

BIM – BUILDING INFORMATION MODELING IN LITHUANIA



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**LITHUANIAN ROAD
ADMINISTRATION**

MAIN INFORMATION ABOUT LITHUANIA

MAIN INFORMATION

Capital (and largest city): Vilnius

Official language: Lithuanian

Area: 65,300 km²

Population: 2,944 million

National currency: 1 EURO

First mentioned: 9 March 1009

Boarders lenght: 1,732 km

Transport fleet: 2,275,977 (180,720 heavy)

Memberships: EU, NATO

Trakai Castle



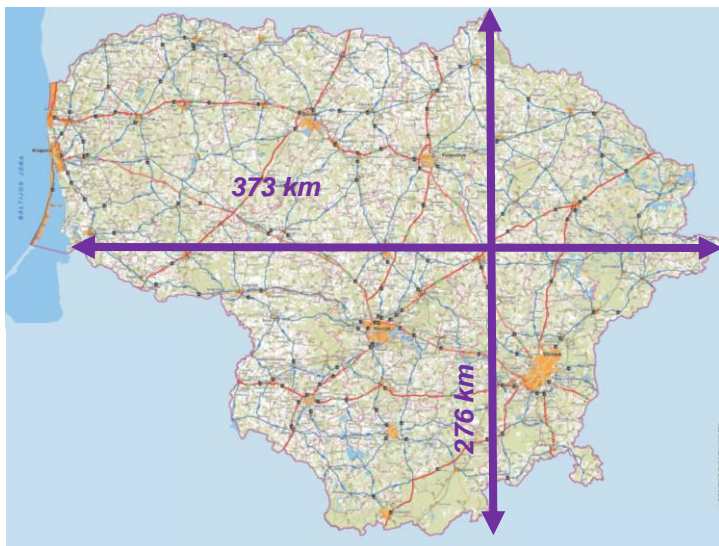
Anykščiai Church



Lake Sartai



Kernavės Mounds



Lithuania is a very beautiful country....

AIMS

- Ensuring traffic safety is the top priority;
- Satisfaction of the needs of society and road users;
- Working in an economic and efficient manner by creating adequate traffic conditions, so that transport on the state roads is safe, fast, convenient and environment-friendly.

