

# Roadworks planning exercise: Case Telakkakatu



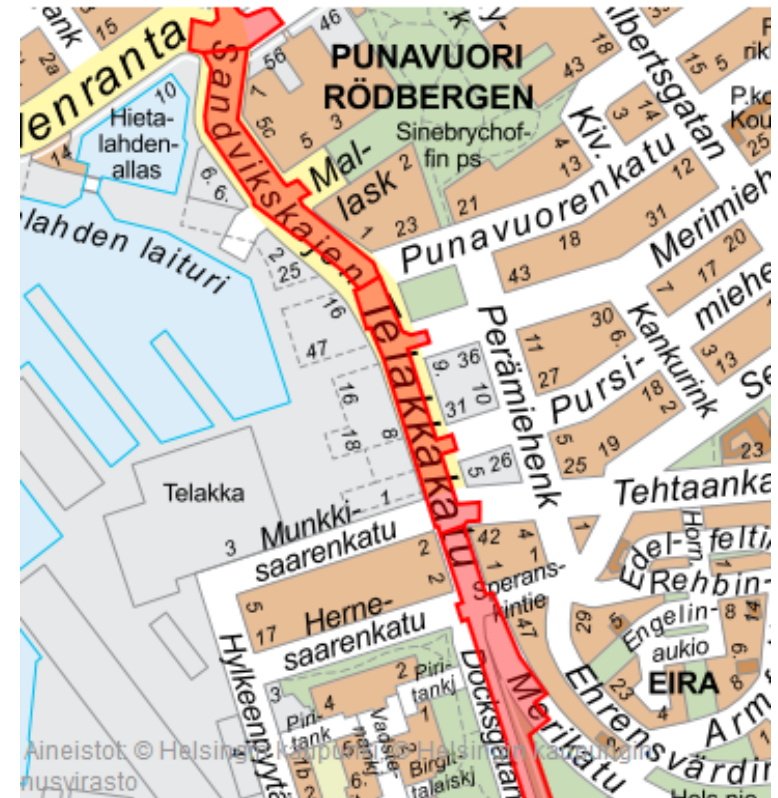
# City of Helsinki invests on improving the flow efficiency of roadworks

- Nowadays, the poor flow of roadworks causes major disturbances in traffic, which can affect the citizens for years
  - i.e. Mechelininkatu roadworks project



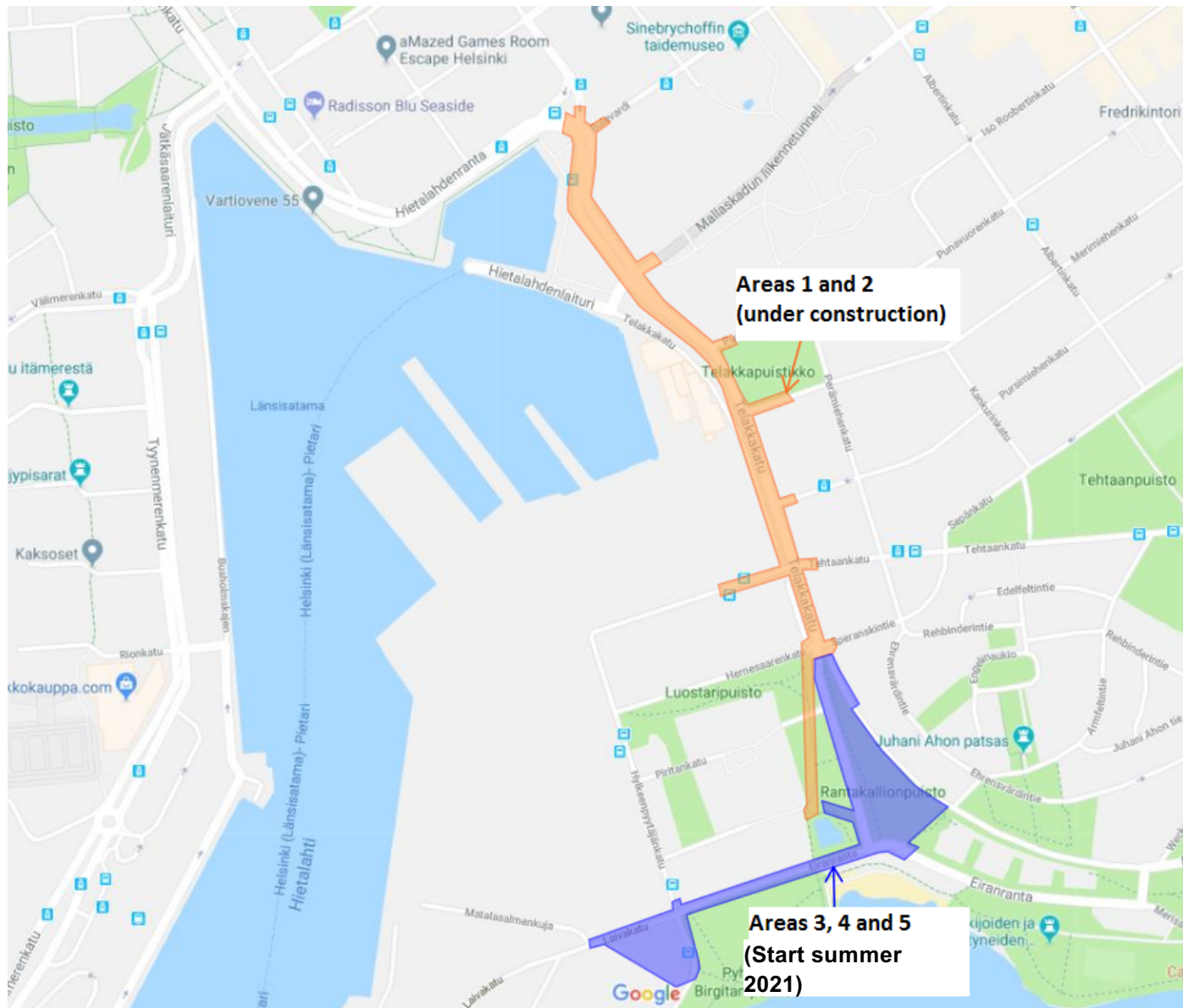
# Roadworks planning exercise: Telakkakatu

