Critical challenges and prominent themes that scientific inquiries might address under the Virtual Organizations as Sociotechnical Systems (VOSS) may include, but are not limited to:

Units and frameworks of analysis-both social and technical: Social units of analysis may be individuals, teams, scientific disciplines, individual or multiple organizations. Technical units of analysis may include specific tools or objects, virtual or immersive environments or "worlds," specialized niches, or collections of such virtual environments. What are the conceptual and comparative frameworks of analyzing virtual organizations? What theoretical, methodological, and empirical approaches can be applied, what need to be adapted, what need to be developed?

Organizational life cycles: What are the stages and causes of virtual organization evolution, including, for example, formation of new organizations, organizational change or transformation, and organizational crisis or decline? How do they vary across task, domain, population, and/or stage of organization lifecycle?

Production and innovation: What technological, social, and legal arrangements support intellectual production and innovation in virtual organizations? How do these arrangements interact? How do they vary across task, domain, population, and/or stage of organization lifecycle?

Organizational structure, scope, and scaling: Are there levels of connectivity, diversity, and interactivity at which scientific production and innovation can be optimized in virtual organizations? How does optimization on these dimensions vary across task, domain, population, and/or stage of organization lifecycle?

Individual and collective motivation: What are the social and technological barriers to and/or enablers of participation in a virtual organization? What are the social and technological forces of coordination, competition, and/or collaboration? How do these forces vary across task, domain, population, and/or stage of organization lifecycle?

Management, governance, and leadership: What are models of governance agreement, and what should they address? How do they interact with the cultures, structures, and arrangements governing the participating individuals and institutions? How do virtual organization and participants understand, negotiate, and prioritize multiple, and what might be conflicting memberships?

Measurement and assessment: What are the tests of efficiency, equity, and effectiveness that can be applied to different types of virtual organizations? How do these conditions vary across task, domain, population, and/or stage of organization lifecycle?

Comparative performance: Under what conditions do virtual organizations outperform co-located organizations? What tasks or processes can be done or done better by virtual organizations that cannot be done or done as well in co-located organizations, and vice versa? What are the advantages and disadvantages of technological-mediation? Under what conditions and how might virtual organizations be instrumented to advance our understanding of certain phenomena better than co-located organizations?