

## CLUSTERING EVENT

Ambient Intelligence Advanced  
Technologies in Support of  
Healthcare and Assisted Living

---

Foundation for Research & Technology  
Hellas, Heraklion, Crete, Greece

---

26-27 September  
2013

## PRESENTER:

**STEVE LANE**

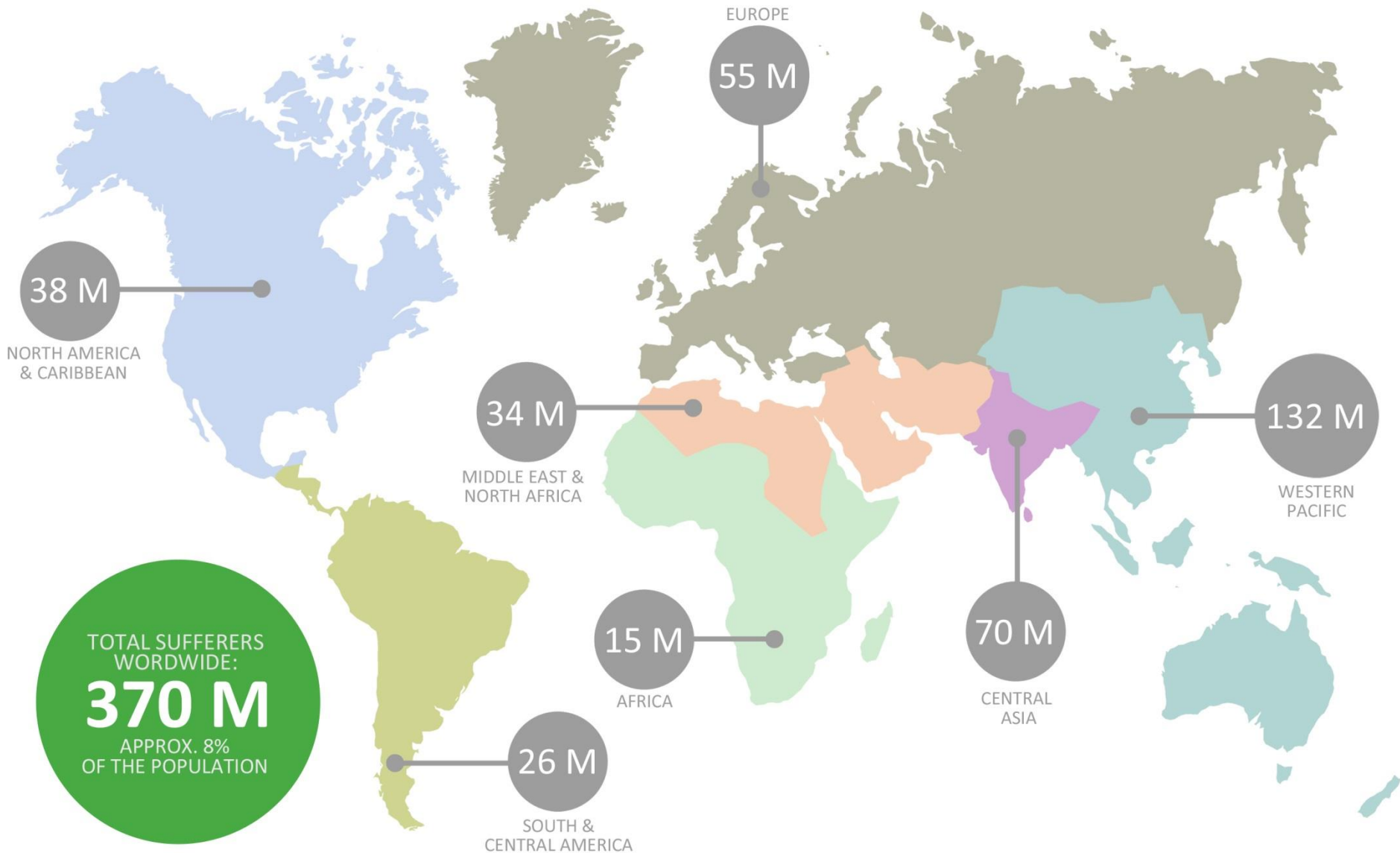
Commercial Director  
Triteq Ltd




## AP@home

A European research project funded by the European Commission under the IST framework programme 7 for Information and Communication Technology, ICT.

# BACKGROUND

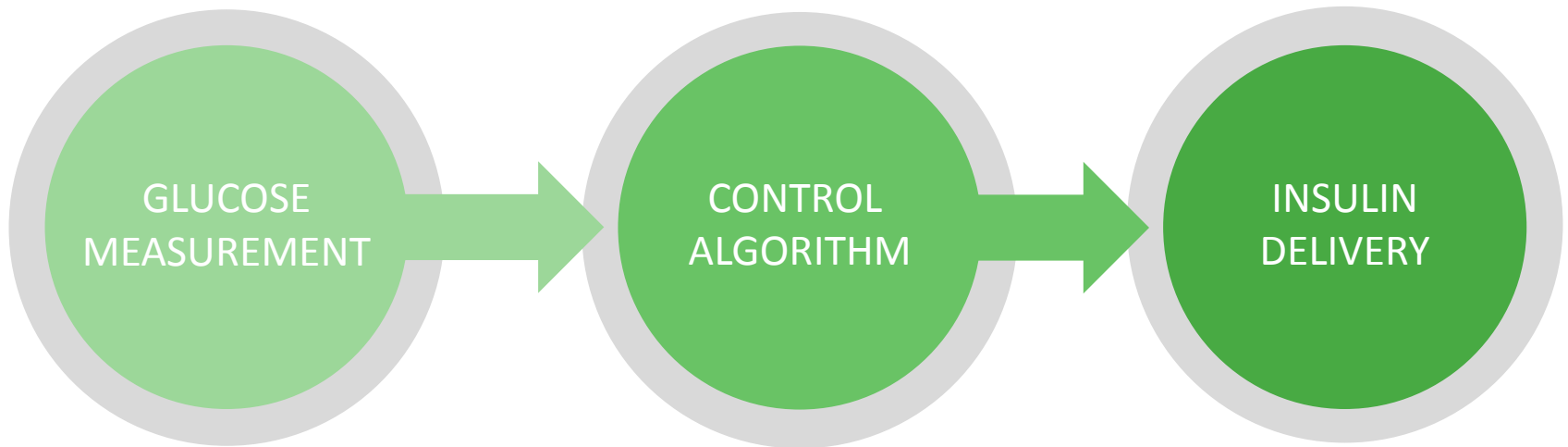


A circular graphic consisting of a light green inner circle and a gray outer ring.

