



Reformation of the Curricula on Built Environment in the Eastern Neighbouring Area

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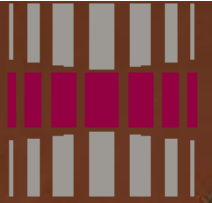
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I'm sooooo
sorry...



CASEBOOK:

GOOD PRACTICES FOR ENERGY-EFFICIENT HOUSING IN THE UNECE REGION



UNITED NATIONS
ECONOMIC COMMISSION FOR EUROPE

PREPARED FOR:



THE UNITED NATIONS ECONOMIC COMMISSION FOR EUROPE
(UNECE)



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UNITED NATIONS
ECONOMIC COMMISSION FOR EUROPE

UN HABITAT
FOR A BETTER URBAN FUTURE

TINAVIENNA
URBAN TECHNOLOGIES & STRATEGIES



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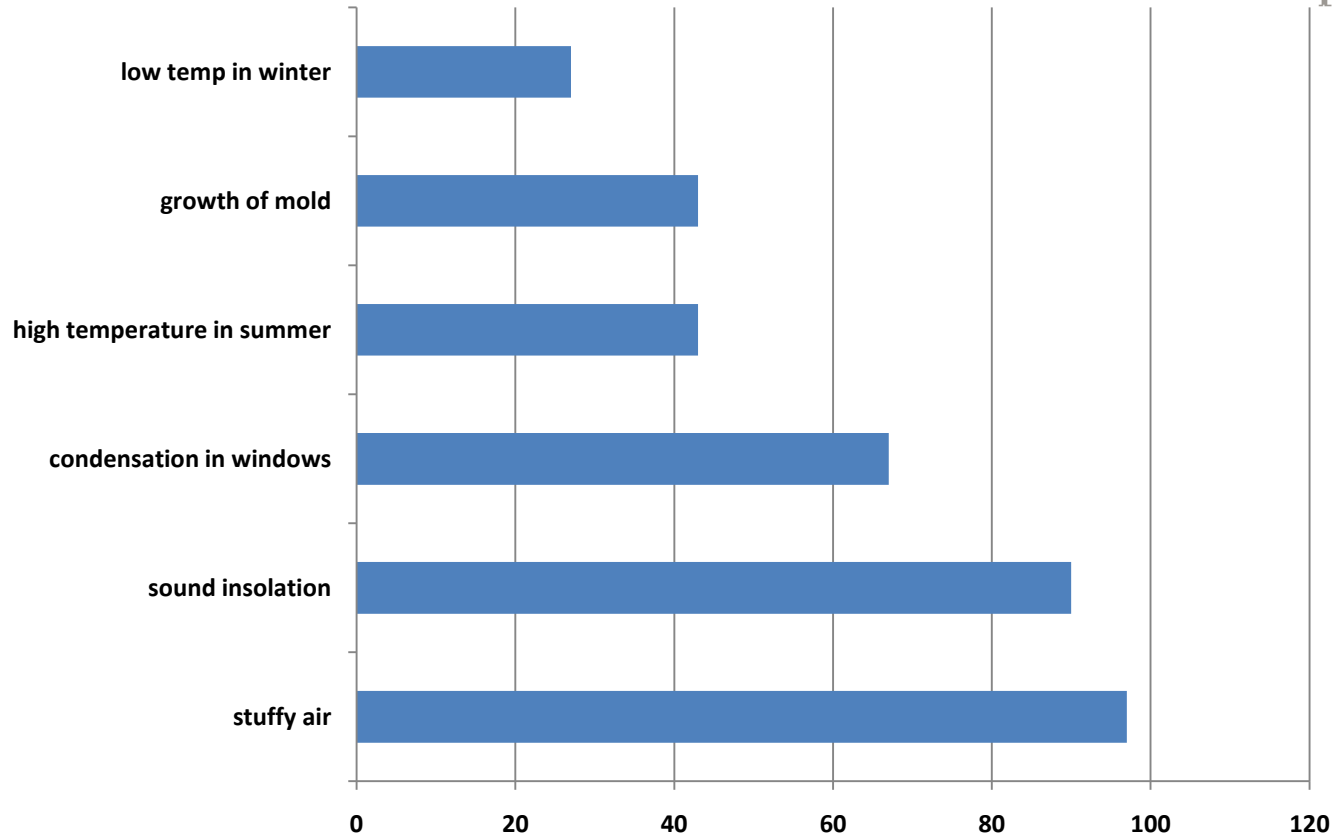


