

# **Market consultation Renewal AVMS GVB**

**Information day  
14 oktober 2015**

**GVB connects Amsterdam**

## Program

13:00	Introduction to GVB	Jan
13:20	Objective & process market consultation	Peter
13:30	Why renewal	Jan
	Relations with other GVB activities	Jan
	Current Situation	Jan
14:10	Break	
14:20	Business Analysis Process	Mark
	Mission and vision GVB	Mark
	Architecture	Mark
15:00	Tender procedure	Peter
15:15	Questions	All
15:30	Wrap up	Jan

# Amsterdam



- A dynamic city needs good public transport
- 24 hours a day
- 7 days per week
- 365 days per year



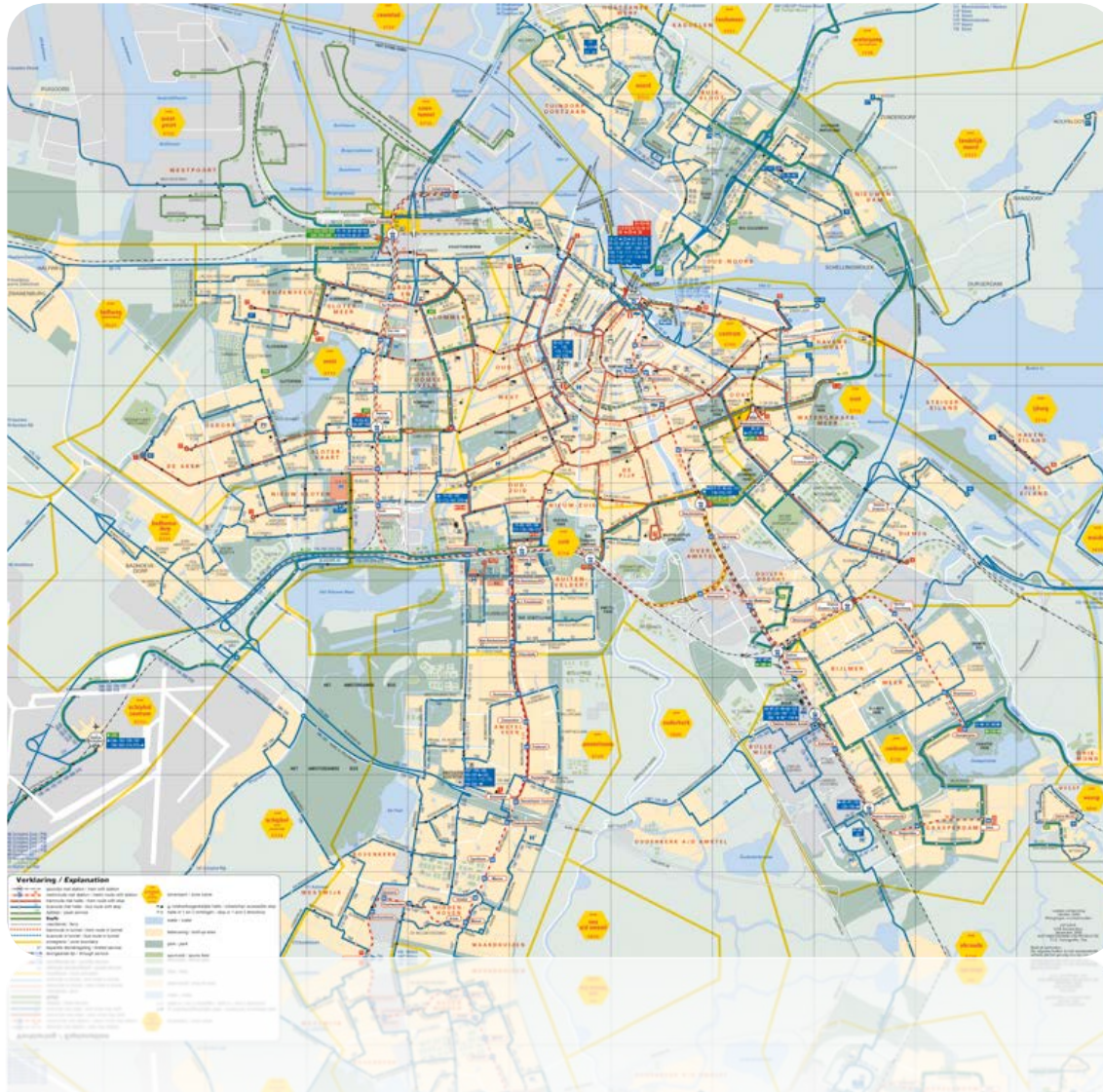
# Amsterdam

- Population 811,185
- = 4.6% of NL people
- 219 km<sup>2</sup>





## Service area



- Amsterdam
  - Diemen
  - Duivendrecht
  - Amstelveen
  - Weesp
- 
- 1300 bus stops
  - 490 tram stops
  - 52 metro stations
  - 81.2 km metro rails
  - 213 km tram rails

