

```

1  mcdp {
2
3      simple_cell = catalogue {
4
5          provides voltage [set-of(V)]
6          provides capacity [J]
7
8          requires cost [$]
9          requires mass [kg]
10
11
12
13          model1 | {1.5 V} | 1 MJ | 5 $ | 0.20 kg
14          model2 | {1.5 V} | 1 MJ | 15 $ | 0.10 kg
15
16
17          model3 | {5.0 V} | 1 MJ | 5 $ | 0.30 kg
18
19      }
20
21      cell_plus_converter = mcdp {
22          provides voltage [set-of(V)]
23          provides capacity [J]
24          requires cost [$]
25          requires mass [kg]
26
27          sub converter = catalogue {
28              provides voltage_out [set-of(V)]
29              requires voltage_in [set-of(V)]
30              requires cost [$]
31              requires mass [g]
32
33              step_up1 | {5 V} | {1.5 V} | 5 $ | 20 g
34              step_up2 | {12 V} | {1.5 V} | 10 $ | 20 g
35              step_up2 | {12 V, 5 V} | {1.5 V} | 10 $ | 20 g
36          }
37
38          sub cell = simple_cell
39
40          voltage <= converter.voltage_out
41          converter.voltage_in <= cell.voltage
42          mass >= cell.mass + converter.mass
43          cost >= cell.cost + converter.cost
44          capacity <= cell.capacity
45      }
46
47      sub battery = simple_cell ^ cell_plus_converter
48      requires cost, mass for battery
49      provides voltage, capacity using battery
50  }

```