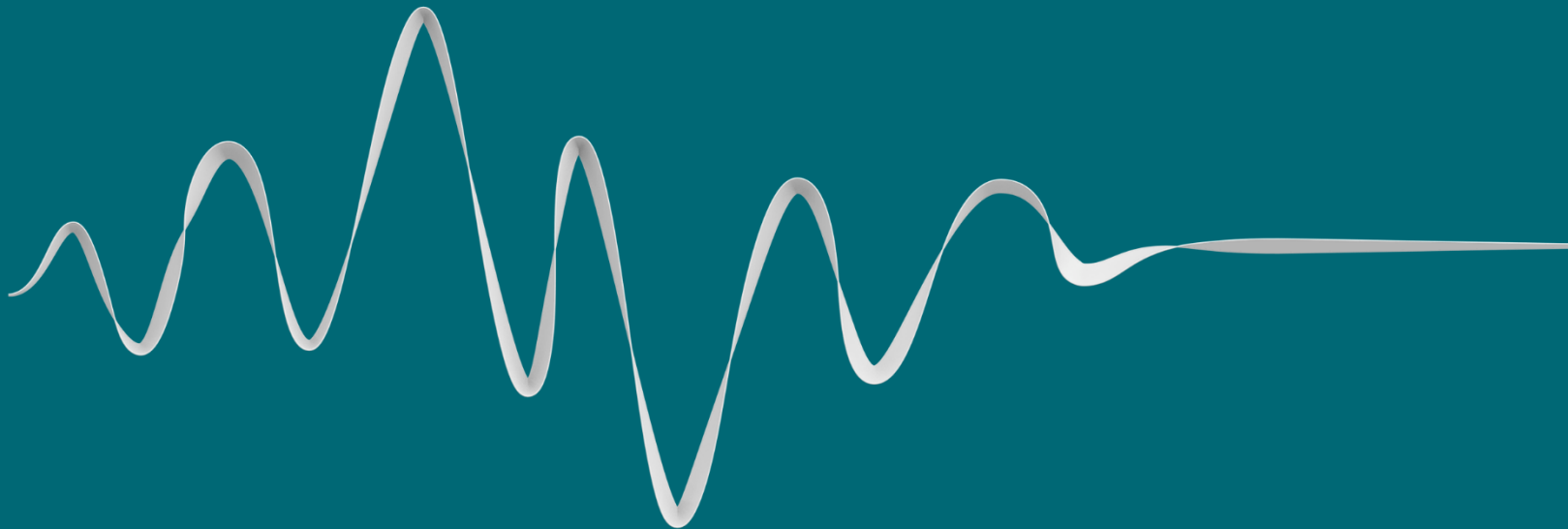


MUSIC IN HERITAGE
THE ACOUSTIC AGORA



INTRODUCTION

Contents

■ Problem statement

Objective

RESEARCH

Research method

Conclusion

ARCHITECTURE

Context

Concept

Design

Atmospheres

ACOUSTICS

Existing situation

AR Design

Acoustic solution

BUILDING TECH

Climate

Detailing

PROBLEM STATEMENT



INTRODUCTION

Contents
Problem statement
Objective

RESEARCH

Research method
Conclusion

ARCHITECTURE

Context
Concept
Design
Atmospheres

ACOUSTICS

Existing situation
AR Design
Acoustic solution

BUILDING TECH

Climate
Detailing

CONTENTS

INTRODUCTION

Contents

■ Problem statement

Objective

RESEARCH

Research method

Conclusion

ARCHITECTURE

Context

Concept

Design

Atmospheres

ACOUSTICS

Existing situation

AR Design

Acoustic solution

BUILDING TECH

Climate

Detailing

PROBLEM STATEMENT

In a lot of monuments, the room acoustics are bad due to materialisation and dimensions.

Changing the acoustics with common solutions, could harm the historical and cultural value.

INTRODUCTION

Contents
Problem statement
■ Objective

RESEARCH

Research method
Conclusion

ARCHITECTURE

Context
Concept
Design
Atmospheres

ACOUSTICS

Existing situation
AR Design
Acoustic solution

BUILDING TECH

Climate
Detailing

OBJECTIVE

Overall research question

How can the acoustics in monuments be made suitable
with unconventional or tailor-made solutions?

Overall design question

How can the Van Gendthallen be a place for music?

INTRODUCTION

Contents
Problem statement
Objective

RESEARCH

Research method
Conclusion

ARCHITECTURE

Context
Concept
Design
Atmospheres

ACOUSTICS

Existing situation
AR Design
Acoustic solution

BUILDING TECH

Climate
Detailing

RESEARCH

INTRODUCTION

Contents
Problem statement
Objective

RESEARCH

Research method
Conclusion

ARCHITECTURE

Context
Concept
Design
Atmospheres

ACOUSTICS

Existing situation
AR Design
Acoustic solution

BUILDING TECH

Climate
Detailing

RESEARCH METHODOLOGY



INTRODUCTION

Contents
Problem statement
Objective

RESEARCH

Research method
Conclusion

ARCHITECTURE

Context
Concept
Design
Atmospheres

ACOUSTICS

Existing situation
AR Design
Acoustic solution

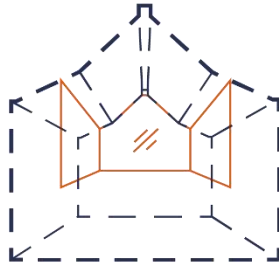
BUILDING TECH

Climate
Detailing

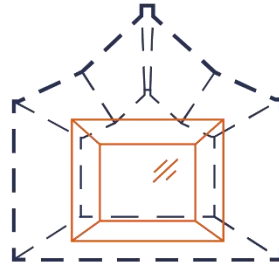
RESEARCH METHODOLOGY

Predecessors

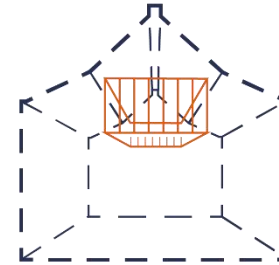
Nieuwe Kerk Den Haag
Glass curtain



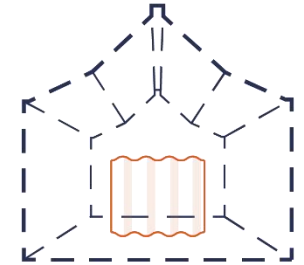
Beurs van Berlage
Glass box



Rijksmuseum
Difussing chandelier



Casa di Musica
Corrugated glass



INTRODUCTION

Contents
Problem statement
Objective

RESEARCH

Research method
Conclusion

ARCHITECTURE

Context
Concept
Design
Atmospheres

ACOUSTICS

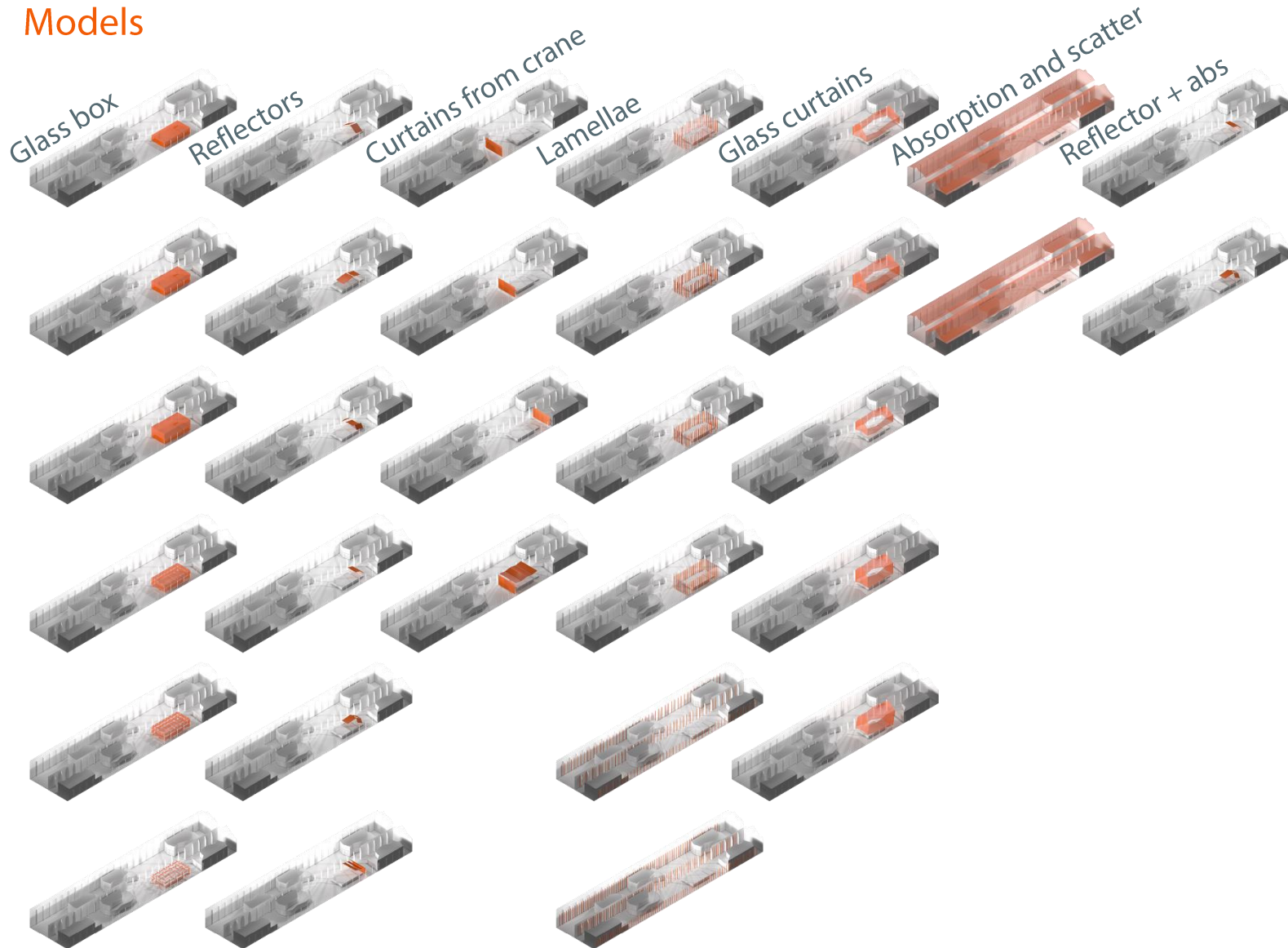
Existing situation
AR Design
Acoustic solution

BUILDING TECH

Climate
Detailing

RESEARCH METHODOLOGY

Models



INTRODUCTION

Contents
Problem statement
Objective

RESEARCH

Research method
Conclusion

ARCHITECTURE

Context
Concept
Design
Atmospheres

ACOUSTICS

Existing situation
AR Design
Acoustic solution

BUILDING TECH

Climate
Detailing

RESEARCH METHODOLOGY**Simulation roadmap****Existing**

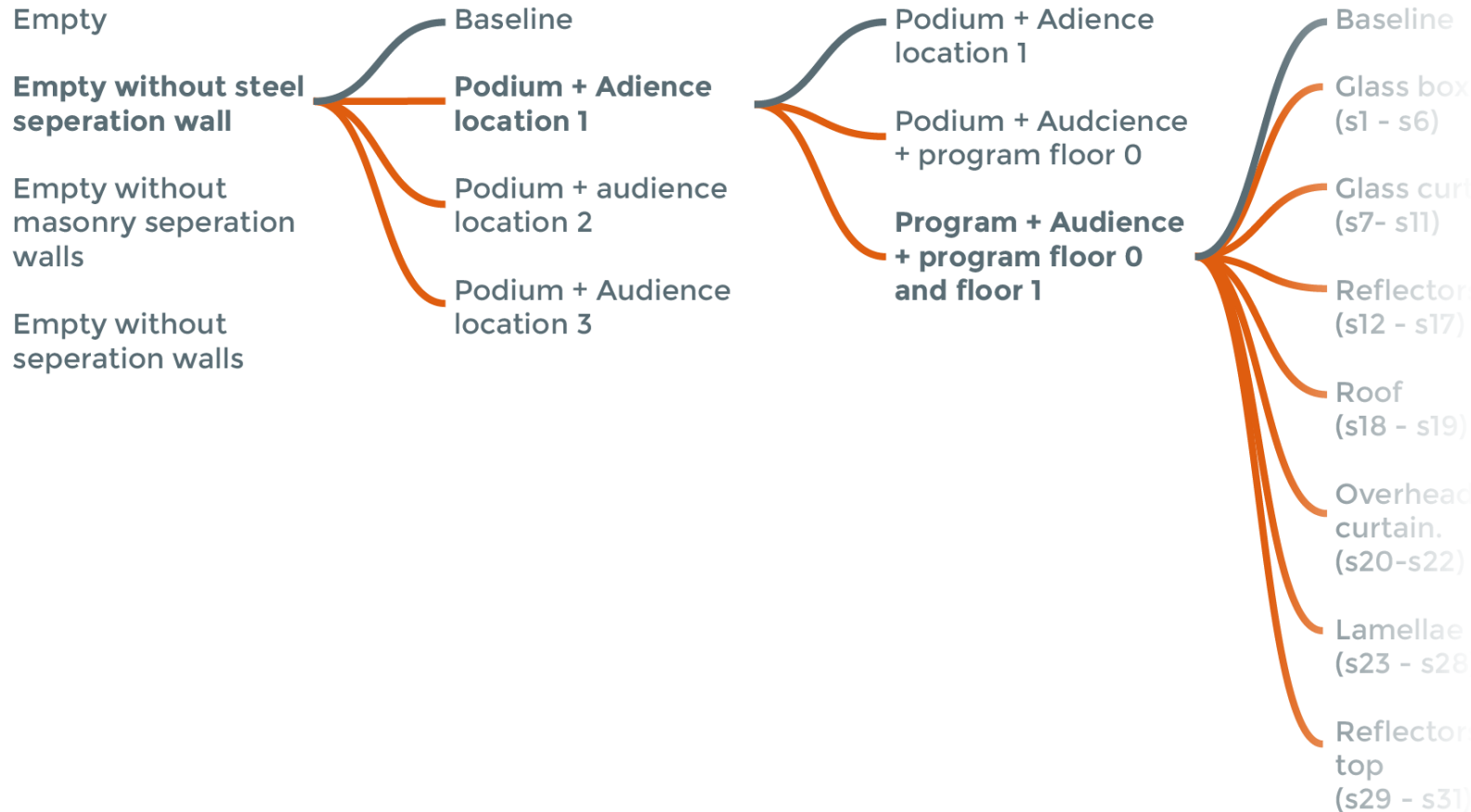
Empty

Empty without steel
seperation wallEmpty without
masonry seperation
wallsEmpty without
seperation walls**Performance
location**

Baseline

Podium + Adience
location 1Podium + audience
location 2Podium + Audience
location 3**Relevance
program**Podium + Adience
location 1Podium + Audcience
+ program floor 0Program + Audience
+ program floor 0
and floor 1**Testing**

Baseline

Glass box
(s1 - s6)Glass curtain
(s7- s11)Reflector
(s12 - s17)Roof
(s18 - s19)Overhead
curtain.
(s20-s22)Lamellae
(s23 - s28)Reflector
top
(s29 - s31)

