Implementing OSS Associated with Regulated Wholesale Products

Issues and European Regulatory Experience

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1 Executive Summary

European experience of regulated wholesale products demonstrates that the promotion of a competitive market is facilitated by Operational Support Systems (OSS) that enable alternative service providers to handle retail customer orders, faults and enquiries in a manner that is equivalent to that of the incumbent's retail arm. The New Zealand Commerce Commission appears to have recognised this, however European experience also shows that without active oversight by the regulator and input from alternative service providers, the OSS offered by the incumbent is unlikely to meet the requirements and expectations of the industry and subsequently of end retail customers. Recovery from the negative impact of poor customer experience or of failing to meet customer expectations is likely to be expensive and lengthy – if possible at all.

The four key OSS areas[1] that have consistently led to significant issues in other countries are:

- the overall implementation timetable and milestones
- process definition
- functionality and automation of support systems
- transparency and dispute resolution.

The level of automation afforded to high volume mass market products - such as Carrier Pre-Selection (CPS), Wholesale Line Rental (WLR), and wholesale broadband access - has a direct bearing on its success: a high volume product not supported by a minimum level of automation such as basic electronic file transfer will be severely constrained within the market resulting in negative retail customer experience and not reaching its full potential.

The involvement of the regulator to establish high-level principles for implementation, and to oversee key milestones, and involvement of alternative service providers in the definition of requirements is paramount to the development of effective competition, generated by the timely availability of effective wholesale access product(s).

1.1 Nomenclature

Throughout this report the term 'Regulator' is used in the many European examples discussed; this term can be interchanged with that of 'Commissioner' used in New Zealand (notwithstanding any differences in legal powers).

The terms 'non-discrimination' and 'equivalence' are used interchangeably.

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[1] The issues of timely availability of an appropriate product description, and charges and costs are outside the scope of this document

2 Need for Regulator and Alternative Service Provider Input

2.1 Need for Regulator involvement

- **There is an inherent need for the regulator to establish at the outset the high-level principles and framework for process and OSS development, including:**
  - **the desired timescales and milestones around minimum deliverables;**
  - **the method for involvement of alternative service providers in the design of support systems and processes.**
- **A level of arbitration/impartiality and oversight (control) by an independent party is required to ensure compliance with principles especially regarding specification, prioritisation and timescales.**

NOTE: The involvement of the regulator is discussed further in Section 3.

2.1.1 Failings of bilateral negotiation

Some countries in Europe have attempted to leave agreement and implementation of OSS around wholesale products to bilateral negotiation between incumbent and alternative service providers. In almost every case, this approach was unsuccessful and required the intervention of the regulator. Two examples where bilateral negotiations have failed requiring regulatory intervention concern the implementation of WLR in Austria and in Ireland:

- **Austria:** bilateral negotiations between an alternative service provider and the incumbent failed resulting in intervention by the National Regulatory Authority (NRA) Telecom Control Commission. Even following obligations on Austria Telekom to provide a WLR offering and direct negotiations between the NRA and Austria Telekom, the NRA had to subsequently intervene to impose additional obligations due both to deficiencies of Austria Telekom's offering and its proposed time schedule:
  - In September 2001 an alternative service provider entered into negotiations with the incumbent Telekom Austria aimed at concluding a WLR contract. Following six months of unsuccessful negotiations the alternative service provider submitted a complaint to the NRA (Telecom Control Commission). In Sept 2002 the NRA obliged Telekom Austria to submit a proposal for WLR
  - A second round of negotiations also failed and the alternative service provider submitted a further complaint to the NRA in May 2003 due to the lack of non-discrimination
  - During the summer of 2003 the NRA attempted to resolve issues through informal negotiations with Telekom Austria. Although resolving many issues, these negotiations failed to agree operational timescale issues. This subsequently led the NRA to oblige Telekom Austria to modify the operational service by December 2003.
- **Ireland:** bilateral negotiations on WLR on certain elements of the regulated WLR program failed and required the intervention and direction of ComReg.

