- *activity*, a processing step in a business process;
- *control link*, sequencing rules in a business process that model the control flow from one activity to the next;
- *data link*, information flow in a business process, wherein data flow can be separate from control flow;
- *data mapping*, specifying information that needs to be transferred between two linked activities; and
- *pluglink* and *export element*, describing the relation between activities in the flow model and the WSDL operations the service provider offers.

Figure 5 shows a graphical representation of the TotalSupply Web service WSFL model, with three flow models comprising the global model: one for our enterprise and two representing the supporting services.

Prior to constructing a WSFL global model, the individual flow models must be specified according to IBM's WSFL specification (http://www-4.ibm.com/software/solutions/webservices/pdf/WSFL.pdf). The WSFL flow model for TotalSupply consists of a flowModel name, TotalSupplyFlow; a service ProviderType; and a listing of service providers, activity specifications, and control and data links. Our TotalSupply flow model includes two separate serviceProvider elements in the service ProviderType—mySupplier and myShipper. Figure 6a shows the XML code for mySupplier.

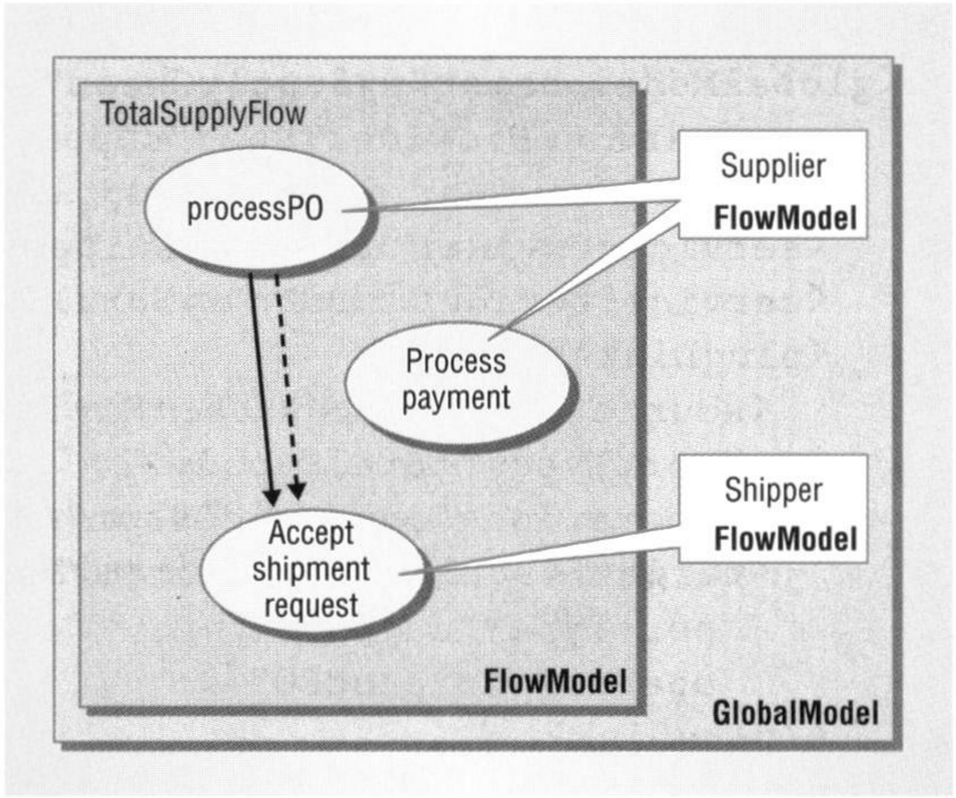

Figure 5. TotalSupply Web service global model representation. Activities such as processPO are represented as shaded circles, control links are solid arrows connecting activities, data links are dashed arrows, and the callouts connecting the TotalSupply activities to the external services represent pluglinks.

The TotalSupply flow model must perform three activities to successfully complete the business process: processing a purchase order, accepting a shipment request, and receiving a payment. Separate activity elements specify each of these activities, which must perform in a specific order: Purchase-order processing must precede the shipper's acceptance of the shipping request, whereas the payment can be received at any time—WSFL allows an activity to exist outside the control links connecting other activities. Figure 6b provides an example of the processPO activity, which is provided by my-

```
<serviceProvider name="mySupplier" type="supplier">
  <locator type="static" service="qualitySupply.com"/>
</serviceProvider>
```
(a)

```
<activity name="processPO">
  <performedBy serviceProvider="mySupplier"/>
  <implement>
    <export>
      <target portType="totalSupplyPT"
          operation="sendProcOrder"/>
    </export>
  </implement>
</activity>
```
(b)

```
<controlLink source="processPO"
      target="acceptShipmentRequest"/>

<dataLink source="processPO"
        target="acceptShipmentRequest">
  <map sourceMessage="anINVandSR" targetMessage="anSR"/>
</dataLink>
```
(c)

Figure 6. WSFL TotalSupply flow model: (a) serviceProvider element for mySupplier; (b) processPO activity provided by mySupplier; (c) controlLink and dataLink elements.