

Your app is no longer welcome in our app store: partner exclusion in software ecosystems

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Abstract— Software ecosystems are sets of interdependent actors that collaboratively interact with a shared market for software and services. In commercial software ecosystems, there is typically a platform that is managed by one central software producing organization. Subsequently, the central organization orchestrates the partners that wish to be part of the software ecosystem. As the relationship between the orchestrator and the partner matures, the platform orchestrator runs into new challenges: how should partners be rewarded in the software ecosystem for their good behavior and punished for any bad behavior, with removal from the ecosystem as its most drastic step? In this work we focus on partner evaluation and exclusion by conducting a set of exploratory theory building interviews with partner managers working at these software platform orchestrators. Our findings indicate that exclusion of partners in practice involves the removal of resources and funding. In the case of technology partners, orchestrators typically remove these resources by restricting access to app stores or technical resources. For business partners, exclusion involves the loss of support from commercial resources or revenue streams derived from contracts.

Keywords— *Software Ecosystems, Partnerships, Partner Exclusion, Software Ecosystem Health, Ecosystem Orchestration*

I. INTRODUCTION

A Software ecosystem (SECO) is defined as a set of actors functioning as a unit and interacting with a shared market for software and services, together with relationships among them [1]. In commercial SECOs, there is typically one central software producing organization that brings together partners around a platform [2]. These partners can be of different types, such as sales partners, consultancy partners, and extension partners, i.e., partners who build additional features that make the platform more valuable to its end users. In this work, we focus on the orchestration of these partner networks and take a closer look at the evaluation and dissolving of a partner relationship. This may lead to the termination of contractual agreements, the removal of an app, built by the extension partner, from an app store [3] or the revoking of API credentials that gave the partner access to the platform. It must be stated that we take the viewpoint of an organization that plays the hub role in a SECO and is typically much larger than its partner organizations. We refer to these organizations as platform SECO orchestrators, or orchestrators for short (in this work).

An organization can be considered a partner in the eyes of an orchestrator when they have enlisted in the partner program of the orchestrator and contributes to the goals and targets of

the orchestrator. The orchestrator tends to interact with its partners in diverse ways, based on the level of their contribution, commitment, and alignment with the orchestrator's goals. The interdependent partnerships within a SECO bring many benefits; partner organizations can extend the value propositions of orchestrators by adding industry specific features, offering unified apps, integration services or commercial offering bridging different orchestrator ecosystems.

In general, partnerships should lead to healthier ecosystems and more platform SECO organizations. The main question in this research concerns the moment when the orchestrator realizes that the relationship is no longer worthwhile and is actually detrimental to the health of the SECO [4]. What reasons are there for an orchestrator to eliminate the relationship? And how should the orchestrator subsequently dissolve the relationship in an elegant manner? The main research question is “how do platform software ecosystem orchestrators let go of partnerships?”

The main academic contribution of this work is that we observe that platform SECO orchestrators take different approaches towards their role in protecting and improving the health of SECOs. We also observe that there is significant unfounded trust [5] and that some orchestrators simply assume that partners will be on their best behavior, or otherwise be removed naturally from the ecosystem. For practitioners in the industry, we provide a structured method that orchestrators can regularly use to ensure that their ecosystem remains healthy.

This research is also relevant to the System-of-Systems (SoS) knowledge domain. SoS and SECO have traditionally been investigated separately, but should be approached complementarily, as stated by Santos, Gonçalves, Nakagawa and Werner, particularly when constituent systems fall under the SoS categories of (iii) acknowledged, where the goals and management of the SoS are recognized but constituent systems retain independent management, and (iv) directed, where there is a central control and specific main purposes but constituent systems maintain operational and managerial independence under that control [6].

In Section II "Literature Review", the following concepts are introduced: partner roles, SECO health (metrics), and monitoring partners. These concepts are centered around partner management in SECOs and play a crucial role in partner selection. In Section III "Research Methodology", we provide an explanation of the research methodology used for collecting our concepts, developing the interview protocol,

conducting the interviews, and analyzing the data collected. A total of eight exploratory semi-structured interviews were conducted with partner managers at eight platform SECO orchestrators. The results from the interviews are analyzed and summarized in Section IV "Interview Results". Our findings suggest that the discussions about partner exclusion provide new insights into the ways in which orchestrators can "prune" their SECOs to maintain their health. Additionally, our results suggest that in many cases, simply reducing attention towards a partner can lead to their eventual departure from the ecosystem. In Section V, we present a partner exclusion model that can be used for further theorization and practical application in the field of software ecosystem orchestrators and their partnerships. This model outlines the partner management process flow, the different steps and decisions that are taken within a "managed partnership". It includes what happens before partners are excluded can benefit practitioners at orchestrator organizations.

