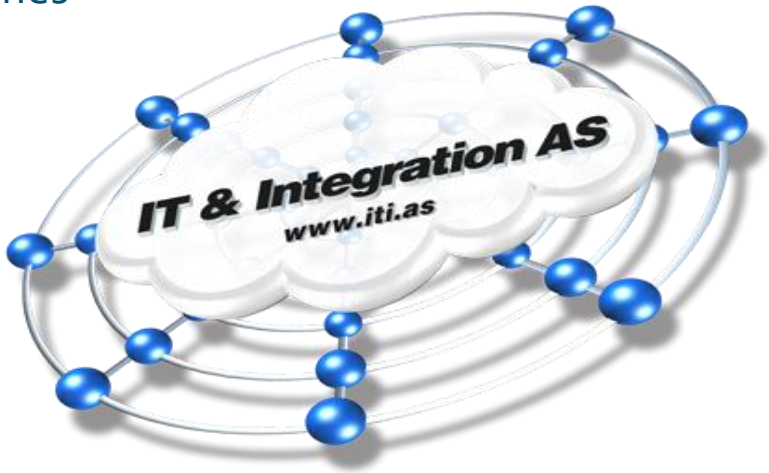
Service Templating in a Hybrid System Architecture

(Cross Platform META-Engineering)

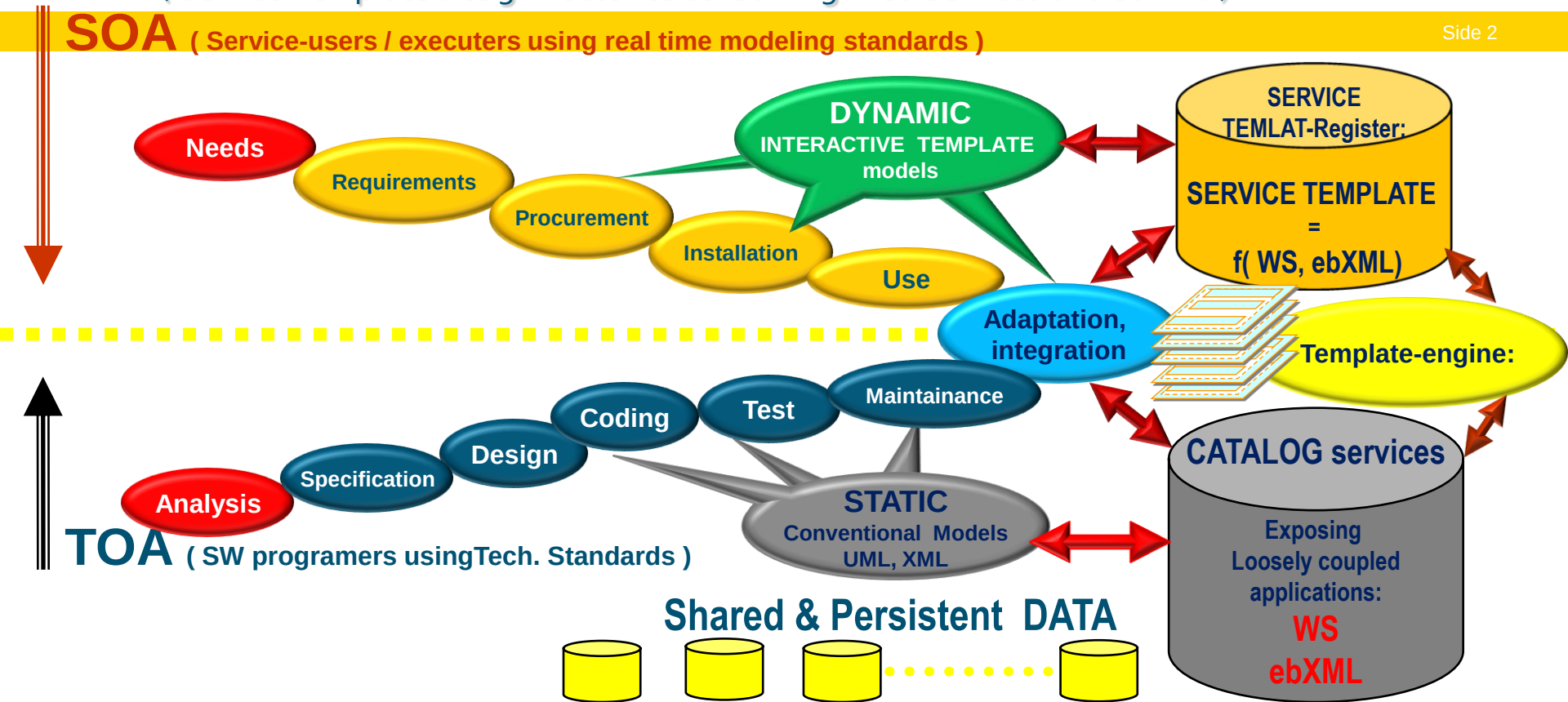
The basic "glue" between Environmental controlled Condition monitoring and User defined Scenario service templating with Working Processes' & Routines is EPR-eDevice and EPR-eFolder based Templates:

1. EPR-eFolder Template building blocks
2. EPR-eDevice Template building blocks



The new SOA and Hybrid way of doing XML-based SW design in Real Time

(Service Template Design Factories consuming Web Services and ebXML)

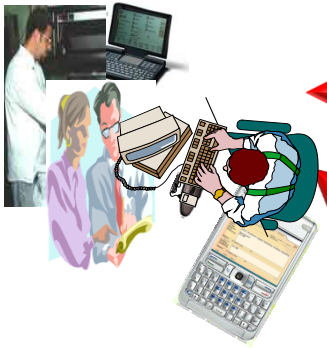


Hybrid System Architecture

(Dynamic Forms/Templates)

IT & Integration AS

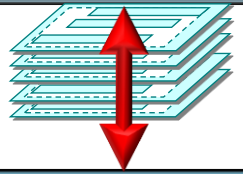
Browser clients(HTML5):



Roles/Actors

XMPP messaging

SOA Service driven (EPR-eFolder Scenario Templates)
Mirroring technology on business centric (semantic) terms and processes.

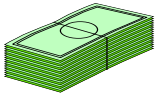


eFolders Processing of **Steering cards/Templates**"
(New way of SW Engineering)

TOA Technology & Platform driven (EPR-eDevice Templates)
- **EPR-eDevice Template RT models** (EPR-eDevice Dictionaries)
- **Semantic Web Services**

Traditional Data-systems

Service ID =



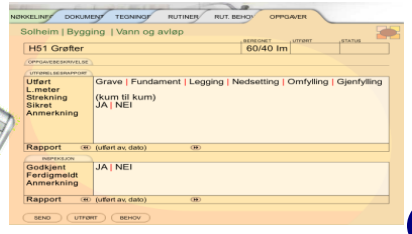
Transactions

Trading partners in **Supply Chain**
for eHealth-care services

Semantic Interoperability Standards Stack

(OASIS- TGF, CAM , BCM , SAML, ebSOA, BPEL , ...)

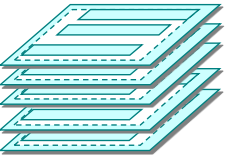
Source: OASIS BCM Lubash Pyramid

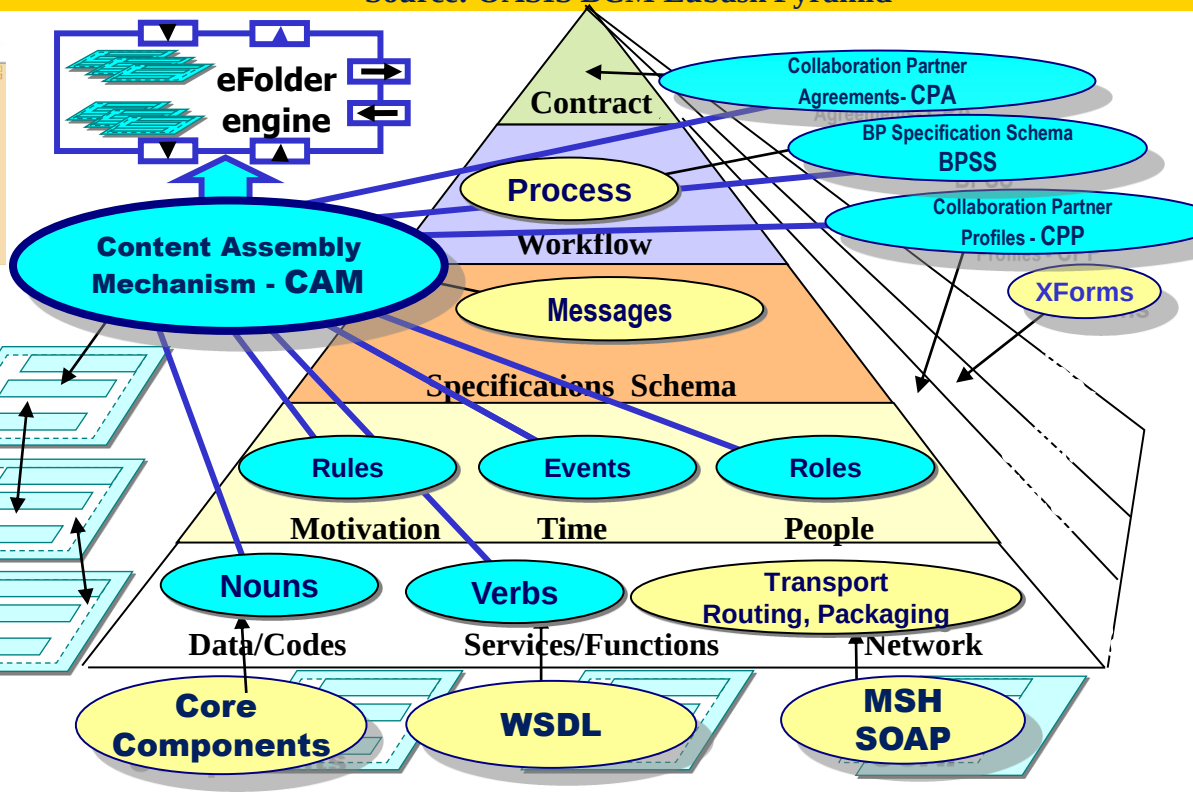


EPR-eFolder Templates:

Organizing and Orchestrating Loosely coupled applications

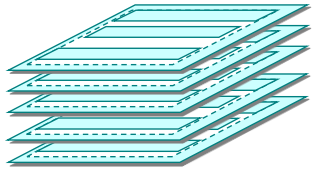
(ebXML, WS)





GS1 Service ID =

1. EPR-eFolder Template building blocks



EPR-eFolder: Super Structure's 4 groups of Role access

1: Service management:

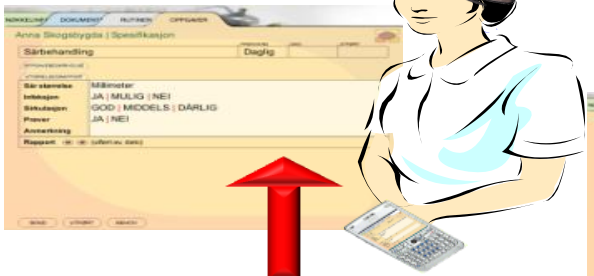
Template construction :

Spesification:

Based on a common rule regime (models)

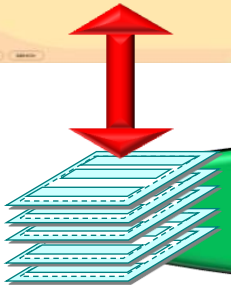
3: Service executor:

Service employees / Social network people



4: Service Receiver:

Citizens



Super Structure: An Infrastructure organized by user controlled service eFolders

2: Portal & System developers:

Portal and Legacy system programming

Legacy & Expert Systems With different business logic

EPR-eFolder: Service eFolder modeling in Real Time

(eFolder container with Task Folder and Steering card Templates)

