



SUBCOMMITTEE

ARCTIC

DESIGN

29-7-2016/ SAPPORO / CITY ARCHITECT MS. TARJA OUTILA

**SUBCOMMITTEE:
TO SOLVE PROBLEMS
AND
CREATE NEW OPPORTUNITIES BY
MEANS OF DESIGN**

PROCESS:

DEFINE - QUANTIFY - PLAN - TEST

**SOLUTIONS
PROBLEMS
OPPORTUNITIES**



Rovaniemi

THE OFFICIAL HOMETOWN
OF SANTA CLAUS®

CHANGCHUN

EDMONTON HARBIN

HWACHEON-GUN NOVOSIBIRSK

ROVANIEMI SAPPORO



Rovaniemi

THE OFFICIAL HOMETOWN
OF SANTA CLAUS®

THEME I: URBAN DESIGN

PAVILION WINTER DESIGN GUIDELINES STREET BRIDGE
KINDERGARTEN YOUTH ASTROPHYSICAL CENTER
FOOTBALL ARENA PARK SPORTS ARENA PLAYGROUND
LAND USE-TRAFFIC PLAN

CHANGCHUN

CHANGCHUN PARK DEVELOPMENT PROGRAM

Changchun has invested RMB 2 billion into the construction and maintainance of city parks and gardens since 2014. At present, Changchun has 108 public parks and gardens opened to the citizens. The new parks have become popular leisure places for citizens to enjoy their free time.

PARKS AND SQUARES CATEGORY

B1 PUBLIC SECTOR:

Changchun Gardening Bureau: Draft and implement the park and gardening plan and design.

B2 PRIVATE BUSINESS:

Gardening companies: Involved as contractors..

DESIGN INNOVATIONS :

Changchun is known as the spring city, it's a good wish that city could continue the greening in all seasons. The investment did improve the image of the city.

BUSINESS KNOW-HOW:

The program increased the contractors' design and expertise in shaping the landscape.

PUBLIC SECTOR'S KNOW-HOW :

The citizens aware that their everyday life is benefited from the well cared parks and gardens.

EDMONTON (1)

VICTORIA PARK PAVILION



The Victoria Park Pavilion (completed in 2015) is 3,337 square foot pavilion nestled in Victoria Park. It serves as a gathering space in the river valley, providing a location from which outdoor activities can take place as well as a space for the use of community and sport groups.

It offers a great vantage point to observe the Olympic sized speed skating oval and the river valley, and offers a beautiful place to warm up, gather, and change into one's skates.



Location:
12130 River Valley Rd.

ARCHITECTURE CATEGORY

B1 PUBLIC SECTOR:

City of Edmonton

B2 PRIVATE BUSINESS:

Rayleen Hill Architecture + Design

EDMONTON (1) *VICTORIA PARK PAVILION*

DESIGN INNOVATIONS :

This curved building provides panoramic views while integrating passive solar systems. Snow from the zamboni is reused by way of a snow melt system. The water is then stored, filtered and sent to a 'clean' tank before it is pumped/heated to refill the zamboni.

BUSINESS KNOW-HOW:

Integrated sustainable design as well as great winter city design.

PUBLIC SECTOR'S KNOW-HOW :

It has increased the number of people who use the skating oval considerably, making it a very popular hub of winter activity.



Website:

http://www.edmonton.ca/activities_parks_recreation/parks_rivervalley/victoria-park-pavilion.aspx

http://www.edmonton.ca/activities_parks_recreation/documents/VPP_Design_Competition_History.pdf

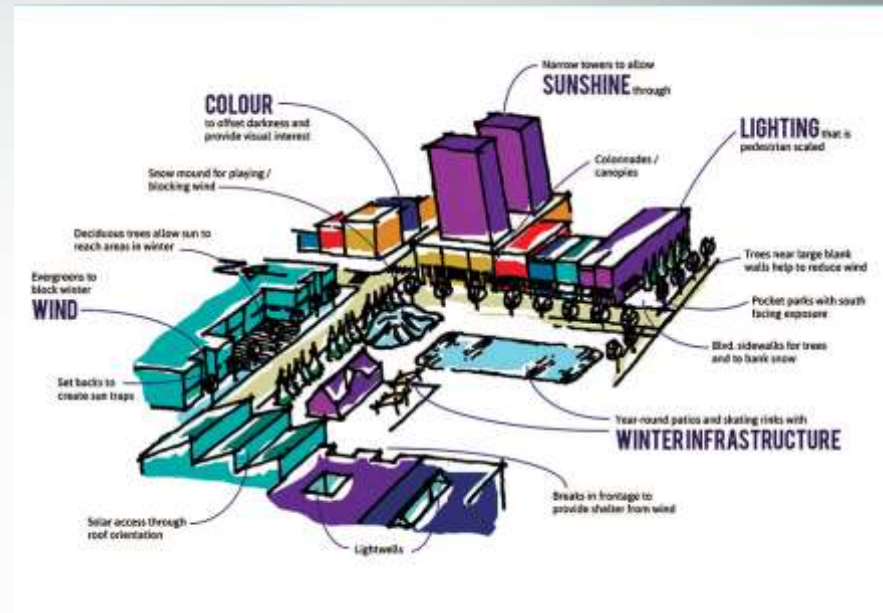
<http://www.rhad.ca/victoria-park>

EDMONTON (2)

WINTER DESIGN GUIDELINES

Edmonton's Winter Design Guidelines apply to the public realm of our streets, parks and open spaces, and include:

1. INCORPORATING DESIGN STRATEGIES TO BLOCK WIND,
2. MAXIMIZING EXPOSURE TO SUNSHINE THROUGH ORIENTATION AND DESIGN,
3. USING COLOUR TO ENLIVEN THE CITYSCAPE,
4. ADDING VISUAL INTEREST WITH CREATIVE LIGHTING, AND
5. PROVIDING INFRASTRUCTURE THAT SUPPORTS DESIRED WINTER LIFE



CITYSCAPE CATEGORY

B1 PUBLIC SECTOR: City of Edmonton

B2:PRIVATE BUSINESS: Not Applicable

EDMONTON (2)

WINTER DESIGN GUIDELINES

DESIGN INNOVATIONS :

They are broad and comprehensive; they can apply to a single site or an entire neighbourhood or even a park supporting public outdoor life, creating warmer micro-climates making our winterscape more inviting and beautiful.

BUSINESS KNOW-HOW :

Consultants know much more about how to properly design for our winter context. Is becoming part of standard practice.

