

Smart Connections – System and Requirements Analysis

A central system architecture forms the basis of the activities of all participants as well as their verification in product and process development. It facilitates teamwork, supports internal workflows, and enables the validation and verification of all requirements.

The methodology of e1ns.architect allows to build a model of the system architecture very quickly and systematically. The requirements on a system and/or the customer needs are analyzed and the components that could be used to fulfill the requirements can be identified. This reciprocal process-between the formulation of the requirement and the selection of a component for its implementation, automatically builds a system structure. The division into individual, independent units/elements which can be realized separately is depicted in a hierarchical tree. The analysis also includes the company’s own production processes and the components manufactured by suppliers.

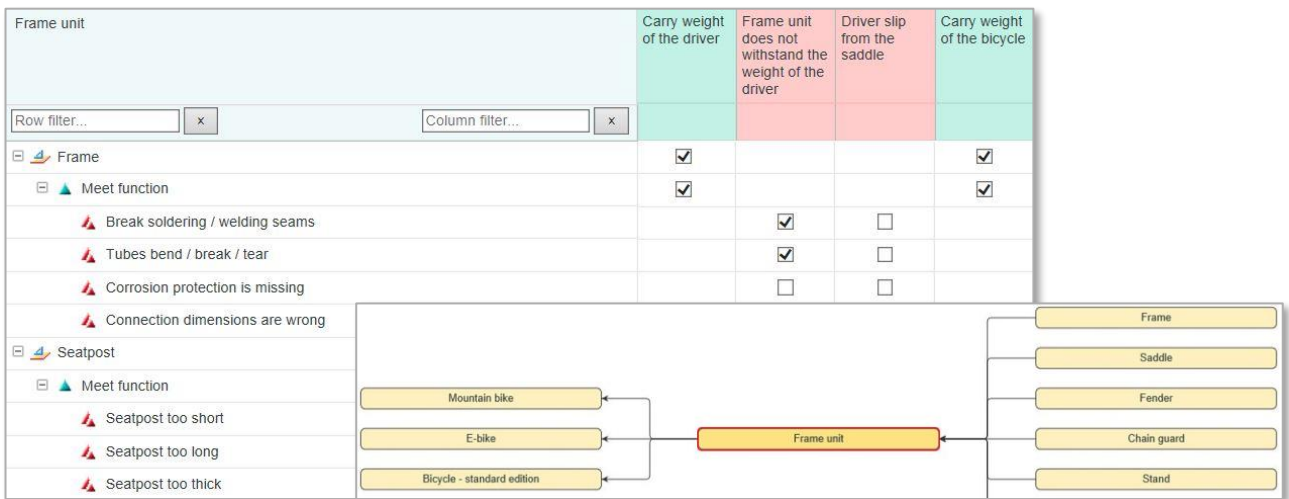


Fig.: Link matrix for systems, functions, and failures as well as visualization as a net diagram.

Applications and Use

- Customer-oriented product planning
- Requirements analysis and detailed specifications
- Configuration of a system design
- Description of functions and responses
- Analysis of system crashes, failures, and their effects
- Visualization of relationships with nets for systems, functions, and failures
- Networking of product requirements and manufacturing processes
- Formulation of safety functions (functional safety)
- System analysis using the QFD (Quality Function Deployment) methodology
- Operation according to AIAG / VDA

Main Features and Functions

System design, requirements, and specifications

- The combination of systematic analysis (link matrix) and the visualization of relationships (nets) is a method that quickly provides robust results.
- A discipline- and solution-independent representation of the overall system is used as the basis for all further activities. All areas in product and process development work on the same system design and contribute to its completion by integrating their specific requirements, analyses, and data.
- Requirements are specified in detail and linked to the elements that are responsible for their implementation. Each requirement is validated (link to the DVP&R).

Functional relations and failure analysis

- Functional relationships result automatically from the system design and are visualized as nets.
- The function net shows how the requirements are related to the implementation. It shows, e.g. the influence of a process step on the product functionality.
- Each function is checked for non-compliance, which leads to the creation of the failure net. During development and in case of complaints, the problem causes need to be identified, and it is possible to see which further problems could arise elsewhere as a consequence.
- The failure net automatically fills in the corresponding FMEA forms with failures, causes, and effects at all system levels.
- For potential failures, safety functions are defined and traceably linked.

Visual work in nets – e1ns.netbuilder

- The integrated e1ns.netbuilder is used to work directly in nets. This is especially recommended for focusing on detailed problems.
- Nets are easily edited and extended (drag and drop). FMEA actions are also added in the failure net. systematically in matrices or visually in nets. Changing the view is possible at any time. Depending on the task or inclination, users work

Your Benefits

Time and cost savings:

- Different areas work on a common system and process representation
- The most recent data is always available
- Repeated tasks are avoided and maintenance effort is minimized
- Easy to find all verifications and documents in the central structure
- Easy to get started quickly due to straightforward operation
- Simple orientation due to visualization and navigation capabilities
- Accessible via a web browser; a local installation is unnecessary