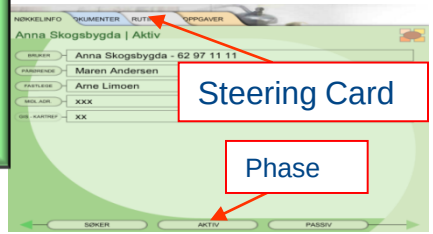
Super Structure Access:

Role

Single Sign-On portal:

Steering card:

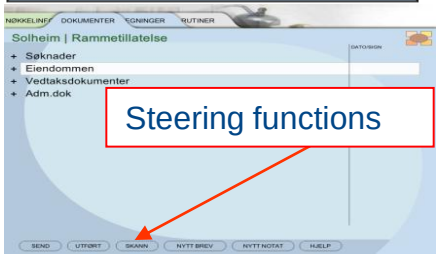
EPR-eFolder (eF:)
Service Phases

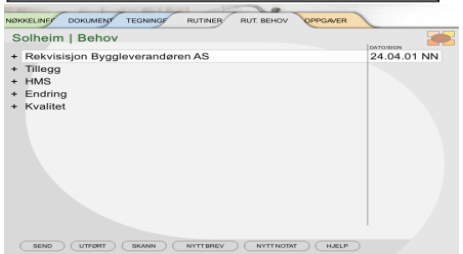


Content Card
(Document card)

Workflow Card
(Routine card)

Task Card
(Service card)





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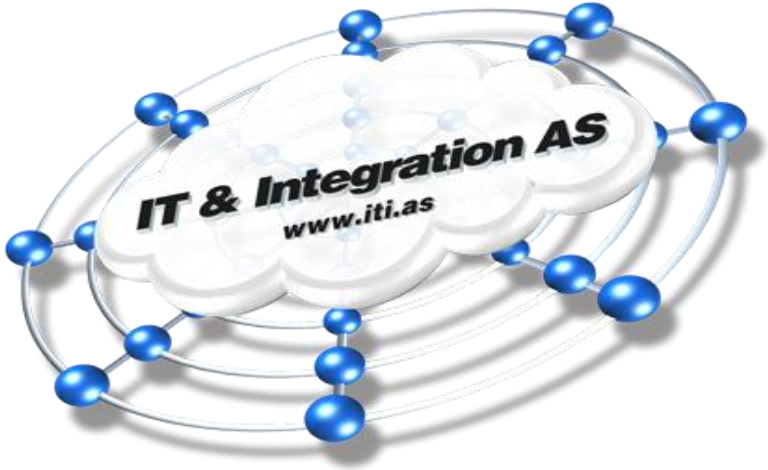
Demo

Some EPR-eFolder Scenario Template Examples:

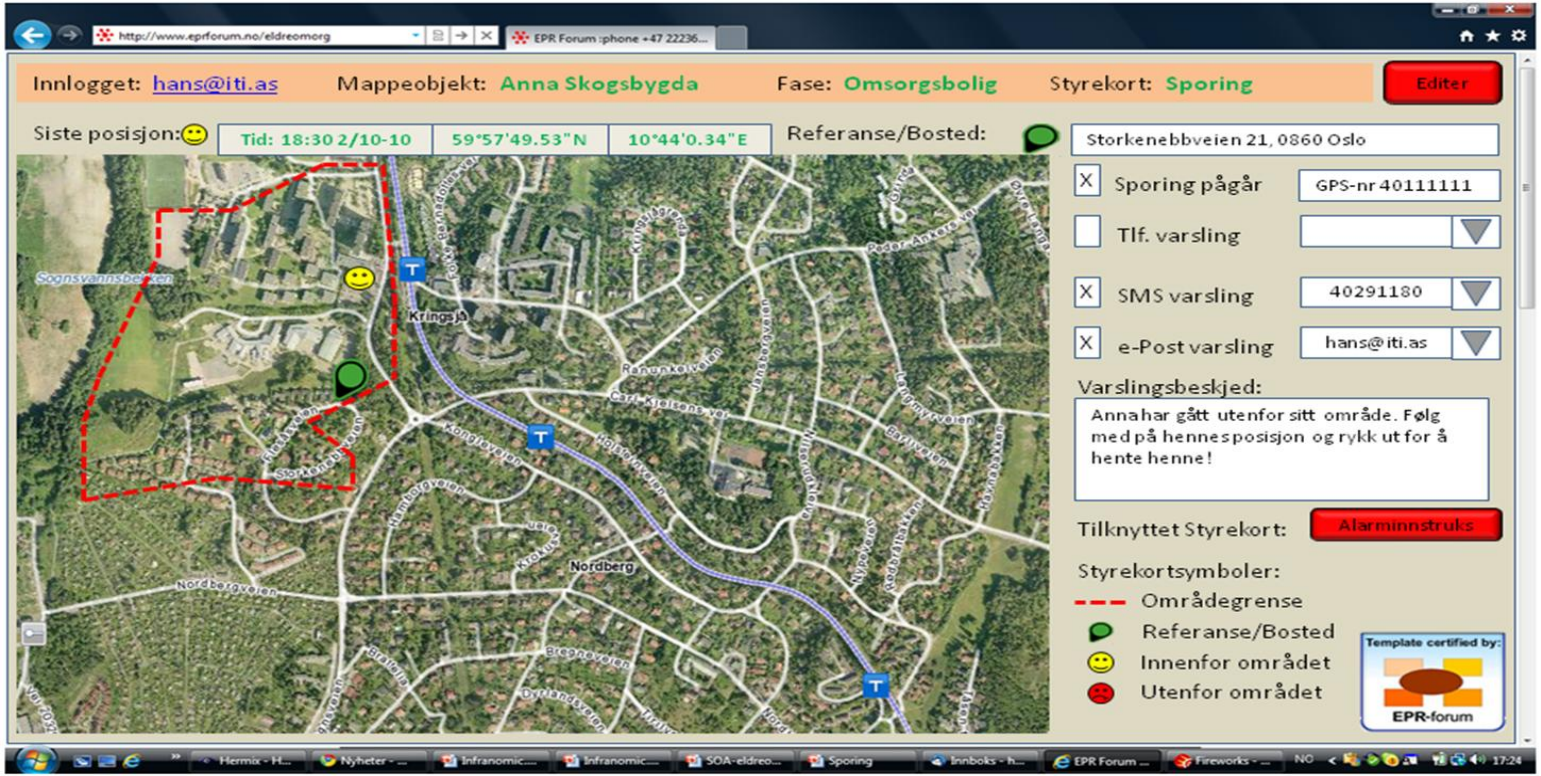
TEMPLATES are specified by Healthcare related people:
(Nurses, Doctors etc)

1. Tracing of a person
2. Fall & Movement of a person
3. Medication of a person
4. Access control to a person's house
5. Condition Monitoring of a person
6. Tracing missing Objects
7. Social security (Social Network)



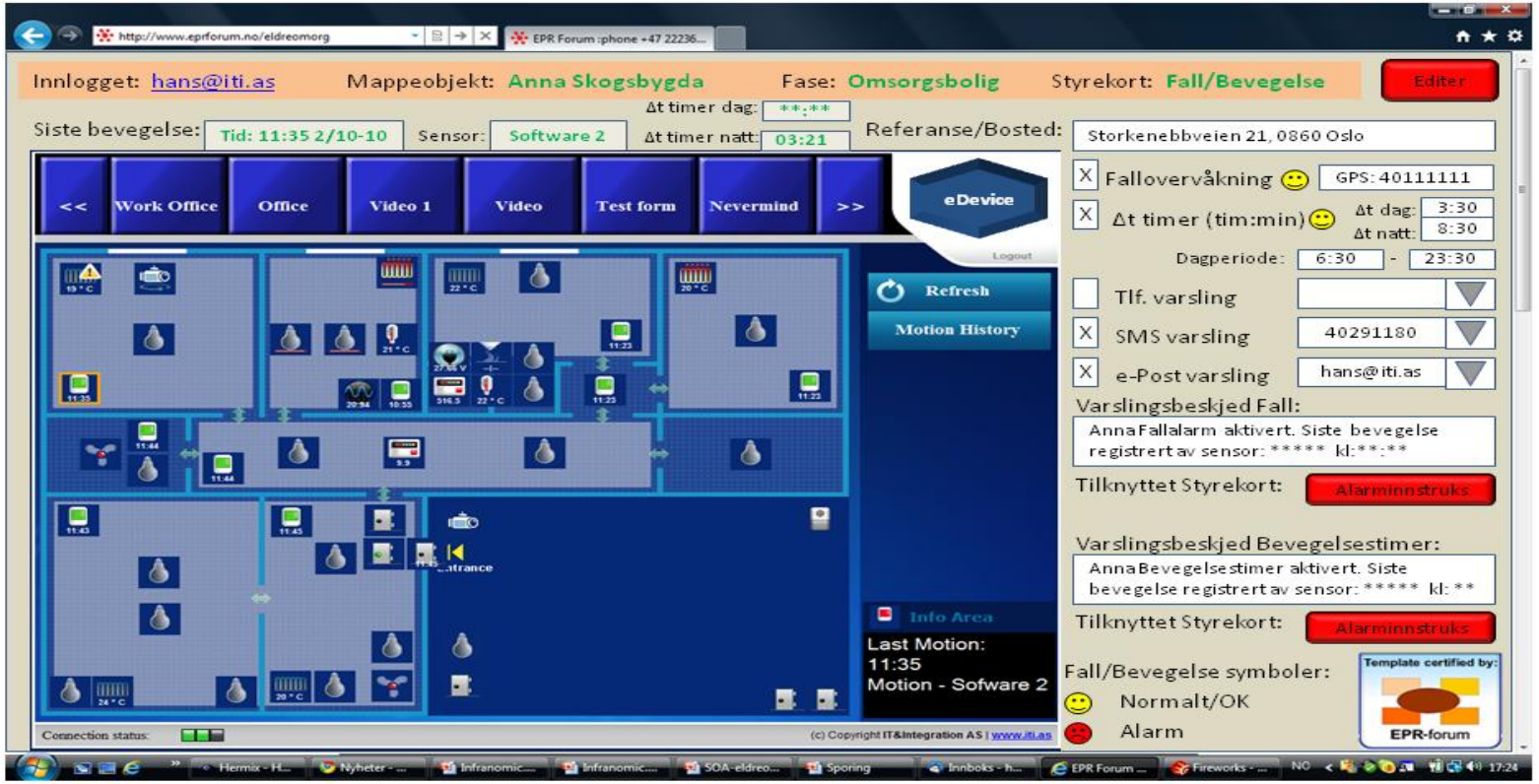
EPR-eFolder ScenarioTemplate-example 1:

Steering card "Tracing of Anna"



