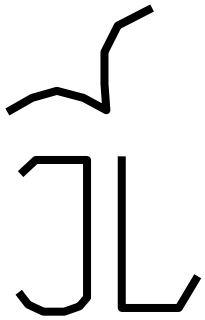
OTSM-TRIZ Technologies for Breakthrough Problem Solving

("Jonathan Livingston" Project)



Insight Technologies Lab

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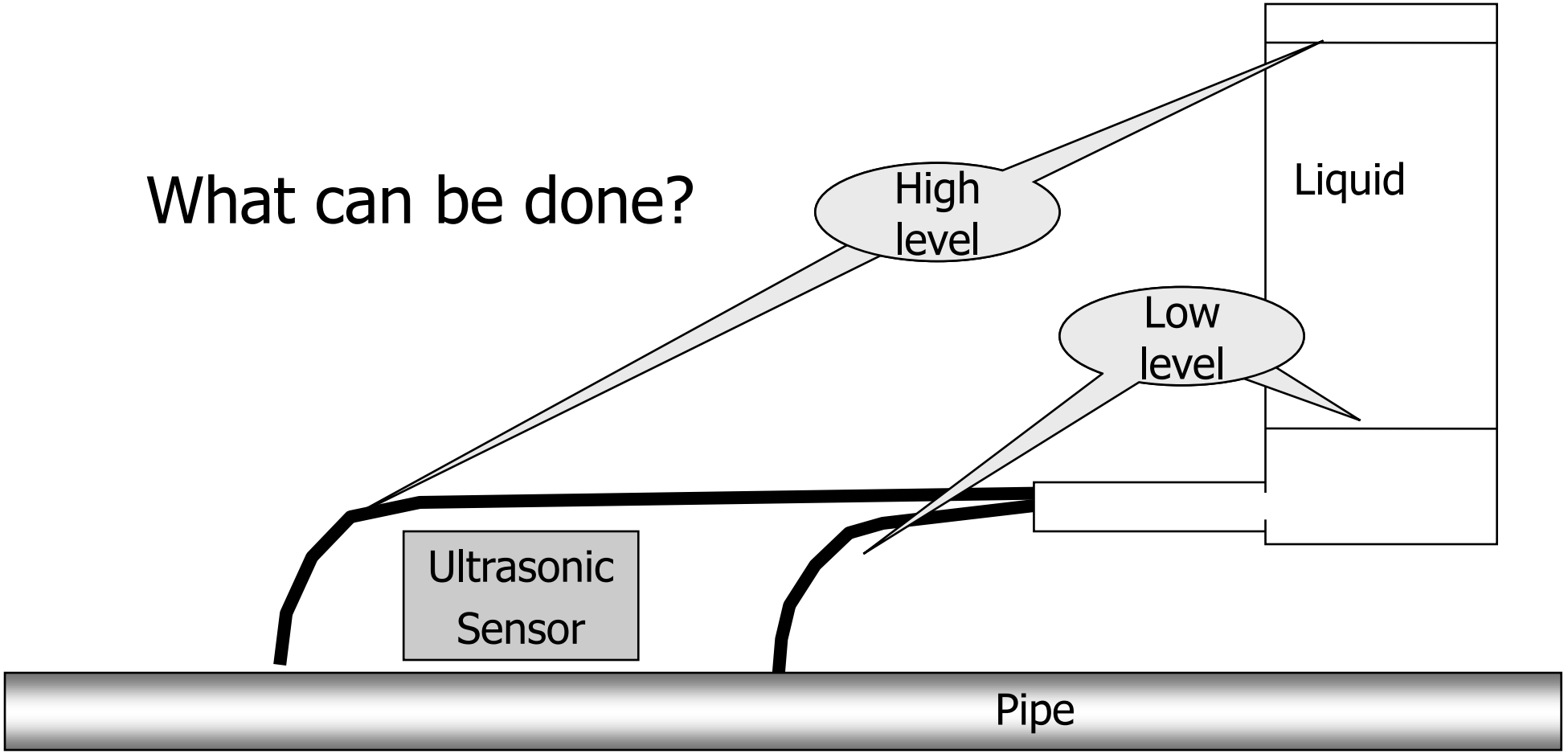
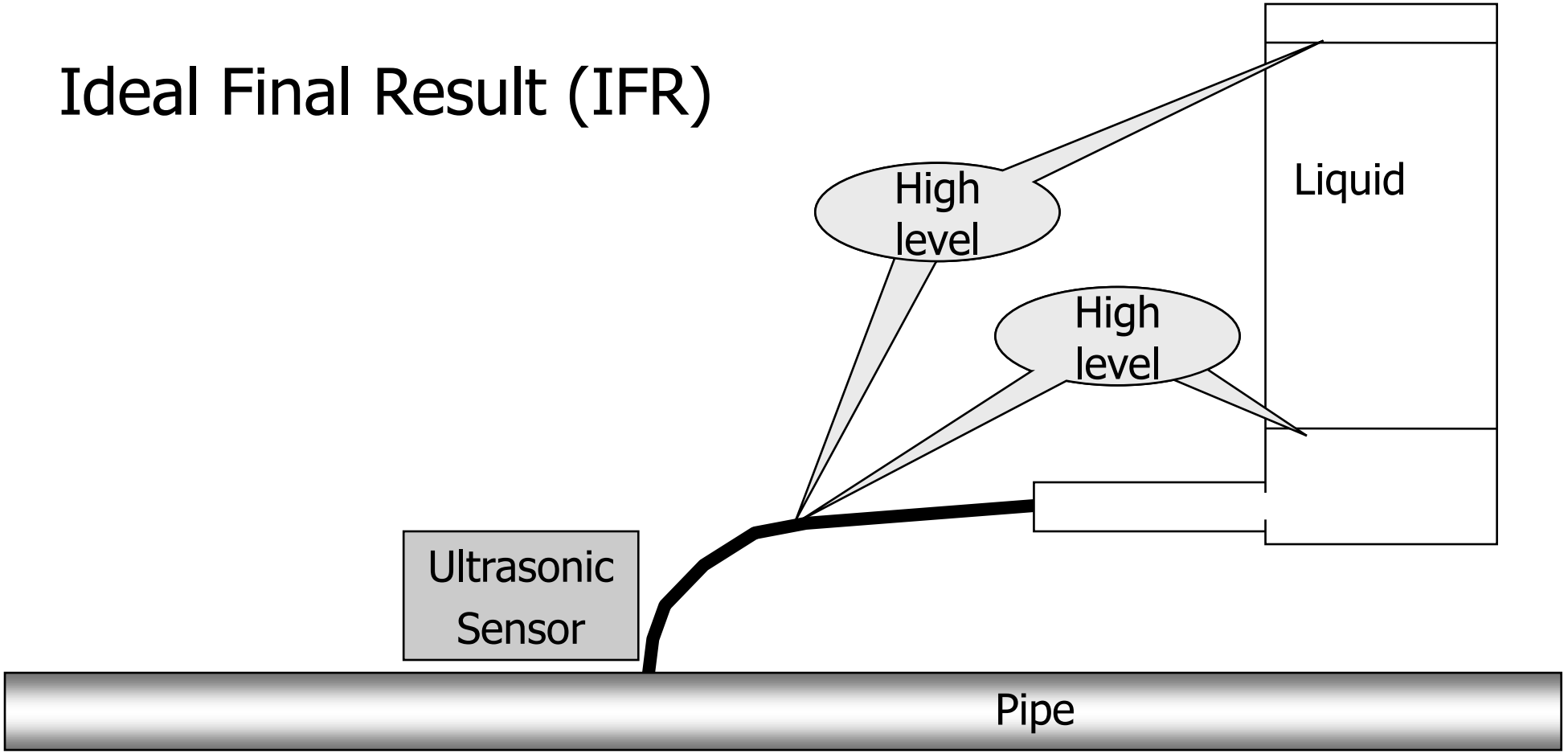
http://www.trizminsk.org/lab