In Section VI, we acknowledge the limitations of our research approach, which is based on exploratory semi-structured interviews with partner managers at eight platform SECO orchestrators. While the interviews were a valuable source of knowledge on the sensitive topic of partner exclusion, they also suffered from selection bias and interviewer bias. We also identify areas for future research, such as further studying the factors that organizations use for partner exclusion and exploring alternative options to exclusion. In Section VII we review the options for future research complementing and enriching this study, including the option to take the perspective of partners participating in managed partnerships with an orchestrator.

Finally, in Section VIII, we examine the outcomes of the research question and the question of whether the power wielded by orchestrators is always exercised in a fair manner.

II. LITERATURE STUDY

A. Partner roles

In a commercial platform ecosystem (SECO), three distinct roles are identified by Iansiti and Levien: Keystones, Dominators, and Niche Players [9]. Keystones and Dominators are usually the central hubs of the SECO. Niche Players, also referred to as "Partners" in this context, make up the remainder of the SECO as they are interconnected to the central hub. Niche Players play a minor role in the ecosystem, adding value to it while utilizing the resources provided by the orchestrator.

In a study of the SAP development partner ecosystem [7], partner applications are categorized as standalone or extensions to SAP's core products. The company has four objectives it seeks to achieve through its partnerships: integration, customer access, meeting customer demand, and business expansion. In the work of van Angeren, various roles played by actors in an ecosystem are identified: sales partners, system integrators, and value-added resellers [9].

In a study by Hagel et al., niche players are further categorized into Influencers, Hedgers, and Disciples [10]. An Influencer is a niche player that aligns itself with one shaping strategy early and noticeably. A Hedger develops its products or services to cater to multiple platforms and their orchestrators. A Disciple is fully committed to only one platform.

Van Vulpen creates and presents the SECO Partner Management Framework (SECO-PMF) to map the orchestrator's SECO and all its partners in a common framework [11]. For the creation of this framework, four dimensions are included: the orchestrator, partner management activities, ecosystem enablers, and finally partners with their partner goals. Ecosystem enablers create resources that contribute to other organizations' business goals. He defines three different roles that exist in the group of partnerships; the software vendors who develop software value propositions, the services providers that provide implementation, configuration or consulting services and the infrastructure providers that provide cloud solutions.

In the study by Beelen et al., a partner selection framework called PALERMO is introduced. This framework helps SECO orchestrators in their partner selection process [2]. The framework divides the partner selection process into three approaches: Inbound, Outbound, and Hybrid. Inbound partner selection occurs when a potential partner contacts the orchestrator to request a partnership. Outbound partner selection is the opposite, where the SECO orchestrator approaches potential partners to assess their interest in becoming a partner. Hybrid partner selection is a combination of both Inbound and Outbound. The framework guides the orchestrator through three activities: Identifying potential partners, Verifying potential partners, and Engaging partners.

The partnership meta-model of Belo provides an insightful overview of the partner-orchestrator relationship. This metamodel was made with the goal of being a reference guide for the initiation of specific partnership models for orchestrators initiating SECOs [12], but can also be useful for the evaluation of partnerships. For example: in order to use the meta-model, one would have to articulate which goal satisfaction is enabled through certain actors (e.g. partners).

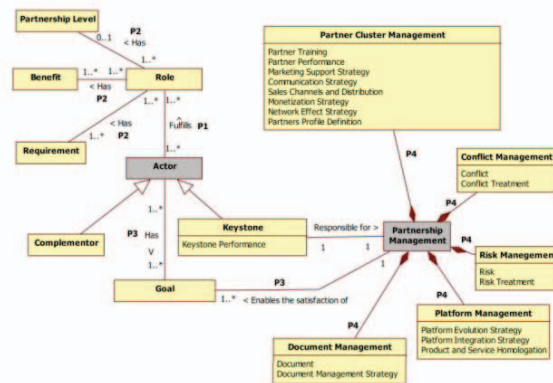


Fig. 1. Partnership meta-model from Belo et al. [12]

B. SECO Health Metrics

Iansiti and Levien identify that, just like an individual species in a biological ecosystem, each member of a SECO ultimately shares the fate of the network as a whole. Therefore, it is in the interest of all participants to not only further their own interests but also promote the overall health of their ecosystem [13].

