



EUCISE 2020



Key results of EUCISE2020

(European test bed for the maritime Common Information Sharing Environment)

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EUCISE2020 received funding from the European Union's seventh framework programme under grant agreement no: 608385





EUCISE 2020 project

- Challenges
- Mission, roadmap and principles
- Common architecture and development plan
- Transition phase to operational CISE
- Gap analysis and expected user value
- Implementation status
- Key results





EUCISE2020

- develops the reference implementation of the European CISE for cross-border and cross-sector information exchange between the European maritime authorities, according to COM (2010) 584
- is included among the actions of the EUMSS (European Maritime Security Strategy) implementation plan; the results of the project are relevant for the security of the European seas.



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CISE Challenges



- CISE was born to overcome the obstacles of a lack of information sharing between the European maritime administrations.
- The challenging objective is to **realize on a voluntary basis a cross-sector and cross-border exchange of information** to face the risks of maritime activities in the European seas.
- A fundamental purpose is to **overcome the sectoral information silos**
- The main objective is to **achieve interoperability between existing maritime surveillance systems**
- CISE is not a new system or a system of systems: it is a voluntary information cooperation based on the principle of responsibility-to-share between the existing systems of the European maritime authorities of various sectors: defense, fishing, border control, environment, safety and security, custom, ...



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Context analysis

- Gap analysis of user needs performed by the TAG (Technical Advisory Group) in the CISE User Communities
- Survey to detect the services requested by users performed by Gartner Group



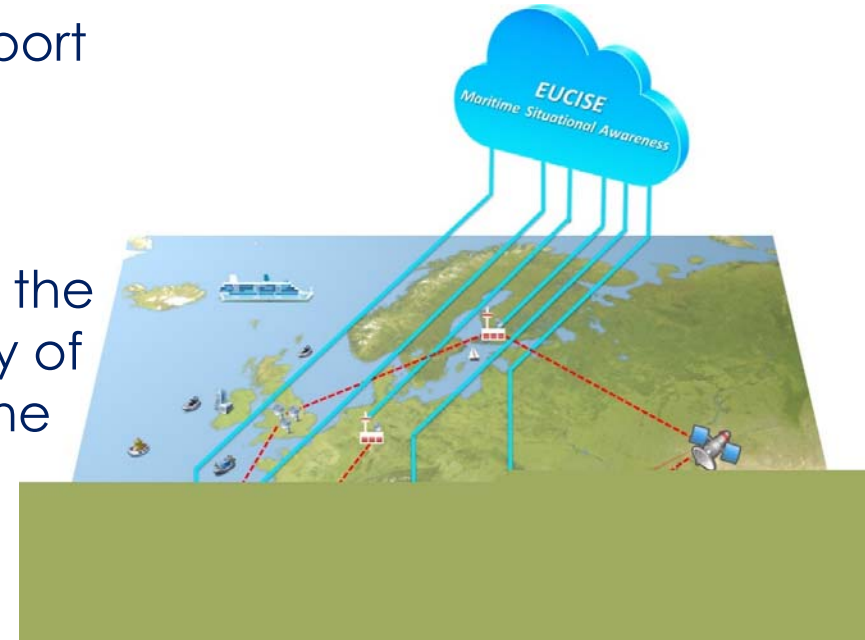
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Primary mission of EUCISE2020 is to support the EU Maritime Situational Awareness capability by means of an **Information Sharing Environment** implementing adequate security measures to ensure the confidentiality, integrity and availability of the data required and transmitted in the CISE community.

EUCISE2020 does not affect the functionalities of the operational information systems belonging to the participating Public Authorities or of the European existing sectorial information systems.



Blue lines depict flows of information within the CISE community, while the red dashed lines depict flows of information within the legacy systems belonging to single Public Authorities.





EUCISE2020 Principles

- Complete decentralization according to CISE Hybrid Architecture: no central system, no central database
- Military/civilian cooperation;
- Independence from any system and sensor
- Independence from any national or European architecture
- Common technical architecture
- Management of EU RESTRICTED information through a special channel
- Firm adherence to standards and open source software
 - Adherence to the CISE data and service models
 - Promotion of standardization groups inside the EU bodies (ETSI)
- IPR management and sharing
- Open to new partners and to European Agencies





EUCISE2020 RESULTS

Considering the three types of results:

- **Outputs** – short-term results available at the end of EUCISE2020 (the legacy)
 - Joint functional and technical requirements and architecture
 - Core&Common software and documentation
 - **Interoperable unique operational infrastructure at 10 national sites available for cross-sector and cross-border information exchange**
 - Exchanged data and information
 - Enhanced cooperation in the community of European maritime administrations
 - Formal standardization group established in ETSI
 - Analysis and recommendations





EUCISE2020 RESULTS

Considering the three types of results:

- **Outcomes** – medium-term results
 - Engagement with DG MARE and EMSA for the transitional phase
 - Developed and acquired knowledge not only of "what to do", but also "how to do it"
- **Impact** – long-term socio-economic factors
 - Increased effectiveness of the institutional action at sea
 - Rooting of the "Responsibility-to-Share" approach
 - Risk containment
 - Reduction of the area "I don't know what I don't know"
 - Increased security for European citizens and economies





- The result of the project is a validated technical and operational reference framework
- Enhanced maritime awareness will help ensuring more secure, safer and cleaner seas
- Clear evidence of the cost/effectiveness of the approach will be provided
- The consolidation of requirements and joint procurement will lead to reduced procurement and maintenance costs
- Participants will verify and optimize their technological choices
- The results will create important market opportunities worldwide for the European industry



