Structured Problem Analysis Guide

Structured Problem Analysis

> ⚠ **Note:** *This article applies to Fuji and earlier releases. For more current information, see Structured Problem Analysis* [1] *at* http://docs.servicenow.com **The ServiceNow Wiki is no longer being updated. Visit** http://docs.servicenow.com **for the latest product documentation.**'

Overview

Structured problem analysis provides a rational methodology for investigating the cause of a problem or incident. This problem solving methodology was developed by Kepner-Tregoe [2] to help problem managers avoid making wrong decisions based on subjective opinions.

The Structured Problem Analysis application lets you track the problem analysis process through ServiceNow. This feature is available starting with the Dublin release.

Problem managers must complete Kepner-Tregoe training before using the Structured Problem Analysis application.

Process Flow

This process is based around a problem analysis record and uses the following steps:

Step	Description
Situation Appraisal	If there is an associated problem or incident record, state the situation within that record. For example: *Users cannot access the file share.*
Create the Structured Problem Analysis record	Create a new problem analysis record and define both the object and the deviation, that is, the degradation of service from the expected result. For example, the object could be *File Server*, and the deviation could be *running with greater than 50ms response times.*
	Coaching assessments can be requested now, if required.
Specify the problem	Define *Is* and *Is Not* values for What, Where, When, and Extent aspects. For example, *Is in London* and *Is not in New York.*
List distinctions and changes	List all possible distinctions and changes to help identify possible causes. For example, *London has recently upgraded its server, New York has not.*
List, test, and confirm causes	List all possible causes, and justify why each may or may not be correct. For example, a general software upgrade might not be the cause because the problem does not affect all users.
	Select the most probable cause or causes. Then, create tasks and confirmation methods to test those causes, to finally determine and confirm the cause.

The process should conclude with a confirmed cause. This confirmed cause can then be addressed through the standard problem management or incident management processes.
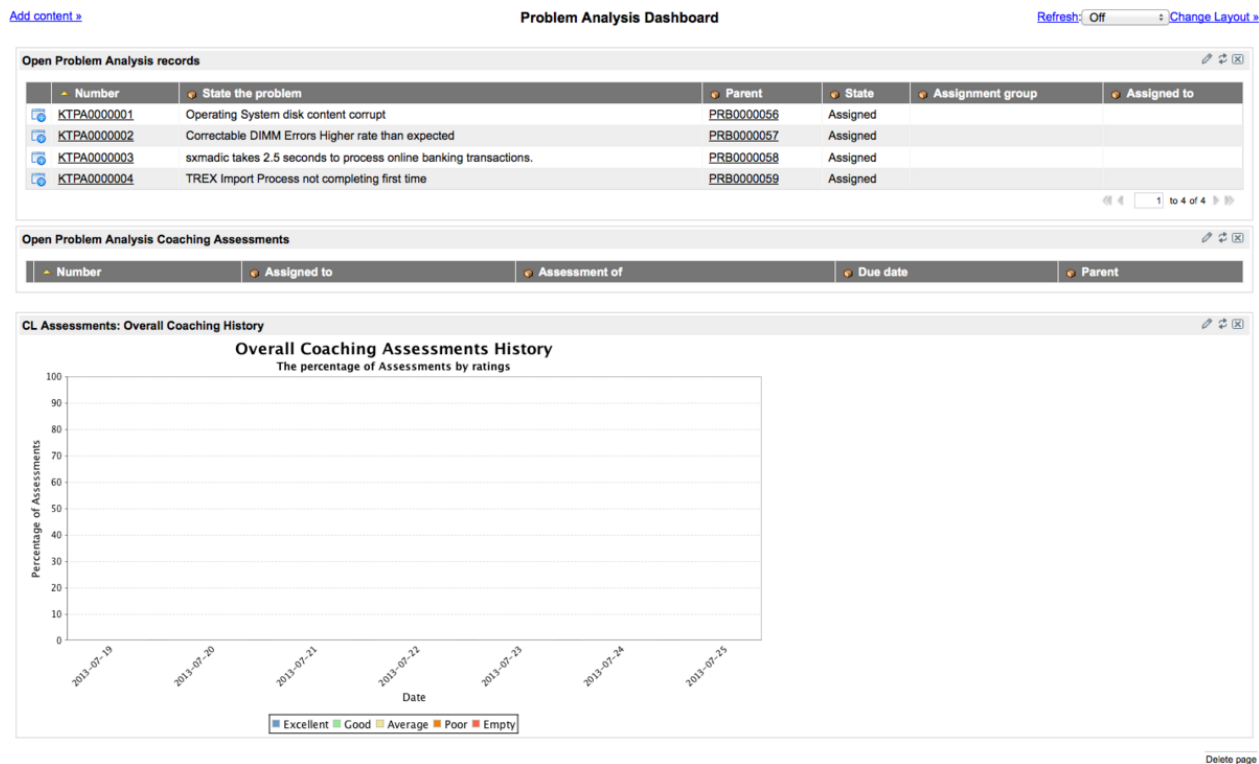
Problem Analysis Dashboard

