# Risks Heat Map – The Powerful Tool In Enterprise Risk Management

## *An excellent tool to communicate the overall risk picture to busy executives*

*By Abdallah Mambo Dallu*

Risk heat maps are visualizations that present the results of a risk assessment. In an enterprise risk assessment process, the ability to visualize risks helps to establish and communicate a holistic view of risks affecting the organization. Risk heat maps are often used to convey the potential likelihood and impact of risks so that strategic decisions can be made for the health of the organization.

A good risk assessment is an important part of the process of putting together a solid internal audit plan. But gathering risk information from an entire company and organizing it into manageable and actionable material can be a daunting task. Creating a risk heat map can help.

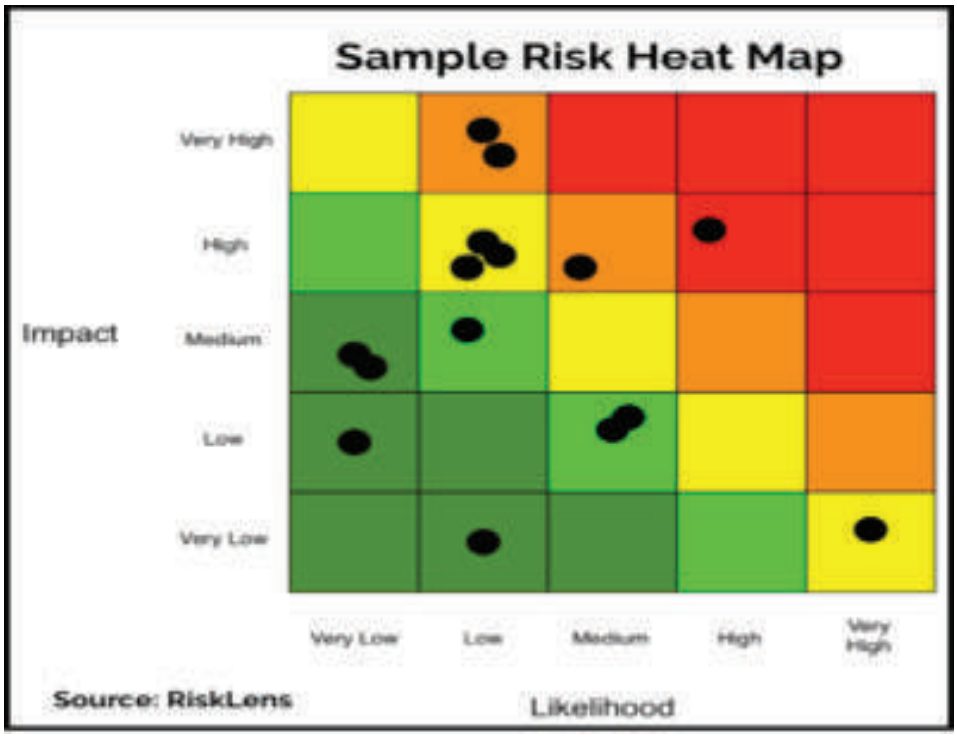
Conducting a risk assessment, either as part of a full enterprise risk management process (ERM) or through a more narrowly focused internal control process, is a critical step to help keep management focused on the key risks that could impact the company. A heat map—a visualization tool to help organize, define, and quickly communicate these key risks—is an indispensable tool in any risk management toolbox and can help cut through the complexity.

Indeed, risk heat maps are a common part of an ERM approach to risk management. The Committee of Sponsoring Organizations' (COSO) ERM guide, Enterprise Risk Management—Integrated Framework, promotes the use of a risk matrix or heat map to focus management's attention on the most important threats and opportunities and to lay the groundwork for risk responses.

A heat map is a two-dimensional representation of data in which values are typically represented by colors (often red, green, and yellow) and can range in complexity from simple (for example, showing qualitative risks only) to more complex (including qualitative and quantitative risks). In the risk assessment process, visualization of risks using a heat map presents a concise, big-picture view of the full risk landscape to discuss while making decisions about the likelihood and impact of risks within the company. (It's important to note that a full risk identification and assessment process is generally required before creating a heat map and those steps are not addressed here.)

