



## Consultation on the Revised Framework for Spectrum Pricing

### Response by Transfinite Systems Ltd



**TRANSFINITE**  
SYSTEMS

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## Background to Transfinite

Transfinite is an independent UK company, with an excellent track record of consultancy support, study work and software development. We specialise in products and services to analyse compatibility between radiocommunications systems and their use of the radio spectrum. Our tools have a particular emphasis on interference analysis, spectrum management and frequency co-ordination. Our study work has encompassed a wide range of communications systems including both terrestrial and satellite services.

Recently we were involved in the auction of spectrum in the 10 – 40 GHz bands and were successful, gaining a licence in the 28 GHz band. We intend to operate as a band manager providing access to our spectrum via a web based software solution called Visualyse Spectrum Manager (SM).

Visualyse SM provides all the necessary features to support issuing of licences including:

- Licence application
- Licence processing
- Licence search and display
- Technical analysis
- Management and reporting
- Engineering

Visualyse SM can offer users the ability to apply for licences via a web based portal as shown in the figure below.



## General Comments

Transfinite welcomes the publication by Ofcom of a revised framework for spectrum pricing. This is an important topic for Transfinite as the price set by Ofcom for spectrum products such as fixed links can become the de-facto price for commercial band managers.

In the revised framework Ofcom notes that it intends to “*facilitate the emergence of band managers*” by structuring the licence conditions. This is inline with the requirements on Ofcom in section 3(1) of the Communications Act to promote competition.

However Ofcom remains both the regulator and supplier of the majority of spectrum access assignments within the UK and there is a danger of Ofcom actions harming the ability of other organisations to competitively provide a commercial alternative.

We are concerned about the scope of the analysis for an Impact Assessment in this Consultation. As noted above, Ofcom’s position as both regulator and provider of spectrum introduces a range of competitive power and conflict of interest issues in relation to emergence of band managers.

The scope of an impact analysis is suggested in section 3.8 to be the “*best estimates on the available information of the financial and commercial implications of our proposals for current users and their customers.*” Our interpretation of this statement is that it does not include the impact of Ofcom’s actions on band managers.

We strongly suggest that Ofcom should undertake an Impact Assessment under Section 7 of the Communications Act on how any proposed changes to the prices it charges for spectrum products such as fixed links would have on the ability of commercial band managers to undertake their business, taking into account the requirements on Ofcom to promote competition.

*Question 1: Do you agree with our proposed core principles of setting AIP? Are there additional matters that it would be helpful to clarify?*

Answer: The review and list of principles did not consider alternative options for providing pricing information to users of the radio spectrum other than A.I.P. In particular it did not consider the use of auctioning overlay licenses to blocks of spectrum that are currently open to new assignments, in particular in fixed link or business radio bands.

This would permit a true market in access to spectrum services, rather than one that is dominated by a single player which is also the regulator, namely Ofcom itself. There is a danger of internal conflicts of interest between regulatory roles and service provision roles.

Use of private Spectrum Management Organisations (SMOs) and a legal framework that permits leasing could provide an alternative approach in which the SMOs would decide prices based upon commercial decisions. Intervention by Ofcom would still remain an option if there is evidence of market failure.

Ofcom has a requirement under the section 3(1) of the Communications Act to promote competition, which would prohibit providing subsidised or below cost access to spectrum.

*Question 2: Do you agree that we should charge cost-based fees where AIP is not appropriate or AIP would not cover our costs? How do you think we should set cost-based fees in future fee reviews? Are there particular factors you think we should take into account, for specific licences fees or cost-based fees in general?*

Answer: If cost based fees were to be used it should take account of **ALL** of the costs, not just those listed in the consultation document, in order to avoid subsidisation of spectrum products.

We strongly disagree with the statement in A8.27 that implied that the auction price was the primary determiner for the price of fixed link assignments. Below we give a significant number of additional costs that a SMO must take into account.

The calculation of the minimum cost that Ofcom charges for spectrum products such as fixed links should include at least the following:

**Spectrum:** there is an opportunity cost of a band being used by Ofcom to provide spectrum products: as an alternative it could, for example, be auctioned. This cost element is also required to ensure Ofcom prices reflect the true cost that an SMO would incur, in particular the need to buy spectrum block(s) at auction and after the licence term pay A.I.P. to Ofcom.

