

Flexibility in UHF: Regulatory Options

Analysis of regulatory frameworks applicable to the
introduction of SDL in the UHF Band | 9 October 2015

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Brussels, 9 October 2015

KEY MESSAGES

SDL in 470-694 MHz band can be beneficial for Europe

Supplemental Downlink (SDL) in the 470-694 MHz band can contribute to several objectives set by European regulations noting that Media Service Providers will always have to rely on a return channel controlled by someone else:

- Ensuring that public service broadcasting continue to benefit from technological progress.
- Encouraging the production of European content taking into account the convergence of information society services and media services, networks and devices, in order to foster growth and jobs in the information society and media industries. In this analysis, such innovative services are referred to as converged services.
- Promoting reception of all digital interactive television services, regardless of the transmission mode.
- Increasing consumer choice through availability of on-demand audiovisual media services.
- Enabling traditional broadcasters to compete on a level playing-field with on-demand media competition.
- Safeguarding efficient use of spectrum while fulfilling other general interest objectives defined by Member States.
- Promote innovation and investment through the freeing up of harmonised spectrum for new advanced technologies supporting social, cultural and economic objectives.

National flexibility is key

Member States have potentially diverging national general interest objectives, i.e. objectives related to their democratic, social, linguistic, cultural interests, especially for broadcast services. Member States also face vastly varying legacy situations in the use of the UHF band. The national regulatory framework adopted for the introduction of SDL in the UHF band must take into account these national specificities. In other words, there has to be national flexibility in the use of the UHF band in order to secure an optimum use of the band at European level.

Flexibility can be introduced in the UHF band through appropriate modification of the international regulatory framework. Flexibility would allow Member States to fulfil their national objectives, while operating under internationally harmonised technical spectrum access rules.

National Flexibility is constrained by international regulatory framework

The regulatory documents that impact the flexibility offered to Member States when considering the introduction of SDL are:

- The ITU Radio regulations, in particular the primary broadcast allocation in the 470-694 MHz band.
- The GE 06 Agreement – and how SDL services are introduced with respect to this agreement.
- The universal service directive, in particular the restrictions to ‘must carry’ regulations.

Finally, national regulations and laws may limit the flexibility of a Member State, unless it decides to modify its regulatory regime.

One clear call for action for Member States and the European Union is to determine which services can be currently supported on the 470-694 MHz band under the broadcast allocation. In particular, **can SDL be leveraged for Downlink (DL) transmissions of interactive services under the broadcast allocation?** This is a key question that should be answered by regulators in order to clarify how much flexibility is currently allowed under the existing regulatory framework.

Role of the European Union: harmonisation of a single market

Though national flexibility is key, national markets are not large enough to trigger the emergence of a successful ecosystem: the goal is to achieve support of SDL in UHF in mass market mobile terminals. It is key for the European Union and European Member States to collaborate towards the emergence of a single market for SDL in the UHF band, through the adoption of a harmonised international regulatory framework.

ITU, CEPT, the European Union and EU Member States have a long history of productive cooperation to support innovative use of spectrum. The successful introduction of flexibility in the UHF band requires an intensive joint work between all parties to identify the most appropriate international regulatory framework for the introduction of SDL in the UHF band.

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1. INTRODUCTION

In 2013, DIGITALEUROPE published a position paper recommending repurposing the 694-790 MHz band for Mobile Broadband (MBB) whilst carefully managing the impact on consumers and their legacy equipment.

Discussions took place throughout 2014 and 2015 in the European Conference of Postal and Telecommunications Administrations (CEPT), the EC's High Level Group on the UHF band (HLG) and the Radio Spectrum Policy Group (RSPG) on the longer term options beyond 2020 for the 470-694 MHz band. This could potentially allow for complementing or converging services of Digital Terrestrial Television (DTT) and MBB which would lead to innovation of enhanced technologies and services, but which would also likely require new operational, business and regulatory models.

Digital Europe published in June 2014 its *Vision on the long term future of the UHF¹ spectrum* and in December 2014 a *White paper on supplemental downlink in the UHF Band²*.

DIGITALEUROPE stated in particular that it ***sees Supplemental Downlink (SDL) as a promising field to explore and recommends further research*** to develop concepts and proposals for the next decade whilst carefully considering compatibility with replacement cycles of devices necessary in the migration to protect consumer interests.

The regulatory regime that would be applicable for the introduction of SDL in the UHF band is particularly critical in order for Member States to ensure that the services delivered in the 470-694 MHz band contribute to their national general objectives. Such general objectives include democratic, social, linguistic, cultural interests, as well as investment, innovation and efficient use of spectrum.

The goal of this document is to analyse the current international regulatory framework and to identify both the level of flexibility that it currently embeds and how such national flexibility would be impacted by modifications of the international regulatory framework.

The document also presents and reviews some potential regulatory scenarios for the possible introduction of SDL in the 470-694 MHz band at national level. DIGITALEUROPE keeps the international developments in the 470-694 MHz band under continuous review and remains open for exploring alternative options of long term use of the 470-694 MHz band.

