STRATUS: a Questionnaire for Strategic Usability Assessment

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ABSTRACT
Strategic usability is widely recognized as a challenge, as moving from scattered to strategic usability requires organizations to operate significant changes. The current solutions are hardly accessible and complicated to implement. STRATUS is a questionnaire for cost-effectively assessing strategic usability. A companion model enables to easily analyze and describe the current state of strategic usability according to five dimensions and related indicators. A pilot STRATUS survey compared the responses between novices and experts in usability. It highlighted dependencies between experience and usability awareness, as well as positive correlations between the presence of usability staff and strategical use of usability. The questionnaire needs now to be validated by means of a longitudinal study. Another promising track towards its validation consists in further investigating the causations between the dimensions of strategic usability.

CCS Concepts
• Human-centered computing → Human computer interaction (HCI).

Keywords
Strategic usability assessment, usability maturity model, questionnaire, control-case study, correlations.

1. INTRODUCTION
Strategic usability is defined as "an approach which helps organizations to achieve their business goals by improving the usability of their computer systems, and the way those systems are developed" [3]. Its impact is extensive (i.e., reduction of user needs for support, reduction of development and maintenance costs, optimization of decision-making processes…) and has been extensively documented [2, 11, 15]. The introduction of strategic usability and user-centered approaches into software organizations has been the subject of numerous publications [3, 5, 12, 13, 27].

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Yet, strategic usability remains a challenge [2, 20, 22], mainly as moving from scattered to strategic usability requires organizations to operate significant changes. Essentially, it involves the migration from traditional software development practices to user-driven processes [4, 13, 16, 24, 25], i.e., processes that place users and user experience (UX) ahead of technology requirements. This heavily relies on innovation (i.e., introduction of new decision-making and organizational models, methods, tools and job functions), which is disruptive [2, 25] and leads to situations where strategic usability can be stopped by organizational and behavioral issues [6, 17, 25, 28]: e.g. schedule and funding regarding the former; resistance to change and conflict regarding the latter.

Another obstacle which seems to have severely impeded strategic usability is the lack of skills while attempting to make the top-management and executives "buy" usability. Firstly, the human-computer interaction (HCI) community seems to have failed to deliver the right message to these decision-makers [20, 22]. Secondly, common myths about usability seem to have led to the mistaken belief that usability activities can be carried out without any usability expertise [1, 2, 25]. Usability science requires competence not only to increase the usability of products, but also to adequately feature its impact on organizational efficiencies, reduce uncertainties about schedule and budgets, and therefore reduce the risks of failure [1, 2, 13].

Usability capability assessment (UCA) was presented as an initial step towards strategic usability. Similar to audits and derived from standard process assessment in traditional software engineering (SE) [18], UCAs rather focus on process management than on the "true problems" in usability engineering (UE), namely lack of UE awareness, expertise and methods [8].

Thereafter, usability maturity models (UMMs) were introduced. UMMS are ordered scales of maturity with respect to strategic usability, along with some suggestions to move from one maturity level to the next [4, 16, 24]. Their application, however, is not trivial, as there is no empirical research about UMMs that we are aware of and the documentation about how to implement UMMs remains hardly accessible.

The work presented here aims to provide UX and usability practitioners with STRATUS, a questionnaire for cost-effectively assessing strategic usability. The paper is organized as follows. The next section discusses the related work. This is followed by the presentation of STRATUS. Then, the report of a pilot study demonstrates its usefulness in practice. The paper ends with the discussion of the contribution and the outlines for future work.

Table 1: Similarities between the generic UMMs (presented on the same line)

Earthy's model [4]	Nielsen's model [16]	Schaffer's model [24]
1: Unrecognized (no indicators)	**1: Hostility toward usability** (designers ignore users, no usability resources)	**1: Clueless** (lack of usability awareness)
2: Recognized (problems of recognition)	**2: Developer-centered UX** (decisions based on personal judgment, no resources)	**2: Piecemeal usability** (early adopters, but no overall organizational strategy)
	3: Skunkworks UX (ad hoc usability)	
3: Considered (quality in use, awareness of the value of usability and user focus)	**4: Dedicated UX budget** (formal budget, usability testing after product is completed)	**3: Managed usability** (development of strategy, funding and champion found)
	5: Managed usability (scattered, usability testing, usability resources, usability staff)	
4: Implemented (user involvement, human factor technology and skills)	**6: Systematic usability process** (early design changes, usability funded in key projects)	**4: Infrastructure** (development of infrastructure and adoption of UCD)
5: Integrated (improvement of usability processes and iterations)		**5: Staffing** (appropriate usability effort assigned to any project, usability skills)
	7: Integrated UCD (user research)	
6: Institutionalized (human-centered leadership)	**8: User-driven corporation** (user data determine future)	**6: Routine usability** (institutionalization)

