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Towards an integrated transport system in the Baltic Sea Region

ICT tools supporting optimal modal choice and intermodal supply chains planning. Directions of development

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ICT tools supporting planning operations for multimodal transport

- Multimodal transportation system
- Multimodal Information System requirements
- Broad classification levels of planning
- The major challenges to solve
- The new concept of intermodal planning tools
- Structure of intermodal planning system
- Process flow
- Conclusion

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Multimodal transportation system

The main areas of improvements with multimodal transportation system:

- Unified and standardized transportation units
- Improvement in transportation handling and physical goods management
- Stacking goods into containers and transport them without breaking bulk – without taking it out of the vehicle or trailer in which it was loaded at the place of origin
- Operate and control Multimodal transportation by one carrier or one operator
- Create better environment for planning and coordinating containers move in multimodal chains
- Minimize the loss of time and the risk of loss, pilferage and damage of cargo at trans-shipment points
- Enable to easy maintains communication links and coordinates interchange at trans-shipment points
- Improvement in faster transit goods by unification shipment units, physical and informational processes automation
- Transport good in containers create many possibilities for cost reductions

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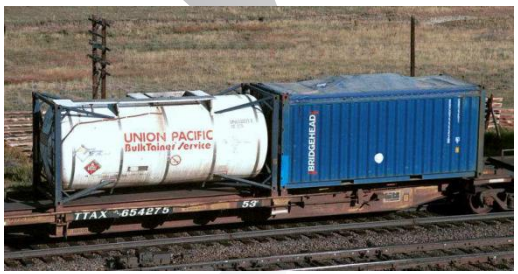
Multimodal planning system



Multimodal transportation involves the use of more than one means of transport such as a truck, railcar or ship in succession to each other

Multimodal Information System requirements

- Support logistics operation activities in the planning, execution and control processes
  - Forecasting & Inventory management systems
  - Vehicle routing
  - Scheduling and resource management software
  - Fleet management systems
- Tracking and controlling all of information-related logistics values for manage physical goods movements:
  - Electronic point of sale (EPOS)
  - Warehouse management systems
  - Monitoring locations of goods, train, ship and vehicles
  - Barcodes / radio frequency identification (RFID)
- Integrate logistic information systems in the following fields:
  - Electronic data interchange (EDI) between companies
  - Integration logistics systems between companies – Communications protocols
  - Integration web portals between services provider and companies (SOA, WebServices)

Three levels of logistics planning

Strategic (long-term)

Warehouse:
- How many storages?
- Where to place?
- Size?

Technology
- Automation level?
- Integration?

Transportation
- Distribution network?
- Warehouse replenishment/transportation?
- Long term contract?

Tactical/Planning (less than 1 year)

Warehousing
- Rent or buy?
- Location?
- Equipments?

Technology
- Automation?
- Level of integration?

Transportation
- Seasonal fleet management?
- Medium term contract?

Operations (daily)

Warehouse
- Personnel?
- Working hours?
- Desired amount of stock?

Technology
- Order policy?
- Tracking goods and resources

Transportation
- What type of vehicles should be used?
- Service region of each vehicle?
- Planning route trucks?

