USING THE BIMCO SHIPPING KPI DATABASE TO IDENTIFY COSTS AND BENEFITS OF E-NAVIGATION SOLUTIONS

Dag Atle Nesheim, Research Scientist (dagatle.nesheim@sintef.no)

Kay Endre Fjørtoft, Senior Research Scientist

SESAME Solution 2

- RCN MAROFF program
- Q1 2018 – Q1 2021

SESAME Solutions 2

Develop and demonstrate, on operational systems both onboard and ashore, a fully-realized suite of e-navigation services, developed with a Human Centered Design (HCD) approach

Quantify the effects of these services on human operators and ship performance.

Build the business case for **end-users to buy into e-navigation solutions**

Background for WP6 – Cost Benefit Assessment

In SESAME Solution 2 a key aspect is to develop a **cost benefit assessment framework**.

This framework will be used to **assess the solutions related to e-navigation and automatic reporting**, to be developed by the project.

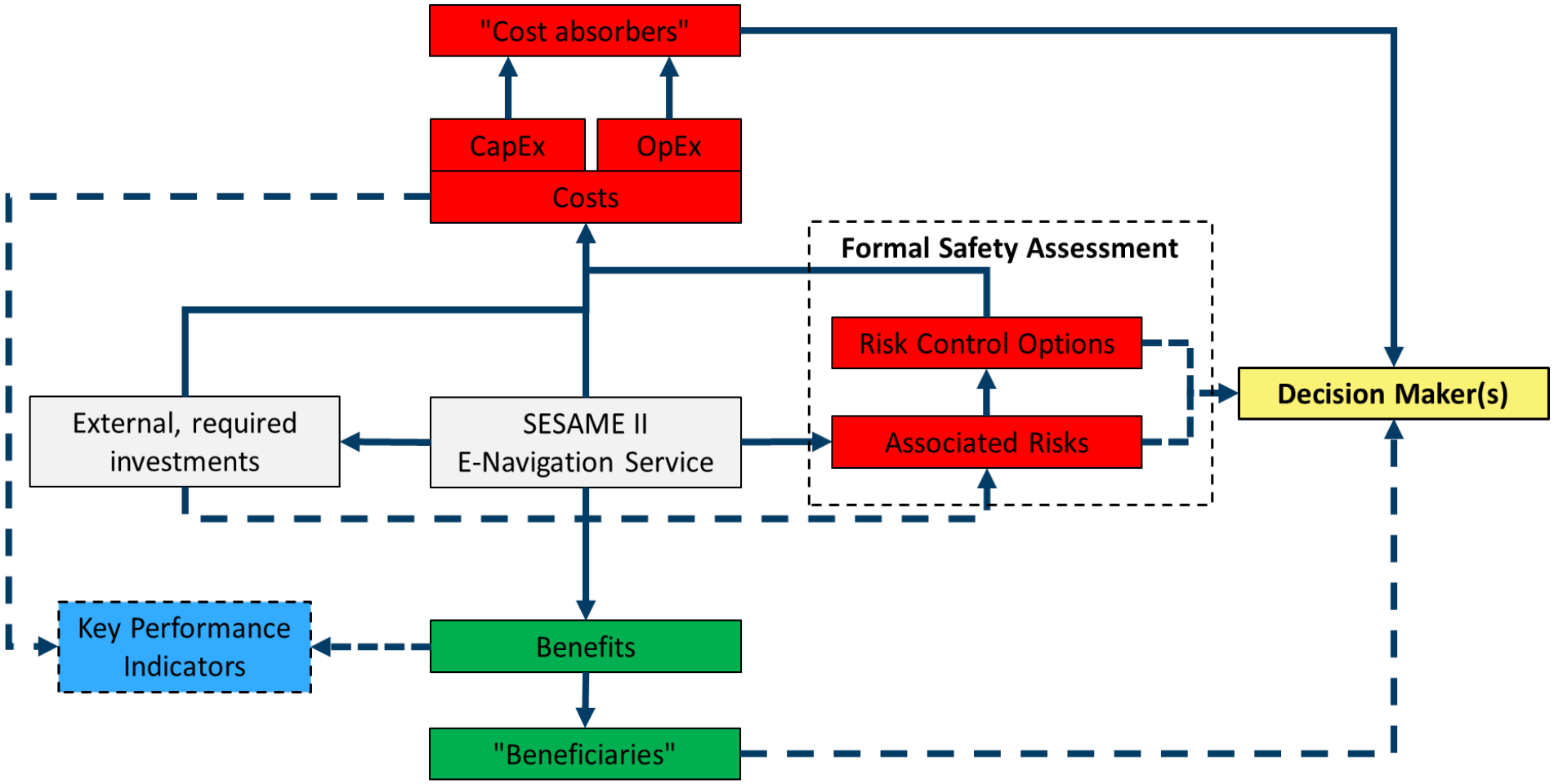
Challenge(s)

Does it work … and at what costs?