# Employees

- 3,750 of whom
  - 77% men – 23% women





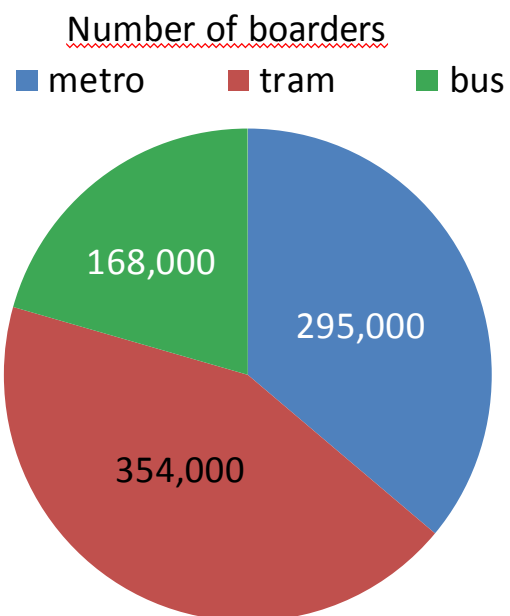
# Travellers

- 211 million boarders per year
- 877 million travellers kilometers per year



That is almost  
20,000 times  
around the  
world

# Boarders per day



Average of 3,6 km per traveller





# Environment

## GVB is green

- ◉ Trams and metros run on green energy
- ◉ Since 1999, low sulfur diesel
- ◉ 23 Euro-6 buses
- ◉ environmentally friendly engines
- ◉ 2 Hybrid fuel cell buses
- ◉ Recycle car wash water



# Transport

- 200 km tram rails
- 650 switch points
- 1800+ stops
- 120 km metro rails
- 225 metro switch points
- 52 metro stations

- 4 metro lines
- 16 tram lines
- 33 bus lines –  
11 night lines
- 8 ferry connections

- 900 metro rides
- 3600 tram rides
- 4050 bus rides –
- 182 night rides
- 1140 ferry crossings

Daily

- 336,000 kWh for tram and metro
- 28,000 litre low sulfur diesel for the buses



# Metro

28 Metropolis metro's



25 metro-trams



37 Ringline metros



42 Zilvermeeuwen (herring)



Will be replaced by  
28 new metros

# Trams

216 trams

155 Combino trams



16 x 9/10G



25 x 12G



20 x 11G





# Buses

2 x Phileas fuel cell bus articulated



23 x VDL Citea SFLA articulated



201 buses

Euro-6

3 x Mercedes Citaro standard



Euro-3

EEV 79 x Mercedes Citaro articulated



70 x VDL Citea standard



4 x Mercedes Sprinter midi

Euro-4

EEV

20 x Daf standard



Euro-2/3

# Ferries

5 x Northsea canal ferries



3 x IJ-ferry 30 series



13 ferry boats

5 x IJ-ferry 50 series



1 x IJ-ferry 35





## Market consultation objectives

- **In anticipation to the tender procedure to take place in 2016**
- **Receive industry feedback**
  - GVB shares their ideas with market
  - Validate the ideas or adjust them prior to the tender
- **Use relevant information to improve or adjust vision and list of requirements**

## Process market consultation

### ○ Steps in consultation

- Share GVB ideas and vision with market (document)
- Ask questions to market
- Explain vision to market on Information day
- Give room for suggestions and other improvements
- Submit answers untill 27th october 2015
- Only if necessary, consultation rounds for further explanation of answers

### ○ Then

- Draw up a report of the market consultation
- Prepare business case, list of requirements etc.



# Process market consultation

- **Questions in document**
  - Almost 40 questions in total
- **Basically 3 types of questions**
  - General questions about company and market
    - References with lessons learned
    - Investment estimates
  - Questions concerning vision GVB
  - Questions concerning your vision on transport systems and the possible solutions you can provide

# Automatic Vehicle Management System GVB

*Approach for system renewal*

Jan Luijben

October 2015

verbindt heel Amsterdam met heel Amsterdam



# Topics

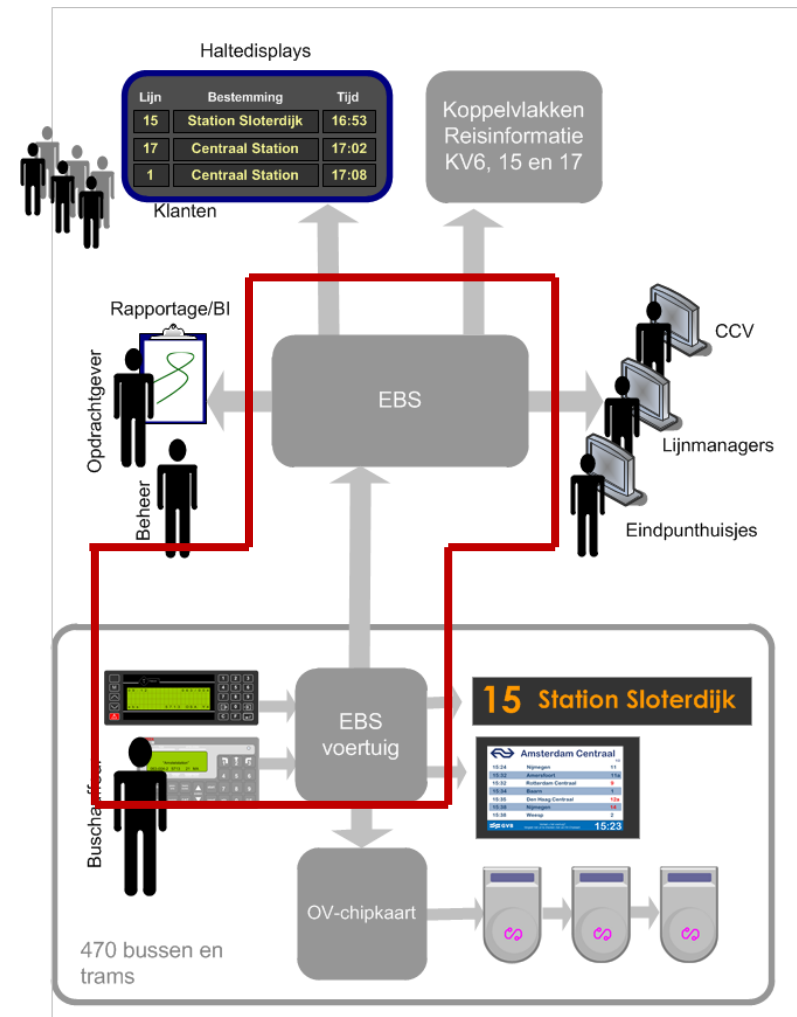
- AVMS at GVB
- Current situation
- GIVA architecture
- Approach for renewal
- High level planning



