The main focus of this article is to present a framework to create a understanding of the business strategy context and aid the portfolio management process in a software company. The research method is a quali-quantitative, presented in a study case and the intervention instrument adopted is the Multicriteria Decision Aiding Methodology - Constructivist (MCDA-C). The framework enables to visualize the criteria that must be taken into account according to the decision-makers’ values in the project selection and sorting processes. The framework supports the ordinal and cardinal measurement of the project performance, making it possible to compare and rank proposals, as well providing a process to improve project proposals. This process has helped in negotiations between stakeholders in a portfolio context and, consequently, has helped the chief project officer to select and prioritize strategic projects within the demand for new products.

Palavras-chaves: Performance Management, Portfolio Management, Decision, Technology Management, Multicriteria, Measurement
A.

1. INTRODUCTION

An alternative to aid the strategic decision processes in context that involves complexity is presented by portfolio management, by using problem structuring techniques that improve the understanding of the consequences on the operational focus of the business.

The new competitive dimensions as agility and innovation have brought with them the fact that the managers responsible for the portfolio management need to decide in an context where they do not know the criteria to be met, nor do they develop mechanisms to improve knowledge of the consequences of the portfolio management in the strategic objectives of the organization (GANN & SALTER, 2000).

Nowadays, the decision to build understanding about the decision contexts, explaining the objectives to be achieved and their association with the operational activities, becomes a competitive key for organizations.

On this issue emerge research question of this article: How to measure a project charter in light of the strategic objectives of a company in order to aid decisions on portfolio management?

In order to answer the research question, the main objective in this study is propose a methodology that allows identifying, measure and integrating dimensions judged by decision-maker as necessary and sufficient for evaluating projects and thus enable the creation and ordering of proposals in a cycle of selection of projects in an software development company.

Thus, the specific objectives of the research are: (i) To present a performance measurement framework and to generate a better understanding of the portfolio context and (ii) to present an application in order to illustrate the proposed framework for identifying and evaluating a project in a portfolio.

To achieve the objectives set out above, the methodology selected by authors was the Multicriteria Decision Aid Methodology – Constructivist (MCDA-C) by its characteristics of constructivism, specifically regarding: (i) the ability to promote awareness of the actors, as the context that we intend to improve, (ii) the ability to structure and evaluate the dimensions considered relevant for these actors, giving more reliable results; (iii) the ability to spread generated knowledge, (iv) capability to support the decision-making process.

The relevance of the theme is given by (i) the current organizations context with respect to its business objectives, which are increasingly using project management as a tool for competitive advantage (PWC, 2004); (ii) the feasibility to solve problems using the methodology selected for this study (BANA E COSTA, ENSSLIN et al., 1999); (iii) to extend the scientific publications of Englund and Graham (1999), Coombs et al (1998) and Cooper (2000), suggesting the creation of criteria for selecting projects, but do not focusing their studies on how to perform this activity.

Thus, beyond this introduction, this article is arranged in five sections. In the following section is presented the theoretical framework for the portfolio management; in the third section is presented the research methodology used; in the fourth section is presented the built model, analysis and discussion; in the fifth section is for the final considerations of the authors, and the last section the references used in this article are listed.
2. THEORETICAL FOUNDATIONS

2.1 SUCCESS PROJECTS

Given its history had been developed in operational research, the discipline of project management was coined within a positivist paradigm (WILLIAMS, 2005; POLLACK, 2007). Thus, it is necessary to consider if such a paradigm is appropriate for a discipline that deals with a complex reality (DE MEYER, LOCH et al., 2002; PICH, LOCH et al., 2002; SOMMER & LOCH, 2004).

It is important to note that some hard thinking about project management should not be regarded as wrong or should be replaced, but one must bear in mind that this view is only one point of view to examine this field of knowledge (WINTER & CHECKLAND, 2003).

On the rationalist view, Roy (1994) consider that:

\[
\text{This is a reductionist conception of OR which I would call unproductive. It is largely responsible for what has been called the OR crisis. First of all, this conception of OR tends to cut it off from the milieu which nourishes it and legitimizes it as something other than a branch of mathematics. Cutting off OR in this way encourages researchers to work in isolation. This results in naive or impoverished references to managerial reality and decision-making processes. Those responsible for solving concrete problems are thus inevitably disappointed by the gap between their own expectations and the results they receive.}
\]

Among the recent published studies on the effects of these two paradigms in theory and practice of project management, we can highlight the text of Williams (2005). In this systemic perspective, the project management has an attitude focused on stakeholders rather than in pre-established requirements (TUKE & ROM, 2001), a precedent in the "iron triangle" (ATKINSON, 1999) in project management for a view more strategic (JUGDEV & MÜLLER, 2006).