The key deficiency in bilateral negotiation and implementation between incumbent and alternative service providers is one of perspective: the wholesaler and retailer have materially different objectives and requirements. This is commonly the driver for regulator involvement and requests for determination (as identified in the Commission's draft determination in paragraphs 23, 24 and 25[2]: *"The parties do not agree on the application of these access principles and limitations"*).

As such, there is an inherent need for the regulator to set the high-level principles, and provide a level of oversight (control) and impartial arbitration as required.

Regulatory involvement is generally required in the definition of each of the three key areas of processes, systems and importantly the implementation timetable. European experience shows that incumbents will generally propose timetables that are deemed to be excessively long by alternative service providers and regulators, which frequently require regulator involvement/intervention to determine an impartial balanced timetable.

2.1.2 Industry consensus with regulatory oversight

The approach of establishing 'working groups' has proved very successful in **the UK and Ireland**, amongst other countries. These working groups – made up of representatives from the incumbent and alternative service providers[3] – develop and agree industry proposals on areas such as product, process and technical (network and OSS), with the regulator (or appointed third party[4]) providing guidance and overseeing the outputs of these groups, acting as arbitrator as required.

Specific roles that the regulator/third party often undertakes to expedite implementation include acting as impartial chairperson; providing independent review (such as the review of alternative service providers WLR forecasts); producing, based on working group discussions, draft documents (such a processes, specifications etc.) for further development.

A further step that ensures regulator involvement and control is through *staged* determination whereby the regulator ratifies or makes determination on key submissions developed by the industry working groups (e.g. product definition, system spec) as being 'formal draft' or 'issue version'.

Numerous examples of such arbitration exist including ComReg's intervention to 'freeze' (Feb. 2002) the eircom draft WLR product description such that system and

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[2] Paragraph 276 'Draft determination on the application for determination for access to and interconnection with Telecom's fixed PDN service Bitstream Access', 21/4/05, J6863

[3] Generally working groups are open to representatives of all alternative providers

[4] Schema has been the appointed third party for numerous regulated wholesale product implementations in the UK and Ireland including CPS, number portability, FRIACO, WLR.

process specification could commence; Ofcom's intervention mandating the synchronisation of WLR and CPS and the supporting OSS.

This approach is very much in line with that of the Commission in relation to the appointment of an external auditor of the key service parameter reports, that being *'….. failing agreement within 30 days of determination, (the auditor) will be selected by the Commission' [para: 248].*

2.2 Need for alternative service provider input

- **Unilateral design and implementation has proven not to meet the needs of alternative service providers or the market as a whole.**

2.2.1 Failings of unilateral development

European experience has shown that unilaterally defined processes and systems are unlikely to support the requirements of industry as a whole and nor are they likely to be non-discriminatory.

In **the UK** in 2000 BT unilaterally defined and launched a wholesale product that it called 'Calls & Access'. However, the product was felt by both alternative service providers and the NRA, Ofcom (then Oftel), not to be fit-for-purpose and not to facilitate commercial retail offerings. Amongst other things, a key failing of BT's 'Calls and Access' product was the lack of equivalence it provided in ordering, provisioning and fault management between alternative service providers and BT's downstream arm.

It is commendable that the New Zealand Commerce Commission has acknowledged and reiterated the principle of equivalence in its draft determination on Bitstream Access *[para: 276]*. However, although the Commission acknowledges Telecom is *"currently developing an electronic ordering system"[para: 275]* and is *"planning to implement electronic ordering for its UBS service" [para: 274]:* experience in Europe shows that an incumbent is unlikely to have sufficient incentive or understanding (of industry requirements) to unilaterally develop a non-discriminatory solution that will ensure the important *"efficient provision" [para: 275]* of Operational Support Systems (OSS)[5].