INTRODUCTION

Contents
Problem statement
Objective

RESEARCH

Research method
Conclusion

ARCHITECTURE

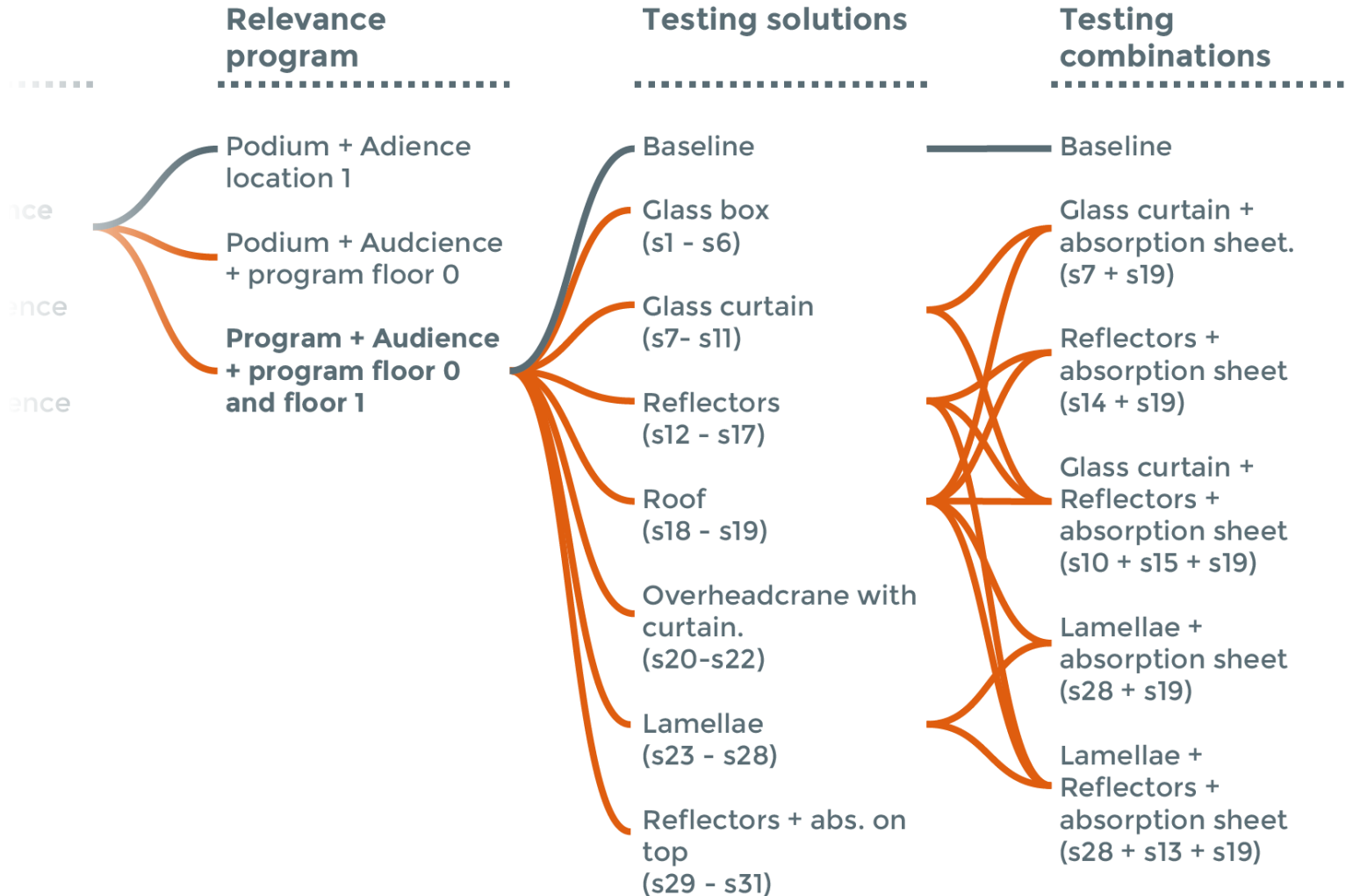
Context
Concept
Design
Atmospheres

ACOUSTICS

Existing situation
AR Design
Acoustic solution

BUILDING TECH

Climate
Detailing

RESEARCH METHODOLOGY**Simulation roadmap**

INTRODUCTION

Contents
Problem statement
Objective

RESEARCH

Research method
Conclusion

ARCHITECTURE

Context
Concept
Design
Atmospheres

ACOUSTICS

Existing situation
AR Design
Acoustic solution

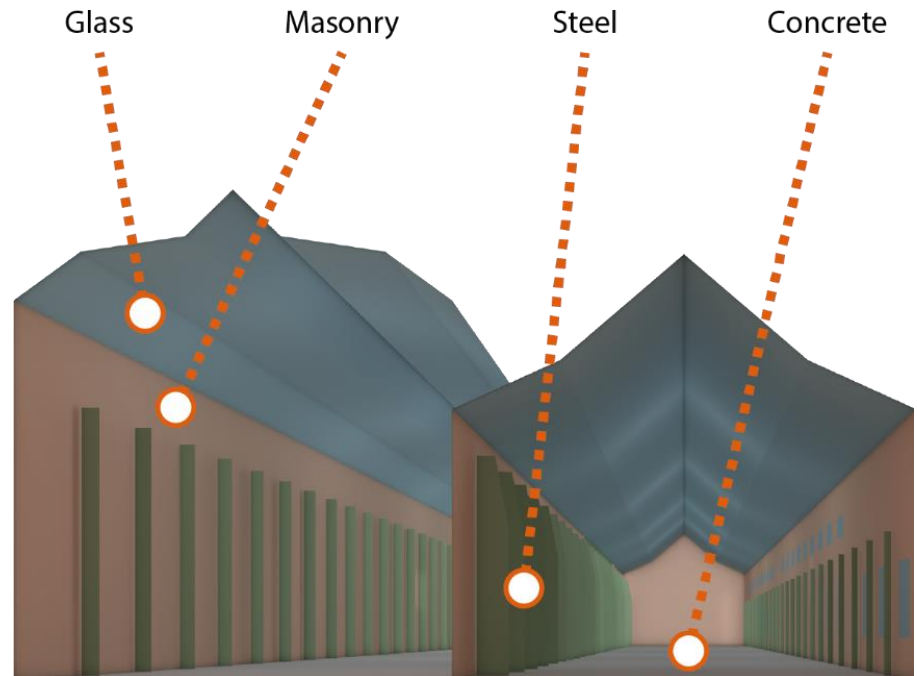
BUILDING TECH

Climate
Detailing

RESEARCH METHODOLOGY

Simulation with CATT Acoustic

- Simulation of a room, based on a ray-tracing method.
- Calculating of objective parameters.
- Auralization.



INTRODUCTION

Contents
Problem statement
Objective

RESEARCH

Research method
Conclusion

ARCHITECTURE

Context
Concept
Design
Atmospheres

ACOUSTICS

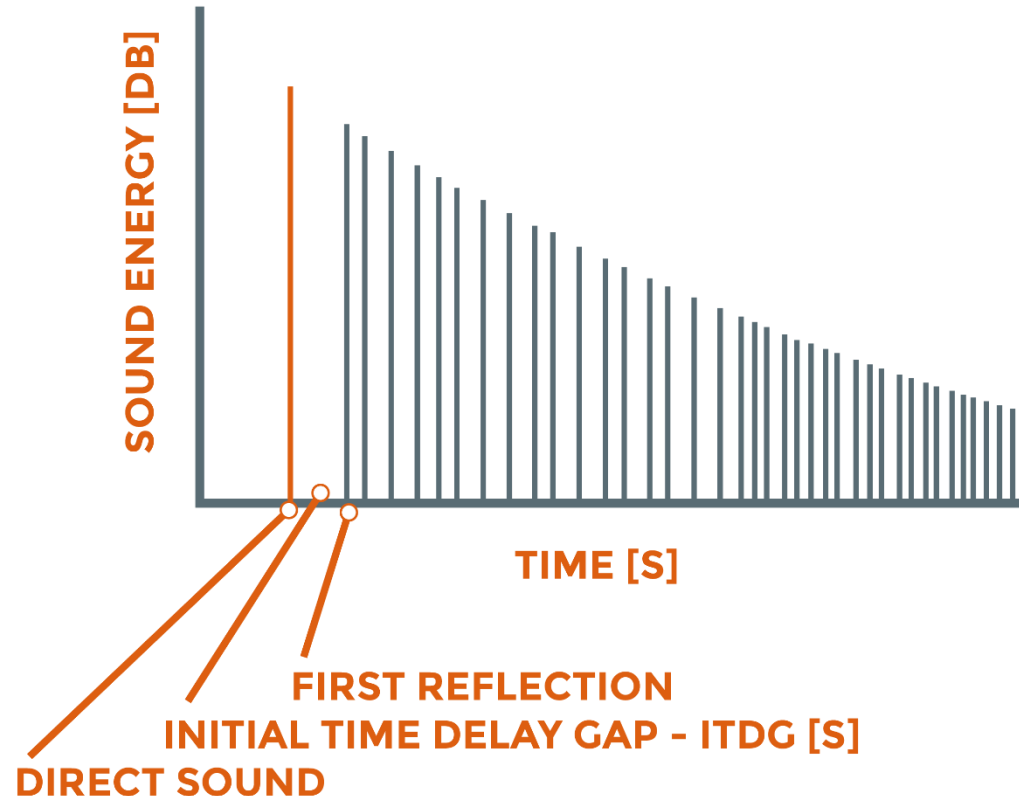
Existing situation
AR Design
Acoustic solution

BUILDING TECH

Climate
Detailing

RESEARCH METHODOLOGY

CATT Acoustic



INTRODUCTION

Contents
Problem statement
Objective

RESEARCH

Research method
Conclusion

ARCHITECTURE

Context
Concept
Design
Atmospheres

ACOUSTICS

Existing situation
AR Design
Acoustic solution

BUILDING TECH

Climate
Detailing

RESEARCH METHODOLOGY

Quantification

- Reverberation time [T-30]
- Early decay time [EDT]
- G-Strength [G]
- Clarity [C-80]

INTRODUCTION

- Contents
- Problem statement
- Objective

RESEARCH

- Research method
- Conclusion

ARCHITECTURE

- Context
- Concept
- Design
- Atmospheres

ACOUSTICS

- Existing situation
- AR Design
- Acoustic solution

BUILDING TECH

- Climate
- Detailing

RESEARCH METHODOLOGY

Preliminary demands

RT30 <350 Hz	RT30 >350 Hz	G	C80	EDT
1.7-2.0	1.4-1.7	10-12	6-10	1.3-1.6

INTRODUCTION

Contents
Problem statement
Objective

RESEARCH

Research method
Conclusion

ARCHITECTURE

Context
Concept
Design
Atmospheres

ACOUSTICS

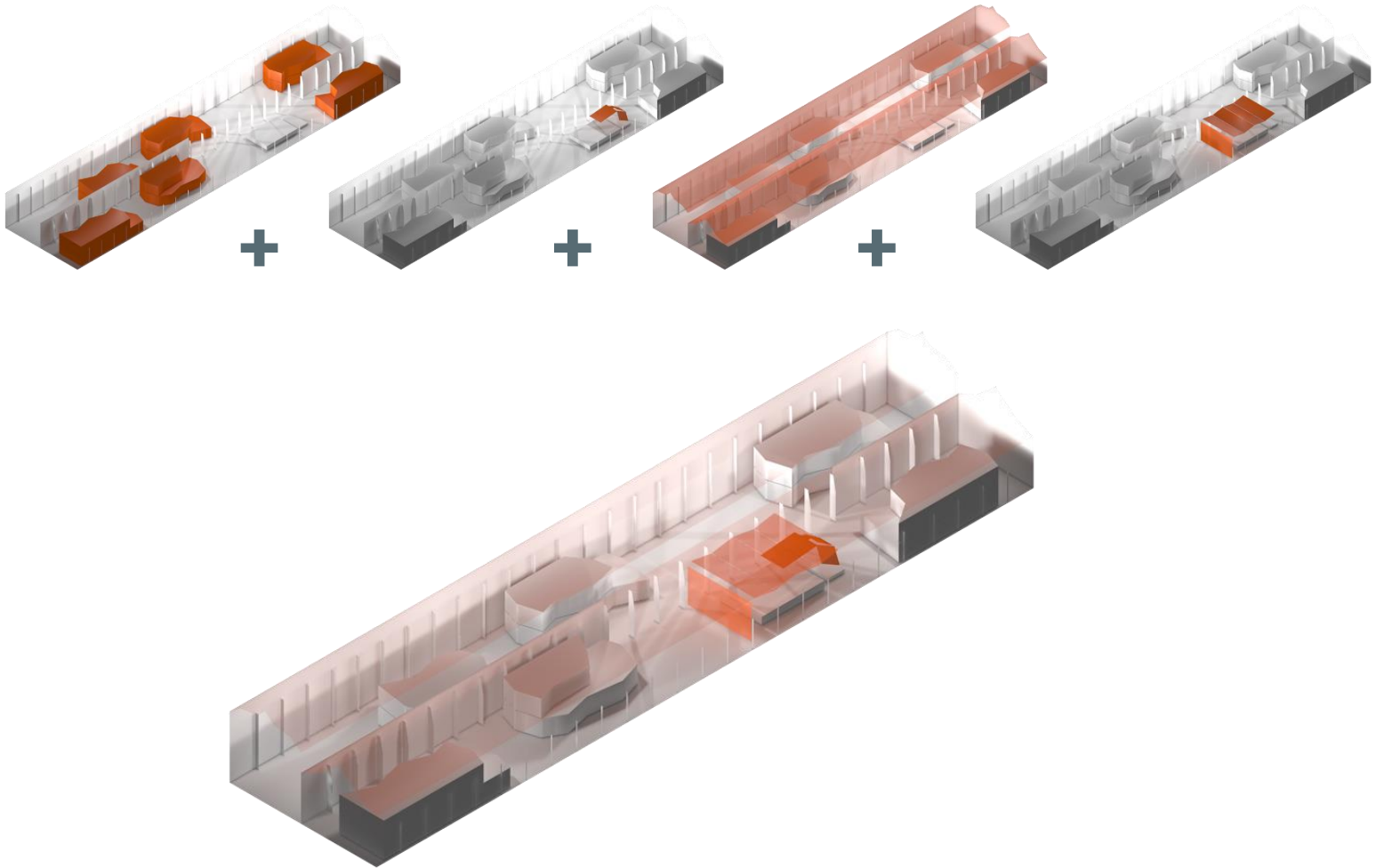
Existing situation
AR Design
Acoustic solution

