Performance measurements in port communities
Example East African Ports

HPC Hamburg Port Consulting, Thomas Gondermann
Cape Town, April 19 2017

Content

1. HPC Hamburg Port Consulting

2. Case Study: Scope and Background

3. Container and Data Flows

4. Performance Monitoring System

HPC Hamburg Port Consulting GmbH

- Founded in 1976 as subsidiary of HHLA Hamburger Hafen und Logistik AG

- Around 100 experts (incl. subsidiaries), annual turnover in 2015: approx. EUR 15 million

- Since 1976 port and transport-related projects in more than 100 countries, both in the private and public sector

- Approx. 1,400 projects world-wide with extensive experience in container terminal operations

Mother-Company HHLA:

- 3 Container Terminals in Hamburg, capacity +10 mill TEU p.a.

- Multipurpose and bulk terminals

- Intermodal transport

- Logistics services

HPC Hamburg Port Consulting GmbH
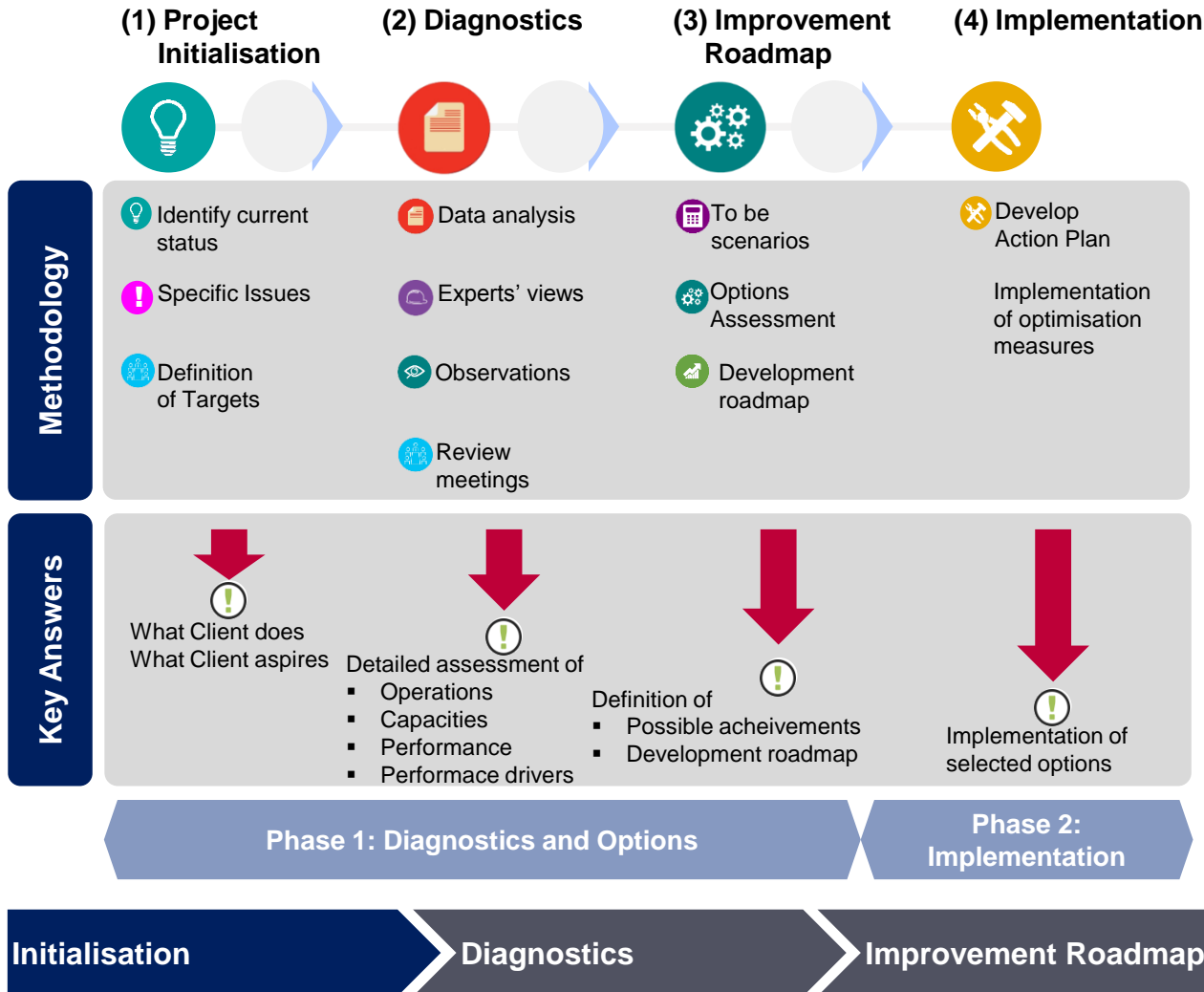
Our Focus

- Ports
  - Container terminals
  - Bulk terminals
  - Cruise ship terminals
- Logistics facilities
  - Rail terminals
  - Inland ports
- Intermodal facilities

Assessment

Design & Planning

Preparation

Full Service Provider

Realisation

Commissioning & Operations

Improvement

Our Clients

- Private terminal operators, port authorities & public institutions
- Governments
- Logistics service providers
- Banks and private investors
- International organisations, such as World Bank, UN

HPC – Optimisation Services Overview

(1) Project Initialisation

(2) Diagnostics

(3) Improvement Roadmap

(4) Implementation

Methodology

- Identify current status
- Specific Issues
- Definition of Targets

- Data analysis
- Experts' views
- Observations
- Review meetings

- To be scenarios
- Options Assessment
- Development roadmap

- Develop Action Plan

Implementation of optimisation measures

Key Answers

What Client does
What Client aspires

Detailed assessment of
- Operations
- Capacities
- Performance
- Performace drivers

Definition of
- Possible acheivements
- Development roadmap

Implementation of selected options

Phase 1: Diagnostics and Options

Phase 2: Implementation

Initialisation ▸ **Diagnostics** ▸ **Improvement Roadmap** ▸ **Implementation**

HPC has the experience and provides the necessary range of services to assist throughout the entire life cycle of value delivery.

