

Service Concepts, Business Models, Delivery Modes



Deliverable D4.1.1c

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Table of Contents

1	Executive Summary	1
2	Introduction	2
2.1	Purpose of this Document	2
2.2	Scope of this Document	2
2.3	Status of this Document	2
2.4	Related Documents	2
3	The Selected Product Market Combination	4
3.1	The PMC, Use Case and FascinatE Technology	4
3.1.1	<i>PMC</i>	4
3.1.2	<i>Use Case</i>	5
3.1.3	<i>WP4 FascinatE Technology Description</i>	5
3.2	Value Chain & Users in the Value Chain	6
3.2.1	<i>The Value Chain</i>	6
3.2.2	<i>Aggregator</i>	6
3.2.3	<i>Technical Supplier</i>	7
3.2.4	<i>Distributor</i>	7
4	Value Chains, Stakeholders and Business Models	9
4.1	Aggregator	9
4.1.1	<i>The Business Model</i>	9
4.1.2	<i>Decision Factors</i>	10
4.1.3	<i>When to Break-Even</i>	11
4.2	Technical Supplier	12
4.2.1	<i>The Business Model</i>	12
4.2.2	<i>Decision Factors</i>	12
4.2.3	<i>When to Break Even</i>	13
4.3	Distributor	13
4.3.1	<i>The Business Model</i>	13
4.3.2	<i>Decision Factors of Potential Users</i>	14
4.3.3	<i>When to Break Even</i>	15
5	Impact on Network Technology Developments	16
6	Remarks and Considerations	17
7	References	18
8	Glossary	19

1 Executive Summary

This document is the third iteration of deliverable D4.1.1 within WP4, Task 4.1; Business models for network-based services. This task is concerned with identifying viable business models and associated services. We aim to support the partners of the FascinatE consortium to make choices backed by business information in their technology development. The final goal of T4.1 is to make explicit the offer of FascinatE to the market:

- How can the provided technology/functionality act as a differentiator for services in business-to-consumer markets;
- How can the provided technology/functionality differentiate the offer of the consortium partners in the primary value chain;
- How can the provided technology/functionality differentiate ourselves from similar R&D efforts;

The third iteration of this document has as goal to identify, what the factors are, that explain if and under what conditions the FascinatE technology are adopted. Therefore we discussed the most viable product market combination from the earlier deliverables with several industry parties. During this discussion we aimed to understand how the product market combinations could impact their business model, how the selection process works and what the financial considerations and impacts were.

The main observations and conclusions of this document are summarized as follows:

- The business model of the companies are leading to determine the potential of the iDirector business model.
- The technical supplier and the aggregator are the most and less likely parties to adopt the FascinatE network technology.
- The lack of validated use cases makes it hard to determine the point to breakeven.

Overall, we found that we gained new insights about the information gap. Related to the final goal of T4.1, this document provides:

- Insights about how commercial companies perceive the FascinatE technology in relation to their own business.
- Insights about the decision process of commercial companies in the selection of new technology.
- Feedback on the level of detail of the use cases as described in other deliverables of the FascinatE project.
- Insights how to determine the choices and the business model canvasses used to determine viable business models.
- Insights how to enhance the approach described in the first iteration of this document. This will be elaborated in the last deliverable: D4.1.3.

2 Introduction

2.1 Purpose of this Document

This document is the third iteration of the first deliverable of WP4, Task 4.1; Business models for network-based services. According to the FascinatE proposal this task is concerned with identifying viable business models and associated services.

- In the first iteration of this document we have defined consumer services and products that can be offered by using the FascinatE technology. For each of the defined services and products we have also identified the consumer markets.
- In the second iteration we have identified the most viable product market combination (PMC), based on both opinions of domain experts and the market knowledge gathered in deliverables of task 4.1.2.
- The FascinatE technology used for the most viable product-market combination is a semifinished product that a third party will use in their existing or new developed products to enhance it. This has the consequence that the third party will have some specific considerations and specific needs regarding the product.
- The FascinatE network technology is not a complete product but a semifinished product that enables companies to offer the described consumer product-market combinations. We have identified two types of companies that can benefit from the use of FascinatE technology in their product offering, i.e., content aggregators and technical suppliers.
- For these two types of companies we will:
 1. Draw the business model for the PMC with FascinatE technology
 2. Try to identify the preconditions for these companies to adopt the FascinatE technology

In the previous iterations of this deliverable, we focused mainly on the non-financial aspects of the business model canvas. In this document all aspects of the business model will be discussed. The main objective of this deliverable is to view from the perspective of the companies that want to adopt the technology and understand their position, interests and way of working. The central questions in this deliverable are:

- Do third parties recognize the selected PMC as viable for their own business?
- How do these parties analyse and select new technologies (for integration with their existing products and services)?

2.2 Scope of this Document

The first document expounded the methodology of Business Modelling in the fuzzy Front-End. In the second document we focused on the network-based services and the corresponding value network, taking an inside-out perspective. In this third and last iteration of D.4.1.1 we will focus on the cost structures and the revenue streams, which will result in a completed business model canvas for the selected use cases.

2.3 Status of this Document

This is the final version of D4.1.1c.

2.4 Related Documents

Before reading this document we recommend the reader to become familiar with the following documents:

- FascinatE project proposal, Annex I - "Description of Work" [1]
- D1.1.1: End User, Production and Hardware and Networking Requirements [2];
- D4.1.1a: Service Concepts, Business Models, Delivery Modes [3].

- D4.1.1b: Service Concepts, Business Models, Delivery Modes [5].
- D4.1.2a: Market Overview [4].
- D4.1.2b: Market Overview [6].

