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FRAMEWORK FOR BUILDING A SERVICE VISION STATEMENT

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Abstract: *The product vision sets the end state for what a product will deliver, and guides every action taken to develop or enhance it. This is also similar for a service, which is instead intangible, unique to each customer, inseparable from its provider, and non-storable. A good service vision is therefore critical for its success. There are, however, several challenges in translating vision into a competitive product or service, like demanding time constraints, fire-fighting instead of proactive management, inconsistent stakeholder opinions, or market dynamics.*

While considerable attention has been given to product vision building, service vision building has been less addressed. This paper proposes a framework for service vision development (in the IT domain), based on the creative usage of the Anticipatory Failure Determination method. A case study related to an integrated knowledge management service is also presented.

Key words: *service design; vision statement building; creativity support.*

1. INTRODUCTION

Turning ideas into successful products and services has made vision generation an important process of many innovating organizations [1] [2]. The vision of a product or service describes who the customers are, what customers need, and how these needs will be met [3]. It should capture the critical information to be known in order to develop and maintain a competitive product or service.

A plain web search for vision statement examples returns many good examples of visions that shaped well-known products or services. There are also many guidelines on how a sound statement vision should be, and what one should consider when formulating it. In short, the vision statement should give customers *a sense of purpose*, value and meaning, it should be inspiring for *employees* providing the service by arousing feelings of ambition, enthusiasm and commitment, and should clearly tell *what is sought, and what is not* [4].

The service vision should be unique and powerful; in other words, the vision statement should be distinctive, motivating, and clear. Superlatives in vision statements are usually encouraged [5], but – apart from being highly motivational – a vision statement should be realistic and measurable. In addition to that, mobilisation of differential visions of various stakeholders is important in the building, validation and acceptance of innovations within the product or service to be realised in the future [1] [6].

Furthermore, apart from knowing as much as possible about the future product or service, managers need to mix all that knowledge with a good dose of creativity to define the vision for their product or service [7].

As vision statements make often use of superlatives, measures and target values for the future product or service quality should already be clear when stating the vision: “best”, “greatest”, or “easiest” should translate into similar performance characteristics, for anybody involved in the future product or service development. Services, compared to products, are intangible and heterogeneous – hence performance metrics are often difficult to define and realistic target values are more difficult to be set.

To sum up, there are several challenges in translating vision into a competitive product or service, like rapid technology changes, complexity, demanding time constraints, fire-fighting instead of proactive management, inconsistent stakeholder opinions, or market dynamics.

While considerable attention has been given to product vision building, service vision building has been less addressed. This paper proposes a framework for service vision development (in the IT domain), based on the creative usage of the Anticipatory Failure Determination method [8]. A case study related to an integrated knowledge management service is also presented.

The paper is structured as follows: Section 2 discusses related work, Section 3 presents the proposed framework (ground ideas and the framework itself), Section 4 presents a case study, based on the proposed framework, about building the vision for an integrated IT service to be provided to a research group, and Section 5 discusses findings and draws the conclusions.

2. RELATED WORK

The product management literature contains many topics on product (and service) vision. A plain Google search for "how to build a product vision statement" (or a similar keyword) returns over 100 million results. Narrowing the search ("product vision statement frameworks") reveals mostly templates (e.g. spreadsheets) for stating the vision. Searching scientific literature databases (e.g. ScienceDirect) using the same search terms also returns general approaches regarding (product) vision.

To effectively find related work, two literature reviews were conducted: one to identify algorithms and frameworks to build (product or service) vision, and one to identify means of supporting creativity in product development management.

2.1 Vision building

A first search was conducted using the "product vision framework" (and other similar) search terms. The findings are discussed below.

Research in [1] highlights the importance of mobilising differential visions of various stakeholders through consensual integration to eventually enable sustainable value creation. It also explores how incongruence in stakeholders' vision could impact on realised innovations.

The research in [9] highlights the importance of the team in product development and examines the relationship between team vision and performance, and the possible moderating role of knowledge strategy. It concludes that product development managers should pay more attention to the development of a common view among team members. Successful product development requires that the components of team vision – clarity, strategy fit and trade-off – be aligned to knowledge strategy.