2. RELATED WORK

Strategic usability was the subject of recurrent contributions at major HCI conferences [3, 5, 20, 21, 22, 23] during the late 90's, and intensively researched until 2005 by Bias and Mayhew [1, 2, 12, 13]. Its popularity seems to have decreased after this period: [19] in 2008 is the only other unpublished reference that we are aware of.

Concurrently, current state analyses of user-centered processes (aka UCAs) were introduced in order to define the usability capability of software organizations [10]. They find their roots in the assessment of software development processes. Each process is assigned a capability level according to indicators of performance [18]. Capability levels and indicators constitute capability maturity models. Usability maturity models (UMMs) are capability maturity models targeted at strategic usability. They were intensively researched between 1994 and 2004 [10], and range from standard process assessment models (ISO standards) to generic models which include both standard process assessment and specific usability issues such as usability awareness, expertise, and organization [1]. The Table 1 shows examples of generic models with their similarities presented on the same line.

Standard process assessment models and derived non-standard models which assess performance instead of capability [8] focus rather on SE processes than on those of UE. In addition, they are resources intensive [7]: assessments are implemented as workshop sessions which spread over time (months) and require the strong commitment of key persons in the project being assessed.

Generic models, whose most cited in the literature are those presented in the Table 1, include process aspects, but also usability awareness, expertise, organization, and attitude towards usability. Their application, however, is not trivial, as the level of documentation of models varies from very limited [16, 24] to very detailed [4]. Furthermore no empirical research results exist about their implementation in organizations. This is due, we believe, to the discouraging specific timelines prescribed by authors: from 2-3 years in [24] to 20 years in [16].

3. STRATUS

3.1 Levels

A simplified 3-level usability model is proposed (Table 2). Initial, tactical and strategical levels result from the cross-level and cross-model merging of the UMMs in the Table 1 (white *versus* grey cells). This simplification was made as the distinction between numerous levels (i.e., from six to eight) makes it difficult to discern between intermediate levels, and hence difficult to operate. This is particularly true when organizations move from level 2 to level 5 in Nielsen's model [26].

Table 2: STRATUS levels

Levels	Characteristics
Initial	Ad-hoc/scattered management of usability No dedicated resources (budget, staff, tools) Based on (naïve / amateur) individual effort
Tactical	Repeatable/proactive management of usability Allocated resources Benefits generally understood
Strategical	Continuous management of usability Controlled and predictable usability of products Recognized importance of users and early design

3.2 Dimensions

Five usability dimensions are proposed as means to classify the indicators of usability performance and capability:

D1. Usability awareness: understanding of UCD/UE processes, understanding of the obvious and downstream effects of usability
D2. Usability expertise: ranging from novice to expert
D3. Usability resources: budget, staff and facilities
D4. Management of usability: schedule, funding, promotion, project management and access to users
D5. Attitude towards usability (behavior): intra-team resistance to change *vs* internal/external promotion of usability

Table 3: STRATUS model (usability levels expressed as a function of indicators per dimension)

