

Volere

Partial Example Requirements Specification

for

EasyLife Ltd.

Universal Entertainment Controller

*This **partial** example is intended for users of the Volere Requirements Template. The example illustrates how you could use Volere to specify the requirements for a Universal Entertainment Controller.*

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principals of the Atlantic Systems Guild

The Volere Requirements Specification Template is intended for use as a basis for your requirements specifications. The template provides sections for each of the requirements types appropriate to today's software systems. You may download the template from the Volere site and adapt it to your requirements gathering process and requirements tool. The template can be used with Requisite, DOORS, Caliber RM, IRqA and other popular tools see <http://www.volere.co.uk/tools.htm>

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Volere

Volere is the result of many years of practice, consulting, and research in requirements engineering and business analysis. We have packaged our experience in the form of a generic requirements process, requirements training, requirements consultancy, requirements audits, a variety of downloadable guides and articles, and this requirements template. We also provide requirements specification-writing services.

The first edition of the Volere Requirements Specification Template was released in 1995. Since then, organizations from all over the world have saved time and money by using the template as the basis for discovering, organizing, and communicating their requirements.

The Volere web site www.volere.co.uk contains articles about the Volere techniques, experiences of Volere users and case studies, requirements tools, and other information useful to requirements practitioners.

The Volere requirements process is described in the book *MASTERING THE REQUIREMENTS PROCESS—SECOND EDITION* by Suzanne Robertson and James Robertson, Addison-Wesley, 2006. ISBN 0-321-41949-9

FOR MORE ABOUT MANAGING REQUIREMENTS SEE *REQUIREMENTS LED PROJECT MANAGEMENT* by Suzanne Robertson and James Robertson, Addison-Wesley, 2005. ISBN 0-321-65904-X

Updates to this template and instructions for downloading are available at <http://www.volere.co.uk>

Public seminars on Volere are run on a regular basis in Europe, the United States, Australia, and New Zealand. For a schedule of courses, refer to www.volere.co.uk.

1. The Purpose of the Project

1a. The User Business or Background of the Project Effort

Every entertainment device released onto the market comes with its own controller, this results in people needing to have many controllers and to understand how each one works. Market research shows that people would like one controller capable of controlling all their entertainment devices. We have decided to build a product capable of controlling all the entertainment devices in a Viewer/Listener's home.

1b. Goals of the Project

Purpose:

We want to sell N entertainment controllers during the first year and we want a growth rate of N% per year.

Advantage:

We want to become the recognized provider of entertainment controllers for the home entertainment industry.

Measure:

Graphs specifying numbers of controllers sold, projected revenue for the first N years, both worldwide and by country

