ENERGY MANAGEMENT USING CLOUD BASED SERVICES

Adrian Scott

WE ARE PRIVA

We create an optimal environment in which people and plants experience the best way to grow, using leading-edge technology, products and knowledge. We are proud that our solutions result in lower use of natural resources like energy and water.

OUR AMBITION

To be known as the leading technology and service provider for sustainable urban deltas: circular economies based on greentech and smart buildings.

THE BIG PICTURE: THE ‘SUSTAINABLE URBAN DELTA’

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SUSTAINABLE URBAN DELTA

http://sustainableurbandelta.com/us/

THE WORLD AROUND US

THE WORLD AROUND US

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The world around us is changing at a high pace.

Device technology is changing very rapidly

Decision makers want to have the right information at their fingertips
(any time, any place, any device)

Companies do not have the finances, time, (or desire) to keep-up with the latest ICT developments.

Move from CAPEX to OPEX.
(Capital expenditures to Operational expenditures)

WHAT'S DRIVING OUR MARKET?

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The building controls industry is investing to…

Improve building performance

Reduce operational cost

Minimise energy use

Offer Backward compatibility

Ease of access/use

Big data analysis

Internet of Things

SO WHAT IS THE INTERNET OF THINGS?

"Simply put, this is the concept of basically connecting any device with an on and off switch to the Internet (and/or to each other)".

"The ability to transfer data without requiring human interaction".

THE CLOUD IS ALREADY HERE!

ITS EXPANDING, IT WON'T BE GOING AWAY!

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Examples of new cloud business models

Here we see a change in the way we buy things (pay for them).

WHY CLOUD BASED SOLUTIONS FOR BUILDINGS?

What are the benefits:

Remote access to multiple buildings over the internet (no need for VPNs)

Any time, any place

Professionally managed at all times

Secure connections with safe data storage

Building performance – analytics using ‘big data’

Easy access to energy monitoring and management

CLOUD SERVICES - DETAILS

Vendor independent
connecting of syster

Services:
"business-end".
Services can be combined to appear as one.

Portal:
Environment where users can see all their buildings and navigate to the services.

Users:
All stakeholders that have access like:
-Service organisations
-End-users
-Consultants
-Priva(?)

Service e

Building Dashboard

TC Manager

Energy Dashboard

Alarm Management

Historian

Installation performance

Reporting

Contr.room screens

Customer voting

3rd Party systems

Storage and processing

DB

API's

Portal

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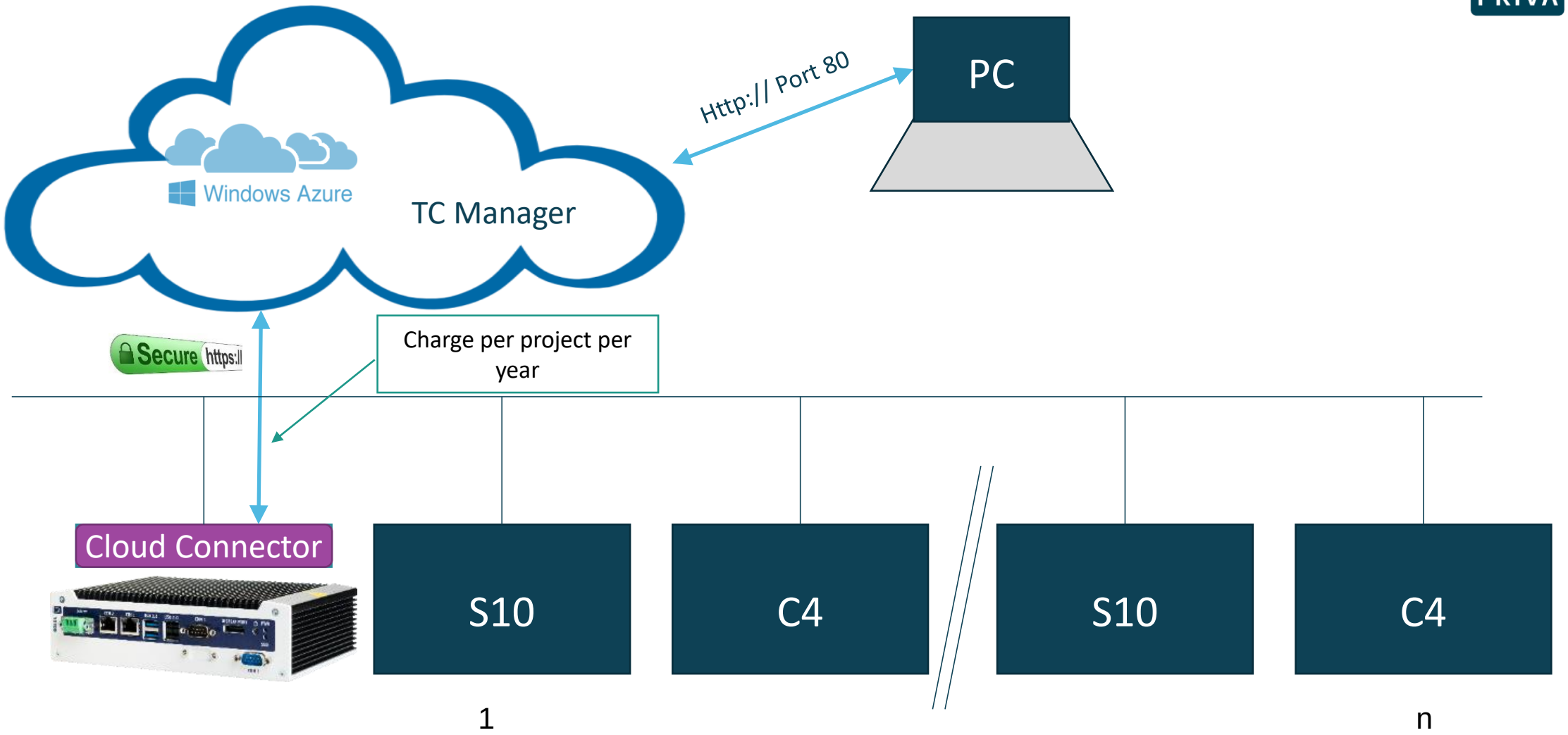
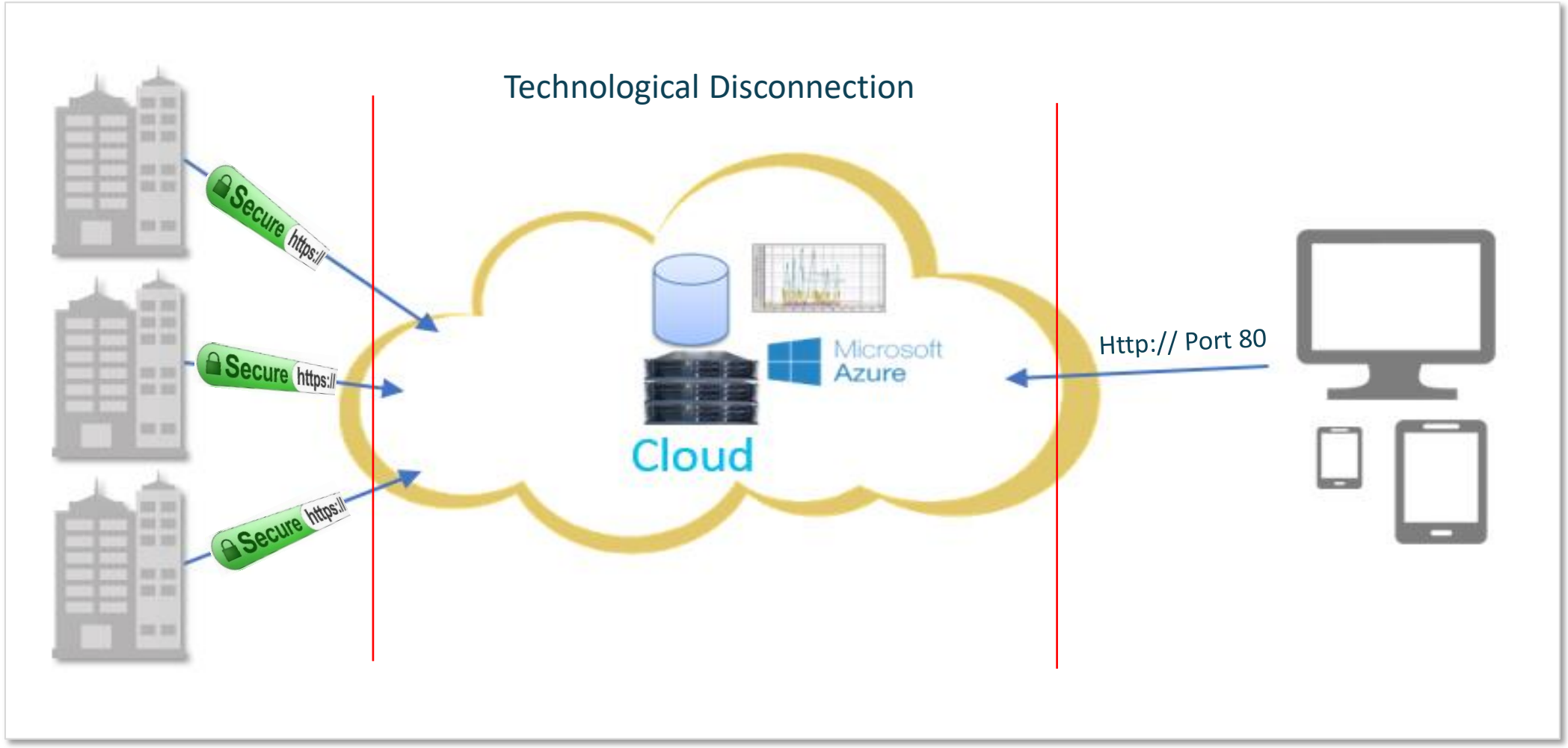
sbc
SAIA BURGESS CONTROLS

