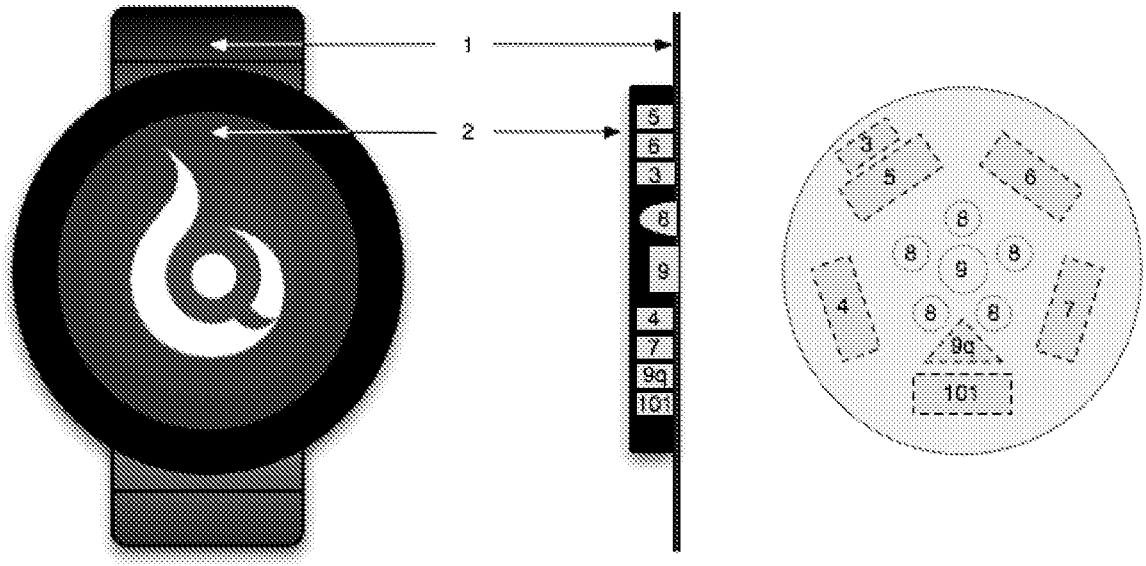



**Figure 1**

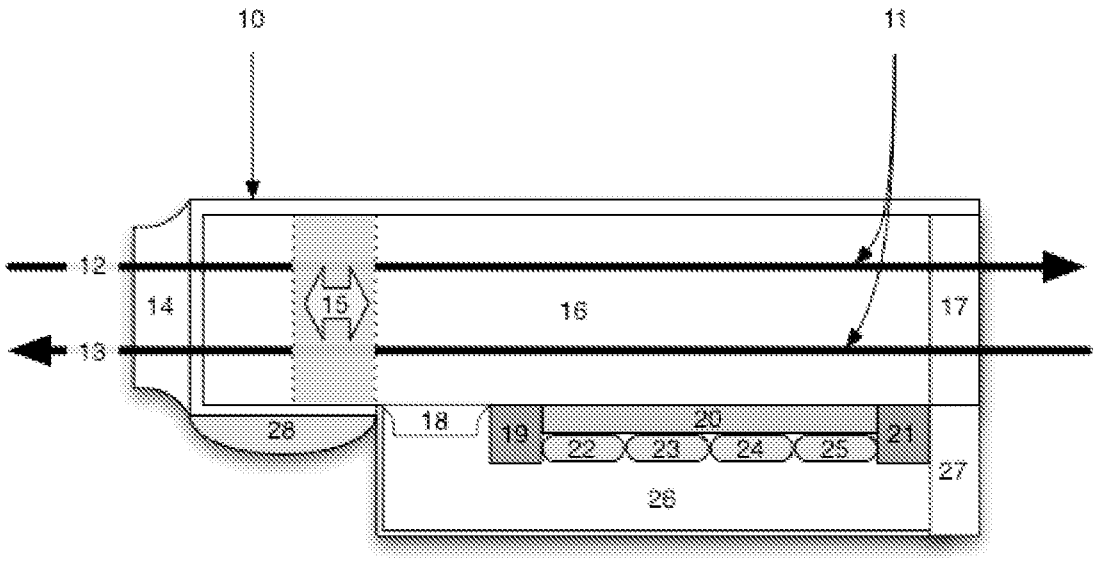



**Figure 2a**

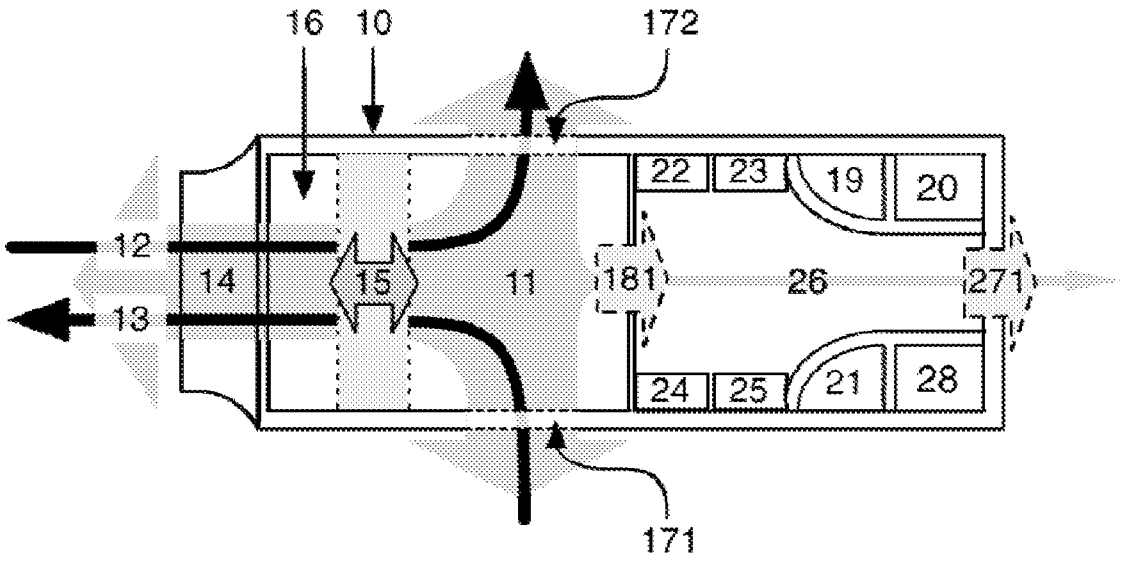
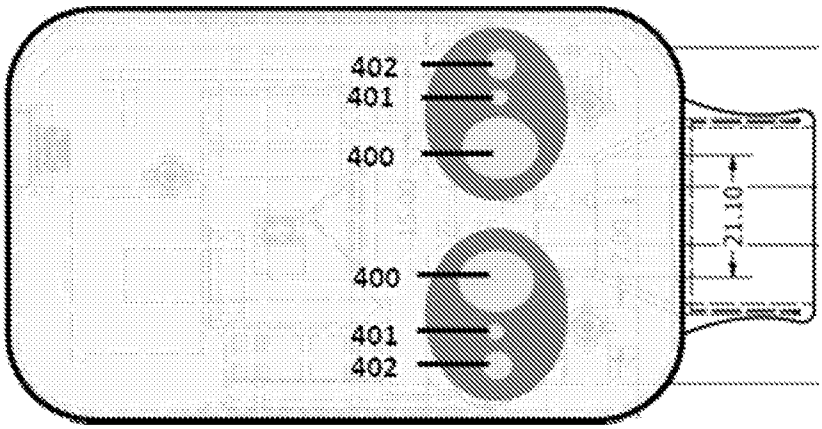
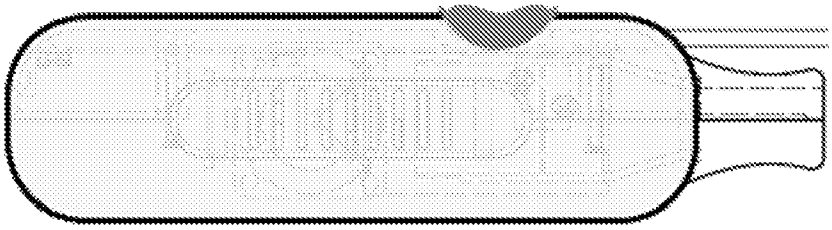


