

# Systematic Innovation and Competitiveness

Interactive CTI Panel Presentation  
SCIP - 2008, Rome

David W. Conley



# TRIZ Activities

- Engineering Program Manager - **Intel**
  - TRIZ Projects
    - Technical and Business
  - TRIZ Program Development
    - Organization Integration
    - Program Integration (ex. TRIZ and Lean)
  - TRIZ Training
  - Competitive Analysis
- Executive Committee Member - **Altshuller Institute for TRIZ Studies**
- Consultant - **Innomation, LLC**

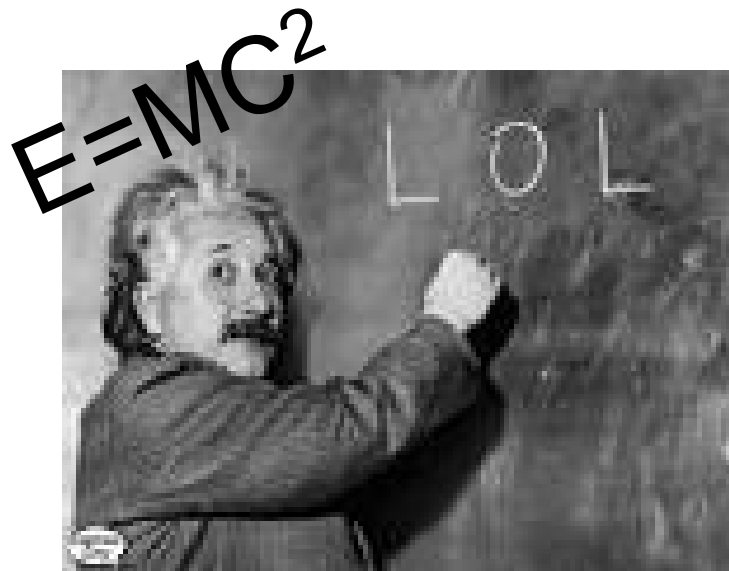


# Systematic Innovation Competitive Intelligence Tools

- Used by companies world wide to improve their competitive position
  - Airbus, GE, Samsung, Siemens, etc.
- Wide variety of Analytical Tools to:
  - Model Problems
  - Model Solutions
- Gives specific solution paths towards improving your competitive position
- The following is intended to familiarize you with the principles underlying the strategies I will discuss during the panel discussion

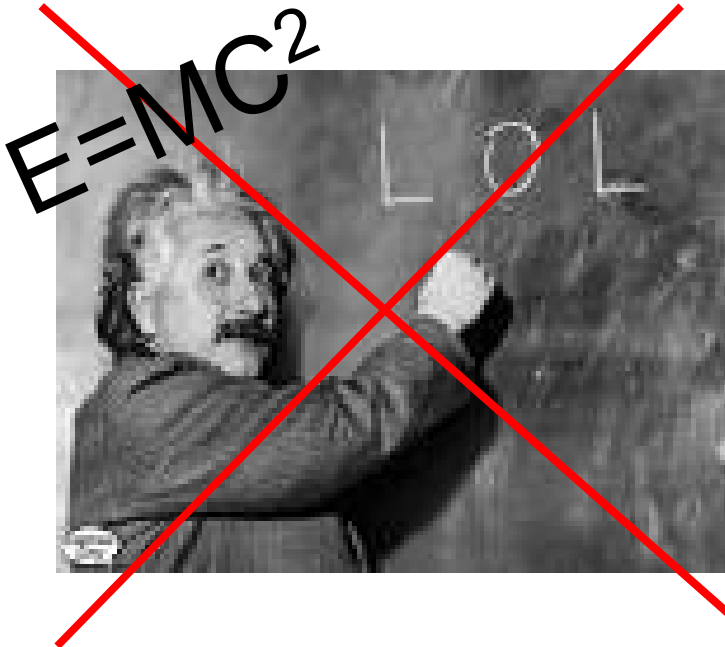
# Systematic Innovation

- Prevailing thought is that innovation only comes from a gifted few or that it simply happens randomly and by luck.



# Systematic Innovation

- In fact, innovation can now be systematic and purposeful.



# Systematic Innovation

- In fact, innovation can now be systematic and purposeful.



# The Theory of Inventive Problem Solving (TRIZ)

- 3 TRIZ Tools for competitive intelligence
  - Functional Analysis
  - Trends of System Evolution (TSE)
  - Patent Analysis and Circumvention



# Functional Analysis

- The function of a system is the reason for it's existence.
- What is the system doing?

