



Renovation main building to Atlas

Introduction Atlas



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TU/e

Facts & figures

42,000

M² FLOOR
SPACE

28

EDUCATION
ROOMS

2

MULTIFUNCTIONAL
EDUCATION
ROOMS

3,475

STUDY
PLACES

875

INDIVIDUAL
STUDY PLACES

MEETING
ROOMS FOR
A TOTAL OF

900

PERSONS

Users

- Department ID
- Department IE&IS
- 8 support services
- Executive board
- Strategic Area's
- ILI
- ESOE

Functions

- Education
- Defense room / UR
- Workplaces
- Meeting
- Labs
- Foodcourts
- Exposition

Process Renovation Atlas

#1

Process

An aerial photograph of a large-scale construction project. A multi-story building is in the process of being renovated or reconstructed. The structure is heavily scaffolded, and several large tower cranes are positioned around the site. In the foreground, there are smaller, older buildings and a dirt area with construction materials. The overall scene depicts a major urban renovation project.

IDEA

PRELIMINARY
PHASE

WHAT

PRELIMINARY
PHASE

HOW

DESIGN
PHASE

BUILD

CONSTRUCTION
PHASE

USE

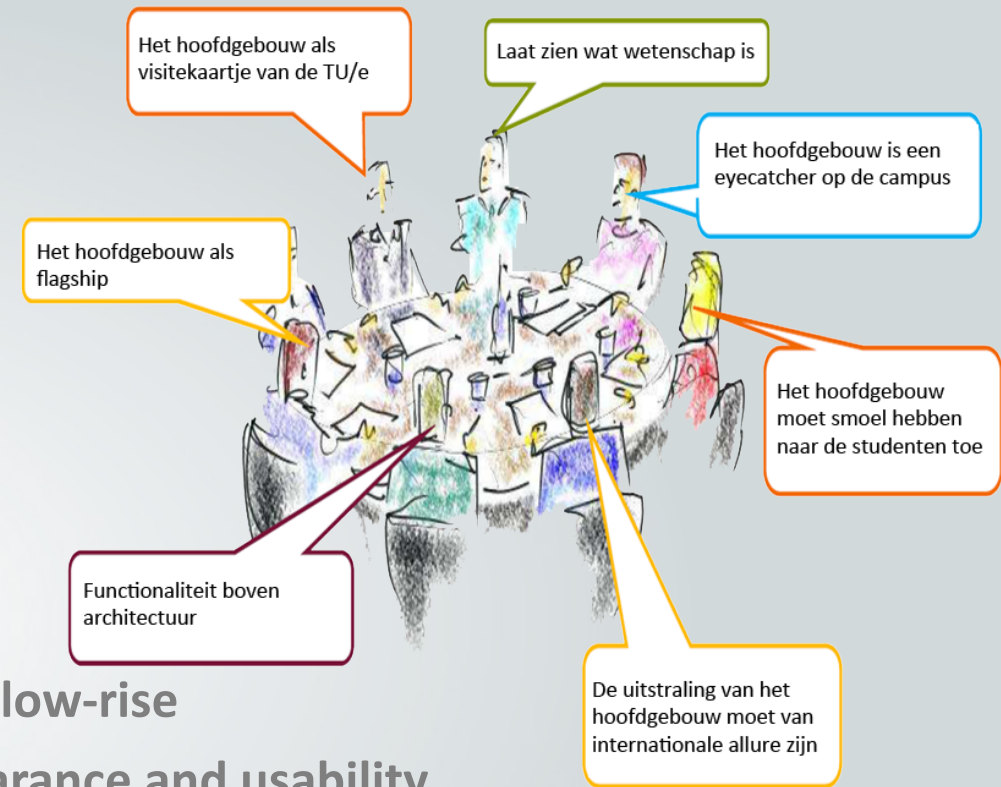
AFTER
CARE

PRELIMINARY STAGE



Golden rules

- Outside a uniform identity, inside individual identities
- Inside dynamics visible on the outside
- Atlas is a home to departments and services
- Education and research is visible and welcoming in the low-rise
- Diverse educational environments, welcoming in appearance and usability
- The working environments fit the worker processes and preferences
- Any remaining facility is shared, unless specific uses do not allow it
- A sustainable building and sustainable behavior: a living lab and an experimental design landscape



