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# HUMAN FACTOR IN TEAM INTERACTION, INFORMATION FLOW AND DECISION MAKING WITHIN ISS OPERATIONS

**Abstract**

ISS operations are more dynamic and flexible comparing to nominal orbiting satellite operations. A Human in the loop means that not only operations can be more complex but also that operations are faced with additional constraints to maintain safety of the crew member in the case of both nominal and off-nominal situation requiring a wider real-time expertise and decision making capability. These needs are implemented accordingly by the diversified real-time/near real-time Team available to support operations directly and indirectly. This team includes not only Operations, Engineering and Safety, but planners, medical experts and management. During critical operational phases real time team on console is strengthened by dedicated subsystem experts supplied by the engineering centers. During nominal activities Operators can resort to "off-line" experts who can provide additional engineering expertise in case of anomalies. The interaction of these teams, needed to support the growth in complexity and flexibility given by the presence of the crew, means in consequence an additional level of complexity to the operations through the need to interface among expert having different cultural backgrounds and work approach. This translates into a dependency of ISS Operations from a variety of Human Factors. The management of the complex preparatory activities for on-orbit operations has to cope among other with human dependability regarding the process flow of information and the appropriate consideration of the various contributions from the different, worldwide spread teams in the decision process. In addition the importance and urgency of support information does play in important role in the priority assignment of certain offline task. Communication and agreement of the urgency to fulfill a dedicated offline preparation task between the various parties involved is causing additional challenges for the real-time and near real-time team. Objective of this paper will be to address various topics related to these highly dynamic space operations. Mostly will be achieved via case studies of interaction between Ops, Engineering and Safety, addressing how this was in line with processes and how team perceived these events. An objective of this part would be to identify room for improvement and also way of increasing empathy among the various participating teams, through the understanding of the needs of each participant to the process. Often processes are perceived as not efficient from one player, because they have to accommodate the need of another player.