The pillars of ecosystem health are robustness (the ability to withstand and recover from disruptions), productivity (the efficiency with which the ecosystem converts inputs into outputs), and niche creation (the capacity to generate

significant diversity and new capabilities) [9], [13]. Carvalho also added two additional concepts to these metrics: sustainability and diversity [14].

Building on the health metrics, a correlation between financial health and network health has been observed [4], [13]. Financial health is a metric used to predict the bankruptcy of partners and is determined by factors such as liquidity and total asset growth. A numerical value can be assigned to a partner based on its financial health. Network health is another metric, which encompasses the number of partnerships, market visibility, and the covariance of partner diversity with the market.

According to Den Hartigh et al., Iansiti's health metrics have the strongest correlation with partner health [4]. Specifically, the productivity indicator is highly associated with partner health. Unproductive organizations struggle to survive, which negatively impacts the health of the SECO. Den Hartigh argues that robustness in both the short-term and long-term is crucial for partner health and that this metric should reflect these aspects. They consider operational measures such as liquidity and bankruptcy models (discussed in the previous subsection) are appropriate indicators of partner health. Other indicators of partner health include total assets, total revenue, liquidity, solvency, total asset growth, and working capital [4].

III. RESEARCH METHOD

We take the following research questions as the starting point for this research:

- RQ1: How do platform software ecosystem orchestrators let go of partnerships?
 - RQ1.1: How does an orchestrator monitor partner value?
 - RQ1.2: What criteria must be met in order for a partner to be excluded?
 - RQ1.3: How are partners excluded from a software ecosystem?

We conducted an interview study with eight partner program managers at platform SECO orchestrators. Seven out of the eight SECOs were ecosystems with one clear keystone player providing a software platform leveraged by partner organizations to build their solutions or provide their services. The participants were selected using convenience sampling and were identified through the personal networks of the authors. Two of the authors had experience in the software business, which allowed us to recruit partner program managers from some of the largest software organizations in the world. Our main criteria for inclusion were job titles that included the words 'ecosystem', 'partner manager', or 'alliance manager'.

Before conducting the interviews, an interview protocol was developed [17]. This ensured consistency in the interviews while still allowing for in-depth exploration of specific topics. The interviews were of an exploratory nature [18]. Each interview lasted approximately 45 minutes. Table I provides an overview of the interviewees. The interview protocol consisted of eleven questions focused on partner

monitoring, evaluation, and exclusion, each addressing a specific research question. This can be seen in Figure 2.

Before each interview, the interviewee was provided with an informed consent form that had to be signed and approved before the start of the interview¹.

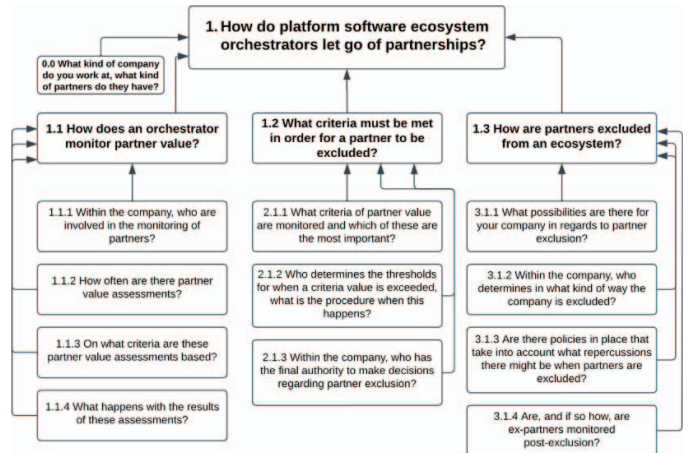


Fig. 2. The interview protocol consists of three parts, and matches the three sub questions of the main research question.

The research questions were answered through semi-structured exploratory interviews. This format was selected as it allowed the interviewees to provide more in-depth insights into their personal experiences, and it gave the interviewer the flexibility to follow up on these experiences while still adhering to the general interview outline.

