Optimierte Crew- und Wartungsplanung an Bord mithilfe von SCEDAS®

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From multiple projects with several shipping companies resulted the SCEDAS® software suite with its modules:

- **SCEDAS® Office** for crew demand assessment and workload planning
- **SCEDAS® Onboard** for crew scheduling on board the vessel
- **SCEDAS® Voyage Management** as part of the Onboard and Office modules
- **SCEDAS® Timekeeper** for data collection and analysis on tasks and workloads

**Complex assignment problem**

- Human resources
- Maintenance
- Voyage
- Regulations

**Determination of workload, work schedules and optimal manning level**
SCEDAS®

INTERTWINED CREW AND MAINTANCE SCHEDULING

Transit  Pilot arrival  Approach  Berthing  Port stay

Mooring  Admin

Mooring  Port authorities

Mooring  Bunkering

Mooring  Cargo handling

Cargo handling

Pilot reception

Watch  Various tasks  Rest  Maintenance

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Decision support through SCEDAS®.
Seafarer log-ins with individual ID

Selection of jobs from predefined
Possibility to define additional jobs
Drag-and-drop
Seafarer specifies jobs done

TASK BASED WORK RECORDS
KEY FACTS OF DATA COLLECTION

318,841 recorded work hours

408 harmonized tasks

>1200 PMS jobs per ship
**SCEDAS® WORKLOAD IN NUMBERS**

- **General tasks**: 24%
- **Ship Operation & Administration**: 18%
- **Watch keeping**: 16%
- **Mooring**: 5%
- **Maintenance**: 17%
- **ISPS**: 17%
- **Other**: 3%

- **PMS Job**: 41%
- **Unplanned Maintenance**: 37%
- **Special Maintenance**: 22%

**External**
- **Unplanned Maintenance**: 41%
- **Special Maintenance**: 22%

**Crew**
- **PMS Job**: 24%
- **Unplanned Maintenance**: 17%
- **General tasks**: 17%
DETAILLED WORK SCHEDULES

Validation of current situation:
- Similar ships on the same voyage
  - Why is the crew scheduling different?
- Clarifying the actual way of work
  - Who is assigned to which task and why?
  - Relation of tasks to the voyage
Minimum crew complement and their deployment
CREW DEMAND IN HEADS
SCEDAS® Voyage Management is a tool for holistic voyage management that
- combines navigational route planning with operative scheduling (cargo ops, authorities, provision,...)
- plans the voyage in a sequence of ship operations
- is a central system for voyage updates in a well-defined data format
- eases the complex communication task between stakeholders that share the ship as a common resource
DETAILLED WORK SCHEDULES

Transit  Pilot arrival  Approach  Berthing  Port stay

Mooring  Admin

Mooring  Port authorities

Mooring  Bunkering

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SCEDAS® ONBOARD

Voyage updates
Available Crew
Recent work hours

Detailed onboard work schedules
SCEDAS® REACTING TO CHANGES IN VOYAGE PLAN

- Unexpected delay
- Transit
- Pilot arrival
- Approach
- Berthing
- Port stay

SCEDAS® reschedules

- Transit
- Anchorage
- Pilot arrival
- Approach
- Berthing
- Port stay

- Watch
- Various
- Rest
- Maintenance
NONCOMPLAINECE MINIMIZATION

SCEDAS®

SCEDAS® reorganizes

Ordinary seaman drops out

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Data and algorithm based calculation of adopted crew demand for the current reduced occupancy considering:
- Specific ship class
- Specific route

Quantification of specific organizational measures in terms of crew demand and crew schedule considering:
- PMS Strategy
- COVID-19 measures

Support and improvement of the internal communication by enabling data driven discussions rather than experience and feeling

Cost savings

CURRENT ACHIEVEMENTS

- 408 harmonized tasks
- >1200 PMS jobs per ship
- 318.841 recorded work hours

Image: © Carnival Maritime GmbH
SCEDAS® BENEFITS

- Optimized crew demand
- Assessment of time available for e.g. maintenance tasks
- Risk assessment regarding adherence to regulatory compliance
- Transparency through data driven basis of discussion
- What-if scenario models (e.g. for maintenance strategies)
- Informed decision-making process for crewing budgets
WORKFORCE PLANNING AND COMPLIANCE.
MATHEMATICALLY OPTIMIZED.

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