

FANTASIE

Forecasting & Assessment of New Transport Technologies and Systems and their Impact on the Environment

*Technology forecasting and assessment
to support transport policy*

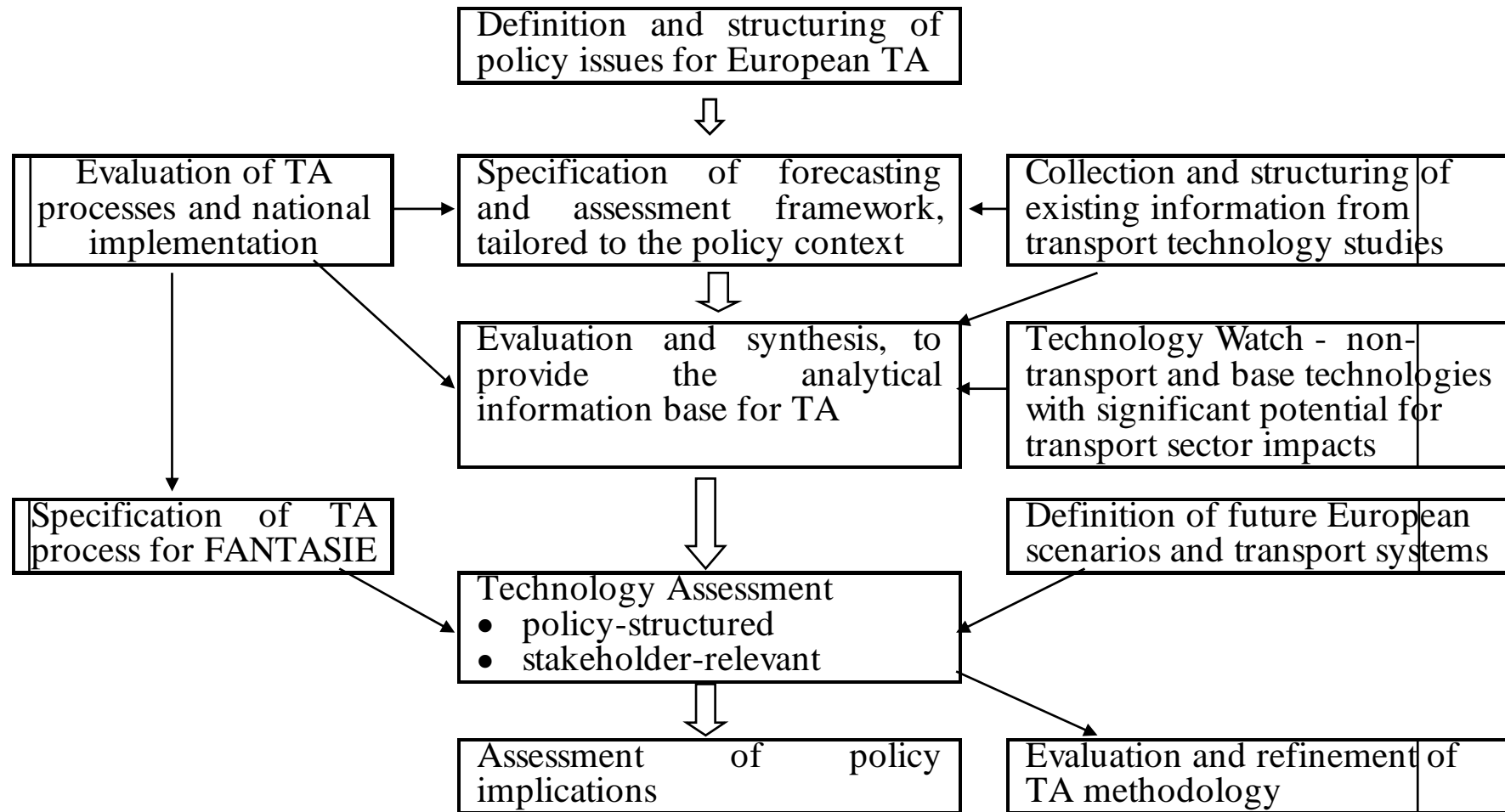
Overview

1. Introduction
2. Technology Forecasting
3. Technology Assessment and Scenarios
4. Policy Implications

(1) Objectives

- Identification of significant future transport technologies
- Forecasting of future performance and market penetration
- Assessment of the transport technologies identified under different future scenarios with regard to transport policy objectives
- Identification of policy issues and needs for action emerging from identification, forecasting and assessment