Initial level	Tactical level	Strategical level
D1: Lack of usability awareness Disregard for users/usability Indifference to usability Misunderstanding of usability	D1: Partial usability awareness Some awareness of usability Underestimation of the obvious and down-stream effects of usability	D1: Usability awareness Usability and its benefits understood at any level in the organization
D2: No usability expertise Product-driven methodology Naïve/amateur individual effort No focus on users Focus on individuals	D2: Partial usability expertise User-centered methodology Key usability techniques (champion) Recognition of users Trade-offs for other considerations	D2: Usability expertise User-driven methodology Full range of usability techniques Formal recognition of users Human-centered organization
D3: No usability resources No usability budget No tools No/initial staffing (consultants)	D3: Limited usability resources Usability budget allocated to a few projects Tools/space dedicated to usability Poor ratio designers/developers	D3: Intensive usability resources Budget allocated to any ongoing project Testing lab, tools and equipment Each key usability function is filled
D4: Ad hoc management of usability Poor access to users Now and then in a few projects If there are usability problems Decisions based on personal judgment	D4: Proactive management of usability Sporadic/fragmented access to users Controlled and planned in a few projects Embedded in development processes Measurement of usability	D4: Continuous management of usability User research is mainstream Predictable in any ongoing project Drives development processes Monitoring of usability
D5: "Usability is not a concern"	D5: Recognition of usability Limited promotion Lack of support from decision-makers Intra-team resistance to changes	D5: Usability culture Promoted externally and internally Drives strategic decision-making Embedded in organizational culture Perceived as a competitive advantage

3.3 Model

The STRATUS model (Table 3) results from the organization into categories of the UMM indicators presented in Table 1 and from the barriers to usability discussed in the HCI literature. These barriers range from educational and methodological obstacles [1, 2, 13, 17] to more complex organizational and behavioral ones [6, 17, 25, 28].

3.3.1 Initial level indicators

The initial level characterizes immature organizations where usability efforts occur too late in the lifecycle: after a failed product, once usability problems already damaged customer trust or negatively affected organizational efficiencies [2]. In such organizations, there is no objective basis for judging usability or for solving usability engineering problems. Therefore, usability is difficult to predict, and activities such as usability testing are often eliminated when projects fall behind schedule [18]. Typically, usability is misunderstood or unrecognized [4, 25], the users' input is under-valued [2], and users need to adjust their behavior to the interactive systems in place no matter how poor their usability [3].

3.3.2 Tactical level indicators

The tactical level characterizes organizations where a need for UE has been acknowledged, but where the lack of usability expertise [17, 25], and the lack of support from decision-makers impede the adoption of usability engineering as formal software development method [2]. In such organizations, usability is mostly targeted at immediate (usability) problem solving. Although significant (increased user performances and satisfaction), these effects remain minor when compared with those of strategical usability [2].

Typically, "discount usability" has been successfully employed in a few pilot projects [22], which serve as internal showcases for usability. Similarly, usability testing has produced reliable results about the efficiency of systems/products, or unfolded large and complex usability issues in relatively short time [17, 23]. However, resistance to change often arises at this level [28].

3.3.3 Strategical level indicators

The strategical level characterizes mature organizations where usability is understood and promoted at any level in the organization [16], is adequately funded and staffed [1, 13, 16], is used as key performance indicator [26], and drives development processes and strategic decision-making [18]. In such organizations, usability is employed as a strategic asset and considered as a competitive advantage [26], usability is promoted externally (with clients) and internally (while staffing [2]), and usability processes are continuously monitored for optimization purposes [18].

To summarize, the more mature the organization, the greater the usability awareness and expertise, the more significant the resources allocated to usability, the more user-driven the organization.

3.4 Questionnaire

The STRATUS questionnaire is divided into two parts: the first part is intended for the collection of demographic information about respondents (age, degree, eventual usability training taken), whereas the second part builds on the STRATUS model and is intended for the assessment of strategic usability in their organization. The second part (Appendix) is divided into five blocks, named Block 1 to Block 5. This enables to assess strategic usability in each block separately.

Table 4: STRATUS questionnaire: structure in five blocks

Item	Scope
1.1	Disregard for users (initial)
1.2-5	Misunderstanding of usability (D1: initial)
1.6-7	Underestimation of obvious effects (D1: tactical)
1.8-11	Underestimation of other effects (D1: strategical)
2.1-14	UE techniques (D2)
2.15	*Other techniques
3.1	*Usability staff (D3)
3.2	Usability lab (D3)
3.3	Usability rooms (D3)
34	Usability tools (D3)
4.1	Unrecognized usability (initial)
4.2-3	Ad hoc usability (D4: initial)
4.4-5	Proactive usability (D4: tactical)
4.6	Continuous usability (D4: strategical)
4.7-9	Usability culture (D5: strategical)
5.1	Unrecognized usability (initial)
5.2-4	General statements (D2/D3/D4: initial)
5.5-6	Organizational problems (D4: initial)
5.7-9	Behavioral problems (D5: tactical)
5.10	*Other problems
Notes: * indicates open-ended questions (B15, C1 and E10); () indicates the corresponding STRATUS level.	