2. The Stakeholders

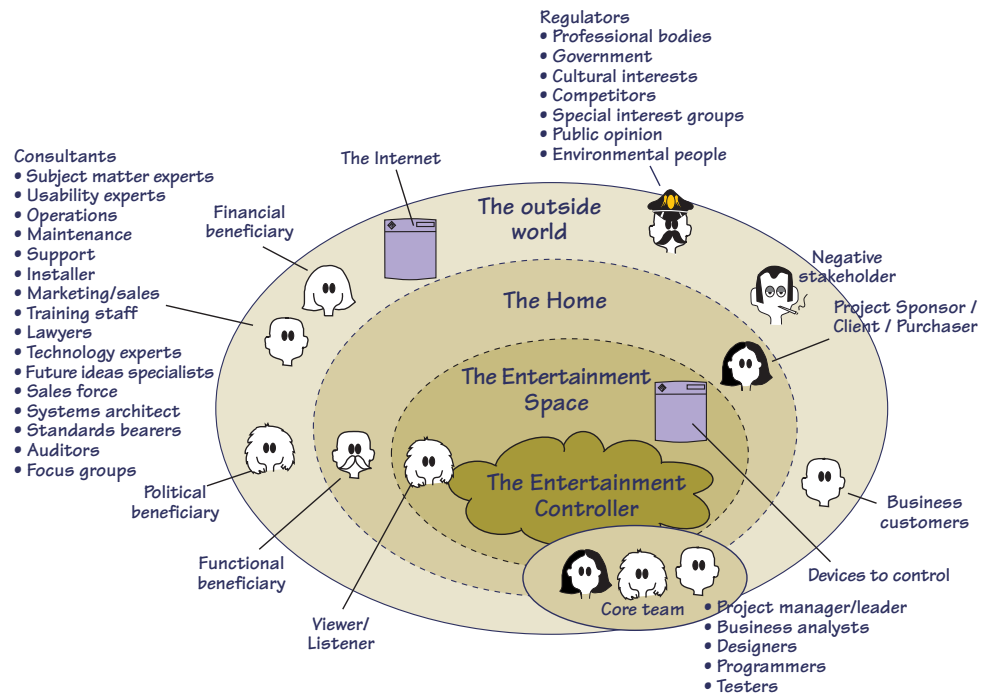
2a. The Client

Charles Quicksilver, the chief executive officer of EasyLife Ltd.

2b. The Customer

- Organisations who sell entertainment devices and might be influenced to provide our Entertainment Controller as part of their sales package.
- Viewer/Listeners who would like to have a Universal Controller.

2c. Other Stakeholders



The above diagram is a map of all the stakeholders who are affected by the entertainment controller or whose input is needed in order to build it.

For each type of stakeholder, provide the following information:

- Stakeholder identification (some combination of role/job title, person name, and organization name)
- Knowledge needed by the project
- The degree of involvement necessary for that stakeholder/knowledge combination
- The degree of influence for that stakeholder/knowledge combination
- Agreement on how to address conflicts between stakeholders who have an interest in the same knowledge

2d. The Hands-On Users of the Product

User Categories:

- Adult buyers of home entertainment devices
- Adult viewers and listeners
- Child viewers and listeners
- Other user characteristics: Describe any characteristics of the users that have an effect on the requirements and eventual design of the product. For example:

Physical abilities/disabilities

Intellectual abilities/disabilities

Attitude toward job

Attitude toward technology

Education

Linguistic skills

Age group

Gender

3. Mandated Constraints

3a. Solution Constraints

Description: The entertainment controller device shall communicate with the entertainment controller web page via a USB cable.

Rationale: This is the most commonly available interface in viewer/listeners' homes.

Fit criterion: The USB interface shall meet standard XKBV22.

Description: The product shall be a hand-held device.

Rationale: The product should be easy for people to carry.

Fit criterion: The product shall weigh no more than 300 grams, no dimension shall be more than 15 centimeters, and there shall be no external power source.

3e. Anticipated Workplace Environment

The room/s of Viewer Listeners' houses/apartments where entertainment systems are installed.

3f. Schedule Constraints

The controller must be ready to be provided to suppliers one year after the start date of this project.

3g. Budget Constraints

The budget for this project is €850,000. Bear in mind that the work already done for the Snapey project will be input to this project.

4. Naming Conventions and Definitions

4a. Glossary of All Terms, Including Acronyms, Used in the Project

A glossary containing the meanings of all names, acronyms, and abbreviations used within the requirements specification. *The following is an incomplete example.*

Device Name— Name of device to be controlled by the Electronic Controller

Entertainment Controller — The product that will control the entertainment technology in Viewer/Listeners' homes. This device is the product that will be built by this project

Manufacturer Name— Name of the manufacturer of a device to be controlled by the Electronic Controller

Model Number— Unique identifier of a particular model of a device to be controlled by the Electronic Controller

New Technology— New devices that a Viewer/Listener wishes to control with the Electronic Controller

Viewer/Listener— Person who uses the entertainment controller to control entertainment devices

Note that this Glossary is a starting point for gathering terminology and creating a shared understanding. Eventually some of the terms will be formally defined in a Data Dictionary (Section 7) that supports all of the models used by this project.

