiency or security (don't confuse security of the network and the protocol with the way users keep their secret access information secured).

Where most of the "magic" happens is the Bitcoin blockchain. Not only it's solving most of the distributed digital cash architecture issues but finding its use beyond the Bitcoin's currency related functions, be it timestamping or securing integrity of data against unauthorized manipulation through storing a hash of the data in the blockchain, as well.

As long as the blockchain exists and is maintained by decent entities that control the majority of computing power behind the blockchain, the data embedded into it are as safe as it gets (granted you don't lose the control of your private keys).

However, adoption of a new technology, no matter how revolutionary, is always dependent on its user friendliness. One of the services making Bitcoin user-friendly to the masses is Hive Wallet<sup>7</sup>, offering a convenient multiplatform (Mac OS, iOS, Android, web) Bitcoin wallet experience.

The Hive Wallet is an open source, easy to set up and use Bitcoin wallet with an API and embedded platform making it easy to interface the wallet with third party extensions.

With the support from Wendell Davis, the founder and CEO of Hive, and innovativeness of their software, the choice of this representative of Bitcoin ecosystem for the series' needs was a no-brainer.

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7. <https://hivewallet.com/>

It took no king to produce paper, wheel, or language, and it takes no government to produce a proper banking system.

The greatest current issue of Bitcoin is not the lack of mainstream adoption itself but rather what prevents it from happening. People confused by the media coverage of Bitcoin and other related activities are aware of the existence of Bitcoin. There are many myths and misconceptions rooted in the initial bad publicity.

The series might clear the purpose and benefits of Bitcoin to its readers and add to the ease of mainstream adoption.

**Disclaimer:** the author of this thesis is a keen contributor to various Bitcoin related projects (Bitcoin Core<sup>8</sup> and Bitcore<sup>9</sup> among others).

### 5.1.3 An Open Mobile Experience for a Discrete Future

With the current level of government or corporative surveillance, rises a need for an open mobile operating system offering a full control over the device, information and communication to its user.

While a completely open stack from the lowest hardware levels to the end user applications and distributed alternatives to communication networks is a music of the future, an open mobile operating system is already available for daily use.

An instance of such operating system is Nemo Mobile<sup>10</sup>, a community driven effort with a rather large and spreading family tree. Based on the GNU/Linux, Qt<sup>11</sup> and RPM<sup>12</sup>, it's continuing in the tradition set by MeeGo and its reference handset UX, a joint development effort of Nokia's former Maemo and Intel's former Moblin operating systems backed by the Linux Foundation.

The architecture of Nemo Mobile can be simplified as an integral bundle of Linux kernel, Mer middleware and Nemo Mobile's own Glacier UI. This abstract architecture's description importance will be seen later in this part.

In its first incarnation, Mer was a community effort to provide an open alternative to Maemo operating system for Nokia's Internet Tablets (770, N800 and N810).

After the announcement of MeeGo, Mer community's efforts changed to building MeeGo for both N8x0 devices as MeeGo was a much more mature open mobile operating system with a large community and Mer community goals largely overlapped with those of MeeGo.

After the abandonment of MeeGo by all Nokia, Intel and Linux Foundation, the Mer community keeps developing an open mobile operating system based on the latest MeeGo code base with no default UI.

With common middleware provided by Mer community, many distributions including Nemo Mobile, Jolla's Sailfish OS, KDE's Plasma Active or Yuanxin Technology's Yuanxin OS are being developed, enabling them to focus solely on the user interface and applications instead of developing and maintaining the whole stack.

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8. A reference implementation of the Bitcoin client, which is a continuation of the original Satoshi's work <https://github.com/bitcoin/bitcoin>

9. A pure and powerful JavaScript Bitcoin library <https://github.com/bitpay/bitcore>

10. <https://wiki.merproject.org/wiki/Nemo>

11. A cross-platform application framework <http://www.qt.io/>

12. Red Hat Package Manager <http://www.rpm.org/>

The relation between Mer, Nemo Mobile and Jolla can be seen as a symbiotic one. While Mer and Nemo Mobile can be seen as a community playground, Jolla offers a commercial product based on both projects, contribute back to them and employs the aptest members of the community.