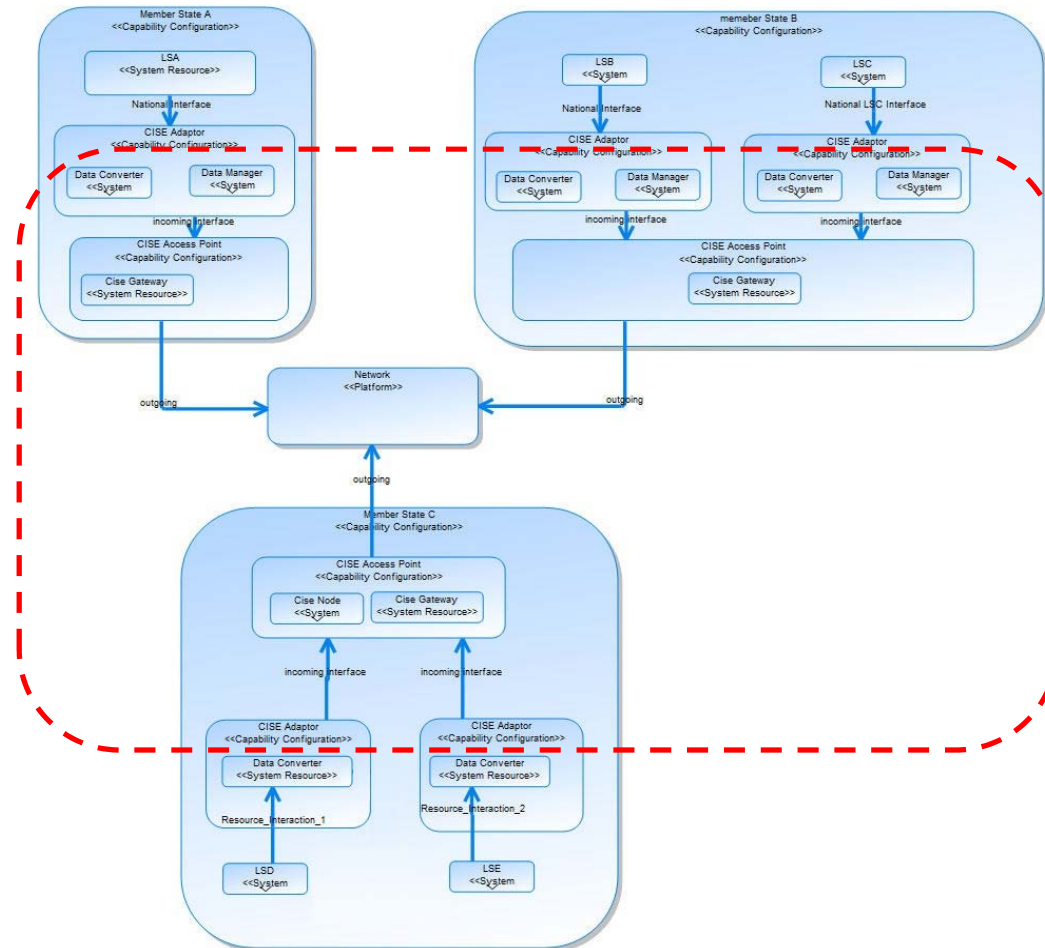


Common architecture



Logical Architecture of EUCISE2020 Configurations A, B and C:

- Inside the red line components developed through the joint European tender
- Outside the red line interfaces with the national legacy systems developed through the national procurements



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Transition to CISE Implementation

Urgent need to start the transition to CISE Implementation to have CISE operational by 2020.

Major points to address:

- Maintain operational the information exchange infrastructure between the 10 national nodes participating in the pre-operational CISE after the end of project
- Clarify the funding scheme for the national nodes
- Define infrastructure governance criteria to implement
- Manage the intellectual property of the partners, according to IPR policy and existing constraints
- Follow the CISE principles to which EUCISE2020 conformed