RESEARCH KNOW-HOW :

We had to research what other winter cities were doing and which ideas would work in our city.

PUBLIC SECTOR'S KNOW-HOW :

City of Edmonton staff know much more about how to properly design winter context.



Website:

http://www.edmonton.ca/city_government/initiatives_innovation/winter-design-guidelines.aspx

HWACHEON-GUN: *CONSTRUCT SEONDEUNG STREET*

To attract and make tourists stay in downtown. In Hwacheon-gun, we are going to create luminarie by using LED lights during Hwacheon Sancheoneo Ice Festival.



Location:
Hwacheon-eup downtown area

URBAN PLANNING CATEGORY

B PUBLIC SECTOR: Hwacheon County Office Tourism Policy Division:
Planning Seondeung Street and its budget.

B2 PRIVATE BUSINESS: Electric work businesses within the region:
Installing and maintaining LED lights.



HWACHEON-GUN: *CONSTRUCT SEONDEUNG STREET*

DESIGN INNOVATIONS: Senior residents of Hwacheon have been making about 27,000 Sancheoneo Lanterns since a year before the festival.

BUSINESS KNOW-HOW :
Cut down unnecessary expenses by reusing steel pillars and supporting ropes



PUBLIC SECTOR'S KNOW-HOW :
Every year we reflect changed concepts and we give meanings on new Sancheoneo Lanterns.



Bugrinsky Bridge has a unique design with the arch span of 380 meters, which is the longest one in the CIS. The over-water length of the bridge has a compound system - arch with a tie and slanting hangers (mesh arch). The arch's visual design resembles a gigantic red bow.

TRAFFIC PLANNING CATEGORY

B1 PUBLIC SECTOR:

Mayor's Office of Novosibirsk: Construction project owner, joint funding with regional and federal budgets

B2 PRIVATE BUSINESS:

Motorists, public transport passengers: Competed to name the bridge.

B2 RESEARCH AND EDUCATION

JSC Sibmost: Project developer, principal contractor

Location:

Novosibirsk, Russia. Bugrinsky Bridge

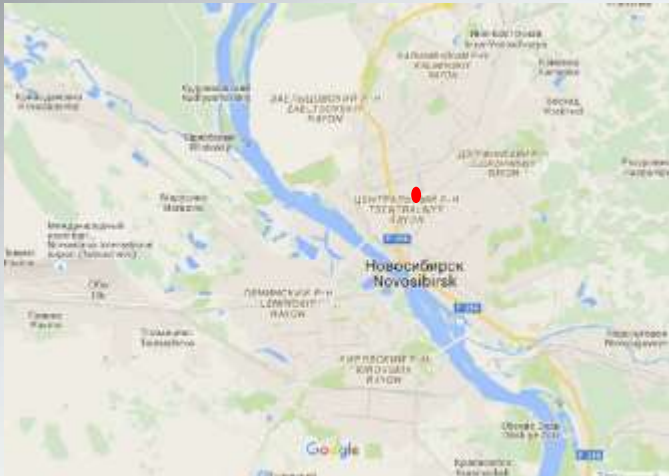
DESIGN INNOVATIONS :

With no hard rock bottom in the central part of riverbed, the over-water length of the bridge has a compound structure - arch with a tie and slanting hangers (mesh arch).

PUBLIC SECTOR'S KNOW-HOW :

This bridge crossing not only improved traffic conditions in the city, but also ensured continuous traffic between M-51 and M-52 motorways.

NOVOSIBIRSK (2) *KINDERGARTEN BUILDING*



Location:
16, Kainskaya street, Novosibirsk

ARCHITECTURE CATEGORY/ SOCIAL ASSETS

B1 PUBLIC SECTOR:

Mayor's Office of Novosibirsk: Building owner, founder.

B2 PRIVATE BUSINESS:

Children of 3 to 7 years: Pupils

B2 RESEARCH AND EDUCATION

JSC SibNIEP, Project designer.

This kindergarten won the Best Russian Kindergarten prize in 2011 at the FIABCI Global Competition. The kindergarten building successfully blended into the existing architectural environment, and enriched it with its colorful features.



NOVOSIBIRSK (2) *KINDERGARTEN BUILDING*



DESIGN INNOVATIONS:

The land lot occupied by the building has a considerable height discontinuity. It is designed as a ship with all corresponding features and operational roof deck.

PUBLIC SECTOR'S KNOW-HOW :

The project "Kindergarten for 205 children in Kainskaya street" was voted the best in Russia at the FIABCI PRIX D'EXCELLENCE in 2010 (The Best Implemented Real Estate Project in the Russian Market) in the category "Public sector: Social Assets for Public Use"

Website:

<http://www.ds-42.nios.ru>

NOVOSIBIRSK (3)

YOUTH ASTROPHYSICAL CENTER



ARCHITECTURE CATEGORY

B1 PUBLIC SECTOR:

Mayor's Office of Novosibirsk: Construction project owner, joint funding with regional and federal budgets, founder.

B2 PRIVATE BUSINESS:

High schoolers, children: Learn municipal supplementary educational programs

B3 RESEARCH AND EDUCATION

AMP-2002 LLC, Igor Popovskiy, Agroservis LLC, institution's staff: Project designer, project architect, principal contractor, educational program developers

Location:

1/1, Klyuch-Kamyshenskaya Plato, Novosibirsk

The Novosibirsk Astrophysical Center became the first Russian institution of supplementary municipal education. In 2015 it was recognized as the best implemented construction project of a social asset in Russia at the 1st City Planning Contest organized by the Russian Ministry of Construction.

Its main purpose is to promote sci-tech creative work and provide opportunities to youths to obtain supplementary education. It is the largest such center east of the Urals and has cutting-edge equipment.

NOVOSIBIRSK (3)

YOUTH ASTROPHYSICAL CENTER

DESIGN INNOVATIONS :

Creation of a continuously developing youth technopark with three stages:

1. Astrophysical Center and Planetarium with astronomical landscape garden;
 2. Polytechnic Museum;
 3. Scientific and recreational facility.
- Basically, the Center represents a space station.

RESEARCH KNOW-HOW :

A platform for scientific and research activities in astrophysics, cosmophysics, aviation and space exploration.