¹ http://www.digitaleurope.org/DocumentDownload.aspx?Command=Core_Download&EntryId=805

² http://www.digitaleurope.org/DocumentDownload.aspx?Command=Core_Download&EntryId=893

2. RELEVANT INTERNATIONAL REGULATORY DOCUMENTS

2.1. ITU Radio Regulation

The ITU Radio Regulations (ITU RR) governs the international use of spectrum, in particular – in the case of terrestrial services - how states coordinate their respective national use of spectrum to mitigate cross-border interference.

A country is never constrained in the use of spectrum within its own territory. However, most countries only bring service into use in accordance with the RR in order to have the possibility to be granted protection from cross border interference. In particular, stations from the broadcasting service can potentially generate cross border interference to very large distances in the 470-694 MHz band.

In ITU Region 1, the band 470-694 MHz is allocated to broadcasting service on a primary basis.

The definition of the broadcasting service is:

1.38 broadcasting service: A radiocommunication service in which the transmissions are intended for direct reception by the general public. This service may include sound transmissions, television transmissions or other types of transmission (CS).

SDL would therefore belong to the broadcasting service as long as the service delivered over SDL is intended for direct reception by the general public. For example, should SDL be leveraged exclusively for the broadcast of TV content to the general public, SDL would be classified as broadcasting service.

The exact limit of the concept of 'direct reception by the general public' is not entirely clear. For example, it is unclear whether the delivery of data in the downlink channel for a specific user – e.g. in the context of Video-on-Demand service – could be considered as broadcast service or not. Administrations should clarify which services can be considered as belonging to the broadcast service, and which cannot. This in turn would provide Member States – and the industry – more clarity about the degree of flexibility they can enjoy under a broadcast allocation, or alternatively under a co-primary mobile-broadcast allocation.³

The band 470-698 MHz is also allocated in many countries on a secondary basis to the land mobile service, intended for applications ancillary to broadcasting. PMSE are an example of such applications. The secondary status and the restriction to applications ancillary to broadcasting would significantly restrict the services that could be operated over SDL, should SDL be deployed under this allocation. It should also be noted that so called whitespace devices considered getting access to the band on a non-interfering – non-protected basis, without corresponding RR allocation. Such option is not likely to be realistic for SDL as significant network investment is unlikely to occur without appropriate regulatory status.

It should be noted that in Region 1, except in the African Broadcasting Area, the band 608-614 MHz is also allocated to the radio astronomy service on a secondary basis. Also, in the Russian Federation and Ukraine, the band 645-862 MHz, in Bulgaria the bands 646-686 MHz are also allocated to the aeronautical radionavigation service on a primary basis.

³ It is clear that the introduction of return channel (also called uplink channel) in the 470-694 MHz band would require a co-primary mobile allocation. However, this is by definition not directly related to SDL, which is limited to downlink transmission, and therefore not further discussed in this paper.

a) Review

The ITU RR are amended during World Radio Conferences, which are held every few years. WRC-15 will be held from 2nd to 27th November 2015. The next WRC is planned for 2019.

b) Conclusion

Under the current version of the RR, SDL could be deployed in Europe for broadcast services, i.e. services that are intended for direct reception by the general public.

Deployment of individualised services over SDL, for example data or individualised video services for specific users, would most likely require a modification of the Radio Regulation and the introduction of the mobile service as a co-primary service in 470-694 MHz in the relevant countries. Such introduction can only be achieved following an agreement between the affected countries, i.e. not only the countries deciding to introduce this service on their territory but also the countries that may be impacted by this introduction.

There have been across Europe some examples of limited data services being deployed in the 470-694 MHz band, multiplexed with broadcast services, even though such usage is not strictly in accordance with the RR. So it should also be stressed that while the theory is clear, in practice administrations would have to come to a common understanding, preferably at European level, of which exact services are allowed under the broadcast allocation. In particular, it is critical for the industry to obtain a clarification from administrations on whether interactive services in downlink can be provided over a broadcast allocation, or whether a co-primary mobile allocation is required for such service.

2.2. ITU Geneva 06 Agreement

The Regional Radiocommunication Conference for planning of the digital terrestrial broadcasting service in parts of Regions 1 and 3, in the frequency bands 174-230 MHz and 470-862 MHz (RRC-06) was held in Geneva from 15th May to 16th June 2006. The final acts of the conference include a Regional Agreement Relating to the planning of the digital terrestrial broadcasting service, in particular in 470-862 MHz.

In particular, the Agreement defines DVB-T assignments and allotments, as well as a procedure to modify the plan or to coordinate with other primary terrestrial services.

The Agreement has some flexibility in the sense that a digital entry in the plan can be leveraged to introduce either a station using a technology other than DVB-T or even a station from another service (in conformity with RR), as long as the new station does neither create more interference nor request more protection than the digital entry in the Plan.

On the other hand, the plan is based on a fixed 8 MHz channel raster which limits its flexibility when considering other technologies. For example, 3GPP standards currently define channel bandwidths of 1.4, 3, 5, 10, 15 and 20 MHz, but not 8 MHz.

It should also be noted that the plan is being modified regularly. For example, it was modified successfully to take into account the harmonisation of the band 790-862 MHz for mobile services in Europe.