The Interviews were audio-recorded and transcribed verbatim. They were conducted by multiple authors, typically three, to maintain the focus of the discussion. Each interviewee kept notes, and these were compared after the interview. Additionally, interview recordings were stored for 48 hours in case of any discrepancies between the interviewees. To gather data from the interviews, the questions and answers on these questions were listed in a spreadsheet and organized in categories and themes. Then, thematic analysis was executed. This means finding patterns in the answers. For example a clear patterns in the types of partners identified, as mentioned in several interviews like participant seven: “there are three main types, technology partnerships that other technologies integrate with, affiliate partnerships, basically anybody who signs up to our program and then service partnerships, which are those companies that deliver services to our customers. and that will be anything between on-boarding, training to our product, integrating with other products”. Therefore, we could make the distinction.

IV. INTERVIEW RESULTS

The conducted interview results were organized according to the research questions in a spreadsheet and are subsequently discussed here along the research sub question. The structure of the interviews and of this Section follow the structure presented in Figure 2. In this section, “P” stands for “Participant”.

¹ The consent form is available here for reference: https://www.dropbox.com/s/lhsmk9iijvfur3g/Informed_Consent_SECO.pdf?dl=1

TABLE I.

INTERVIEWEES: EXP. INDICATES THE YEARS OF EXPERIENCE. NO. EMP. INDICATES THE NUMBER OF EMPLOYEES AT THE ORCHESTRATOR.

	Sector	No. Emp.	Function/role	Exp.
P1	HR	10,000+	SECO Program manager	5
P2	Public IT	4,300+	Partner manager	2
P3	E-commerce	1,800+	Lead Ecosystem Bizz Dev	4
P4	Partner IT	180,000+	Partner sales strategy	20
P5	Business IT	3,300+	Partner Alliance Manager	24
P6	Business IT	2,000+	Director Ecosystems	15
P7	Communication	90	Senior Partner Manager	5
P8	Business IT	100,000+	SAP Ecosystem Director	30

A. Types of partners

Distinctions can be made regarding the service areas and roles of partners, as well as the criteria used to evaluate their value. Participant 1 (P1) only highlights one type of partner, software partners who can utilize APIs. Participant 2 (P2) provides a more detailed distinction of partners into three categories: partners that enhance existing software (which can be hardware or software suppliers), partners that specialize in a specific domain (such as white-label external software), and global players that bring new technology. Participant 7 (P7) categorizes their partners as affiliate partners, technology partners, and service partners, which is similar to Participant 6's (P6) categorization of Independent Software Vendors (ISVs), System Integrators (SIs), and strategic partners. Participant 3 (P3) also differentiates three types of partners: sales partners, app developers, and delivery partners. This categorization is more tailored to e-commerce organizations, which is why it differs from the others.

In the interviews, the interviewees usually described their partner programs and how their partner levels operate. For instance, Participant 3 (P3) has a bronze, silver, or gold level system in their partner program that determines a partner's rights and obligations. Participant 5 (P5), a medium-sized orchestrator, ranks their partners differently, ranging from E to A, with A being the highest rank. Small orchestrators, such as Participant 4 (P4) and 7 (P7), typically do not have a public ranking system, but keep internal lists. In general, larger, more established orchestrators have well-organized partner programs with different levels and even different types, depending on the value a partner brings. For example, a partner can be both a gold reseller and a bronze development partner. Smaller orchestrators, on the other hand, do not have a formal partner model, but do assign internal statuses to their partners. The level of dependence on a potential partner can impact the power dynamic in a future partnership, and it is important to consider this carefully when entering into a partnership.

B. Partner Value Monitoring

1. *Who is responsible for monitoring?* Typically, orchestrators establish a monitoring department that includes partner managers and/or account managers who are responsible for overseeing various partners in various regions. For instance, the company of P2 assigns a partner manager to each sector and a business owner to oversee partners related to their area of responsibility. On the other hand, the company

of P1 has a partner success manager who mainly handles the monitoring efforts. In certain cases, the monitoring process also involves of the product marketing manager, product owner, and other market analysis personnel. Furthermore, account managers are participating in the monitoring of important partners to maintain strong relationships with these partners.

2. *How often are partners monitored?* This varies based on the sector of the orchestration group. For instance, HR platform company of P1, as well as business platforms of P5 and P8, monitor partners on an annual basis. The company of P8 states that this is because at the beginning of each year, they need to determine the amount of money to allocate for partner fees, decide whether to continue the partnership, and notify the partner if they decide to end the partnership. On the other hand, Public IT and E-commerce platforms, such as the companies of P2 and P3, perform more frequent assessments, including quarterly, monthly, and even weekly assessments. For example, they monitor the performance of partners weekly based on KPIs and assess ecosystem partners every quarter. The monitoring is conducted through various methods, including data from the integrated systems (P1), in-house built software (P3, P4, and P8), or a regular spreadsheet (P2) without any specific monitoring software.