We uncover optimisation potentials across the operational activities on the terminal. We are achieving this by applying a three staged methodology across the different focus areas:

1. Operations diagnostics

2. Derivation of optimisation measures and definition of prioritised roadmap

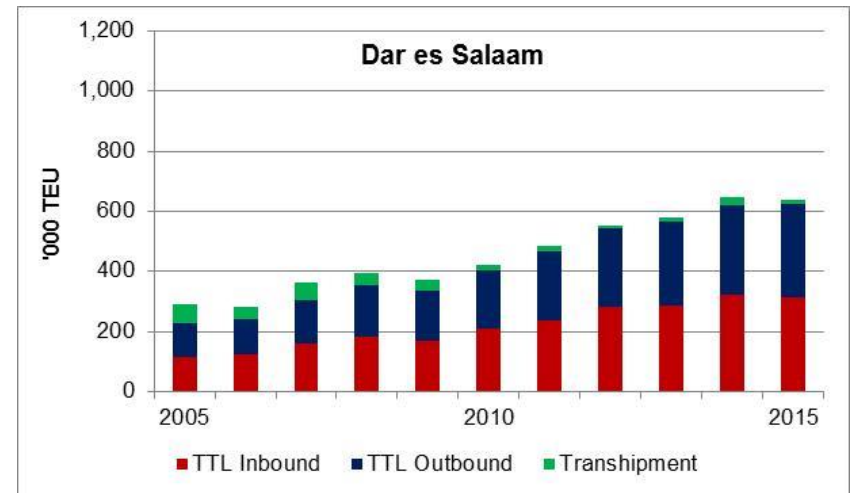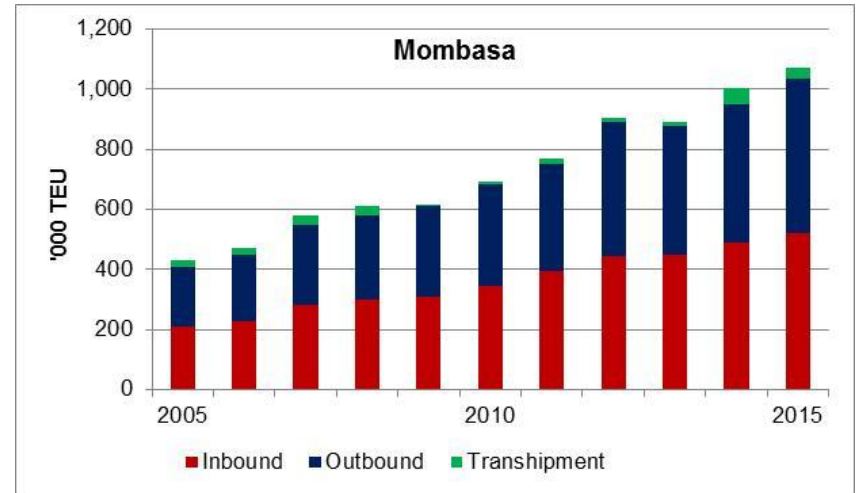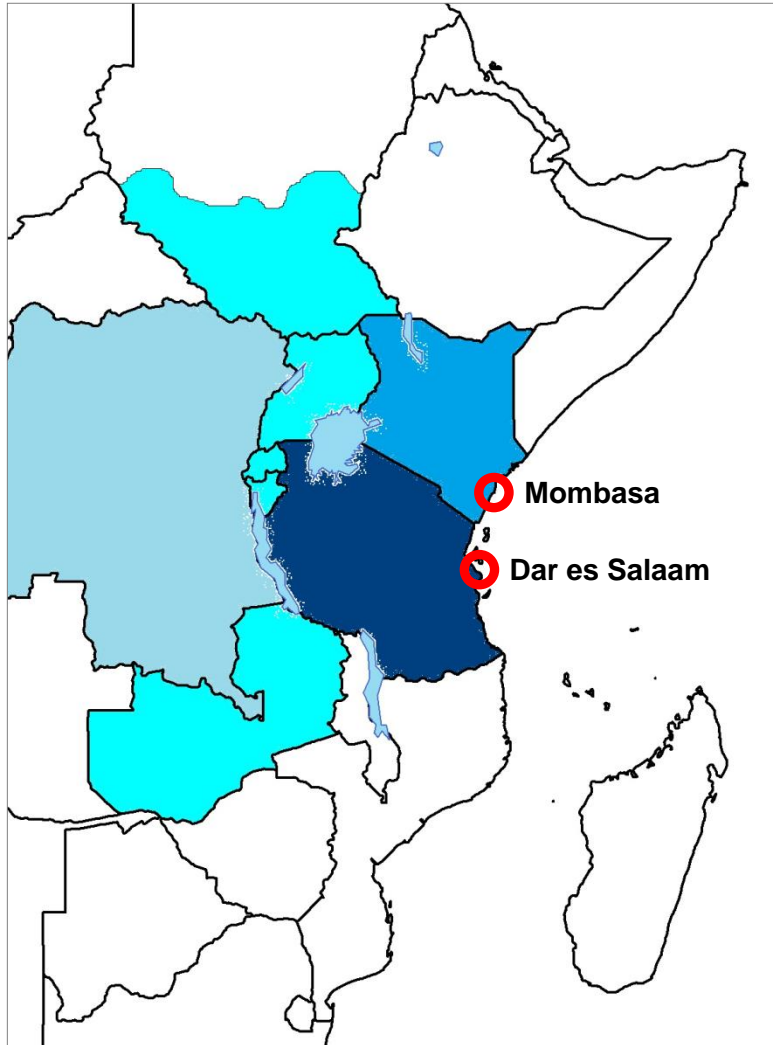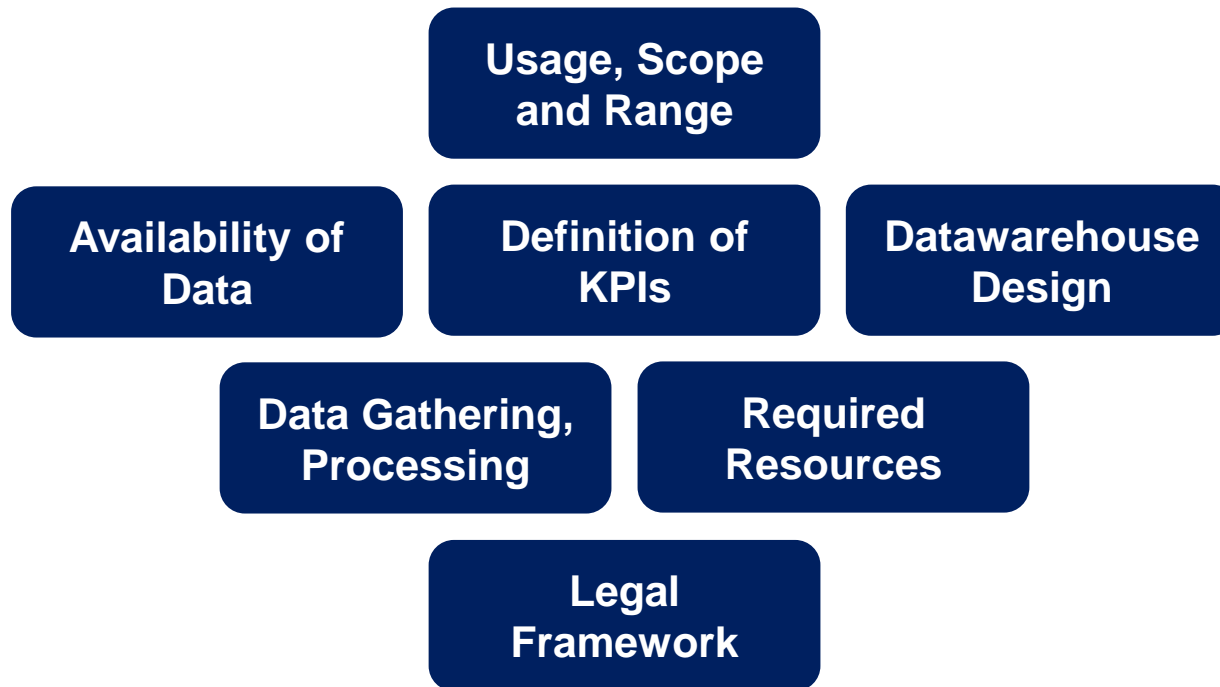3. Implementation of selected improvement measures

