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Supporting Urban Innovators' Reflective Practice

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Abstract. Over the past years, a growing number of local initiatives are generating solutions for societal challenges in their cities. However, the scale and complexity of these challenges force urban innovators to constantly adapt and learn, having to acquire new capabilities that will help them advance towards systemic change. In the current work, we take the premise that these urban innovators need to be able to utilise the urban context as a learning ecosystem in order to push their interventions beyond the boundaries of small innovative niches. In keeping with Schön's reflective practice, we envisage reflection as a core competence for these urban change makers to grow and present a reflective process supporting urban innovators in framing their professional learning journey to succeed in their projects. A series of online sessions have been conducted to investigate how to scaffold a reflective process enabling innovators to better identify challenges in their projects and the corresponding capabilities they need to acquire. In the proposed paper, we present reflective activities as a tool supporting urban innovators in self-defining their learning journeys and elaborate on the insights gained. It can be concluded that the reflective process we developed was valuable to urban innovators in unveiling new learning needs for their projects, while further research is needed to more effectively translate these learnings into actionable steps to sustain innovators' self-development.

Keywords: Design, Learning ecosystems, Reflection, Self-development, Societal Challenges, Urban Innovators.

1 Introduction

Societal challenges are increasingly spurring the emergence of a growing number of local initiatives that leverage the resourceful and interconnected nature of cities and use them as urban learning ecosystems to engage in and experiment with innovative and creative ways to generate social innovation. Interestingly, mature urban initiatives show oftentimes a diverse mix of backgrounds within their team and closer collaborators; think of designers, local authorities, academia, private and public organizations, who share an interest in proposing positive change. Design skills and approaches seem to be a promising resource for urban innovators, but also new capabilities are needed (e.g.,

community building, business acumen, strategic leadership, to name a few). More importantly, when implementing innovative solutions for societal transformations, these teams of urban innovators find themselves learning and operating in a complex, multi-level system that is the urban context and society as a whole. “Imagining, creating and developing these innovations requires the simultaneous consideration of different perspectives” [1], and the creation of propositions valuable for multiple actors at different levels; from citizens to private and public organizations, including local authorities. Urban innovation processes become then ‘co-evolutive’ processes, where innovators must be capable of constantly learning from and with the different dynamics, actors, resources and competences that characterize the urban ecosystem [2]. This, in order to identify the most appropriate strategies and capabilities that can help them advance in embedding their projects in cities urban innovators need to continuously identify the most appropriate innovation strategies and capabilities [2]. To exploit cities as learning ecosystems, our premise is that innovators must be increasingly aware of the capabilities they need to embed innovation in cities, as well as the steps to acquire them. In keeping with Schön’s reflective practice [3], the next section elaborates upon reflection as a core capability enabling these urban change makers to grow. Following a review on learning and reflection, we motivate a reflective approach enabling urban innovators to better frame their needed learning journey to succeed in their projects. A series of reflective design interventions have been conducted to investigate how to structure such a reflective process in a way that would help innovators identify the challenges ahead in their initiatives and the capabilities they need to acquire to achieve them. We report the designed interventions and the insights gathered on the structuring and support of a reflective activity for innovators. Afterwards, we elaborate on the insights gained and discuss the value of introducing reflective activities as a tool for urban innovators’ development. We end with a series of guidelines for enhancing reflective practices that support urban innovators’ ability to self-define their learning journey.

2 Learning and Reflection

Seen as an “active and purposeful process of exploration and discovery”, reflection can become a promising tool for self-development [4, p.496]. Particularly, as it helps to “become receptive to alternative ways of reasoning and behaving”, reflection is likely to open up learning opportunities. Specifically, engaging in a reflective process can help practitioners to “improve (their) ongoing practice, by using the information and knowledge that they are gaining from experience” [5, p.16]. Schon’s distinction in reflection on/in action is particularly relevant to innovation practice; the ability to learn from experiences to frame how to better act on current unknown challenges. It can be concluded that through a “reflective conversation with the situation” at stake, innovators explore the problem situation relating it to past experiences that could help them approach it. In this way innovators can “name the things to which [they] will attend and frame the context in which [they] will attend to them”, and by doing so they more easily define the initial problem, and together with it also the decision to be made, the ends to be achieved, the means which may be chosen” [3, p.40]. Similarly, Dorst and Cross [6]

