SE627

Assignment 1

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* In my opinion, OpsCon is the document for non-technical personnel such as users, clients and stakeholders - explain and introduce the system from their perspective so they can understand system-related questions like: What does the system do? Why should I use the system? What can I get? What are the risks? Therefore, I think OpsCon is a necessary document when communicating with stakeholders. Another important characteristic of OpsCon is it can help us define the requirements of the system. Just like the practice in the class, based on the description in different sessions in the OpsCon document, we are able to summarize a list of detailed potential technical requirements of the system. Therefore, I think OpsCon is not only a helper for better stakeholders’ communication, but also the fundamental of technical documentations.

1. In 1.3 System Overview, the identification of the project sponsors, user agencies, supplier organizations, support agencies, certifiers or certifying bodies is missing, and the operating centers or sites that will run the system is not mentioned as well. These information are important because stakeholders will doubt the feasibility of the system: if no one else is supporting this system, why would we do it? Are there enough resources to deploy? Where and who will operate and run the system? In order to answer these questions and let stakeholders trust the planning is reliable, these information must be included in the OpsCon document.
2. In 3 Current System or Situation, the description of the currently existed system or situation is missing. Although figure 1 shows the current situation, there are no further explanations such as judgements or evaluations about it. Stakeholders may not know, familiar with or understand the current systems for oceanographic research, so they may have the same confusion about this new system as well. In addition, without these information, there are no comparisons such as advantages and progresses between the current oceanographic research system and the new system. Stakeholders may have questions about the details in the following sections. For example, in section 3.1 Background, Objectives, and Scope: stakeholder may ask why ‘the current submarine is constrained to depth of 15,000’ needs to be improved? Is 15,000 a good number or bad? Therefore, an explanation of the currently existed system or current situation is necessary for stakeholders to understand the new system, working flow and reasons for changes.
3. In 3.1 Background, Objectives, and Scope, the goals for the current system, things used to accomplish them and summarization of the scope are missing. If the goals for the system are not defined, the stakeholders will not be able to understand what this system is trying to accomplish. As for missing definitions of strategies, solutions, tactics, methods or techniques that will be used, stakeholders cannot determine the feasibility of system construction and the success of the outcome. The missing scope summarization such as modes of operation, classes of users and interfaces to the operational environment will affect stakeholders’ understanding about the overall system. Although those details may be mentioned or included in the sections below, without these definitions and summarizations, the readers must go find those information through the whole document by themselves and they may feel lost when they first read those details. These overviews are important as they help organize the OpsCon document.
4. In 5 Concepts for the Proposed System, the high-level description of the proposed system is missing. This is important because this section is supposed to explain how this system will meet users and buyer’s needs and requirements. Without the description, the rest sections are detailed information that cannot perform the same explanation at a high-level perspective. Stakeholders may have questions like: What is this system’s purpose? What features does it have? How does this proposed system meet our needs? Therefore, the description is necessary for readers to have a high-level understanding of the proposed system and the current section.
5. In 7 Summary of Impacts, the explanations of temporary impacts during the developed, installed or trained period are missing. These information are important because stakeholders will need them to know who will be affected during the construction and prepare for the upcoming changes. Without this information, when the readers look at this section, they will be lost about the system situation when it is being developed, installed or trained: What will happen when the new system is not ready? What should I do before it is ready? So this part is missing in the OpsCon document.

**Deep Sea Vessel**

**General**

1. The Deep Sea Vessel shall have the ability to descend to 35,000 feet below the Earth’s surface.
2. The Deep Sea Vessel shall have capability to examine sunken ships.
3. The Deep Sea Vessel shall have capability to examine wildlife in deeps down to the ocean floor.
4. The Deep Sea Vessel shall operate without operator input.
5. The Deep Sea Vessel shall accept operator’s input from The Support Ship.
6. The Deep Sea Vessel shall have support equipment that receives the command from The Support Ship.
7. The Deep Sea Vessel shall have a Support Ship.
8. The Deep Sea Vessel shall explore sunken ships from any depth.
9. The Deep Sea Vessel shall examine wildlife from any depth.
10. The Deep Sea Vessel shall have capability to perform multiple operational runs.
11. The Deep Sea Vessel shall have capability to search different depth ranges.
12. The Deep Sea Vessel shall have capability to collect pictures of fish.
13. The Deep Sea Vessel shall have capability to collect videos of fish.
14. The Deep Sea Vessel shall have capability to collect pictures of plants.
15. The Deep Sea Vessel shall have capability to collect videos of plants.
16. The Deep Sea Vessel shall have capability to collect pictures of mammals.
17. The Deep Sea Vessel shall have capability to collect videos of mammals.
18. The Deep Sea Vessel shall transmit sensor data to The Support Ship.
19. The Deep Sea Vessel shall transmit control data to The Support Ship.
20. The Deep Sea Vessel shall shut down in heavy storm conditions.
21. The Deep Sea Vessel shall have a power plant.
22. The Deep Sea Vessel shall operate at most eight hours.
23. The Deep Sea Vessel shall cost less than 10 million dollars.
24. The Deep Sea Vessel shall have 5 modes.
25. The Deep Sea Vessel shall have Descending in Depth mode.
26. The Deep Sea Vessel shall have Ascending in Depth mode.
27. The Deep Sea Vessel shall haveInvestigating Wildlife Autonomous mode.
28. The Deep Sea Vessel shall have Investigating Wildlife with Operator Assistance mode.
29. The Deep Sea Vessel shall have Emergency Mode.
30. The Deep Sea Vessel shall have on board systems.