## AVMS (EBS) at GVB

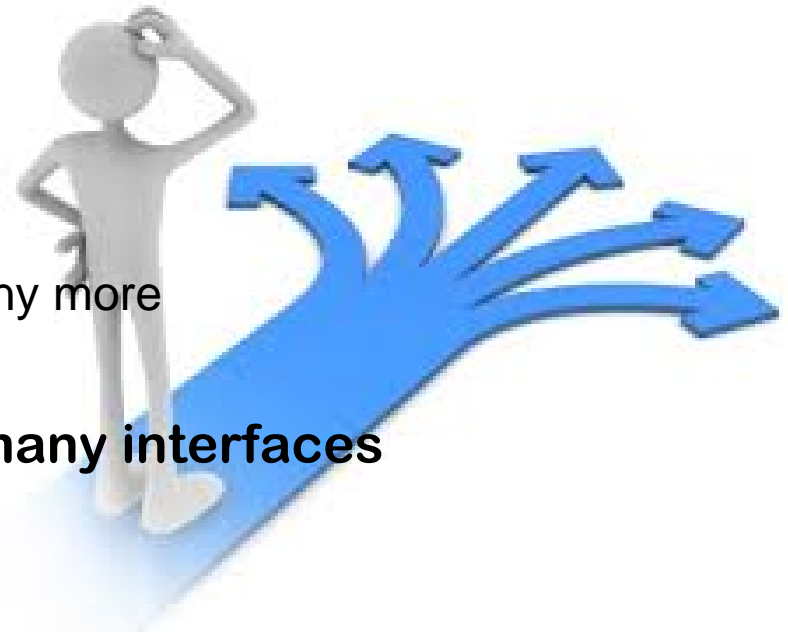
- **Exploitation management:**
  - Traffic control center
  - Driver assistance
  - Teammanagers
- **Passenger information**
- **Location for payment system**
- **Reporting**

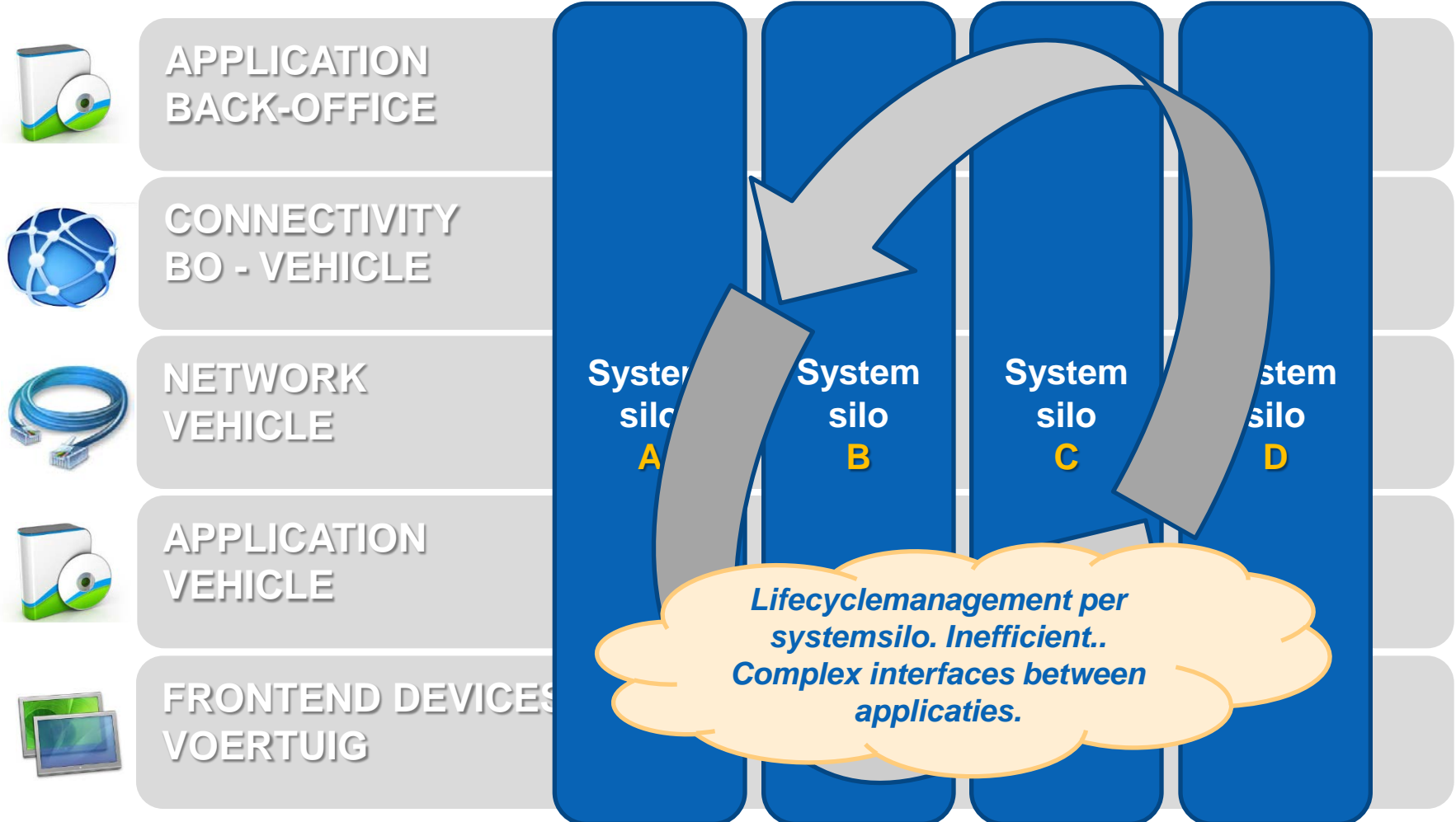
*AVMS at GVB is a crucial system for daily exploitation!*