GLUCOSE  
MEASUREMENT

A circular graphic consisting of a dark green inner circle and a gray outer ring.

INSULIN  
DELIVERY



# THE CONSORTIUM



To develop a two-port and/or single-port AP system that can be clinically tested

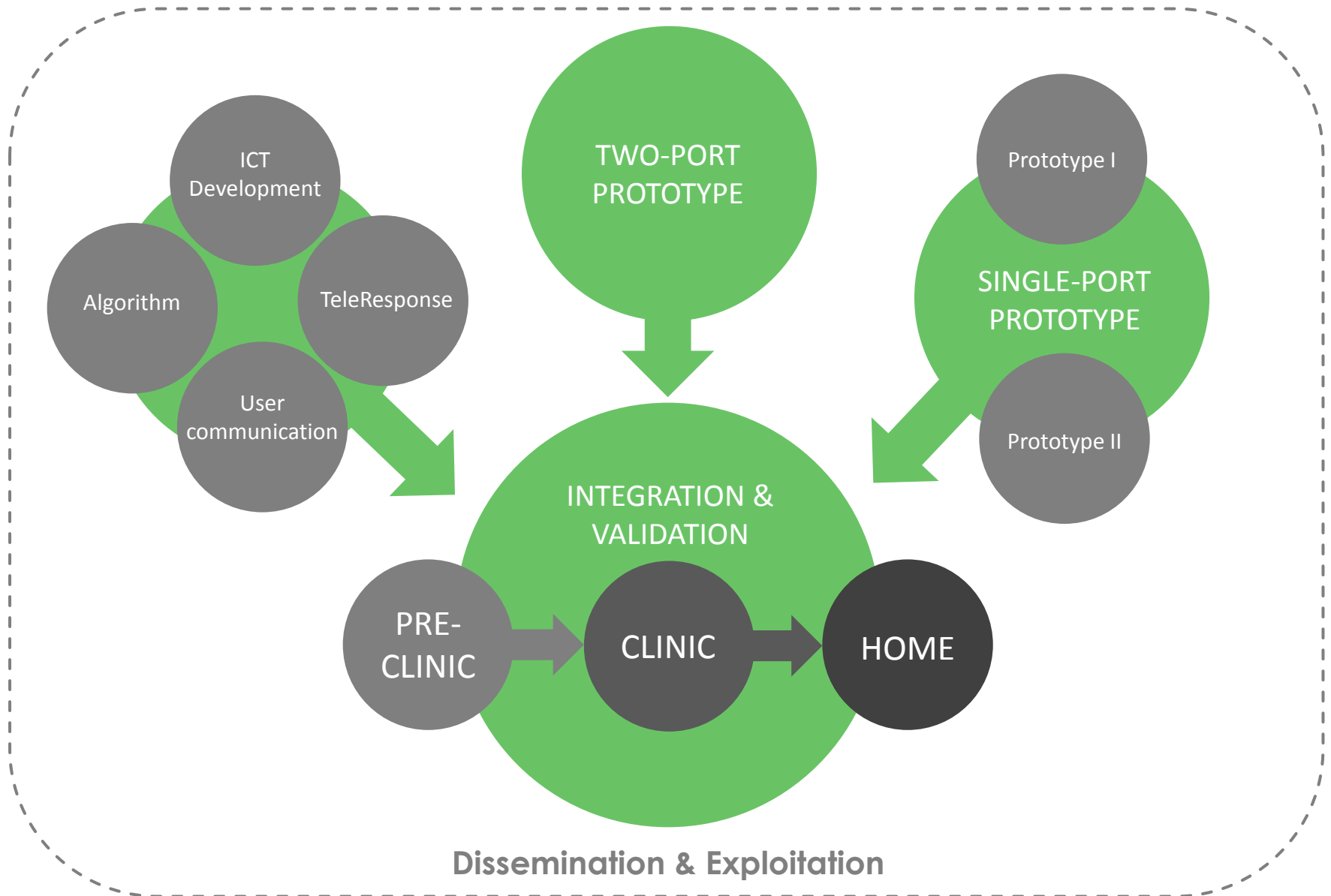
Move the artificial pancreas home

Improving the life of patients

Advancing European ICT and device industry



# PROJECT MAJOR TASKS

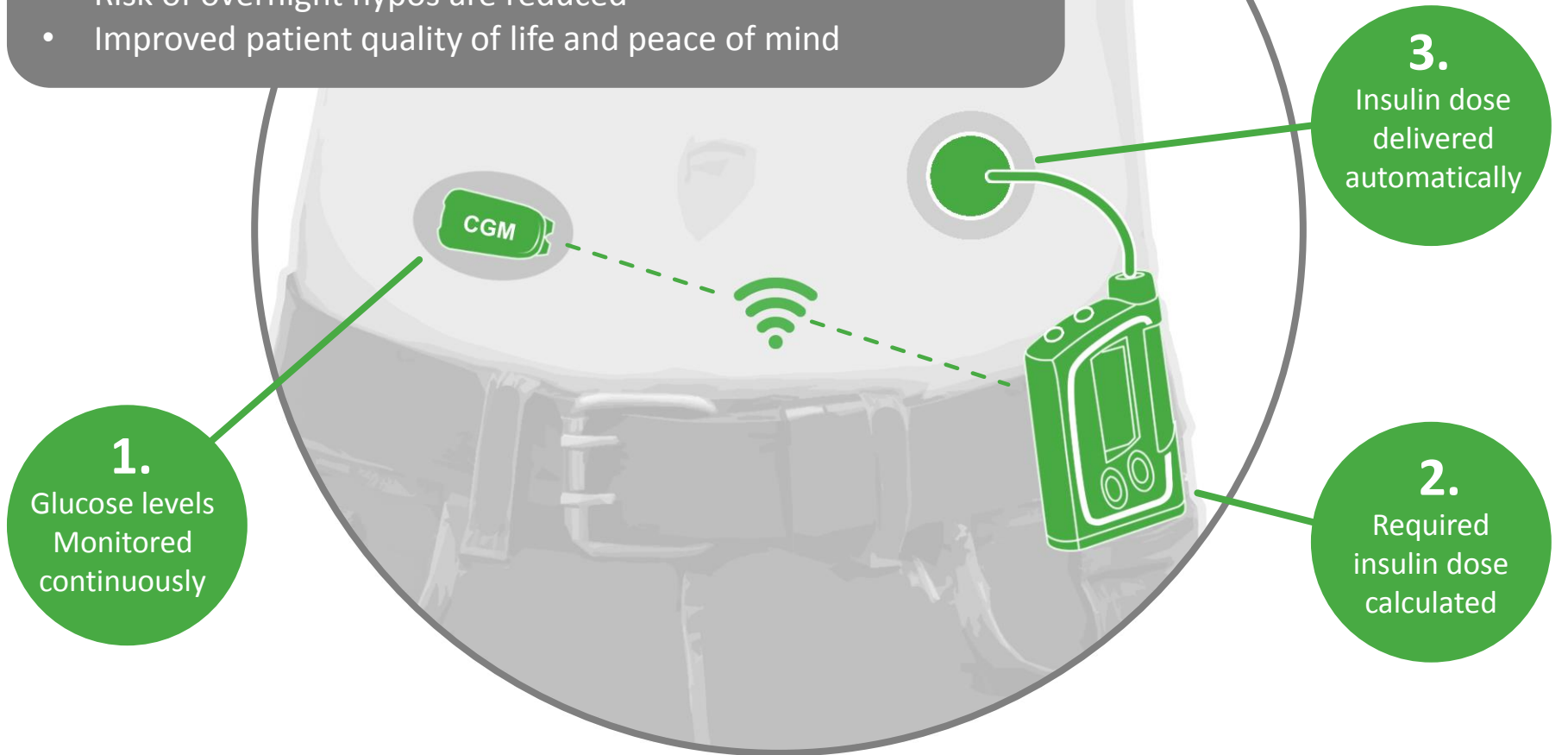




# THE ARTIFICIAL PANCREAS

## Benefits:

- Better glucose control, leading to reduced risk of complications
- Glucose levels are monitored continuously
- Risk of overnight hypos are reduced
- Improved patient quality of life and peace of mind



# ROADMAP FOR @home STUDIES

July 2012

Oct 2012

Jan 2013

July 2013

Jan 2014

July 2014

@CRC/@home  
MPL/PAD/AMS  
DiAS (IDEX)

@CRC/@home  
MPL/PAD/AMS  
DiAS(Roche) 2

@CRC/@home  
PRO/GRZ/CAM  
Florence D

@home study,  
2 arm trial,  
RCT,  
6 centres, 30 patients  
3 months @home,  
HbA1c