There are essentially five options for introducing SDL in the 470-694 MHz band:

- Introduce SDL exclusively as a secondary service, i.e. not creating interference to and not requesting protection from entries of the plan or other services such as PMSE. This was essentially the regulatory option considered by so called whitespace devices. Such option is not likely to be realistic for SDL as significant network investment are unlikely to occur without appropriate regulatory status.

- Introduce SDL leveraging the envelope concept within the digital entries of the plan. Under this option, SDL would be constrained to an 8MHz channel raster and most likely to a Multiple Frequency Network type of deployment, unless a country successfully manages to modify the plan to create large Single Frequency Networks (SFN) within its territory.
- Introduce SDL as ‘other primary terrestrial services’ which would provide more freedom to achieve an SFN deployment but would still require cross-border coordination based on 8 MHz channel raster for neighbour countries operating High Power High Tower networks.
- Develop a separate regulatory framework for SDL. The relationship between GE-06 and the new framework would have to be harmonised when developing the new framework.
- Develop a new regulatory framework for the band or part of the band, including possibly denunciation of the Regional Agreement. This would provide maximum flexibility for the country denouncing the agreement but would severely compromise the use of the band for High Power High Tower networks in this country.

For the 800 MHz band, it was decided to develop a new regulatory framework at European level for the introduction of mobile in 790-862 MHz. Though GE06 in theory still applies to 790-862 MHz and the plan still includes entries in 790-862 MHz, in practice the band has been harmonised for mobile which means the band can no longer be used by European countries for broadcasting services.

a) Review

The agreement can only be amended by a competent regional conference, none of which is currently scheduled.

The plan can be modified continuously according to the rules of the Agreement.

b) Conclusion

The Agreement – and the corresponding plan – is critical for the operation of high power high tower broadcast stations in Europe in the 470-694 MHz band, given the large coordination distance required by these stations.

The mechanisms set by the Agreement are flexible enough to enable the introduction of another service in the band, or another regulatory framework can be developed for SDL in addition to the Agreement which would remain valid for High Power High Tower networks (as was done in the case of the 800 MHz band). The exact regulatory mechanism leveraged to introduce SDL in the band would depend on the regulatory scenario adopted at European level.

2.3. Audiovisual Media Services Directive

The EU's Audiovisual Media Services Directive (AVMS-D) governs EU-wide coordination of national legislation on all audiovisual media, both traditional TV broadcasts and on-demand services. The goals of the directive are:

- providing rules to shape technological developments,
- creating a level playing field for emerging audiovisual media,
- preserving cultural diversity,
- protecting children and consumers,
- safeguarding media pluralism,
- combating racial and religious hatred,
- guaranteeing the independence of national media regulators.

The directive addresses the rights and obligations of the ‘media service provider’, i.e. the entity having ‘editorial responsibility’ which itself is defined as the effective control both over the selection of the programmes and over their organisation either in a chronological schedule, in the case of television broadcasts, or in a catalogue, in the case of on-demand audiovisual media services.

The rules set by the AVMS-D are therefore targeting the content made available by the media service provider, with some slight variations between traditional and on-demand services, but does not regulate the distribution of these audio-visual services.

Nevertheless, some of the principles set by the AVMS-D should be kept in mind when discussing the possibility to introduce SDL in the member states:

- Audiovisual media services are important for society and therefore specific rules can be applied to these services,
- Public service broadcasting should continue to benefit from technological progress,
- The Commission wants to modernise the EU policy instruments to encourage the production of European content taking into account the convergence of information society services and media services, networks and devices, in order to foster growth and jobs in the information society and media industries,
- The availability of on-demand audiovisual media services increases consumer choice,
- The development of new advertising techniques potentially enables traditional broadcasters to compete better on a level playing field with on-demand media competition.

a) Review

The European Commission is currently consulting on the potential revision of the AVMS-D. A draft revised AVMS-D is expected by mid-2016 at the latest.

b) Conclusion

The AVMS-D regulates exclusively the ‘making available’ of media services but not the distribution of these services. As such, the AVMS-D is completely neutral with regards to the introduction of SDL in the UHF band.

Some principles (not rules) of the AVMS-D support the availability to broadcasters of new technologies and new advertising techniques in order to support public policy objectives linked to mass media.

2.4. Framework Directive

The Directive establishes a harmonised framework for the regulation of electronic communications networks, i.e. transmission systems which permit the conveyance of signals by wire, by radio, by optical or by other electromagnetic means, including satellite networks, fixed and mobile terrestrial networks, electricity cable systems, networks used for radio and television broadcasting and cable television networks, irrespective of the type of information conveyed.

The content of services delivered over electronic communications networks, such as broadcasting content, are excluded from the scope of the Directive.

It sets as one of the roles for national regulators, the requirement to promote the interests of European citizens by ensuring that all citizens have access to a universal service.

The Directive also covers other aspects, including standardisation designed to promote the harmonised provision of electronic communications networks and services and associated facilities and services and the

interoperability of digital television services. In particular, assignment of radio frequencies should take into account the democratic, social, linguistic and cultural interests related to the use of frequency.