TASKS

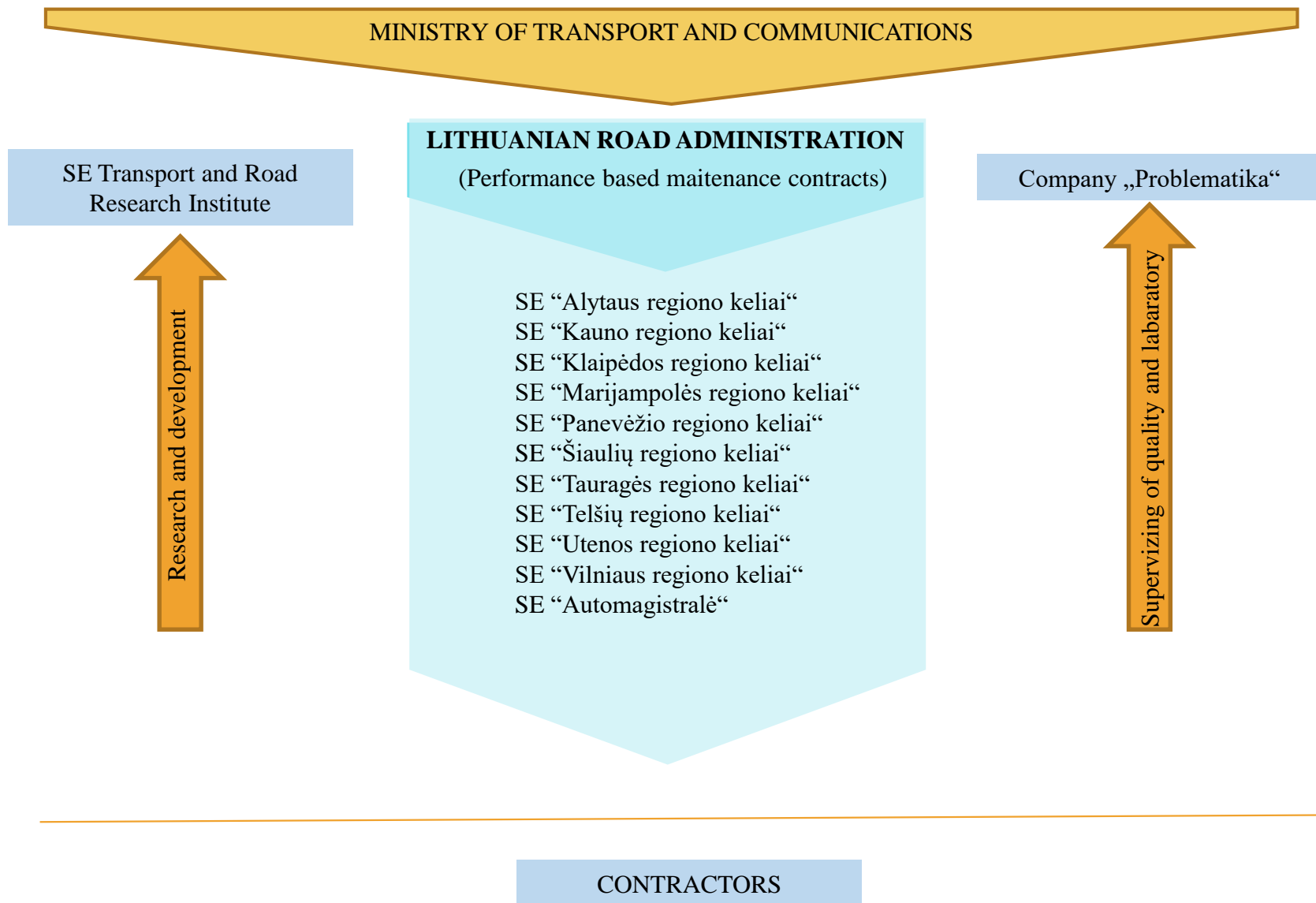
- Implementation of policies of road maintenance and development;
- Implementation of road maintenance and development programmes;
- Ensuring economically sound maintenance and development of state roads;
- Management of the development, modernization and functioning of the network of state roads.



