

A2K: A management model for localization volunteer projects of large-scale narrative games

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Abstract. Introduction: Despite the growing relevance of game localization, there is a lack of structured and empirically grounded management models for volunteer localization projects of large-scale narrative games. **Objective:** This paper introduces “A2K”, a management model that formalizes organizational mechanisms for volunteer localization projects. **Methodology:** A2K is defined based on observed practices and is evaluated through its application in a case study, combining process documentation with questionnaires applied to both end users and translators. **Results:** The evaluation indicates optimal textual quality and consistency (>4.5), organizational structure and tool support. These findings suggest that structured management models can enhance the scalability and consistency of volunteer localization projects. However, further validation across multiple projects is required to generalize the model’s effectiveness.

Keywords Organization model, game translation, game localization workflow, volunteer projects.

1. Introduction

Digital games have transcended fun to become the most profitable industry in the sector [Icon Era 2025], attracting growing academic interest in phenomena such as genres and target audiences [Fortim et al. 2016], neurological effects [Tourinho et al. 2016], and usability [de Sales Viana et al. 2017]. At the same time, the globalization process has driven companies to localize their products to reach broader audiences.

However, simple translation does not assure full understanding, since each language has unique cultural elements, such as idioms and figures of speech, whose pragmatic intent can be lost in a literal translation [Steiner 1975]. In Zero Wing (1991), the popular “All your base are belong to us” is a well-known example of this problem.

Thus, the lack of cultural adaptation alongside translation provoked a process named as "localization" [Bernal-Merino 2015]. Some popular game franchises have experienced controversial adaptations when localization was still a new approach, such as *Phoenix Wright: Ace Attorney*. The current trend is to adopt "nationlessness" right from the design stage to avoid incorporating specific cultural elements, as seen in *Animal Crossing* and *Pokémon* [Mangiron 2021].

The challenge is even greater in visual novels (VNs), a genre of narrative games with limited interaction and text volumes that can exceed millions of words. "Steins;Gate", for example, requires about 36 hours of reading time according to the How Long to Beat platform (2026). The lack of well-established methodologies or models for consistent localization of this genre is reflected in the recurring players' tendency to reject official translations [O'Hagan and Mangiron 2013].

Therefore, this paper proposes "A2K", a management model for the localization of large-scale narrative games, addressing organizational, translation, and proofreading aspects with a focus on granting accessibility and replicability for (but not limited to) volunteer projects, and validated by the case study of the Chaldea BR project.

2. Related works

Given the lack of academic literature on management models for volunteer localization projects, the research team sought to identify studies that addressed, even if only tangentially, game localization in Brazil and other countries. The search, however, yielded few results. Maier's (2018) study highlights how the game *Rise of the Tomb Raider* uses localization as "cultural mediation," following the terminology proposed by other authors, further discussing the importance of game localization as a fundamental part of the process, and contributes to the scientific community by showing that the translation of the game's script allows players from different cultures to enjoy the game as a source of entertainment.

Concurrently, Souza (2015) presents, in his thesis, a robust analysis of translation elements present in various game genres. The author makes a very pertinent observation regarding the current state of game localization: prior to release, companies often send partial versions of the text to translators, who do not know one another in most cases. Furthermore, the localization team rarely has access to an "alpha" version of the game, used by developers to test the game, which compromises the adaptation. More recently, Camargo and Cantarotti (2024), through a case study on the translation and dubbing process of *The King of Street Fighters*, reinforce the practical complexity of game localization by examining how linguistic and audiovisual adaptation decisions influence the final localized product, further illustrating the multidisciplinary nature of localization workflows.

Regarding the historical studies on translation and localization, O'Hagan stands out for her notable contributions, being a widely cited researcher in the field. Among other works, she discusses the impact of localization on video games [O'Hagan 2011] and the emerging role of volunteer translations in the industry [O'Hagan 2009]. In collaboration with Mangiron (2013), she presented an analysis of translation and game localization work and its role in a growing industry [O'Hagan and Mangiron 2013].

It is thus evident that, despite the crucial importance of the works mentioned, there

is a scarcity of studies regarding localization project management, which directly affects the gaming industry, since many games today are released in more than one language. Therefore, there is an urgent need to establish management models that formalize a functional model for localization teams.