BUILDING TECH

Climate
Detailing

CONCLUSION

Combinations are necessary



INTRODUCTION

Contents
Problem statement
Objective

RESEARCH

Research method
Conclusion

ARCHITECTURE

Context
Concept
Design
Atmospheres

ACOUSTICS

Existing situation
AR Design
Acoustic solution

BUILDING TECH

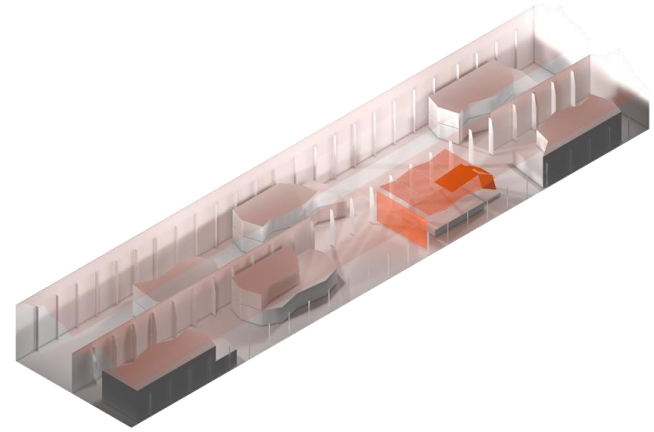
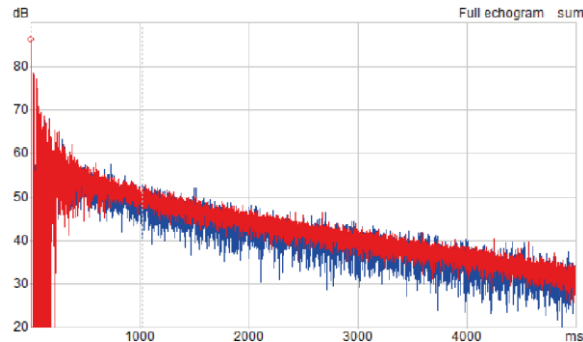
Climate
Detailing

COMBINATION

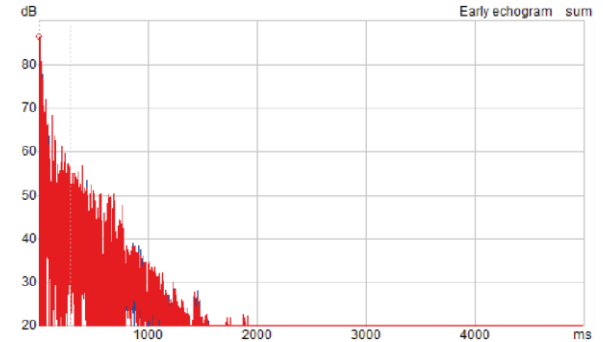
Comparison



Empty hall



Combination



INTRODUCTION

Contents
Problem statement
Objective

RESEARCH

Research method
Conclusion

ARCHITECTURE

Context
Concept
Design
Atmospheres

ACOUSTICS

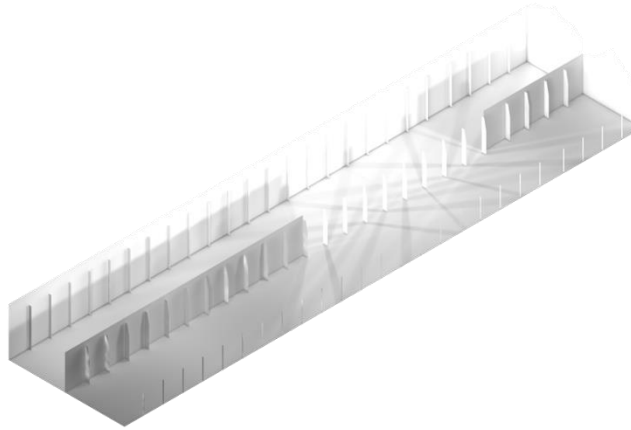
Existing situation
AR Design
Acoustic solution

BUILDING TECH

Climate
Detailing

COMBINATION

Auralization



Empty hall



INTRODUCTION

Contents
Problem statement
Objective

RESEARCH

Research method
Conclusion

ARCHITECTURE

Context
Concept
Design
Atmospheres

ACOUSTICS

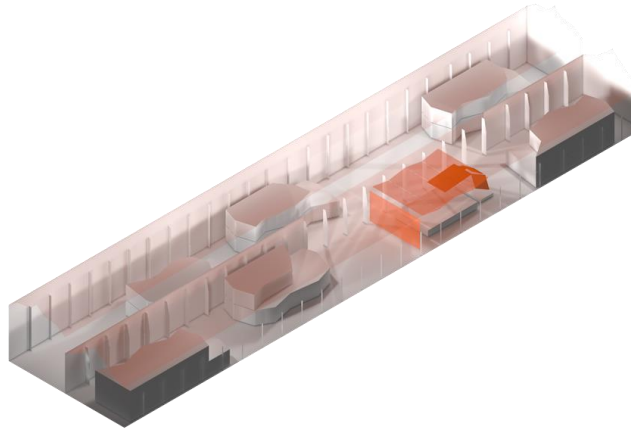
Existing situation
AR Design
Acoustic solution

BUILDING TECH

Climate
Detailing

COMBINATION

Auralization



Combination



INTRODUCTION

Contents
Problem statement
Objective

RESEARCH

Research method
Conclusion

ARCHITECTURE

Context
Concept
Design
Atmospheres

ACOUSTICS

Existing situation
AR Design
Acoustic solution

BUILDING TECH

Climate
Detailing

RESEARCH CONCLUSION

- Final program has significant influence on the room acoustics.
- The different solutions can be combined very well.

INTRODUCTION

Contents
Problem statement
Objective

RESEARCH

Research method
Conclusion

ARCHITECTURE

Context
Concept
Design
Atmospheres

ACOUSTICS

Existing situation
AR Design
Acoustic solution

BUILDING TECH

Climate
Detailing

ARCHITECTURE

INTRODUCTION

Contents
Problem statement
Objective

RESEARCH

Research method
Conclusion

ARCHITECTURE

Context
Concept
Design
Atmospheres

ACOUSTICS

Existing situation
AR Design
Acoustic solution

BUILDING TECH

Climate
Detailing

CONTEXT

Van Gendthallen - Location



INTRODUCTION

Contents
Problem statement
Objective

RESEARCH

Research method
Conclusion

ARCHITECTURE

Context
Concept
Design
Atmospheres

ACOUSTICS

Existing situation
AR Design
Acoustic solution

BUILDING TECH

Climate
Detailing

CONTEXT

Van Gendthallen - Values



- Beautiful existing construction

INTRODUCTION

Contents
Problem statement
Objective

RESEARCH

Research method
Conclusion

ARCHITECTURE

Context
Concept
Design
Atmospheres

ACOUSTICS

Existing situation
AR Design
Acoustic solution

BUILDING TECH

Climate
Detailing

CONTEXT

Van Gendthallen - Values



- Closed façade

INTRODUCTION

Contents
Problem statement
Objective

RESEARCH

Research method
Conclusion

ARCHITECTURE

Context
Concept
Design
Atmospheres

ACOUSTICS

Existing situation
AR Design
Acoustic solution

BUILDING TECH

Climate
Detailing

CONTEXT

Program 'Acoustic Agora'

- Rehearsal rooms & studios
- Workplaces & meeting rooms
- Hotel restaurant, coffee corner
- KeyMusic shop
- Music halls

INTRODUCTION

Contents
Problem statement
Objective

RESEARCH

Research method
Conclusion

ARCHITECTURE

Context
■ Concept
Design
Atmospheres

ACOUSTICS

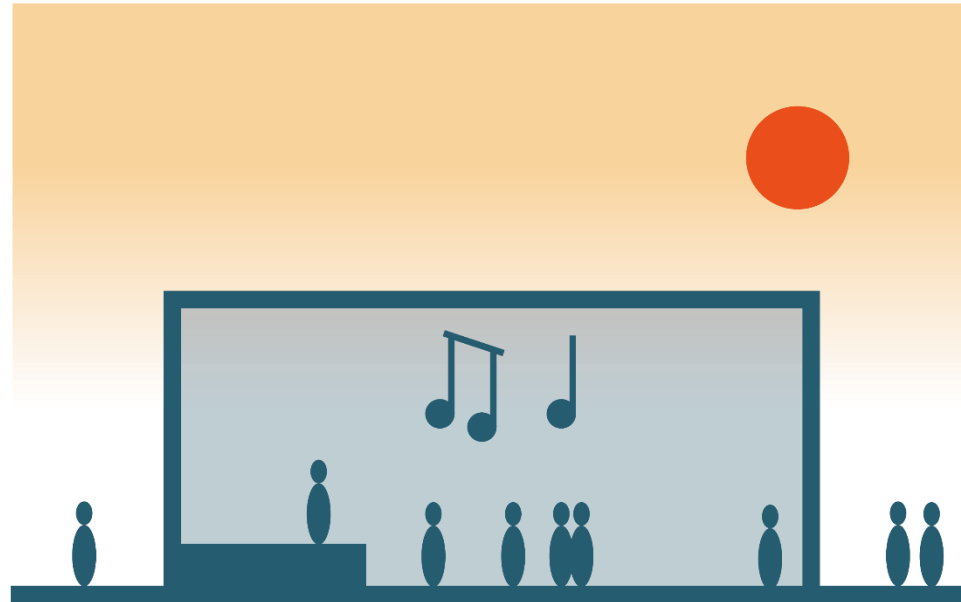
Existing situation
AR Design
Acoustic solution

BUILDING TECH

Climate
Detailing

CONCEPT

Standard music halls



- Closed, secluded box
- Used a few hours a day

INTRODUCTION

Contents
Problem statement
Objective

RESEARCH

Research method
Conclusion

ARCHITECTURE

Context
■ Concept
Design
Atmospheres

ACOUSTICS

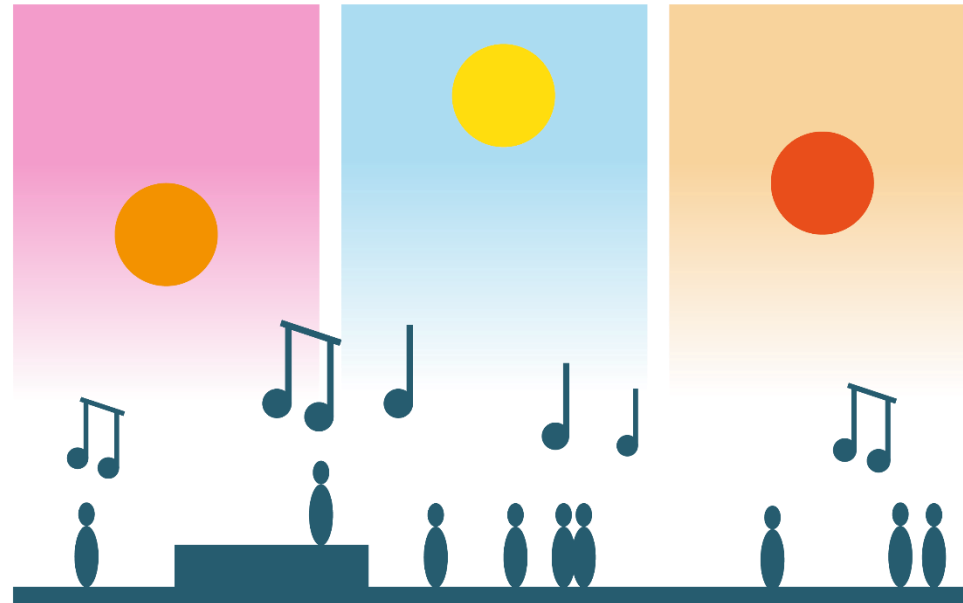
Existing situation
AR Design
Acoustic solution

BUILDING TECH

Climate
Detailing

CONCEPT

Old city square



- Casual place for singer songwriter / alternative music
- Beautiful existing construction exhibits itself as a roof instead of the sky.

INTRODUCTION

Contents
Problem statement
Objective

RESEARCH

Research method
Conclusion

ARCHITECTURE

Context
Concept
Design
Atmospheres

ACOUSTICS

Existing situation
AR Design
Acoustic solution

BUILDING TECH

Climate
Detailing

CONCEPT

Old city square



INTRODUCTION

Contents
Problem statement
Objective

RESEARCH

Research method
Conclusion

ARCHITECTURE

Context
Concept
Design
Atmospheres

ACOUSTICS

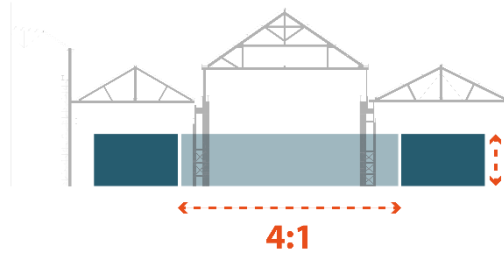
Existing situation
AR Design
Acoustic solution