Transition from EUCISE2020 toward operational structure

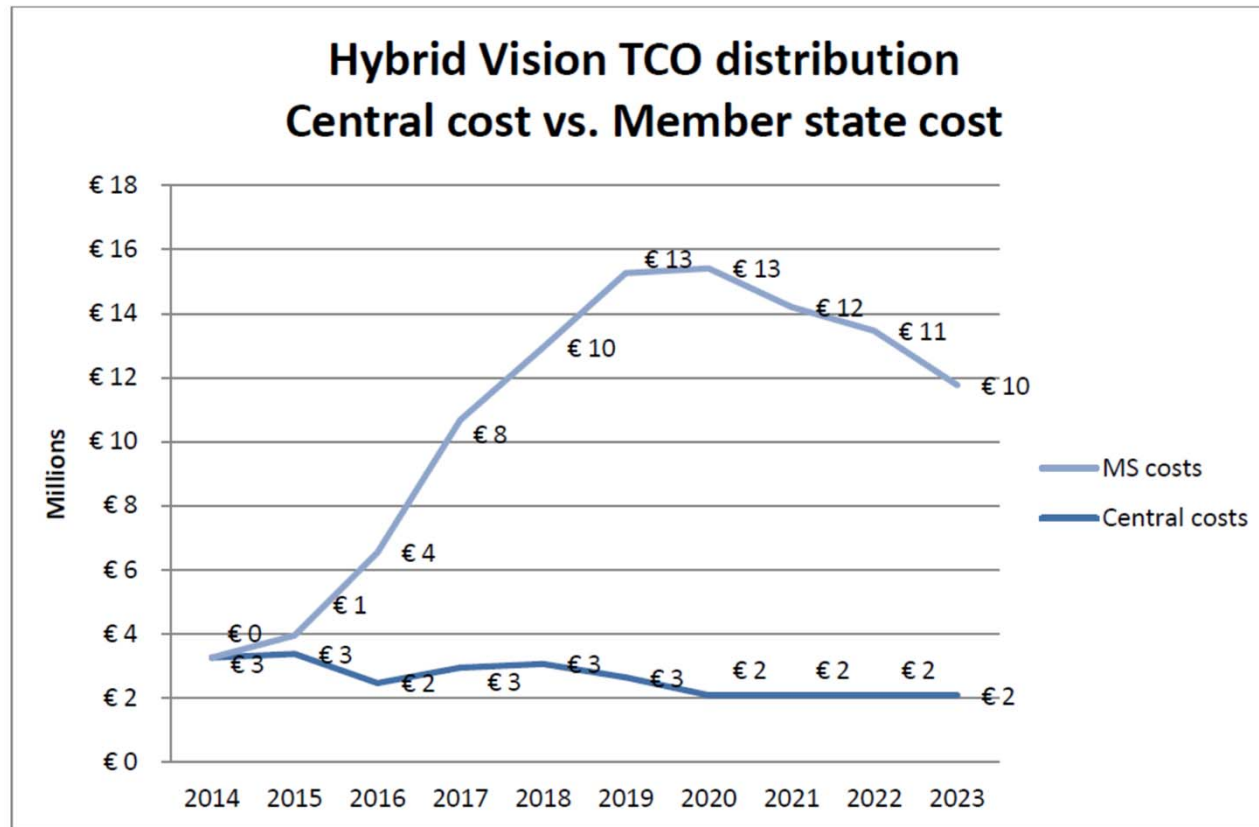


Figure 4 TCO Distribution of Central versus Member State Cost for Hybrid vision



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Validation Campaign



- Expected and Observed benefits
- Implementation status
- Preliminary results of information sharing
- Benefits of Satellite Monitoring
 - Satellite Ship and Oil Detection (CSK)
 - Meeting at sea detected using satellite acquisition



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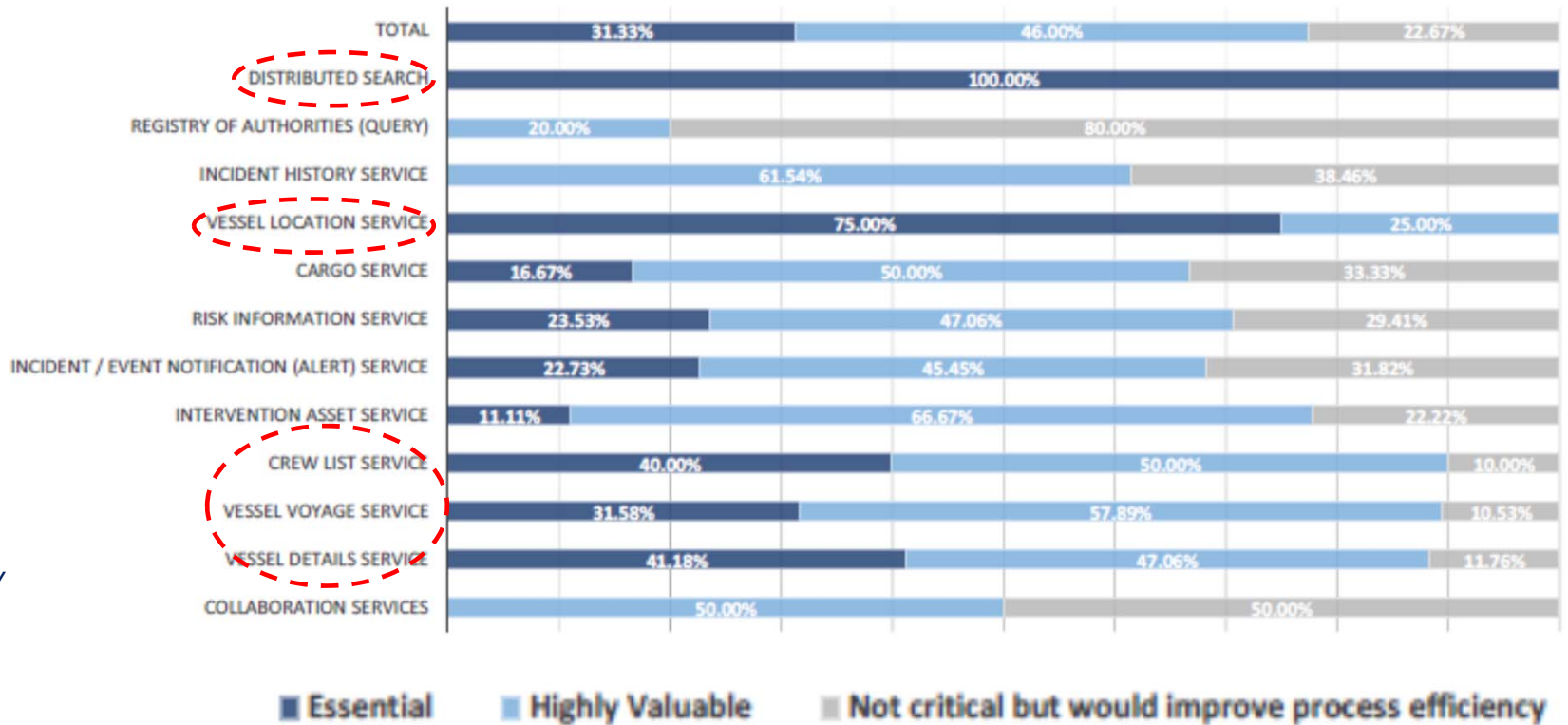


Expected benefits : CISE Benchmarking User Value



For 77% of Authorities, the 12 identified CISE services are either essential or highly valuable to support their operational processes; by implementing these services, CISE contributes directly to his objective of "improving the daily work of operations for Maritime Authorities."

Operational criticality of the CISE services



A registry of Authorities, Incident History and Collaboration are less mission critical for most Authorities but provide significant operational efficiency benefits



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Observed Benefits



Coordinator of Validation: Two main areas of benefits observed during the validation

infrastructure

EUCISE2020 network provides a complete, flexible and expandable support for maritime authorities to generate, acquire, handle and built new information of interest.

The ICT infrastructure already deployed allows continuous operation and direct communication between and among operators.

New services can be introduced by authorities' agreements and/or new services commissioning, avoiding new creation of complex interfaces and ICT infrastructures. During this validation period we have used services in use but new ones have been introduced over the period and we have got immediate access.

information sharing/exchanging

Information sharing and exchanging during this period have proved the unquestionable advantages of EUCISE2020 network in terms of process automation, continuity, awareness of available information or access to new valuable information. Process automation avoids manual data interchange, this improves current operation firstly, shortening timelines and secondly, providing a common model of information understood by all the operators and easily handled by all the legacy systems in EUCISE2020. During this phase, processes involving data exchange previously carried out manually have been validated, such as assets deployments or anomalies. Services discovered within this phase have proved useful for daily operation, identification of ships in incidents can be one example. In all the cases, it is important to remark that the information can be used immediately.