3. Case study

The Chaldea BR project is a volunteer localization initiative for a large-scale VN game, which features a massive amount of text, as highlighted in Table 1. For ethical reasons, the title and specific details of the game are not disclosed. The project was actively carried out between 2021 and 2024, facing a hiatus between 2025 and early 2026 after the team had translated all of the main story content.

Table 1. Game content data (approximately)

Chapters (deliveries)	31 (38)
Dialogue lines	180,000
Words	1,700,000

The game features official translations in multiple languages and ships new content continuously, with a significant delay before the release of the English version. To avoid this long wait, the community relied on *Machine Translation* (MTL) through a third-party tool for modifying in-game text content without violating the terms of use. Manual translation teams began using this application, which currently supports translations for English, Spanish, French, Italian, Indonesian, and Brazilian Portuguese.

Over the course of three years, the project involved more than 40 translators and 10 proofreaders, producing approximately 180,000 lines of dialogue divided into more than 30 chapters, with an initial rate of one chapter per month. The project had approximately 70,000 downloads and 15,000 unique users, and its main goal was to keep up with the official content in English, which was achieved in December 2023 with a simultaneous release. Additionally, staff members applied the model to localize a second game of the same genre, currently under proofreading.

4. The "A2K" management model

This section describes the methods tested and documented in the presented volunteer project, whose relevance to the game localization field is widely recognized [O'Hagan 2011].

The model has eleven methods identified by letters from A to K (leading to the name of the model), organized into three blocks: team organization (A–G), translation and proofreading workflow (H), and follow-up (I–K). Methods that are not connected by arrows do not need to be performed in sequence. Compared to existing, well-established methods, which tend to rely on freelance translators and CAT (Computer-Assisted Translation) tools, this proposal emerges as a cost-effective and efficient alternative. It also introduces an innovative interaction between project organization and deliverables, which, when applied to the context of volunteer game localization, can mitigate risks of inaccuracies and delays. Aiming to properly illustrates the proposed model, the Figure 1 shows how every method interacts with each other.

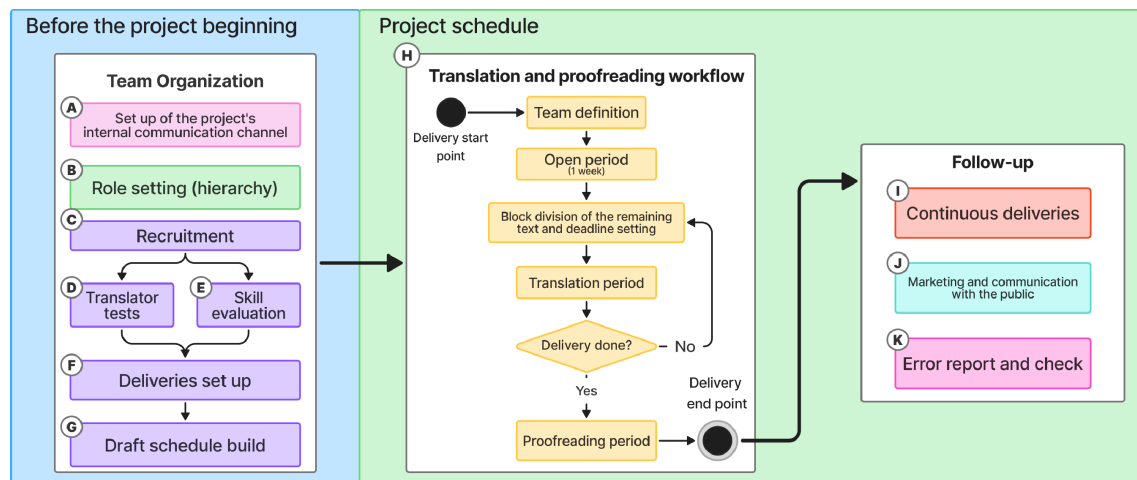


Figure 1. The "A2K" model methods.

4.1. Schedule and recruitment

The start of the project requires knowledge of two key variables: the volume of text and the number of people involved. Based on these, a draft schedule is drawn up to guide translators, proofreaders, and managers [Project Management Institute 2017]. In the context of volunteer localization projects, recruitment should prioritize a multidisciplinary and multicultural team: teams composed exclusively of professionals may not fully understand the work [Mangiron 2021], while teams made up solely of fans may require technical training that impacts the schedule.

