

COMPETITIVENESS AND INNOVATION FRAMEWORK PROGRAMME

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DTV4ALL

WP 1 Detailed Work Plan for the Pilot

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2 Summary

This document is based on Annex 1 – Description of Work for DTV4All. It outlines the tasks that have to be completed so that the detailed Scope of the Pilot can be determined and approved by the Commission.

The document includes:

- The rationale of doing a Pilot on mature services.
- Clarification of the scope of digital television access needed to for the Pilot.
- A detailed breakdown of the goals and outcomes for Work Package 1 (WP1) – essentially what kinds of information the Pilot of mature access services (WP2) is expected to produce
- A workplan for each task in WP1 (who contributes to the planning, execution, quality assurance and signing-off of each task). (to be completed)
- A detailed timetable for completing WP1 by September 30, 2008.

The Description of Work, DoW (c.f. pages 33-53) requires DTV4ALL to complete three sub-packages:

- WP 1.1 Which audiences, content and services – and how much? (i.e. details of the target audiences and their needs, the content genre for which access services will be provided and some quantification of the services themselves)
- WP 1.2 On which devices and platforms [Stakeholders in the supply chain. Which access services will be produced and delivered to which devices?]
- WP 1.3 Which business models and regulatory regimes? [Stakeholders external to the supply chain. How is agreement reached about the access services to be offered and funded?]

In order to do so, a framework for agreeing the objectives and scope the Pilot for mature access services itself is needed. This is what is proposed in the next section.

3 The rationale of doing a Pilot on mature access services

There is a vision underpinning the project itself – e-inclusiveness. It is about a Europe in the not-too-distant future where as many Europeans as possible are able to access digital television.

E-inclusiveness is thus more than just assistive technologies in the form of access services in programmes produced specifically for those with disabilities. It is also about television programming in general, about making it easier for anyone to benefit from television regardless of age and possible disabilities. The working assumption is that digital technology allows us to improve the ease with which people can discover, use and benefit from television to a degree that was not possible with analogue solutions.

The vision has its basis in various treaties and legislation, one of which is Article 26 of the Charter of Fundamental Rights of the European Union. This “recognizes and respects the right of persons with disabilities to benefit from measures designed to ensure their independence, social and occupation integration and participation in the life in the community.” It is based on the tenet that, in a society where individuals are diverse in nature, we share a collective responsibility to be socially inclusive. TV access services are a means of doing this.

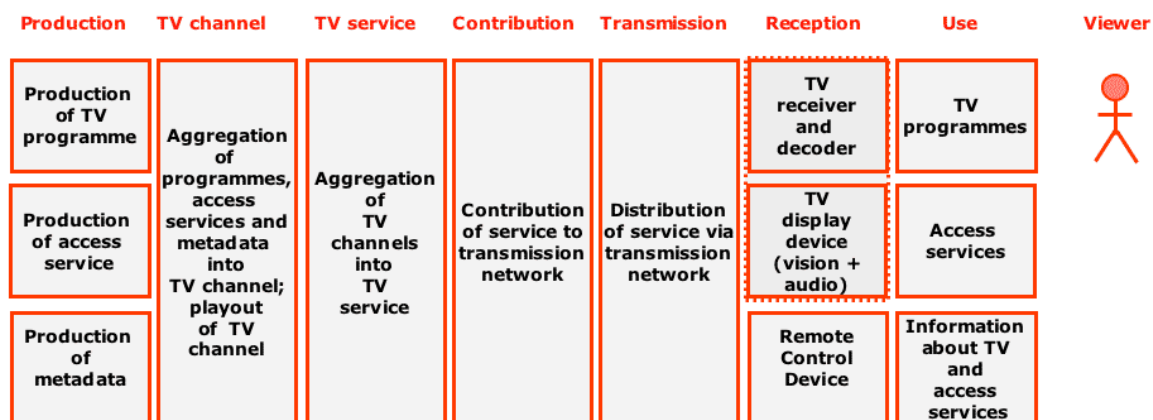
Access services for digital television are already available in many member states. To improve the e-inclusiveness of television, action is required on three fronts:

1. In the short term, facilitating the take-up of mature access services on what we have termed first generation digital television (1997-2012, broadcast systems based on MPEG-2).
2. Preparing for the second generation of digital television by assessing the viability of mature services on second generation digital television platforms.
3. Identifying and validating emerging solutions that will either replace mature access services or extend the scope of access provisions on second generation digital television platforms.

The Pilot of mature services (WP2) can contribute with inputs to the first two points. Proof of Concept work on emerging solutions (WP3) will contribute to the third.

What WP1 has to provide for the Pilot - in addition to the activities already mentioned in the DoW - is the rationale of the Pilot of mature services, how the Pilot will contribute to realising the e-inclusiveness vision. The consortium also needs to agree the scope and operational objectives of the Pilot with the Commission. We can do so by answering the question: *Who needs to know what in order to be able to plan, produce, deliver, promote and successfully use mature access services by 2010?*

As regards the “*who*” part of the statement, our existing plans in the DoW focus on those with access problems, primarily those with impaired sight and hearing. Mention is also made of consumer electronics manufacturers. We suggest the use of the complete supply chain as our starting point for scoping. It is necessary to keep in mind the needs of the viewers’, the stakeholders in the supply chain itself and those who influence it such as regulators and legislators. A generic supply chain is included here:



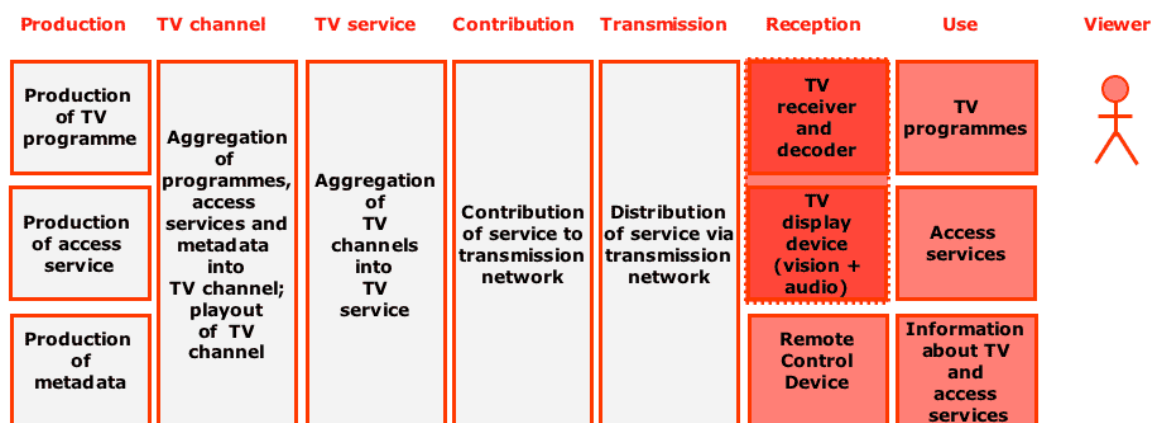
As far as the “*what*” is concerned, the DoW outlines activities that can identify strategic issues about the reception and use of access services. By working *backwards* through the supply chain from the viewer, it is possible to identify key strategic issues facing all key stakeholders. Working from right to left also helps us to maintain our focus on strategic inputs rather than doing research for its own sake.

In order to “*plan, produce, deliver, promote and successfully use mature access services by 2010*”, the DoW already mentions a generic life-cycle, 9 stages through which a specific access service goes through from its inception until it is finally closed down (usually to be replaced by something new and better). The aim of WP1 is to rank strategic issues in the order they need to be addressed by the various stakeholders. c.f. section 5.3 after N on page 33 of this document.

4 The scope of the Pilot on mature services

This section identifies various actions that could be included in the scope of the Pilot. For each action identified, there are three options: including the action in the Pilot (WP2), referring it to Proof of Concept work (WP3) or recommending that the action be outside the scope of the project.

4.1 The viewer, receiving and using television



According to a recent digital switchover study¹, the key issues affecting the viewer are:

- awareness of the existence of access services
- being able to discover and gain access to access services associated with digital television
- the ease of use of the access service
- the usefulness of the access service and
- the attractiveness of the access service.

These 5 general success criteria will be used to assess the e-inclusiveness of access services.

¹ Damodaran, Leela (2004). Analogue To Digital Switchover: Human Aspects Of Adoption A Scoping Study For The Digital Television Project CRSP456. Loughborough University, UK.
http://www.digitaltelevision.gov.uk/pdf_documents/publications/scoping_study.pdf

4.1.1 Television programmes

Television is generally synonymous with television *programmes* which are aggregated into television *channels*. Television programmes can be pre-recorded or live, can be aired once or repeated, and may be available for viewing at a time of the viewer's choosing via Personal Video Recorders (PVRs), an On-Demand or video podcasting service or even on optical discs such as DVD boxes.

