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A REVIEW OF IMPLEMENTING ISO45001 IN CONSTRUCTION INDUSTRY

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Abstract : The construction industry is recognized as one of the most hazardous sectors globally, characterized by elevated rates of workplace accidents, injuries, and occupational illnesses. The implementation of ISO 45001:2018, an international standard for occupational health and safety (OHS) management systems, provides a comprehensive framework designed to enhance safety performance and promote a culture of health and safety within organizations. This report critically reviews the significance of ISO 45001 in the construction sector, highlighting its role in mitigating risks, ensuring legal compliance, and fostering a proactive safety culture. Additionally, the report addresses the challenges associated with the implementation of ISO 45001, including resistance to change, resource allocation, and the complexities inherent in construction projects. Through the examination of best practices and case studies, the report offers valuable insights into effective strategies for successful implementation. Ultimately, this review underscores the importance of ISO 45001 as a vital tool for improving occupational health and safety outcomes in the construction industry, paving the way for safer work environments and enhanced organizational performance.

IndexTerms **- ISO 45001,Occupational Health and Safety (OHS),Construction Industry,Safety Management Systems,Risk Management,Workplace Safety,Safety Culture,Legal Compliance,Implementation Challenges,Best Practices**

1. INTRODUCTION

This report aims to evaluate the construction industry is a cornerstone of economic development, contributing significantly to infrastructure, housing, and public works. However, it is also one of the most dangerous sectors, with workers facing a myriad of hazards that can lead to serious injuries, fatalities, and long-term health issues. According to the International Labour Organization (ILO), construction workers are at a higher risk of accidents compared to other industries, with statistics indicating that construction-related incidents account for a substantial proportion of workplace fatalities globally. The nature of construction work—characterized by physical labor, the use of heavy machinery, and exposure to hazardous materials—exacerbates these risks.

Need for the Study

The construction industry is one of the most hazardous sectors globally, characterized by a high incidence of workplace accidents, injuries, and fatalities. As construction projects become increasingly complex and diverse, the need for effective occupational health and safety (OHS) management has never been more critical. The implementation of ISO 45001:2018, the international standard for OHS management systems, offers a structured approach to improving safety performance and mitigating risks.

2. OVERVIEW OF ISO 45001

ISO 45001:2018 is the first international standard specifically designed for occupational health and safety (OHS) management systems. It provides a framework for organizations to improve employee safety, reduce workplace risks, and create better, safer working conditions. The standard is applicable to any organization, regardless of its size, type, or nature of work, making it particularly relevant for the diverse and dynamic environment of the construction industry.

2.1 Key Principles of ISO 45001

ISO 45001 is built on several key principles that guide organizations in establishing an effective OHS management system. These principles include:

1. **Leadership and Worker Participation**:
    - Effective leadership is crucial for the successful implementation of an OHS management system. Top management must demonstrate commitment to OHS by actively participating in the development and maintenance of the system.
    - Worker participation is equally important. Engaging employees in safety discussions, decision-making, and the identification of hazards fosters a culture of safety and accountability.
2. **Risk Assessment and Hazard Identification**:
    - A core component of ISO 45001 is the systematic identification of hazards and assessment of risks associated with workplace activities. Organizations are required to evaluate the potential impact of these risks and implement appropriate controls to mitigate them.
    - This proactive approach helps organizations anticipate and prevent incidents before they occur.
3. **Continual Improvement**:
    - ISO 45001 emphasizes the need for continual improvement in OHS performance. Organizations are encouraged to regularly review and update their OHS management systems to adapt to changing circumstances, emerging risks, and new regulatory requirements.
    - This principle promotes a culture of learning and adaptation, ensuring that safety practices evolve over time.
4. **Legal and Other Requirements**:
    - Organizations must identify and comply with applicable legal and regulatory requirements related to occupational health and safety. ISO 45001 encourages organizations to stay informed about changes in legislation and to integrate these requirements into their OHS management systems.
5. **Integration with Other Management Systems**:
    - ISO 45001 is designed to be compatible with other management system standards, such as ISO 9001 (Quality Management) and ISO 14001 (Environmental Management). This compatibility allows organizations to integrate their OHS management system with other operational processes, enhancing overall efficiency and effectiveness.