PUBLIC SECTOR'S KNOW-HOW :

The Youth Astrophysical Center project is listed in the Russian Catalogue of Best City-Planning Practices



Website:

<http://www.nebo-nsk.ru/photoplanetariya>

NOVOSIBIRSK (4)

ZARYA INDOORS FOOTBALL ARENA

Currently it is Siberian largest indoors football complex. Siberian harsh climate conditions make it necessary to have an indoors arena that can comfortably host training session and sporting events year-round. For outdoors games in summer the complex has 5 artificial-turf football pitches.

ARCHITECTURE CATEGORY/ SOCIAL ASSETS

B1 PUBLIC SECTOR:

Mayor's Office of Novosibirsk: Construction project owner, joint funding with regional and federal budgets, founder

B2 PRIVATE BUSINESS:

Athletes: Sports activities

B3 RESEARCH AND EDUCATION

Recon LLC, Stroytrest 43, arena's staff Recon LLC, Stroytrest 43, arena's staff: Project designer, principal contractor, program developers

Location:

2, Sportivnaya street, Novosibirsk

DESIGN INNOVATIONS :

Arena with total space of 29,610 sq.m. consists of 3 buildings with varied storey heights and a custom-made design. Its structural layout represents a metal skeleton fixed-end arches with the spans of 90 m and 12 m. Construction technology is extraordinary and technically challenging.

BUSINESS KNOW-HOW IN OUR CITY:

Erection of this arena demonstrated construction capacities of Novosibirsk, since the project was designed locally, girders for unsupported spans were designed and manufactured in Novosibirsk.

SAPPORO

MOERENEUMA PARK

Moerenuma Park was designed as a base in the framework of the “Circular Greenbelt Concept” which aims to encompass Sapporo’s urban districts with parks and green zones. Total area of 189 ha. Its major facilities and features include the Glass Pyramid, Sea Fountain, Moere Beach, Mt. Moere tennis courts, a baseball field, a track and other sports facilities. During the winter visitors can enjoy cross country skiing the grounds or sledding or skiing down Mt. Moere, making the park a place to delight in winter sports.

PARKS AND SQUARES CATEGORY

B1 PUBLIC SECTOR:

City of Sapporo: Construction/Operational Management

B2 PRIVATE BUSINESS:

Sapporo Parks & Greenery Foundation

B3 RESEARCH AND EDUCATION :

- 1) The Isamu Noguchi Foundation of Japan, Inc; Design preservation and supervision
- 2) 2) Moere Fan Club (non-profit): Park use/ proposal

Location:

Moerenuma-koen 1-1,
Higashi-ku, Sap.

Major Facilities in Moerenuma park

公園内の主要施設

- *ガラスピラミッド、イサム・ノグチ
- *噴泉：イサム・ノグチ設計
- *テニスコート：イサム・ノグチ設計
- *野球場：イサム・ノグチ設計
- *面積：約189ha
- *設計：Isamu Noguchi
- *Design Supervisor: Isamu Noguchi Foundation
- *Executive Architect: ARCHITECT S
- *Landscape Architect: Eitoku Landscape Planning
- *約457 acres



SAPPORO MOERENEUMA PARK

DESIGN INNOVATIONS:

The general design was drafted by sculptor Isamu Noguchi under the concept of “the whole being a single structure”. The park’s facilities form many geometric shapes on the expansive grounds and are arranged in an orderly manner, allowing the space’s scenery to be enjoyed as a fusion of nature and art.

BUSINESS KNOW-HOW :

A portion of the revenue earned from usage fees. Additionally, a slew of events organized by the private sector bring about economic effect.

PUBLIC SECTOR’S KNOW-HOW :

How to garner attention from the angle of nature conservation, as the park was converted from a former landfill site and the Glass Pyramid indoor facility features a cooling system that implements the natural energy of snow.



Website:

Moerenuma Park Official Website:

<http://moerenumapark.jp/>

Sapporo Tourism Photo Library* (Moerenuma Park)

<http://www.welcome.city.sapporo.jp/sightseeing.photolibrary/?s=&cat=9>

Sapporo Parks Photo Library* (Moerenuma Park)

ROVANIEMI (1)

ROVANIEMI SPORTS ARENA

This multipurpose sportsfield includes ice-rink, skiing tracks and festival arena in the winter and football or festival field in summer. It houses a stand for 2,000 people as well as sportsmen's changing and washrooms. It is an essential part of a central sports arena in the city center of Rovaniemi. Despite the short summer in the Polar Circle, they play Finnish Premier League football there. The arena is also open to public use. The arena was elected Architizer A+ Popular Choice Winner in 2016.

ARCHITECTURE CATEGORY

B1 PUBLIC SECTOR:

City of Rovaniemi and RoMa Ltd.: Builder

B2 PRIVATE BUSINESS:

Architets APRT OY: designer

Rovaniemi Football Club Ltd: tenant



Location:
Ruokasenkatu F196100
Rovaniemi

ROVANIEMI (1)

ROVANIEMI SPORTS ARENA

DESIGN INNOVATIONS:

Design is based on Architectural competition held in 2012. The heated football field enables the prolonged season.

BUSINESS KNOW-HOW :

The Arena has been a huge success to Football Club, which has developed new products and services. The Sports arena will also help local businesses to invent new tourism activities in downtown area.

PUBLIC SECTOR'S KNOW-HOW :

The public sector gained know-how in wooden- and steel constructions and cold-climate.



Website:

http://architizer.com/projects/rovaniemi-sports-arena/?utm_source=awards.architizer.com&utm_medium=web&utm_campaign=

<http://www.aprt.fi/projects/rovaniemi-sports-arena/>

ROVANIEMI (2)

PLAYGROUNDS: LAPPSET GROUP

Lappset's Play Evolution is not about reinventing the notion of play, it is about finding new, fun perspectives for life and promoting our natural instinct for playfulness. Play is everywhere. Lappset has never been content with just designing and manufacturing playground equipment. The company has a selection of outdoor equipment for playgrounds, sports and parks.

Location:
Hallitie 17

PARKS CATEGORY

B1 PUBLIC SECTOR:

B2 PRIVATE BUSINESS:

Lappset Group Ltd: designer, manufacturer

B3 RESEARCH AND EDUCATION :

University of Lapland, several Universities of Applied Sciences



ROVANIEMI (2)

PLAYGROUNDS: LAPPSET GROUP

DESIGN INNOVATIONS:

The company designs products that make play fun and educational at the same time. The play equipment combines carefully thought-out design and play-enticing colours with in-depth scientific research into the needs of playing children and elderly. By making our products durable, the company also respects our environment. The products are made from hardwearing materials and designed to fit in visually with their surroundings. The innovative products can be combined for a variety of environments.