Content

HPC

Case Study East African Ports

Case Study Core Elements

Port-wide performance measurement system – building blocks

Usage, Scope and Range

Availability of Data

Definition of KPIs

Datawarehouse Design

Data Gathering, Processing

Required Resources

Legal Framework

World Bank: Port Development Themes

1960s   **1990s**   **2000s**

Expansion / Rehabilitation
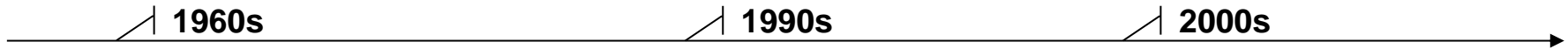
Elements / Keywords
- IT systems
- Intermodal Transport
- Port cities
- Trade facilitation
- Port sector strategies

Customs Reform   Asycudas, ...

Privatisation   Landlord Ports, PPP

Integration Optimisation

Industry trends
- Lean management
- Digitalisation

Regional Background

Transport corridors

- Northern Corridor Transit and Transport Coordination Authority (NCTTCA, 2007)

- Central Corridor Transit Transport Facilitation Agency (TTFA, 2006)

Regional trade facilitation

- Trademark East Africa (2010)

- Northern Corridor Dashboard (2012)

- Central Corridor Data Portal (2012)

Port specific initiatives

- Kenya: Kentrade (Single Window)

- Mombasa Port Charter (2014)
  - Reduce constraints at the Port of Mombasa
  - Target: clearing 70% of cargo throughput via the green channel
  - Service Level Agreement: achieving performance targets at some 130 KPIs
- Tanzania: Regulatory agency Sumatra (2001, Surface & Marine Transp. Regulatory Authority)

PORT INDICATORS

Containerized Cargo Dwell Time at the Port
The average time between landing & exit of container from the port. more

53.84 hrs

Week 13: 29 Mar 2017 - 4 Apr 2017
Previous Week	59.09 hrs
Baseline	105 hrs
Target	72.0 hrs
Benchmark	48 hrs

Customs - DPC
The average time between customs entry registration and passing of customs entry registration. more

1.83 hrs

Week 13: 29 Mar 2017 - 4 Apr 2017
Previous Week	2.10 hrs
Baseline	2 hrs
Target	1.0 hrs
Benchmark	** hrs

One Stop Center
The average time between passing of customs entry registration and issuance of release order. more

41.84 hrs

Week 13: 29 Mar 2017 - 4 Apr 2017
Previous Week	47.13 hrs
Baseline	80 hrs
Target	24.0 hrs
Benchmark	** hrs

Delay After Release
The average time between entry of Release Order and removal of container. more

45.47 hrs

Week 13: 29 Mar 2017 - 4 Apr 2017
Previous Week	35.48 hrs
Baseline	42 hrs
Target	36.0 hrs
Benchmark	24 hrs

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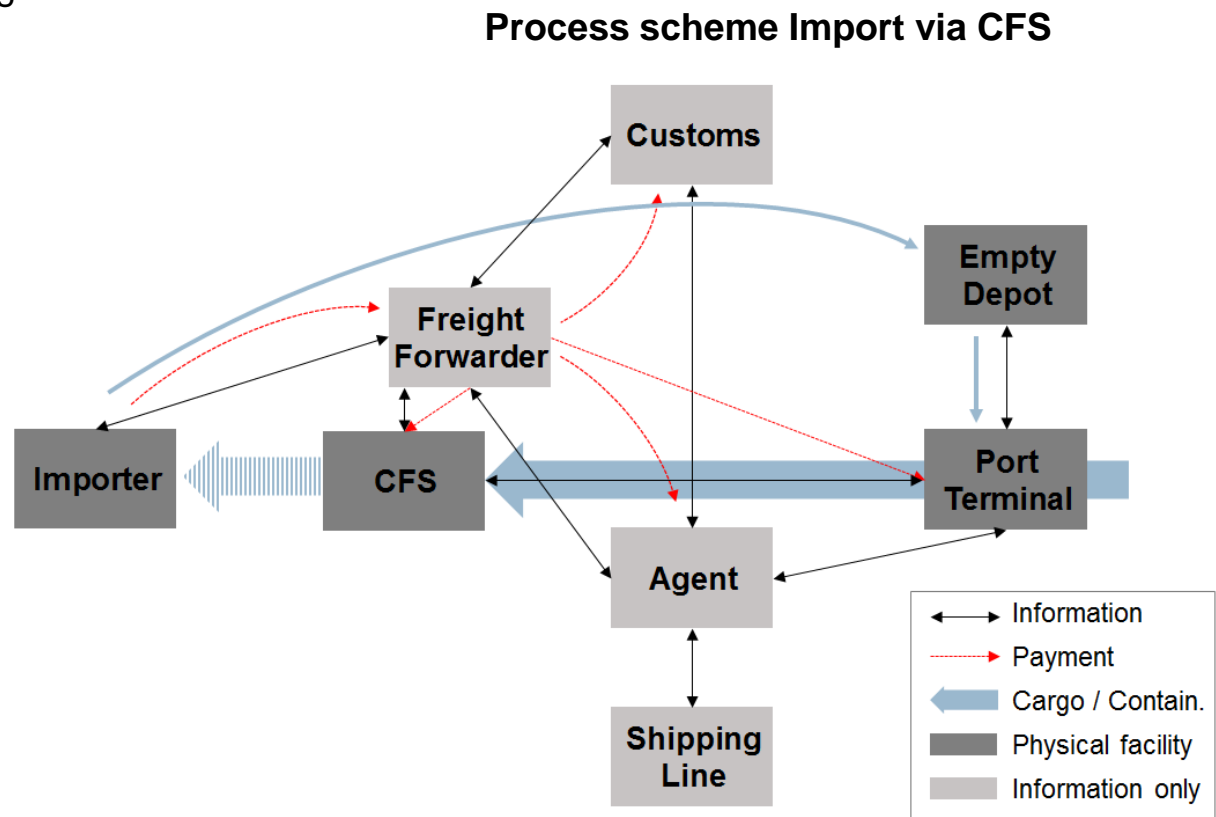**4. Performance Monitoring System**

Process-based Approach

Target

- Port-wide Performance Measurement System
- Drilling deeper than existing dashboards
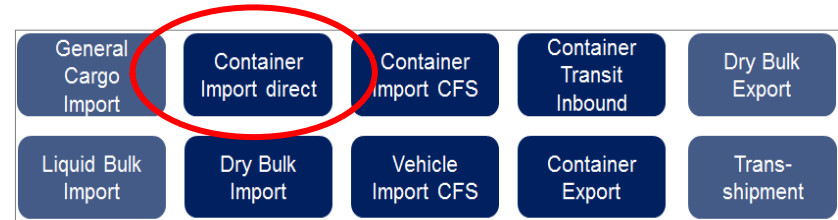 or Port Regulators' reports
- Stakeholder engagement