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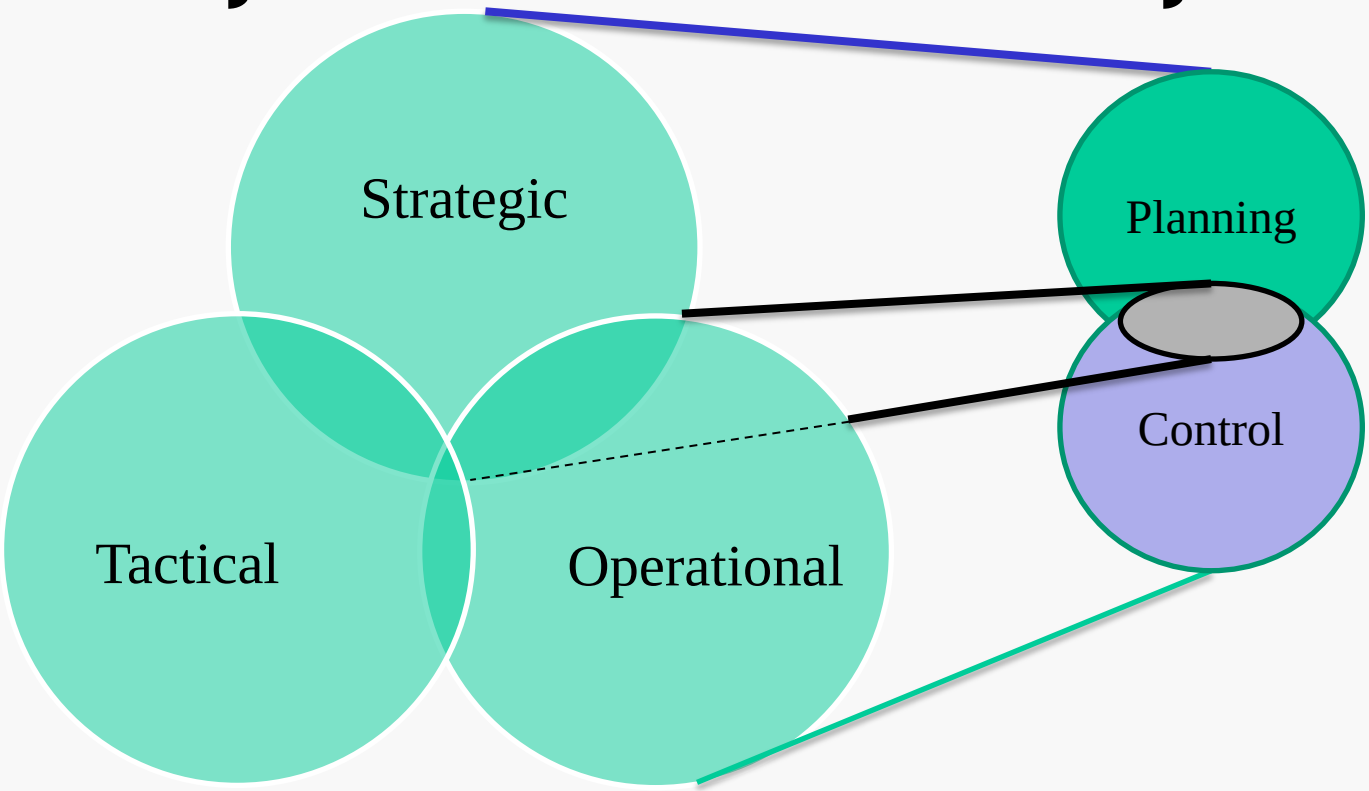
Integration of all three Planning levels by modern information systems



- Planning should be undertaken according to a certain hierarchy that reflects different planning horizons and spans of decisions.
- All three planning levels are tightly integrated with planning and control processes

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The major challenges to solve

- Multimodal transport management is dominated by major key players operating as freight forwarders, ships and rail operators
- Planning and control for multimodal transport requires complex logistic system
- Service providers, clients and coordinators do not know each other and it requires upfront negotiation to set up multimodal transportation lanes
- There are competing companies which never cooperate in multimodal chain
- There are number of geographical and logistics constrains which make multimodal transport very rigid for customers requirements

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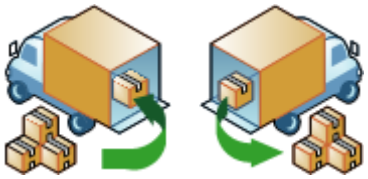
The new concept of intermodal planning tools

Establish internet infrastructure for multimodal transportation planning and control operations. Integration service platforms for coherent exchange of logistics services and order executions.

Provide transparent tool for flexible cooperation between service providers, clients and logistics coordinators

Manage fixed resources like service locations, rail and sea transportations

Introduction of flexible resource which allow create plan for wide inland areas



Integrate multimodal planning and control activities with freight exchange – support for request for resources