5. Relevant Facts and Assumptions

5a. Facts

Research shows that households have an average of 3 controllers for controlling their entertainment systems.

Children spend an average of 30 hours per week watching TV or video

5b. Business Rules

We must abide by the electrical emissions guidelines EM273/1

5b. Assumptions

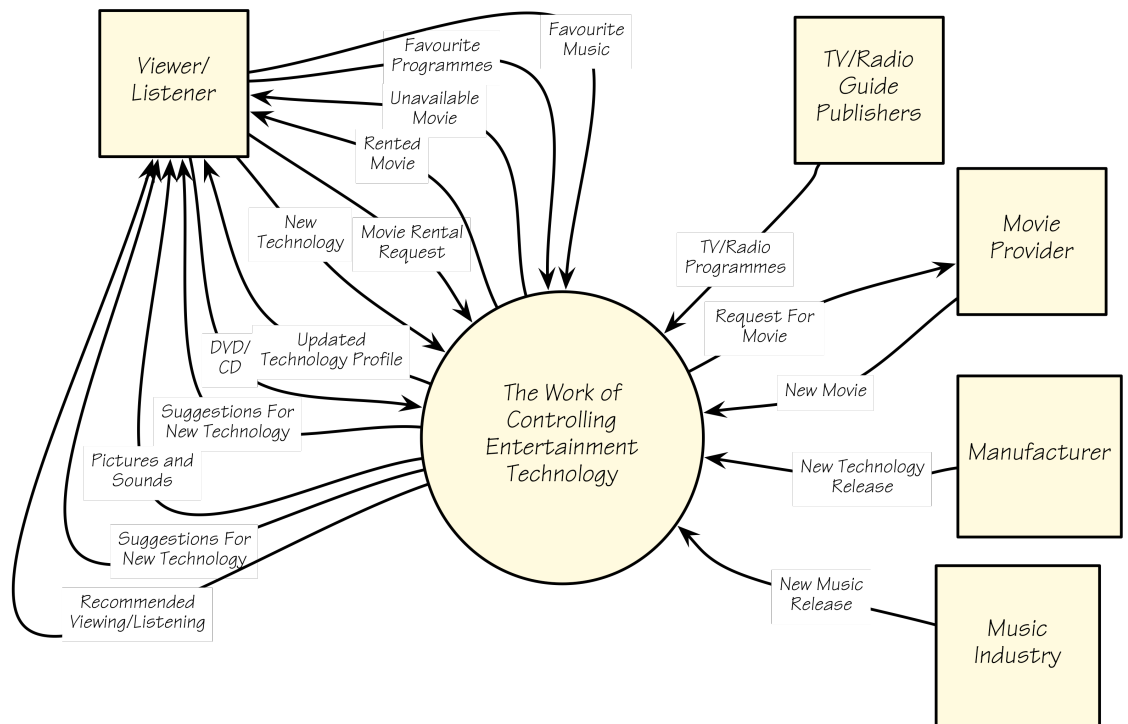
We assume that the viewer/listeners will have access to the Internet in order to load their technology profile onto the entertainment controller.

6. The Scope of the Work

6a. The Current Situation

Currently our target customers control their TV's and DVD players using a combination of controller devices. Here we include pictures of several typical home entertainment areas in Viewer/Listeners' houses to give the designers more input about where the eventual product will be used.

6b. The Context of the Work



The above identifies the scope of the investigation necessary in order to discover the requirements related to controlling entertainment technology. The model shows the detailed area of investigation and how it connects to the Viewer/Listener and the Manufacturer.