BUILDING TECH

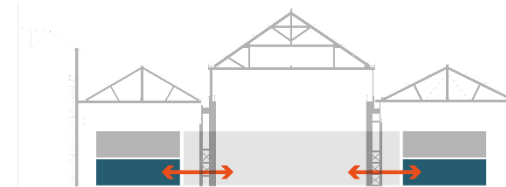
Climate
Detailing

CONCEPT

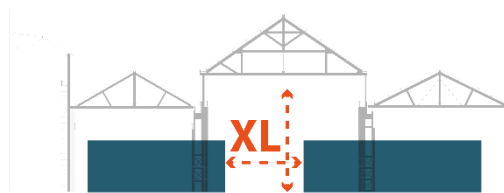
Boundary conditions



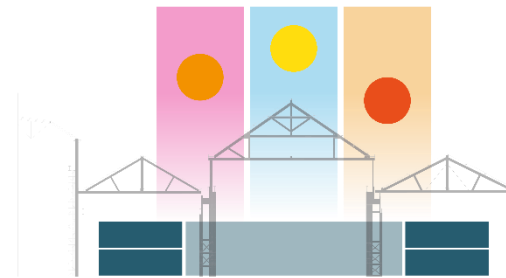
1. Envelop



2. Plinth



3. Large entrance



4. Dynamic use

INTRODUCTION

Contents
Problem statement
Objective

RESEARCH

Research method
Conclusion

ARCHITECTURE

Context
Concept
Design
Atmospheres

ACOUSTICS

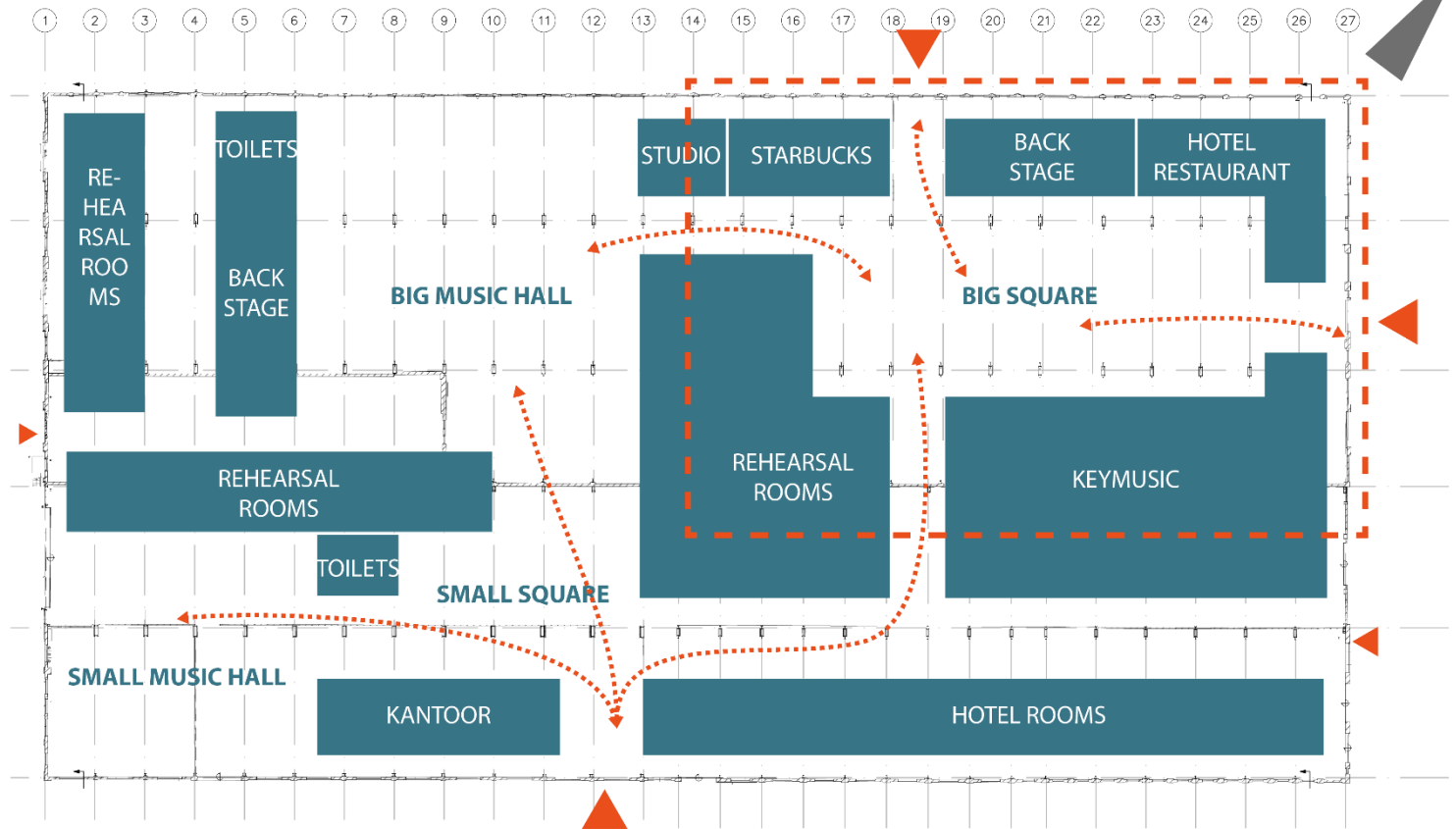
Existing situation
AR Design
Acoustic solution

BUILDING TECH

Climate
Detailing

DESIGN

SITE



INTRODUCTION

Contents
Problem statement
Objective

RESEARCH

Research method
Conclusion

ARCHITECTURE

Context
Concept
Design
Atmospheres

ACOUSTICS

Existing situation
AR Design
Acoustic solution

BUILDING TECH

Climate
Detailing

DESIGN**Groundfloor**

Hotel -
Restaurant

KeyMusic

Backstage

Rehearsal
rooms

Starbucks

Studio



INTRODUCTION

Contents
Problem statement
Objective

RESEARCH

Research method
Conclusion

ARCHITECTURE

Context
Concept
Design
Atmospheres

ACOUSTICS

Existing situation
AR Design
Acoustic solution

BUILDING TECH

Climate
Detailing

DESIGN**First floor**

Hotel -
Restaurant

Rentable office
and meeting

Open work
floor



DESIGN

Elevation



DESIGN

Longitudinal section



INTRODUCTION

Contents
Problem statement
Objective

RESEARCH

Research method
Conclusion

ARCHITECTURE

Context
Concept
Design
■ Atmospheres

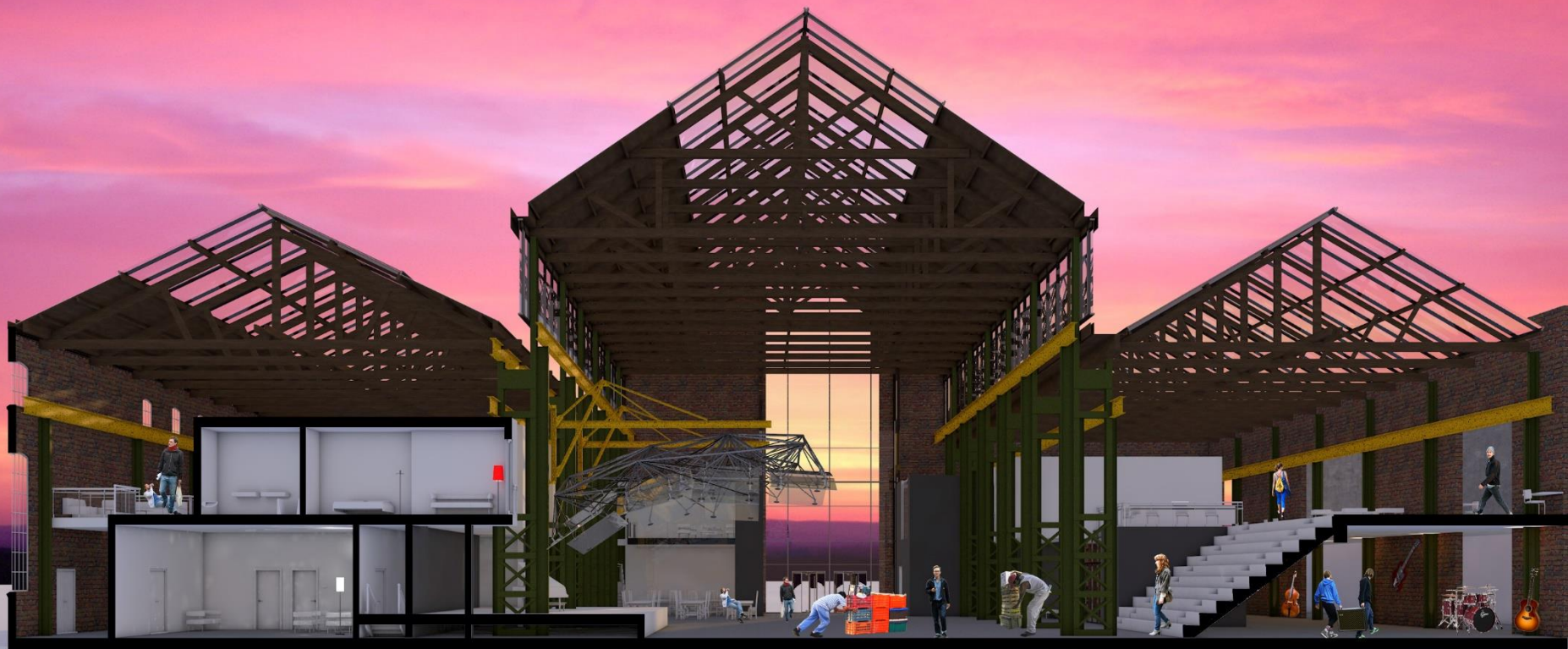
ACOUSTICS

Existing situation
AR Design
Acoustic solution

BUILDING TECH

Climate
Detailing

ATMOSPHERES





INTRODUCTION

Contents
Problem statement
Objective

RESEARCH

Research method
Conclusion

ARCHITECTURE

Context
Concept
Design
Atmospheres

ACOUSTICS

Existing situation
AR Design
Acoustic solution

BUILDING TECH

Climate
Detailing

ACOUSTICS

INTRODUCTION

Contents
Problem statement
Objective

RESEARCH

Research method
Conclusion

ARCHITECTURE

Context
Concept
Design
Atmospheres

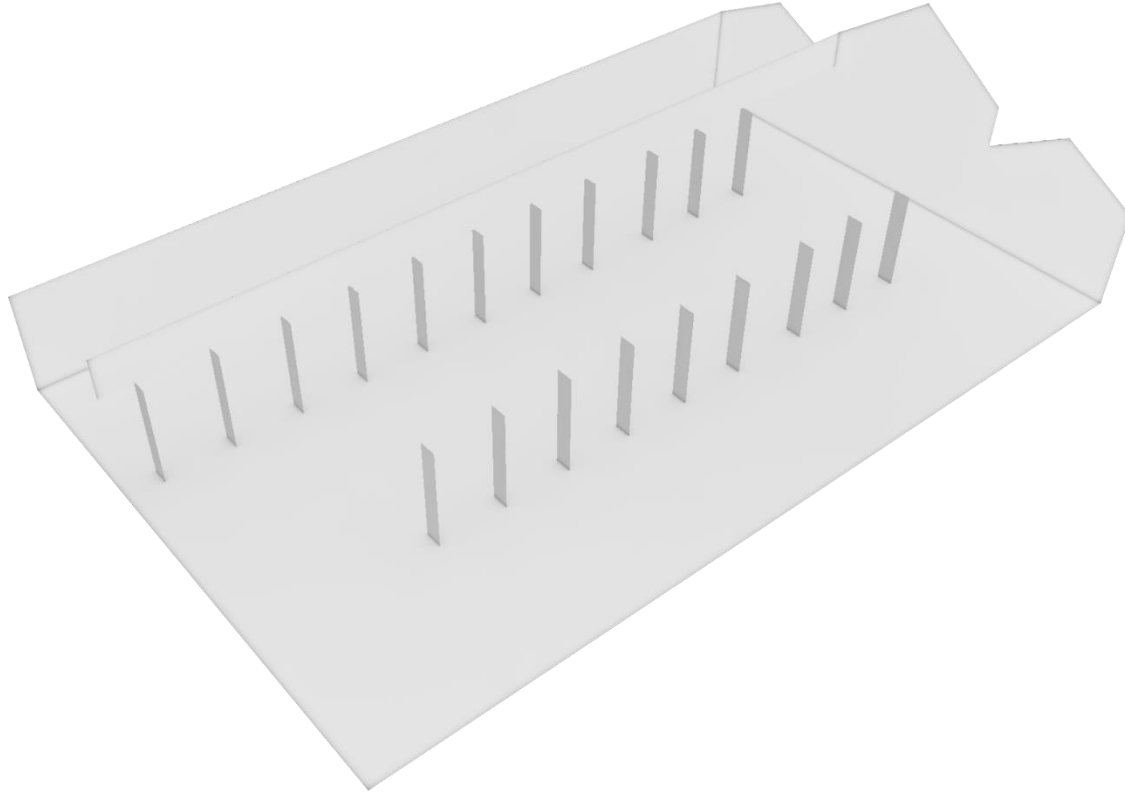
ACOUSTICS

Existing situation
AR Design
Acoustic solution

BUILDING TECH

Climate
Detailing

EXISTING SITUATION



INTRODUCTION

Contents
Problem statement
Objective

RESEARCH

Research method
Conclusion

ARCHITECTURE

Context
Concept
Design
Atmospheres

ACOUSTICS

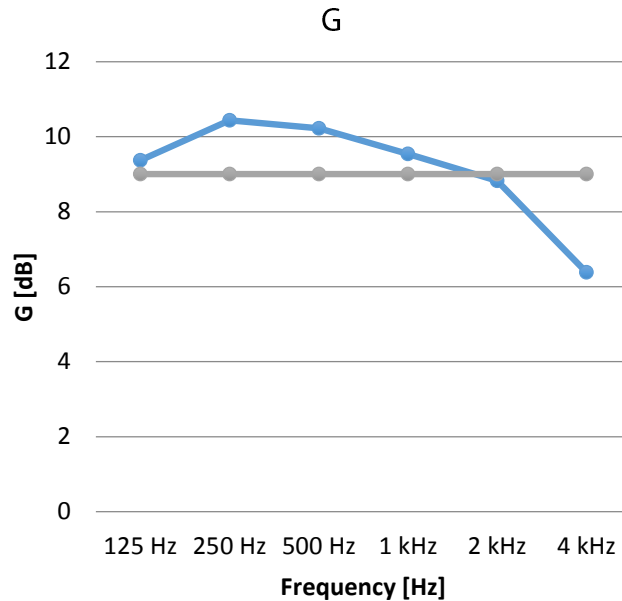
Existing situation
AR Design
Acoustic solution

BUILDING TECH

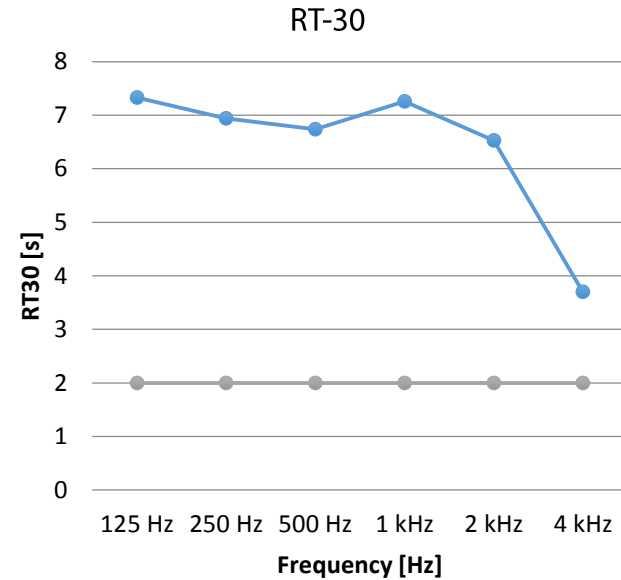
Climate
Detailing

EXISTING SITUATION

Simulation



Existing Aim



Existing Aim

INTRODUCTION

Contents
Problem statement
Objective

RESEARCH

Research method
Conclusion

ARCHITECTURE

Context
Concept
Design
Atmospheres

ACOUSTICS

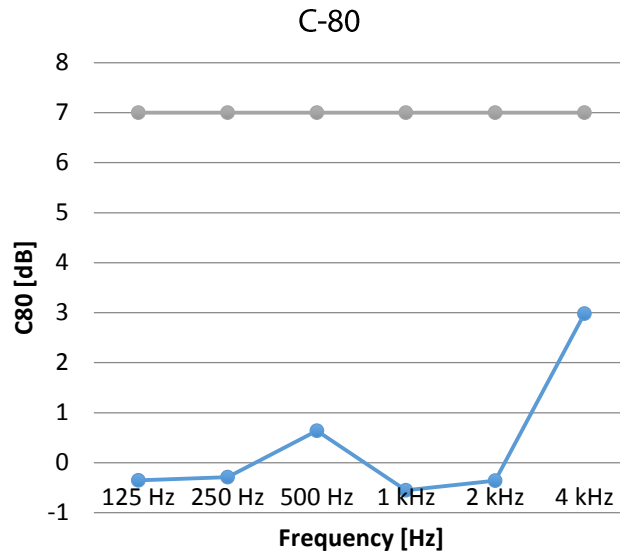
Existing situation
AR Design
Acoustic solution