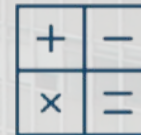
Preliminary investigation



DESIGN

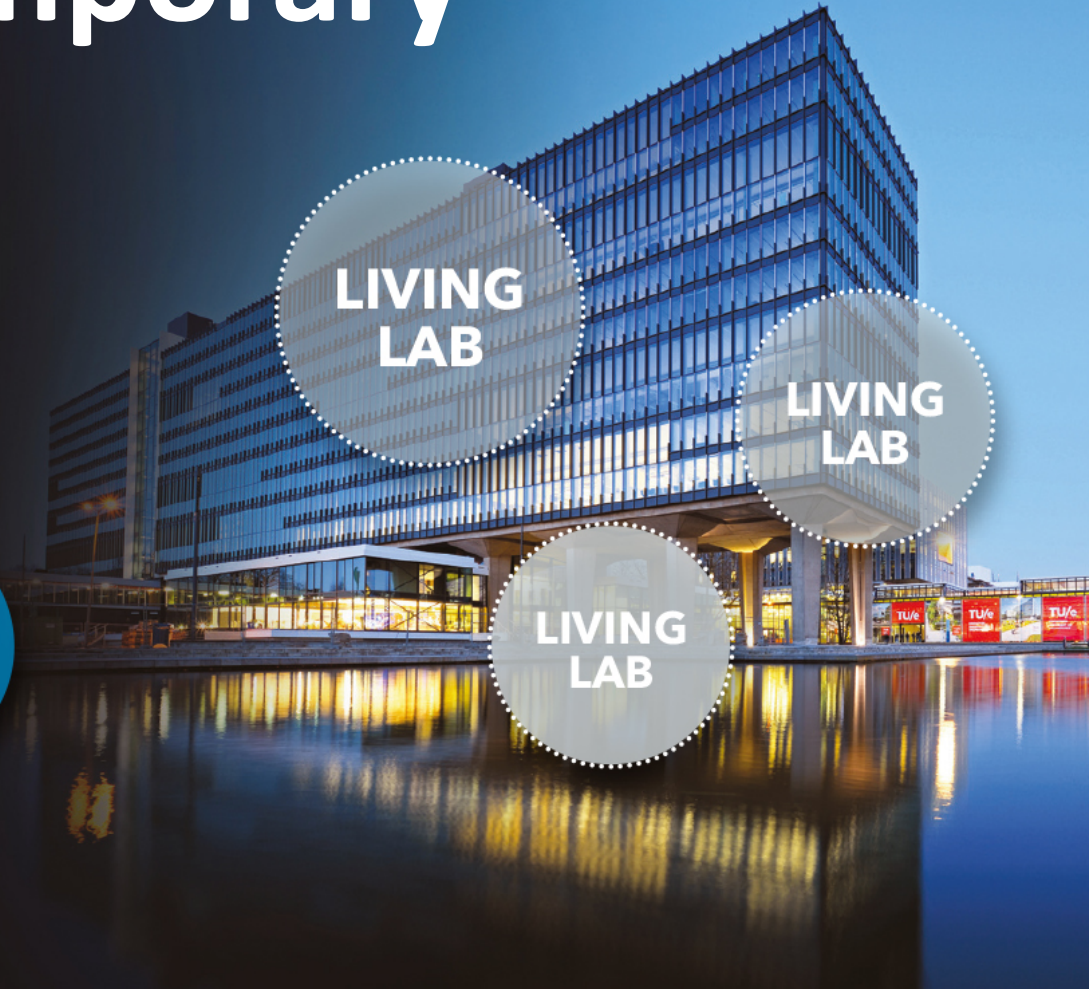
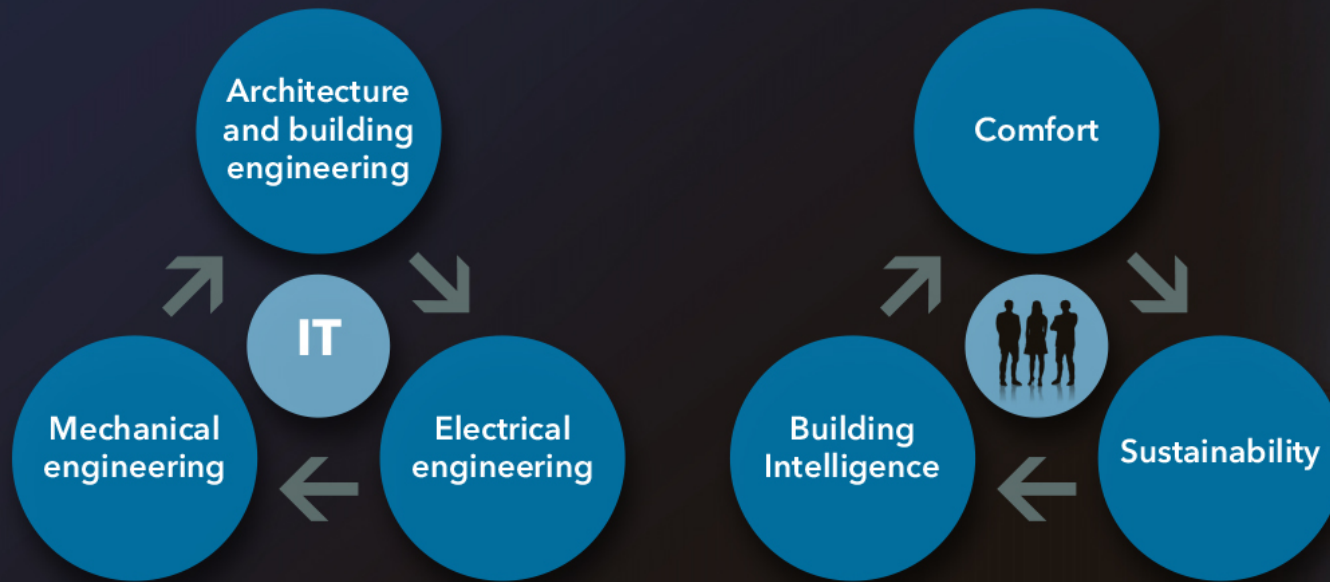