This evidence is relevant, since the end result of the project is assessed differently by various stakeholders in the project and the success criteria should reflect diverse interests and viewpoints (LIPOVETSKY, TISHLER et al., 1997; BACCARINI, 1999; SHENHAR, TISHLER et al., 2002). Neglecting any point of view can mean the failure of the project (DVIR, LIPOVETSKY et al., 1998), being then a great opportunity for multi-dimensional studies, enabling us to analyze the mutual interactions of all variables and managerial success metrics (DVIR, LIPOVETSKY et al., 1998).

Such characteristics in question, some authors have understood that the soft approach has positive impacts on the management aspect when (i) the technological uncertainty is high (DE MEYER, LOCH et al., 2002) and long-term consequences are diffuse, (ii) the project is susceptible to external factors (WINTER & CHECKLAND, 2003) and (iii) the complexity of the scope and context of the project are high (ATKINSON, CRAWFORD et al., 2006).

2.2 PORTFOLIO MANAGEMENT AND BUSINESS STRATEGY

The corporative strategy constitutes in an organizational process, in which Andrews (1980) shows this process two important aspects: the formulation and implementation (ANDREWS, 1980; MINTZBERG, 1994). However, to achieve success in the implementation of strategy is needed its alignment with organizational interests (SHENHAR, 2004; MINARRO- VISERAS, BAINES et al., 2005), emerging the concept of projects portfolio management.
According to Cooper et al. (2000), portfolio management is the formulation, selection and implementation of projects and the operationalization of organizational strategy.

Despite the growing interest and relevance to portfolio management by organizations, these are faced with some difficulties (ELONEN & ARTTO, 2003), such as decisions on project prioritization (COOPER, EDGETT et al., 2000), making a critical point the of project selection.

Bearing this mind, Englund and Graham (1999) explore a process model for portfolio management based on four stages, operated in the theoretical framework.

2.2.1 Establishing evaluation criteria

As a first step, it is necessary to define what should be done, focusing on the strategic organization objectives (BOURNE, MILLS et al., 2000). This step represents a very crucial point that determines whether the rest of the process will be successful (ENGLUND & GRAHAM, 1999; COOPER, 2007).

At this point it is appropriate to increase the understanding of what are the dimensions to be taken into account by decision-makers, especially in contexts that work with incomplete, fuzzy and conflicting information (LIESIO, MILD et al., 2007).

In the process for formulating the problem, it is necessary to determine the dimensions in which the projects will be evaluated based on the perception and values of the decision-makers. These performance criteria are scales in which the judgments and decisions will be based to evaluate different projects (CHIEN, 2002).

Important to note that portfolio management is under political pressure, given the personal interests of executives to use the power to impose their individual preferences (ENGLUND & GRAHAM, 1999; CHIEN, 2002; ELONEN & ARTTO, 2003; ENGWALL & JERBRANT, 2003). Thus, a decision-making process is structured and formalized through a decision-maker in managing pressures of interest groups, justifying their decisions and communicating with other organization elements (CHIEN, 2002).

The criteria must be sought in the strategic objectives of the people responsible for portfolio management (KEENEY, 1992). The socio-political values of the decision maker and the objective properties of the projects set the environment where the criteria should be sought (KEENEY & RAIFFA, 1976; ROY, 1993; LANDRY, 1995; ROY, 1996; BANA E COSTA, ENSSLIN et al., 1999). Care must be taken to ensure that the criteria are built from the decision maker values and not from the differences between the alternatives and / or sought from past similar situations even successful (KENNERLEY & NEELY, 2003; ENSSLIN, GIFFHORN et al., 2010).

Although there are several generic proposals for structuring the criteria for selection, the most important step is to identify the criteria that has greater significance for the organization (ENGLUND & GRAHAM, 1999; SHENHAR, TISHLER et al., 2002; CHEN, 2008), taking into account the preferences of decision makers (ROY, 1993) and the adoption of appropriate management techniques to each particular situation (SHENHAR, 2001; LEWIS, WELSH et al., 2002).

