CLAIMS

1. A system for modelling and assessment of risks comprising

at least one electronic model specification associated with a system under assessment (SUA), the electronic model specification comprises

an application section associated with at least one element of the SUA; the application section includes at least one of a safety section and a security section associated with the at least one element; the at least one of a safety section and security section comprises a plurality of risk related properties; the plurality of risk related properties mapped from a natural language to a system semantic, the system semantic associated with a physical or functional property of the SUA;

~~and~~ a condition section specifying at least one condition associated with at least one of a safety risk and a security risk to materialize; wherein the at least one condition comprises at least one of the plurality of risk related properties; and

an evaluation engine configured to evaluate the at least one condition associated with the at least one of a safety risk and a security risk to determine if an unmitigated risk exists, wherein the evaluation engine is configured to receive a set of reference parameters from the SUA to define a search space associated with the at least one condition, and wherein the defined search space represents a set of solutions that comprises one or more unmitigated risks.

2. The system of claim 1, wherein the defined search space is reduced by substitution and removing redundant or duplicate solutions.

3. The system of claim 1 or 2, wherein the electronic model specification comprises a definition section defining a plurality of general elements associated with the SUA.

4. The system of any one of the preceding claims, wherein the application section comprises a world section, the world section comprises at least one general property.

5. The system of any one of the preceding claims hosted by a network, wherein the at least one electronic model specification resides in a first network node and the evaluation engine resides in a second network node.

6. The system of any one of the preceding claims, further comprises a plurality of electronic model specifications, wherein each of the plurality of electronic model specifications is associated with at least one of an equipment, an operation, a facility, an infrastructure, a vehicle, a furniture of the SUA.

7. The system of any one of claims 1 to 6, wherein the search space is represented as a deterministic model.

8. The system of claim 7, wherein the deterministic model is a SMT model.

9. The system of claim 7 or 8, wherein the deterministic model is evaluated to a Boolean result.

10. The system of claim 1, wherein the at least one condition is represented as a Boolean formula of the plurality of risk related properties.

11. The system of claim 10, wherein the evaluation engine is operable to generate an evaluation model, the evaluation model includes the Boolean formula.

12. The system of claim 9 and 11, wherein if the Boolean formula is evaluated to a Boolean “True”, the evaluation engine evaluates that an unmitigated risk is present, and wherein if the conjunctive formula is evaluated to a Boolean “False”, the evaluation engine evaluates that the unmitigated risk is not present.

13. A method for modelling risks of a system under assessment (SUA) comprising the steps of:

(a.) defining an application section associated with at least one element of the SUA;

(b.) defining within the application section at least one of a safety section and a security section associated with the at least one element, the at least one of a safety

section and security section comprises a plurality of risk related properties;

(c.) mapping the plurality of risk related properties from a natural language to a system semantic, the system semantic associated with a physical or functional property of the SUA;

(d.) specifying at least one condition associated with at least one of a safety risk and a security risk to materialize;

(e.) receiving a set of reference parameters from the SUA to define a search space associated with the at least one condition, wherein the defined search space represents a set of solutions that comprises one or more unmitigated risks; and

(~~e~~f.) forming an electronic model specification associated with the SUA~~; and~~.

~~(f.) receiving a set of reference parameters from the SUA to define a search space associated with the at least one condition, wherein the defined search space represents a set of solutions that comprises one or more unmitigated risks.~~

14. The method of claim 13, further including the step of specifying a definition section defining a plurality of general elements associated with the SUA.

15. The method of claim 13 or 14, wherein the step of forming the electronic model specification includes the step of combining a plurality of electronic model specification fragments.

16. A method for assessing risks associated with a system under assessment (SUA) comprising the steps of:

(a.) creating an electronic model specification associated with the SUA;

(b.) configuring the electronic model specification for assessment of at least one risk associated with the SUA;

(c.) parsing the electronic model specification according to the rules of a modelling language to generate a risk model associated with the SUA, the risk model comprises at least one risk; and

(d.) evaluating the risk model to determine if at least one unmitigated risk exists

wherein the generation of the risk model comprises the step of defining a search space associated with at least one condition, wherein the search space represents a set of solutions that comprises one or more unmitigated risks.

17. The method of claim 16, wherein the step of parsing the electronic model specification includes the step of consolidating at least one referenced electronic model specification fragment via an import function.

18. The ~~model~~ method of claim 16 or 17, wherein the step of defining a search space comprises the step of generating an SMT model.

19. A non-transitory computer readable medium comprising instructions which cause the execution of the method of any one of claims 16-18 when the instructions are executed by a processor.

20. A non-transitory computer readable medium comprising instructions which cause the execution of the method of any one of claims 13-15 to create an electronic model specification.