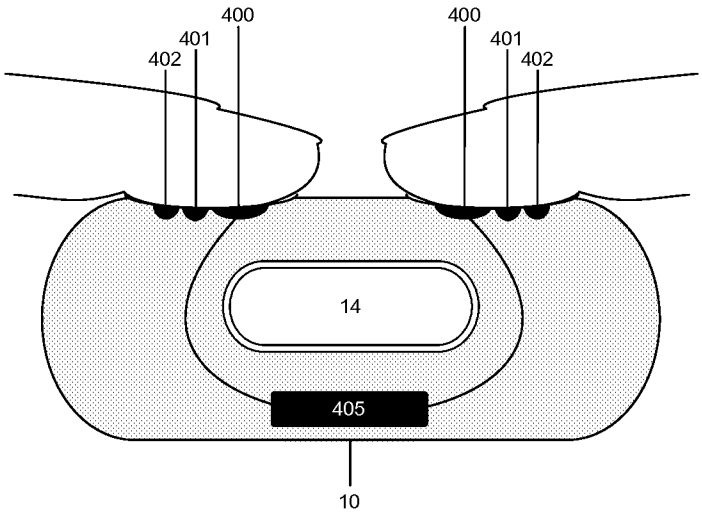

**Figure 2b**




Top View



Side View




Viewed From the Front

**Figure 2c**

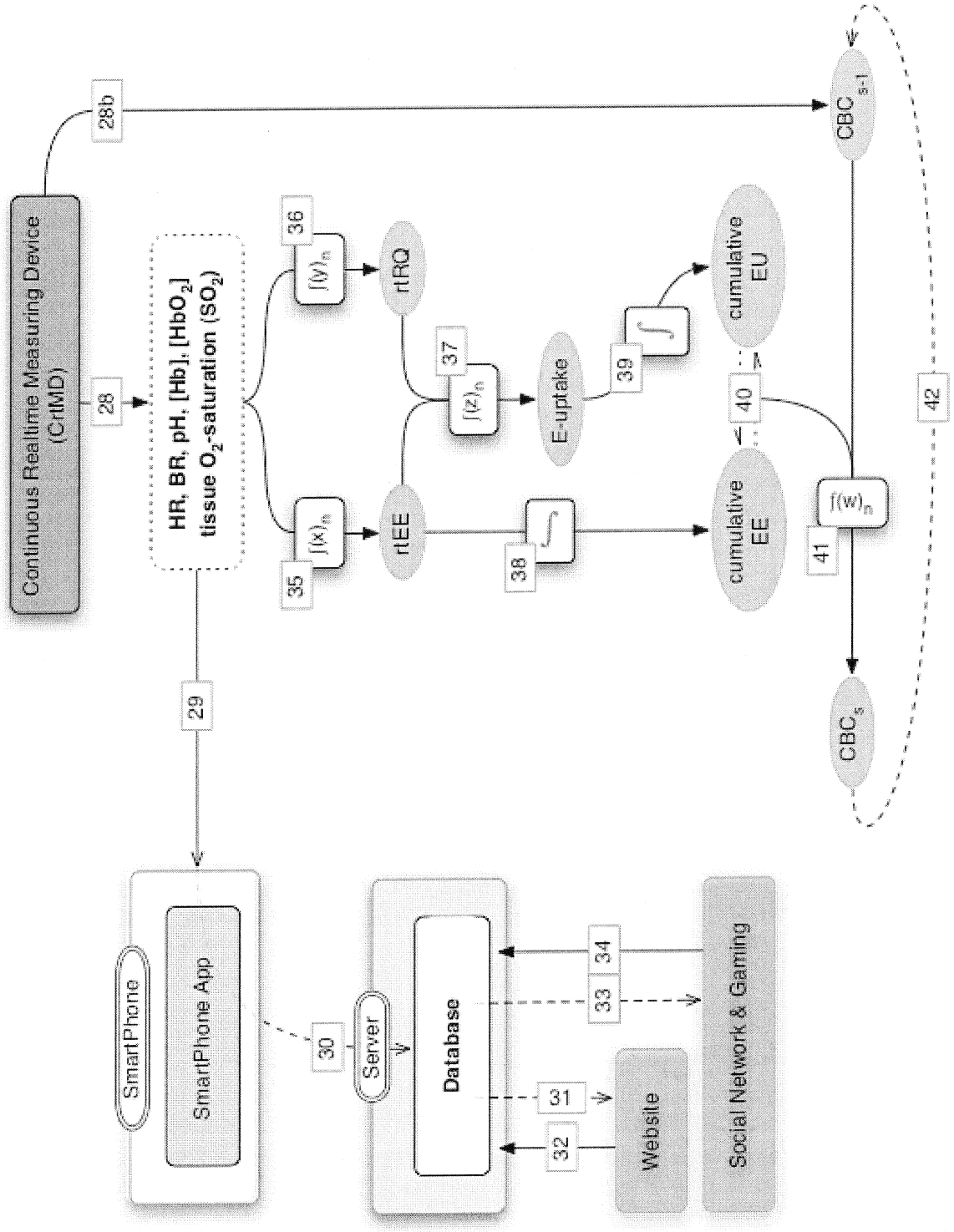

Continuous Realtime Measuring Device (CrtMD)
28
28b
HR, BR, pH, [Hb], [HbO2] tissue O2-saturation (SO2)
29
35
36
37
38
39
40
41
42
rtEE
rtRQ
E-uptake
cumulative EE
cumulative EU
CBC s-1
CBC s
SmartPhone
SmartPhone App
30
Server
Database
31
32
33
34
Website
Social Network & Gaming

