



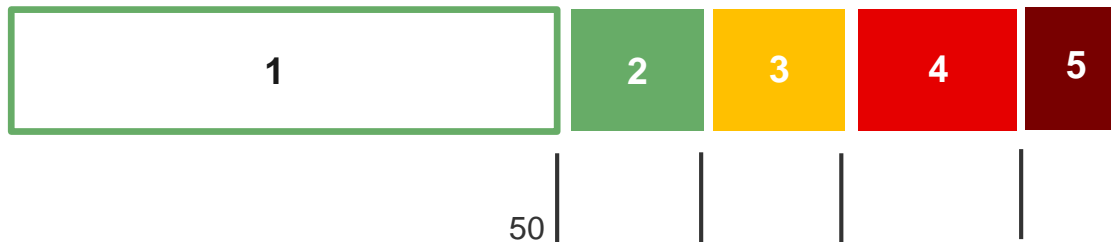
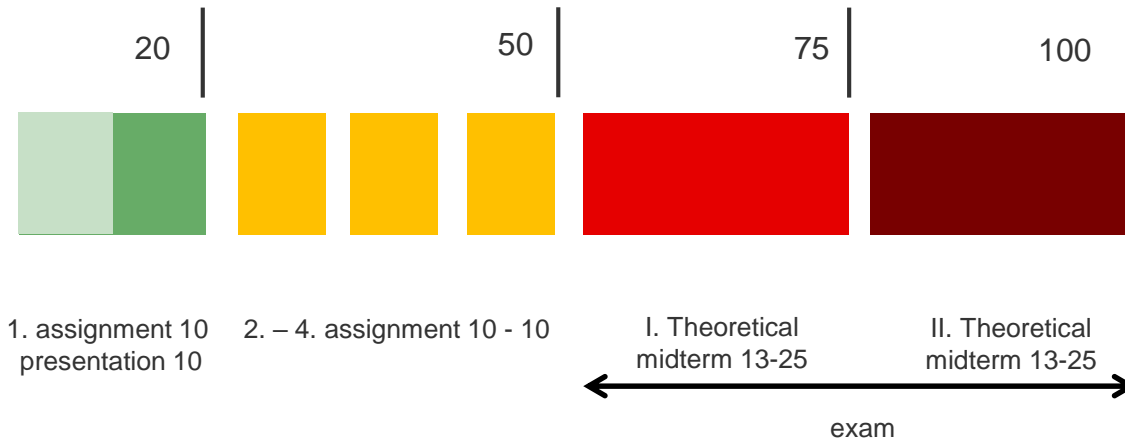
Master of Science (MSc) in transportation engineering Passenger Transportation – BMEKOKUM208

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Homepage of department: <http://www.kukg.bme.hu/index.php/en/>
(results)

study-aids + announcements

Calculation of final points and mark



In case of offered mark the exam result may be replaced by results of the 2 theoretical midterms

Timetable, list of students, essence of the subject, antecedents, objectives of the course, cooperating colleagues

Interdependence of the subjects:

BSc courses:

Transport and society + Transport network planning +
Transportation information systems I. and II. +
information systems of transport subsectors/modes

MSc courses:

Transportation informatics + Intelligent transportation systems (ITS) +
Passenger transportation

Revealing of connections of knowledge learnt previously, development of complex approach

Themes of final exam (homepage)

Characterization of passenger transportation system

To preserve and improve the quality of life – Sustainable Development

Subject of the passenger transportation: passenger + (luggage)

without vehicle + vehicular movements

Provoking factors human relationships
 distribution of functions in space
 social division of labour, economic activity

Passenger transportation system

complex (high number of element types, elements and relations between elements)
 interactions between *track, vehicle (transportation means), environment (weather) and people*

dynamic (elements and their attributes, **demands** and processes vary in time)

open (the demands are affected by external factors; the settlement structure is decisive)

stochastic (it can be described by random variables and distributions)