Other
BMS

CONNECTING TO THE CLOUD SECURELY



SECURITY HIGHLIGHTS



CLOUD TECHNOLOGY

EG. Microsoft Azure platform

Offers:

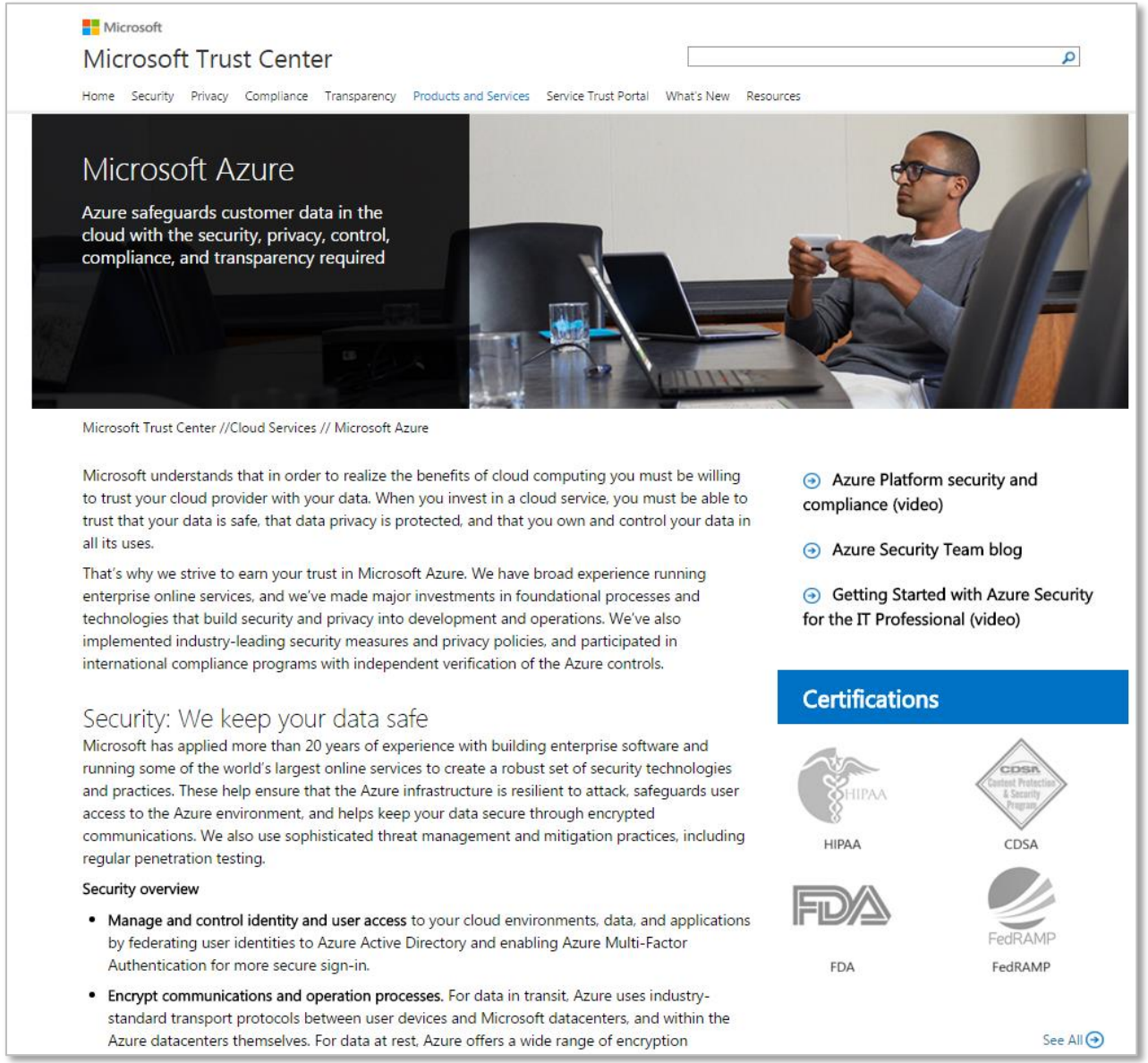
The most complete cloud portfolio today

Which meets with a broad set of international and industry-specific compliance and regulations

Security

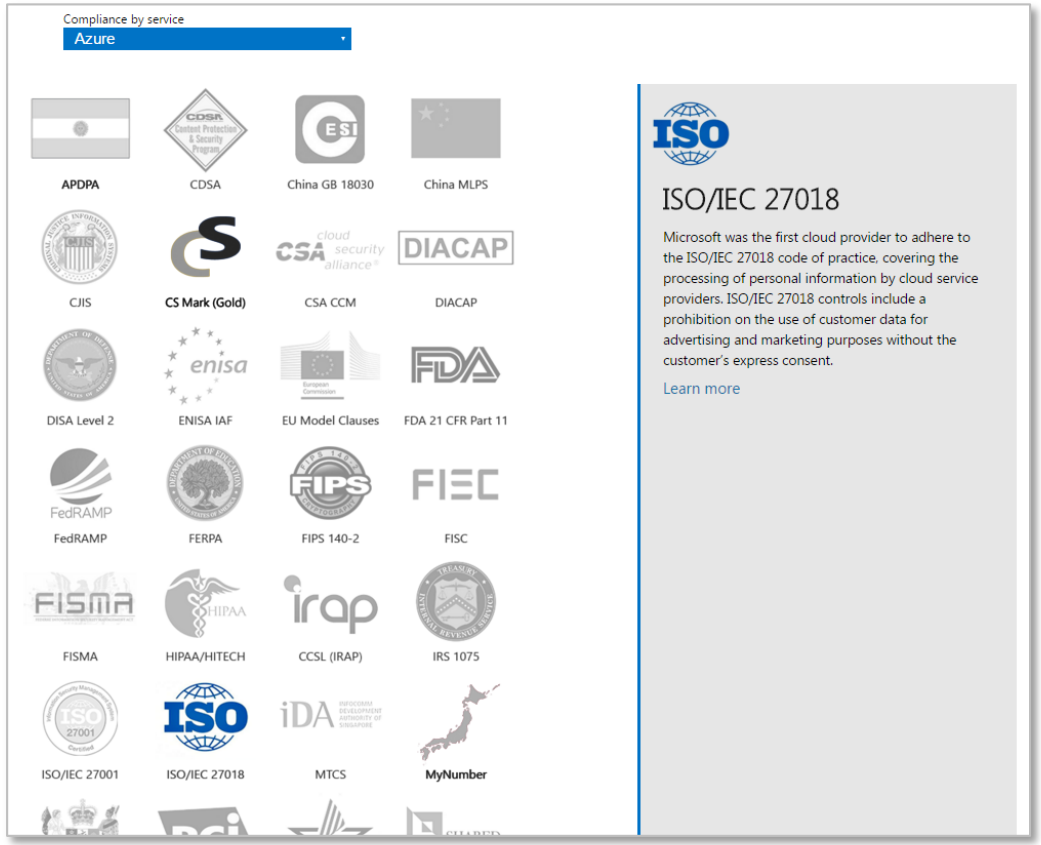
Cloud Infrastructure – different providers of infrastructure for cloud based solutions:
Amazon Web Services, Microsoft Azure, Google Cloud Platform, IBM Watson, HP, Rackspace, VMware, Docker

