

Emerging Challenges in Storage Protection

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IKEA Group Risk Management

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Fire & Rescue Services:

- Fire Engineer

IKEA:

- Risk Manager (Sweden)
- Area Risk Manager (AP)
- Safety & Security specialist (Concept owner)
- Fire Safety Manager

Agenda:

- IKEA Concept
- Facts & Figures
- IKEA - Fire Risk Handling
- Emerging Challenges
 - Fire load – goods configuration
 - Type of storage solutions
 - Storage height / Ceiling height
 - New businesses
 - New markets

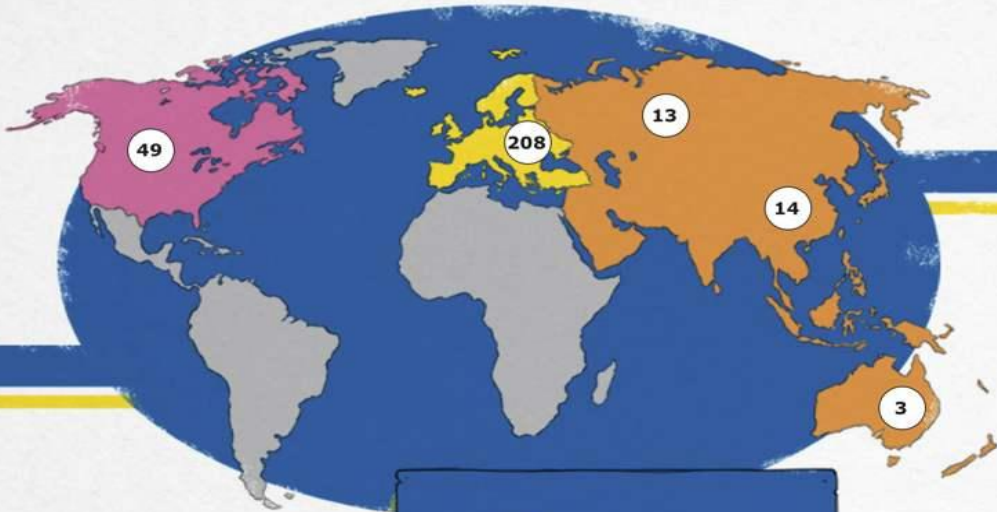


SHARING A VISION

To create a better everyday life
for the many people

BUSINESS IDEA

We shall offer a wide range of well-
designed,
functional home furnishing
products at prices
so low that as many people as
possible will
be able to afford them.