## Current situation

- **System is End-of-life**
  - Hardware parts not supported any more
  - Technology is out-dated
- **Complex system landscape / many interfaces**
- **Increasing business demands**
  - Realtime monitoring
  - Realtime passenger information
  - More flexibility
  - Higher availability
  - Remote maintenance







# Future GIVA layer architecture



APPLICATION  
BACK-OFFICE

Central  
intelligence

Central  
intelligence

Central  
intelligence



CONNECTIVITY  
BO - VEHICLE

**Generic** connectivity



NETWORK  
VEHICLE

**Generic** vehicle backbone



APPLICATION  
VEHICLE

Low  
complexity

Low  
complexity

Low  
complexity



FRONTEND DEVICE  
VEHICLE

**Generic** hardware devices

## Starting points Generic ICT Vehicle Architecture (GIVA)

- Stepwise renewal – no big bang
- Lifecycle management – decoupling of architecture layers  
en standardization for higher flexibility and lower costs
- Supplier independent – reduce of vendor lockin
- Commercial off the shelf (COTS) when FIT for purpose
- Intelligence in backoffice, low complexity in front-end
- Hardware Specialized COTS
- Remote Systems Management



## Approach for AVMS renewal



- 1. Decoupling of systems with preconditional projects**
- 2. Reduce investments on current system**
- 3. Temporarily enhance lifetime AVMS**
- 4. Analyse business proces**
- 5. Stepwise renewal: First upgrade backoffice, secondly upgrade AVL vehicle**