## AP@HOME PLATFORM

Single-port  
@CRC  
GRZ

@CRC  
CAM  
test validation  
Gen 4b

Single-port  
@CRC  
GRZ 2

@CRC  
Clinical  
validation  
Gen 5

# TRIAL SYSTEM

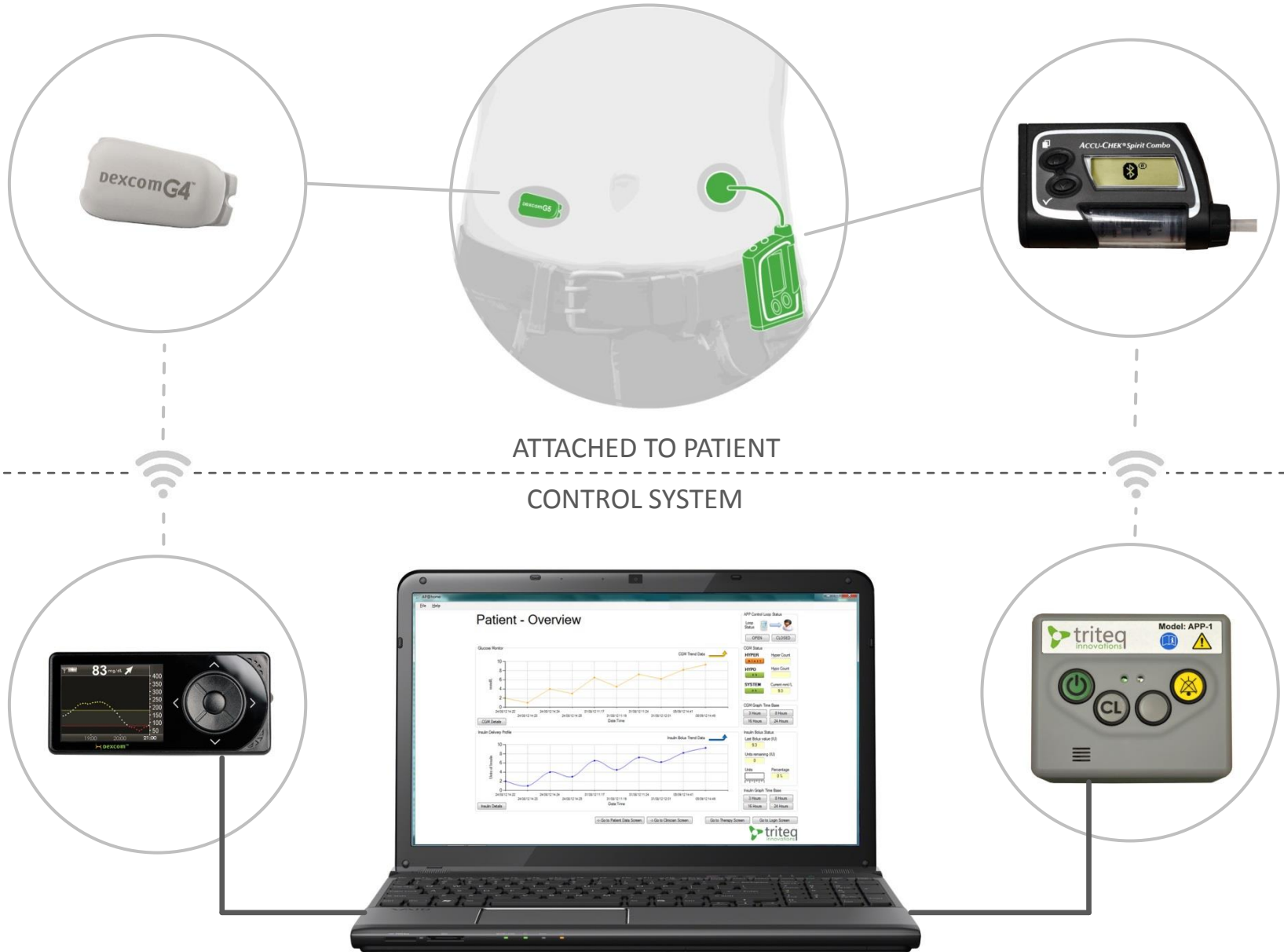
## CONFIGURATION 1



## CONFIGURATION 2




# THE AP @ home PLATFORM (APP)



AP@home  
File Help

## Patient - Overview

Glucose Monitor

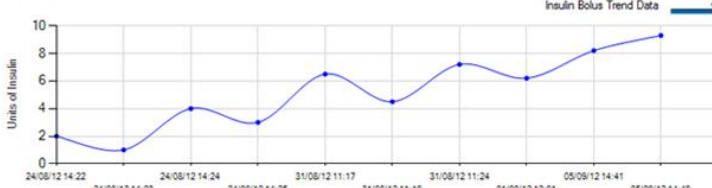


CGM Trend Data

Date:Time	Glucose (mmol/L)
24/08/12 14:22	2.0
24/08/12 14:23	1.0
24/08/12 14:24	4.0
24/08/12 14:25	3.0
31/08/12 11:17	6.5
31/08/12 11:19	4.5
31/08/12 11:24	7.0
31/08/12 12:01	6.0
05/09/12 14:41	8.0
05/09/12 14:49	9.0

CGM Details

Insulin Delivery Profile



Insulin Bolus Trend Data

Date:Time	Units of Insulin
24/08/12 14:22	2.0
24/08/12 14:23	1.0
24/08/12 14:24	4.0
24/08/12 14:25	3.0
31/08/12 11:17	6.5
31/08/12 11:19	4.5
31/08/12 11:24	7.0
31/08/12 12:01	6.0
05/09/12 14:41	8.0
05/09/12 14:49	9.0

