

HT2019

IS1 - Enterprise Computing and ERP Systems

Final Project Report

Group 17

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The following paper is a final presentation of what our project is. This project is the presentation of a BPMN of FestivalBar, our company: starting from the goal model to visualize the purposes of the company, a VDML has been developed to show the exploitation of the stakeholders and the economic agents related to the company. We also produced the value process graph that helped us to find all the possible processes that create value within FestivalBar, this graph was also useful to design the REAs, and some of the EPCs that will deepen into the processes. Lastly, we managed to find some possible KPIs and the related capabilities that the company has and the IT infrastructure behind them.

1. Introduction

We put ourselves in the shoes of a festival-organizing company's management at the beginning of its life. We firstly decided that our company will focus on organizing big, public, and musical events. The company focuses on customer satisfaction, in being eco-friendly, and, of course, maximizing its profits. The company will deal not only with festivals participants but with third-party companies that will provide services during the music event, the external collaboration (outsourcing) is done to reduce the centrality of the company, it is also done to lower the overall risk that our company has to take, and last but not least to take advantage of the experience, because, as a new company, our main defect it's the lack of experience. Third-party companies will provide food, beverage, security staff, medical staff, cleaning staff, equipment, and other things that are going to be discussed later in the goal model paragraph.

Our company focuses on the IT behind a festival and to make all the agents communicate together in order to maximize the satisfaction of the participants. The IT structure can be divided in five sub-structures, as shown in figure 1 (MEAN 4), the first sub-structure is to deploy two types apps: one for every organized event; the second sub-structure it's the website with which third-party companies can communicate with us to participate at one of the events; another sub-structure is dedicated to deploy a forum of the festival where the participants can relate to each-other and evaluate structures, and the festival organization overall; the fourth sub-structure is committed to the customer service both for the participants and the third-party companies; the fifth and last sub-structure is dedicated to create and maintain the social-media pages by the social-media management.

2. Goal model

The company puts in the first place the customer satisfaction, both for participants and the companies that are going to work within the festival. The main goal is to organize an amazing festival for everyone involved in the process; to do so, we found four sub-goals:

1. Profits shall be maximized – this is necessary to create value for all the involved stakeholders.
2. Third-party companies shall be satisfied – this goal is necessary to tempt the companies to cooperate with us for other events
3. Clients shall be satisfied – this goal is necessary to provide a unique experience for the festival participants
4. The experience shall be eco-friendly – this is necessary to sensitize the participants and the involved companies and, also, to reduce pollution.

These four sub-goals are split in six more detailed sub-sub-goals:

- | | |
|---|---|
| 1. Develop and sponsor the festival event | 4. Provide secure and comfortable festival |
| 2. Establish good relationships for future collaborations | 5. Provide a unique experience |
| 3. Sell many vouchers and merchandise | 6. Customer care service shall be efficient |

All these goals are supported by different means, objectives, and influencers (both internal and external) as can be seen in figure 1:

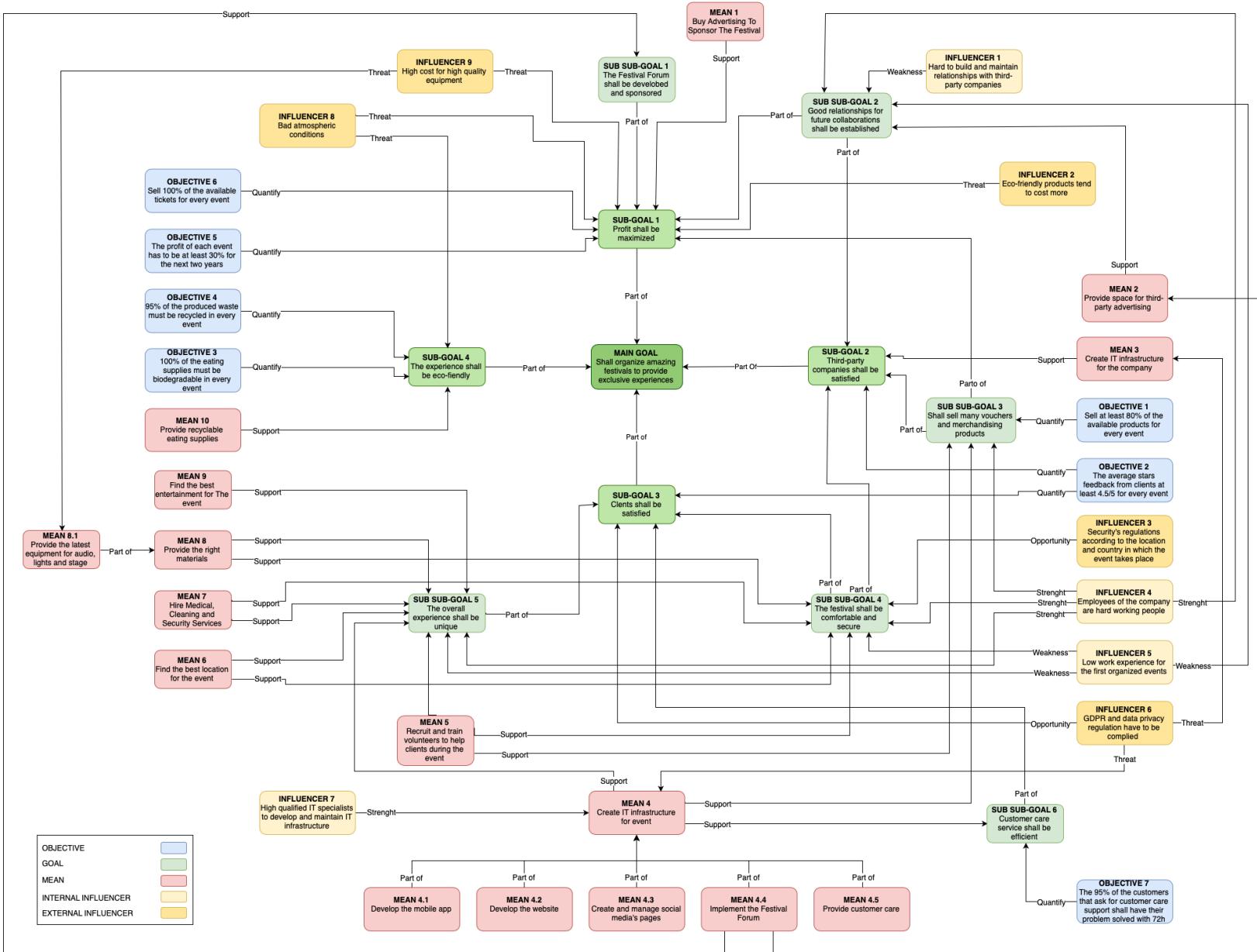


Figure 1 - Goal Model

3. VDML model

The VDML model illustrated below explains how the stakeholders and other economic agents are related to our network, how they are related to each other, and how they benefit from participating. The necessity of producing such structure is to show what the stakeholders will bring to our company and how FestivalBar is committed to them. It's useful to understand which division of the company that has to deal with the stakeholders.

The leading stakeholders are listed as follows:

- Festival company
- Public domain and host service provider
- Location provider
- Artist
- Equipment provider
- Entertainment agency
- Advertisement company
- Third- parties' shop and vendors
- Third- parties' restaurants and food stall
- Festival clients
- Merchandise provider
- Insurance company
- Bank
- Volunteers
- Site maintenance (Workers, security, medical & cleaning services)
- Printing company

The following list, instead, shows all the value proposition of the VDML and what they describe:

- Money VP
 - From entrance tickets
 - From vouchers
 - From merchandise
- Tickets and vouchers VP
 - 1 ticket for each festival's attendant
 - 1 voucher for the 50% of the festival's attendants
- Host and domain VP
 - 1 public domain
 - 1 host service
- Location VP
 - Access to electricity
 - Access to water
 - No architectural barriers
 - Mobile WC
- Musical entertainment VP
 - 1 or more performances during the event
 - Backstage meeting with some lucky fans
- Equipment VP
 - Audio system
 - Lighting system
 - Stage
 - Workers
- Entertainment VP
 - Opening show
 - Dancers
 - Lighting tricks
 - Video screening during performances
- Advertisement VP
 - Sponsor the event on social media
 - Paper marketing
- Physical space VP
 - Spot in the location
 - Space to paper
- Virtual space VP
 - Space in the mobile app o in the website for third-party companies' adv
- Meals VP
 - Food
 - Kid's meals
 - Snacks
 - Sweets
 - Beverages
 - Alcohol beverages
- Festival access and VP
 - Entrance to the event
- Merchandise products VP
 - Clothes
 - Gadgets
- Products VP
 - CDs
 - Clothes
 - Gadgets
- Insurance VP
 - Insurance for risky events
- Loaned money VP
 - Amount needed to organize the event
- Work force VP
 - Check in
 - Security
 - Medical
 - Cleaning
 - Vendors
 - IT specialists
- Work experience VP

The VDML model of our company is shown in figure 2:

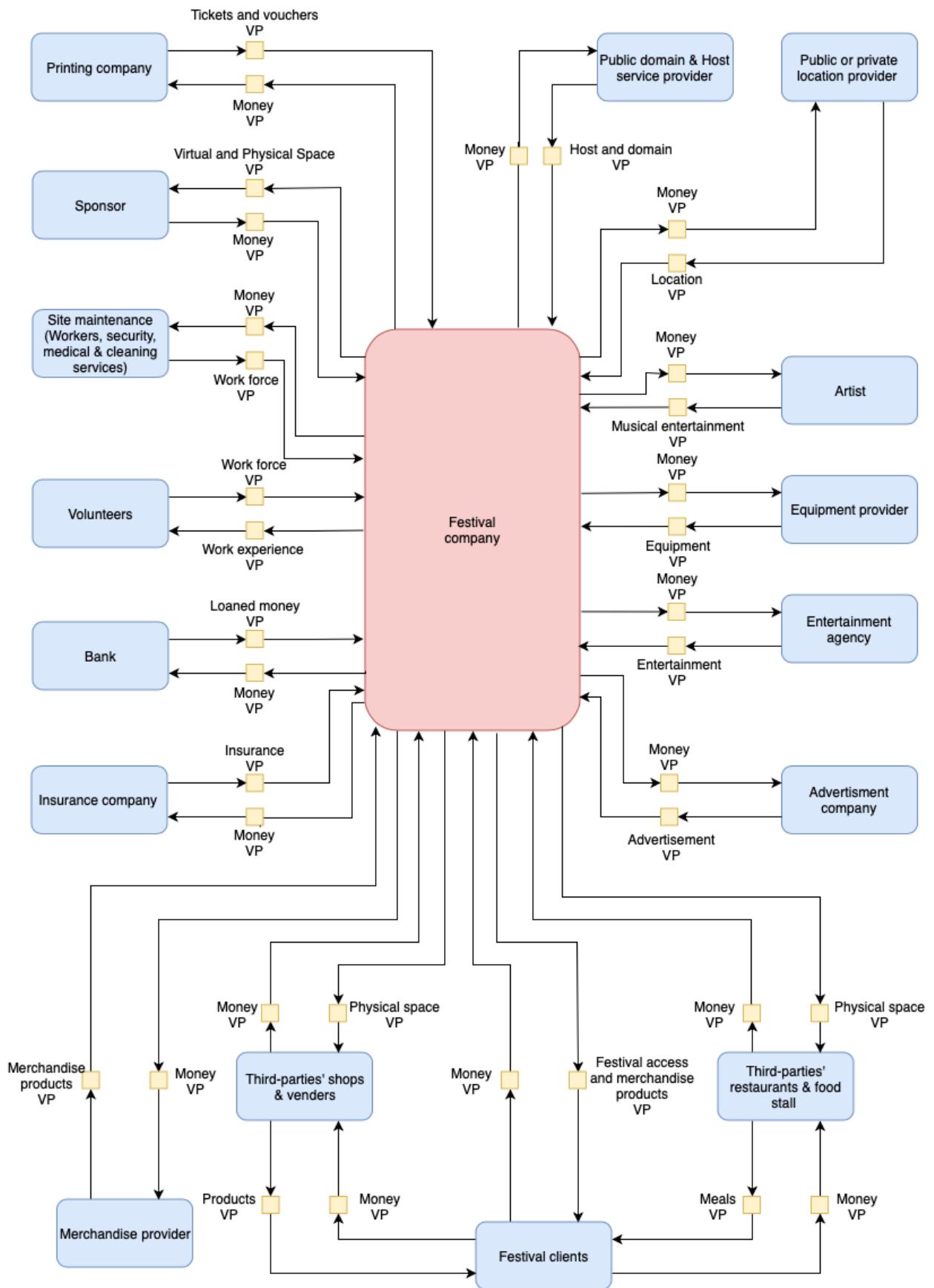


Figure 2 - VDML model

4. Value Process Graph

This graph highlights all the main processes in which the company is involved. We found 16 main processes that are necessary for the mentioned goals in “The goal model” paragraph. It’s necessary to mention that as a new-rising company, we’ll need some financial resources; to do so, it’s necessary to contract a loan with a bank. The processes are listed clockwise according to figure 3:

1. Request for financial resources
2. Buy advertisement
3. Create an IT infrastructure
4. Hire medical, security, and cleaning services
5. Buy insurance
6. Hire workers
7. Rent location
8. Deal with third party companies
9. Provide sponsorships and advertisement
10. Buy/rent location
11. Produce tickets and vouchers
- 12a. Buy merchandise for the event
- 12b. Sell merchandise for the event
13. Recruit volunteers
14. Acquire entertainment
15. Hire artists

All these processes and the involved resources are presented in the figure below:

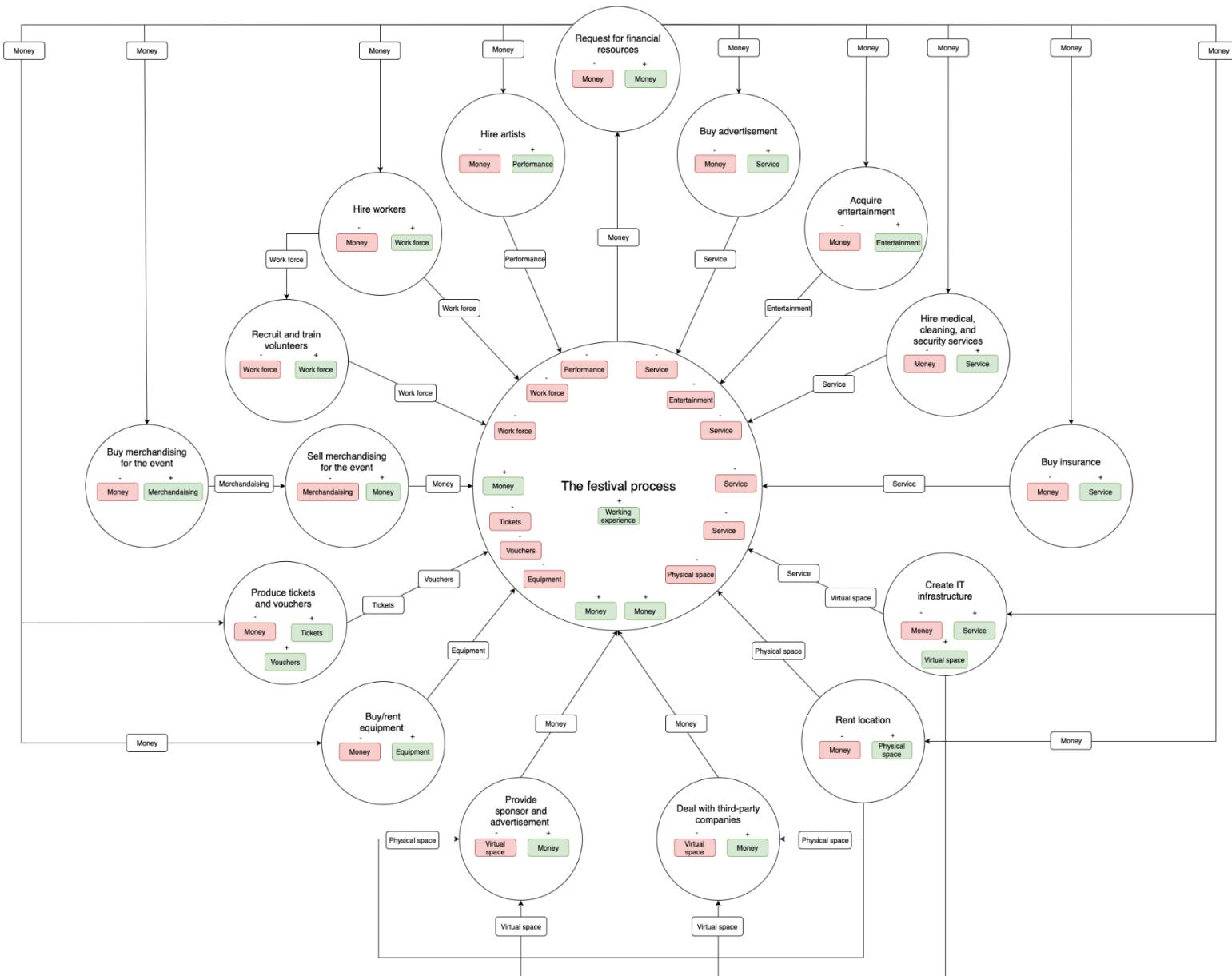


Figure 3 – Value Process Graph model

5. REA Diagrams

To evaluate all the processes singularly, REA diagrams are provided to analyze better every resource, events, and agents that are involved. The REA graphs are very similar to each other because our company often uses an outsourcing strategy, as said in the introduction, to reduce risks and to take advantage of other companies' experience in their competence sector. The REA graphs are very useful because, by exploiting the visualization effect, they represent really well the involved resources and the benefits that our company will get by undertaking a given process. REA graphs are divided into two categories: exchange and conversion, the first category deals with processes that concern an exchange between two economic agents and the goods that are interchanged (money, food, equipment...). Most of the REA that are presented in the figures below belong to the exchange category for the reason that we mentioned above. The conversion category has no agents in it because the resources are only internal. Also, the agents do not appear because the process is done internally; this type of REA expresses a transformation that the company is doing. We were able to find two processes that belong to this typology; the first one is the IT infrastructure creation process because all resources needed are internally provided as it can be seen from figure 19; the second one is shown in figure 20 is the overall festival activity: all the provided resources from the other events are treated like to be already produced directly from our company, by doing this is possible to have a glimpse of the festival REA.

The provided REAs are the following:

1. Request for financial resources (Figure 4)
2. Buy advertisement (Figure 5)
3. Acquire entertainment (Figure 6)
4. Hire medical, cleaning, and security services (Figure 7)
5. Buy insurance (Figure 8)
6. Rent location (Figure 9)
7. Deal with third party-companies (Figure 10)
8. Provide advertisement (Figure 11)
9. Buy/rent equipment (Figure 12)
10. Produce tickets and voucher (Figure 13)
11. Buy merchandise (Figure 14)
12. Sell merchandise (Figure 15)
13. Recruit and train volunteers (Figure 16)
14. Hire workers (Figure 17)
15. Hire Artist (Figure 18)
16. Create IT infrastructure (Figure 19)
17. Create festival (Figure 20)