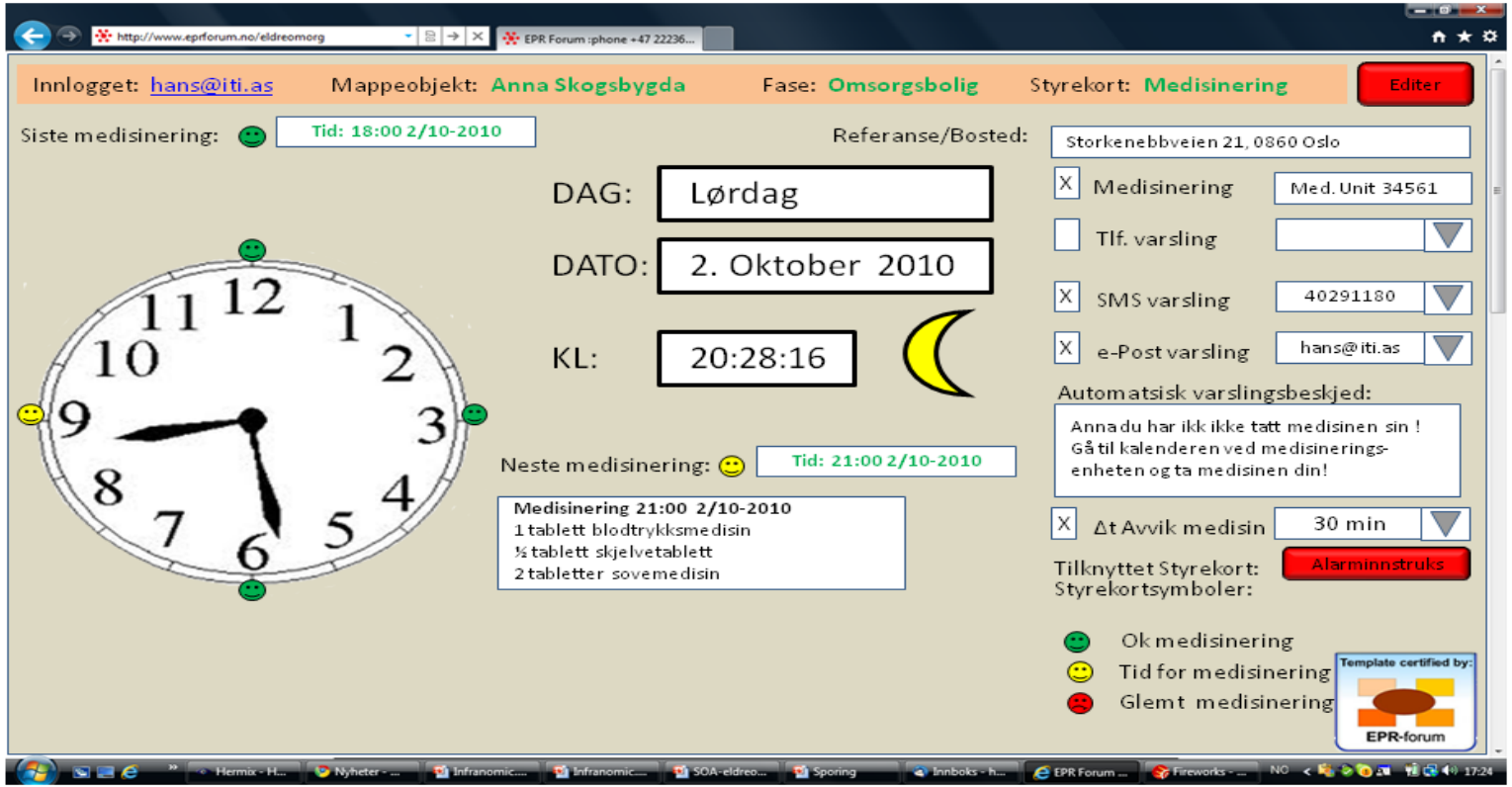
EPR-eFolder ScenarioTemplate-example 2:

Steering card "Fall/Movement tracking of Anna"



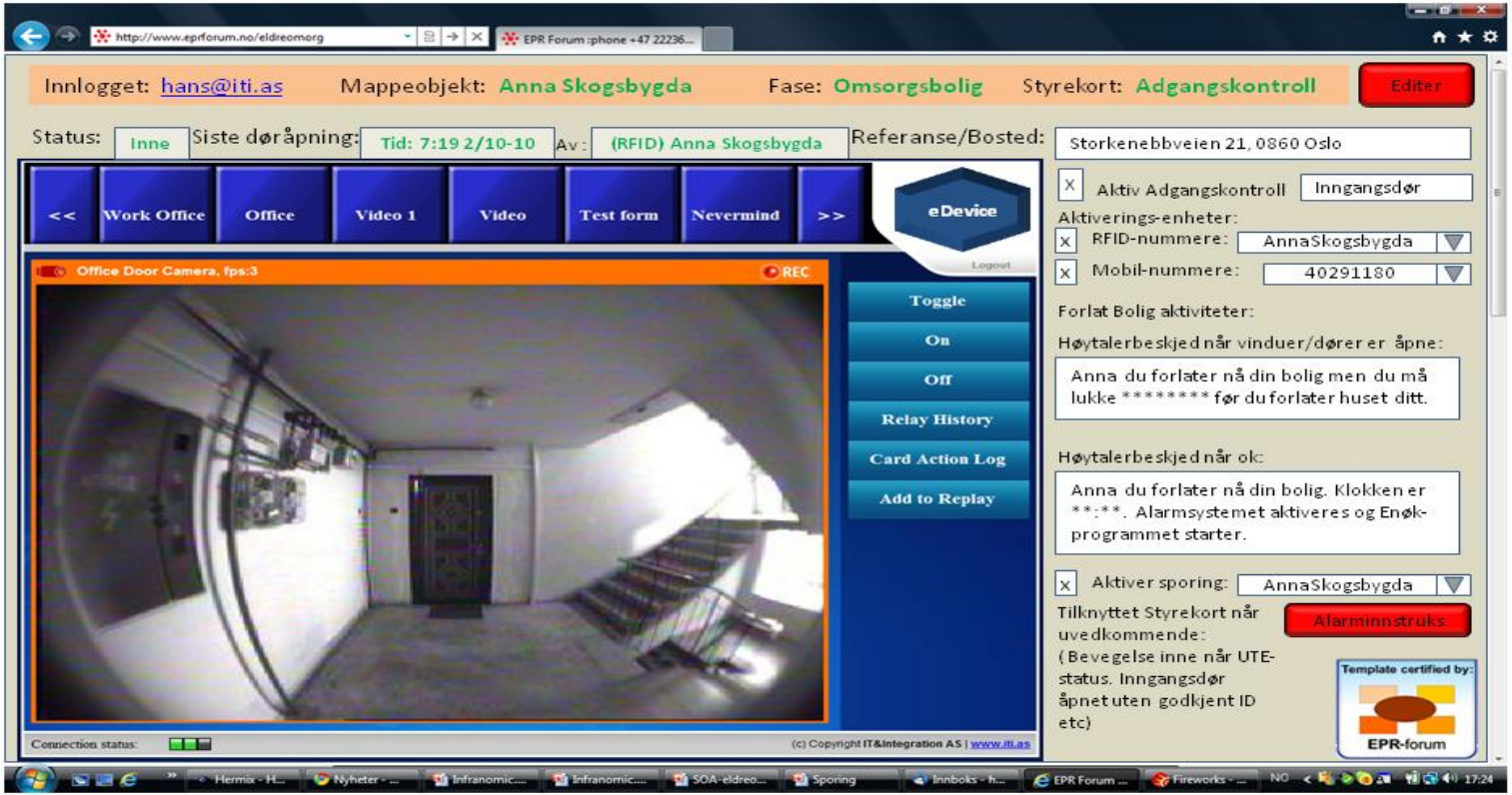
EPR-eFolder ScenarioTemplate-example 3:

Steering card "Medication of Anna"



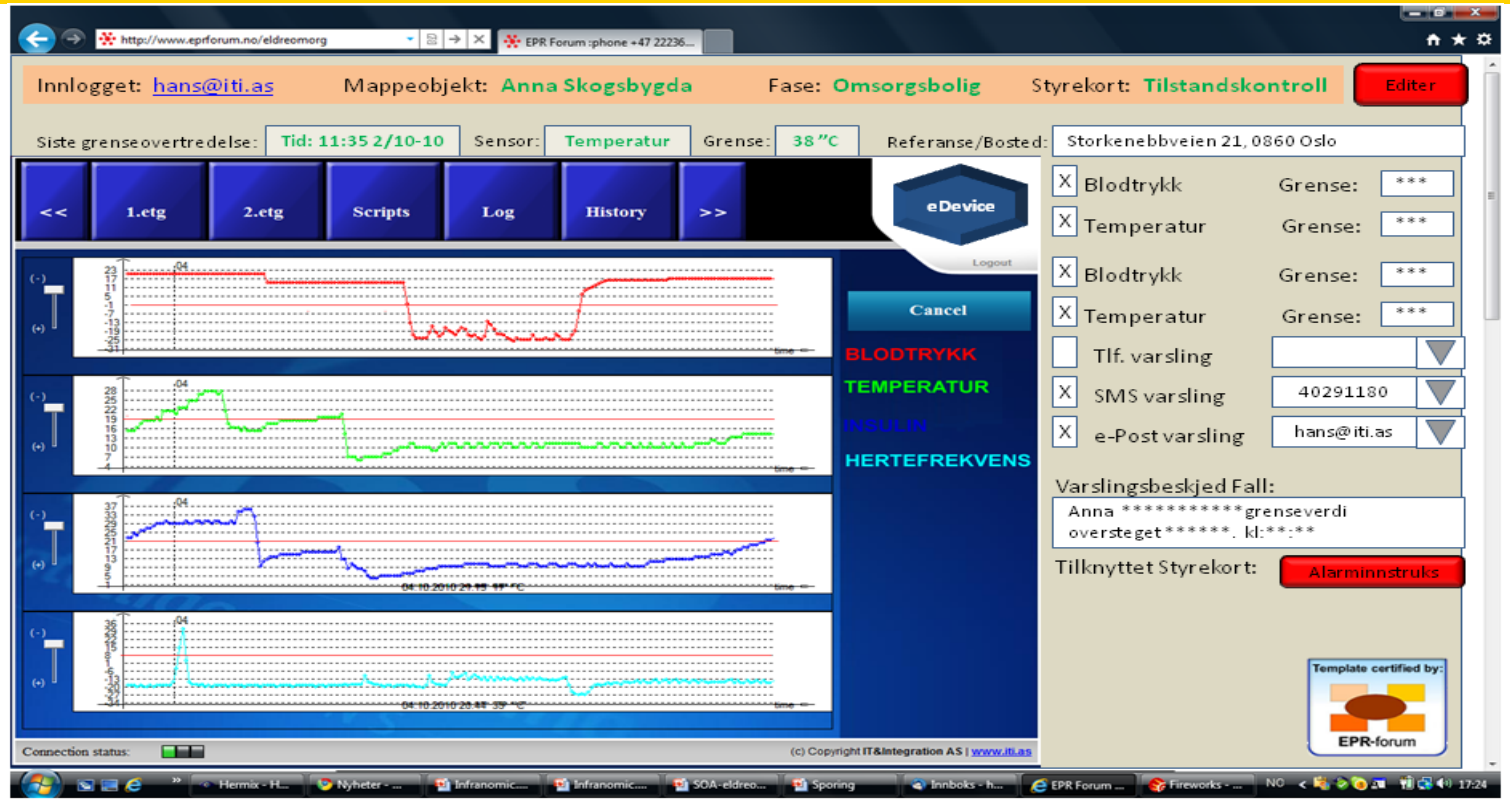
EPR-eFolder ScenarioTemplate-example 4:

Steering card "Access control of Anna's appartment"