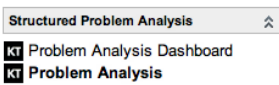The problem analysis dashboard gives problem manages a high-level view of ongoing problem analysis work, including:

• Open problem analysis records (records where the state is not **Closed** or **Cancelled**).
• Open problem analysis coaching assessments associated with structured problem analysis. See Requesting Coaching Assessments for more details.

To access the dashboard:

1. Navigate to **Structured Problem Analysis > Problem Analysis Dashboard**.
2. Review the information and click any entry to examine it in further detail.

Menus and Modules

• **Problem Analysis Dashboard:** View all active problem analysis records, active coaching assessments, and the problem analysis coaching history.
• **Problem Analysis:** View active problem analysis records in the system and create new problem analysis records.

Activating Structured Problem Analysis

To activate the Kepner-Tregoe Structured Problem Analysis plugin, make a request through HI [3]. ServiceNow validates that Kepner-Tregoe training has been completed before activating the plugin.

Click the plus to expand instructions for requesting a plugin.

1. Navigate to [HI [4]].
2. Click **Service Catalog**.
3. Click **Request Plugin Activation**.

   - [Required] In **Target Instance**, select the instance on which to activate the plugin.
   - [Required] In **Plugin Name**, enter the name of the plugin to activate.
   - [Optional] In **Date and time would you like the plugin to be enabled?**, specify a date and time at least 12 hours in the future. Leave this field empty if you want the plugin activated as soon as possible.

   Note: Plugins are generally activated during business hours in the Pacific time zone, but can be scheduled for a different time with advance notice.

   - [Optional] In **Reason/Comments**, add any information that would be helpful for the ServiceNow technical support engineer activating the plugin.
4. Click **Submit**.

References

[1] https://docs.servicenow.com/bundle/jakarta-it-business-management/page/product/structured-problem-analysis/concept/c_StructuredProblemAnalysis.html

[2] http://www.kepner-tregoe.com/

[3] https://hi.service-now.com/nav_to.do?uri=com.glideapp.servicecatalog_cat_item_view.do?sysparm_id=891f088e465667e234a3cb52ffa1d299

[4] http://hi.service-now.com

Installed Components

Overview

Activating the Kepner Tregoe - Structured Problem Analysis plugin adds or modifies tables, user roles, script includes, and other components.

Tables

Structured problem analysis adds or modifies the following tables:

Display Name [Table Name]	Description
Problem [problem]	Adds a Situation Appraisal tab to the Problem form.
Incident [incident]	Adds a Situation Appraisal tab to the Incident form.
Specify Problem [kt_problem_area]	Defines the base table for all kt_nn_... tables used when specifying the problem: • What Object [kt_01_what_object] • What Deviation [kt_02_what_deviation] • Where Geographically [kt_03_where_geographically] • Where On Object [kt_04_where_object] • When First [kt_05_when_first] • When Since [kt_06_when_since] • When In Life Cycle [kt_07_when_lifecycle] • How Many Objects [kt_08_extent_objects] • What Is The Size [kt_09_extent_size] • How Many Deviations [kt_10_extent_deviations] • What Is The Trend [kt_11_extent_trend]
Confirmation method [kt_cause_confirmation_method]	Defines confirmation method information for use when testing causes.
Cause Evaluation [kt_cause_evaluation]	Defines information used during cause evaluation.

Problem Analysis [kt_problem_analysis]   Defines all problem analysis information.

Plugins

If they are not already active, the following plugins are activated with structured problem analysis.