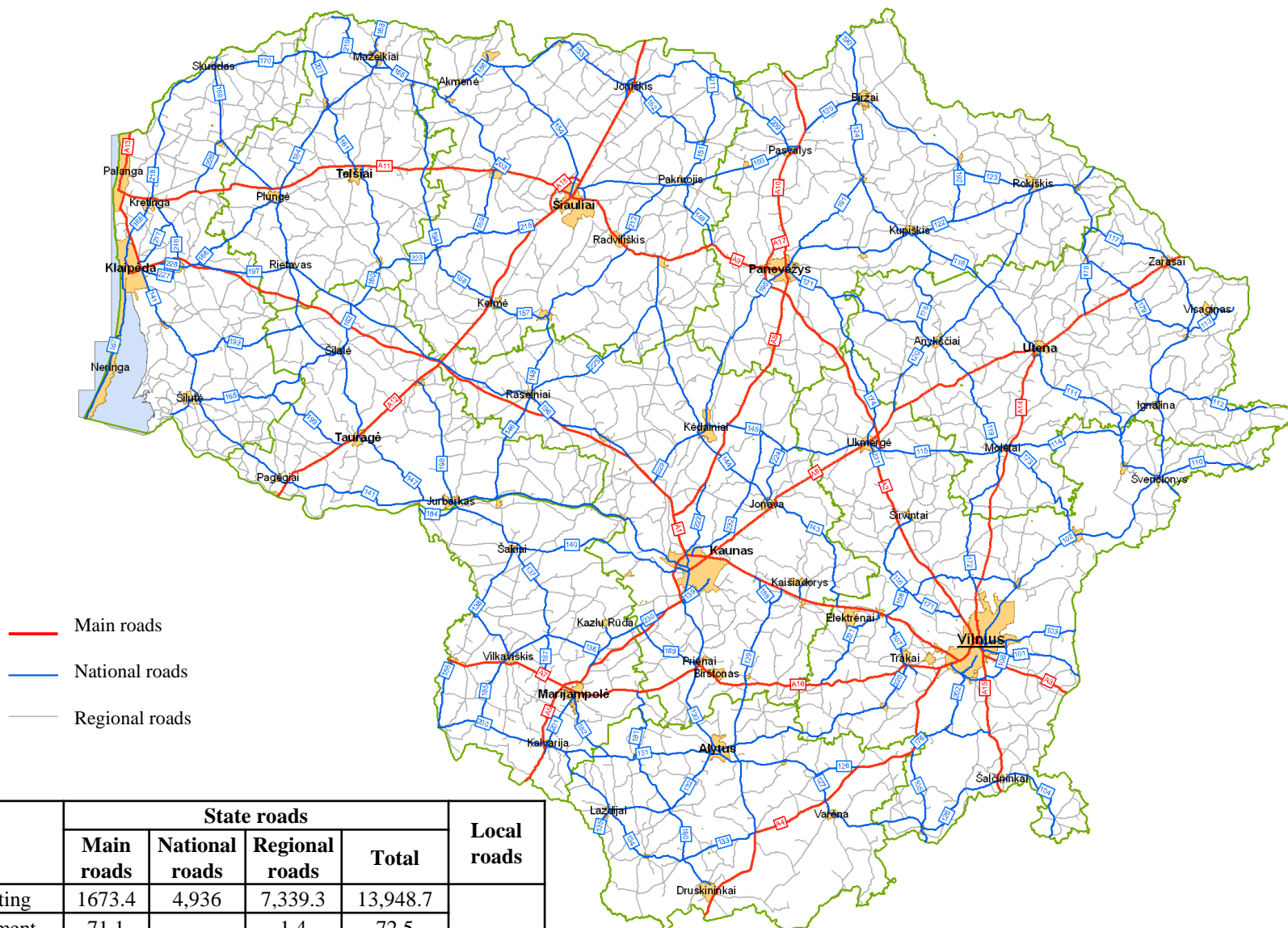
FUNCTIONS

The Lithuanian Road Administration under the Ministry of Transport and Communications is an institution established by the Government of the Republic of Lithuania, which organizes and coordinates the works of rehabilitation, maintenance and development of roads of State significance as well as coordinates the financing of state roads.

LITHUANIAN ROAD SYSTEM STRUCTURE



LITHUANIAN STATE ROADS NETWORK



Covering	State roads				Local roads
	Main roads	National roads	Regional roads	Total	
Asphalt and black coating	1673.4	4,936	7,339.3	13,948.7	62,923
Cement concrete pavement	71.1	-	1.4	72.5	
Gravel	-	-	7,225.3	7,225.3	
Cobbles	0.4	-	7.2	7.6	
Total:	1,744.9	4,936	14,573.2	21,254.1	62,923

MAIN TARGETS OF LRA UNTIL 2020

- **VIA BALTICA DEVELOPMENT:**
 - A) KAUNAS-POLISH BORDER COMPLETION (AM);
 - B) KAUNAS-PANEVĖŽYS, (2+1);
 - C) PANEVĖŽYS BYPASS (2+1);
 - D) PANEVĖŽYS-LITHUANIAN-LATVIAN BORDER (2+1).
- **VILNIUS – KAUNAS – KLAIPĖDA:** VILNIUS - KAUNAS ROAD RECONSTRUCTION FOR A MOTORWAY;
- **NATIONAL AND REGIONAL ROAD PRESERVATION;**
- **GRAVEL ROAD ASPHALT PAVING;**
- **BYPASS CONSTRUCTION AND TEN-T CORRIDOR DEVELOPMENT;**
- **GRAVEL ROAD RESTORATION;**
- **ASSET MANAGEMENT SYSTEM;**
- **TO START BIM PROJECTS;**
- **ITS DEVELOPMENT;**
- **REDUCE OF FATALITIES ON STATE ROADS BY 50%.**

BIM IN LITHUANIA

Public institution “Skaitmenine statyba” was founded on March 5, 2014 by 13 associations:

Lithuanian Builders Association
Lithuanian Roads Association
Lithuanian Association of Consulting Companies
Lithuanian Architects Chamber
Lithuanian Association of Civil Engineers
Lithuanian Electricity Association
Lithuanian Association of Land Reclamation Enterprises
National Passive House Association
Project Expertise and Fire Safety Companies Association
Association of Buildings Certification Experts
Building Product Testing Laboratory Association
“Structural engineers club”
Lithuanian EPS Association

Main directions:

- BIM (Building Information Modeling)
- Industry Foundation Classes (IFC)
- National Construction Classification

BIM IN LITHUANIA

In March 2014

A

study of possibilities of implementing digital construction in Lithuanian business, science and public procurement was being prepared and good foreign practice was being appraised. The main aim of the study was to provide for fundamental progressive organizational technologic forms of digital construction and systematic preparation for construction and possible guidelines and alternatives for their development in Lithuania. It was done on the basis of research on current situation, experience and needs in the field of digital construction.

The study helped to determine a model of implementing digital construction in Lithuania. The end of study – 28 April, 2014

BIM IN LITHUANIA

In September 2014

Public body “Skaitmenine statyba” formed a team for implementing BIM in Lithuania. The team consisted of over 90 specialists from the fields of construction business, science and education, IT and authorities.

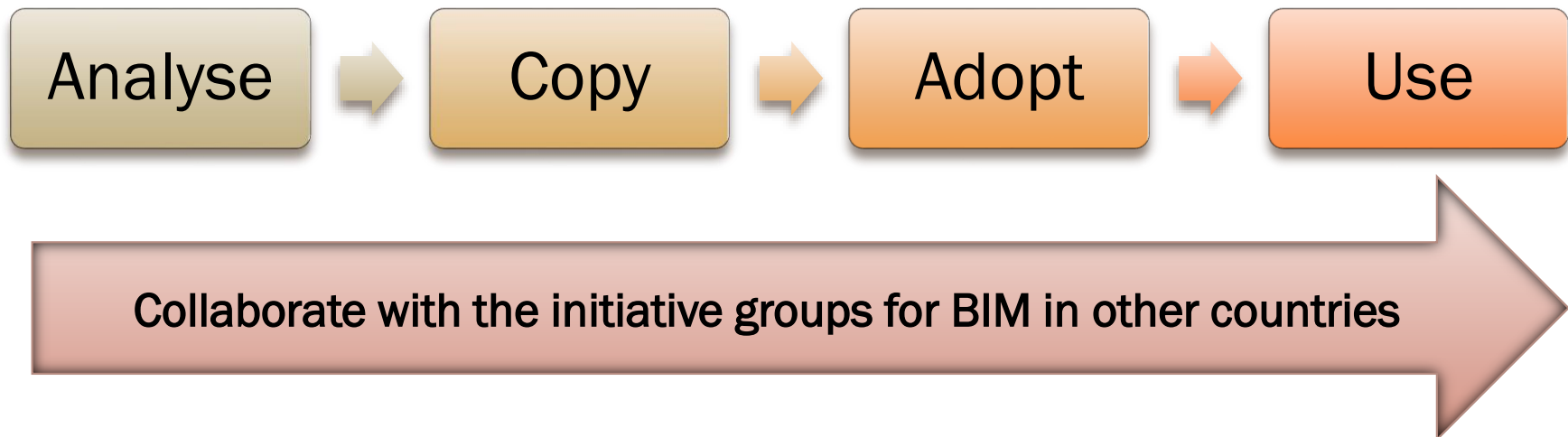
These persons worked in 11 working groups, each dedicated for a topic, inherent to implementation of BIM:

1. Preparing BIM requirements and standards, used in digital construction;
 - 1.1. Preparing of guides;
 - 1.2. Adapting IFC in Lithuania;
2. Defining statistical index of development of digital construction and describing monitoring index of BIM environment;
3. Adapting and analyzing the adjustment of methodology of digital construction and integration with current system of law and regulations of the Republic of Lithuania;
4. Forming and developing the structure of national classification and systems of coding; compatibility and integration with EU;
 - 4.1. Forming and describing of updating order of the structure of classification and coding system, catalogues of data bases;
 - 4.2. Compatibility and integration of national and EU data bases, administrating and describing the order of usage of data bases;
5. Forming, developing, administrating and describing the order of usage of information and communication technologies infrastructure of digital construction;
6. Publicity, dissemination of the results of good practice, creating image of the public body;
7. Regional cooperation for developing BIM;
8. Originating and certificating of BIM studies program, organizing of studies in high schools and informal training, validation of qualification, preparing of certification methodics, organizing of certification of participants of construction process, BIM project managers;
9. Preparing of legal regulation of organizing public procurement in accordance with BIM.