BUILDING TECH

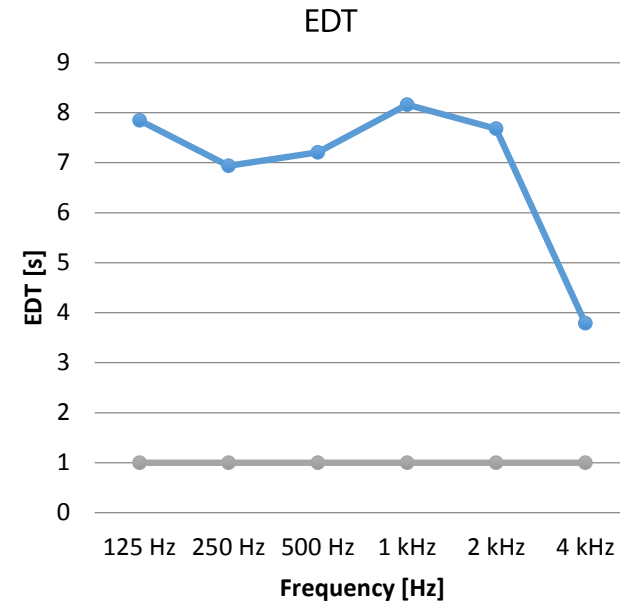
Climate
Detailing

EXISTING SITUATION

Simulation



Existing Aim



Existing Aim

INTRODUCTION

Contents
Problem statement
Objective

RESEARCH

Research method
Conclusion

ARCHITECTURE

Context
Concept
Design
Atmospheres

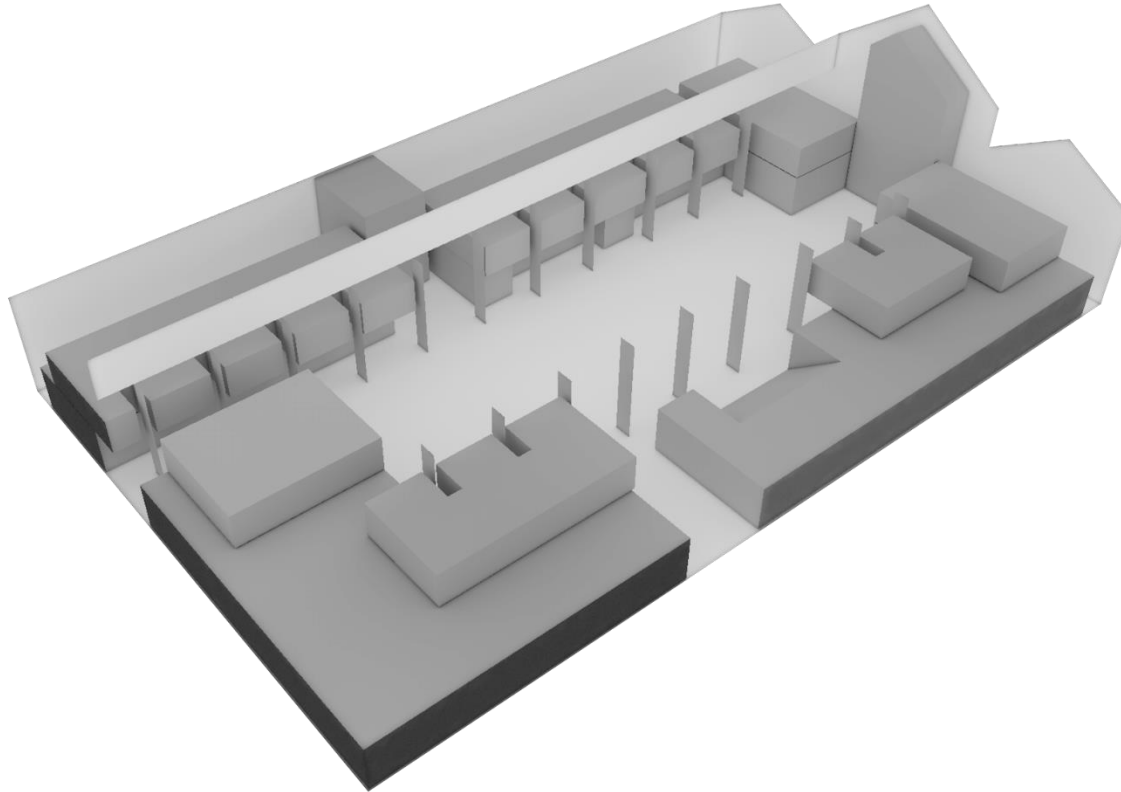
ACOUSTICS

Existing situation
■ AR Design
Acoustic solution

BUILDING TECH

Climate
Detailing

ARCHITECTURAL DESIGN



- Walls are finished with a Helmholtz resonator construction

INTRODUCTION

Contents
Problem statement
Objective

RESEARCH

Research method
Conclusion

ARCHITECTURE

Context
Concept
Design
Atmospheres

ACOUSTICS

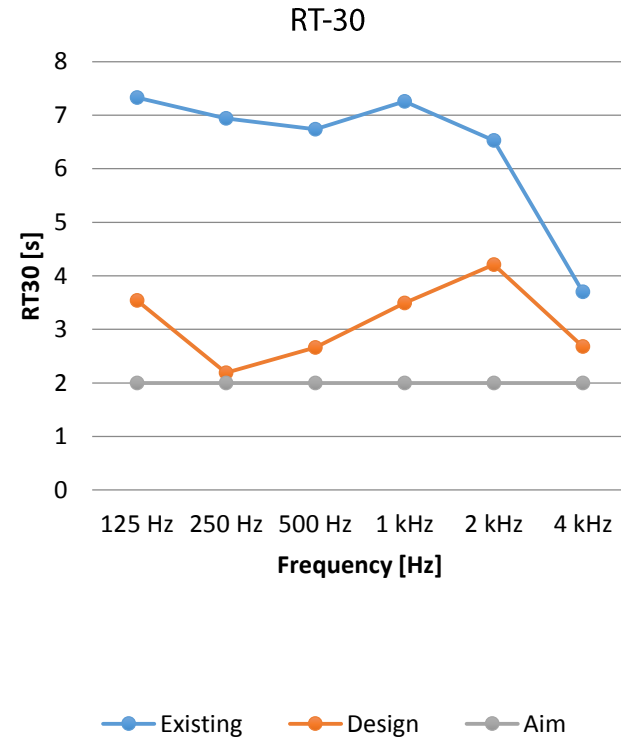
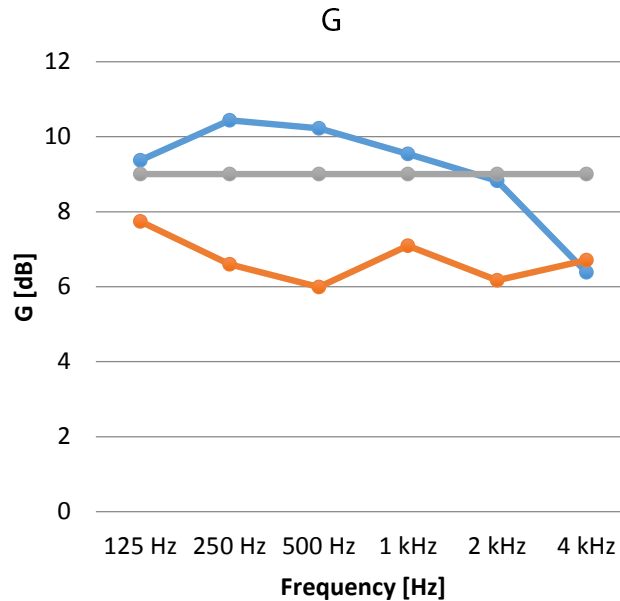
Existing situation
AR Design
Acoustic solution

BUILDING TECH

Climate
Detailing

ARCHITECTURAL DESIGN

Simulation



INTRODUCTION

Contents
Problem statement
Objective

RESEARCH

Research method
Conclusion

ARCHITECTURE

Context
Concept
Design
Atmospheres

ACOUSTICS

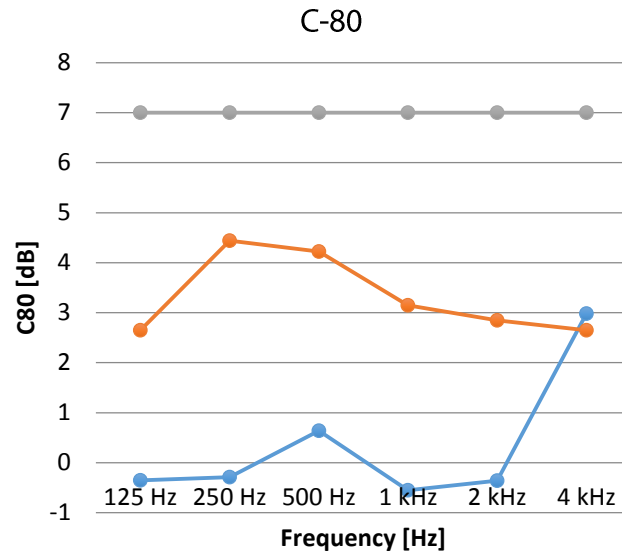
Existing situation
AR Design
Acoustic solution

BUILDING TECH

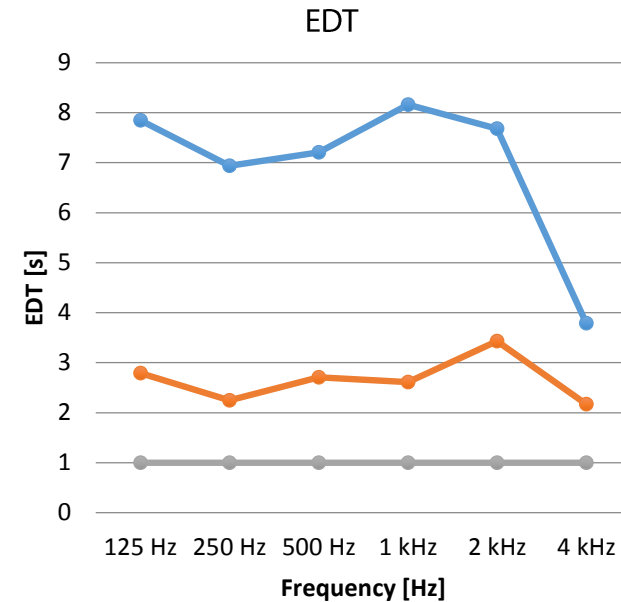
Climate
Detailing

ARCHITECTURAL DESIGN

Simulation



Existing Design Aim



Existing Design Aim

INTRODUCTION

Contents
Problem statement
Objective

RESEARCH

Research method
Conclusion

ARCHITECTURE

Context
Concept
Design
Atmospheres

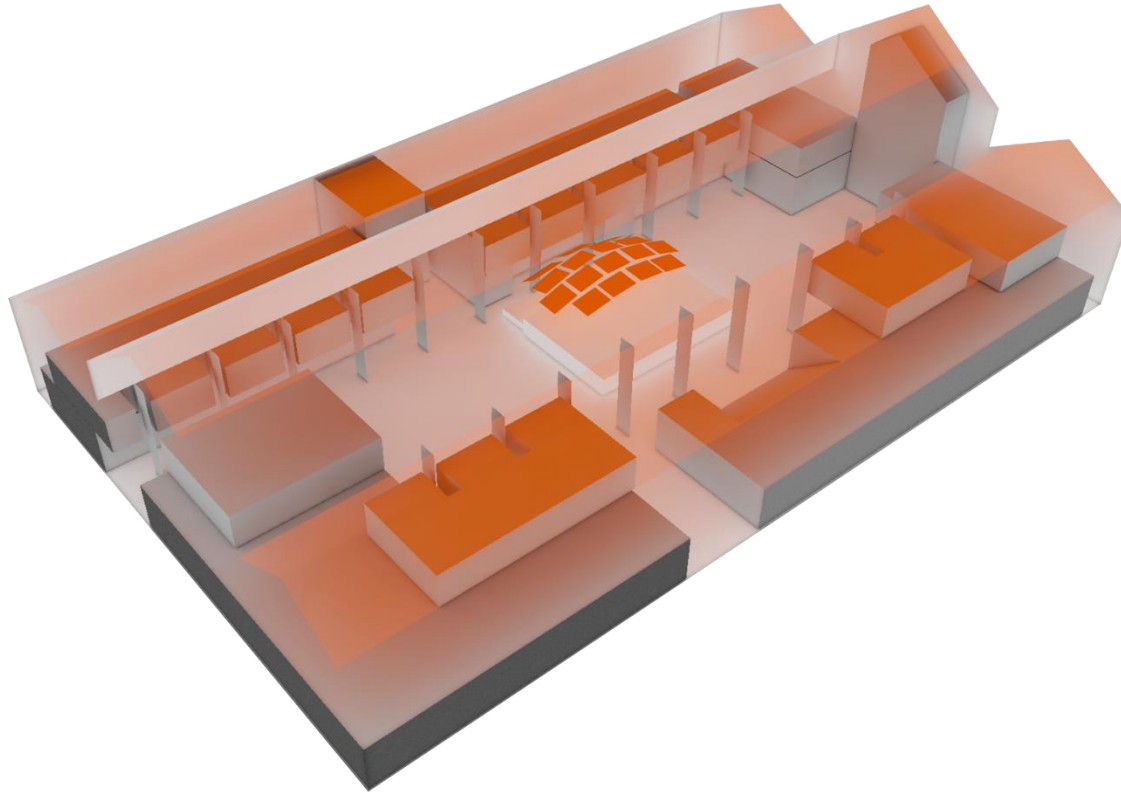
ACOUSTICS

Existing situation
AR Design
■ Acoustic solution

BUILDING TECH

Climate
Detailing

ACOUSTIC SOLUTION



- Transparant sheet with holes in front of the glass roof: Helmholtz Resonator.
- Glass reflectors

INTRODUCTION

Contents
Problem statement
Objective

RESEARCH

Research method
Conclusion

ARCHITECTURE

Context
Concept
Design
Atmospheres

ACOUSTICS

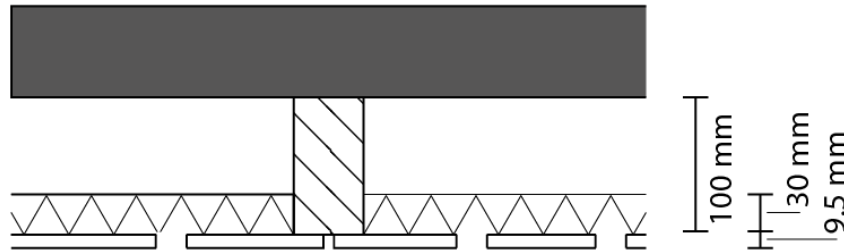
Existing situation
AR Design
Acoustic solution

BUILDING TECH

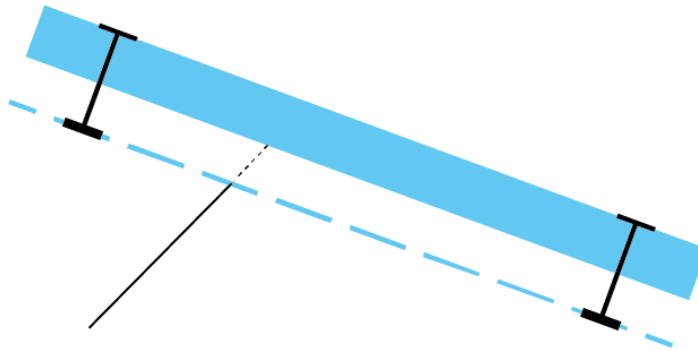
Climate
Detailing

ACOUSTIC SOLUTION

Transparent Helmholtz resonator



'Normal' helmholtz resonator



- Transparant sheet with holes in front of the glass roof: Helmholtz Resonator.