Insulin Details

APP Control Loop Status

Loop Status

OPEN CLOSED

CGM Status

**HYPER** Hyper Count  
Alert

**HYPO** Hypo Count  
OK

**SYSTEM** Current mml/L  
OK 9.3

CGM Graph Time Base

3 Hours 8 Hours  
16 Hours 24 Hours

Insulin Bolus Status

Last Bolus value (IU)  
9.3


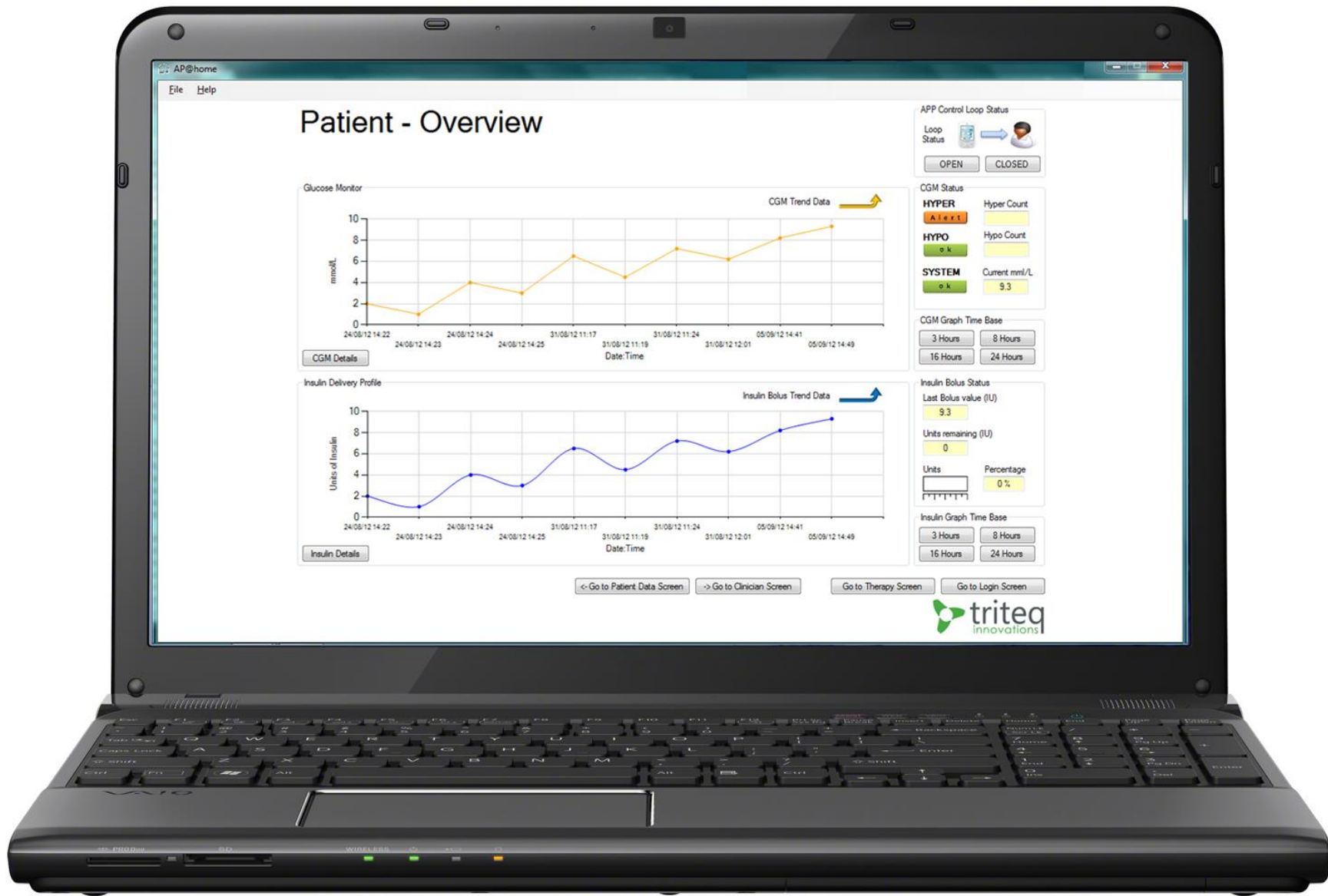
Units remaining (IU)  
0

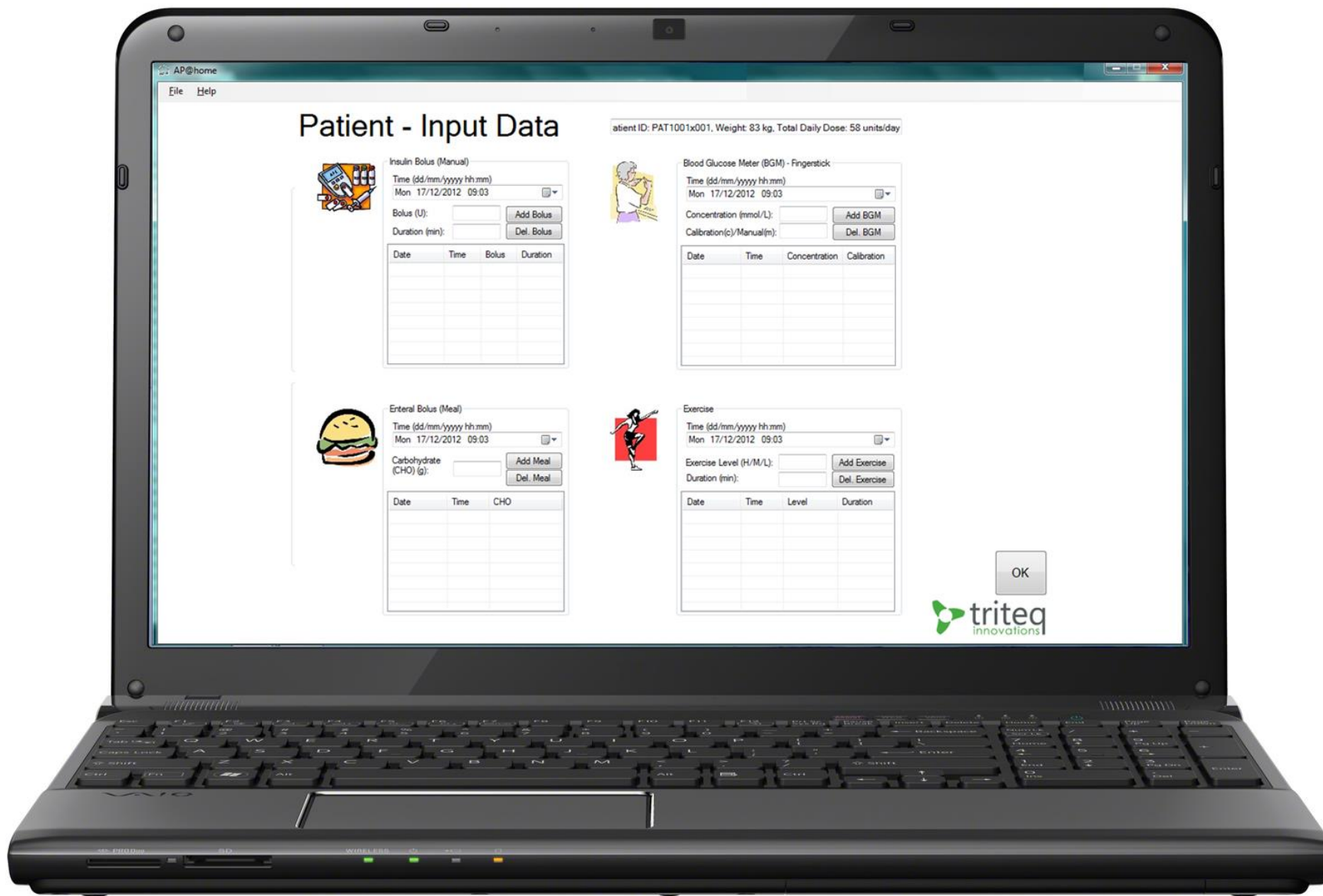
Units Percentage  
0%

Insulin Graph Time Base

3 Hours 8 Hours  
16 Hours 24 Hours

[-< Go to Patient Data Screen](#)
[-> Go to Clinician Screen](#)
[Go to Therapy Screen](#)
[Go to Login Screen](#)



AP@home  
File Help

## Clinician - Patient Record

**Patient Input Data**

Patient Identification: PAT1001x001

Patient Weight (kg): 83      Patient Height (m): 1.61

Patient Age (years): 59      Patient Gender: Male

Patient Total Daily Insulin Dose (units/day): 58

**Patient Basal Rate Profile (unit/hour):**

00:00	00:30	01:00	01:30	02:00	02:30	03:00	03:30	04:00	04:30	05:00	05:30
0.91	0.92	0.93	0.94	0.95	0.96	0.97	0.98	0.99	1.00	1.01	1.02
06:00	06:30	07:00	07:30	08:00	08:30	09:00	09:30	10:00	10:30	11:00	11:30
1.03	1.04	1.05	1.06	1.07	1.08	1.09	1.10	1.11	1.12	1.13	1.14
12:00	12:30	13:00	13:30	14:00	14:30	15:00	15:30	16:00	16:30	17:00	17:30
1.15	1.16	1.17	1.18	1.19	1.20	1.21	1.22	1.23	1.24	1.25	1.26
18:00	18:30	19:00	19:30	20:00	20:30	21:00	21:30	22:00	22:30	23:00	23:30
1.27	1.28	1.29	1.30	1.31	1.32	1.33	1.34	1.35	1.36	1.37	1.38