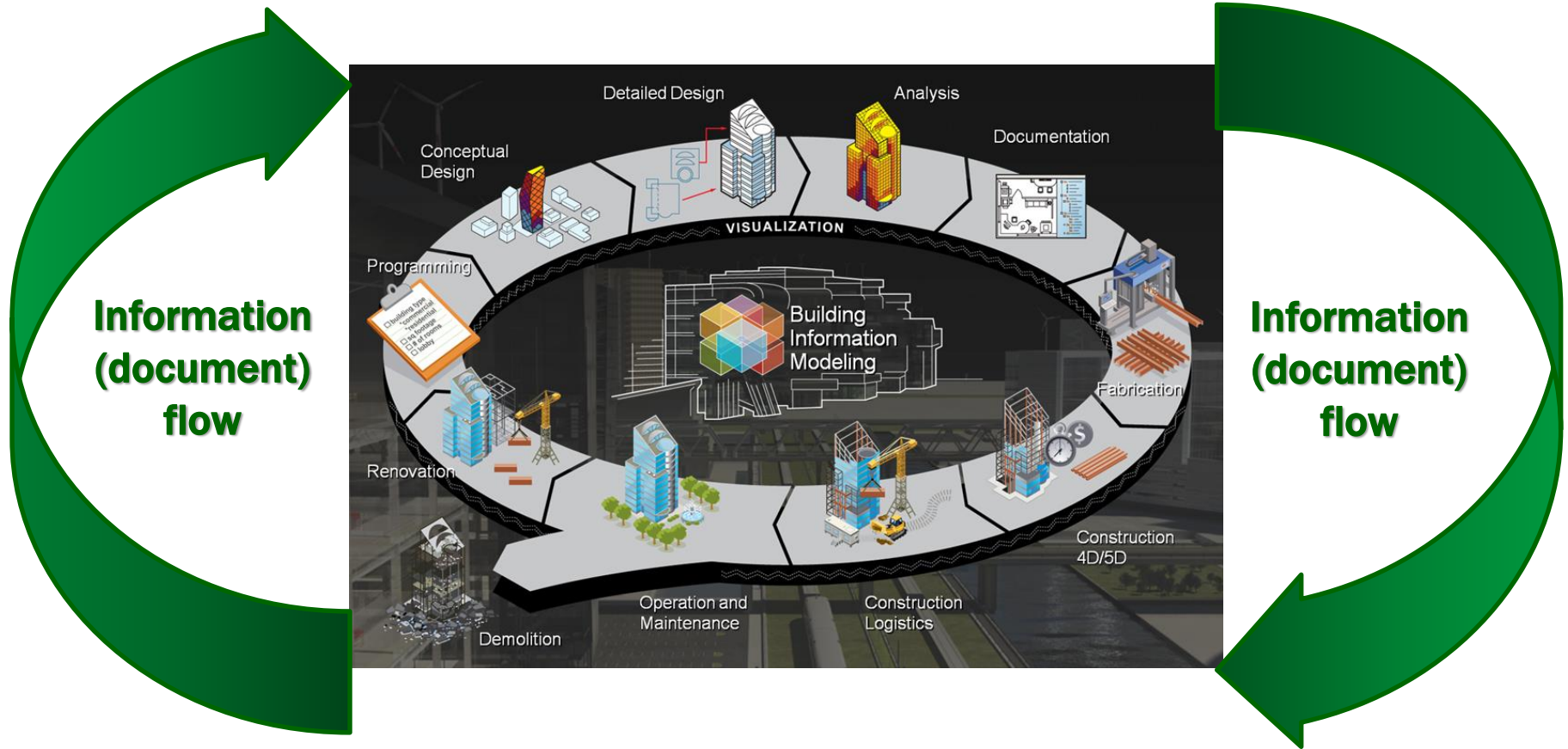
BIM IN LITHUANIA

In September 2015

Government of the Republic of Lithuania officially agreed to the initiative to digitalize Lithuanian construction sector. The implementation model and plan of actions was discussed and confirmed.