The overwhelming majority of those with perception, cognition or motion impairments would like to access television². Not all content genres lend themselves to mature access services such as Audio Description. "Some programmes are too fast-moving, or offer little opportunity to insert audio description (e.g. news), or may not be significantly enhanced by the provision of audio description (e.g. quiz programmes)."³

The working assumption here is that television programme attributes and genres, as well as their use when broadcast and at a time of the viewer's choosing needs to be specified. The topic will be dealt with in more detail in section 4.1.4.

4.1.2 Television other than television programmes

Compared with analogue television, *digital* television has the potential to offer 5 additional content components:

1. Some kind of *Electronic Programming Guide*, EPG, containing listings of programmes that are available to the user (as a minimum, "Present" and "Following" but commonly descriptions of programmes for up to 8 days ahead). The listings normally include accurate and complete information about the attributes of a given programme, for example if the programme is in the 16:9 format, in High Definition or whether it offers subtitles, Audio Description or deaf-signing.
2. A *Digital Text Service* (in some cases just Teletext using text and primitive graphics, in others an information service that uses television-like text, graphics and scaled video). A digital text service is the television's "back garden", a place where users can not only find information relating to television programmes but also information services such as news, weather, sports results and the like. Digital text services sometimes target audiences who do not have access to richer information services on the Internet and potentially constitute a means of combating the Digital Divide.

² House of Commons Select Committee on European Union - Written Evidence. Page 1.

<http://www.parliament.uk/documents/upload/Final%20TVWF%20HL27.pdf>

³ Guidelines on the provision of television access services. Selection and scheduling of programmes 3.3. Ofcom.

3. *Opt-in services* such as extended On Screen Displays (OSDs), closed subtitles that can be turned on or off by the user, additional audio channels, alternative video tracks and the ability to scale text and video as well as digital “triggers” that allow the user to make recordings of programmes and the associated content for viewing at their convenience.
4. *Interactive television*: WIMPs (Windows, Icons, Menus and Peripherals) and interactive features that require the use of a remote control device. Whereas the basic conventions of analogue television involved turning the set on and changing channel (“zapping”), digital television often presumes the use of a remote control device that allows the user to interact with the television in subtly different ways. While in some cases the on/off and zapping features are the same, in other cases the digital television user is required first to select a menu item by using the arrow keys and then pressing the OK button to confirm their choice. A digital switch-over study by Clarkson & Keates (2003) indicates that such differences represent a significant challenge for some users⁴.
5. *Public information services that “piggyback” on top of television but are not an integral part of it*. Public information services in countries like the UK and Spain have made use of digital text services unrelated to television (e.g. teletext) that can be accessed from the user’s television. An example here is the DigiTV local government initiative spearheaded by the Kirklees Council⁵. Such services clearly help the senior citizens and attempt to bridge the digital divide for those who neither can nor wish to use a computer. It is suggested that such services are out of scope for this project.

The working assumption here is that Digital Television comprises not only television channels and programmes but also the first 4 content components described above.

4.1.3 Television scheduling: Assistive or Inclusive?

As regards television programmes themselves, an access service can be merely assistive or truly inclusive.

- A. At the one extreme, the service is provided for all content genres both during the day and at peak viewing hours so that viewers of all ages and abilities can derive benefit from watching the same television programmes. Subtitles for the deaf and hard of hearing at the BBC is an example of a service that is both assistive and inclusive.

http://www.ofcom.org.uk/tv/ifi/guidance/tv_access_serv/guidelines/

⁴ John Clarkson & Simeon Keates (2003) Digital Television For All. A Report On Usability And Accessible Design Appendix E – Investigating The Inclusivity Of Digital Television Set-Top Box Receivers. DTI, UK. 18 September 2003. http://www.digitaltelevision.gov.uk/publications/pub_dtv_for_all.html

⁵ <http://www.digitv.gov.uk/site/content/blogcategory/14/28/>

- B. In the middle we have an access service provided for all content genres but the scheduling of the programme is such that it does not lead to reactions from those who do not want or need the service. An example is visual signing for programming that is offered on channels with more limited audience share and scheduled in connection with repeats aired late at night, well away from peak viewing. This approach is assistive and inclusive outside key viewing hours.
- C. At the other extreme, the access service is not provided for general output, but there are schedule slots designed for audiences with special needs. An example is again visual signing where a policy decision has been taken to offer sign-presented programmes made specifically for those requiring signing, rather than providing sign language interpretation of a selection of programmes within the channel's standard schedule. As with (B), these programmes can be scheduled away from peak viewing hours or even on a different channel (such as the Community Channel in the UK)⁶. This approach is exclusive, and is only assistive outside key viewing hours.

Feedback from call centres from broadcasters and operators indicates that offering “open” solutions on major channels and/or in prime time can lead to adverse reactions from viewers without disabilities.

The working assumption here is that for Digital Television to be inclusive, it should as a minimum include C and B, and ideally be working towards A for an access service where complete coverage is meaningful for its users, is technically feasible and economically sustainable.

It will also be necessary to make use of cases from consortium members that clarify the nature and extent of adverse reactions to “open” access services.

4.1.4 Television: Access problems, causes, solutions & technical options

Our review of the research for this paper has looked at the access problems encountered by viewers, what the causes are, which access solutions are available, and what the technical options are. In the next table in columns 3 and 4, we have included both mature and emerging access service options (light grey boxes).

The problems encountered by viewers may have multiple causes, related to age, disability, modest or absent reading or ICT skills, or a combination of two or more factors. It should be noted that:

1. The nature of access problems is multi-faceted.
2. A given access problem may have multiple causes - perception, cognition and/or motion impairments.
3. Improving accessibility involves not only access services but other changes including how television receivers are installed and used as well as other, non-technical options (e.g. bifocal spectacles).
4. A given mature access service may simultaneously address the access problems of more than one audience segment (e.g. subtitling and Audio Description).
5. For a given access problem there are often several competing “mature” solutions and emerging solutions in the pipeline (e.g. the various Audio Description and Visual Signing options mentioned in the figure).
6. A given disability may express itself to differing degrees, resulting in different access needs. Often there is a combination of two or more disabilities.

The working assumptions here are that:

- *The Pilot will address all of the access problems mentioned in the table that can be dealt with by access services, the features of integrated digital television receivers/digital set-top boxes and digital displays as well as remote control devices used in conjunction with them*
- *The “mature” access services to be included in the Pilot are*
 - *Subtitles (“closed” SDH, “closed” subtitles with translations of foreign languages)*
 - *Dubbing and lectoring (commonly termed “voice-overs”)*
 - *Audio Description (AD Broadcaster mix, AD Receiver mix)*

Note: Broadcast Mix AD is delivered to the user as part of the programme whereas Receiver Mix AD is delivered as an adjustable stream, i.e., the volume can be adjusted separately to the volume of the programme.

 - *Visual signing (“closed” and “open” solutions)*
- *The content genre and scheduling information for each access service in the Pilot will be specified. (Content genre specifications will build on the E-Book or the ETSI TV Anytime standard, or both).*
- *The digital television receiver technical requirements to deliver a given access service will be specified in relation to standards such as DVB.*
- *The Pilot will address issues related to the setting-up and use of digital television receivers, displays and remote control devices.*
- *All of the access services that are either listed as “emerging” or which do not use digital television receivers, displays and remote control devices are deemed out of scope.*