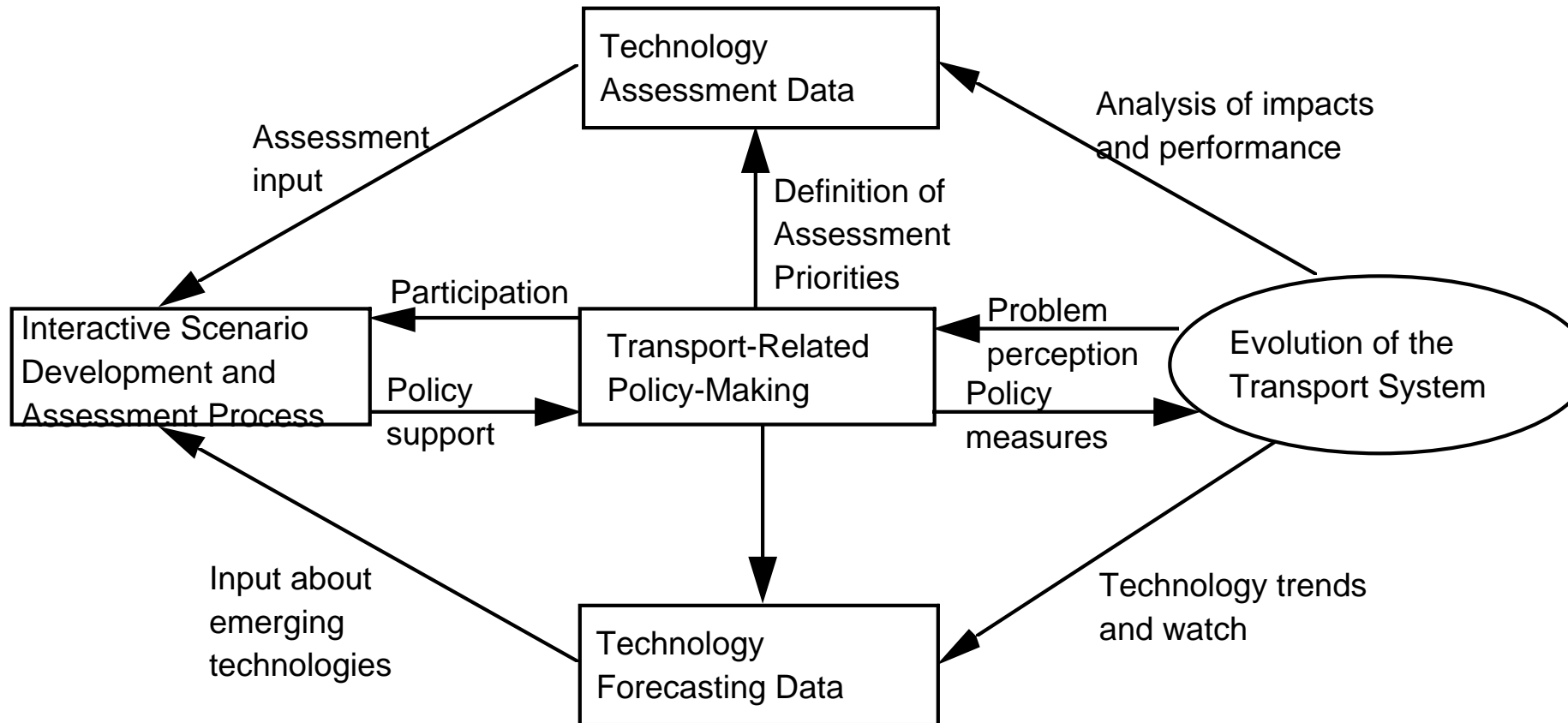
(1) Project structure



(1) The role of policy issues

- Specification of requirements and assessment dimensions
- Exogenous variables in scenarios (transport policy)
- Endogenous variables in scenarios (technology policy)
- Implications of forecasting and assessment results for transport policy