Even though Jolla's Sailfish is much more mature and polished with an incomparably larger community and user base, it's not a completely open mobile operating system, thus not qualifying for our needs. That being said, Jolla is still an essential contributor to both Mer and Nemo Mobile projects with a bright and hopefully open future.

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An open operating system and application software is but a one part needed for safe computing and communication experience. The other part of the software needed for the achievement of a safe and secure communication experience is an open and transparent network protocol and infrastructure.

There currently already are open and distributed alternatives to GSM and internet networks, for example Tox<sup>13</sup>, a distributed, secure messenger protocol with audio and video chat capabilities, and worldwide-ambitioned mesh network Hyperboria based on the CJDNS protocol<sup>14</sup>. What these networks lack is an incentivizing factor for running the infrastructure elements beyond the early tech adopters of the technologies. It's where the sequential art based approach might find it's place and help to determine possible options. Though such effort is beyond the scope of the experiment and the thesis itself, the Who is Secret Agent X-9? series is a perfect fit for such task in the future.

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An open software stack will not help you in case of infested hardware. An open hardware on par with the current generation commercially available is then needed as well. From single components to platforms and complete devices, such hardware is a dream of many open source and privacy concerned enthusiasts.

An example of open CPU that qualify is Sun Microsystems'/Oracle's UltraSparc T2 with the designs publicly available under GPLv2<sup>15</sup>. Though server oriented and for its power consumption level unfit for any kind of mobile computing, it still represents a great resource for open hardware enthusiasts to study and hack.

A GPU equivalent of UltraSparc T2 may be seen in MIAOW<sup>16</sup>, an open source implementation of the AMD Southern Islands GPU Instruction Set Architecture<sup>17</sup>, though currently only implemented through FPGA means.

What both projects share is that they are an open implementation based on a commercial product (open sourced in the first case and reimplemented in the second). OpenCore's OpenRISC<sup>18</sup> is, on the other hand, a series of general purpose CPU architectures following RICS design strategy, open source from the very beginning and not burdened with any "intellectual property".

When it comes to mobile devices open in the sense that anyone can create one from a combination of open and closed hardware and running mostly open source software, the product range is much more interesting, be it OpenPhoenix GTA04<sup>19</sup>, Neo900<sup>20</sup>, an open alternative to Nokia N900 based on the same hardware design as GTA04, or Librem 15 laptop<sup>21</sup>.

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13. <https://tox.im/>

14. <https://github.com/cjdelisle/cjdns>

15. <http://www.oracle.com/technetwork/systems/opensparc/index.html>

16. <https://github.com/VerticalResearchGroup/miaow>

17. [http://developer.amd.com/wordpress/media/2012/12/AMD\\_Southern\\_Islands\\_Instruction\\_Set\\_Architecture.pdf](http://developer.amd.com/wordpress/media/2012/12/AMD_Southern_Islands_Instruction_Set_Architecture.pdf)

18. [http://opencores.org/or1k/Main\\_Page](http://opencores.org/or1k/Main_Page)

19. <http://projects.goldelico.com/p/gta04-main/>

20. <http://neo900.org/>

21. <https://www.crowdsupply.com/purism/librem-laptop>

At least partially, or, better still, completely open devices and communication networks bring secure user experience, may inspire and help to educate the next generation of engineers, and, a feature most appealing to the majority of users and a key to the mass adoption, drive the costs of setting up, producing, operating and thus also the purchase and use of such products and services thanks to the unfettered competition between the market subjects.

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From the sequential art driven development's perspective there is an opportunity to find, explore and eventually embed an incentivizing factor for running the infrastructure elements of distributed communication networks like Tox and CJDNS and the like.

Collaboration between distributed communication networks enthusiasts and open hardware hobbyists can result in completely open routers and network nodes that can show the viability of such devices and one day, we can even see a completely open consumer electronics benefiting from a crowdsourced design, manufacturing, and distribution.

## 5.2 About the Experiment and it's Design

The main target of this experiment is to test the theoretical foundations of the sequential art driven development as set in the previous parts of the thesis.