Plugin Name	Plugin ID	Description
Coaching Loops	com.snc.coaching_loops	Allows coaching assessments for structured problem analysis.

User Roles

Role	Contains Roles	Description
itil	template_editor	Can view the Problem Analysis module and individual problem analysis records.
kt_user	ci_user	Can create and edit problem analysis records. Can view the problem analysis dashboard. Can view their coaching assessments and history.
		Users with this role are referred to as *problem managers* within structured problem analysis.

UI Actions

UI Action	Table	Description
Request assessment	kt_problem_analysis	Displays a button for requesting a coaching assessment.

Client Scripts

Script	Table	Script Contents
Align embedded list columns	Problem Analysis [kt_problem_analysis]	Sets the left-most column header on embedded lists to a consistent width so the various lists align.

Business Rules

Business Rule Name	Table	Description
Set state_the_problem field.	Problem Analysis [kt_problem_analysis]	Sets the **State the problem** field as displayed when problem analysis records are listed, such as on the dashboard and cause record. This field concatenates the object and deviation information.
Update evaluation records.	Problem Analysis [kt_problem_analysis]	Updates all cause evaluation records to reflect the new problem statement if the **State the problem** field changes.
Create cause evaluation records	Specify Problem [kt_problem_area]	Creates a cause evaluation for every cause when a new problem area is created.
Set short description	Confirmation Method [kt_cause_confirmation method]	Concatenates the evaluation method chosen and the cause to populate the **Short description** field in confirmation method records.

Update evaluation records	Cause [kt_cause]	Updates all evaluation statements when the possible cause is changed.
Create evaluation records	Cause [kt_cause]	Creates a cause evaluation for every problem area when a new cause is created.
Set evaluation statement	Cause Evaluation [kt_cause_evaluation]	Sets the evaluation statement in the form of **If {cause} is the true cause of {problem statement}, how does it explain the IS and the IS NOT?**

Creating a Record

Overview

Structured problem analysis is a process for investigating the cause of a problem. The initial steps in this process are:

1. Appraise the situation to understand the problem.
2. Create a problem analysis record to track progress during the course of the process.
3. [Optional] Request coaching assessment, if required.

Creating Situation Appraisals
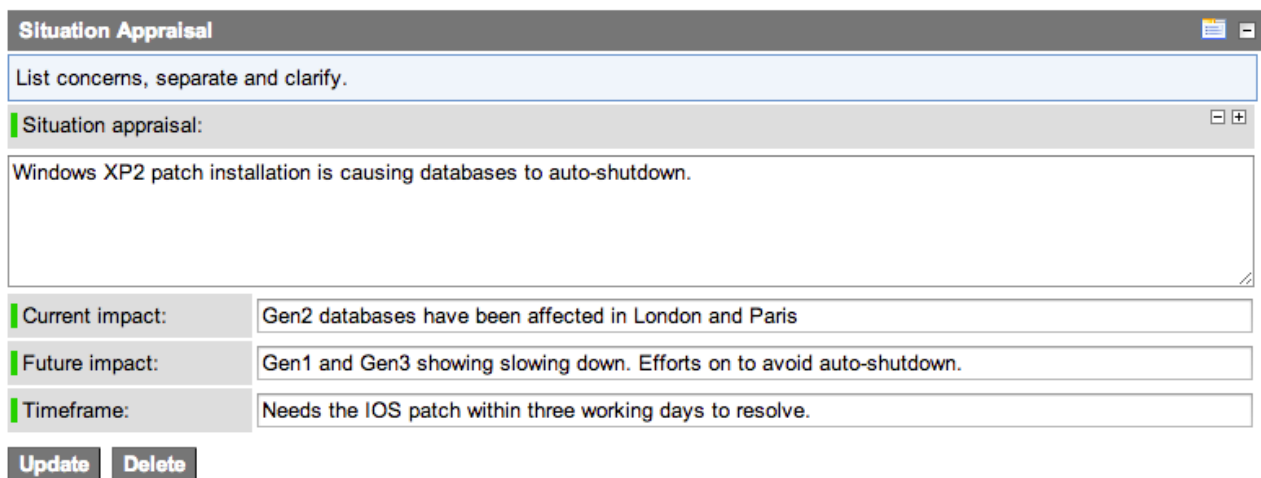
Situation appraisals clarify the situation, allowing problem managers and ITIL users to outline concerns, choose a direction, and select priorities if there are multiple problems.