MICROSOFT TRUST CENTRE

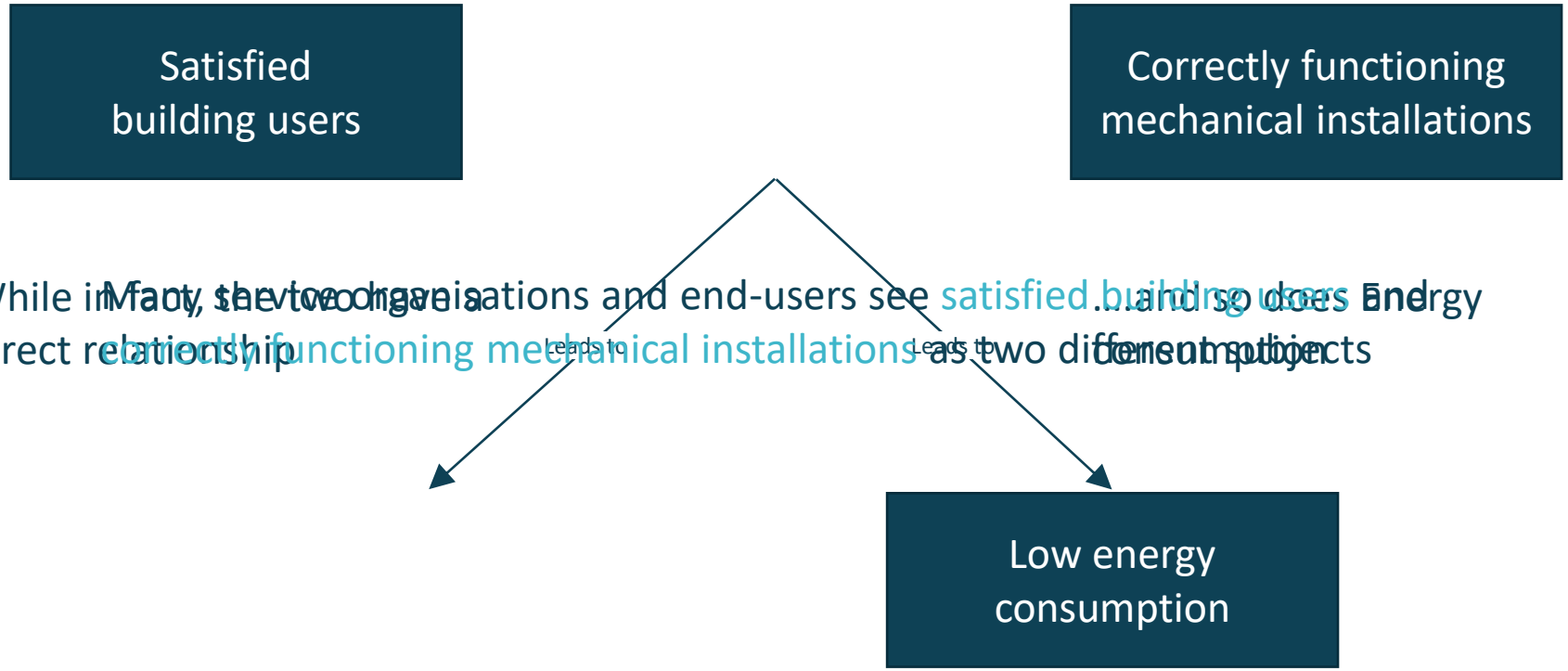


https://www.microsoft.com/en-us/TrustCenter/CloudServices/Azure

See separate CPD: Cloud Security



RELATIONSHIP – SATISFIED USERS & CORRECTLY FUNCTIONING INSTALLATIONS

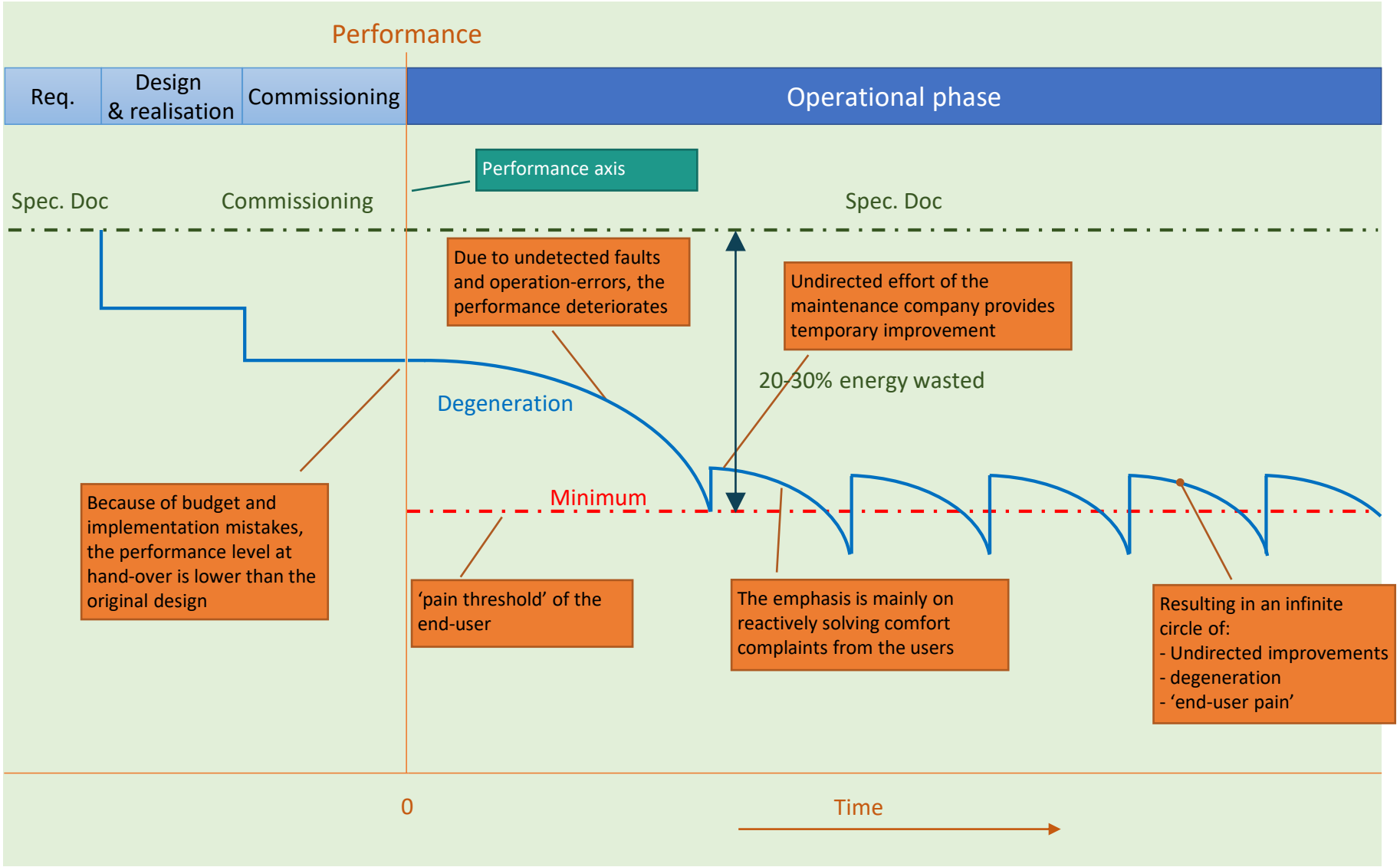


While in fact, the two organisations and end-users see satisfied building users and correctly functioning mechanical installations as two different subjects

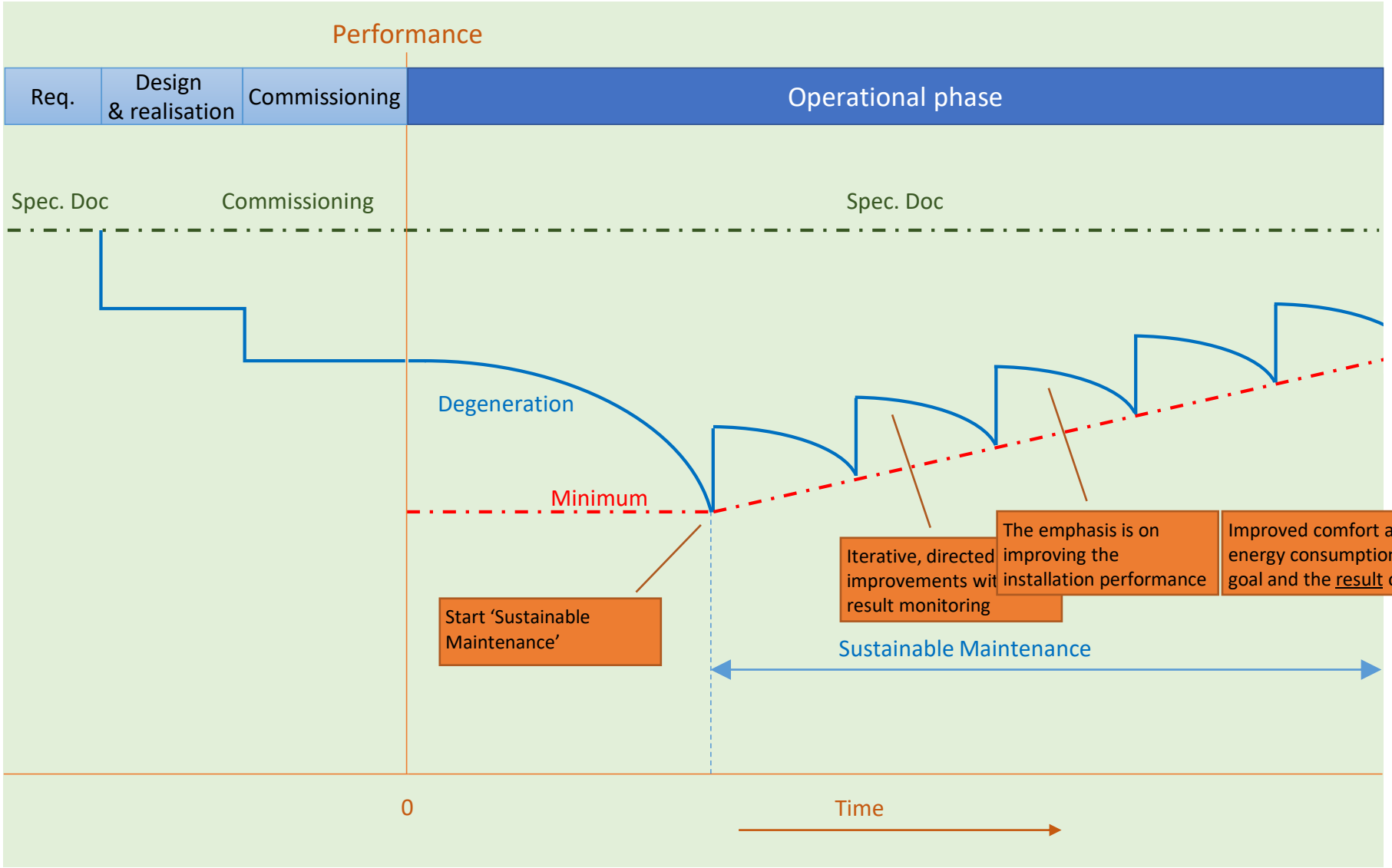
Many times a ... and so does an energy consumption

So by focussing on the mechanical installation, both user satisfaction and energy consumption are affected in a positive way