**Figure 3**

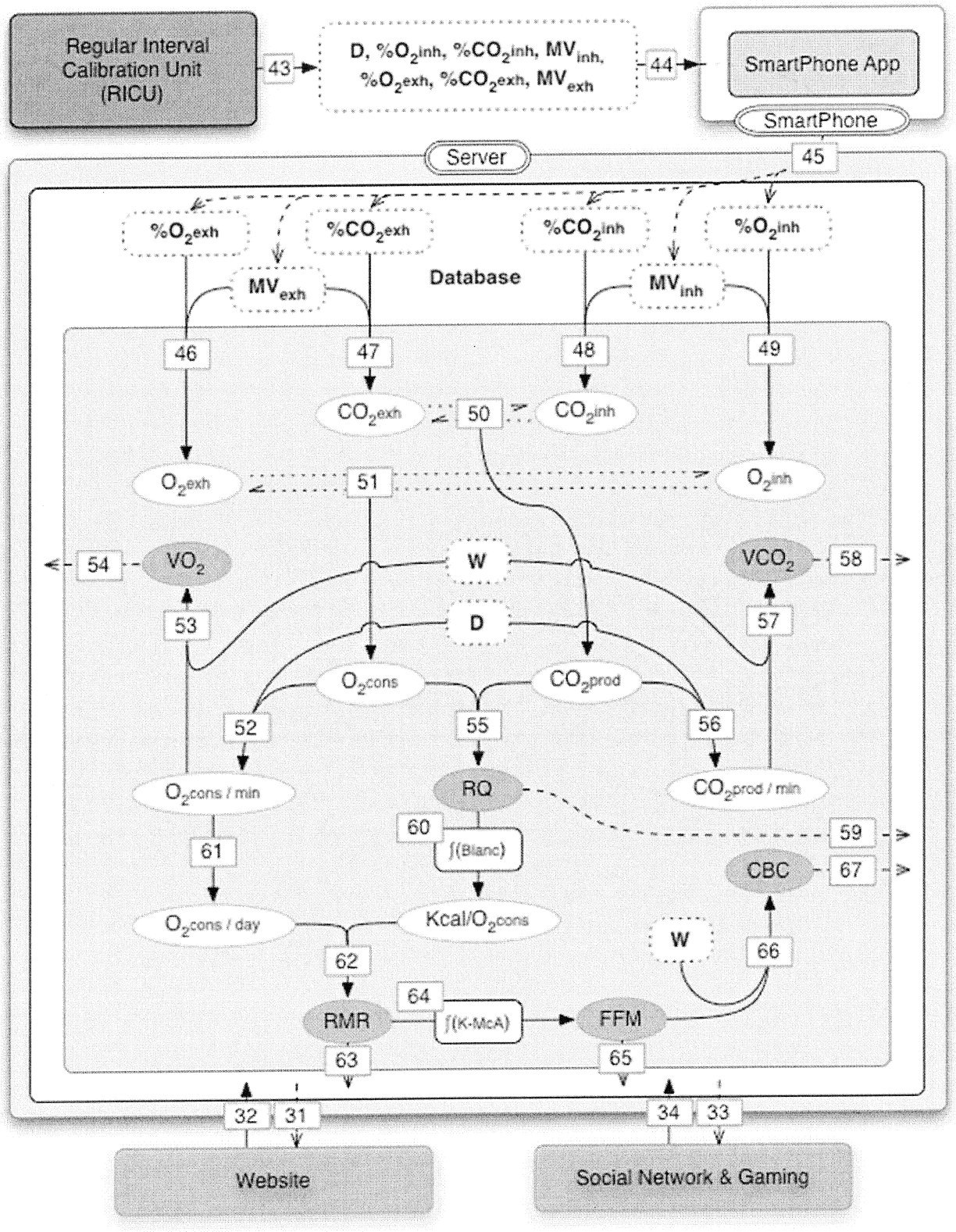

Regular Interval Calibration Unit (RICU)
43
D, %O2inh, %CO2inh, MVinh, %O2exh, %CO2exh, MVexh
44
SmartPhone App
SmartPhone
Server
45
%O2exh
%CO2exh
%CO2inh
%O2inh
MVexh
Database
MVinh
46
47
48
49
CO2exh
50
CO2inh
O2exh
51
O2inh
54
VO2
W
VCO2
58
53
D
57
O2cons
CO2prod
52
55
56
O2cons / min
RQ
CO2prod / min
60
59
61
∫(Blanc)
CBC
67
O2cons / day
Kcal/O2cons
W
66
62
64
RMR
∫(K-McA)
FFM
63
65
32
31
34
33
Website
Social Network & Gaming