Situation appraisals can be added to incidents or problems.

- Within incident management, situation appraisal can enable faster restoration of service and a more satisfying outcome for users and customers.
- Within problem management, problem managers can use the information in a problem record to generate a corresponding problem analysis record, with data populated from the problem record.

To enter a situation appraisal:

1. Navigate to the relevant problem or incident record.
2. Locate the **Situation Appraisal** section.
3. Fill in the fields (see table).

4. Click **Update**.

Field	Description
Situation appraisal	A brief statement of the situation.
Current impact	The current impact of the situation.
Future impact	Any anticipated future consequences of the situation.
Timeframe	Any time constraints and deadlines.

Creating Problem Analysis Records

Problem managers track relevant information in a problem analysis record throughout the process.

Problem analysis records can be created:

- From a problem or incident record.
- Directly from the Problem Analysis list.

Enter basic information when you create the problem analysis record. As the structured problem analysis process continues, update the record to track progress,

Creating a Record from a Problem or Incident

Problem managers can initiate structured problem analysis from an existing problem or incident, typically after situation appraisal information has been added to that problem or incident.

1. Open the relevant problem or incident record.
2. Right-click the form header and select **Initiate Structured Problem Analysis**.

    The new problem analysis record is created with the problem or incident number in the **Parent** field.

3. Fill in the fields (see table).

4. Click **Update**.

Field	Description
Number	An automatically-generated record ID.
Parent	The number of the problem or incident record from which the problem analysis record was created.
State	The current stage of the problem analysis. The state can be **Assigned**, **Work in Progress**, **Think Beyond the Fix**, **Closed**, or **Cancelled**.
Assigned group	The group assigned to work on this problem.
Assigned to	The problem manager assigned to work on this problem.
Object(s)	A text description of the object or objects affected. Forms part of the problem statement.
Deviation	The difference between the expected performance and the actual performance. Forms part of the problem statement.
WHAT, WHERE, WHEN, EXTENT	What the problem is and what it is not, where it occurs, when it occurs, and the extent of the occurrence. This information is all defined later in the process, as part of specifying the problem.

Stating the Problem

The problem statement is a sentence to clearly describe the issue. For example, a poorly-defined problem statement is *The network is slow*. A better statement is *Network access for all UK employees had greater than 50ms response times, compared with the usual 5-10ms*.

This statement is a combination of the **Object(s)** and **Deviation** entries in the problem analysis record, and is shown in the **State the problem** field when problem analysis records are listed.

Creating a New Record Directly

Problem managers can create a new problem analysis record that is not associated with a problem or incident record.

1. Navigate to **Structured Problem Analysis > Problem Analysis**.
2. Click **New**.
3. Fill in the fields as described under Creating a Record from a Problem.

     Note: you can specify non-problem records in the **Parent** field - for example, an incident record.

4. Click **Submit** to save the form.

Requesting Coaching Assessment

Optionally, the problem manager assigned to that problem analysis record can request a coaching assessment.

Coaching assessment enables a *coach* to monitor specific behavior in an individual or group, the *coachee*, and provide timely feedback, so that the coachee can do a better job the next time. Coaching assessment is typically requested during the initial stages of the structured problem analysis process, but can be requested at any point.

1. Navigate to **Structured Problem Analysis > Problem Analysis.**
2. Open a problem analysis record.
3. Click **Request assessment** in the header bar.

     Note: *The **Request assessment** button appears only if the problem analysis record has been assigned to you and you are a member of the relevant coachee group (the group whose members are eligible for coaching for this discipline).*

For more information on how a coaching assessment is performed, see Coaching Loops.

The Next Step

The next step in the structured problem analysis process is to fully define the problem.

Defining the Problem

Overview

Structured problem analysis is a process for investigating the cause of a problem. After creating a problem analysis record, the problem manager should define the problem fully:

1. Specify the problem
2. List distinctions and changes

Specifying the Problem

Specify the problem details by entering values that are definitely true (*Is*) and values that could be true but are not (*Is not*) for:

- *What* the problem is and what it is not.
- *Where* the problem occurs and where it does not.
- *When* the problem occurs and when it does not.
- *Extent* to which the problem occurs and the extent to which it does not.