BUILD



MAINTAIN

Traditional vs contemporary



Output Specifications

- Flexibility
- Architecture
- SUSTAINABILITY → BREEAM Excellent
- Functionality

DESIGN PHASE



Total engineer

TEAM RSVP

Team V Architect BV

Urban Design | Architecture | Workplace | Interior

Peutz BV

Building Physics Sustainability

Valstar Simonis BV

Installations E-W-T

Van Rossum Raadgevende ingenieurs BV

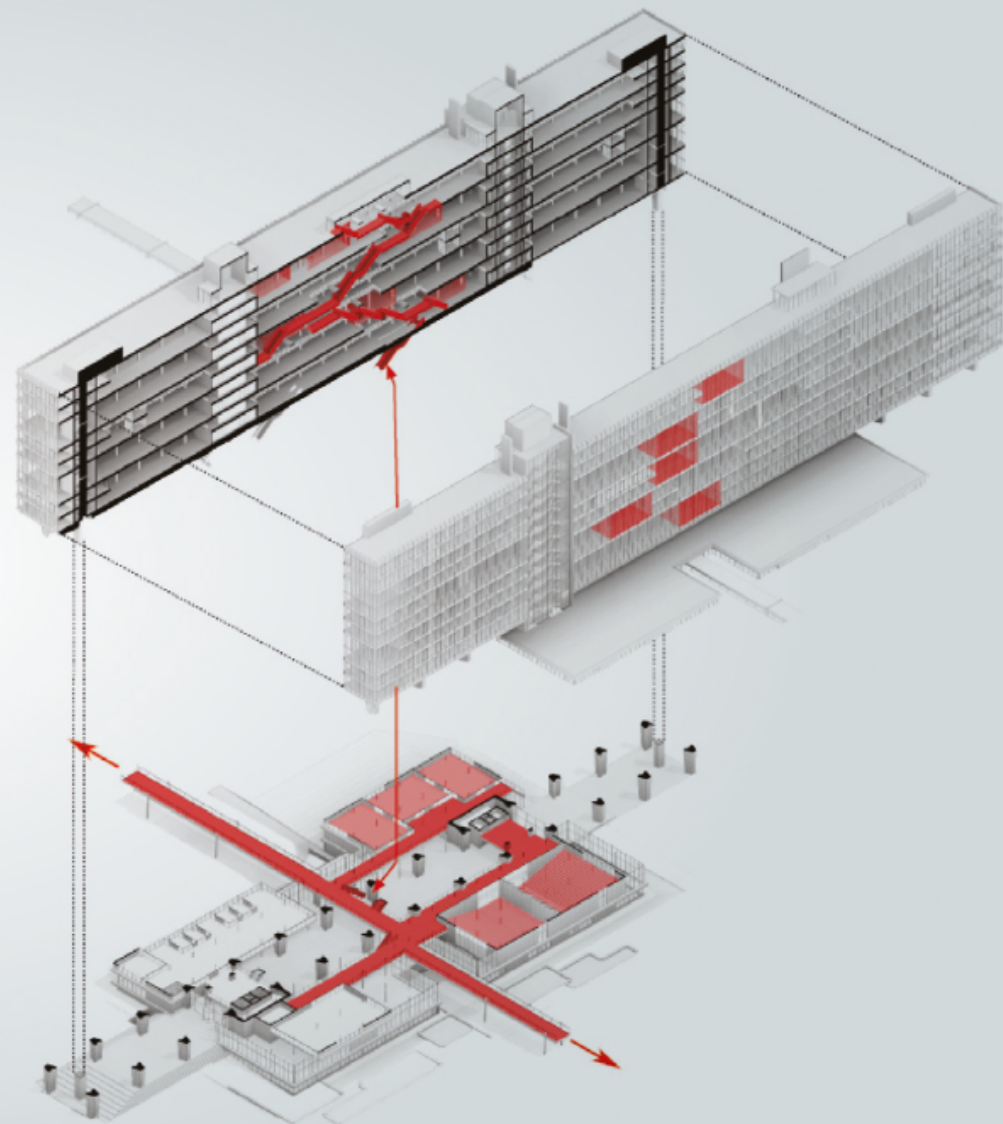
Construction Design

BKS Schagen

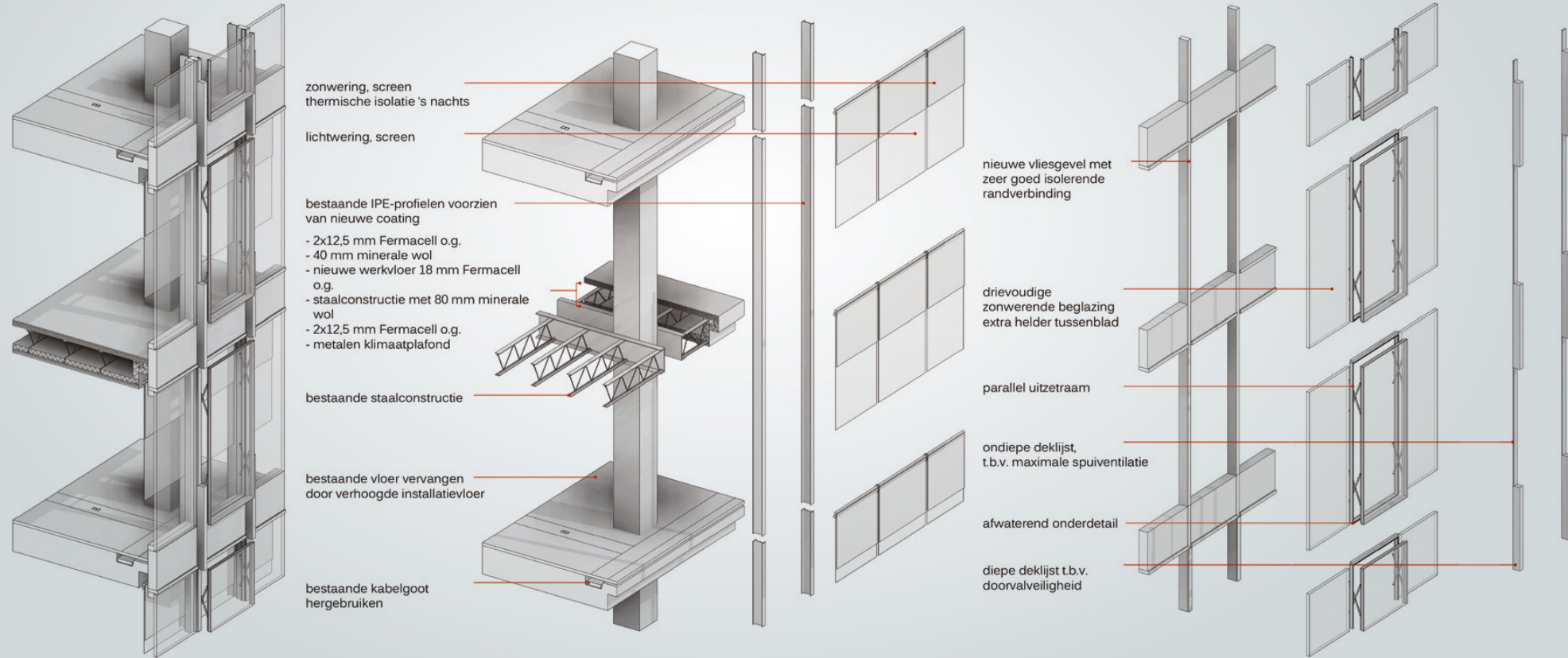
Building Costs



Connection

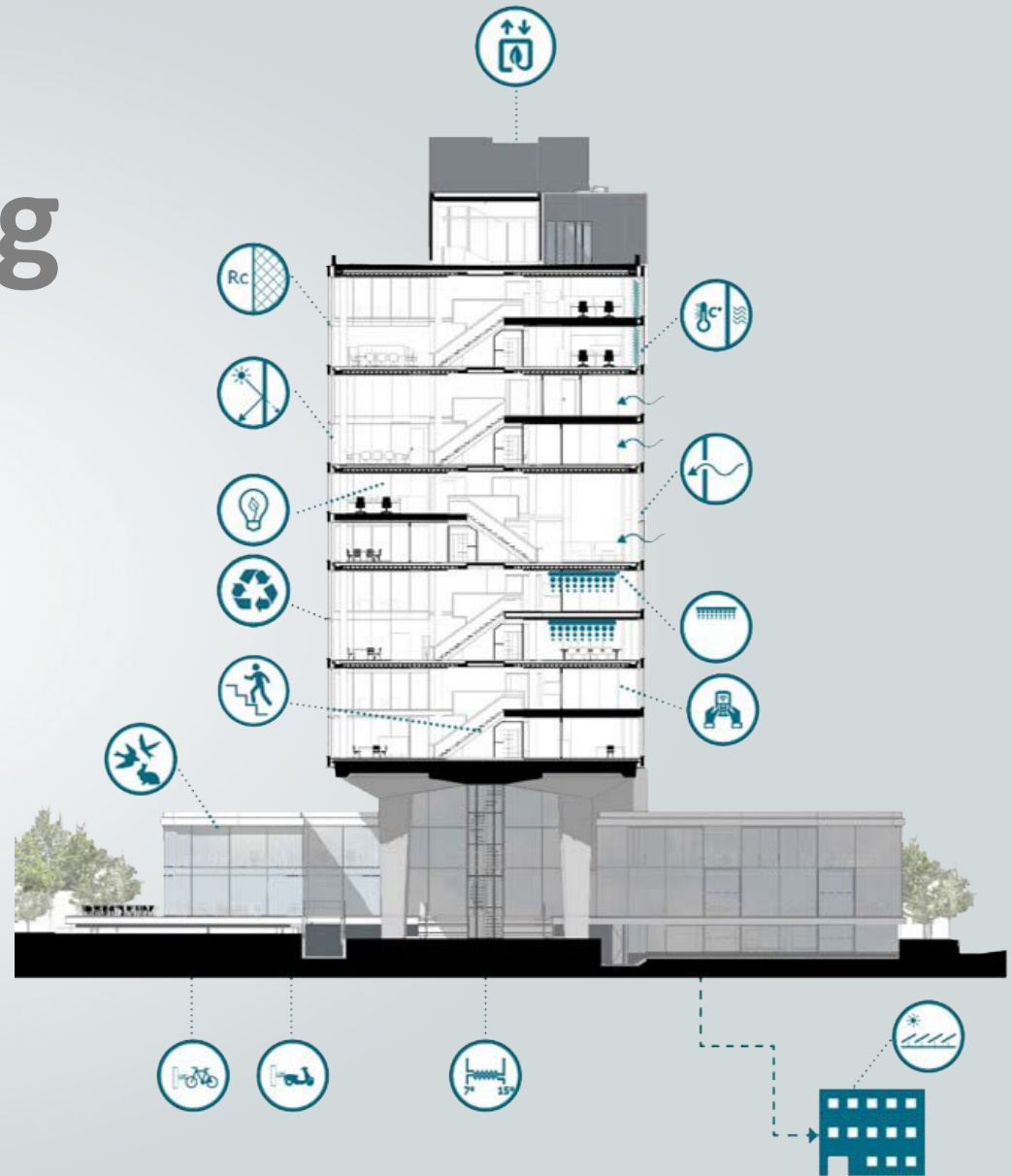


Innovative façade concept



BREEAM Outstanding

- No gas but thermal energy storage
- Use renewable energy
- Re-using materials
- Innovative Facade concept
- Smart energysaving lighting



CONSTRUCTION PHASE



Selection of contractor

A large, modern glass building is under renovation. Two large red and white tower cranes are positioned around the building. The sky is filled with dark, dramatic clouds. In the foreground, there are green trees and a paved area. The building has multiple floors with glass facades, some of which are being worked on by construction workers.

- Pre-selection: policy on sustainability & experience with BREEAM certificate
- Selection: on price & quality
- Contract: UAV-gc

Highlights construction

- 10 weeks sawing with diamond ribbon
- 80 blocks of approx 15kg
- Almost 1,5 m thick with 32 mm rods

Highlights construction

500

PAF
WINDOWS

200 m³

GLASS

ASSEMBLY
TOOK ALMOST

1 year

2

TOWER
CRANES

12

HANGING
BRIDGES

AFTER CARE



Innovation @ Work

- New working procedure
- Ambassadors
- Mock up floors
- Various training courses
- 12 editions News flash
- Workplace guide and User guide
- Guidance by digicoaches

**Atlas the most
sustainable
education building
in the world**

#2

SUSTAINABLE



Healthy and comfortable building



Innovative, sustainable, no use of gas, ecological and comfortable



Prevent energy waste



Recycling material

Sustainability

- Reduce energy demand
- Use of renewable energy
- Material saving
- Innovative façade concept
- Smart energysaving lighting