Though not the complete set of its possibilities and use cases will be featured in the experiment, it should verify its potential

The experiment was designed with the academic nature of this thesis and ease of preparation and execution in mind, limiting the possibility of unwanted noise and faults in the collected dataset. This is a social experiment, not a rocket science.

### 5.2.1 Formulating a Testable Question

In the sense of the introduction, the experiment can be summed up in the following question:

| Is the use of sequential art and its output apt as a proof of concept and a minimal viable product?

The minimal viable product in this case is the idea, script and concept art for the Who is Secret Agent X-9? bundled together with a lot of yet to be decided features.

Wording of the question can be then refined as follows:

| Is the use of sequential art and its output in the form of a mailing list subscription campaign apt as a proof of concept and a minimal viable product for the Who is Secret Agent X-9? comic book series?

### 5.2.2 Observation and Background Research

A traditional approach to marketing research on the interest of the general public in the Who is Secret Agent X-9? series would be through a questionnaire survey.

Such technique is rather resource intensive when it comes to time and network of contacts and sample group is somewhat limited to the inquirer's options. The output of such effort would be, given our conditions and possibilities, of a rather low quality. Above all, such marketing research is not a collaborative effort

and thus not in line with the sense of the thesis. A more suitable technique to use would be, in this case, crowdsourcing.

Crowdsourcing is “an open call for contributions from members of the crowd to solve a problem or carry out human intelligence tasks, often in exchange for micropayments, social recognition, or entertainment value.” [Estellés-Arolas and González-Ladrón-de-Guevara 2012]

The most notoriously known use of crowdsourcing is Wikipedia<sup>22</sup>, an online encyclopedia created and managed by a crowd of voluntary writers and editors instead of a determined group of paid professionals. Contradictory to the general belief of unsustainability of such approach, the Wikipedia community is a self-regulating entity without the need for screening the authors prior to their contributions.

A specific instance of crowdsourcing is crowdfunding, or, obtaining funds through an open call for contributions from members of the crowd in exchange for a campaign related perk or share in the campaign owner’s organization.

Among the best known crowdfunding platforms are Kickstarter<sup>23</sup>, IndieGoGo<sup>24</sup>, or a decentralized, Bitcoin-powered alternative Lighthouse<sup>25</sup>, allowing for verification of ideas and minimal viable products, and securing funds for their large-scale production and distribution.

Thanks to these platforms, such products such as Pebble<sup>26</sup> and Pebble Time<sup>27</sup> smartwatches, \$9 Arduino Leonardo compatible board and development kit<sup>28</sup> or Jolla Tablet<sup>29</sup> were allowed to materialized from the ideas of their creators thanks to the crowd in early adopters willing to buy a still unavailable product.

A case of crowdfunding, microfunding, is then a way of providing small loans to the, mostly third world, entrepreneurs. Such loan, however insignificant from our point of view, can significantly increase their capital for broadening their activities, be it farming, production or trade, and standard of living for the rest of their lives.

Yet another specific instance of crowdsourcing is crowdspeaking, or, obtaining a social reach through an open call for contributions from members of the crowd, where every contributor promises his or her social media post promoting the crowdspeaking campaign’s cause. An early crowdspeaking platform, Thunderclap<sup>30</sup>, allows for quick and easy grassroots campaigns with easily trackable supporters and social reach counter, among which the Phonebloks<sup>31</sup>, or, a phone worth keeping, is the most successful tech campaign with almost 1 million supporters and social reach about 381,753,802.

Crowdtesting and open bug bounty programs are means for white hat hackers for responsible disclosure of the faults found in the security, integrity or accuracy of the electronic systems, be them operating systems, application software or media content. It’s an incentivizing factor for gray and black hat hackers as well.

Among the most popular bug bounty programs are those of major web browser development organizations, be it Google’s Chrome and Chrome OS<sup>32</sup> or Mozilla’s Firefox and Thunderbird<sup>33</sup>.