The relation and coherence between the various documents under Task 4.1. is shown in Figure 2-1. In general, the various iterations of deliverable D4.1.1 aim at supporting the consortium partners in selecting and refining the direction of their respective technological innovations. Deliverable D4.1.2 aims to identify the market opportunities by giving a market overview.

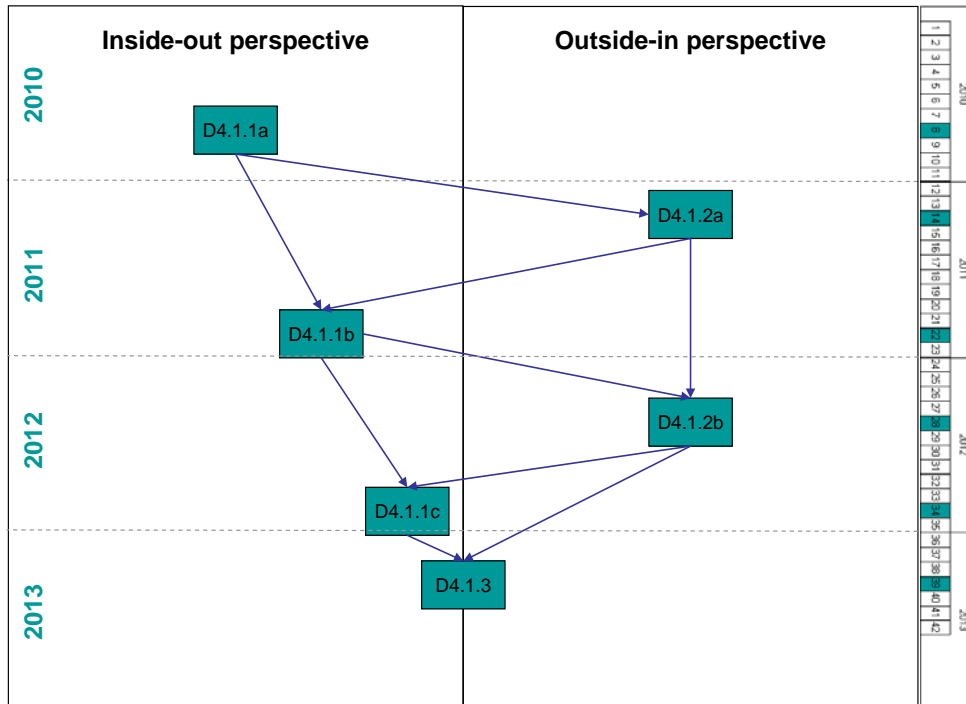


Figure 2-1: The coherence between the deliverables in Task 4.1.

3 The Selected Product Market Combination

In this chapter the selected service concept will be revisited. This particular description of the product market combination is used as an example during the interviews as an illustration of what the FascinatE technology could offer the end-consumer.

3.1 The PMC, Use Case and FascinatE Technology

In this section the PMC, potential use cases and the underlying FascinatE technology are described. Although there are many product variations possible regarding the content of the product we choose for the sake of simplicity to elaborate one PMC and illustrate other applications in the use cases.

The PMC is described because this is the concept that we discussed with the interviewees during the interviews. Other PMCs that are described in earlier iterations of this document were out of scope. Use cases are specific illustrations of the PMC for sports and illustrate how the value for the end users can be generated. In the last part of this section, the technology that is used to make this PMC possible is described. This will provide an overview of the important aspects related to the PMC.

3.1.1 PMC

Because there is only a slight difference between the iDirector for viewing of live sports and cultural and music events, these concepts will be described in a combined fashion¹. In Figure 3-1 the PMC is illustrated. The specific facts that are different for each of the concepts are mentioned when necessary.

The iDirector service concept provides the home viewer with director-like functionality during live events. Users can orchestrate the different views that are available from the layered scene capture. Interfacing with this service concept is implemented by using gestures or a secondary interface like a tablet. Objects and areas of interest can be defined by the user and presented in Picture in Picture (PiP) mode on the TV. Examples of the iDirector functionality are selecting a favourite football player by showing him as a picture-in-picture on the TV set, or following a favourite musician on a stage. Additional functionality, which could enrich this service concept, could be information of the tracked object as overlay or banner information. Main values offered to the user are personalisation and interaction.

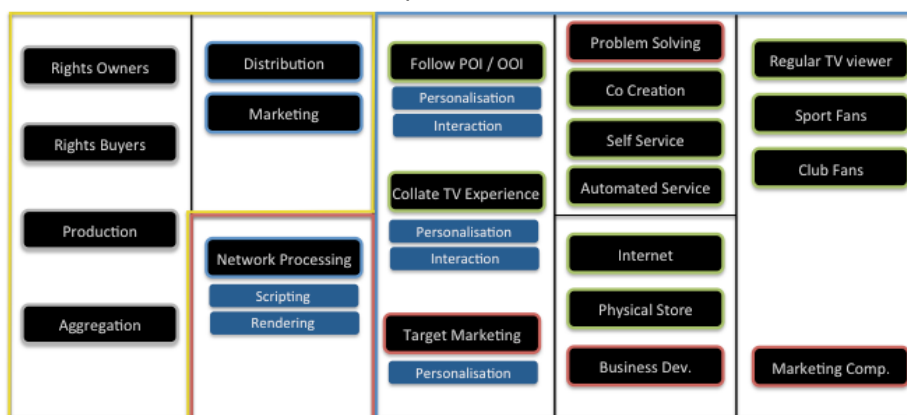


Figure 3-1: Overview of the iDirector PMC as proposed in D4.1.1b

For both markets different partners can be identified as owner of the content. These partners vary depending on the type of content; other partners are involved when we are talking about other events like opera, formula 1 or ballet. Content is one of the key resources for iDirector. It is important for the operator that delivers the iDirector, to maintain a good relationship with the content owners. The key activities that are performed by the cable company or telecom operator are focused on distribution of the content and on the marketing of the product. The first activity will deal with production; namely creating and delivering the product in superior quality. Because iDirector is an experience product a flawless experience of the consumer is essential. For this activity the technical attribute is indispensable, but also acquiring the hardware, the network and the right personnel is inevitable.