argue that through a process of exploration of problem and solution spaces, designers can identify what are more specific, unresolved problems to focus on, on which they can focus their creative effort in elaborating new approaches. Designers explore the so-called problem and solution spaces, analysing first what are the elements of a given problem situation, to then relate them with elements of previous situations they have already encountered. This helps them identify initial solutions they know to approach the situation, which are, however, likely to solve the problem at stake only partially. By elaborating partial solutions, designers can isolate and frame what are new, more latent, and more specific challenges from the initial problem situation they had. Challenges that they are still unable to solve and for which they need to frame and experiment with new creative approaches and solutions. In the current work, we refer to a similar reflective process as a key element in urban innovation initiatives' ability to learn. More specifically, we address social innovators' necessity to constantly learn and adapt throughout the complex process of urban innovation, to identify the needed capabilities to be developed to succeed in their projects with social impact [2]. In keeping with leading scholars [3,6], if urban innovators systematically engaged in a reflective process on their projects, they would likely better define what are the new specific requirements of the different tasks involved in their projects that would force them to develop new capabilities. This potential, however, remains in theory. While reflective approaches have been successfully used for professional self-development [3,4,5], it is not straightforward how urban innovators can benefit from these approaches when dealing with complex multifaceted challenges [7]. For these reasons, we set out a study to investigate how reflection could practically become a tool for innovators to identify the challenges ahead in their initiatives and the capabilities they need to acquire to achieve them. The following section introduces the context, the approach taken, and the methodological details of the study.

3 Study

The current work is part of the European DESIGNSCAPES program that investigates how to ignite the transformative power of design for sustainable and responsible innovation in European cities. The program supports a hundred mission-driven urban innovation initiatives, tackling complex societal and environmental issues connected to the European sustainable development goals. More specifically, these initiatives are selected at three different stages of their innovation process: when carrying out their initial feasibility studies, when prototyping and embedding their solutions in an urban context, and finally in their stage of replication to a new city. Next to funding, the program supports these initiatives with a training program that has been developed with a twofold goal. On the one hand, to identify which capabilities are key to foster social innovation and urban development, and, on the other, to provide appropriate training to infrastructure a community of innovators that can continue learning and developing in a self-sustaining way, beyond the program itself. Within this context, the present study investigates how to facilitate the growth and self-development of urban innovation initiatives; introducing a reflective approach enabling urban innovators to better frame

the challenges ahead in their initiatives and the necessary professional learning needs. Participants have been recruited from the awarded initiatives in the European program. Initiatives that were active in prototyping their proposed urban innovation and were engaged in a complex process of embedding innovation in urban contexts were invited (n=30). Out of the 30 invited initiatives, fitting that criteria, seven initiatives participated in the study. In the first two sessions, only the contact persons participated, and from the third session onwards it was explicitly asked to participate as a team, accumulating a total of 15 urban innovators participating in our research activities. The initiatives varied in the kinds of urban challenges addressed, which ranged from the revitalisation of communities and urban spaces through active participation in co-design processes to the use of platforms to facilitate the promotion of more sustainable mobility behaviours as well as the increase of public awareness on noise pollution in cities. The initiatives took place in seven different medium and large cities located in four European countries: Italy (n=3), Bulgaria (n=2), Greece (n=1), The Netherlands (n=1). Moreover, the background and composition of the different initiatives' teams varied, including among others, practitioners from architecture, design, software development, cultural heritage, and environmental engineering. Table 1 summarises the respective project goals and locations of each initiative participating in the study.

Table 1. Project goals and locations of participating initiatives.