**Building and office space:** the full cost of building and office space required Ofcom licensing operations including other staff required in support such as legal, economic, contractual, accounting, engineering, management, human resources etc as described below. In addition a share of general Ofcom administrative costs (desks, cleaning, power, meeting rooms, reception, office supplies, telephones etc) should be included.

**IT systems:** all necessary general IT support (Microsoft Office, email etc), web site and infrastructure should be included in the cost.

**Licensing system:** the costs should include the full amount paid by Ofcom to develop and operate their spectrum licensing solution, which should be over the software lifecycle, and hence include initial purchase, customisation, installation, training, maintenance, support, updates, etc

**Hardware costs:** all necessary hardware costs including PCs, laptops, servers, printers, networking and routers including backup, maintenance and support

**Licensing costs:** all licences (for example operating system and database) together with maintenance, support and training should be included. Where GIS data is used by the spectrum licensing systems, the cost of the databases should be included (e.g. terrain, clutter, raster or vector map data)

**Professional charges:** for example in-house or external accountants and lawyers developing licence terms, contracts and frameworks for the provision of spectrum products

**Invoicing and billing:** the spectrum product cost should include costs involved in tracking spectrum usage, issuing invoices, tracking payment and chasing non-payers

**Price review:** all the cost of the Spectrum Pricing Framework Review including economic advice should be included in the price of spectrum products: it would not be required if (for example) Ofcom transferred overlay rights to private SMOs

**Documentation:** all the costs of developing, distributing and publishing documentation associated with spectrum licensing (e.g. the Technical Frequency Assignment Criteria or TFACs, Guidelines on using your licence, Licensing Policy Manual etc documents) should be included in the price of those spectrum products

**Consultations:** all the costs of consultation on spectrum products should be included in the price of those spectrum products

**International obligations:** some of the international obligations relate to the protection of bands for which there is significant interests from UK spectrum product holders. Some of this could be provided by SMOs and hence some of these costs should be taken into account when setting spectrum product costs. An example of the work that should be included in the costs would be studies of impact of European or ITU proposals on UK spectrum users<sup>1</sup>.

**Information availability:** there are requirements on Ofcom to make available information over the web regarding spectrum licences issued that should be included for bands where Ofcom issues spectrum products.

**Return on investment:** commercial SMOs have to show a reasonable return on investment (ROI) e.g. purchase of spectrum block, procurement of suitable IT infrastructure, and provision of process support mechanisms. In order to avoid anti-competitive behaviour Ofcom should include a suitable value for the ROI within its costing mechanism.

**Staffing:** all relevant staff costs including licensing, operations, IT, engineers, management and human resource should be fully included in the spectrum costs, taking into account the full employment lifecycle from recruitment to leaving or retirement.

**Stakeholder management:** Ofcom provides platforms for stakeholders in sectors such as BR and FS that are borne by Ofcom due to its roll as provider of spectrum products to those sectors. If all spectrum was provided by SMOs then these would be managed by industry groups such as the Commercial Spectrum Owners Association (CSOA). Hence the costs related to stakeholder management should be included in the spectrum price costs.

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<sup>1</sup> An example would be recent proposals at 24 - 29 GHz for Short Range Radar (SRR) to be introduced in a band where there are UK fixed link allocations. Due to its spectrum blocks at 28 GHz, Transfinite invested significant time in studying the sharing scenarios involved and providing inputs documents to SE-24, working closely with Ofcom staff at the meetings and via web conferences.

**Inflation:** Ofcom's cost base, like that of SMOs, will increase in time due to inflation, and so it would be appropriate to include one of the standard metrics such as RPI (retail price index)

**New links vs. old links:** the majority of the cost to issue a spectrum product is borne by the need to capture and process new applications, in particular planning and interference analysis. A large number of links are in the Ofcom assignment database were planned by the Radiocommunications Agency. Ideally it would be necessary to include the cost of planning these links into the total cost of the current licence database, however that could involve difficulties given the RA has been disbanded. Therefore we suggest that the total cost from the items listed here should be averaged over the number of **new** requirements to plan and issue spectrum products not over the total database of licences.