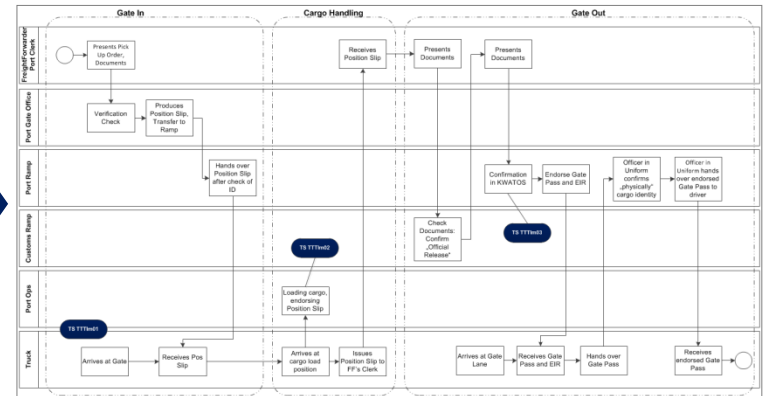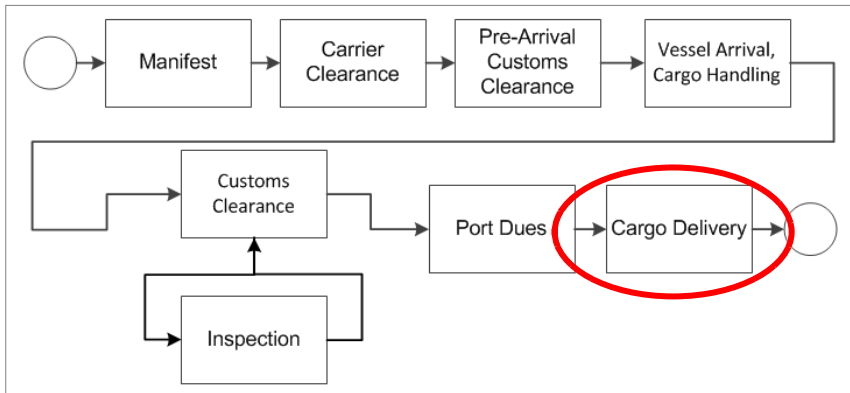**Requirement**

- Beginning with
  detailed process analyses

Process scheme Import via CFS

Legend:
- Information
- Payment
- Cargo / Contain.
- Physical facility
- Information only

Processes and Sub-Processes

Managing complexity

- Multitude of processes

- Complexity of procedures

- High degree of variability

Individual port profiles:
Selection of relevant cargo trades

Example: Gate Process Container Fetch

Complexity

15+ process steps, 3 to 4 interactions

- from truck arrival after confirmed payment of port dues to truck departure

Administrative requirements

Confirmation by gate staff and by customs staff

- that the container is cleared for delivery
- that the truck is entitled for the container
- that the clearing agent is the right person

Interactions

Freight Forwarder agent – truck driver

Exchange documents

Access point

- Documents check
- Return document for later endorsements
- Issue information of cargo location