In a very relevant manner, one of the main reasons for the adoption of the directive was the convergence of the telecommunications, media and information technology. The framework directive states in particular: *It is desirable for consumers to have the capability of receiving, regardless of the transmission mode, all digital interactive television services, having regard to technological neutrality, future technological progress, the need to promote the take-up of digital television, and the state of competition in the markets for digital television services.* The introduction of SDL would support such objective by enabling the delivery of interactive services for consumers receiving television services through the terrestrial network.

The Framework Directive also includes provisions related to the sharing of infrastructure, including compulsory sharing, when appropriate. Such rules may be relevant when introducing SDL.

a) Review

The authorisation directive may be reviewed in the context of the Digital Single Market (DSM) initiative. A public consultation launched in mid-September 2015 is the first step of this review.

b) Conclusion

The Framework Directive is relevant to the introduction of SDL as it sets the regulatory framework for any electronic communication networks irrespective of the service (i.e. including broadcast networks). The Framework Directive already explicitly takes into account some of the key characteristics of broadcasting, including taking into account democratic, social, linguistic and cultural interests.

The Framework Directive aims – among other goals - at providing adequate tools to broadcasters in the context of convergence of the telecommunications, media and information technologies. SDL could support this goal by expanding the broadcast service available on the terrestrial platform.

2.5. Access Directive

The directive provides guidance on agreements between market players on access to and/or interconnection with another's infrastructure.

The general principle provides that, in markets where there continue to be large differences in negotiating power between undertakings, it is appropriate for regulators to act as an instrument for market regulation.

a) Review

As part of the comprehensive review of the EU Telecommunications Framework, the authorisation directive may be reviewed in the context of the Digital Single Market (DSM) initiative. A public consultation launched in mid-September 2015 is the first step of this review.

b) Conclusion

The Access Directive may be relevant for SDL, should SDL be operated by some operators to deliver broadcast services.

The Access Directive may be relevant should national regulators decide that some players are preventing access to infrastructure to the detriment of the general interest.

However, when it comes to media services, regulators have other means to impose remedies than to rely on the Access Directive, for example through must carry obligations. Therefore, it is unclear whether the Access Directive would be of relevance for the introduction of SDL.

2.6. Authorisation Directive

The Directive covers authorisations for all electronic communications networks and services, whether they are provided to the public or not. It applies to the granting of rights to use radio frequencies where such use involves the provision of an electronic communications network or service.

The general authorisation gives companies the right to provide electronic communications networks and services. When they provide electronic communications networks or services to the public, they are entitled to be designated to provide certain universal service functions.

EU countries shall facilitate the use of radio frequencies under general authorisations but, where necessary, may make the use of radio frequencies subject to the grant of individual rights with a view to: avoiding harmful interference; ensuring the technical quality of service; safeguarding efficient use of spectrum; fulfilling other general interest objectives defined by Member States.

The general authorisation and the rights of use may be subject only to the conditions listed in the annex to the directive, for example: financial contributions to the funding of universal service; environmental and town and country planning requirements; personal data and privacy protection; the obligation to transmit certain television and radio programmes (must carry); restrictions concerning the broadcast of illegal content.

a) Review

As part of the comprehensive review of the EU Telecommunications Framework, the authorisation directive may be reviewed in the context of the Digital Single Market (DSM) initiative. A public consultation launched in mid-September 2015 is the first step of this review.

b) Conclusion

The Authorisation Directive is relevant to the introduction of SDL since such introduction requires individual rights of use of radio frequencies. The Directive explicitly mentions that:

- the individual rights of use can be granted either to the network operator or to the media service provider (in the sense of the AVMS-D),
- the right of use may include must carry obligations,
- specific technical or operational conditions.

As such, the Authorisation Directive does not limit the regulatory method that could be selected to introduce SDL. The Authorisation Directive is flexible enough to allow the regulatory model used for broadcast services, for mobile services, or adopt a new regulatory model halfway through these two existing models.

2.7. Better Law making Directive

The Directive 2009/140/EC – Better Law Making Directive – amended Directives 2002/21/EC on a common regulatory framework for electronic communications networks and services, 2002/19/EC on access to, and interconnection of, electronic communications networks and associated facilities, and 2002/20/EC on the authorisation of electronic communications networks and services.

The impact of the Better Law Making Directive are already included when discussing the Framework, Access and Authorisation Directives in the previous sections.

2.8. Universal Service Directive

The Universal Service directive sets out a number of obligations for Electronic Communication Providers as well as a number of user rights in access to electronic services.

In the context of the introduction of SDL, it is mainly relevant as it sets out some rules regarding the consumer digital television equipment and – more critically – defines the framework for member states to adopt legal ‘must carry’ obligations.