⁶ <http://www.ofcom.org.uk/consult/condocs/signing/statement/>

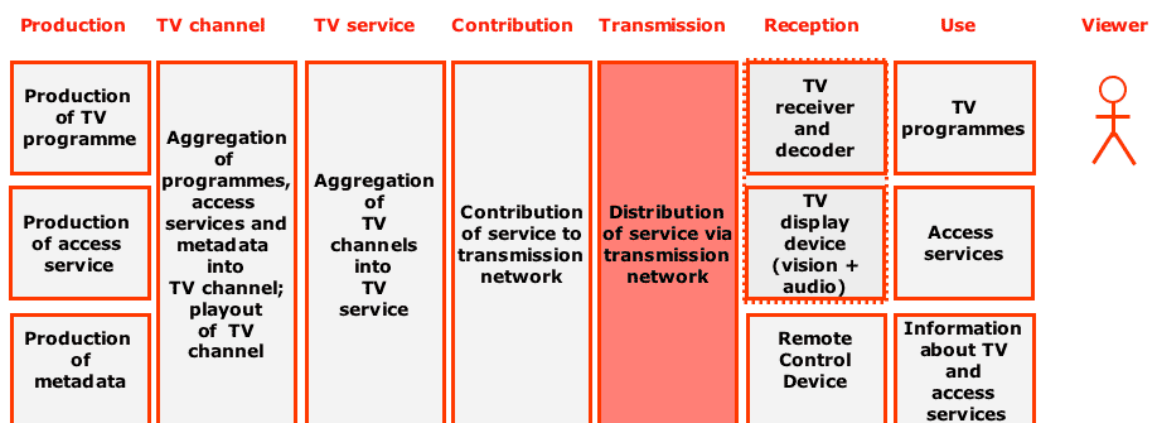
Problem	Cause	Solution	Technical options (mature and emerging)
Sound			
Finds it difficult/impossible to hear the audio of TV programmes	Partial or complete hearing impairment (Deaf/Hard of hearing, DH)	Subtitles (SDH) Visual Signing (Deaf Signing (DS))	<ul style="list-style-type: none"> - In-vision (open) or closed. - Closed delivered using Teletext or DVB-subtitles. - Pre-recorded or live (using speech to text/ stenography) - In-vision (open) or closed. - Closed signing delivered using "Picture in Picture", or a separate video stream for signing with the original audio - Pre-recorded or live
Finds it difficult/impossible to hear/understand speech in mother tongue	Learning difficulties	Visual Signing (Makaton) Subtitles (may differ from SDH)	<ul style="list-style-type: none"> - In-vision (open) or closed. - Closed signing delivered using "Picture in Picture", or a separate video stream for signing with the original audio - Pre-recorded or live - edited subtitles - In-vision (open) or closed. - Closed delivered using Teletext or DVB-subtitles. - Pre-recorded or live (using speech to text/ stenography)
Sometimes finds it difficult to hear/understand speech in mother tongue	Age or culturally/educationally related issues (e.g. young children, adults unfamiliar with slang or fast speech)	Subtitles (may differ from SDH)	<ul style="list-style-type: none"> - In-vision (open) or closed. - Closed delivered using Teletext or DVB-subtitles. - Pre-recorded or live (using speech to text/ stenography)
		Clear or clean audio	Signal processing in receiver to enhance sound

Finds it difficult/impossible to understand speech in a foreign language	Programmes or programme segments not in mother tongue (both imported programming and viewers for whom the national language is not their mother tongue)	Subtitles (translation to mother tongue)	<ul style="list-style-type: none"> - In-vision (open) or closed. - Closed delivered using Teletext or DVB-subtitles. - Pre-recorded or live (using speech to text/ stenography)
		Dubbing /lectoring	<ul style="list-style-type: none"> - Open and Closed (dual language dubbing) - Full dubbing or lectoring. - Pre-recorded or live - lectoring)

Problem	Cause	Solution	Technical options (mature and emerging)
Picture			
Finds it difficult/impossible to see the visual component of a TV programme	Minor or major visual impairment	Audio description (AD broadcast mix)	Pre-recorded as stereo tracks. Pre-recorded as mono track and mixed on the fly to produce stereo tracks during play-out.
		Audio description (AD receiver mix)	Pre-recorded as mono track and played out as private data. Text to speech; mixed in receiver.
		Audio description (AD - separate transmission)	Pre-recorded and played out on separate transmission system using Medium Wave, DVB-H, DAB, telephone.
		Spoken EPG (Text to speech)	Closed. Text to speech using speech synthesis

Unfamiliar with remote controls and interface conventions on digital television sets / STBs	Modest ICT skills	Television / Set Top Box / Remote Control Devices (RCDs)	Intuitive, consistent user interfaces and WIMPs
Finds it difficult/ impossible to make use of access services such as Subtitles (SDH) or Audio Description	Minor or major visual impairment	Television / Set Top Box	Built-in, intelligent user guides with basics (language) pre-configured
Finds it difficult to switch gaze from screen to remote control device	Cannot accommodate vision without changing glasses	Remote Control Devices (RCDs)	Larger, ergonomic remote control devices; bifocal glasses
Finds it difficult to read subtitles (and other OSDs including EPGs)	Minor visual impairment; low reading speed; dyslexia	User control over font size for OSDs	
		Audio sub-titling	Closed. Audio channel similar to AD receiver mix or Teletext and speech synthesis. Pre-recorded or live.
		Spoken EPG	Closed. TTS using speech synthesis
Mobility			
Finds it difficult/impossible to use the television receiver using a remote control device	Psychomotor impairment (eye-hand coordination)	Audio commands	Speech recognition
		Other controls	Interacting with WIMPs using eye tracking
Getting started			
Finds it difficult/impossible to set up and configure TV set or Set Top Box	Modest ICT skills; modest reading skills	Television / Set Top Box	Built-in, intelligent user guides with basics (language) pre-configured
			Intelligent auto-tuning of STBs and integrated DTV receivers

4.2 Transmission



4.2.1 Digital television: Distribution of access services

Currently the most widespread distribution platform in Europe is Digital Video Broadcast (DVB) via terrestrial transmitters, satellite or cable. In some member states, DVB over closed Internet Protocol networks (IPTV) and television delivered over the open Internet are gaining ground as broadband connections become increasingly ubiquitous.

As regards technologies, the working assumption here is that, for the purposes of the Detailed Work Plan for the full-scale Deployment of Mature Access Services, our main focus will be on “first generation Digital Television” using the DVB standard and MPEG-2. The focus of our work will be on “in band” solutions in which the metadata and digital assets for the service are delivered in the DVB transport stream.

Out-of-band and hybrid in-band/out-of-band solutions have appeared on the market. DVB-T2, DVB-S2, Hybrid DVB-T/IPTV, IPTV only, digital television delivered over the open Internet via streaming or IP-multicast and mobile digital television delivered using DVB-H, T-DMB or Media-FLO are out of scope for the Pilot of Mature Access Services. All of these are, of course, potentially in scope for the work on Emerging Access Solutions and need to be included in the list of solutions for Work Package 3 from which solutions will be selected to show proof of concept.

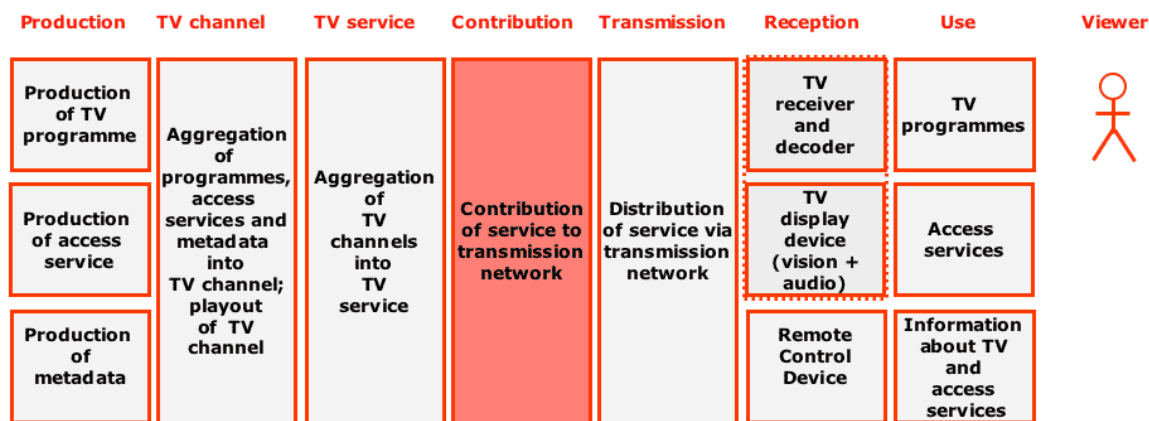
4.2.2 Distribution: “mature” access services

The term “mature access services” needs to be clarified.

The working assumption here is that, for an access service to be considered mature, the distribution technologies need to be in regular service in the Member State in question.

The provision of Audio subtitles though a mature access service is problematic and will need special consideration. This is because while the production of the service is mature, receivers capable of handling it often have this capability either disabled or do not have the necessary supporting middleware.