Initiative	Project goal	Country
Team 1 (n=3)	Connects local institutions, architectural heritage owners, residents, artists, architects, and investors to revitalise disappearing city centers	Bulgaria
Team 2 (n=1)	Promotes grassroots transformation and reuse of existing urban spaces, through a platform enabling citizens to identify sites, generating proposals, and access a variety of funding options.	Bulgaria
Team 3 (n=1)	Co-creation with citizens of a network of urban landmarks (urban art structures) linked to existing green spaces in the city, aimed at the reactivation of neighbourhoods' public spaces and social connections.	Greece
Team 4 (n=3)	Mapping noise pollution in urban environments, raising public awareness and helping people suffering from hearing impairments to better cope with loud city areas.	Italy
Team 5 (n=2)	Fostering community resilience to Climate change through Co-design of green-blue infrastructuring in urban parks	Italy
Team 6 (n=4)	Develops a service for local administrations offering a co-design instrument to involve citizens in the planning of public/common spaces using temporary architectural devices,	Italy
Team 7 (n=1)	Developing a service for employees and companies to find sustainable mobility solutions tailored to local needs to encourage sustainable commuting behaviours.	The Netherlands

Innovators' reflections on their projects are not expected to be immediately noticeable, but rather a mental process carried out internally. With this in consideration, our research approach entailed a series of five interventions where we used design artefacts to trigger innovators' reflections. The insights of each intervention have informed the design of the following one, to gradually develop a process for a reflective activity. In particular, these interventions have been designed as reflective sessions to help urban innovators think of the future steps of their projects, compare them with their previous experiences in practice, and in this way identify what are new challenging aspects in their current projects that force them to develop new capabilities and skills. Next to developing a reflective process, we also have gathered insights on the design requirements of the supporting material of this process. Fig.1 shows the examples of the material used in the first and the last intervention. Fig.2 shows an overview of our research approach and the five interventions with respective research questions.

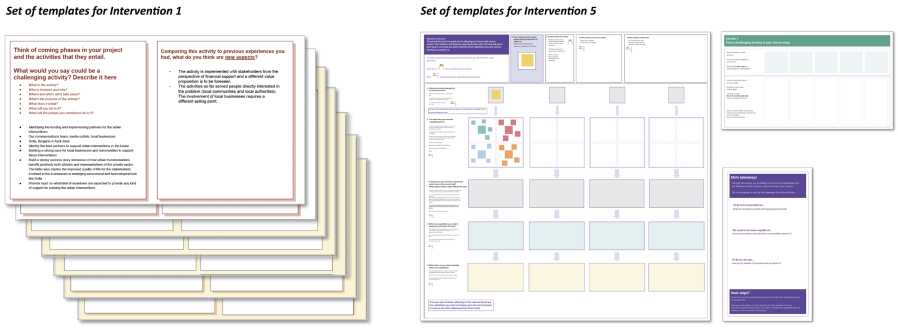

Fig. 1. Supporting material used in the reflective sessions. Template used for the first intervention (left) and the final template set informed by the first four interventions (right).

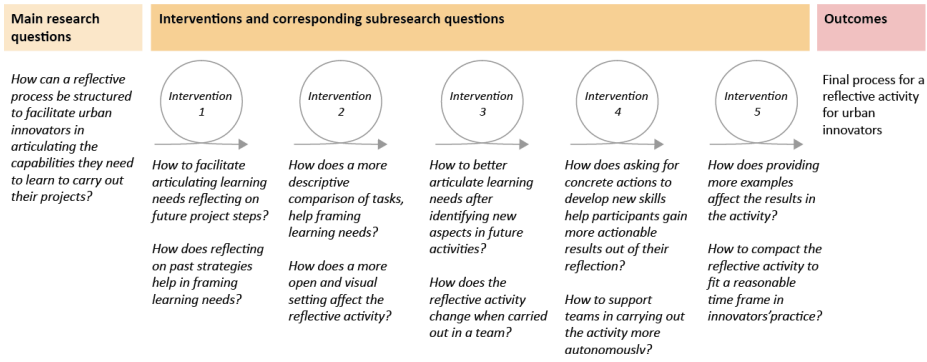

Fig. 2. Overview of the research approach and research questions for each intervention.

Initiatives' members were invited via email to take part in online reflective sessions, which were introduced to them as research activities from the European program. The first intervention was carried out twice, each time with a different initiative, to compare results. The same has been done for the second and third interventions. In the fourth and fifth interventions, only a single initiative took part. Five different sets of templates that helped, one for each intervention, were designed to structure the reflective process that innovators would go through. Participants' interaction with the digital materials developed allowed for observing their reactions and behaviours in the activity, collecting insights on their reflective process as well as on design requirements to develop more supportive templates. Online tools such as Skype or Zoom were used to communicate with participants, while collaborative tools such as Google Slides and Miro were chosen to structure and host the designed artefacts and carry out the interactive activity online with participants. The online reflective sessions have been audio and video recorded. Additional data has been collected via notes taken during observations of the participants' behaviours during the session. Next to that, at the end of each session, feedback interviews have been conducted to gather the participant's impressions on the interventions. The next section reports on the results from our approach.