287 IKEA group stores worldwide



Co-workers
131,000

Visits on IKEA.com
870 million



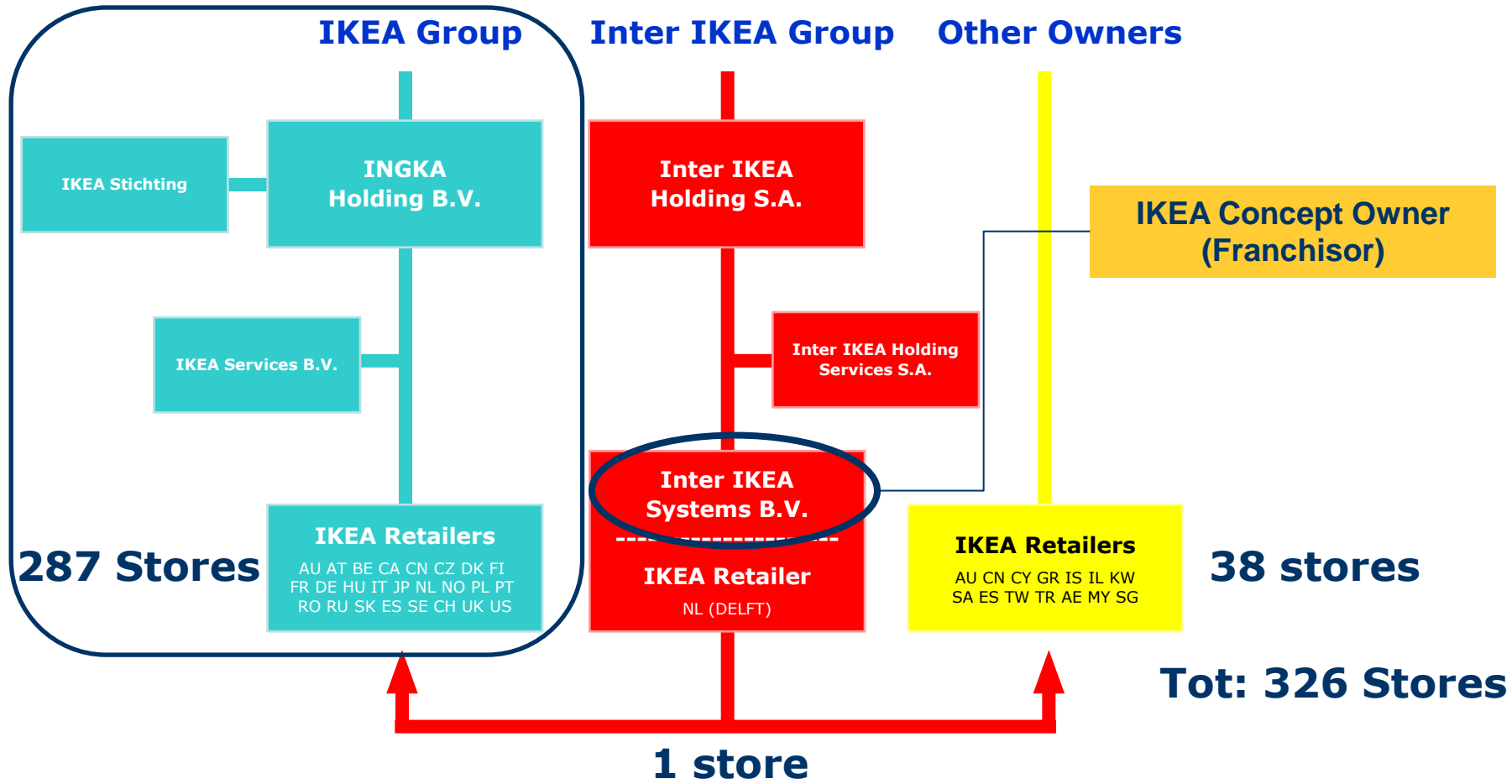
Store visits
655 million

Approximate number of products in the range
9,500



Total sales FY11
EUR 24.7 billion

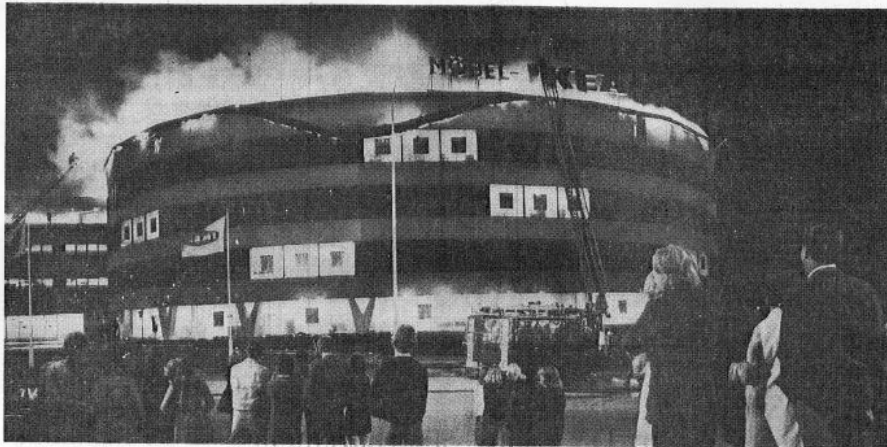
100 % IKEA ownership



IKEA – Fire Risk Handling

Historical perspective:

Katastrofbrand ödelade Ikea



Branden började i taket, men spred sig snabbt i det stora möbelhuset.

FOTO: LEIF ENGBERG

435 anställda

Lördagskvällen svåra brand är den första som drabbar Ikea vid Kungens kurva. Möbelhuset stod klart sommaren 1965. Det var då flera Europas största varuhus. Byggekostnaderna öppnade till cirka 17 miljoner kr. Det runda möbelhuset mäter 60 meter i diameter. Det inbyggande lager- och kontorshuset i tre våningar mäter 60x80 meter. Den totala ytan i komplexet är 32 000 kvadrater. Möbelhuset syns sällan i dag 435 personer.

Skador för 50 miljoner

Möbelhuset Ikea vid Kungens kurva i Stockholm eldhärjades på lördagskvällen så svårt att man måste bygga ett nytt hus. Det uppgav platschefen Hans Ax vid midnatt, då branden fortfarande rasade i det stora möbelkomplexet. Skadorna uppgår till cirka 50 miljoner kr. Branden började vid 20.30-tiden i neonskylten på taket. Tre brandkårer tillkallades men man hade ingen möjlighet att stoppa den våldsamma branden. Via luftintagen fortsatte den ner i huset. Även den intilliggande lager- och kontorsbyggnaden härjades mycket svårt. *Se sidan tjugoåtta*



Fire: The Kungens Kurva store, Sweden - 1970.