What are costs and what are benefits?

Who are the decision makers?

Framework



SINTEF

The BIMCO Shipping KPI Standard

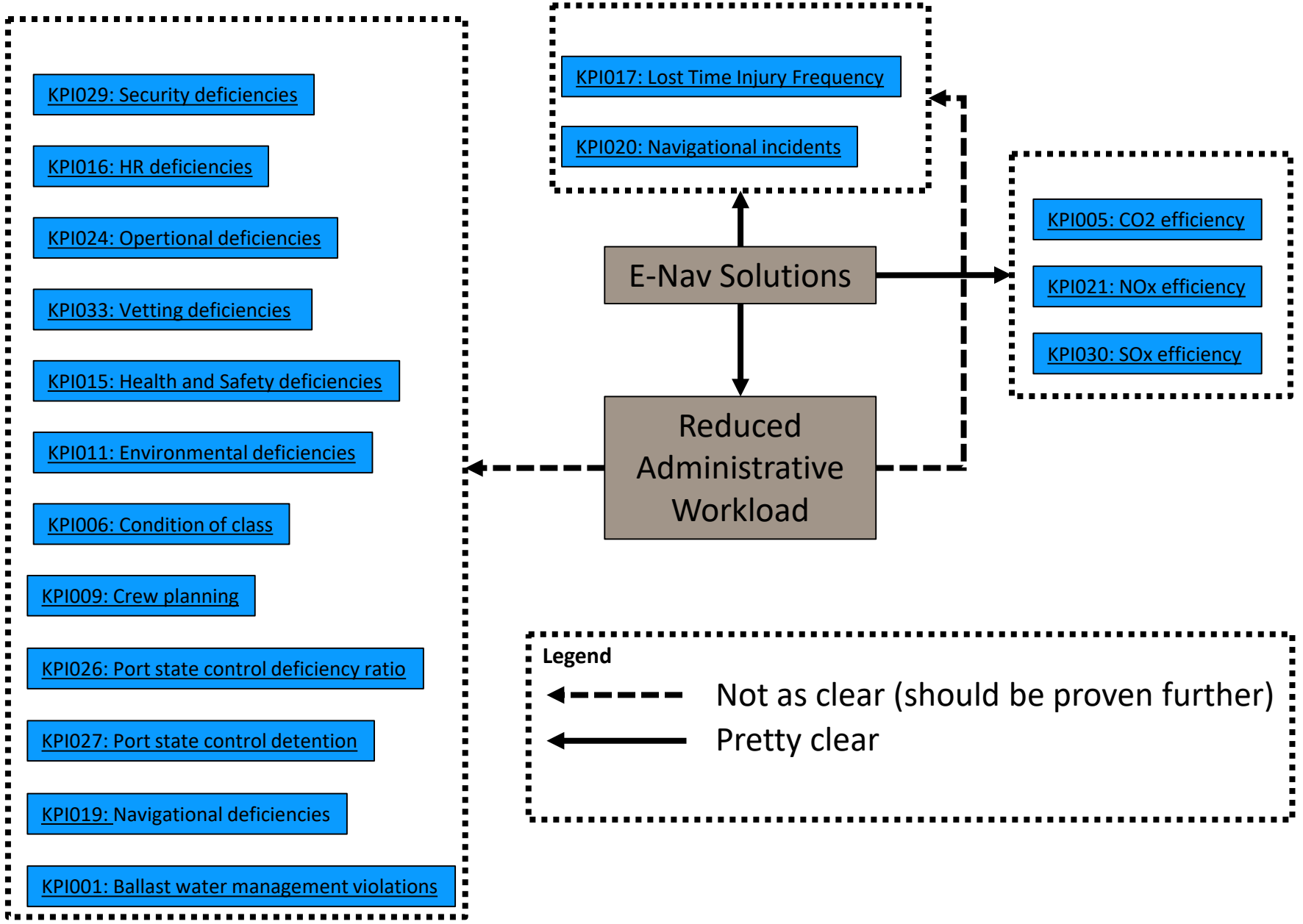
The BIMCO Shipping KPI system is the preferred and trusted tool of all shipowners, operators and managers allowing them to benchmark and monitor their company, fleet and ship performance