For each *is*, an equivalent *is not* question should be posed, although it may not always be answerable. These two columns aid in eliminating intuitive but incorrect assumptions about the problem.

WHAT	WHERE	WHEN	EXTENT

WHAT	

What object(s)?	1 to 1 of 1

Is	Is not
Correctable DIMM memory errors	Uncorrectable memory errors
Insert a new row...	

To add these values, double-click **Insert a new row...** on the appropriate embedded list.

Specifying What

Use the **WHAT** list to define **Is** and **Is not** values for objects and deviations.

Field	Description
What object(s)?	The objects that the problem affects.
D & C: What Object	Shows the information entered when listing Distinctions and Changes for the WHAT area.
What deviations?	The deviations from expected behavior.

Specifying Where

Use the **WHERE** list to enter **Is** and **Is not** values that define where the problem is occurring.

Field	Description
Where geographically	The location where the problem is occurring.
D & C: Where Geographically	Shows the information entered when listing Distinctions and Changes for the WHERE area.
Where on the object	The part and location within the relevant object.

Specifying When

Use the **WHEN** list to enter **Is** and **Is not** values that define when the problem occurs.

Field	Description
When first?	When was the problem first observed?
D & C: When First	Shows the information entered when listing Distinctions and Changes for the WHEN area.
When since?	When since the first observation has the problem been observed?
D & C: When Since	Shows the information entered when listing Distinctions and Changes for the WHEN area.
When in the life cycle?	When in the standard operational activities of the object does the problem occur?

Specifying Extent

Use the **EXTENT** list to enter **Is** or **Is not** values that define the extent of the problem.

Field	Description
How many objects?	The number of objects affected.
What is the size?	The magnitude of the problem. Is it localized or widespread?
How many deviations?	The quantity or frequency of the deviations.
What is the trend?	The problem's potential for growth or shrinkage over time.

Listing Distinctions and Changes

The next step in structured problem analysis is to define distinctions and changes for each **Is** and **Is not** pair previously defined in the WHAT, WHERE, and WHEN sections. This information helps problem managers to focus on recent changes that may have caused the problem.

Creating Distinctions and Changes for the Problem

List each distinction and each change.

1. Navigate to **Structured Problem Analysis > Problem Analysis**.
2. Open the relevant problem analysis record.
3. In the **Distinctions and Changes** related list, click **New**.
4. Fill in the fields (see table).
5. Click **Submit**.

Field	Description
Problem	[Read-only] The problem statement value, which combines the object and the deviation from the Problem Analysis form.
Problem area	The relevant **Is** value that this distinction and change applies to.
Distinction	The distinctive aspect about this area.
Change	Any changed aspect in this area.

Note: *Deleting a problem object, such as a **What object(s)?** item, deletes all distinctions and changes records defined for that object.*

Viewing and Editing Distinctions and Changes

You can open an existing distinctions and changes record by by clicking the relevant **Is** value in:

• The **D & C** lists in WHAT, WHERE, or WHEN section of the form.

• The **Distinctions and Changes** related list.

You can make changes to this form, as required.

Viewing Problem Areas

You can inspect both problem areas and individual distinctions and changes records from the **Distinctions and Changes** related list of a problem analysis record.

Click the **Problem area** entry for the item to view the problem area and a list of distinctions and changes records for that area.

Click the relevant **Distinction** entry to open that distinctions and changes record.

The Next Step

The next step in the structured problem analysis process is finding the cause.

Finding the Cause

Overview

Structured problem analysis is a process for investigating the cause of a problem. After defining the problem, you should be able to find the actual confirmed cause by:

1. Listing all possible causes.
2. Evaluating each possible cause to find the most probable causes.
3. Testing the most probable causes.
4. Confirming the cause.

You may identify several causes as most probable and may confirm several causes by the end of the process.

Listing Possible Causes

1. Navigate to **Structured Problem Analysis > Problem Analysis**.
2. Open the appropriate problem analysis record.
3. In the **Causes** related list, click **New**.
4. Enter a likely cause for the problem in the **Possible cause** field:

5. Click **Submit**.
6. Repeat this process for each possible cause.

> **Note:** *After you submit the Cause form, the **Cause Evaluations** section is updated to list relevant information previously added to the WHAT, WHEN, and WHERE sections of the problem analysis record. This information is used when you evaluate causes. Deleting an object, such as a **What object(s)?** item, also deletes all cause evaluation records generated for that object.*

Evaluating Causes

After listing all causes, evaluate each one to determine the likelihood of it causing a deviation from an expected behavior: the problem. The evaluation should take this form:

> If <possible cause> is the true cause of <problem>, how does it explain the IS and the IS NOT?

