

Crisis Management 1 - Boeing 737 MAX Crisis

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CRI 405: Studies in Creative Collaboration

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Introduction

The aviation industry is no stranger to complex crises that demand agile and effective resolutions. This paper will explore and analyze a case study, written by Bill George for Harvard Business School, centered around a crisis that occurred to the popular aircraft co-operation, Boeing. This analysis draws on insights from creative industries, artificial intelligence (AI), academia, course material, and practical experiences to offer actionable recommendations for Boeing to reach effective crisis management. Furthermore, a focus on collaboration and innovation will be used as the foundation for these crisis solutions.

The contents of the paper will include topics like the description of Boeing's crisis, suggestions for solutions that link to creative industries, a detailed SWOT analysis, the integration of AI solutions, a plan for an activity involving AI, the description of roles involved in collaborative crisis management (with reference to the Six Thinking Hats), as well as an exploration on how various creative industries methodologies (e.g. storytelling, the Design Thinking Process, and visual communications) can be used in response to Boeing's crisis and different crises in general.

The aim of this paper is to provide Boeing and other companies with a comprehensive framework for crisis management that uses the power of creativity, collaboration, and innovative technologies. This paper also aims to highlight the critical role of stakeholders in crisis management processes. By delving into the specifics of Boeing's crisis, this paper seeks to offer actionable insights applicable to real-world scenarios. Ultimately, the goal is to equip organizations like Boeing with the tools and strategies necessary to navigate crises successfully, rebuild trust, and emerge stronger and more resilient in the face of a crisis.

Questions 1

Question 1. Describe the crisis issues related to the paper. Using your professional or academic background in creative industries suggest solutions to use collaboration as an element for mediation the crisis.

Description of the Crisis

The crisis at Boeing comes from a series of interconnected issues that have significantly downgraded the company's reputation and positioning in the aviation industry. It first began with the unfortunate two crashes involving Boeing's 737 MAX aircraft, resulting in the loss of 346 lives, as well as the grounding of the planes, meaning that airlines were not allowed to fly the 737 MAX until further investigations by the Federal Aviation Administration (FAA).

These incidents highlighted not only safety concerns but also raised questions about Boeing's internal culture and decision-making processes. Over time, aggressive cost-cutting measures and changes in leadership have shifted the company's focus away from its previously strong emphasis on top-notch engineering and commitment to safety. Strategic decisions aimed at maximizing short-term profits, such as prioritizing stock buybacks over investing in innovation and aircraft design, have led to design compromises and regulatory assessments.

This crisis has not only caused significant financial losses and shareholder value decline but has also damaged Boeing's reputation as a leader in the aviation industry. Rebuilding trust, restoring a culture of safety and innovation, and addressing leadership and systemic issues within the company are critical steps to navigating through and recovering from this multifaceted crisis. Collaboration with stakeholders, transparent communication, and an enhanced dedication to quality and safety standards will be key drivers of Boeing's recovery and long-term success in the industry.

Suggestions for Solutions Using Collaboration

1) Implement Multi-disciplinary Teams

Implementing teams that involve members from various disciplines is crucial for addressing the root causes of the crisis at Boeing. A key issue that contributed to this crisis was the separation of key engineering teams when new leadership relocated the company's headquarters, as highlighted in the report by George (2024). Moving Boeing's headquarters to Chicago led to a disconnect between corporate decision-makers and engineering teams based in Seattle, negatively impacting aircraft quality and safety.

Collaborating across different disciplines has always been important in creative industries as it encourages innovative ideas. Including team members from diverse backgrounds such as engineering, design, safety and health, and communications can bring fresh perspectives and solutions to complex issues and crises. Research by Cuevas et al. (2012) emphasizes the benefits of teamwork across disciplines, highlighting its role in fostering breakthroughs and discoveries.

Therefore, fostering a collaborative environment with teams comprising members from various disciplines is essential for Boeing to address challenges effectively, improve aircraft quality and safety standards, and drive innovation within the organization.

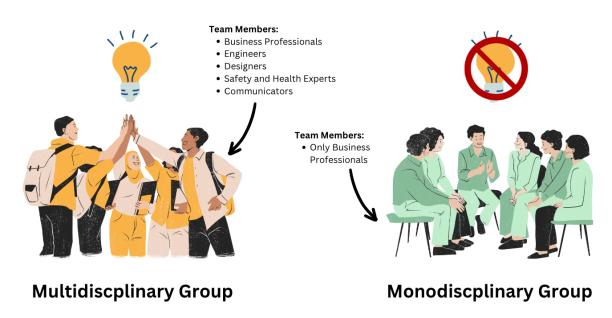


Figure 1: Multidisciplinary vs Monodiscplinary Group Figure Created (Using Canva)

2) Leveraging Co-Creation

Co-creation represents a dynamic collaboration involving not only organizational teams but also consumers and stakeholders to develop products, services, and ideas together. Active involvement of stakeholders in this process opens doors to diverse perspectives and fosters innovation through collaborative exchanges (Ind & Coates, 2013). Therefore, in addition to forming multidisciplinary teams, integrating consumer and stakeholder participation during a crisis is important. This can be achieved by providing direct feedback mechanisms such as surveys and establishing accessible channels for ongoing communication between consumers, stakeholders, and Boeing. Empowering these groups with a voice ensures that their insights contribute meaningfully to crisis management strategies and the overall enhancement of Boeing's operations, reputation, and builds trust within the community, something that was lost during Boeing's 737 MAX crashes.

3) Make use of Improvisation and Brainstorming in Team

Improvisation and brainstorming can be powerful tools for crisis management at Boeing. By using techniques from theatrical improvisation (improv) alongside structured brainstorming processes, Boeing can enhance problem-solving and collaboration among teams.

Drawing insights from studies on interaction designers using improv techniques in brainstorming sessions (Gerber, 2017), Boeing can adapt similar approaches to address crises effectively. The collaboration between improv and brainstorming lies in their shared goals of fostering creativity, encouraging diverse perspectives, and overcoming collaborative challenges.