3. *What criteria are used in assessments?* The company of P1 has a defined structure that includes assessments of both business and technical partner behavior. On the technical side, many organizations monitor if the partner is using the software provided properly. On the business side, the companies of P5, P6, P7, and P8 are assessing factors such as revenue, customer growth, and technology. The latter, technology, is frequently mentioned and even one of the partner managers stated that if three partners provide a similar feature in their app store, they are likely to decline the fourth with a competing feature. P3 provided an example of assessment criteria for a reseller partner. The criteria include: 1) 93% of all ordered items should be delivered on time (occasionally, this percentage may be lower due to increased workload); 2) no more than 2% of orders should be canceled; 3) the partner should be available by phone for 90% of call attempts during working days between 9:00 AM and 5:00 PM; 4) customer questions should be answered within 24 hours.

In summary, the primary criteria used by orchestrators center around revenue, growth (including both an increase in revenue per customer and in the number of customers), and the technological value they add to the equation.

4. *What happens with the results of the assessments?* It became apparent from the interviews that companies allocate more resources and attention to partners that deliver greater value compared to the wider group of partners. There are generally agreed-upon business plans that include targets and deadlines. If these targets are not met, partner managers typically escalate the issue to senior management, and a plan for resolution is established. Partner managers also provide support and advice to partners on how to achieve higher levels within the partnership program and share customer feedback when received. For example, if a partner built an integration but received negative customer feedback, the partner manager may reach out to the partner to discuss how to improve the integration, similar to managing a relationship with employees.

C. What criteria must be met in order to be excluded?

1. *Who determines threshold and procedure?* The criteria for partner exclusion and the process of determining it varies among organizations. Some organizations like the company of P1 view it as a complex and nuanced evaluation, where they do not necessarily have the authority to judge a partner. On the other hand, the company of P3 has a clear set of terms and conditions agreed upon by both parties that determine the threshold for exclusion. If these terms are not met, it serves as a clear reason for the termination of the partnership.

During the interviews, several reasons for excluding a partner were identified. Firstly, if technical partners consistently fail to improve the customer experience and provide low-quality service, the orchestrator may consider terminating the partnership. Secondly, if a partner misuses the API or platform and does not exhibit the required technical skills after repeated efforts to resolve technical issues, they will be removed from the program. Thirdly, if a partner does not perform well in terms of business, such as failing to attract enough new customers, they may lose their preferred position and eventually leave the partner program. Lastly, if a partner's offerings conflict with the strategic goals of the platform orchestrator, it may be removed. For example, P6 mentioned a case where a partner submitted an app to their app store with the purpose of extracting and transferring data from their ERP platform to a competitor's platform, which was deemed unacceptable and was subsequently removed.

2. *Who Has the final authority?* The final authority to decide the continuation or termination of a partnership varies among the interviewees. For P1, P4, and P7, the partner director or account manager holds the ultimate decision-making power. Meanwhile, P2 and P5 indicate that the CEO has the final say, being the most powerful person within the organization. However, in most cases, there is not a single person with the final authority. The individuals responsible for this process usually hold positions such as partner account manager, partner director, or partner manager.

According to P8, the decision-making process is a collaborative effort that involves various stakeholders, including the partner and the partner manager. The partner manager is responsible for providing all the necessary information and insights to the stakeholders, and then a discussion is held to determine whether the partnership should be continued or discontinued. Ultimately, it is a group decision where everyone gives their approval or disapproval.

D. How are partners excluded?

1. *What possibilities are there?* According to P1, if a partner has significant potential and fills a gap in the orchestrator's business, it can be acquired, especially if the partner is a small organization. P2 concurs that acquiring a partner can be a strategy to retain any valuable knowledge or features within the ecosystem.

To summarize, the methods of excluding partners depend on the partner model in place. If the model involves an app store, exclusion results in the removal of the partner's applications. For models that involve payment to the partner based on contractual agreements, the partner manager has the authority to decline contract renewal. Some models have various tiers, and partners may lose benefits and eventually leave the program if they no longer meet the criteria. In some instances, the partner's contribution to the ecosystem may become insignificant, resulting in them being overlooked.