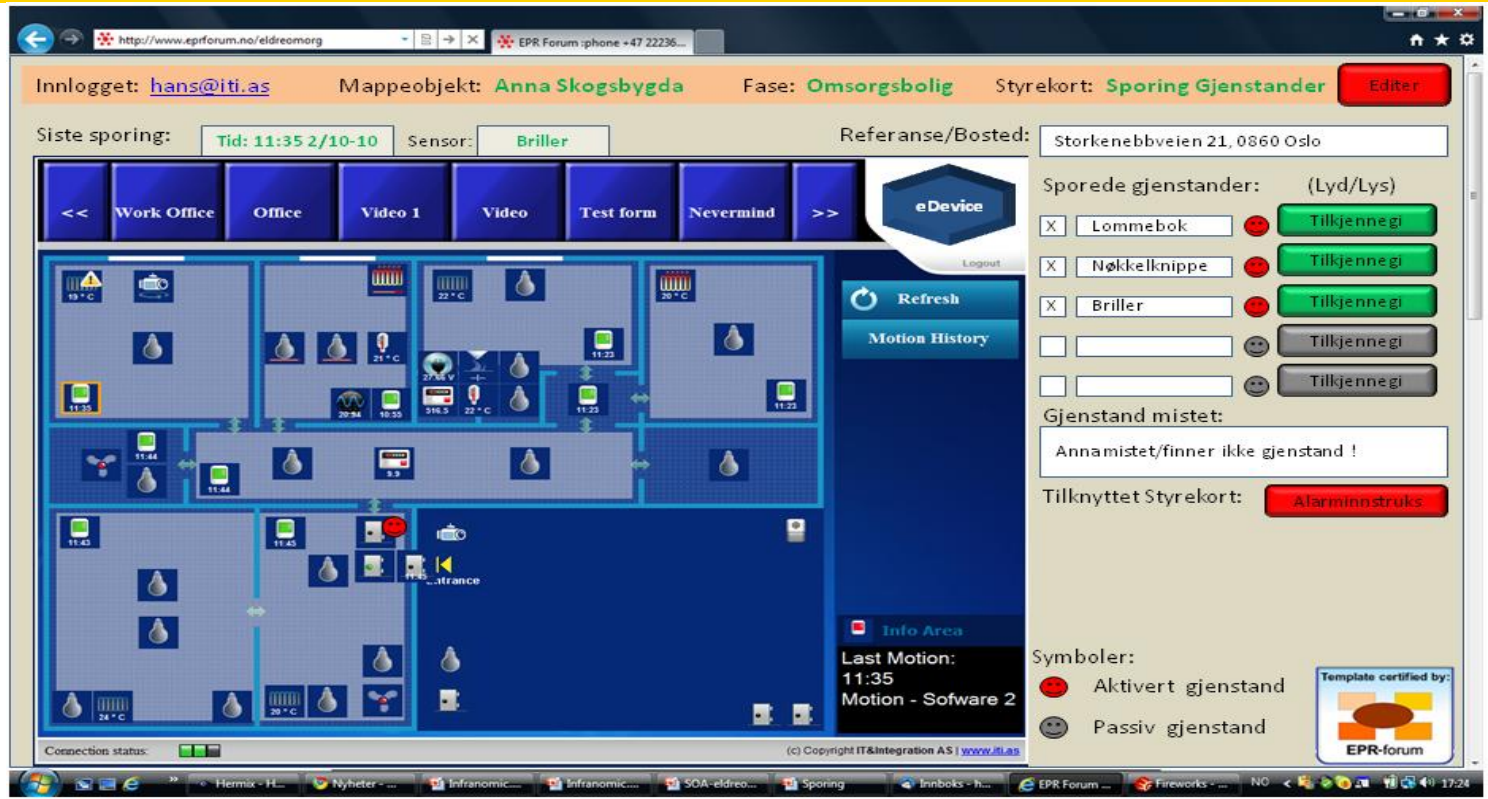
EPR-eFolder ScenarioTemplate-example 5:

Steering card "Condition Monitoring of Anna"



EPR-eFolder ScenarioTemplate-example 6:

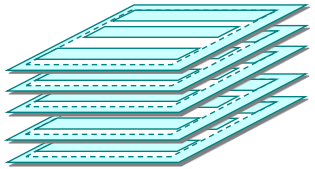
Steering card "Tracing of Anna's missed Objects"



EPR-eFolder ScenarioTemplate-example 7:

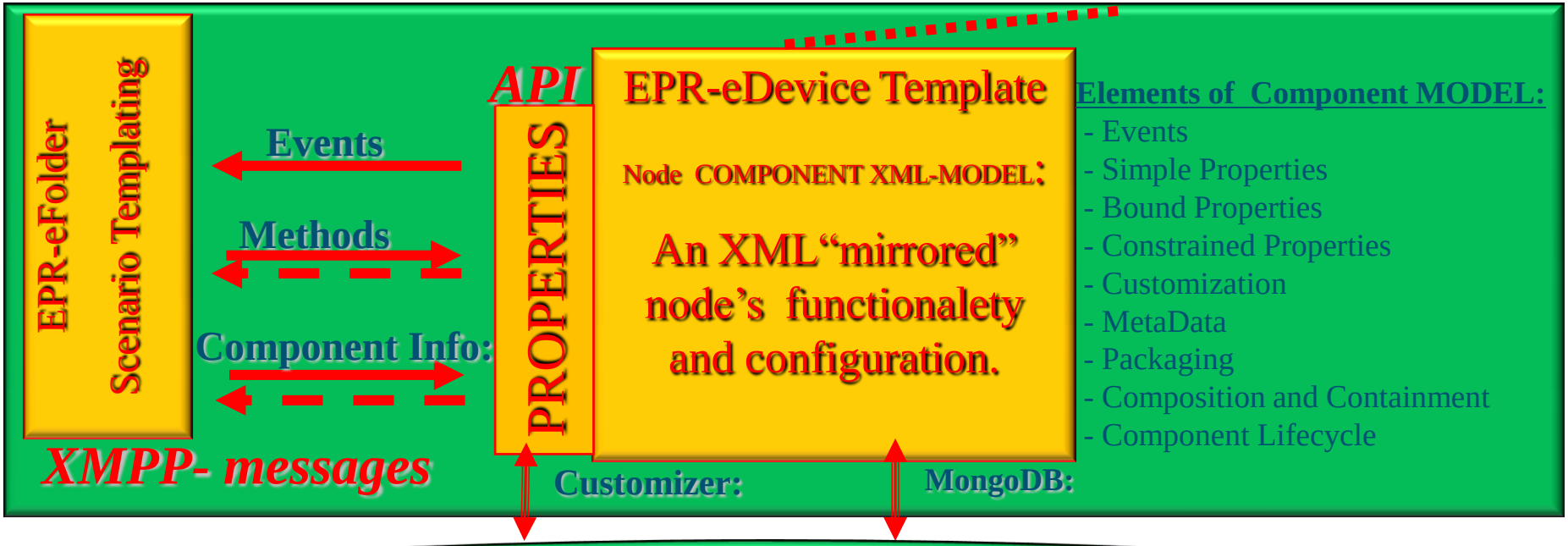
Steering card "Sosial security / Anna's social network"

2. EPR-eDevice Template building blocks



EPR-eDevice Template

Mirrored electronic device (node) as XML COMPONENT



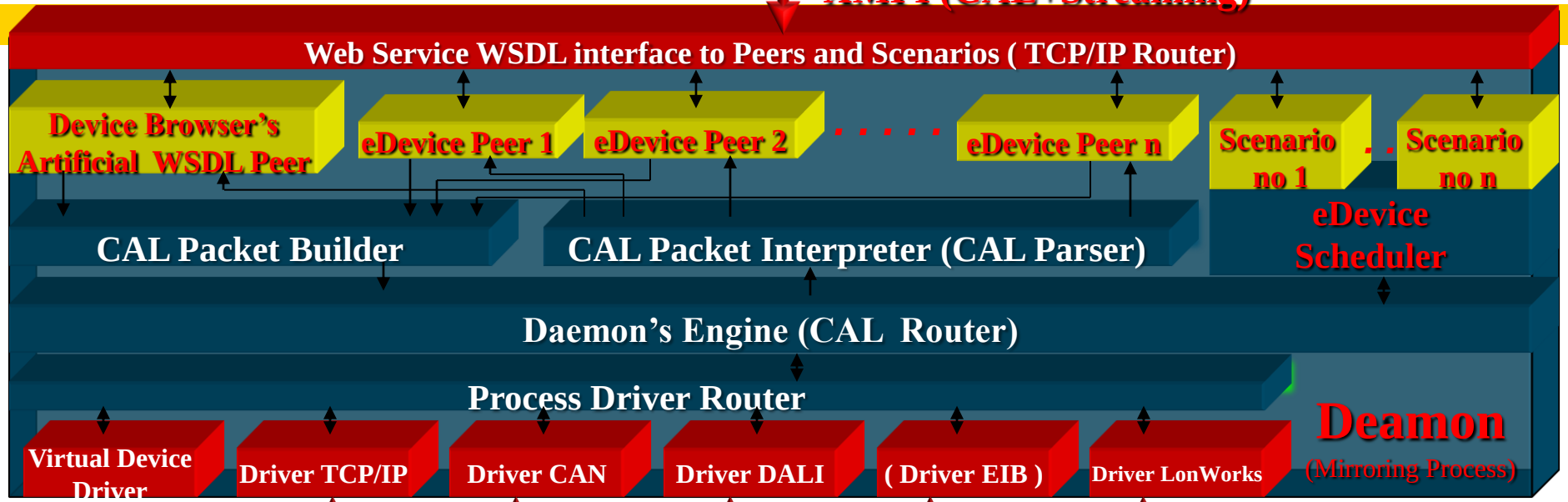
HermEss Process Server: (Peer = mirrored device)

IT & Integration AS

Process Server expose eDevice Templates handled by eFolder scenario Templates

Thin Server:

XMPP(CAL+Streaming)



Hardware BUS-interfacing:

TCP/IP CAN DALI KNX Lon . . . etc

Process Networks of different devices (Nodes)

Scenario variables

Universal Variables = User SCENARIO Variables

MEASUREMENTS:
(Environment Inputs)
- Temperature sensors (ºC)
- Humidity sensors (%RH)
- Blod Pressure sensors (Bar)
- Dimmer sensor (%)
- Speed sensor (m/s)
- Voltage sensor (Volt)
- Current sensor (Amp)
- Load sensor (kW)
- Consumption (kWh)
- Switch sensor (On/Off)
- Pulses (Counter)
- .

ACTUATORS:
(Environment Outputs)
- Voltage output (Volt)
- Level output (%)
- Dimmer output (%)
- Relay output (On/Off)
- .
- .
- .
- .

SYSTEM/GUI Values:
(Internal SW values)
- Thermostat setpoint (ºC)
- Alarm limits
- Clock
- Timer Event
- Intervals
- Stepvalue
- .
- .

EPR-eDevice :

WS Modeling building elements

Interoperability layers: (Application modeling+CAL)

Appl. Groups: (CX)

(Functional Profiles)
0x Universal
1x Audio/Video
2x Lighting
3x Communication
4x HVAC
5x Utility
6x Security
7x Appliance
8x Convenience
9x Food/Meal
Ax Medical/Health

Appl. Fuctions: (OB)

01 Node Control
02 CX Control
03 Data Chan. Rx
04 Data Chan. Tx
05 Binary Control
06 Binary Sensor
07 Analog Control
08 Analog Sensor
09 MultiPosition Control
0A MultiPosition Sensor
0B Matrix Output
0C Multiplane Output
0D Ganged Analog Ctrl
0F Meter
10 Display
11 Medium Transport
13 Dialer
14 Keypad
15 List Memory
16 Data Memory
17 Motor
19 Synthesizer-Tuner
1A Tone Generator
1C Counter/Timer
1D Clock

Appl. Variables: (IV)

b Boolean data (On/Off)
c Letters (ASCII text)
n Numbers (Integer)
d Binary data (Hex bytes)

CAL methods:

SETOFF
SETON
GETVALUE
GETARRAY
SETVALUE
SETARRAY
ADD
INCREMENT
SUBTRACT
DECREMENT
COMPARE
COMPARE_I
COPYVALUE
SWAP
EXIT
ALIAS
INHERIT
DISINHERIT
IF
DO
WHILE
REPEAT
BUILD

Control = System Output signal
Sensor = System Input signal

EPR-eDevice :

eDevice modelling CONTEXTS

Contexts are grouped in Industry Application Areas

Context(CX) = Application groups . CX=oo =General/Universal mandatory in all eDevices

Appl. Groups: (CX)

CX: Functional Profiles

- 0x General
- 1x Audio/Video
- 2x Lighting
- 3x Communication
- 4x HVAC
- 5x Utility
- 6x Security
- 7x Appliance
- 8x Convenience
- 9x Food/Meal
- Ax Medical/Health

0x General

- 00 Universal
- 02 User Interface
- 04 Data Channel
- 05 Time
- 0F House mode

1x Audio/Video

- 10 Audio Amp
- 11 Medium Transport
- 12 Tuner
- 13 Video Display
- 14 Audio Equalizer
- 15 Camera
- 17 Switch
- 18 A/V system
- 19 A/V system Control