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Implementation status



Period of Execution of validation campaign: 17 January 2019 – 14 February 2019

1. 10 national nodes; 2 European nodes
2. 20 legacy systems connected
3. All partners are using the EUCISE2020 network
4. Partners are increasing the volume of information exchanged
5. Partners are extending the type of services
6. Service provided are mainly Vessel Services.

Statistics	17 Jan - 14 Feb
Provided Services	785489
Service Types	6
Active Partners	90%

Provided Services	17 Jan - 14 Feb (n)	17 Jan - 14 Feb (%)
Action	860	< 1%
Aircraft	3	< 1%
Anomaly	8438	1%
Document	5849	1%
Incident	708	< 1%
Vessel	769631	97%

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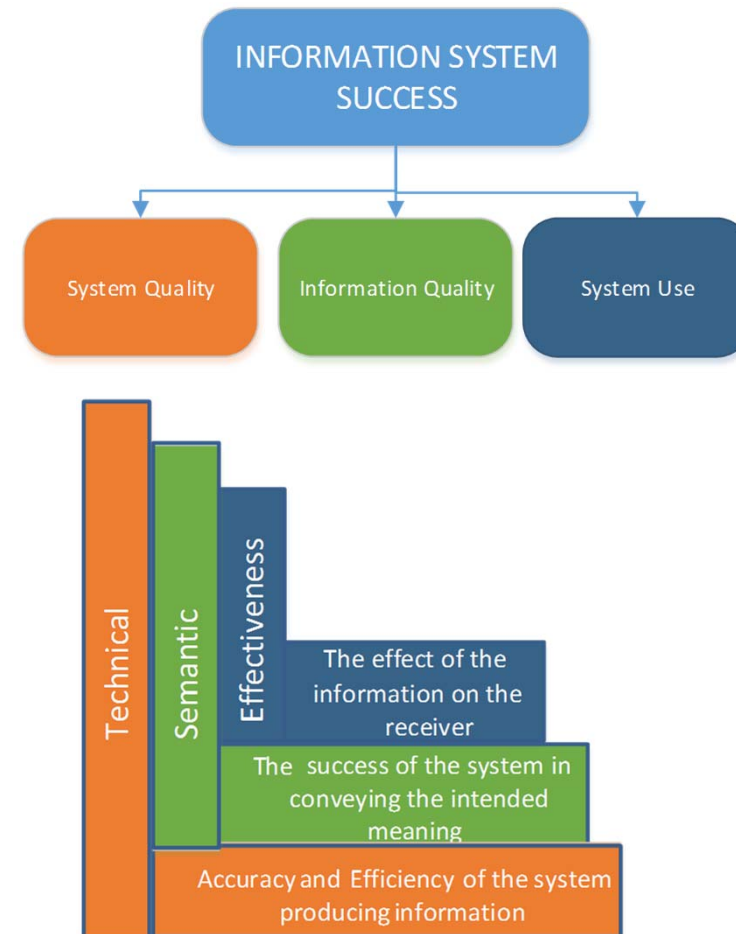
Metrics Analyses Considerations



The **Success** of EUCISE Information Exchange is evaluated by three different perspectives:

- the System Quality
- the Information Quality
- the System Use

achieved in the period of use





System Quality Metrics Analyses Considerations

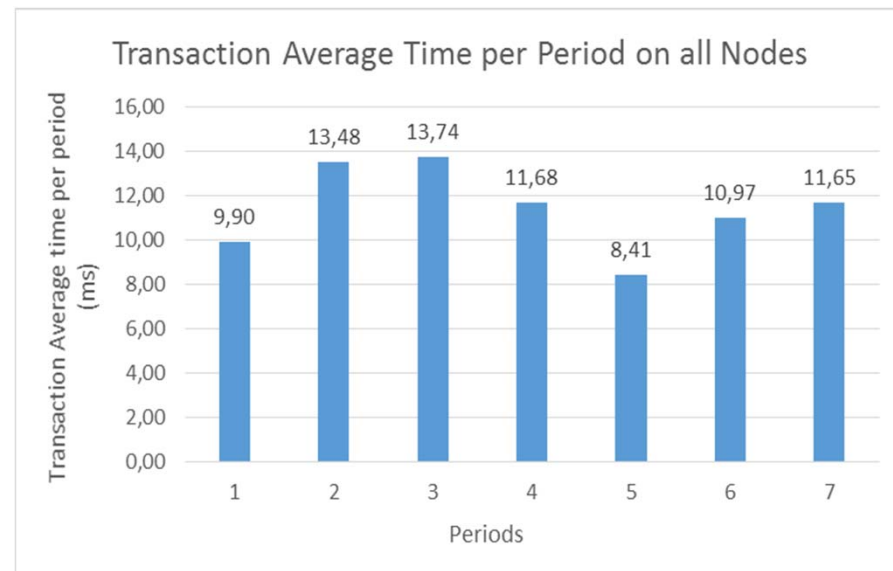


AvgTime:

- It evaluates the average time between a request and a response evaluated in the period of interest.
- The average is calculated by summing the time of each transaction (that is the time passed from each request and the related response) and dividing the obtained value by the total number of messages exchanged in the node

The **AvgTime** shows the current average achieved latency between a request and the first response