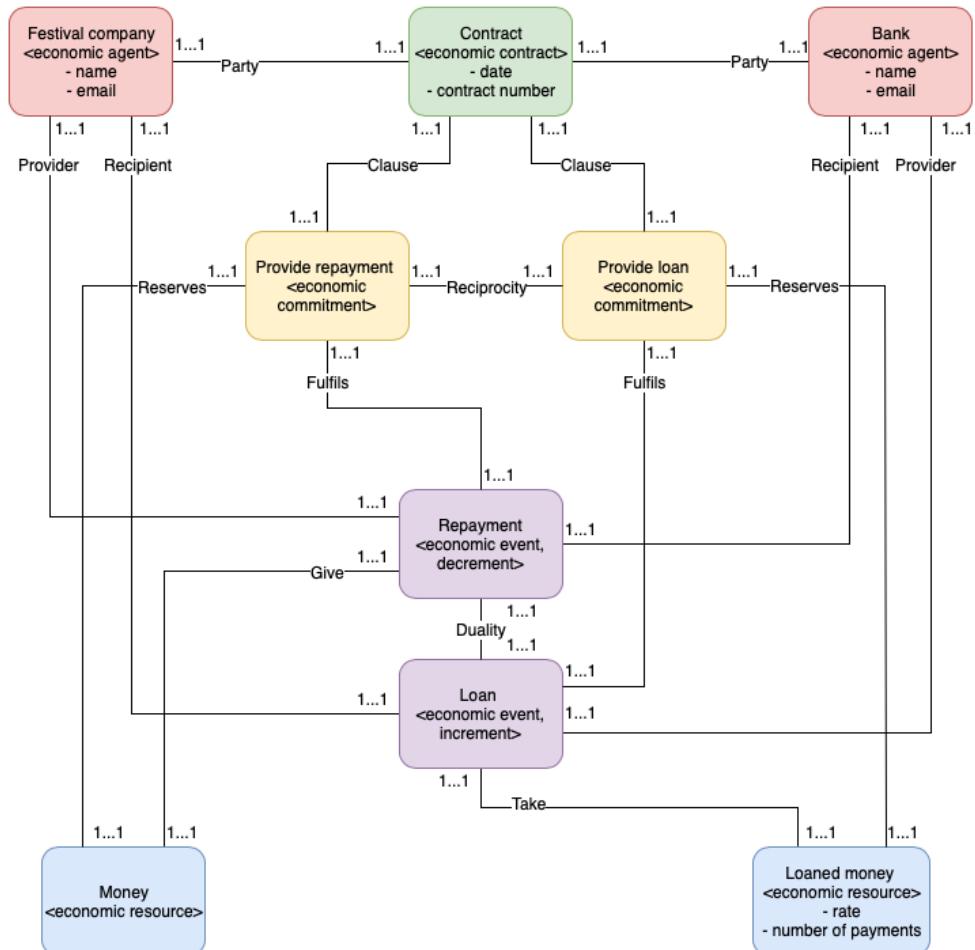


Figure 4 - Request for financial resources

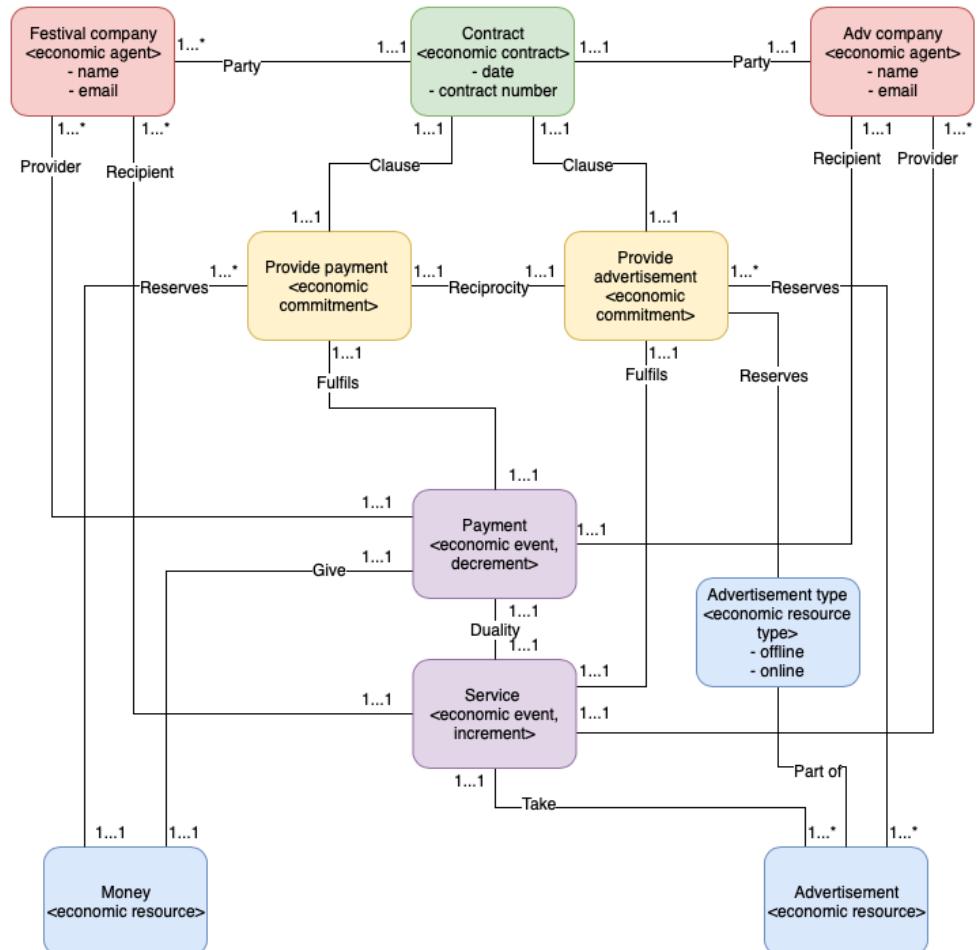


Figure 5 - Buy advertisement

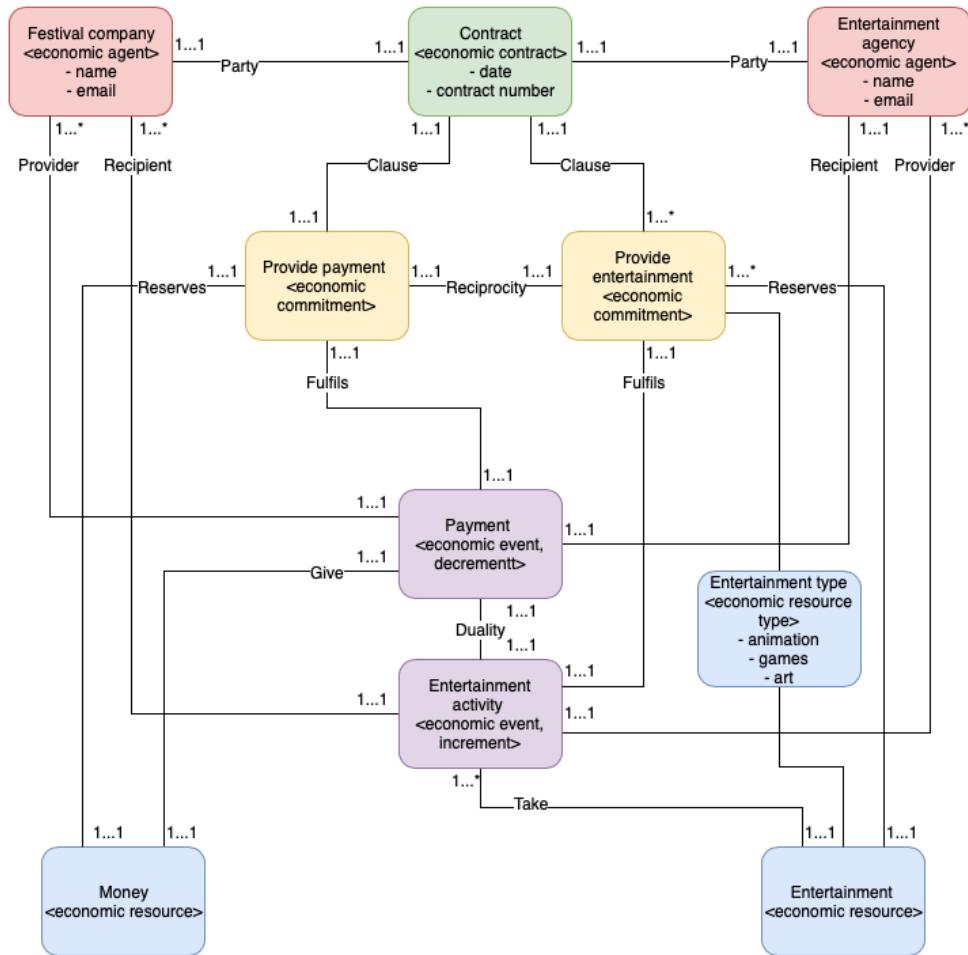


Figure 6 – Acquire entertainment

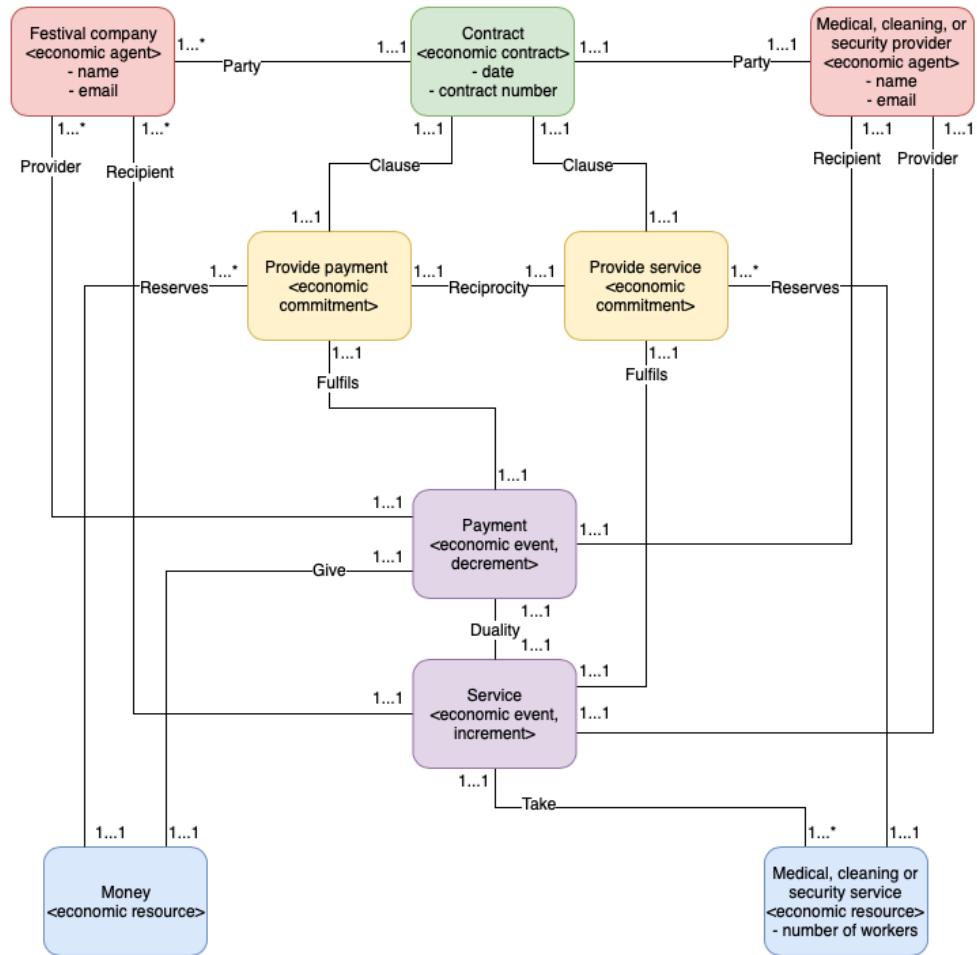


Figure 7 - Hire medical, cleaning, and security services

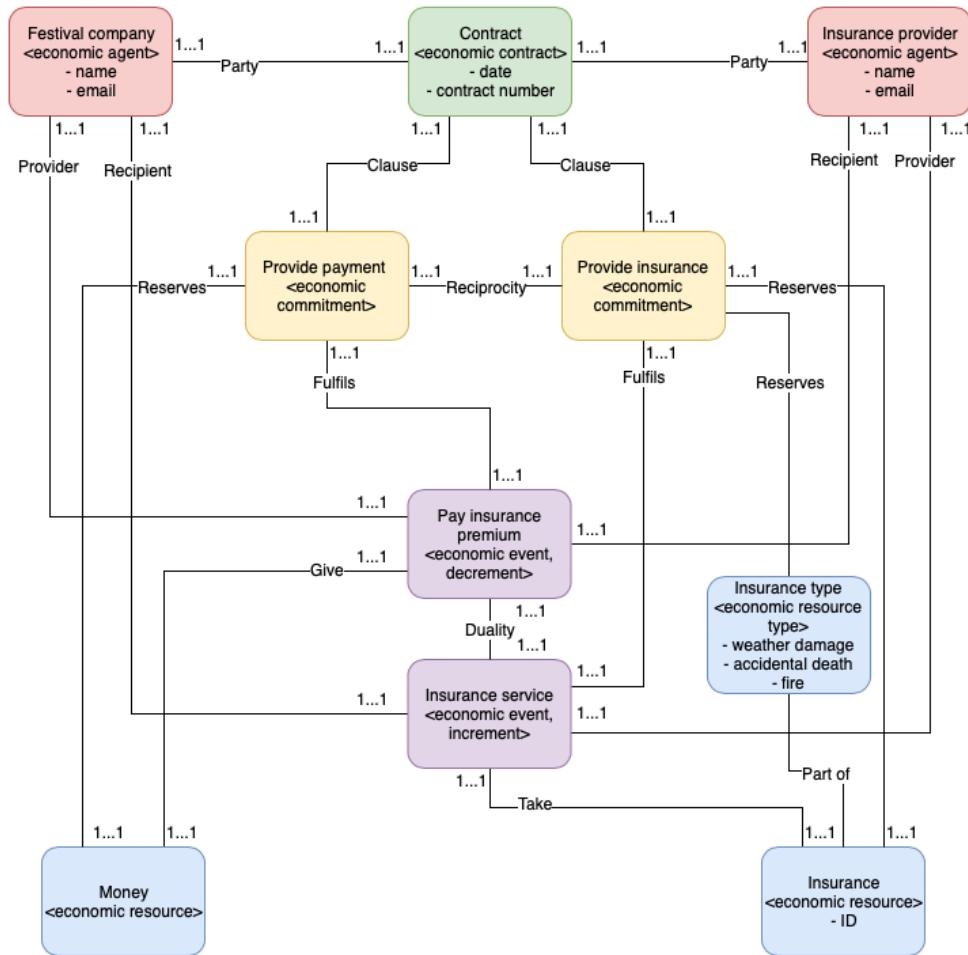


Figure 8 – Buy Insurance

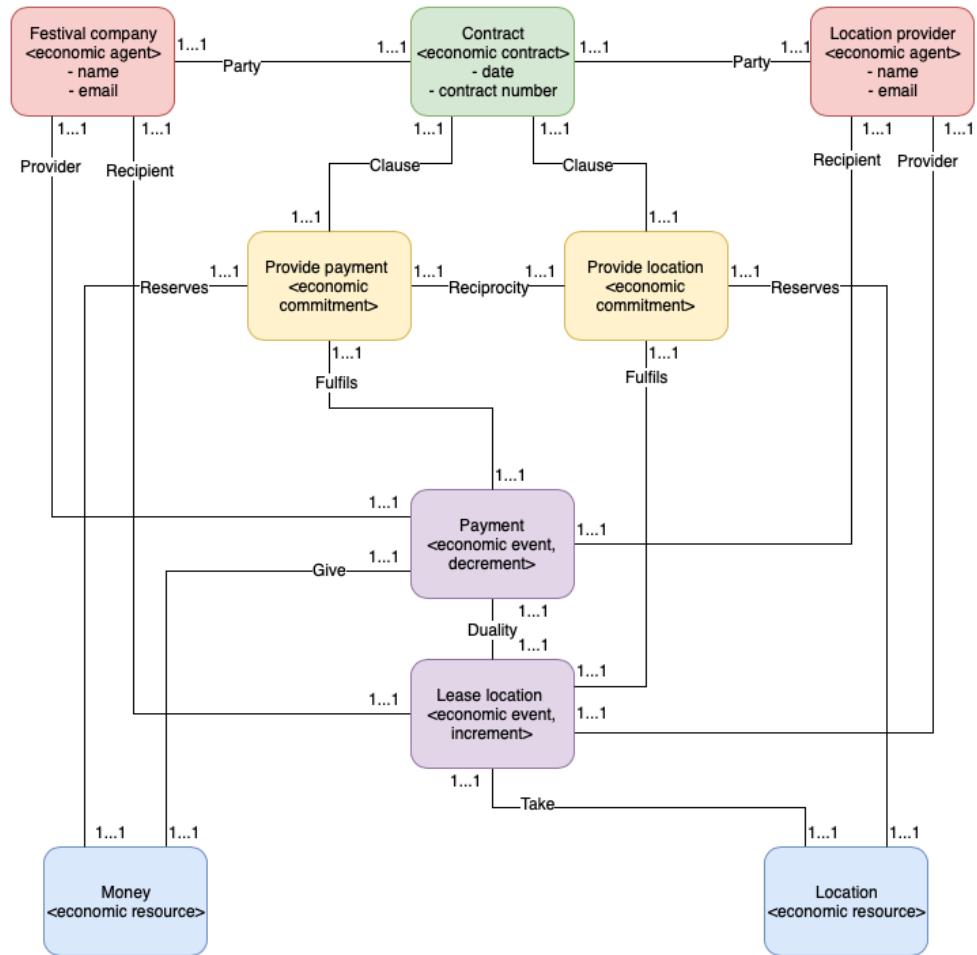


Figure 9 – Rent Location

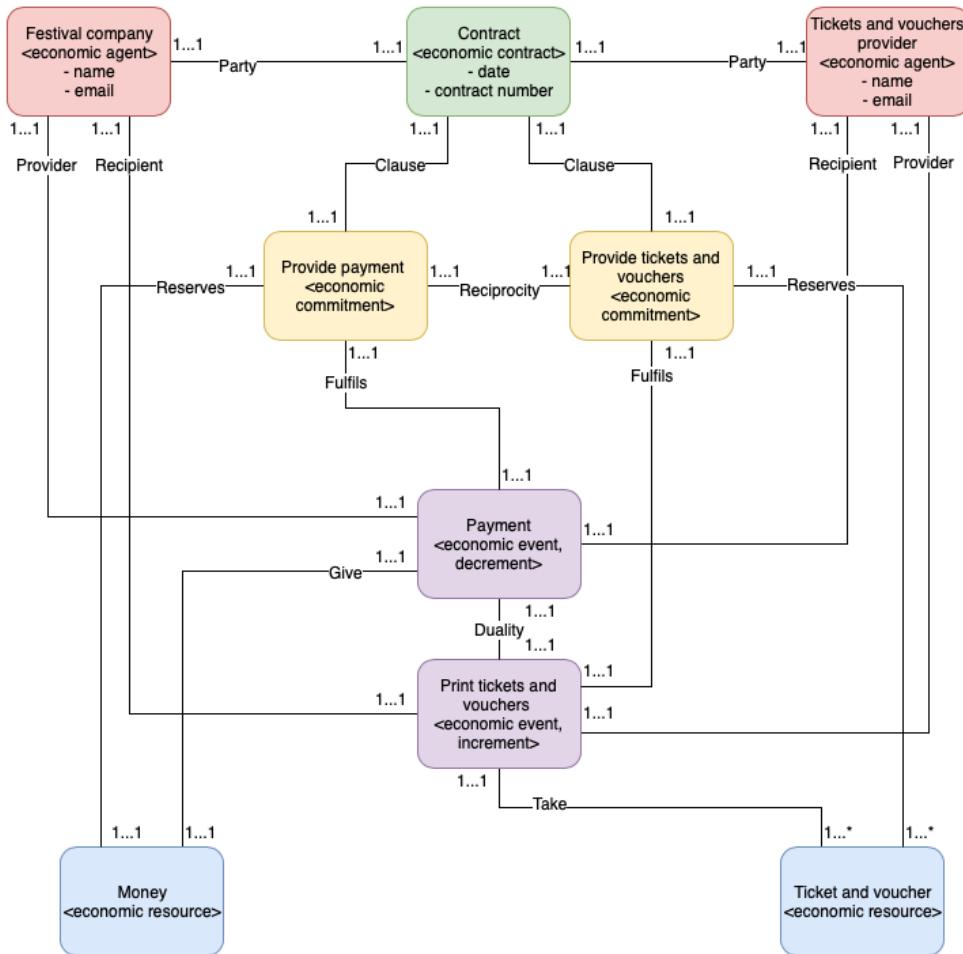