The organizing vision concept is explored in [10]; this research examines how organizing visions are interpreted by organizations. Organizing visions are considered to positively influence technology adoption decisions, but they can also influence decisions to reject a technology (on which, for instance, a product or service component relies on).

A new product design process that concentrates on radical innovations and integrates visioning thinking (among others) is proposed in [2]. The actors in the design process are required to develop a set of alternative visions describing the future state of the project. The advantages and disadvantages of each alternative should be debated and a long-term likely scenario, guided by the shared vision, should be built. Usage of general creative methods to generate the vision alternatives is encouraged.

To sum up, visions of various stakeholders should be considered, and a shared vision, based on them, should be built. Creativity support methods usage is encouraged, but no algorithm or framework to specifically use such a method has been identified.

2.2 Creativity support in product development management

Creative thinking tools and techniques have been used in product development for a long time. One of the most notable tools is the TRIZ

problem-solving philosophy based on logic, data and research, rather than on intuition. Other tools commonly used tools are brainstorming and morphological charts; an example of employing them in product development management can be found in [11]. Comprehensive lists of creativity tools to be used in product design can be found all over the web, for instance in [12]. In the scientific literature, an interesting overview of approaches in structuring and using tools and techniques, based on the effectuation of creativity and decision-making in the design environment, is presented in [13].

As stated in [14], for a successful product or service all the stakeholders must be included, because of their different perspective (and, as a result, their commitment to the development process) on what success represents. In this respect, a team planning to develop a product or service could be associated to a community of interest, as described in [15]. One of the strengths of such a community is its potential for creativity, as different backgrounds and different perspectives can lead to new insights. However, it's members usually fail to create a common ground and a shared understanding [15].

In general, a successful project often starts as a result of individual creativity [15]. This starting point could be in the form of a vision statement, requirement set, prototype, blueprint, or feature list. When shared with other individuals (stakeholders, e.g. designers, users), they will be able to interact with this initial version and extend or use it creatively in more situations than the original designer had intended [16].

2.3 Discussion on findings

One key aspect resulting from the literature review is that all stakeholders should be part of the vision generating process. *Stakeholders* refers here to all actors directly involved in the (product or) service design process. A good vision should increase their commitment to the (product or) service to be developed. A good tool to support idea in practice is the Delphi method, but, although vision statement consensus is critical, attention should be paid to nonconformist or „heretical“ views, as many times true innovation is triggered by unconventional ideas [17] [18].

Another key idea is that both individual and group creativity should be supported while generating the (product or) service vision, as the literature review revealed.

To sum up, a framework to support vision generation (especially for services, which are intangible and heterogeneous) should (apart from managing knowledge items like needs, value creation, target group, features / components, performance characteristics, perceived barriers) enable collaborative ideation and embed a problem solving and/or creativity tool. No such framework or approach has been identified in the literature review; the service vision building framework proposed in this paper aims to fill this theoretical gap.

3. THE FRAMEWORK

This section discusses the ground ideas of the proposed framework, presents the framework itself, and discusses its applicability.

3.1 Ground ideas

As already stated, a great vision is the short, clear description of what value will be delivered to the users [7]. The framework for creating a service vision, proposed in this paper, is based on the following ground ideas:

- the service vision should be shaped from within the company, without consulting (potential) customers (with whom the service offerings – shaped by the vision – will be however validated afterwards) [19]
- complex problems (like building the vision) should be decomposed into smaller manageable problems
- turning the differing visions of stakeholders into a shared attainable vision is crucial to the creation, validation and acceptance of a realized innovation [1]
- consensus-reaching methods like Delphi typically exclude outliers' opinions, but

many times true innovation is triggered by unconventional ideas [17]
- a properly stated vision, with total stakeholder commitment, positively affects the service usability (see Conway's law)

All these ground ideas were translated in the framework steps presented in the next subsection.

3.2 The framework

The framework consists of a set of steps as described below. It requires forming a team of people who directly influence (e.g. through managerial decisions, (un)involvement, or commitment) the design phases of the service to be built, with one member as a facilitator (coordinator). The team member collaboration means should be similar to the Delphi method.