No alarming situation has been detected in the analyzed periods



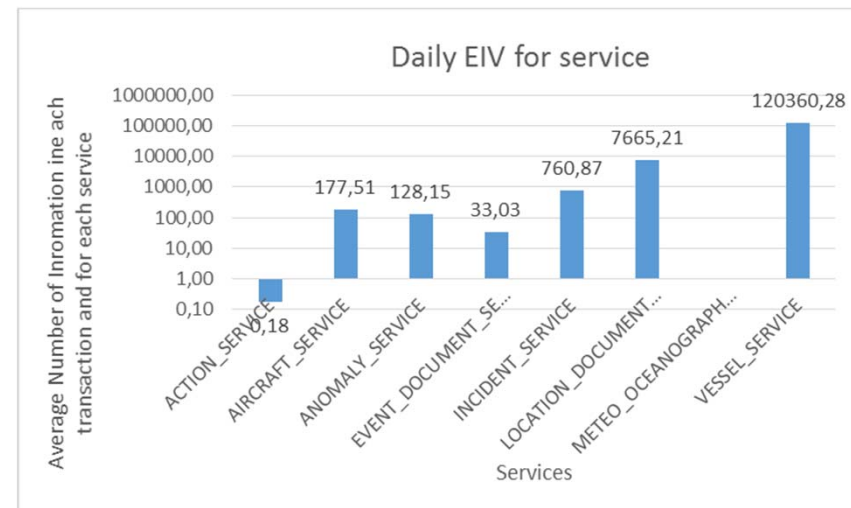
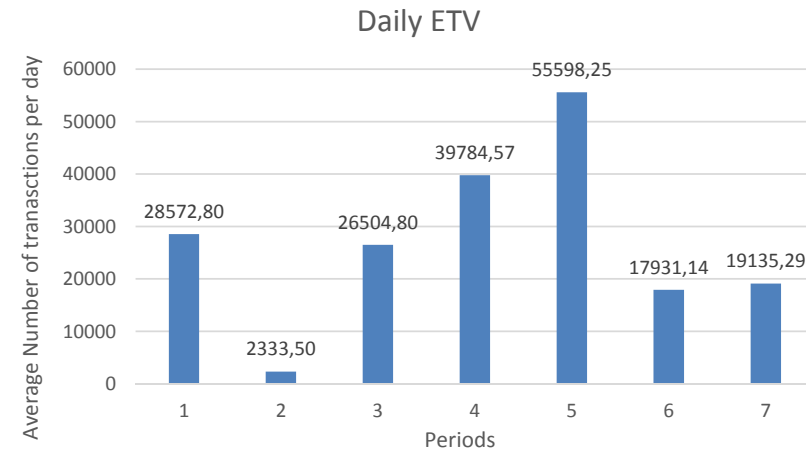


System Use Metrics Analyses Considerations



- **ETV (Exchanged Transaction Volume)**
 - evaluates the number of transactions

- **EIV (Exchanged Information Volume)**
 - evaluates the number of information in a transaction (for example number of vessels)

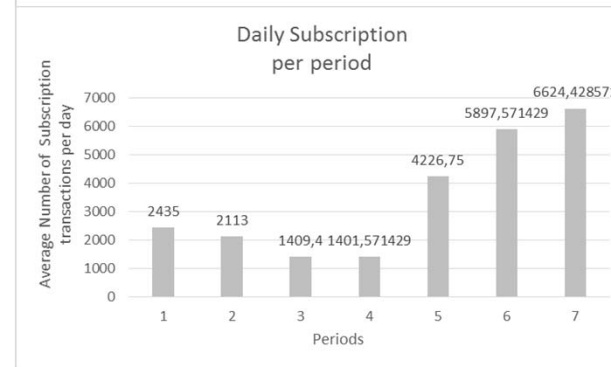
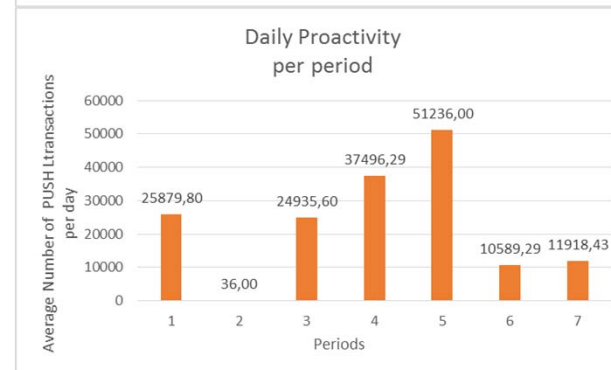
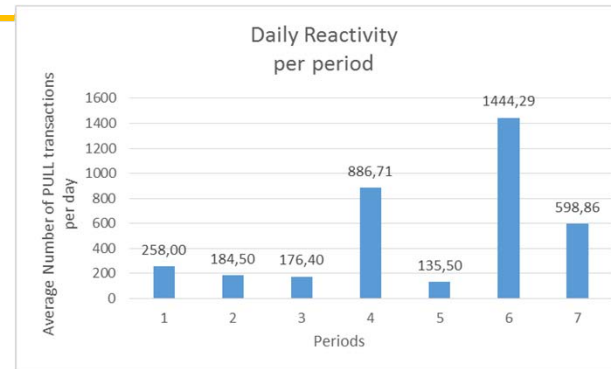
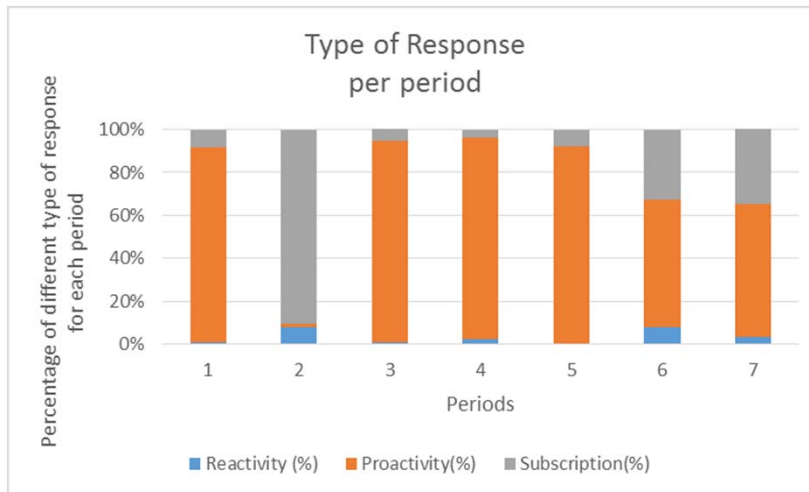