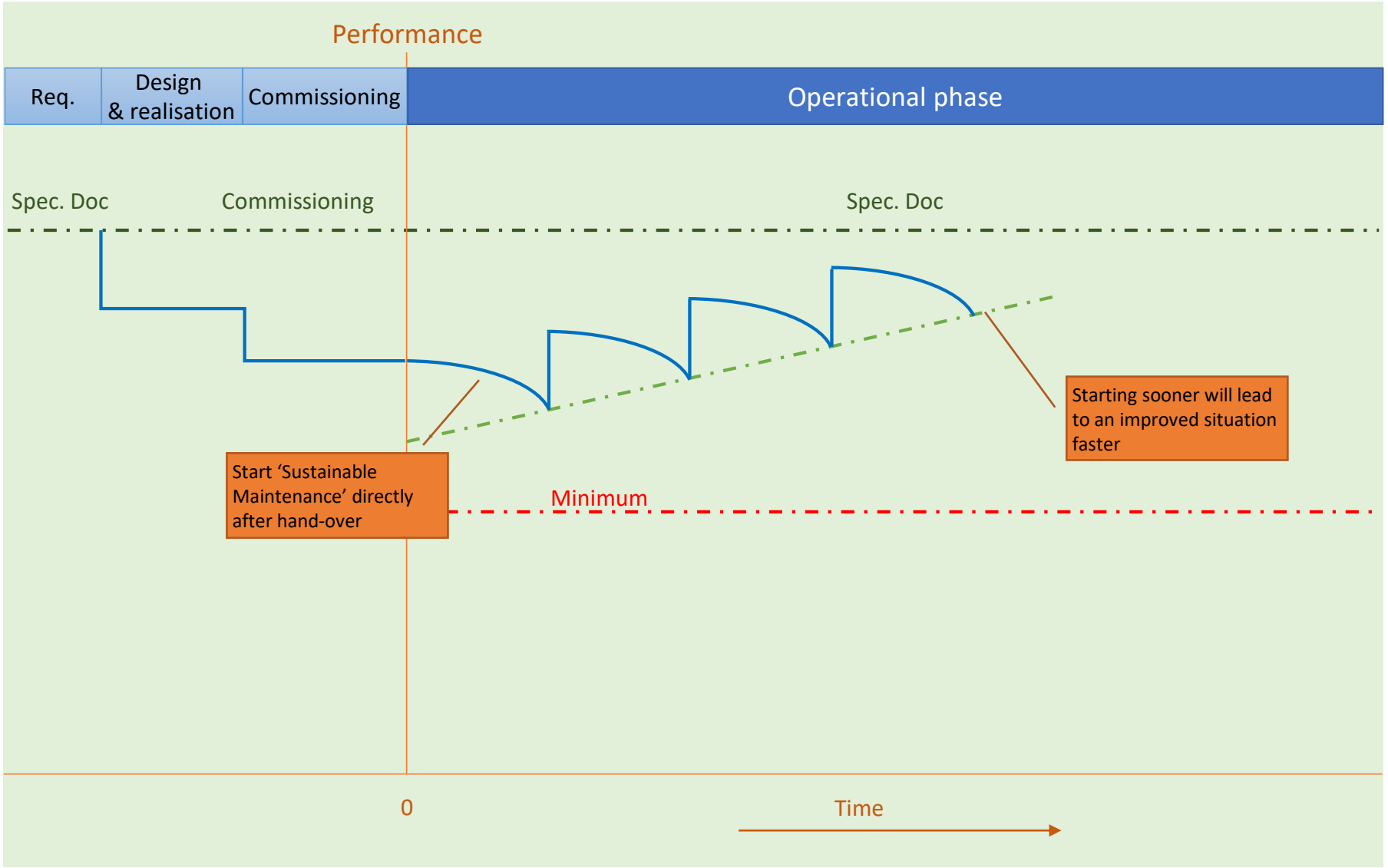
COMMON SITUATION | EXISTING BUILDING



SUSTAINABLE MAINTENANCE | IN AN EXISTING BUILDING



SUSTAINABLE MAINTENANCE | START AFTER COMMISSIONING



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BUILDING PERFORMANCE TOOLS THROUGH ANALYTICS VIA CLOUD BASED SOLUTIONS

WHAT CAN BE OFFERED?

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A tool for the Service organisation and the End User

Shows how the system is actually functioning

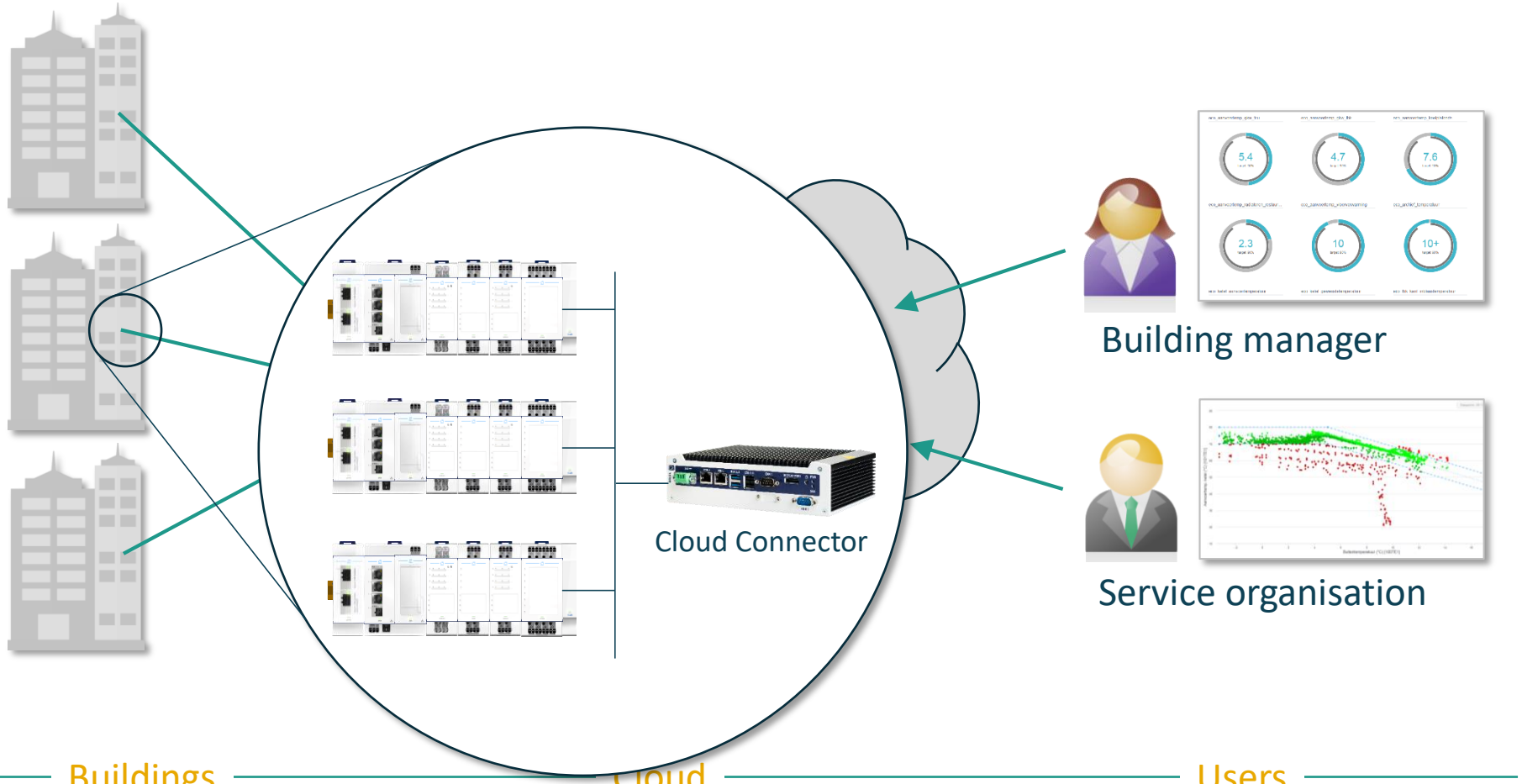
Visualisation of important KPI’s for the building manager