2x Lighting

- 20 Light Sensor
- 21 Light
- 22 Lighting Zone
- 23 Light Status
- 29 Lighting Zone Control

3x Communications

- 30 Telecom
- 37 Intercom
- 38 -3F Computer/ Home Office

4x HVAC

- 40 Environmental Zone
- 41 Environmental Sensor
- 42 Environmental Status
- 43 Environmental Zone Control
- 44 Environmental Zone Equipment
- 45 Environmental System
- 46 Damper Control

5x Utility

- 50 Utility Metering
- 51 Utility Monitoring
- 54 Load Center
- 55 Load Center Control
- 56 Energy Control
- 57 Energy Management

6x Security

- 60 Security Sensor
- 61 Security Zone
- 62 Security Partition
- 63 Security Partition Control
- 64 Security Alarm

7x Appliance

- 70 Washer
- 71 Water Heater
- 72 Dryer
- 73 Refrigerator/Freezer
- 74 Range
- 75 Oven
- 76 Coffee Maker

8x Convinience

- 80 Window
- 81 Window Control
- 82 Door/Gate
- 83 Door/Gate Control
- 84 Pool/Spa
- 85 Pool/Spa Control
- 86 Bath
- 87 Fountain
- 88 Lift

9x Food/Meal

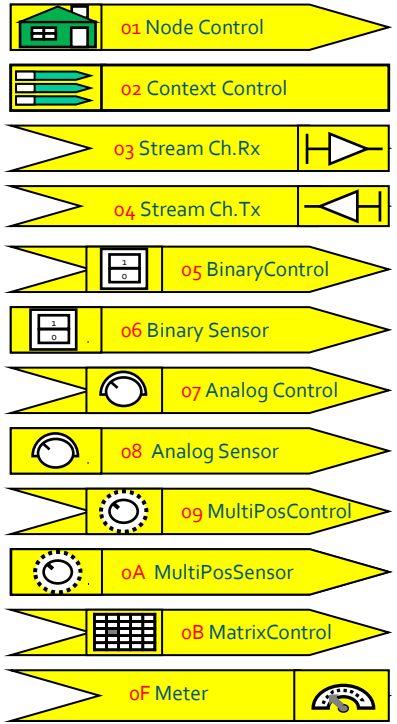
- 90
- 91
- 92
- 93
- 94
- 95

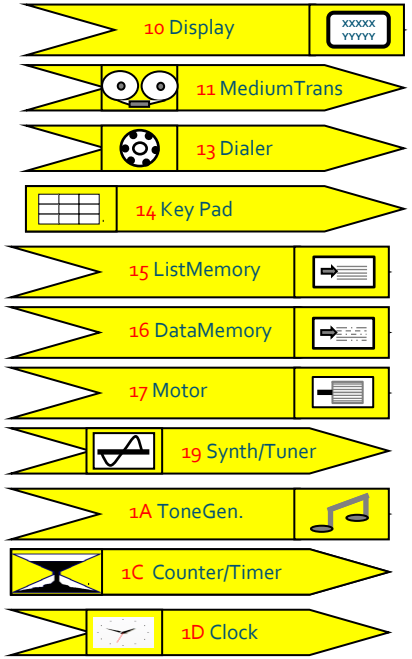
Ax Medical/Health

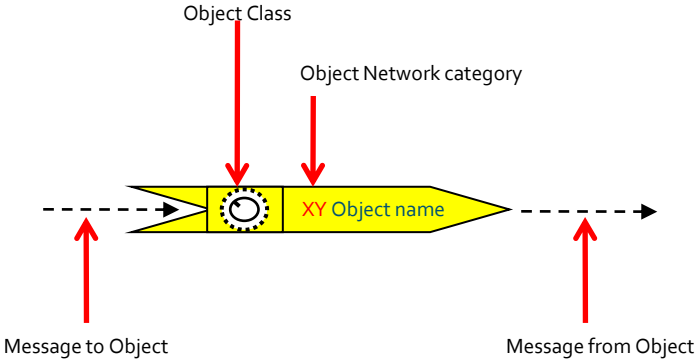
- A0
- A1
- A2
- A3
- A4
- A5

EPR-eDevice Modeling OBJECTS/Components (Symbols)

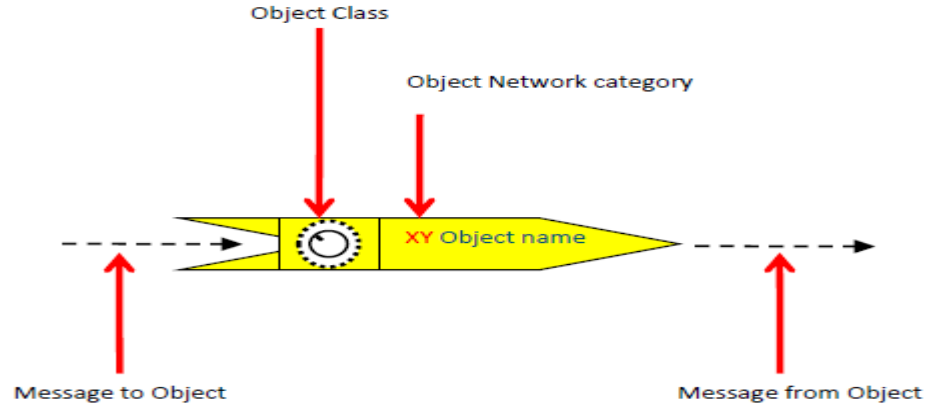
(Model elements made by CAM-Template eDevice Dictionary)







CAL META EPR-eDevice XML info. exchange message

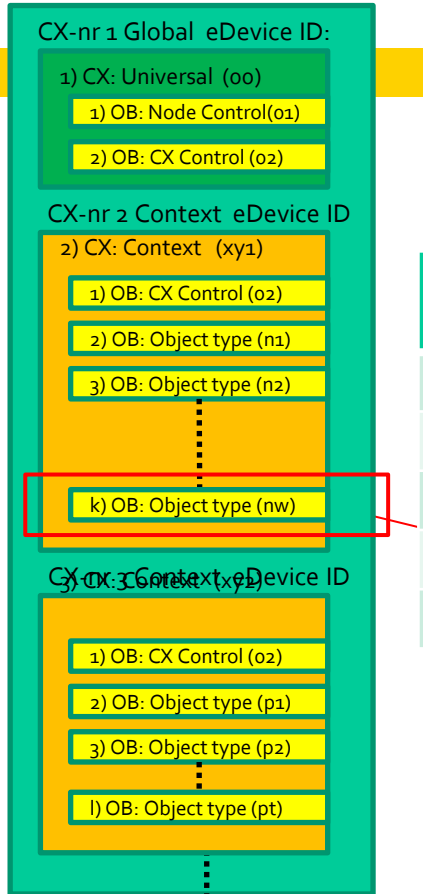


EPR-eDevice Variable Address in a IP based Home server **EPR-eDevice Variable Operation**

Server IP	Device ID	CX-no	OB-no	OB-IV	CAL-method	Argument/ Content
Prosess-server IP-address (Home server)	eDevice Unit Id-no (Bus Unit number)	eDevice CX-no (eDevice Fuctional application group = Object Class + Object Network category=XY)	eDevice OB-no (eDevice Object number. Number gives Object type name)	eDevice OB-IV (eDevice Operational Instant Variable)		

META EPR-eDevice XML model

EPR-eDEvice XML information model: (mirrored)



k) OB: Object type (nw)

IV-Lable	Read/Write	Type	Content
Name-1	R/W	b/c/n/d	xxxxxxxx
.	.	.	.
.	.	.	.
.	.	.	.
Name-x	R/W	b/c/n/d	yyyyyyyy

OB-01 Node Control (Mandatory)

Node Control Object				(01) Node Control
Contains IVs that apply to the entire node including address, node capability, configuration, and node power.				
IV	R/W	Type	Name	Context Function
w	R/W	b	power	device power, 0 = OFF, 1 = ON
l	R/W	b	on_offLine	1 = online, 0 = offline
s	R	c	serial_#	18 character (max) serial number
n	R	c	manuf_name	manuf. product name
m	R	c	manuf_model	manuf. product model
c	R	n	product_class	Product class number
p	R/W	c	product_name/location	Product name
h	R/W	d	system_address	system address
a	R/W	d	mac_address	unit address
g	R/W	d	group_address(s)	zero or more group addr.
b	R	n	capability_class	0,1,2,3...
reset	R/W	b	reset	resets device to factory defaults
o	R	d	context_list	list of contexts used in product
f	R/W	b	configured	1 = address configured
i	R	n	setup	used during configuration
u	R/W	n	user_feedback	user interface IV during config.
t	R/W	b	config_master	indicated node is configuring
d	R	d	source_mac_addr	unit addr. of last received pkt
e	R	d	source_system_addr	system addr of last received pkt
v	R	c	conformance_level	transport type/ver./HPnp ver.
k	R/W	d	authentication keys	one or more keys
R	R/W	d	reporting_condition	Allows reporting on the state of one of the IVs in this object
H	R/W	d	reporting_header	
A	R	n	reporting_address	
P	R/W	d	previous_value	

Det obligatorisk **identites-objektet** er i alle EPR-eDevice Modeller tilknyttet Contextet: **CX -oo Universal**

OB-02 Context Control (Mandatory)

Context Control Object			(02) Context control	
The context control object for this context.				
IV	R/W	Type	Name	Context Function
o	**R**	**d**	**object_list**	**list of objects used in context**
z	R/W	n	instance	Not used
f	R/W	b	context_configured	Not used
t	R	c	type	Not used
n	R/W	c	name_location	node location name text
l	R	n	local_zone_number	Not used

Det obligatorisk **kontroll-objektet** for alle typer Contexter i EPR-eDevice Modeller

OB-03 Stream Cha.Rx

Data Channel Receiver Object			(03) Stream Ch.Rx	
The object handles receiving medium band.				
IV	R/W	Type	Name	Context Function
C	**R/W**	**d**	**current_band**	**Active variable of object. The current band number being received. 0 = receiver disabled**
D	R	d	default_band	A default value for ”C” on power-up reset
m	R	n	medium	The numeric code used to represent the medium

”**m**” verdier for medium:
0 = TP
1 = CX
2 = FO
3 = IR
4 = RF
5 = PL
6 = AV

Dette objektet benyttes til å velge mottakende medium og kommunikasjons-bånd (kanal)

OB-04 Stream Cha.Tx

Data Channel Tranceiver Object			(04) Stream Ch.Tx	
The object handles tranceiving medium band.				
IV	R/W	Type	Name	Context Function
C	**R/W**	**d**	**current_band**	**Active variable of object. The current band number being received. 0 = receiver disabled**
D	R	d	default_band	A default value for ”C” on power-up reset
m	R	n	medium	The numeric code used to represent the medium
c	R/W	c	Carrier_type	Usually read-only value to indicate the carrier type used by the transmitter. Default is AM

”**m**” verdier for medium:

0 = TP
1 = CX
2 = FO
3 = IR
4 = RF
5 = PL
6 = AV

Dette objektet benyttes til å velge sendende medium og kommunikasjons-bånd (kanal)

OB-05 Binary Control

Binary Control Object name			(05) Binary Control	
The Object can be used to receive a message to the "current_position" to ON=1 or OFF=0 state.				
IV	R/W	Type	Name	Context Function
C	R/W	b	**current_position**	Active variable of Object: 1 = ON or true and 0 = OFF or false
D	R	b	default_position	Value that "C" assumes upon power-up or reset
F	R	d	function_of_positions	
p	R/W	b	persistence	0=C exhibits a momentary action when set on
P	R	n	previous_state	Reporting IVs
R	R/W	d	reporting_condition	
H	R/W	d	report_header	
A	R/W	d	report_address	

Dette objektet benyttes til å motta binær styring o eller 1 . Den kan også videresende til et annet Binary Control Object.