System Use Metrics Analyses Considerations



- **Reactivity**
 - evaluates the number of PULL transactions
- **Proactivity**
 - evaluates the number of PUSH transactions
- **Subscription**
 - evaluates the number of Subscription transactions



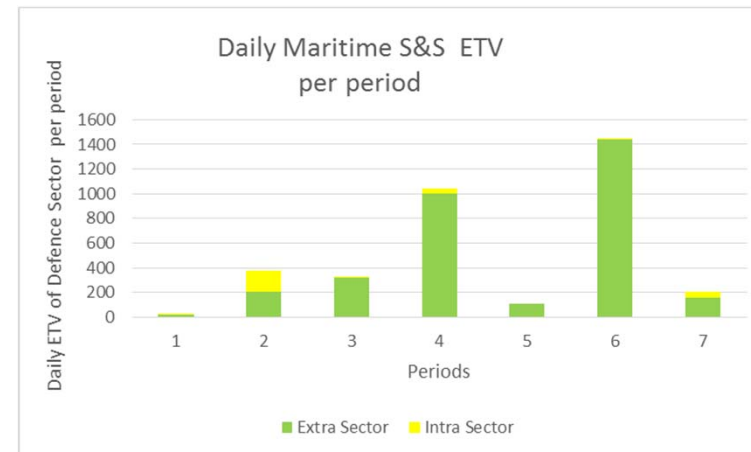
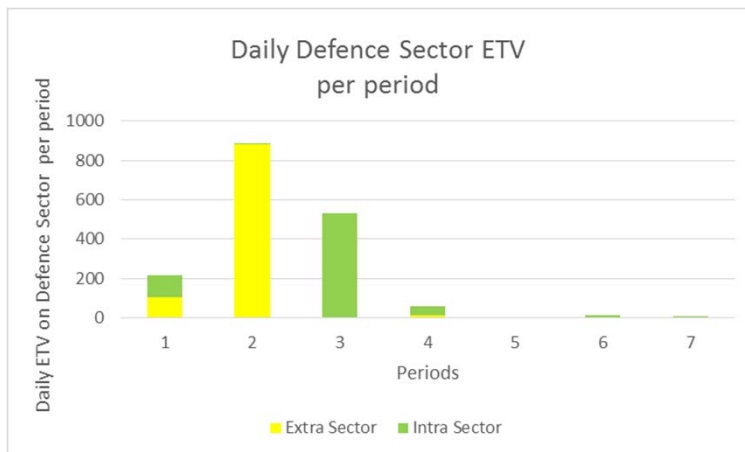
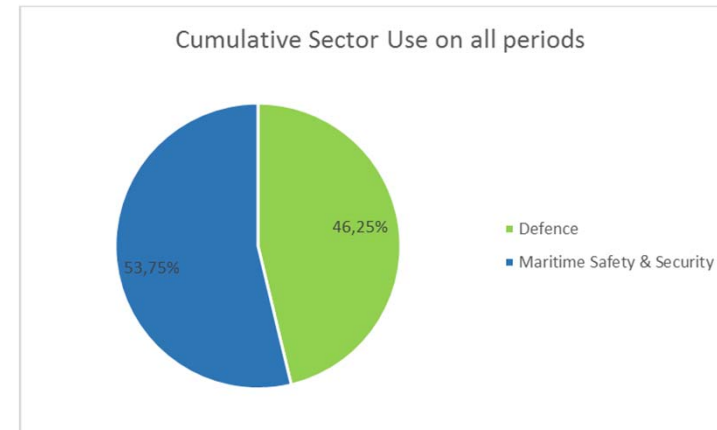


System Use Metrics Analyses Considerations



- **Sectors Use**

- evaluates the sectors that have provided information



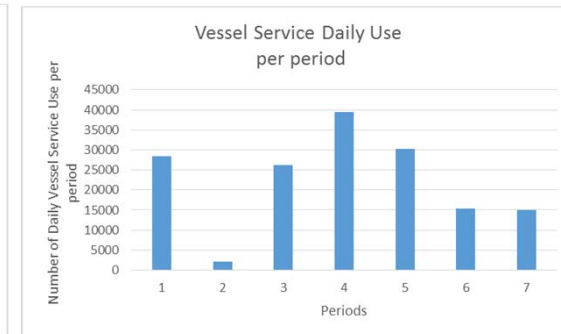
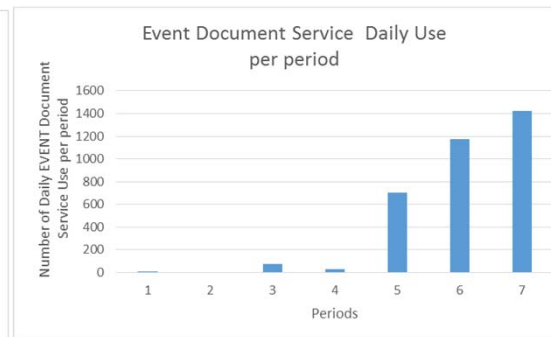
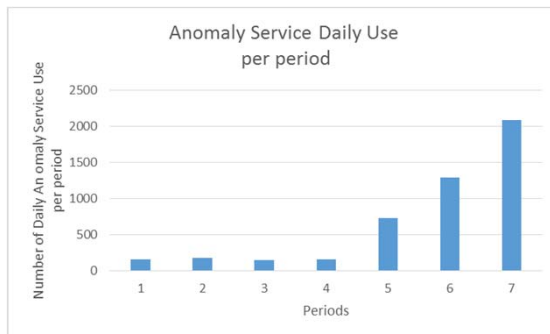
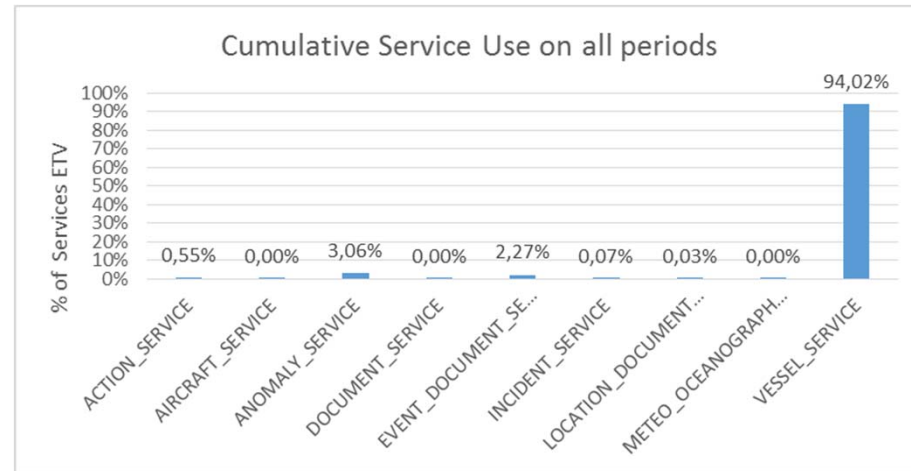


