



Acoustex 1.10.2019

Acoustics in Wood City project

Antti Aaltonen, Development Director
SRV Construction Ltd

Agenda

- SRV Briefly
- Wood City project
- Acoustics in Wood City





SRV IN BRIEF

SRV is a leader in the development of innovative construction projects. We seek to provide the best customer experience as a builder of urban centres and to be the industry's most inspiring workplace.

VISION

SRV Creates the best customer experience as a constructor of urban town centers.

AREAS OF OPERATION

SRV is a listed company founded in 1987. We operate in selected growth centres in Finland, Russia and in Estonia.

WE OPERATE

with SRV Approach, which consists of innovative project development and customer-oriented project management implementation.



Order backlog (31 Dec. 2018)

EUR
1.8
BILLION

We are aiming to build around
10,000–15,000
new homes
in growth centres over
the next 10 years.

Revenue (2018)

EUR **959.7** MILLION

What are we working on?



Homes
30%
of revenue



Schools and
educational institutions
11%
of revenue



Shopping centres
17%
of revenue



Renovation construction
2%
of revenue



Hospitals
23%
of revenue



Infrastructure construction
6%
of revenue

We are constructing a new neighbourhood in Tampere:

TAMPERE DECK

THE NEW CHILDREN'S HOSPITAL

was completed two months ahead of schedule.

The hospital received the 2018
Finlandia Prize for Architecture.

We are also building the Siltasairaala
Hospital, Central Finland Central
Hospital (Hospital Nova),
and TAYS Etupiha.



FOUR SHOPPING CENTRES

three in Russia
one in Finland

OBJECTIVES AND VALUES

Mission

Our mission is to
improve quality of
life through sustain-
able solutions for the
built environment.

Vision

SRV creates the
best customer
experience as a
constructor of
urban town centres.

Values

- Sustainability
- Enthusiasm at work
- Courage in development
- Result driven
- Open collaboration



We employ **1,000 employees**
and **4,810 subcontractors** annually



32,478 workers on
SRV sites in 2018



20,406 workers
completed orientation in 2018



103 sites in 2018



PROJECT DEVELOPMENT

From single plots to larger area planning in growth centres

Functional spaces for users

Owners for real estates

Reading future trends

Understanding the needs of customers' business environments



INVESTMENTS

Real estate management and realisation

Joint venture creation and ownership

Shopping centre operation and management

Properties
In Finland and Russia

Capital employed
EUR 330 million



CONSTRUCTION

Housing, business premises and infrastructure construction

New construction and renovation

Building systems and energy solutions

Design steering

Efficient implementation of projects

Revenue
EUR 1 billion

**Flexible and scalable approach – extensive cooperation network – responsible operator
– customer oriented - implementing ambitious projects**



Wood City Project

SRV

Wood City

Hybrid-project in Helsinki

- **Largest** wood construction project in Finland
- Developed and contracted by **SRV**
- Wood products by **Stora Enso**
- Development project started by SRV in 2010 in cooperation with the City of Helsinki and Stora Enso
- An architectural competition was won by 2012 Anttinen Oiva Architects with a proposal *Stories*

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Wood City

Key Figures

Total investment value over **EUR 100M**

8-story office building for **Supercell**

2 Apartment buildings

98 apartments for the
city of Helsinki

8-story hotel

190 rooms

Parking hall with **170** car slots

Common yard area

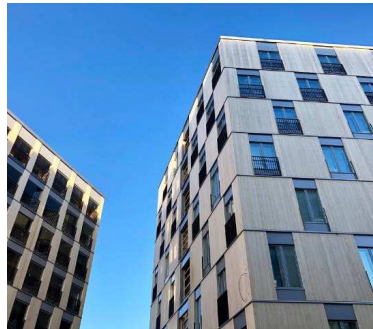
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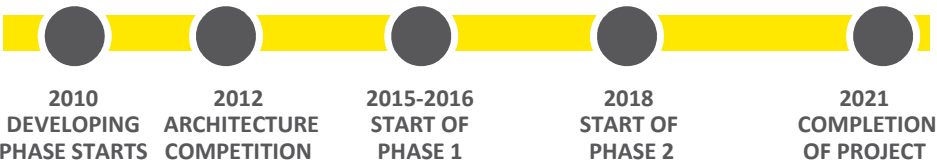
Wood City