INTRODUCTION

Contents
Problem statement
Objective

RESEARCH

Research method
Conclusion

ARCHITECTURE

Context
Concept
Design
Atmospheres

ACOUSTICS

Existing situation
AR Design
■ Acoustic solution

BUILDING TECH

Climate
Detailing

ACOUSTIC SOLUTION

Helmholtz resonator with patterns

- The white boxes

INTRODUCTION

Contents
Problem statement
Objective

RESEARCH

Research method
Conclusion

ARCHITECTURE

Context
Concept
Design
Atmospheres

ACOUSTICS

Existing situation
AR Design
Acoustic solution

BUILDING TECH

Climate
Detailing

ACOUSTIC SOLUTION

Reflectors



- Transparent, refractive construction
- Heated glass produces heat radiation
- LED-based neonlike lamps in between construction

INTRODUCTION

Contents
Problem statement
Objective

RESEARCH

Research method
Conclusion

ARCHITECTURE

Context
Concept
Design
Atmospheres

ACOUSTICS

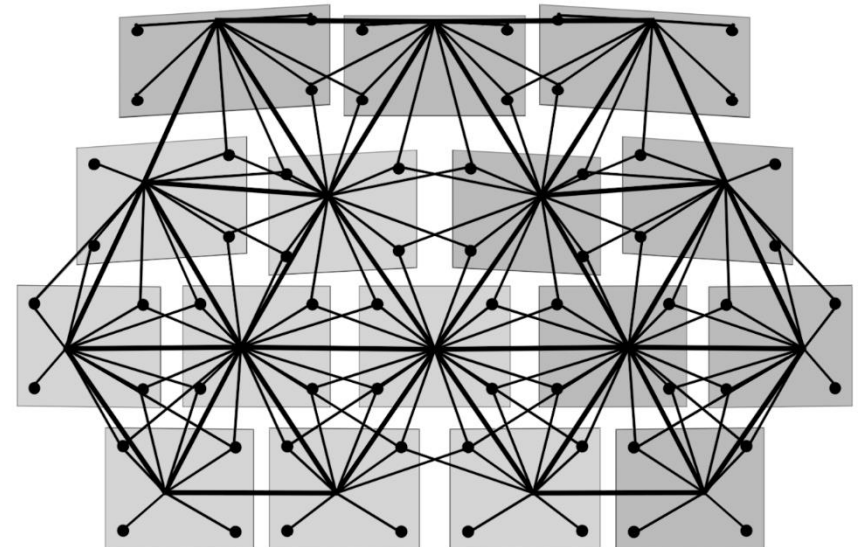
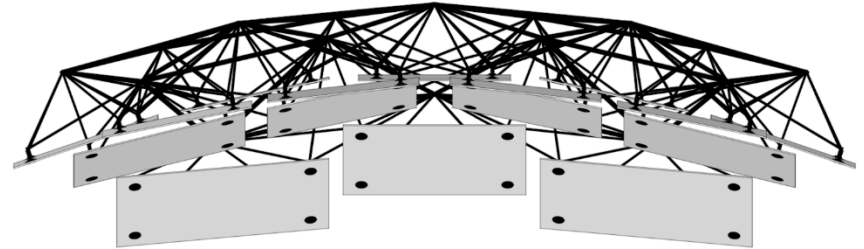
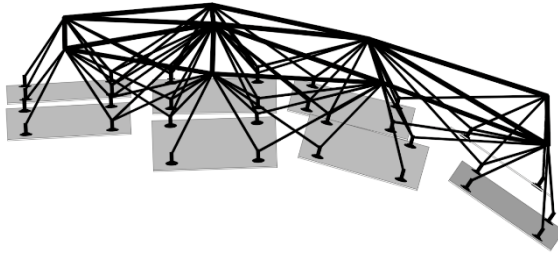
Existing situation
AR Design
Acoustic solution

BUILDING TECH

Climate
Detailing

ACOUSTIC SOLUTION

Reflector construction



- Spidersystem combined with a steel structure

INTRODUCTION

Contents
Problem statement
Objective

RESEARCH

Research method
Conclusion

ARCHITECTURE

Context
Concept
Design
Atmospheres

ACOUSTICS

Existing situation
AR Design
Acoustic solution

BUILDING TECH

Climate
Detailing

ACOUSTIC SOLUTION

Reflector construction



- Existing cranes

INTRODUCTION

Contents
Problem statement
Objective

RESEARCH

Research method
Conclusion

ARCHITECTURE

Context
Concept
Design
Atmospheres

ACOUSTICS

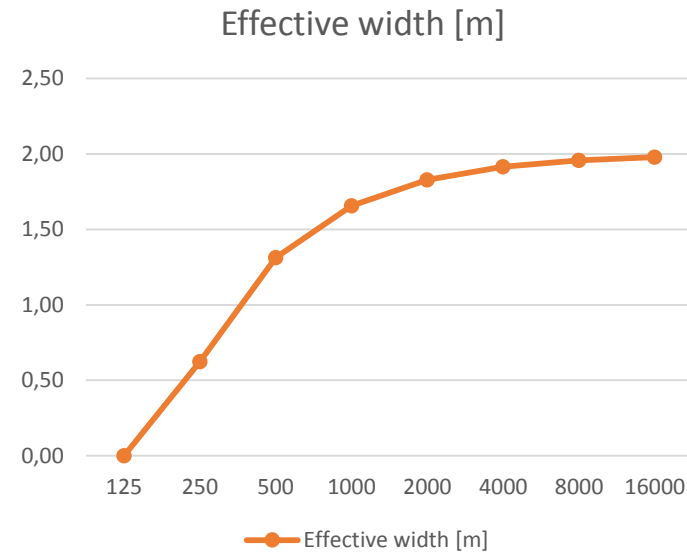
Existing situation
AR Design
Acoustic solution

BUILDING TECH

Climate
Detailing

ACOUSTIC SOLUTION

Reflector size



- Reflectors of at least 2 meters

INTRODUCTION

Contents
Problem statement
Objective

RESEARCH

Research method
Conclusion

ARCHITECTURE

Context
Concept
Design
Atmospheres

ACOUSTICS

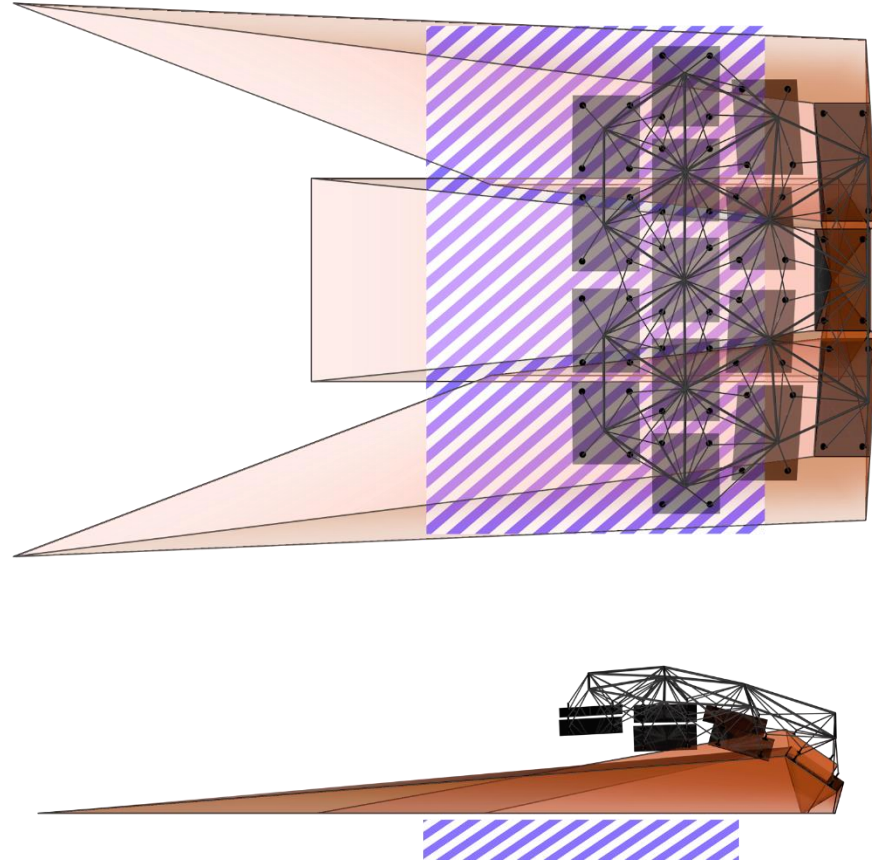
Existing situation
AR Design
Acoustic solution

BUILDING TECH

Climate
Detailing

ACOUSTIC SOLUTION

Reflections row 1



INTRODUCTION

Contents
Problem statement
Objective

RESEARCH

Research method
Conclusion

ARCHITECTURE

Context
Concept
Design
Atmospheres

ACOUSTICS

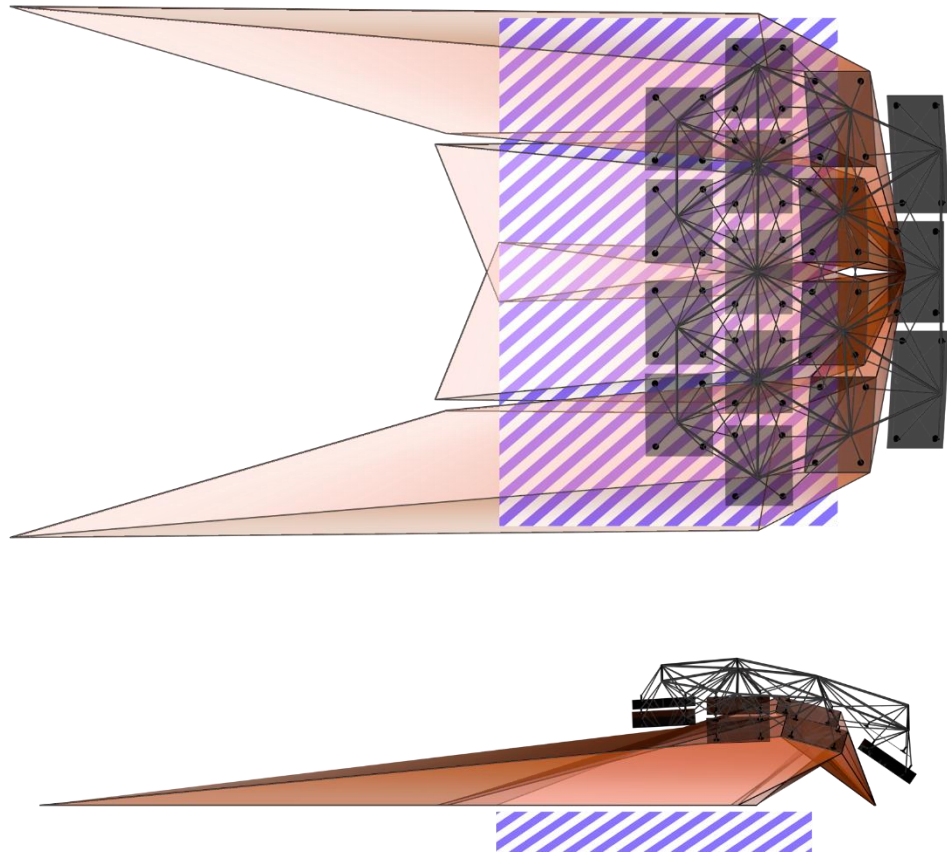
Existing situation
AR Design
Acoustic solution

BUILDING TECH

Climate
Detailing

CHOOSING SOLUTIONS

Reflections row 2



INTRODUCTION

Contents
Problem statement
Objective

RESEARCH

Research method
Conclusion

ARCHITECTURE

Context
Concept
Design
Atmospheres

ACOUSTICS

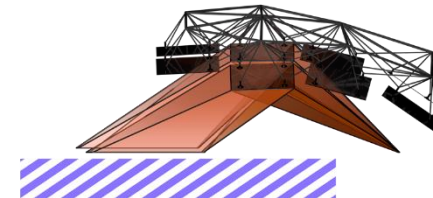
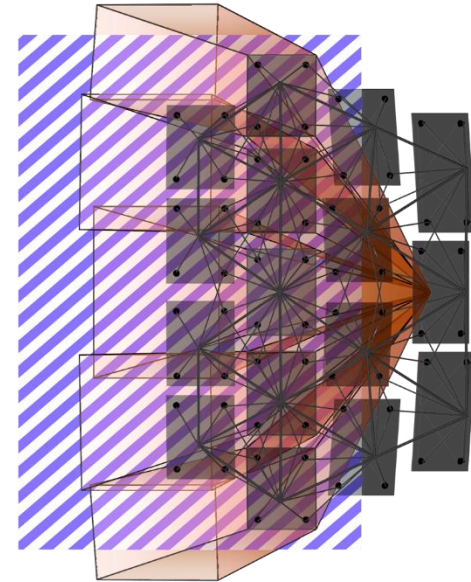
Existing situation
AR Design
Acoustic solution

BUILDING TECH

Climate
Detailing

ACOUSTIC SOLUTION

Reflections row 3



INTRODUCTION

Contents
Problem statement
Objective

RESEARCH

Research method
Conclusion

ARCHITECTURE

Context
Concept
Design
Atmospheres

ACOUSTICS

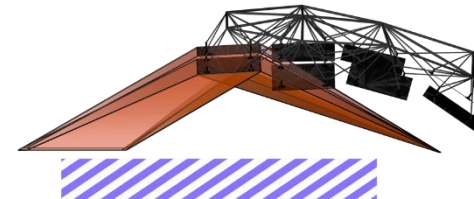
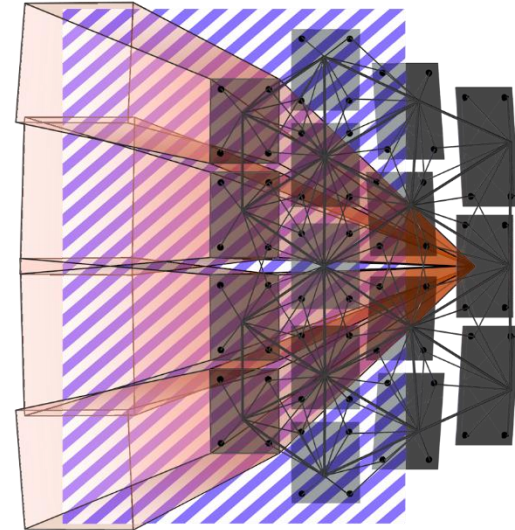
Existing situation
AR Design
Acoustic solution