¹ The abstract model. The differences from the business perspective (e.g. potential customers reached) can be huge.

3.1.2 Use Case

In this section we will describe two use cases of the iDirector product. These use cases are both sports related, but differ from each other. The difference is caused by the rules and type of game: in some games multiple areas are interesting for the viewer at the same time, while other sports are more concentrated in one area.

Baseball – Stadium Experience

For fans of any baseball team the second device can enhance the experience of watching a live game. Although baseball is not a sport that has a high pace, a lot of different events happen at the same time. An example is stealing bases. One of the rules in baseball is that it is possible for players that are already participating the game in the field to run to the next base. When players are trying to steal bases during the game, the focus of the camera is likely with the pitcher and the batter. Compared to other sports baseball is a sport where multiple events could take place at the same time.

As a fan of the local sports team the user is able to watch the game and decide for himself what the perspective is on both the main screen (TV) and the second screen (e.g. tablet). When the game starts, the user selects the 'stadium mode' and picks a virtual seat from one of the teams. The stadium seat provides the complete overview of the field on the main screen from the perspective of the favourite team. On the second screen, the same overview appears, but here it is augmented with the team's latest matches and other related information. During the game a couple of interesting events happened, the iDirector is prepared for those events: it constantly analyse the video and audio content for interesting events and provide these as feedback to the fan. Stealing bases is one of the features that the iDirector is prepared for. As soon as a player moves away from his base, an alert appear and the fan can select that view to see what happens. Sometimes all bases are taken, what makes it even more interesting to see them all at the same time, while keeping the overview on the main screen. Of course the user can use the second device to pan, tilt and zoom and share this personalized view with the main screen. While doing that, the complete overview becomes visible on the second screen so that the fan always has the complete picture.

Soccer – Enhanced Broadcast

The soccer use case is different from the baseball use case. Compared to baseball there are less multiple areas that are interesting for the viewer. There is always one area that is interesting for the spectators: the area where the ball is. The largest part of the soccer match the broadcast cameras follow the ball. A device that can be used as a second screen can provide also alternative information. The screen for this alternative information is the panoramic view that is augmented with all kinds of interesting information such as player statistics (e.g. name, passes completed, goal attempts).

During the game, the sports fan uses the second screen every now and then. During game interruptions, the user can watch replays or pan tilt and zoom to watch for example the audience. For example when there is a sliding and one player is injured, but the game goes on, the sports fan can select a specific view of that area on his second device and watch the customized replay, while viewing on the main screen the broadcast camera that follows the continued play. As the panoramic view on the second device is augmented, it provides the user also interesting events that happen outside the view of the broadcast camera. For example: when the coach and the fourth official do have a discussion, that area lights up on the second screen and the user can simply select that area to get that specific view. For the real fans of specific players it is also possible to select a player on the second device and continuously watch that player, with all the statistics of that player beside him from this game compared to other games. This view also provides other interesting stuff, such as a track of the routes that the player has taken during the game, replays of important moves and tricks during the game and so on.

3.1.3 WP4 FascinatE Technology Description

In deliverable D4.1.1a three delivery modes were identified. Because of the choice for network processing as technical attribute, the delivery network that fits the iDirector best is the *Network-centric* delivery mode. This delivery mode is distinguished by considering the network as intelligent rather than a bit pipe for transporting large amount of data. The iDirector operator will be a telecom operator or a cable company, because these companies have both the technical infrastructural assets and existing relationship with the consumer.

The service is delivered with a combination of technical attributes; that is, scripting and rendering functionality is distributed over network nodes and end-user terminals. For iDirector, we assume that rendering is mostly performed in high profile end-user terminals in the home, with sufficient access

bandwidth available. The blue panes in Figure 3-1 Overview of the iDirector PMC describe which activities will take place in the network. To provide the service as described both scripting and rendering have to be performed. Rendering focuses on presenting the desired view from the generic scene representation. To choose this selection the renderer makes use of the transmitted script metadata or data that is generated based on the interaction with the user (e.g. coordinates in the form of a selection of the screen). Scripting focuses on the usage of semantic technologies and integration of different types of metadata and knowledge that allows the user to derive a set of default or, for that specific moment, interesting shots. The scripts that are pre-written are interpreted on the fly by using network processing.

3.2 Value Chain & Users in the Value Chain

The iDirector PMC is most likely delivered by the service provider. Although this is the most logical party to deliver the service to the end customer, the FascinatE technology could be provided in the value chain: the technology supplier of the service provider.

3.2.1 The Value Chain

To understand the business model of both parties it is helpful to know their position in the value chain. In this case the media value chain for television. In this document we use a value chain that is loosely based on the content creation value chain as proposed by Aris and Bughin [7]. The value chain we use in this document consists of the elements presented in Figure 3-1. The traditional content delivery value chain came into existence with the development of TV from the 1950s onwards.