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22. <http://www.wikipedia.org/>

23. <https://www.kickstarter.com/>

24. <https://www.indiegogo.com/>

25. <https://www.vinumeris.com/lighthouse>

26. <https://www.kickstarter.com/projects/597507018/pebble-e-paper-watch-for-iphone-and-android>

27. <https://www.kickstarter.com/projects/597507018/pebble-time-awesome-smartwatch-no-compromises>

28. <https://www.indiegogo.com/projects/9-arduino-compatible-starter-kit-anyone-can-learn-electronics>

29. <https://www.indiegogo.com/projects/jolla-tablet-world-s-first-crowdsourced-tablet>

30. <https://www.thunderclap.it/>

31. <https://www.thunderclap.it/en/projects/2931-phonebloks>

32. <http://www.google.com/about/appsecurity/chrome-rewards/>

33. <https://www.mozilla.org/en-US/security/bug-bounty/>

Crowdtesting and bug hunting became a career opportunity in the recent year thanks to the already mentioned programs as well as specialized platforms matching software vendors and security experts such as bugcrowd<sup>34</sup>, Bitcoin projects friendly Crowdcurity<sup>35</sup> or HackerOne<sup>36</sup>.

**Disclaimer:** the author of this thesis is a former contributor to Mozilla's Firefox OS<sup>37</sup>

Crowdvoting is a process of gathering opinion of a significant group of people on a given topic. The total sum of votes for a certain option is, in this case, more relevant factor than any kind of percentage analysis for it's the voters who represent the potential customers and crowd members.

A great example of such process is Threadless<sup>38</sup> offering a playground for artists and choice & electronic store for customers.

Though many more models of crowdsourcing exist or are at least theoretically possible, these are the relevant ones for the sake of the experiment.

A mailing list, as intended to be used in this chapter, can be seen as a fusion of both crowdspeaking and crowdvoting where every contributor promises to be informed about the campaign's cause through an email message may the campaign be successful and it's where this model differs from general crowdspeaking the most—you primarily give the consent to be reminded and informed about the project yourself and don't automatically remind and inform others.

Another topic worth research in regard to the experiment are target groups and their behavior, specifically their online behavior.

As the target groups largely consists of cryptography enthusiasts and privacy concerned people commonly using Tor<sup>39</sup>, simple proxies and other anonymity preserving tools, most of the analytics gathered by the platform has no informative value for they most probably are not accurate.

For this reason and other reasons mentioned later, no data other than email addresses, sign-up date and validity of the subscription will be gathered.

### 5.2.3 Stating Our Hypothesis

The hypothesis is that the campaign will be able to yield at least 1,000 mailing list subscribers in two weeks or less without any paid or planned industry leader promotion. The only means of promotion is the author's own contact network and easy shareability of the campaign through social media share buttons.

Our quantitative target for this experiment is to reach at least 1,000 subscribers during the period of two weeks or less for which the experiment will run. The subscription form will remain available even after the experiment ends, all the way until the book is published. As this can be seen as two discrete campaigns sharing only the means and not time, it should not affect the experiment at all.

A qualitative target then is to strengthen the current relations with the industry leaders and potential contributors and to establish new ones as well.

Sharing of the campaign is not connected with any kind of reward, thus people doing so do it out of the pure joy and the desire of seeing the comic book in question being produced.

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34. <https://bugcrowd.com/>

35. <https://www.crowdcurity.com/>

36. <https://hackerone.com/>

37. <https://www.mozilla.org/en-US/firefox/os/#>

38. <https://www.threadless.com/>

39. <https://www.torproject.org/>



Whether the experiment is or is not successful will be determined by the number of lines in the corresponding campaign's database, where every line represents one unique and genuine subscriber.

#### 5.2.4 Designing the Experiment

The core of the experiment will consist of a LaunchRock<sup>40</sup> mailing list subscription<sup>41</sup> to verify the interest among the target groups, encourage the contributors and later keep the subscribers informed about the progress of the production. See **Appendix 1** for a screenshot of the mailing list subscription form.

For those who don't know, LaunchRock is a hosted, white-label mailing list subscription platform with embedded analytics; or, an excellent tool for the experiment to perform at.

Though the platform offers advanced analytics features, only a few of them will be truly utilized due to the nature of the experiment and the intended subscribers.

While LaunchRock was chosen instead of other mailing list subscription solutions for the simple fact of the author's previous experience with it, asking why not choose crowdspeaking or crowdfunding approach to evaluate the hypothesis is a much smarter way to understand the choice.