As can be seen from the Table 4, the block 1 assesses the usability awareness and checks for some disregard for users (Table 1, hostility towards usability) and educational barriers (misunderstanding of usability). The block 2 assesses the usability expertise and checks for some methodological barriers (underestimation of the impact of UE). The block 3 assesses usability resources and checks for some lack of staff and equipment (lab and tools). The block 4 assesses the way usability is managed and checks for potential organizational and cultural barriers (organization of usability and attitude towards usability). The block 5 checks for some problems while employing usability. Educational, methodological, organizational and cultural barriers typically occur during the initial and tactical levels.

3.5 Questions and items

STRATUS is mainly composed of closed-ended questions (except for items 2.15, 3.1 and 5.10). Close-ended questions were preferred to open-ended ones as they are conclusive, quantifiable, and relevant for statistical analysis. Multiple-choice questions are used in blocks 1, 4 and 5 to allow participants to choose the best possible answer(s) out of a list of statements. Single-choice questions are used in the block 3 where a numerical or text inputs are required from the participants. Scaled questions making use of a five-point Likert scale are used in block 2 to enable rating.

The blocks 1, 4 and 5 follow the same pattern: respondents are asked to select items out of a list, where each item is formulated as a statement about usability. The statements in the block 1 are myths about usability extracted from [3]. They reflect some lack of usability awareness and correspond to one STRATUS level exclusively. The statements in the block 4 are indicators extracted from the STRATUS model (Table 3). They reflect the type of usability organization and the attitude towards usability at a strategical level.

Statements related to the attitude towards usability at a tactical level were intentionally omitted in order to avoid ambiguities between items, keep the list in reasonable length, and gradually follow the three levels of STRATUS model. The statements in the block 5 were designed as a combination of: (1) indicators extracted from the STRATUS model that were not exploited in the other blocks; (2) observations from our experience either as partner in research projects at European, national and regional levels or as UX/usability consultants in private organizations.

In the block 2 respondents were asked to rate the effectiveness of well-established UE methodologies extracted from [12]. The UE methodologies were selected so that they would cover as much as possible the UE lifecycle and a wide range of job functions (analyst, designer, developer, tester, and consultant) at the same time.

In the block 3 respondents were asked to indicate the number of persons employed in usability job functions and whether the facilities in their organization include usability equipment. How usability job functions were staffed was used to define the designer-developer ratio which is representative of user-centeredness [29].

4. PILOT STUDY

A pilot study was conducted in order to validate the usefulness of the STRATUS questionnaire. Case-control study design was adopted in order to compare the responses to a STRATUS survey between novices and experts in usability. The STRATUS questionnaire was administered to 28 participants. The sample characteristics are presented in the Table 5.

4.1 Recruitment of participants

Case group: 14 novices available within our network of IT professionals were recruited in the air traffic control, healthcare and R&D sectors. There were no statistical differences between sectors. Consequently, the 14 novices were combined into one group for all the analyses presented in the paper.

Control group: 14 experts were recruited within our network of students. All had completed their master degree. They were recruited at the end of their first year of a two-year program in HCI.

Novices, unlike experts, lack of usability resources and the designer-developer ratio in their organization is poor (Table 5).

Table 5: Sample characteristics (age and experience are mean values, DD ratio stands for Designer-Developer ratio)

Characteristics	Case	Control
Usability level	Novices (N=14)	Experts (N=14)
Age (mean)	38	27
Degree	Master: 10 Bachelor: 4	Master: 14
Experience in usability (mean)	0 hours	60 hours
Experience in job function (mean)	12 years	1 year
Sector	Air traffic control: 5 Healthcare: 6 R&D: 3	Industrial design: 14
Usability resources	DD ratio: 1-1000 Lab/room/tools: no/no/yes	DD ratio: 1-1 Lab/room/tools: yes/yes/yes