BUILDING TECH

Climate
Detailing

ACOUSTIC SOLUTION

Reflections row 4



INTRODUCTION

Contents
Problem statement
Objective

RESEARCH

Research method
Conclusion

ARCHITECTURE

Context
Concept
Design
Atmospheres

ACOUSTICS

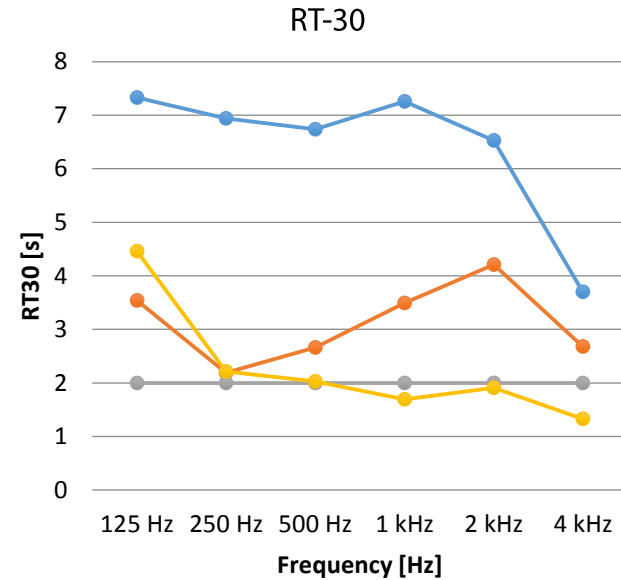
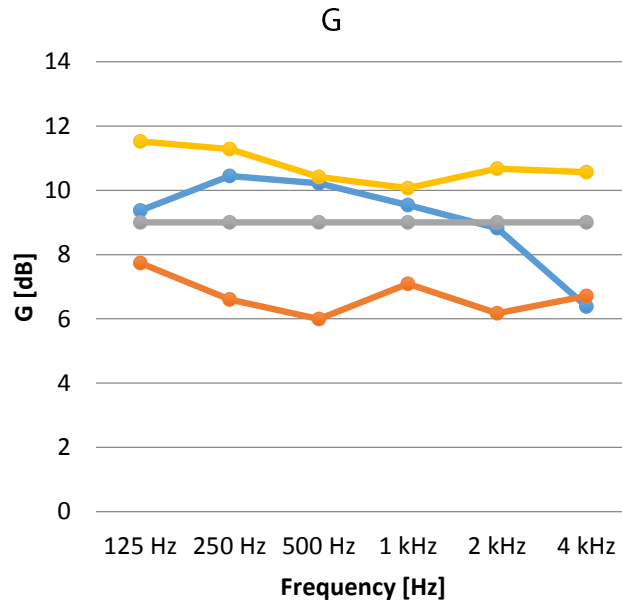
Existing situation
AR Design
Acoustic solution

BUILDING TECH

Climate
Detailing

ACOUSTIC SOLUTION

Simulation - results



INTRODUCTION

Contents
Problem statement
Objective

RESEARCH

Research method
Conclusion

ARCHITECTURE

Context
Concept
Design
Atmospheres

ACOUSTICS

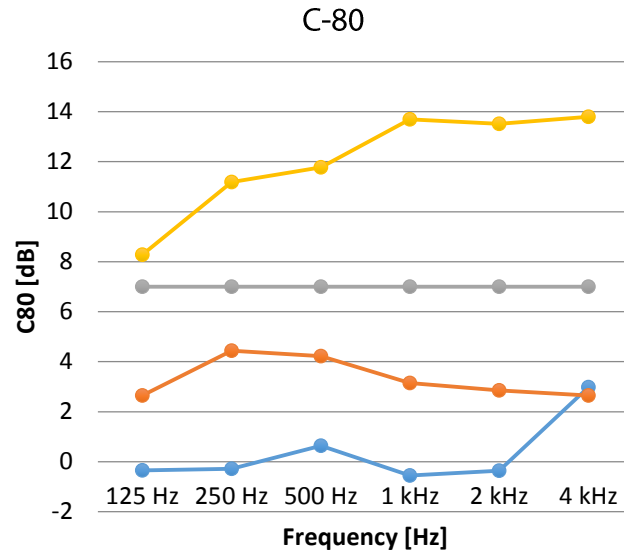
Existing situation
AR Design
Acoustic solution

BUILDING TECH

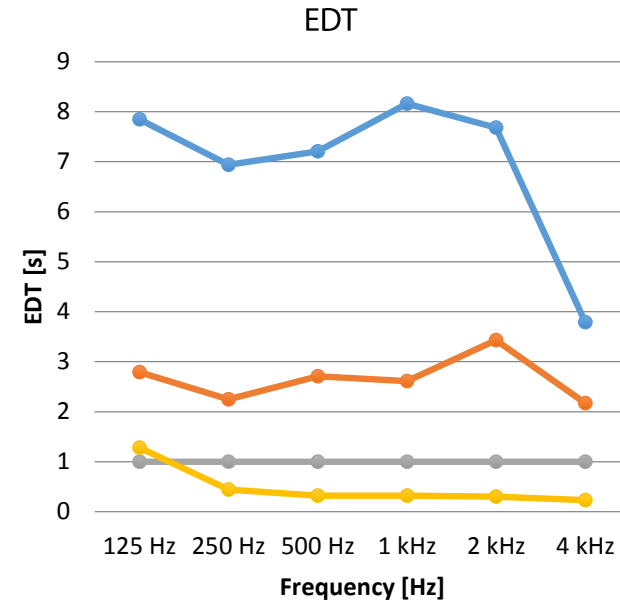
Climate
Detailing

ACOUSTIC SOLUTION

Simulation - results



Existing Design Aim Solution



Existing Design Aim Solution

INTRODUCTION

Contents
Problem statement
Objective

RESEARCH

Research method
Conclusion

ARCHITECTURE

Context
Concept
Design
Atmospheres

ACOUSTICS

Existing situation
AR Design
Acoustic solution

BUILDING TECH

Climate
Detailing

BUILDING TECHNOLOGY

INTRODUCTION

Contents
Problem statement
Objective

RESEARCH

Research method
Conclusion

ARCHITECTURE

Context
Concept
Design
Atmospheres

ACOUSTICS

Existing situation
AR Design
Acoustic solution

BUILDING TECH

Climate
Detailing

CLIMATE

Concept



- Climatised (20 C°)
- Semiclimatised (15-25 C°)
- Unclimatised

INTRODUCTION

Contents
Problem statement
Objective

RESEARCH

Research method
Conclusion

ARCHITECTURE

Context
Concept
Design
Atmospheres

ACOUSTICS

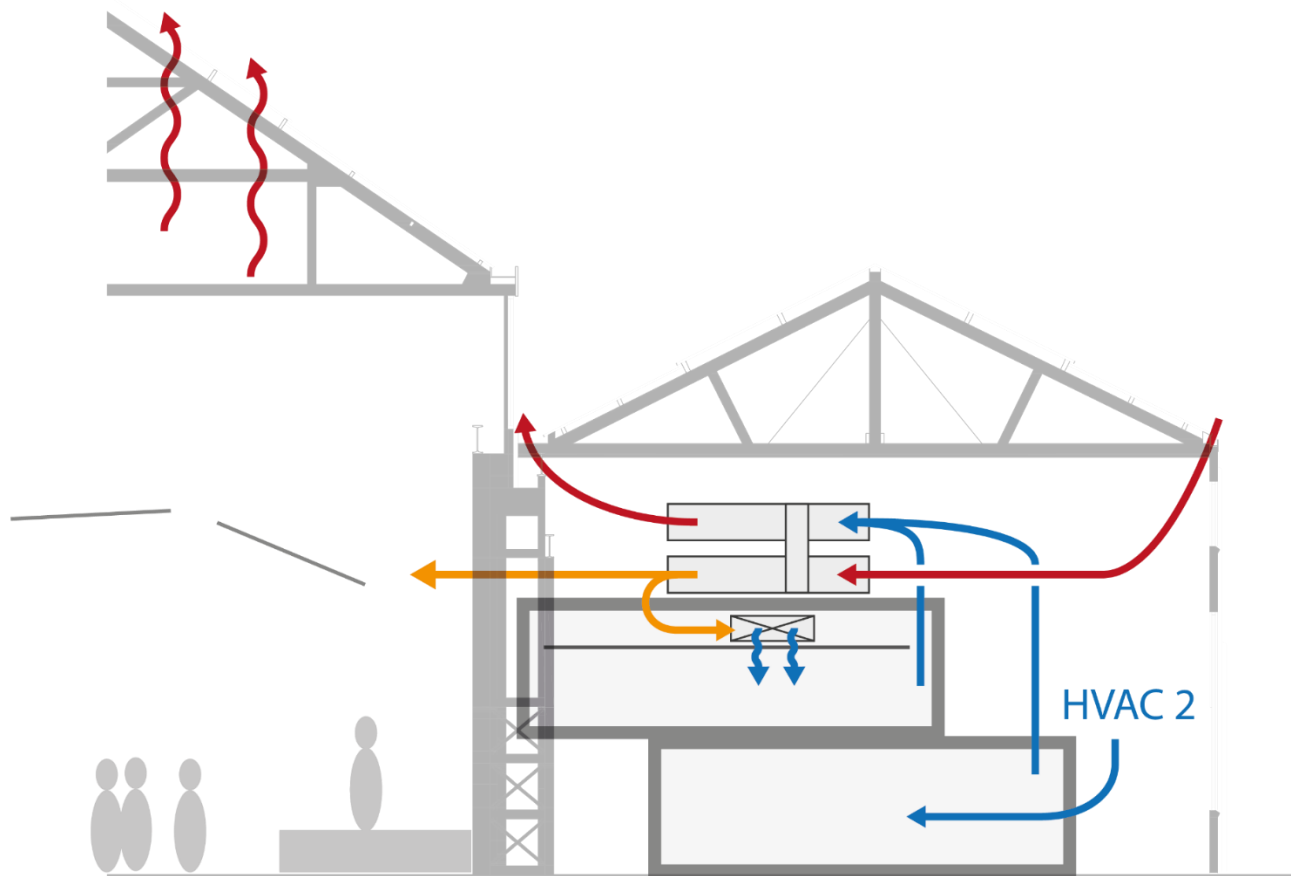
Existing situation
AR Design
Acoustic solution

BUILDING TECH

Climate
Detailing

CLIMATE

Summer



Summer

INTRODUCTION

Contents
Problem statement
Objective

RESEARCH

Research method
Conclusion

ARCHITECTURE

Context
Concept
Design
Atmospheres

ACOUSTICS

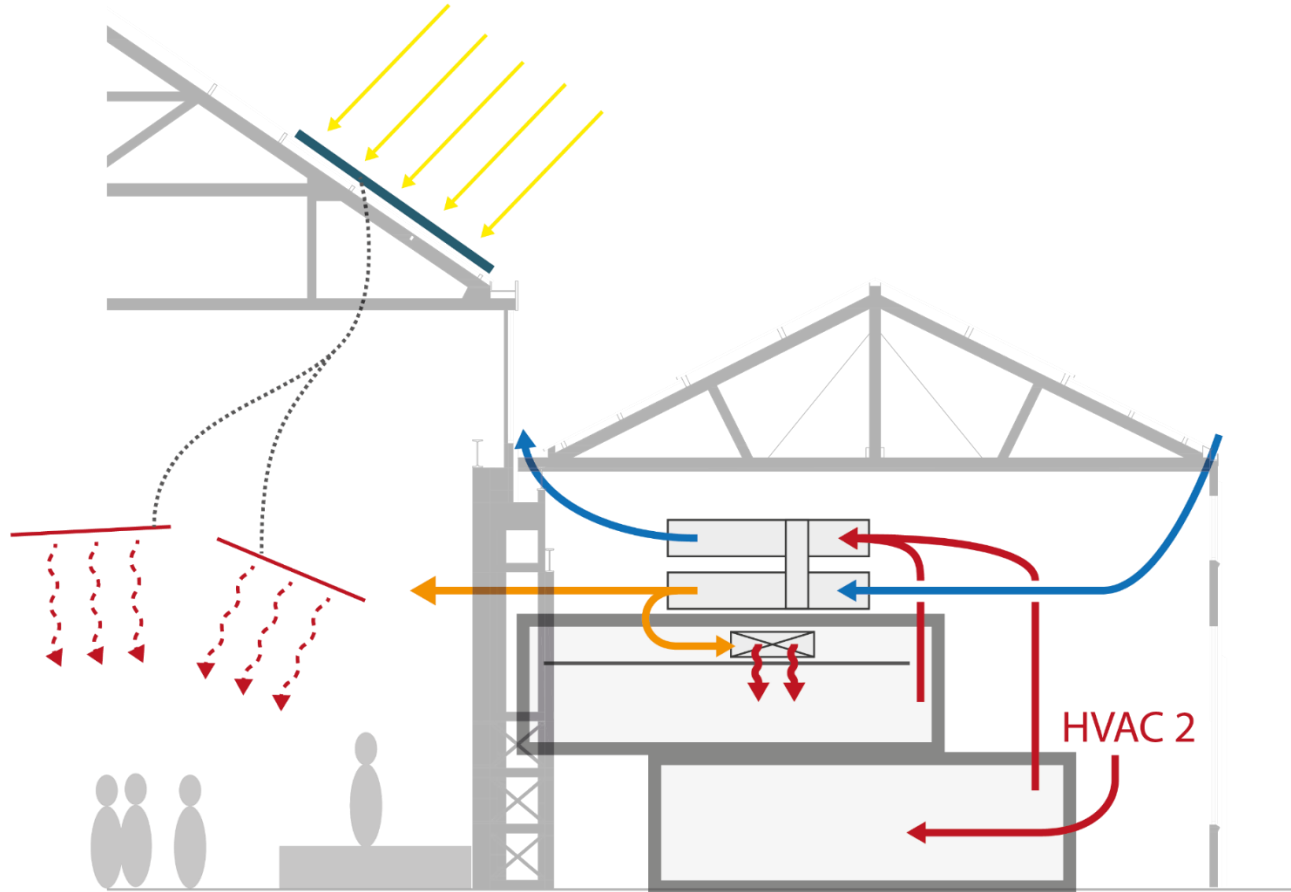
Existing situation
AR Design
Acoustic solution