*Component: book*



*function: inform*



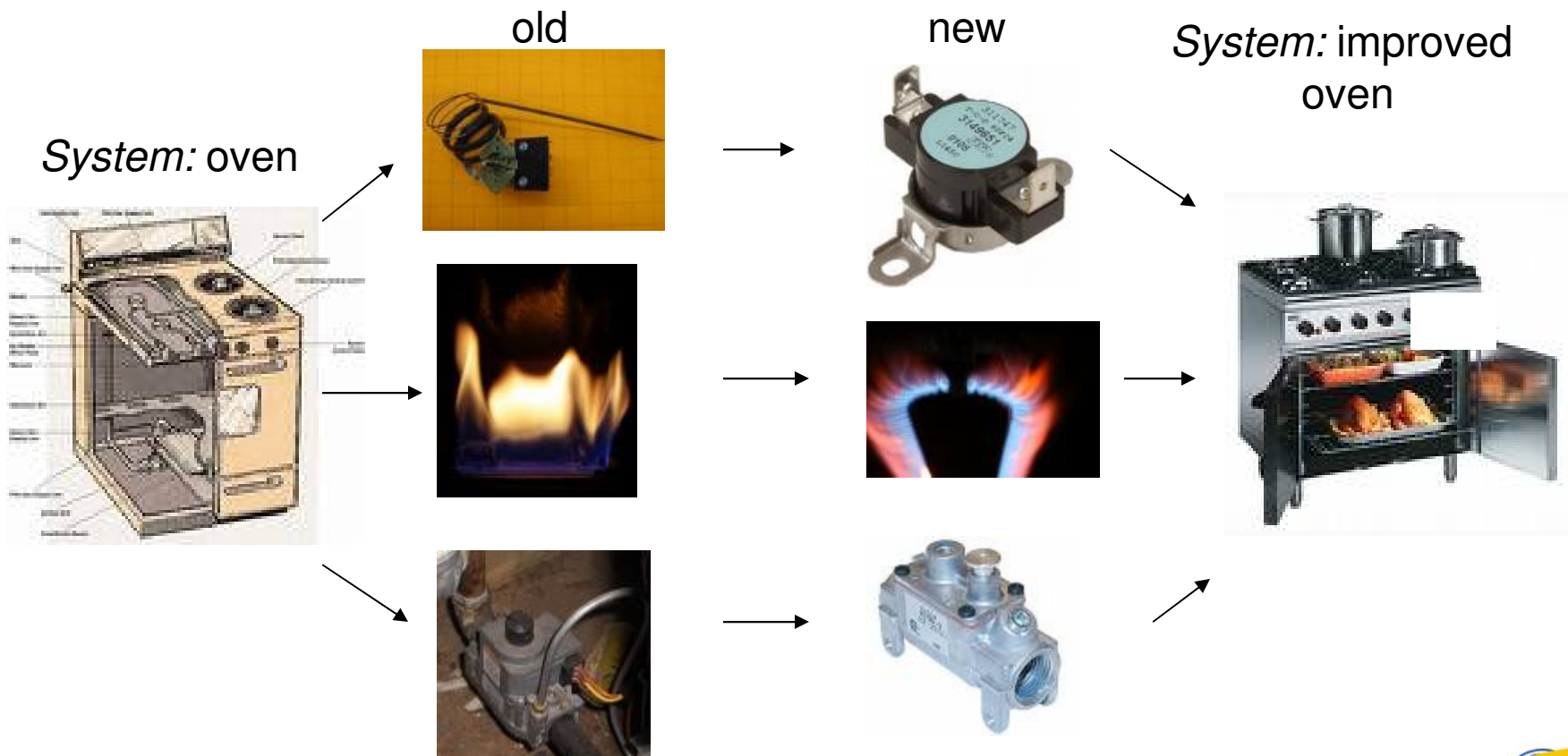
*function: press*



# Functional Analysis

- **Component** Analysis results in system **evolution**

*Components: thermostat, burner, gas valve*



# Functional Analysis

- **Function** analysis results in system **innovation**

*System: cup heater, solar oven*