**Figure 4**

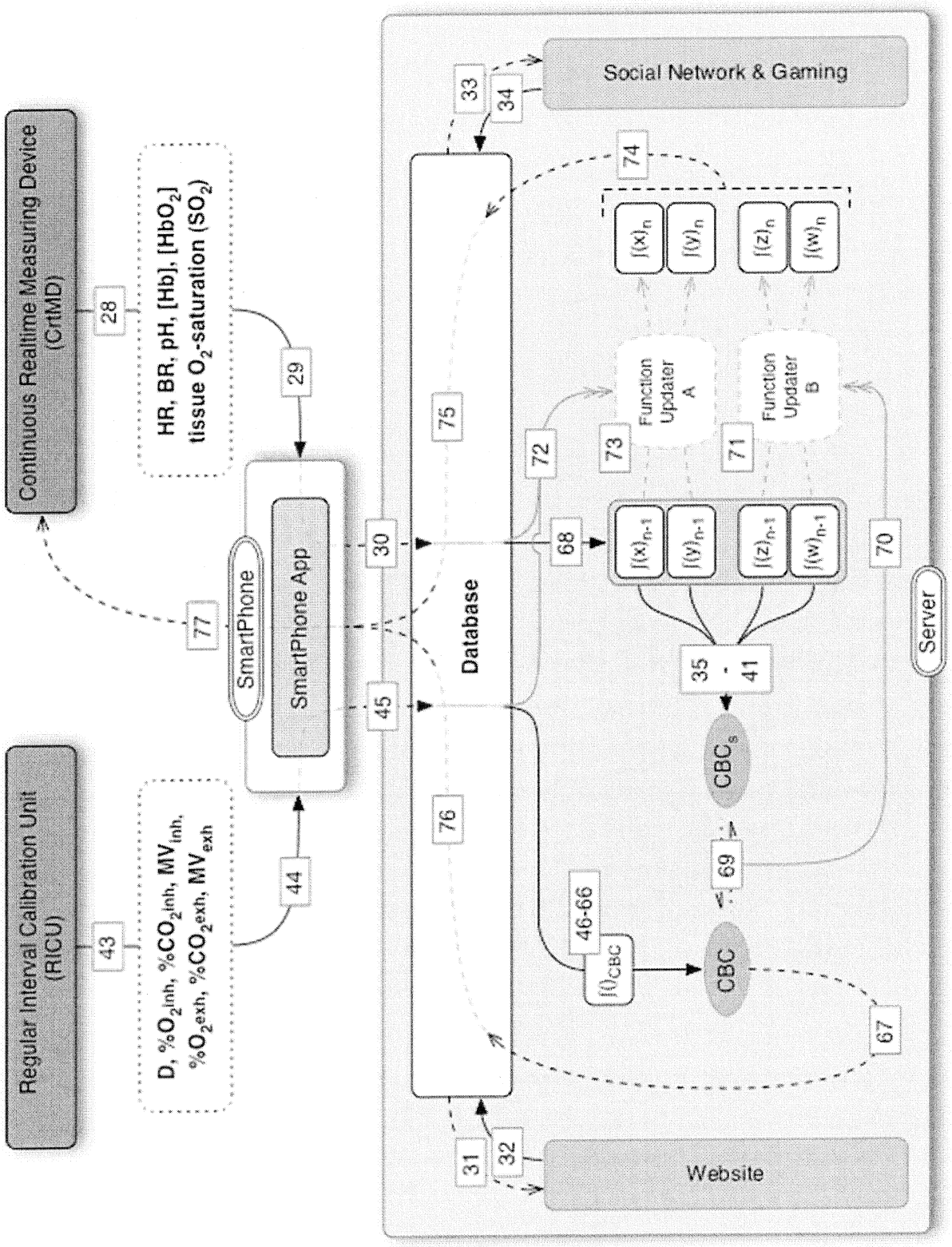

Continuous Realtime Measuring Device (CrtMD)
28
HR, BR, pH, [Hb], [HbO2] tissue O2-saturation (SO2)
29
Regular Interval Calibration Unit (RICU)
43
D, %O2inh, %CO2inh, MVinh, %O2exh, %CO2exh, MVexh
44
77
SmartPhone
SmartPhone App
30
45
Social Network & Gaming
33
34
Website
31
32
Database
75
76
74
f(x)n
f(y)n
f(z)n
f(w)n
Function Updater A
Function Updater B
73
71
72
68
f(x)n-1
f(y)n-1
f(z)n-1
f(w)n-1
70
35 - 41
CBCs
69
46-66
f()CBC
CBC
67
Server