6500 ships - 321 companies (per Oct 2019)

https://www.shipping-kpi.org/

BIMCO

SINTEF


KPI029: Security deficiencies
KPI016: HR deficiencies
KPI024: Opertional deficiencies
KPI033: Vetting deficiencies
KPI015: Health and Safety deficiencies
KPI011: Environmental deficiencies
KPI006: Condition of class
KPI009: Crew planning
KPI026: Port state control deficiency ratio
KPI027: Port state control detention
KPI019: Navigational deficiencies
KPI001: Ballast water management violations
KPI017: Lost Time Injury Frequency
KPI020: Navigational incidents
E-Nav Solutions
Reduced Administrative Workload
KPI005: CO2 efficiency
KPI021: NOx efficiency
KPI030: SOx efficiency
Legend
Not as clear (should be proven further)
Pretty clear

SESAME Solution II

Automated electronic ship reporting

- KPI029: Security deficiencies
- KPI016: HR deficiencies
- KPI024: Operational deficiencies
- KPI033: Vetting deficiencies
- KPI015: Health and Safety deficiencies
- KPI011: Environmental deficiencies
- KPI006: Condition of class
- KPI009: Crew planning
- KPI026: Port state control deficiency ratio
- KPI027: Port state control detention
- KPI019: Navigational deficiencies
- KPI001: Ballast water management violations
- KPI017: Lost Time Injury Frequency
- KPI020: Navigational incidents

Harmonized display of navigational information

- KPI019: Navigational deficiencies
- KPI001: Ballast water management violations
- KPI017: Lost Time Injury Frequency
- KPI020: Navigational incidents
- KPI005: CO2 efficiency
- KPI021: NOx efficiency
- KPI030: SOx efficiency

Cloud-based e-navigation services

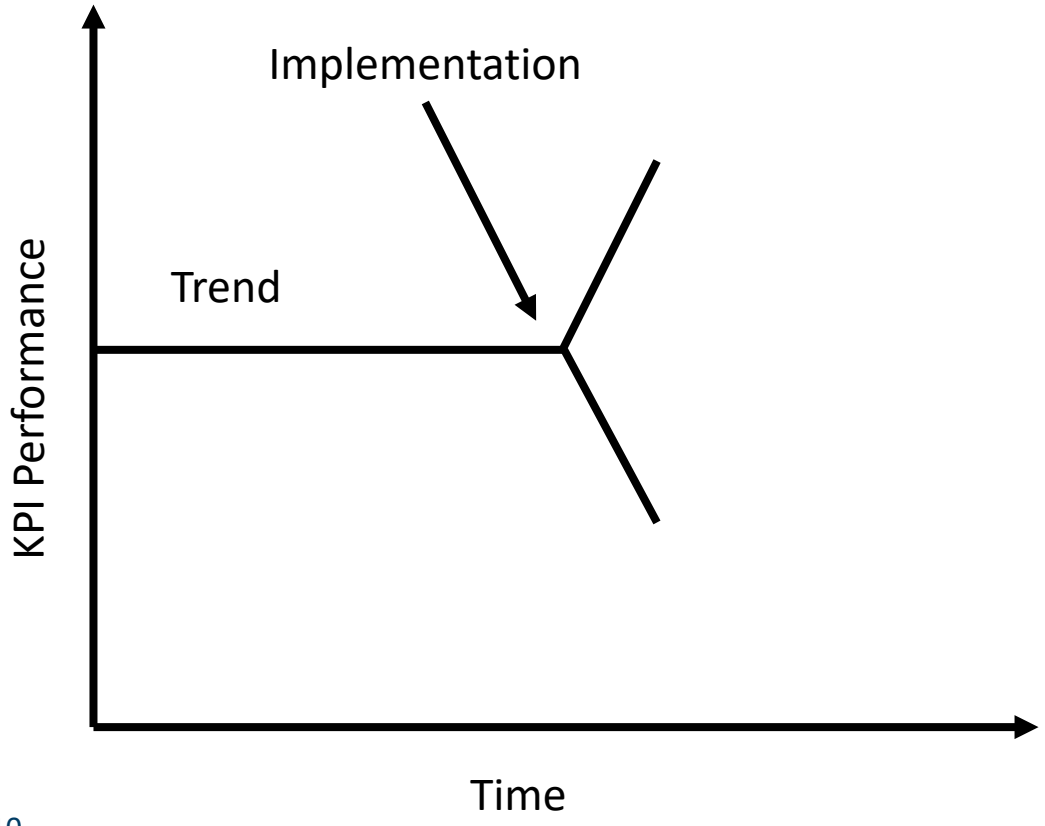
- KPI011: Environmental deficiencies
- KPI019: Navigational deficiencies
- KPI001: Ballast water management violations
- KPI017: Lost Time Injury Frequency
- KPI020: Navigational incidents
- KPI005: CO2 efficiency
- KPI021: NOx efficiency
- KPI030: SOx efficiency