# Critical successfactors

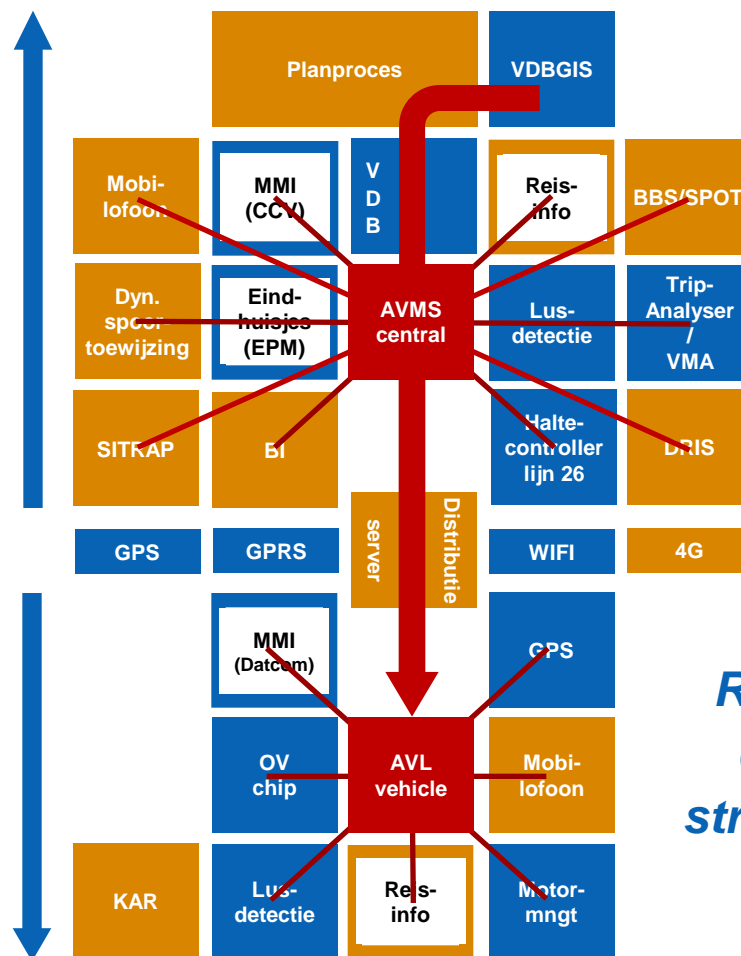
## Stepwise



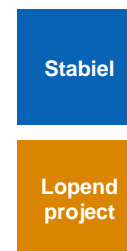
## Users involved



## System integration

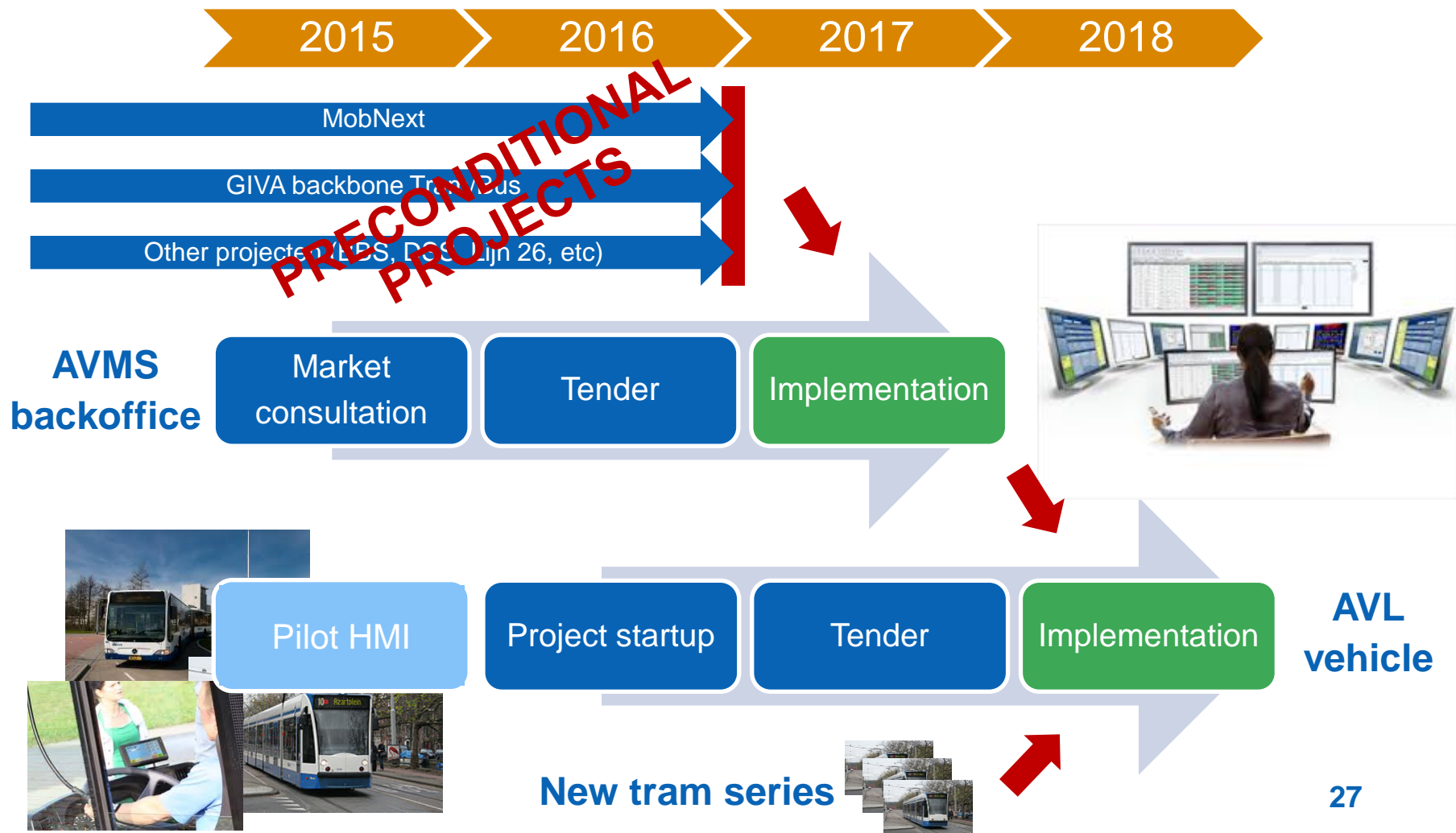


## Retain data structure

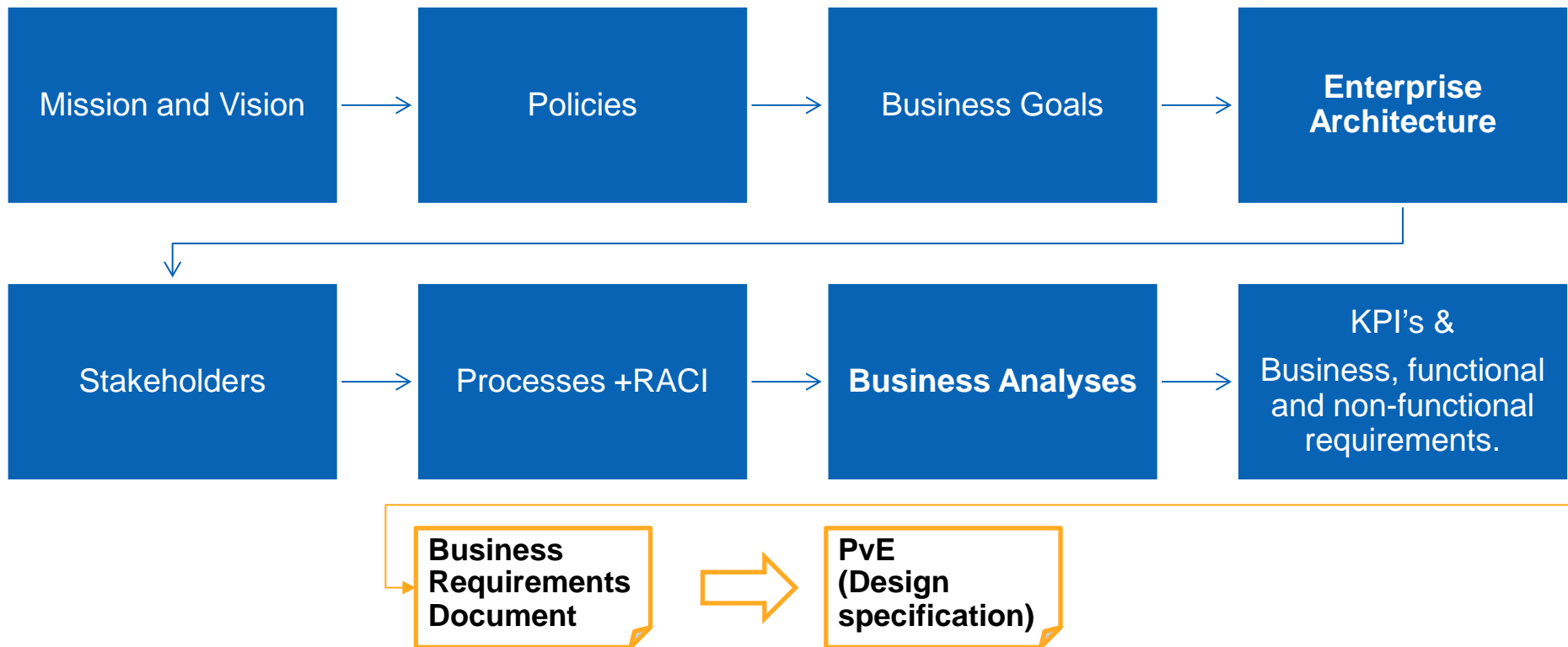


**Data structure**

## High level planning AVMS/EBS



# Business Analysis Process



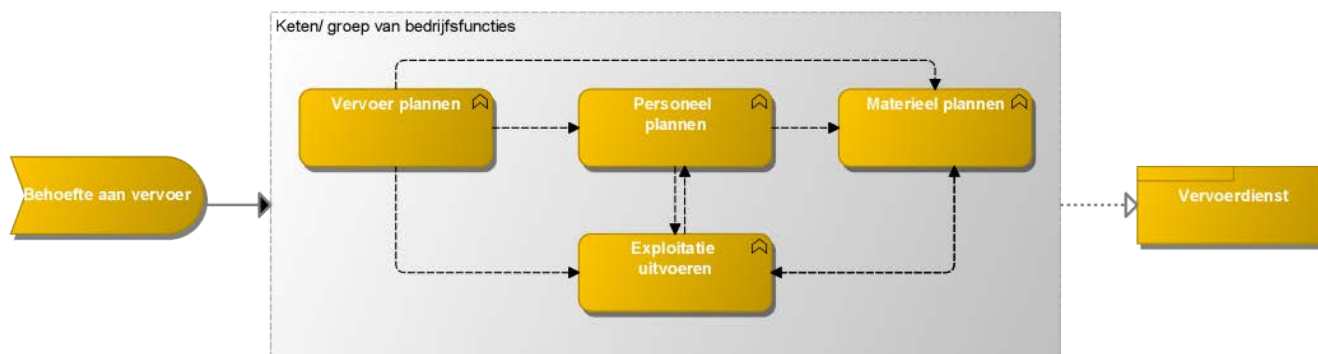


## GVB Mission and Vision

1. Cost-conscious
2. Best city transporter of NL
3. Growth and scalable
4. More with less
5. Top 5 employer of Amsterdam
6. Passenger first and Strong partner

1. Improve the quality of Operations. Low cost and LCM
2. Accurate information highly flexible and innovative.
3. Scalable
4. Modular and COTS
5. Ease of use, integration and automation
6. Interfacing and reporting