**Significant market power cap:** Ofcom has what would be defined as significant market power (SMP) in that it provides the majority of spectrum products at present. Averaging over all assignments that Ofcom issues per year would result in lower average costs than any private SMO could afford, as private SMOs would be capped at the percentage of the market they can provide to avoid anti-competitive behaviour<sup>2</sup>.

Therefore the averaging of costs should not be over the full number of licences issued by Ofcom in a year, but over the maximum that could be issued by a private SMO that is just within the limit of market share it could gain before being charged of having SMP. It is important that Ofcom include this term to avoid dangers of anti-competitive behaviour in an environment which contains private SMOs.

### General Comments

In order to ensure transparency in the pricing mechanism used by Ofcom all the various items listed here should be published as part of the justification for any modifications to the price algorithm.

A review should be carried out taking into account all the points here as soon as feasible. If the analysis shows that Ofcom is charging spectrum users for their licences an amount below than the minimum costs identified here, then the licence fees should be immediately increased in line with the cost-based fee.

This analysis would support an Impact Analysis by Ofcom on how its proposals on pricing would affect private SMOs.

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<sup>2</sup> For example, under the EU Directives, an mobile operator is presumed to have SMP if it has more than 25% of a telecommunications market in the geographic area in which it is allowed to operate

*Question 3: Do you agree with our proposed fee-setting methodology principles (set out below)? Are there additional matters that it would be helpful to clarify?*

Answer: Should fees be based upon spectrum denied it should take an approach that is consistent with engineering principles at both the transmitter and receiver side of the spectrum product. In particular spectrum denied is strongly related to e.i.r.p. and receiver sensitivity requirements, neither of which are (for example) in the current fixed service pricing mechanism.

Fees should be set at best estimate of market value and not lower, in order to avoid harmful anti-competitive behaviour against private SMOs.

As noted in the introductory statement, we are concerned about the scope of the analysis for an Impact Assessment in proposed methodology 4. Ofcom's position as both regulator and provider of spectrum introduces a range of competitive power and conflict of interest issues in relation to emergence of band managers.

The scope of an impact analysis is suggested in section 3.8 to be the "*best estimates on the available information of the financial and commercial implications of our proposals for current users and their customers.*" It is not clear from this definition whether it includes the impact of Ofcom's actions on band managers.

We strongly suggest that Ofcom should include in their Impact Assessment analysis of how any proposed changes to the prices it charges for spectrum products such as fixed links would have on the ability of commercial band managers to undertake their business.

*Question 4: Do you agree with our proposal to move away from regular full-scale reviews to reviewing in response to evidence, as set out in Option 5?*

Answer: Yes, if the evidence can also include the impact of Ofcom prices for spectrum products on commercial SMOs.

*Question 5: Do you agree with our process for assessing the priority of future fee reviews? Are there other sources of evidence of misalignment between fees and spectrum value or spectrum management costs that you can think of, and what weight should we give them?*

Answer: it should also be taken into account whether the prices Ofcom is charging is harming the emerging private SMO sector. If it is clear that Ofcom is undercutting the commercial market by charging below the levels that the market indicates is sustainable then there should be a mechanism that allows a review to be initiated.

*Question 6: Based on our proposed criteria, or other criteria you would propose we use, what do you think our priorities for future fee reviews should be? Please tell us your reasons for thinking these should be prioritised. Do you agree that we should prioritise a fixed link fee, as some stakeholders have suggested to us?*

Answer: there is a danger in Ofcom acting in an anti-competitive way by providing low cost access to spectrum in bands where there are commercial alternatives, such as for fixed links in the bands 10 – 40 GHz. The priority should be to ensure that current pricing is not below the minimum needed to cover costs using the approach and inputs identified in the response to Question 2.

If the current prices charged are above the minimum charge to cover costs then there should be no change to the price mechanism in the 10 – 40 GHz fixed link bands as there are commercial alternatives available.

A similar argument could be made for BR bands where there is an alternative supplier.

Ofcom should also consider as a strategic objective transfer of the management of more bands to commercial SMOs that would be able to set prices according to market principles.

*Question 7: Do you agree with our proposed approach to post-review evaluations?*

Answer: The review should also take into account the impact on private SMOs of any changes made to price structures.

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