BIM IN LITHUANIAN STATE ROAD NETWORK



BIM (Building Information Modeling) is a process involving the generation and management of the entire building information throughout its entire life cycle – from the initial concept to demolition or renovation.

The point of BIM is to minimise data loss and ensure smooth transfer from one stage to another.

For this we need clear, unified standards and roles across all stages country-wide.

BIM IN LITHUANIA

Benefit of BIM application by construction process:

- More cost - efficient construction process. Whereas the creation of a digital building model (BIM model) requires accurate designing, design errors, the correction of which on the construction site becomes very expensive, are avoided. What is more, the calculations of excess quantities are avoided, i.e. budget growth, because the digital model can yield accurate quantities of construction materials.
- Faster and cheaper maintenance, repairs and renovation because a digital construction model means the information kept in a single location to be used for construction, repair or renovation works. For example, the digital information of buildings under renovation would lower the price and speed of reconstruction design at least twice.
- Better planning and design of new areas, fewer errors and more rational solutions. Combined information on construction objects and engineering networks provides an opportunity for better quality design of new construction objects or networks in the existing environment.
- Better quality and more rational design process, i.e. a smaller need for object changes in the future. The BIM model visualises the project solutions of all parts in the design process; therefore, the client can be better aware of results; errors between individual parts of the project are eliminated.
- Unified realistic information on the object. Whereas the information model of the construction object is an accurate collection of project data, errors arising in cases when official project drawings are not consistent with the reality and additional efforts are required to check the reliability of drawings can be avoided.

BIM IN LITHUANIAN STATE ROAD NETWORK

FACTORS INFLUENCING THE DEMAND FOR BIM:

✘ Higher expectations:

- + Faster implementation.
- + Higher return on investment.
- + Greater transparency.

✘ Advanced technology:

- + The phases of analysis and planning provide an opportunity to employ LIDAR, orthophotography and GIS data, as well as methods of analysis of traffic, vehicle maneuvers, visibility, etc., combining all of the information into a single model.
- + The designing phase involves the creation of a model corresponding to the one that will be constructed.
- + Smart equipment automatically carries out precision construction works on the site according to the designed model.
- + A database of designs may be used for operation purposes.



BIM IN LITHUANIAN STATE ROAD NETWORK



Requirements in tender documents:

1. Supplier should have necessary 3D design software in order to prepare work design project;
2. Should have necessary equipment in order to perform works (excavators, bulldozers, graders, milling machine with 3D control system; rollers with GPS equipment, asphalt paver with automatic regulatory system).