Subsidy from European Union

- Make from Atlas most sustainable education building in the world
- Building has to serve as an example in the field of sustainable renovation
- Atlas has been possible thanks to a contribution of the parties below

Slimbouwen[®]

TU/e

EINDHOVEN
UNIVERSITY OF
TECHNOLOGY

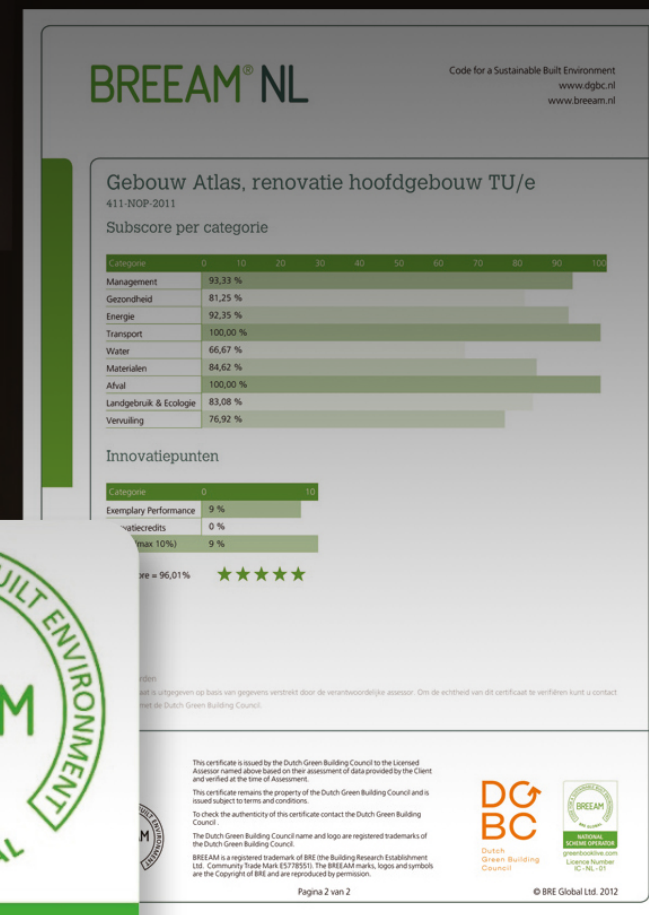
kion
innovatiemeesters >>>

Provincie Noord-Brabant

OPZuid
Europees Innovatieprogramma Zuid-Nederland

 **Europese Unie**
Europees Fonds voor Regionale Ontwikkeling

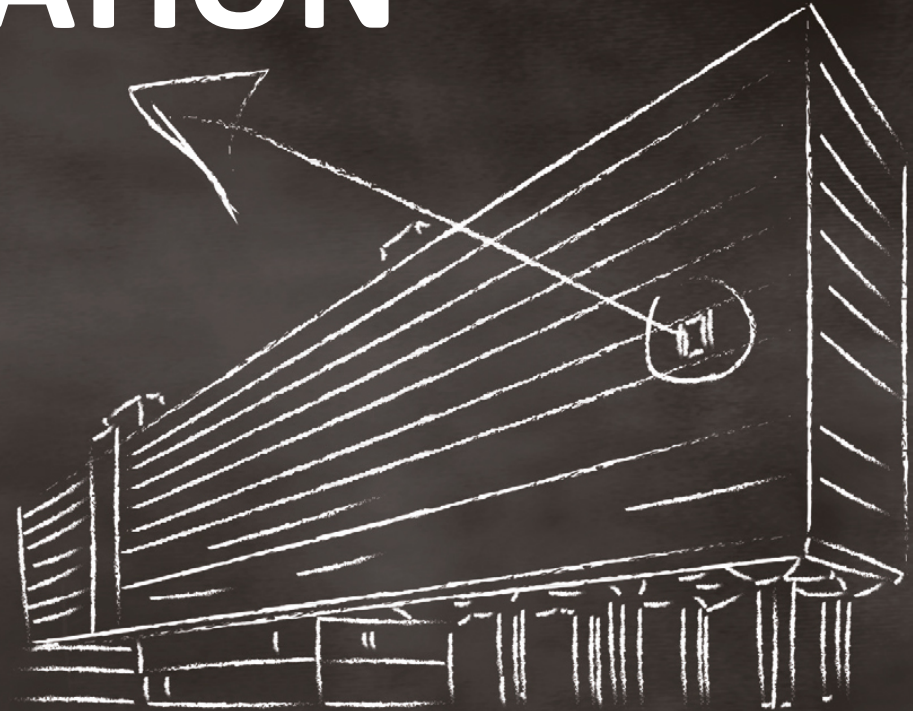
BREEAM



NATURAL VENTILATION



Window
moves out:
creates
natural
ventilation



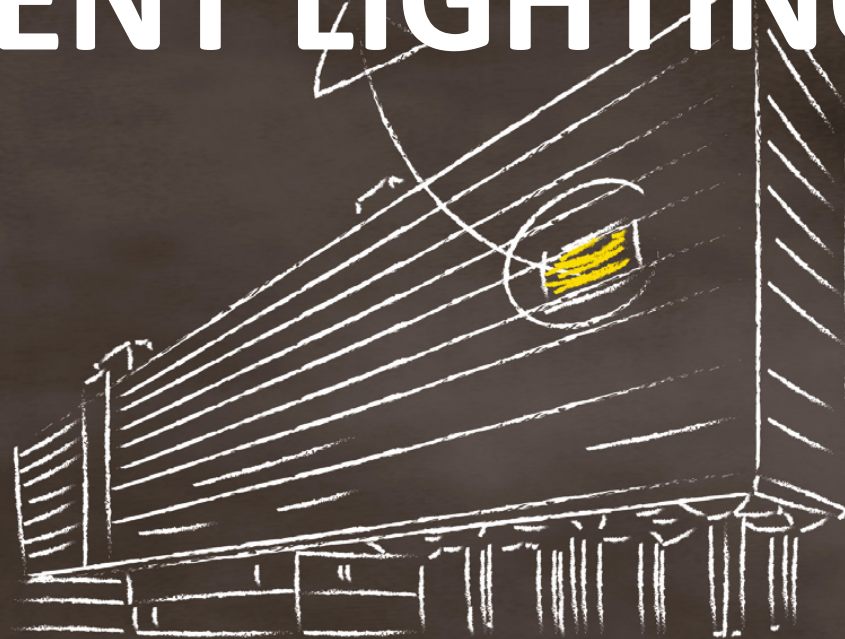
Active façade concept

- Natural ventilation
- Parallel expansion windows
- Prevent draught
- Ventilation system reduction
- Reduction of CO2