The benefits of incorporating improv include enhanced group interactions, creative problem-solving, and collaborative learning. Improv techniques promote spontaneity, active listening, and quick thinking, fostering better group interactions and idea generation during brainstorming sessions (*Salto-Youth*, 2013). The flexibility and adaptability inherent in improvisation allow teams to explore unconventional solutions and think outside the box when faced with complex crisis scenarios. Practicing improv in brainstorming sessions not only produces innovative ideas

but also enhances individual and group outcomes by improving communication, teamwork, and problem-solving skills among team members. Integrating improv and brainstorming into crisis management strategies can foster a dynamic and collaborative environment where teams work cohesively to address challenges and drive continuous improvement across the organization.



Figure 2: Image of Team Members Brainstorming (Created Using CapCut - AI Text-to-Image)

4) Collaborative Crisis Response Training and Development Program

Effective training and development are important in addressing crises, as they equip employees with the necessary knowledge and readiness to tackle present and future challenges. While individual training is valuable, especially for new employees who require focused attention during their initial stages, the current crisis emphasizes the need for a new training program that focuses on teamwork during similar situations.

Developing a collaborative crisis response training and development program at Boeing is essential to prepare employees to work seamlessly together during crises. Research by Moreland and Myaskovsky (2015) highlights that groups perform tasks more effectively when their

members are trained together rather than individually. This proves the importance of collective training sessions, specifically for crisis scenarios. The program should focus on essential elements such as active listening, effective brainstorming techniques, rapid prototyping, problem-solving strategies, and collaborative decision-making. By developing these skills collectively, employees can enhance their ability to respond cohesively and efficiently during crises, thereby mitigating risks and ensuring optimal outcomes.

Moreover, implementing group training and development initiatives aligns with Boeing's costcutting preferences while maximizing effectiveness without compromising on the quality and preparedness of its workforce for crisis situations. This approach not only streamlines training processes but also cultivates a culture of collaboration within the organization.



Figure 3: Boeing 737 Full-flight Simulator Group Training Session (Dunn, 2023)

Question 2

Question 2. Perform a detailed SWOT analysis applying the lessons and techniques learn in this course. How to use the Artificial Intelligence to minimize the impact of the crisis described in the case study? Suggest interventions from creative industries field to convert weaknesses to opportunities and threats to strengths.

SWOT Analysis of Case Study

Using the information found in the case study, below is a SWOT analysis diagram and a short description of each of the elements:

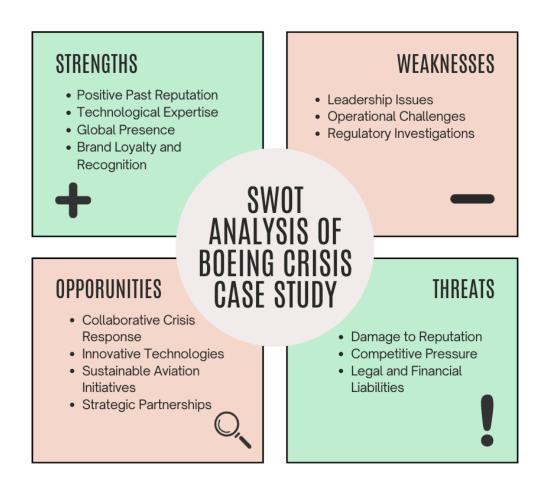


Figure 4: SWOT Analysis Diagram of Boeing Crisis Case Study (Created Using Canva)

Strengths

- **Positive Past Reputation:** Boeing has a rich history of engineering excellence and safety, which can be leveraged to rebuild trust and credibility. This is evident in the article as it mentions that Boeing was once admired for its engineering rigour and commitment to safety.
- **Technological Expertise:** The company possesses advanced technological capabilities, providing a foundation for innovative solutions. For instance, the case study highlights Boeing's technological advancements by mentioning its newest jumbo jet, the 787 Dreamliner, which demonstrates the company's ongoing commitment to technological innovation
- Global Presence: Boeing has a significant global footprint and established relationships with governments, airlines, and suppliers worldwide. According to Boeing's website, the company's global reach includes customers in approximately 150 countries and employees and operations in more than 65 countries (Boeing, 2024).
- **Brand Loyalty and Recognition:** Despite recent challenges, Boeing has retained a loyal customer base and is widely recognized and respected by aviation enthusiasts and industry stakeholders. This long-lasting trust is reflected in Boeing's strong relationships and continued partnerships with major airlines and governments globally, for example, Emirates Airlines and the Federal Aviation Administration (FAA) respectively.

Weaknesses

- Leadership Issues: Leadership changes and decisions focused on short-term gains have led to cultural drift and quality compromises. The case study mentions leadership failures that decreased Boeing's once-acclaimed engineering quality due to decisions made by former CEOs Philip Condit, Harry Stonecipher, and others (George, 2024).
- **Operational Challenges:** Design flaws in aircraft models, like the two 737 MAX's crashes and grounded fleets, have exposed errors in production and safety protocols.
- **Regulatory Investigations:** Ongoing regulatory inspections, tests, and design changes lasting 20 months due to the 737 MAX crashes were mentioned in the case study, indicating strained relations with aviation regulators like the Federal Aviation Administration (FAA) (George, 2024). This can be considered a weakness for Boeing due to potential delays in regulatory

processes, negative impacts on reputation and credibility, increased compliance challenges, competitive disadvantages, and financial implications that come from resolving regulatory issues and rebuilding relationships.

Opportunities

- Collaborative Crisis Response: Implementing collaborative crisis response training and development programs can enhance teamwork and problem-solving during crises.
- Innovative Technologies like AI: Utilizing Artificial Intelligence (AI) can streamline processes, enhance safety measures, and improve decision-making in crisis management.
- Sustainable Aviation Initiatives: Investing in sustainable aviation technologies and practices can align with market trends and regulatory requirements, presenting opportunities for innovation and market differentiation.
- **Strategic Partnerships:** Collaborating with technology firms, universities, and research institutions can foster innovation and accelerate the development of cutting-edge aerospace solutions.