**Descending in Depth mode**

1. The on board systems shall report back current depth to The Support Ship.
2. The on board systems shall report back water pressure to The Support Ship.
3. The on board systems shall report back descend rate to The Support Ship.

**Ascending in Depth mode**

1. The on board systems shall report back ascent rate to The Support Ship.
2. The Ascending in Depth mode shall know remaining power limitations.
3. Ascending in Depth mode shall know when it must ascend.

**Investigating Wildlife Autonomously mode**

1. The Deep Sea Vessel shall record wildlife using a camera.
2. The Deep Sea Vessel shall record wildlife using other sensors.

**Investigating Wildlife with Operator Assistance mode**

1. The Deep Sea Vessel shall receive control commands from operators.
2. The Deep Sea Vessel shall receive research decisions from operators.
3. The Deep Sea Vessel shall have autonomous control.
4. The Deep Sea Vessel shall avoid the ocean floor.

**Emergency mode**

1. The Deep Sea Vessel shall transmit a distress call to allow for location.
2. The Deep Sea Vessel shall have a transmission beacon.
3. The transmission beacon shall operate separately from the data communication.
4. The transmission beacon shall operate separately from the control communication.
5. The Deep Sea Vessel shall ascend to the ocean surface.
6. The Deep Sea Vessel shall allow The Support Ship to locate it.
7. The Emergency mode shall be triggered by a mishap.
8. The Emergency mode shall be triggered by an animal life form colliding with the Deep Sea Vessel.
9. The Emergency mode shall be triggered by command.
10. The Deep Sea Vessel shall not interact with operators.
11. The Deep Sea Vessel shall abort any mission.

**Operation**

1. A single operation shall cost less than 10,000 for power source and associate maintenance.
2. A single operation shall be defined as 7 days.
3. A single operation shall descend 1 time a day.

**Personnel**

**Deep Sea Vessel Operators**

1. The Deep Sea Vessel Operators shall control the Deep Sea Vessel remotely.
2. The Deep Sea Vessel Operators shall monitor the Deep Sea Vessel remotely.
3. The Deep Sea Vessel Operators shall be inside the support ship.
4. The Deep Sea Vessel Operators shall operate at most eight hours.

**Support Ship Operators**

1. The Support Ship Operators shall know the location for oceanographic research.
2. The Support Ship Operators shall bring the submarine to the location.
3. The Support Ship Operators shall assist in placing the submarine into the ocean.
4. The Support Ship Operators shall assist in retrieving the submarine from the ocean.
5. The Support Ship Operators shall assist in managing the on ship equipment.
6. The Support Ship Operators shall assist in connecting power to the equipment.

**Deep Sea Vessel Maintainers**

1. The Deep Sea Vessel Maintainers shall perform maintenance on the Deep Sea Vessel.
2. The Deep Sea Vessel Maintainers shall perform fueling/powering.
3. The Deep Sea Vessel Maintainers shall perform software/data upgrades.
4. The Deep Sea Vessel Maintainers shall verify vessel integrity.
5. The Deep Sea Vessel Maintainers shall aid the support ship operators.
6. The Deep Sea Vessel Maintainers shall aid the loading/retrieving the vessel from the ocean.

**Researchers**

1. The research teams shall work together.
2. The researchers shall interact with the Deep Sea Vessel Operators.
3. The researchers shall redirect the research depending on the current situation.

**Support**

**Support Ship**

1. The Support Ship shall have control devices for operators.
2. The Support Ship shall send operator’s input to The Deep Sea Vessel.
3. The Support Ship shall have support equipment that send commands to the Deep Sea Vessel.
4. The Support Ship shall have combustible fuel material for the power plant in the Deep Sea Vessel.
5. The Support Ship shall have battery powered electrics material for the power plant in the Deep Sea Vessel.
6. The Support Ship shall receive sensor data from the Deep Sea Vessel.
7. The Support Ship shall receive control data from the Deep Sea Vessel.
8. The Support Ship shall have support equipment that receive the data from the Deep Sea Vessel.
9. The Support Ship shall have space for Deep Sea Vessel Operators.
10. The Support Ship shall have space for Support Ship Operators.
11. The Support Ship shall have space for Deep Sea Vessel Maintainers.
12. The Support Ship shall have space for researchers.
13. The Support Ship shall send emergency mode command to The Deep Sea Vessel.
14. The Support Ship shall have support equipment that send emergency mode commands to the Deep Sea Vessel.
15. The Support Ship shall have a launching platform.
16. The Support Ship shall be equipped with lifting mechanisms.
17. The Support Ship shall lower the Deep Sea Vessel to the water.
18. The Support Ship shall raise the Deep Sea Vessel to the water.
19. The Support Ship shall contain space for equipment needed to control the Deep Sea Vessel.
20. The Support Ship shall contain space for equipment needed to record oceanographic research.
21. The Support Ship shall be equipped with physical maintenance mechanisms.
22. The Support Ship shall be equipped with functional upgrades mechanisms.
23. The Support Ship shall be equipped with refueling mechanisms.
24. The Support Ship shall contain space for maintenance equipment.
25. The Support Ship shall contain a place to store the Deep Sea Vessel during transit to the location.
26. The Support Ship shall have compatibility of communicating with Home Site Support.
27. The Support Ship shall have access to Home Site Support information.

**Home Site Support**

1. The home site support shall be on land.
2. The home site support shall provide information for use during operations.
3. The home site support shall provide information for use during maintenance.
4. The home site support shall include documented research at official institutions.
5. The home site support shall include fuel needs.
6. The home site support shall include off ship maintainers.
7. The home site support shall include researchers.
8. The home site support shall include the internet.