Fire: The Wallau store, Germany - 1984.

IKEA – Fire Risk Handling

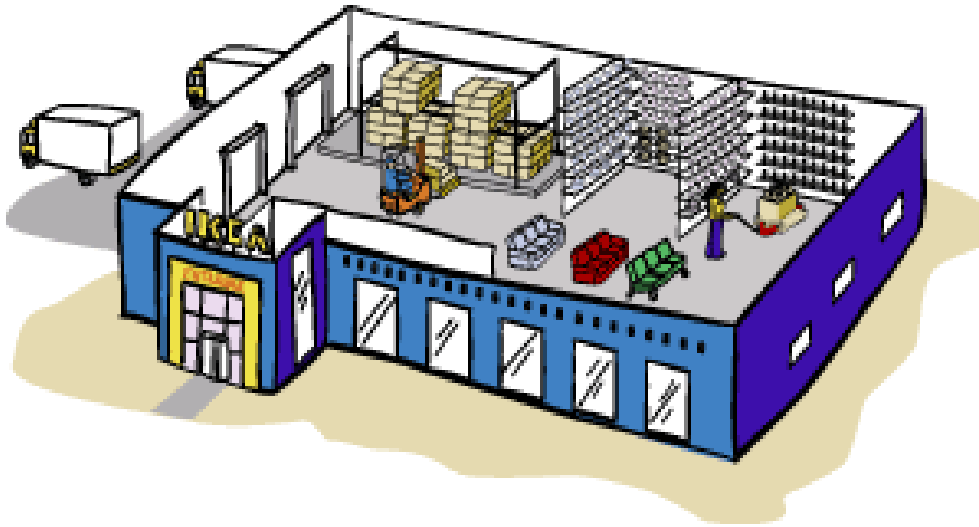
Historical perspective:



- Israel 2011
- NOT IKEA Group owned unit!

IKEA – Fire Risk Handling

Concept development:



Development IKEA concept:

- Concept layouts
- Sales solutions
- Logistic handling
- Store equipment
 - Restaurant
- Money handling
 - IKEA range
- Packaging concept
 - Etc.



Risks :

- **Fire**
- Accident
- Crime
- Natural hazards
- Etc.



IKEA Safety & Security “proven solutions”

**More then 50 years of experience!
IKEA GROUP - 287 stores!**

IKEA – Fire Risk Handling

IKEA Group Risk Manual:



GROUP RISK MANUAL
- STORE -

GRM 2004
Updated December 2008

**Store
Shopping Centre
Distribution Centre (DC)**

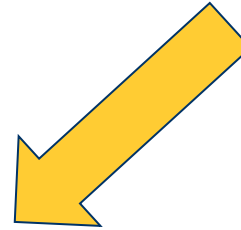
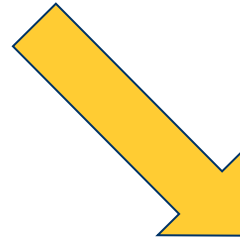
- 1. Fire**
- 2. Emergency Evacuation**
- 3. Accident Prevention**
- 4. Theft and Fraud**
- 5. Corruption Prevention**
- 6. Access Control**
- 7. Robbery**
- 8. Burglary**
- 9. Threats**
- 10. Emergency Response**
- 11. Store Openings**



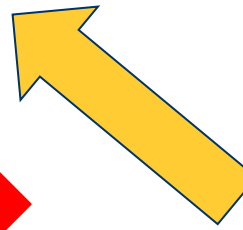
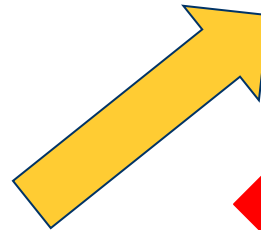
Inter IKEA Systems Manual



National codes

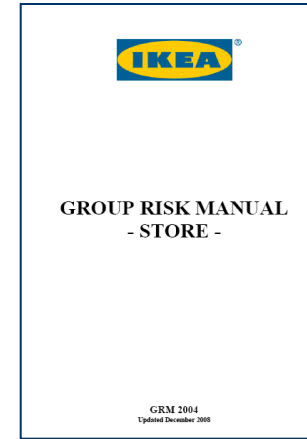


IKEA Store



Harmonization?