BUSINESS KNOW-HOW IN OUR CITY:

The company is one of the largest exporting companies in Rovaniemi.



Website:
<http://lappset.com>

RESEARCH KNOW-HOW :

Lappset's evolution in the form of scientific partnership projects and dynamic, continuous product development.

ROVANIEMI (3)

ROVANIEMI PARTIAL LOCAL MASTER PLAN AND TRAFFIC PLAN

City of Rovaniemi has adopted urban zoning principle in local master planning: pedestrian, bicycle, public transportation and private car. The aim is to make the winter city more ecological and viable for the increasing number of residents in downtown area.

The Urban Zone 3- research project is GIS based and can be used in assessing the quality of the legally binding local master plan. The Urban Zone 3 project also helps to evaluate the planning process.



URBAN PLANNING CATEGORY

B1 PUBLIC SECTOR:

City of Rovaniemi: In charge of urban planning

B3 RESEARCH AND EDUCATION :

Finnish Environment Institute: In charge of Urban Zone 3 research-project

Location:

Downtown area in Rovaniemi

ROVANIEMI (3)

ROVANIEMI PARTIAL LOCAL MASTER PLAN AND TRAFFIC PLAN

DESIGN INNOVATIONS:

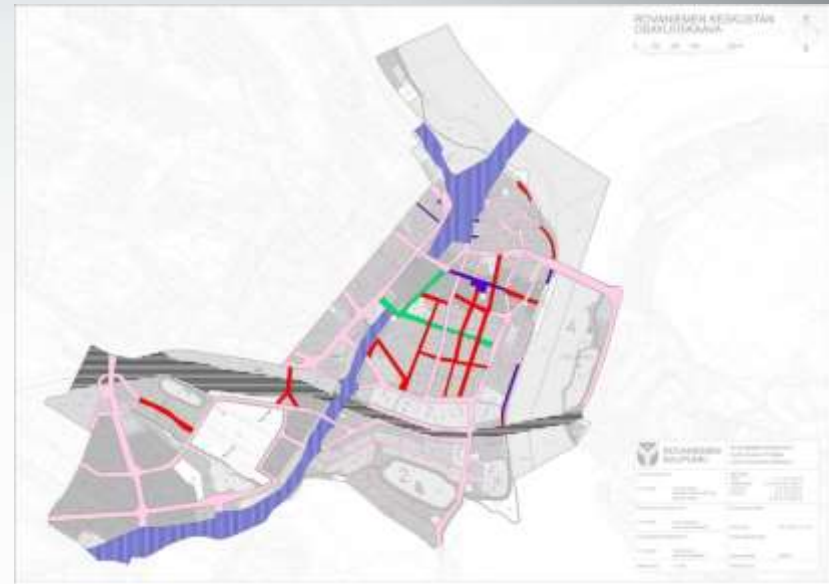
The local master plan defines the guidelines for local detail planning. In local detailed planning and in street designs the planning principles shall be implemented in concrete projects.

RESEARCH KNOW-HOW :

The zoning principle adopted in local general plan will be monitored according to Urban zone method. In the urban zone method, cities are divided into pedestrian, transit and car zones according to criteria based on the location in the urban form and the public transport supply. The project has two main objectives:

- Forecasting the future development of urban form in Finnish cities
- Applying the UZ method in urban planning

:



Website:

<http://www.rovaniemi.fi/fi/Palvelut/Kaavat-ja-kiinteistot/Kaavatori/Yleiskaava?showmodul=213&CityPlanID=9173319c-0501-4909-b21c-b9ab9346167c>

http://www.syke.fi/en-US/Research_Development/Research_and_development_projects/Projects/Urban_Zones_Applied_in_Planning_Urban_Zone_3

THEME II: DESIGN AND EXPERTISE IN WINTER CONDITIONS

**FREEZEWAY SOLAR PHOTOVOLTAIC SYSTEM ROAD SCANNING
CIRCULAR ECONOMY ARCTIC DRIVING CENTER
ARCTIC CENTRE- UNIVERSITY OF LAPLAND**

EDMONTON

THE EDMONTON FREEZEWAY



Edmonton had a new winter recreation destination last winter. It was the pilot project for The Freezeway, a 400 m skating trail nestled in the trees in Victoria Park.

The trail connected to the skating oval and but offered a completely different experience. It had light installations designed by artist Dylan Toymaker illuminating the trail, casting a multi-coloured pattern on the ice and creating a magical atmosphere.

The trail was new to Edmonton but was a huge hit and helped to fulfill the river valley's destiny as a meeting place for the Edmonton region.

RECREATION CATEGORY

B1 PUBLIC SECTOR: City of Edmonton

B2 PRIVATE BUSINESS: Not applicable

Location:

12130 River Valley Rd.

EDMONTON

THE EDMONTON FREEZEWAY

DESIGN INNOVATIONS :

The technology was fairly low-tech. The solar-powered creative lighting was instrumental to the popularity of the project.

BUSINESS KNOW-HOW :

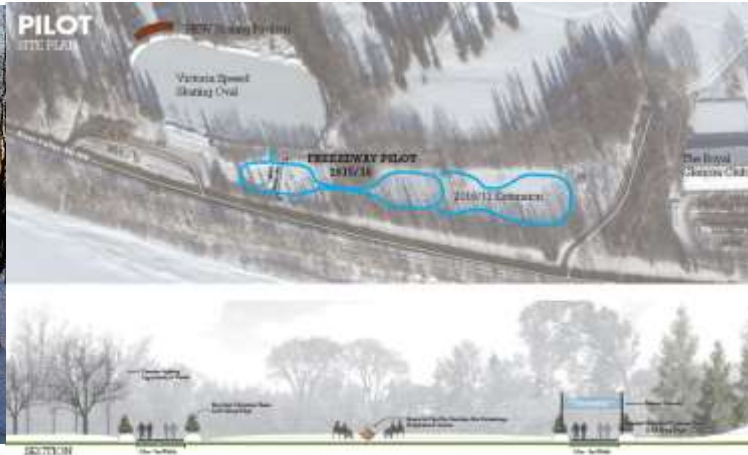
Now we know more about the business case for skating trails. It is inspiring some private ice contractors to want to build other skating trails in the city.

RESEARCH KNOW-HOW :

Building and maintaining the skating trail for one winter season allowed the City to learn about costs of materials, labour, specific challenges, and about the huge positive impact of the skating trail.