6c. Work Partitioning

BUSINESS EVENT LIST

Event Name	Input and Output	Summary of BUC
1. Viewer/Listener wants to use new entertainment technology	- New Device Purchase (in) - Updated Technology Profile (out)	Find the details of the new technology device and media, add to technology profile and confirm new technology profile.
2. Viewer/Listener wants to access content of DVD/CD	- Request To View/Listen (in) - Pictures and Sounds (out)	Identify the devices relevant to the Request To View/Listen and activate the technology to produce pictures and/or sounds.
3. Viewer/Listener wants to rent a movie	- Movie Rental Request (in) - Request For Movie (out) - New Movie (in) - Rented Movie (out) - Unavailable Movie (out)	Ask the Movie Provider for the requested movie, keep track of the rental and make the rented movie available to the Viewer/Listener
4. TV Guide is Published	- TV/Radio Programmes (in) - Recommended Viewing/Listening (out)	When a TV/Radio Guide is published recommend viewing/listening appropriate for a Viewer/Listener's favourites and history.
5. Manufacturer releases new technology.	- New Technology Release (in) - Suggestions for New Technology (out)	When a manufacturer releases new technology, then check the Viewer/Listener technology profile suggest new technology if appropriate.
6. Music Industry releases new music	- New Music Release (in) - Suggestions for New Music (out)	When the music industry releases new music check the Viewer/Listener listening history and favourite music and

		suggest new music if appropriate.
7. Viewer/Listener chooses favourite programmes	- Favourite Programmes (in)	Keep a record of the Viewer/Listener's favourite programmes.
8. Viewer/Listener chooses favourite music	- Favourite Music (out)	Keep a record of the Viewer/Listener's favourite music.

The above business event list partitions the work into eight functional chunks of work/business each of which can be separately investigated.

Attempting to list the business events is a way of testing the work context. This activity uncovers uncertainties and misunderstandings about the project and facilitates precise communications. When you do an event analysis, it will usually prompt you to make some changes to your work context diagram.

6d. Business Use Case (BUC) scenarios

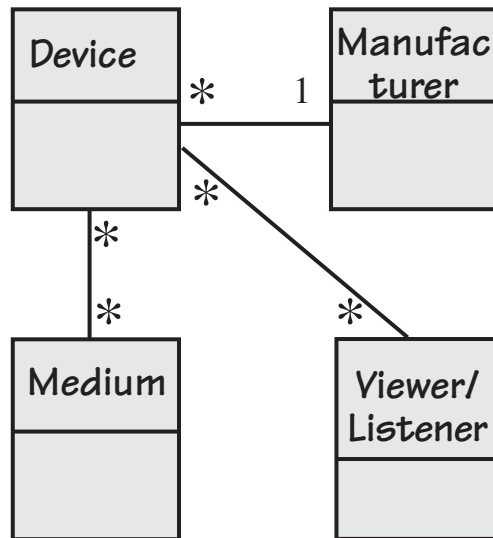
BUC Scenario for Business Event 1: Viewer/Listener wants to use new entertainment technology

- For each new device mentioned in the New Technology
 - Get the manufacturer's specification of the device
 - Record the device's interface specification
 - For each medium input or output from the device
 - Record the medium's specification
- Confirm the Updated Technology Profile to the Viewer/Listener

7. Business Data Model

7a. Data Model

The business data model identifies the classes (rectangles) of business data and the relationships (lines) between them. The cardinality is represented by * (many) and 1 (one). This data model uses UML class model notation – there are many other alternative notations. The attributes of each class are defined in the data dictionary (see 7b).



7b. Data Dictionary

Definitions of all the data names used within the requirements specification. The data names used in all requirements (including models and higher level summaries) should be identical with the names defined in the dictionary.

The following is an incomplete example.

Data Dictionary for Entertainment Controller Project

Data Name	Description	Definition	Data Type
Device	Device manufactured by manufacturer	Device Name + Device Model Number	Class
Device Model Number	Unique identifier for a device	Format varies depending on manufacturer	Data Element
Device Name	Name of device to be controlled by electronic controller	[CD Player DVD Player Television Speakers]	Data Element
Manufacturer	Organisation that manufacturers devices	Manufacturer Name + Manufacturer Address + Manufacturer Web Page + Manufacturer Contact	Class
Manufacturer Name	Company name of the manufacturer	[B and O Grundi , Panasonic Phillips Sony Toshiba]	Data Element
Manufacturer Contact	Primary contact at manufacturer		Data Element
Manufacturer Address	Head office address		Data Element