A translation test is recommended using excerpts from the original text to evaluate: (1) language comprehension; (2) writing skills; (3) ability to abstract from context; (4) creativity in adaptation; and (5) interpretation. The test review should be double-blind to eliminate bias.

4.2. Team organization

The internal hierarchy will define the workflow, and to ensure efficient organization, it is recommended that the project manager have prior experience with localization projects [Dunne and Dunne 2006]. The team consists of translators, proofreaders, and, ideally, a chief proofreader or editor, who is responsible for maintaining textual quality. Translators who consistently demonstrate above-average performance on criteria (1) and (5) of the test throughout the project are eligible for promotion to proofreaders.

Regarding the team's communication channels, it is preferable for the project manager to choose an option that promotes efficiency and the smooth exchange of information. For large-scale localization projects, it is crucial to maintain control over information, ensure easy access to links or translation support platforms, provide feedback on text quality, and establish channels for addressing questions, among other things. Platforms such as Slack and Discord are free to use and stand out for their ability to customize channels, set permission and access levels, and offer various other tools that facilitate the creation of a highly adaptable virtual workspace; thus being highly recommended for this purpose.

4.3. Translation and proofreading workflow

The reason for developing this method stems from the lack of alternatives suited to nonprofit, volunteer-driven, and challenging projects (since completing the translation of a large-scale narrative tends to require more resources than other genres) carried out by a diverse team. Consequently, the workflow is delivery-oriented rather than project-oriented, and consists of small steps that dictate its pace.

The first step in the workflow is to define the participants assigned to a specific delivery. If the project managers deem it necessary, sub-teams may be formed to translate more than one chapter simultaneously. For volunteer projects, it is recommended the use of intent polls, in which each translator and proofreader decides whether or not to participate in a given delivery. Once the participants have been defined, the "open period" starts. The open period covers the first week of the delivery, during which each translator can translate any section they wish. A single document containing the entire delivery is shared with all of them to avoid overlapping, so the translators can then read the text and choose any sections they wish to work on. After this period ends, the text is divided into the next period.

The remaining text is divided equitably among the translators. A balance should be sought between narrative context and block size, so that each section is self-contained and its beginning and end do not depend heavily on other sections. It is also advisable to take individual availability into account, especially in volunteer teams [da Silva Salvagioni et al. 2017].

Once the volume of text assigned to each translator has been determined, a deadline for the translation period must be set. As soon as the deadline ends and the delivery is done, the next one starts, and this continues as long as there is text to be translated. At the start of the next delivery period, the team of proofreaders begins the process of proofreading the previous delivery, following the same scheduling method.

By and large, deadlines should follow a linear progression based on the length of the text relative to the number of days available. The longer the text, the longer the deadline. If a realistic goal is set at 2,000 words per week, which was the metric used in the case study, then 6,000 words over three weeks would be an equally achievable deadline without compromising the translator's well-being, and so on.

The proofreading process begins with an automated check for common errors (spelling, capitalization, formatting errors). This is the only point in the entire model described where a machine directly interacts with the text. After the error check, the process goes to the incremental proofreading stage, in which each translated section is reviewed by at least two different proofreaders. The term "incremental" comes from the idea that subsequent proofreadings do not overwrite the previous one, but rather refine it, identifying errors that may have been overlooked by the previous proofreader.

However, proofreading is not just about the quality of the text. Therefore, it is necessary to proofread and test the translation within the game, in addition to the process carried out in the text editing tool used. This stage of proofreading is dedicated to identifying visual inconsistencies and/or compilation issues caused by code that could affect the reader's experience.

4.4. Risk management

Project managers should be prepared for some of the possible scenarios that may arise in localization projects. Among these, localization conflicts that arise and schedule delays can be resolved using the methods described in this paper.

In translation conflicts, resolution proceeds up the hierarchy: from the translator to the proofreader, and from them to the chief proofreader, who issues the final decision. Proofreaders and the chief proofreader may, if they deem it necessary, conduct a pool to reach a conclusion democratically.

Furthermore, if a delivery deadline is not met, thereby compromising the schedule, the project manager must: (A) extend the delivery deadline or (B) break it down into smaller deliveries, reapplying the described workflow. The schedule is expected to stabilize between 20% and 30% of the project. Especially in the early stages, delays are common, which is why the initial schedule is called a “draft”: it will be refined and reach a final, stable form as the management team observes the team’s engagement.