Yard

Loading. Issuance of EIR, endorsed documents

Egress point

- Check and keep Gate Pass
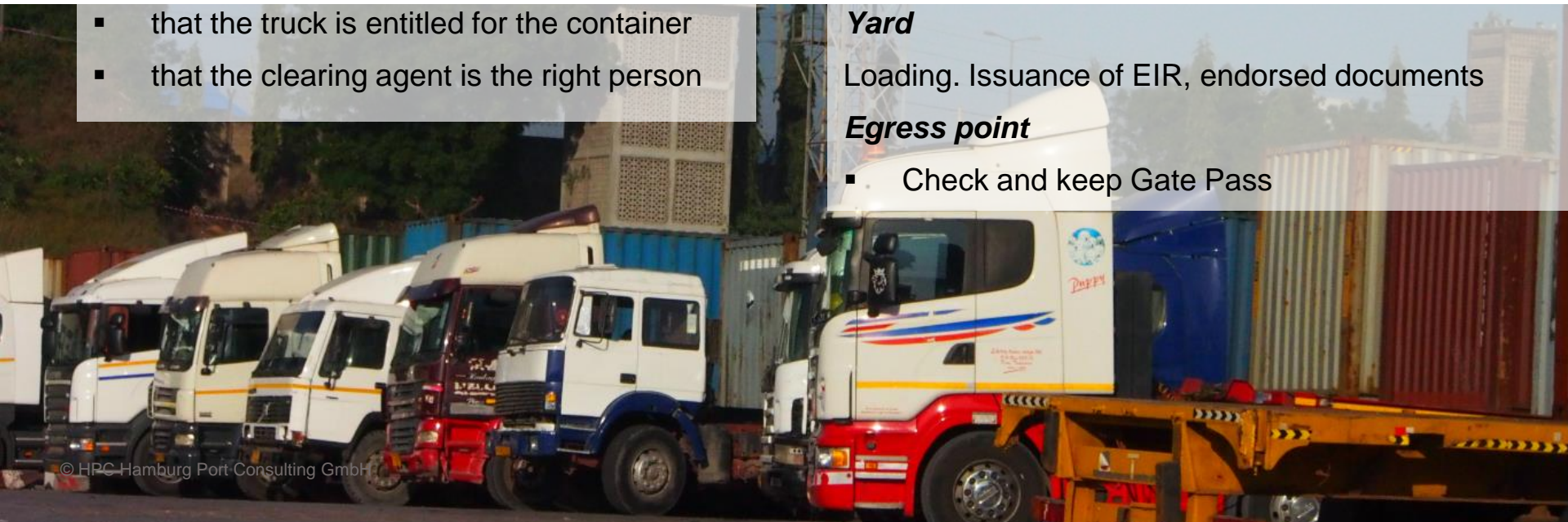
Process Steps and Data Available
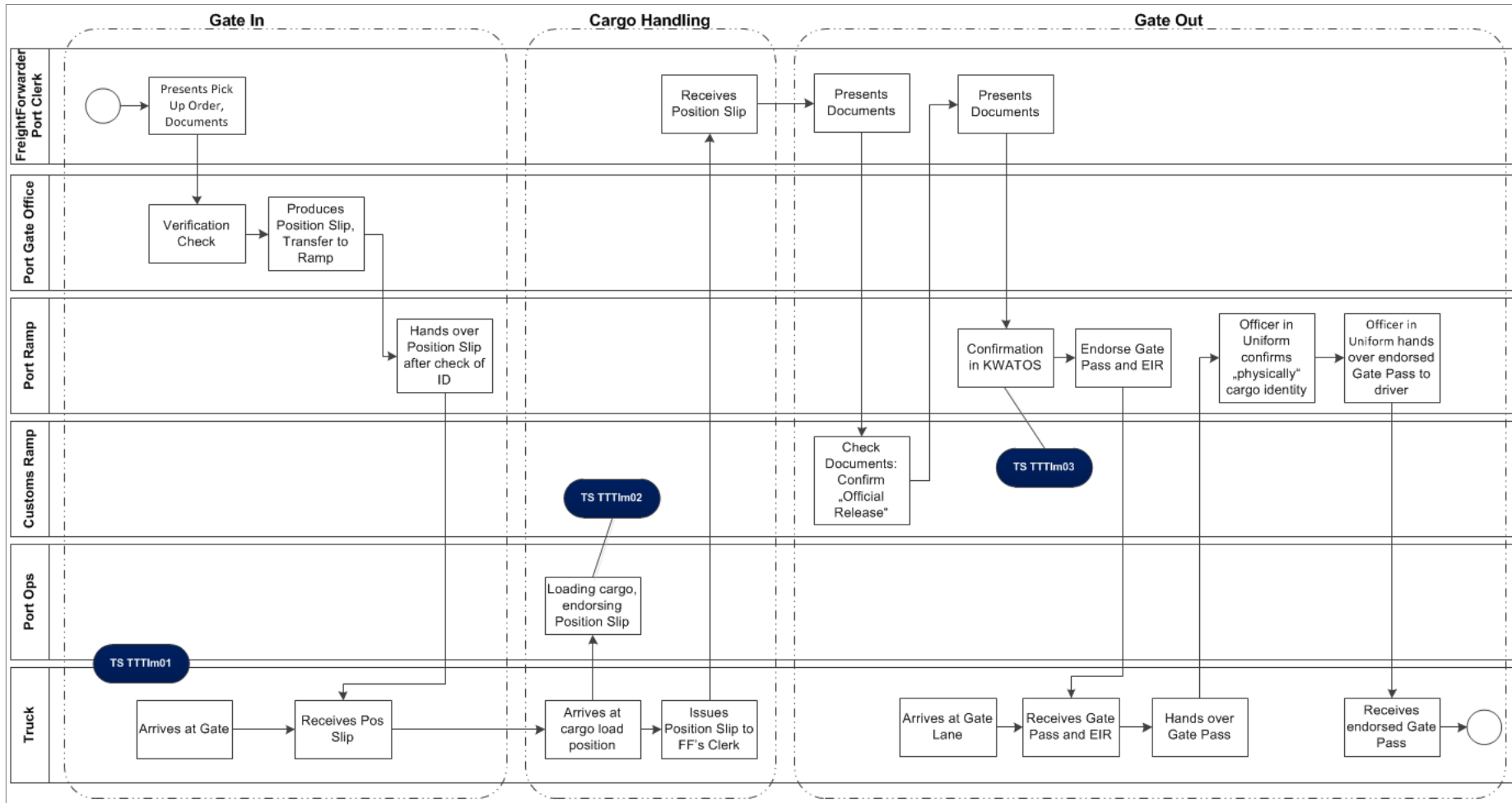
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Defining Targets

Usage of data

- Feed current structures
  - Weekly meetings
  - Corridor Dashboard
- Additional reporting

Interpretation framework

- Benchmarks
- Target Values

Data analysis

- KPI measurement provides
  - Average values or peak values or deviation from target
  - For a predefined period
  - For a selected user group
- Interpretation of data is required, can reveal certain problems and potential causes
- KPI measurements do not provide explanations
- KPI measurements do not provide instruction how to improve

Aim: Future use of KPI data

- Frequent Communication / publication of data: awareness, tranparency
- Individual information exchange to instill self-optimisation
- Improvement campaigns
- Feedback-loops with port community