Since the establishment of criteria and measurement takes into account the values and preferences of the manager responsible for the area being evaluated, this step in performance evaluation is personalized to the manager responsible for the decision. Roy (1996) and Landry (1995) refer to this condition as the limit of objectivity.

After identifying what are the necessary and sufficient properties of the portfolio that explain the decision-maker’s values (LACERDA, 2009), it is necessary to translate them into a measurable and unambiguous set of scales. At this stage, the decision-makers are prompted
by the facilitator to clarify the direction of preferences for each specific goal set in the previous step.

Firstly, the ordinal scales built has a limited degree of knowledge since all the information they provide is qualitative. If the decision-maker wants to improve the quality of the information he has to transform the ordinal scales into cardinal scales providing the information of the difference of attractiveness between the level of the scales.

2.2.2 Project information collection

Once clarified the criteria, the teams can "shape" the projects scope according to these criteria, in order to be aligned to the strategy (SALOMO, WEISE et al., 2007).

Thus, the second step defined proposed by Englund and Graham (1999) for selection of projects is the projects information collection. The main way out to this phase is a list of projects with their charters and information necessary to confront the projects properties with pre-established criteria for the organization.

2.2.3 Evaluation and Recommendations

This stage of evaluation is to determine the impact of projects on performance indicators to understand its consequences (KEENEY, 1992). A recurring problem in portfolio management is to give priority to short duration projects, low risk and consequently that with little impact on improving competitiveness (FRICKE & SHENHAR, 2000).

Thus, measuring the impact of each element to the portfolio management, the third stage ends with the establishment of prioritization in projects within the available investment resources.

2.2.4 Monitoring the portfolio management

The fourth step is proposed to allocate the financial and human resources in prioritized projects, communicate project teams and continue managing the initiatives. In this stage, monitoring of projects should return information to executives in order to close the cycle of four stages, as proposed by Englund and Graham (1999).

Noting that there is not a single tool for portfolio effective monitoring, the methodology presented in this article may be used to build models in line with the two approaches described by Cooper et al (2000) for monitoring the portfolio management.

2.3 PORTFOLIO MANAGEMENT AND PERFORMANCE EVALUATION

As shown, the contribution of a structured process on the constructivist performance evaluation allows the identification of opportunities for improving portfolio management. Thus, we draw the following parallel with the paradigms for decision aid (ENSSLIN, 2009) to be recognized, as illustrated in Table 1.

<table>
<thead>
<tr>
<th>Decision Aiding Paradigms</th>
<th>Paradigm Description</th>
<th>Context in Portfolio Management</th>
<th>Reference in Portfolio Management</th>
</tr>
</thead>
<tbody>
<tr>
<td>P1 = Uniqueness, Identity</td>
<td>Decision maker values and preferences</td>
<td>Criteria for evaluating projects must be contextualized and developed in each case the projects performance evaluation.</td>
<td>(ENGLUND &amp; GRAHAM, 1999; SHENHAR, 2001; CHIEN, 2002; ENGWALL, 2003)</td>
</tr>
<tr>
<td>P2 = Limited Knowledge</td>
<td>Decision makers’ need to improve their understanding of the decision consequences.</td>
<td>Approaches that expand the understanding of decision makers on the context must be used</td>
<td>(WILLIAMS, 2005; CÁNEZ &amp; GARFIAS, 2006; LIESIO, MILD et al., 2007)</td>
</tr>
<tr>
<td>P3 = Social Entity</td>
<td>To favor the stakeholders with interests in the decision to submit their</td>
<td>Recognize that the criteria for evaluation are influenced by social participants in the portfolio</td>
<td>(ENGLUND &amp; GRAHAM, 1999; CHIEN, 2002;</td>
</tr>
</tbody>
</table>
interests to the decision | management decision process | ENGALL, 2003; WILLIAMS, 2005)
--- | --- | ---
P4 = Recursive Participatory Learning | The dynamic recursive process of participants learning | Recognition that the learning process is cyclical and that organization needs a mechanism to incorporate such knowledge in the organizational culture. | (ENGALL & GRAHAM, 1999; COOPER, EDGETT et al., 2000; ENGALL, 2003; WILLIAMS, 2005)
P5 = Principles of Measurement | Properties of ordinal scales, interval, and ratio | Among references of portfolio management found, none increases the understanding of the process of measuring the level of differences recognition between ordinal and cardinal scales. | (ROBERTS, 1979; BARZILAI, 2001)
P6 = Legitimacy and Validation | Transparency of participation, recognition of usefulness of knowledge generated and the scientific status of the construction of knowledge used | Recognition by the decision maker, knowledge built by the decision aid process was useful to understand the consequences of projects in strategic objectives as well as having scientific support for corporate use. | (ENGALL & GRAHAM, 1999; CHIEN, 2002; CANEZ & GARFIAS, 2006; ENSSLIN, GIFFHORN et al., 2010)