4.5. Follow-up

Given the sheer volume of text in large-scale narratives, the project should adopt a continuous delivery workflow, dividing the text either on mathematical (number of dialogues) or contextual (chapters/story arcs) factors. Each delivery should be associated with a deadline based on the volume of text and the number of participants.

Throughout the localization process, it is important to maintain clear communication with the public. The project should be publicized from start to finish so that the player community can follow its progress transparently. Another benefit of this practice is the opportunity to build a talent pool of potential translators. In volunteer projects, which are born and thrive solely on the willingness of each individual, the process of onboarding new translators is made easier. Reusing the translator test used in recruitment or creating a new one are equally valid approaches, and at least one of them must be implemented.

Each completed delivery (i.e., translated and proofread) must be reported to the public, serving as a checkpoint for the project and making it possible for the audience to identify errors. Thus, the project takes on aspects of crowdsourcing, used by well-known platforms such as Facebook and LinkedIn, and allows the public itself to participate in the project. In this way, the public enjoys the translated content, identifies errors, and reports them to the project coordinators, who must promptly notify the translators and/or proofreaders to correct them and update the text.

4.6. CAT tools alternatives

Computer-assisted translation (CAT) tools, such as “Trados Studio” and “memoQ”, are designed to enhance translators’ productivity by offering translation memory, automatic proofreading, and terminology glossary management [Esselink 2000], but their costs are beyond the reach of volunteer projects. As an alternative, “Google Sheets” in tandem with “Google Apps Script” replicates the essential features: term search, memory-based suggestions, spell checking, and custom automations.

The terminology glossary should be built by the entire project team, so that its use and the terms included in it are transparent and widely known. It is encouraged, though

not mandatory, that the target audience also have access to the glossary. This avoids questions about the reasoning behind the translation of terms relevant to the game's story.

5. Evaluation

To evaluate this work and the general effectiveness of the model, an empirical assessment was conducted with two target groups: (A) target audience (people who tested Chaldea BR's translation) and (B) volunteer team (Chaldea BR translators and proofreaders). Then, ten hypotheses were formulated and distributed among the groups, as shown in Table 2. The hypotheses are linked to the model's methods, as discussed in the Results section, and were evaluated using Likert-scale scores, calculated based on the average of the responses. A score of 4 was adopted as "satisfactory," given that this represents explicit agreement on the Likert scale.

Table 2. Evaluation hypotheses.

Sample group	Hypothesis	Metric
A	The proofreading process contributed to the narrative quality.	Narrative quality
A	The model meets quality standards comparable to those of the market.	Market comparison
A	The model delivers a coherent and cohesive text.	Textual consistency
A	Volunteer translation projects expand access to unofficially localized games.	Accessibility
A and B	The model is effective for localizing large-scale narrative stories.	Model effectiveness
B	Dividing texts into smaller blocks promotes translator engagement.	Block division engagement
B	The use of user-centered tools is crucial for game localization workflows.	Tool effectiveness
B	Hierarchical models in volunteer-driven projects promote efficiency and consistency.	Organization effectiveness
B	Acting as a translator/reviser promotes understanding of the languages being worked on.	Language development

The questionnaire was closed two weeks after publication, and the data were processed in Python using Jupyter Notebook, Pandas, and Matplotlib. Data integrity was validated using Cronbach's alpha in addition to Pearson's correlation, which was used exploratorily to check for redundancy among items. The analysis is descriptive and exploratory in nature due to the sample size. Additionally, a qualitative synthesis of the open-ended fields was conducted to identify recurring criticisms and suggestions not anticipated by the authors. An Informed Consent Form (ICF) was also produced and signed by all participants.

5.1. Text volume analysis and project data compilation

Concurrently, a thorough analysis was conducted of the textual and organizational content of the case study in this article. The project data were organized into two categories:

schedule and error reports. The schedule data consists of start dates, stipulated deadlines, actual completion dates, and release dates for each delivery. For the reports, an unbiased sampling method was adopted: for each year of the project, two months were randomly selected to sample up to ten submissions per month. For each image found, to avoid bias—since a single submission could contain more than one image—the next five were skipped. This process resulted in 93 errors extracted from a total of more than 1,200 submissions received throughout the project.