- ***The improvement of **energy efficiency** in the residential sector is defined as securing the reduction of energy intensity of housing services **without impairment of people's well-being or the environment.*****
 - reconstruction of the existing housing stock to secure the highest standards of energy efficiency
 - high standards of energy efficiency in the construction of all new buildings
 - energy-efficient utilities providing services in the residential sector
 - efficient housing stock management system
 - replacement of inefficient equipment, appliances and lighting systems
 - high environmental quality of spatial planning
 - environmentally friendly construction technologies
 - minimization of carbon emissions in the housing sector
 - affordability of energy in the residential sector

goals for the project

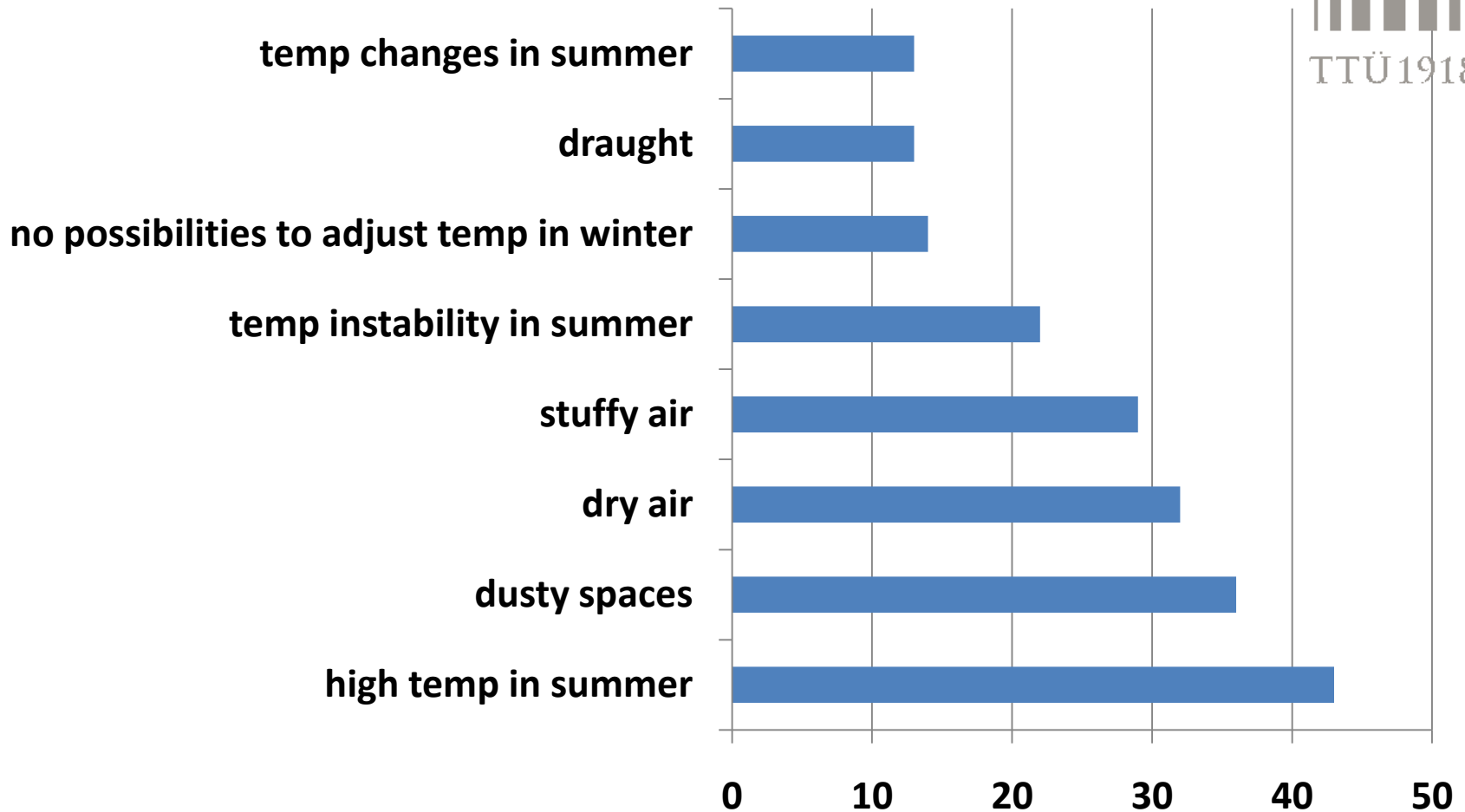
- lack of educational and research literature
- insufficient demand for sustainable and healthy built demand
- education plans are not matching Bologna practices
- insufficient communication between universities and labour market organisations
- differences between the efficiency of the educational material
- skills of universities are not sufficient to ensure high quality education