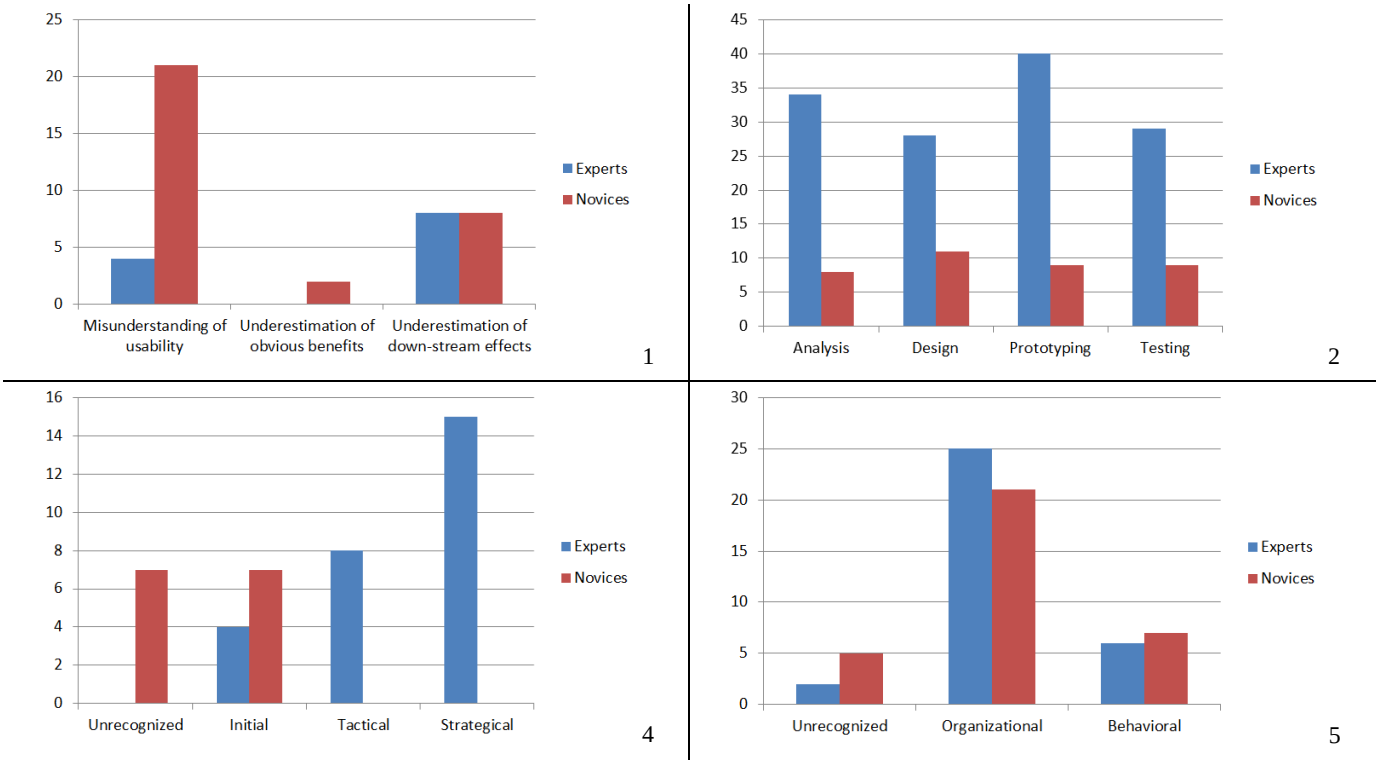


Figure 1: Novices vs. experts comparison per block (1: awareness; 2: expertise; 4: organization/culture; 5: problems)

4.2 Data analysis

The data analysis is divided into two parts: a descriptive analysis of interrelations and dependencies between experience in usability and the STRATUS dimensions, and an explanatory analysis of the correlations between the STRATUS dimensions.

4.3 Results

4.3.1 Interrelations

The frequency distribution of the responses was calculated for the blocks 1-2-4-5 (Figure 1). Bar graphs were preferred to contingency tables to display the results because they are easier to understand. The results can be summarized as follows:

Block 1. The usability awareness was greater for experts regarding understanding of usability. Surprisingly, the estimation of the effects of usability was similar in both groups. It was particularly surprising that novices were so aware of the obvious benefits of usability.

Block 2. The usability expertise was wider for experts and novices who rated fewer UE techniques.

Block 4. Usability was rather employed as a strategic asset by experts (mature organization), whereas it remained unrecognized or managed at initial level by novices (immature organizations).

