# Towards a Software Tool Portal to Support Startup Process

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**Abstract.** Despite their popularity and growth, startups still face many challenges to keep survived in highly dynamic and turbulent environments. With limited time and resources, they must develop products or services that solve real problems. Today, various software tools have been provided to help entrepreneurs to tackle these challenges and speed up their processes. However, how to effectively find and use these tools are not clearly understood either by entrepreneurs or in literature. The purpose of this research-in-progress paper is to apply design science principles to develop a software tool portal to support the startup processes. The initial results reveal the need of tool recommendation as part of software the portal for entrepreneurs to find the right tools effectively in order to meet their specific needs.

**Keywords:** Startups, Software tool portal, Entrepreneur

## 1 Introduction

Startup is not only about developing innovative product or service, but also about business development [1]. To enter into an existing market or a new market, a startup often develops technologically innovative product which requires disruptive technologies. The entrepreneurs should ensure that the product they build targets at solving a real problem. It means that there is somebody out there who will pay for and use it to solve their problems. To do this, entrepreneurs should go out of the building to involve the customers since day one [2].

Most of startup founders are young and inexperienced. Moreover, they have limited resources. To overcome these challenges, finding and using the right tools have become critical for entrepreneurs to build and grow their startups. Entrepreneurs need tools to assist them in managing the team, finance, product or service development and marketing. Choosing the right tools will not only allow them to speed up their product or service development but also to commercialise it. In this study, we focus on software tool which defined as a software application (including mobile, desktop and web application) that supports a well-defined startup activity [3].

Today, the growth of web technology has made available a plethora of software tools that can be useful for entrepreneurs. Knowledge of what others may be doing helps them to make startup process less painful, more productive and effective. Various web portals have been also developed to serve as the gatekeepers to the existing software tools for startups. Entrepreneurs may begin their searching for tools by visiting a portal and obtain information about the tools and the links to get the tools.

Most of the existing portal provides a collection of a huge number of tools and organised them into a certain category. Moreover, each portal offers different features for entrepreneurs to find a tool for them e.g. tool search, forum, etc. However, it is still unresolved how these portals can suggest right tools for the entrepreneurs to support their activities. Hence, the research question in our study is *how do we implement a portal that satisfy the entrepreneurs' needs of finding the right tools?*

The solution we propose is based on the following argument. Different tools have been developed and published over the world wide web. New entrepreneurs might not have sufficient knowledge what tools they need in their circumstances as compared to experienced entrepreneurs. In this case, we advocate a new categorisation of existing tools. In addition, not all of tools are good enough to help entrepreneurs in certain tasks or situations. The entrepreneurs' experience of using the tools will serve as the basis to evaluate and recommend certain tools.

The remainder of this paper is structured as follows. Section 2 discusses the related work of this study. Section 3 presents the research approach proposed. The preliminary results of this study are explained in Section 4. Section 5 describes the immediate next steps.

## 2 Literature review

### 2.1 Startup process

Startups are newly created companies tend to grow fast in extreme uncertainty. According to Sutton [4], startups have the following characteristics: (1) young and immature (2) limited resources (3) multiple influences from stakeholders and (4) dynamic technologies and market.

In order to grow and attain a sustainable business model, startups go through different phases. Crowne [5] defines the startup life cycle into four stages: The first stage is startup stage starting from idea conceptualization to the first sale. The stage starting from the first sale until the product is stable enough to present to new customers without effecting development process is second (or stabilization) stage. The growth phase beings with growth, getting share in the market. The final stage is when a startup becomes a mature company and follows proven process to develop an innovative product.

During the life cycle, startups perform different activities. These activities are related to product development, business and customer development etc. Software tools can be helpful for entrepreneurs to effectively perform and thus

accelerate these activities. However, little is known about what are the software tools that startups are using to accelerate performance during their daily activities.

Tools are used to facilitate people to perform, manage and control different tasks and activities. For example, project management tools can help entrepreneurial team to effectively manage and utilize their resources. Another example is development tools that can be helpful to support different software development activities. Keeping in mind the dynamics and fast nature of startups, it is important to identify the tools that entrepreneurs can use to accelerate their startup processes.

### 2.2 Portal

Over the past decade, the popularity of web portal has increased considerably. Organisations use web portals to compliment, substitute and extend existing services [6]. The idea of a web portal is to provide an access to different data providers via online [7] and an environment which allows users to find the data and information needed to support their operational or strategic decisions [8]. Therefore, web portals serve as a gateway to explore and access information on the Internet.