Task of the passenger transportation

to handle/manage the arising demands in

secure and safe

energy efficient

economic and

accessible/barrier-free (for disabled people) way, which fits into the nature and the social environment

(space requirements)

Participants in the passenger transportation system

- client/user (**passenger**)
- operator**, service provider
- society** (planning and operational responsibility – government and local government)

Qualitative and quantitative attributes are regulated by the ISO 9000 standards (ISO 9001, ISO 9002)

Classification of the forms of passenger transportation, according to

- means of transport** (on foot, motorized or non-motorized vehicle)
- mode of operation** (individual – collective <common>)
- organizational form** (individual – public)
- transportation relation (destination)**
 - local, interurban (suburban, regional, long-distance, international)

According to motivation (purpose – activity) - the connecting component of the activity chains

- work**
- education**
- shopping**
- administration**
- leisure** (daily, weekly, yearly)
- health**

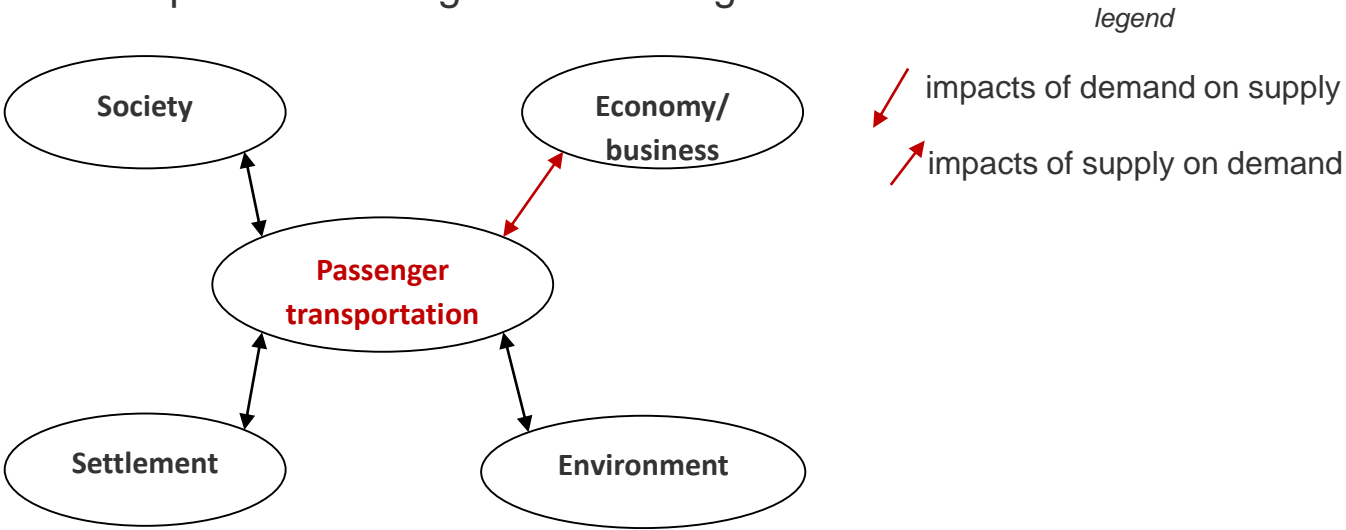
According to territorial unit	in Budapest
departure	~ 8 %
arrival	~ 8 %
internal	~ 83 %
transit	~ 1 %