*System: oven*



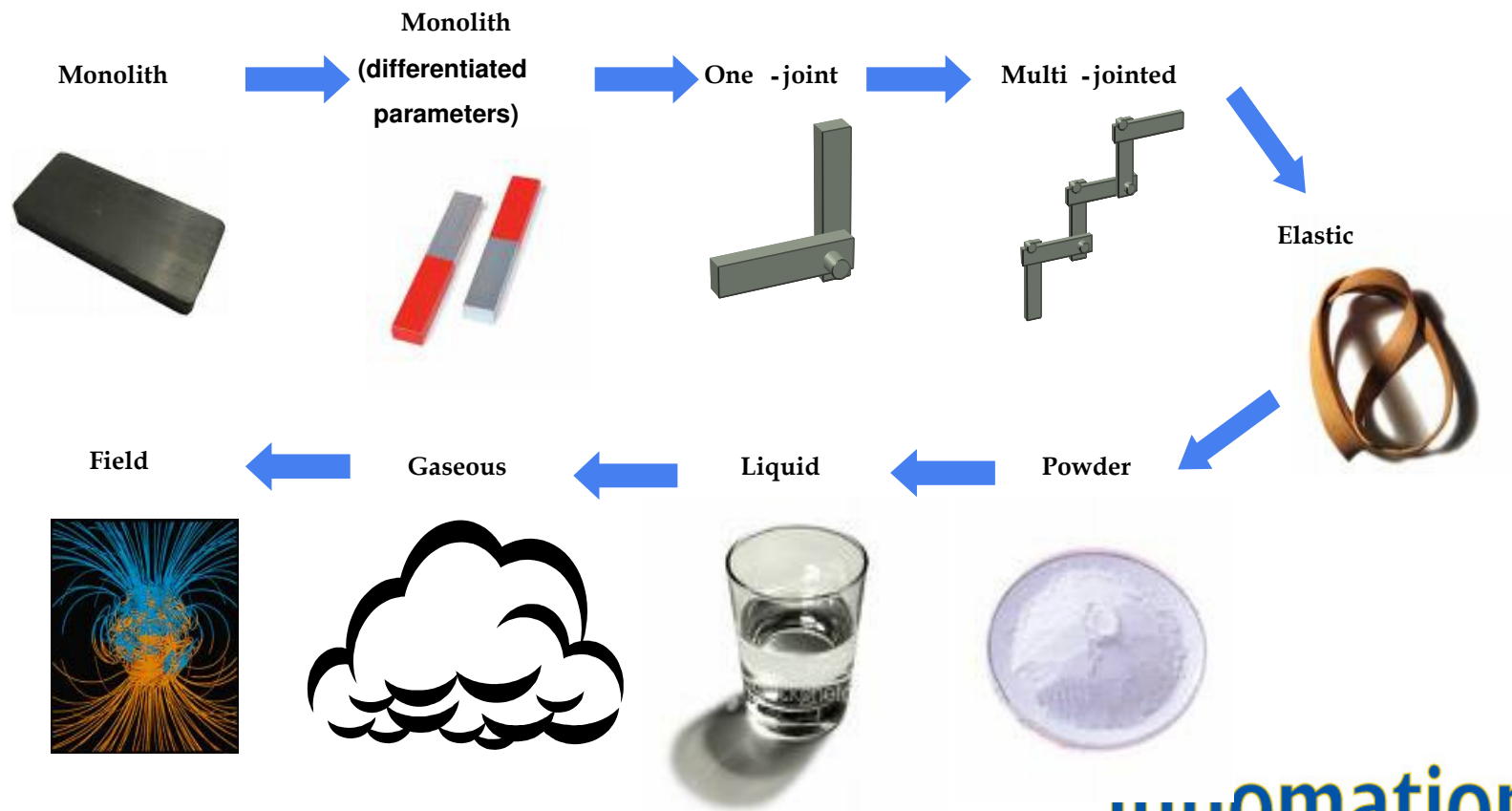
*function: heats food*



*System: microwave, solar heating bag*

# Trends of System Evolution (TSE)

- Trend of Increasing Dynamization (1 of 11 interrelated trends)



# Trends of System Evolution (TSE)

- Trend of Increasing Dynamization (1 of 11 interrelated trends)