BUILDING TECH

Climate
Detailing

CLIMATE

Winter



WINTER

INTRODUCTION

Contents
Problem statement
Objective

RESEARCH

Research method
Conclusion

ARCHITECTURE

Context
Concept
Design
Atmospheres

ACOUSTICS

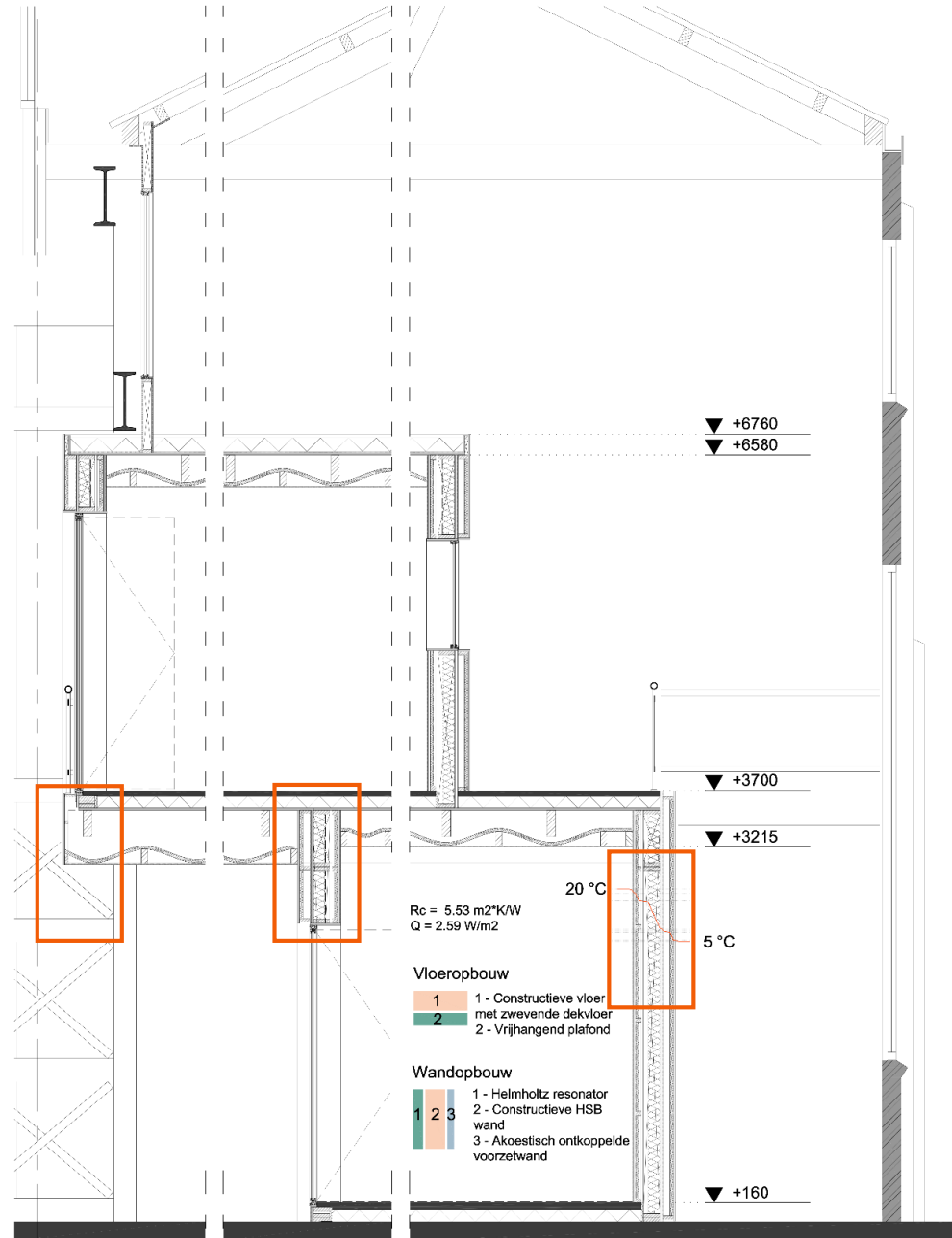
Existing situation
AR Design
Acoustic solution

BUILDING TECH

Climate
Detailing

DETAILLING**Façade fragment**

- Walls consist of three 'layers'.
- Floors consist of two layers



INTRODUCTION

Contents
Problem statement
Objective

RESEARCH

Research method
Conclusion

ARCHITECTURE

Context
Concept
Design
Atmospheres

ACOUSTICS

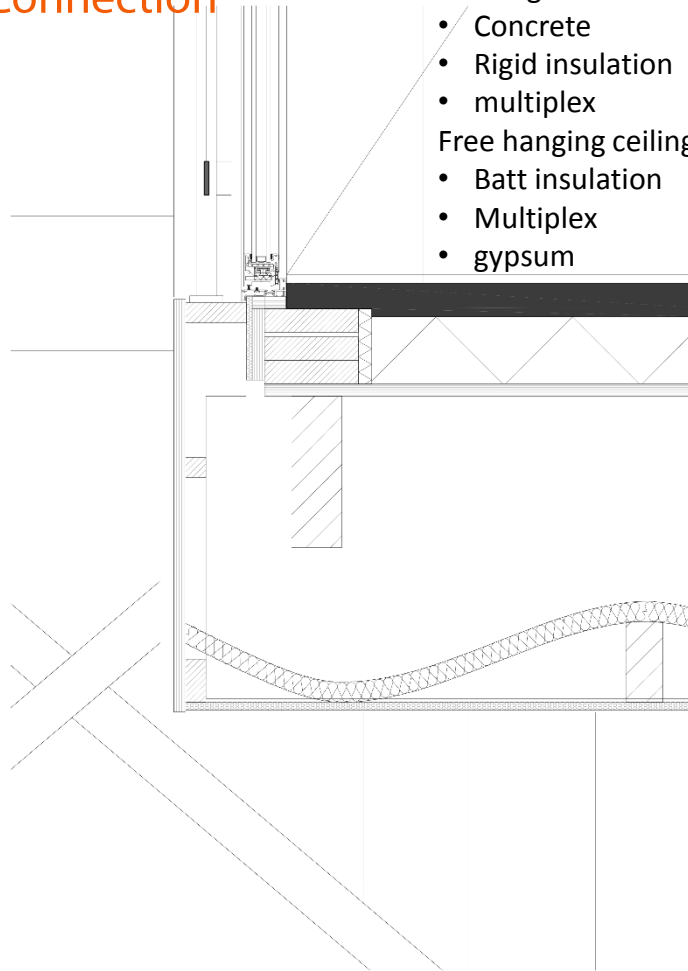
Existing situation
AR Design
Acoustic solution

BUILDING TECH

Climate
Detailing

DETAILLING

Connection



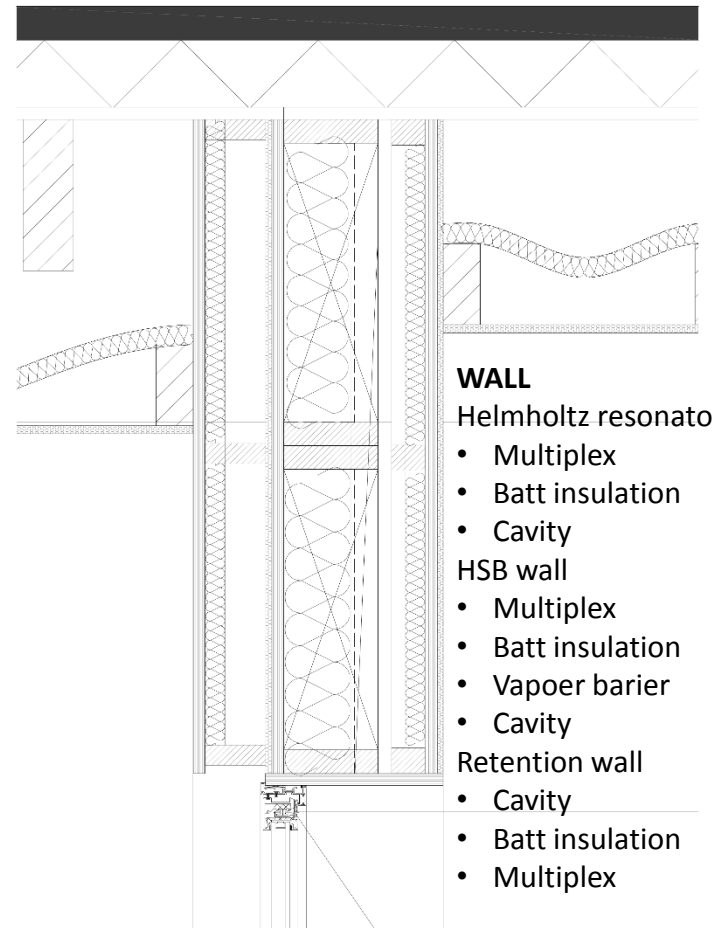
FLOOR

Floating screed

- Concrete
- Rigid insulation
- multiplex

Free hanging ceiling

- Batt insulation
- Multiplex
- gypsum



WALL

Helmholtz resonator

- Multiplex
- Batt insulation
- Cavity

HSB wall

- Multiplex
- Batt insulation
- Vapoer barier
- Cavity

Retention wall

- Cavity
- Batt insulation
- Multiplex

INTRODUCTION

Contents
Problem statement
Objective

RESEARCH

Research method
Conclusion

ARCHITECTURE

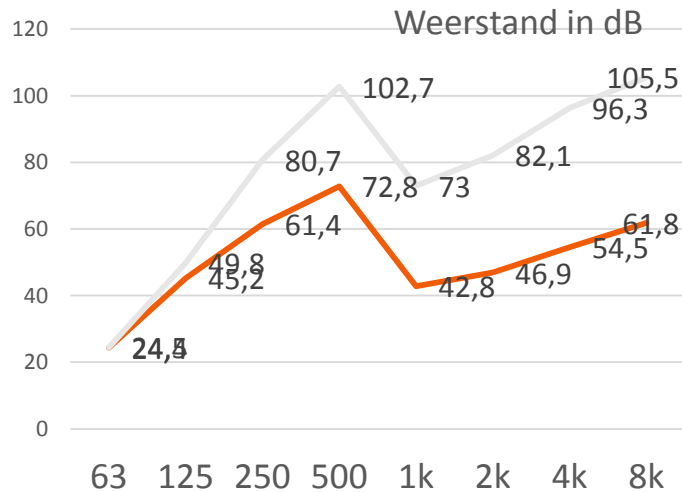
Context
Concept
Design
Atmospheres

ACOUSTICS

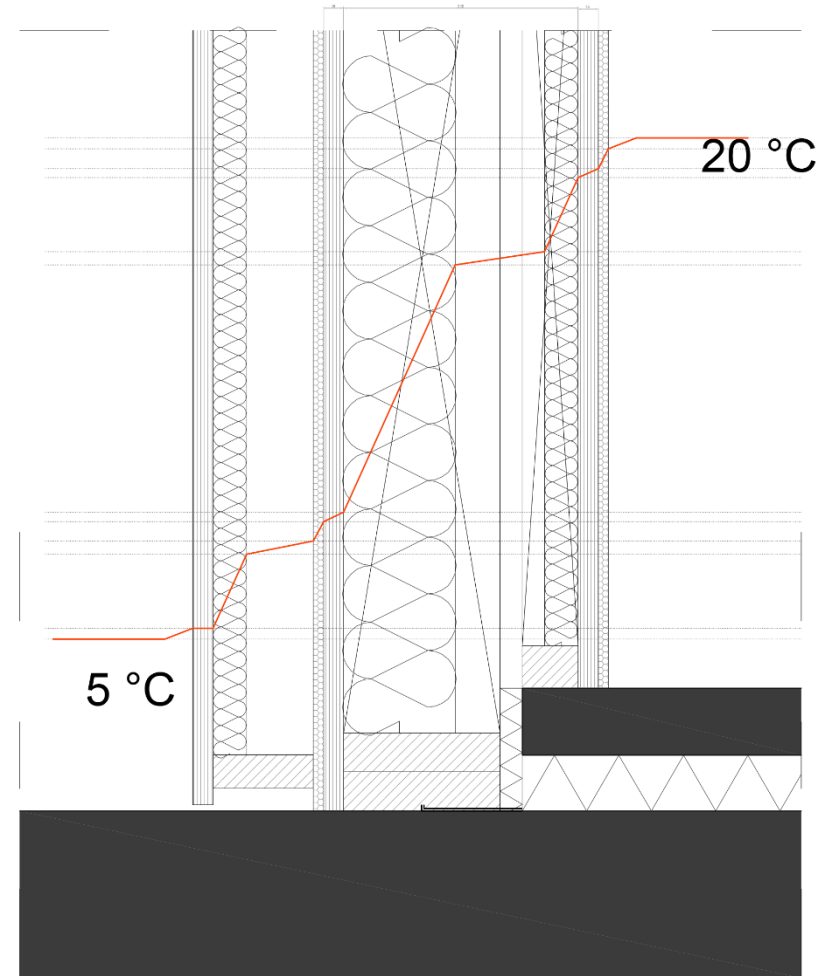
Existing situation
AR Design
Acoustic solution

BUILDING TECH

Climate
Detailing

DETAILLING**Standard exterior wall**

- Sound insulation
- Atmosphere of the program is influenced by halls



INTRODUCTION

Contents
Problem statement
Objective

RESEARCH

Research method
Conclusion

ARCHITECTURE

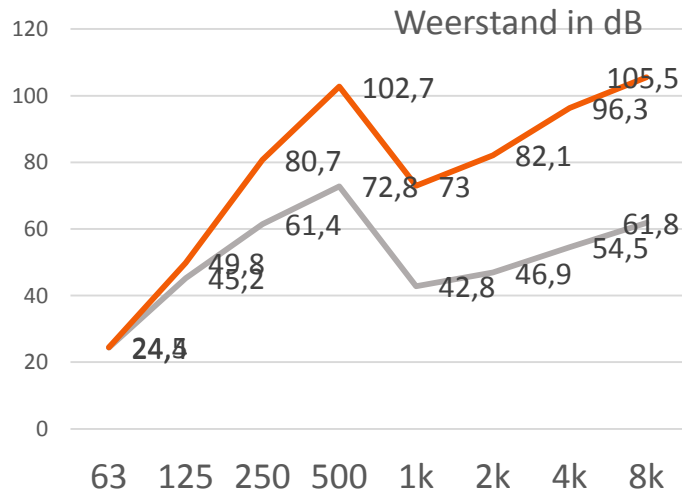
Context
Concept
Design
Atmospheres

ACOUSTICS

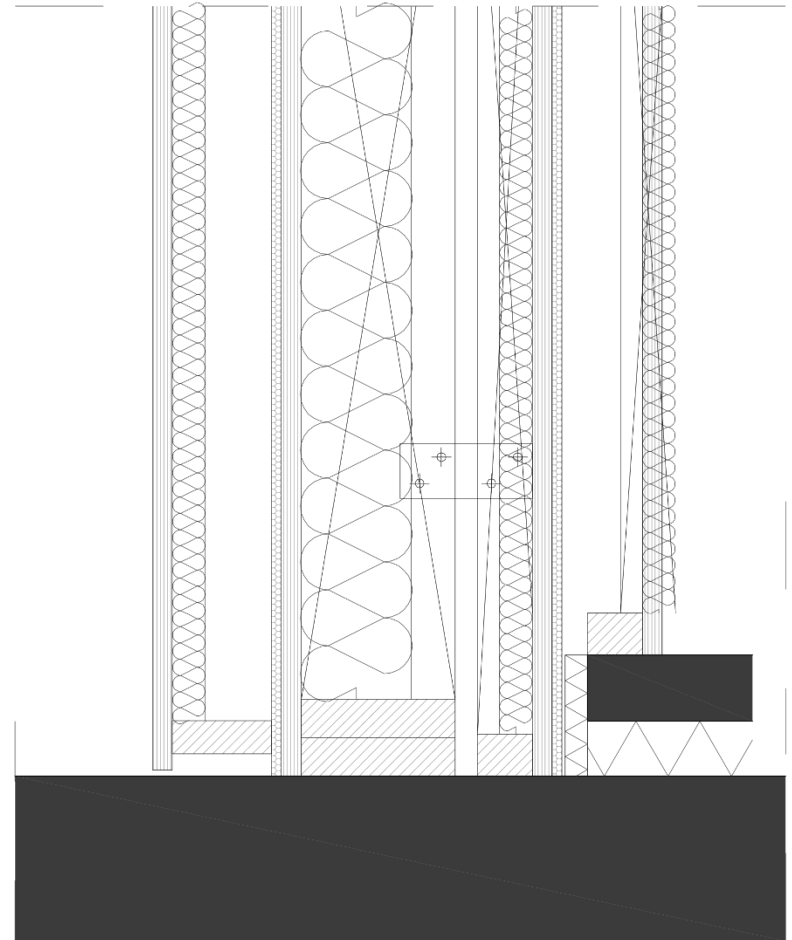
Existing situation
AR Design
Acoustic solution

BUILDING TECH

Climate
Detailing

DETAILLING**Rehearsal room exterior wall**

- Sound insulation
- Atmosphere of the program is influenced by halls



Here comes a video-impression with auralised sound.
Visit: vimeo.com/153086907