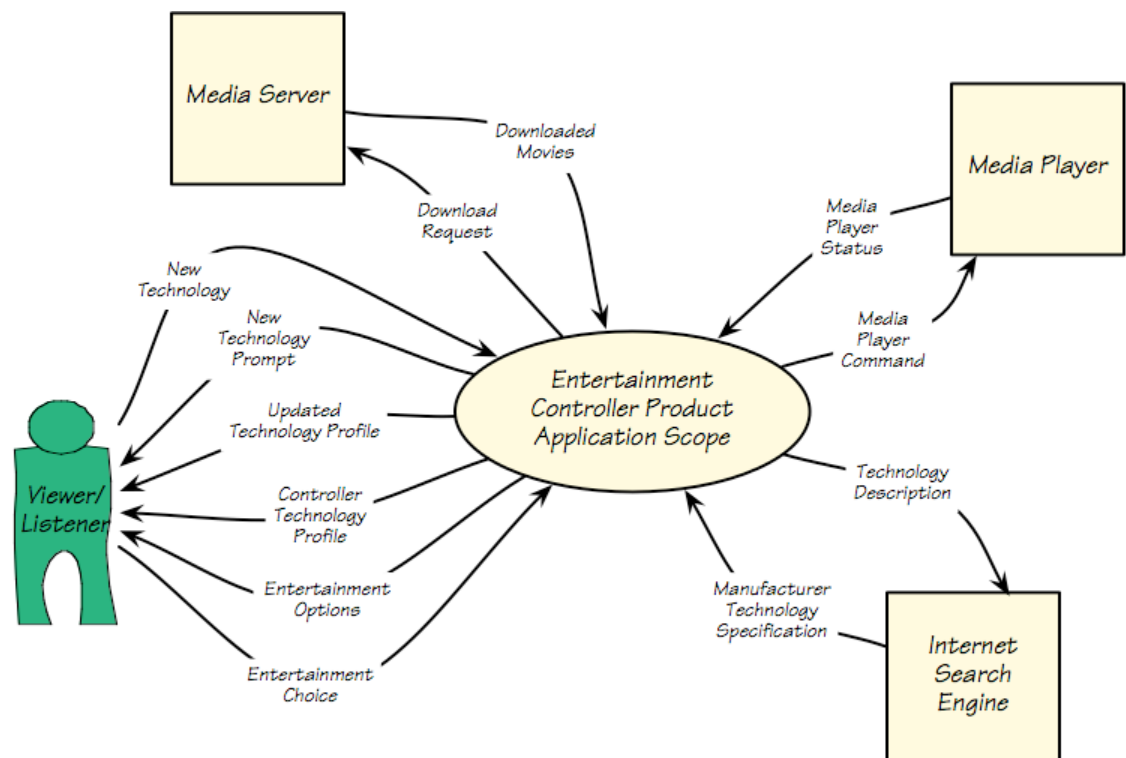
Manufacturer Web Page	Home page URL for Manufacturer		Data Element
Movie Rental Request	Request to rent a movie	[Movie Name Actor Names Director Name]	Dataflow
Medium	A medium that is input and/or output by a device	Medium Name + Input Signal + Output Signal	Class
Medium Name	The names of media relevant to a given device	[Picture Sound]	Data Element
New Technology	Details of new technology that a viewer wants to control	Device Name + Device Model Number + Manufacturer Name	Dataflow
New Technology Release	Details of a new technology that has been released by a Manufacturer	Device Name + Device Model Number + Manufacturer Name + Release Date	Dataflow
Pictures and Sounds	Entertainment transmission to a Viewer/Listener	[TV Programme Film Radio Programme CD Content DVD Content]	Dataflow
Request to View/Listen	Indication that Viewer/Listener wants to access entertainment media	Viewer/Listener Name + [CD DVD Programme Name Channel Name Movie Name]	Dataflow
Rented Movie	Confirmation of movie rental	Viewer/Listener Name + Movie Name + Rental Fee + Rental Expiry Date	Dataflow
Updated Technology Profile	Details of all devices that a viewer wants to control	Viewer/Listener Name + {Device Name + Device Model Number}	Data Flow
Viewer/Listener	Person who owns a device	Viewer/Listener Name + Viewer Listener Address	Class