Collins [8] defines a set of basic functions that are provided by web portals, as follows:

- Data points and integration. Web portal provides information from a wide range of sources, which should be correct, up-to-date and complete.
- Taxonomy. The information published in the portal should be arranged and ordered so that users can easily use the portal.
- Search capabilities. Users can search the information throughout the portal.
- Help features. Users should be able to ask and get answers when using the portal.
- Content management. This function allows users to create/modify content.
- Process and action. Users can be involved in the portal business process.
- Collaboration and communication. This function facilitates sharing of innovative ideas, information or resource.
- Personalisation. Web portal allows each user to organise and configure a specific working environment.
- Presentation. The information provided should be presented in flexible format and intuitive so that it is easy to navigate.
- Administration. This function refers to the deployment and maintenance of the portal.
- Security. This function defines the level of access and portal features that each user has.

## 3 Research methodology

To answer our research question, we employed design science approach [9] (see Fig. 1). Design science approach is a problem-solving paradigm which creates

artefacts to solve a problem in a certain context [10]. The artefacts can be represented in various structured forms, e.g. software, formal logic, method, technique or conceptual structure [9]. Each problem has a root in a certain context so that the artefacts are designed to understand that context. Design science involves two main activities: designing and investigating (see Fig. 1).

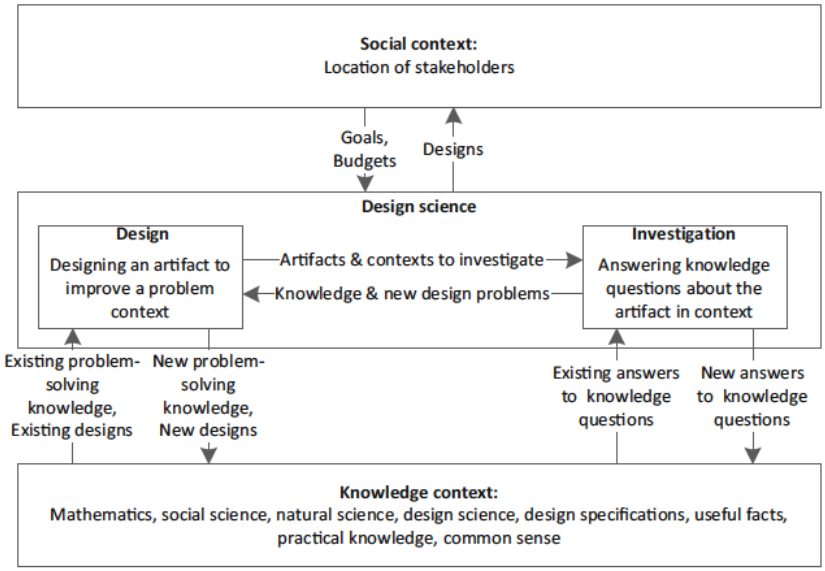


**Fig. 1.** Design science framework [9]

In this study, the stakeholders in the social context are startuppers or entrepreneurs. The goal of this design science study is to understand and meet the needs of entrepreneurs regarding software tools to support their activities and access to them. Hence, we analysed the existing software tool portal available online. To be qualified as a software tools portal, a web page should meet the following criteria [11, 6, 12]: (1) collection of links to multiple sources in the world wide web, (2) the links are organised based on a certain structure for navigation. We used Google search engine to perform the selection. The generic search string with combination of keywords we used to find the software tools portal is *("startup" OR "startups" OR "start-up" OR "start-ups") AND ("Tools" OR "Tool").*

Our selection with Google search engine discovered 15 tool portals, which offer thousands of tools available online that one can use for different purposes (see the complete list of the portal in the following link: `http://figshare.com/articles/List_of_software_tool_portals/1540679`. For startuppers, it becomes very crucial to find a suitable tool quickly because of fast and dynamic nature of startups. Currently, we do not see any solution that is primarily de-

veloped by keeping in mind startups nature and involving several startuppers to overcome this problem.

To fill this gap, we started designing a new software tool portal. We follow the four steps proposed by Wieringa [9] iteratively (see Fig. 2): (1) problem investigation, (2) treatment design, (3) treatment validation and (4) treatment implementation. To better understand the problem, we performed interviews with five different startups. Semi-structured face-to-face interview with a mix of open-ended and specific question is employed to elicit information. Based on the interview, we found out that the entrepreneurs are not aware of these portals and the list of tools available. They tend to use only the tools they are familiar with.

