triz
CLUB
MINSK

- Webinars of the TRIZ Ontology project -

"Function" and "Functional Analysis"

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https://triz-summit.ru/confer/tds-2020/web/

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project team

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Ontology "Function"

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First version. Cmap

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Ontology creation. OSA

Highlighted new links between concepts:

o Ways to describe the function:

- Function model;
- Vepol;

• Elepol.

Additional
function classification:

o Subsystem function;

o Super-system function;

o Function of the environmental object.

Function model and su-field -> ele-field model

Function model:

Subject	Act	An object	Parameter	Function type	Power fulfillment
A hammer	Clogs (moves)	Nail	coordinate	Useful	Insufficient
A hammer	Bends (deforms)	Nail	the form	Harmful	

Su-field -> Ele-field model:

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Function in books on TRIZ

G.S. Altshuller, B.L. A. V. Zlotin Zusman and V.I. Filatov "Search for new ideas: from insight to technology".

P. twenty P. 88

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Function in books on TRIZ

Basic GEN3 Innovation Discipline (G3: ID) Training.

P. five P. 95

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Function classification

Supersystem:
Car
(moves)

The object of the surrounding
Wednesday:
Oxygen
(oxidizes)

System:
Engine
(converts
energy)

Subsystem:
Piston group
(changes volume
combustion chambers)

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Function in books on TRIZ

G.S. Altshuller, B.L. A. V. Zlotin Zusman and V.I. Filatov
Searching for new ideas: from insight to technology.

A. Seredinsky, A. A. Gin, A.V. Kudryavtsev, V.Yu. Bubentsov
“Theory of Inventive Problem Solving. Tutorial I
level "

- p. twenty

- p. 15

- p. 18

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Ontology creation. OSA

eleven

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Ontology research

Analysis

Synthesis *Assessment*

TRIZ model

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Ontology research

	Function model	Vepol -> Elepol
Analysis	• Functional and cost analysis • Functional analysis	Su-Field -> Ele-Field Analysis
Assessment	• Functional and cost analysis • Functional analysis	Su-Field -> Ele-Field Analysis
Synthesis	• Functionally ideal modeling (folding) • Function-oriented search • Deployment (lines of systems development)	• Standards • Convolution (lines of development of systems) • Deployment (lines of systems development) • Other lines of systems development

Research topics:

- *How do FIM and the folding line of systems relate?*
- *Is it possible to apply lines of development of systems, in addition to folding, in functional analysis?*
- *Is it possible to estimate the value of the fields?*

Ontology creation. OSA

New concepts are highlighted:

o Useful feature with drawbacks

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Combining functional analysis and standards

Function type	Subtype	System of standards 76
Harmful function		Class 1. Construction and destruction of su-field systems;
	Insufficient function	Class 2. Development of su-field systems; Class 5. Standards for the application of standards;
Useful function flawed	Redundant function	Class 3. Transition to the supersystem and to the microlevel;
	Poorly managed function	Class 2. Development of su-field systems;
	Missing function	Class 1. Construction and destruction of su-field systems; Class 4. Standards for detection and measurement systems;
Useful function		Class 3. Transition to the supersystem and to the microlevel; Class 5. Standards for the application of standards.

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Benefit from new concepts

o Theoretical:

- *New areas of research:*
  - *Combining functional and su-field -> ele-field analyzes;*
  - *Solving the problems of functional analysis using the system of standards 76;*
  - *Combining functional analysis and analysis by system operator;*
  - *Cross-fertilization of methods based on models of function*

o Didactic:

- *Simplification of the approach to teaching the concepts of "Vepol", "Ele-field".*

oPractical:

- *A single template for describing TRIZ tools allows you to link tools and apply different methods to achieve the same goals. In this way the flexibility of analysis and problem solving increases.*

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Repository of up-to-date information

Section on the triz-summit website:

https: // triz-summit.ru/onto_triz/mod/metod/triz/fa/model_fa / func_syst_model / func /

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Ontology
"Functional

analysis"

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First version. Cmap

Ontology creation. OSA

Description template developed tool:

- o Purpose;
- o Models;
- o Rules for building models;
- o Model transformation rules.

Private Functional Analysis Cases:

- o Functional analysis of the system;
- o Functional process analysis.

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Ontology creation. OSA

The objectives of the functional analysis:

o Finding new systemic connections;

o Assessment of the functional model for compliance with the requirements;

o Task detection;

o Search for resources.

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Ontology research

With the help of ontology, the difference between the concepts Function Model and Functional Model

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Repository of up-to-date information

Section on the triz-summit website:
https://triz-summit.ru/onto_triz/mod/metod/triz/fa/

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Benefit from new concepts

o Theoretical:

- *A single template for describing TRIZ tools allows you to find common and different things in methods and tools;*
- *A new approach to the study of functional analysis of processes and streaming analysis;*

o Didactic:

- *Ontology simplifies the presentation of differences between concepts such as "Function model" and "functional model";*

oPractical:

- *Improving the effectiveness of the application of functional analysis through relationships with other TRIZ tools.*

Next steps

- ❑ Adding links with various TRIZ methods based on functional approach;
- ❑ Development of a glossary of existing ontology objects;
- ❑ Development of ontological map pages on the triz-summit.ru website;
- ❑ Building links between functional model-based methods and su-field;
- ❑ Building links between functional methods of TRIZ and other areas of knowledge (e.g. Systems Engineering);

❑ Etc.

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