Integration of multimodal logistics with transport exchange systems

The most inflexible resource

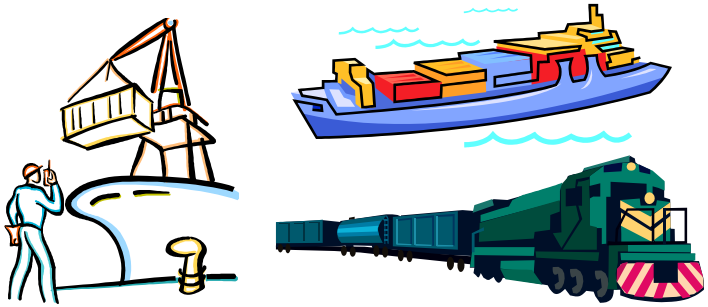
The most flexible resource

Multimodal logistics system

Transport exchange systems

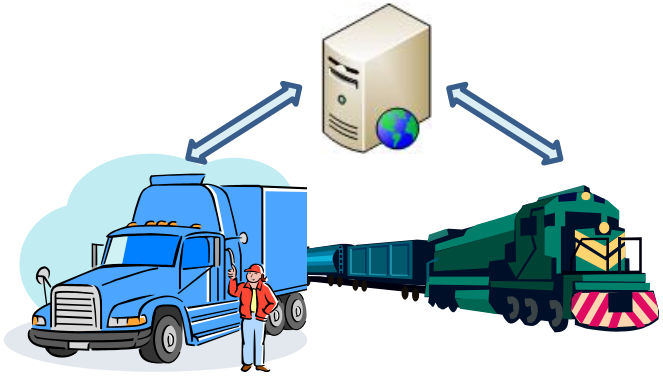
integration

Resource types supporting new concept of multimodal planning



Rigid – fixed resources which have defined pick up and delivery places and provide services by know schedule

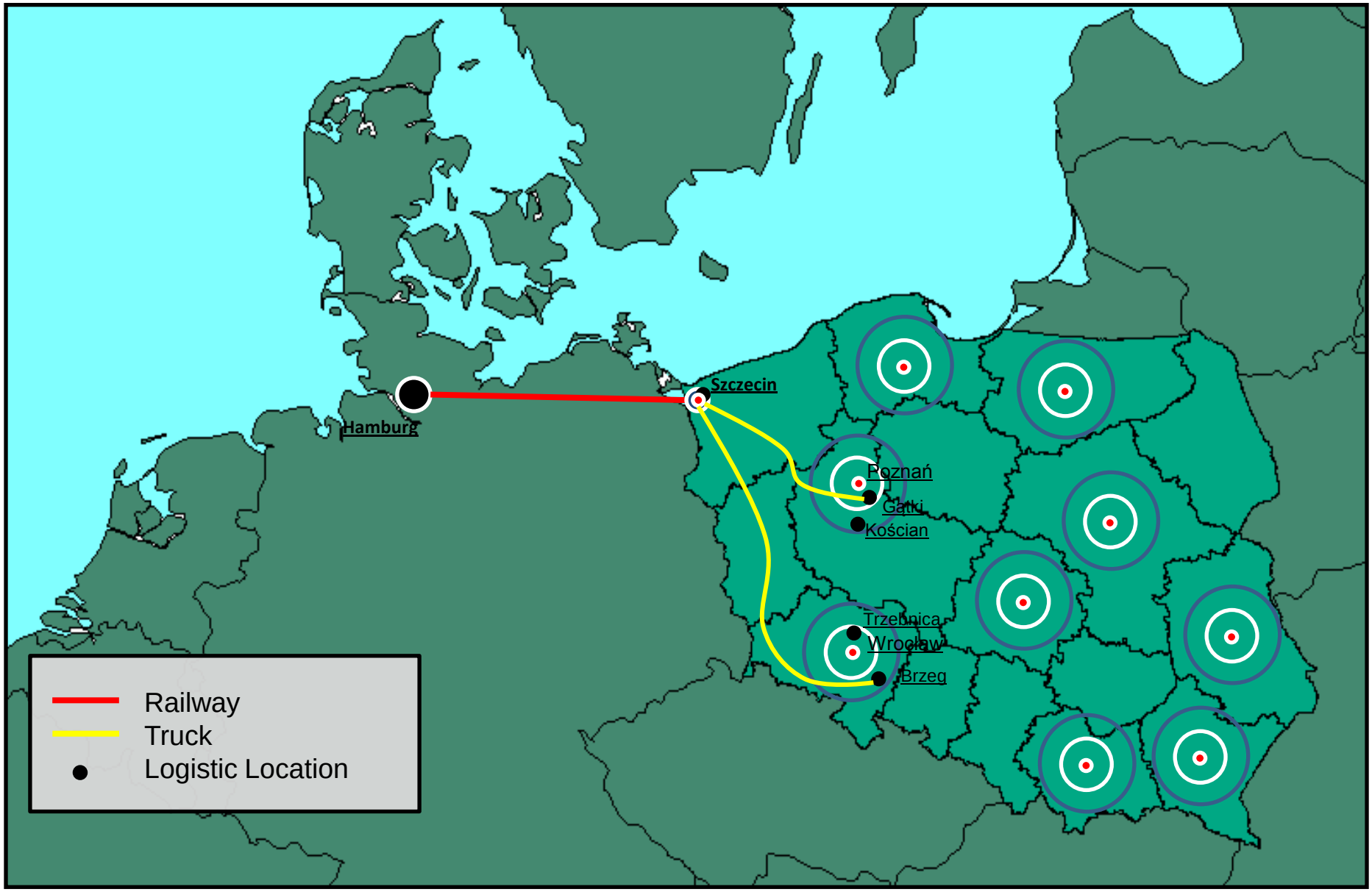
Flexible resources which can support pick up and delivery places for predefined area or zone of services.