The different roles in this value chain are well established: **producers** create or at least own content like movies and TV series. The content **aggregator** is typically the broadcaster, like the BBC, Channel 4 or Sky in the UK. They aggregate content and advertisements into TV channels. These are broadcast to consumers by the **distributors** and via its core and access networks. The **technical supplier** is the only party that is supportive to the parties in the value chain; it delivers the technology to the aggregator and the service provider that is necessary to provide the services to the consumer.

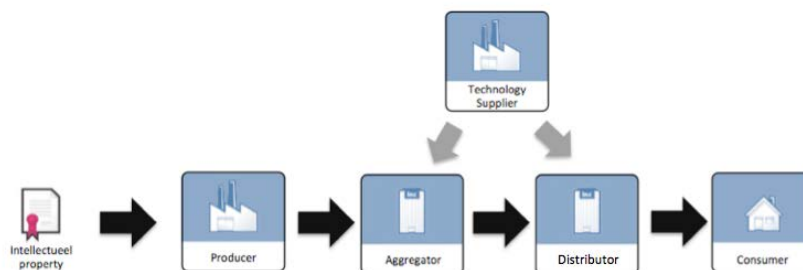


Figure 3-2: value chain

As stated in the beginning of this chapter, three players in the media value chain are potential users of the FascinatE network technology. These parties are the aggregators, distributors and technology suppliers. Each of these parties has their own reasons why they could adopt the technology. This will be discussed in the next paragraphs.

3.2.2 Aggregator

The aggregators do have an intimate relationship with their consumers. Most of the time the consumers relate soccer to the specific aggregator. For example in the Netherlands there is the “Eredivise Live”. This company owns the content rights of the soccer matches. For the distribution to the end consumers, they are dependent on the Distributor - the cable, telecom and satellite providers - who act as the service provider to the consumer. For the second device applications they are not dependent on the distributors and become service providers themselves. They can use the Internet as infrastructure to deliver the content to the second device.

The first signs of innovations regarding the second screen by the aggregators are already visible in the market. Canal+ and EVS together launched in France a second-screen application designed for Canal+ subscribers. The app, which uses EVS’ second screen media delivery platform, C-Cast, was launched this soccer season. The app provides the consumers up-to-the-minute statistics, multicam video clips of highlights and bonus material such as super slow-motion action replays in full length. It also features

filmed reactions from the commentators and special guests from Canal Plus' live football program, Canal Football Club, as well as the possibility to interact via social networks.

In the specific case of Canal+ the content is delivered through the EVS' C-Cast; its automated hardware and software solution. C-Cast instantly processes and transfers live multicam media recorded on EVS' XT/XS production servers, along with descriptive metadata and third-party items (graphics and statistics), direct to web-connected tablets with the Canal Football App. During the matches, producers Euro Media France, created clips and associated metadata, such as keywords describing the action and time code references. Key action shots and their references are transferred to a central database, where they were available in multiple angles. The database made the content available in less than two minutes, almost direct to football fans.

As described in the case above, the Aggregator has a key role but is not able to deliver the PMC without the help of other actors in the value chain: in this case the Technology Supplier EVS. Of course other actors also play In this specific case the technology provider is actually part of the content production, but in a way that it helps the aggregator or the distributor to create a new or enriched service.

This perspective works for all of the aggregators that have a specific brand or audience, from the BBC to Sky and ESPN. The content is closely related to the aggregator or even a specific TV program that the aggregator produces. Therefore this could be the most logical party that is interested in the FascinatE technology. It is less likely that this party also will adopt the technology for itself, but it is an option.

3.2.3 Technical Supplier

The technical supplier delivers the network technology to both the aggregators and the service providers. The companies in the value chain already have a business relationship with each other, as the technical supplier and their partners develop hard- and software necessary to deliver the services of the aggregator or service providers to their customers. The role of the technical supplier varies. In some cases they only create and deliver products to their (B2B) customers, in other cases they organize and support a complete service.

The EVS case is a good example for describing the technical relationship between aggregator and technical supplier. In that specific case, as described in the previous section, EVS provides a complete service to the customer.

The Smart glass project of Microsoft is also an example of a second device application. Microsoft partnered with ESPN, NBA Game Time and UFC. It developed the smart glass, which is a second screen device equipped with the smart glass application, to use with their Xbox. This application on the second screen device makes it possible to navigate through content from ESPN and the NBA, UFC, and NHL. That will include sports that can be accessed through the cable provider, or sports from ESPN through the ISP.

Similar to the EVS application the content is enriched with scores, rosters, stats and the ability to pick the winners of games. It is also possible to watch the highlights of the game on the second screen device and show that on the main screen. As the Xbox has already its own network to deliver (video) content to its users, this is also an example of the technical supplier that organizes the second screen service for the aggregators. Although it is possible that the technical suppliers only sell the equipment (hard- and software) to offer similar services, we haven't seen this in today's market.

The technical supplier has two options: deliver the equipment to the aggregator or distributor to enable them or organize the second screen service for the aggregator or distributor. While the traditional model of the technical supplier is selling equipment, the market trends show us that the last option "organizing the service", is more common in the case of second screen interaction. Therefore it is the most likely that the FascinatE technology will be adopted by this kind of companies.

3.2.4 Distributor

The distributor is the company that sells access to the content of the aggregators to the consumer. In most of the countries the telecom operator, cable- or satellite company embodies the role of the distributor.

The distributor is not the most likely party in the value network to deliver this PMC. This is because the other parties, the aggregator and the technical supplier, have some of the most important assets that are needed. The service provider has for example limited influence on the content and the production of the

content by the aggregator. This is an important aspect as the content needs to be in high resolution, otherwise the service that is offered by the service provider has a very low quality. Another aspect that is important is that all the raw content needs to be distributed to the service provider. In a traditional situation only the directed content is distributed, but as the viewers can be their own directors the raw content needs to be available as well. This kind of issues makes it difficult for the distributor to take this role.