- One major starting roadwork project is located in Telakkakatu, and the project is part of the renovation of the area of Telakkaranta
  - The project is scheduled from fall 2019 and is estimated for 14ME
- The renovation of Telakkakatu project include
  - Installation of new tram lines
  - Construction of two new bike lanes
  - Renovation of all underground municipal systems
- Your task is to create and optimize the roadworks schedule of Telakkakatu with Vico
  - Minimize the schedule time, maximize the flow while following the given constraints



# Assignment: Create and optimize the planning schedule of Telakkakatu (1/4)

- **Tutorial 1:**
    - Introduction of the assignment, case project and evaluation criteria
    - Familiarize with the given material needed for scheduling
      - *Excel sheet (tasks, quantities, resources, prerequisites etc.)*
    - Introduction to Vico Schedule Planner
    - Start the scheduling together by
      - *Entering quantities*
      - *Forming the first tasks and dependencies*
    - Individual work in groups, questions and discussion
  - **Readings during the assignment**
    - *Yassine, T., Bacha, M. B. S., Fayek, F., & Hamzeh, F. (2014). Implementing takt-time planning in construction to improve work flow:*
      - <https://www.researchgate.net/publication/265125168> Implementing Takt-Time Planning in Construction to Improve Work Flow
    - *Fiallo, M., & Howell, G. (2012). Using production system design and takt time to improve project performance*
      - <https://iglcstorage.blob.core.windows.net/papers/attachment-3b7a3675-3692-4556-b42e-9ceba6481cf7.pdf>
    - *Gaio, J., & Cachadinha, N. (2011). Suitability and benefits of implementing lean production on road works*
      - <https://iglcstorage.blob.core.windows.net/papers/attachment-10242166-6150-47ce-8644-a51cob347e18.pdf>
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# Assignment: Create and optimize the planning schedule of Telakkaranta (2/4)

- **Tutorial 2:**
  - Mid-assignment feedback / review of status of each group
  - Team work evaluation
  - Additional features – risks, resource leveling

# Assignment: Create and optimize the planning schedule of Telakkaranta (3/4)

- **After tutorials: Finish the optimization and reflect upon your learnings**
  - Write a report based on the process and optimized schedule. The report should be 5-7 pages with illustrations, address atleast the following issues:
    - *Demonstrate the process of optimization; after generating the initial schedule, how the schedule was changed?*
    - *What bottlenecks were observed?*
    - *What was especially difficult / easy in the process? Why?*
    - *How did you handle risk evaluation / management?*
    - *Were the given prequisities realistic?*
    - *How the disturbances for traffic should be taken care of?*
    - *How the schedule could be improved further? What information or actions would it need?*
    - *What would happen if the schedule would be implemented **as a takt plan**? Reflect!*
  - *Use the grading criteria to self-evaluate your own group's work*
  - *Give a brief feedback regarding the exercise; what was good, what could be improved?*

# Assignment: Create and optimize the planning schedule of Telakkaranta (4/4)

- **Other things to consider:**
  - Grading is based on the following criteria
    - *Teamwork evaluation (done twice)*
    - *Final project schedule*
    - *Final project report (peer evaluation)*
  - Estimated workload for the assignment is 20 hours / student
    - *Getting to know to the materials, generation of the first schedule 7h*
    - *Optimization of the schedule 7h*
    - *Reflection and report 6h*
  - Deadline of the final teamwork evaluation, schedule and report is 3.2. Sunday (?)