Threats

- **Damage to Reputation:** Ongoing crises and safety concerns have tarnished Boeing's reputation, leading to market share losses and regulatory scrutiny.
- Competitive Pressure: Rivals like Airbus continue to innovate, posing a threat to Boeing's market dominance and customer trust. According to the case study, Airbus has "outsold Boeing in new aircraft orders each of the last five years" (George, 2024).
- Legal and Financial Liabilities: Potential lawsuits, fines, and financial penalties that have come from past crises and ongoing investigations pose significant financial risks and legal challenges.

Use of Artificial Intelligence to Minimize Impact of Crisis

In today's rapidly evolving technological landscape, the integration of Artificial Intelligence (AI) has become a main priority across various industries, including aviation.

The aviation sector, with its complex systems and firm safety requirements, can greatly benefit from AI-driven solutions. Implementing AI in crisis management not only optimizes processes but also enhances safety, decision-making, and predictive capabilities.

Below is a list of these AI solutions that can be used to minimize the impact of the crisis:

- 1. Predictive AI Safety Maintenance: Boeing could implement AI algorithms to continuously monitor the aircraft components in real-time, analyzing data such as temperature, pressure, and unexpected patterns. By detecting anomalies early, maintenance teams can proactively address potential failures before they occur. For instance, General Electric (GE) Aviation utilizes Predix, an AI algorithm that monitors engine performance, predict maintenance needs, and schedule maintenance tasks, reducing unplanned downtime and enhancing overall aircraft reliability (GE Vernova, 2018). Furthermore, AI systems could also monitor and analyze regulatory changes and safety standards in the aviation industry to ensure Boeing is up-to-date with any newer requirements to avoid future crises.
- 2. Streamlining Safety Reports Using AI: With AIs like Natural Language Processing (NLP), manually creating charts and graphs to capture data is not required. Instead, the AI system (like NLP) can streamline this process by automatically generating a visually appealing report with the most relevant data when asked to as it can interpret and comprehend human language (Ihnatchyck, 2024). Boeing could use these NLP algorithms to process large amounts of data from safety reports and regulatory documents. AI systems can extract valuable insights, identify recurring safety concerns or emerging issues, and prioritize corrective actions for future crises.
- 3. **Analyzing Customer Feedback Through AI:** Boeing could use an AI-driven sentiment analysis tool (similarly to an NLP) to analyze and interpret customer feedback across various channels such as social media, surveys, and direct communications. By understanding customer emotions and concerns in real-time about the recent or future crisis, Boeing can

- promptly address issues, implement corrective actions, and communicate effectively with stakeholders, regaining trust.
- 4. **AI Crisis Simulations:** Developing an AI-driven simulation model that can replicate real-world crisis scenarios would benefit Boeing. The simulation can consider factors such as aircraft malfunctions, adverse weather conditions, and operational challenges. These simulations allow Boeing to test response strategies, evaluate decision-making processes, and train personnel without actual risks to aircraft or personnel safety. By conducting AI-enhanced crisis simulations regularly, Boeing can refine crisis management protocols, enhance coordination among teams, and improve overall crisis readiness.



Figure 5: Aircraft Training Simulator Example (CAE, 2023)

Interventions From Creative Industries Field

Boeing faces various weaknesses and threats as identified in the SWOT analysis above, making strategic interventions from the creative industries field necessary to convert these weaknesses and threats into opportunities and strengths.

Weaknesses to Opportunities

1) Leadership Development Labs

One of the weakness found in the SWOT analysis that Boeing experienced was leadership issues. A creative industries related intervention to turn this weakness into an opportunity is the creation of leadership development labs to ensure the leadership teams at Boeing gain new perspectives, increased emotional intelligence, and enhanced decision-making skills. Innovation labs in the creative industries are used frequently to garner new ideas, this same concept can be applied to help leaders at Boeing become more well-versed through activities like experiential learning, role-playing scenarios, and real-time feedback mechanisms.

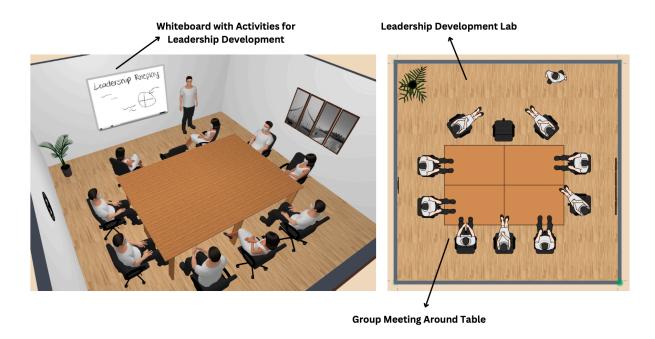


Figure 6: Leadership Development Lab Example (Using 5D Floor Planner Software)

2) Creating Prototypes for Innovation and Safety

The SWOT analysis also highlighted operational challenges as a weakness for Boeing. An intervention from creative industries to address this weakness is through innovative product prototyping. Prototyping, a common practice in design thinking, is a valuable tool used across various creative fields. Given Boeing's operational challenges leading to accidents and fleet groundings, employing prototyping techniques becomes essential for ensuring aircraft safety.

Prototyping involves creating tangible replicas of team-generated ideas, often involving a diverse group of experts to ensure comprehensive testing and validation.

Threats to Strengths

1) Building Trust through Transparency and Storytelling

One of the threats Boeing experienced was a damaged reputation due to this crisis. This threat can turn into a strength by implementing transparent communication strategies. Boeing can use creative approaches such as storytelling in its communications to convey accountability, lessons learned, and commitment to improvement. By using storytelling, the crisis can become more understandable for a wider audience, as well as convey human emotion, something that can help make the company seem more human too. By openly acknowledging past mistakes and showcasing concrete actions taken, Boeing can rebuild trust with stakeholders and regain credibility.