Task about ultrasonic device



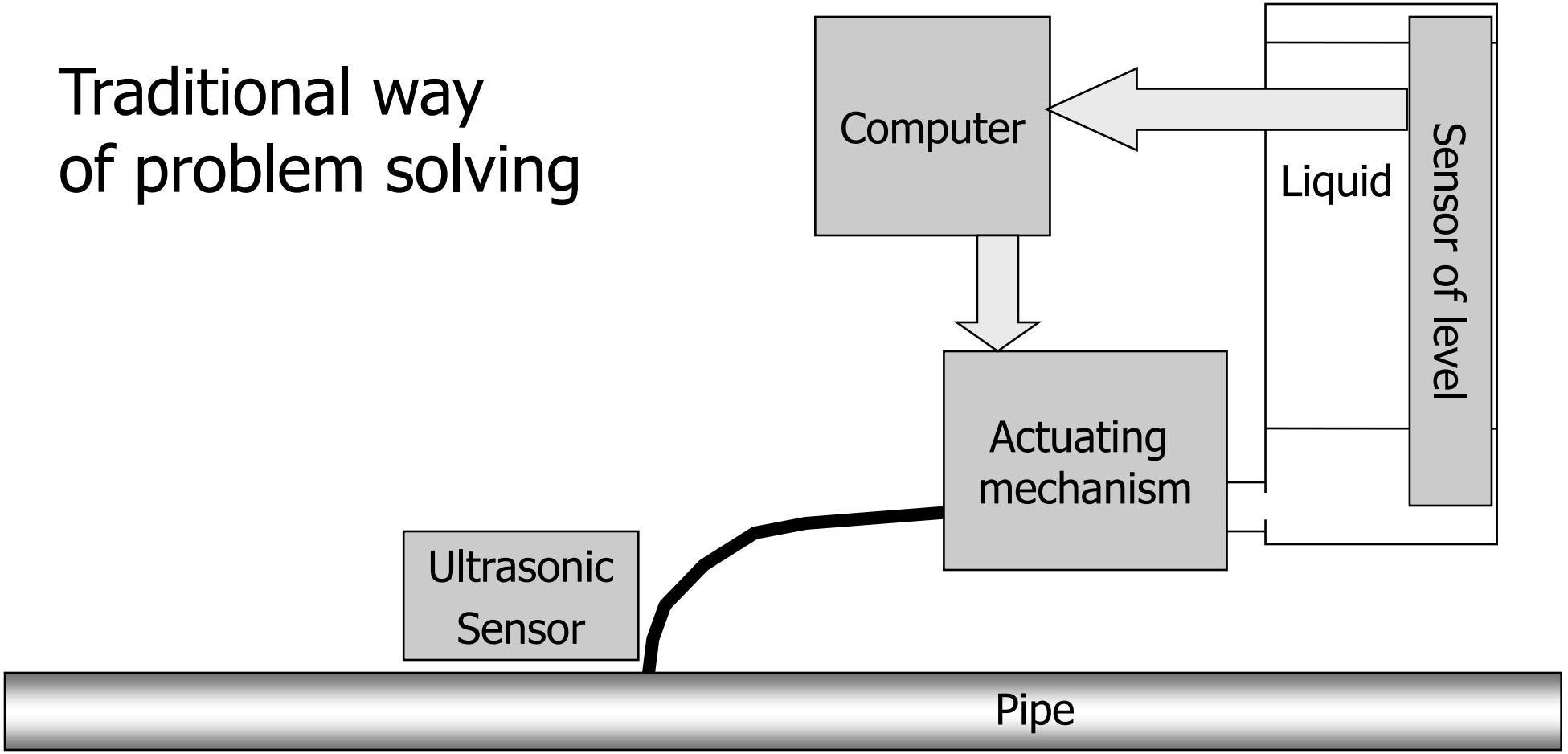
Task about ultrasonic device

Ideal Final Result (IFR)