DASHBOARDS

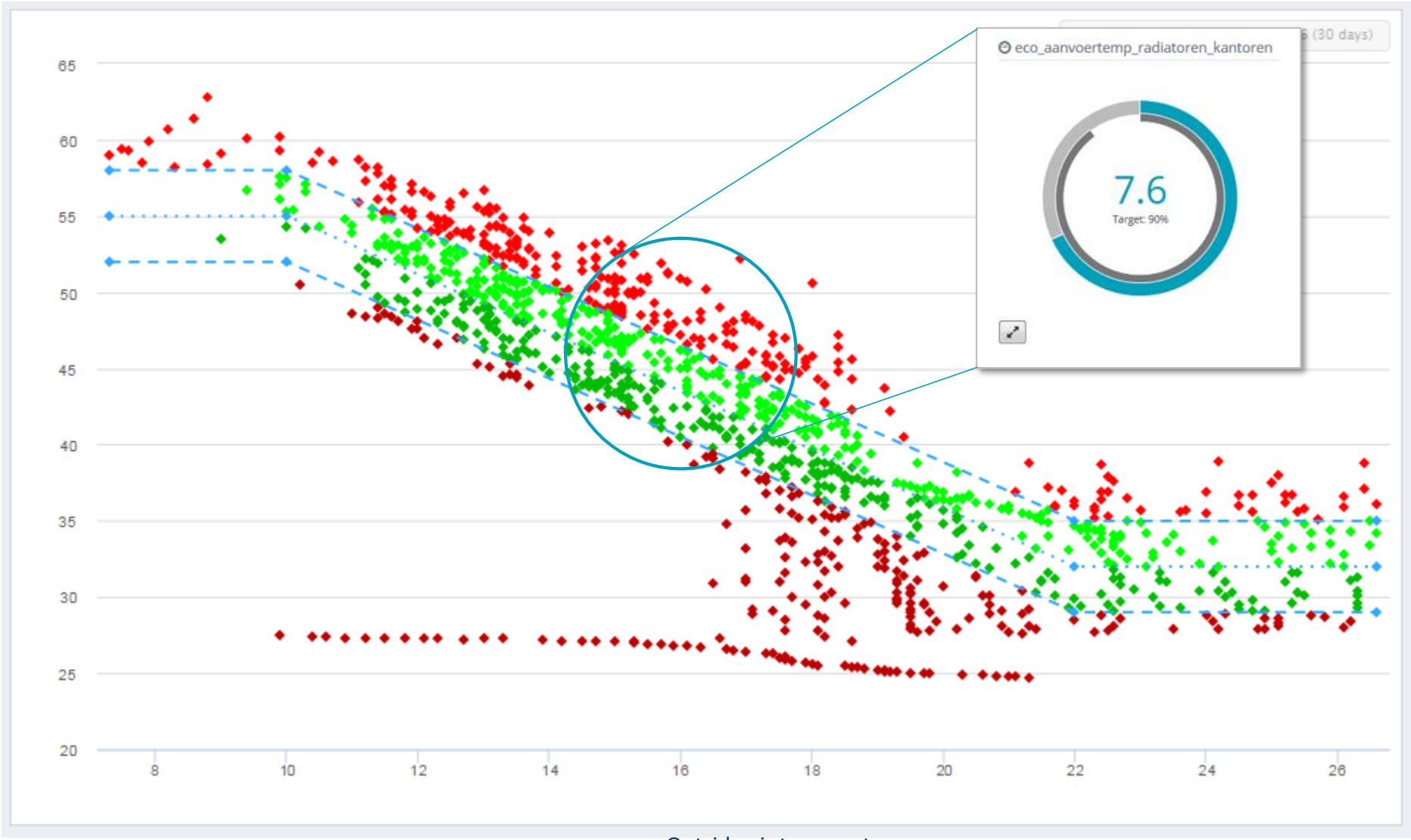
Technical view for the
Service organisation

KPI Dashboard for the Building Manager

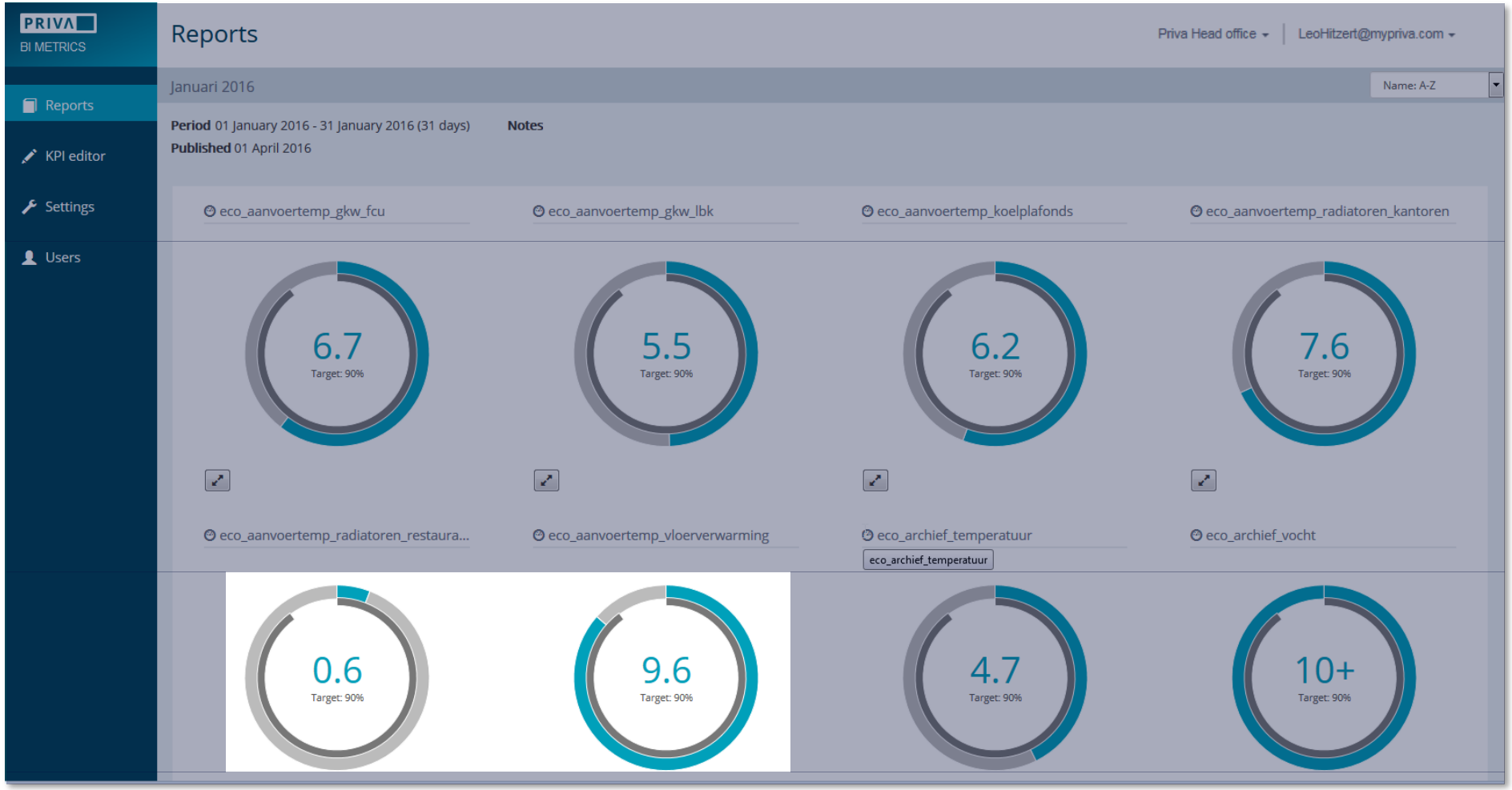
SERVICE ARCHITECTURE - EXAMPLE



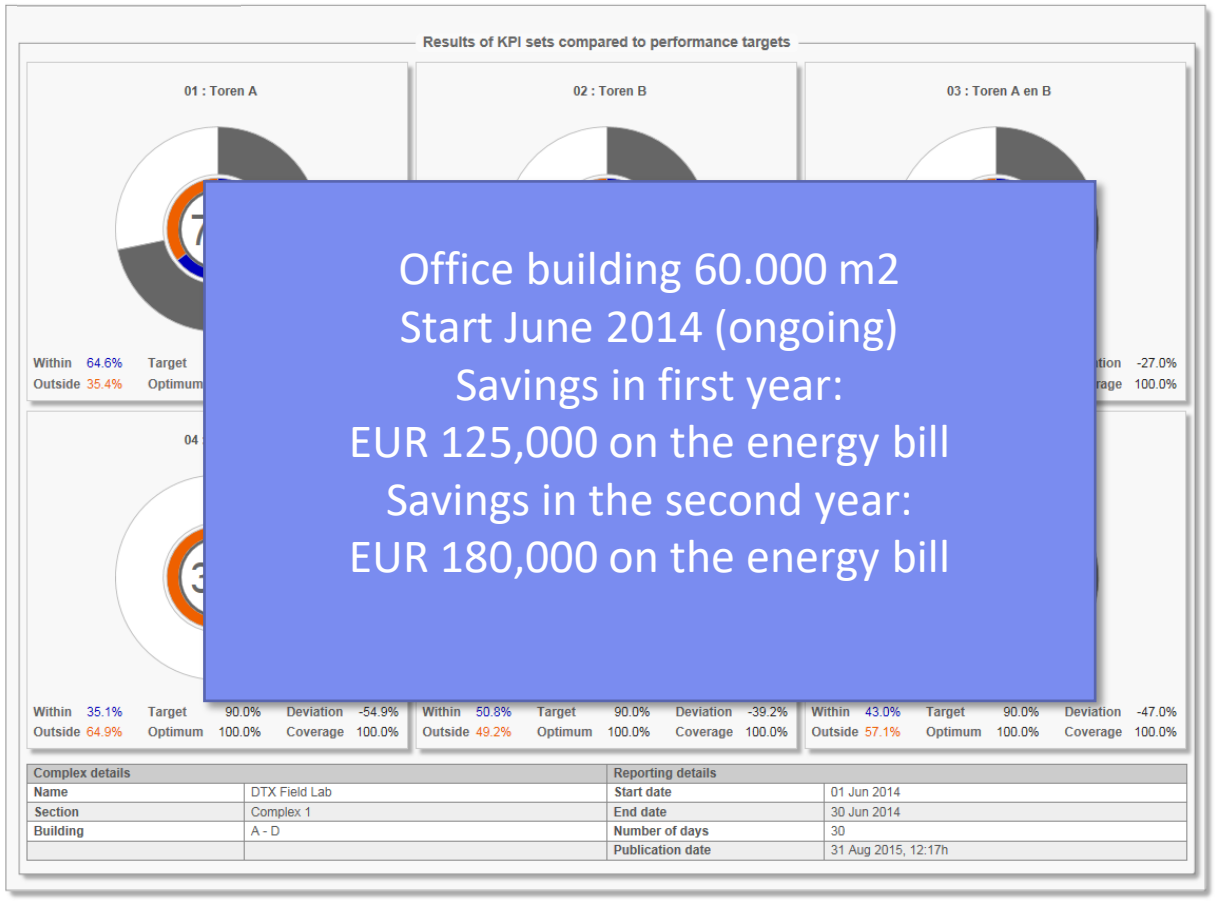
PROFILE (EXAMPLE)