2) Collaboration to Enhance Differentiation

Boeing can leverage creative industries' strategies for innovative differentiation to deal with the threat of competitive pressures. A focus on developing unique selling propositions (USPs) through advanced technologies, sustainable practices, or customer-centric services can be used to reach this differentiation. Collaborations with creative design firms can help infuse artistic elements into product designs, creating visually appealing and functionally superior aircrafts, thus enhancing competitiveness.

Question 3

Question 3. Create an activity to solve or minimize the impact of the crisis using Artificial Intelligence and your expertise in Creative Industries. Critical analyze the situation and describe how to involve the UAE or Dubai in your solution?

Activity Idea: Boeing's Crisis Collaboration and Solution Design Event

To effectively manage the crisis using AI, Boeing can organize an event that brings together employees, customers, stakeholders, and passersby. The event will feature interactive touch screens where participants receive a brief story about an aviation-related crisis, similar to recent 737 MAX incidents, accompanied by visuals for better understanding. Participants will then use AI tools to brainstorm and prototype solutions to address the crisis. For instance, they can use AI to turn text into visual diagrams or transform hand-drawn 2D sketches into 3D models (see figure 7).

Following the design phase, AI algorithms will evaluate each solution based on pre-existing data, providing participants with feedback and a letter grade. This collaborative approach not only encourages engagement between stakeholders and Boeing, but also fosters creativity, problemsolving, and public awareness about crisis management and aviation safety.

Moreover, this event serves as a practical exercise for employees post-crisis management training, allowing them to apply learned strategies and assess their preparedness. The focus on safety and regulatory issues during crisis discussions further educates participants about essential safety measures and industry compliance.

Additionally, the most innovative and effective solutions generated during this event will be documented and saved for potential implementation by Boeing in future crisis situations. This aspect highlights the co-creation aspect of the event, where ideas from diverse sources are leveraged for real-world applications, benefiting both Boeing and the wider aviation community. Combining AI technology, collaborative ideation, prototyping, and education, this event

promotes innovative solutions, public engagement and feedback, and continuous improvement in crisis management strategies within Boeing, solving and minimizing future crises.

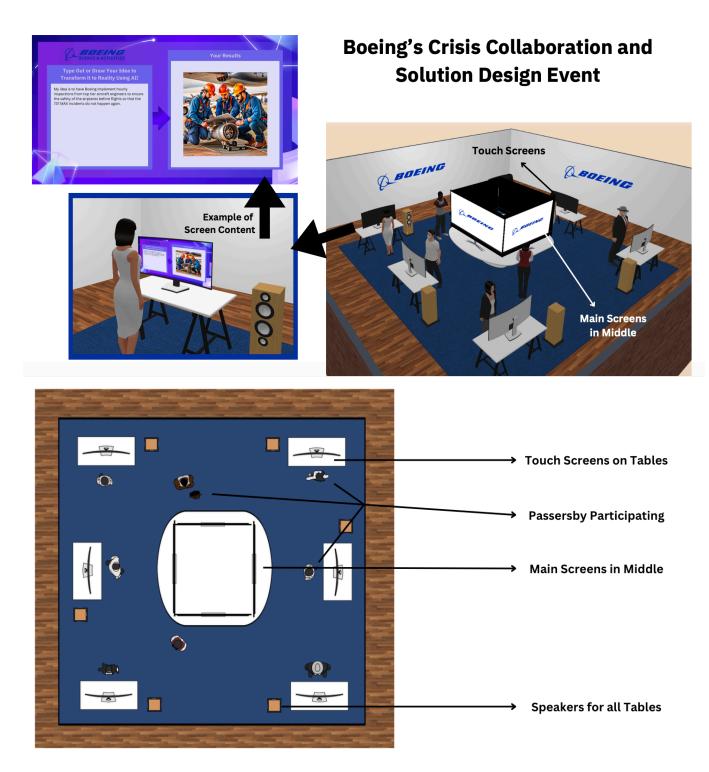


Figure 7: Boeing's Crisis Collaboration and Solution Design Event Example (Using 5D Floor Planner Software)

My Expertise in Creative Industries

My experience as a student in a creative industries program resonates well with this activity as I have been actively involved in planning and organizing many events as part of a collaborative team. In a recent project related to COP 28 last semester, my team and I successfully organized an event that required detailed planning, coordination, and execution to engage participants effectively. Similarly, this semester, I took on the role of event manager for a Student Marketplace event at CUD, which provided valuable insights into managing logistics, communication, and participant engagement.

Through these experiences, I have gained the practical knowledge in event organization, including brainstorming creative ideas, coordinating tasks among team members, managing timelines and resources, and ensuring smooth event operations. This background equips me with the skills needed to contribute effectively to the Crisis Collaboration and Solution Design Event proposed for Boeing.

UAE and **Dubai** Involvement

Boeing's Crisis Collaboration and Solution Design Event can span globally, strategically located in countries and cities where Boeing has strong partnerships with major airlines, such as Emirates Airlines in Dubai. Dubai, in particular, offers a good environment for such an event due to its vibrant aviation industry and technological innovation landscape. Collaborating with government entities in Dubai, such as the Dubai Police or the General Civil Aviation Authority (GCAA) of UAE, could further enhance the event's impact and relevance, given the shared focus on safety and innovation between Boeing and local authorities. This partnership not only aligns with the event's objectives but also leverages Dubai's reputation as a hub for aviation excellence and innovative initiatives.

Question 4

Question 4. Answer the questions using the CASE STUDY as your foundation. Explain the different types of roles that individual contributors may take on in collaborative environments, and the strengths and challenges specific to those roles and how to involve stakeholders in all the five following questions.

Different Types of Roles and the Strengths and Challenges of Each

In collaborative environments, individuals typically take on roles aligned with their expertise and responsibilities, contributing to the overall team effort. For example, in an aviation maintenance team focused on resolving complicated technical issues, there will be individuals with different roles to ensure solving these issues goes smoothly. These roles include: aircraft engineers, maintenance technicians, quality inspectors, and regulatory compliance officers.