2.2 Components of ISO 45001

ISO 45001 is structured around the Plan-Do-Check-Act (PDCA) cycle, which provides a systematic approach to managing occupational health and safety. The key components of the standard include:

1. **Context of the Organization**:
    - Organizations must understand the internal and external factors that can impact their OHS performance. This includes identifying stakeholders, their needs and expectations, and the legal and regulatory context in which the organization operates.

2. **Leadership and Commitment**:
    - Top management must demonstrate leadership and commitment to the OHS management system. This includes establishing an OHS policy, assigning roles and responsibilities, and ensuring adequate resources are allocated for implementation.
3. **Planning**:
    - Organizations are required to establish objectives and targets for OHS performance. This involves identifying hazards, assessing risks, and determining actions to address these risks. The planning process should also consider legal and other requirements.
4. **Support**:
    - Adequate support is essential for the effective implementation of the OHS management system. This includes providing necessary resources, training, and awareness programs to ensure that employees understand their roles and responsibilities in maintaining a safe work environment.
5. **Operation**:
    - Organizations must establish processes to manage the risks associated with their operations. This includes implementing controls, conducting training, and ensuring that safety measures are integrated into daily activities.
6. **Performance Evaluation**:
    - ISO 45001 requires organizations to monitor, measure, analyze, and evaluate their OHS performance. This includes conducting internal audits, management reviews, and incident investigations to identify areas for improvement.
7. **Improvement**:
    - Organizations must take corrective actions to address nonconformities and continually improve their OHS management system. This involves learning from incidents, near misses, and feedback from employees to enhance safety practices.

2.3 Benefits of Implementing ISO 45001

Implementing ISO 45001 offers numerous benefits for organizations in the construction industry, including:

- **Enhanced Safety Performance**: A structured approach to risk management leads to a reduction in workplace accidents and incidents.
- **Legal Compliance**: Organizations can ensure they meet legal and regulatory requirements, reducing the risk of penalties and legal liabilities.
- **Improved Employee Morale**: A commitment to safety fosters a positive work environment, leading to increased employee satisfaction and retention.
- **Operational Efficiency**: Fewer accidents and disruptions result in improved productivity and reduced costs associated with workplace incidents.
- **Reputation and Competitiveness**: Organizations that prioritize safety can enhance their reputation in the industry, making them more attractive to clients and potential employees.

3. IMPORTANCE OF ISO 45001 IN THE CONSTRUCTION INDUSTRY

The construction industry is characterized by its dynamic work environments, diverse workforce, and inherent risks associated with various activities. The implementation of ISO 45001 is crucial for enhancing occupational health and safety (OHS) within this sector. This section discusses the significance of ISO 45001 in the construction industry, focusing on its role in improving safety culture, reducing incidents, ensuring legal compliance, and enhancing overall organizational performance.

3.1 Enhancing Safety Culture

A strong safety culture is essential in the construction industry, where workers are often exposed to hazardous conditions. ISO 45001 promotes a proactive approach to safety by encouraging leadership commitment and worker participation.

- **Leadership Commitment**: Top management plays a vital role in establishing a safety culture. By demonstrating commitment to OHS, management sets the tone for the organization, signaling that safety is a priority. This commitment can manifest through the allocation of resources, active participation in safety initiatives, and open communication about safety issues.
- **Worker Participation**: Engaging workers in safety discussions and decision-making processes fosters a sense of ownership and accountability. When employees feel that their input is valued, they are more likely to adhere to safety protocols and contribute to a safer work environment. ISO 45001 encourages organizations to involve workers in hazard identification, risk assessment, and the development of safety procedures.