Although the distributor is not the most likely party to deliver the PMC, there are some elements that are beneficial for introducing it. The first pro is the installed base of the settopboxes in the houses of the consumers. The functionality described in the PMC can be built in the settopbox. The distributor does have a lot of influence on which settopbox is used and what kind of services they support. A great example of this is the Horizon box of UPC, a broadcast network provider. This settopbox has a lot of functionalities in it that seem to integrate seamless with the Internet and TV proposition. It is conceivable that a party such as UPC introduce the PMC and arrange with the aggregator that it will take care that the service always works in the home environment. Another reason why it is possible that the distributor will play a role in this PMC is the relationship it maintains with the customer. The aggregators don't have a billing relationship with the customer, but with the distributor. Even when the customer has a pay-tv subscription, the fee for the subscription will be paid to the service provider.

Although the distributor is not the most obvious party in the chain to deliver, it has some important assets: the direct customer- and the billing relationship. These assets make it possible for the distributor to offer the iDirector service directly to their customer. The biggest challenge is to find content partners.

4 Value Chains, Stakeholders and Business Models

In this chapter, the selection of viable use cases will be described in more detail. This detailed description will be used as foundation to match the network technology that is under development with the business opportunities.

For the collection of this information we interviewed several companies that hold a position as aggregator, technical supplier or distributor in the value chain. During these interviews we first explained the technology that FascinatE aims to deliver and second we discussed three topics.

- The first topic is how the technology would impact their existing business model or, when it is perceived as possible, their new business model.
- The second topic is the decision making process and the considerations and factors that influence such a process.
- The third and last topic takes the financial aspects into account. To understand the financial dynamics it is necessary to know when companies do have a positive business case with the introduction of this new technology. The financial aspects are important from both the cost and the revenue perspective.

4.1 Aggregator

The aggregator is the company that aggregates the content and advertisements into TV channels. We interviewed a key person at a Dutch aggregator to gather the insights that are presented in this section. He is responsible for the online branch of the aggregator.

4.1.1 *The Business Model*

To understand how the technology affects the business model of existing parties, it is important to have a clear view of the existing business model. The aggregator that is consulted is a commercial broadcaster. The essence of commercial broadcasters is the offering of advertisements. Main function of the broadcaster is to match the supply and demand of attention of audiences and advertisers. The core business of a (commercial) broadcaster is to attract and keep an audience. The success of that is measured in rating points: this is the percentage of all the TV households in a defined area that tuned in to a show. Traditionally the TV was the main channel, but with the appearance of new media it becomes more challenging to attract and keep the attention of the audience. Broadcasters sell time to advertisers using the concepts of gross rating points (GRP), reach and frequency. Reach is the percentage of households (or the target audience) exposed to a message at least once over a predetermined span. Frequency is simply the number of times an advertisement is used during a period of time. Thus, GRP is reach multiplied by frequency. Given that advertisers will always prefer to aim their messages first at audiences that are most likely to be receptive to or interested in their products or services, they aim to find broadcasters that are able to reach that audience, this is measured by the targeted rating points (TRP).

Broadcasters have multiple tools to influence the TRP. The first and most obvious tool is the content that is broadcasted: the TV shows, sport matches and so on. The broadcasters can acquire the rights of sports and other events or TV formats, but in some cases the production of this content is (partly) done by the broadcaster himself as well. The second toolset consist of the other services and products that are offered in addition to the traditional broadcast. Examples are the website of the broadcaster, additional apps and features such as mobile text-services to promote interaction.

In a nutshell the value proposition in the business model of the commercial broadcasters is: attention or 'eyeballs'. Business model improvement is possible if cost savings or new services and strategies make it possible to gain more (controlled) attention. In the department of the interviewee all people regularly scout for new technology, but there is no structured analysis approach or method. New technologies should support the commercial model, independent of the platform used (TV, Websites, mobile apps or other new media). This is also the case for the proposed FascinatE technology.

During the interview with the head of digital products there were some problems brought up why the FascinatE technology would not fit the business model of that Dutch commercial broadcaster. The first challenge was the content. The interviewee emphasized that he saw limited opportunities for use within the existing content in the portfolio of the broadcaster. FascinatE technology does only add value to

highly specific content. Content that is mainly served are sitcoms and shows, such as game shows and talent shows like the Voice of Holland.

The limited content applicability had also another issue: reach. The content that the FascinatE technology is relevant for had only limited reach (setting football apart). An example of the content that was relevant was the formula one races. The audience for formula one in the Netherlands is small. The extra costs to make such content available with new technologies are not interesting, as long as it doesn't enhance the reach or frequency. During the interview the opportunities were briefly discussed, but the main conclusion was that there were limited benefits in the Dutch market at the commercial broadcaster to use the FascinatE technology.

Soccer on the other hand could be interesting: there is a large audience. The difficulty there is to what extent the audience will benefit from this technology. The interviewee interpreted the FascinatE technology at the consumer end as a gimmick instead of a real distinctive feature. One of the major challenges is that it is too difficult for home users to be the director themselves. Being a director is a job on its own which requires professional training; these home directors can't learn some of the rules for a good registration of soccer matches easily. Also, these rights are usually pretty exclusive. If an aggregator has football rights, viewers will watch it via this aggregator. There is no competition like with different talent shows or comedies. I.e., for such content Fascinate does not act as a *differentiator*. It could only enhance the service up to level that perhaps more people will subscribe to the service (pay TV channel).