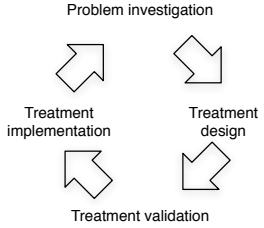


**Fig. 2.** Design cycle [9]

Based on tool portal analysis, we designed a new web portal, called MineToolz and asked the experts to foresee how the portal can satisfy their need. Three criteria were posed: (1) the positive aspect, (2) the negative aspect, (3) additional feedback for the design. The first validation with the experts signalled a positive impression about our design. The three level designed are insightful for new entrepreneurs who are looking for tools systematically. Only one expert thought that we were showing our own tools. All the experts agreed that our design was simple and enabled the users to go through the categories and list of tools.

One of the experts suggested to implement a questionnaire to know a user's need and based on that, suggest the right tools for him (can be a recommender system). Besides, this feature also allows the users to directly find the desired tools rather than browsing all the pages. The experts also suggest to have two types of rating: the user rating and the admin rating. User rating is given by users based on their experience using certain tools. For admin rating, the experts suggest to have a certain mechanism to evaluate the tools which is supposed to be more objective than user rating.

## 4 MineToolz

MineToolz (`www.minetoolz.com`) is designed by following the three-tiered architecture design: presentation layer, business logic layer and data layer (see Fig.

3). The presentation layer is the first layer where users can see the list of the tools. Users can also read the description about each tools. The presentation layer is further divided into three levels. The first level consists of the landing page and the four categories (product, market, team, finance) in which the list of tools are categorised. Also, the landing page consists of several features e.g. suggesting a tool, contact form, connecting with social media etc.

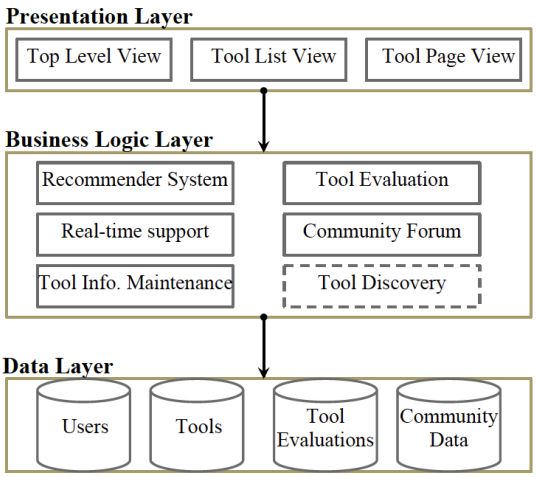


**Fig. 3.** MineToolz architecture

The business logic layer is responsible for two important features: recommender system and automated tool evaluation. Recommender system is designed to generate a list of recommended tools for entrepreneurs. Automated tool evaluation is handling all the process of evaluating newly added tools into the portal. Another component of business logic layer is an independent tool discovery component that helps to discover the new tools that are available on the Internet with the passage of time. The data link layer is used to manage the information about different tools with their evaluations, users of the portals etc.

The curated list of tools are shown in the second level. This level serves as the hub of all the software tools. When a user enters a category, the corresponding tools are displayed. Each tool displayed at this level consists of the tags, tool description, rating etc.

The third level gives the detailed view of a specific software tool. After logging in, a user can give comments and rate a specific tool. Tools are also recommended to users at this level by implementing a tool recommender system.

We classified the users into newbie, intermediate and advanced users. For newbies, a minimum set of tools are offered to build the business idea into startup. For intermediate users, an additional list of tools are provided that assist

the startup to follow their flow after business idea validation. The advanced user tool section is: when the startup is in the scalable phase.

## 5 Next step

In this paper, we have described an outline of the design of a new software tool portal, called MineToolz. The following premises stipulate the need of such systems. First, a huge number of software tools have been published online the world wide web. A software tool portal plays an important role as the gateway to the huge collection of tools. Second, every entrepreneur has different needs. A tool recommender system will be beneficial for entrepreneurs to find the right tools effectively.

Further research will entail several new studies. First, we are still working on the implementation of the system. The implementation will also include the tool recommendation system. Second, we will collect empirical evidence of validity and reliability of our solution.

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