This way, we're not binding the interested parties to anything except receiving campaign updates as opposed to the use of crowdspeaking (binding the subscribers to post a social media message) and crowdfunding (donating funds to the production) and thus the interest of the subscribers is not limited by any constraints other than Internet access and email address.

Out of respect for our supporters and for the legislative requirements, we won't publish any of the email addresses gathered during the campaign in the thesis, not even as an attachment. A screenshot of only a small part of the dataset will be shown as a proof of the campaign's success with the addresses censored and the whole dataset is further available only for the purposes stated in the campaign.

The experiment took place from March 9, 2015, 12am CET<sup>42</sup> to March 23, 2015, 12am CET. The whole period consist of two week cycles starting and ending on Monday to evade most of the possible noises caused by the various time cycles.

The campaign will be promoted through the author's own contact network and through selected, thematic subreddits, namely /r/Anarcho\_Capitalism<sup>43</sup>, /r/antiwar<sup>44</sup> and /r/comics<sup>45</sup>.

#### 5.2.5 Performing the Experiment

The experiment started and ended exactly according to the plan. The course of the experiment was quite smooth without any exceptional events, nor any action to correct and deviate from the planned experiment's environment was required.

Unfortunately for the sake of the experiment, LaunchRock was rolling a major update during the duration of the campaign which might have influenced the experiment for the limited availability of the social sharing functionality of the campaign and consequently limiting the possible reach of the campaign.

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40. <https://www.launchrock.com/>

41. The mailing list subscription is available at <http://x9.miceeatheese.co/>

42. Central European Time

43. [http://www.reddit.com/r/Anarcho\\_Capitalism/comments/2ykaeh/make\\_comic\\_books\\_not\\_war\\_subscribe\\_and\\_strengthen/](http://www.reddit.com/r/Anarcho_Capitalism/comments/2ykaeh/make_comic_books_not_war_subscribe_and_strengthen/)

44. [http://www.reddit.com/r/antiwar/comments/2yox37/make\\_comic\\_books\\_not\\_war\\_subscribe\\_and\\_strengthen/](http://www.reddit.com/r/antiwar/comments/2yox37/make_comic_books_not_war_subscribe_and_strengthen/)

45. [http://www.reddit.com/r/comics/comments/2yp4g3/make\\_comic\\_books\\_not\\_war\\_subscribe\\_and\\_strengthen/](http://www.reddit.com/r/comics/comments/2yp4g3/make_comic_books_not_war_subscribe_and_strengthen/)

As the experiment was performing rather good, it was left to its own in the second week and not promoted any further.

#### 5.2.6 Collecting the Data

The process of clearing the data from empty lines, incomplete entries and duplicit data was quite easy thanks to the way LaunchRock handles the subscriptions. The system simply won't let the subscriber post an empty form or one that don't meet certain criteria, including invalid or duplicit email address.

The only action required from us is then to leave out all the unsubscribed lines, for which LaunchRock offers a simple option.

As most of the groups engaged in the campaign are privacy concerned and known to use tools such as anonymising proxies or Tor, any kind of conclusion based on the place stated in the **Location** column would not stand on solid ground. Even in the case of the platform being able to exactly pinpoint the location of every single subscriber, such information would still be useless to us; using information based on such determination of location is moronic for a start and since the product is clearly digital anyway, it really doesn't matter where are the subscribers from.

The total number of subscribers reached after two weeks is 1,057 of which none unsubscribed from the list. See **Appendix 2** for the proof of reaching 1,057 subscribers in two weeks.

As another three subscriptions were made before the image was caught, it shows 1,060 subscribers instead of the mentioned 1,057. Luckily, the number is higher, not lower, thus does not affect the success of the experiment.

To the April 10, another 78 subscribers joined, making it a total of 1,138 subscribers from the beginning of the campaign, through the experiment, to the last measured date. The subscription list will remain open for anyone to subscribe and agree to be informed about the progress of the *Who is Secret Agent X-9?* production even though the experiment already ended. The experiment and the campaign are then two overlapping, yet independent entities serving two distinct goals with a common core.

#### 5.2.7 Drawing Conclusions

This experiment shows that it's possible to create successful sequential art based minimal viable product.