3.2 Reducing Accidents and Incidents

The construction industry has one of the highest rates of workplace accidents and fatalities. Implementing ISO 45001 provides a structured framework for identifying and managing risks, leading to a significant reduction in incidents.

- **Systematic Risk Management**: ISO 45001 emphasizes the importance of identifying hazards and assessing risks associated with construction activities. By systematically evaluating potential risks, organizations can implement effective control measures to mitigate them. This proactive approach helps prevent accidents before they occur.
- **Continuous Monitoring and Improvement**: The standard encourages organizations to monitor their OHS performance continuously. Regular audits, inspections, and performance evaluations help identify areas for improvement and ensure that safety measures are effective. By learning from incidents and near misses, organizations can adapt their practices to enhance safety further.

3.3 Legal Compliance and Risk Management

Compliance with legal and regulatory requirements is a critical aspect of operating in the construction industry. ISO 45001 assists organizations in meeting these obligations, thereby reducing the risk of legal penalties and enhancing their reputation.

- **Understanding Legal Requirements**: ISO 45001 requires organizations to identify and comply with applicable OHS laws and regulations. This ensures that organizations stay informed about changes in legislation and integrate these requirements into their OHS management systems.
- **Reducing Legal Liabilities**: By implementing ISO 45001, organizations can demonstrate their commitment to OHS and their efforts to mitigate risks. This proactive approach can help reduce the likelihood of legal claims and penalties resulting from workplace incidents.

3.4 Improved Productivity and Efficiency

A safer work environment directly correlates with improved productivity and operational efficiency. By reducing the number of accidents and incidents, organizations can minimize disruptions and associated costs.

- **Minimized Downtime**: Workplace accidents can lead to significant downtime, affecting project timelines and budgets. By implementing ISO 45001 and reducing incidents, organizations can maintain productivity levels and complete projects on time.

- **Enhanced Employee Morale**: A commitment to safety fosters a positive work environment, leading to increased employee morale and job satisfaction. When workers feel safe and valued, they are more likely to be engaged and productive.

3.5 Competitive Advantage

In a competitive construction market, organizations that prioritize safety can differentiate themselves from their competitors. Implementing ISO 45001 can enhance an organization's reputation and attractiveness to clients and potential employees.

- **Client Trust and Confidence**: Clients are increasingly prioritizing safety when selecting contractors. Organizations that can demonstrate compliance with ISO 45001 and a commitment to OHS are more likely to gain the trust and confidence of clients, leading to increased business opportunities.

- **Attracting Talent**: A strong safety culture and commitment to employee well-being can help organizations attract and retain skilled workers. In an industry facing labor shortages, organizations that prioritize safety are more likely to appeal to potential employees.

4. CHALLENGES IN IMPLEMENTING ISO 45001

While the benefits of implementing ISO 45001 in the construction industry are significant, organizations may encounter several challenges during the process. Understanding these challenges is crucial for developing effective strategies to overcome them and ensure successful implementation. This section outlines the key challenges associated with ISO 45001 implementation and provides insights into potential solutions.

4.1 Resistance to Change

One of the most common challenges organizations face when implementing ISO 45001 is resistance to change from employees and management.

- **Cultural Barriers**: Established safety practices and organizational culture can create resistance to new processes and systems. Employees may be accustomed to existing ways of working and may view changes as unnecessary or burdensome.

- **Overcoming Resistance**: To address resistance, organizations should focus on effective communication and engagement. Involving employees in the implementation process, providing clear explanations of the benefits of ISO 45001, and addressing concerns can help foster acceptance and buy-in.

4.2 Resource Allocation

Implementing ISO 45001 requires a commitment of resources, including time, personnel, and financial investment. Smaller construction firms may find it particularly challenging to allocate these resources effectively.

- **Financial Constraints**: The costs associated with training, hiring additional staff, and implementing new processes can be significant, especially for smaller organizations with limited budgets.

