



# Overview of 41<sup>st</sup> ISOC Organization

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# Overview

- A new streamlined two-step review and journal acceptance process
- Addition of several program elements including minisymposia and panel discussions
- Focus on improving interactions amongst participants through expanded poster sessions and focused panels
  - Venue can accommodate up to 1200 papers (oral + poster)
  - Additional space for special sessions

# Drivers for Change

- Adapt to broader participation, changing needs and research (better serving the CI members)
- Encourage even broader participation, especially among early career and industry researchers
- Streamline Symposium/PROCI process
- Encourage innovative research (beyond biz-as-usual)
- Increase the quality and consistency of review(ers) for ISOC presentations and PROCI publication

# ISOC Selection and Journal Review Process

## Symposium paper selection process

Authors will submit four-page paper with specified format (with completed work and statement of oral/poster preference)

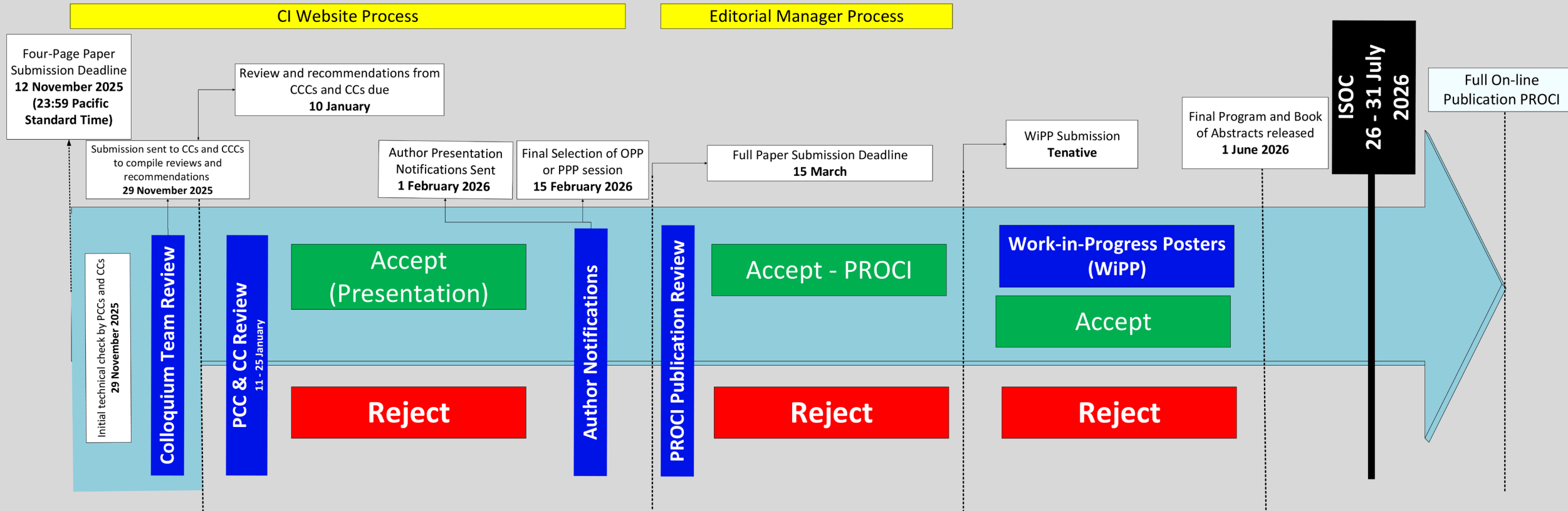
- Each colloquium will have a lead colloquium coordinator (LCC), who manages the paper selection process
- The colloquium co-coordinators (CCCs) are solely responsible for the evaluation process
  - We expect 20-25 papers to be evaluated by each CCC
- Each paper evaluated by two CCCs to reach decision, with tie-breaking from LCC
- LCCs and CCCs provide summary ranking of papers & presentation formats to PCCs

## PROCI paper review process

Authors will expand the short paper to eight-page full-length paper

- PROCI editors have nominated a set of LCCs and subset of CCCs to be guest associate editors (guest AEs)
- Only papers selected for symposium presentation (oral or poster) will be invited for full-length submission
- Regular review process that may call upon CCCs and external reviewers

# Timeline Overview (Subject to Change)



# Colloquia

## Fundamental Processes

Focus on physical and chemical processes; could be agnostic to final application

- Chemical Kinetics
- Flame Dynamics and Transport
- Turbulent Flames
- Detonation & High-speed Combustion
- Heterogeneous Combustion

## Enabling Models, Methods, Tools and Technology

Focus on topics that aid combustion science and practice

- Diagnostics & Experimental Methods
- Modeling Approaches
- Numerical Techniques
- Enabling Concepts

## Applications

Focus on applications-specific issues

- Energy, Material Conversion & Heating Processes
- Low-speed Propulsion
- High-speed Propulsion & Energetics
- Fire and Safety in Combustion Systems

# Fundamental processes

The topics within this group explore the foundational concepts in combustion that could be motivated by but need not directly relate to an application. The exploration is predominantly conducted in canonical configurations that expose the targeted processes

**Chemical kinetics**, including the kinetics of hydrocarbons, oxygenated fuels, and alternative fuels, formation of gaseous pollutants and particulates, elementary reactions

**Flame dynamics and transport processes**, including exploration of laminar flames and physics aspects of ignition, structure, propagation, extinction, dynamics, and instabilities

**Turbulent flames**, including exploration of high Reynolds numbers regimes in single and multiphase flames, and physics aspects relevant to ignition, structure, propagation, extinction, dynamics, and instabilities

**Detonations and high-speed combustion**, including fundamental principles governing compressible reactive flows, dynamic structural and stability issues in flame acceleration, deflagration-to-detonation transition

**Heterogeneous combustion and processes**, pertaining to chemical and physical changes in two-phase flows, metal combustion, solid propellants, coal, biomass, and waste conversion, and fundamental processes in fire

# Enabling Models, Methods, Tools & Technology

**The topics here focus on enabling tools that utilize fundamental processes but with broad utility in applications, and are necessary for the successful realization of combustion systems**

**Diagnostics & experimental methods**, *including novel techniques for measuring combustion processes and sensors in practical systems, and data reduction techniques*

**Modeling approaches**, *including novel representations of governing physics, chemistry modeling, physics-based modeling, reduced-order and reduced-fidelity approaches, data-driven approaches*

**Numerical techniques** *including computational representation of governing equations, deterministic & stochastic approaches, uncertainty quantification, data reduction, and machine intelligence for acceleration of simulations*

**Enabling concepts** *including plasma-aided systems, chemical looping, carbon capture, fuel synthesis, hydrogen production*

# Applications

**The topics within this group are multiscale, multiphysics in nature, and will involve the geometric aspects relevant to a particular application**

**Energy & material conversion and heating processes**, *including topics related to practical systems for power generation, synthesis of nanoparticles, metal combustion, industrial furnaces*

**Low-speed propulsion**, *pertaining to the applications of combustion-based engines for subsonic propulsion, such as internal combustion engines, gas turbines for aircrafts, reciprocating engines and fuel cells*

**High-speed propulsion & energetics**, *pertaining to supersonic or hypersonic propulsion, including scramjets, detonation engines, rockets as well as energetic material*

**Fire & safety in combustion systems**, *including wildfires, industrial fire, and topics on the safety of combustion systems*