4 Results

In the following section, we describe the five resulting design interventions as well as the corresponding insights of each intervention. The first intervention has been designed as a slideshow containing reflective questions that have been discussed together with urban innovators. The innovators participating in this first intervention were asked to think of a challenging future activity in their projects, and the aspects in this task that may pose new challenges. Afterward, participants were asked to think of strategies they used in the past to solve one of the named challenges and elaborate on how they would solve it now, and what would be remaining issues. From this intervention, we observed the need to provide an overview throughout the entire reflection process to the participants, so that they could look back to their answers during the activity. We observed that when participants described more nuanced aspects of the tasks at hand, this helped them define specific 'challenges within the challenges', that seemed promising directions to identify their learning needs. On the contrary, when participants reflected on how to apply past strategies to their current tasks, they stopped exploring the challenging situation at hand and focused instead on elaborating solutions to solve it, which was inherently complicated.

Informed by the first intervention, the design of the second intervention includes a more open structure, with templates designed on a digital whiteboard on the collaborative online tool Miro. Participants were asked to choose one of the future activities in their project to focus on, divide this into steps, to then reflect on one of these alone. They were presented with prompt questions to help them elaborate on who and what will be entailed in the chosen step, to contextualise it. These same questions were posed to describe a similar past activity. After articulating differences and similarities between the two activities, participants were asked to list the challenges they perceived in the

new task and, in consequence, what learning they expected to need to face them. Insights on the reflective process confirmed that comparing the current and past tasks pointing to specific contextual aspects (e.g., differences in terms of stakeholders, location, methods) helps nuance specific aspects to tackle and learn for. However, a too detailed description of the tasks also slowed down the activity, interrupting the participants' rhythm. The open structure made the activity slightly scattered, requiring consistent facilitation from the researcher to navigate through the digital board.

For the third intervention, a set of three templates was designed to propose a more structured process, to help participants better reflect autonomously. The process of selecting a step to reflect on and initially describing it was designed to be shorter, while more focus was put on asking participants to elaborate on the skills they showed in past similar experiences. Gibbs' reflective cycle [8] was used as inspiration to guide participants in describing and evaluating past experiences through prompting questions from the steps 'description', 'feelings' and 'evaluation' of his framework. Consequently, we also created more space for the participants to elaborate on what differences in the current task required them to adapt their capabilities or learn new ones. We observed that without elaborating first on the chosen step, participants reflected on the skills required too broadly. When asked "Based on this, which capabilities do you think you possess?" and "What skills could be required to carry out these tasks successfully?" participants did not explain to what extent their capabilities would be effective in a given situation. Rather, participants tended to abstract capabilities from the situation to tackle. However, carrying out the activity as a team helped the participants build on each other's answers, offering different points of view on the experiences and tasks at hand, leading ultimately to more nuanced answers. Moreover, it also benefited the teams' internal alignment, as some team members were not updated on specific plans, and the reflective activity helped not only bring those up to speed but also bring the team together to further detail these plans. Another observation was that asking participants at the end of the activity questions like "Where would you go to learn this? Who could you ask?" helped them formulate a plan of action to acquire the now needed skills. We also understood the need of reducing written tasks in the activity to leave more room for discussion among team members, as the most interesting reflections happened when the participants interacted with each other. Finally, it was observed that participants were not able to carry out the reflective activity by themselves, and facilitation was required to guide them through the different steps presented in the templates.