OB-o6 Binary Sensor

Binary Sensor Object name			(06) Binary Sensor	
Used to sense an on/off status. It can bind to a Binary Control object				
IV	R/W	Type	Name	Context Function
C	**R**	**b**	**current_state**	**Active variable of object.1 = ON or true 0 = OFF or false**
F	R	d	function_of_states	1 = occupied/0 = unoccupied
p	R/W	b	persistence	
P	R	n	previous_state	Reporting IV's
R	R/W	d	reporting_condition	
H	R/W	d	report_header	
A	R/W	d	report_address	

Dette objektet benyttes til å sende binær sensing o eller 1 . Den kan også videresende til et Binary Control Object.

OB-07 Analog Control

Analog Control Object name			(07) Analog Control	
Used to receive a message to control an analog output value as for example a voltage value to a dimmer.				
IV	R/W	Type	Name	Context Function
C	**R/W**	**n**	**current_value**	**Active variable of object. Can assume any numeric value**
D	R	n	default _value	Value that ”C” assumes upon power-up or reset
U	R	n	units_of_measure	Units of measure of ”C”
S	R	n	step_size	Value that ”C” changes when incremented or decremented
r	R	n	step_rate	Rate(time) of change of”C”when set to a new value. If 0 change is immediate
M	R	n	max_value	If used, the maximum value that ”C” can be set
N	R	n	min_value	If used, the minimum value that ”C” can be set
P	R	n	previous_value	Reporting IV’s
R	R/W	d	reporting_condition	
H	R/W	d	report_header	
A	R/W	d	report_address	

Dette objektet benyttes til å styre ut en analog output som varierer mellom en min_value og max_value som f.eks 0 Volt til 10 Volt DC. Den kan også videresende til et annet Analog Control Object eller til et Meter(0F), Motor(17), Synth/Tuner(19) eller ToneGen(1A) objecter.

OB-o8 Analog Sensor

Analog Sensor Object name			(08) Analog Sensor	
Used to sense a input value from the environment as a temperature, pressure etc				
IV	R/W	Type	Name	Context Function
C	**R/W**	**n**	**current_value**	**Active variable of object. Can sense any numeric value**
U	R	n	units_of_measure	Units of measure of ”C”
S	R	n	step_size	Smallest incremented that ”C” changes
M	R	n	max_value	If used, the maximum value that ”C” can sense
N	R	n	min_value	If used, the minimum value that ”C” can sense
P	R	n	previous_value	Reporting IV’s
R	R/W	d	reporting_condition	
H	R/W	d	report_header	
A	R/W	d	report_address	

Dette objektet benyttes til å måle en analog input som varierer mellom en min_value og max_value som f.eks - 30 °C til + 30 °C. Den kan også videresende til et Analog Control Object eller til et Meter(0F), Motor(17), Synth/Tuner(19) eller ToneGen(1A) objects.

OB-09 Multiposition Control

Multiposition Control Object name			(09) Multiposition Control	
Used to receive a message to control any positive integer output value over a range from 0 to n.				
IV	R/W	Type	Name	Context Function
C	**R/W**	**n**	**current_value**	**Active variable of object. Can assume any positive integer value**
D	R	n	default _value	Value that ”C” assumes upon power-up or reset
n	R	n	number_of_positions	Possible values of ”C”
F	R	d	function_of_positions	
p	R	b	persistence	0=C exhibits a momentary action when changed ,1=C remains at value set
P	R	n	previous_value	Reporting IV’s
R	R/W	d	reporting_condition	
H	R/W	d	report_header	
A	R/W	d	report_address	

Dette objektet benyttes til å styre ut et funksjonsnr (heltall) fra o til n output. Den kan styre et annet Multiposition object eller videresende verdi til et Matrix Control(oB) eller Synth/Tuner(19) objecter.

OB-oA Multiposition Sensor

Multiposition Sensor Object name				(0A) Multiposition Sensor
Used to receive a message to control any positive integer output value over a range from 0 to n.				
IV	R/W	Type	Name	Context Function
C	**R/W**	**n**	**current_value**	**Active variable of object. Can assume any positive integer value**
D	R	n	default _value	Value that ”C” assumes upon power-up or reset
n	R	n	number_of_positions	Possible values of ”C”
F	R	d	function_of_positions	
p	R	b	persistence	0=C exhibits a momentary action when changed ,1=C remains at value set
P	R	n	previous_value	Reporting IV’s
R	R/W	d	reporting_condition	
H	R/W	d	report_header	
A	R/W	d	report_address	

Dette objektet benyttes til å styre ut et funksjonsnr (heltall) fra o til n output. Den kan styre et annet Multiposition object eller videresende verdi til et Matrix Control(oB) eller Synth/Tuner(19) objecter.

OB-oB Matrix Switch

Matrix Switch Object name			(0B) Matrix Switch
Used to sense an input position and at the same time also control an output position over a range from 0 to n.			

IV	R/W	Type	Name	Context Function
C	**R/W**	**n**	**input_position**	**Active variable of object. Can assume any positive integer value**
D	R	n	default _input_position	Value that ”C” assumes upon power-up or reset
n	R	n	number_of_input_positions	Possible values of ”C”
F	R	d	function_of_input_positions	
o	**R/W**	**n**	**output_position**	**Active variable of object. Can assume any positive integer value**
e	R	n	default _output_position	Value that ”o” assumes upon power-up or reset
m	R	n	number_of_output_positions	Possible values of ”o”
f	R	d	function_of_output_positions	
P	R	n	previous_value	Reporting IV’s. Note that only the position of ”C”or ”o” can be reported at a time
R	R/W	d	reporting_condition	
H	R/W	d	report_header	
A	R/W	d	report_address	

Dette objektet skal bare benyttes I spesielle applikasjoner hvor man ikke kan benytte 2 Multiposition Control objekter.

Dette objektet er bare benyttet I Context 16: Switch. Typisk binding er med et annet Matrix Switch objekt eller mot Multiposition Control(09) objektet.

OB-oF Meter

Meter Object name			(0F) Meter	
Used to model an analog display function simelar to a mechanical meter movement, bar graph or level indicator.				
IV	R/W	Type	Name	Context Function
C	**R/W**	**n**	**current_value**	**Active variable of object. The display value of the meter.**
D	R	n	default _value	Value that ”C” assumes upon power-up or reset
U	R	n	units_of_measure	Units of measure of ”C”
S	R	n	step_size	Value that “C” changes when incremented or decremented.
M	R	n	max_value	If used, the maximum value that ”C” can be set
N	R	n	min_value	If used, the maximum value that ”C” can be set

Dette objektet mottar en analog måleverdi som evt kan kobles til et Disply. Måleverdien kan mottas fra Analog Sensor(08) eller Analog Control(07) objektene og måleverdien kan begrenses innenfor max og min verdi hvis ønskelig.

OB-10 Display

Display Object name	(10) Display

Used to model any character to a row and colomn in a character oriented display.

IV	R/W	Type	Name	Context Function
C	**R/W**	**c**	**current_character**	**Active variable of object. The character to be read or written at the current row and column position.**
r	R/W	n	current _row	Current row number of ”C”
c	R/W	n	current _column	Current column number of ”C”
a	R	n	number_of _rows	Total numbers of rows in the Display
b	R	n	number_of _columns	Total numbers of colums in the Display
x	R	n	default_row	The current row on power-up or reset
y	R	n	default_column	The current column on power-up or reset
e	R/W	b	display_enable	1=display on , 0=display off
q	R/W	n	Character_color	The current character color
z	R/W	n	background_color	The current background color or pattern
clr	R/W	b	clear_screen	1=display is cleared and ”r” and ”c” are reset to 0 or default

Dette objektet mottar en karakter-verdi som plasseres i et Display på angitt linje og kolonne. Objektet kan modellere både alpha-numeriske og grafiske displayer. Karakterene kan skrives en av gangen eller som en gruppe.

“r” og “c” peker til den nestte tilgjengelig karakter-posisjon. Karakterene mottas for eksempel fra Keypad(14) objektet.

OB-11 Medium Transport

Medium Transport Object name	(11) Medium Transport

Used to model the functions of theTransport Medium used by TV, PC,PDA,SmartPhones,VCR, Camera, DVD-players, etc

IV	R/W	Type	Name	Context Function
C	**R/W**	**n**	**current_motion**	**Active variable of object. Value that defines the motion mode of the transport.**
p	R/W	b	pause_mode	1=paused, 0=not paused
I	R/W	n	index	Modify the actions of ”C”. 0=index search disabled. Any other value moves transport to index location.
r	R/W	n	frame	Frame/track number. Modifies the action. 0= frame search disabled. >0 moves transport to frame number
c	R/W	n	chapter	Chapter/program number. 0= chapter search disabled. >0 moves transport to chapter number
w	R/W	n	slow_play_speed	Speed of the transport in slow play mode
n	R/W	n	Scan_speed	Speed of the transport while in scan mode (forward or reverse)
l	R/W	b	meadium_load	0=medium out, 1=medium loaded
m	R	n	medium	The medium supported by the transport
P	R	n	previous_value	Reporting IV’s.
R	R/W	d	reporting_condition	
H	R/W	d	report_header	
A	R/W	d	report_address	

Dette objektet administrerer overførings-funksjonene på et gitt medium og mottar normalt meldinger fra en MultiPosition Control(09) objekt som velger kanaler og programmer for en VCR, filmkamera, DVD/Blueray-spillere etc. Ojektet er foreløpig bare i bruk under Context 11 **Medium Transport**

OB-13 Dialer

Dialer Object name	(13) Dialer

Used to model a device that perform number dialing.

IV	R/W	Type	Name	Context Function
C	**R/W**	**c**	**number_to_dial**	**Active variable of object. The number string to dial.**
d	R/W	b	dialing_state	Dialing activity. 1=number being dialed, o=dialing complete, dialer idle
p	R/W	b	pulse_TT	Select pulse (0) or TT(1) dialing
m	R	b	default_dialing_mode	Default value of ”p”
P	R	n	previous_value	Reporting IV’s. Reports ”d”
R	R/W	d	reporting_condition	
H	R/W	d	report_header	
A	R/W	d	report_address	

Dette objektet administrerer oppringing funksjonen og mottar normalt meldinger fra et Keypad(14) objekt et eller Binary Control(05) objektet.

Dette objektet benyttes i Communication Contexts (3x): Modem, Telephone, etc

OB-14 Keypad

Keypad Object name	(14) Keypad

Used to model generated character strings(single character or a string)evice that perform number dialing.

IV	R/W	Type	Name	Context Function
C	**R**	**c**	**current_key**	**Active variable of object. A character string (1 to n characters).**
k	R	b	new_key	current _key ready. 1=new ”C” value available. Transition to 0 when ”C” read or reported.
P	R	c	previous_key	PReporting IV’s. Previous value of ”C”
R	R/W	d	reporting_condition	
H	R/W	d	report_header	
A	R/W	d	report_address	

Dette objektet rapporterer Keypad –v erdier til objekter som Dialer(13), List memory(15) eller Display(10) .

OB-15 List Memory

List Memory Object name	(15) List memory

Used to model a memory storage for a series of identical length strings.

IV	R/W	Type	Name	Context Function
l	**R/W**	**c**	**item_list**	**Active variable of object. A byte array of ”a” items, each one ”b” bytes long**
C	**R/W**	**n**	**current_item**	**An index ”pointer” to an entry in the item_list.**
a	R	n	lenght_of_list	Number of items in the memory block
b	R	n	length_of_item	The byte length of each entry in item_list.

Lagerområdet er byte-orientert og så stort som den tilknyttede applikasjonen trenger. Hvert item i listen har samme lengde, men hvis ett item ikke blir fyllt helt ut blir resten av bytene satt inn med “space” eller terminert med en null-byte. For å lese og skrive til et item må “C” settes til index nummer som varierer fra 0 til length_of_list -1 , deretter kan man benytte CAL-kommandoene setValue eller getValue for å skrive eller lese i “l”. Er det bare ett item er C=0 . Dette objektet mottar data fra Keypad(14) objektet.