Block 5. The problems while employing usability were similar between both groups: organizational problems (lack of resources, and time, and difficulty for accessing to users) were more important than behavioral ones (intra-team resistance to changes, poor integration in the development process, lack of support from the decision-makers, and limited promotion of usability).

4.3.2 Dependencies

Chi-squared tests were executed to check for dependences between experience in usability and the STRATUS blocks 1-2-4-5. They were not conclusive for expertise and problems (blocks 2/5), whereas the differences were significant between usability awareness and management (blocks 1/4). Relative frequencies (Table 6) of lack of usability awareness are more important for novices than for experts. This difference is significant, $\chi^2(1, N = 43) = 4.209$, $p < .05$. Similarly, relative frequencies of management of usability are more important for experienced than for novice respondents. This difference is significant, $\chi^2(1, N = 41) = 27$, $p < .05$.

Table 6: Relative frequencies of indicators of usability awareness and organization as a function of experience in usability

	Indicator	Novices	Experts	Total
Awareness	Misunderstanding	18.02	6.98	25
	Underestimation	12.98	5.02	18
	Total	31	12	43
Management	Unrecognized	2.39	4.61	7
	Initial	3.76	7.24	11
	Tactical	2.73	5.27	8
	Strategical	5.12	9.88	15
	Total	14	27	41

Table 7: Correlation coefficients (blue cells highlight statistically significant positive correlations; r=.374)

	Analysis	Design	Prototyping	Testing	Initial management	Tactical management	Strategical management	Organizational problems	Behavioral problems	Usability staff
Experience at usability	0.643	0.342	0.781	0.615	-0.192	0.408	0.567	0.102	-0.046	0.999
UE Analysis		0.455	0.458	0.561	-0.249	0.194	0.168	0.027	0.072	0.646
UE Design			0.406	0.651	0.012	0.318	0.266	0.134	0.117	0.347
UE Prototyping				0.540	0.035	0.407	0.371	0.061	0.070	0.785
UE Testing					-0.208	0.348	0.465	0.117	0.046	0.610
Initial management						-0.288	-0.264	0.273	0.156	-0.201
Tactical management							0.525	-0.115	0.084	0.408
Strategical management								0.308	0.245	0.567
Organizational problems									0.515	0.091
Behavioral problems										-0.052

4.3.3 Correlations

Correlation coefficients were calculated for all the 28 participants in order to check for any correlation between experience in usability, expertise, management, problems and usability staff (Table 7). Awareness and resources were omitted in the correlation matrix as both were too correlated with experience in usability. The most enlightening results can be summarized as follows:

Staff: Statistically significant positive correlations between staff and some UE techniques (analysis, prototyping and testing) seem to indicate that they are perceived as more effective when key usability job functions are adequately staffed; this result is compliant with [17, 25]. Similarly, the management of usability seems to be more tactical or strategical in the presence of usability staff.

Problems: There were no statistically significant correlations between problems and any other STRATUS dimension, whereas there was a statistically significant positive correlation between organizational and behavioral problems. This result suggests that (1) problems arise no matter the level of usability expertise or the type of management, and (2) the more numerous the organizational problems, the more numerous the behavioral ones.

Management: The statistically significant positive correlations between management and UE techniques indicate that prototyping rather belongs to the tactical toolkit and usability testing to the strategical one; this result is compliant with [25] which argues that usability testing requires more support (not only financial and material, but also from decision-makers) than prototyping.

5. DICUSSION

The sample size (N=28) was large enough [14] to run a pilot study in which two groups were identified and then compared on the basis of some supposed causal attribute: their experience in usability. We can confidently argue that experience in usability (60 hours training *versus* 0) drives the responses to the STRATUS questionnaire, especially in the awareness and management dimensions. Interrelations and dependencies, however, are limited in the expertise and problem dimensions. This may be due to the similarity between UE and SE terminologies. For example, regarding expertise, 5 novices out of 14 assigned an effectiveness rate of 4 to task analysis, but it is reasonable to believe that they rather referred to the SE technique than the UE one [12, 23].

Similarly, statements of problems such as lack of time, resources and expertise (Appendix, items 5.2-4) are also typical of any SE model. Therefore, the STRATUS questions and items related to expertise and problems have to be reformulated.

Furthermore, strategic usability is not an individual problem but an organizational one [3, 5, 13]. As next step towards the validation of STRATUS, a longitudinal study "that involves repeated observations of the same variables over long period of time" [30] will be undertaken in order to examine how consistently and accurately the same organization is assessed by its members.