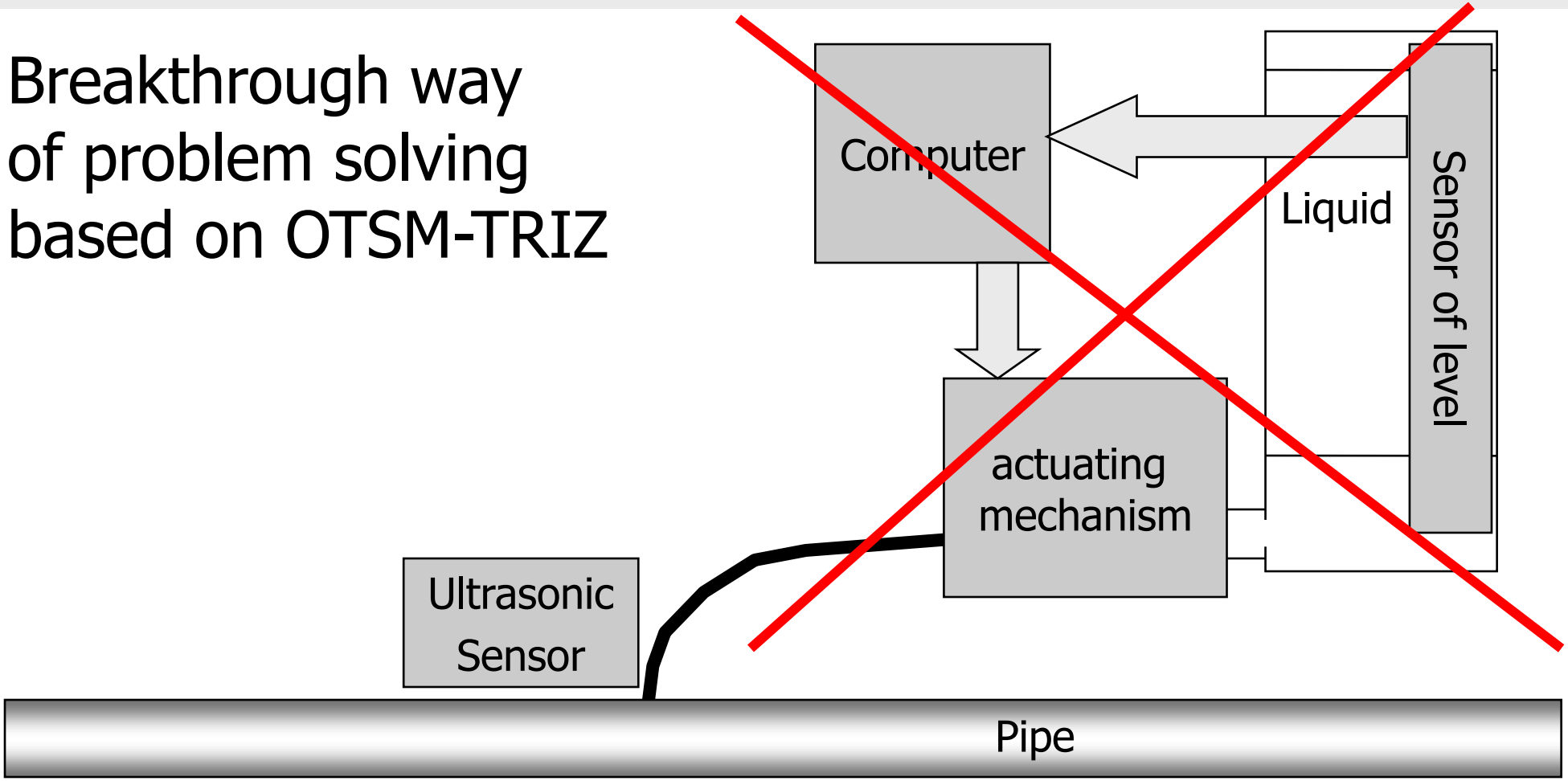
Task about ultrasonic device

Traditional way
of problem solving



Task about ultrasonic device

Breakthrough way of problem solving based on OTSM-TRIZ



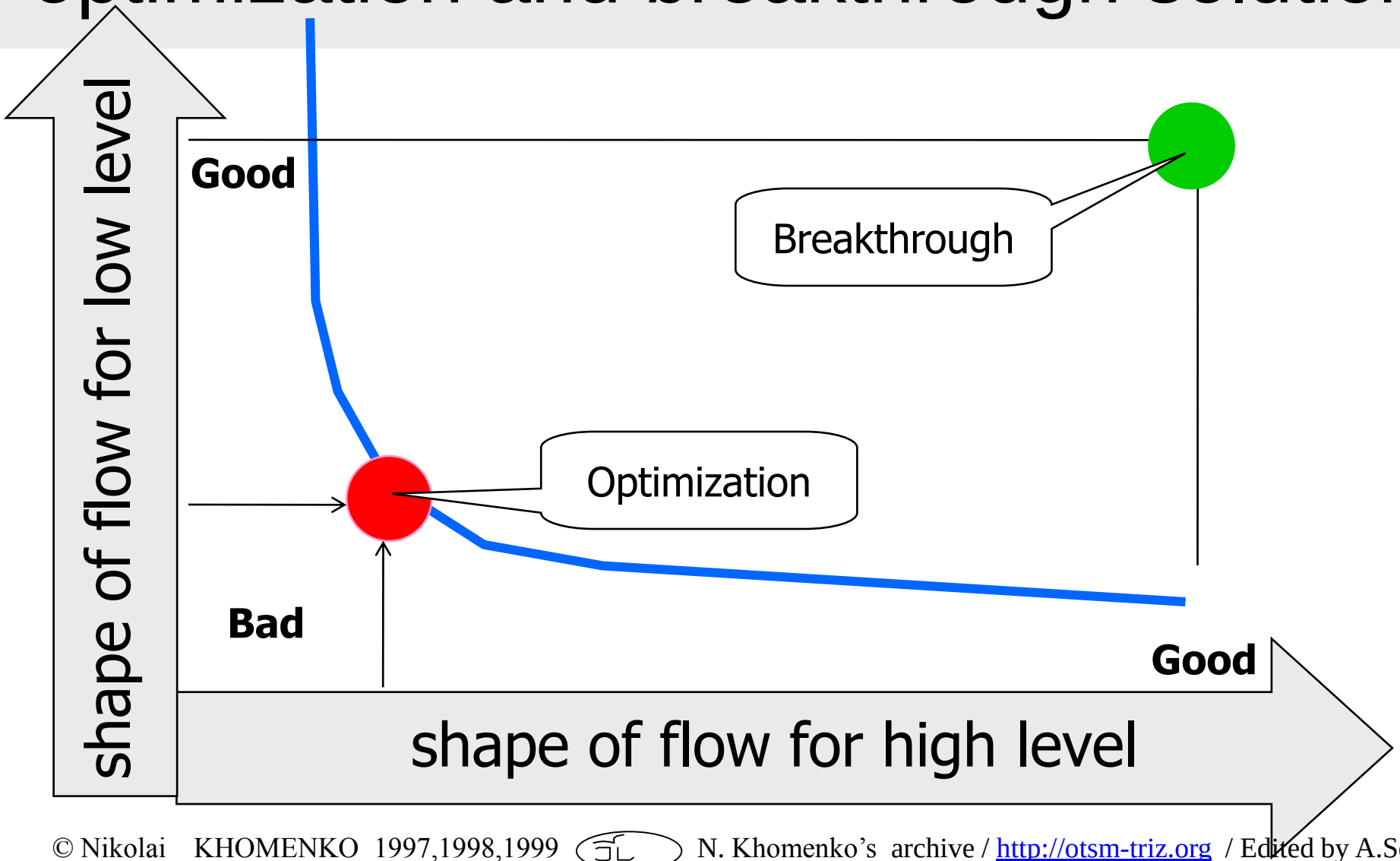
Task about ultrasonic device

Breakthrough way
of problem solving
based on OTSM-TRIZ:

Step 1. Contradiction

If the shape of liquid flow for high level is good
then the shape of liquid flow for low level is bad
and vise versa.

Task about ultrasonic device optimization and breakthrough solutions



Task about ultrasonic device

Breakthrough way
of problem solving
based on OTSM-TRIZ:

Step 2. Ideal Final Result

The shape of liquid flow is good for both high and low levels of liquid.

Task about ultrasonic device

Breakthrough way
of problem solving
based on OTSM-TRIZ:

Step 3. Analysis of resources that produce negative effect

Substance: liquid

Field: gravitation force

Task about ultrasonic device

Comment:

A negative effect is always produced by the objective law!
It means that a breakthrough solution must break the objective law.

However the "mental inertia" prevents one from breaking the law. This is one of the reasons for difficulties.

The task is to identify the objective law that is to be broken and overcome the mental inertia that prevents one from doing it.

Task about ultrasonic device

Breakthrough way of problem solving based on OTSM-TRIZ:

Step 4. Identification of the objective law to be "broken".

It is the law of gravitation. According to the law of gravitation, the shape of liquid flow must be different for different levels. It is necessary to "break" this law.

Task about ultrasonic device

Breakthrough way of problem solving based on OTSM-TRIZ:

Step 5. Intensification of the Ideal Final Result (IFR)

Despite the law of gravitation, it is necessary to ensure the same good shape of liquid flow for every level of liquid.

Task about ultrasonic device

Breakthrough way of problem solving based on OTSM-TRIZ:

Step 6. Stronger Intensification of the Ideal Final Result (IFR)

Liquid and gravity themselves ensure that the shape of liquid flow is the same for every level of liquid.

Task about ultrasonic device

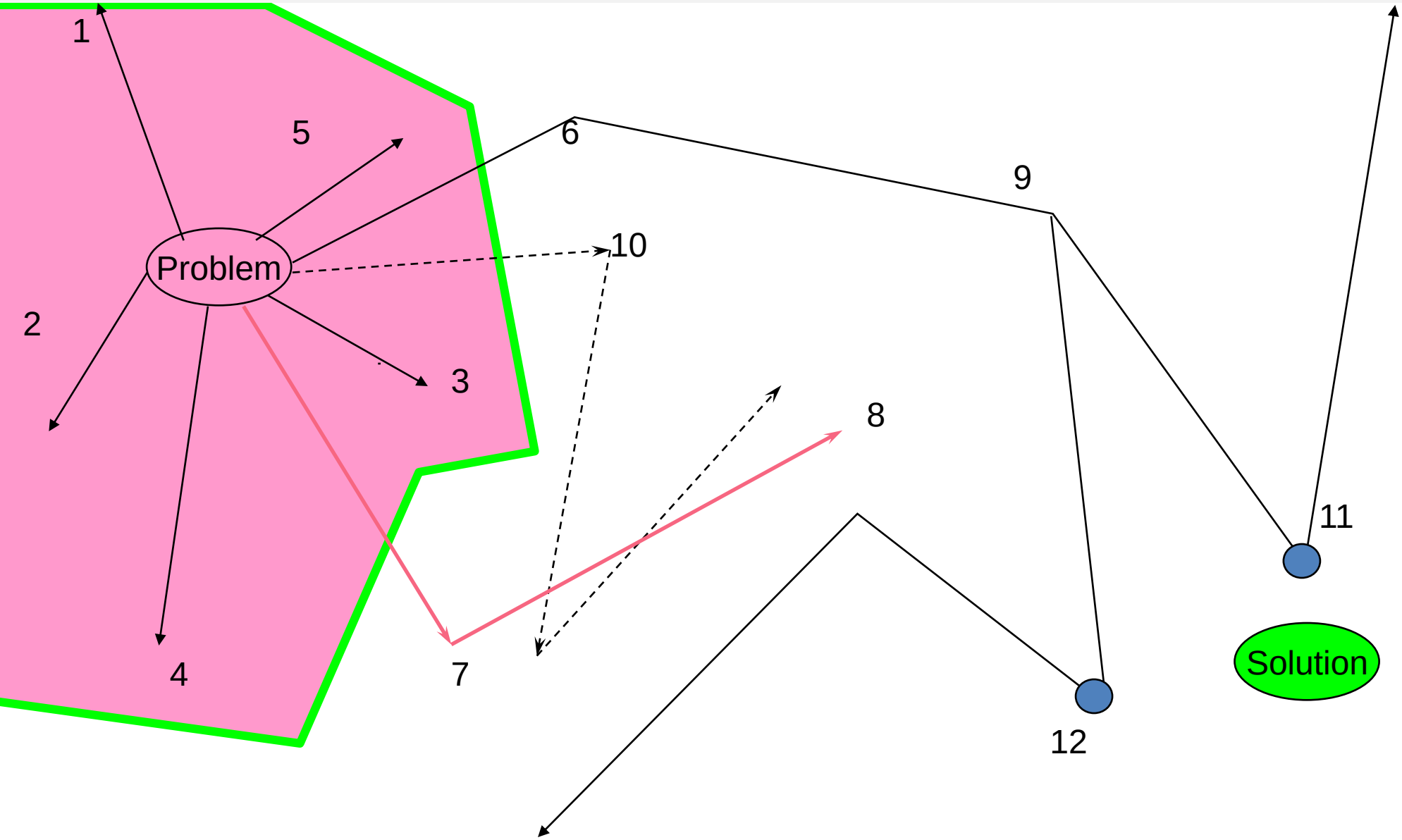
Comment:

At a first glance, it appears impossible!