It is also noted with concern that the Commission indicates that Telecom will unilaterally decide the ordering system functionality of *'a coming version of eOR, assuming volumes make it cost effective to do so' [para: 274]*: experience of international best practice warrants concern over this and would raise the question of by what principles Telecom will decide what is *'cost effective'*.

A more inclusive approach is recommended and should extend to the development of industry processes[6] such as in ComReg's determination on the

[5] OSS development best practice also generally includes garnering customer requirements.

[6] This method is also used in both countries to define technical solutions such as numbering databases, system interfaces, etc. by way of a technical working group.

implementation of WLR *"ComReg requires that eircom develop**, with appropriate OLO involvement** a detailed Inter-Operator Process Manual…..taking account of the views of industry…". [D2/03]*

It should also be noted that in **the UK and Ireland** inclusion of alternative service providers also means that the incumbent cannot unilaterally amend the layout of the support systems post-launch without alternative service provider approval. BT is permitted to make *emergency* changes in the event of *'operational failure of the gateway'*, however they must issue release notes the day following implementation of any such changes.

2.2.2 Prioritisation

Prioritisation of features and planning of their phased implementation must include input from alternative service providers as it is their requirements (notwithstanding any technical constraints) that the product is aiming to fulfil.

The aim for 'day one' availability of the wholesale mass market service should be a determined product supported by fully automated processes and OSS. However, reality indicates initial launch to be a compromise between functionality and the speed to market and cost of achieving that functionality (with additional functionality developed post-launch). This principle of *'a phased programme'* is acknowledged by TelstraClear (as per the Commission's draft determination *[para: 271]*).

In **Ireland** the WLR timetable was *"an industry agreed project plan to be drafted by ComReg" [D2/03]*. **In the UK**, the revised WLR2 timetable (developed under Ofcom intervention, June 2003) included functionality prioritised and agreed with alternative service providers.

3 Regulators should set the high-level principles

European experience shows that even where government bodies (e.g. regulatory authorities, competition commissions, etc.) do mandate obligations on incumbents to provide wholesale service, without oversight and control there are likely to be significant delays and deficiencies in the Product, Processes and Systems – each of which is essential to successful implementation. The three key issues that arise and in which intervention is generally required are:

1. deficient incumbent support processes and systems
2. failure by the incumbent to offer acceptable timescales for implementation
3. failure by the incumbent to adhere to mandated timescales.

Fundamental to the OSS design and development is the product description: it is the defined product that the OSS is designed to support. An issue that frequently arises in implementing regulated wholesale products is the timely availability of the product description. It has proved advantageous for the Regulator to set milestones for the availability of a summary of the product description and the comprehensive document such that progress on OSS development is not hindered. In both **the UK** and **Ireland** late definition of the WLR product description (both requiring intervention) caused subsequent delay on OSS implementation.

3.1 Support system and automation functionality

- **Operational Support Systems should support the processes efficiently and cost effectively for all alternative service providers.**
- **The features, level of automation *and access to* support systems must be on a non-discriminatory basis.**
- **An appropriate level of automation must be provided to support any high volume mass-market retail product: at a minimum provision for some form of electronic data exchange.**

Applying the principle of non non-discrimination[7], the OSS should support the processes of alternative service providers as far as practically possible without materially disadvantaging the alternative service providers over the incumbent and vice versa.

Variation in the degree of interface/ integration available to the incumbent's downstream and upstream arms is of particular issue. Generally an incumbent's retail arm will have an existing interface with the wholesale arm (normally this will be automated). However, this cannot readily be replicated by an alternative

[7] As per New Zealand's Standard Access Principle 3 and as acknowledged in paragraph 276 of the Commission's draft determination.

service provider giving rise to a material difference between the two retail organisations[8].

At a minimum, a method of basic electronic data exchange should be provided (e.g. FTP, XML, etc.) to alternative service providers to automate the submission, management and tracking of orders for high-volume, mass market products[9]: this is generally considered the international minimum system standard for wholesale products. **In Ireland**, the initial Jan. 2000 launch of CPS was supported by a basic FTP file transfer that ComReg had determined as essential to the mass market product.