Principles for Defining KPIs

Relevance

- Measurements that contribute to the project

- Measurements that describe core processes, ignore marginal activities

Practicability

- Measurements feasible to implement with a view to resources

- Measurements for which data will available in a workable format, i.e. electronically transmittable with standard protocols

Sustainability

- Measurements that are maintainable in the future, i.e. data should be used from sources that are not project dependent but stable, e.g. Single Window, TOS

- Only as many measurements that can be maintained and processed in order to avoid effects of weariness in the port community

Expectations

Conditions

Feasible KPIs
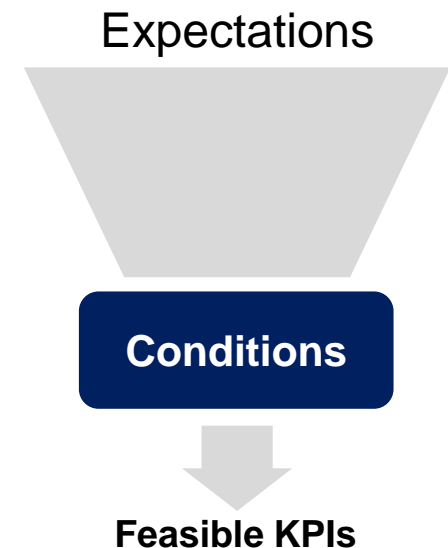
Identifying Core Performance Areas
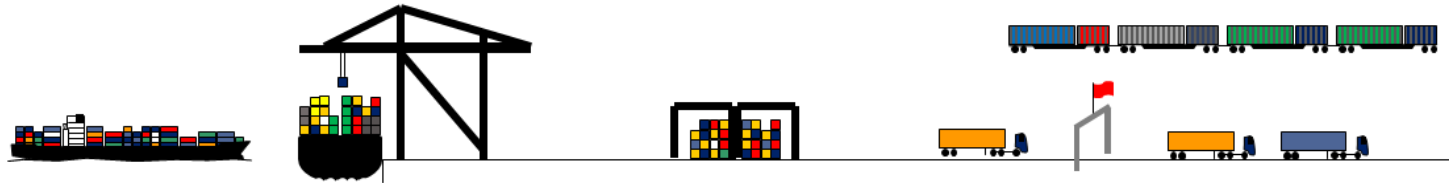
Vessel Servicing	**Dwell Time**	**Truck / Train Servicing**

Why relevant
Vessel costs
Schedule maintenance
Berth capacity

Drivers
Vessel delays (other ports)
Weather
Marine services
Berth availability
Terminal performance

Why relevant
Cargo availability
Capital lockup (cargo)
Yard capacity

Drivers
Manifest and clearing
processes:
Freight forwarder, customs,
OGAs
Risk management and
inspections

Why relevant
Logistics costs
Hinterland capacity (rail)
Terminal capacity (trucks)

Drivers
Processes in port
operations
Traffic (inside / public roads)
Fraud / theft prevention,
security processes

Data Gathering

Data sources

- IT systems
  - Terminal Operation System (TOS)
  - Customs System
  - Port Communication System
- Possible: Manual reports

Data collection

- Automated
  - Interfacing systems (realtime or batch)
- Semi-automated
  - Pre-defined reports from reporting tools, set intervals
- Manually
  - Reports to be generated per event

Frequency

- Realtime / daily
- Weekly

Collecting frequency to correspond with aim.

→ Weekly data collection

- Frequency excludes all manual reporting
- Data sources should be limited to available systems
- System generated reports suffice, no real-time data exchange needed

Implementation

Implementing port performance monitoring

1. Sources

   - Data generation / extraction and provision

2. Data processing entity

   - Check integrity
   - Transfer / alter data
   - Load
   - Compute KPIs
   - Generate Reports
   - Distribute / communicate reports

3. Port community

   - Data interpretation
   - Deviation of improvement measures

Data Sources — KENYA REVENUE AUTHORITY — KenTrade

Extraction

Data Transfer Component

Transformation
Loading

Data Warehouse — Storage
Data Marts/ Aggregations

Creating Queries

Report Production Component

Reporting

Report Submission Component
Management & Stakeholders

System Component
Procedure

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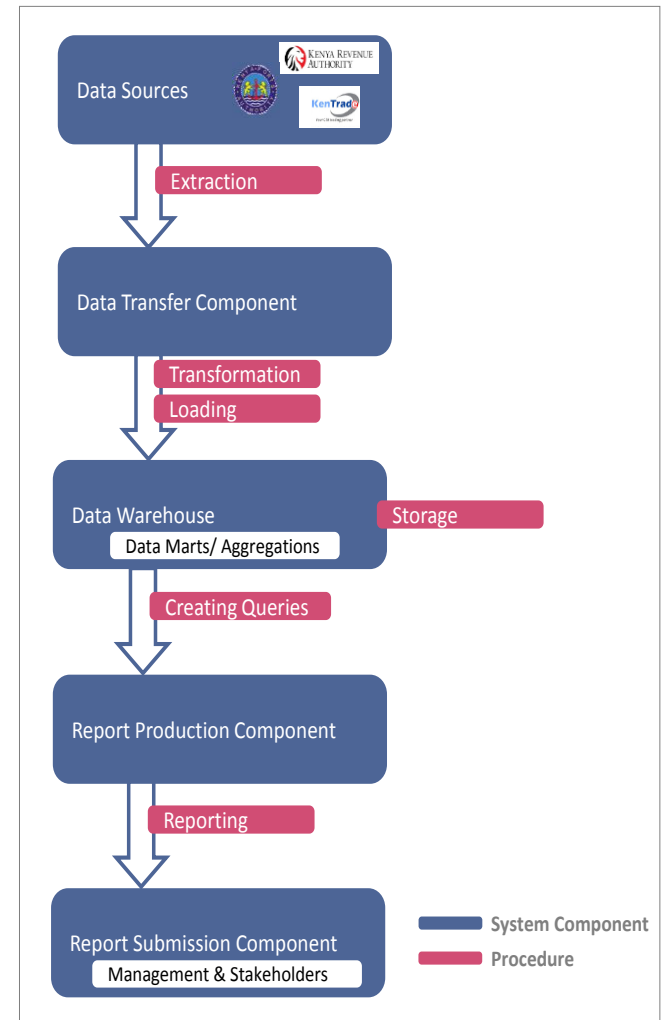
Data Warehouse Systems