PUBLIC SECTOR'S KNOW-HOW:

City Administration learned that there is much latent demand for this sort of winter recreation experience.



Website:

http://www.edmonton.ca/activities_parks_recreation/documents/PDF/VIC-Freezeway400mPilot-ConceptPLAN.pdf

<https://www.facebook.com/EdmontonFreezeway/>

HWACHEON-GUN

EXPANDING SOLAR PHOTOVOLTAIC SYSTEM IN THE CITY

We are looking forward to reducing a degree of air pollution and energy usage during the winter season by using sustainable energy systems (solar power) rather than fossil fuels.



RECYCLING, CIRCULAR ECONOMY

B1 PUBLIC SECTOR:

Hwacheon County Office Regional Economy Division: Supplying and expanding solar photovoltaic system

B2 PRIVATE BUSINESS:

Solar photovoltaic system businesses within the region: Constructing and monitoring a high efficiency energy converter

Location:

Hwacheon-gun bound (entire region)



HWACHEON-GUN

EXPANDING SOLAR PHOTOVOLTAIC SYSTEM IN THE CITY

DESIGN INNOVATIONS :

Reducing levels of environmental pollution and heating energy usage during the winter by investing in pollution-free solar photovoltaic system business.

BUSINESS KNOW-HOW :

Increasing the efficiency of the facility by maximizing generation capacity of solar panels and developing energy storage technology of solar batteries.

PUBLIC SECTOR'S KNOW-HOW :

Promoting a business of supporting the installation of solar photovoltaic systems, conducting a test operation and public relations by the public institution, and selecting a place that has a good amount of sunshine.



ROVANIEMI (1) ROAD SCANNING

The main focus of the Roadscanners' activities is structural and functional condition monitoring and analysis of roads, railroads, bridges and airports. Roadscanners uses a combination of ground penetrating radar, laser scanner, accelerometer, HD and thermal camera linked together with GPS to make a complete picture of the infrastructure. Roadscanners' main office is located in Rovaniemi.



TESTING CATEGORY
B2 PRIVATE BUSINESS:
Roadscanners Oy (Ltd): entrepreneur

Location: Varastotie 2

ROVANIEMI (1) *ROAD SCANNING*

DESIGN INNOVATIONS :

2D and 3D GPR Surveys; Road Diagnostics and Design; Railroad Surveys; Bridge Surveys; Forest and Private Road Surveys; Laser Scanning Services; Thermal Camera Surveys; Road Management System (RMS); Seasonal Change Management; Quality Control and Quality Assurance; Software; Hardware

BUSINESS KNOW-HOW:

The company has increase international business know-how in the city. In addition to its current main market areas of Finland, Sweden and U.S.A., the company has also had consulting projects in many countries. Roadscanners instruments and GPR turnkey packages have been used as far south as Antarctica and as far north as Spitzbergen and everywhere in between from Amarillo to Shanghai.

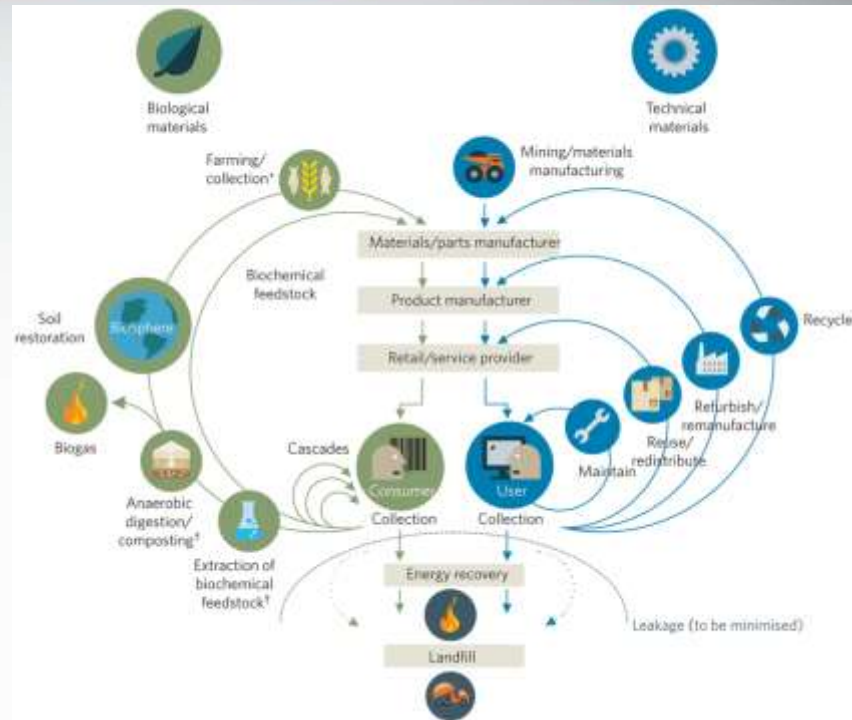


Website:

<http://www.roadscanners.fi/>

ROVANIEMI (2) CIRCULAR ECONOMY

The circular economy (CE) is a novel economic model in which the focus is on reusing materials and value, and on creating added value in products through services and smart solutions. The starting point is the strive for a maximisation of the volume of waste put to reuse in the form of raw materials or as an energy source. Rovaniemi has set a target to become a leading arctic city in circular economy. In Rovaniemi CE will be implemented in energy production, waste management, tourism, traffic, snow and ice technology expertise and cold-climate competence.



RECYCLING, CIRCULAR ECONOMY CATEGORY

B1 PUBLIC SECTOR:

City of Rovaniemi

B2 PRIVATE BUSINESS:

Local companies

B3 RESEARCH AND EDUCATION :

University of Lapland, university of Applied sciences, Educational Institutes

ROVANIEMI (2) *CIRCULAR ECONOMY*

DESIGN INNOVATIONS

Arctic Circle water and Energy Ltd:

- Granulated ash
- Green energy
- Charging stations for electric cars and bicycles

University of Lapland

- Arctic design, product design, service design

Lapland university of Applied Sciences

- Cold climate competence
- Ice and snow expertise

Educational Institutes

- Local food
- Wood chipping

City of Rovaniemi

- Green tourism

BUSINESS KNOW-HOW :

Local businesses will get new markets and products. New businesses will emerge.

RESEARCH KNOW-HOW IN OUR CITY:

Research focuses at Arctic and CE issues.

Design adds value to CE products.

PUBLIC SECTOR'S KNOW-HOW :

Gradually increasing competence in CE encourages the stakeholders to adopt and create new processes and businesses.