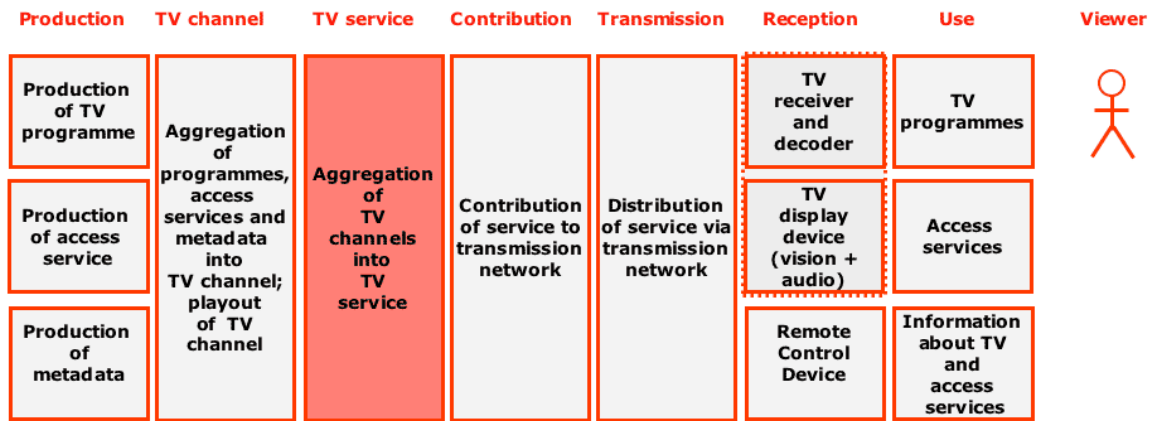
4.3 Contribution



A television contribution network is a closed digital network that delivers the signal from the broadcaster’s play-out system to the distribution network delivering digital television to the viewers.

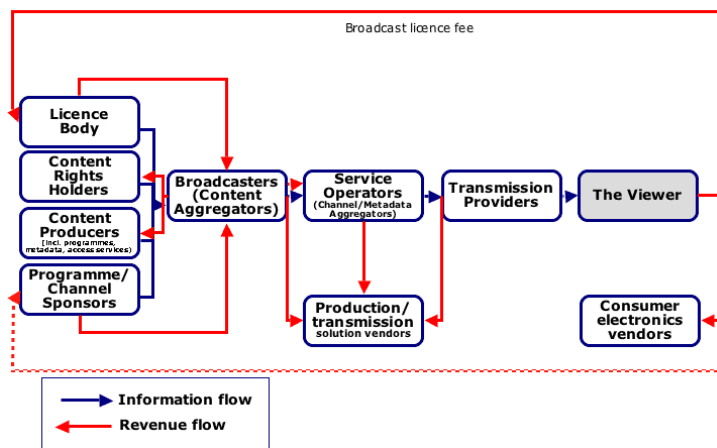
The working assumption here is that contribution networks can transparently deliver television channels, access services and metadata to the point at which these are all included in a given multiplex.

4.4 Aggregation of TV channels into a TV service

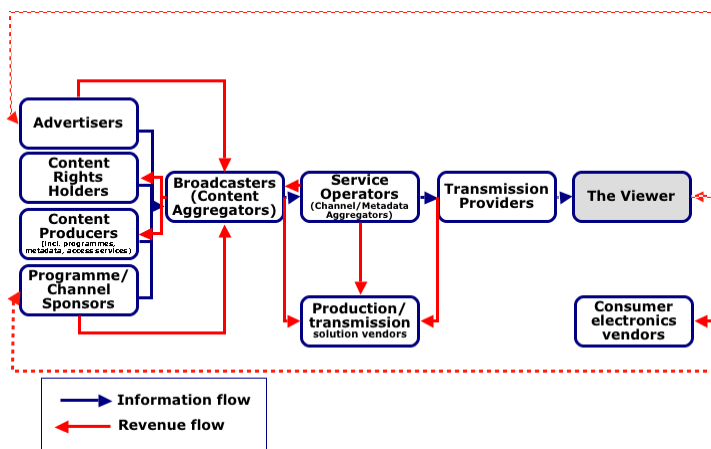


Television creation and distribution has a number of characteristic revenue streams throughout the supply chain, as does television access creation and distribution.

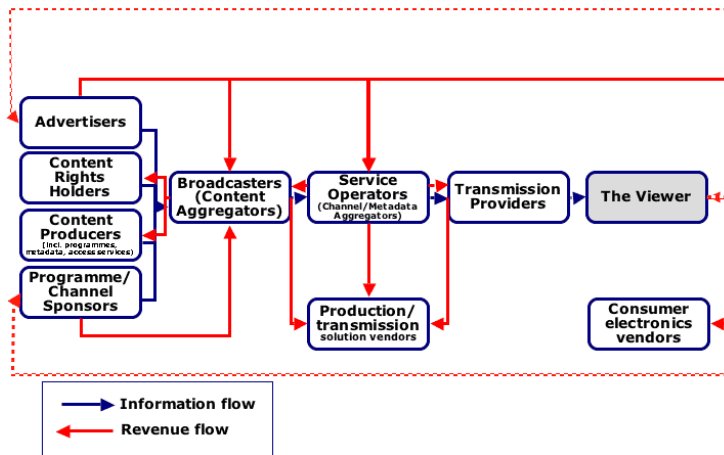
4.4.1 Digital Television: Free-To-Air (licence fee funded)



4.4.2 Digital Television: Free-To-air (commercial TV)



4.4.3 Digital Television: Pay TV



Source: Peter Olaf Looms and 7

Digital television in Europe is underpinned by 4 main business models:

1. Free-to-air public service broadcasting funded by revenues from a broadcast or media licence (or from state/government)
2. Free-to-air commercial broadcasting funded by advertising revenues
3. Pay-TV funded by subscription revenues from its users
4. Sponsorship of programmes.

In many cases, digital television is funded by a combination of these models. Pay-TV usually combines 2 and 3; public service broadcasting often combines 1 and 3 or 1 and 2.

The business models underpinning the access services themselves are often unclear. The funding of access services is often an additional production cost required in order to comply with national or European legislation; in others it is part of the public service remit or agreement.

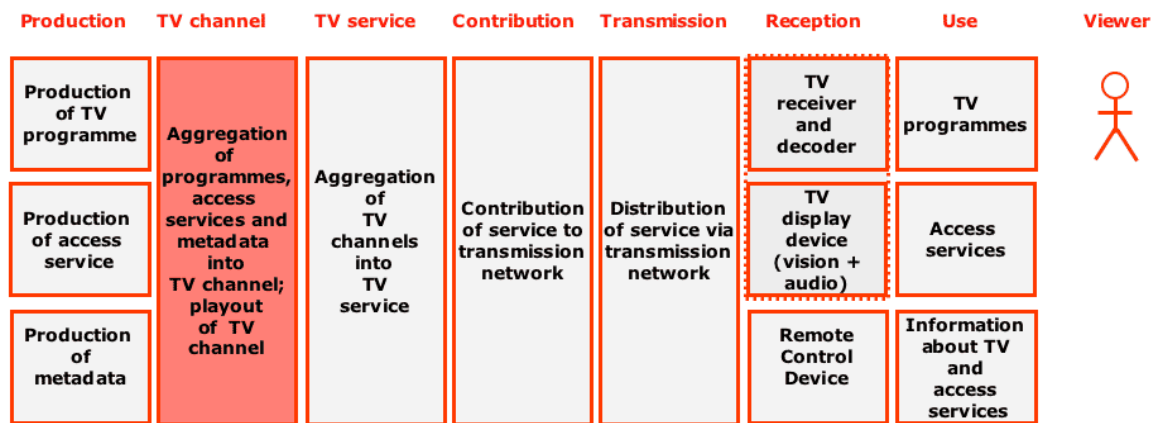
In other parts of the world, access services such as closed captioning/subtitling are funded by sponsorship. Examples of this also exist in Europe for visual signing in video clip channels, but little is known about separate business models for access services in Europe.

As regards business models for digital television and access services, the working assumption is that, for the purposes of the Detailed Work Plan for the full-scale Deployment of Mature Access Services, our main focus will be on 1, 2 and 4.

⁷ http://img.lightreading.com/heavyreading/pdf/hr20070710_fig1_full.gif

This means that priority will be given to Free-To-Air television using digital terrestrial or digital satellite transmission. Digital Cable Television may still be in scope in cases where it offers simulcast must-carry channels.