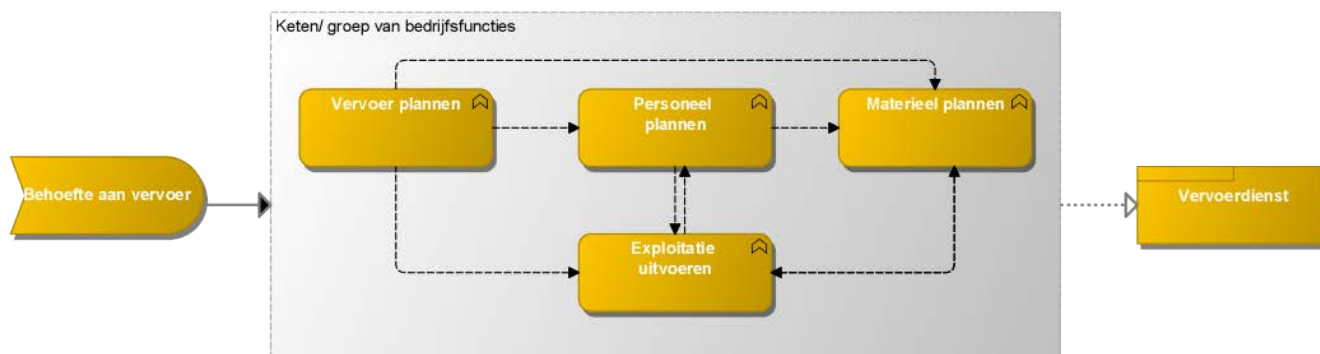
## Chain: Transportation delivery



## Chain: Travel information



## Chain: Transportation delivery

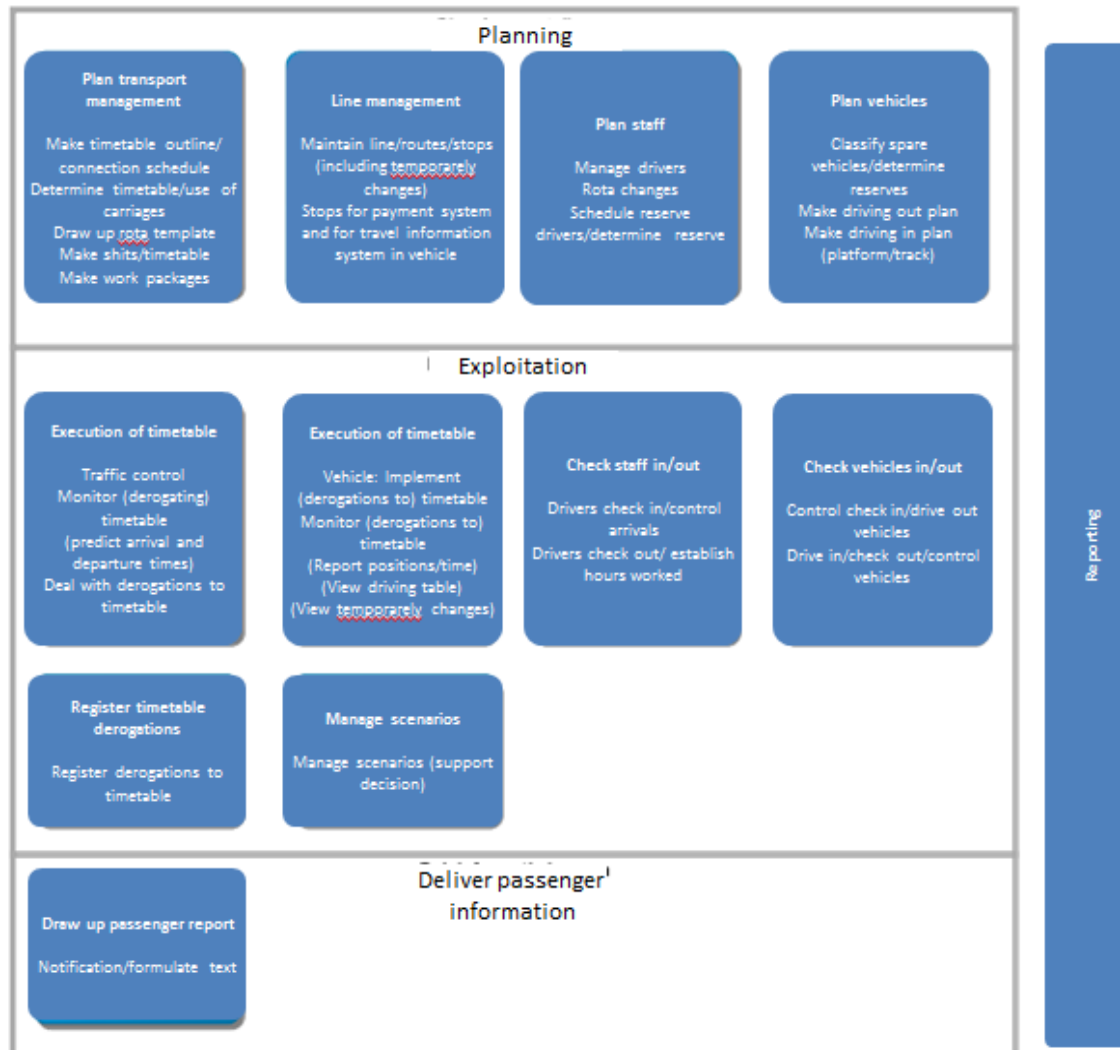


## Chain: Travel information



# Application Functions

- Planning
- Exploitation
- Execution
- Execution
- Check
- Check
- Register
- Manage
- Deliver Passenger Information