Step 1. Each team member (anonymously) completes a vision statement document to describe: target group, needs, service, and added value; to identify service features, expected results and potential barriers (or problems) for each feature to be planned. Table 1 (in Section 4) shows the structure of the vision statement document.

Step 2. Data from each team member is aggregated into one central document, from which the coordinator extracts each foreseen service feature / component and analyses them using the following structure: (a) what result is expected by offering it? (b) what are the perceived barriers, problems or existing clichés that may challenge the expected result? (c) what performance metrics are related to this issue? (d) what are the (general) solutions to overcome these barriers? and (e) what are the technical challenges to apply these solutions?

Step 3. All technical challenges are then addressed using the Anticipatory Failure Determination method. The creative solutions thus identified can be translated into new (or better) service features and added to the aggregated document, or can be provided as guidelines, for a later design stage.

Step 4. Based on all findings, the coordinator formulates a draft vision statement using the following structure: *For (target user) who (statement of the need or opportunity), the (service name) is a (service category) that (key benefit, compelling reason to use). Unlike (main alternatives), the new service (statement of primary differentiation).*

Step 5. The updated document (draft vision included) is resubmitted to the team members, who are asked to further amend / contribute to it; the algorithm continues then with Step 2.

One or more such loops can be made, depending on the service complexity, team size and available time resources.

3.3 Applicability

The framework can be used to build the vision statement for virtually any type of service, regardless of its complexity. It can be as well employed for products, but as the latter are tangible and can be easily prototyped, a vision statement may be easier to develop. The team coordinator is crucial to the vision building success; he should be not only creative, but also skilled in applying creativity and problem-solving tools like AFD.

4. APPLICATION EXAMPLE

The framework was used to build the vision statement for an integrated IT service to be provided to a research group of 14 people (academic staff in a technical university, performing both research and educational tasks). The service to be built should provide project management support, a knowledge base, data sharing, web application hosting, and an (internal) social media platform. It should be internally designed, developed and maintained. The application of each algorithm step is presented below.

The team in charge with designing the service (and of course stating the vision) was formed out of four people with an average level of knowledge and skills in setting up and configuring web applications and servers.

Step 1. Four vision statement documents were independently completed by each team member by following the structure discussed in Step 1 (in section 3.2). The outcome of this step is summed up in Table 1 (which, due to space constraints, combines the information received from each member).

Table 1.

The centralised initial vision statement data.

Target group

Target users: academic staff, their PhD students, the students of a robotics club coordinated by the group, students attending courses held by the group's members, students doing their diploma or disertation work in the group, group site visitors

Short user profile: academic staff: technically skilled, average- to highly-skilled mobile device users, but not necessarily geeks; students: mobile device geeks looking to quickly get answers (sometimes)

Needs

Which needs does the service respond to?

academic staff and all students: project management support, knowledge sharing support, social media

academic staff: to make information for students, documentation, various knowledge accessible; to host the internally developed web applications, to support computerized maintenance management, to support the internal library management

other needs: information security, flexibility (multiple platforms, data formats), availability, scalability (many projects, equipment, knowledge etc), performance (operation efficiency), usability

Clichees: an internally built service cannot provide good availability; service components will not be integrated; service reliability will be low; the overall solution will be complicated and hard to use; privacy is threatened if mobile access to the service will be provided; time monitoring will generate coercive measures

How does it create value for its users?

it will allow staff to become more productive, to better track activities and deadlines

equipment (robots, conveyors, PLCs, vision systems, etc.) will be better managed – a proper maintenance will be made and maintenance costs will be transparent and predictable

people will be more committed

tasks will run more efficiently and collaboration will be boosted

information will be way more accessible

Which emotions will it evolve?