OB-16 Data Memory

Data Memory Object name	(16) Data Memory

Used to model a memory area to read and write any type of binary data.

IV	R/W	Type	Name	Context Function
I	**R/W**	**d**	**Memory_block**	**Active variable of object. A data memory block , size_of_memory bytes long**
C	**R/W**	**n**	**current_index**	**An index ”pointer” to a record.**
a	R	n	size_of_memory	The size of ”I” in bytes
b	R	n	length_of_record	The byte length of each record in the memory block.

Lageområdet er byte-orientert og så stort som den tilknyttede applikasjonen trenger. Lageområdet er organisert med ett antall records eller som en hel data-block. Hvis den er organisert med records peker “C” til aktuelle record som skal leses eller skrives til og “b” angir lengden av hver record. C=0 indikerer første record og C= length_ofrecord-1 angir siste record. Før man kan lese eller skrive til en record må man sette “C” til aktuelle record før man kan lese eller skrive med getArray og setArray.

Er det bare en data-block vil “C” være 0 . “C” beholder sin peker utfra siste lesing eller skriving.

OB-17 Motor

Motor Object name	(17) Motor

Used to model the operation of a motor control.

IV	R/W	Type	Name	Context Function
C	**R/W**	**n**	**current_speed**	**Active variable of object. Sets the motor speed. Default range is 0-100 (min to max)**
o	R/W	b	on_off	Motor on/off control . Default value is off
D	R	n	default_speed	Default value of ”C”
r	R	n	reverse	0=forward, 1=reverse
N	R	n	minimum_speed	Minimum value of ”C”
M	R	n	maximum_speed	Maximum value of ”C”
S	R	n	step_size	Smallest change in ”C”

Motor objektets modell er ment til å styre hastigheten til en motor. Stepvis verdi på motorhastighet kan også håndteres.

Binding kan gjøres ved å motta meldingsverdi på hastighet fra Analog Sensor(o8) objektet eller å starte/stoppe motoren med Binary Sensor (6) objektet.

OB-19 Synthesizer/Tuner

Synthesizer/Tuner Object name	(19) Synthesizer/Tuner

Used to models a frequency synthesis or tuning function.

IV	R/W	Type	Name	Context Function
C	**R/W**	**n**	**current_frequency**	**Active variable of object. The frequency setting of the object**
D	R	n	default_frequency	Default value of ”C” on power-up or reset
U	R	n	Tuning_units	The frequency units of measure value
N	R	n	min_frequency	Minimum value of ”C”
M	R	n	max_frequency	Maximum value of ”C”
S	R	n	step_size	Smallest increment of ”C”

Synthesizer/Tuner objektets modell er ment til å styre frekvenssyntese eller tuning-funksjon benyttet I Context er hvor tuning gjøres ved frekvens-tilpasning fremfor kanal-valg. Typiske tuning-funksjoner er FM-mottakere eller TV-frekvensvalg. hastigheten til en motor.

Binding kan gjøres ved å motta frekvenssverdier fra Analog Sensor(08) objektet eller Analog Control(07) objektet.

OB-1A Tone Generator

Tone Generator Object name	(1A) Tone Generator

Used to model the operation of an alarm sound or audiable alert tone function.

IV	R/W	Type	Name	Context Function
C	**R/W**	**b**	**alarm_state**	**Active variable of object. Turns the tone on or off (0=off)**
t1	R/W	b	tone_1	Tone frequency in kHz. t1 is the default frequency. t1=0 indicates no tone
t2	R/W	n	tone_2	An optional alternate tone for use with ”n” and ”m” for an alternating tone alarm. t2=0 indicates no tone
n	R/W	n	on_time	Used for alarm duty cycle. Time that t1 is on in tenths of seconds
m	R/W	n	off_time	The duty cycle off time for t1 in tenth of seconds. If t2 is used, it will be the time t2 is on

The Tone Generator objektet modell for styring av alarm/sirene lyd mottar melding vanligvis fra Binary Sensor(o6) eller

Analog Sensor(o8) objektet.

OB-1C Counter/Timer

Counter/Timer Object name	(1C) Counter/Timer

Used to model a general-purpose counter or timer function

IV	R/W	Type	Name	Context Function
C	**R/W**	**n**	**current_count**	**Active variable of object. The count value in defined units indicated in ”U”**
D	R	n	default_speed	Default value for ”C” on power-up or reset.
U	R	n	units_of_measure	The units that ”C” is counting
t	R/W	n	target_count	The terminal count for ”C”. Upon reaching this vallue the count will stop
e	R/W	b	count_enable	1=count enabled, 0=count disabled
u	R/W	b	Up_down	1=count up, 0=count down
P	R	n	previous_value	Previous value of ”C”
R	R/W	d	reporting_condition	Reporting IV’s when count down
H	R/W	d	report_header	
A	R/W	d	report_address	

Counter/Timer objektet kan telle opp eller ned de telle-enhetene eller antall begivenheter(events) . Telle-verdien “C” kan telle ned til o eller opp til target_count. Typisk binding kan gjøres ved å motta meldingsverdier fra Analog Control(07) objektet eller Multiposition Control(09) objektet.

OB-1D Clock

Clock Object name	(1D) Clock

Used to model a real-time clock function

IV	R/W	Type	Name	Context Function
C	**R/W**	**c**	**current_time**	**Active variable of object. Current yymmddhhmmssw (13 karakterer) string.**
t	R/W	c	hh_mm_ss	Optional hours/minutes/seconds portion of the current_time
h	R/W	n	hour	Optional hours in integer format
m	R/W	n	minute	Optional minutes in integer format
s	R/W	n	second	Optional seconds in integer format
e	R/W	c	yy_mm_dd	Optional year/month/day portion of the current_time
d	R/W	n	day	Optional day in integer format
n	R/W	n	month	Optional month in integer format
y	R/W	n	year	Optional year in integer format
w	R/W	c	day_of_week	Optional day_of_week in bit-map format 2(6)=Sunday, 2(5)=Monday,,2(0)=Saturday
z	R/W	n	time_zone	Time zone of time as an offset from GMT. -5=EST -6=CST 1=Oslo etc
r	R/W	b	run_edit	1=clock running, 0=stopped. Clock can only be changed when stopped
a	R/W	b	savings_time	1=savings time, 0=not
P	R	c	previous_value	Previous value of ”C”
R	R/W	d	reporting_condition	Reporting IV’s
H	R/W	d	report_header	
A	R/W	d	report_address	

Objektet Clock har tiden satt i enheten sekunder eller minutter. Parts of the string not used in ”C” should be blanks. Objektet rapporterer til andre Clock(1D) objekter for å synkronisere tiden mellom forsjellige nettverksenheter

EPR eDevice Functional Modeling Examples:

Examples:

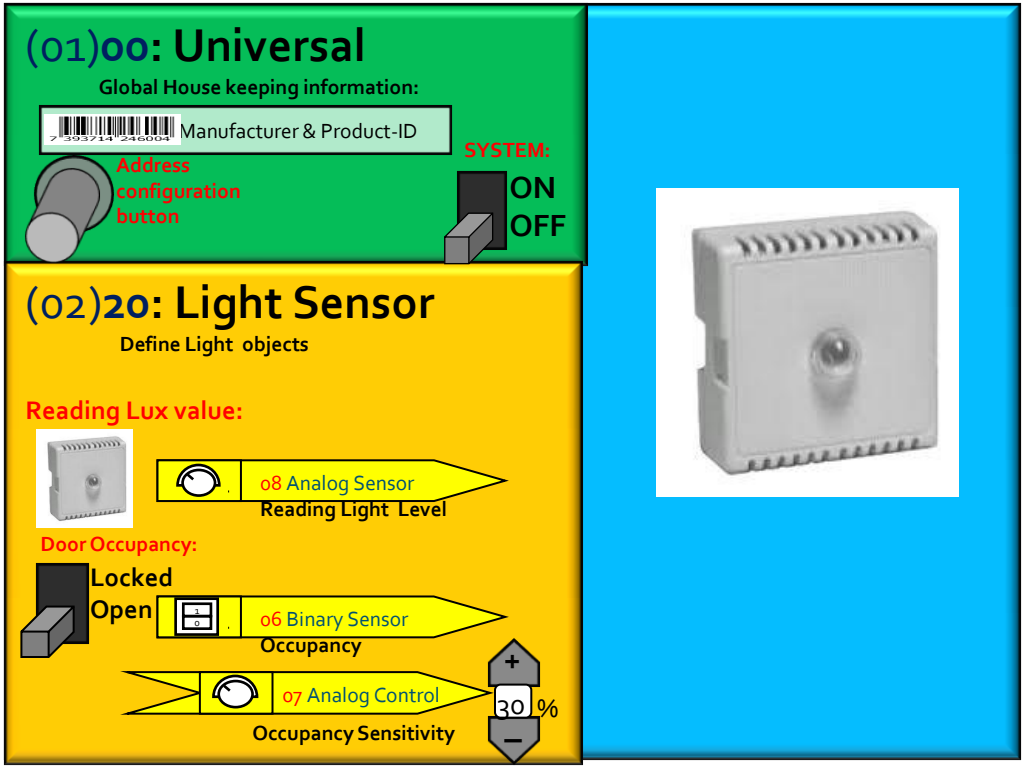
1. EPR-eDevice: **Light Sensor**

2. EPR-eDevice: **Thermostat**

3. EPR-eDevice: **El-Meter**

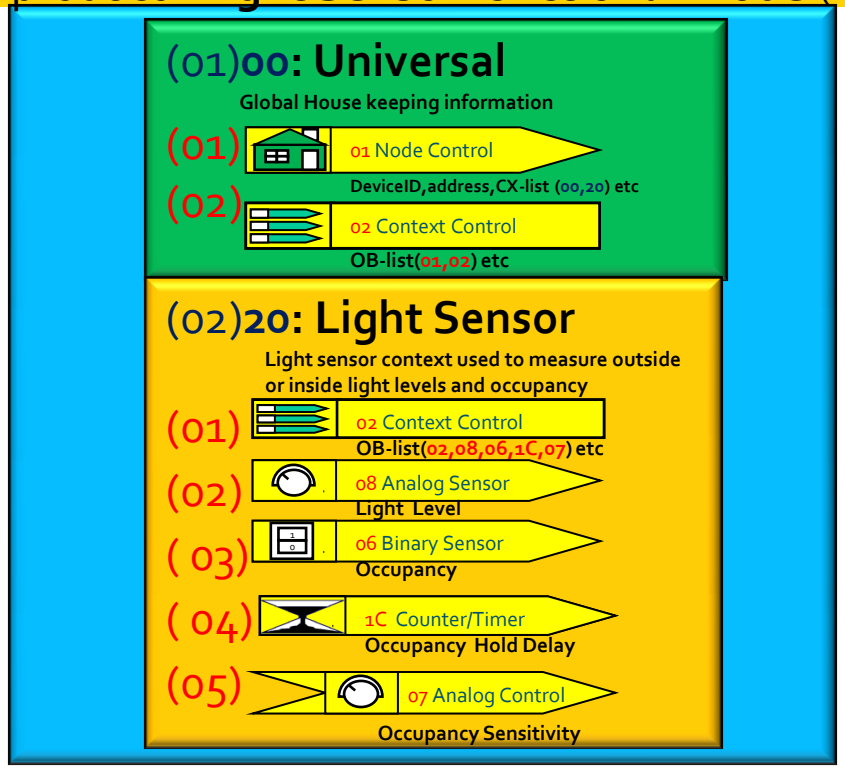
EPR-eDevice product model example: **Light sensor**(default)