4.5 Aggregation of TV programmes & services into a TV channel



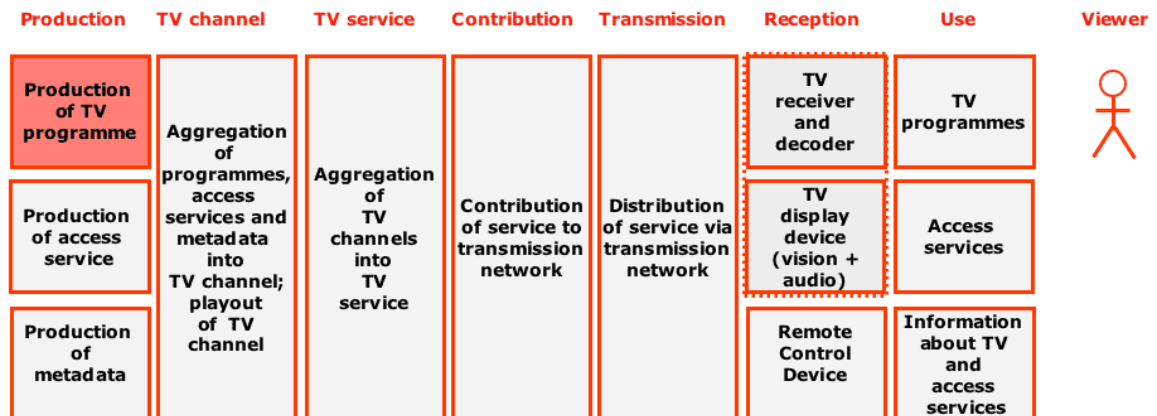
At this point in the supply chain, programmes and their associated access services along with metadata such as programme listings and production metadata such as triggers and information regarding the audio levels of AD broadcaster mix have to be put together and played out. This is usually done by a broadcaster.

As a consequence, the broadcaster has to develop a production and distribution strategy for access services and e-inclusiveness. Decisions will also have to be taken about integrating access service work flows with those for TV programming itself. Some choose to outsource some or all of this work; others do all of it in-house. Ultimately it is the broadcaster that pays for the production and distribution of the access services.

As regards the aggregation of TV programmes and access services into TV channels, the working assumption is that the Pilot will be required to identify all the key issues facing broadcasters in order to plan, produce, deliver and promote the mature access services mentioned above at the end of section 4.1.4.

4.6 Production of TV programmes and access services

4.6.1 Production of TV programmes

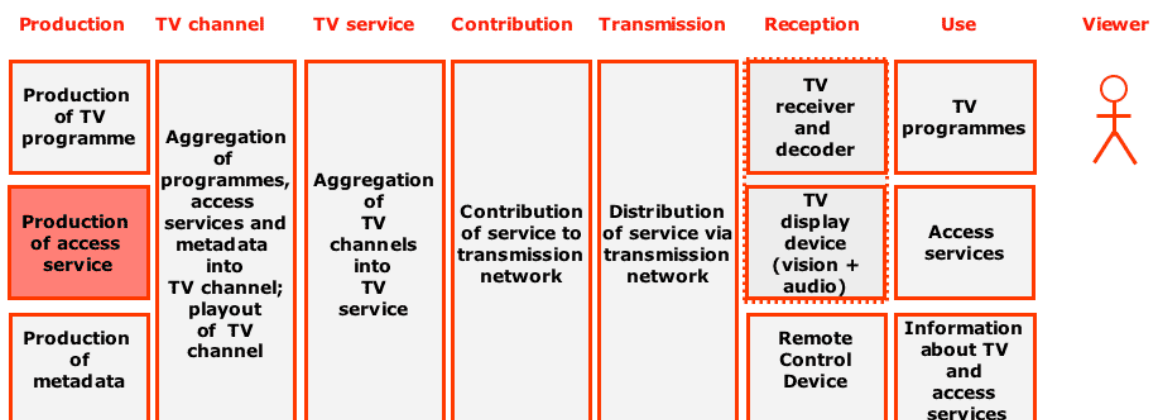


E-inclusiveness has implications for the production of TV programmes themselves.

- *Legibility and intelligibility of graphics captions and audio* (colours, fonts and font sizes for captions; the intelligibility of audio mixes of multi-channel audio and recordings in “noisy” settings).
- *Production of sign-presented programming* – programmes with content tailored to the needs of viewers with a hearing impairment and presented in their first language (e.g. BSL in the UK).

As regards the production of TV programmes for which access services will be offered, the working assumption is that the Pilot will be required to identify current TV production practices in order facilitate the integration of the mature access services mentioned above at the end of section 4.1.4.

4.6.2 Production of access services

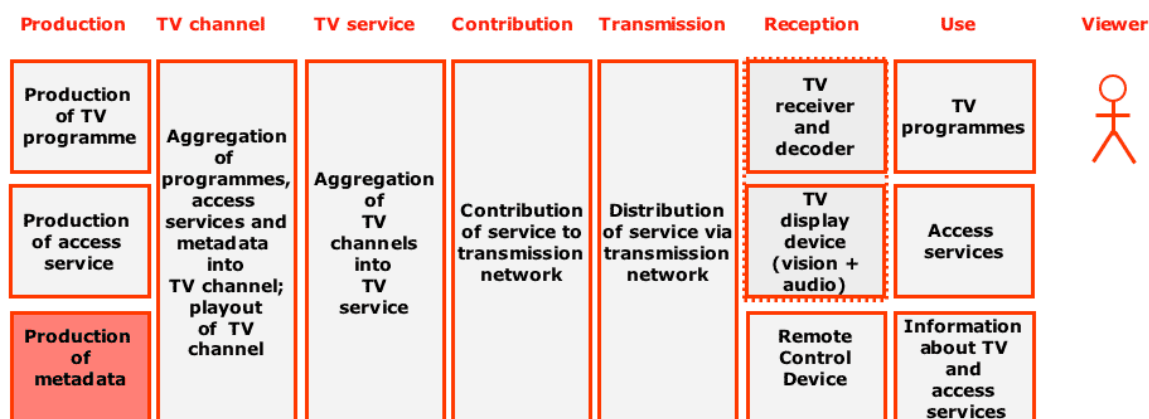


The DTV4ALL consortium comprises instances where access services are both produced in house and outsourced.

- *Legibility and intelligibility of captions and audio* (colours, fonts and font sizes for subtitles; acceptability of audio description mixes etc.)
- *Open or in-vision access services.* Services such as visual signing require design and production issues to be addressed such as how big the signer is to be and how the signer should be placed in relation to the studio and screen layout.
- *Closed access services.* Checking that visual and audio design of a programme lends itself to any text overlays, picture-in-picture options or audio description.

As regards the production of access services for TV programmes, the working assumption is that the Pilot will be required to identify all the key issues facing access service producers in order to plan, produce, deliver and promote the mature access services mentioned above at the end of section 4.1.4.

4.6.3 Production of metadata



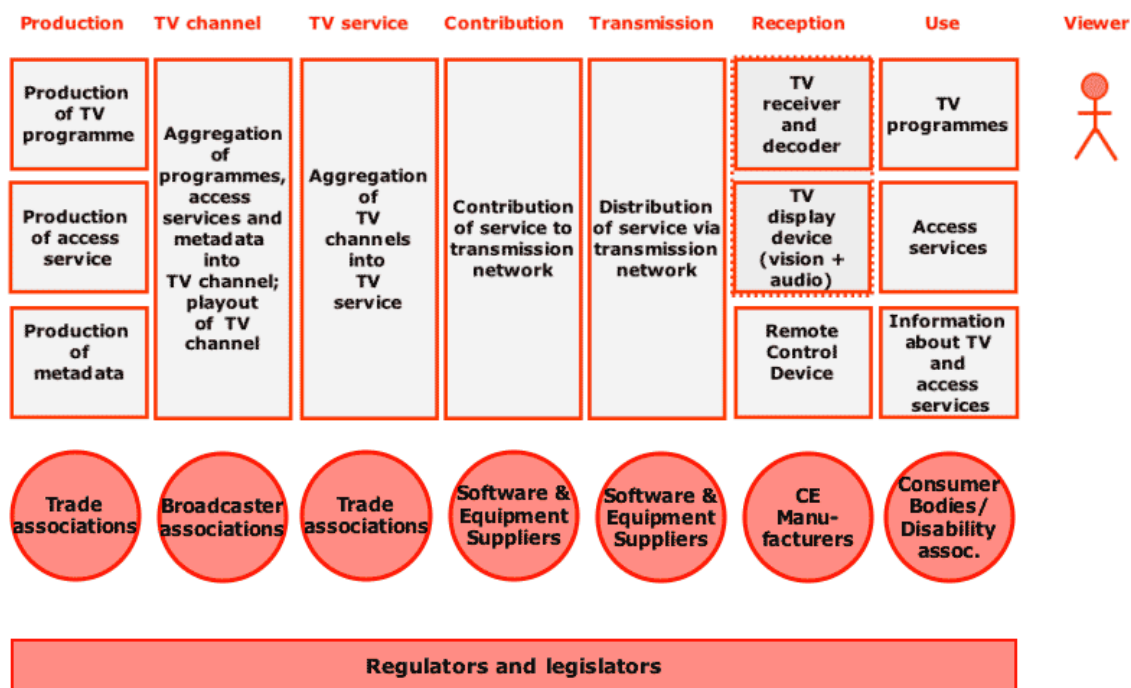
Our initial research for this Work Package has identified a lack of awareness about how potential users of access services discover their existence and make effective use of them. As far as the supply chain is concerned, it will be necessary to identify how this can be done effectively and efficiently.