In particular, the directive restricts ‘must carry’ obligations to undertakings under their jurisdiction providing electronic communications networks used for the distribution of radio or television broadcast channels to the public where a significant number of end-users of such networks use them as their principal means to receive radio and television broadcast channels. This framework does not cover the adoption of a ‘must carry rule’ in the context of the granting of individual rights to a frequency band.

a) Review

As part of the comprehensive review of the EU Telecommunications Framework, the authorisation directive may be reviewed in the context of the Digital Single Market (DSM) initiative. A public consultation launched in mid-September 2015 is the first step of this review.

b) Conclusion

The relevance of the Universal Service Directive lies in the definition of the regulatory framework for ‘must carry’ obligations. Unless the Directive is reviewed, it probably prevents one potential regulatory model for the introduction of SDL, that would set a must carry obligation of specified radio and television broadcast channels and complementary services as a pre-condition to the granting of individual rights of access to a frequency band.

2.9. BEREC Regulation

The BEREC Regulation is the Regulation (EC) No 1211/2009 of the European Parliament and of the Council of 25 November 2009 establishing the Body of European Regulators for Electronic Communications (BEREC) and the Office.

The Regulation defines the rules on the establishment and functioning of BEREC. The main task of BEREC is to advise and assist the European Commission in developing the internal market and to form a link between national regulatory authorities (NRAs) and the Commission. It should also serve as a body for reflection, debate and advice for the European Parliament, the Council and the Commission in the electronic communications field.

BEREC’s objective is to:

- develop and disseminate regulatory best practice among NRAs, such as common approaches, methodologies or guidelines on the implementation of the EU regulatory framework;
- assist NRAs in the regulatory field;
- deliver opinions on draft decisions, recommendations and guidelines;
- issue reports and provide advice on the electronic communications sector;
- assist the European Parliament, the Council and the Commission as well as NRAs in the dissemination of best practices.

a) Review

The BEREC regulation may be reviewed since the DSM strategy states that *“The changing market and technological environment calls for strengthening the institutional framework. Enhancing the role of bodies in which the Member States' authorities are themselves represented – such as the Body of European Regulators for Electronic Communications or the Radio Spectrum Policy Group will also be required.”*

b) Conclusion

The regulation targets setting up of BEREC. Therefore, and notwithstanding the fact that BEREC may play a role in the setting up of the regulatory framework applicable to the introduction of SDL, the regulation has no direct impact on any potential regulatory framework.

Note that BEREC has been created to harmonise practices among regulators, whereas SDL should precisely provide flexibility to Member States to adapt to their national broadcasting context and regulations.

2.10. Radio Spectrum Decision

The Radio Spectrum Decision aims at coordinating policy approaches, including adopting harmonised conditions, in the availability and efficient use of radio spectrum.

In particular, the Decision sets up the Radio Spectrum Committee and establishes the mechanism of mandates to the CEPT for the development of technical implementing measures.

a) Review

No review expected.

b) Conclusion

The Radio Spectrum Decision suggests that the development of an appropriate regulatory framework for the introduction of SDL, including technical implementing measures, should probably involve a mandate to the CEPT for the technical part of the task.

2.11. Radio Spectrum Policy Programme Decision

The Radio Spectrum Policy Programme Decision establishes a multiannual radio spectrum policy programme for the strategic planning and harmonisation of the use of spectrum in Union policy areas, such as electronic communications and audiovisual policies.

The decision sets the following policy objectives supporting the introduction of SDL:

- promote innovation and investment through the freeing up of harmonised spectrum for new advanced technologies supporting social, cultural and economic objectives,
- ensure there is sufficient spectrum available for the further development of innovative audiovisual media,
- consider allocation of spectrum to innovative applications that may have a major socio-economic impact and/or potential for investment.

a) Review

A regular review of the programme is necessary to take into account both goals achieved and new objectives.

b) Conclusion

The introduction of SDL – and the advanced multimedia services it would enable – is perfectly aligned with the policy objectives set by the Radio Spectrum Policy Programme.

It is not expected that the RSPP would have an impact on the regulatory framework for the introduction of SDL.

2.12. Cable Directive

The Cable Directive sets the regulatory framework applicable to the acquisition of right to broadcast content by cable and satellite services, including rights originating from another Member States than the cable/satellite own MS.

a) Review

European Commission is currently conducting a public consultation on the Directive.

b) Conclusion

The Cable Directive impacts the acquisition of rights to broadcast content and has therefore no impact on the introduction of SDL.

2.13. European Convention on Transfrontier Television

The European Convention on Transfrontier Television defines a common set of rules applying to television broadcasting. It does not address the transmission side of broadcasting but exclusively the rules applying to the media service provider.

a) Review

No review expected.

b) Conclusion

The Convention does not apply to the transmission of television services and therefore does not impact the introduction of SDL.

2.14. Council Directive on the coordination of television broadcasting

Council Directive 89/552/EEC sets minimum rules for applicable to television broadcasting, in particular in the fields of advertising, retransmission window and protection of minors.

a) Review

No review expected.

b) Conclusion

The Directive does not apply to the transmission of television services and therefore does not impact the introduction of SDL.