Project Schedule

- **Phase 1** – Apartment building for the City of Helsinki, completed 2/2019
- **Phase 2** - Construction of the office building and car park began in spring 2018, completion in 2020
- **Phase 3** – Investor and tenant negotiations for the hotel on-going. Estimated building time of the hotel is 20 months
- The whole quarter is expected to be completed in 2021



- Main material for the buildings is LVL massive wood elements made of Finnish spruce
- Foundations, stairways, elevator shafts and parking lot made of concrete



Supercell HQ

Developing and building the best working environment

500 000 kg rebar

3000 m³ concrete

2300 m³ LVL-massive wood

200 Km datacabel

13 Truck loads of wood material/ floor

2 weeks / floor erection time

- Intense development phase started in November 2017 in collaboration with Supercell
- Construction works started in summer 2018
- Concrete works started in Autumn 2018
- Wood frame erection works started in Spring 2019
- Interior works scheduled to start in Autumn 2019
- Handing over to Client in Autumn 2020

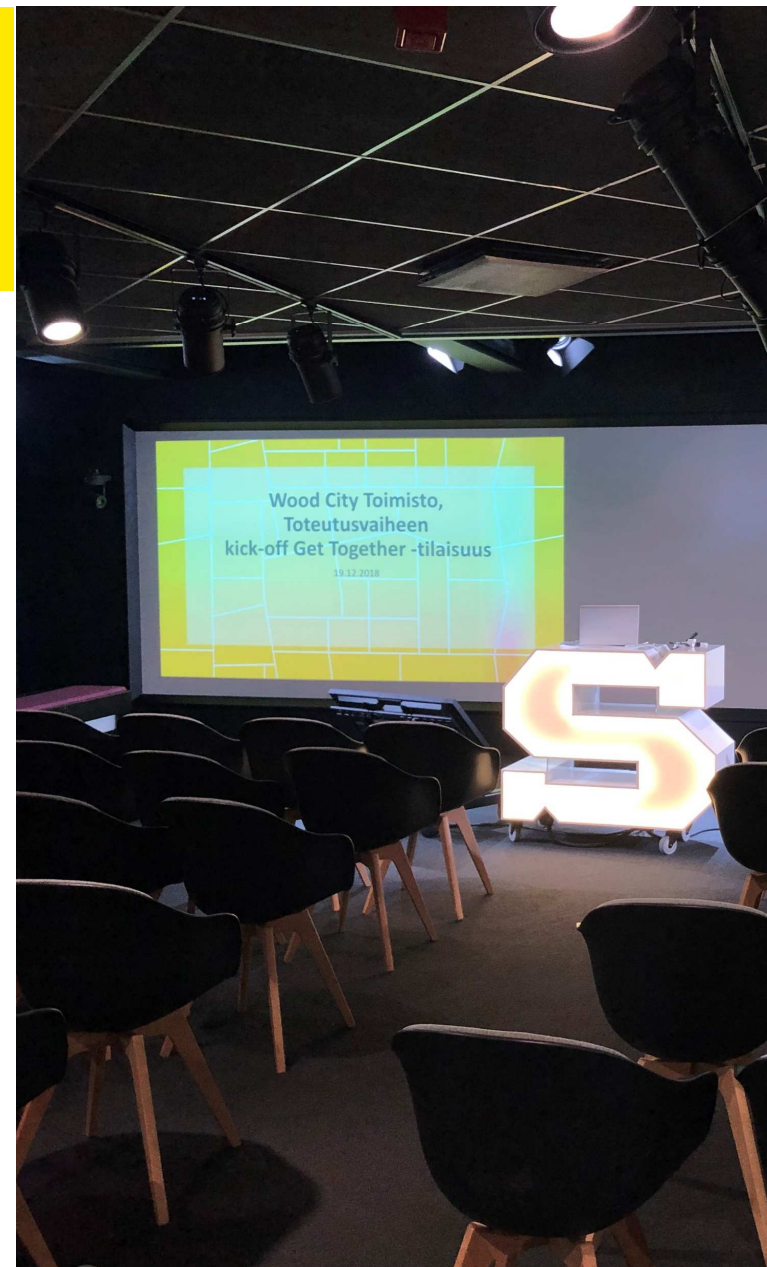
NOVEMBER 2017
SRV SELLS WOOD
CITY OFFICE TO
SUPERCELL