In the fourth intervention, the reflective process has been adjusted to first ask participants to define what the task selected requires and the capabilities they thought would help them achieve it. To avoid the formulation of capabilities in abstract terms, observed in the previous intervention, this time participants were not asked "What capability would be necessary?", but "What do you need to be good at, to achieve this task?" instead. After that, they were asked to recall past experiences in which those skills had already been used, to compare those situations with the present task, and consider if those skills needed to be adapted. In this intervention participants also had to answer questions about which concrete actions they would take to acquire the new capabilities needed, and a fourth template was added to write down takeaways from the activity as well as the team's next steps articulated. Instructions for participants on how to move

from one template to the next have been improved to make it easier for them to follow the activity autonomously. In this fourth intervention, it was observed that expressing what capabilities a task requires was not easy for participants, instead it created ambiguity on what the word ‘capability’ stood for. Asking instead “what do you need to be good at”, was received more positively by participants, as the question opened up to multiple possible answers and allowed for giving more detail than just voicing specific capabilities. For example, one participant said, "It may be hard to express immediately as a capability the fact of being able to engage experts". Another observation was that participants found the added template for noting down takeaways a valuable instrument to summarise what they learned throughout the activity. The questions on actionable steps “What are concrete actions you can take?” generated interesting answers from participants that included approaches and strategies to acquire the missing capabilities (e.g., in this case, the group was missing “scientific capabilities”, and identified as strategy the structuring of collaborations with researchers for publications). Overall, the participants could carry out the activity almost autonomously, however, guidance was still needed when going from one template to the next one and the activity took too long for a session that the team would carry out in their practice.

The insights gained thus far informed the design of the fifth and last intervention and corresponding reflective activity, which has been structured into three main sections, with a different template per section. In the first section, participants list and choose a future task in the project that the team wants to reflect on. Supported by prompting questions, in the second section participants described first what the project task entailed and what they expected they would need to do. Secondly, they articulated what they needed to be good at to succeed in the task, listing the main capabilities that are required in their opinion. Participants were then asked to recall and describe some (up to four) previous experiences in which they already used one of the required capabilities, and then compare those situations with the circumstances of the current task, to uncover new challenging aspects for them in this instance. Once these new aspects were found, innovators are asked to define the new skills that they think they need to develop if they want to succeed, and the steps they could take to develop them. The third and last template helped participants to summarize the main learnings and next steps that have been mapped throughout the session.

The fifth intervention provided additional insights regarding both the structuring of the reflective process and requirements for supporting material. It was noticed how asking to recall and describe multiple examples made the activity slightly longer with the risk of going off track if there was no intervention of a facilitator, (role played by the team leader of the project in this instance). However, multiple examples also helped to further define differences between current and past situations, resulting in better answers for the reflection. When asked “What capabilities do you need to develop?” participants more often replied with new requirements or new tasks they had to be capable of doing (e.g., “to mediate now is fundamental to share the knowledge with the people there”). Sometimes with really detailed answers, such as “we need to interpret quickly the inputs we will get, without waiting too much we need to concretise what they tell us somehow”. Such rich information, however, was then hard to express concisely as a capability, as the question suggested, and some information was therefore lost in the

outcomes of the reflection. Defining ways to acquire the emerging needed skills was difficult for participants, especially when these were new to them. When the answers given as strategies for the next steps were too generic, participants considered them banal and not actionable enough. However, it was also observed that when participants were able to think of professional profiles from whom to learn, their answers seemed promising as a base to take further action towards fulfilling their learning needs. Overall, the templates showed to be clear and self-explanatory, since participants could carry out the entire activity without the need for external facilitation. Nevertheless, the whole procedure still needed streamlining and the number of questions and steps could be reduced. The time needed to conduct the session remained a limiting factor, for which also the presence of a facilitator was crucial. Finally, the innovators' feedback on the structure of the activity points to the need of having a more flexible and modular setup that could adapt to their time available or need to reflect on multiple steps of their project instead of only one.

5 Discussion

In the reminder, we discuss the main steps distilled from our learnings that seem to be helpful in a reflective process enabling urban innovators to identify learning needs and provide accompanying guidelines for better supporting reflection.

One observation was that reflection is not straightforward and the participants need to be guided to reflect and define their present challenges. We first helped participants to detail what they want to obtain, and what they would imagine the task will involve, to uncover and highlight what will be required of them. Articulating the requirements of the task as a first step, seemed to ensure that the participants' reflection revolves around the relevant aspects that will determine the success of the task. We continued by asking participants what they think they need to be good at to achieve the task at hand. As seen in the last two interventions, open questions encourage spontaneous and nuanced answers and do not restrict participants to think only in terms of skills or competencies. More interestingly, participants provided actionable tasks to complete instead. To reflect on what they are already capable of doing was a helpful stepping stone for participants; for example, by recalling past experiences and analysing what actions they took and what resulted from them, and in what circumstances they acted. This reflection mechanism helps first clarify the challenging aspects of new tasks to consider, to then let participants reflect on how these new aspects force them to develop further their capabilities; articulating once again what is that they need to be capable of, or good at, to succeed in their new tasks. These new required actions will likely point to the new capabilities that innovators need to acquire and help them formulate the initial steps to continue their learning process.