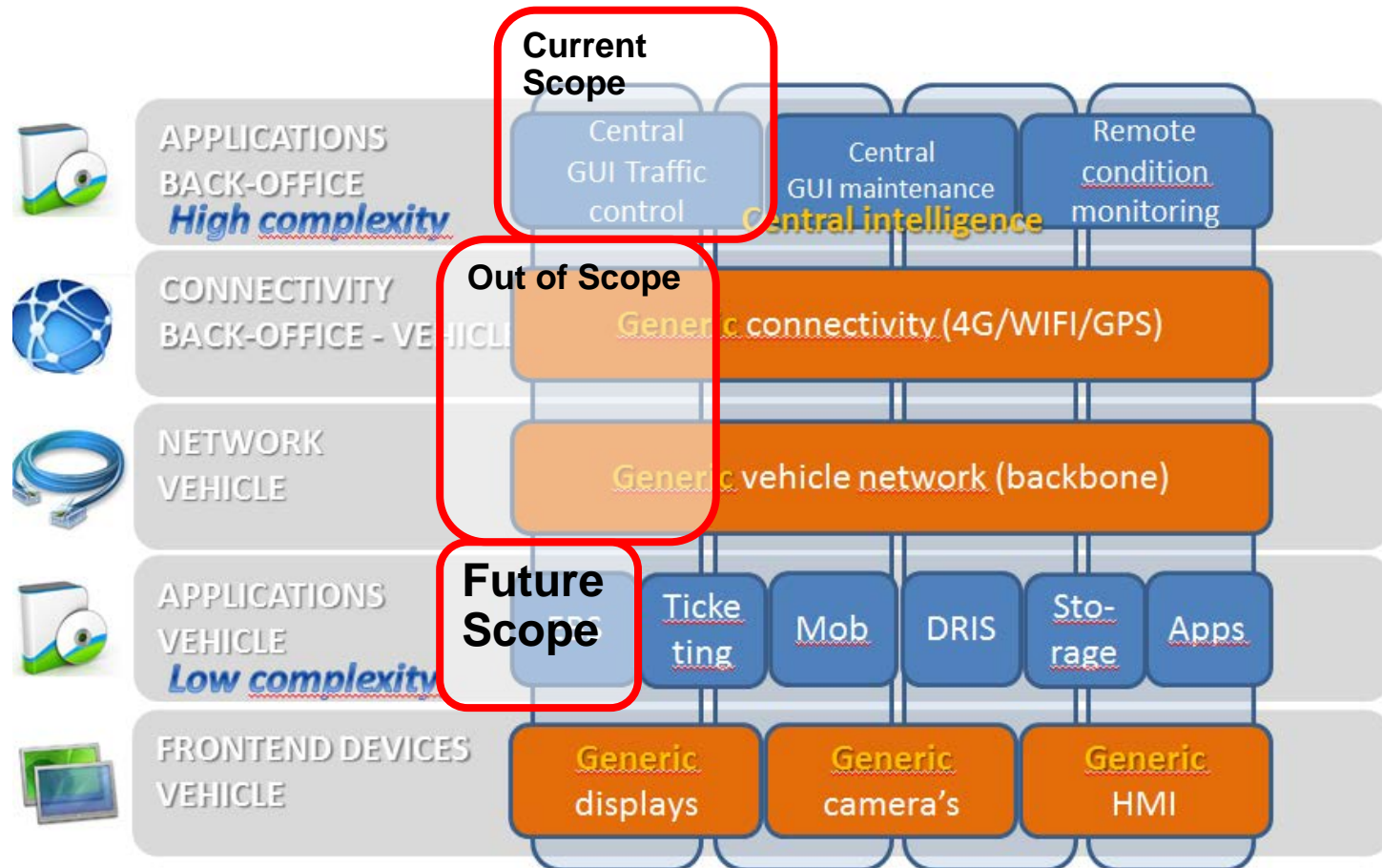




## Current BA KPI (in development)

- **(Near) Real-time location information with high accuracy**
  - (Almost) No Simulation
  - Distinction possibility on key infra components
- **Interface / Application integration (Control Room)**
- **Pro-activity and automation**
- **Different transport management models**
- **Modularity in function and system design**
- **High quality travel information**

# GIVA and Connectivity



# Top RFI Questions

## Questions asked in previous chapters:

1. Chapter 3: GVB asks you to familiarise yourself with our vision and to relate this to your products. We would like to hear whether this vision and architecture **connect to the opportunities and experiences in the market**. If you do not think this is the case please make suggestions to improve or adapt the vision and/or architecture.
2. Chapter 3.2.1: The current AVMS can be divided into three components; On board, Server Side and Distribution. GVB intends to tender the On Board and Server Side components in stages. We would like to hear from you whether this strategy **fits with your product and solution or whether you would recommend a different strategy**.

## Other specific questions market consultation

### 2. AVMS Modules

What do you think are **logical modules** in a total Automatic Vehicle Management System and which modules contain your solution (such as back office with travel information, depot management, staff planning, traffic control, line management, reporting, process management and vehicle systems, etc.)?

### 3. Distinction product

Can you tell us **how your product distinguishes itself** compared to similar products on the market? Please list both the strengths and weaknesses of your product.

## Tender procedure (1)

### ○ Planning tender

- Based on current insights of GVB
- Tender procedure for Back office start Q1 2016
- Finish Q4 2016
- Project completion Q4 2017
- Tender procedure vehicle systems start Q3 2016
- Finish Q2 2017
- Project completion Q4 2018



## Tender procedure (2)

- **A negotiated procedure (with prior publication)**
  - Select companies
  - Multiple rounds to negotiate on solutions
  
- **Prequalification:**  
**Minimal requirements for qualification**
  - Professional integrity
  - Technical and/or professional ability:  
references/experience

## Tender procedure (3)

### ○ Phases

- Clarification requirements and discuss first solutions
- First offer
- Evaluation -> reduction of competitors
- Dialogue phase -> Optimization Purchase Agreement
- Final offer (BAFO)

### ○ Award tender

- Most economically advantageous tender
- Price minus fictitious deduction

## Tender procedure (4)

- **Focus: procurement procedure based on contract award criteria (quality of the offer):**
  - Comply with basic requirements
  - TCO for 10-15 years
- **Quality**
  - Reliability and Maintainability
  - Management approach (project management)
  - Migration strategy
  - Modulair approach of the solution
  - Commercial Of The Shelf (COTS)

## Tender procedure (5)

### ○ Communication

- Dutch
- (virtual) Data Room / tenderplatform
- Procurement & Contract language: Dutch
- Procurement Guideline and Requirements will be translated in English (non binding)



# Questions