6. Results and discussion

The model was developed and refined throughout the Chaldea BR project for a VN game. Table 1 presents some of the relevant data regarding the game's content. The questionnaires were applied in March 2026, yielding 67 responses from Group A (target audience) and 21 from Group B (volunteers). The block division engagement metric was excluded from the analysis due to an extremely low Cronbach's alpha (0.16), which was possibly caused by the fact that not all translators were in the project when this method was implemented. Although we were unable to analyze this quantitatively, the engagement is later perceived in Figure 3. The results are summarized in Table 3.

Table 3. Evaluation metrics and their reliability

Metric	Sample group	Cronbach's Alpha	Result
Narrative quality	A	0.91	4.59
Market comparison	A	0.75	4.43
Textual consistency	A	0.85	4.54
Accessibility	A	0.83	4.30
Model effectiveness	A	0.83	4.16
Model effectiveness	B	0.86	3.88
Block division engagement	B	0.16	3.68
Tool effectiveness	B	0.83	4.23
Organization effectiveness	B	0.81	4.18
Language development	B	0.89	4.29

Narrative quality (4.59) and textual consistency (4.54) received the highest scores in Group A, reflecting the audience's approval of the natural flow of the dialogue, characters, and terminology throughout the narrative. Both results were enhanced by the use of a public glossary containing 412 entries, which ensured consistency across chapters.

The market comparison metric (4.43) indicates that the audience recognizes the volunteer translation as competitive with official localizations. On the other hand, the result for access to the work (4.30) highlights the project's role as a gateway to the narrative: the localization drove game installations, with an average of over 100 unique users per week, even after the localization process concluded. The metrics reflect the competitive capacity of a volunteer project managed according to the presented model and imply the public's perception of professional quality.

The model's effectiveness yields different results: 4.16 (Group A) and 3.88 (Group B). For Group A, the communication channel and the handling of error reports

were evaluated positively. Figure 2 reveals that about 40% did not involve translation quality, but coding errors, suggestions, and false positives, reinforcing the importance of maintaining open channels for feedback. For Group B, items related to communication tools received many neutral votes, possibly indicating indifference. Another finding was that 90.5% stated that the methods were clear, and 87.5% indicated they would participate in future projects using a similar methodology. It is evident that the model used left a positive impression on both groups; however, the project's execution in the final stage did not align with the principles of communication with the public ("J" method), which may have tarnished the project's image for both sample groups.

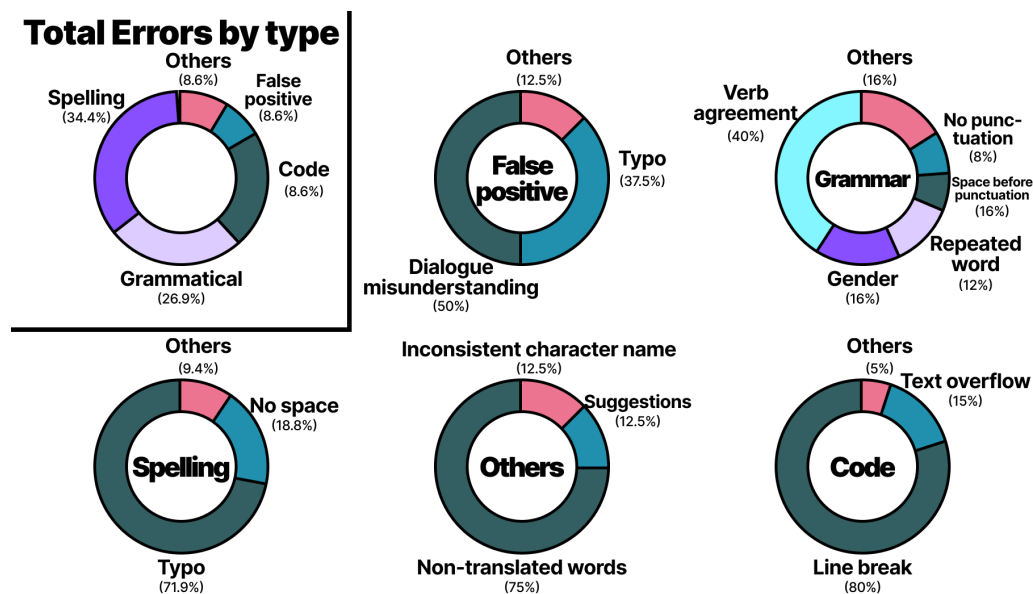


Figure 2. Error report analysis.