During the interview the opportunities for product placement were also discussed. There were only limited options in the current content portfolio of the commercial broadcaster. The main conclusion of the interviewee was that the FascinatE technology offers the commercial broadcaster limited opportunities to improve its business model.

Conclusion Aggregation Business Model

The technology that FascinatE offers is interesting but the application of the technology is limited from the advertisement perspective.

- The main business model of an aggregator is based on attention.
- There is no clear use case in which the FascinatE technology causes the audience to grow, or raise the frequency of watching advertisements by that audience.
- For the limited cases in which the FascinatE technology enhances the experience, it is hard to gain enough viewers to make the business case positive to invest in new technology. Main reason is that the Dutch market is very small.

For actors on larger markets are different conclusions possible. In future research these parties should be interviewed.

4.1.2 Decision Factors

There no formal decision making process available at the commercial broadcaster, other than presenting an idea that is supported by a business case that is positive. This will be presented to higher management and then if it is discussed and accepted, budget becomes available.

The interviewee explained that the main reason for looking into new solutions (not necessarily technology) is the existence of an **actual problem** or challenge. This problem can be very hands-on and technical, but it can also be on a much higher level such as new products and features.

The first important category of information to take decisions is business information. One of the most important decisions factors is the existence of a valid (and positive) business- and use case. The interviewee shared with us that basically everything that is done within the company must deliver value by getting attention from viewers and users right from the start. To make sure that the value is delivered, it is important to demonstrate that new technology in the form of a service is perceived as so by the end users. This is not something that is only qualitative but should also be backed with figures about concrete market / consumer experience information. Specific user interaction and usage studies are very relevant in this stage. The use cases that are described in earlier FascinatE deliverables are not sufficient, as it lacks the business perspective. This should be completed with user information about usage. The market potential is very important. How much attention can we get from the viewers (and maintain their attention during advertising)? This is the main question to be answered. If the technology can be connected somehow to the advertiser model, then it is probably worth to look deeper into it.

The next business question is the balance between the potential revenues and the costs to make the innovation work. It is a simple cost-benefit topic but very important for the decision to continue further investigation of the innovation. In this calculation the long term will be kept in mind, but a precondition is that it should make money right from the start.

The second category is the technical information. This is something that goes most of the time in parallel with the business question that focuses on the cost-benefit questions. The first question to be answered is the question if there are other technologies that can offer the same services or products to the end user. If so, then it becomes relevant to identify the differences and also how those technologies relate to each other. Information that is closely related to the technology and also the competitive position of the technology, such as underlying patents, becomes relevant.

The next technical question that needs to be answered is how well the technology can be embedded in the existing technical environment of the company.

Conclusion Decision Factors

The following questions are essential in deciding if the technology will be worth investing in or not.

General

- Does the innovation / technology solve an existing problem?

Business

- Is there a validated use- and user interaction case?
- Is there a positive high-level cost/benefit analysis?

Technical

- How does the innovation/technology place itself in the market?
- How can the technology be embedded in the existing technical environment of our company?

4.1.3 When to Break-Even

During the interview the interviewee did not provide any financial information. Instead he provided examples of technologies and innovations that were successful and that failed. One of the examples that were a clear success was the second screen app for a talent show. That app was used approximately 200.000 times. Because it was shown in an early stage that there was a clear need (people like to vote, this was already done by e.g., SMS), a large advertiser was willing to invest in the technology to create the app and the system to back it. The cost-benefit analysis was easy to create.

A clear failure was the prolongation of live shows by broadcasting them for an hour on the Internet after the show finished on TV. Although the use case was easy to figure out, the cost-benefit of this innovation was not. It is unclear if the cost-benefit analysis was performed before the innovation was introduced. But the innovation was stopped very soon after introduction. The TRP score of the Internet broadcast was too low and therefore the costs too high to keep this innovation profitable. The exact numbers were not provided.

Another innovation that is not yet introduced by the broadcaster, but is seen as a good opportunity is audio fingerprinting. A difficult problem for advertisers (and therefore broadcasters) is that during the commercial breaks, the audience change their focus to other devices such as tablets and smartphones. There is a great risk for advertisers that they lose their audience. With audio fingerprinting it is possible to use these other devices to present information that corresponds with the content shown on television and keep the focus of the audience. This is exactly a kind of innovation that is very relevant, as the eyeballs are fed with information from the advertiser.

Not always is it important to invest yourself in a new technology or innovation; if there is a huge sponsor that believes in the innovation, or if you are able to show advertisers how a new technology will catch a lot of attention, than it is worth to invest in it or to work together on the technology.

When to break even

In the case of the broadcaster it is very simple: if you can prove that the innovation will attract enough attention you will break even. It is also possible to spread the risk, especially when specific advertisers are willing to invest in the technology themselves in exchange for exclusive usage rights. It is important to look further than the aggregator itself.

4.2 Technical Supplier

The technical supplier is the company that serves the service provider with network technology that enables the service provider to deliver the audio-visual content to the end consumer. We interviewed the Product Development Manager of Technical Supplier that provides video production solutions to broadcasters all over the world to gather the insights that are presented in this section.

4.2.1 The Business Model

The business model of the technical supplier is pretty straight forward. It provides the technology for the aggregator and/or the service provider. In both cases the value proposition in the business model of the technical supplier is to sell their equipment. This has as consequence that there are only a few cases in which they can benefit from new technology or innovation. Basically the technical supplier is willing to invest in innovations or new technology when they can create a better user experience for the end consumer (the audience) or when they can simplify the life of the producer.

