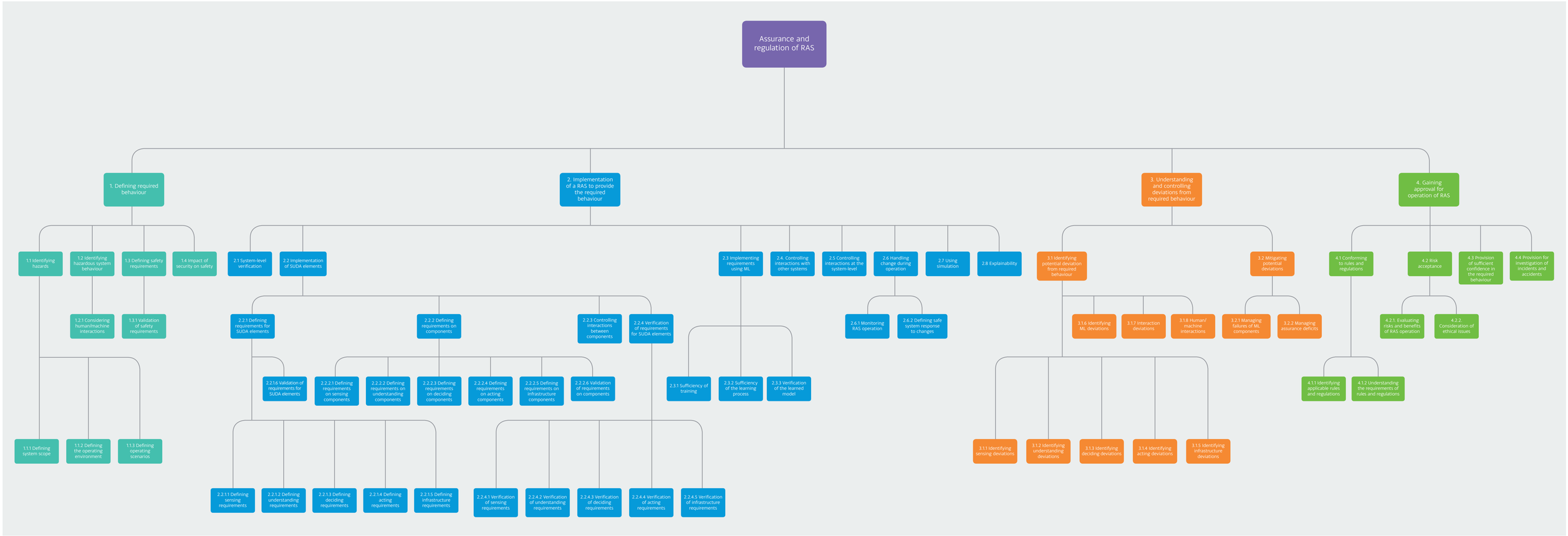
Assurance and regulation of RAS
1. Defining required behaviour
1.1 Identifying hazards
1.2 Identifying hazardous system behaviour
1.3 Defining safety requirements
1.4 Impact of security on safety
1.2.1 Considering human/machine interactions
1.3.1 Validation of safety requirements
1.1.1 Defining system scope
1.1.2 Defining the operating environment
1.1.3 Defining operating scenarios
2. Implementation of a RAS to provide the required behaviour
2.1 System-level verification
2.2 Implementation of SUDA elements
2.2.1 Defining requirements for SUDA elements
2.2.2 Defining requirements on components
2.2.3 Controlling interactions between components
2.2.4 Verification of requirements for SUDA elements
2.2.1.6 Validation of requirements for SUDA elements
2.2.2.1 Defining requirements on sensing components
2.2.2.2 Defining requirements on understanding components
2.2.2.3 Defining requirements on deciding components
2.2.2.4 Defining requirements on acting components
2.2.2.5 Defining requirements on infrastructure components
2.2.2.6 Validation of requirements on components
2.2.1.1 Defining sensing requirements
2.2.1.2 Defining understanding requirements
2.2.1.3 Defining deciding requirements
2.2.1.4 Defining acting requirements
2.2.1.5 Defining infrastructure requirements
2.2.4.1 Verification of sensing requirements
2.2.4.2 Verification of understanding requirements
2.2.4.3 Verification of deciding requirements
2.2.4.4 Verification of acting requirements
2.2.4.5 Verification of infrastructure requirements
2.3 Implementing requirements using ML
2.3.1 Sufficiency of training
2.3.2 Sufficiency of the learning process
2.3.3 Verification of the learned model
2.4. Controlling interactions with other systems
2.5 Controlling interactions at the system-level
2.6 Handling change during operation
2.6.1 Monitoring RAS operation
2.6.2 Defining safe system response to changes
2.7 Using simulation
2.8 Explainability
3. Understanding and controlling deviations from required behaviour
3.1 Identifying potential deviation from required behaviour
3.2 Mitigating potential deviations
3.1.6 Identifying ML deviations
3.1.7 Interaction deviations
3.1.8 Human/machine interactions
3.2.1 Managing failures of ML components
3.2.2 Managing assurance deficits
3.1.1 Identifying sensing deviations
3.1.2 Identifying understanding deviations
3.1.3 Identifying deciding deviations
3.1.4 Identifying acting deviations
3.1.5 Identifying infrastructure deviations
4. Gaining approval for operation of RAS
4.1 Conforming to rules and regulations
4.2 Risk acceptance
4.3 Provision of sufficient confidence in the required behaviour
4.4 Provision for investigation of incidents and accidents
4.2.1. Evaluating risks and benefits of RAS operation
4.2.2. Consideration of ethical issues
4.1.1 Identifying applicable rules and regulations
4.1.2 Understanding the requirements of rules and regulations