**Hyperglycaemic Hard Upper Limit (mmol/L):** 30

**Hyperglycaemic Soft Upper Limit (mmol/L):** 30

**Hypoglycaemic Soft Lower Limit (mmol/L):** 2

**Hypoglycaemic Hard Lower Limit (mmol/L):** 2

**Insulin Cartridge Low Alarm (IU):** 0

Audible Alarm Mute


**Insulin Infusion**

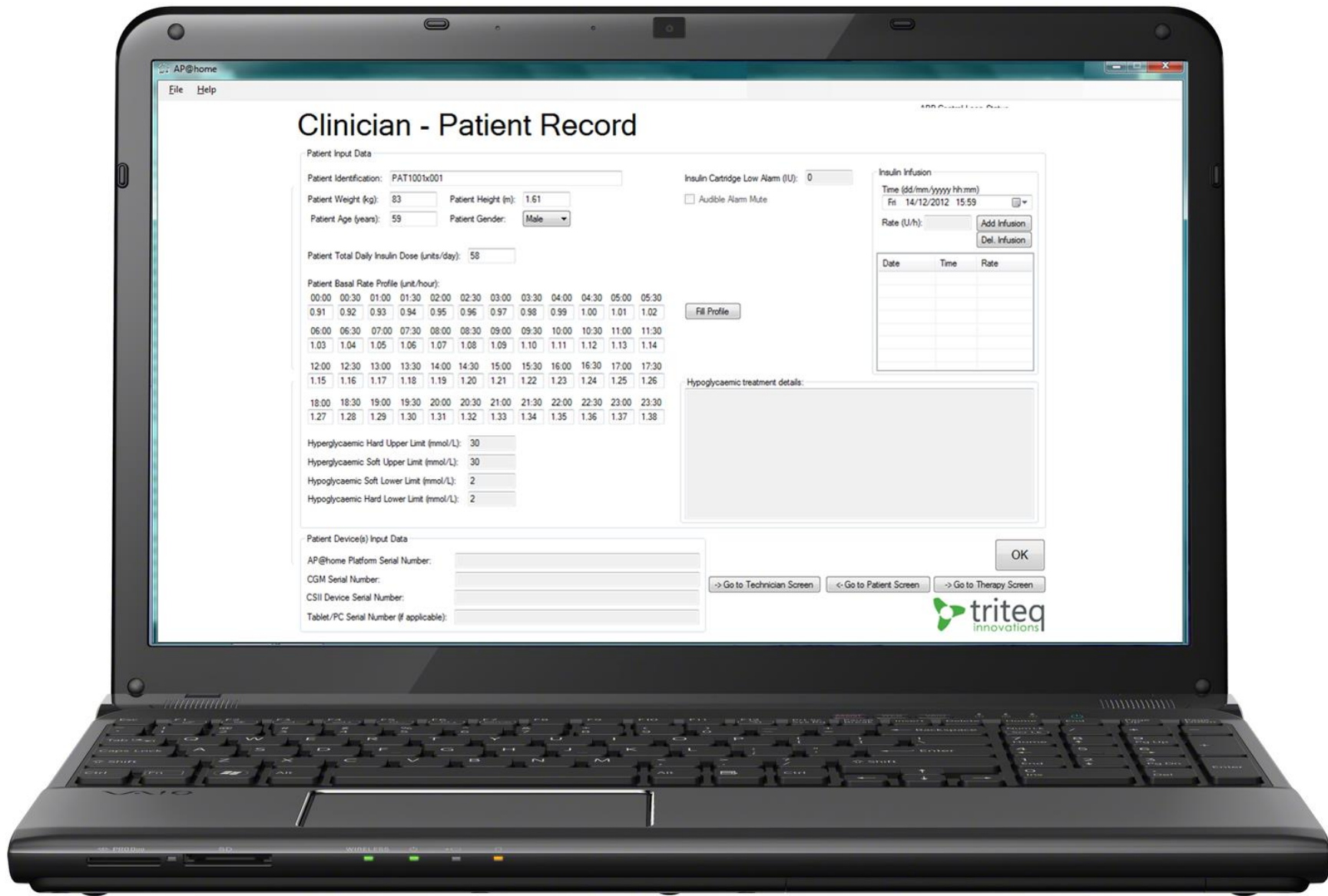
Time (dd/mm/yyyy hh:mm)  
Fri 14/12/2012 15:59

Rate (U/h):

Date	Time	Rate

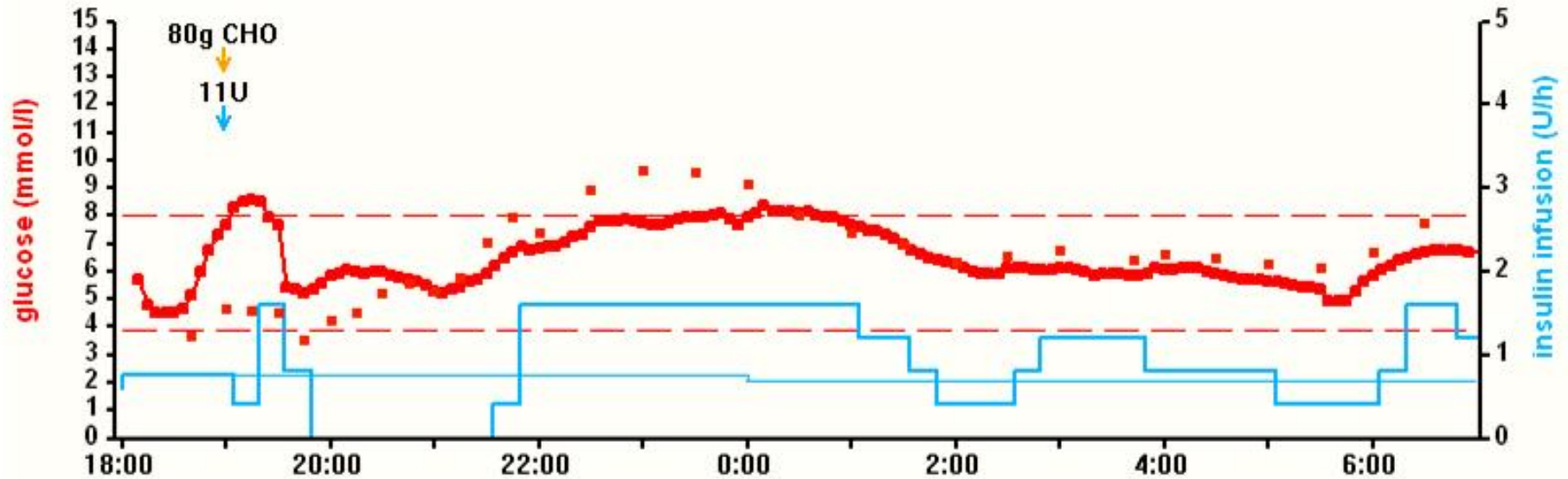
**Hypoglycaemic treatment details:**





# RESULTS FROM 2 PORT CLINICAL STUDY

Clinical study undertaken by the University of Cambridge





# ROADMAP FOR @home STUDIES

July 2012

Oct 2012

Jan 2013

July 2013

Jan 2014

July 2014

@CRC/@home  
MPL/PAD/AMS  
DiAS (IDEX)