**Figure 5**

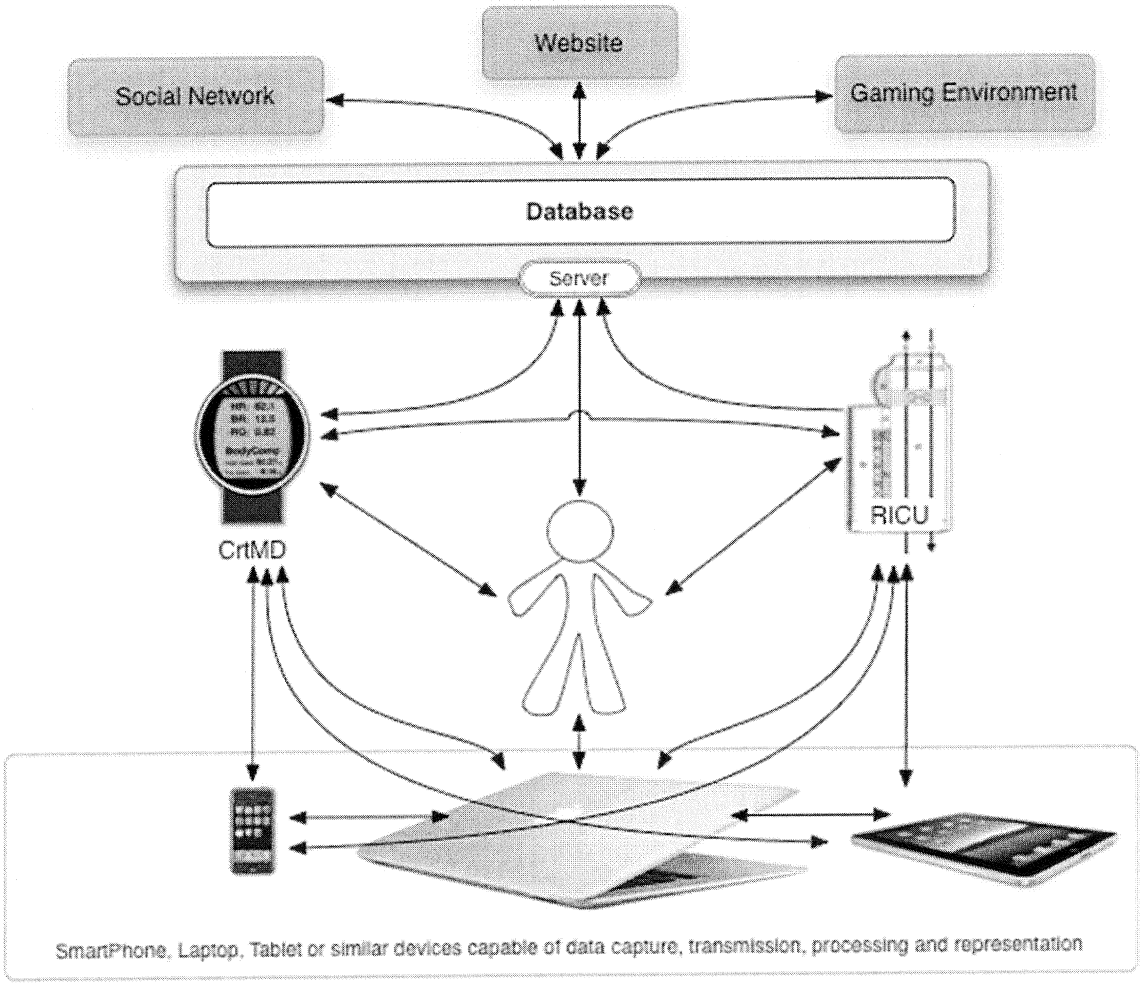

Website
Social Network
Gaming Environment
Database
Server
CrtMD
RICU
SmartPhone, Laptop, Tablet or similar devices capable of data capture, transmission, processing and representation