6. CONTRIBUTION

The primary contribution of this paper is the STRATUS questionnaire and the STRATUS model. It provides UX/usability practitioners with a tool to cost-effectively assess strategic usability. First, there is no other similar questionnaire that we are aware of. Second, as far as comparison with UCA and UMM is concerned, STRATUS is much less resource-demanding. UCAs require expertise with ISO standards, weeks to be carried out and interpreted, and the strong commitment of the people knowledgeable in each area being assessed [7]. UMMs are difficult to operate as they are not documented enough except for [4], which comes with a descriptive assessment checklist but resembles UCAs with respect to resources. By contrast, the administration of STRATUS only requires a few minutes of respondents' time, the analysis of responses is achieved by basic descriptive statistics and their interpretation by matching responses with the STRATUS model.

7. CONCLUSION

STRATUS consists of a questionnaire and a model for strategic usability assessment. A pilot STRATUS survey compared a group of novices and a group of experts in usability. It highlighted some dependencies between experience in usability and usability awareness, together with some positive correlations between the presence of usability staff and strategical management of usability. The questionnaire needs now to be validated by means of a longitudinal study. Another promising track consists in further investigating the causations that exist between the five dimensions of strategic usability.

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Appendix: STRATUS questions

Block 1. Usability awareness

Please indicate in the list below the statements which, if any, correspond best to usability according to you.

___ 1. Users do not need enhanced usability, they just need training.
___ 2. Usability is just common sense.
___ 3. Usability awareness is all you need to design good user interfaces.
___ 4. Usability is equivalent to ergonomics and graphic design.
___ 5. Usability is subjective and therefore cannot be measured.
___ 6. Usability is a nice-to-have that should not be considered until product fielding.
___ 7. Usability will only have a limited impact on user's efficiency, satisfaction and trust in the system.
___ 8. Usability will increase development time.
___ 9. Usability will in turn impede organizational efficiencies.
___ 10. Usability will conflict with the current development methodology and processes.
___ 11. Clients will not pay for usability.

Block 2. Usability expertise

Please rate the effectiveness for improving product quality of the usability methodologies listed below that you personally have used.
(1: not effective at all; 2: not effective; 3: neutral; 4: effective; 5: very effective)

___ 1. Contextual inquiry	___ 6. Focus group	___ 11. Heuristic evaluation
___ 2. Task analysis	___ 7. Survey	___ 12. Lab usability testing
___ 3. User profile	___ 8. Video prototypes	___ 13. Field testing
___ 4. User stories	___ 9. PowerPoint prototypes	___ 14. Cost-benefit analysis
___ 5. Usage scenarios	___ 10. Mock-ups/wireframes	___ 15. Other: _____

Block 3. Usability resources

1. Please indicate for each of the following job functions the number of persons currently employed in your organization.

___ Usability/UX expert(s) ___ Designer(s) ___ Developer(s) ___ Tester(s)

2. Do the facilities at your workplace include a usability lab?	___ Yes	___ No
3. Do the facilities at your workplace include any room dedicated to usability activities?	___ Yes	___ No
4. Do the facilities at your workplace include usability tools?	___ Yes	___ No

Block 4. Usability organization and culture

Please indicate in the list below how usability is generally employed in your company.

___ 1. Usability is not a concern
___ 2. Usability is employed now and then in a few projects
___ 3. Usability is employed if there are usability problems
___ 4. Usability is funded and planned in any ongoing project
___ 5. Usability is fully embedded in development processes
___ 6. Usability data is systematically collected as Key Performance Indicator
___ 7. Usability is promoted externally and internally
___ 8. Usability is taken into account in strategic decision-making
___ 9. Usability is fully embedded in organizational culture and the company has become user-centered.

Block 5. Problems while employing usability

Please indicate in the list below the main problems while employing usability.

___ 1. Usability is not a concern
___ 2. Lack of time
___ 3. Lack of resources
___ 4. Lack of expertise, methods and tools
___ 5. Difficulty for accessing to users
___ 6. Poor integration in the development process
___ 7. Intra-team resistance to methodological changes
___ 8. Lack of support from the decision-makers
___ 9. Limited highlighting of the benefits of usability
___ 10. Other: _____