- *belonging to a competitive group*
- *more knowledge therefore more confidence*
- *responsibility and committment*
- *fun*

The service

Major features

major functions / features:	**(via) component / provider:**
online collaborative project management	some project management portal and some Android client app for it
(network) shared folder	cross-platform; to be mounted in file explorer
web app hosting	web server, sql server, php, java
online maintenance management for robotic equipment	some CMMS portal
online knowledge base	the PM platform or some other KB management platform
communication / social media	some social media platform
online library management	some library management portal
management & configuration for the service by own staff	some control panel (virtual machine management tool, config file access, mobile application for availability monitoring)

Planned technical performance

performance metrics:	measure-ment	target value
service availability	% (↑)	99.5
time for submitting timesheets	h monthly (↓)	1,5
time for documenting task results	h monthly (↓)	4
time from logging in to doing something useful	s (↓)	1
access to any management data	s (↓)	15
access to any directly accessible stored knowledge item	s (↓)	30

Value

How is the service going to benefit the research group?

- it will reduce research tasks effort; it will provide a collaborative framework for research group tasks; it will provide traceability of actions and equipment

Will it increase revenue?

indirectly yes; it will basically reduce costs

Will it reduce some costs?

more efficiency will mean more work done, less dead time which means cost reduction

Will it create valuable knowledge?

yes; all relevant knowledge will be formalized

Perceived potential barriers or problems in providing a competitive service were also identified. Regarding the target group, notable perceived problems are *acceptance and usage of the new service (implying also a new work methodology)*, superior responsibility regarding the quality of knowledge submitted to the group; time constraints; technical skills to develop and submit content to the service IT

platforms; people to validate submitted information.

Regarding the needs the service responds to, notable perceived problems are internet access, platform security, platform redundance, people training.

Regarding the service features, challenges are: complexity; information consistency; standard formats for information.

Regarding added value the service should bring, the only identified concern is related to information access for newbies.

Step 2. The service features, along with perceived potential barriers and problems identified, were then centralized by the coordinator and an analysis was performed to identify solutions to overcome these issues. Each functionality of the service was detailed as follows: (a) what result is expected by offering it? (b) what are the perceived barriers, problems or existing clichés that may challenge the expected result? (c) what performance metrics are related to this issue? (d) what are the (general) solutions to overcome these barriers? and (e) what are the technical challenges to apply these solutions?

Sub-steps (a) to (d) were completed using brainstorming, while (e) was completed by using the 5W method. All the technical challenges identified in sub-step (e) were then addressed by using the Anticipatory Failure Determination method and creative solutions were documented. An example for a potential barrier is presented in Table 2.

Table 2.

Perceived barrier example.

Feature / component: the overall service

Expected result: a flexible, mobile service built of off-the-shelf open-source components, completely manageable by one or two skilled people in the group, offering a fair availability level (> 99%) and requesting a reasonable management effort (< 2 man-days within a month)

Potential barrier(s):

- people fear they need to have many other user accounts for which they will often lose passwords, they will need to remember many odd links, and the technical support will be quite low (being internally organized), data from their work may thus be lost or scrambled
- mobility may overtake their private time; the service (via the project management features) will add strictness and more control on their activities and time will be lost with (unneeded) reporting

Related CTQ(s): service availability, time from logging in to doing something useful

Solution to solve (general approach): flexible, highly usable open-source platforms will be selected to build the service stack; all these platforms should have mobile apps (at least for Android) and should support OpenIDs; the platforms will be hosted in individual virtual machines and accessed via a gateway

Technical barriers for this solution:

- virtual machine server configuration, security (the group members do not have professional network admin skills)
- some platforms do not properly format links in webpages and therefore have issues when proxied (for instance the Redmine project management tool)

Step 3. The technical barriers identified in Step 2 were addressed using either the AFD method, or simply brainstorming (for the simple ones). We will discuss here how AFD was applied to overcome the link formatting problem of certain platforms (e.g. Redmine) when proxied.

Redmine is a neat project management tool, very popular among technical project managers. It is open source, highly usable, can be extended via plugins, and is easy to install and manage. However, it runs best when installed in the root folder of its host web server, as it has issues with formatting links in pages and therefore it cannot be simply proxied. However, in our case it should be accessed from outside via a gateway (https://group-website.edu/management). The proxy server supporting the service should "translate" external requests to a virtual machine, in the intranet, hosting the Redmine installation. However, some links are badly formatted so the user gets a page-not-found error for a link like https://group-website.edu/management/management/(some-page) which will obviously not work. AFD was used to find solutions to this problem; the method steps are further discussed.

