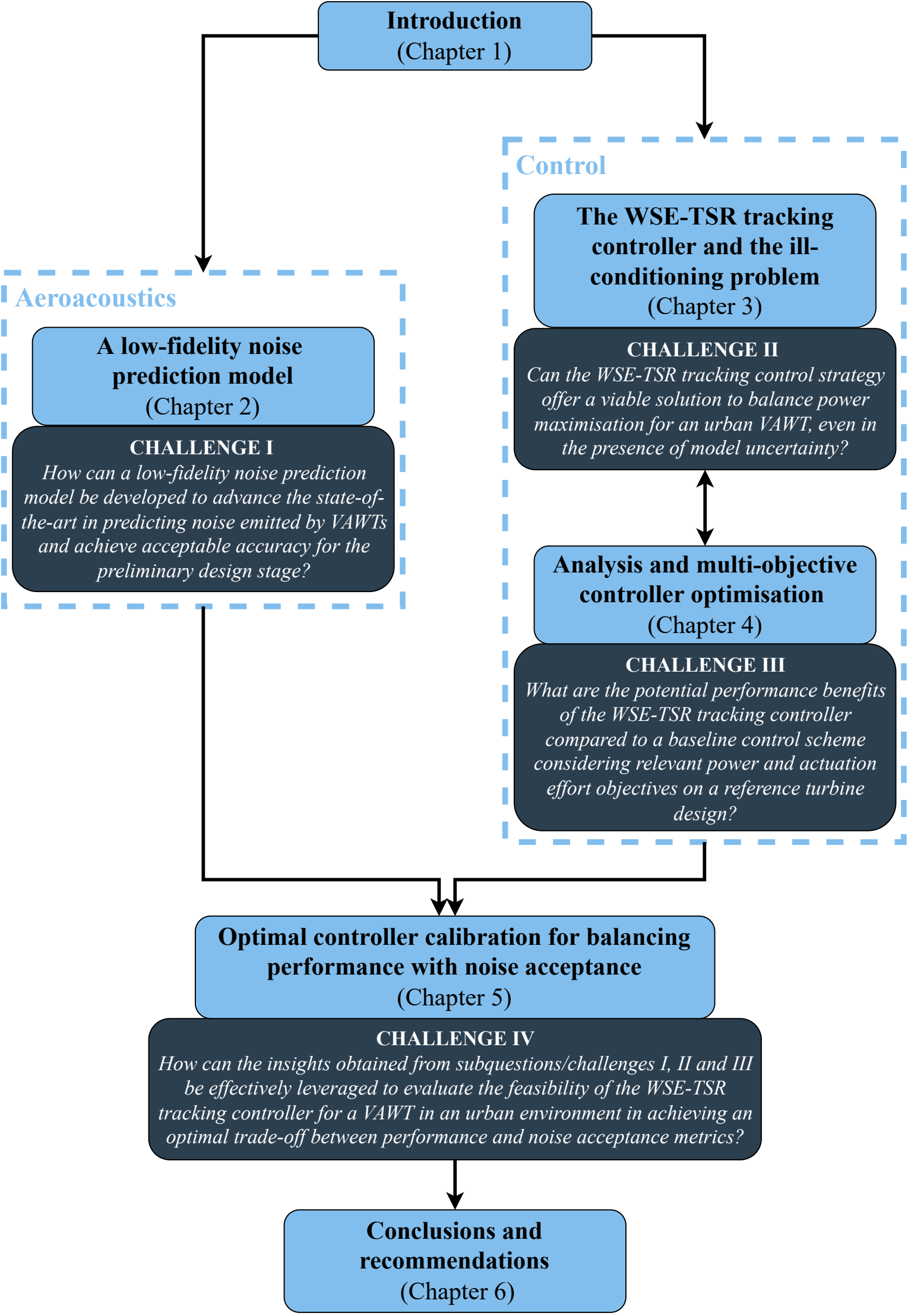
Introduction
(Chapter 1)
Control
The WSE-TSR tracking controller and the ill-conditioning problem
(Chapter 3)
CHALLENGE II
Can the WSE-TSR tracking control strategy offer a viable solution to balance power maximisation for an urban VAWT, even in the presence of model uncertainty?
Analysis and multi-objective controller optimisation
(Chapter 4)
CHALLENGE III
What are the potential performance benefits of the WSE-TSR tracking controller compared to a baseline control scheme considering relevant power and actuation effort objectives on a reference turbine design?
Aeroacoustics
A low-fidelity noise prediction model
(Chapter 2)
CHALLENGE I
How can a low-fidelity noise prediction model be developed to advance the state-of-the-art in predicting noise emitted by VAWTs and achieve acceptable accuracy for the preliminary design stage?
Optimal controller calibration for balancing performance with noise acceptance
(Chapter 5)
CHALLENGE IV
How can the insights obtained from subquestions/challenges I, II and III be effectively leveraged to evaluate the feasibility of the WSE-TSR tracking controller for a VAWT in an urban environment in achieving an optimal trade-off between performance and noise acceptance metrics?
Conclusions and recommendations
(Chapter 6)