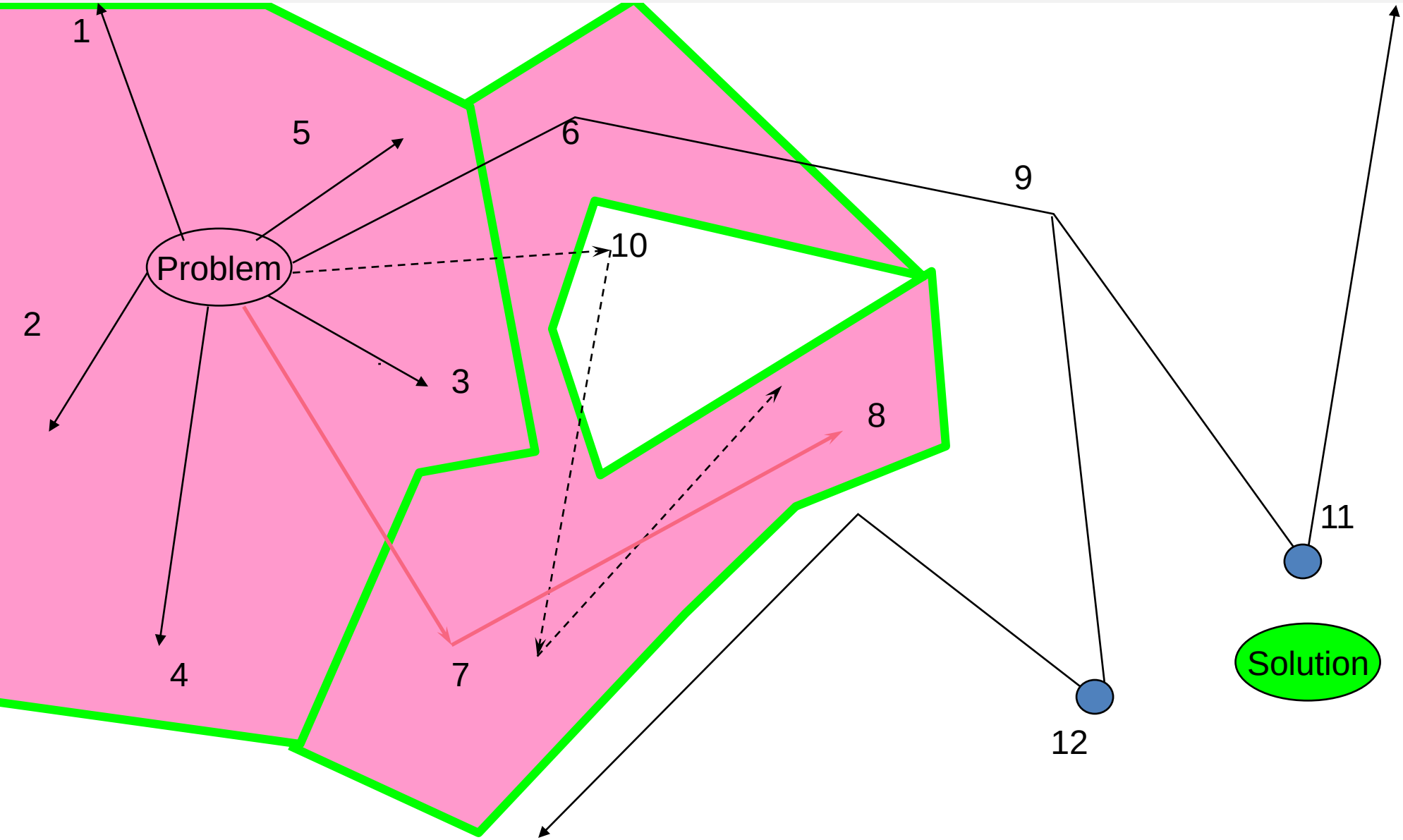
However one has follow this path. OTSM-TRIZ gives us the direction for thinking and the tools for transform “Impossible” into “Possible”.

OTSM-TRIZ technologies of breakthrough problem solving should be followed to obtain the result.