To answer the question asked at the beginning of this chapter:

| Is the use of sequential art and its output apt as a proof of concept and a minimal viable product?

yes, it is.

We won't venture to say that it's fit for any kind of product as we would not say it's unfit for all the products in case of the experiment's failure. A minimal viable product will always be an output of a human design. Its acceptance is a matter of a human action.

Given the opportunity to start the experiment again, a better use of the referral counter function would be taken advantage of to better estimate the impact of different promotional channels on the campaign. Unfortunately, the LaunchRock platform undergone a rapid upgrade just days before the experiment started and many features, including the social media sharing and referral counter, which would prevent us from doing so anyway.

As a result of the successful experiment, the first issue of *Who is Secret Agent X-9?* was picked by MiceEatCheese for production during the late 2015. In the case of a successful production and friendly

acceptance by the community, the remaining 11 issues will follow. In this case, other productions from MiceEatCheese will follow in the tradition set by *Who is Secret Agent X-9?* and will use sequential art development tools and practices.

Features of the sequential art driven development not tested during the experiment will be tested during this production where applicable, and the whole production will follow the best practices outlined in this thesis.

## 6 Conclusion

From the academic point of view, the goals stated at the beginning of the thesis were both fulfilled.

The first goal of this thesis was to show a sequential art and its instances as a communication platform for the target users, decision makers and developers which can act as a model of the relevant part of the real world displaced by a possible innovation, auxiliary tool in creating a mind map and documentation and a way of promoting the final product regarding the development of complex systems.

It was the content of the third and the fourth chapter of the thesis, where the third one consisted of research on the current approaches to the topic and the fourth one acted as the main theoretical body.

The second goal, stated at the beginning of the thesis and specified at the beginning of the fifth chapter, was to verify the viability of a “copyright” free and open source comic book depicting a time-shifted society, showing a practical application of the Sequential Art Driven Development methods while introducing the idea of non-aggression, voluntarism and pacifism to a broader community.

Though the experiment of the fifth chapter covered only the early phase of the process, it was shown that such approach is, at least in some cases, possible and efficient. A simple minimal viable product in the form of a promise of a comic book, backed by a concept art and draft script, was enough to convince a significant amount of people they want to see and know more about the product.

As this thesis is only a part of a bigger picture, the author will continue in experimenting with use of sequential art in development process and eventually will cover all, or at least most of the use case types.

From the practical point of view, the thesis is a pure success as both sponsors of the thesis, the Benjamin Tucker Institute, z.s. and MiceEatCheese, are more than satisfied with the outcome of the thesis, namely the minimal viable product experiment.

In the coming months and years, the Who is Secret Agent X-9? series will serve as a platform for mind mapping, modeling, communication, documentation, promotion, and feedback acquisition in finding sustainable business models for distributed communication networks, completely open computing devices and social frameworks for voluntary society, making it a complete cycle of a sequential art driven development.

Different industries and project sizes or organizational structures, of course, bring different needs for tools and techniques. Nevertheless, there are *a priori* no constraints preventing the use of sequential art driven development in any organization unless it's a management's decision.

The foundations are set, cornerstones of the first sequential art driven product is placed, and at least one enthusiast with both hands free in using it is committed to employ it wherever plausible.