Table 1: Paradigms for Decision Aid (ENSSLIN, 2009) and Portfolio Management

3 RESEARCH METHODOLOGY

This item is divided into three sections, first section presents a methodological framework, second section presents the procedures used to the literature review and the third section discusses the adopted intervention instrument.

3.1 METHODOLOGICAL FRAMEWORK

This research is exploratory, applied and developed in a case study way because the goal resides in deepening the knowledge related to innovation within a software development company. Data used are primary, since they were obtained through unstructured interviews with the technology director and manager of PMO (Project Management Office) of the company in which the research was performed. The research method is qualitative and quantitative. The intervention tool used was the Multicriteria Decision Aid Methodology - Constructivist (MCDA-C) (ENSSLIN, GIFFHORN et al., 2010).

3.2 LITERATURE REVIEW

The theoretical framework of this article began searching for articles in each journal cited by Shenhar and Dvir (2007), using the keyword "project management", which created a database of 200 articles that, after systematic reading of their abstracts before the previously defined criteria: (i) view of knowledge is not reduce to the positivist paradigm, (ii) recognize that the dimensions of project success are socially constructed and (iii) create opportunities to expand the understanding of what the degree of success in project and portfolio management.

Finally, after reading the full articles, eight articles were selected (COOMBS, MCMEEKIN et al., 1998; FRICKE & SHENHAR, 2000; CHIEN, 2002; DVIR & LECHLER, 2004; SHENHAR, 2004; WILLIAMS, 2005; TUKEI, ROM et al., 2006; COOPER, 2007) to set the core of the bibliography.
3.3 CONSTRUCTION OF THE MULTICRITERIA MODEL – PROCEDURES

The construction of the model of performance evaluation following the MCDA-C methodology is divided into eight steps, described in this sub-section.

3.3.1 STEP 1: CONTEXTUALIZATION

The Structuring Phase aims to explain the context and achieve an understanding of the problem to be discussed. To achieve such an aim, the players involved in the context are identified and the problem statement is legitimated with them.

3.3.2 STEP 2: HIERARCHICAL STRUCTURE OF VALUE

The facilitator then encourages the decision maker to talk about the context, and by interpreting the interviews the Primary Elements of Evaluation (PEE) are identified. These elements are the essential factors in the decision maker’s system of values and concerns. For each PEE, a concept representing the decision maker’s choice of preference direction is constructed, as well as its psychological opposite pole.

Then, the decision maker is encouraged to group the concepts in areas of concern. With the concepts of each area of concern, cognitive maps are constructed (BITITCI, SUWIGNJO et al., 2001). In the means-ends relationship map, the clusters of concepts are identified (EDEN, JONES et al., 1985) and they represent the map in an exhaustive way. Each cluster in the cognitive map has an equivalent point of view in the hierarchical structure of value. This association makes it possible to transfer knowledge from cognitive map to the hierarchical structure of value (ENSSLIN, DUTRA et al., 2000).

3.3.3 STEP 3: CONSTRUCTION OF DESCRIPTORS

The hierarchical structure of value represents the strategic dimension called Fundamental Points of View (FPsV) and their connections to the operational activities, called Elemental Points of View (EPsV). Next, it is necessary to use the information in the cognitive maps to build ordinal scales in the hierarchical structure of value, named descriptors, in order to measure the range of what is measured (BANA E COSTA, ENSSLIN et al., 1999). In order to establish the basis for comparing the performance between descriptors, the decision maker must identify the reference levels ‘neutral’ and ‘good’ (ENSSLIN, DUTRA et al., 2000). The process of qualitative knowledge generation is finished with the descriptors.