Another area of issue is the *times* at which access to the incumbent system *and* operational support (e.g. helpdesks) is available to both the incumbent's upstream and downstream lines of business. This issue of access was determined to be a key discrimination issue **in the UK** in that BT Retail was able to place line orders (WLR) on Saturdays (unlike alternative service providers which were restricted to Monday to Friday) and that BT Retail orders were also subsequently processed automatically[10]. A similar issue was experienced in Ireland at the onset of both CPS and WLR.

It is unlikely that any unilaterally designed system would result in *"efficient provision"* of OSS to support the product features and the processes of both parties. It is important to inform and involve alternative service providers in design and implementation of the support system(s) thereby providing an opportunity for system matching by both the incumbent and the alternative service provider (as is normal best practice when developing a system with which both supplier and key customers interact/integrate).

In **the UK**, any changes to underlying wholesale based broadband service (e.g. the moving of Network Termination Equipment to be completed by the alternative service provider) caused an automatic cease of the service with no automatic reinstatement.

It is noted that the Commission acknowledges Telecom's *"planning to implement electronic ordering"[para: 274]* however, the aim should be an electronic system for both ordering and fault reporting and status management in order to offer equivalence with Telecom's retail arms.

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[8] Such is the case for UBS in New Zealand where it is proposed that alternative providers are to be provided a 'dumb', field based web solution which would provide for *manual population* of each field rather than *data transfer* (such as that provided by using xml)

[9] Ideally reporting of faults and provision of status information should also be automated.

[10] This was rectified at the request of Ofcom release 13.1 (April 2005) of the alternative provider Gateway.

3.2 Timetable set by regulator

- **The regulator must define the high-level timetable and principles. This should include both the key dates and the expected deliverable.**

The value of the principle of equivalence identified by the Commission *[Para: 276]* will be undermined without the *timely* definition and implementation of *efficient* operational processes.

In order to ensure the efficiency of the industry as a whole for the benefit of the end user there must be a high degree of non-discriminatory match between operators' processes. As such it is important that input is garnered from alternative service providers on the definition of industry processes.

As with the definition of the product specification, the timeliness of process definition is intrinsically linked to the design of OSS: any delay in the availability of agreed processes will have a subsequent affect on the development of industry and alternative service provider OSS, and hence launch, thereby negatively impacting retail customers.

Accordingly, it is essential that the regulator (or other impartial body with the necessary powers) defines the high level timetable for implementation. The aim of the timetable is to deliver all key elements (product, processes and systems) in a timely manner in order to ensure successful launch.

Without regulation there is little incentive for the incumbent to unilaterally ensure development and delivery of a cohesive timetable – in fact, control of the plan is one of the incumbent's most powerful defences against successful and timely implementation of a product that is likely to result in declining revenues for them.

In the UK, BT defined a 15 month timetable for the implementation of WLR in the UK, which was considered unacceptable by industry and Ofcom. Ofcom intervened to define a timetable that reduced the implementation time by six months. It is important to note that the revised timetable was developed with input from alternative service providers.

The timetable must include key milestones in terms of both quantifiable dates and defined deliverables. Experience shows milestones that do not define the expected deliverable or are open to interpretation can subsequently be exploited to delay progress (such as the WLR product description in Ireland requiring regulatory intervention).

4 System requirements: the need for automation

4.1 The drivers for system support and automation

- **Failure to implement basic system support will negatively impact on alternative service providers, the product and subsequently on the retail customers' experience.**

Failure to implement electronic data transfer - subsequently resulting in associated manual processes - has generally been found to give rise to:

- increased costs
- extended processes times (order fulfilment, fault resolution, etc.)
- increased probability of data errors due to requirement to re-key data
- reduced sales/conversion rates due to poor customer experience (constrained order processes effectively applying a maximum ceiling to alternative service providers order volumes -by default a restriction on the market)
- increased scope for (or reasonable concerns on the part of alternative service providers of) discriminatory treatment.