**Figure 6**

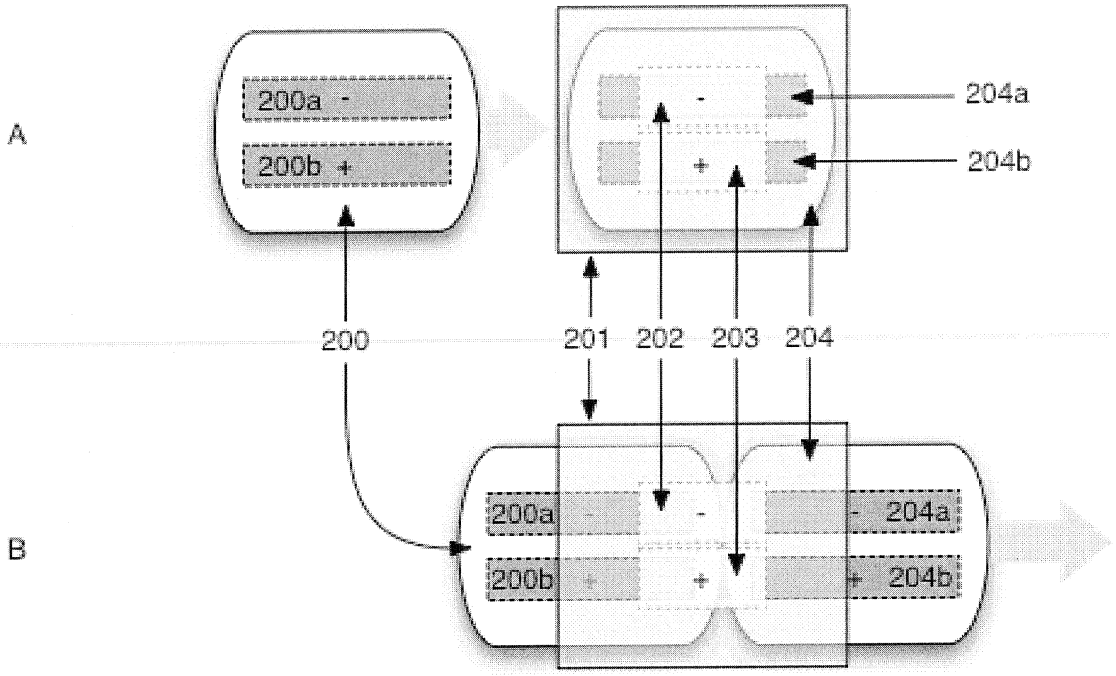



**Figure 7a**

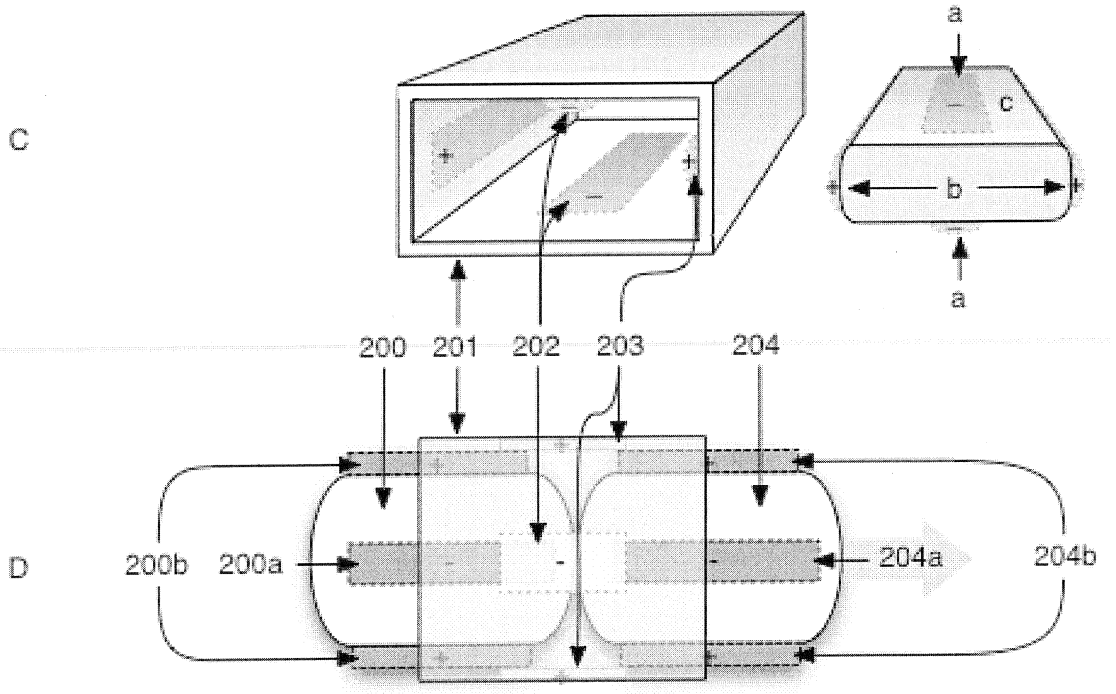



**Figure 7b**

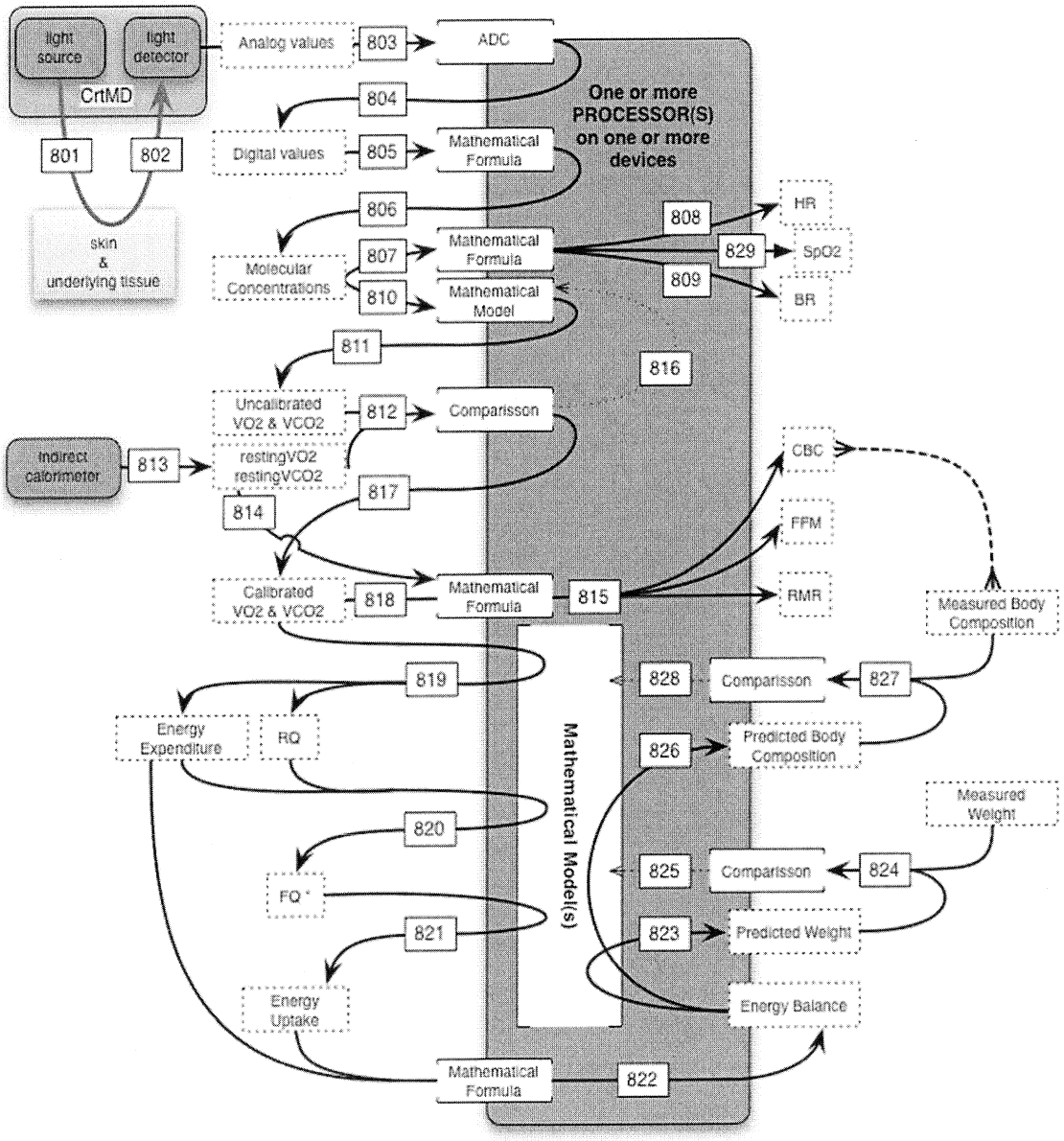

light source
light detector
CrtMD
801
802
skin & underlying tissue
Analog values
803
ADC
804
Digital values
805
Mathematical Formula
806
Molecular Concentrations
807
810
Mathematical Formula