Roles can also be categorized into "Six Thinking Hats," a concept, created by Edward de Bono, which emphasizes distinct perspectives and responsibilities crucial for effective teamwork (The de Bono Group, 2019) (see figure 8). The following will explain each role, as well as the strengths and challenges.



Figure 8: The Six Thinking Hats Explanation (Product School, 2022)

The Blue Hat - Crisis Management Director

The blue hat role relates to facilitators or coordinators in collaborative settings. These individuals steer discussions, maintain focus, set agendas, and manage overall collaboration processes.

Therefore, the individual with the blue hat role would be a crisis management director during the case study's aviation crisis.

Challenges:

- Balancing strategic planning with real-time decision-making during crises.
- Managing diverse stakeholder expectations and interests.
- Handling high-pressure situations while maintaining composure and clarity.

The White Hat - Aviation Safety Analyst

Data analysts and information specialists embody aspects of the white hat role in collaborative teams. They offer data-driven insights, conduct research, gather facts, and objectively analyze information. An individual taking on the white hat role would be the aviation safety analyst in this case study.

Challenges:

- Dealing with lots of complex data and ensuring accuracy in analysis.
- Keeping up with evolving safety regulations and industry standards.
- Communicating technical findings and recommendations in a clear and understandable manner.

The Red Hat - Crises Response Team Leader

Emotionally intelligent team members often play the role of the red hat in collaborative environments. They focus on empathy, intuition, and stakeholder perspectives, managing emotional responses and fostering inclusivity. Due to the high emotional intelligence of an individual taking on the red hat role, they would be the crisis response team leader in this case study.

Challenges:

• Handling intense emotions and stress during high-stakes crisis situations.

- Balancing empathy with assertiveness and decisiveness.
- Ensuring effective communication and collaboration among diverse team members.

The Black Hat - Safety Auditor

Individuals proficient at critical analysis and risk assessment often fulfill roles similar to the black hat in collaborative teams. They focus on identifying risks, challenging assumptions, critiquing ideas, and ensuring thorough analysis before decisions. Due to the ability to critically think, an individual with this role would be a safety auditor in this case study.

Challenges:

- Balancing thorough risk assessments with timely decision-making in crises.
- Addressing resistance to change or criticism of established practices.
- Communicating potential risks and recommendations effectively across teams and departments.

The Yellow Hat - Innovation Engineer

Optimistic and forward-thinking team members typically embody aspects of the yellow hat role. They focus on positivity, exploring opportunities, generating ideas, and highlighting benefits and solutions. Because of this opportunistic role, an individual would be the innovation engineer in this case study.

Challenges

- Managing expectations around feasibility and implementation of innovative ideas.
- Overcoming resistance to change or traditional mindsets within the organization.
- Balancing optimism with realism regarding resource constraints and practical considerations.

The Green Hat - Safety Improvement Expert

Finally, individuals with creative and innovative thinking skills take on roles similar to the green hat in collaborative teams. They generate novel ideas, propose alternatives, and foster out-of-the-box thinking. Individuals with this level of creativity would be involved in safety improvement during this case study.

Challenges:

- Ensuring alignment between creative ideas and practical safety considerations.
- Integrating innovative solutions within existing regulatory frameworks and safety standards.
- Collaborating effectively with cross-functional teams to implement and test safety innovations.

Question 4.1

How can principles of storytelling be employed in crisis management strategies to effectively communicate the narrative surrounding the crisis and its resolution?

Principles of Storytelling in Crisis Management

Effective storytelling in crisis management involves using a cohesive narrative that conveys the seriousness of the situation, actions taken to address it, and the path forward. Storytelling principles emphasize clear structure, relatability, and emotional connection to engage stakeholders (Griffin, 2017). By framing the crisis as a narrative with a beginning (the start of the crisis), middle (response efforts), and end (resolution and recovery), organizations can create a compelling storyline that connects with stakeholders and fosters understanding.

Example of Implementation to Resolve Crisis

For instance, Boeing can utilize storytelling principles to address the crisis highlighted in the case study, such as the 737 MAX incidents. They can craft a narrative that acknowledges past mistakes transparently (beginning), outlines corrective actions and safety improvements (middle), and emphasizes a commitment to regain trust and ensure safety (end) (see figure 9). By narrating this journey effectively through various communication channels like press releases, internal communications, and public statements, Boeing can rebuild credibility and regain confidence.

Storytelling for Boeing's Crisis Case Study

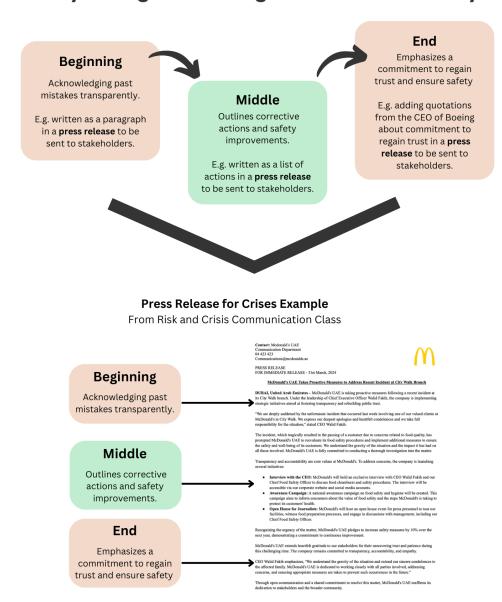


Figure 9: Storytelling for Boeing's Crisis Case Study Visual and Example (Created with Canva)

Role Involvement

Using the roles in the beginning of Question 4 (see page 19), the crisis management director (blue hat) would oversee the narrative structure and coordination, safety analysts and auditors (white and black hat) would provide factual insights and risk assessments, crisis response leaders

(red hat) would manage emotional and stakeholder aspects, innovation engineers (yellow hat) would focus on solutions and opportunities, and safety improvement experts (green hat) would contribute creative strategies for long-term resolutions. Together, these roles ensure a comprehensive and engaging storytelling approach in crisis management.