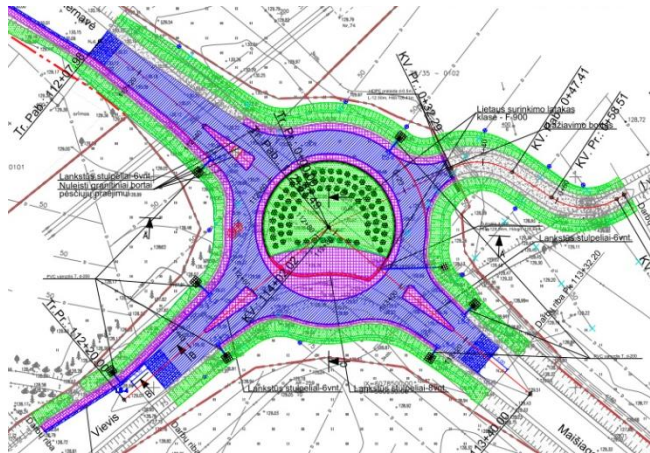
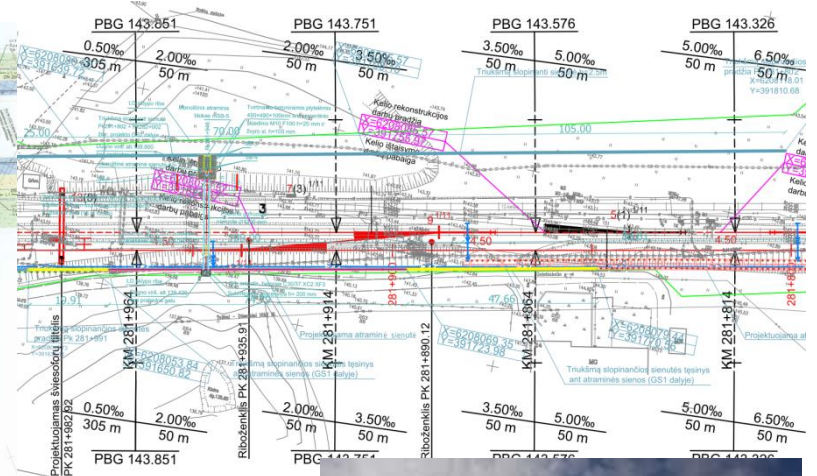
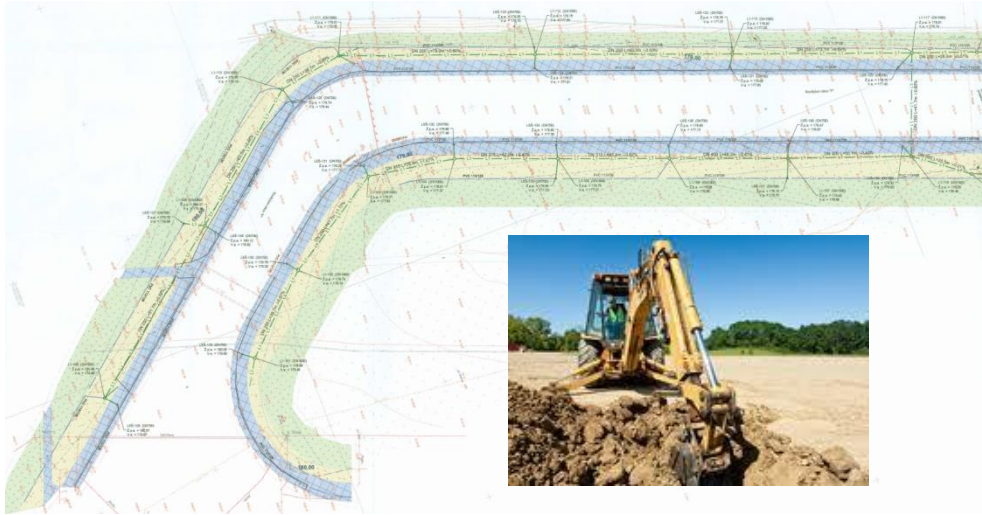
BIM IN LITHUANIA

Design solutions for the reconstruction of the highway Kaunas–Marijampolė–Suwalki (A5/E67) stretch from 57.7 km to 97.06 km (2014)

- Preliminary design of the highway Kaunas–Marijampolė–Suwalki (A5/E67).
- Geological, geodetic, economic and other surveys.
- Field research of traffic volume and flow.
- Field research of the traffic of pedestrians and other road users.
- Analysis of the benefits of statistical reconstruction project costs.
- Ecological survey (noise simulation, biological diversity, identification of the impact of planned economic activities on the existing or potential Natura 2000 territories).
- Preparation of design solutions for the construction.