Awareness requires not only promos and/or campaigns about the access services themselves (such as the recent campaign on Audio Description in the UK) but also the production of metadata about the programmes and access services related to them. This may take the form of programme listings and access service identification but also “production metadata” such

as information about volume levels that can be used in the receiver to build a useful receiver mix.

As regards the production of metadata and promos/campaigns for TV programmes, the working assumption is that the Pilot will be required to identify all the key issues facing metadata production and delivery in order to promote the discovery and use of mature access services mentioned above at the end of section 4.1.4.

4.7 Stakeholders external to the supply chain



There are many stakeholders external to the supply chain that play an important role in e-inclusiveness, including associations that represent consumers and those with functional disabilities and those who do research in access needs and solutions, regulators and legislators. The scope of the Pilot also covers which of these stakeholders will be consulted and the nature of their interest in e-inclusiveness. For this reason, each will be dealt with in turn.

4.7.1 Consumer bodies and disability associations

4.7.1.1 European and national bodies/associations

Through participation in the EICTA forum on e-inclusiveness and digital television, a number of key bodies have already been identified. In Denmark, Germany, Italy and Spain consortium partners already have ongoing contacts with national bodies and associations.

As regards consumer bodies and disability associations at European and national level, the working assumption is that the Pilot will be required to identify key bodies (name, contact person etc.) from whom DTV4ALL will need to get feedback on work with mature access services.

4.7.1.2 European and national audience research bodies

The DoW has already identified important research bodies at universities that will be engaged in the user-related work of the Pilot. Audience research bodies associated with broadcasters and/or regulators also need to be identified.

As regards European and national audience research bodies, the working assumption is that the Pilot will be required to identify key bodies (name, contact person etc.) from whom DTV4ALL will need to get feedback on work with mature access services.

4.7.2 Consumer electronics manufacturers

Consumer electronic manufacturers play an important role, especially in free-to-air television, when it comes to agreeing objectives and a roadmap for changes in the core functional specifications for digital receivers (set-top boxes, digital television displays, integrated digital television receivers and remote control devices).

In an “e-inclusiveness” consumer electronic scenario where many access services are an integral part of base-line receivers, it is vital to strike a reasonable balance between the interests and needs of the users, and the commercial viability of offering features in receivers that will only be used by a minority.

Remote control devices have already been subjected to scrutiny in some national markets and there are non-mandatory functional specifications for RCDs that promote e-inclusiveness.

As regards consumer electronics manufacturers and trade associations at European and national level, the working assumption is that the Pilot will be required to identify key bodies (name, contact person etc.) from whom DTV4ALL will need to get feedback on a host of receiver-related issues.

As regards remote control device manufacturers, the assumption is that the Pilot needs to identify existing work on functional specifications and RCDs on the market meeting the requirements of users with special needs.

4.7.3 Suppliers of Broadcast Production and Transmission Equipment

These stakeholders need to be consulted to check the extent to which mature access services and metadata about them can be passed transparently down the supply chain. In certain cases where DVB-SI or DVB-GBS are being used to deliver metadata or signalling, feedback will be required on configuration and interoperability issues for broadcasters delivering on multiple platforms.

As regards Suppliers of Broadcast Production and Transmission Equipment, the working assumption is that the Pilot will be required to identify key bodies (name, contact person etc.) from whom DTV4ALL will need to get feedback on supply-chain and interoperability issues.

4.7.4 Broadcaster Associations and Digital Television Standardisation Bodies

A Memorandum of Understanding is already in place between the DTV4ALL consortium and the European Broadcasting Union (EBU) and informal discussions have been held with the Association of Commercial Television in Europe (ACT).

As regards Broadcaster Associations, the working assumption is that the Pilot will be required to get feedback on a host of e-inclusiveness issues and assist in translating the finding into dissemination and standardisation actions.

There are numerous bodies concerned with standardisation issues that impact access services and e-inclusiveness on digital television. Among them at the World Wide Web Consortium W3C and the International Telecommunications Union, ITU, both of which address e-inclusiveness. Note a recent ITU project with which DTV4ALL has been in contact: “ITU-D Projects : Call for Partners : Global Projects”⁸

⁸ http://www.itu.int/ITU-D/projects/proj_call-partners_GP.asp

As regards standardisation, the working assumption is that the Pilot will be required to identify key bodies (name, contact person etc.) from whom DTV4ALL will need to get feedback on standardisation and interoperability issues.

4.7.5 Suppliers of Access Service Production Software and Equipment

At a recent European conferences and meetings at the Digital Television Group (DTG) in London it is clear that there are many suppliers actively working in the field who develop the solutions being used to create access services.

As regards suppliers, the working assumption is that the Pilot will be required to identify key bodies (name, contact person etc.) from whom DTV4ALL will need to get feedback on production and interoperability issues.

4.7.6 Bodies representing Suppliers of Access Service Development and Production

This group of stakeholders encompasses companies such as Red Bee Media that are actively involved in Access Service Development and Production and bodies that play an active role in the education and training of those who produce subtitles, audio description and the like. In this area, care will be required to engage these stakeholders while at the same time not creating problems by revealing sensitive client-related issues.

As regards access service producers, the working assumption is that the Pilot will be required to identify key bodies (name, contact person etc.) from whom DTV4ALL will need to get feedback on production, distribution and interoperability issues.

4.7.7 European and National Regulators of Digital Television Access Services

The key legal document for e-inclusiveness at European level is the Television Without Frontiers Directive. At national or regional level, we have to engage with the regulators of the participating territories. In addition, the British regulator OFCOM is regarded as being one of the most experienced regulators, and in its role of administering the UK Communications Act of 2003, probably the most comprehensive legal instrument for access services in Europe.

As regards regulators, the working assumption is that the Pilot will be required to identify key bodies (name, contact person etc.) from whom DTV4ALL will need to get feedback regulatory issues throughout the supply chain.

5 The Goals and Outcomes of the Pilot of mature services

In this section we will build on the actions identified in the scoping of the Pilot in section 4 and translate them into operational goals and outcomes.

As was indicated in rationale of the project, we need to identify the kinds of information that will help us to answer the following question: *Who needs to know what in order to be able to plan, produce, deliver, promote and successfully use mature access services by 2010?*

5.1 WP 1.1: Who are the recipients of e-inclusiveness and what are their needs?

This task focuses on the users of mature access services and the kinds of problems that need to be addressed for digital television to be inclusive.

For each of the countries participating in the Pilot of mature access services, the following kinds of information will be needed:

The demand side of e-inclusiveness

- A. The current demographics of those who have difficulties accessing digital television using the categories or problems listed in section 4.1.4.
- B. Forecasts for access in the coming 5-10 years (the demographic trends)

The supply side of e-inclusiveness (restricted to “what” is supplied; supply chain issues are in WP 1.2)

- C. Mention of which of the following aspects of digital television are currently offered by the broadcaster in question

Electronic Programming Guide, EPG.

- “Present” and “Following”
- EPG with listings for 24 hours to 8 days
- General attributes of TV programmes (what metadata categories are included)
- Whether and how access service(s) are mentioned in “Present” and “Following”/EPG

Digital Text Service

- Teletext (information service)
- “2nd Generation Digital Text” (information service)

Opt-in services

- On Screen Displays (OSDs)
- closed subtitles (e.g. teletext or DVB-subtitles that can be turned on or off by the user)
- dual language audio tracks (e.g. Castilian/Catalan)
- alternative stereo audio tracks (Audio description – broadcaster mix)
- alternative audio tracks (receiver mix)
- alternative video track (e.g. visual signing in Denmark)

Interactive television: WIMPs (Windows, Icons, Menus and Peripherals) and interactive features that require the use of a remote control device).