IKEA Group Risk Manual

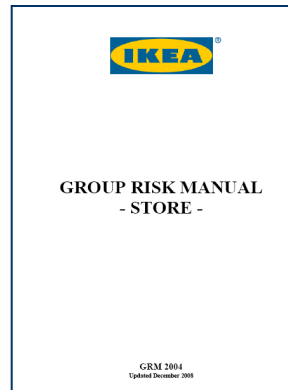


IKEA Engineering & Construction Manual

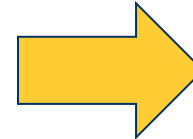


International standards: Storage protection:

**IKEA Group Risk
Manual**



**IKEA
Engineering & Construction
Manual**



- EN
- NFPA
- FM

Emerging Challenges - Storage Protection

IKEA Perspective:

- Fire load – goods configuration
- Type of storage solutions
- Storage height / Ceiling height
- New businesses
- New markets

Emerging Challenges - Storage protection

Fire load – Goods configuration

■ 1958 – 1970

- Most wooden products
- More or less everything in cardboard boxes



Emerging Challenges - Storage protection

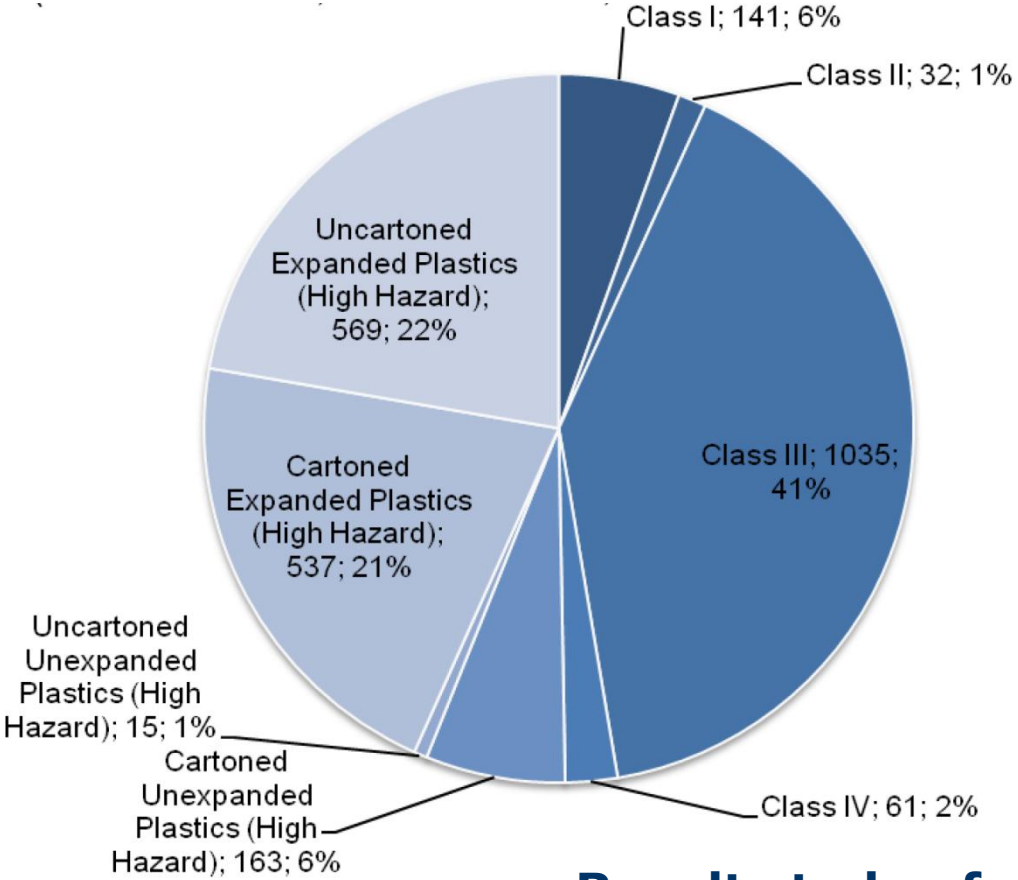
Fire load – Goods configuration

- 1980 – 2012
 - More and more plastic products in our range
 - New products / range
 - Not packaged in cardboard boxes
 - Shrink wrapping