### An Important Risk Management Tool

A risk heat map can be an important




*A risk heat map can be an important tool to communicate risk within an organization. It is very effective in communicating which risks rate highest when you consider their potential impact and the likelihood of that impact.*

tool to communicate risk within an organization. It is very effective in communicating which risks rate highest when you consider their potential impact and the likelihood of that impact.

To make use of a risk map, it's important for the organization to create a common language around discussions of risk. Terms like "potential impact" and "likelihood" need to be defined and used throughout the organization and in the design of the heat map so that everyone is on the same page on discussions of risk. It also requires a common understanding of the risk appetite of the organization.

Organizations use a variety of ways to identify entity-wide risks, including surveys, workshops, interviews with business unit managers, risk factors disclosed in financial reports, industry literature, and many others. When the entity-wide risks are identified then each risk is assessed for potential impact, sometimes called "severity" and likelihood of occurring.

Assigning the impact and likelihood scores is easily the most difficult part of the risk-mapping process and much thought and deliberation should go into it. While internal audit can play an important part of this risk scoring, the process should seek major input from the business unit managers, risk management function, and elsewhere.

What benefits do Risk Heat Maps provide?

- A visual, big picture, holistic view to share while making strategic decisions
- Improved management of risks and governance of the risk management process
- Increased focus on the risk appetite and risk tolerance of the company
- More precision in the risk assessment process
- Identification of gaps in the risk management and control process
- Greater integration of risk management across the enterprise and embedding of risk management in operations.

## Plotting the Risks

A typical risk heat map will show risks plotted on a graph with "potential impact" on the vertical axis at left and the "likelihood" plotted on the horizontal axis along the bottom. A simple 3×3 risk heat map will contain three categories for each. Potential impact can be defined as high, medium, and low, while likelihood can be defined as

remote, possible, and plausible.

Once each risk is scored on these attributes, they can be plotted on the graph. A more complex map can have more categories, such as a 5×5 map. For example, potential impact can range from negligible, low, medium, high, and extreme, and likelihood can range from remote, unlikely, possible, plausible, to likely. Again, it's more important that these terms are used commonly throughout the organization than the exact terms used.

Some companies take the additional step of assigning percentages to these ranges to better quantify them beyond the labels. For example, a remote likelihood might be defined as a risk that has a chance of occurring from 0 to 10 percent, an unlikely one from more than 10 percent to 25 percent, and so on.

These attributes can also be used to compute an overall risk score. The overall risk score corresponds to the product of the likelihood (or probability) rating scores and the impact rating scores. The simple formula to calculate risk score is: Risk Score = Likelihood Score x Impact Score.

The risks will be plotted on a heat map according to its score. The risks in the heat map will range from red, yellow, and green—and shades in between—according to their individual score. Companies usually map risks on a heat map using a "residual risk" basis, meaning that it considers the extent to which risks are reduced by internal controls, insurance, or other existing risk response strategies. Then, they can be plotted on the four quadrants or sections if there are more than four.

The map can help the company visualize how risks in one part of the organization can affect operations of another business unit within the organization. A risk map also adds precision to an organization's risk assessment strategy and identifies gaps in an organization's risk management processes. Additionally, it helps to clarify the company's relative response to risks. Since there are not unlimited resources to manage risks, the response must be in proportion to the risk. A heat map can help identify where resources are being used disproportionately to the threat implied in a given risk.

## Creating a Risk Heat Map

The process of creating a risk heat map sits on top of, and is based on, an extensive process of conducting a risk-assessment to identify risks and then potentially creating a risk matrix or risk register where risks are categorized, scored for potential impact and likelihood, and potentially assigned with several other attributes. Let's walk through the key steps in preparation of a risk heat map. These steps will produce a solid risk heat map suitable for most organizations, particularly small and medium companies or for a single business unit or function.