Problems of households in pre-fab buildings (in %)



built environment inherited from soviet-times

Indoor climate problems in new buildings (in %)



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what has changed?

do you know the real situation

- **social assessment to the situation related to built environment:**

FUCK

- any building differs from other items by:
 - the need to **maintain property value** over time
 - the possibility that the **property may undergo a change** in the intended use during its service life
 - the number of **persons responsible for maintenance** (owner, administrator, tenant, employee)
 - its duration over **time** (decades) – lifetime



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**building has been finished and commissioned!
it has to meet the following requirements:**

- mechanically stable (physically stable)
- fire-safe
- environmentally safe
- safe when in use
- protecting from noise (safe for noise)
- energy efficient

from EU directive



all these requirements are to be followed

today – tomorrow – the day after tomorrow

all these requirements are to be followed permanently

- **the holistic target is – a building in good repair**
- **building can be in good repair only when all its components are in good repair:**
 - engineering service-systems
 - rooms
- **but not only the structures –**
 - property has to be considered in complex

within the **serviceability** context terminology does vary according to the level of interest:

- **fitness for purpose** is an important issue at the level of the workplace/apartment
- serviceability of buildings covers the **issues at the level of the building**
- **return on investment** is certainly the issue at the level of asset management
- **durability and sustainability** are issues, imposed at the level of government and society



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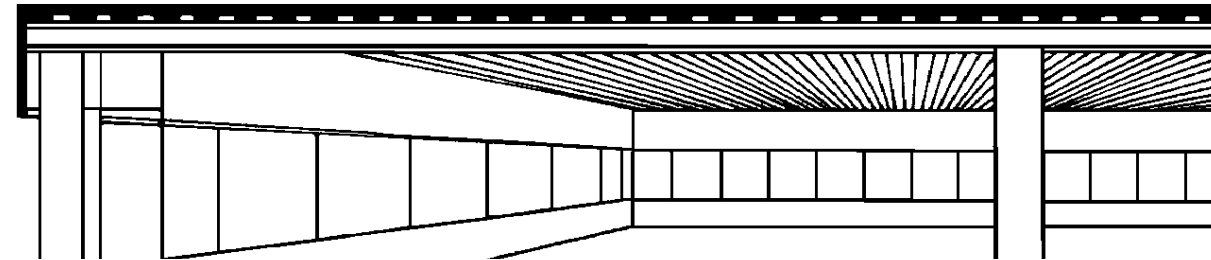
- the problem area of **serviceability** of buildings strongly depends on how different partners/stake-holders view the performance of **serviceability** in relation to their own **specific interests**