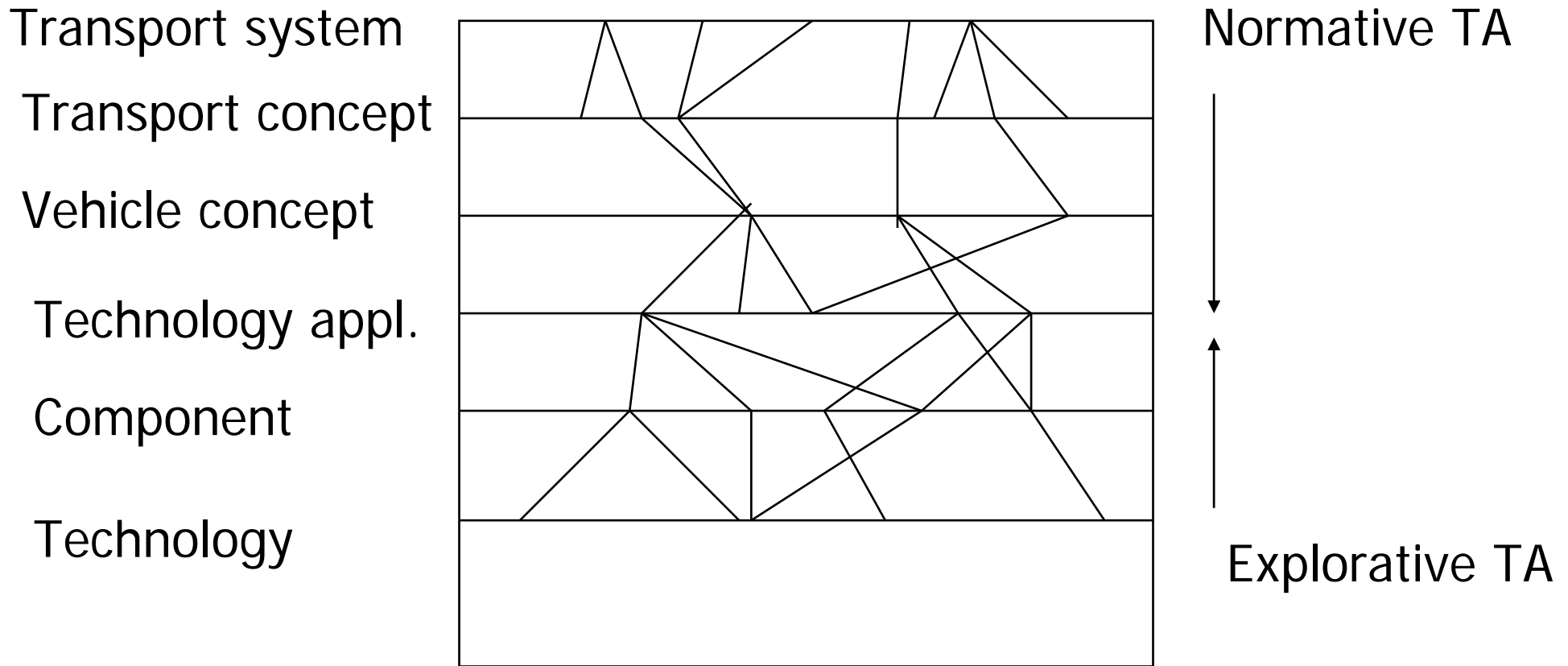
(1) Overview of TA, TF and policy



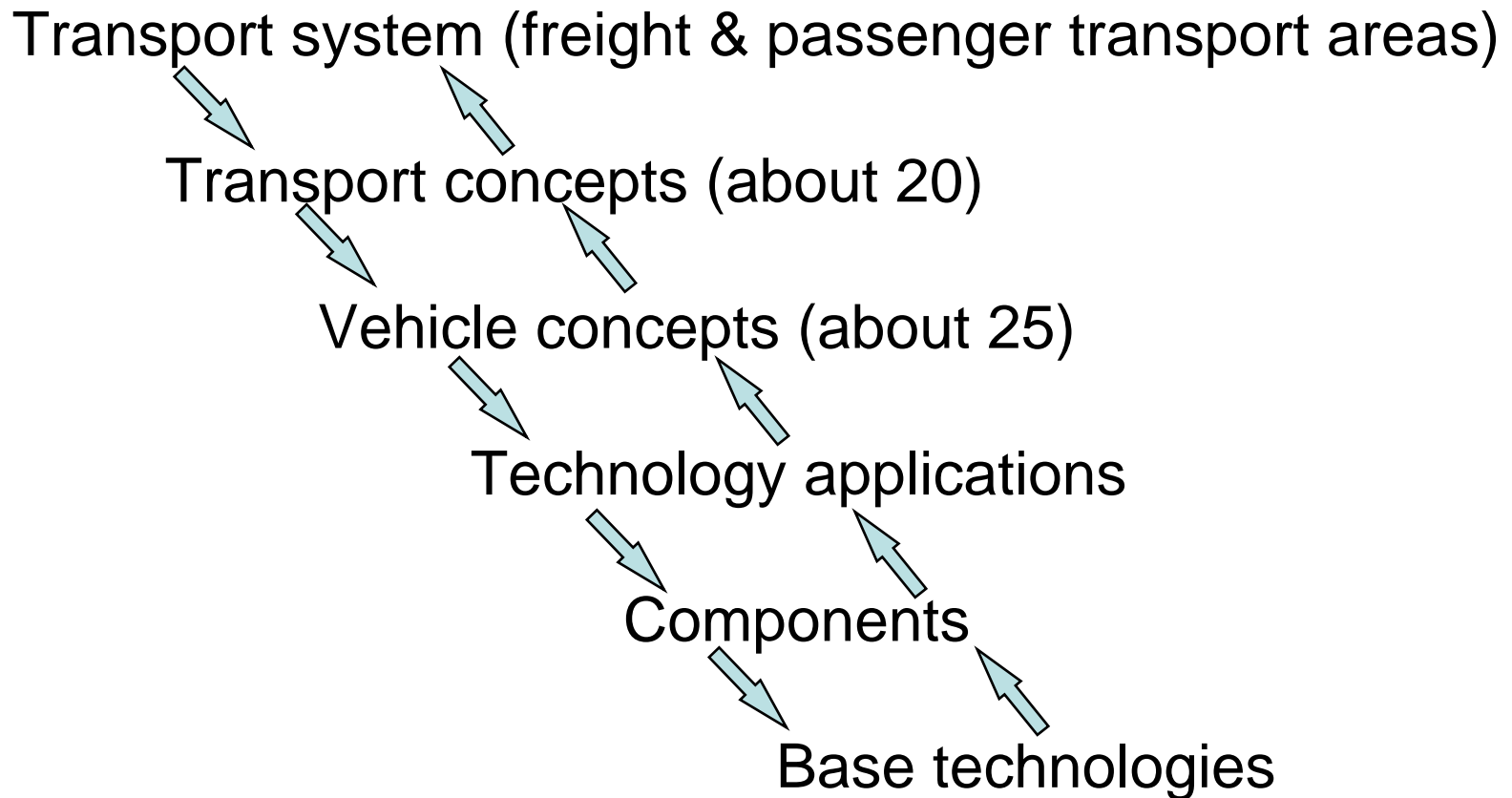
(2) Levels of the transport system

- Level 1 - base technologies (e.g. silicon chip technology)
- Level 2 - components (e.g. microprocessors)
- Level 3 - technology applications (e.g. automatic guidance system) vehicle
- Level 4 - vehicle concepts (e.g. urban car)
- Level 5 - transport concepts (e.g. self-drive urban system) hire car
- Level 6 - transport systems (e.g. multimodal/inter-European system) modal

Levels of technology and TA



(2) Levels of the transport system



(2) Identification of new technologies

Data collection on technologies at different levels by

- Review of research studies
- Interviews
- Workshops

in order to establish future transport concepts.

(3) Assessment and policy issues

Assessment dimensions derived from an analysis of current and future policy requirements

- Common Transport Policy
- Cross DG transport-related policies
- Transport related policies in the MS
- Future and emerging requirements

(3) Main assessment dimensions

1. Specific dimensions

- Efficiency
- Environment
- Socio-economic
- Safety

2. Integrated dimensions

- Demand effects
- Intermodality
- Structural interdependencies

=> *Aggregation by means of multicriteria analysis*

(3) Assessment structure

6-8 transport problem areas

4 scenarios

3 different time horizons (2005, 2020, > 2030)

several transport concepts and technologies

7-8 major assessment dimensions

(3) Transport area scenarios

Transport Problem Areas (examples):

- Urban passenger mobility
- Long-distance freight transport
- Rural mobility
- Long-distance passenger mobility (> 250 km)
- etc.

(3) Types of scenarios

Four scenarios:

- Unrestricted Growth
- Sustainable Growth
- Business as Usual
- Sustained Balance

to study the robustness of technological options.