System Use Metrics Analyses Considerations



- **Services Use**

- evaluates the services about which information have been provided





Information Quality Metrics Analyses Considerations

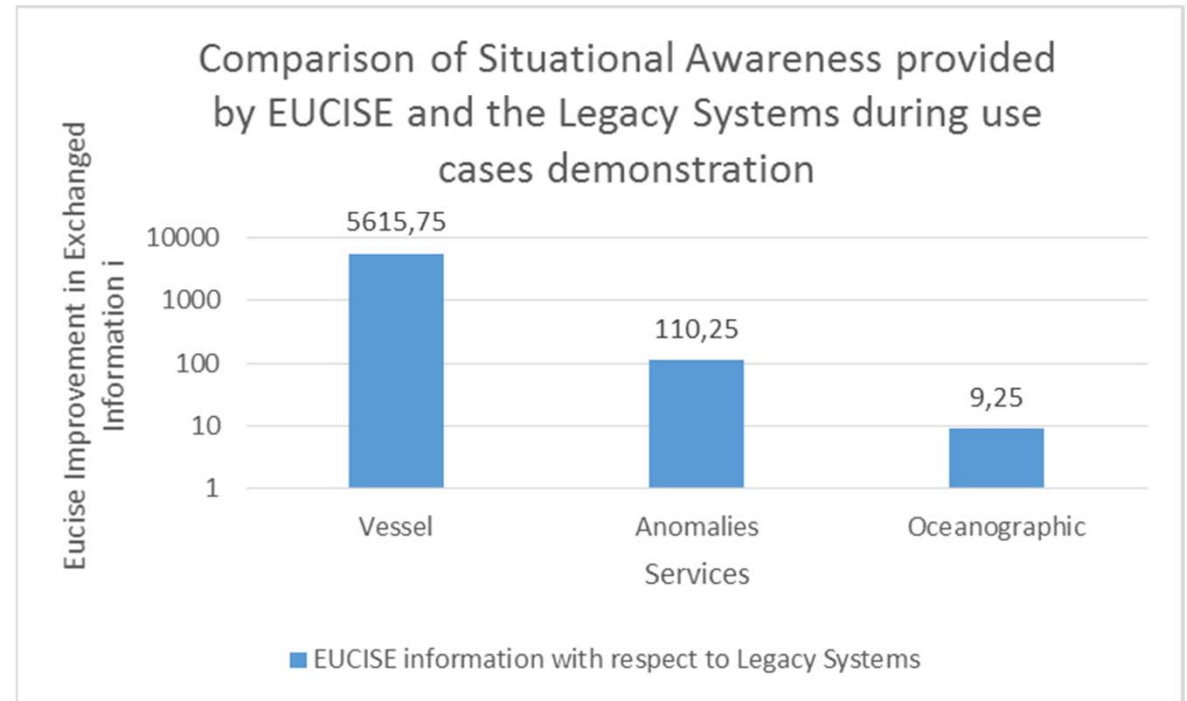


Users' comments:

“Communicating through EUCISE network, ensures reliability and security of data exchange.”

“Validation tests were made in Light Client. Our legacy system does not have this data. Having this data available, increases Eucise value.”

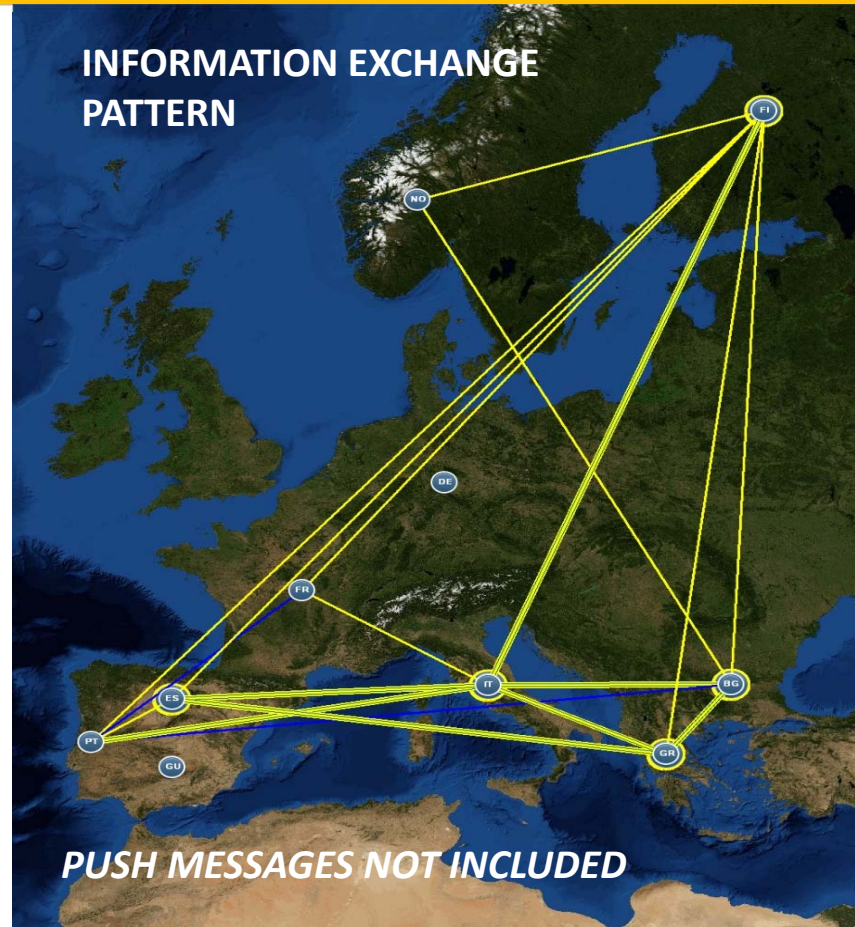
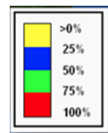
“Collaborative tools bring added value. Operators felt that are a useful tool for exchanging especially risk assessment related information.”