3.3.4 STEP 4: INDEPENDENCE ANALYSIS

To continue the process of building knowledge, the qualitative scales of descriptors must be transformed onto cardinal scales and then integrated. The MCDA-C uses a compensatory model to build the global evaluation model. This model assumes that the conversion rates used in the integration are constant. To achieve this condition, the criteria must be independent (ENSSLIN, DUTRA et al., 2000).

3.3.5 STEP 5: CONSTRUCTION OF VALUES FUNCTIONS AND IDENTIFICATION OF CONVERSION RATES

The next step in the methodology is the transformation of the descriptors into cardinal scales called value functions. This transformation requires the decision makers to describe the different levels of attractiveness for all the levels of the descriptor. The integration is achieved.
by associating the conversion rates with the increase in performance when improving from the ‘neutral’ reference level to the ‘good’ reference level for each descriptor.

3.3.6 **STEP 6: IDENTIFICATION OF IMPACT PROFILE OF ALTERNATIVES**

Then it is possible to evaluate the performance of every alternative and, among them, the status quo. The models constructed by the MCDA-C methodology make possible an explicit evaluation in numerical and/or graphic form, facilitating the identification and understanding of the intensity of strong as well as weak points of the alternatives under evaluation.

3.3.7 **STEP 7: SENSITIVITY ANALYSIS**

In order to provide a broad view of the stability of alternative performances, the model allows for the development of a sensitivity analysis of the impact of alternatives in the scales, in the attractiveness difference in cardinal scales as well as in the conversion rates.

3.3.8 **STEP 8: FORMULATION OF RECOMMENDATIONS**

The knowledge generated allows the decision-makers to visualize for each criterion where the performance of a given alternative is ‘good’, ‘normal’ or ‘weak’. The scale of the descriptors allows the identification of actions to improve performance. Combining this knowledge with the global evaluation obtained in the previous step, it is possible to generate alternatives and measure their impact in the context.

**4 MULTICRITERIA MODEL OF PROJECT EVALUATION**

**STEP 1: CONTEXTUALIZATION**

The research commenced with meetings with the decision makers of the company in order to contextualize the problem and expose its function. The company wanted to have a mechanism to identify and evaluate projects proposals of new software products.

The interview resulted in the establishment of a problem focus, with definition of: (i) Label: To evaluate the competitive advantage of a new company product; (ii) Players: Core Decision-makers: CTO (Chief Technology Officer) with the CPO (Chief Project Officer); Relevant Stakeholders: Product Manager and Sales Executive; those directly affected by decisions: users; those indirectly affected by decisions: customers; (iii) Problem statement: Product managers demand new software, but they do not have a mechanism to evaluate the competitiveness of a product at the beginning of a project.

**STEP 2: HIERARCHICAL STRUCTURE OF VALUE**

After legitimating the context of the problem with the decision maker, the PEEs were mapped. 60 PEEs were identified, and classified in two areas of concern for the decision maker: “compatible products with global players” and “life cycle cost”.

As the study continued, the decision makers were questioned in order to guide the PEEs to action and to determine the concepts inherent in each PEE. When this activity was concluded, the decision maker started to construct two means-ends relationship maps, one for each area of concern. With the maps, it was possible to identify the sub-clusters. Next, the clusters were associated with the concerns and transferred to the hierarchical structure of value, forming the fundamental points of view and the elementary points of view.
Figure 1 shows the means-ends relationship map constructed for the area of concern “compatible products with international players”, as well as the identification of its clusters that generate the FPsV. At this point, a hierarchical structure or a tree of value was proposed for the decision context.

![Means-ends relationship map of an area of concern highlighting the clusters “Strategic Alliances”, “Pioneering” and “SOA”.](image)

**STEP 3: CONSTRUCTION OF DESCRIPTORS**

After the identification of the FPsV, the construction of scales for the multicriteria model was started in order to measure the performance of each action on an ordinal scale, using the decision maker’s construction. In order to construct the scales, in some cases it was necessary to decompose the FPsV in the elementary points of view (EPsV) in order to operationalize the descriptors.

From the hierarchical value structure, the construction of descriptors was started in order to express the decision maker’s strategic objectives.

**STEP 4: INDEPENDENCE ANALYSIS**

All the criteria were analyzed to check the independence of preferences.