2.15. Summary/Conclusion

The regulatory documents that may impact the regulatory framework applicable to the introduction of SDL are:

- The ITU Radio regulations, which will determine among other aspects whether the service is limited to linear broadcast (under broadcast service allocation), or whether individualised services can be deployed over SDL (which may require the adoption of a mobile allocation in the band). Administrations should decide exactly which services can be delivered under a broadcast allocation, in order to clarify the flexibility provided by the current regulatory framework.
- The GE 06 Agreement – and how SDL services are introduced with respect to this agreement. Several regulatory options are possible which impact to different degrees the ability to operate on channel raster different than 8 MHz and the ability to operate as nationwide SFN (or under MFN). The selection of a specific option also influences the respective protection criteria between traditional terrestrial broadcasting and SDL.
- The universal service directive, since it currently limits the adoption of ‘must carry’ rules to the specific case of competing broadcast networks but does not cater for the adoption of ‘must carry’ rules associated with individual rights of use for spectrum.
- Potentially, national regulation.

One clear lesson from the analysis of the existing international regulatory framework – and specifically the ITU RR’s primary broadcast allocation in 470-694 MHz, is that it is not entirely clear how the regulatory framework should be interpreted when considering the innovative services that could be provided over SDL. As such, one clear recommendation for regulators would be to develop a common view at European level on the interpretation of the existing international regulatory framework in the context of the introduction of SDL in the UHF band.

Key elements of international regulation unduly limiting the opportunities to introduce SDL in the UHF band should be identified and corrected, in order to provide flexibility to Member States wishing to introduce SDL while providing regulatory certainty to Member States wishing to maintain the current use of the band.

It would also be beneficial to develop regulatory guidelines at European level for the introduction of SDL in Member States wishing to do so. Increased harmonisation of the regulatory framework between Member States would facilitate the introduction of SDL for the industry, while clear recommendations would also enable to adopt modifications quickly, should they decide to implement SDL.

3. REGULATORY ASPECTS IMPACTING FLEXIBILITY

3.1. Who is the holder of frequency individual rights of use?

One key aspect for the emergence of converged services – and the deployment of innovative networks – is the impact of the national law/regulation on which entity would hold the spectrum individual rights of use.

Typically, the spectrum individual right of use could be granted either to the media service provider or to the network operator.

Media service providers typically request being the holder of the spectrum licence in order to have maximum freedom in the selection of a network operator, in particular in order to maintain control over the conditions of broadcasting of their content.

Mobile network operators typically request being the holder of the spectrum licence in order to provide certainty to investors, when requesting access to funds required for investment in networks.

Innovative regulatory models may be required to solve this issue. For example:

- frequency individual right of use could be granted to network operator, under the express condition of ‘must carry’ for specific content that would have been previously authorised by regulator,
- or frequency individual right of use could be granted to media service provider, but more spectrum than strictly necessary would be provided to media service provider, in order to enable media service provider and candidate network operator to conduct business discussion taking into account potential revenues of converged services running over SDL.
- or frequency individual right of use could be granted jointly to a consortium grouping both media service provider and network operator(s).

3.2. Which entity delivers the spectrum licence?

Member States have adopted diverging regulatory structures at national level. In some Member States, a single entity regulates both Electronic Communications and the Media. In others, two different entities oversee these markets. In some Member States, market regulator and spectrum regulator are separate entities, while in others, a single entity perform both functions.

The introduction of SDL in the 470-694 MHz band can enable the development of innovative converged services enhancing media and communication services by leveraging the best of both worlds. However, the emergence of such services would require balanced regulatory decisions taking into account the impact on both the electronic communications market and national broadcasting objectives.

Therefore, the national regulatory framework may impact the degree of convergence that can be achieved in a specific Member States and artificially limit the benefit that the introduction of SDL may deliver.

3.3. Degree of competition required by lawmaker/regulator?

Infrastructure competition is one of the pillars of the EU Electronic Communications regulatory framework. Infrastructure competition it typically ensured through review of mergers, spectrum caps during spectrum auctions and review of infrastructure sharing agreements.

Terrestrial broadcasting, on the other hand, is based on the single transmission of content as there would be no benefits in transmitting the same content several times, which would contradict the principle of effective use of spectrum.

Converged services, running over the SDL platform, would require a new approach to these principles, even though they would have an impact on both broadcast and electronic communications markets.

Appropriate decisions should focus on enabling investment, technology and service innovation, as well as taking into account the democratic, social, linguistic and cultural interests.

3.4. Requirement for horizontal operation by lawmaker/regulator?

Electronic communications network operators have been facing heightened scrutiny in relationship to the discrimination between content/services running on their network, especially when such operator have commercial relationships with one of the content/service providing entities.

The requirements for appropriate delivery of audiovisual broadcast services are not compatible with best effort services. The resources – in particular spectrum resources - required in order to broadcast audiovisual services as managed service are large and cannot be offered to any media service provider requesting access to the platform. This is already the case as access to terrestrial broadcasting services is not open to any media service provider, but is restricted to the providers selected by the national regulator.

Innovative services delivered over SDL would be managed services and, as such, entities operating such innovative platforms cannot be subject to non-discriminatory rules. This is another area where specific regulations of respectively the electronic market and the media market collide and which requires innovative regulatory approaches in order to reach the most desirable outcome for consumers and citizens.