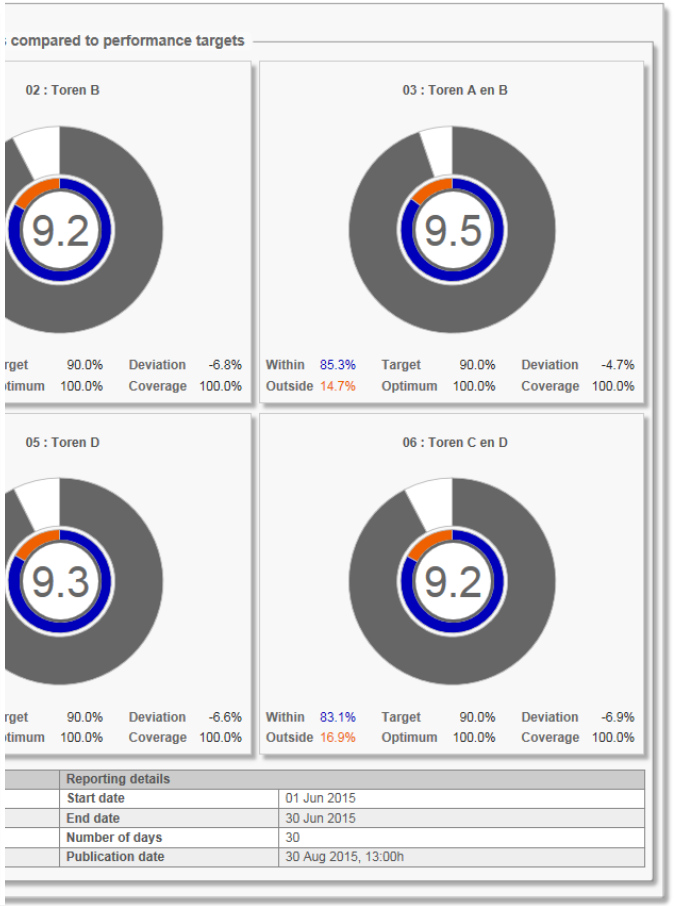
KPI'S (EXAMPLE)



WTC SCHIPHOL AMSTERDAM: COMPARISON



Office building 60.000 m2
Start June 2014 (ongoing)
Savings in first year:
EUR 125,000 on the energy bill
Savings in the second year:
EUR 180,000 on the energy bill



June 2014

June 2015

A higher score here means less energy waste

Note: screenshots from previous version

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ENERGY MANAGEMENT IN THE CLOUD

WHAT CAN BE A SOLUTION?

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A tool to monitor actual energy usage

Easy to set-up as a cloud based addition to any BMS installation

Monitor and report amount of energy used and saved

No capital investment

DATA COLLECTION – HOW IS IT SET UP

Energy user

Internet
Powered by Windows
Azure

Energy
Datacenter

Cloud Connector

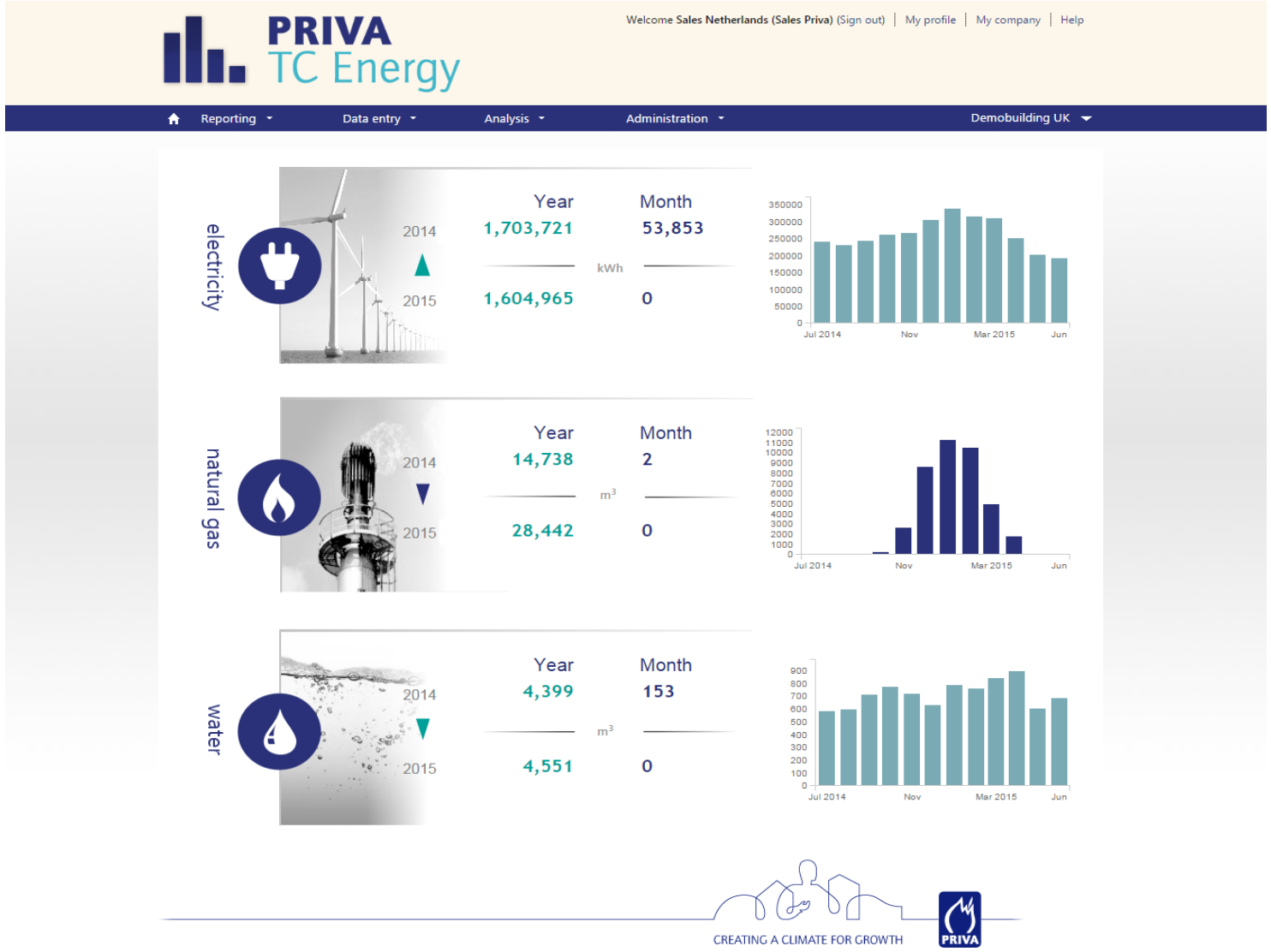
Project

Energy data is pushed
to the cloud

Local network

Configuration of
Energy set-by 3rd
party

DASHBOARD


PRIVA
TC Energy
Welcome Sales Netherlands (Sales Priva) (Sign out) | My profile | My company | Help
Reporting
Data entry
Analysis
Administration
Demobuilding UK
electricity
2014
2015
Year
Month
1,703,721
53,853
kWh
1,604,965
0
350000
300000
250000
200000
150000
100000
50000
0
Jul 2014
Nov
Mar 2015
Jun
natural gas
2014
2015
Year
Month
14,738
2
m3
28,442
0
12000
11000
10000
9000
8000
7000
6000
5000
4000
3000
2000
1000
0
Jul 2014
Nov
Mar 2015
Jun
water
2014
2015
Year
Month
4,399
153
m3
4,551
0
900
800
700
600
500
400
300
200
100
0
Jul 2014
Nov
Mar 2015
Jun
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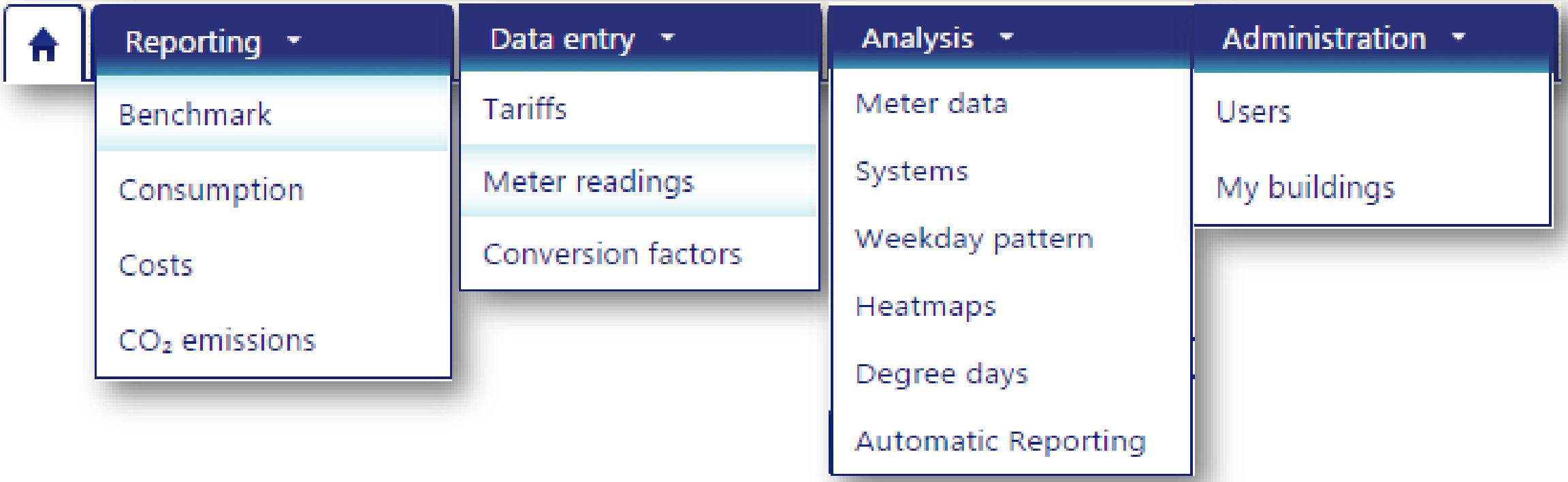
MENUS