Figure 10 - Deal with third-party companies

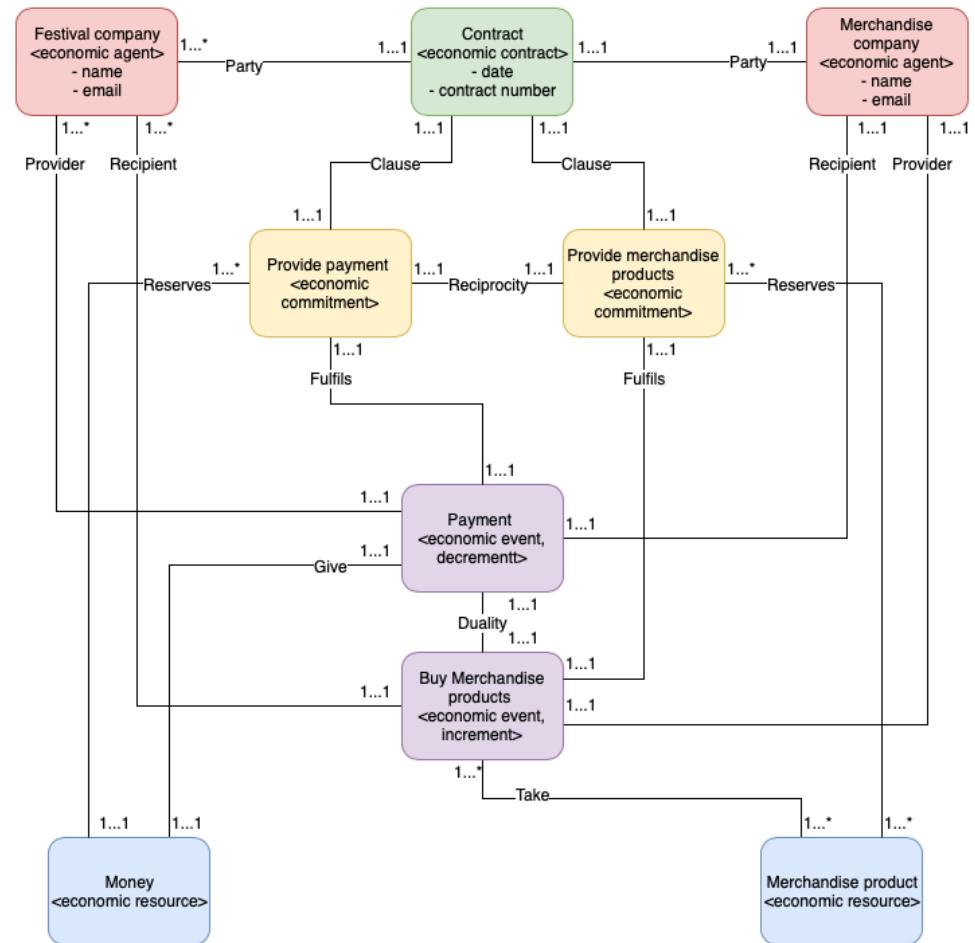


Figure 11 - Provide advertisement

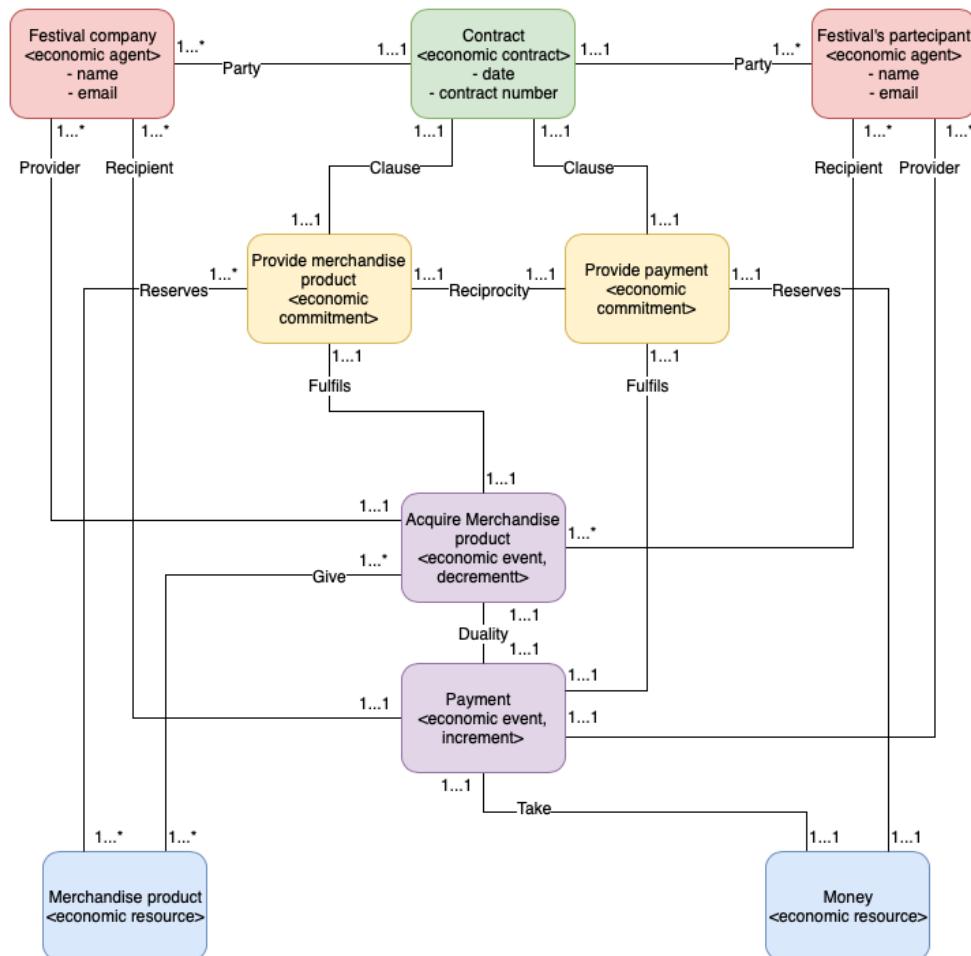


Figure 12 - Buy/rent equipment

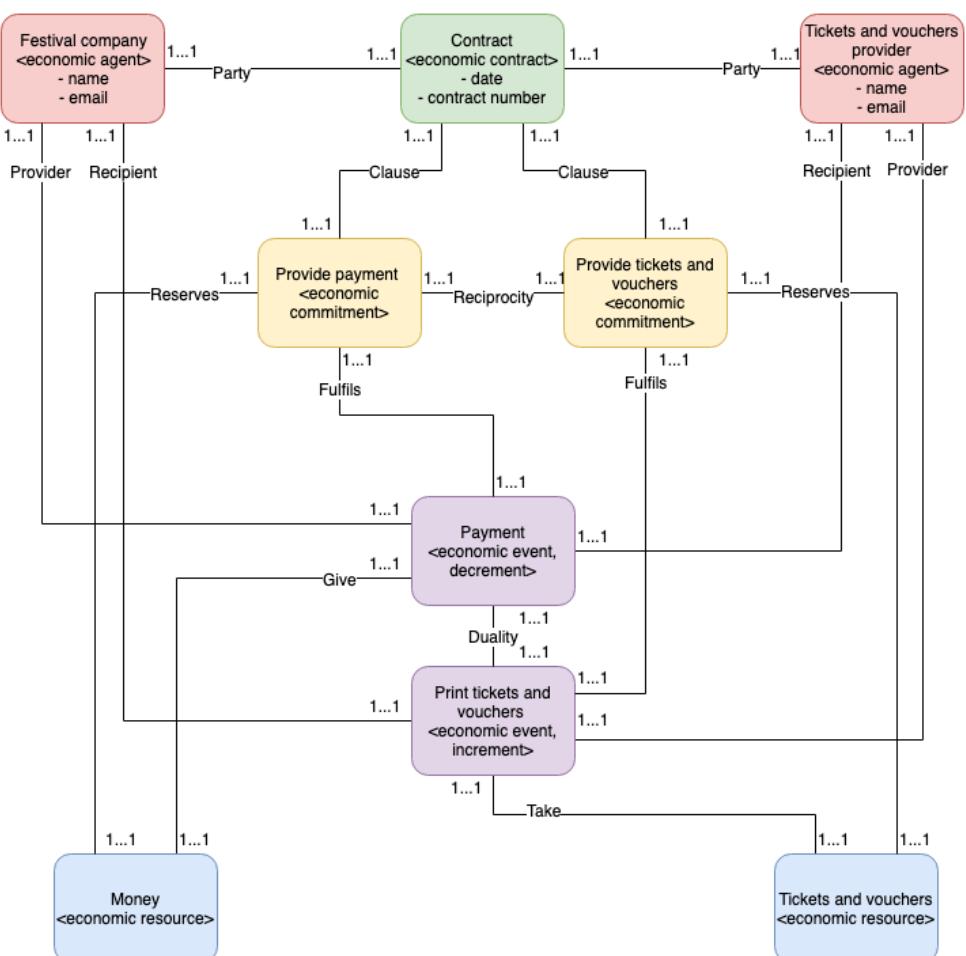


Figure 13 – Produce tickets and vouchers

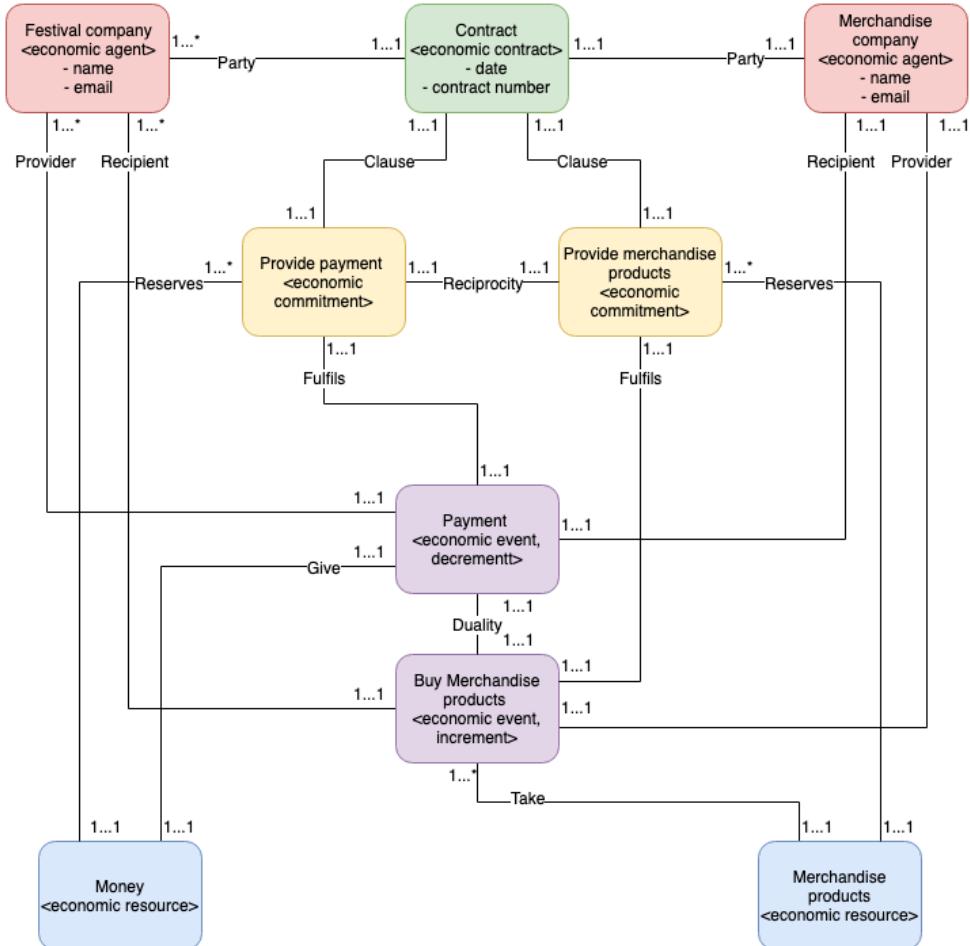


Figure 14 – Buy merchandise

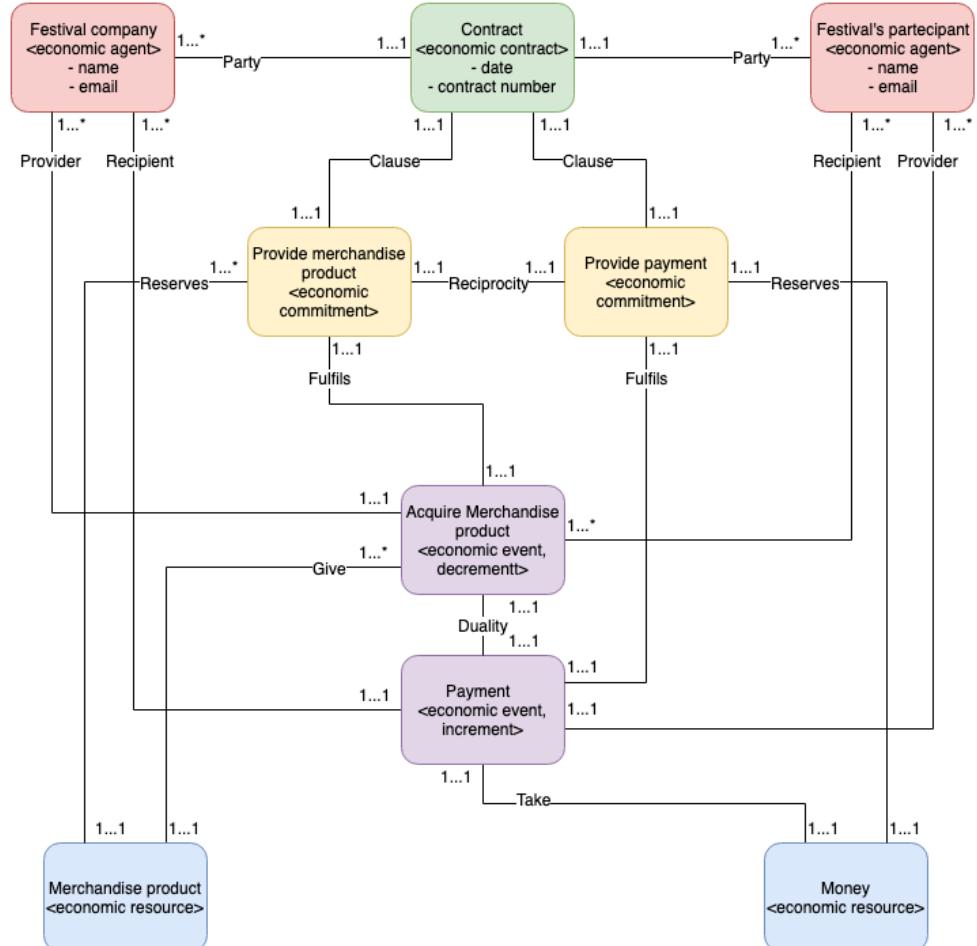


Figure 15 – Sell merchandise

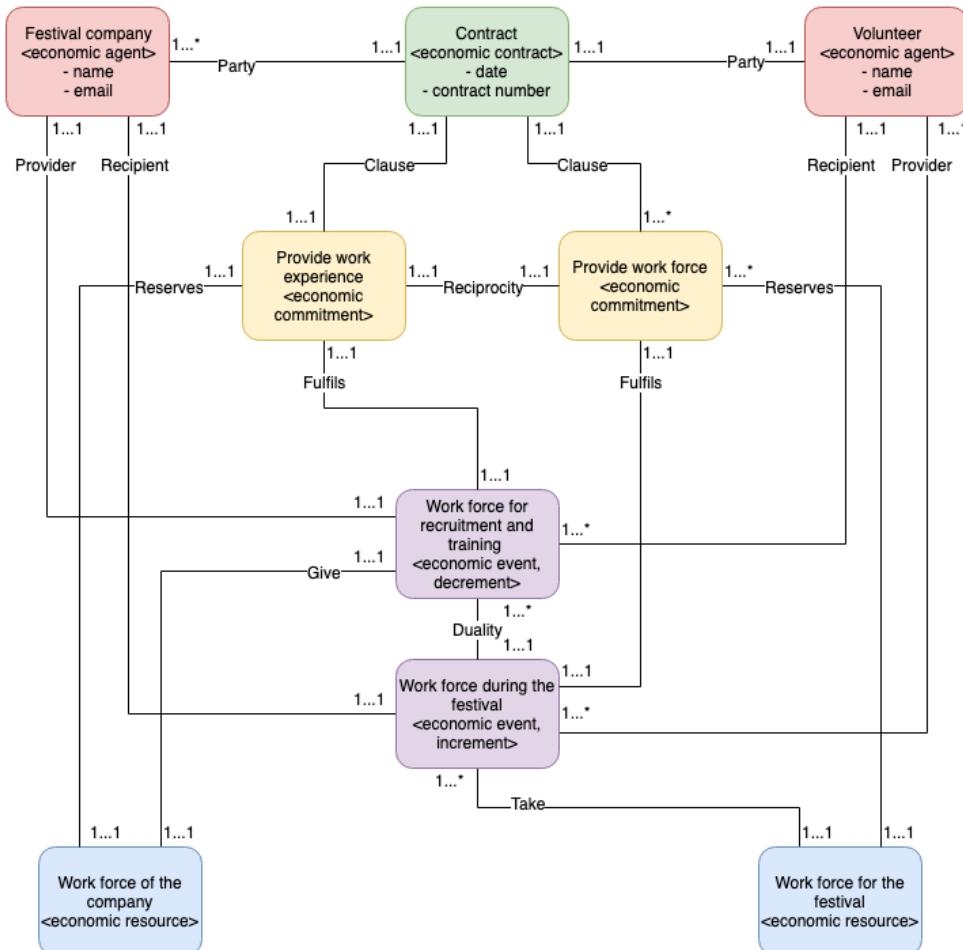