4. MAIN OPTIONS TO BUILD A REGULATORY SCENARIO

4.1. Co-primary mobile allocation

Should the 470-694 MHz band be subject to a co-primary mobile allocation?

Benefits of operation under current allocation (primary broadcast): such approach would maintain mostly unchanged the current regulatory framework applicable to the UHF band and provide absolute regulatory certainty for linear broadcast services.

Benefits of operation under co-primary Mobile-Broadcast allocation: such approach enables converged services, where broadcast and on-demand services can be run in parallel. It also opens the door for economic actors of the mobile world to contribute to the investment required for the deployment of a converged platform.

Impact on flexibility for MS: the absence of a primary mobile allocation would reduce the flexibility for MSs to adopt innovative approach over SDL. Adopting a primary mobile allocation has no impact for MSs that do not wish to introduce SDL in the UHF band.

Open question: EU MSs, even together, cannot unilaterally modify the RR. Assessment of the potential impact for MSs with neighbouring countries outside of the EU is necessary, should international partners not agree with the direction adopted by EU MSs.

4.2. ITU-R GE 06 vs new framework

Is SDL operated within ITU-R GE 06 or under a new specific band plan and spectrum regulation?

Benefits of operation within ITU-R GE 06: Operation of SDL within the entries of GE06 provides maximum guarantees to incumbent terrestrial broadcast services.

Benefits of operation under a new spectrum regulation: the adoption of a new regulation would open the door to international coordination following a new band plan with associated spectrum regulation measures. This enables the adoption of specific international coordination rules more adapted to SDL than the GE-06 rules.

Impact on flexibility for MS: both options potentially limit the flexibility of MSs. The most appropriate option should be selected depending on the full regulatory and business models that MSs want to put in place.

Open question: should the discussion target a single regulatory step – i.e. a stable regulatory situation enabling all options – or should the regulatory approach be adapted gradually, e.g. taking into account the review opportunities suggested in the Lamy report?

4.3. Whitespace or new band plan

Should a whitespace approach or a new band plan be adopted?

Benefits of whitespace approach: there is no impact on the existing broadcast infrastructure.

Benefits of new band plan: this would enable SDL deployment in Single Frequency Networks and adoption of channel bandwidth currently used in mobile standards. It may also enable easier implementation in terminals.

Impact on flexibility for MS: the flexibility available to MSs may be limited here due to standardisation. It is unlikely that two different technologies (one based on whitespace approach, one based on new band plan) would become widely available in terminals.

Open question: Are there sufficient incentives for specific member states to maintain both a high power high tower broadcast infrastructure and introduce an SDL platform? Should the answer be negative, the approach is only relevant for cross border coordination, which would significantly reduce the impact of this question.

4.4. Delivery of spectrum licence

Is the spectrum licence delivered by the broadcast regulator or by the electronic communication regulator?

Benefits of delivery of spectrum licence by broadcast regulator: the broadcast regulator is best placed to assess the impact on the democratic, social, linguistic and cultural interests due to modification of the broadcast landscape.

Benefits of delivery of spectrum licence by electronic communications regulator: the ECS regulator is best placed to deliver a regulatory framework enabling the converging platform to compete with innovative internet based services.

Impact on flexibility for MS: as long as the decision is adopted at national level, by definition there is no impact on MS. Should a single solution be imposed at EU level, MS may lose flexibility and the ability to adapt to national circumstances.

Open question: is it possible to identify mechanisms for joint/coordinated delivery of individual rights of use by both regulators when addressing platforms delivering converged services?

4.5. Spectrum licence owner

Is the spectrum licence held by media service provider/by network operator?

Benefits of spectrum licence held by media service provider: this solution provides the best guarantee for media service providers to control the conditions under which their service is broadcasted.

Benefits of spectrum licence held by network operator: this provides the best incentive for network operators to invest in the converged infrastructure and also facilitates the introduction of managed data/media services, either to complement the media broadcast service or in addition of the media broadcast service.

Impact on flexibility for MS: as long as the decision is adopted at national level, by definition there is no impact on MS. Should a single solution be imposed at EU level, MS may lose flexibility and the ability to adapt to national circumstances.

Open question: what is the interaction with net neutrality, infrastructure competition and universal service regulations?

4.6. Must carry

Should a 'must-carry' be adopted for terrestrial broadcast content identified by media regulator in relationship to delivery of a frequency individual right of use?

Benefits of 'must carry': such regulatory approach would decouple the regulatory process related to the media service and the regulatory process relating to the selection of a network operator. It would also create incentive for investment in network.

Impact on flexibility for MS: as long as the decision is adopted at national level, by definition there is no impact on MS. Should a single solution be imposed at EU level, MS may lose flexibility and the ability to adapt to national circumstances.

Open questions:

- Can the 'must carry' requirement be extended to 'must deliver' with criteria compatible with existing broadcast requirements, in particular in terms of Free-to-Air availability criteria for a specific country?
- Is there a risk for the benefits of the converged services to be limited to the customers of the network operator running the converged platform?