8. The Scope of the Product

8a. Product Boundary

The *product application scope diagram* (below) identifies the boundaries between the users (actors) and the product. This diagram is a *summary* of all of the *product use cases*. You arrive at the product boundary by inspecting each business use case and determining, in conjunction with the appropriate stakeholders, which part of the business use case should be automated (or satisfied by some sort of product) and what part should be done by the user. This task must take into account the abilities of the actors (section 3), the constraints (section 4), the goals of the project (section 1), and your knowledge of both the work and the technology that can make the best contribution to the work.

The use case diagram shows the actors outside the product. The product use cases are inside the boundary. The lines denote interfaces between the product and an actor. Note that actors can be either automated or human.



8b. Product Use Case Table

The product scope diagram (above) is a useful summary of all the interfaces between the product and other automated systems, organizations and users. If there are a manageable number of PUC's – say less than twenty – then the PUC diagram is useful as a graphical way of summarizing the PUC's

relevant to the product, But in practice we have found that a Product Use Case Table is more useful because it can handle larger numbers of PUCs and it precisely identifies the input and output data that defines the boundary of each PUC. The following is a PUC Table for the PUCs derived from BUC 1. Notice that the names of the inputs and outputs are the same as those used in the data dictionary in section 7.

Product Use Case (PUC) Summary Table

PUC No	PUC Name	Actor/s	Input & Output
1.1	Find Device Specs	Viewer/Listener	New Technology (in), New Technology Prompt (out)
1.2	Update Controller Technology Profile on Web		Device Specification (in)
1.3	Display Technology Profile on Web	Viewer/Listener	Updated Technology Profile (out)
1.4	Activate Controller Interface	Viewer/Listener	Ready (in)
1.5	Update Technology Profile on Controller		Start (in)
1.6	Display Technology Profile on Controller	Viewer/Listener	Controller Technology Profile (out)

8c. Individual Product Use Cases

A product use case (PUC) is part of the BUC that will be carried out by the product. There can, and often will, be several PUCs related to one BUC. This is where you keep details about the individual product use cases on your list. You can include a scenario for each product use case on your list.

Following on from the BUC example in Section 6, here is an example of using a BUC Scenario as the input for exploring how a product could carry out/assist with and potentially improve the BUC. Note that there could be many versions of the annotated BUC; It is intended as a vehicle for exploring preliminary design ideas and for questioning the current business rules.

Annotated BUC Scenario for Business Event 1: Viewer/Listener wants to use new entertainment technology

- For each new device mentioned in the New Technology

The Viewer/Listener can input the manufacturer/device type/model via the web.

- Access the manufacturer's specification of the device

The web page can access this specification directly from the Internet

- Record the device specification

The controller can receive the interface spec from the web (USB, wireless??)

The web page can keep a record of the technology profile for the controller

How many devices will the controller need to be able to control?

