



# Shapeshifter Change Request

## Service Type in FlexRequest



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### Background – Flexibility Service Types

Within a given flexibility service market there are typically multiple service types are used. For example, the UK Energy Networks Association defines three standard flexibility service types, Secure, Dynamic and Restore<sup>1</sup>. In the Scottish Power FUSION project there are three service types, Sustain, Secure and Dynamic in addition to free bids.

### Limitation of the Current System

At the point when the flexibility purchaser, such as the DNO, makes a FlexRequest, it is known which service type is being requested. However, this information is not conveyed to the aggregator who provides the flexibility. Where the flexibility windows are mutually exclusive, it would be possible, although not robust, for the aggregator to infer which service is being requested. In the case where the availability windows do overlap, it is impossible for the aggregator to know which service is being requested.

The problem is that the aggregator is not able to modify the FlexOffer to match the service. Different services have different requirements in terms of the latency, power and duration which defines the response-characteristics. The response characteristics directly influences the power and price of the flexibility that can be offered.

In the case of free bids, the price cap is different for the FUSION project, but there is currently no reliable way to distinguish free bids from contracted orders.

### Change Request

The change request is rather simple. Introduce the name of the ordered service into the FlexRequest message. This could be done by adding an attribute called “ServiceType” to the FlexRequest message, to hold the name of the requested service-type as a string. For free-bids the ServiceType attribute would not be included.

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<sup>1</sup> <https://www.flexiblepower.co.uk/flexibility-services>



## XSD

Definition of FlexRequest, new ServiceType attribute shown in red.

```
<!-- Flex Request Type -->
<!-- -->
<xs:complexType name="FlexRequestType">
  <xs:complexContent>
    <xs:extension base="FlexMessageType">
      <xs:sequence>
        <xs:annotation>
          <xs:documentation>The ISP represents one or more Imbalance Settlement Periods
and is used by Prognosis and Flex-related messages.</xs:documentation>
        </xs:annotation>
        <xs:element name="ISP" type="FlexRequestISPTyp" maxOccurs="unbounded"/>
      </xs:sequence>
      <xs:attribute name="Revision" type="xs:long" use="required">
        <xs:annotation>
          <xs:documentation>Revision of this message, a sequence number that must be
incremented each time a new revision of a
FlexRequest message is sent.</xs:documentation>
        </xs:annotation>
      </xs:attribute>
      <xs:attribute name="ExpirationDateTime" type="xs:dateTime" use="required">
        <xs:annotation>
          <xs:documentation>Date and time, including the time zone (ISO 8601 formatted
as per http://www.w3.org/TR/NOTE-datetime) until which the FlexRequest message is
valid.</xs:documentation>
        </xs:annotation>
      </xs:attribute>
      <xs:attribute name="ServiceType" type="xs:string" use="optional">
        <xs:annotation>
          <xs:documentation>Service type for this request or empty for free-
bids</xs:documentation>
        </xs:annotation>
      </xs:attribute>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

## Examples

Current FlexRequest from schema version V2.00 (ISP list truncated for brevity).

```
<?xml version="1.0" encoding="UTF-8"?>

<FlexRequest SenderDomain="fusion-dso.gridos.com" RecipientDomain="cloud.gridimp.com" TimeStamp="2022-
01-05T12:13:33.509241Z" MessageID="41009d66-271e-43ce-aa80-7c3e7c6007db" ConversationID="bc65628e-
46be-477a-9e28-d9114aa3ad46" ISP-Duration="PT30M" TimeZone="Europe/London" Period="2022-01-06"
CongestionPoint="ea1.2021-06.fusion-dso.gridos.com:StAndrewsPrimary" Revision="0"
ExpirationDateTime="2022-01-07T00:00:00Z">

  <ISP Disposition="Available" MinPower="3784000" MaxPower="3784000" Start="1" Duration="1"/>

  <ISP Disposition="Available" MinPower="3454000" MaxPower="3454000" Start="2" Duration="1"/>

  ...

  <ISP Disposition="Available" MinPower="2991000" MaxPower="2991000" Start="48" Duration="1"/>

</FlexRequest>
```

Proposed FlexRequest, example for “secure” service type, new ServiceType attribute shown in red.



```
<?xml version="1.0" encoding="UTF-8"?>

<FlexRequest SenderDomain="fusion-dso.gridos.com" RecipientDomain="cloud.gridimp.com" TimeStamp="2022-01-05T12:13:33.509241Z" MessageID="41009d66-271e-43ce-aa80-7c3e7c6007db" ConversationID="bc65628e-46be-477a-9e28-d9114aa3ad46" ISP-Duration="PT30M" TimeZone="Europe/London" Period="2022-01-06" CongestionPoint="ea1.2021-06.fusion-dso.gridos.com:StAndrewsPrimary" Revision="0" ExpirationDateTime="2022-01-07T00:00:00Z" ServiceType="secure">

  <ISP Disposition="Available" MinPower="3784000" MaxPower="3784000" Start="1" Duration="1"/>

  <ISP Disposition="Available" MinPower="3454000" MaxPower="3454000" Start="2" Duration="1"/>

  ...

  <ISP Disposition="Available" MinPower="2991000" MaxPower="2991000" Start="48" Duration="1"/>

</FlexRequest>
```

## Decisions

Decisions from the meeting held on Thursday 10<sup>th</sup> Feb.

1. ServiceType will be added as a string field. It will be an optional field.
2. ContractId will also be added to the FlexRequest message. This field may refer to a specific contract created between a DSO-Aggregator pair or to a generic commoditized market contract. This will also be an optional field.
3. ContractId is already specified in the FlexSettlement message as a field under FlexOrderSettlement – this field should be interpreted as referring to the same contract as the FlexRequest and the naming will be reflected in the FlexRequest message.

Example with both the new fields included:

```
<?xml version="1.0" encoding="UTF-8"?>

<FlexRequest SenderDomain="fusion-dso.gridos.com" RecipientDomain="cloud.gridimp.com" TimeStamp="2022-01-05T12:13:33.509241Z" MessageID="41009d66-271e-43ce-aa80-7c3e7c6007db" ConversationID="bc65628e-46be-477a-9e28-d9114aa3ad46" ISP-Duration="PT30M" TimeZone="Europe/London" Period="2022-01-06" CongestionPoint="ea1.2021-06.fusion-dso.gridos.com:StAndrewsPrimary" Revision="0" ExpirationDateTime="2022-01-07T00:00:00Z" ServiceType="secure" ContractID="FlexServiceAgreement123">

  <ISP Disposition="Available" MinPower="3784000" MaxPower="3784000" Start="1" Duration="1"/>

  <ISP Disposition="Available" MinPower="3454000" MaxPower="3454000" Start="2" Duration="1"/>

  ...

  <ISP Disposition="Available" MinPower="2991000" MaxPower="2991000" Start="48" Duration="1"/>

</FlexRequest>
```