Stakeholder Involvement

Stakeholders play a crucial role in the storytelling process during crisis management. Involving stakeholders means actively listening to their concerns, incorporating their perspectives into the narrative, and engaging them in the resolution journey. Boeing can conduct focus group sessions, surveys, and forums to gather stakeholder feedback and insights. By integrating stakeholder voices into the crisis narrative, Boeing not only demonstrates transparency and inclusivity but also gains valuable input that can shape effective crisis response strategies.

Question 4.2

In what ways can the Design Thinking Process assist in identifying innovative solutions to navigate through a crisis and mitigate its impacts on stakeholders?

The Design Thinking Process and Creating Innovative Solutions

The Design Thinking Process is a structured approach to problem-solving that revolves around five stages: empathizing (empathize stage), understanding human needs and problems (define stage), generating creative ideas (ideation stage), prototyping solutions (prototype stage), and testing them (test stage) (Han, 2022). This process is highly repetitive to refine and improve ideas or solutions, encouraging teams to explore multiple perspectives, challenge assumptions, and think outside the box.

When applied to crisis management scenarios, the Design Thinking Process becomes a powerful tool for creating innovative solutions. By empathizing with stakeholders affected by the crisis, teams gain deep insights into their challenges, concerns, and desires. Defining the problem in a human-centered way ensures that solutions directly address critical needs and pain points.

Ideation encourages teams to brainstorm diverse solutions, fostering creativity and thinking outside-of-the-box. Prototyping and testing allows for the experimentation and refinement of ideas based on real-world feedback, ensuring that the final solutions are effective and impactful.

The Five Design Thinking Steps



Figure 10: The Five Design Thinking Steps (University of Texas, 2021)

Example of Implementation to Solve Crisis

Ideation within the Design Thinking Process encourages innovative approaches to crisis management. For example, brainstorming sessions can lead to ideas such as AI-driven safety systems, collaborative crisis response training, or improved communication strategies. Prototyping these solutions allows Boeing to test them in controlled environments, gather feedback, and refine them accordingly. By involving stakeholders throughout the process, Boeing ensures that the final solutions are not only innovative but also resonate with the needs and expectations of those impacted by the crisis. This approach helps Boeing navigate the crisis effectively, rebuild trust, and mitigate negative impacts on stakeholders.

Role Involvement

Using the roles given in the beginning of Question 4 (see page 19), the crisis management director (blue hat) would manage all of the efforts throughout the Design Thinking Process.

Safety analysts and auditors (white and black hat) would provide factual insights and data to use when collecting information for the define stage. Crisis response leaders (red hat) would manage the emotional aspect of this process, which is the empathizing stage. Innovation engineers (yellow hat) would focus on generating innovative ideas, linking to the prototyping stage. Safety improvement experts (green hat) would test for long-term solutions to avoid risks, linking to the testing stage.

Stakeholder Involvement

In the context of the case study crisis at Boeing, the Design Thinking Process can also help navigate through the challenges and mitigate impacts on stakeholders. By empathizing with affected parties such as passengers, authorities, and employees, Boeing can gain insights into their safety concerns, trust issues, and expectations. Defining the core problems related to aircraft safety, regulatory compliance, and public perception allows Boeing to frame solutions that address these issues.

Question 4.3

How might principles of improvisation and spontaneity from the performing arts be applied to crisis management scenarios to adapt quickly to evolving situations?

Principles of Improvisation and Spontaneity in Crisis Management

In the context of performing arts, improvisation refers to the spontaneous creation of dialogue, actions, or music without preparation or scripting (Luther, 2016). It involves quick thinking, creativity, and adaptability to respond to unexpected situations. Improvisation allows performers to explore new ideas, collaborate with others, and engage audiences in dynamic and unpredictable ways. Therefore, spontaneity in performing arts relates to the ability to act or react naturally in the moment without hesitation. Spontaneity adds freshness, authenticity, and liveliness to performances, creating engaging and memorable experiences for both performers and audiences (Richard, 2020).

Principles of improvisation and spontaneity from the performing arts can be an important tool in crisis management scenarios too. By using these principles, crisis management teams can be more flexible, creative, collaborative, and quick in decision-making, which are crucial elements in navigating complex and dynamic crises. Improvisation encourages teams to think fast, respond to changing circumstances, and explore innovative solutions in real-time. Applying this principle in crisis management allows teams to adapt strategies and mitigate risks seamlessly as situations unfold. Spontaneity complements improvisation by promoting agility, open-mindedness, and the willingness to explore unconventional approaches. These qualities helps teams break free from rigid structures, embrace uncertainty, and take advantage of emerging opportunities during crises.

Example of Implementation to Solve Crisis

In crisis management at Boeing, principles of improvisation and spontaneity can help in adapting to dynamic challenges like safety concerns, regulatory changes, and stakeholder expectations. For example, crisis response teams can conduct simulation exercises that simulate growing crisis scenarios, requiring participants to improvise responses based on changing variables. This practice builds adaptability, teamwork, and quick decision-making skills essential during real crises. Moreover, fostering a culture of open communication, experimentation, and embracing diverse perspectives encourages spontaneous and creative problem-solving, contributing to adaptable crisis management practices.

Role Involvement

The involvement of every team member is important in improvisation and spontaneity during crisis management. Each member contributes unique insights and ideas, making spontaneous discussions have diverse perspectives drawn from different professional backgrounds. For example, individuals with strong creativity, similar to the green hat role, bring fresh and innovative problem-solving approaches to the table. On the other hand, those with an analytical perspective, similar the white hat role, offer improvised solutions grounded in factual analysis

and informed decision-making. This collaborative approach creates comprehensive problemsolving, supporting the strengths of each team member during improvisation.

Stakeholder Involvement

Stakeholders like aviation experts, regulatory authorities, employees, and passengers offer diverse perspectives and real-time insights needed for dynamic crisis responses. Involving stakeholders in crisis simulations, workshops, and feedback sessions fosters collaborative problem-solving, validates strategies, and enhances transparency and trust.