Figure 16 - Recruit and train volunteers

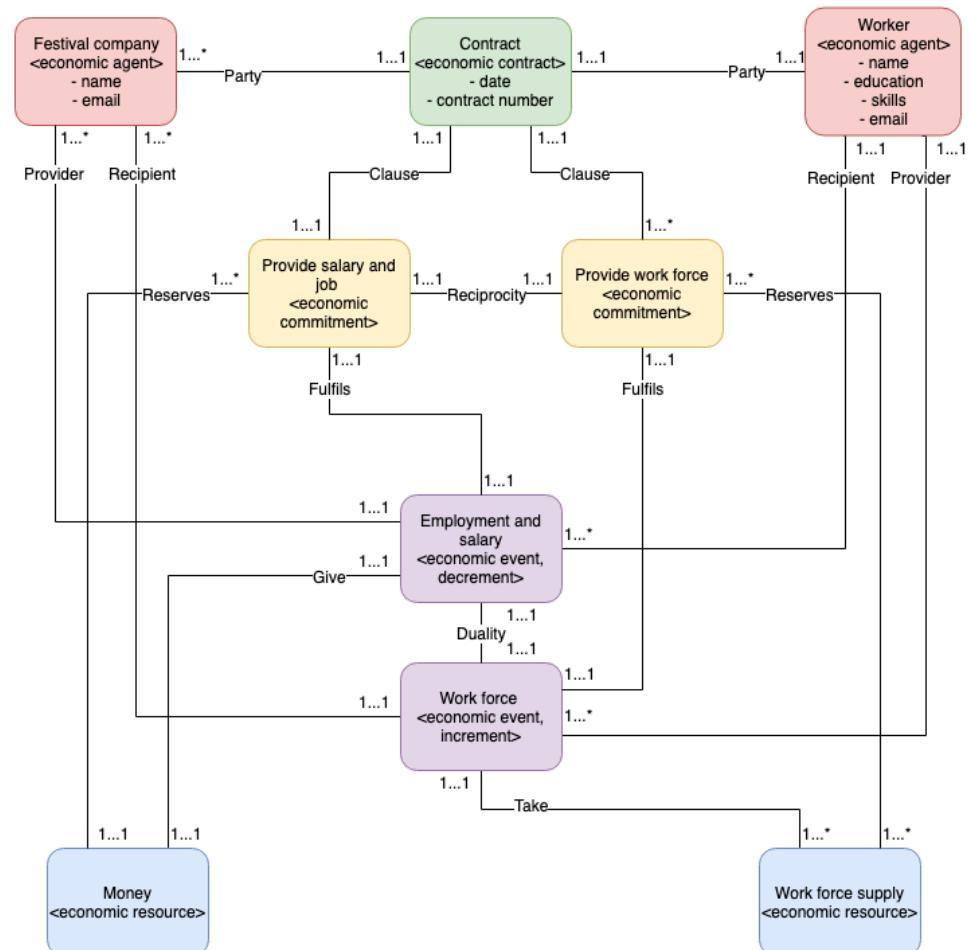


Figure 17 – Hire workers

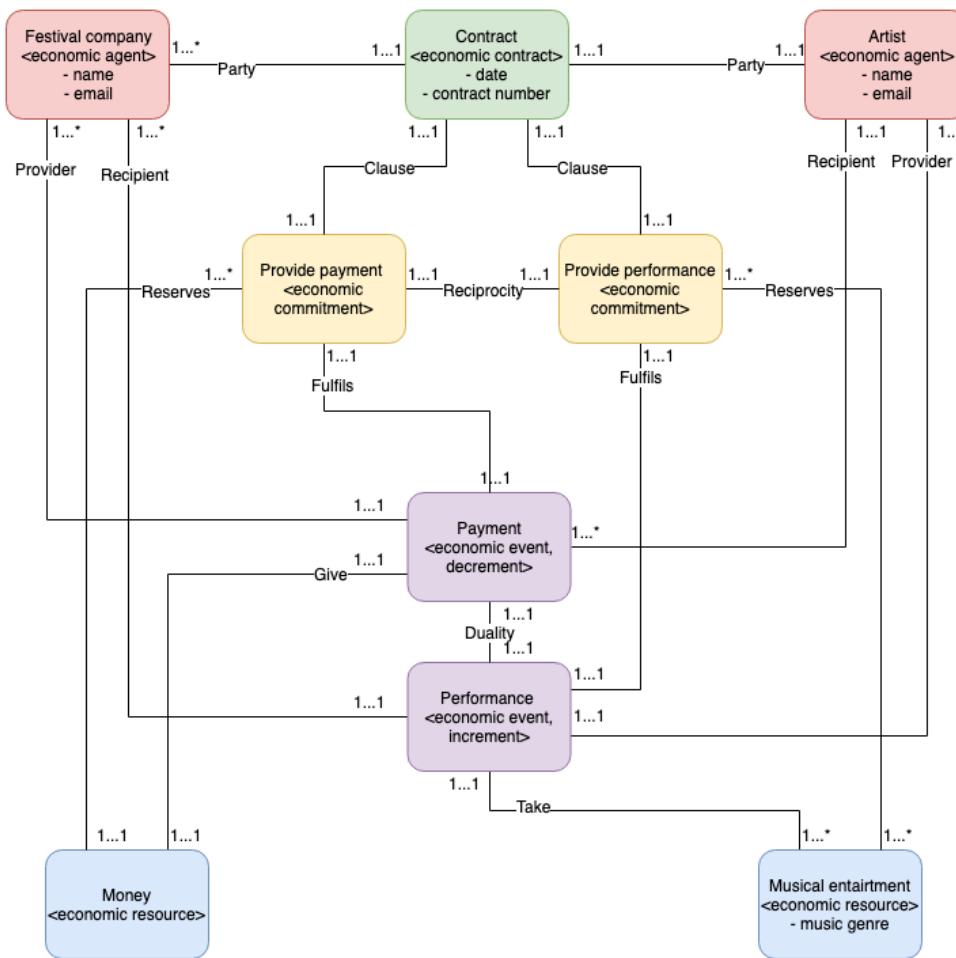


Figure 18 – Hire artist

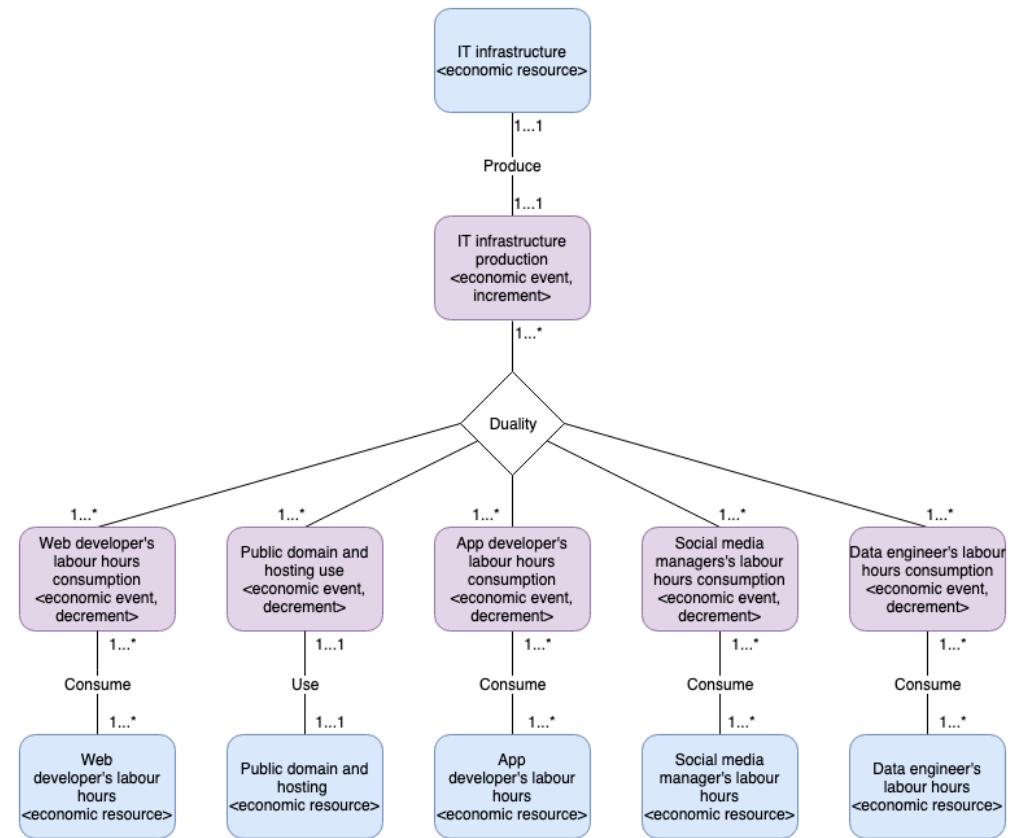


Figure 19 – Create IT infrastructure

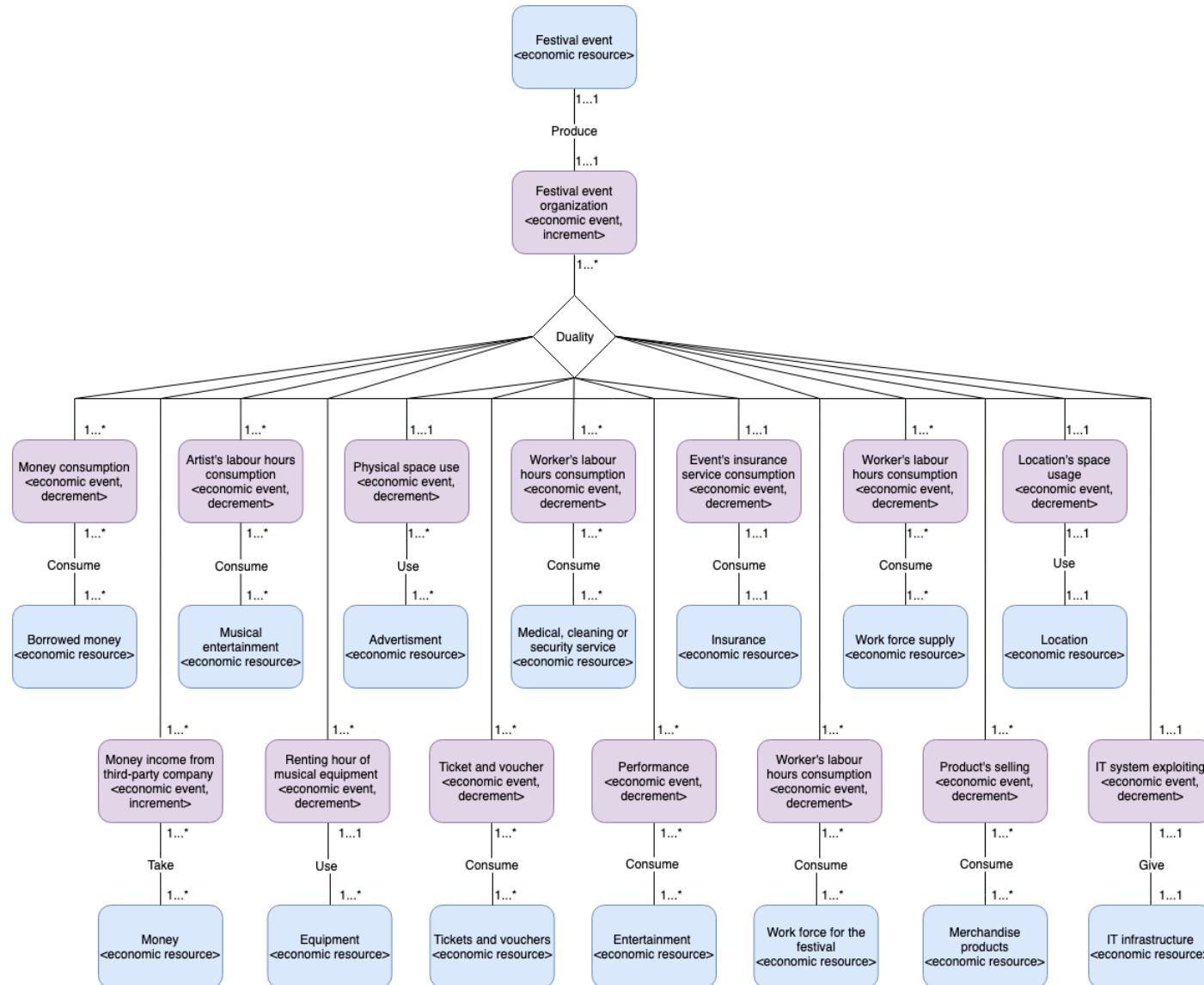


Figure 20 – Create festival

6. EPC Diagrams

Breaking through different processes our company found different processes that might be explicative when the outsourcing procedure is applied, thus the EPC graph will mainly be for the IT Unit in the company. The processes that will be explicative for all the others are: Create IT infrastructure, Hire artist, Buy/rent equipment and Buy and sell merchandise.

There are two more processes that exploit the EPC diagram concerning the IT department: (1) the registration process and (2) the customer service application process. But it's worldwide to mention that the processes that can be seen under the EPC diagram are many and not every possible process is considered:

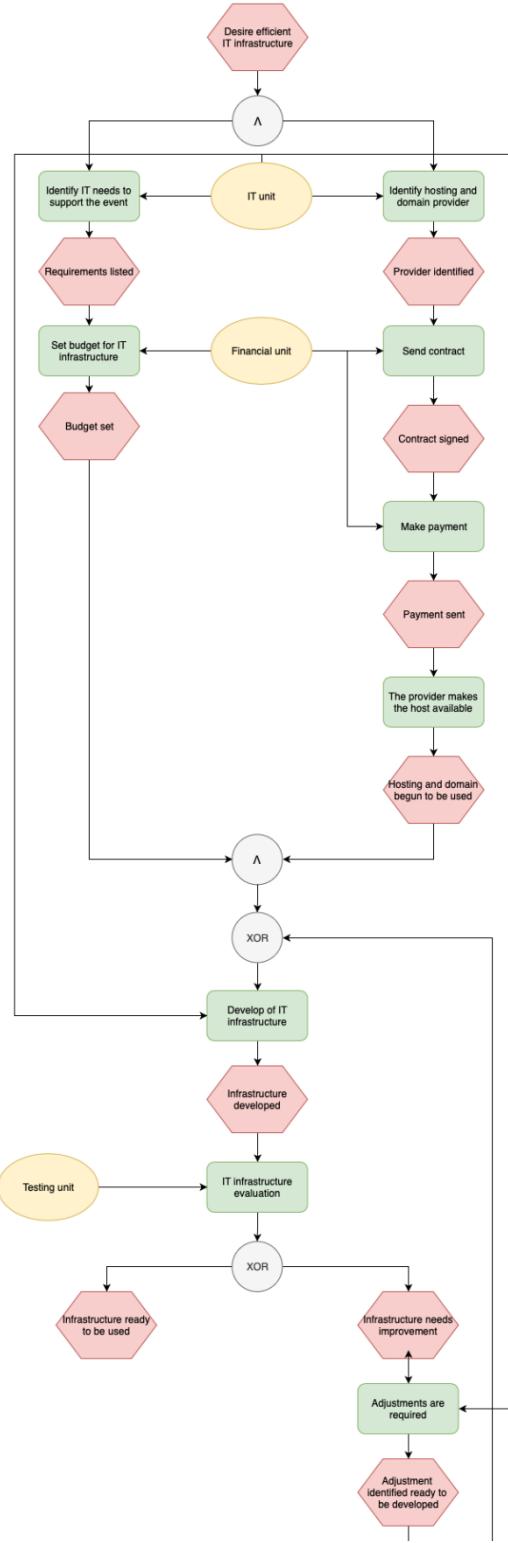


Figure 11 - EPC Create IT Infrastructure

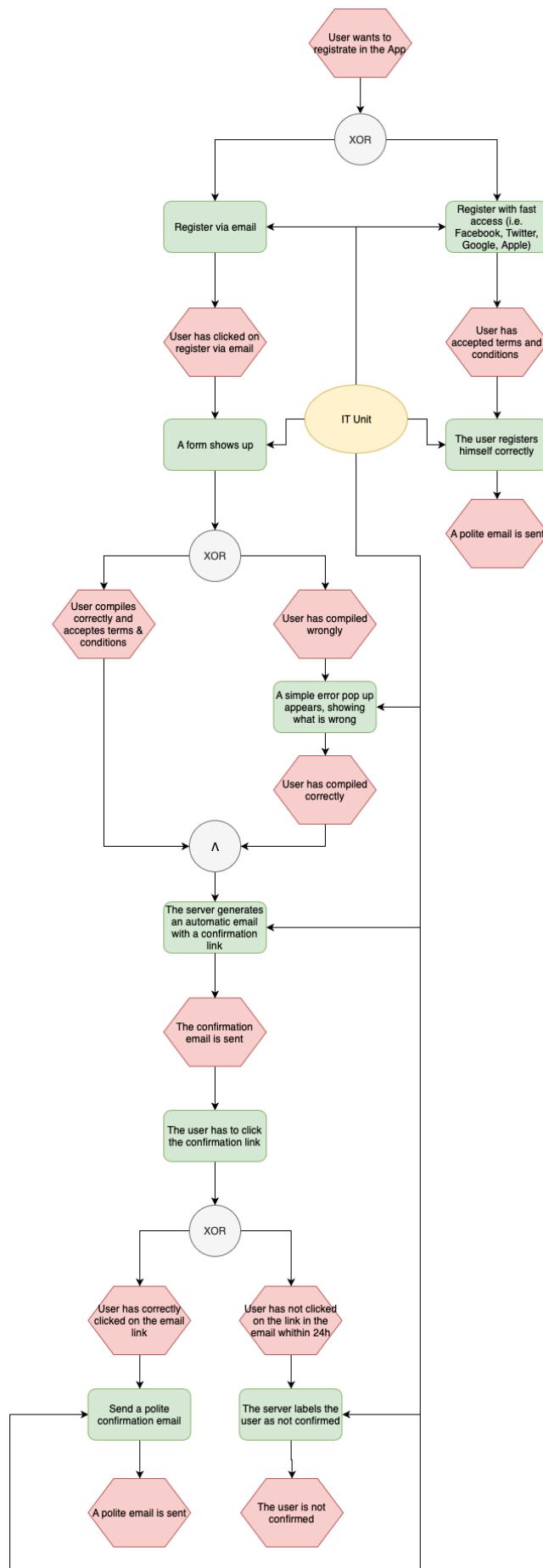


Figure 22 - EPC user app registration

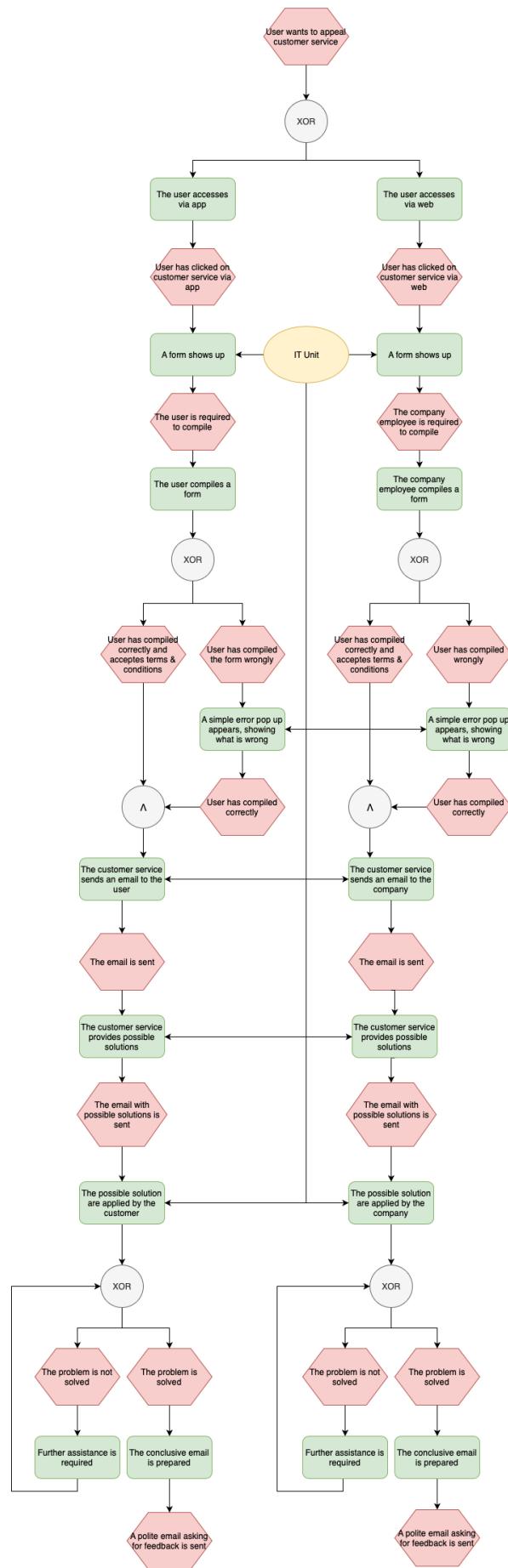


Figure 22 - EPC customer service

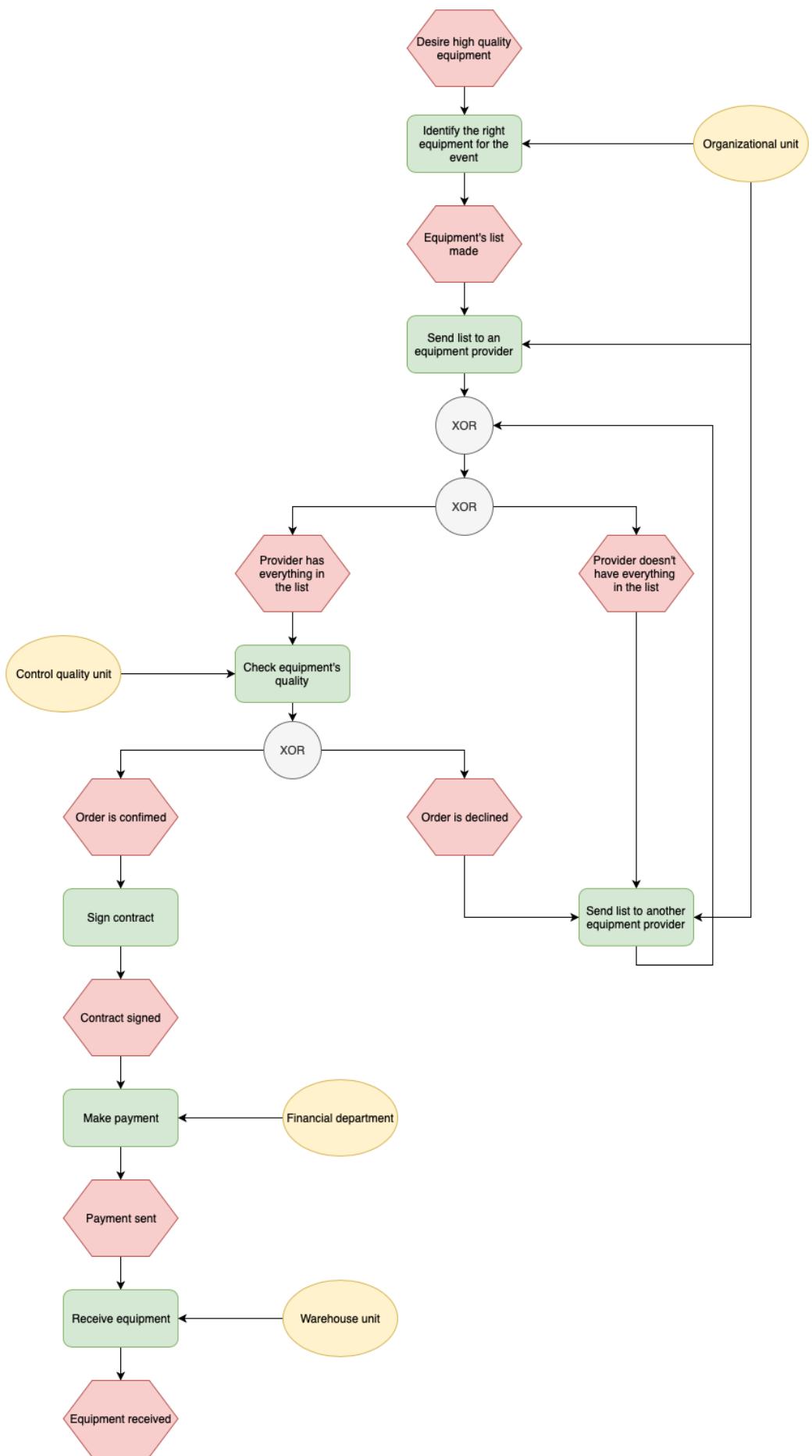


Figure 23 - buy/rent equipment

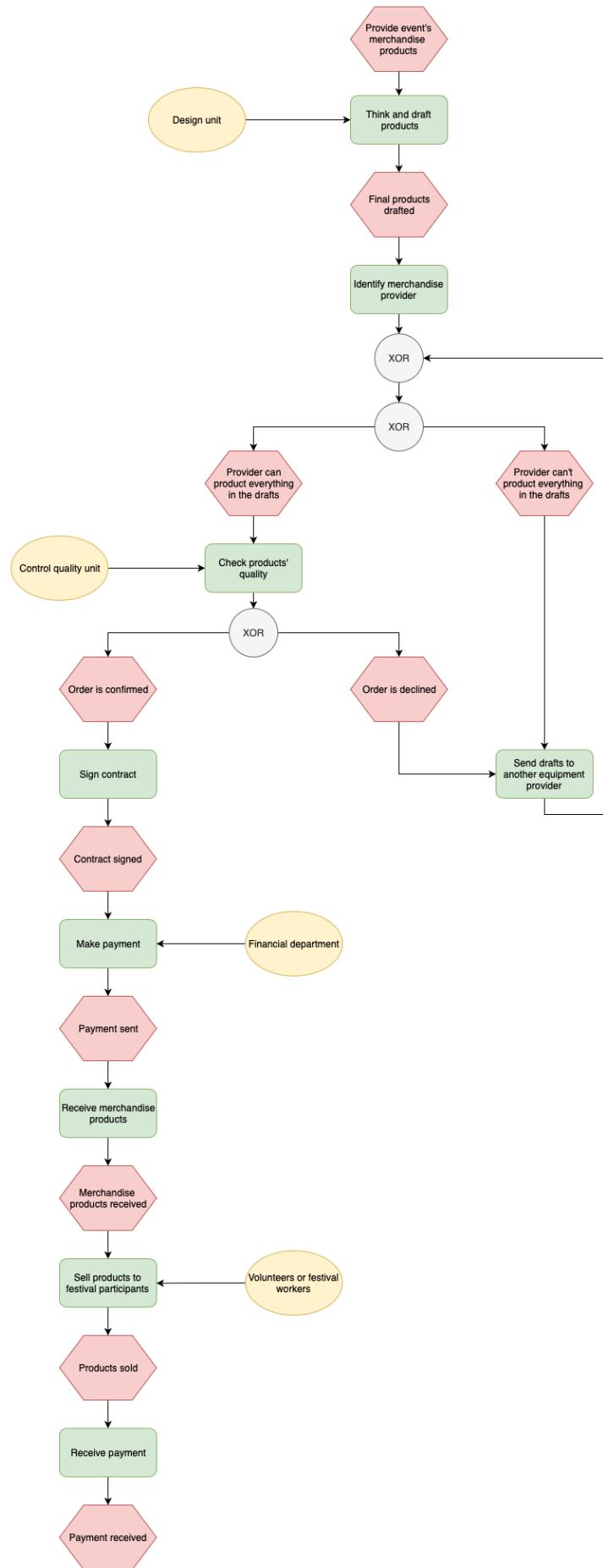


Figure 25 - EPC buy and sell merchandise

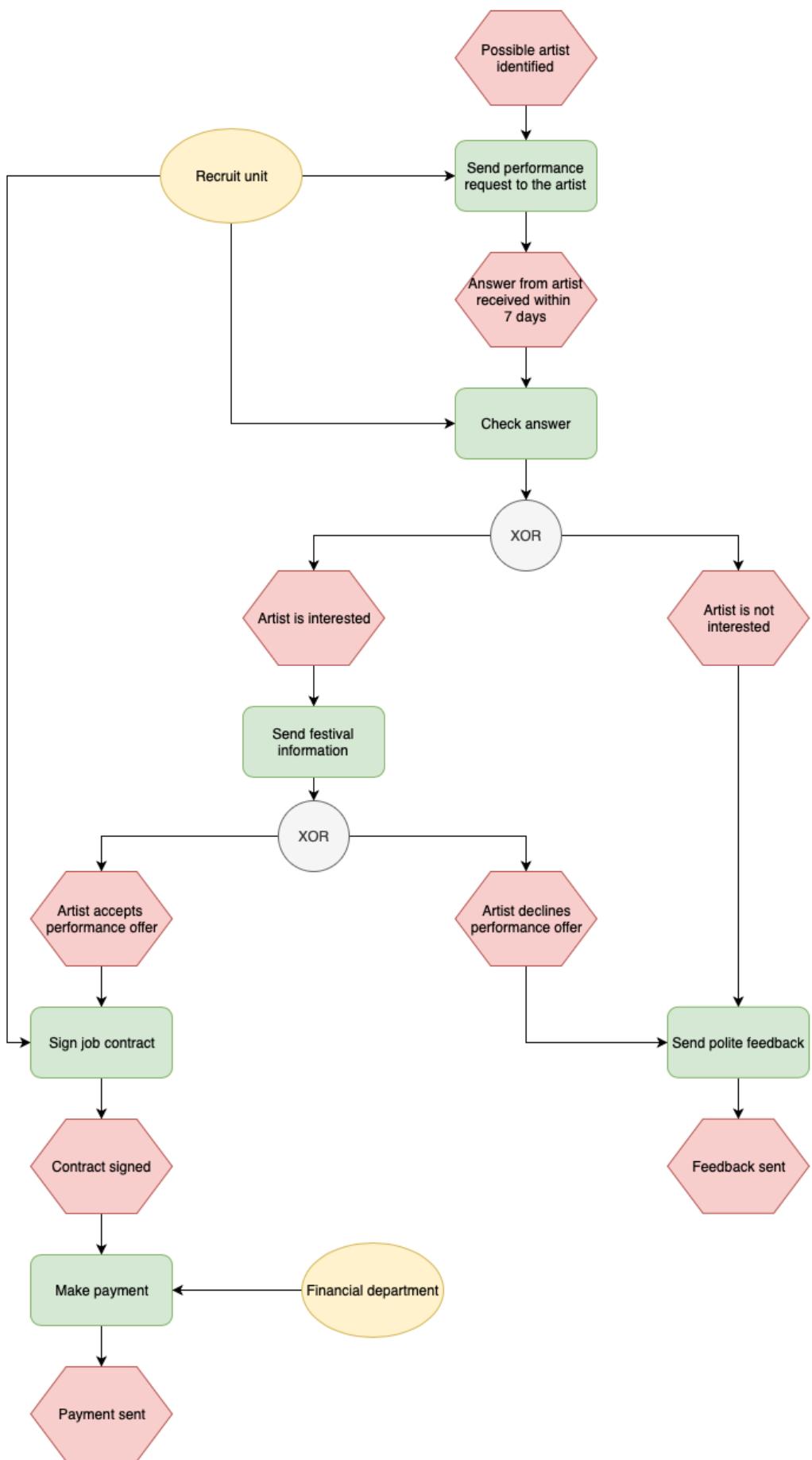


Figure 26 - EPC hire artist

7. KPIs

The main purpose of creating Key Performance Indicator (KPI) is to monitor, measure and manage the effectiveness of the business processes, given the goals. In fact, they can be seen as metrics measuring how well the organization performs an operational, tactical or strategical activity that is critical for the current and future success of the organization. The company's KPIs focus on the success of the event for the three main agents involved in the festival process: the clients, the third-party companies and the company itself. In the section below, the 6 KPIs that have been developed for this purpose are listed:

- **KPI 1 - Third-parties satisfaction**

This KPI is a lagging KPI and aims to measure the satisfaction of the third-party companies that have collaborated with the company for an event. A company is considered satisfied if it assigns at least a score of 4 out of 5 stars in the final review in the website. It is important in order to measure the success of the event and it can be useful to know which companies would be happy to work with the organization once again.

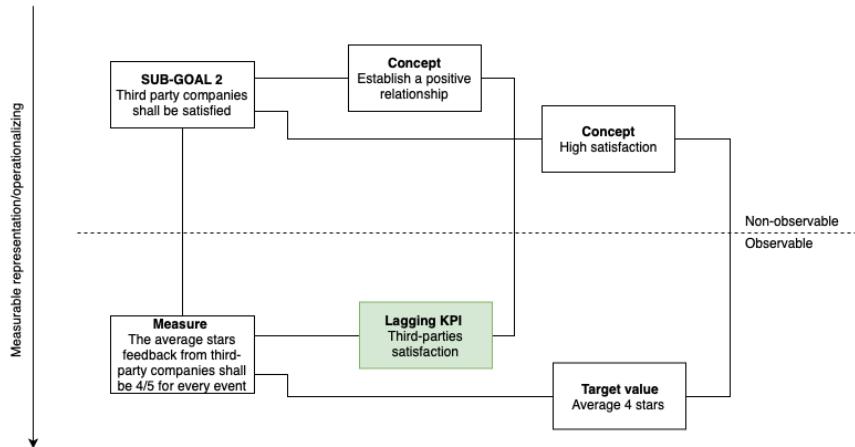


Figure 27 - KPI1 Third-parties satisfaction

- **KPI2 – Clients satisfaction**

This KPI is a lagging KPI and aims to measure the satisfaction of the clients that have been to the event in order to establish how successful the event was. A satisfied client writes a review with 4 or 5 stars out of 5, so the average scoring of an event in order to be successful must be around 4.5.

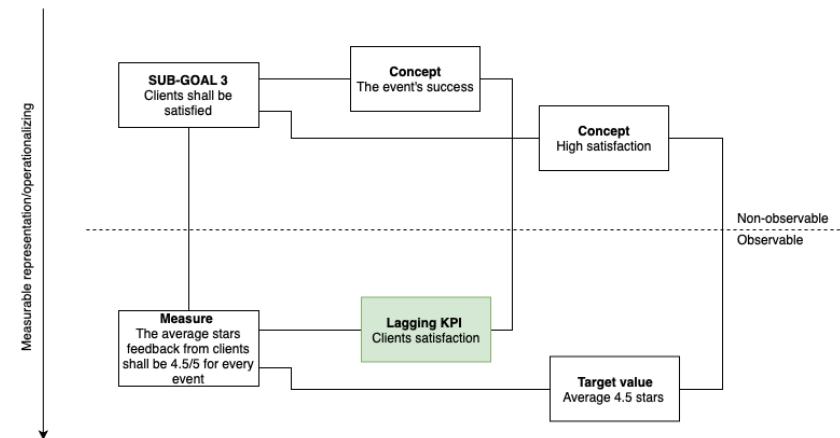


Figure 28 - KPI2 clients satisfaction

- KPI3 - Sales revenue from vouchers and merchandising

This KPI is a lagging KPI and it aims to measure the sales revenues from the event, not considering the entrance tickets. In fact, every event has a certain number of merchandising products and vouchers that are made in order to be sold. The goal is to sell at least the 80% of the products that are available for the event and it's important to know the output of this activity in order to obtain a more correct estimate of the sales of subsequent events.

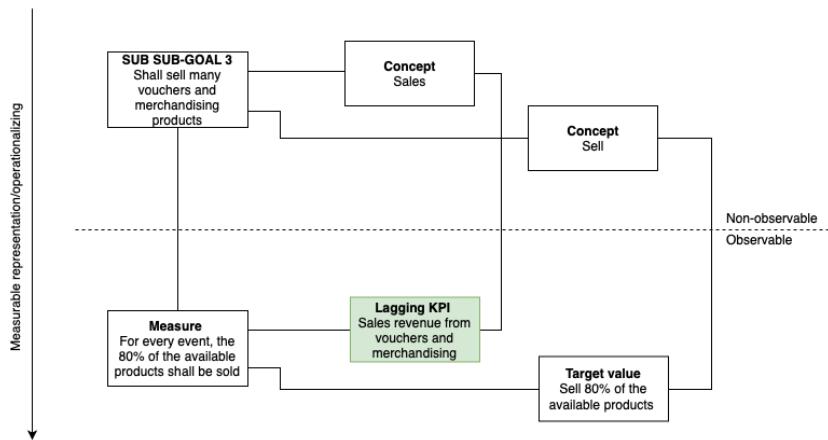


Figure 29 - KPI3 sales revenue from vouchers and merchandising

- KPI4 - Number of products sales meeting

This is a leading KPI because it influences the previous KPI, the sales revenue from vouchers and merchandising products. In fact, the number of merchandise products and vouchers that are made available for the event is a leading KPI in respect to the sales revenue of them.