Mathematical Model
808
829
809
HR
SpO2
BR
811
816
One or more PROCESSOR(S) on one or more devices
Uncalibrated VO2 & VCO2
812
Comparisson
Indirect calorimeter
813
restingVO2 restingVCO2
814
817
Calibrated VO2 & VCO2
818
Mathematical Formula
815
CBC
FFM
RMR
Measured Body Composition
819
828
Comparisson
827
Energy Expenditure
RQ
826
Predicted Body Composition
Measured Weight
820
825
Comparisson
824
FQ *
821
823
Predicted Weight
Energy Uptake
Energy Balance
Mathematical Model(s)
Mathematical Formula
822

**Figure 8**

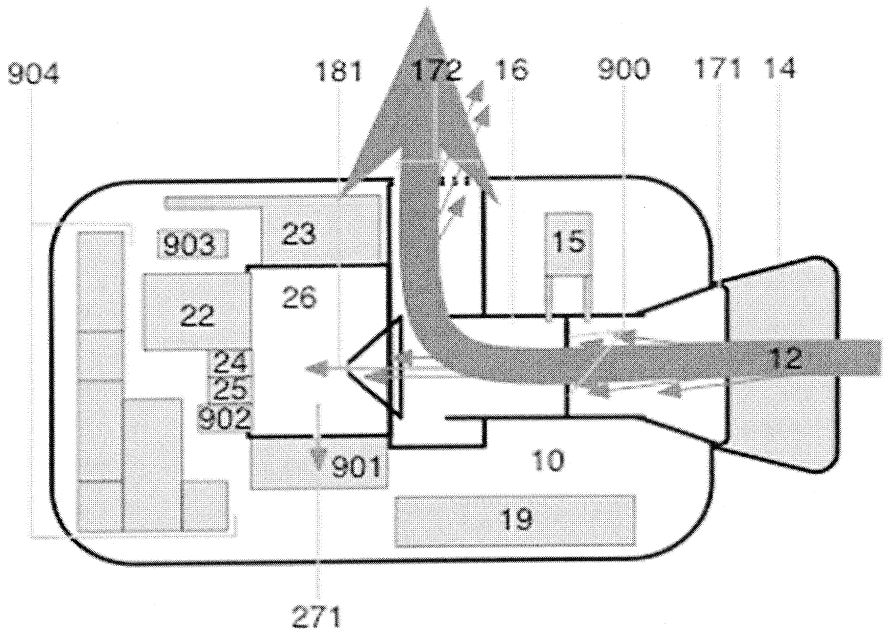



**Figure 9a**: Air Flow Dynamics generated by an exhalation.

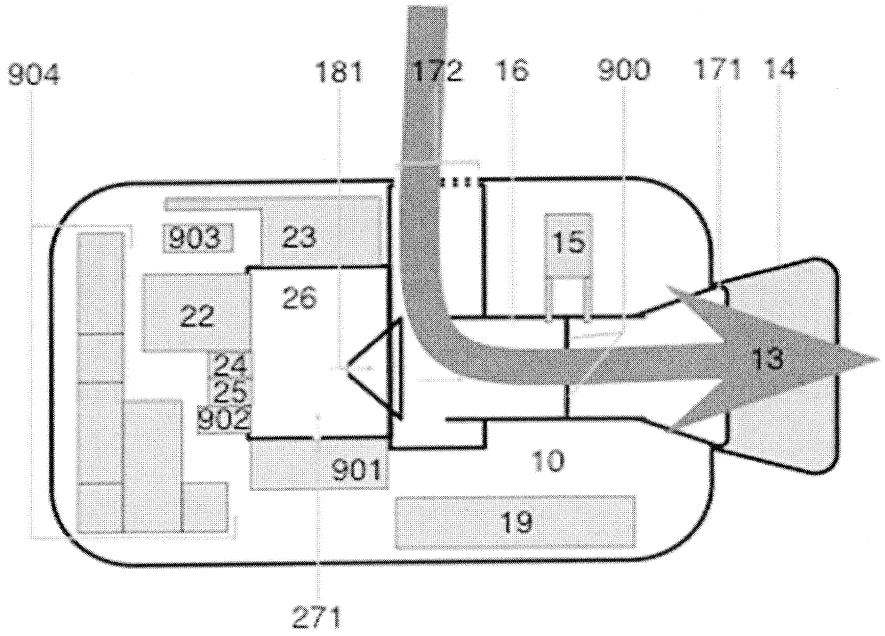



**Figure 9b**: Air Flow Dynamics generated by an inhalation.