Question 4.4

How can the principles of visual communication and graphic design be utilized to create compelling and informative crisis communication materials that resonate with diverse audiences?

Principles of Visual Communication and Graphic Design in Crisis Communications

Visual communication and graphic design principles include contrast, simplicity, repetition, alignment, space and visual hierarchy to effectively convey messages and information through images, typography, colours, and layout (Lumen, 2019). These principles aid with the creation of compelling and informative crisis communication materials that resonate with diverse audiences. For example, clear and concise visuals will be easily understood by many different types of individuals from all over the world. Moreover, consistent branding elements, appropriate colour schemes, and accessible typography are important aspects utilized to ensure that communication materials during a crisis are engaging, easy to understand, and visually appealing.

Example of Implementation to Solve Crisis

In implementing visual communication and graphic design principles to solve crisis communication challenges, Boeing can create engaging infographics, charts, videos, and posters that can help turn complex information into easily understandable visuals. For instance, infographics can illustrate safety protocols, regulatory compliance measures, and crisis response procedures using icons, colour-coded visuals, and concise text. These infographics can be given

as reference for employees during crisis management training sessions (see figure 11 for examples). Furthermore, using these principles, videos can feature animated explanations of critical concepts, emphasizing safety procedures or showcasing innovative solutions, while posters can display emergency contact information, safety guidelines, and actionable steps during crises. All of these types of visual communications can be given to a variety of stakeholders to inform them on what to do during a crisis.

By using a blend of graphics, typography, and visual storytelling techniques, these materials can effectively communicate key messages, build trust, and resonate with many types of audiences such as employees, regulators, passengers, and the general public.



Figure 11: Examples of Visually Appealing Safety Infographics (Canva, 2023)

Role Involvement

Involving various roles that link to the Six Thinking Hats framework guarantees an organized approach to crisis communication design. The crisis management director (blue hat) would oversee the overall design strategy and alignment with the crisis objectives. The safety analysts and auditors (white and black hat) would ensure there is factual accuracy and credibility in the visuals. The crisis response team leaders (red hat) would focus on adding design elements that would resonate with audiences, linking to the emotional side of things. Innovation engineers (yellow hat) would explore creative and engaging design solutions. Safety improvement experts (green hat) would contribute innovative safety communication strategies. This collaborative effort gathers diverse expertise to craft impactful crisis communication materials.

Stakeholder Involvement

Engaging stakeholders, using feedback channels and holding meetings and discussions, throughout the design process ensures that communication materials meet their expectations, address concerns, and resonate with their perspectives. Stakeholder input during brainstorming sessions, design reviews, and feedback cycles refines visual elements for maximum effectiveness. Incorporating stakeholder feedback also fosters trust, transparency, and inclusivity in crisis communication strategies, promoting active engagement and understanding across diverse stakeholder groups.

Ouestion 4.5

How can the collaborative and iterative nature of creative industries such as game development or film production inform crisis management practices, particularly in terms of teamwork and rapid prototyping of solutions?

Collaborative and Iterative Nature in Crisis Management

Collaborative and iterative nature in crisis management draws parallels from the teamwork and iterative processes seen in creative industries like game development and film production. In these industries, teams work closely together, combining diverse skills and perspectives to tackle complex challenges iteratively. According to game design experts, Remiar et al., the benefits of

collaborating as a team for game design include the diversity of ideas, motivation, enjoyment, streamlining production, and enhanced feedback and problem-solving (2019). The same benefits can also be linked to film product too (Blend Pictures, 2023). Similarly, crisis management benefits from collaborative teamwork that allows for the exploration of multiple solutions and rapid adjustments based on feedback and evolving situations. This approach fosters adaptability and innovation, crucial elements in managing dynamic crises effectively.

Example of Implementation to Solve Crisis

An example involving Boeing and its crisis management strategy includes leveraging teamwork and rapid prototyping of solutions. Boeing's crisis management teams can adopt methodologies inspired by the collaborative and iterative processes seen in game development or film production. For example, forming multidisciplinary teams comprising of engineers, safety experts, regulators, and communications professionals with clear roles and responsibilities, Boeing can facilitate efficient collaboration and brainstorming sessions.

For instance, in response to safety concerns like those highlighted in the 737 MAX crisis, Boeing can initiate rapid prototyping of crisis response strategies. This process involves designing and testing innovative solutions such as software updates, employee and pilot training enhancements, and safety protocol revisions. Boeing can rapidly prototype collaboratively during team meetings with a multidisciplinary team. Teams can also then gather feedback from stakeholders, industry experts and regulators to ensure these solutions are appropriate using a tester. According to this feedback, Boeing can work accordingly to improve the prototype. This iterative approach ensures that Boeing can swiftly address safety issues, mitigate risks, and restore trust among stakeholders and the aviation community effectively.

Role Involvement

Role Involvement is important in utilizing the collaborative and iterative nature of creative industries for crisis management. Each team member takes on roles aligning with their expertise and responsibilities, contributing to a comprehensive and dynamic crisis response. As mentioned

before, the crisis management director (blue hat) oversees coordination and strategy, safety analysts and auditors (white and black hat) provide data-driven insights, crisis response leaders (red hat) manage emotional aspects, innovation engineers (yellow hat) focus on solutions, and safety improvement experts (green hat) contribute creative strategies for long-term solutions. All of these roles together will contribute to a space that will have a variety of ideas and perspectives and efficiency.

Stakeholder Involvement

Stakeholder Involvement is vital for the success of crisis management informed by collaborative and iterative practices. Engaging stakeholders such as employees, customers, regulators, and the community ensures diverse perspectives are considered in crisis response strategies.

Collaborative workshops, feedback sessions, and simulations involving stakeholders foster transparency, build trust, and validate the effectiveness of crisis management plans. This involvement creates a shared understanding of roles, responsibilities, and expectations, enhancing overall crisis resilience.