According to transport processes (movements)
moving traffic
stationary traffic

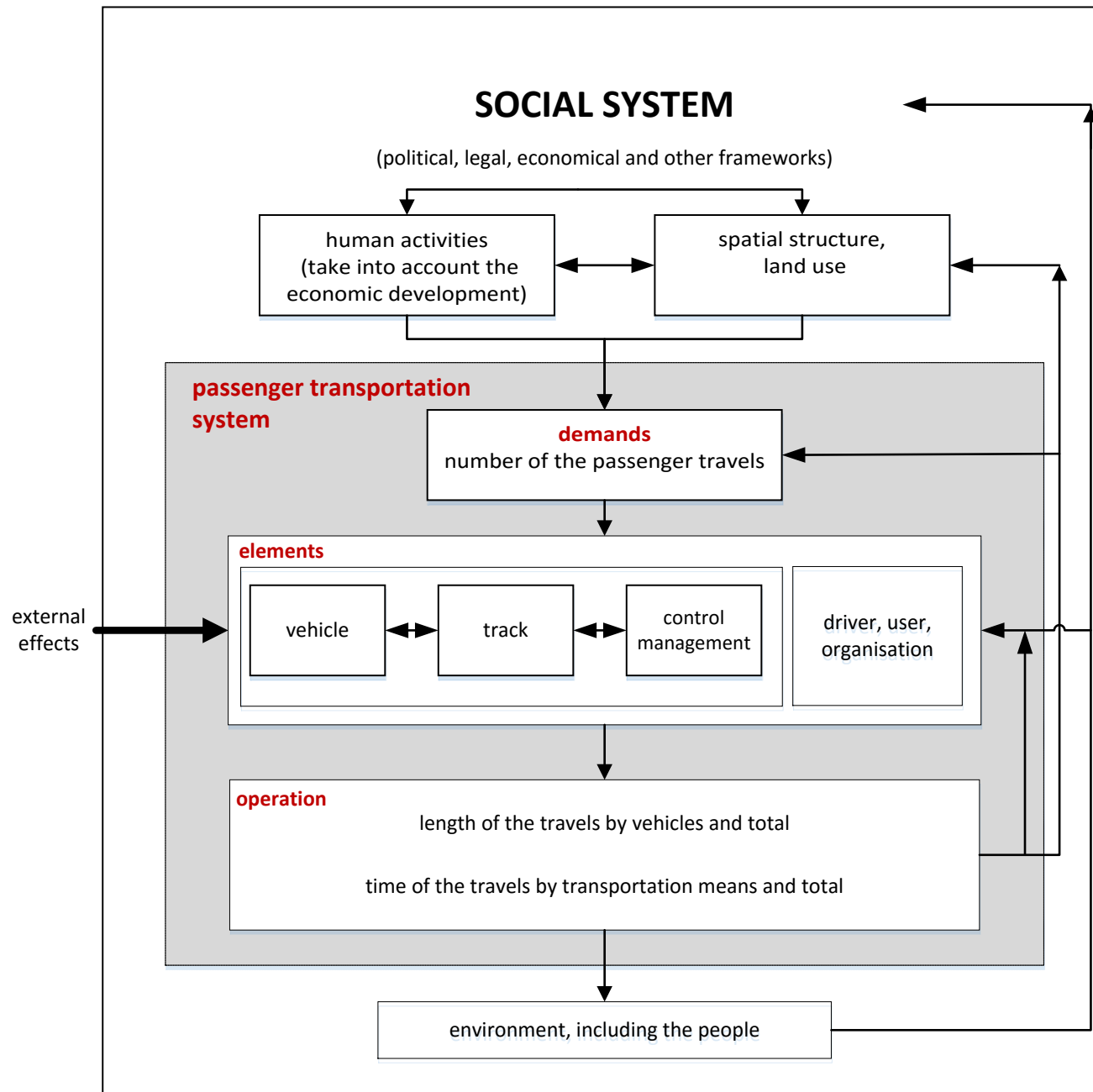
According to transportation path/track (separated or not; bound - e.g. rail tracks or not)
road (including paths for bikers and pedestrians as well as sidewalks too)
rail
air
water (inland or see)

Institutional system, levels of responsibility, objectives/goals of transportation policy

Planning on global and regional level the competence belongs to the government (ministry)
 on local level the competence belongs to the local government