Through our study, we also identified a series of aspects to consider when setting up and facilitating participants' reflection on learning needs. For example, to carry out a reflective process following the steps previously presented, especially with a team, the role of the process facilitator is key. Another important lesson is to avoid including

excessive steps and instructions when structuring reflection, as this can hinder the reflective and discursive nature of the activity. It seems to be constructive to create enough space for the participant's personal 'flow' of reflection to lead part of the process. Another important aspect is to guide innovators to contextualise the capabilities they may have exercised in the past and avoid discussing them as abstract qualities. As different circumstances change our ability to achieve the same task, being capable of doing something, therefore, is directly related to the specific context in which that is carried out. As in Schon's reflective conversation [3], here it is valuable to guide participants to recall the elements of a situation that one had attended or will attend, and frame that situation reflecting on what circumstances make (or made) them capable (or not) of achieving something with the skills they already possess, and how this can play in the new task or challenge at hand. To better unveil these specific circumstances of a current task, it might be best to compare the latter to multiple examples of related previous experiences and their respective aspects or situations (e.g., recalling who was involved, what was the intention). In this sense, in line with Gibbs's reflective cycle [8], which has proved to be a valuable inspiration in supporting reflection on prior experiences, asking participants to provide examples, episodes, or even anecdotes, contributes to a more effective comparison and reflection on the concrete different aspects of the task at hand. The sessions also highlighted that reflecting in a team can provide additional benefits, compared to individual reflections. This happens especially if the team involved can discuss a shared experience and build on each other's answers, refining better the problem and solution spaces, and improving significantly the framing of the newly uncovered challenges.

Whereas insights are (co)-constructed during discursive and reflective dialogues, it is key to support innovators in self-defining their learning journeys, for example through sharing the collaborative learnings from the reflective process and translating them into actionable steps. However, not all insights are made explicit. and might consequently, not be fully captured by simply noting down conclusions, which on the contrary may oversimplify rich information. It seems therefore important to not only record the main answers and conclusions but also gather the richness of information generated in the discussions by, for example, recording and transcribing dialogues and assigning a note-taker for the session. Next to understanding their learning needs, innovators should be able to plan actionable steps towards acquiring the new capabilities needed; our study showed that this is not a straightforward step for participants. A possible approach to facilitate this task is to guide participants to think about contacts in their network or context that possess such capabilities and could help in acquiring them. Identifying a personal learning network, as already pointed out in literature [9], may provide a path for the innovators to develop their learning journey after the reflection activity.

Even when recognising the value of reflection, it still seems challenging for innovation initiatives to introduce it systematically in their everyday practice. Insights from this study have shown the need to shorten a reflective session to fit within the time constraints of the design team workflow or offer a modular version of such activity that adapts to the timely needs and wants of the innovators. Despite the iterations that have been made for the current study, further research is needed to understand how to struc-

ture a reflective activity for it to be embraced as a systematic habit in innovators' practice. Another aspect worth considering is that the research done for this study happened mostly online. On the one hand, this permitted us to investigate how to structure reflections in a digital setting and inform possible ways to enable collaborative reflective activities from remote. On the other hand, further research could investigate how to introduce reflective activities in innovators' practice taking into consideration the everyday physical settings and contexts where that innovation practice is carried out.

6 Conclusions

The present study investigated how a reflective process could be structured to enable urban innovators to autonomously develop their learning trajectories and contribute to a better city. By employing reflective activities with several urban initiatives, we could identify building blocks for a reflective process that could help urban innovators frame new capabilities relevant to learn for the advancement of their practice. It can be concluded that the developed reflective processes showed valuable to urban innovators in unveiling new learning needs, but not necessarily in translating their learning into actionable steps in order to self-sustain their learning journey. Further research can be done to support urban innovators in learning from and with cities, to ultimately exploit them as learning ecosystems.

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