The effectiveness regarding tools (4.23) and the hierarchy (4.18) confirm the functionality of the proposed hierarchical structure and the viability of the free tools employed compared to CAT tools, demonstrating that the methods used for team organization were successful. Linguistic development (4.29), in turn, indicates that the translation exercise and cultivation of linguistic skills in general can be beneficial not only for those who intend to pursue a career as a translator, but also for any individual.

An analysis of Figure 3 helps us understand the contribution of the most committed translator in each delivery during the open period. In specific deliveries, this discrepancy was more noticeable, indicating cases in which a single translator worked particularly hard and positively impacted the delivery schedule, fulfilling the purpose of the open period. Thus, the translation and proofreading workflow accelerates, and the continuous delivery of chapters is maintained.

The qualitative analysis of the open-ended responses indicated overall public satisfaction and positive feedback from the volunteers. The main point raised by both groups was the project's inactivity, coupled with a lack of clear communication to the community, highlighting the importance of adhering to the communication method proposed in the model.

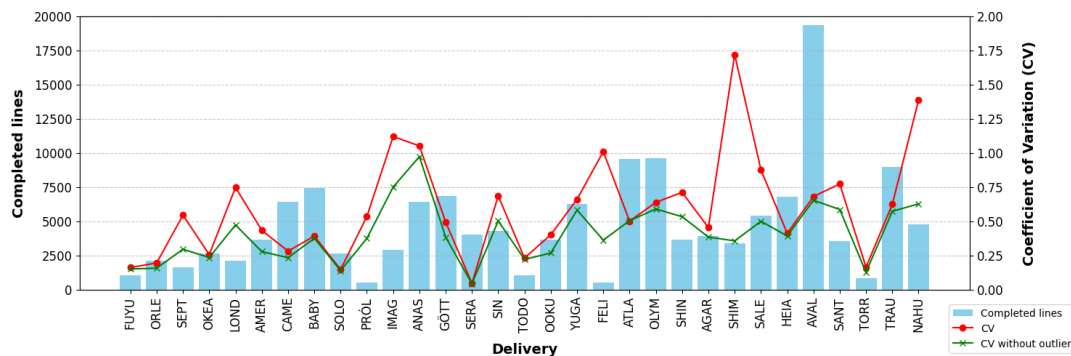


Figure 3. Dialogue lines per delivery and coefficient of variation for text divisions.

7. Limitations and ethics

The case study in this article is based on a volunteer localization project. For ethical reasons, the authors have refrained from naming the game and the third-party tool, or including images of the final result. The data presented focuses on methodological and organizational aspects, and demonstrates the effectiveness of the model used without revealing any sensitive content.

In addition, the research team notes a lack of plan for the project's conclusion: the aforementioned communication with the public was not maintained, and the public was uncertain as to whether the project would continue. Furthermore, regarding the model, which is designed for use in volunteer localization projects for large-scale narrative games, there is a lack of cases to discuss, given that it was applied to only two projects.

8. Conclusion

This paper presents A2K, a model for localizing large-scale narrative stories in games, along with a case study that applied it to a project involving approximately 200 hours of reading. The model, in turn, highlights the importance of establishing an organizational structure for the project, involving team recruitment and hierarchy, a workflow for translation and proofreading, and also establishes efficient methods for creating an engaged audience willing to support the project.

The evaluation conducted indicates, in general, that the target audience approved the localization done by Chaldea BR, classifying it as market-competitive. Although it is not conclusive, it shows how good the final result was for the public. The project made a good impression on the volunteer team too, as they asserted that the tools and the organization were effective, as well as mentioning that the experience helped them to improve their language skills. Thus, the study concludes by encouraging the use of the model, which has proven effective, though it requires improvements, not only for volunteer projects but also for industry professionals interested in emerging and innovative business models.

Although, in the public's view, this model is competitive with the market, future work includes refining the translation and proofreading workflow and improving the structure of the proofreader selection process. Also, the project managers have highlighted their interest in applying it to other volunteer projects, which could be beneficial for the model's maturity.

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