**1: Define the scope:** Decide on the scope of the map you want to create. It can be a simple 3×3 matrix with three colors for high, medium, and low, or it can be a complex affair with layers based on types of risk, several categories on each axis, multiple shades depending on risk scores, lines that follow how risks have changed over time, and more. Start simple and add complexity as you go along. Also, ensure that those who will use the map in the decision-making process are on board with the planned scope. You don't want the board to criticize the map as too simplistic once you've gone all the way down the road of completing it.

**2: Create a common language.** Building a heat map—indeed, the whole risk management process—relies on using a common vernacular to talk about risk. Terms like "likelihood," "impact," and "onset speed" need to be defined and used in the same way throughout the organization. It's also a good idea to give rankings along the axes quantitative ranks, such as percentage ranges or scale ratings, such as 1 out of 5 for "low."

**3: Gather the necessary data.** Again, a risk heat map should be built after a solid risk assessment process is completed, so the data should be there already. You may be consolidating data from several departments or functions, in which case you need to ensure that the assessments were done in the same way and that duplication is eliminated. It's important to get consensus on the data before you begin the mapping process. You don't want process owners taking issue with the risk scores after the map has already been created.

**4: Score the risks.** Score on likelihood, impact, and other factors you want on the map, according to the agreed scope. This part is likely done already, if a risk register or risk matrix is created after the risk assessment and identification process is completed. It's important that process owners and those that

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"own the risk" drive the risk scoring process, since they are closest too it, with help from the second and third lines of defense. Try to keep it simple, by using scores on a range from 1 to 10 or 1 to a 100. Gets lots of input from those in the best position to understand the risk and drive consensus. You don't want to find out later that the process owner never agreed with the score that was determined for the likelihood of a particular risk.

**5: Plot the points and create the map.** The actual mapping of risks is fairly easy, once the data is gathered and consensus is achieved on scores. Use a simple application, such as Excel, at first and for simple maps. In fact, Excel should serve most of your heat-mapping needs. More sophisticated programs, such as Tableau or eSpatial, may be able to do slightly more. Large ERM software packages will also likely be able to produce risk heat maps from existing risk-assessment work, without re-entering lots of data.

**6: Assess the relative placement of individual risks.** The first glance at a newly produced risk heat map will likely yield a few groans. A risk that is clearly more severe in terms of impact and has a higher likelihood is somehow in a "safer" quadrant than a far more benign risk. The error is often the result of a breakdown in forming a common language, or an outlier view has been incorporated that is not shared by others. At this step, such problems can be identified. You should also assess the usefulness of the map at this stage. Is there too much data incorporated into the map to make it useful? Is it too complex? Too cluttered? Too simplistic? You won't really know until you plot the points and put it all together. At this stage the complexity or scope can be adjusted to ensure the usefulness of the final product.

**7: Gather feedback.** The feedback and consensus process starts again with the whole map in view and adjustments are made to fix outliers, errors, and in light of the relevant scores of each risk. The usefulness, based on complexity and addressed in the last step, can also be further assessed and adjusted here. It might also be time to incorporate feedback from senior executives or even the board.

**8: Refine and update the map.** Use the feedback to make adjustments to the map and then create the process for updating the map and ensuring that it is a living document. It an annual process to coincide with the risk assessment that is completed as part of the audit planning stage? Or will it be updated on a quarterly, monthly, or more frequent basis? At each iteration the map can also be refined and more complexity can be added as those in the organization become more familiar and comfortable with using it.

**Conclusion**

A Risk Heat Map is an important method to show the results of the qualitative assessment approach visually and in a meaningful way. The assessment is a critical step in the management process, it's involved in finding the probability of threat occurrence and the impact on the construction project's major goals (time, cost and quality).

Heat maps are an approach to prioritize and rank threats, and all that is done by multiplying the probability by the impact... the result is known as a risk score. This can be allocated in different coloured zones which reflect the importance of the threat of the red colour zone which represents the high threat zone; depending on how much important changes in impact and /or probability, heat maps can be customized to show more details about what types of threats need more attention.

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