ROVANIEMI (3) *ARCTIC DRIVING CENTER*

Arctic Driving Center Ltd is a leading provider of test tracks, workshops, office rooms and technical assistance for car and tyre makers that operate in Finnish Lapland.

This tried-and-tested proving ground is ideal for testing light/heavy vehicles and tyres. It is also suitable for all manner of demonstrations, as well as press and driver training events.



TESTING CATEGORY
B2 PRIVATE BUSINESS:
Arctic Driving Centre Oy (Ltd): entrepreneur

Location: Aionkatu 4-6

DESIGN INNOVATIONS :

In Finnish Lapland, the winter season lasts as long as half a year. With the long, cold, snowy winters, Lapland is the best choice for testing cars, tyres, studs and components in extreme winter conditions. Cold climate testing is just one aspect of its expertise in dealing with harsh winters and extreme conditions.

RESEARCH AND BUSINESS KNOW-HOW :

Private, independent and highly trusted, the Arctic Driving Center's strength lies in its over 30 years of experience in the automotive testing arena for car companies.

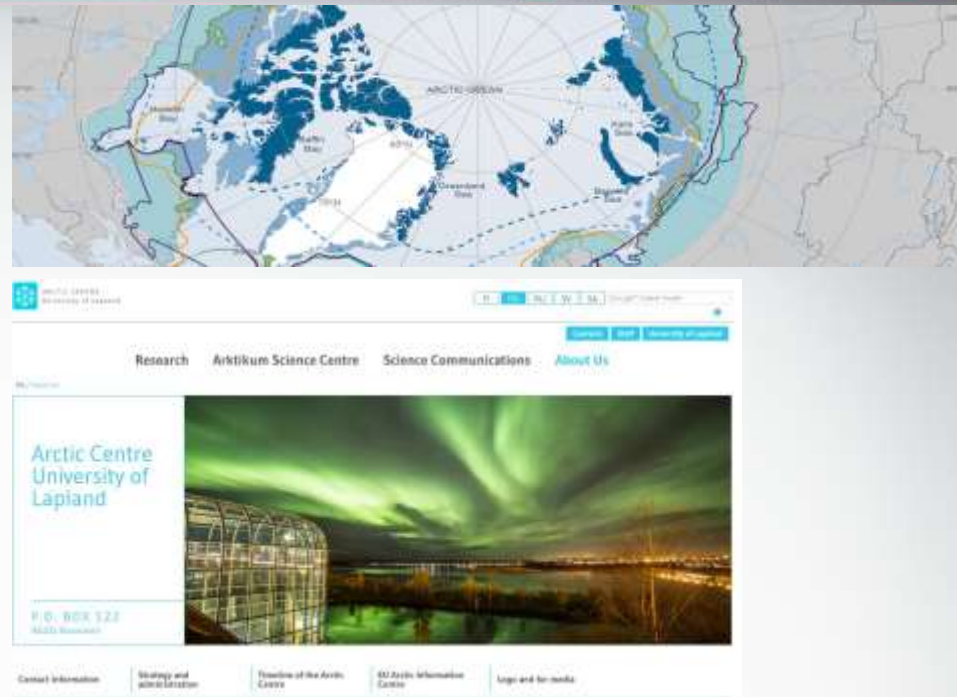


Website:
<http://www.adcltd.fi/fi//>

Arctic Centre is a national and international hub of information and centre of excellence that conducts multidisciplinary research in changes in the Arctic region. It is located in the Arktikum House, Rovaniemi, Finland.

The research focuses on three main themes.

- Northern Institute for Environmental and Minority Law
- Sustainable Development Research Group
- Arctic Anthropology



Location: Pohjoisranta 4

RESEARCH CATEGORY

B3 RESEARCH AND EDUCATION :

Arctic center: Hub of information and center of excellence in Arctic issues.

DESIGN INNOVATIONS

The Arctic Centre's science communications and library compile, popularize and communicate Arctic issues to increase the knowledge and understanding of experts, decision makers and the general public on Arctic issues.

BUSINESS KNOW-HOW :

Arctic Centre supports business and society by adequate international projects and research together.

RESEARCH KNOW-HOW :

The Arctic Centre is internationally recognized for the quality and relevance of its multidisciplinary Arctic research. The Arctic Centre promotes increased knowledge, awareness and understanding of the Arctic both within and outside the region. This research supports decision-making and sustainable development in the Arctic.

PUBLIC SECTOR'S KNOW-HOW :

The goal is to increase the knowledge and understanding on arctic issues of the experts, decision makers and the general public by offering net services, theme portals and library services by utilizing the expertise of the staff and partners.

Website:

<http://www.arcticcentre.org/EN/>
<http://www.arcticcentre.org/EN/RESEARCH>

THEME III: DESIGN IN EVERYDAY LIFE AND TOURISM

ICE CASTLE LOCAL FOODS/ FESTIVALS SPORTS COMPLEX
TRAINING CENTRE WARM WINTER TOUR ARCTIC DESIGN WEEK
ARCTIC CIRCLE TOURISM DESTINATION ARCTIC SNOWHOTEL

Changchun Municipality has a plan and design to encourage the local citizens to participate in sports and exercise, esp. in winter seasons. Changchun has hosted Changchun Vasaloppet Int'l Cross Country Skiing Festival for 10 years in a cooperation with Swedish company called Nordic Ways. It is a design by local gov't to influence the everyday life and tourism in winter cities.

SPORTS, TOURISM CATEGORY

B1 PUBLIC SECTOR:

Changchun Municipal Government: Invest in public sports and tourism.

B2 PRIVATE BUSINESS:

Gardening companies:

Location: *Jingyue Forest Park, Changchun, China*

DESIGN INNOVATIONS :

This is a design innovation between a local government and a foreign company.

BUSINESS KNOW-HOW:

January 1st to 3rd each year of Changchun has become a gala for world skiers. More than 1000 Int'l skiers come to Changchun for their tournament. The hotels and service sector benefited from the event and initiatives.

RESEARCH KNOW-HOW :

The 1st Changchun Vasaloppet Int'l Cross Country Skiing Festival was hosted in 2003, it proved a great success. Changchun Municipality determined to keep invest in this event as a stimulator to boost the city image and local economy.

PUBLIC SECTOR'S KNOW-HOW :

The City government arranged the university students and local citizens to join the event, learn to ski and other winter sports.