The incentive to introduce new innovations is twofold. First of all it is important to stay ahead of the competition. This not only makes you more attractive for new customers, but also strengthens the relationship with the existing customers. The Second incentive is when customers are asking for new features or services.

In the case of the company of this particular interviewee the technology they deliver focus on enhancing the captured video with information and serve automatic replays. Their technology is closely connected to the cameras that do the registration of the events. Because they have a close connection at the production side, the FascinatE technology could be interesting. During the interview some of the opportunities were discussed but there was no specific business model as outcome.

Besides delivering the technology, the technical provider can also change its business model by delivering extra services to the customer for the aggregator or service provider. The technical provider can enhance its equipment with the innovative technology and use the Internet channel to deliver the content to the end user. In that case FascinatE can be offered to customers, by capturing all the video streams and deliver them to a mobile app and let the user interact with the content on their smartphone or tablet. There are some challenges in this model, as the right to distribute this content is licensed by the aggregator. So the service could only be provided in collaboration with the producer and/or aggregator.

Conclusion Technical Supplier Business Model

The technologies that FascinatE offer could be interesting for the technical Supplier, although during the interview no concrete intentions to use FascinatE like technology were mentioned.

- The main business model is based on selling technical equipment to aggregators and/or service providers.
- The FascinatE technology can be built in the next generation of their products, so that their clients can enhance their offerings to the end consumer.
- An alternative business model is that the technical supplier integrates the FascinatE technology in their products and offer FascinatE service to the customer branded under the name of the aggregator.

4.2.2 Decision Factors

The interviewee at the technical supplier shared that they don't have a formal process to identify and select innovative technologies. Although the lack of formal process, they make a distinction in the selection of parties that offer these new technologies:

- Technology providers; such as RTO's that creates new technology and tries to find launching customers for it. In that case they aim to identify to what extent it is possible to integrate the technology.

- Parties looking for funding; this can be a small medium enterprise, but also graduates or PhD's from universities that look for options to commercialize their research deliverables.

In the decision process there are many questions that need to be answered in order to understand the potential of such an innovative technology. The first question focuses on the scenarios in which the technology is applied, these scenarios need to describe how the technology could work in a real life situation. Topics that need to be covered are the user experience and the engineering process. The user experience focuses on how the experience is build up and what is exactly delivered to end-users. Information that is needed from the engineering process focuses on the level of involvement of the users in the creation of the technology. The interviewee his view is that it is important to understand the philosophy of the product and understand what the actual problems are that are solved by the technology. Based on these insights most of the innovative technologies are dismissed. If there is still interest in the technology then technical experts have an in-depth look in the technology itself. In this analysis the technology will be discussed to see how it is programmed, how well thought through the architecture is, if there is any IP involved and/or if the technology is already patented. The final step in the technical evaluation is to determine to what extent it could be integrated in the existing architecture of the company. If the new technology passes all these conditions, a rough business plan will be created. The necessary information is gathered and the financial aspects will be looked into. If the business plan is positive it is probably a go, in all other cases the road ends here. There are two relevant persons involved in the decision making process: the relevant product manager together with the relevant R&D manager. Of course supported with support of other departments, but this depends on the questions that need to be answered.

Decision Factors

The following questions are essential in deciding if the technology will be worth investing in or not.

General

- Does the innovation / technology solves an existing problem for our customer or the end user?
- Is the design philosophy in line with that customer group?

Technical

- How well build is the innovation/technology?
- How can the technology be embedded in the existing technical environment of our company?

Business

- Is there a positive high-level business case?

4.2.3 When to Break Even

During the interview the interviewee did not discuss the point when to break even in depth. This is normally done in their rough business case and much more detailed information is needed to get this straight. Another difficulty is the implementation of the technology. There are multiple use cases each of these cases should be looked into. As no concrete details were discussed, it is hard to answer this question in this stage.

4.3 Distributor

The service provider is the company that delivers the audio-visual content to the end consumer. This is the company that has direct consumer contact with the end user and is a potential adopter of the FascinatE technology. We interviewed the Head of Standards of a large telecom operator in the UK to gather the insights that are presented in this section.

4.3.1 The Business Model

The service provider does only own the distribution rights of the content. It only makes it possible to distribute the TV signal to the end consumer and in some limited cases add some value to this service. The customer pays for the basic and the advanced services. An example of those advanced services are interactive TV services like catch-up TV or network PVR. The difficulty of innovation in the case of the service provider is that when they want to offer services that are content specific, they have to work closely with the aggregator, as they do not have any content rights. This is also the case for the

FascinatE technology, to deliver or enhance the business model it is important to understand with content of whom the service or product can be offered. It is not likely that the business model will change significantly; it is most likely that it will be a paid added service or an enhanced feature of an existing service.

There were some content types that could benefit from the FascinatE technology. Some specific shows were mentioned such as the X Factor and sports matches. Conclusions of the interviewee were that the FascinatE technology could be of interest, but that there is no specific action for the service provider. Instead when such technology is introduced there are two options. The first is to simply request this technology by the technical provider. The second is to discuss the technology with the aggregator and the technical supplier, to explore the potential and to come to an understanding how to deliver the FascinatE functionality to the end users.

Conclusion Technical Supplier Business Model

The FascinatE technology can only be offered in cooperation with the aggregator.