Emerging Challenges - Storage protection

Fire load – Goods configuration



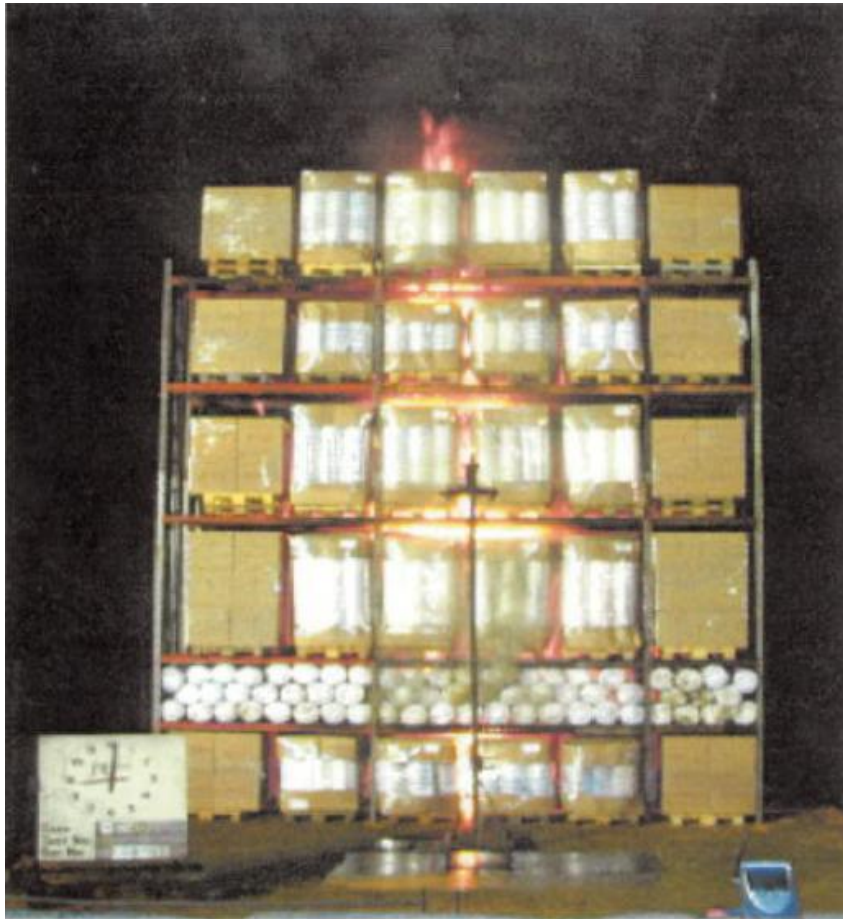
Result study of one IKEA US store 2009 (NFPA)

- Volume of plastic have increased
- IKEA testing since 1980-
 - SP
 - FM
 - Vds
 - Viking
 - CCI
 - UL
 - Etc.



Emerging Challenges - Storage protection

Fire load – Goods configuration



Test at FM1999-2000

- Exposed Expanded Plastics
- Rolled mattresses
- Challenge:
 - Few international standards?
 - In-rack solutions – flexibility?
 - IKEA standards – Approval authorities
 - Sensible solutions – Flue space
 - Expensive installations

Emerging Challenges - Storage protection

Type of storage solution

- VASS – Vertical Automated Storage System
- High level picking
- Sales solutions
- Packaging concept



17.05.2010 12:10



18.05.2010 11:18

VASS - Vertical Automated Storage System



19.05.2010 07:44



19.05.2010 07:42

Emerging Challenges - Storage protection

Type of storage solution: VASS



- Gas vs. conventional sprinkler?

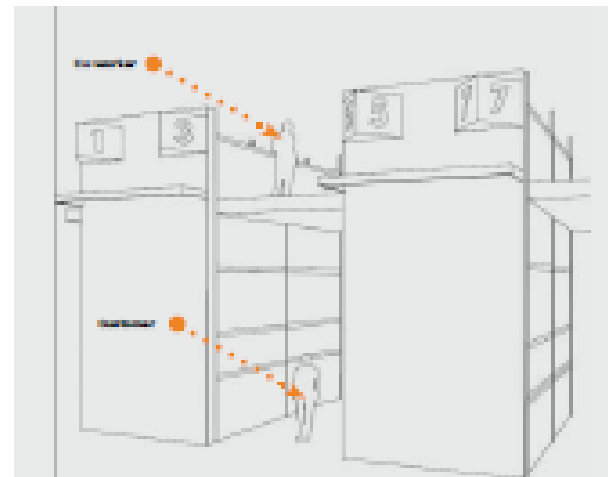
 - Challenge:
 - Fire load – standard?
 - IKEA Test needed
- Conclusion:
- maintain the structural integrity
 - contain the fire
 - low probability for fire spread
 - manual fire fighting