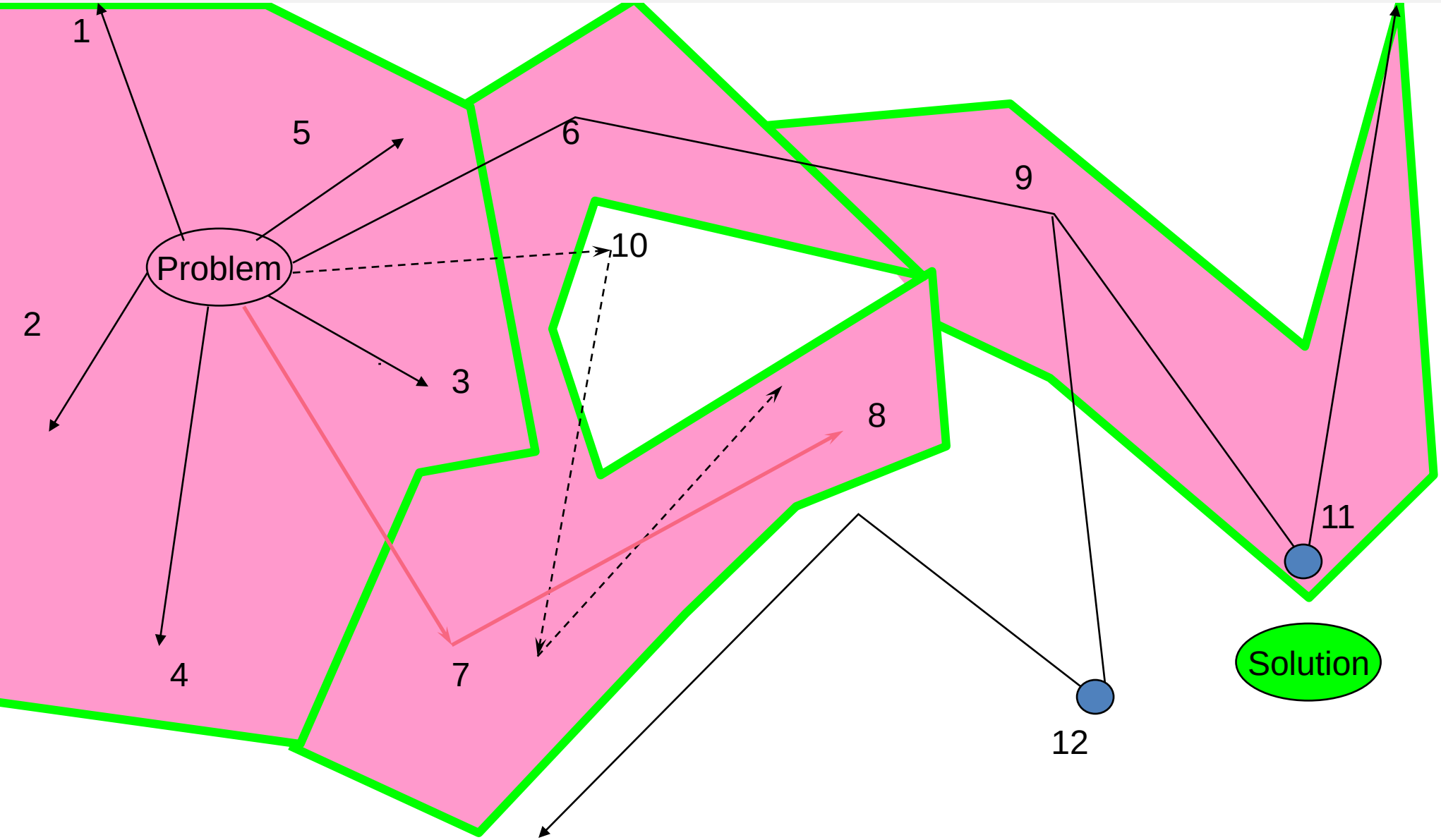
Trials and Errors Method



Trials and Errors Method

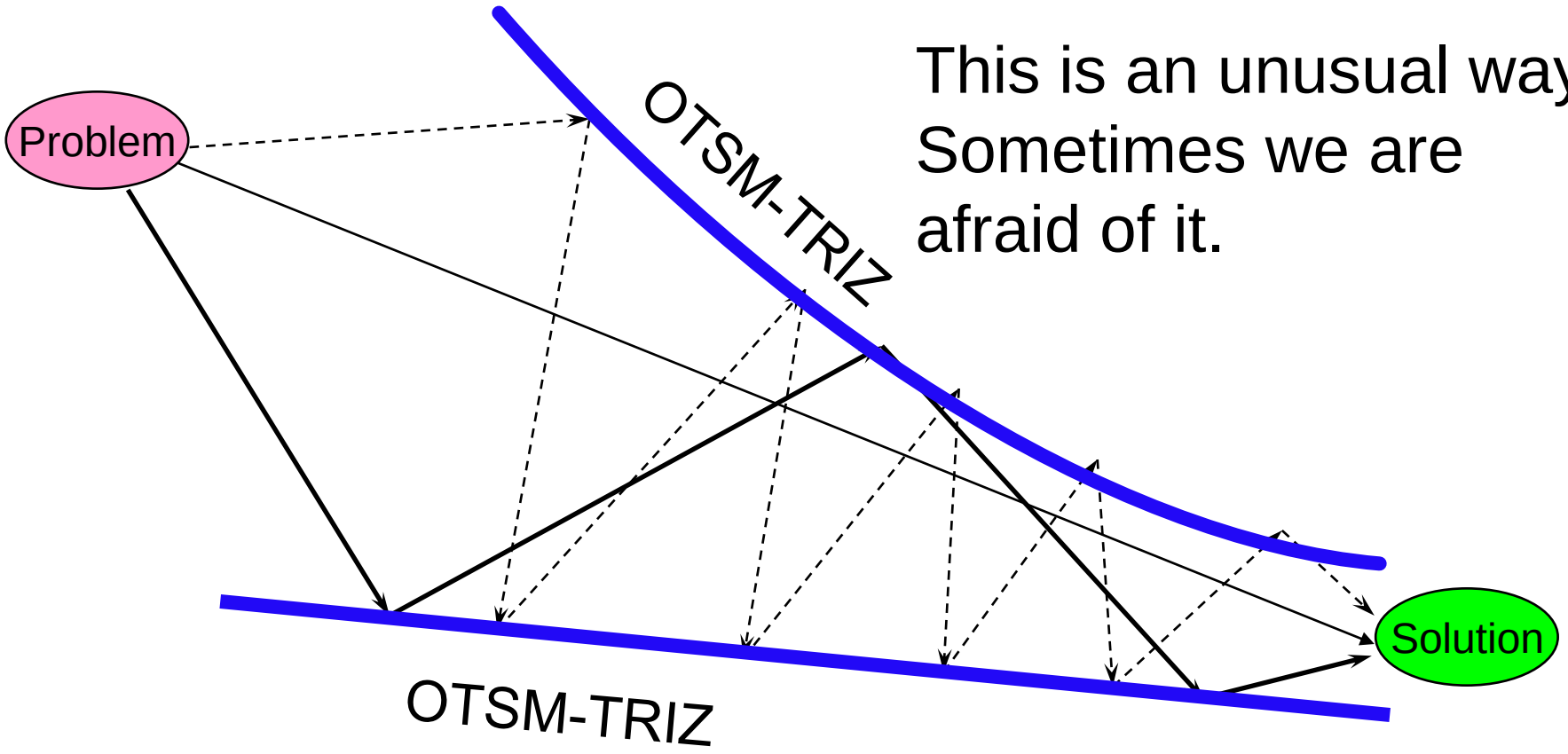


Trials and Errors Method



OTSM-TRIZ technology gives us direction

Each step brings us closer to the result.

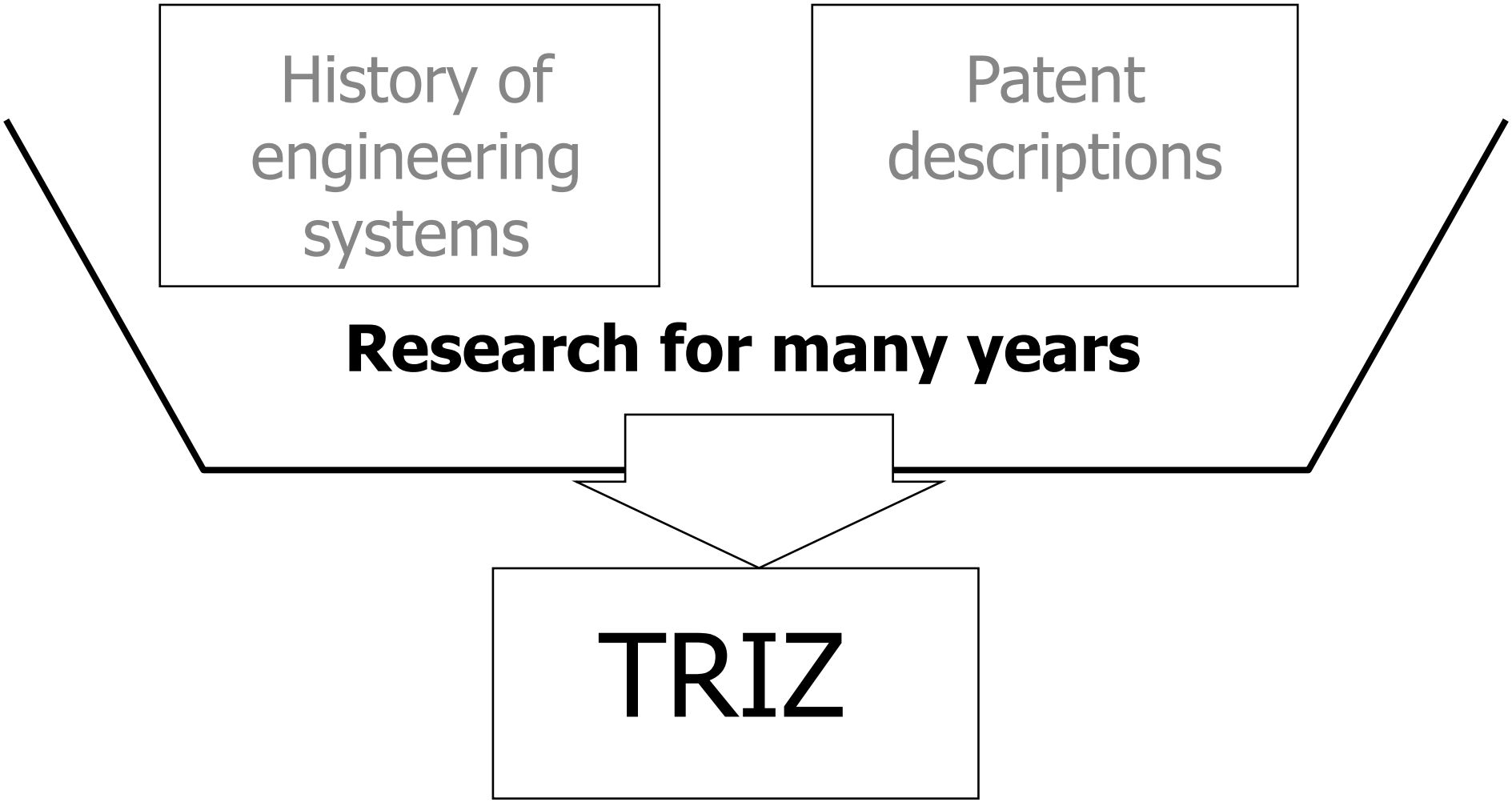


Task about ultrasonic device

Comment:

TRIZ technologies provide us not only with the direction of thinking but also the tools for problem solving: a set of typical solutions (for problems that can be defined as typical *from the TRIZ point of view*) and ARIZ-85-C for non-typical problems.

What is the source of these typical solutions and TRIZ in general?