Relations of passenger transportation



Characteristics of the passenger transportation system

Characterization of demands of passenger transportation

Relationship between demand and supply – stability of the system

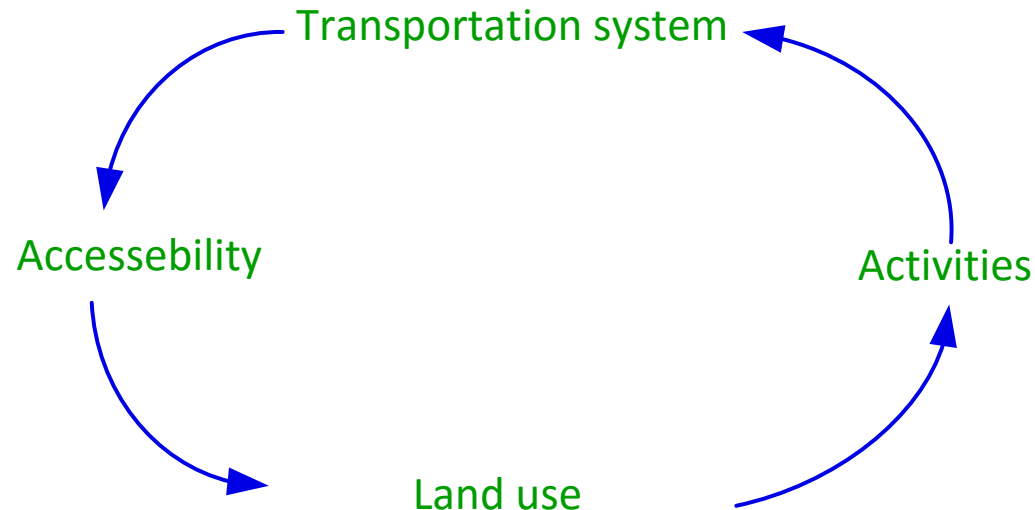
transportation demands assigned to territorial units – global demands
to individuals (households) – specific demands (needs)

- comparison of territorial units by specific indicators, because many attributes of them are different (e.g.: territory size, population)
- change in time, follow-up the developments (trends)
- number of journeys/movements of a territory
splitting by means, distance, duration
- specific number of movements: *number of **aim-motivated** movements in a demarcated area per person in a given duration*
notation: **u** ; unit: number of aim-motivated movements/(person*day)
national income (GDP) increases => specific travel demand increases
- daily specific average travel time
notation: **t** $t = (u * l) / v$ unit: h/(person*day)

Aim: reduction of this time

Opportunities:

- Reduce travel demand (work motivated movements are decisive, difficult to reduce)
- Increase velocity (construction of express roads, development of public transportation are expensive, requiring significantly more space)
- Reduce distance (the average distance is increasing – negative trend)



Land use – transport feedback cycle

urbanization; suburbanisation; desurbanisation, reurbanisation

Factors affecting the demands of passenger transportation

Demographic characteristics: - population – age structure (descending ratio of young people)
- lifestyle , habits (shopping malls <> small shops)

Economic characteristics: - workplaces: - distribution – capacity – nature of the production

Settlement characteristics, land-use

Demand side

- spatiality: - departure, destination – air distance – real distance
- temporality: - departure time – arrival time - duration
- motivation
- passenger characteristics (e.g. income)

Supply side

- performance of the system elements (track and vehicle capacity)
- velocity of vehicle, travel speed (required time of entire journey)
- resource requirements (land, energy, labour, etc.)
- spatial and temporal supply
- environmental impact
- safety, risk of accidents
- tariff system
- expenses, costs: - user (traveller) - service operator - society

Factors affecting the development/alteration of mobility:

- Individualization of society,
- Evolution from the industrial society to consumer society,
- Reduced working hours, increased leisure time and leisure travels,
- Employment of women,
- Shopping traffic becomes more dominant,
- Changes in criteria of selection of settlements for living purposes,
- Lifestyle changes.

Planning process of passenger transportation