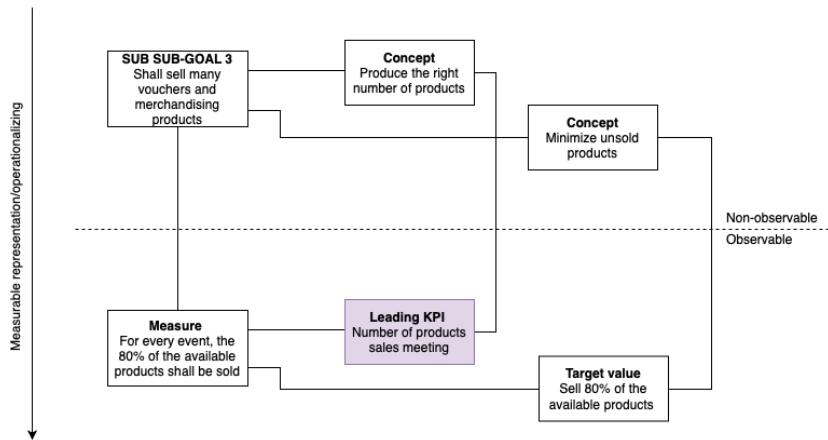


Figure 30 - KPI4 number of products sales meeting

- KPI5 – Customer care efficiency

This is a lagging KPI and aims to measure the efficiency of the customer care provided by the company to be able to help the customers with any kind of problems. A care service is considered efficient if it solves the problem within 72 hours.

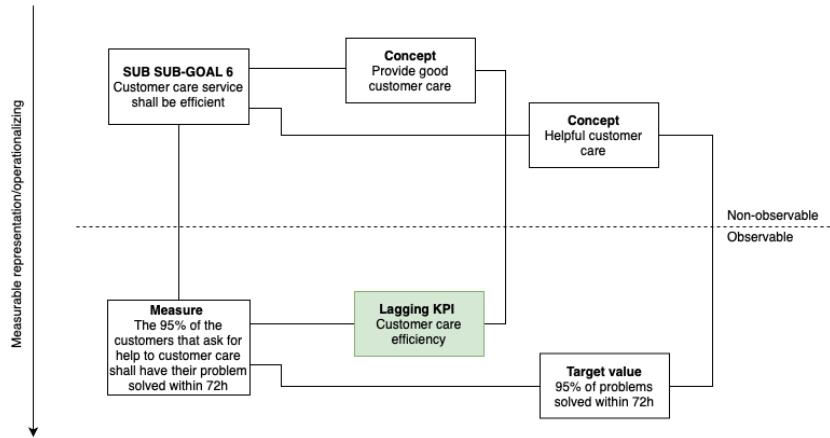


Figure 31 - KPI5 customer care efficiency

8. Capabilities

To achieve the company's goals, several capabilities are required. For every KPI shown in the section above, a capability elicitation template has been filled in order to provide a clear overview of the abilities and capacities that enable the company to achieve their goals in a certain context:

Concept	Description
Capability	Good social skills in establishing good relationships
Goal	SUB-GOAL 2 - Third party companies shall be satisfied
KPI1	Lagging KPI: Third-parties satisfaction
Context	<p>The public relations department has to be able to:</p> <ul style="list-style-type: none"> - Engage the right companies for the event - Create a good relationship with all the third parties that collaborate with the company - Maintain the relationship so that future collaborations can happen
Process	The public relation department has to decide which third-party companies are the right choice for the event in order to ensure the best visibility and the right amount of clients so that the third-parties can be fully satisfied by the collaboration, leave a good review and be available for future events.
Process Variants	Some issues can occur before, during and after the event. Before the event a deal might not be possible, during the event a third-party company could have a bad experience resulting in no future collaborations.

Concept	Description
Capability	Great staff that can ensure an unique experience and a great IT unit for the review section on the mobile app
Goal	SUB-GOAL 3 - Clients shall be satisfied
KPI2	Lagging KPI: Clients satisfaction

Context	Every participant has to experience a great event in which he has fun and feels safe. At the end of it, he should leave a positive review on the mobile app if he was satisfied.
Process	The participants have to be aware of the possibility of leaving their review on the mobile app and should be encouraged in doing it. The form has to be easy and not too long to be sure that everybody can fill it all the way to the end. Last, but not least, the event has to be great and unique so that the reviews have a high stars rating.
Process Variants	If the IT specialists realize that something about the review process on the mobile app is too complex or doesn't work, they should immediately take actions. If something happens during the event making the experience not so great, something should be done to mitigate the situation in order to have high stars ratings anyway.

Concept	Description
Capability	High qualified merchandise designers and vendors
Goal	SUB SUB-GOAL 3 - Shall sell many vouchers and merchandising products
KPI3	Lagging KPI: Sales revenue from vouchers and merchandising
Context	<p>Logistic problems:</p> <ul style="list-style-type: none"> - Wrong amount of products available - Warehouse issues - Unattractive products - Wrong target price - Wrong amount of desired sizes (clothes merchandise)
Process	It's required to pay strong attention while designing, ordering and controlling the merchandise to have the right amount of products for each event.
Process Variants	<p>If the shipped products are damaged or wrong in quantity, an employee should take care of it by reordering them.</p> <p>Bad quality items should be replaced as soon as the quality control realizes it.</p>

Concept	Description
Capability	Great ability of the IT division in analyzing data
Goal	SUB SUB-GOAL 3 - Shall sell many vouchers and merchandising products
KPI4	Leading KPI: Number of products sales meeting
Context	In order to be able to sell the 80% of the available products and, in general, to minimize the unsold goods and meet the sales, it is important to order them in the right amount but data can be complex to analyse (GIGO - Garbage In, Garbage Out) and previsions might be misleading.
Process	An efficient pre-processing must be performed and in order to avoid misleading results, data scientists could provide different models to find the best predictors.
Process Variants	A lot of problems can occur during the pre-processing due to bad raw data, during the analysis due to complex predictors that require efficient hardware and during the analysis that can be susceptible to interpretation.

Concept	Description
Capability	Really prepared staff willing to help customers
Goal	SUB SUB-GOAL 6 – Customer care service shall be efficient
KPI5	Lagging KPI: Customer care efficiency
Context	Customer care is for everybody that has some kind of relationship with the company: clients that want to organize an event, customers that participate to the event and third-party companies.
Process	Everyone that ask for help to the customer service for any kind of problem, has to be considered as soon as possible and the problem should be solved in, at maximum, 72 hours.
Process Variants	Issues can occur when some kind of problems have never been solved before and maybe the solution is not immediate. This could result in a longer time of resolution but the staff should do their best to avoid this situation, maybe collaborating between them.

9. IT Architecture

The most significant part of our business, as said, is the IT division. Observing the GDPR, the IT sector exploits data coming from different sources, this is done to improve the provided services and to maximize the profit. At the heart of this process there is the data science division which exploits the data to output predictions and to improve the business. The leading contributors to the data warehouse are represented in the IT architecture scheme that follows:

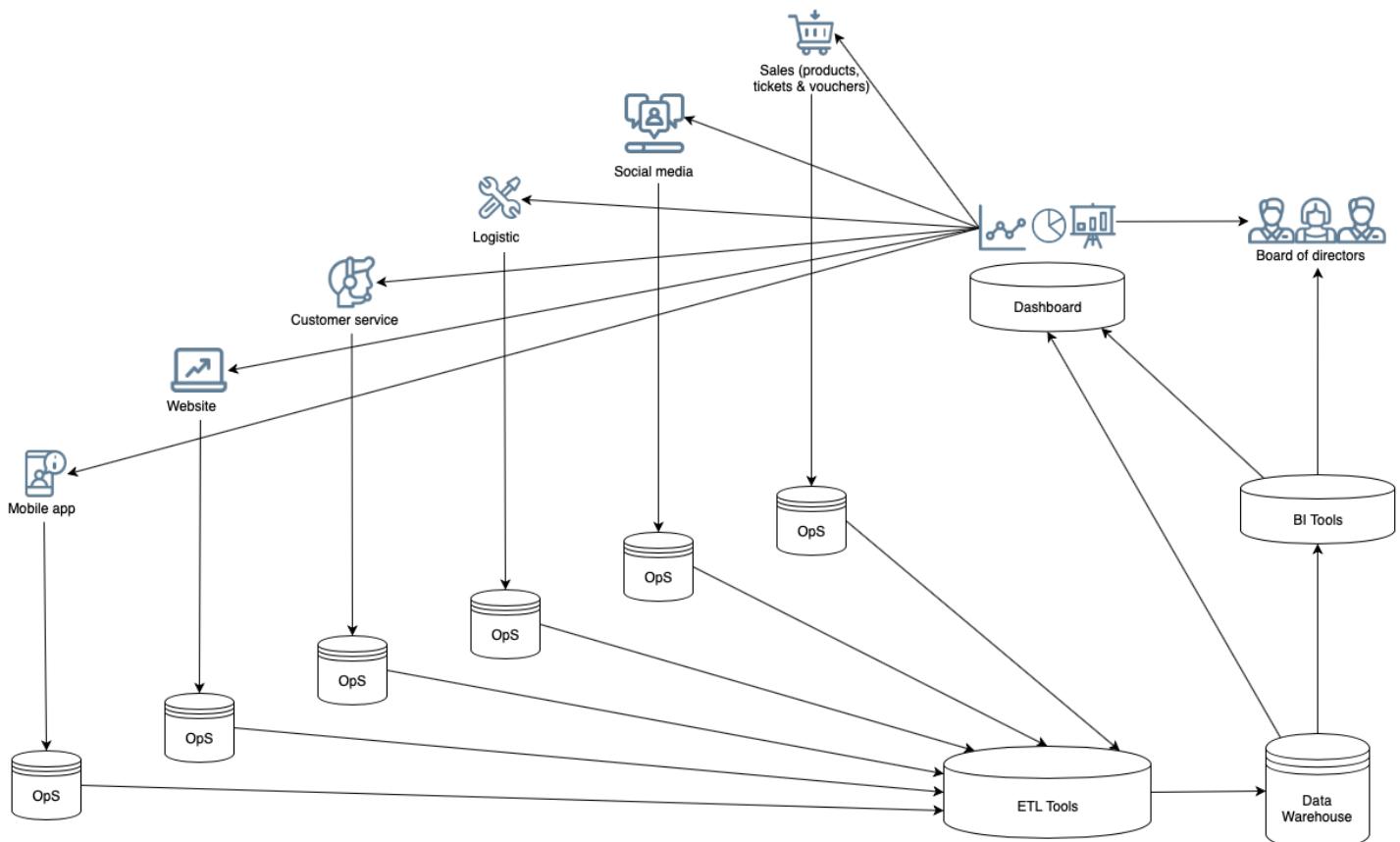


Figure 32 - IT infrastructure

10. Modeling Session

During a modelling session we tried to merge our company with another company which was committed in the same aim of our company. The main differences were in the organized festival: while FestivalBar is a big company and organizes huge public events, the other was smaller and its focus was on private-parties organization. One of their strength was the fact that all needed equipment was under their property, another good part of their company was the established collaborations with third-party companies that already asked them to organize festivals. Since we both wanted to maximize the profits, both teams tried to take the best out of this collaboration, and the most probable choice was to acquire that company and exploit their experience and the materials, and, by uniting the two IT divisions, the other company could have used our bigger infrastructure to improve the relationship with the company they worked for, also in the perspective of increasing our catchment area.

11. Future Implementations

Our company wants to provide only electronical tickets and voucher in order to reach an higher sustainability score, this will also help to achieve the sub-goal 4: the experience shall be ecofriendly.

12. Conclusion

This project involves different factors that are useful to deploy an ERP system, but the lack of an economic analysis could bring the management to misleading decisions, and even if a firm has the best possible ERP system could fall in mistakes that might bring the company to a difficult situation.

There is the necessity to find a way to model how all the divisions within a company have to interact in order to reach the established goals.

The overall project shows how a company interacts with all stakeholders and how the processes are managed both internally and externally. Using different models to understand how a company should operate to reach its goals and how the management has to behave in order to stay focused on the developed goals. However, the approaches presented above might have different problems when applied in the reality: most of the times a model is helpful if everyone behaves following those models, otherwise many problems can occur. A company like FestivalBar has a lot of reliance on these models, since from it is born from the scratches starting from the models, and if a company borns with lot of reliance on the models, it perhaps could reach its goal faster than a company that has a lack of a ERP structure. A company like ours could perform better if the provided models are in line with the management objectives and goals and also if the stakeholders do not misbehave.

Lastly, from this project is possible to see how a company should interact with all the economic agents in the network and how processes have to be managed, how the processes have to be handled, and also how the IT infrastructure should work.

Link to the google drive folder containing all the graphs for better resolution:

<https://drive.google.com/drive/folders/1ffNxD4Z4jqfe-l8RuvhJkOPx6HH101RE?usp=sharing>