# Evaluation criteria – team work

TOPIC	1 point	2 points	3 points	4 points	5 points
Contribution of ideas	Rarely provides useful ideas when participating in the team assignment. May refuse to participate in discussions		Sometimes provides useful ideas when participating in the team assignment. A satisfactory group member who does what is required.		Routinely provides useful ideas when participating in the team assignment.
Problem-solving	Does not try to solve problems or help others solve problems. Lets others do the work		Does not suggest or refine solutions but is willing to try out solutions suggested by others		Actively looks for and suggests solutions to problems
Attitude	Is often publicly critical of the project or the work of other members of the group. Is often negative about the tasks.		Is rarely publicly critical of the project or the work of others. Usually has a positive attitude about the task(s)		Is never publicly critical of the project or the work of others. Always has a positive attitude about the task.
Working with others	Rarely listens to, shares with or supports the efforts of others. Often is not a good team player		Often listens to, shares with and supports the efforts of others but may not always be a good team member		Almost always listens to, shares with, and supports the effort of others. Tries to keep people working well together.
Producing deliverables	Did not participate in preparing the schedule (= using the software) or writing the final report.		Participated less than others in preparing the schedule (= using the software) or writing the final report		Participated equally in preparing the schedule (= using the software) or writing the final report

# Team work is evaluated twice – once at the second tutorial and once in the end

- **Evaluation is performed by the team in MyCourses. Each team member evaluates own performance and other members**
- **Mid-term feedback can be used to improve team work**
- **End of assignment feedback will be used to distribute scores of the assignment**

# Evaluation criteria for final project schedule

TOPIC	1 point	2 points	3 points	4 points	5 points
Following rules	<p><b>The assignment broke three or more rules :</b></p> <ul style="list-style-type: none"> <li>- Project deadline (31.12.2021) was not met</li> <li>- Tasks were crossing in flowline view</li> <li>- More resources were used than maximum allowed</li> <li>- Dependencies were incorrect</li> <li>- Production factors were changed</li> <li>- Prequisites were not generally followed</li> </ul>		<p><b>The assignment did not break the most important rules:</b></p> <ul style="list-style-type: none"> <li>- Project deadline (31.12.2021) was met</li> <li>- Production factors should not be changed</li> <li>- Prequisites were generally followed</li> </ul> <p><b>and did not break badly less important rules:</b></p> <ul style="list-style-type: none"> <li>- no more than 2 instances of crossing</li> <li>- minor extra resources in some tasks</li> <li>- minor dependency errors</li> </ul>		<p><b>The assignment did not break any of the rules:</b></p> <ul style="list-style-type: none"> <li>- Project deadline (31.12.2021) was met</li> <li>- Tasks were not crossing in flowline view</li> <li>- No more resources were used than maximum allowed</li> <li>- Dependencies were correct</li> <li>- Production factors were not changed</li> <li>- All the prequisites were followed</li> </ul>
Levelness of resources	There were major resource fluctuations for 3 or more contractors / equipment		There were no major resource fluctuations (first up and then down) for more than one contractors / equipment		There were no major resource fluctuations (first up and then down)
Risk analysis	Risk analysis was not conducted		Risk analysis was conducted but only few buffers were used or they were added in inappropriate locations / tasks		Risk analysis was conducted and buffers were added in appropriate locations



# Evaluation criteria for final project report

Subtopic	1 point	2 points	3 points	4 points	5 points
Quality of report	The report is unorganized, unclear and not concise and does not convey the relevant information		The report is organized and concise and conveys much of the relevant information		The report is well organized, clear and concise and appropriately conveys the relevant information
Quality of analysis	The report does not appropriately describe the solution or does not adequately answer the questions		The report describes the solution and analyzes the process and attempts to answer all the questions. Deep understanding of the topic is not demonstrated by the report.		The report completely describes the process followed, the resulting solution and demonstrates deep understanding of risks involved and answers all the questions very well

# Peer evaluation of final schedule and report

- **After the assignment is completed, it will be distributed to three randomly selected reviewers from other groups**
- **The three randomly selected reviewers evaluate your work based on the criteria above and write a peer evaluation report**
- **The final group grade is based on the average grade of acceptable peer review reports. Peer review reports are reviewed by the teacher.**