@CRC/@home  
MPL/PAD/AMS  
DiAS (Roche) 2

@CRC/@home  
PRO/GRZ/CAM  
Florence D

@home study,  
2 arm trial,  
RCT,  
6 centres, 30 patients  
3 months @home,  
HbA1c

## AP@HOME PLATFORM

Single-port  
@CRC  
GRZ

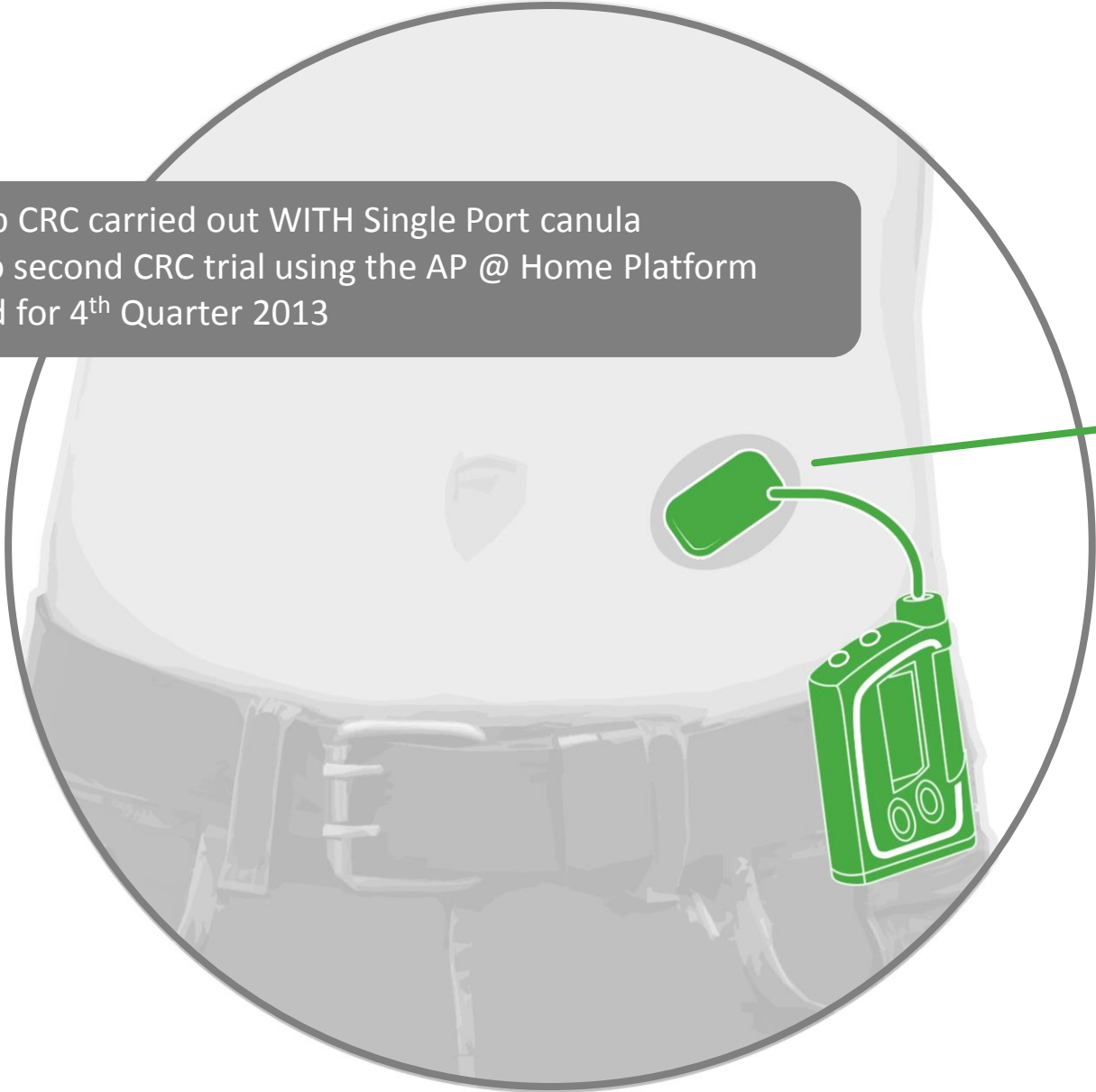
@CRC  
CAM  
test validation  
Gen 4b

Single-port  
@CRC  
GRZ 2

@CRC  
Clinical  
validation  
Gen 5

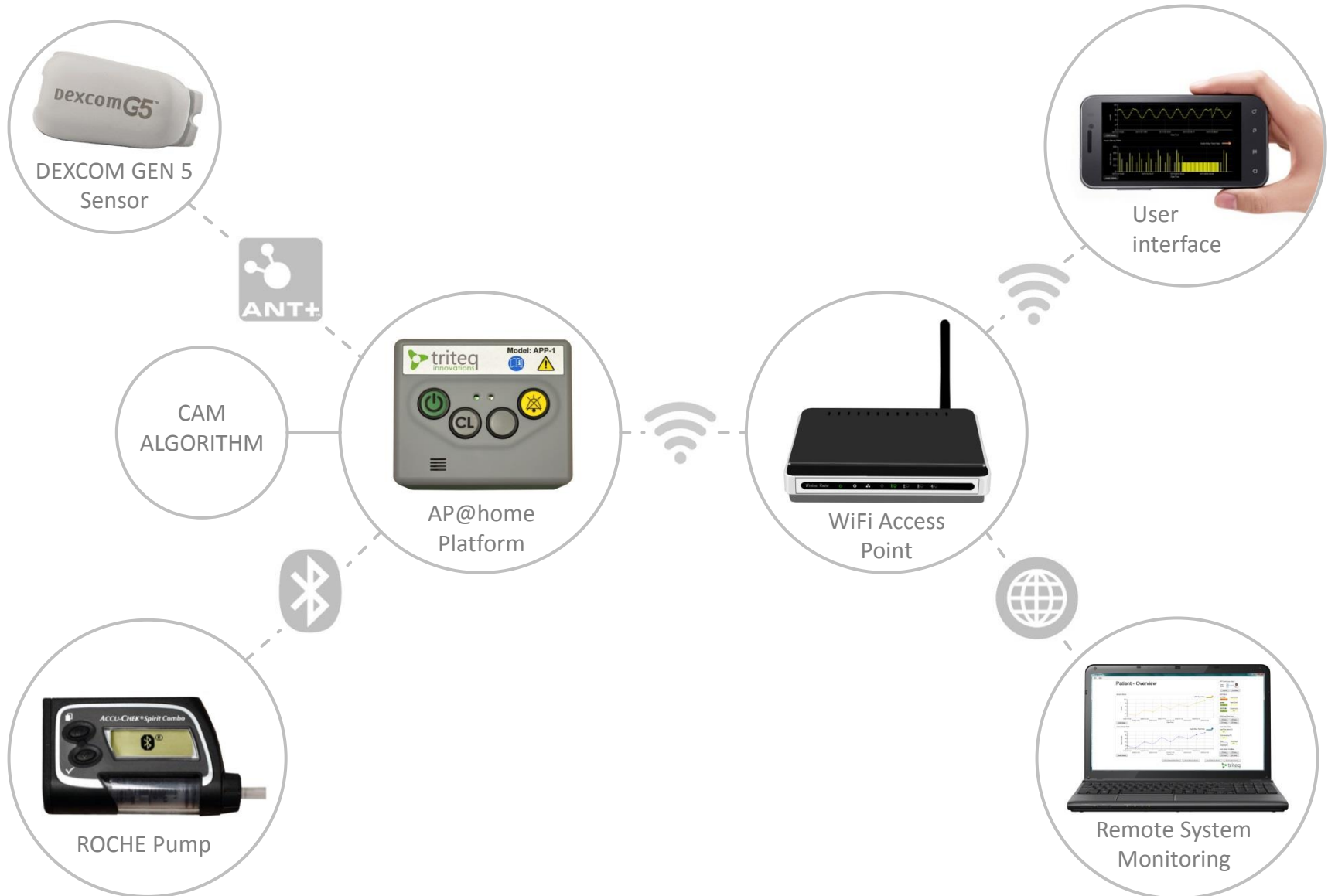
## SINGLE PORT SYSTEM

- Open loop CRC carried out WITH Single Port canula
- Moving to second CRC trial using the AP @ Home Platform
- Scheduled for 4<sup>th</sup> Quarter 2013

A diagram of a person's torso from the chest to the waist, shown in a light gray, semi-transparent style. A green rectangular canula is inserted into the abdominal wall on the right side. A green tube connects the canula to a green rectangular pump device with a screen and buttons, which is positioned on the person's right hip. A green line connects the pump to a green circular callout box on the right.