- For each medium, input or output from the device

- Record the medium's specification

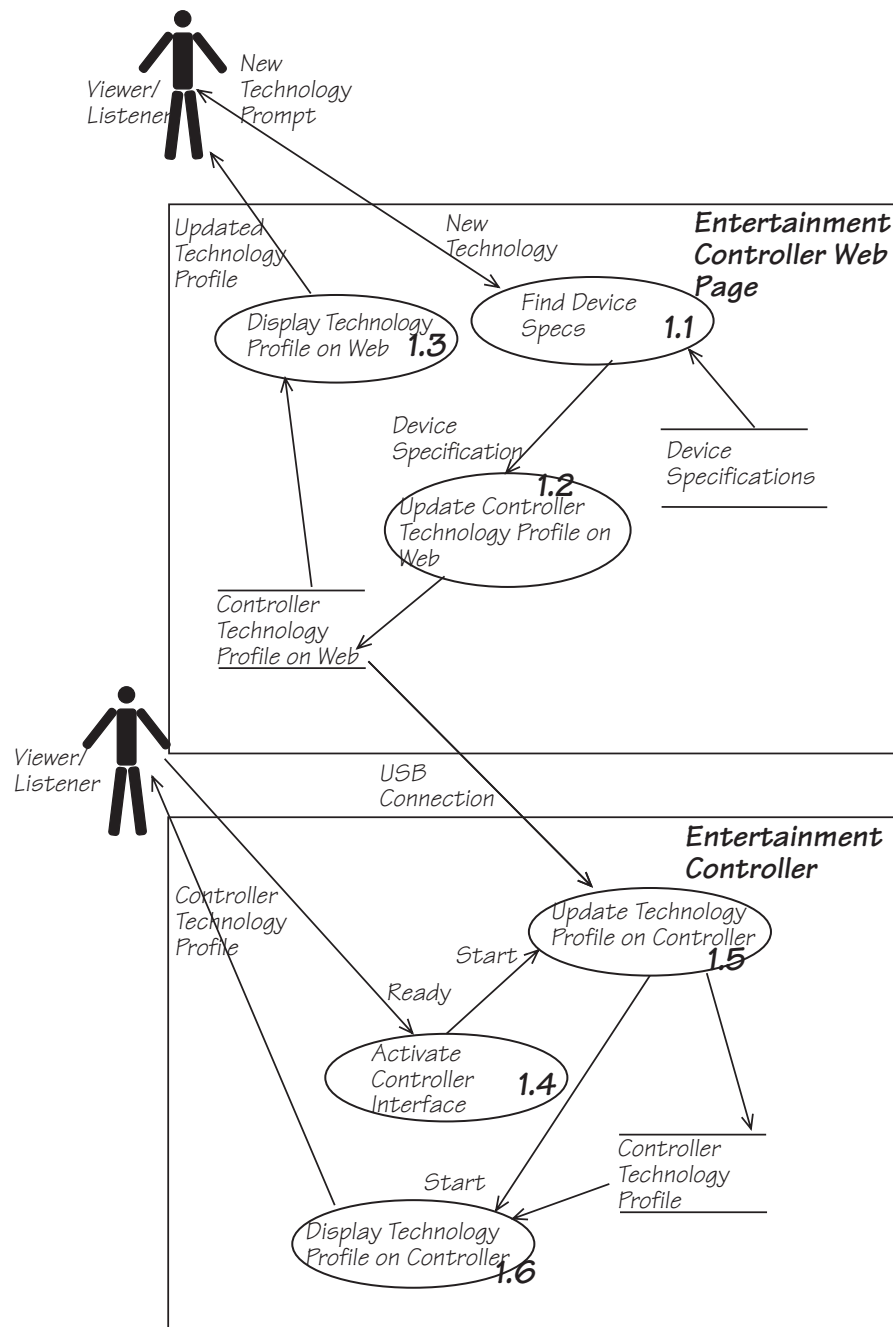
How many media for each device?

- Confirm the Updated Technology Profile to the Viewer/Listener

Viewer/Listener can access the technology profile via the Internet or via the controller

****The example annotated BUC scenario shows the discussions and questions that were raised and the ideas that were suggested in order to make a decision about how much of the BUC will be carried out by the product. ****

The following example shows the Product Use Cases (PUC's) derived from the decisions made about how much of BUC 1 will be carried out by the product:



8d. Product Use Case Scenarios

The following is an example of a scenario for one of the PUC's derived from BUC 1

PUC 1.1 Find Device Specs - Traceable back to BUC 1

For each new device mentioned in the New Technology:

- Prompt the Viewer/Listener to identify/provide the manufacturer/
device type/model number of the new device

- Accept manufacturer name/device type/model number from the Viewer/Listener
- Search the web to find the matching manufacturer name/device type/model number
- Confirm the match with the Viewer/Listener
- Get the device specification

9-17 Functional, Data and Non-functional Requirements

This is a specification for each atomic requirement. As for all types of atomic requirements (functional, non-functional, constraint), use the requirements shell as a guide for which attributes should be specified. A full explanation of the atomic requirement and its attributes is included in this template's introductory material.