Additionally, there will be a resultant increase in costs due to the additional resource (personnel) costs required for manual fulfilment. This increase in costs manifests itself in increased costs to:

- the alternative service provider for manual data entry (re-keying) and data recovery (proactive system interrogation e.g. to obtain order/fault status)
- the alternative service provider associated with correcting manually induced errors
- the incumbent; where manual processes are required; these costs are generally recovered from the alternative service provider.

In **the UK,** Ofcom (then Oftel) in its conclusions on the WLR consultation stated *"Oftel remains of the view that a high degree of automation is essential in order to minimise the additional transaction costs and process inefficiencies….."*.

In **Ireland**, following eircom's automation of a number of WLR processes ComReg mandated a new wholesale charging regime (from eircom manual process charges to retail minus) in recognition of the reduced cost of automated processes - *"Since (the publication by ComReg of manual processing charges) eircom have automated their WLR order handling process but have not sought to revise their charges. These charges are therefore no longer appropriate. [04/15: 19/2/04]* .

It is important to note that while the end objective was to increase the level of automation, both Ofcom and ComReg required a minimum level of automation at the outset because of the mass market nature of the services to be supported. Automation therefore was not just a goal which the incumbent had to work towards but was the starting point for its OSS.

4.2 Equivalence

- **Wholesale systems must provide a level of equivalence between incumbent upstream and downstream arms**

System automation is also inherently related to the principle of equivalence: any difference in system access and the derived support provided to incumbent upstream and downstream arms denotes material discrimination.

In the UK Ofcom determined for WLR that *"BT shall provide (alternative service providers) with the same capability to submit a fault report for an exchange line, and track the status of that report, as is available to BT Retail. BT shall provide an appropriate electronic interface for both the initial submission and the subsequent tracking of fault reports." [WLR Oftel Conclusion Statement 11/3/04]*

Unlike in the UK (where BT retail continues to use its internal interface ordering system), in Ireland eircom's retail arm is required to submit certain orders for new PSTN lines via the same WLR gateway as alternative service providers.

4.3 The consumer experience

- **Any increase in process times or occurrence of errors will negatively impact on the customer experience.**

Failure to implement systems and automation to an extent that offers near equivalence with incumbent retail arms are likely to result in a *material difference* in end customer experience (contrary to the Commissions requirement of *para 276*).

The question that arises is what is acceptable to the market, as any difference is likely to be a deterrent to switching providers and thus acts in the incumbent's favour.

4.4 Automation requirements of high volume, mass market

- **There is a fundamental requirement for high volume, mass market products to be supported by electronic data exchange between operators at a minimum.**

The *appropriate* level of support must be provided to all products. The level of support required varies from product to product, it being driven by volume and complexity: high volume, low complexity products generally require, and afford, more benefit from higher levels of automated system support than a low volume, complex/specialised product[11].

It should always be acknowledged that there is a trade-off between the extent of automation (e.g. fully automated systems and processes), and the cost and development times for such automation. Technology is the enabler not the

[11] This being additional to the trade-off between level of automation and costs & time to market

objective and there is a need to assess the demand (generally driven by volume) and impact of automation. In **the UK,** Ofcom (then Oftel) in conclusions on the WLR consultation stated "*….. it will not be cost-effective to automate every process*".

One example that provides a warning of over automating more complex products is in the current UK rejection rates for WLR: simple analogue orders are currently experiencing a rejection rate of 15% whilst complex 30 channel digital (ISDN30) orders are experiencing rejections in excess of 30%.

While the level of automation which is appropriate may vary between products, the incumbent should not be left to make the decision of what is to be automated. The decision of whether or not to proceed with automation will affect the costs of its competitors in acquiring and supporting services from the incumbent. The decision about whether automation is *'cost effective'* must take account of competitors' costs as well as the incumbent's.