For example:

- If server upgrade is the true cause, how does it explain why the issue first started 7 days ago?
- If server upgrade is the true cause, how does it explain why only London users are affected?

This process helps you remove any possible causes that do not explain the *is* and *is not* values and arrive at a list of one or more probable causes.

To evaluate a cause:

1. In the **Causes** related list, open a cause record.
2. Click an entry listed in the **Cause Evaluations** section.

3. The **Evaluation Statement** field is populated with a statement in this form:

> If <cause> is the true cause of <problem>, how does it explain the IS and the IS NOT?

4. Fill in the fields, as appropriate (see table).
5. Click **Update**.

Field	Description
Explains because	A description of why this cause explains the problem.
Explains only if	A set of conditions under which this explanation applies.
Does not explain	Any aspects of the problem which this possible cause does not address. If you add content here, this is unlikely to be a probable cause.

Most Probable Causes

This evaluation process should now have helped to identify one or more causes that are the *most probable*.

1. Open each most probable cause record.
2. Select the **Most probable** check box on that record.

Testing Causes

Use an appropriate *confirmation method* to test each most probable cause to determine whether it is a confirmed cause of the problem. The confirmation method describes the specific testing to be performed on a particular cause, such as observing similar behavior.

When a most probable cause is confirmed in this way, it becomes a "confirmed cause".

Note: *It is possible to have several confirmed causes for a problem.*

To create a new confirmation method for a cause:

1. Open the appropriate cause record.
2. In the **Confirmation Method** list, click **New**.

3. Select the **Cause** being confirmed and a **Confirmation method**:
   - **Verify assumptions:** check any assumptions made to see if they are correct.
   - **Observe:** observe the relevant behavior to see if the cause is correct.
   - **Experiment:** perform an experiment on the object. Describe the experiment in the **Description** field
   - **Try fix and monitor:** apply a fix and see if this works.
4. Fill in the other fields, as appropriate.

5. Click **Submit**.

    A confirmation method is created for the associated cause, and is assigned to the specified user.

6. Perform the test identified in the confirmation method to either confirm or reject that this as the cause of the problem.

Confirming Causes

The final step in the structured problem analysis process is to confirm the cause and learn from previous mistakes by:

- Considering underlying issues.
- Considering possible additional areas of concern.
- Deciding how to avoid similar problems in future.

For each confirmed cause:

1. Open the cause record.
2. Check the **Confirmed cause** check box.
3. Fill in the additional **Extend the Cause** and **Extend the Fix** sections that appear (see table).

Field	Description
Extend The Cause section	
What other damage could this cause create?	Any other possible impact to the system identified.
Where else could the cause create problems?	Any other systems that might be affected by the same cause.
What caused the cause?	The underlying factor that caused the cause.
Extend The Fix section	
What identical things need the same fix?	Any other systems that a proposed fix should be applied to.
What problems could this fix cause?	Any possible negative impact from applying a proposed fix.

This concludes the structured problem analysis process. The cause of the problem has been identified, tested, and confirmed.

The overall problem management process can continue.

Article Sources and Contributors

Structured Problem Analysis *Source*: http://wiki.servicenow.com/index.php?oldid=250915 *Contributors*: Cheryl.dolan, John.ramos, Joseph.messerschmidt, Ludwig.adriaansen

Installed Components *Source*: http://wiki.servicenow.com/index.php?oldid=191145 *Contributors*: David.Bailey, Ludwig.adriaansen, Phillip.salzman

Creating a Record *Source*: http://wiki.servicenow.com/index.php?oldid=189440 *Contributors*: Ludwig.adriaansen

Defining the Problem *Source*: http://wiki.servicenow.com/index.php?oldid=189494 *Contributors*: David.Bailey, Ludwig.adriaansen

Finding the Cause *Source*: http://wiki.servicenow.com/index.php?oldid=189467 *Contributors*: Ludwig.adriaansen