5. ASSESSMENT OF SCENARIOS

5.1. Scenario 1: Vanilla SDL

a) Characteristics

- Current ITU allocation
- Allotment under GE06 framework
- Spectrum Licence delivered by broadcast regulator to media service provider
- Operation of SDL by broadcast network operator

b) Benefits

- No modification of existing regulatory framework is required, this regulatory option is implementable today.
- Media Service provider maintains full control of the terrestrial distribution platform.

c) Drawbacks

- It is unclear that interactive DL services can be supported under this option, depending on administration interpretation of the ITU-R definition of 'broadcast service'.
- Media Service Providers bear full cost of deployment of SDL network.
- The option limits deployment opportunities to Multiple Frequency Networks.
- It offers limited opportunities to leverage the existing mobile infrastructure.
- It is unlikely to trigger investment from mobile players.
- And therefore it is unlikely to achieve large scale support in terminals.

d) Required modifications of regulatory framework

- None.

5.2. Scenario 2: White chocolate SDL

a) Characteristics

- Current ITU allocation.
- New band plan.
- Spectrum Licence delivered by broadcast regulator to media service provider.
- Operation of SDL by mobile network operator.

b) Benefits

- Media Service Providers maintains full control of the terrestrial distribution platform.
- Customers of the MNO operating the SDL platform can benefit from interactive services over the MNO's FDD spectrum.
- The option triggers the opportunity for SFN deployment.

c) Drawbacks

- MNOs have a lesser incentive to invest in SDL platform.
- It is unclear that interactive DL services can be supported under this option, depending on administration interpretation of the ITU-R definition of 'broadcast service'.
- Such business model would require very long broadcast contract between Media Service Provider and MNO to justify investment in SDL platform.
- Such model is unlikely to trigger mass market penetration in terminals due to lack of support by MNOS.

d) Required modifications of regulatory framework

- Adoption of an SDL regulation besides GE-06.

5.3. Scenario 3: Milk chocolate SDL

a) Characteristics

- Co-primary mobile allocation in 470-694 MHz.
- New SDL band plan.
- Licence delivered by broadcast regulator to media service provider.
- Operation of SDL by mobile network operator.

b) Benefits

- Media Service Providers maintains full control of the terrestrial distribution platform.
- Customers can benefit from interactive and converged services over SDL platform.
- The model provides an opportunity for Media Service Providers and MNOs to share the cost of infrastructure and benefits of converged services.
- MNO involvement secures good market penetration of the technology support in mobile terminals.
- The option triggers the opportunity for SFN deployment.

c) Drawbacks

- Such business model would require very long broadcast contract between Media Service Provider and MNO to justify investment in SDL platform.

d) Required modifications of regulatory framework

- Modification of ITU RR
- Adoption of an SDL regulation besides GE-06
- Adoption of guideline for review of innovative services by ECS regulator

5.4. Scenario 4: Dark Chocolate SDL

a) Characteristics

- Co-primary mobile allocation in 470-694 MHz.
- New SDL band plan.
- Licence delivered by spectrum regulator to SDL network operator with ‘must carry’ of broadcast content
- Operation of SDL by mobile network operator

b) Benefits

- Customers can benefit from interactive and converged services over SDL platform.
- MNO involvement secures good market penetration of the technology support in mobile terminals.
- The option triggers the opportunity for SFN deployment.

c) Drawbacks

- Media Service Providers lose control over terrestrial distribution platform.
- Media Service Providers are unlikely to open their platform and catalogues to generate innovative services.
- The in depth modification of the regulatory framework may require significant amount of time.

d) Required modifications of regulatory framework

- Modification of ITU RR.
- Adoption of an SDL regulation besides GE-06.
- Full recast of national broadcast legal/regulatory framework.

6. OTHER OPEN QUESTIONS

There are a few open questions which may impact the flexibility provided to member states by the introduction of SDL in 470-694 MHz.

6.1. Synchronisation between neighbouring States

One question that may limit the flexibility is to determine how tightly neighbouring Member States would have to align their respective implementation of flexibility.

ECC report 224 provides some elements of response by assessing cross border situations. The existence of a market sufficiently large to justify implementation in terminals is the other requirement.

6.2. Return channel for converged services

Under SDL, Media Service Providers will always have to rely on a return channel controlled by someone else. Typically, such return channel could run over the uplink supported on the FDD spectrum owned by an MNO for a return channel. Another option would be the introduction of a return channel (Uplink) in the 470-694 MHz, which would require a co-primary mobile allocation. Finally, a return channel could be operated through other access networks, e.g. WiFi, although such solutions typically already provide a downlink, and their coverage is unlikely to match the SDL coverage.

The best way for broadcasters to get access to an independent return channel remains an open question.

6.3. Sharing benefits vs securing investment

An SDL platform would provide significant benefits to users that get access to it. Should access be limited to the customers of the MNO(s) operating the network, it would provide a differentiating argument for the MNO and therefore favour investment by the MNO in the SDL platform. However, this would be to the detriment of customers of other MNOs not getting access to services offered over SDL.

On the other hand, should access be open to anybody, regardless of the serving MNO, there would be little incentive for an MNO to invest in such a network. However, this shared network, providing at least access to the must-carry channels, could be at least partially financed by the taxes that citizens pay for Public Broadcasting Service.

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