Expanded just-in-time arrival

- KPI009: Crew planning
- KPI020: Navigational incidents
- KPI005: CO2 efficiency
- KPI021: NOx efficiency
- KPI030: SOx efficiency

SINTEF

The Basic Idea



Implementation of a new e-nav solution or industry-wide regulation could be visible on the performance trend

Either positive

Or negative

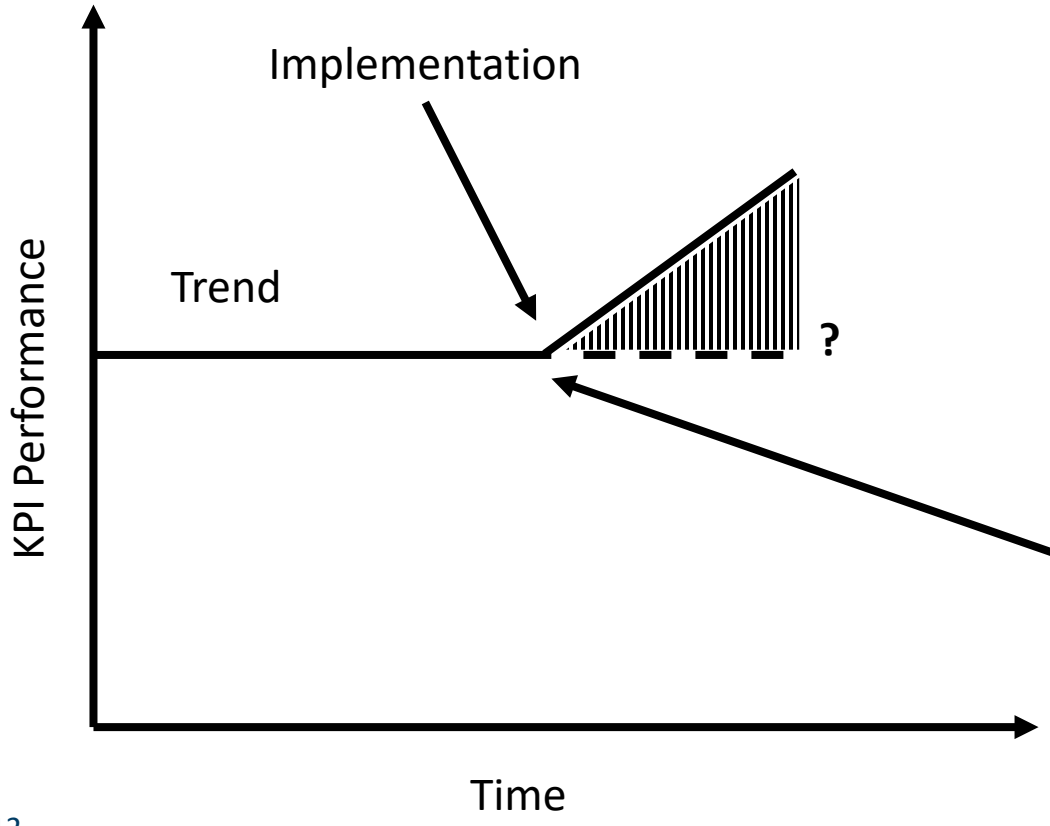
SINTEF

Correlation does not imply Causation

We need to understand the context

We need to take into account other variables

Spurious correlations



Implementation of a new e-nav solution indicates a positive reaction in industry performance

The implementation coincides with an updated STCW convention focusing on better qualified crew members

What is the actual effect of the e-nav solution?

SINTEF

A snapshot is just a snapshot

A single picture does not give you the complete picture

A historical trend on an industrial scale, makes sense

…but never lose sight of the context!

SINTEF

Technology for a better society