rigid

single joint

multi-joint

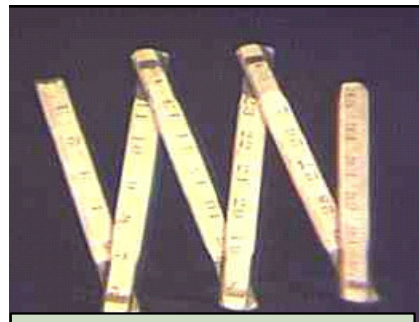
elastic

liquid or gas

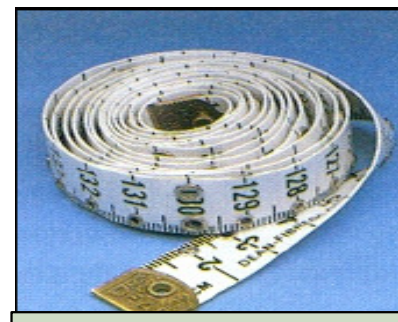
field



Simple Ruler



Folding Ruler



Measuring Tape



Laser Ruler

# Patent Analysis and Circumvention

## Patent Criteria:

1.) Novelty – new, does not exist, must be novel word wide

- Patents focus on Components not Functionality.
- To make a patent novel:
  - Change the Components and retain its Functionality
  - Insure the patent is *Non-Equivalent*

# Patent Analysis and Circumvention

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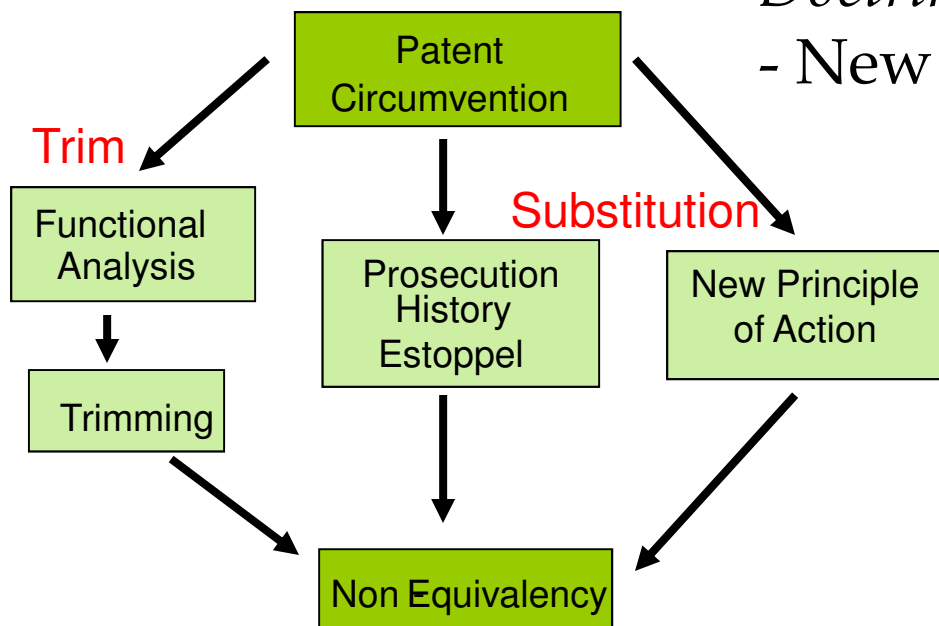
- To make a patent novel:

- Change the Components and retain its Functionality

- Insure the patent is *Non-Equivalent*

# Patent Analysis and Circumvention

- To make a patent novel:
  - Change the Components and retain its Functionality
    - Trim
    - Substitute
      - Prosecution History Estoppel can avoid Doctrine of Equivalence
      - New Principle of Operation (Action)



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# Patent Circumvention Example

## Trimming

- 2007 TomTom Patent - GPS with built in video camera



# Patent Circumvention Example

## Trimming

- 2007 TomTom Patent - GPS with built in video camera



### 1.) Trim a component



# Patent Circumvention Example

## Trimming

- 2007 TomTom Patent - GPS with built in video camera

Component: GPS



+

Video GPS



=

Function: information

live images

graphics overlay on live image

- 1.) Trim a component
- 2.) Replace the functionality

# Patent Circumvention Example

## Trimming

- 2007 TomTom Patent - GPS with built in video camera

Component:

GPS



Windshield w/  
plasma tech.



+

=

Video GPS



Function:

information

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# Patent Circumvention Example

## Trimming

- 2007 TomTom Patent - GPS with built in video camera

Component:

GPS



+

Windshield w/  
plasma tech.



=

Heads-up GPS



Function:

information

live images

graphics overlay on live image

- 1.) Trim a component
- 2.) Replace the functionality



# Patent Circumvention Example

## New Principle of Action



**Component:** Sewing Machine

**Function:** Join *material*

### **Current Action Principle**

Thread Stitching



# Patent Circumvention Example

## New Principle of Action



**Component:** Sewing Machine

**Function:** Join *material*

### Current Action Principle

Thread Stitching



### New Action Principle

Micro Rivets



# Contact Information

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