Reporting
Benchmark
Consumption
Costs
CO_2 emissions
Data entry
Tariffs
Meter readings
Conversion factors
Analysis
Meter data
Systems
Weekday pattern
Heatmaps
Degree days
Automatic Reporting
Administration
Users
My buildings

ANALYSE ENERGY DATA

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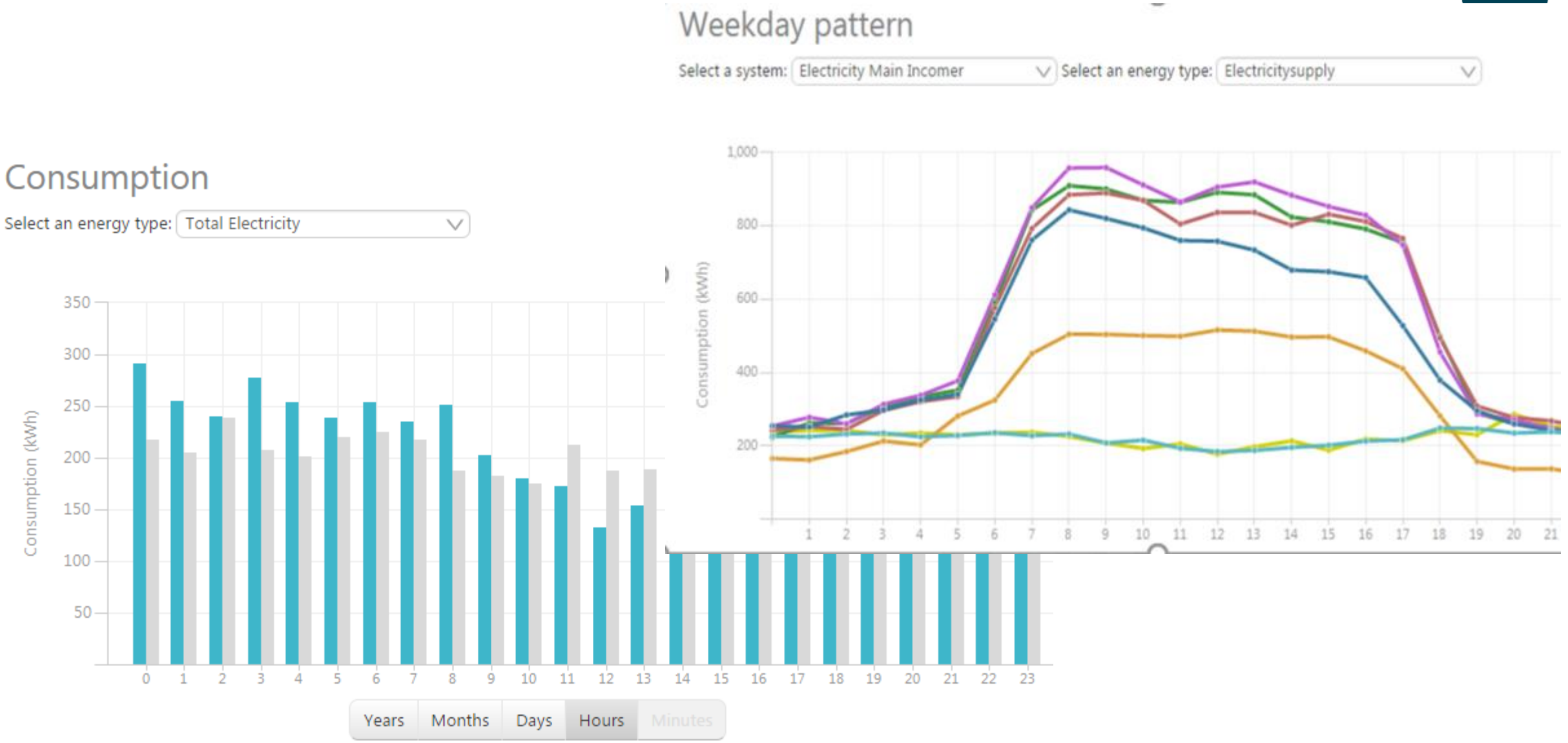

AUTOMATIC REPORTS

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PRIVA TC Energy

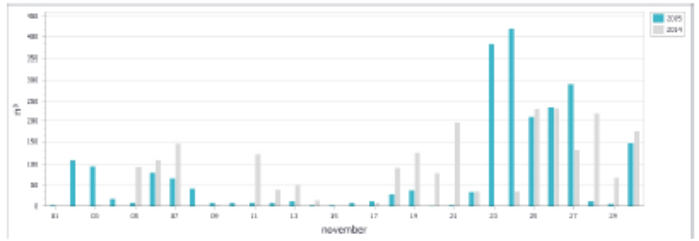
Demo building FR
1-11-2015 - 1-12-2015

	Gaz acheté	Eau achetée	Elec. achetée	Elec. Panneaux photo-voltaïques	Gaz centrale vapeur hum. de gaz	Gaz cent vapeur hum. cte elle	Gaz production chaud	Carburant sur site
	Aardgaslevering	Waterlevering	Elektriciteitlevering	Elektriciteitlevering	Aardgasverbruik	Aardgasverbruik	Aardgasverbruik	Brandstof op locatielevering
1-11-2015	1,54 m³	0 m³	428 kWh	563 kWh		0 m³	104 m³	0,58L
2-11-2015	109 m³	28,9 m³	1203 kWh	360 kWh		18,6 m³	359 m³	0,58L
3-11-2015	83,2 m³	25,5 m³	1547 kWh	620 kWh		16,2 m³	337 m³	0,58L
4-11-2015	16,9 m³	22,1 m³	1062 kWh	465 kWh		5,8 m³	331 m³	0,58L
5-11-2015	6,80 m³	24,6 m³	1097 kWh	281 kWh		0 m³	364 m³	0,58L
6-11-2015	19,3 m³	16,1 m³	946 kWh	195 kWh		0 m³	303 m³	0,58L
7-11-2015	66,2 m³	0,85 m³	472 kWh	204 kWh		0 m³	84,4 m³	0,58L
8-11-2015	42,4 m³	0 m³	480 kWh	301 kWh		0 m³	109 m³	0,58L
9-11-2015	6,80 m³	26,3 m³	1076 kWh	230 kWh		0 m³	334 m³	0,58L
10-11-2015	1,7 m³	24,6 m³	1023 kWh	130 kWh		0 m³	320 m³	0,58L
11-11-2015	6,80 m³	23,8 m³	1030 kWh	171 kWh		0 m³	360 m³	0,58L
12-11-2015	6,80 m³	28 m³	1033 kWh	370 kWh		0 m³	326 m³	0,58L
13-11-2015	11,6 m³	14,4 m³	933 kWh	442 kWh		22 m³	296 m³	0,58L
14-11-2015	1,54 m³	0,85 m³	594 kWh	282 kWh		0 m³	88,9 m³	0,58L
15-11-2015	1,54 m³	0,85 m³	420 kWh	108 kWh		0 m³	92,3 m³	0,58L
16-11-2015	1,7 m³	27,2 m³	1838 kWh	135 kWh		0 m³	384 m³	0,58L
17-11-2015	11,5 m³	24,6 m³	1832 kWh	174 kWh		0 m³	344 m³	0,58L
18-11-2015	37,7 m³	20,4 m³	1017 kWh	328 kWh		0 m³	333 m³	0,58L
19-11-2015	37,7 m³	24,6 m³	1952 kWh	181 kWh		5,8 m³	393 m³	0,58L
20-11-2015	0 m³	15,3 m³	1058 kWh	262 kWh		23,2 m³	327 m³	0,58L
21-11-2015	1,54 m³	1,7 m³	603 kWh	185 kWh		0 m³	86,6 m³	0,58L
22-11-2015	13,1 m³	0,85 m³	549 kWh	337 kWh		0 m³	85,5 m³	0,58L
23-11-2015	382 m³	28 m³	1341 kWh	387 kWh		73,1 m³	368 m³	0,58L
24-11-2015	418 m³	27,2 m³	1391 kWh	98,9 kWh		65 m³	341 m³	0,58L
25-11-2015	308 m³	22,1 m³	1288 kWh	307 kWh		26,7 m³	328 m³	0,58L
26-11-2015	336 m³	24,6 m³	1365 kWh	353 kWh		45,2 m³	329 m³	0,58L
27-11-2015	390 m³	18,7 m³	1895 kWh	200 kWh		37,1 m³	325 m³	0,58L
28-11-2015	11,6 m³	1,7 m³	691 kWh	286 kWh		0 m³	101 m³	0,58L
29-11-2015	3,85 m³	0 m³	495 kWh	147 kWh		0 m³	100 m³	0,58L
30-11-2015	145 m³		1381 kWh					