AFD step (a): formulate the problem: the group can use a single public IP address (as an access point for the service, via the group site domain); the web tools to be used as service components need to be accessed from everywhere (to have a high availability of the service) and therefore they need to be exposed via a proxy server; some foreseen web applications do run smoothly when hosted on a

dedicated web server, but they have issues running behind a proxy (because of bad formatted URLs). When proxied, we basically translate a publicly accessible URL (e.g. http://www.my-group.com/some-web-tool/) into a local URL (within our intranet) like http://{some-private-address:some-port}/. If the web application does not return links in a uniform manner (e.g. all complete or all relative), the proxy will not be able to properly "translate" them back and the end-user will get bad links for menus, buttons etc.

AFD step (b): invert the problem: how can we make a web app to run smoothly if hosted in its own webserver (in the root folder), but to fail when exposed via a proxy server, specifically by hardcoding links?

AFD step (c): find the method(s) of producing the phenomenon. To format links, many web applications store the absolute URL (for instance http://www.my-domain.com/webapp-folder/"). Some of them even store the subfolder separately. Due to bad code habits, links in web pages that the application produces can be formatted in either way. This can make the proxy (and reverse proxy) to fail into properly "translating" these links.

AFD step (d): links can programatically be produced in any form, in any part of the application code; to run locally, but fail when proxied, we can (subversively) make use of:

- relative links, like /project-id-1/timesheets.php
- links with subfolder included: /sub-folder/project-id-1/timesheets.php
- complete links: http://address/sub-folder/project-id-1/timesheets.php
- redirect clauses with complete links
- programatically adding the subfolder to links – this could lead to subfolder duplication, like /sub-folder/sub-folder/project-id-1/timesheets.php, but if installed in the root folder the error will not be noticed
- hardcoding links in all html element attributes (either complete urls or only adding the subfolder)
- encoding urls (so backslashes will turn into %2F)

AFD step (e): solve the problem. To overcome the hardcoded links issue, a substitution filter (offered by any modern web server) can be used, and all problematic links can be fixed by replacing the hardcoded string parts. Figure 1 shows an excerpt of a proxy web server configuration file that allows the correct "translation" of e.g. "http://my-public-url/management/" link to a private one within the intranet. Via brainstorming within the team, all possible problematic links were translated into Substitute directives.

```
<Location /management>
  RequestHeader unset Accept-Encoding
  AddOutputFilterByType SUBSTITUTE text/html
  # html element tags:
  Substitute "s|src=\"/|src=\"/management/|ni"
  Substitute "s|url=\"/|url=\"/management/|ni"
  Substitute "s|href='/|href='/management/|ni"
  Substitute "s|href=\"/|href=\"/management/|ni"
  Substitute "s|action=\"/|action=\"/management/|ni"
  # hardcoded urls:
  Substitute "s|241/|241/management/|ni"
  # encoded urls (e.g. when redirecting):
  Substitute "s|241%2F|241%2Fmanagement%2F|ni"
  Substitute "s|'/issues|'/management/issues|ni"
  Substitute "s|'/time|'/management/time|ni"
  Substitute "s|\"/projects|\"/management/projects|ni"
  # fix images, css, js:
  Substitute "s|'/images|'/management/images|ni"
  Substitute "s|\"/uploads.js|
          \"/management/uploads.js|ni"
  # prevent subfolder duplication:
  Substitute "s|/management/management/management|
          /management|ni"
  Substitute "s|/management/management|/management|ni"
  # fix redirects:
  Header edit Location "(^http[s]?://)([^/]+)"
"https://193.226.7.241/management"
  # prevent subfolder duplication by redirecting:
  Redirect "/management/management/management/"
         "/management/"
  Redirect "/management/management/" "/management/"


  ProxyPass https://10.147.3.194
  ProxyPassReverse https://10.147.3.194
```

Fig. 1. Substitute clauses for the proxy server.

The substitution filters replaces the all occurrences of strings on the left side of the vertical bar character with the string on its right side.

A test installation of the Redmine project management tool was installed and then proxied, in order to test the Substitute filter settings shown in Figure 1. A test project was then created and some several tasks were performed. No error due to improperly formatted links was noted. The web server log file was also checked, but, after a week of extensive use, no such error was noted.