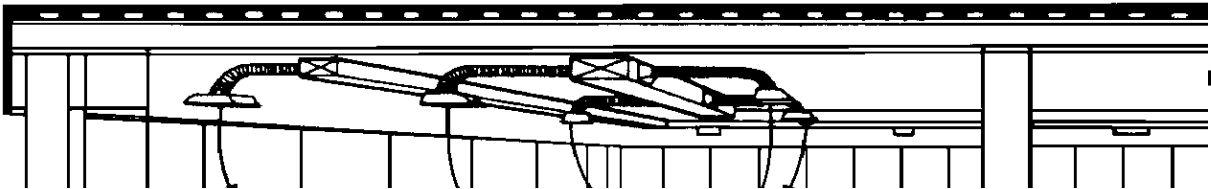


- **technical system defines the functional system while the functional system sets the requirements for the technical system (*perpeetum mobile*)**
 - **"It is more important to know how well the building will perform during its service life than it is to know how it is constructed or which products are used to assemble it"**

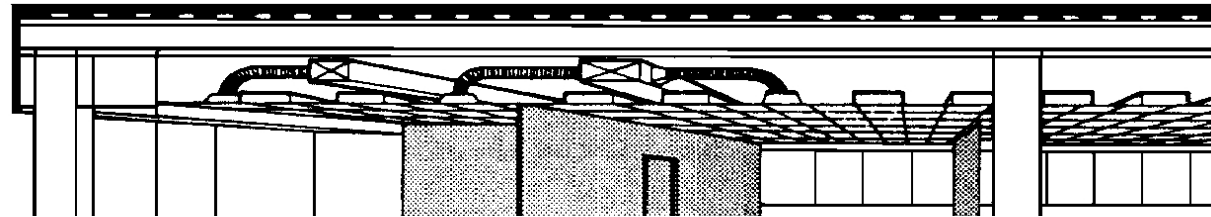
Pekka Huovila



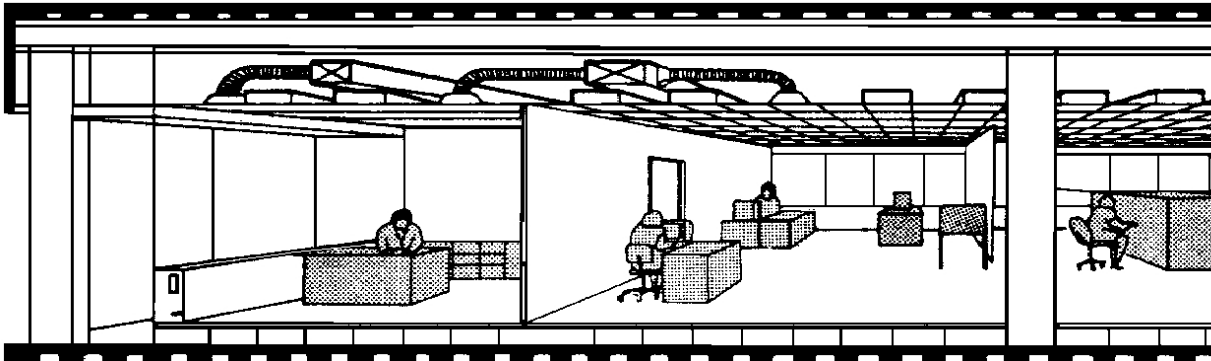
for at least
50 years



for max
10 years



for about
5 years




for max
2-3 years



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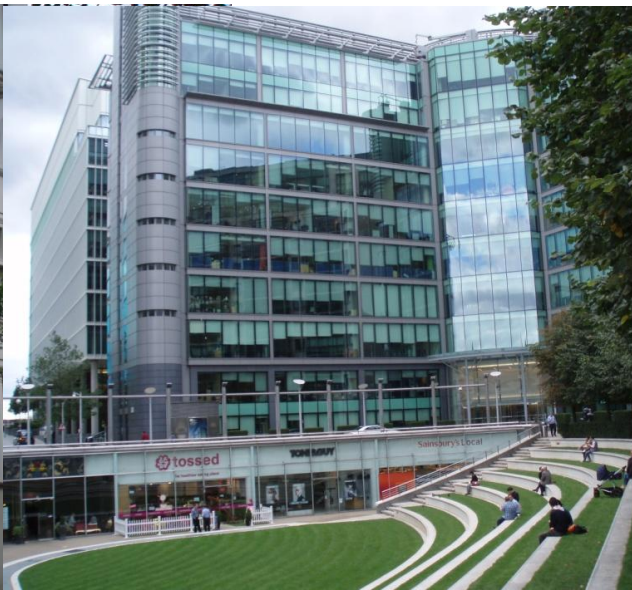
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- construction projects have become more complex as ever before
 - this has been brought about by the requirements of clients who know what they want to achieve
 - clients' requirements are becoming more complicated and more demanding



- much of the complexity comes about because of the environmental engineering services
- more thought is given to internal environment
- atria are now commonly incorporated into building designs
- increased use of IT which means that buildings designed more than 20 years ago are technologically obsolete
- unless otherwise stated, **‘cost’** shall mean **‘cost to the client/user’**

at each level of the performance three viewpoints are related to the building user and owner:

- **functional performance**: is the building useful?
- **technical performance**: does the building remain useful?
- **economic performance**: is the building performing in an efficient and effective way?





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gaps and problems

- if serviceability of buildings is an issue, then **what gaps and problems in knowledge, skills** etc. must be bridged and resolved in order to treat this issue adequately?
- two main causes why new buildings still do not meet their requirements:
 - **the lack of a systematic approach to the serviceability issues during the design stage**
 - **the absence of a defined party that should be responsible for implementing serviceability issues in building**
- not only maintained (**for any costs in any case!**), but already designed the way that repair and maintenance activities are organised and carried out following the required technology and targeting to reasonable costs



given the fact that **requirements for spaces are constantly changing**, and buildings should be able to follow those changes, it would be very convenient to be able to assess the future changes in society

- a precondition for fulfilling requirements is the amount of the **budget available**
- the building process is traditionally organised in such a way that the **use phase is separated from the building process**
- the stakeholders of the **use phase are hardly ever present during the building process**
- stakeholders who are present during the building process tend to **focus on the building costs**; the running costs or exploitation costs do not really form part of the decision process during the design and construction phases
- the price to be paid for the performance over time **is simply not properly thought through** in the pre-use phase



statements for discussing gaps and problems

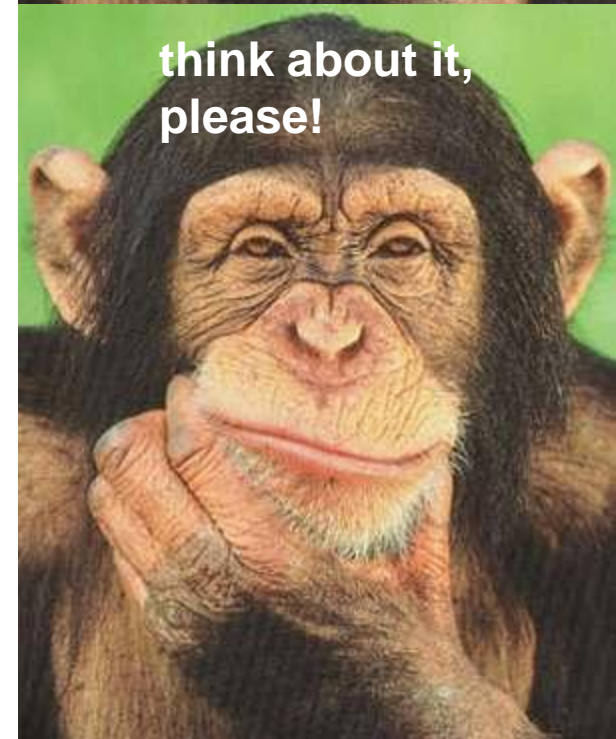
- lack of **systematic approach to serviceability** issues during the design stage
 - what is easily built may be not easily maintained
 - what is easily maintained is usually not suitable for the user (does not fit the users needs)
 - extremely suitable solution for the user may not be reasonable (economically)
- absence of **defined party that should be responsible** for implementing serviceability issues in buildings
 - client is the king
 - client may be the owner, but also the user
 - designers and contractors are the professionals
 - maintenance-man is a cleaning lady and the dustman

there is...