Conclusion

In conclusion, Boeing's crisis requires a multi-dimensional approach that integrates insights from creative industries, AI technologies, and collaborative strategies. The collaborative and innovative solutions proposed in this paper align with Boeing's need to address not only immediate crisis management but also long-term organizational transformation. Using collaboration as a central element in crisis mediation can help Boeing tap into the diverse expertise of its teams, stakeholders, and external partners to navigate complex challenges effectively.

The integration of AI technologies such as safety systems, crisis simulation events, and data analytics offers Boeing real-time insights and predictive capabilities important for proactive crisis management. Furthermore, adopting principles from creative industries, such as storytelling, design thinking, and visual communication, enables Boeing to craft compelling narratives, identify innovative solutions, and resonate with diverse stakeholders during crises. Boeing's implementation of these strategies requires a cultural shift towards transparency, accountability, and a focus on safety and quality, ensuring the current crisis and future crises can be mitigated or solved.

Bibliography

- Blend Pictures. (2023, July 28). *The Importance of Collaboration in Film & TV Production. Medium*; Medium. https://medium.com/@seo.blendpictures/the-importance-of-collaboration-in-film-tv-production-6762514dde5e
- Boeing. (2024). Global. Boeing.com. https://www.boeing.com/global#overview
- CAE. (2023). *Training systems*. Cae.com; CAE.com. https://www.cae.com/defense-security/what-we-do/training-systems/
- Canva. (2023). Canva Templates. Canva. https://www.canva.com/
- Capella. (2023). *Using AI for Predictive Maintenance in Manufacturing*. Capellasolutions.com. https://www.capellasolutions.com/blog/using-ai-for-predictive-maintenance-in-manufacturing
- Cuevas, H. M., Bolstad, C. A., Oberbreckling, R., LaVoie, N., Mitchell, D. K., Fielder, J., & Foltz, P. W. (2012). Benefits and Challenges of Multidisciplinary Project Teams: "Lessons Learned" for Researchers and Practitioners. *The ITEA Journal (International Test and Evaluation Association)*, 33(1).
- Dunn, G. (2023, June 2). *Boeing training chief sees progress in shift to competencies approach*. Flight Global; Flight Global. https://www.flightglobal.com/safety/boeing-training-chief-sees-progress-in-shift-to-competencies-approach/153483.article
- Futurism. (2024, January 30). Flying into the Future: How AI is Redefining the Future of Aviation. Futurism Technologies. https://www.futurismtechnologies.com/blog/flying-into-the-future-how-ai-is-redefining-the-future-of-aviation/
- GE Vernova. (2018). *GE's Industrial Transformation* | *GE Digital*. Ge.com. https://www.ge.com/digital/blog/our-future-digital
- George, B. (2024, January 24). *Why Boeing's Problems with the 737 MAX Began More Than 25 Years Ago*. HBS Working Knowledge. https://hbswk.hbs.edu/item/why-boeings-problems-with-737-max-began-more-than-25-years-ago
- Gerber, E. (2017). Using improvisation to enhance the effectiveness of brainstorming | Proceedings of the SIGCHI Conference on Human Factors in Computing Systems. ACM Conferences. https://dl.acm.org/doi/abs/10.1145/1518701.1518718

- Griffin, C. (2017). 6 Key Principles for Great Storytelling. Linkedin.com. https://www.linkedin.com/pulse/6-key-principles-great-storytelling-craig-griffin/
- Han, E. (2022, January 18). *What Is Design Thinking & Why Is It Important?* | *HBS Online*. Business Insights Blog. https://online.hbs.edu/blog/post/what-is-design-thinking
- Ihnatchyck, Y. (2024, February 23). *The Benefits of Natural Language Processing (NLP) in Business*. Data Science Central. https://www.datasciencecentral.com/what-are-the-benefits-of-using-natural-language-processing-nlp-in-business/
- Ind, N., & Coates, N. (2013). The meanings of co-creation | Emerald Insight. *European Business Review*, 25(1), 86–95. https://doi.org/10.1108//ebr
- Luther, A. (2016, March 10). *Spontaneous Improvisation: a definition The Maydays*. The Maydays. https://www.themaydays.co.uk/definition-spontaneous-improvisation/#:~:text=Definition%20of%20Spontaneous%20Improvisation,created%20Spontaneously%20or%20without%20preparation.
- Richard, E. (2020). *How Artists Are Using Improvisation and Spontaneity in Their Work Art21*. Art21. https://art21.org/read/yes-and-how-artists-are-using-improvisation-and-spontaneity-in-their-work/
- Lumen. (2019). Visual Design Principles | Business Communication Skills for Managers.

 Lumenlearning.com. https://courses.lumenlearning.com/wm-businesscommunicationmgrs/chapter/visual-design-principles-overview/
- Moreland, R. L., & Myaskovsky, L. (2015). Exploring the Performance Benefits of Group

 Training: Transactive Memory or Improved Communication? *Organizational Behavior and Human Decision Processes (Print)*, 82(1), 117–133. https://doi.org/10.1006/

 obhd.2015.2891
- Product School. (2022). Six Thinking Hats in Product Management. Product School. https://productschool.com/resources/glossary/six-thinking-hats
- Remiar, J., Reagan, R., & Naidoo, R. (2020). What are the benefits of teamwork in game design? Linkedin.com. https://www.linkedin.com/advice/0/what-benefits-teamwork-game-design-skills-game-design-0goqe

- Salto-Youth Toolbox Improv Theatre for Non-formal Education. (2013). Salto-Youth.net. https://www.salto-youth.net/tools/toolbox/tool/improv-theatre-for-non-formal-education.3950/
- The de Bono Group. (2019). *Six Thinking Hats De Bono Group*. Debonogroup.com. https://www.debonogroup.com/services/core-programs/six-thinking-hats/
- University of Texas. (2021, December 17). *Apply the Design Thinking Process in Your Business* | *UT Austin Boot Camps*. UT Austin Boot Camps. https://techbootcamps.utexas.edu/blog/design-thinking-process/