- The main business model is based on selling basic and advanced TV services on a subscription basis.
- The FascinatE technology can be offered as an enhanced feature of an existing product (for example as an added service for interactive TV)

4.3.2 Decision Factors of Potential Users

The main focus of investing in new technology is to offer the customers a better experience. It starts by examining the existing supply side of the service provider. The most important question for the service provider in selecting innovative technologies is: 'for what kind of service can this technology be used?' In other words, would like to understand if the technology can be used in conjunction with or enhance any of the service propositions in the portfolio. The second question the interviewee brought up is: 'how will the technology affect our business?' There are broadly spoken two options: the new technology is enabling a new service or it is an enhanced feature for an existing product.

In the first case it is good to know what kind of new service it is enabling. Than a very high-level business case becomes relevant. In this high-level business case the following information should be available: 1. the user group of this new service and 2. how it extend the product portfolio.

In the second case the service provider tries to understand what existing service in the portfolio could be enhanced. In this case it could fit one of the services that the company we have interviewed offered, because of its characteristics: it has a fixture on demand and High Definition TV. When there is a match with an existing service it is important to understand if the technology is compelling enough. To find this out there is a clear need for (tested) use cases. In the case of FascinatE there are some sports cases that can be relevant or for example other live shows, such as X Factor. The preconditions to make this successful is that there should be live content, and that there need to be significant audiences interested in this kind of interactivity.

When it looks like that the new technology could be interesting, the question is how the service provider gets access to the new technology. If the technology enhances an existing product or service, the technical suppliers of that product will be asked if they have similar technology available and/or when the technology becomes available. If this could be a completely different product, we will research more in depth if and how we can set up such a service.

Decision Factors

The following questions are essential in deciding if the technology will be worth investing in or not.

General

- Does the innovation / technology has a fit with an existing proposition?
- Is this innovation / technology compelling enough to create a new proposition?

Business

- Is there a (paying) user group available in the market?
- Is there a positive high-level business case?

Technical

- Is it something that our technical suppliers can deliver?

Is it something that we need to invest ourselves in?

4.3.3 When to Break Even

During the interview the interviewee did not discuss the breakeven point. It is clear that there are differences between new products and services and enhanced services. For enhanced services the new features are also introduced in the new equipment, so when the technology need to be replaced the new features arrive.

Conclusion

The FascinatE technology can only be offered in cooperation with the aggregator and technical supplier.

- It is most likely that new innovative technology will not be developed, but bought by the service provider as soon as there is a viable business case.

5 Impact on Network Technology Developments

The insights gathered in this deliverable can have impact on three levels of the technology developments.

The first insight is that the demonstrator needs to be used in more advanced customer test setup to understand in which use cases the technology actually works and is perceived as useful. This is information that is very important for all of the interviewees. They want to understand if these use cases are realistic for a (paying) consumer group and what the service would look like in that case.

The second is taking into account an existing technical architecture in which the technology should work. All of the interviewees noticed that it is important to know how the architecture looks like and to what extent it could be integrated in the existing architecture of their company. Therefore it is important to keep in mind that the technical development should be flexible enough to fit in all infrastructures.

The last insight is more practical. It seems that for the network technology it looks like that the technical supplier is the most likely party to adopt this network technology. This could be a starting point to answer the technical questions from this perspective.

6 Remarks and Considerations

The interviews were done with a limited group of people. Most of the people work in the product development and have both the commercial and the technical vision to understand the impact of FascinatE technology on their company. Although we tried to interview parties of different types, the amount of interviews is limited. Consequence is that the perspectives are from different geographical areas and, as we have seen in the deliverable 4.2.1 and 4.2.2 the location of the companies can have impact on the way the interviewees look at the technology and at the market viability of the technologies.

Although there were a limited amount of interviews the insights were consistent. The need for information and especially more specific information on how the technology will affect a specific market or company is very relevant. This is something that could have been done in an earlier stage of the project. For example, the use cases were determined in the research group, but were not validated with end users. Of course this is difficult to do so early in the process, but the lack of validated use cases can be a hurdle in the demonstrator stage of the technology. Also the future potential of the technology need to be taken in mind.

When the development of technology starts, it is important to understand the market in which the technology should land. To get a better view it is recommended to perform an overall company scan. In this scan, information about the country where the companies are active (and the technical and business characteristics of that country), their business model and state of the art technology can be gathered on high level. These variables provide insights about the groups of companies that can benefit from the new developed technology and help also to focus the research to deliver something that has a clear fit with that group in the market. Alternative to gather the information yourself, another option is to acquire this information from consultant agencies such as Parks Associates, futurescape.tv and others.

In the next and last deliverable, we will review the approach in this work package in more detail. The remarks and considerations of this deliverable will be taken into account.

7 References

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8 Glossary

Terms used within the FascinatE project, sorted alphabetically.

BMC	Business Model Canvas
PCM	Product Market Combination
iDirector	A product market combination that is defined in the first and second deliverable of D4.1.1
EVS	EVS offers evolutive video equipment and systems to video professionals by providing modular, open, efficient and reliable solutions.
UPC	International Cable Operator that provides TV, telephony and Internet connections to consumers in selected geographical areas.

Partner Acronyms

ALU	Alcatel-Lucent Bell NV, BE
ARI	Arnold & Richter Cine Technik GMBH & Co Betriebs KG, DE
BBC	British Broadcasting Corporation
DTO	Technicolor, DE
HHI	Heinrich Hertz Institut, Fraunhofer Gesellschaft zur Förderung der Angewandten Forschung e.V., DE
JRS	JOANNEUM RESEARCH Forschungsgesellschaft mbH, AT
SES	Softeco Sismat S.P.A., IT
TII	The Interactive Institute, SE
TNO	Nederlandse Organisatie voor Toegapast Natuurwetenschappelijk Onderzoek – TNO, NL
UOS	The University of Salford, UK
UPC	Universitat Politecnica de Catalunya, ES