## A Glossary of Terminology

Term	Meaning of the Term
Android	A mobile, Linux-based operating system developed by Google for mobile devices.
API	Application Programming Interface, providing a programmatic access to software components.
ASIC	An ASIC, or application-specific integrated circuit, is an integrated circuit designed for a specific use case rather than general purpose computing.
BSD	BSD licenses are a set of permissive free software licenses, allowing for reuse of the source code within any kind of software provided a copy of the license terms and the copyright notice is attached.
CAD	Computer-aided design, or the use of computer systems in the process of designing.
CC0	Creative Commons Zero, a “copyright” waiver.
CET	Central European Time is a standard time one hour ahead of UTC, or Coordinated Universal Time.
Client-server Architecture	An application architecture where the client makes a service request and the corresponding server fulfills it.
CPU	A CPU, or a central processing unit, is an integrated circuit performing the basic arithmetic, logical, control and input/output operations within a computer.
Creative Commons	A non-profit organization maintaining a set of licenses enabling the sharing and possibly other use of creativity and knowledge while staying compatible with most of the world’s legislature.
Firefox OS	Firefox OS, formerly known as <i>Boot to Gecko</i> , is an open source, Linux-based mobile operating system developed by Mozilla, using the Gecko web layout engine as an application runtime system.
FPGA	An FPGA, or field-programmable gate array, is an integrated circuit intended for a custom configuration.
Glacier UI	An open source user interface developed for and used by the Nemo Mobile Linux distribution.
GNU	<i>GNU’s not Unix</i> is a project for creating an open source UNIX-like operating system.
GNU/Linux	An open source, UNIX-like operating system using GNU userland on top of Linux kernel.
GNU GPLv2	GNU General Public License version 2.0, is an open source license allowing anyone to use, study, copy, share, and modify such licensed software given that the derived work will be distributed under the same or compatible license.
GPU	A GPU, or graphics processing unit, is an integrated circuit accelerating the process of graphical output within a computer.
GSM	GSM, or Global System for Mobile Communications, is standard protocol for digital cellular networks.
ID	An ID, or identifier, is a lexical token that represents an entity, allowing for symbolic processing.
iOS	A mobile operating system developed by Apple for mobile devices.

IP	Intellectual “property”.
IS/ICT	An information system employing the use of information and communication technologies.
Linux	Linux kernel is an open source operating system kernel intended for UNIX-like operating systems.
Mac OS	An operating system developed by Apple for the Macintosh line of computers.
MeeGo	A former open source mobile operating system developed by Intel and Nokia as a continuation of their Moblin and Maemo mobile operating systems.
Mesh Network	A network topology where all nodes participate in the distribution of data in the whole network.
Middleware	A computer software providing services to software applications not provided by the operating system.
MIT	MIT License is a permissive free software license, allowing for reuse of the source code within any kind of software provided a copy of the MIT License terms and the copyright notice is attached.
OpenBazaar	An open source and decentralized online marketplace powered by Bitcoin.
Outsourcing	Transferring and contracting a process of given entity to an outside supplier.
Open Source	A software development model with an open access to its source code.
P2P	Peer-to-peer, a distributed application architecture where either party can initiate a communication session and thus act as both server and client when needed.
Proxy	An intermediary between a client and a server during the process of request, allowing for anonymizing and other set-ups.
RISC	RISC, or reduced instruction set computing, is a CPU design using a smaller, highly optimized set of instructions as opposed to the CISC, or complex instruction set computing.
SIM card	A SIM card, or subscriber identification module, is an integrated circuit used for user identification and authentication on mobile devices.
UI	The user interface enables users to easily operate and control computer systems.
UX	The user experience is the sum of perceptions user gets from using a computer system.
Webcomic	A comics distributed primarily through the World Wide Web.
Wiki	A web application for collaborative creation of content.
XKCD	A webcomic series created by Randall Munroe.

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## Who is Secret Agent X-9?

Join us in creating our new CC0 licensed comic book series Who is Secret Agent X-9? whose story takes place in a pacifist (non-aggressive, voluntary, stateless) society, which is a result of a worldwide disaster caused by the UN and it's member governments, which forces X-9 to make the hardest choice of his life. Whoever X-9 was before, can he be the same man ever again?

*Count me in and keep me informed of the progress of its production:*

### Email

You can find, read and edit the draft script for the first issue at [GitHub](#)

A screenshot of the mailing list subscription form. [Moravec 2015a]

Appendix 2

Dashboard

Users

Books

Analytics

Customers

Make comic books, not war. Join us in creating the #WhodiscreetAgentix comic book series. No rights reserved.

Last Update: 2013/09/15

Customers

Here you can filter and identify people who have signed up on your LaunchBook site.

Filters

Name

Email

Subscription status

Any

Signup Date Range

2/29/15

2/27/15

Location

Any State

Any Country

Sorting

Signup Date

Descending

Apply Filters

Reset

1,060 Users

Name

Email

Signup Date

Location

Referrals

Subscribed

Actions

3/23/15

0

105

3/23/15

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105

3/2/15

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101

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101

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Proof of reaching 1,057 subscribers in two weeks. [Moravec 2015b]