EPR-eDevice product: **Light Sensor hardware block diagram**

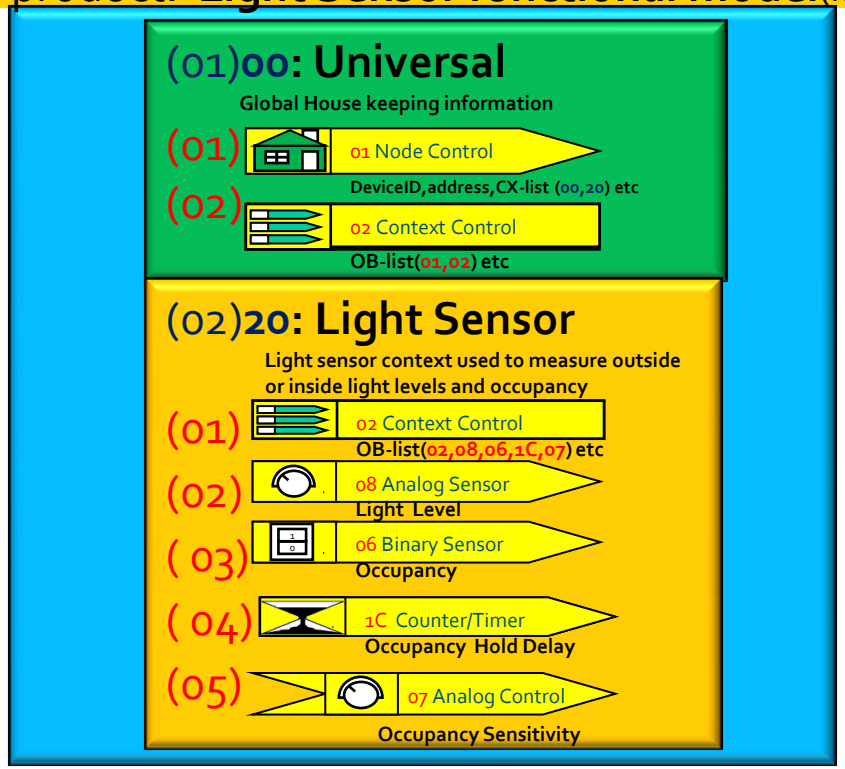


EPR-eDevice product model example: **Light sensor**(default)

EPR-eDevice product: **Light Sensor functional model**(mirrored SW block diagram)



EPR-eDevice product model example:**Light Sensor**(default)



EPR-eDevice product model example: **Thermostat**(default)

EPR-eDevice product: **Thermostat hardware block diagram**

(01)00: Universal

Global House keeping information:

Manufacturer & Product-ID

Address configuration button

SYSTEM: ON OFF

(02)40: Environmental Zone

Define Environmental Sensor objects

FAN: ON Auto

05 BinaryControl
Fan Control

Wanted Temperature: 21 °C

0A MultiPosSensor
Zone Status

(03)41: Environmental Sensor

Measuring Temperature & Humidity Values

08 Analog Sensor
Inside Temperature, "C

08 Analog Sensor
Inside Humidity , %RH

(04)42: Environmental Status

Status picked from Environmental Sensor

(05)63: Security Partision Control

Security Partision Status Vektor and battery

EPR-eDevice product model example: **Thermostat**(default)

EPR-eDevice product: **Thermostat functional model**(mirrored SW block diagram)

(01)00: Universal
Global House keeping information

(01) 01 Node Control
DeviceID,address,CX-list (00,40,41,42,63) etc

(02) 02 Context Control
OB-list(01,02) etc

(02)40: Environmental Zone
Define Environmental Sensor objects

(01) 02 Context Control
OB-list(02,14,0A,05,07,07) etc

(02) 09 MultiPosControl
Zone Mode

(03) 0A MultiPosSensor
Zone Status

(04) 05 BinaryControl
Fan Control

(05) 07 Analog Control
Heat Setting, "C

(06) 07 Analog Control
Cool Setting,"C

(03)41: Environmental Sensor
Measuring Temperature & Humidity Values

(01) 02 Context Control
OB-list(02,08,08)

(02) 08 Analog Sensor
Inside Temperature, "C

(03) 08 Analog Sensor
Inside Humidity , %RH

(04)42: Environmental Status
Status picked from Environmental Sensor

(01) 02 Context Control
OB-list(02,07,07)

(02) 07 Analog Control
Current Zone Temp,"C

(03) 07 Analog Control
Current Zone Hum,%RH

(05)63: Security Partision Control
Security Partision Status Vektor and battery

(01) 02 Context Control
OB-list(02,15,0A)

(02) 15 ListMemory
Partision Status Vector from CX:62

(03) 0A MultiPosSensor
Battery Status

EPR-eDevice product model example: **El-Meter**(default)

EPR-eDevice product: **El-Meter hardware block diagram**

(01)00: Universal

Global House keeping information:

Manufacturer & Product-ID

Address configuration button

SYSTEM: ON OFF

(02)50: Utility Meter

Define Utility Meter objects

1D Clock

Current Date and Time

(03)51: Electric Monitor

Monitoring the energy consumptions

08 Analog Sensor

Electric Power Demand,kW

08 Analog Sensor

El. Commulative Demand,kWh

08 Analog Sensor

Total El. Current,Amp

El. Current Phase 1,2,3

08 Analog Sensor

El. Voltage,Volt

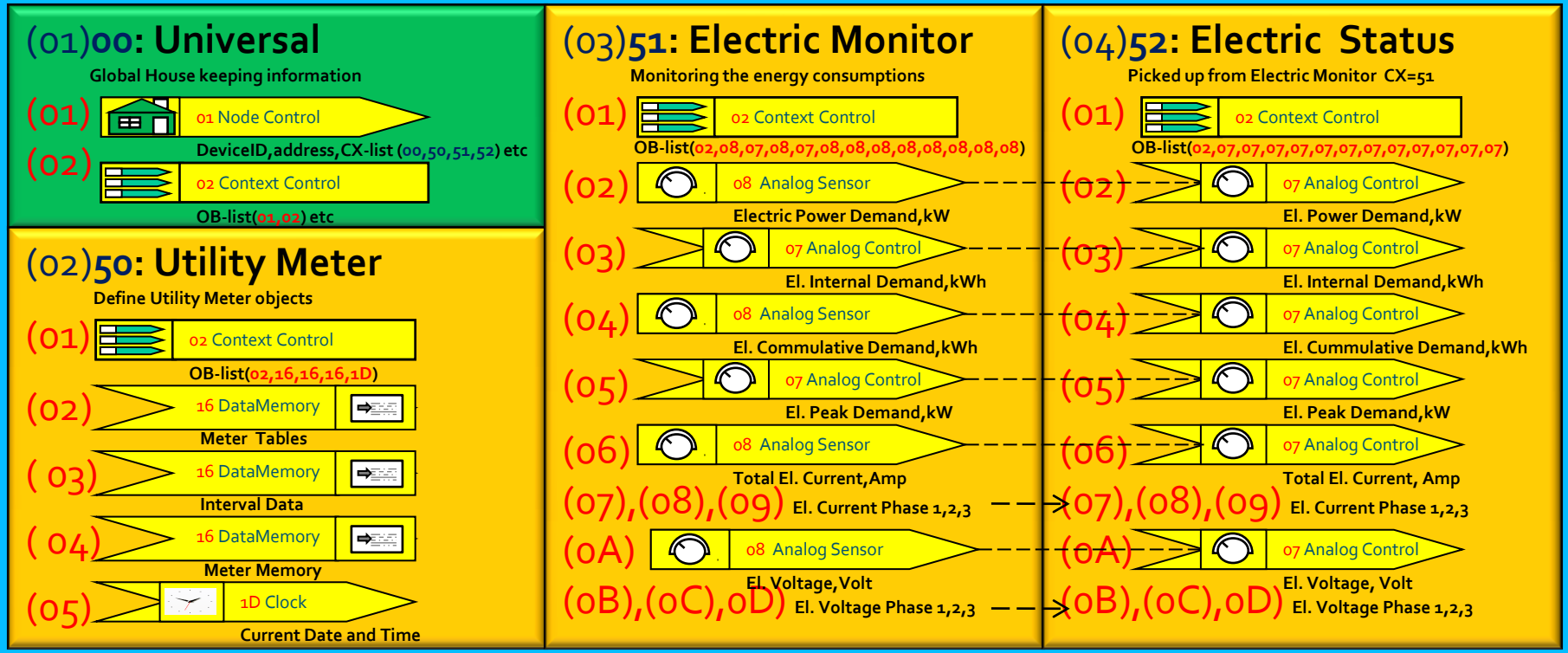
El. Voltage Phase 1,2,3

(04)52: Electric Status

Picked up from Electric Monitor CX=51

EPR-eDevice product model example: **El-Meter**(default)

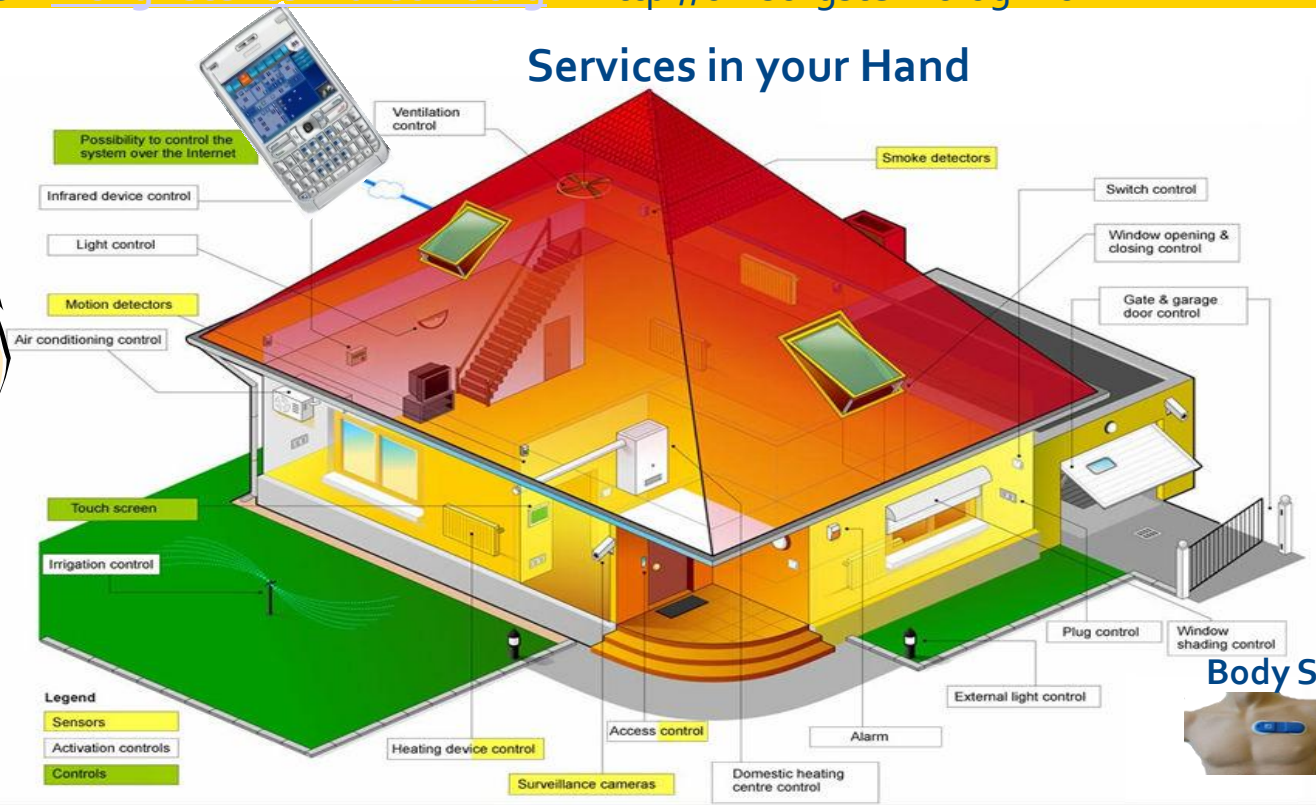
EPR-eDevice product: **El-Meter functional model** (mirrored)



Thank you for your attension !

See more: «Mulighetenes Eldreomsorg» http://omsorgsteknologi.no

Services in your Hand



Body Sensors