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SUMMER 2018
START OF
GROUND WORKS

MAY 2019 START
OF WOOD
FRAME
ERECTION

AUTUMN 2020 HANDING
OVER TO SUPERCELL



Acoustics in Supercell HQ (Wood City office building)

ACOUSTIC CLASSIFICATION IN BUILDINGS

- Basic regulations and instructions concerning sound insulation and noise reduction by Ministry of the Environment
 - Building code C1
 - Finnish standards SFS5907
- Instructions regarding
 - Sound insulation
 - Noise level
 - Room acoustics
- All buildings and spaces divided to four (4) different category
 - Class D = Old building requirements
 - Class C = Normal (minimun) requirements
 - Class B= Higher level requirements
 - Class A = Most demanding requirements
- All buildings are treated equally, despite the main frame material / system



Acoustics in Wooden building

- Same regulations and instructions as for the concrete/steel frame buildings
- Different kind of "sound world" as people have used to in concrete buildings*
 - Apartment buildings people generally prefer Wood buildings but some voices are more disturbing
 - Upstairs neighbour's stepping noises is considered most disturbing
- Feels more "soft" and pleasant due to low level of echo
- Apartment building regulations are very strict in Finland
 - Multi-layer structures
- Office buildings regulations can be achieved by wood more easily

* source: Tampere University of technology and Finnish Minister of environment research 2017)



Building the world's best working environment

- Supercell (the Client) has a mission of building the best working environment for their employees
- Office spaces have three (3) targets:
 - Adaptability
 - Level of Quality
 - Functionality
- Mission includes upgrading to acoustic Class A
 - Team spaces need to be silenced and insulated in the best possible way
 - The general atmosphere needs to be tranquil and harmonious



Comparison between Class A and C

Airborne sound insulations	Class A	Class C
Space / Weighted sound reduction index	R'w	R' w
Between team spaces	44 dB	35 dB
Between team space and corridor	34 dB	25 dB
Between meeting rooms	52 dB	48 dB
Between meeting room and corridor	48 dB	35 dB
Between auditoria and cafe/restaurant	52 dB	48 dB

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Comparison between Class A and C

Impact sound insulation	Class A	Class C
Space / Weighted normalised impact sound pressure level	L'n, w	L'n, w
Between team spaces	63 dB	63 dB
Between team space and corridor	58 dB	63 dB
Between meeting rooms	63 dB	63 dB
Between meeting room and corridor	58 dB	63 dB

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Comparison between Class A and C

Room acoustics	Class A	Class C
Space / reverberation time	T	T
Team spaces	0,5 s	0,7 s
Meeting rooms	0,5 s	0,7 s
Video conference room	0,3 s	0,5 s
General spaces like cafe, restaurant, auditorio	1,0 s	1,0 s

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Comparison between Class A and C

Sound levels caused by building technology	Class A	Class C
Space / max. permitted sound levels	dB	dB
Team spaces	35dB	35dB
Meeting rooms	30dB	35dB
Video conference room, auditorium	30dB	35dB
General spaces like corridors, cafe, restaurant,	40dB	45dB

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How to reach these Class A acoustics requirements?

- Part of the total design process, effects all designs
 - Iterating process
 - Define the critical points
- Immediate effect (at least):
 - Dividing walls / drywall
 - System walls
 - doors
 - Sealing / joints
 - System floors
 - Lower ceilings
 - Acoustical/absorption materials eg. acoustic wall elements
 - HVAC system / silencers
 - Fire stops
- Work quality needs to be spotless

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How to reach these Class A acoustics requirements?

- Class A also brought new challenges: too silent team spaces?
 - Installation of white noise generators?
 - Background music?
- At this point no knowledge of the total cost for the upgrade
- True co-operation needed between all parties
- To ensure work quality (extra supervision)
- Immediate measurements and feedback during construction phase (to ensure correct sound insulation and noise reduction)
- The final product will be the world's best working environment

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SRV

A man and a woman are standing in front of a modern apartment building under construction. The man is wearing a dark coat and the woman is wearing a dark coat and a plaid scarf. They are both smiling. The building has many windows and balconies. The text "THANK YOU FOR YOUR INTEREST, ANY QUESTIONS?" is overlaid on the image.

**THANK YOU FOR YOUR
INTEREST, ANY QUESTIONS?**

More information

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