2. *Who determines the exclusion method?* The method of exclusion is determined by a few individuals within the company. According to P3 and P7, account managers or partner managers are primarily responsible for determining the method and preserving a positive relationship with the partner. However, the final decision may be made by the CEO, as in the case of P2, after consultation with partner managers or business managers. It is generally a collaborative effort between multiple individuals and functions, as stated by P4. Additionally, the exclusion method is discussed with the partner themselves.

3. *Are the policies for repercussions?* According to P3, there are policies in place for the consequences of non-compliance by partners. These policies are outlined in the terms and conditions that the partner must agree to. If the partner fails to sign these terms and conditions, they will not be allowed to participate in the program. If a partner violates the contract, the issue will be handled by the legal department of the orchestrator.

Additionally, some orchestrators do not have policies for consequences. According to P5, all partners have the same contract and there are no consequences specified in the contract. The only outcome of a partner not delivering the expected value would be a reduction in their rank and fewer opportunities for collaboration with the orchestrator.

P2 stated that there are consequences for customers when a partner does not perform well. In such cases, efforts will be made to assist the customer in the best way possible. Additionally, if the partnership is terminated, the contract will still remain in effect until its end date to ensure that ongoing projects are completed and customer satisfaction is maintained.

4. *Are former partners monitored?* There are two types of former partners: those who continue to use parts of the orchestrator's solutions and those who have a shared customer. For the latter, they may be monitored to observe their development and gather information to learn from. According to P7, "it's a partner's life cycle," and in some cases, the door remains open for re-establishing the partnership and treating them as new partners. P1 and P3 stated that because people in the market know each other, the orchestrator still becomes aware of what the former partners are doing, but they are not actively monitored.

V. ANALYSIS

So, RQ1: "How does an orchestrator monitor partner value?" Orchestrators customize the categorization of partners to meet their specific needs and requirements. The classification is based on the offerings and distinctive features of a partner's solutions or products, and the value they bring to the partnership. This is evident in literature and case material, where various types of partners are encountered. Although orchestrators may categorize their partners differently, it is useful and acceptable for the purposes of this research to generalize these into two categories: technology partners and business partners.

Technology partners build apps using the development tools provided by the orchestrator or use APIs to extend the orchestrator's platform. Business partners are valuable to orchestrators as they integrate and resell the orchestrator's solutions, potentially adding industry knowledge or consulting services. The differentiation between the two

partnership types is based on their unique business models. Technology partners typically receive income streams from intellectual property, whereas business partners generate revenue through reselling, integration, deployment, and other services.

Regarding RQ2 covering the criteria that must be met for a partner to be excluded and RQ3 which questions how partners can be excluded, partners' perspectives must be considered. The value technical partners attain from the orchestrator is grounded in the technical enablement facilitated by the platform's tools and solutions to enhance the quality and value proposition of the total offering. On the other hand, the value business partners receive from the partnership is based on their capacity to utilize or expand the orchestrator's value proposition and potentially be part of their sales motions.

When excluding partners, the categorization must be considered. Technology partners primarily benefit from technical enablement, which provides them with the tools necessary to build their solutions. Exclusion due to failing to meet technical requirements means that they would lose access to development tools and resources, with the added disadvantage of losing their position in marketplaces or joint customer offerings.

For conclusions about business partners, it is important to note that the interviews revealed that orchestrators actively seek out partners who participate in their partner program to build relationships with. These "managed partners" are a small subset of partners who participate in the partner programs and receive more resources and attention from orchestrators. To receive these benefits, there are customized partnership plans in place based on the partner's role, with specific targets that must be met. Exclusion for these partners means losing their established position and the benefits outlined in their partner agreement. There are partners that fall into both categories, those that offer sophisticated business-to-business applications, such as ERP and CRM, and have strong integration with the orchestration platform. These partners are often provided with access to technical resources and business support through joint business planning.

	No technical governance	Strong technical governance
No commercial governance	Natural exclusion through negligence	Technical exclusion from the platform
Strong commercial governance	Commercial exclusion from the platform	Complete exclusion from the platform

Figure 3. A classical four by four illustrating the different exclusion tools an orchestrating organization has to exclude partners from its ecosystem.