EDMONTON

THE EDMONTON ICE CASTLE



Made entirely of ice and snow, the ice castle offered a magical winter experience – one that you could walk through and explore. The massive castle featured slides, waterfalls, tunnels and caves. It also featured music that was synchronized with dancing lights embedded in the ice. It was the only ice castle in Canada and will return next winter.

A1 RECREATION CATEGORY

B1 PUBLIC SECTOR:

City of Edmonton– coordinated the civic services required

B2 PRIVATE BUSINESS:

Ice Castles LLC and Silver Skate Festival

Location:

William Hawrelak Park, 9330 Groat Road.

Website:

<http://icecastles.com/edmonton/>

<https://www.facebook.com/IceCastlesAB/>

EDMONTON

THE EDMONTON ICE CASTLE

DESIGN INNOVATIONS :

Roughly every metre of castle had about 400 icicles and the walls were 10 feet thick. The icicles were grown from more than three kilometres of sprinklers. Every day, 10,000 icicles were placed throughout the ice castles to provide something for the water to freeze to.

PUBLIC SECTOR'S KNOW-HOW

The City learned about ice as a building material and became comfortable with managing risk related to it.

BUSINESS KNOW-HOW :

Ice Castles LLC shared the expertise they gained from making ice castles in other winter cities in the United States with Silver Skate Festival and local staff they hired.



HWACHEON

BOOSTING SALES OF LOCAL FOOD THROUGH FESTIVALS



During the festivals, contribute to local produce sales should establish and managing agricultural markets of the region.. Festival visitor sales through the city paying agricultural part of ticket refund by festival program.



A1 TOURISM CATEGORY

B1 PUBLIC SECTOR:

Hwacheon-gun County Office Rural Development Division: Planning and managing agricultural markets of the region

B2 PRIVATE BUSINESS:

Regional agricultural associations and forestry associations: Producing, processing, and packaging agricultural products.

B3 RESEARCH AND EDUCATION:

Agricultural Technology Center:

Location:

Festival places and regional agricultural markets around the Hwacheon-eup region..

HWACHEON-GUN: *BOOSTING SALES OF LOCAL FOOD THROUGH FESTIVALS*

DESIGN INNOVATIONS

Regional economy activation by vitalizing local agricultural markets that have been decreased during the winter and increasing profit from selling local agricultural products by linking a local currency and festivals.

PUBLIC SECTOR'S KNOW-HOW :

Competitiveness reinforcement of the local agricultural market through a market research on visitor's responds and developing new products.



NOVOSIBIRSK (1)

FLAMINGO SPORTS COMPLEX

SPORTS CATEGORY

The complex consists of indoors track-and-field arena, full-scale football pitch with tracks and stands for 3,000, futsal pitch, indoors skating rink, workout facility, choreographic hall. Preliminary work started for construction of a 25m swimming pool. The Copmplex hosts various sporting events for city residents.

B1 PUBLIC SECTOR:

Provision of comfortable conditions for training and competitions, public event

Location:
82/3, Zorge street, Novosibirsk

Website:
www.ncvsm.ru

The indoors football arena has an arched construction. The arch size (107 m in width) makes it unique. Stress monitoring system controls the stress upon the building's structural units. The sports complex occupies 19.4 hectares and includes the indoors football arena: 6 gyms, futsal arena, football pitch (110m x 70m); swimming pool (25 m, 6 lanes), 3 gyms; 4 artificial-turf football pitches (110m x 70 m); artificial-turf football pitch (20m x 40 m), earth football pitch used in winter for bandy and skating; outdoors ice-hockey rink..

Location:
2, Sportivnaya street, Novosibirsk

SPORTS CATEGORY

B1 PUBLIC SECTOR:

Organizing of sporting events for residents of Novosibirsk, recreation on weekends and holidays

B2 PRIVATE BUSINESS:

Organizing of sporting and other events for residents of Novosibirsk

B3 RESEARCH AND EDUCATION

Institutions involved.

Website:

<http://m-nsk.ru/en/portfolio-item/walking-tours-around-the-city>

In January 2016 the Museum of Novosibirsk presented a new type of tours - Warm Winter Tours. Tours are conducted by tour guides of the Museum, and are based on historic documents and lore. There are 2 walking tours and 1 bus and walking tour. Tours are offered in winter.

DESIGN INNOVATIONS :

The only walking tour offered in Novosibirsk in wintertime. It became quite popular despite harsh winter conditions.

TOURISM CATEGORY

B1 PUBLIC SECTOR:

tate Public Scientific and Technical Library, Siberian Botanic Garden, West-Siberian Railway, Museum of Novosibirsk: Premises, tour guides, route development

B2 PRIVATE BUSINESS:

Organizing of sporting and other events for residents of Novosibirsk

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Location:

2, Sportivnaya street, Novosibirsk

Website:

<http://m-nsk.ru/en/portfolio-item/walking-tours-around-the-city>

Each year, Arctic Design Week, the world's most northerly design week, brings international design experts, Nordic designers, firms and students, as well as design enthusiasts from near and far, to the Arctic Circle in February.

DESIGN IN BUSINESS CATEGORY

B1 PUBLIC SECTOR:

the City of Rovaniemi: organizer

B2 PRIVATE BUSINESS:

Rovaniemi Regional Development Agency: organizer

B3 RESEARCH AND EDUCATION :

the University of Lapland: organizer



Location: City of Rovaniemi

ROVANIEMI (1)

ARCTIC DESIGN WEEK

DESIGN INNOVATIONS

Most design week events are free-of-charge and are held in or around Rovaniemi city centre, making design easily accessible to all.

The topic of the main seminar is arctic design and user experience as a business developer.

BUSINESS KNOW-HOW :

Once the customer and the user are taken into account in the planning and development of the product and service, the end result is a satisfied buyer and more successful business.

RESEARCH KNOW-HOW:

The exhibition by the students of the University of Lapland seeks answers to the issue of Arctic aesthetics.

There are several exhibitions during the week.

C4 HOW PROJECT INCREASED PUBLIC SECTOR'S KNOW-HOW IN OUR CITY:

Focus of the main seminar: to utilise design, get close to the top people in the industry, and have the opportunity to network with other entrepreneurs and operators.

Website: <http://arcticdesignweek.fi/en/>



ROVANIEMI (2)

ARCTIC CIRCLE TOURISM DESTINATION

The Arctic Circle is located just 8 kms from the downtown of city of Rovaniemi. The Arctic Circle is also known as the border of hastiness. The nightless night is best experienced in the Northern Arctic Circle regions. The Santa Claus Village has a unique meeting place where hundreds of thousands of visitors from all over the world come to meet Santa Claus on every day of the year. You can meet the elves in Santa's underground home cavern Santa Park! There are several restaurants and accommodations to choose from. You will find husky parks, reindeer parks, snowmobile parks, snowman world, gold panning at the resort.