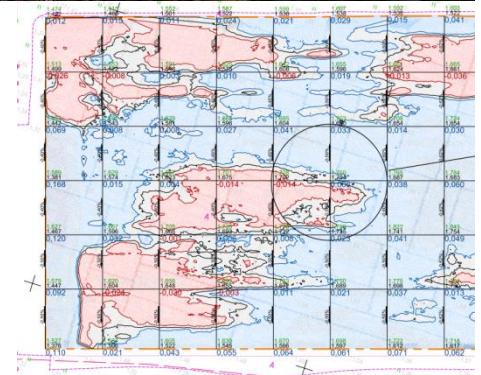
BIM IN LITHUANIAN STATE ROAD NETWORK



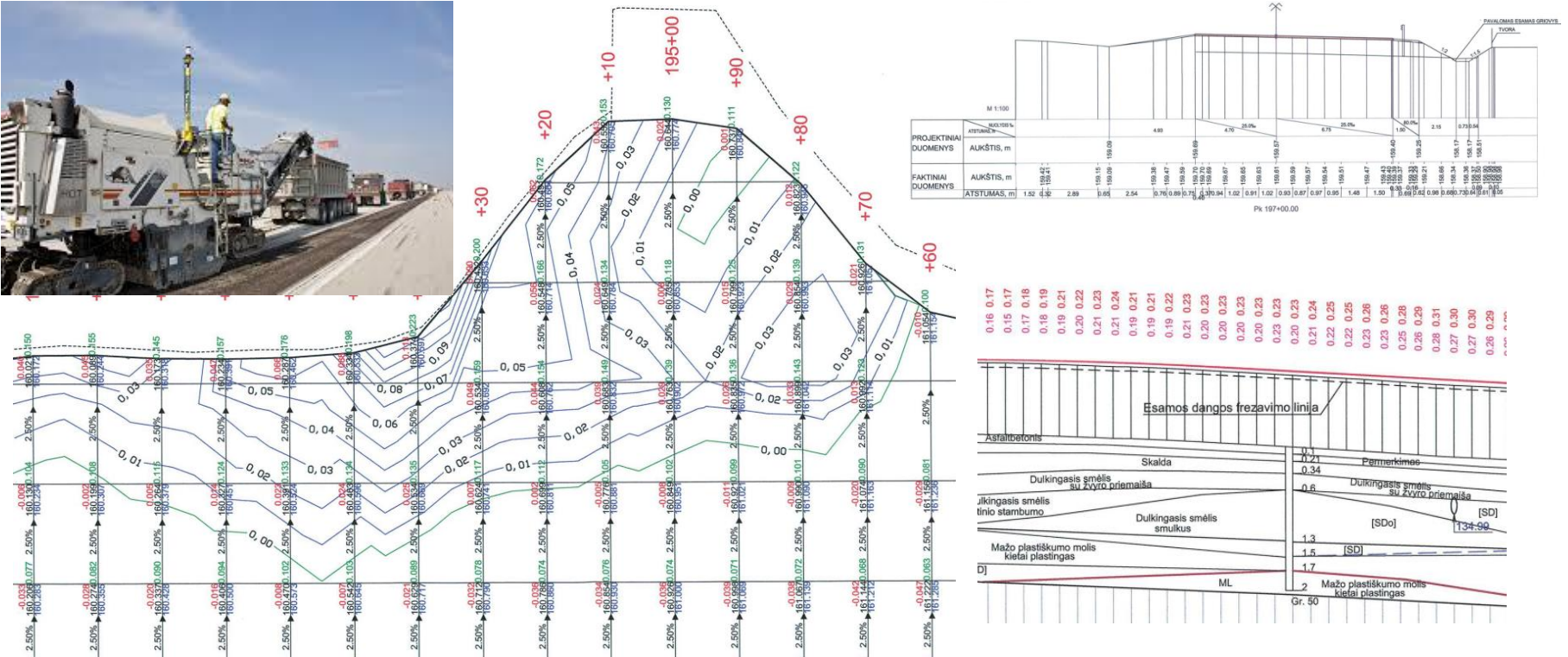
The main point here is that all detailed drawings, annotations, bills of quantities, and data for machine control are generated from parametric BIM models.

If we change some parameter, like an alignment curve, all information will be updated automatically.

This opens up different possibilities not only in designing stage, but in construction stage as well.



BIM IN LITHUANIAN STATE ROAD NETWORK



BIM technologies enable us to use models not only in the designing stage, but provide data for construction companies as well.

Today it is hard to imagine highway construction works without automated machine control, etc.

We are using pavement milling machine control since 2002 and this enables not only to speed up the work process, but to ensure higher quality as well.

THANK YOU FOR ATTENTION

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