Requested resources form freight exchange – dynamically provided available resources form market by freight exchange internet platform

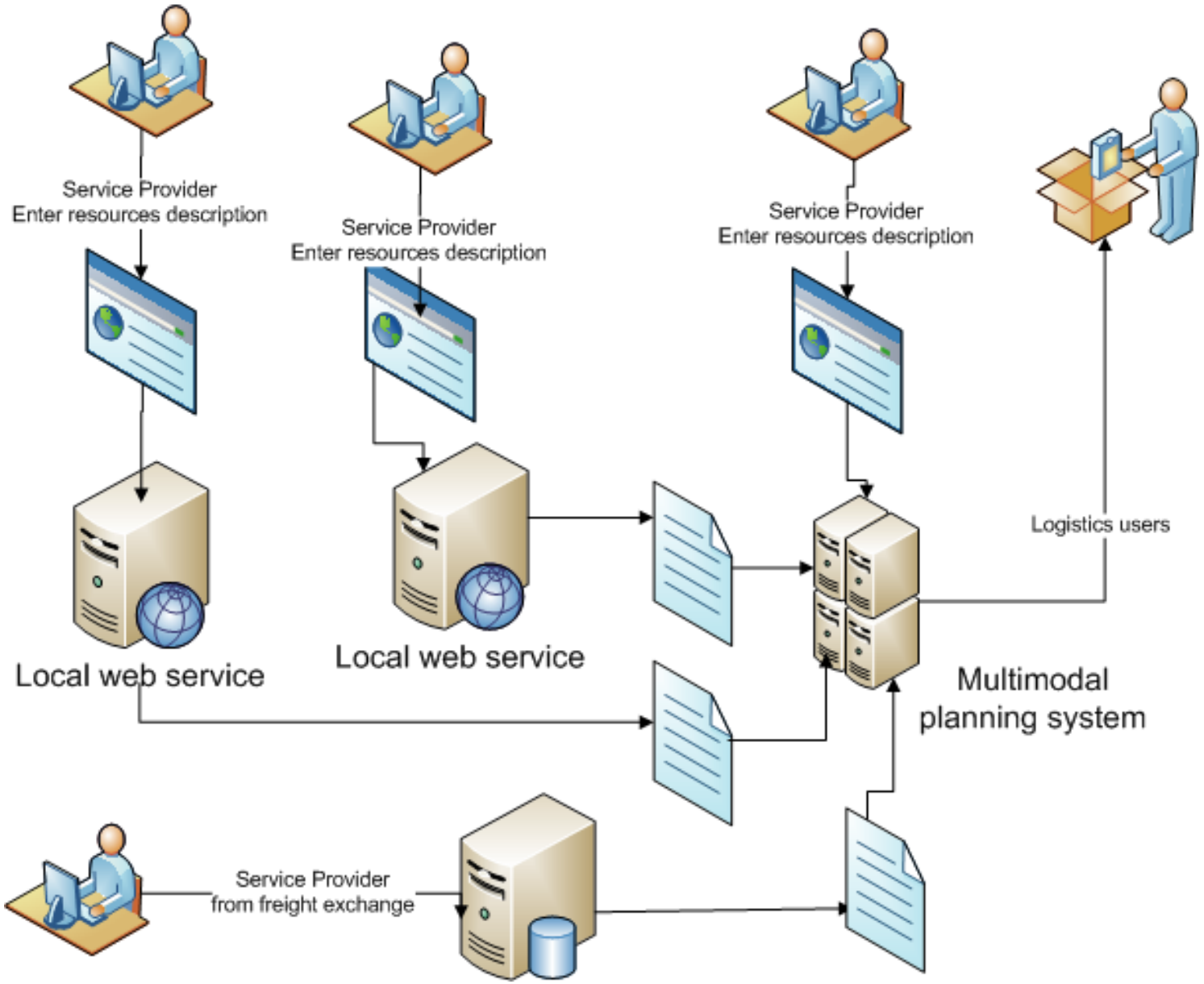
Conventional intermodal approach

Flexible resources - service area

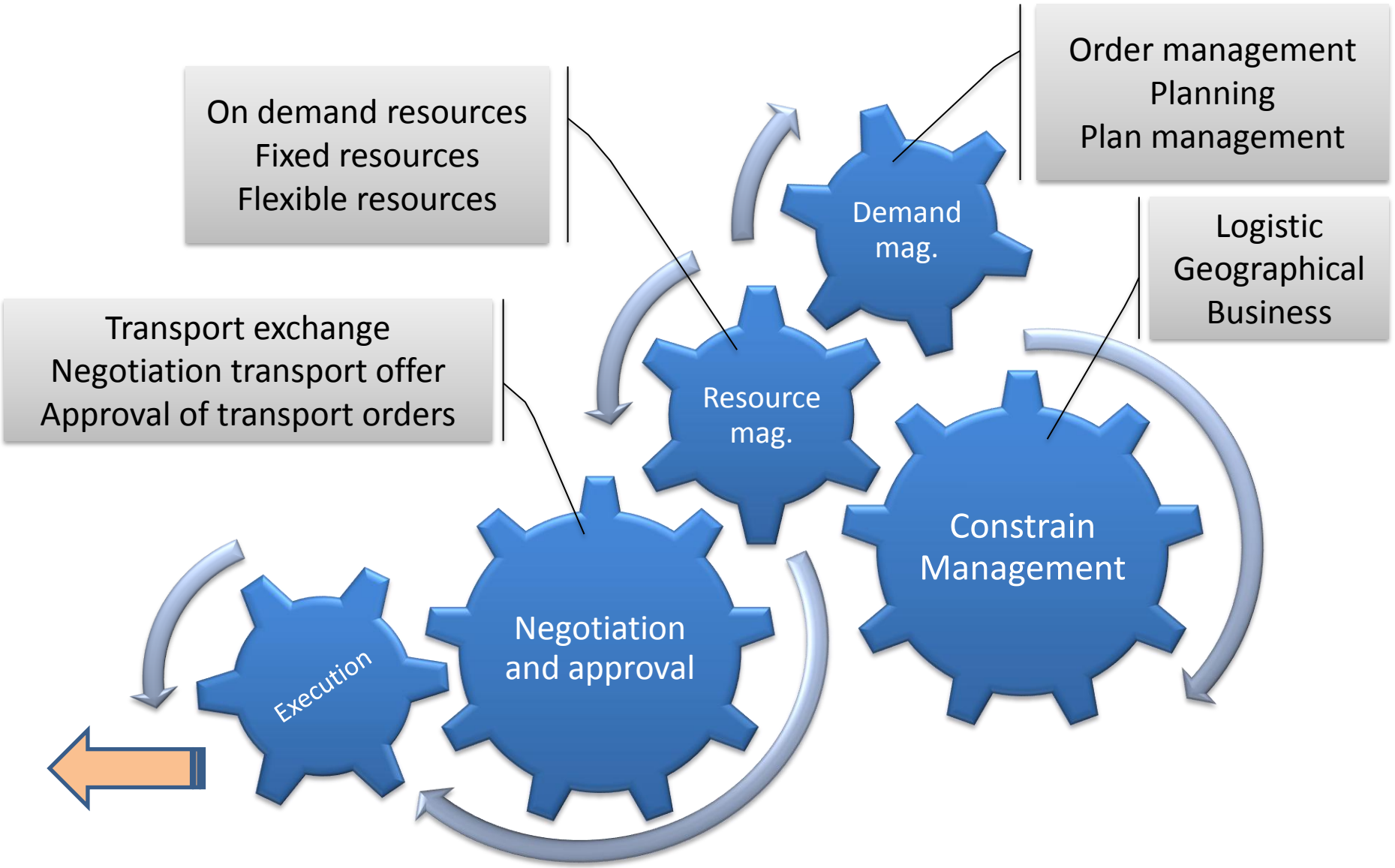


Flexible resources - zone of services