Validation Campaign Preliminary Results

(17 January 2019 – 14 February 2019)



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Benefits of Satellite Monitoring



SEonSE
Smart Eyes on SEas

WebGis Configuration Help Logout

Last update: 2019-01-11 05:01:54 **LIVE ON** Center location ... **Filter active**

Service start on November 17, 2018

- **14 Areas of Interest to monitor**
- **444 Satellite Acquisitions (CSK)**
- **41 Satellite Detected Oil Spills (CSK)**
- **5.328 Satellite Detected Ships (CSK)**
 - (Correlated using 101.669.680 AIS Messages)
- **380 Satellite Acquisition (Sentinel-1) over the Med Sea**
- **17.674 Satellite Detected Ships (Sentinel-1)**
- **277 Meeting at sea detected by satellites**
- **1.372 Meeting at sea detected by AIS in the monitored AOIs**



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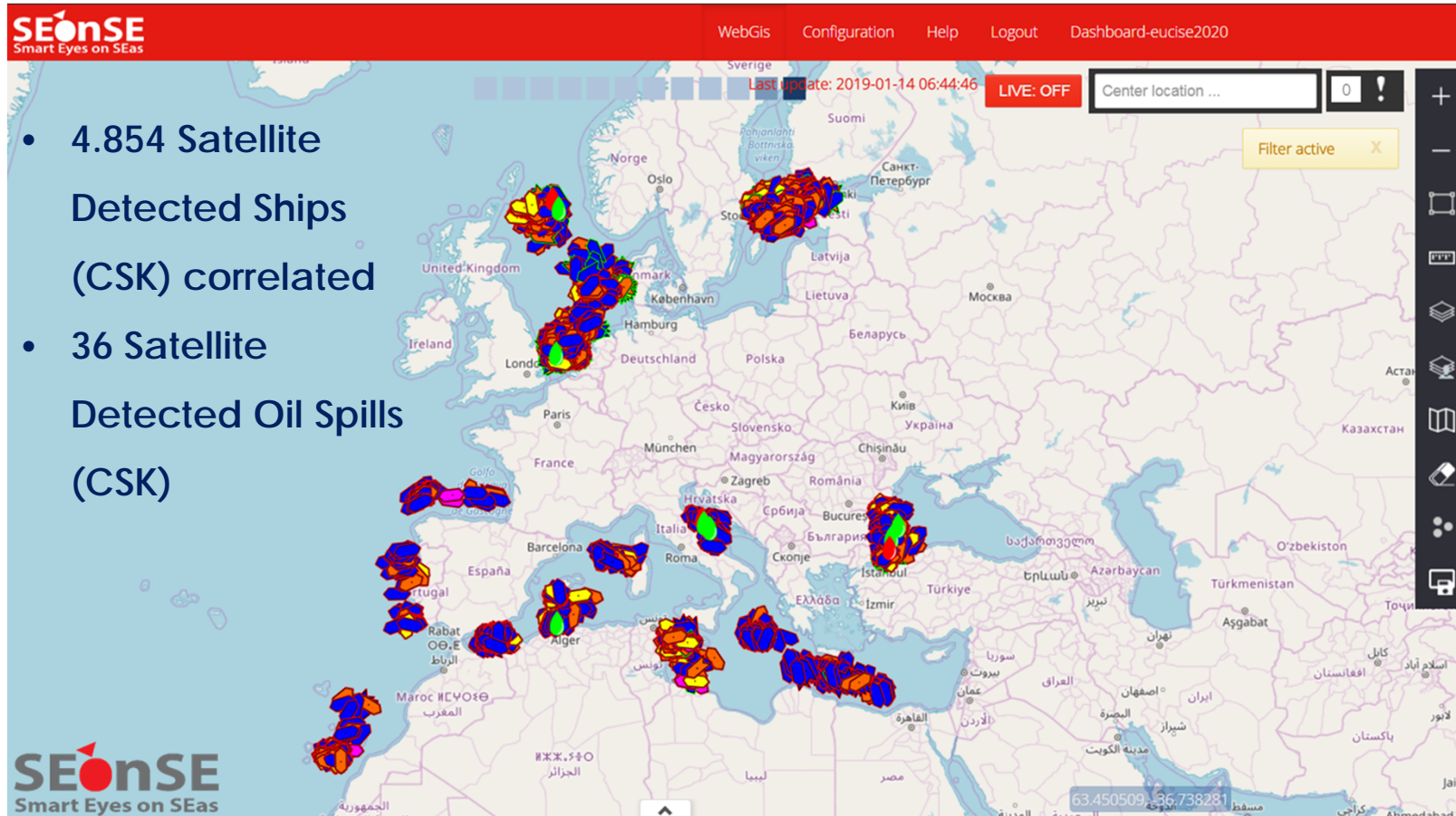




Satellite Ship and Oil Detection (CSK)



Distribution of the satellite ship detection over the monitored areas



- 4.854 Satellite Detected Ships (CSK) correlated
- 36 Satellite Detected Oil Spills (CSK)



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