4.4.1 Minimum requirements

As noted above, the fundamental requirement for any high volume product such as CPS/WLR, wholesale broadband, etc. is basic electronic data exchange from the initial launch date; the rationale being non-discrimination, efficiency and avoidance of re-keying errors. An example of this would be exchange of a simple 'comma-separated-file' using File Transfer Protocol (FTP).

The implementation of a simple file transfer solution may be an interim solution prior to specification and development of a more comprehensive solution. This basic system support should aim to remove the need for any re-keying of order data required to be sent from one provider to another (e.g. alternative service provider to incumbent). This data should flow through to other systems where economically viable thereby supporting (semi) automated processes and should be a two way process (i.e., including confirmations and rejections from the incumbent back to the alternative service provider).

Of the WLR in **the UK** where initial systems[12] provided electronic data transfer and where today 70% of orders are already automated, BT acknowledged in its February 2005 response to Ofcom's Strategic Review of Telecoms that "*The prognosis for further automation in the consumer sector, where the requirements can be less complex than in the business market, is very good indeed*".

In **Ireland**, from the first day CPS was supported by a simple FTP file transfer as it was deemed necessary for a mass market product (as such it supported single-line and multi-lines up to an agreed number). WLR also supported electronic data interchange from day-1, and in order to expedite implementation and constrain costs ComReg mandated that WLR system support should be based on an

[12] This refers to the initial regulated industry WLR product and not the BT unilateral 'Calls and Access' product that did not provide automation

enhancement to the existing CPS system for day-1. ComReg recommend starting with *'front office'* type functions such as order submission and validation.

In both **the UK and Ireland,** although existing systems have been exploited to support new products where possible, wholesale products are supported by a number of different systems. However, it is worth noting that both countries aim to or have commenced development to consolidate the number of systems and/or move to a single common alternative service provider interface (the UK is driven by BT while in Ireland there has been regulatory discussion).

In **Ireland,** following eircom's failure to address the concerns over LLU automation - a relatively low volume product - ComReg has issued directives (March 2005) mandating eircom's *attendance* at industry meetings to progress automation of LLU transfer processes (the key objectives being to improve efficiency, reduce process times and minimise the current break in voice and broadband services experienced by transferring customers). These automation obligations[13] also included:

- providing alternative service providers with access to systems such as *"line test"*
- *"volume system"* accommodating volume processing
- "*(process) automation if required":* however, automation is mandated by default by the requirement to provide order acknowledgement and delivery notification *"instantaneously"*.

Similarly, in **the UK** many LLU processes are already automated however, the development of additional automated systems is being fast-tracked for implementation during 2005: in the interim BT has deployed additional operational resource to handle expected (increased) order volumes. Wholesale broadband in the UK is extensively automated with alternative service providers being able to use xml interfaces to electronically transfer data between their own systems and BT's.

4.5 'Dumb' web page system inappropriate

- **Implementing a 'dumb' web front end would have a negative impact on the process**

The Telecom proposed system is a web front end with limited/no intelligence (i.e. the system acts only as a type of electronic form to be manually populated) and as such will not achieve the *"efficient direct electronic interfaces between [TelstraClear's] operational support systems for the service inquiry, service ordering, provisioning and fault reporting processes"* desired by the Commissioner and alternative service providers *[para: 271]*.

[13] At the time of writing eircom had granted leave to challenge the obligations in the high court

There are a number of reasons why this appears wholly inappropriate and contrary to the norm in other countries for system development:

- such a solution does not appropriately support a high volume, mass market product (given its manual nature)
- the simple data entry functionality adds an unnecessary manual process step for alternative service providers (as they must manually intervene to re-key an order into Telecom's web page) that will result in increased costs
- is discriminatory assuming Telecom's downstream arms are not required to use the same manual interface and low level functionality, instead being able to utilise electronic data transfer and automated interfaces[14].
- the need for alternative service providers to utilise screen scraping of a web page to retain data is neither efficient or considered an acceptable form of system interface.