**STEP 5: CONSTRUCTION OF VALUES FUNCTIONS AND IDENTIFICATION OF CONVERSION RATES**

When the structuring of the decision context was concluded, the evaluation phase was started with the transformation of the descriptors into cardinal scales, so as to express the attractiveness of the impact levels of the descriptors. With the use of the MACBETH software, Figure 2 shows the transformation phases from the ordinal scale to the cardinal, for one of the EPV descriptor “sign services” from FPV “SOA”.

![Means-ends relationship map of an area of concern highlighting the clusters “Strategic Alliances”, “Pioneering” and “SOA”.](image)
Figure 2: Transformation process of a descriptor in a specific criterion (Cardinal Scale), using the MACBETH software

Once having the value function, and defined the unit, of all the points of view, the process to integrate them and form the representation of the model of global evaluation according to the perception of the decision maker was started. Integration was achieved applying the conversion rates to the points of view. At this point, the global model of the multicriteria support was used to evaluate the success of a software project of the company investigated.

STEP 6: IDENTIFICATION OF IMPACT PROFILE OF ALTERNATIVES

The project under consideration obtained 50 points, and hence was rated as competitive according to the decision maker’s perception. The evaluation in graphic form is presented in Figure 3, where the arrows beside the points of view are the scale representation of success in each dimension evaluated.

STEP 7: SENSITIVITY ANALYSIS

Finally, changes to conversion rates and the impact of each criterion were simulated, as a sensitivity analysis of the model. This analysis resulted in an instrument to show to the decision maker and project agents where the best opportunities for improvement in performance are, thus improving the competitiveness of new products developed.

STEP 8: FORMULATION OF RECOMMENDATIONS

The generated knowledge has helped to measure, on a cardinal scale, the contribution that improvement actions may make to the strategic objectives as can be observed in the
measurement of 50 points for the initial version of the project evaluated. With this knowledge, the chief project officer (CPO) started a new activity to sort the improvement requests and improve the project’s performance, linking with the FPV “Speedy in developing new features”, that would improve the global performance by 13 points (see Figure 4). This would involve the average rate of errors dropping from 4 to 2 (EPV-“Project Management”), the project deploying 10 features requested by stakeholders per months instead of 8 (EPV-“Productivity”), and the project reusing 20% of the lines of code instead of the original 15% (EPV-“Components Reuse”). This illustrate the Step 8 of the MCDA-C, recommendations.

![Figure 4: The representation of the impact of improvement action a' in the global performance against the current project a](image)

5 CONCLUSIONS AND RECOMMENDATIONS FOR FURTHER RESEARCH

The present research used recent views of knowledge to propose solutions to some problems observed in portfolio management, proposing a methodology that enables the identification, organization, measurement and integration of criteria judged necessary and sufficient by the decision maker, in order to understand the context, and thus, to understand the consequences of different decisions.

With the points above in mind, the research question guiding this work is revisited: How to measure a project charter in light of the strategic objectives of a company in order to aid decisions on portfolio management?

To answer this question, the present work has presented a methodology that, by using the instruments described here, helps the creation of possible improvement actions to increase alignment with strategic planning.

Regarding the achievement of the objective of this research, as set out in Section 3.3, “Construction of the Multicriteria Model – procedures” – the MCDA-C methodology has been presented and Section 4.

The decision maker’s understanding of the contribution of the project was presented graphically and numerically, as shown in Figure 3. This knowledge emerges from developing the ability to foresee the consequences of the operational characteristics of the project in the strategic objectives of the company. This contributes to foreseeing the opportunities for project improvement, as well as generating, starting from this instrument, actions to improve
its chances of success. Moreover, this cardinal measurement allows the comparability and project ordering the evaluated faced with other projects proposals.

The decision makers may apply the model to guide the search for actions in order to select and prioritize projects put forward by managers. Before the model, the decisions were ad-hoc, resulting in many negotiations in order to choose which project to begin.

A limitation of the present research is its tightly centered focus on the technical concerns of product development, which is the decision maker’s main concern. So, the model could be expanded by the unpacking of the core problem in order to observe other company areas, such as services, sales and marketing. The MCDA-C methodology has demonstrated its usefulness in the process of supporting portfolio management, and it is recommended that it be applied in other contexts, so as to test its generality in similar situations. However, as models generated in each situation are specific to the context, the model will need to be adapted, even in contexts that are very similar.

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