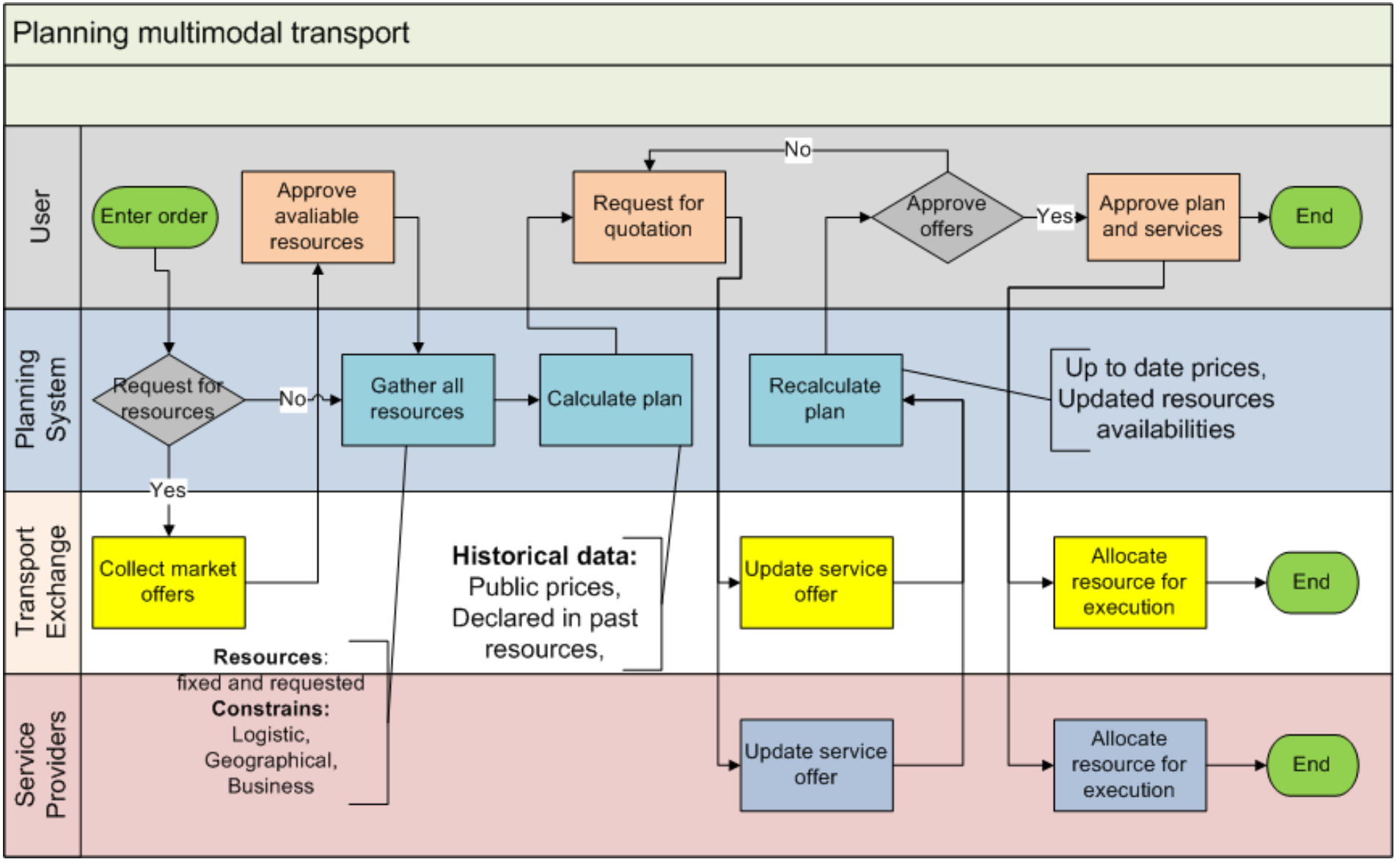
Idealistic approach of multimodal planning system



The new concept of multimodal planning system



Process flow in multimodal container planning system

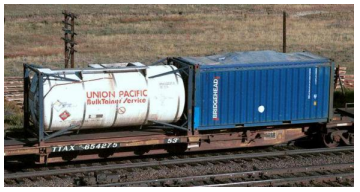


Conclusions

- The new multimodal planning platform provide single meeting place for all users
- Open access for medium size clients and multimodal transportation service providers
- Flexible and transparent method for building customized multimodal transportation channels
- Combine rigid and inflexible container planning and control with power of fright exchange







Thank you for your attention

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