Definitions of Measures of Criticality (MoCs) to identify and prioritize scientific and technical Questions/Issues that need to be answered to achieve the ST Program Goal (Vision and Mission) – Draft 080410

Scientific Motivation:

1) **Physics Regime (PR):** The degree in which the question/issue defined for the plasmas of the Goal facility is identical to (H), near (M), or removed from (L) the physics regime in the presently available experimental capabilities including STs and Tokamaks. In the case of diagnostics, the degree in which the proposed diagnostic scientific basis and capability can be effectively (H), significantly (M), or not at all (L) addressed using the available experimental capabilities.
2) **Science Gap (SG):** The degree of gap or uncertainty in our scientific and engineering knowledge base needed to enable adequate projections to the design of the ST Goal facility is large (H), moderate (M), or zero (L).
3) **Commonality with Tokamak (CT):** The degree to which the knowledge base for answering the question/issue is strongly common (H), moderately common (M), or not common (L) with the available tokamak knowledge base.

Goal Motivation:

4) **Goal Leverage (GL):** The degree in which the projected performance-cost-risk tradeoffs of the Goal facility can benefit greatly (H), significantly (M), or weakly (L) from answering the question/issue.
5) **Goal Definition Maturity (GDM):** The maturity of the scientific and engineering knowledge base needed to define and quantify the requirements of a needed capabilities in the Goal facility is fully (H), partially (M), or not (L) established.

Broad Opportunities:

6) **Relevant International Capabilities (RIC):** The degree to which the U.K. and Japan ST research programs provide highly (H), moderately (M), inadequately (L) relevant capabilities to answer the question/issue.
7) **Contribution to Fusion Development (CFD):** The degree to which answering the question/issue contributes strongly (H), significantly (M), or weakly (L) to the broader fusion development.