- Remote control devices with colour or number buttons used with in-vision prompts on the television screen.
- Arrow keys and OK/ Confirm buttons used to select and confirm choice
- Other interface issues of relevance to access services and e-inclusiveness

D. The current availability of mature access services for free-to-air television (digital terrestrial and digital satellite or cable, if this is appropriate):

- Subtitles (“closed” SDH, “closed” subtitles with translations of foreign languages)
- Dubbing and lectoring (commonly termed “voice-overs”)
- Audio Description (AD Broadcaster mix, AD Receiver mix- specify the technology used)
- Audio subtitles (specify the technology used)
- Visual signing (“closed” and “open” solutions - specify the technology used)

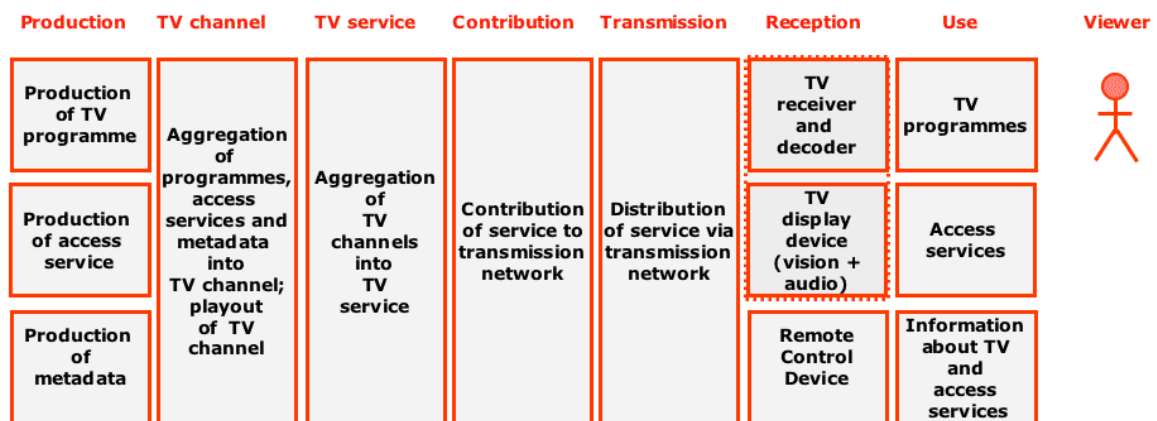
E. Information for each mature service for 2008 covering:

- The proportion of annual television output (combined figure for both first airings and repeats) for which it is available
- The content genre categories for which it is produced (c.f. E-Book use of DVB content genre categories and their interpretation in Appendix 1).
- Mention of the scheduling of the service (morning, afternoon, evening [=prime-time], night)
- Whether the service is inclusive, assistive or somewhere between the two (c.f. the scenarios A-C described in section 4.1.3).

- Mention of the minimum digital television receiver technical requirements to deliver the access service
 - Information regarding current practises related to the setting-up and use of digital television receivers, displays and remote control devices (what help is available to the user from whom).
 - Promotion: mention of how the potential users are made aware of the existence of the service and what it takes to make use of it.
- F. Forecasts for each access service for the broadcaster in question in the period to 2012
- The proportion of annual television output (combined figure for both first airings and repeats) for which it will be available in 2009, 2010 and 2011 – where known.
 - The content genre categories for which it will be produced
 - Mention of the scheduling of the service (morning, afternoon, evening (prime-time), night)
 - Whether the service will be inclusive, assistive or somewhere between the two
- G. End user assessments of e-inclusiveness from the Pilot of mature access services (cf. DoW page 13) collated with reference to the following general metrics:
- awareness of the existence of access services
 - being able to discover and gain access to access services associated with digital television
 - the ease of use of the access service
 - the usefulness of the access service and
 - the attractiveness of the access service.

5.2 WP 1.2: What are the options to meet the e-inclusiveness challenge with mature access services?

This task deals with the stakeholders in the supply chain and their views on issues relating to the planning, production, delivery, promotion and use of mature access services to promote the e-inclusiveness of digital television.



For each of the countries participating in the Pilot of mature access services, the following kinds of information will be needed:

- H. Identification of formal e-inclusiveness guidelines or informal “good practice” in current work flows for digital television to identify any usability and accessibility issues in connection with:

Electronic Programming Guide, EPG.

- “Present” and “Following”
- EPG with listings for 24 hours to 8 days
- General attributes of TV programmes (what metadata categories are included)
- Whether and how access service(s) are mentioned in “Present” and “Following”/EPG

Digital Text Service

- Teletext (information service)
- 2nd Generation Digital Text (information service)

Opt-in services

- On Screen Displays (OSDs)
- closed subtitles (e.g. teletext or DVB-subtitles that can be turned on or off by the user)
- dual language audio tracks (e.g. Castilian/Catalan)
- alternative stereo audio tracks (Audio description – broadcaster mix)
- alternative audio tracks (receiver mix)
- alternative video track (e.g. visual signing in Denmark)

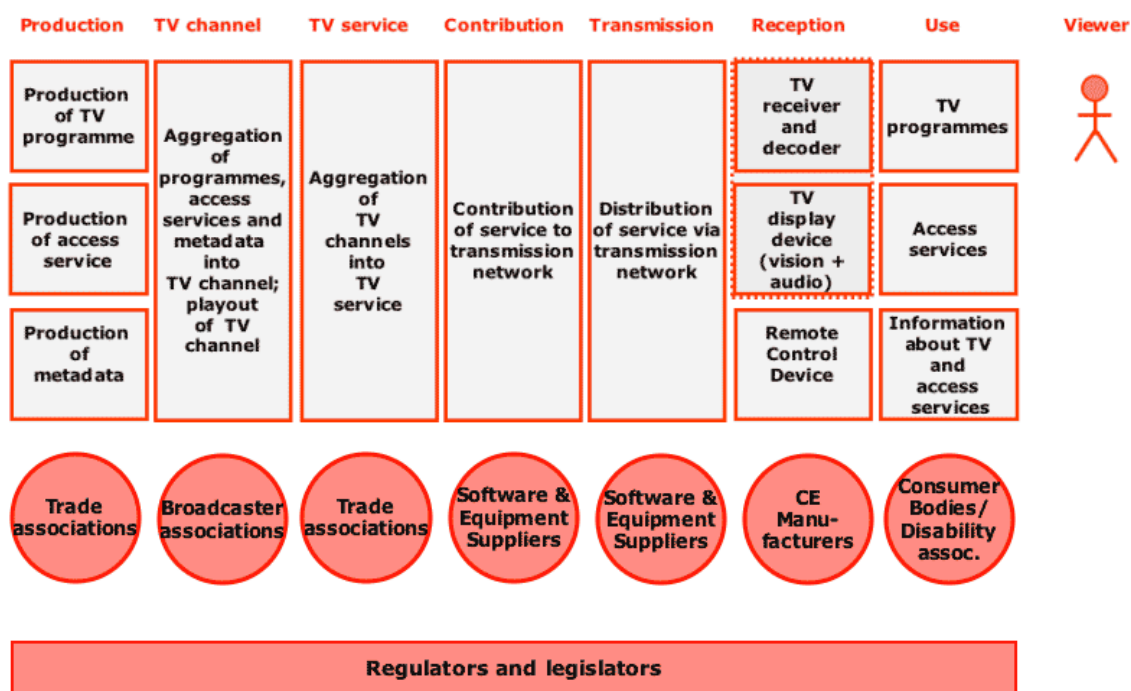
Interactive television: WIMPs (Windows, Icons, Menus and Peripherals) and interactive features that require the use of a remote control device).

- Remote control devices with colour or number buttons used with in-vision prompts on the television screen.
- Arrow keys and OK/ Confirm buttons used to select and confirm choice

- Other interface issues of relevance to access services and e-inclusiveness
- I. A general description of the supply chain and work flows for each of the following mature access services for free-to-air television (digital terrestrial and digital satellite or cable, if this is appropriate):
- Subtitles (“closed” SDH, “closed” subtitles with translations of foreign languages)
 - Dubbing and lectoring (commonly termed “voice-overs”)
 - Audio Description (AD Broadcaster mix, AD Receiver mix- specify the technology used)
 - Audio subtitles (specify the technology used)
 - Visual signing (“closed” and “open” solutions - specify the technology used)
- The description should include the principal stakeholders.
- J. A review of the main supply chain and work flow issues for each of the mature access services in (I) from the perspective of each of the stakeholders in the supply chain:
- Planning and policy issues (in particular where there are competing or conflicting uses of access services that prevent full e-inclusiveness)
 - Production issues
 - Delivery issues including scalability
 - Promotion issues and
 - Issues related to the discovery, access and use of access services.
- K. Foreseen issues in relation to each access service for the broadcaster in question in the period to 2012
- Planning and policy issues (in particular where there are competing or conflicting uses of access services that prevent full e-inclusiveness)
 - Production issues
 - Delivery issues including scalability, the impact of second-generation digital television platforms
 - Promotion issues and
 - Issues related to the discovery, access and use of access services.

