

Computer Program SAMSON

SAMSON stands for Safety Assessment Models for Shipping and Offshore in the North Sea, with the model various risk assessment calculations can be performed regarding maritime safety. Using a good maritime traffic database, various environmental conditions such as wind and current and different mathematical models, the frequency of different types of “dangerous” events, casualties, can be determined.

The following types of accidents are contained in the SAMSON-program:

- Collision between sailing ships (head-on, overtaking and crossing)
- Collision of a sailing ship with a ship at anchor (ramming and drifting)
- Stranding / grounding of a ship
- Contact with objects such as offshore installations, buoys and wind farms (ramming and drifting)
- Foundering of a ship
- Explosion of fire on board the ship
- Hull or machine failure

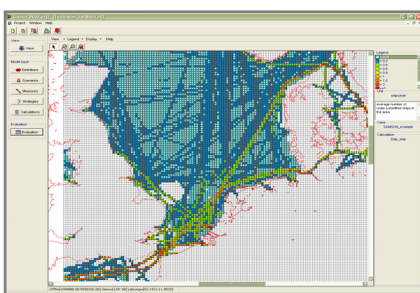
To determine the frequency of an accident (casualty) occurring, the number of “potential” dangerous situations, the so-called exposures, are determined first. For example, the exposure measure for a collision between sailing ships is an encounter between the ships. An encounter occurs when one ship enters a certain domain around on other ship. These exposures are calculated using traffic information, environmental information, some historical information and different (physical based) mathematical models.

The maritime traffic in the model is divided into two main groups: the route-bound and non-route-bound traffic. The route-bound traffic consists of the merchant vessels and ferries sailing along the shortest route from one port to another. The non-route-bound traffic has mainly a mission at sea, containing fishing, supply, work and recreation vessels.

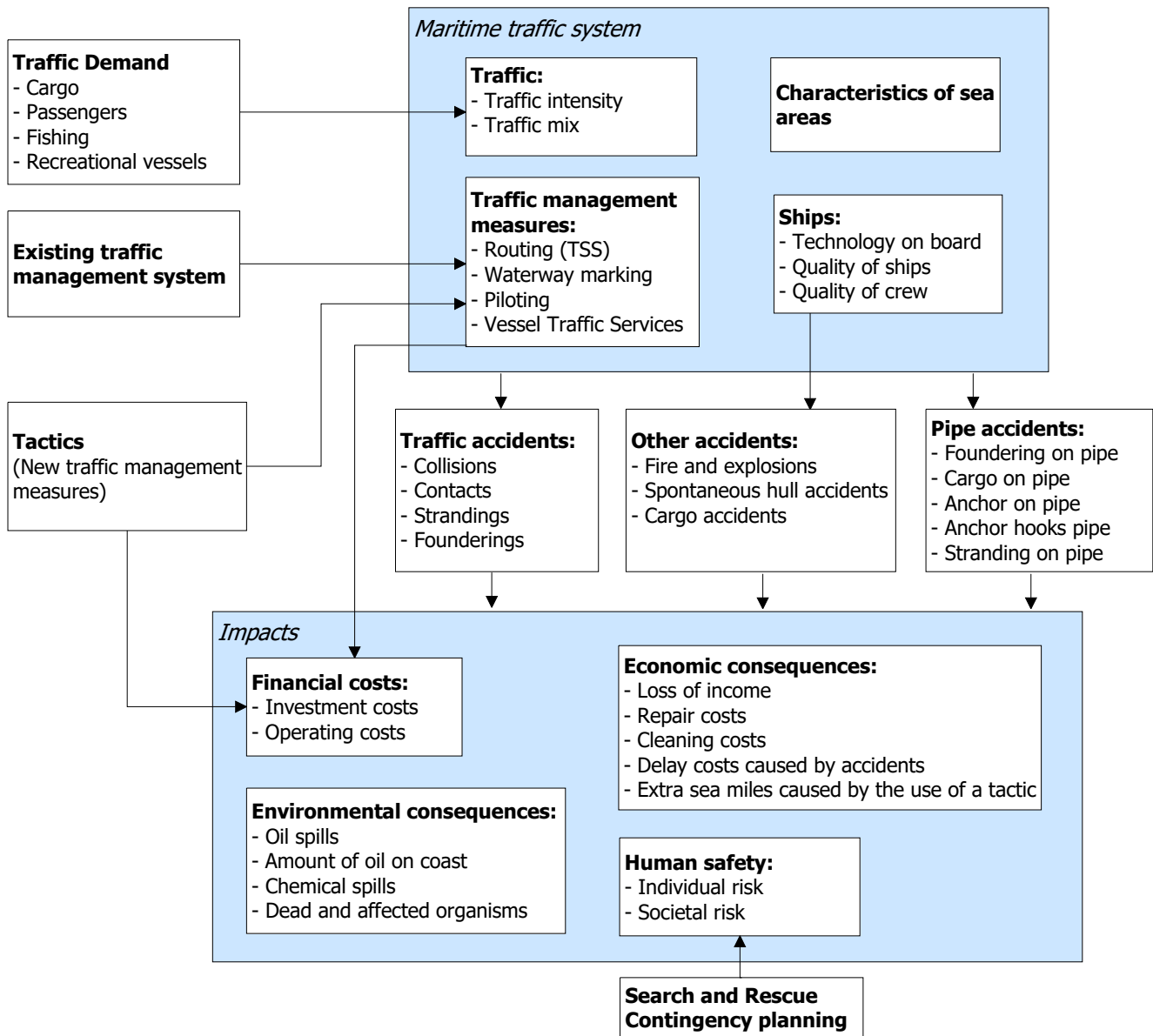
The second and final step in calculating the casualty frequencies, is multiplying the calculated exposures with a casualty rate, corresponding to the accident type, to determine the frequency of the actual accident. A casualty rate defines the probability of a potential dangerous situation leading to an actual accident. The casualty rates are bases on the worldwide accident data from Lloyds, collected between 1990 and 2002.

Within the program one can define different (strategical) measures so the effect / impact of a these measures, that can be taken to increase the maritime safety, can be determined.

So, besides the calculation of the casualty frequencies (safety assessment), the model can also be used for strategical purposes (policy making, contingency planning).



Average number of ships presents on the North Sea at any moment



System diagram for the maritime traffic system

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