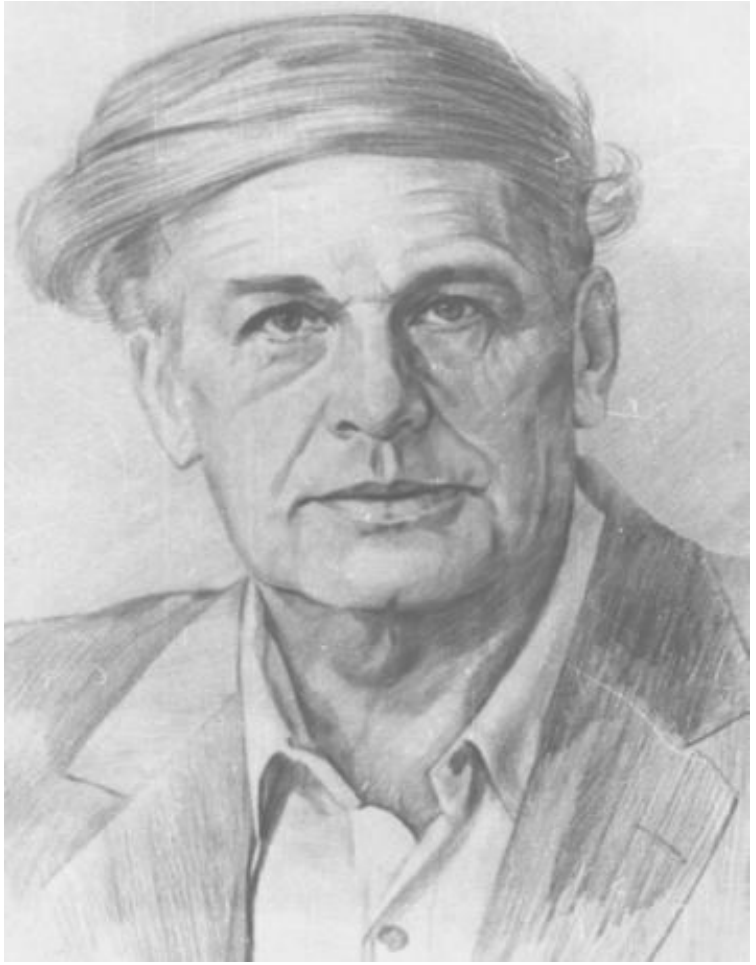


Who developed this research?

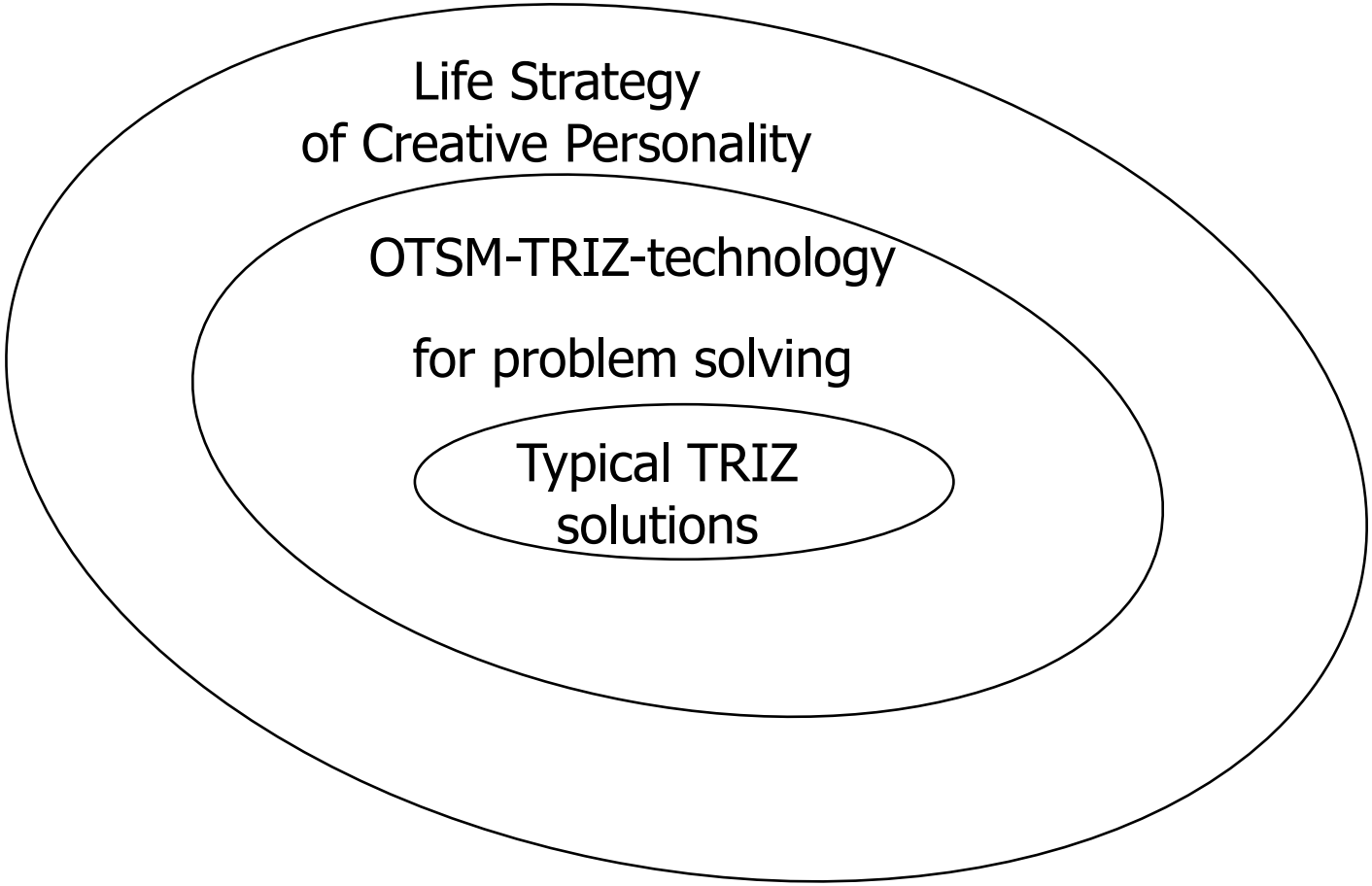
Genrich Altshuller still continues his work on OTSM-TRIZ that he started in 1946.

At that time he was 20 years old

[G.Altshuller passed away on 24 September 1998]



TRIZ typical solutions is only a small part of Altshuller's research



Task about ultrasonic device

Breakthrough way of problem solving based on OTSM-TRIZ:

Step 7. Using TRIZ typical solutions

TRIZ typical solutions offer the use of Segmentation, i.e. dividing the object into several parts and arranging an interaction between them.

Task about ultrasonic device

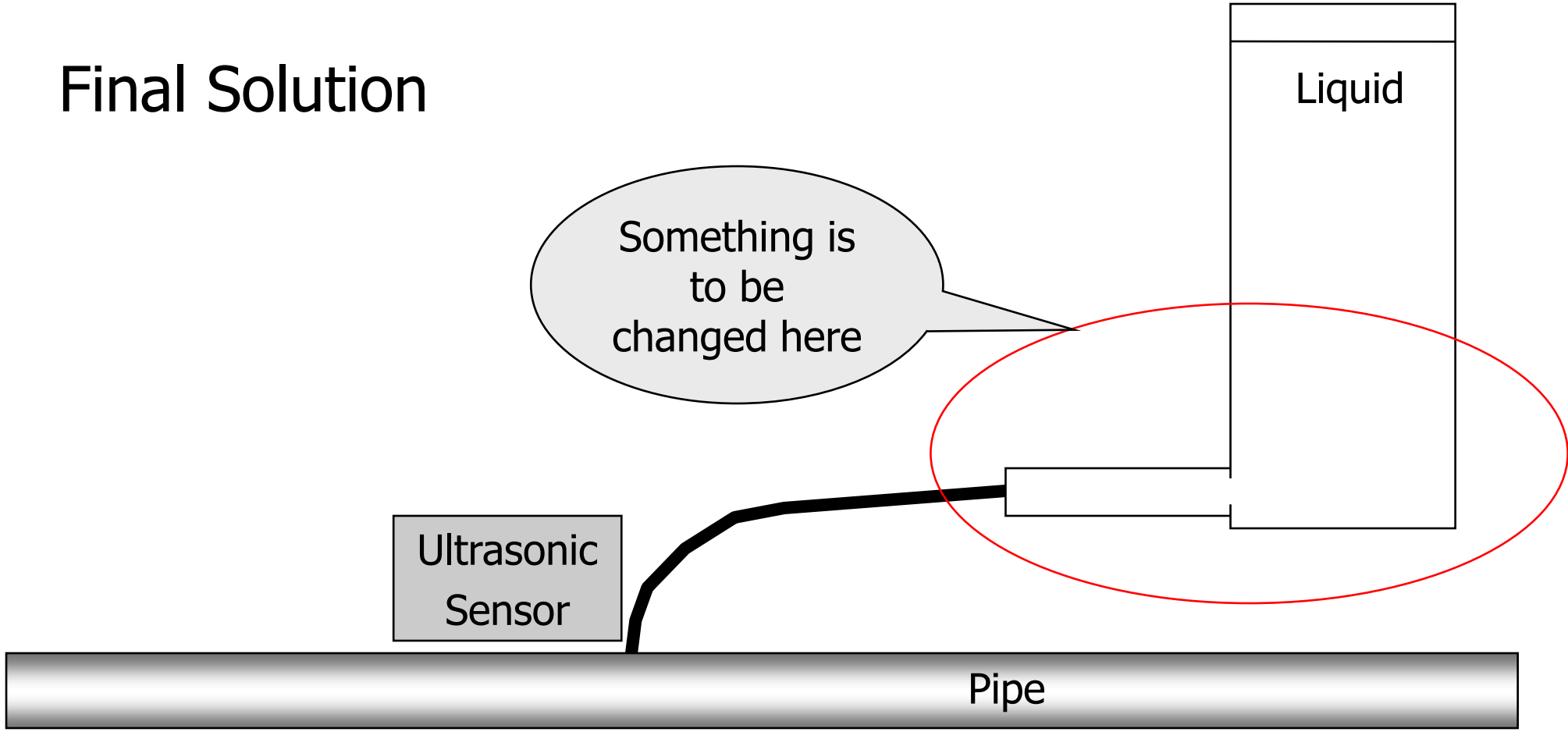
Breakthrough way of problem solving based on OTSM-TRIZ:

Step 8. Transforming typical solution into specific solution

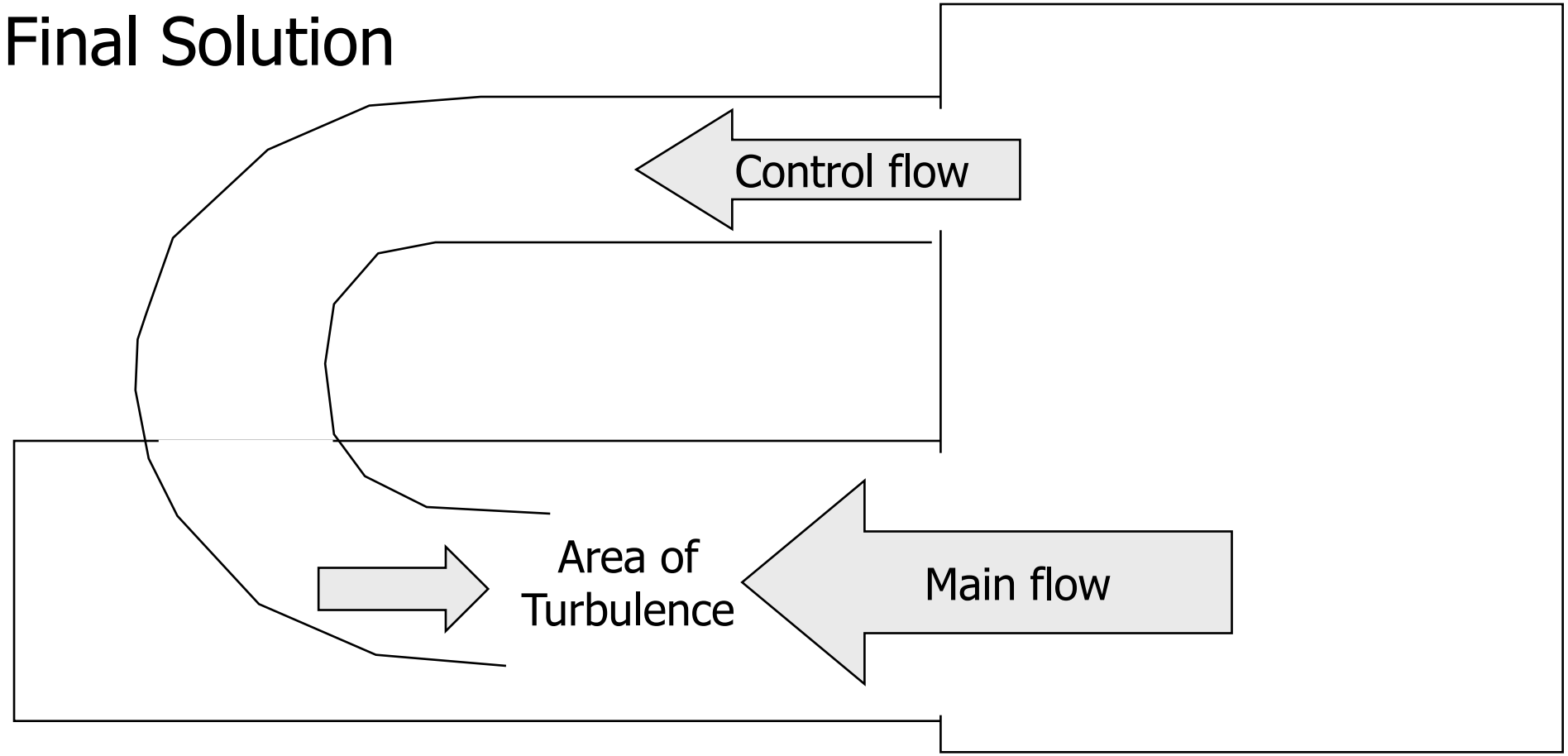
Liquid flow can be divided into two different parts and the interaction between them can be arranged.