- no **methodology** on how to anticipate changing requirements
- no **criteria** for serviceability and the building performance over time in the pre-use phase
- no methodology on how to **translate** building material/products **performance** into building-related **serviceability** requirements
- a demand/supply matching problem between **functional requirements** (relating to sustainability, fitness for use, economic criteria, serviceability etc.) on the demand side and **building features** (load bearing structure, installations, building envelope, materials and components) on the supply side
- maintainability/serviceability always represents **somebody's interests**
 - for the user – quickly and cheaply
 - for the owner – in time and in agreed costs
 - for the professional – with reasonable efforts
- who should be interested in studying this all



think about it,
please!

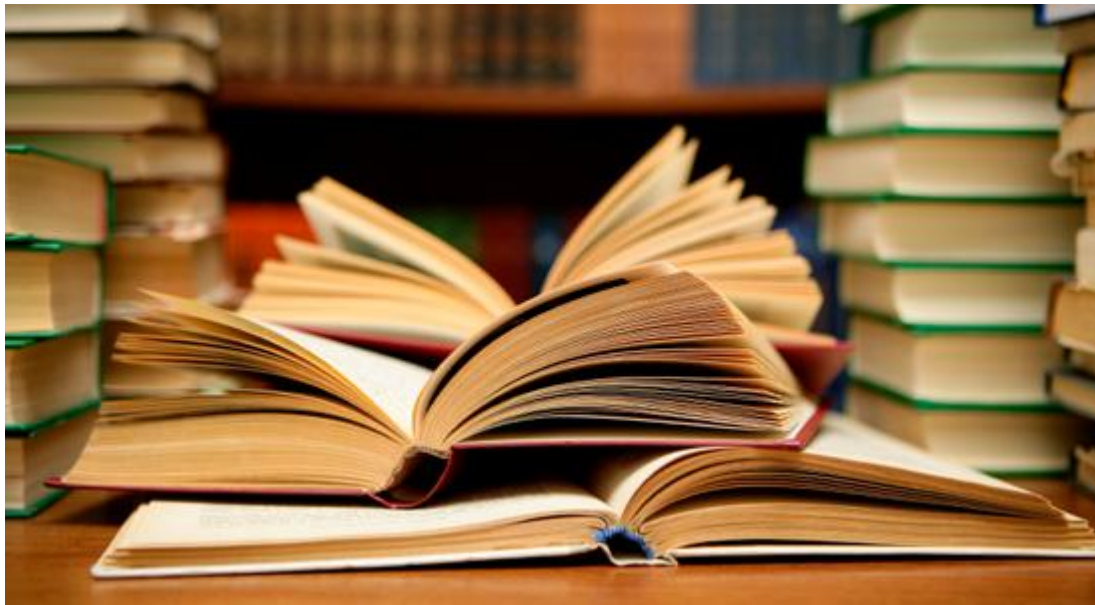


think about it,
please!



why we need to keep in mind maintainability/serviceability issues

- **each asset (building and its part) anyhow step-by-step becomes obsolete**
 - all the pipes-and-wires (utilities) require to be renewed
 - structures to be surveyed and repaired
- **the requirements for the buildings and rooms constantly change**
 - requirements for workplaces / indoor quality / living rooms
 - understanding of suitability and comfort is in constant change
 - requirements for health & safety
- **energy efficient and sustainable developments – these are politically strong requirements!**



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- **knowledge**

- the outcome of the assimilation of information through learning
- knowledge is the body of facts, principles, theories and practices that is related to a field of work or study