Location: Arctic Circle, Rovaniemi



TOURISM CATEGORY

B1 PUBLIC SECTOR:

the City of Rovaniemi

B2 PRIVATE BUSINESS:

Rovaniemi Regional Development Agency, companies

DESIGN INNOVATIONS

There are several architectural destinations, amusement facilities and wintry townscape.

BUSINESS KNOW-HOW :

The Arctic Circle is the fastest growing tourist resort in Rovaniemi. It invites international investors as well as domestic business. The business is almost totally international. Rovaniemi has started to export Christmas know-how to Asia.

RESEARCH KNOW-HOW :

There is an international research project (BusK) linked to the development and land-use planning processes



Website: <http://www.santaclausvillage.info/>
<http://www.arctictreehousehotel.com/>

ROVANIEMI (3) *ARCTIC SNOW HOTEL*

The Arctic Snow Hotel is an entire world of snow and an experience destination that provides an exotic possibility to spend the night sheltered by snow. Visitors have good opportunity to experience Arctic specialities, including the Ice Restaurant as well as the surrounding fields of snow. The hotel is open every year .

TOURISM CATEGORY

B2 PRIVATE BUSINESS:

Arctic snow hotel: builder, owner

B3 RESEARCH AND EDUCATION :

University of Applied Sciences has made several researches and guidelines for ice- and snow constructions in Lapland.

Location: Lehtojärvi, Rovaniemi



ROVANIEMI (3) ARCTIC SNOW HOTEL

DESIGN INNOVATIONS

Expertise in ice and snow building and detailing.

BUSINESS KNOW-HOW :

The Snow hotel has increased expertise in making profitable and high quality snow and ice structures.

Website: <http://www.santaclausvillage.info/>
<http://www.arctictreehousehotel.com/>



THEME IV: PROBLEMS TO BE SOLVED

CHANGCHUN:

There are several challenges and problem that limit the design of the city, such as the growing of the population, proper treatment on the waste, clever use of energy and resource, the traffic congestion, etc...

EDMONTON:

Two main challenges, both related to each other.

- Challenge 1: robust knowledge of **what it means to design for our winter context**.
- Challenge 2: **applying this knowledge properly**. Some say that their projects incorporate consideration for our winter conditions (has even become a selling point), but some do not do this properly.

Also, although **our culture has shifted considerably to embrace winter more** and **focus on enhancing the vibrancy of our streets in winter**, some still think that we need pedways (above-ground or underground walkways) to support winter mobility. Pedways are expensive and much contested.

HWACHEON-GUN:

-1. Increased **complexity** through creating Seondeung Street

Solution → Relieving traffic congestion by operating **one-way traffic** on two-lane roads.

2. Increased necessity of **inducing visitors to the downtown area**

Solution → Inducing visitors through **creating a heart tunnel** between the festival area and the downtown area.

SAPPORO:

- It is crucial to deliver a series of well-thought out initiatives to capture the various needs of residents in **aim of boosting urban appeal and vibrancy.**
- Due to the advancing deterioration of old urban infrastructure once built in response to a rapid rise in population, there is **a need for review regarding appropriate maintenance and conservation efforts,** as well as reallocation of existing facilities **to meet the needs of shifting demographics and age distributions.**

CHANGCHUN:

The **use of snowmelt agent**, the **air pollution** in winter seasons, the cold climate kills most of the green plants in winter, etc..

EDMONTON:

Maintenance of bicycle lanes in winter is still a challenge in our city. We have had a few pilot projects clearing snow from various kinds of on-road bicycle lanes. The lesson seems to be that we need to have separated bicycle infrastructure – clearing snow from lanes that are marked only with paint is not done well due to operational challenges. Related to this is the perception for many that cycling is a summer activity only. Our culture is shifting and there are more winter cyclists every year, but we have a long way to go before winter cycling is mainstreamed.

HWACHEON-GUN:

1. **High initial investment** is required due to **expensive solar batteries**.

Solution → Offering investment costs for the local through a business of supporting the installation of solar photovoltaic systems.

2. **Spoiling the scenic beauty**

Solution → **Creating a new design for the solar batteries** that suit to the concept of the festival. ex) Sancheoneo shape, etc.

SAPPORO:

- Given the general harsh climate conditions of snowy and cold winters and Sapporo's additional unique trait of experiencing six meters of snowfall annually, it is imperative **to set sights on achieving livable winters in harmony with snow.**
- Sapporo must **overcome** the issue of **high energy consumption** during winter by promoting the increased **use of next-generation energy systems.**

CHANGCHUN:

Vasaloppet is an international tournament, Changchun is thinking of inviting more foreign visitors, esp. those from Scandinavia to participate in Changchun Vasaloppet.

EDMONTON:

Aversion to risk makes many projects take longer or cost more – For example, it took 2 years for the ice castle to be allowed to be constructed.

Ice is not a recognized building material in our Building Code. There were concerns about it being safe.

HWACHEON-GUN:

1. Wrapping design and preferences on purchasing need to be improved but **expenses on design will be excessive**. → Cutting down on expenses by holding Hwacheon-gun's independent **design competition**.
2. Distributing low quality agricultural products by some sellers can harm the image of Hwacheon-gun and its festival. → Preventing consumer-related injuries by **introducing a consumer reporting system**.

SAPPORO:

The number of tourists visiting Sapporo between tourism's busy period (July-Sept.) and slow period (Nov.-April) differs greatly. One of our challenges is attracting more tourists during the slow period.

-We must pour additional effort into creating a more comfortable landing environment for foreign tourists by boosting multi-lingual services and expanding the Wi-Fi coverage area, etc. in order to increase the number of tourists from outside Japan

MOST PROMINENT :

CHANGCHUN (T I) EDMONTON (T I-III) HWACHEON (T III) ROVANIEMI (T I-III) SAPPORO (T III)

LEAST PROMINENT:

CHANGCHUN (T I) EDMONTON (T I-III) HWACHEON (T I) ROVANIEMI (T I-III) SAPPORO (T I)

NEXT STEPS:
LISTING COMMONS PROBLEMS
AND BENCHMARKING GOOD
PRACTICES!
CREATING COMMON DATABASE?