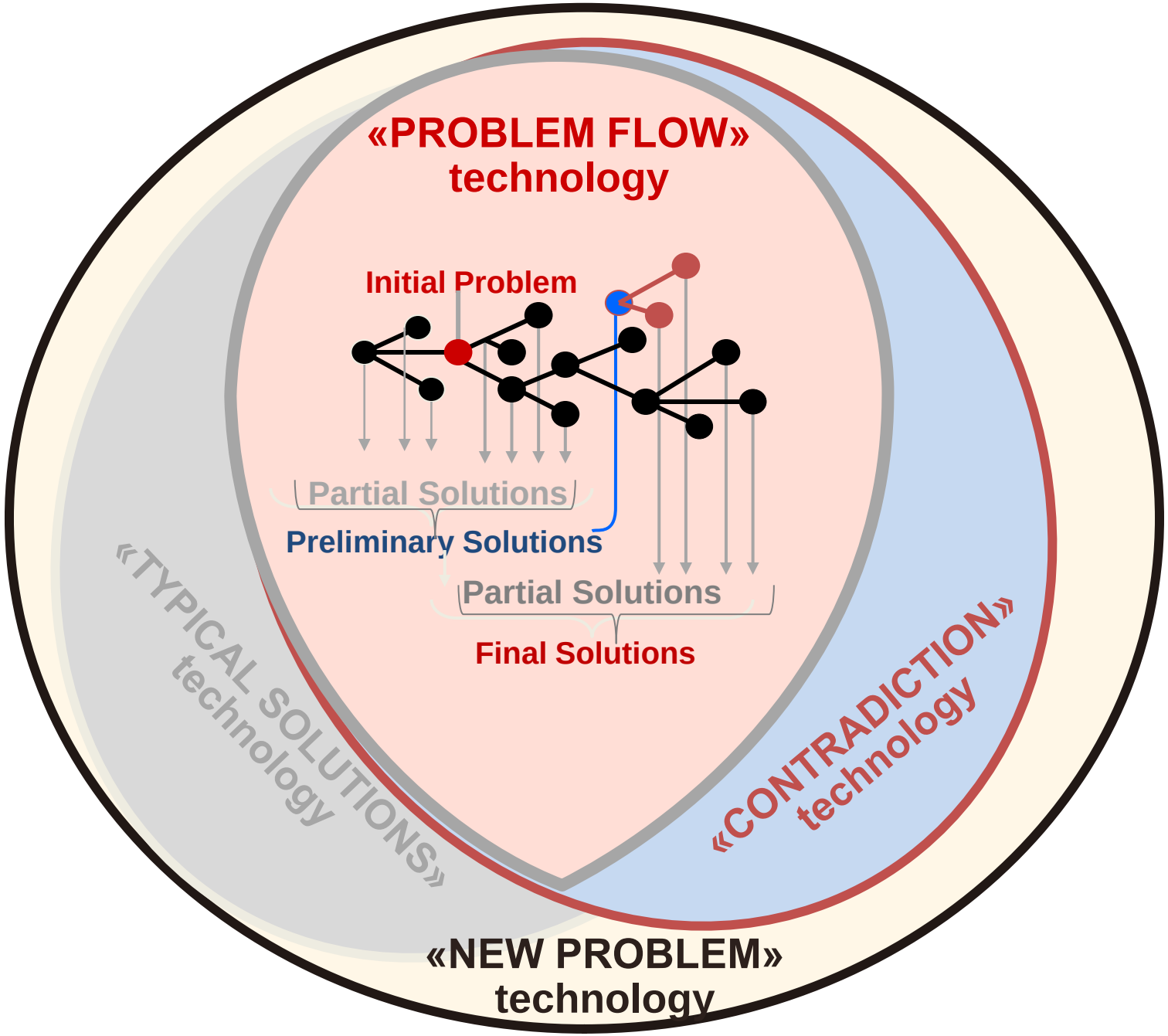
Task about ultrasonic device

Final Solution

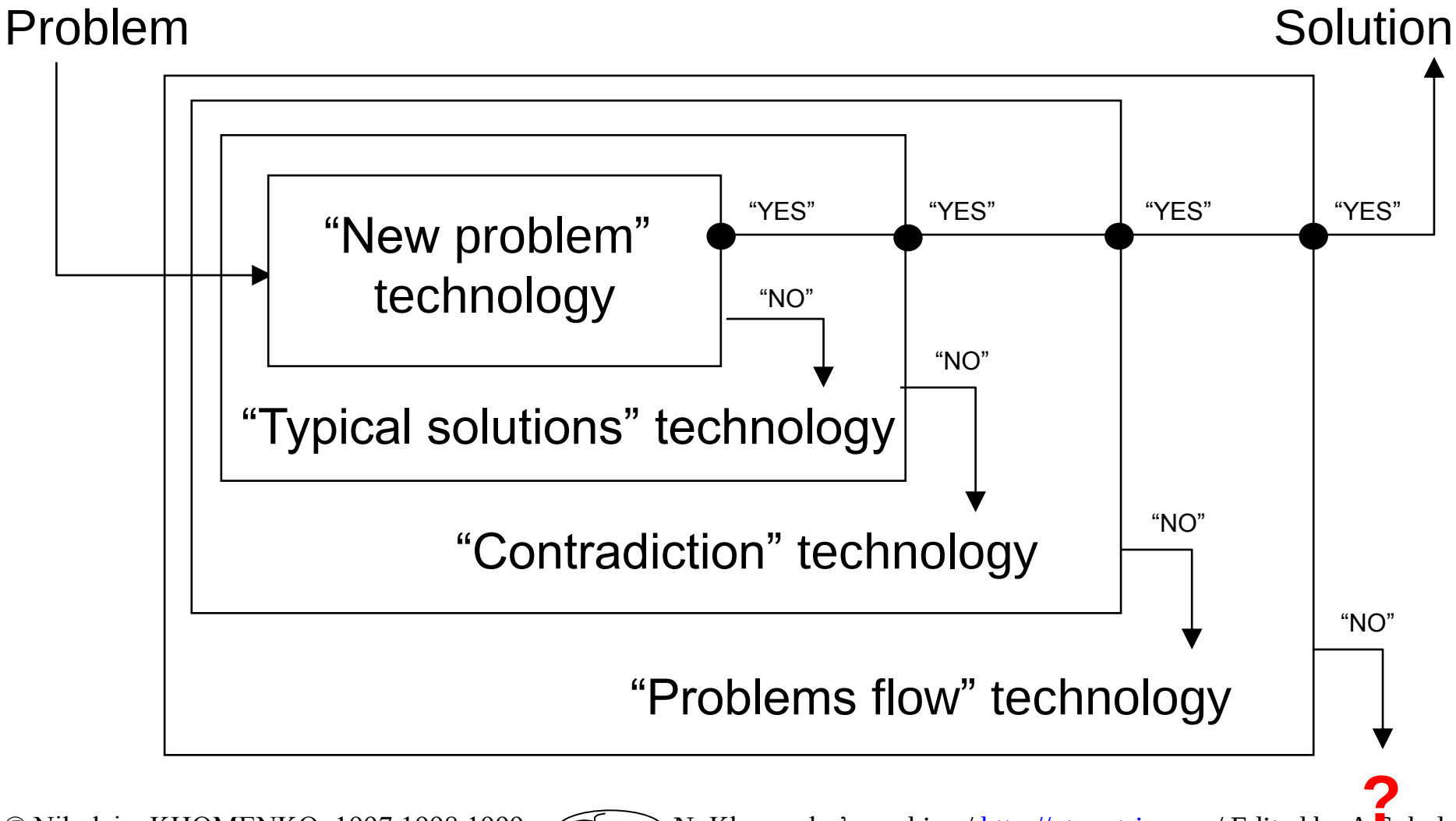


Task about ultrasonic device

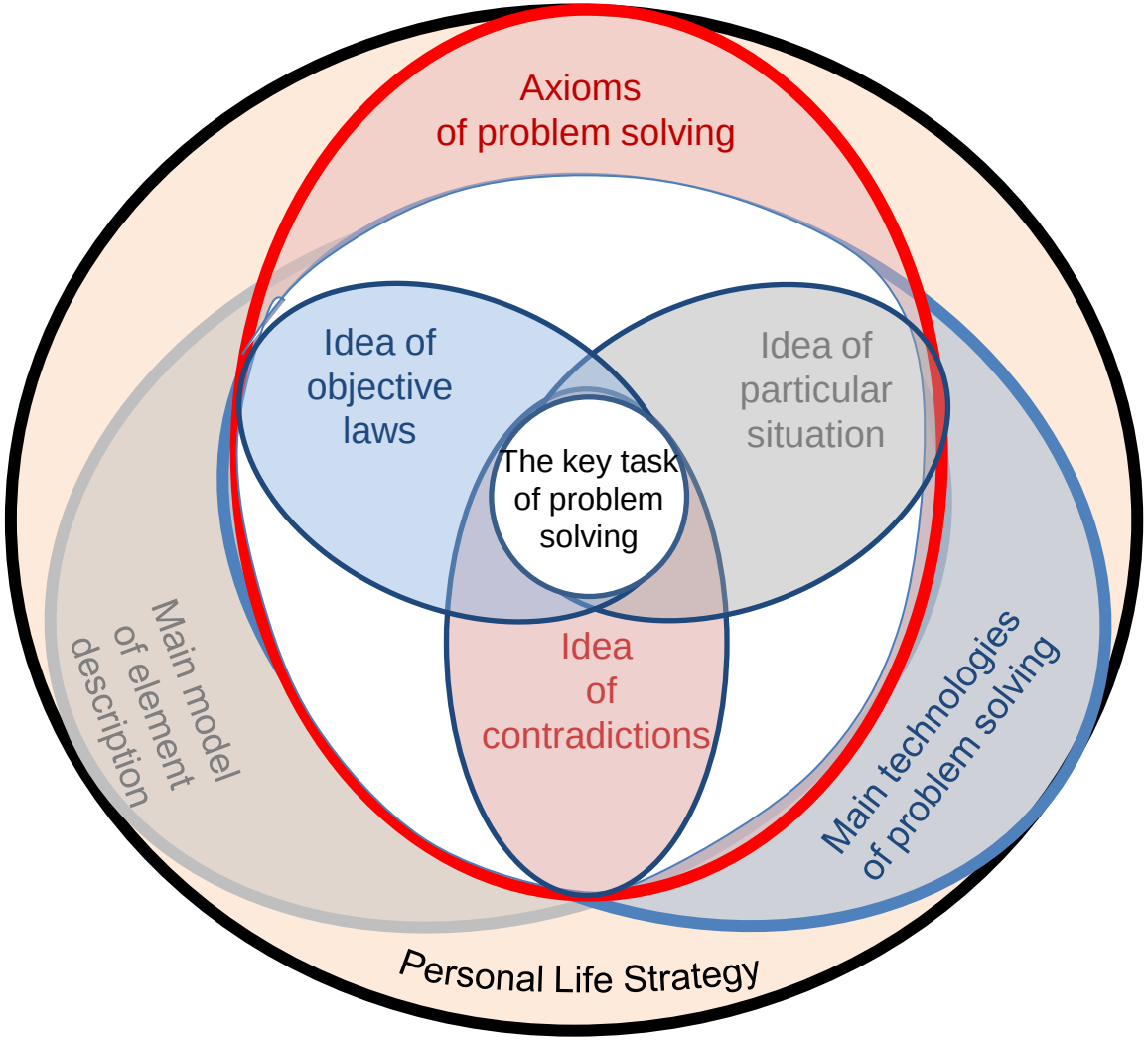




One of ways how to use OTSM-TRIZ technologies?



Main scheme of OTSM-TRIZ



TRIZ
is a tool
for
thinking
but
not instead of thinking

G. Altshuller