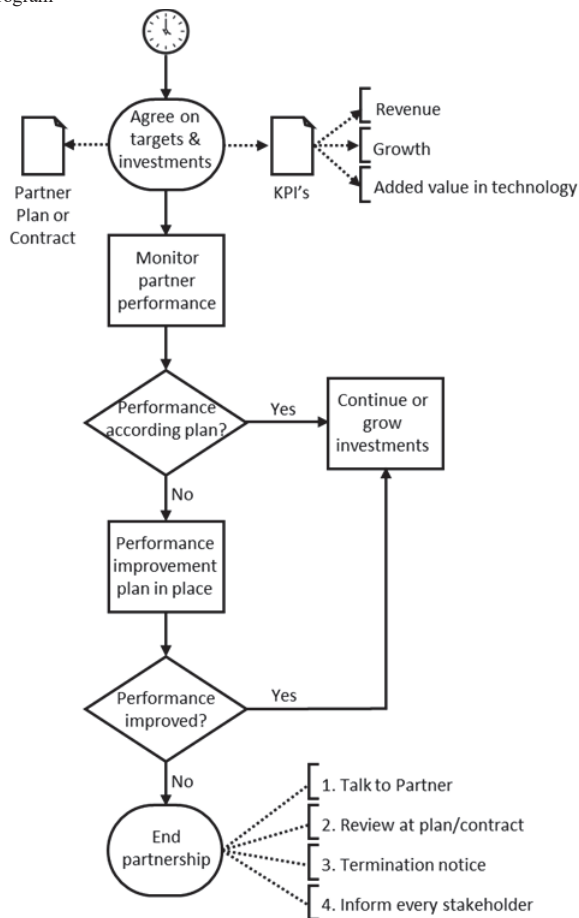
We derive the two-by-two matrix in Figure 3 to define four governance modes. The first governance mode assumes that partners are not detrimental to the SECO health when left alone and can simply be ignored until they leave. The second governance mode is where the orchestrator applies strong technical governance and is able to remove someone's listing in an app store, revoke API keys, and other technical access modes to the software platform. The third governance mode focuses on commercial governance, i.e., where an orchestrator for instance reduces the amount of commercial resources. In the last mode an active effort is made to remove all technical

support and refrain from any commercial support to force a partner out of ecosystem.

Regarding the monitoring of partners, a few points can be made. The allocation of resources, either in terms of manpower or systems, for monitoring partners appears to be proportional to the significance of the partners to an organization's business goals, the size of the partner ecosystem, and the size of the organization itself. There appears to be no standard for the intensity of monitoring, but most organizations engage in monitoring either monthly, quarterly, or yearly. This monitoring is leveraged in other activities, such as reviewing the partner's goals for the upcoming month or determining whether to renew a contract at the end of the year.

A. Partner exclusion model

Fig. 4. Partner evaluation and exclusion process for partners in a partner program



A framework concerning partner evaluation and exclusion has been promised. A process model for the evaluation and exclusion of business partners in a partner program has been developed based on the findings. The reason for using this particular type of partner as the foundation for the model is because the technology partners exhibit less consistent patterns. The results indicate that the evaluation and exclusion process for business partners in partner programs is consistent across different partners. Figure 4 illustrates the process. It begins with the creation of a partner plan or contract, where objectives such as revenue targets, customer base growth, and value-added offerings through technology are negotiated in

exchange for resources and support from the orchestrator. Next, the partner's performance is regularly monitored and discussed in business review meetings. If the performance is on track, the agreed resources and investments will remain available. In some cases, such as with other underperforming partners, investments may even increase along with increased targets.

If a partner is not meeting the performance targets, a performance improvement plan will be put into place. This plan can take various forms, including short-term "must-do" targets and long-term development plans. If the partner improves, the partnership will continue as agreed. If not, steps will be taken to end the partnership, which may involve several discussions and extend over several months, depending on factors such as the reasons for missing targets, the improvement plan in place, and the partner's commitment. The termination of a partnership may be the result from an active discussion with the senior leadership of the partner in cases such as competitive situations, or it may occur silently through mutual agreement when the collaboration ends.

VI. DISCUSSION

Although our research scope was narrowed down and made as specific as possible, some questions still emerged during the creation of this paper. One such question was whether the qualitative research was comprehensive enough. With eight interviews conducted, featuring various orchestrators, each with their distinct SECOs, much has been learned. However, it is not yet possible to generalize the results and conclusions of this research to open-source organizations. Further research and interviews would be required for this purpose.

Another consideration is related to some of the assumptions made prior to the research. Specifically, the assumption that orchestrators had a formal process for excluding partners from their SECO. During the interviews, it became evident that only a small sub-set of partners participating in a SECO are actively managed by orchestrators and can be excluded and lose the benefits that they receive. Secondly it became clear that different partner types are excluded in different ways.