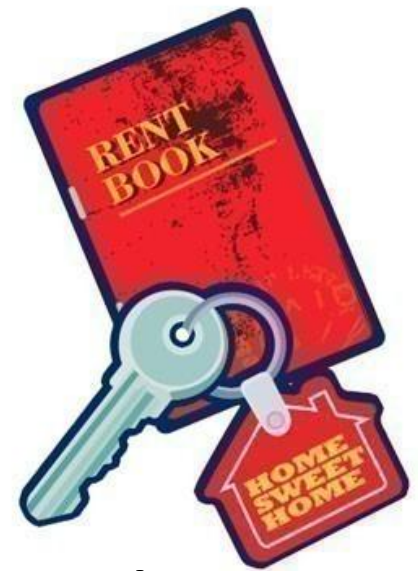
from prEN/CEN
'qualification of professionals'

two sides of the coin called 'serviceability'

- space and infrastructure
- people and organisation



space and infrastructure



accommodation

- client demand for space is satisfied by services such as programming design and acquisition of space, but also the administration and management of space and its disposal
 - strategic space planning and management
 - programming and briefing
 - design and construction
 - lease and occupancy management
 - building operations and maintenance
 - renovation and refurbishment
 - ...



space and infrastructure

workplace/living environment

– client demand for a working environment (workplace) is satisfied by services related to internal and external environments, lifting out with furniture, equipment and tenants

- workplace design and ergonomics
- selection of furniture, machinery and equipment
- move management
- equip internal and external environment
- signage, decorations, partitions and furniture replacement
- ...



space and infrastructure



technical infrastructure

- **client demand for utilities (technical infrastructure) is satisfied by services resulting in a comfortable climate, lighting, power, water and gas**
 - energy/utilities management
 - environmental sustainability management
 - technical infrastructure operations and maintenance
 - building management systems operations and maintenance
 - lighting maintenance
 - management of waste (hazardous) disposal
 - ...



space and infrastructure



cleaning

– client demand for hygiene and cleanliness (cleaning) is satisfied by services that maintain a proper working environment and help maintain the assets in good condition

- hygiene services
- workplace cleaning, machinery cleaning
- building fabric and glass cleaning
- cleaning equipment provision and maintenance
- outdoor space cleaning and winter services
- ...



other space and infrastructure

- hiring of special measuring equipment
- fitting out with machinery and equipment
- retail unit space management
- ...



people and organisation



health, safety and security

- client demand for a safe environment is satisfied by services that protect from external dangers or internal risks as well as the health and well-being of the people
 - occupational health services
 - security management
 - access control; ID cards; locks and key holding
 - disaster planning and recovery
 - fire safety and protection
 - ...



people and organisation

hospitality

- **client demand for hospitality is satisfied by services providing a hospitable working environment makes people feel welcome and comfortable**
 - secretarial and reception services
 - help desk services
 - catering and vending
 - organisation of conferences, meetings and special events
 - personal services
 - provision of work wear
 - ...



people and organisation



information technology (IT)

- client demand for IT is satisfied by services providing information and telecommunication technologies
 - data and telephone network operations
 - data centre, server hosting and operations
 - personal computer support
 - IT security and protection
 - computer and telephone connections and moves
 - ...

people and organisation

logistics

- **client demand for logistics is satisfied by services concerned with the transport and storage of goods and information and improving the relevant processes**
 - internal mail and courier services
 - document management and archiving
 - reprographic systems, copying and printing
 - office supplies
 - freight forwarding, storage systems
 - people transport and travel services
 - car park and vehicle fleet management
 - ...



people and organisation



other support services

- ...
- accounting, auditing and financial reporting
- human resource management
- marketing and advertising, photographic services
- procurement, contract management and legal advice services
- project management
- quality management
- ...





- **what are the actual problems causing poor performance of the buildings**
 - who has caused this gap?
 - for whom is this a problem?
- **we are missing complex understanding about performance of the buildings (built environment)**
 - no answers why the results are poor
 - even not very clear list of problems is available

- are you happy?
- time for shisha now?