INTELLIGENT LIGHTING



Personal lighting



40% - 60%
CO₂ reduction



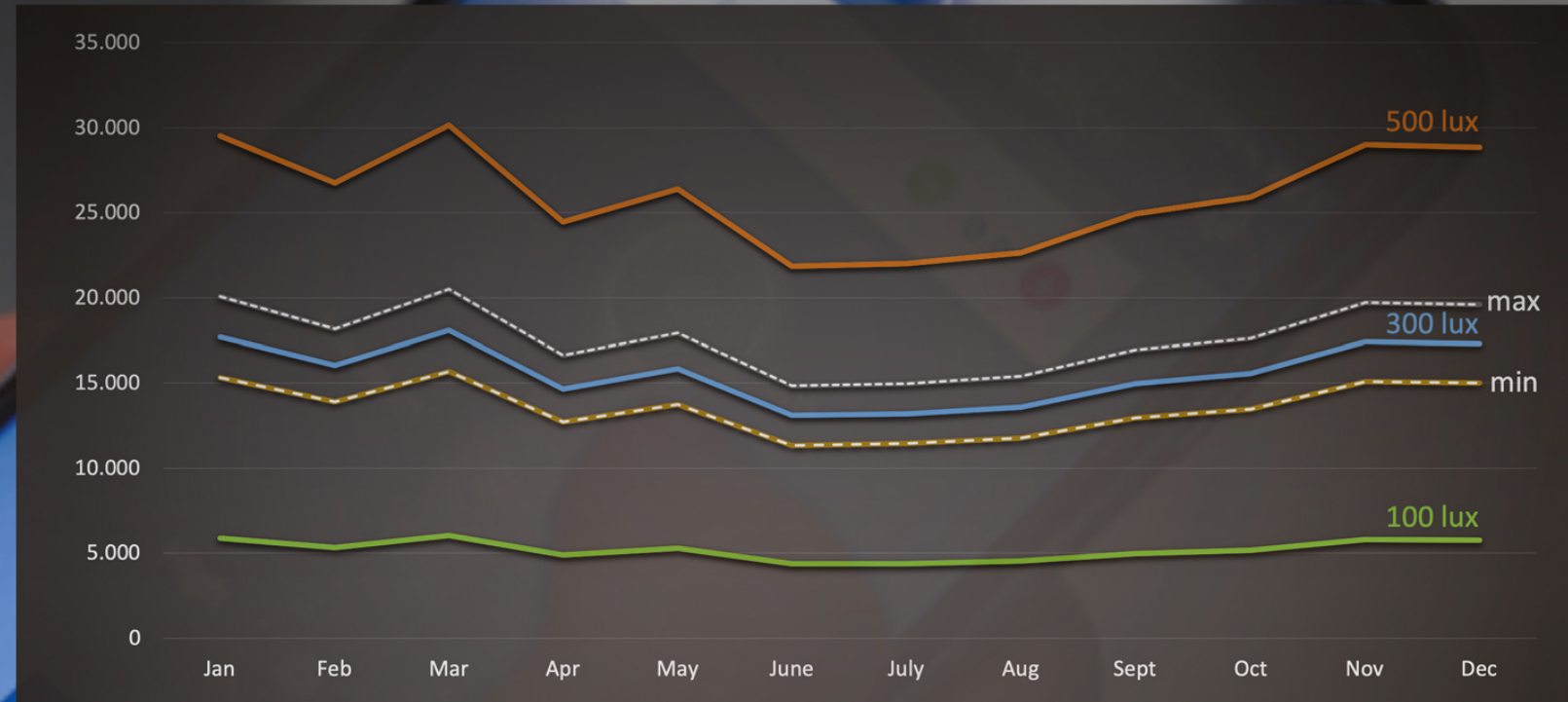
From light source
to information source

Lighting

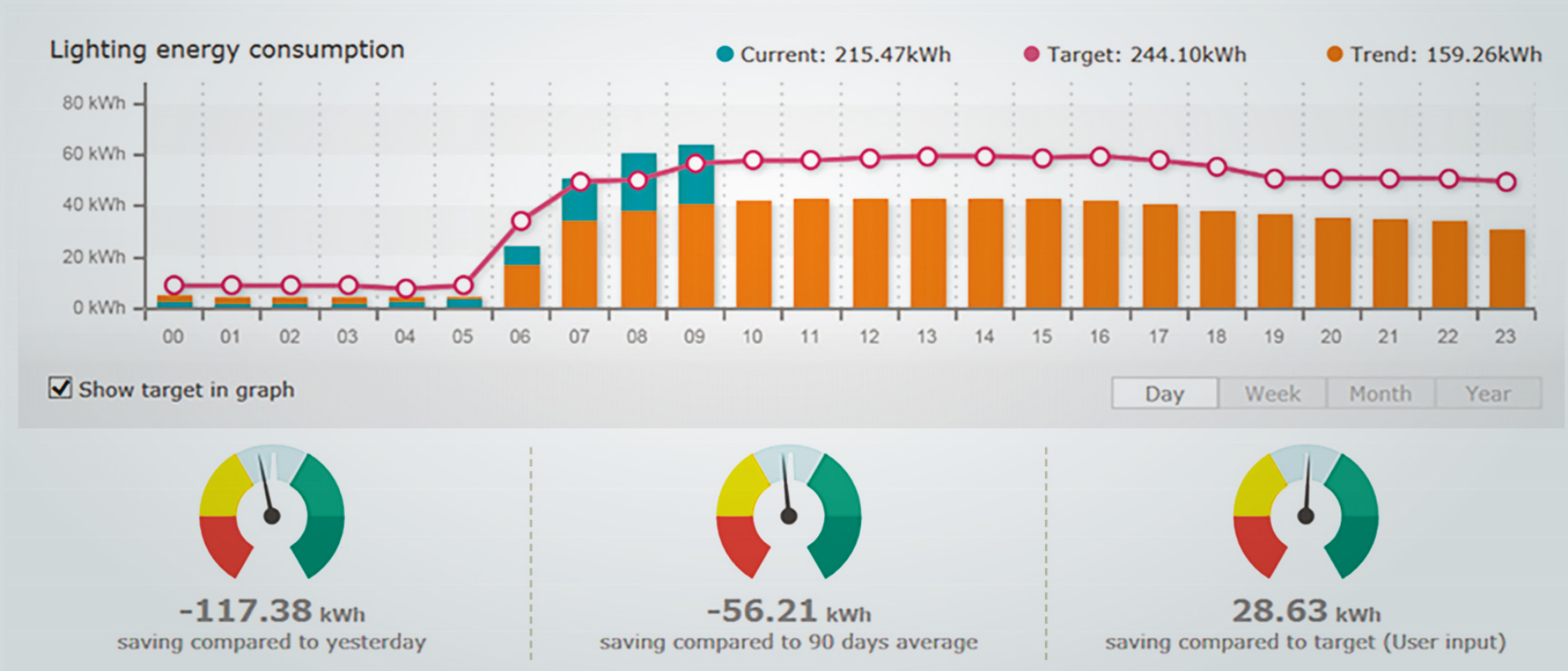


Smart Energysaving Lighting

Monthly
consumption
in kwh



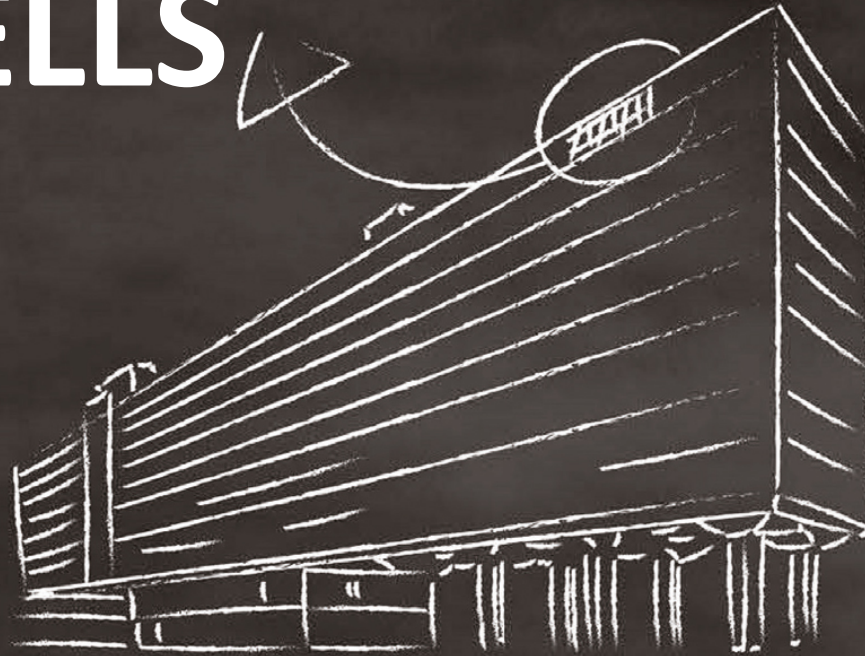
Envision Manager



SOLAR CELLS



Atlas uses PV panels on roofs
sport center and Spectrum



2,654 PV panels of
280 W_{peak} each



Guaranteed yield
> 500,000 KWh
per year

Occupied roof 4,400 m²
is $\pm 10\%$ of the floor
area of Atlas



Substantial part of the
total consumption of Atlas
is covered by renewable
energy from the PV panels