5.3 WP 1.3: What are business models for sustainable e-inclusiveness & how does regulation influence it?

This task deals with the business models underpinning access services. It seems necessary to identify the business models behind digital television and the provision of access services for digital TV. As there are often several options for dealing with a given access problem, promoting the uptake of mature access services will require an understanding of the revenue flows – not just what comes in but in general terms, what are the total costs of providing access services all down the supply chain?



It also covers stakeholders *external* to the supply chain and their views on issues relating to the planning, production, delivery, promotion and use of mature access services to promote the e-inclusiveness of digital television.

These business models need to be discussed in relation to the regulatory climate and consensus governing social equity in each country or territory. Offering access services usually lies between the following two extreme scenarios:

- Focus on disability and equating them with diseases that require medical attention
- Focus on “the social model of disability where a distinction is made between the terms ‘impairment’ and ‘disability.’⁹

⁹ http://en.wikipedia.org/wiki/Social_model_of_disability

In the first scenario, the (public) health system uses medical science to take corrective action as far as disabilities are concerned. Solutions often require public funding and assuring action ultimately up to those directly affected. In this scenario, those with impairments buy specialised DTT set-top boxes themselves or get them from the public health system. Solutions often ignore the self-esteem of those involved and tend to be ad-hoc, and run the risk of being expensive from a macro-economic perspective.

The UK has one such publicly funded scheme which has its critics. “A government scheme designed to help ‘vulnerable and elderly’ viewers in the digital television switchover process has been criticised by manufacturers and consumer groups. The help scheme, which is funded by £603m of the BBC license fee, entitles over-75s and disabled viewers to subsidised set-top boxes and installation. The scheme has been accused of being misleading and confusing and is said to favour Rupert Murdoch's Sky empire over all other competitors. The set top box installation will cost customers a £40 one-off fee (free for those on benefits). However, also included in this package is free time-limited access to personal video recorder service Sky+ and to some of the premium pay channels. But when users have had their first few months free fix, the service is turned off and customers are left with the choice of going back to a cut-down service, or coughing up extra money to The Man in order to retain what they've become used (addicted?) to.”¹⁰

In the second scenario, however, society at large assumes a collective responsibility for being inclusive. DTT solutions in this scenario focus on hammering out consensus among all the stakeholders in the supply chain, including the viewers and organisations representing those with impairments and the elderly. Where consensus is reached, DTT is synonymous with inclusiveness, a respect for the rights and well being of all.

The Digital TV Supply Chain Switchover Group Response to the Governments Consultation [on providing access services and features] is typical of such consensus positions for digital terrestrial TV¹¹.

WP 1.3 therefore requires for each of the countries participating in the Pilot of mature access services, the following kinds of information:

¹⁰ Telly technology confuses old people Digital switchover deemed 'stressful, confusing and unfair' By Emma Hughes: Monday, 04 August 2008, 12:09 PM <http://www.theinquirer.net/gb/inquirer/news/2008/08/04/technology-confuses-old-people>

¹¹ Response to the Governments Consultation Document on Core Receiver Requirements for Digital Television Reception products. (September 2, 2007 (?))
www.digitaltelevision.gov.uk/consultations/Supply%20Chain%20Switchover%20Group.pdf

- L. the business model(s) and revenue streams for digital television
- For digital television itself (c.f. section 5.1 C)
 - For each of the mature access services identified (c.f. section 5.1 D).
- M. Generic cost structures for a given service from start to finish in the supply chain (what in general terms are the hourly and/or annual costs involved at each point in the value chain?).¹²
- N. The regulatory framework governing e-inclusiveness in the country in question (both media legislation and regulations, public service remits and contracts, and also competition, industry and social legislation and guidelines impacting e-inclusiveness). There may well be European, national and sub-national legislation involved.

The inputs produced in A-N will then be used at later stages of WP2 to provide a generic *Access Service Maturity Model* indicating what kinds of strategic issues need to be addressed at the various stages in the lifecycle of an access service. The 9 stages are:

1. *A political or regulatory go-ahead for the introduction of a new, mature access service in a territory where this has not yet been introduced.* (Access problems that are to be addressed, access solutions that fit the bill, business models)
2. *The overall planning of a new, mature access service* (Objectives, metrics, identifying the stakeholders in the supply chain, workflows)
3. *Consultations and testing of the features of the new service* (Participatory design of prototypes of the service with stakeholders - users, the supply chain, regulators).
4. *Detailed planning of the new, mature service.* (Planning, production and distribution of the final access service itself)
5. *Test production and validation of the new service.* (Process evaluation of the production and distribution of the access service, check conformity with objectives and metrics from (2))
6. *The new service enters operation - “soft launch”.* (Process evaluation and fine-tuning of the production and distribution of the access service; appropriate receivers are available, but not necessarily widespread; stakeholders informed)

¹² An example here is AD (broadcaster mix). At DR, a second set of stereo audio is mixed and played out along with the original audio for television drama programmes. At Red Bee and the BBC, however, the stereo mix is created on the fly at playout from the Audio Description files and the production metadata governing the relative levels of the AD and the original sound. The same audio resources and metadata can be used for building and playing out the file needed for AD Receiver Mix, making the UK solution more cost-effective but possibly more risk-prone.

7. *The new service is formally launched and scaled up to its final target level.* (Promotion of the service, audience research on take-up and use of the service, changes in objectives, metrics/targets, benchmarking the production and distribution of the access service; there is a wide range of receivers capable of facilitating the access service)
8. *Identification of challenges to the viability of the service emerging from various quarters.* (Life cycle decisions about service viability)
9. *The service is phased out in favour of something else.* (Planning the transition of one generation of the service to the next).

There are issues affecting one or more stakeholders in the supply chain that have to be resolved in connection with each of these 9 stages. The Pilot of mature services will enable us to identify what these issues are and what options can be considered. It is our task to facilitate strategic planning, not to prescribe solutions, given the complexity of the issues and major differences in national or regional circumstances.

Those who have reached stage 7 or 8 for all their access services can be regarded as more “mature” than those who have yet to reach this point for their portfolio of access services. The model can thus be used as the starting point for bench-marking and for strategic planning by an organisation in the supply chain or one that influences it.

6 GANTT Diagram for Work Package 1

Date	1-jul-08	11-jul-08	18-jul-08	25-jul-08	1-aug-08	8-aug-08	15-aug-08	22-aug-08	29-aug-08	5-sep-08	12-sep-08	19-sep-08	26-sep-08	3-okt-08
WP 1. Detailed scoping of mature accessibility services of the Pilot >D1.1 A detailed workplan for full-scale deployment of mature access services)														
WP 1.1 Which audiences, content and services - and how much?														
WP 1.2 On which devices and platforms?														
WP 1.3 Which business models and regulatory regimes?														
First draft of D1.1														
Comments on draft to Work Package leader														
Revision of D1.1														
Comments on 2nd draft of D1.1														
DELIVERY OF D1.1 TO COMMISSION														30sep08
Work Package Report for Month 1 from Red Bee to Brunel > inputs to WP 5.1														
Work Package Report for Month 2 from Red Bee to Brunel > inputs to WP 5.1														
Work Package Report for Month 3 from Red Bee to Brunel > inputs to WP 5.1														

7 Appendices

7.1 E-Book use of DVB tags and content genre categories

Tag	E-book (Europe)	Denmark	Germany	Italy	Spain	UK
Ox0	Undefined				Sin definir	Unclassified
Ox1	Movie/Drama				Cine (cinema)	Movie
Ox2	News/Current affairs (informative)				Informativo	News and current affairs
Ox3	Show/Game				Entretenimiento	Entertainment
Ox4	Sports				Deporte (sports)	Sport
Ox5	Children's/Youth programs				Infantil	Children's
Ox6	Music/Ballet				Musica (music)	
Ox7	Arts/Culture				Documental	News and Factual (culture without music)
Ox8	Social/Magazine					News and Political Factual
Ox9	Children's/Science/Factual topics				Televentas (tele-sales)	Education
OxA	Leisure				Ocio (leisure)	Lifestyle
OxB	Special				Toros (bulls)	
OxC	Reserved				Serie (series)	
OxD	Reserved				Adulto (adult)	
OxE	Reserved				Religión	
OxF	User defined				User defined	