AFD step (f): document measures to avoid producing the problem. A technical document was produced, to document the proxy substitution directives, and to be used as guidelines in the later service development phases.

Step 4. The draft vision statement was then formulated:

For a 15 tech-people academic & research group & robotics club who need (software) support for managing projects, applications, equipment maintenance, communication, and knowledge, the provided service is an integrated web-based service that provides project management, file sharing, web application hosting for developers, maintenance management, library management, basic social media, that improves communication, productivity and eases access to common knowledge. Unlike disparate services like closed facebook groups or googledrive folders, the new service provides comprehensive management support services which enhance mobility, collaboration and enthusiasm.

Step 5. The updated document (draft vision included) was resubmitted to the team members, who were asked to further amend / contribute to it (one more iteration was completed).

The outcome of applying the framework consists of: a vision statement, the underlying information so that every stakeholder can better understand it, performance metrics and realistic target values (even in this early service design stage), and guidelines containing implementation details to avoid critical technical issues.

5. DISCUSSION AND CONCLUSIONS

The vision statement for a product or service is effective when it is shaped within the organization, by people who directly influence (e.g. through managerial decisions, (un)involvement, or commitment) the design phases of the product or service to be built.

This is because a good vision will increase their commitment to the (product or) service to be developed. Customers or end-users do not necessarily need to be consulted *in this step of vision generation* (the service offerings – shaped by the vision – will be however validated afterwards with the end-users).

A vision statement should be realistic and measurable. Therefore, the proposed framework implies defining performance metrics and target values even in this early stage of development. By addressing also technical issues in this stage (with the AFD method, like discussed in the application example) the vision statement will be backed up by realistic data.

Complex problems (like building the vision) are better solved when decomposed into smaller manageable problems.

This is done in the framework by thoroughly assessing each considered service component or feature and by identifying (and solving) potential technical barriers. Valuable information can thus be supplied in the later stages of service development.

The employment of the AFD method in a creative way may compensate the downside of the Delphi method of excluding nonconformist opinions. However, this downside should be carefully considered by the coordinator, who should not neglect or minimize the potential of unconventional ideas.

Employing the proposed framework to build a vision statement requires a skilled coordinator. It also implies a possibly considerable time effort, especially if the foreseen service is complex. or has a higher degree of flexibility. The effort invested in vision building should, however, be proportional with the overall design efforts.

To sum up, our research aimed to bring contributions that could help advance both the theory and practice of service innovation. The proposed framework fills the identified theoretical gap of missing tools or frameworks that enable collaborative ideation and also support creativity in an effective way.

The application example in Section 4 shows how a vision statement for a real service was developed. The service is currently in some advanced stage of actual implementation and all stakeholders are committed to its development, maintenance and future improvements.

Future research will focus on framework improvements and on designing a collaborative software to implement it.

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Modul de lucru pentru a construi o viziune asupra unui serviciu

Rezumat: Viziunea produsului stabilește starea finală a ceea ce va oferi un produs și ghidează toate acțiunile întreprinse pentru dezvoltarea sau îmbunătățirea acestuia. Acest lucru este, de asemenea, similar pentru un serviciu, care este în schimb intangibil, unic pentru fiecare client, inseparabil de furnizorul său și non-storable. O viziune de serviciu bună este, prin urmare, esențială pentru succesul său. Cu toate acestea, există mai multe provocări în ceea ce privește traducerea viziunii într-un produs sau serviciu competitiv, cum ar fi solicitarea constrângerilor de timp, combaterea incendiilor în loc de gestionarea proactivă, opiniile inconsecvente ale părților interesate sau dinamica pieței.
Deși sa acordat o atenție considerabilă construirii viziunii asupra produselor, dezvoltarea viziunii serviciilor a fost mai puțin abordată. Acest document propune un cadru pentru dezvoltarea viziunii serviciilor (în domeniul IT), bazat pe utilizarea creativă a metodei de determinare a eșecului anticipativ. De asemenea, este prezentat un studiu de caz referitor la un serviciu integrat de management al cunoașterii.

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