Examples

Basic query structure
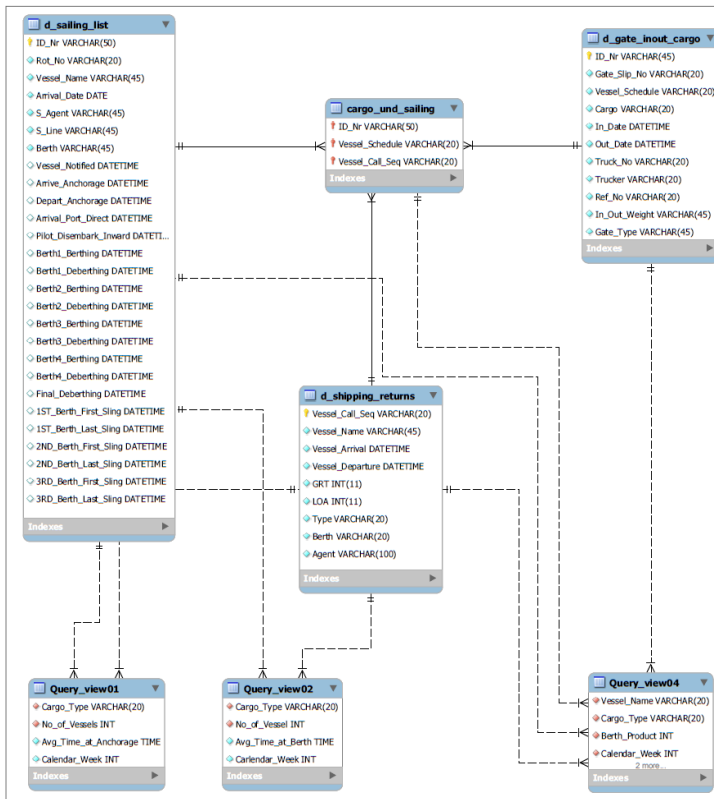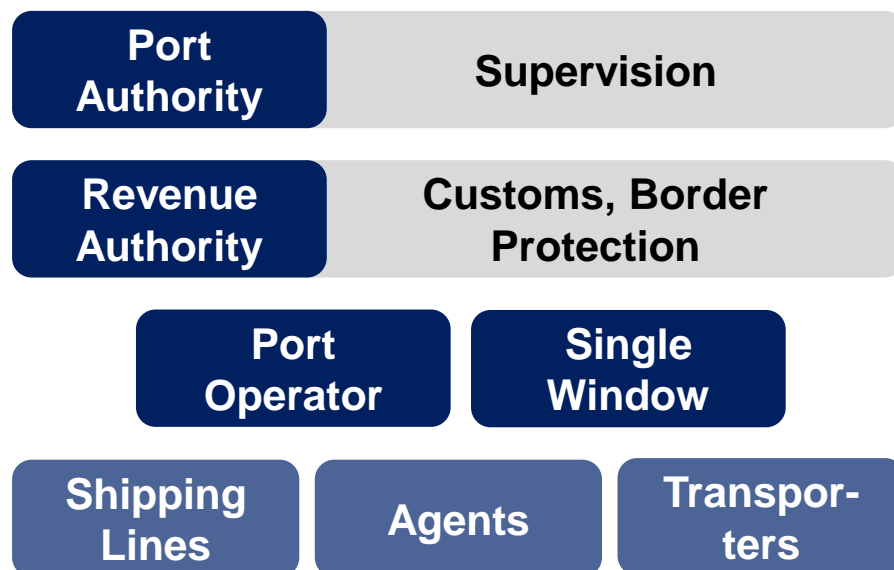

User interface for reporting

Challenges

Legal Framework

- Existing scope of legislation does not always allow that a Port Authority puts performance monitoring into practice

- Might require enhancement of the Authority's scope

- Might require to alter other authorities' rights and obligations

Administrations and parastatals

- Level of collaboration?

- Willingness to share?

- Acceptance of being monitored?

Powers	Mandate
Very High	**Regulating** E.g. Penalties for non-compliance
High	**Controlling** Monitor and evaluate standards
Medium	Act as **Mediator** in case of deviation of standards
Low	**Facilitating** Collect, analyse, and publish data

Port Authority	Supervision
Revenue Authority	Customs, Border Protection

Port Operator	Single Window

Shipping Lines	Agents	Transpor-ters

HPC

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