Resilient systems withstand, recover from, and adapt to disruptive changes with acceptable degradation in their provided services. Resilience is increasingly important for modern software and software-controlled systems, many of which are required to continually adapt their architecture and parameters in response to evolving requirements, customer feedback, new business needs, platform upgrades, etc. Despite frequent changes and disruptions, software and the wide range of cyber-physical and IoT systems controlled by software are expected to function correctly and reliably. This is particularly important for software and software-controlled systems that provide services which are critical to society and the economy, e.g., in transportation, healthcare, energy production and e-government. Since modern software should be developed to efficiently cope with changes, unforeseen failures and malicious cyber attacks, design for resilience is an increasingly important area of software engineering.

This Special Issue invites novel contributions that advance the state-of-the-art in the design, implementation, verification, operation, and evolution of resilient software and software-controlled systems. Contributions are welcome from researchers and practitioners from a wide range of research communities, including – but not limited to – software engineering, engineering and assurance of self-adaptive and autonomous systems, dependability and resilience, cyber-physical systems, IoT, machine learning, and cloud computing. Manuscripts that extend research published previously (e.g., in conference or workshop proceedings) will only be considered if they include at least 30% of significantly new material; the submission of such manuscripts must be accompanied by a “Summary of Differences” letter explaining how the authors extended their previously published work.

The authors of the best papers from the 11th International Workshop on Software Engineering for Resilient Systems (SERENE 2019) will be invited to submit an extended version of their paper for potential inclusion into the Special Issue, but submission of manuscripts describing novel research not presented at SERENE 2019 is strongly encouraged.
The topics of interest for the Special Issue include – but are not limited – to the following areas:

**Development of resilient software and software-controlled systems**
- Engineering processes for resilient systems;
- Requirements engineering & re-engineering for resilience;
- Frameworks, patterns and software architectures for resilience;
- Engineering of self-adaptive and autonomous systems;
- Design of trustworthy and intrusion-safe systems;
- Resilience at run-time (mechanisms, reasoning and adaptation);
- Resilience & dependability (resilience vs. robustness, dependable vs. adaptive systems).

**Verification, validation and evaluation of resilience**
- Modelling and model-based analysis of resilience properties of software and software-controlled systems;
- Formal and semi-formal techniques for the verification and validation of resilient systems;
- Experimental evaluations of resilient systems;
- Quantitative approaches to ensuring resilience;
- Resilience prediction.

**Case studies & applications**
- Empirical studies in the domain of resilient systems;
- Methodologies adopted in industrial contexts;
- Cloud computing and resilient service provisioning;
- Resilience for data-driven systems (e.g., big data-based adoption and resilience);
- Resilient cyber-physical and IoT systems;
- Global aspects of resilience engineering: education, training and cooperation.

**Tentative Schedule**
- Submission Due: 15th January 2020
- First Review Notification: 15th March 2020
- Revision Due: 15th May 2020
- Second Review Notification: 15th July 2020
- Publication date: Approx. first quarter of 2021

**Submission Guidelines**
All submitted manuscripts must be formatted according to the *Computing*’s instructions for authors, which are available at [https://www.springer.com/607](https://www.springer.com/607). We will accept both LaTeX manuscripts (which must use the Springer templates at [https://www.springer.com/607](https://www.springer.com/607)) and Word manuscripts (for which no templates are available).

**Manuscript length**
Please note that the page limit for Special Issue submissions differs from that of regular *Computing* submissions. Manuscripts submitted to the Special Issue should not exceed 20 pages. Submissions that do not comply with this requirement are likely to be desk rejected without being reviewed.

**Submission instruction**
Manuscripts should be submitted using the online submission system at [https://www.springer.com/607](https://www.springer.com/607).

When submitting a manuscript for this Special Issue, the authors should take care to select ‘Resilient Software and Software-Controlled Systems’ as the Manuscript Type for their submission.