The final limitation of this research is the applicability of the results and established 'exclusion criteria'. As stated in one of our interviews, when choosing partners, particularly when options are limited, there may not be the ability to enforce demands. Regardless of the degree to which a partner aligns with an orchestrator's requirements, if they provide a crucial API, are the preferred partner of crucial clients, or have a dominant position in a particular market or industry, it is not practical to implement the 'exclusion criteria'.

VII. FUTURE RESEARCH

The first potential avenue for future research relates to the last point mentioned, specifically the various types of partners and their connection to SECO health and partner exclusion. The field of research on SECOs is gradually expanding, and there is already a substantial amount of literature available on partner types [7–10, 12]. We attempted to draw conclusions regarding partner types and exclusion criteria, but there are still several partner systems and types that have not been studied. While this piece or research was relatively qualitative, a more quantitative research, covering a large amount of

partners at for example a national level like done by Den Hartigh [4] could provide additional insights.

Another future research possibility is to explore social aspects of SECOs. Based on the discussion in our interviews, it seems that partnerships can sometimes be akin to balance on top of a tightrope, impressions can be important, and with personal benefit often a priority on both sides, the social landscape within SECOs could be complex and difficult to navigate.

In our study, we have underrepresented the perspectives and objectives of the partners involved in the partnerships. In future research, we plan to examine the behaviors and strategies of successful partners in partnership programs. It may be worthwhile to investigate whether a partner's exclusive dependence on the platform (single homing) of the orchestrator is detrimental. A partner that can participate in multiple ecosystems (multi-homing) may be better equipped to handle challenges from either SECO.

VIII. CONCLUSION

This paper examined the process by which orchestrators exclude partners or terminate partnerships. The aim was to identify common patterns or procedures for this process. The main research question was "What is the process for excluding partners in determining the end of a partnership?" We learned through this study that orchestrators tend to select only a small number of specific partners that are part of the partner program, to dedicate resources to and make investments in. Only partners that possess the skills and the profile required to contribute to the business goals of orchestrators in combination with the willingness to commit to certain targets, are selected for managed partnerships. This in turn, makes it possible to be excluded. This is an important learning from this study while that means that most partners in a partner program cannot be excluded, as long as they meet the program requirements.

The first sub-question was: "How does an orchestrator monitor the value of a partner?" Based on the literature study and series of interviews we concluded that it is useful, and acceptable in the context of this study, to categorize partners into two groups: technology partners and business partners. Technology partners focus on developing solutions that utilize the development tools provided by the orchestrator and can offer apps through app stores or add value through integration with the orchestrator's platform offerings. Their value can be monitored by tracking the success of apps on the marketplace and customer feedback received. The impact of technology partners, like ERP or CRM providers, that have built integrations with the offerings of the orchestrator can be measured through the success of these solutions on the orchestrator's platform. The value of business partners is monitored through a business review process that involves regular business review meetings. During these meetings, the agreed goals and targets are evaluated.

The second sub-question was: "What criteria must be met in order for a partner to be excluded?" For the technology partners, low quality of the apps or solutions provided, and negative customer feedback were identified as criteria why partners were to be excluded. Apps aimed at helping competitors were also reasons to be excluded from the app store. Missing agreed upon targets and unwillingness or lack of competency to correct this situation, were the main reasons to exclude business partners, according to our research.

“How are partners excluded from an ecosystem?” was the third sub-question. This research finds that exclusion in practice involves the withdrawal of resources and funding. Having access to support, the contact with valuable resources or revenue streams are the motivations for partner organizations to enter the partner program of an orchestrator. Denial to these resources is what orchestrators can do to exclude partners from partner management. This can happen, for both types of partners, by actively ending the relationship because, for example, competitive issues or by silently starting to ignore a partner. And everything in between in this spectrum.

This research examined the maintenance aspect of managing a software ecosystem and the role that an orchestrator can play in maintaining its productivity and health. We found that the resources and investments made by the orchestrator are how it can exclude partners. During this research it also became evident that the actions taken by orchestrators to exclude partners are almost without exception aimed at achieving their (strategic) objectives. And exclusion of a partner from an app store can have a significant impact on the partner's business. While interesting work has been done about power struggles within SECOs [19], this raises questions about the power dynamic between orchestrators and partners, and the ethics of such imbalances of power. Future research should investigate the ethical considerations surrounding a platform's control over access to its market, including the determination of costs and participants.

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