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ITER—Is it a model For International Scientific Cooperation?

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ITER is an international experimental facility being built by seven Parties to demonstrate the long term potential of fusion energy. The ITER Joint Implementation Agreement (JIA) defines the structure and governance model of such cooperation. There are a number of necessary conditions for such international projects to be successful: a complete design, strong systems engineering working with an agreed set of requirements, an experienced organization with systems and plans in place to manage the project, a cost estimate backed by industry, and someone in charge. Unfortunately for ITER many of these conditions were not present. The paper discusses the priorities in the JIA which led to setting up the project with a Central Integrating Organization (IO) in Cadarache, France as the ITER HQ, and seven Domestic Agencies (DAs) located in the countries of the Parties, responsible for delivering 90%+ of the project hardware as Contributions-in-Kind and also financial contributions to the IO, as “Contributions-in-Cash.” Theoretically the Director General (DG) is responsible for everything. In practice the DG does not have the power to control the work of the DAs, and there is not an effective management structure enabling the IO and the DAs to arbitrate disputes, so the project is not really managed, but is a loose collaboration of competing interests. Any DA can effectively block a decision reached by the DG. Inefficiencies in completing design while setting up a competent organization from scratch contributed to the delays and cost increases during the initial few years. So did the fact that the original estimate was not developed from industry input. Unforeseen inflation and market demand on certain commodities/materials further exacerbated the cost increases. Since then, improvements are debatable. Does this mean that the governance model of ITER is a wrong model for international scientific cooperation? I do not believe so. Had the necessary conditions for success been present at the beginning, ITER would be in far better shape. As is, it can provide good lessons to avoid the same problems in the future. The ITER Council is now applying those lessons. A very experienced new Director General has just been appointed. He has instituted a number of drastic changes, but still within the governance of the JIA. Will there changes be effective? Only time will tell, but I am optimistic.