Solar panels

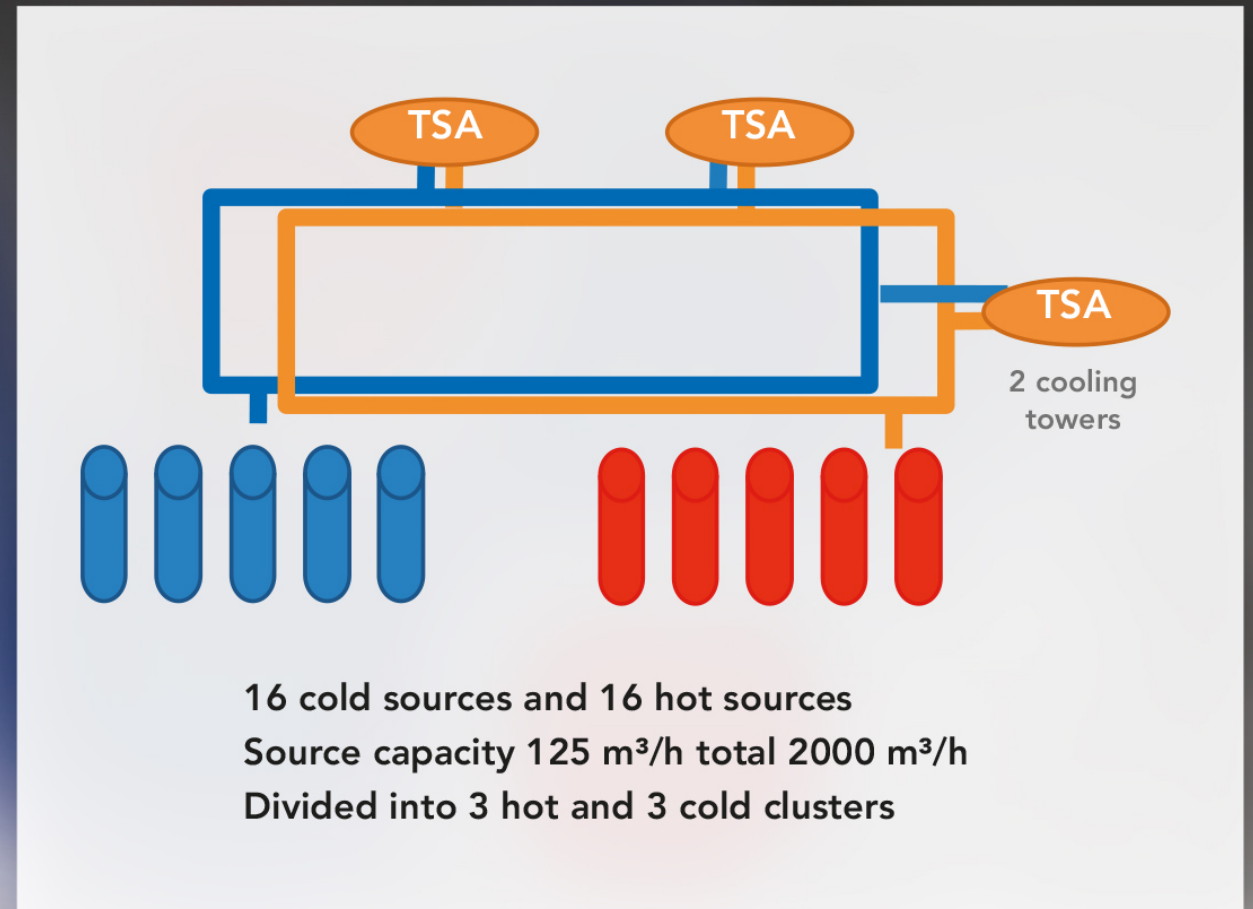
2,654
PANELS

ROOFS
SPORTS
CENTER AND
SPECTRUM

YIELD
500,000
KWH PER YEAR

ATES

1. Campus-wide ATES (Aquifer thermal energy storage system, no gas)
2. Reduction of cooling towers consumption 15%
3. Users doubled, 80% CO₂ reduction



LIVING LABS



Living Labs

- Research SAD free environment
- Research building materials PV systems and other building components
- Experiential design landscape in the field of sustainability

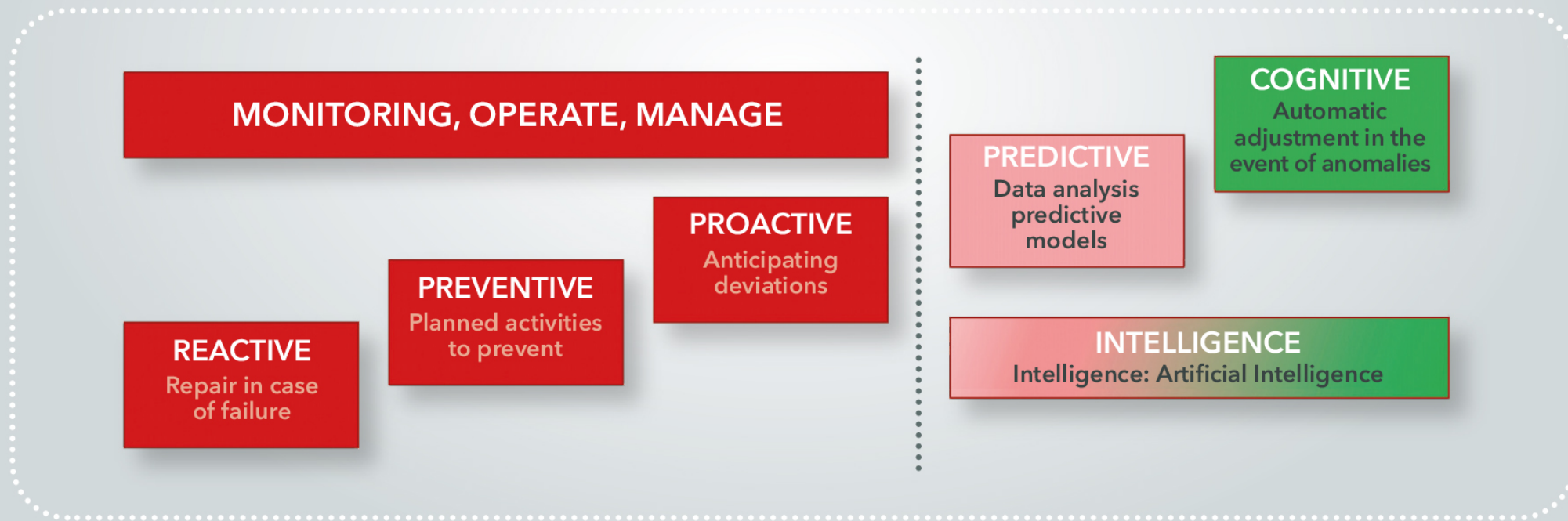
SMART BUILDING



Developments

- Control PAF windows
- Optimization ATES
- Optimization lighting
- Outcome based services

Evolution of the Building Management System (BMS)





ATLAS: SUSTAINABLE, CONNECTING!

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