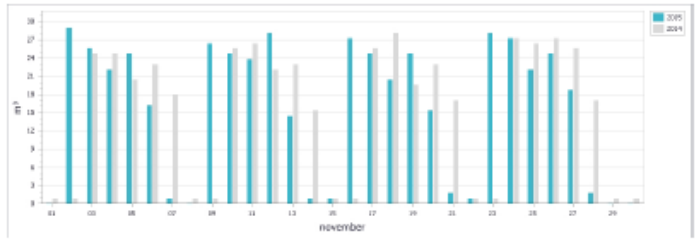
PRIVA TC Energy

Demo building FR
1-11-2015 - 1-12-2015

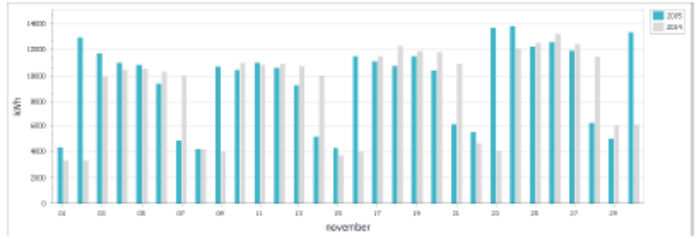
Gaz acheté - Aardgaslevering



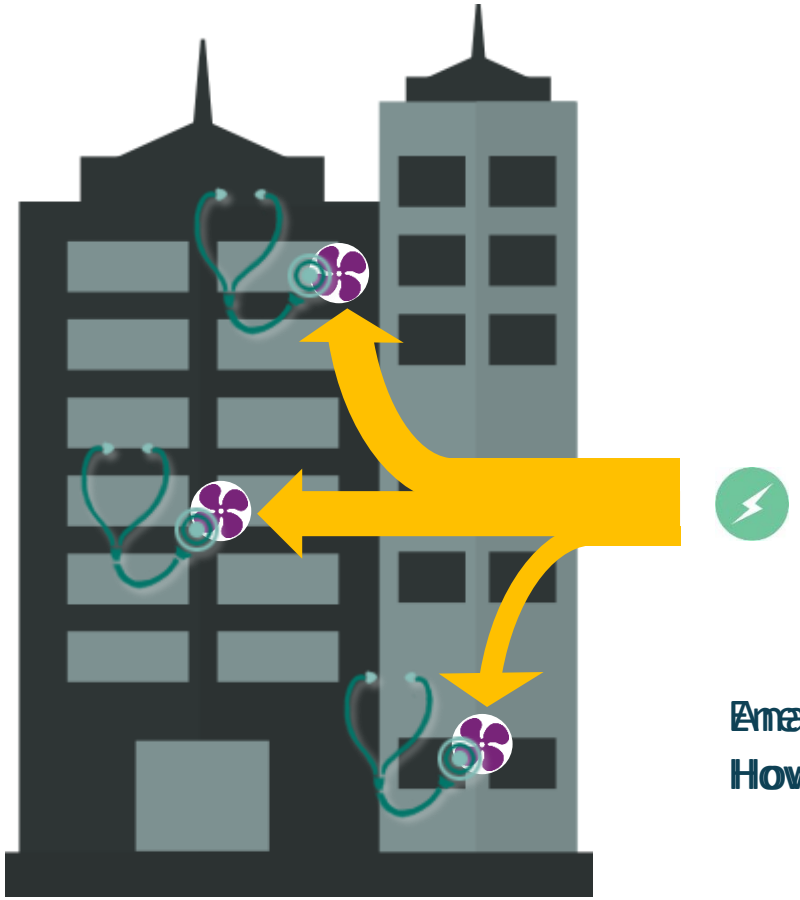
Eau achetée - Waterlevering



Elec. achetée - Elektriciteitlevering



ENERGY MONITORING & BUILDING ANALYTICS



Energy Monitoring:
How much energy is being used?

Analytics:
How efficiently is energy being used?

Energy Monitoring section?

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ALARM MANAGEMENT

ALARM MANAGEMENT – CLOUD BASED

What is an alarm?

An alarm is a event that has occurred in the BMS which needs to be reported to the right person(s). That person needs to take action.

What does the system do?

The system actively informs the correct person(s). The system provides information to allow an analysis of past (alarm) events.

- alarm portal
- alarm app – mobiles
- emails

Service organisation

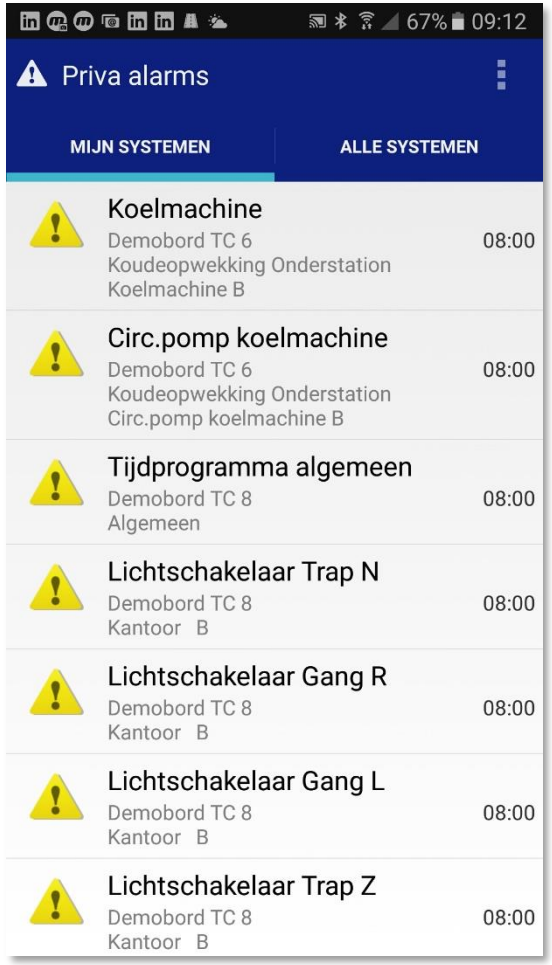
End-user

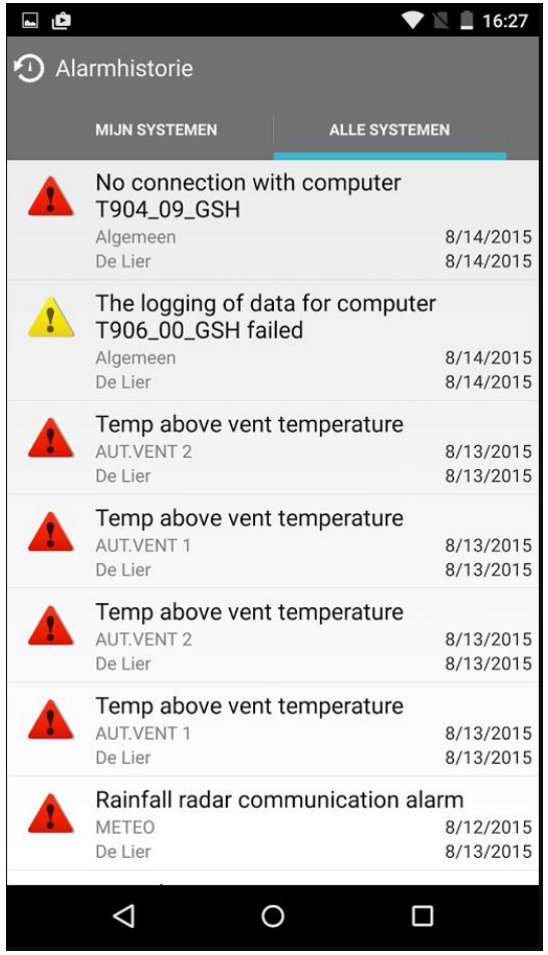
Fast service Ltd.

Solve problem remotely?

Service engineer

ALARM APP





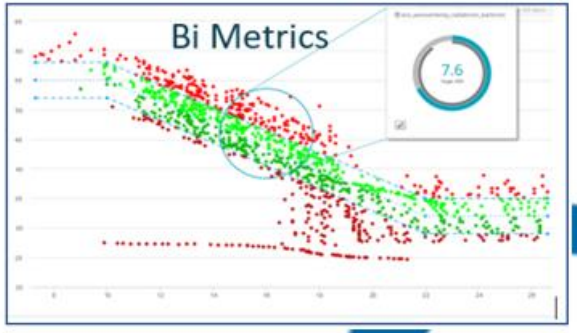
- Notification and forwarding of alarms
- View historical alarms
- Acknowledge alarms (not to be confused with resetting alarms)

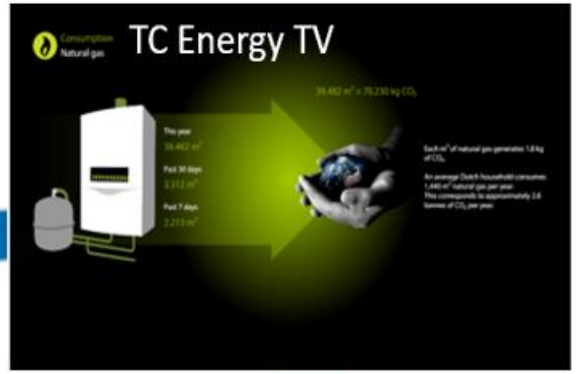
Download on the App Store

ANDROID APP ON Google play

Windows Store

BEYOND THE CLOUD





> Alarm Management

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THANK YOU FOR YOUR ATTENTION

WE ARE ON STAND 22