Emerging Challenges - Storage protection

Type of storage solution: High Level Picking



- New storage solution in existing stores - capacity problems
- Challenge:
 - Standards
 - Rebuilding
 - Smoke management
 - Life safety



Emerging Challenges - Storage protection

Type of storage solution: Sales solutions



- New racking
 - Gondola
 - Ceiling displays
 - Solid shelves
- Challenge:
 - New sales solutions
 - Fire load
 - Obstructions

Emerging Challenges - Storage protection

Type of storage solution: Packaging Concept



- Paper pallets
- Loading ledges

- Challenge:
 - Flue spaces
 - Flexibility



Emerging Challenges - Storage protection

Type of storage solution: Packaging Concept



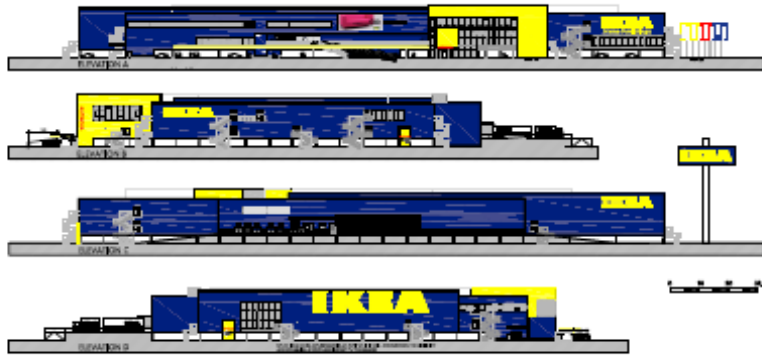
- Optimal Unit loads (new)
 - Improve fill rate - transport
 - Better handling
 - Less undamaged products

- Challenge:
 - Flue spaces
 - Flexibility

Emerging Challenges - Storage protection

Storage height / Ceiling height

The IKEA original
standard store ?



- New store design
- Capacity problems
- Meeting the markets need:
 - Small
 - Medium
 - Large
 - Multi level
 - City centre location

- Challenge:
 - Storage height - Available sprinkler standards
 - Ceiling height
 - Indoor climate – ceiling fans
 - Full flexibility

Emerging Challenges - Storage protection

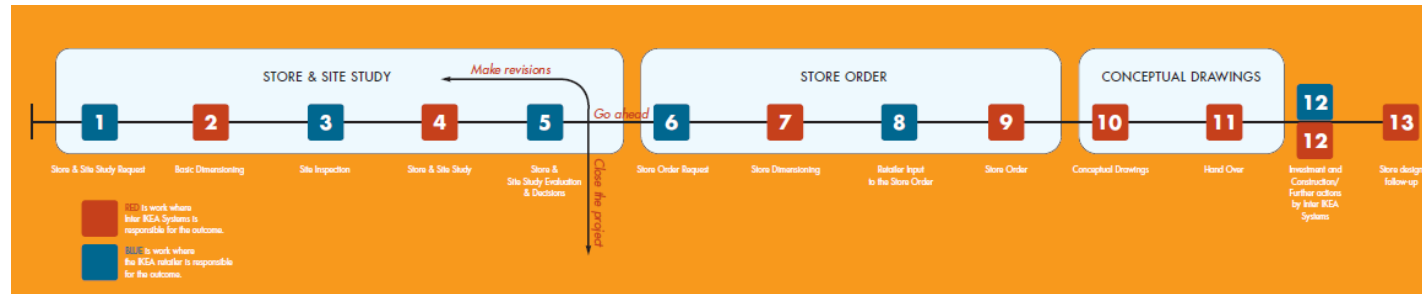
New businesses



- IKEA Shopping centers
- Challenge:
 - Different businesses
 - Fire loads
 - Sprinkler standards
 - Legal demands
 - Company policies
 - Contract tenants

Emerging Challenges - Storage protection

New markets



- Challenge:
 - Different stakeholders - know-how:
 - Local IKEA project team
 - Insurance
 - Authorities
 - Legal requirements
 - Local sprinkler standards
 - Smoke management (Life Safety)
 - Communication - Culture
 - Corruption!

Emerging Challenges - Storage protection

Conclusion - Vision

- High level of fire safety
- Flexibility
- Simplicity
- Cost efficient solutions
- Know-how

Most things still remain to be done. A glorious future!

