

# Maritime Intelligence for Port Ecosystems

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Confidential

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# Introduction

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- 4764 Ports in 196 countries conduct 90% of the global trade
- General cargo ships (16,500), Bulk carriers (8,700), Container ships (4,900), Tankers (13,200), Passenger ships (6,600)
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- A 18,000 TEU (and above) ships are on the rise and each one of them may cost up to \$190 million
- Ships alone are worth \$2.5 trillion not including off-shore platforms, port infrastructures , containers, and ground transportation

Source: United Nations Conference on Trade and Development, Review of Maritime Transport, 2011

# Key Maritime Challenges

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- ❑ Due to the complex maritime operations (partly because of the increase in the number of ships, their sizes and traded volume) modern (smart) port face many challenges:
  - Loitering
  - Unusual halting
  - Illegal trading of oil and goods
  - Ambiguous identification of ships
  - Unexplained high/low speed of ships
  - Zone violations (due to weather or port constraints)
  - And others....

# Maritime Intelligence (MI) for Smart Port Ecosystems

## (An Overview)

# “Smart Ports” Means Differently



**Cost Per Ton Shipped**



**Integrated Asset Management**



**Warehouse and Inventory Productivity**



**Corporate Social Responsibility**



**Environmental Health & Safety**



**Labor Productivity**



**On-time Delivery Performance**



**Port Ecosystems**

# Some Low Hanging Fruits (Opportunities)

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- Provide analytics that can help in automating the billing of port dues
  - Majority of ports use a 12-hour cycle based billing system that results in a lot of inefficiencies in collecting the port dues
  - Providing billing information up to the minute level can change the above situation
  - Having a flexible (and possibly more attractive) plan may drive more revenue
- Automatic detection of violations
  - Dependency on humans to monitor complex events such as illegal ship-to-ship transfers, speeding and zone violations etc. results in a lot of inefficiencies
  - Automatic detection of violations will allow the ports to be more safer and efficient and may also drive new revenue source

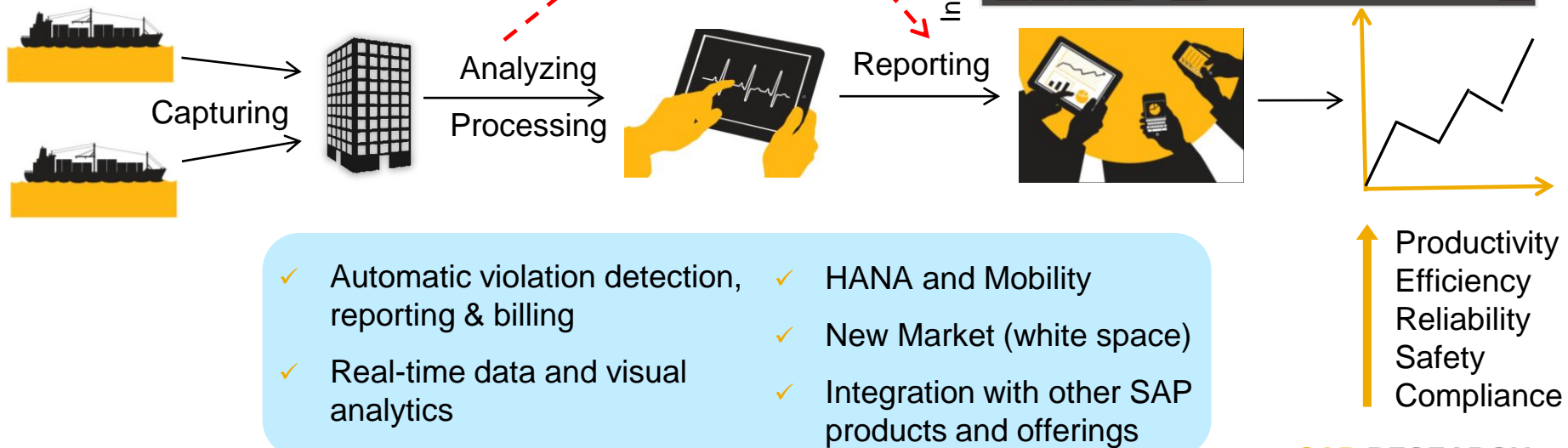


# SAP Maritime Intelligence for Smart Ports

## Automatic Violation Reporting and Billing

Maritime Intelligence is about empowering users in a port ecosystem with data and visual analytics to increase the efficiency and effectiveness of maritime operations.

- ❑ Unauthorized access
- ❑ Domain violations
- ❑ Ambiguous identifications
- ❑ Zone/Speed violation
- ❑ Others (user defined)
- ❑ Automated Billing



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# Summary: MI Use Cases

Feature	Stake Holders	Point of Difference – Value-added benefits?	
		Tangible Benefits	Intangible Benefits
<b>Identification</b> <ul style="list-style-type: none"> <li>- Missing flag information</li> <li>- Incorrect MMSID</li> <li>- Detection of concealed identity</li> <li>- Notice of arrival (automatic validation)</li> </ul>	<ul style="list-style-type: none"> <li>- Port Authority</li> <li>- Shipping Companies</li> <li>- 3PLs</li> </ul>	<ul style="list-style-type: none"> <li>- Port security and efficiency</li> <li>- Increased reputation resulting in increased traffic and revenue</li> </ul>	<ul style="list-style-type: none"> <li>- Verification of regulatory compliance</li> </ul>
<b>Detecting Complex Events (Activities)</b> <ul style="list-style-type: none"> <li>- Constant Brushing incidents</li> <li>- Unauthorized movements</li> <li>- Detecting pollutant ships (need to discuss for providing data)</li> <li>- Profiling and association of events with businesses and individuals (need to discuss for providing data)</li> </ul>	<ul style="list-style-type: none"> <li>- Port Authority</li> <li>- Shipping Companies</li> <li>- Insurance Companies</li> <li>- 3PLs</li> </ul>	<ul style="list-style-type: none"> <li>- Compliance, safety, and increased reputation with partners</li> <li>- Insights for insurance partners</li> </ul>	<ul style="list-style-type: none"> <li>- Fulfillment of regulatory obligations</li> </ul>
<b>Zone Definition (Geo Fencing++)</b> <ul style="list-style-type: none"> <li>- Specialized zones (constrained by geography and other navigational criteria)</li> <li>- Enhanced criteria such as on-demand and dynamic zones</li> </ul>	<ul style="list-style-type: none"> <li>- Port Authority</li> <li>- Port Operators</li> <li>- 3PLs</li> </ul>	<ul style="list-style-type: none"> <li>- Increased revenue due to optimization of parking/berthing</li> <li>- Customized alerts for multiple parties</li> </ul>	<ul style="list-style-type: none"> <li>- Port security and efficiency</li> </ul>



# Value of SAP HANA

<ul style="list-style-type: none"><li>- In memory computing</li><li>- Multicore CPU</li></ul>	Scanning speed of several megabytes per millisecond enables, instant access to data and parallel processing, which is required for analysis of high volumes of data in real-time from AIS, radar, cameras and other data sources (sensors)
- Columnar Data Storage, where data tables are stored as columns (rather than rows of data), in sequence in compressed memory blocks	Results in faster aggregation of data when calculations are performed on single columns, such as geographical coordinate information
- Only fields that have been changed will be updated rather than entire rows	Avoids lock of data tables during updates and allows high levels of parallelization, which is critical when processing live data streams and performing constant and near-simultaneous updates.

# Contact

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