Glucose measurement and insulin infusion through single point

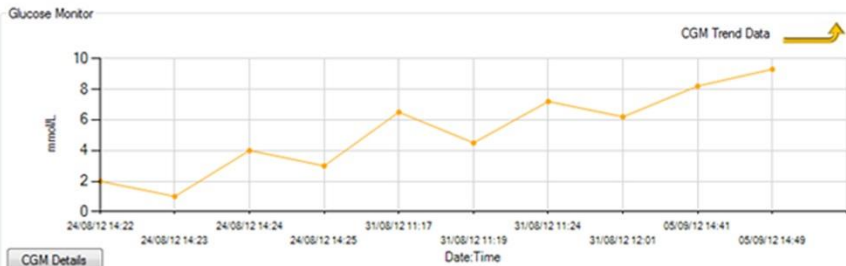
# APP – LOOKING AHEAD



# MOVING THE ARTIFICIAL PANCREAS INTO EVERYDAY LIFE



## Patient - Overview



### APP Control Loop Status

Loop Status

OPEN CLOSED

CGM Status

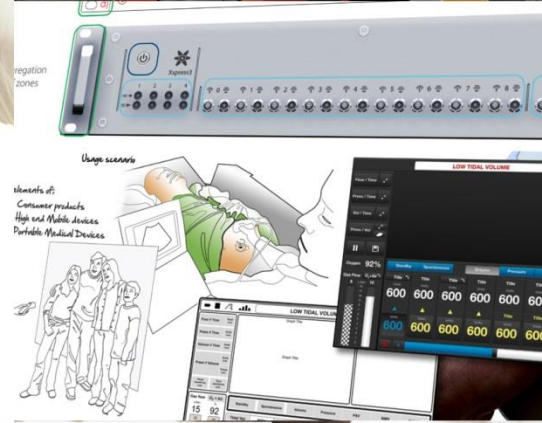
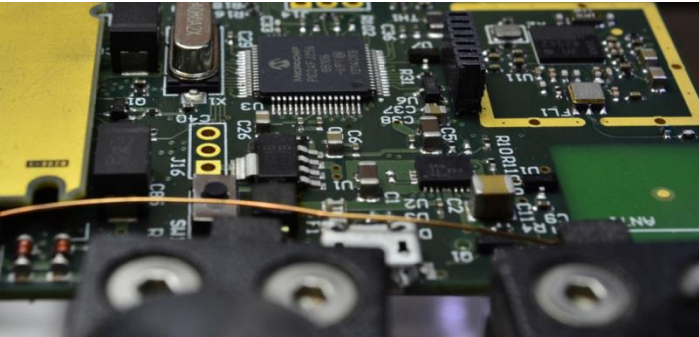
<b>HYPER</b> Alert	Hyper Count
<b>HYPO</b> OK	Hypo Count
<b>SYSTEM</b> OK	Current mmol/L 9.3

CGM Graph Time Base

3 Hours 8 Hours  
16 Hours 24 Hours



creativity  
collaboration  
experience  
knowledge





[www.triteq.com](http://www.triteq.com)

+44 (0) 1488 684554

[steve.lane@triteq.com](mailto:steve.lane@triteq.com)



[www.apathome.eu](http://www.apathome.eu)

THANK YOU FOR LISTENING  
ARE THERE ANY QUESTIONS?