(3) Scenario elements

- Exogenous factors
- Reference transport system/area trajectory and policy-dependent variants
- Reference transport concepts and “innovative” variants
- Analysis of actor and stakeholder positions

(3) Outputs

- Set of “robust” future technologies/technology portfolios with a desirable impact
- Information on performance and impact under different scenario conditions
- Implications for transport and transport technology policy
- Overview of stakeholder positions regarding the technologies identified

(3) Actor and stakeholder involvement

Widespread use of interactive TA-methods:

- to identify and forecast technology performance
- to weigh and aggregate impacts by means of multi-criteria analysis
- to elicit stakeholder positions
- to develop policy options

(3) The assessment process

1. Definition of transport problem areas
2. Definition and specification of (exogenous) scenarios
3. Definition of transport reference trajectories and innovative variants (for different time horizons)
4. Identification of transport concepts and technologies for the different trajectories
5. Impact assessment of reference trajectories and variants
6. Aggregation by means of MCA
7. Selection of most promising and robust technologies
8. Analysis of possible stakeholder positions
9. Policy implications

(4) Policy implications

- Identification of “robust” technologies/technology portfolios
==> *Technology policy implications*
- Focus on gaps and emerging requirements with regard to European transport policy
==> *Transport policy implications*

(4) Policy workshops

Development of policy options

- for supporting (or inhibiting) the introduction of new technologies by means of technology policy
- to identify potential modifications of the European transport policy framework
- elicit stakeholder perspectives