Telecom's eOR system would almost certainly have been rejected by both Ofcom and ComReg as an inappropriate starting point for OSS because it does not offer electronic data interchange.

4.5.1 Need for *meaningful* and timely rejection information

- **Alternative service providers should be provided with *agreed* finite reasons for order rejections.**

European experience shows that to successfully analyse problems and correct failed order submissions an alternative service provider must be provided with consistent and meaningful information regarding the reason for the failed order. Experience in other countries that New Zealand would benefit from is the use of agreed rejection codes that have agreed definitions that avoid interpretation and ambiguity.

In both **the UK** and **Ireland,** the importance of *agreed standard* rejection codes has long been an established principle[15]. This importance is highlighted by the fact that the regulators have felt the need to mandate new or amended rejection codes post service launch[16]. In the UK the current release of the WLR Service Provider Gateway (SPG) has 71 rejection codes and the CPS system has 78.

Standard rejection codes offer an additional advantage to the industry as a whole by providing quantifiable data on which to rapidly and efficiently identify major recurring issues (rejection reasons) that may indicate underlying process problems.

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[14] In **Ireland** both the alternative providers and eircom's retail arm use the same WLR Gateway (which utilises FTP protocol to transfer XML sent from the CPS system).

[15] Rejection codes cover incorrect order data incompatible products/features for new provides and Moves, Adds and Changes.

[16] BT can introduce new/amend rejection codes but is obliged to notify Ofcom and alternative providers.

The provision of rejection data to alternative service providers should be automated and proactively *sent* to the alternative service provider. This helps to avoid delay in correction and resubmission of an order that could negatively affect the *'experience of the retail customer'*: without some form of proactive notification of rejections, an alternative service provider would continually/regularly have to interrogate the wholesale system (which they need to do multiple times each day).

It is also best practice to validate an order in stages whereby a group of associated fields (e.g. all customer data) are validated and relevant rejection codes for all of those fields provided rather that reject an order based on the first rejection, only for the resubmitted order to be rejected on a different field which may result in multiple iterations of order submission.

5 Importance of performance metrics

- **Performance metrics are a key tool in identifying weakness in processes and systems, and in demonstrating non-discrimination.**

It is generally accepted amongst European regulatory bodies, operators and consumer groups that there is a requirement for meaningful measurement and reporting (whether released to the public domain or not) of regulated wholesale services. This dictates a requirement for defined and agreed metrics and reporting systems.

Performance metrics provide the ability to not only identify problems and weaknesses in implemented processes and systems but also to demonstrate non-discrimination. This latter point is commonly the driver for regulators to implement Key Performance Indicators (KPIs). In **the UK,** Ofcom determined that KPI's will be measured and reported for both the alternative service provider *and* the incumbent's retail stream to ensure non-discrimination.

It is during the 'ramp-up' period directly following launch of new services that the measuring and reporting of KPIs is most important to ensure processes are designed to ensure equivalence.

KPIs are also important where the incumbent has not yet implemented automated OSS – and where subsequently processes contain manual procedures – as it is in manual steps that there exists the highest risk for inconsistency and variation of application.

In common with commercial best practice for provision of services to customers, key areas which benefit from measurement are[17]:

- provision of service
- repair of service
- technical performance (acknowledged by the Commission *[Para: 244]*).

One key area that benefits from performance metrics, especially during the initial period of product launch and establishment, is order rejection rates. However, it is through analysis of the *reason* for rejections that maximum benefit can be obtained. To facilitate this it is important that measurement data is comparable – the common approach to this being the definition of a standard set of rejection reasons usually with an associated code) which provide easily quantitative data.

[17] Any compensation regime must also have pre-defined and agreed performance metrics.