PUC Number
1.1 (see PUC scenario 1.1)

PUC Name
Find Device Specs

BUC Number
1 (see BUC scenario 1)

Rqt #	Rqt Type	Description	Rationale	Fit Criterion	Sub Systems
EC001	Functional	The product shall prompt the Viewer/Listener for the manufacturer name, device name and model number.	Need to let the Viewer/Listener know what is required in order to set up a new device.	See definitions of device manufacturer name, device name and model number in Terms and Definitions	Viewer Web Interface
EC002	Functional	The product shall accept the device manufacturer device name and device model from the Viewer/Listener	Need to know which new devices to add to the controller's technology profile.	See definitions of device manufacturer name, device name and model number in Terms and Definitions	Viewer Web Interface
EC003	Functional	The product shall search the web to find the matching manufacturer name/device type/model number	Need to look for device specifications.	See definitions of device manufacturer name, device name and model number in Terms and Definitions	Web Page
EC004	Functional	The product shall confirm to the Viewer/Listener that a matching device has been located.	Need to ensure that the device located is the one intended by the Viewer/Listener.	See definitions of device manufacturer name, device name and model number in Terms and Definitions	Viewer Web Interface
EC005	Functional	The product shall get the device specification for the matching device.	Need for the Entertainment Controller to have the device specification.	See definitions of device specification in Terms and Definitions.	Web Page

EC006	Look and Feel	The product shall be recognisable as an Easylife product.	To promote the Easylife brand.	Viewer/Listeners are able to recognise the product as an Easylife product the first time they use it.	Viewer Web Interface
EC007	Usability	The product shall make it easy for the Viewer/Listener to enter the manufacturer name, device name and model number	To avoid annoying the Viewer/Listener and wasting his time.	The Viewer/Listener can tell the product the manufacturer name, device name and model number within n secs without any training or need to consult instructions.	Viewer Web Interface
EC008	Performance	The product shall not cause any physical harm to the Viewer/Listener.		The product shall pass safety certification tests A, B & C.	Web Page
EC009	Performance	The product shall find the device specification quickly.	To avoid annoying the Viewer/Listener.	The product finds the device specification within n secs of the Viewer/Listener telling the product the device manufacturer name, device name and model number.	Viewer Web Interface, Web Page
EC010	Operational	The product shall run on the most popular Internet browsers.	To be compatible with the Viewer/Listener's environment.	All product's functions allocated to the internet must work as specified using all the browsers specified in the Easylife Browser compatibility list version 10.	Viewer Web Interface, Web Page
EC011	Maintainability	The product shall be able to recognise device specifications for future new devices.	New devices are continually being released on the market.	Any new device that satisfies the definition of device specification in Terms and Definitions shall be recognisable by the product.	Web Page
EC012	Security	The product shall only allow the authorised Viewer/Listener to change the controller technology profile.	To avoid annoying the owner of the controller.	Any change made to the controller technology profile is proved to be made by the authorised Viewer/Listener.	Viewer Web Interface, Web Page

EC013	Cultural	The product shall be usable by Viewer/Listeners who do not speak English.	To expand the market for the entertainment controller.	A representative sample of Viewer/Listeners who do not speak English are able to set up a controller technology profile within n time units.	Viewer Web Interface
EC014	Legal	The product shall only allow the authorised Viewer/Listener to access the technology profile.	To protect the Viewer/Listener's privacy.	All access to the technology profile must comply with the Data Protection act.	Viewer Web Interface, Web Page