- **Strategies for Resource Allocation**: Organizations can explore various strategies to manage resource constraints, such as prioritizing key areas for improvement, seeking external funding or grants, and leveraging existing resources to support

implementation efforts. Additionally, integrating ISO 45001 with other management systems can help streamline processes and reduce duplication of efforts.

4.3 Complexity of Construction Projects

The dynamic and multifaceted nature of construction projects can complicate the implementation of a standardized OHS management system.

- **Varied Work Environments**: Construction sites often involve diverse work environments, fluctuating conditions, and a wide range of activities, making it challenging to apply a one-size-fits-all approach to safety management.
- **Tailoring the Approach**: Organizations should tailor their implementation of ISO 45001 to address the specific risks and challenges associated with each project. Conducting thorough risk assessments and engaging workers in the development of site-specific safety procedures can enhance the effectiveness of the OHS management system.

4.4 Lack of Awareness and Understanding

Some organizations may lack awareness of ISO 45001 and its benefits, leading to insufficient commitment to the implementation process.

- **Knowledge Gaps**: Employees and management may not fully understand the requirements of ISO 45001 or the importance of OHS management, resulting in a lack of engagement and support.
- **Raising Awareness**: Organizations should invest in training and awareness programs to educate employees about ISO 45001 and its significance. Providing resources, workshops, and informational sessions can help build understanding and support for the implementation process.

4.5 Integration with Existing Systems

Organizations that already have established management systems may face challenges in integrating ISO 45001 with these systems.

- **Compatibility Issues**: Existing processes and procedures may not align with the requirements of ISO 45001, leading to confusion and inefficiencies.
- **Streamlining Integration**: To facilitate integration, organizations should conduct a thorough review of their existing management systems and identify areas of overlap with ISO 45001. By aligning processes and ensuring compatibility, organizations can create a cohesive OHS management system that enhances overall efficiency.

4.6 Maintaining Momentum

Sustaining momentum throughout the implementation process can be challenging, particularly in the face of competing priorities and changing project demands.

- **Short-Term Focus**: Organizations may become focused on immediate project deadlines and overlook the importance of maintaining OHS initiatives.
- **Strategies for Sustaining Momentum**: To maintain momentum, organizations should establish clear objectives and timelines for implementation, regularly communicate progress to stakeholders, and celebrate successes along the way. Engaging employees in ongoing safety initiatives and encouraging feedback can also help sustain interest and commitment.

5. BEST PRACTICES FOR IMPLEMENTING ISO 45001

Successful implementation of ISO 45001 in the construction industry requires a strategic approach that incorporates best practices tailored to the unique challenges of the sector. This section outlines key best practices that organizations can adopt to enhance their occupational health and safety (OHS) management systems and ensure effective implementation of ISO 45001.

5.1 Leadership Commitment

Strong leadership commitment is essential for the successful implementation of ISO 45001. Top management must actively support and participate in the OHS management system.

- **Establish an OHS Policy**: Develop a clear OHS policy that reflects the organization's commitment to health and safety. This policy should be communicated to all employees and stakeholders, emphasizing the importance of safety in all operations.
- **Allocate Resources**: Ensure that adequate resources—financial, human, and technological—are allocated to support the implementation of ISO 45001. This includes investing in training, safety equipment, and necessary infrastructure.
- **Lead by Example**: Management should model safe behaviors and actively participate in safety initiatives. By demonstrating a commitment to safety, leaders can inspire employees to prioritize OHS in their daily activities.

5.2 Employee Involvement

Engaging employees at all levels is crucial for fostering a culture of safety and ensuring the successful implementation of ISO 45001.

- **Establish Safety Committees**: Create safety committees that include representatives from various levels of the organization. These committees can facilitate communication, gather feedback, and involve employees in safety decision-making processes.
- **Encourage Reporting**: Foster an environment where employees feel comfortable reporting hazards, near misses, and safety concerns without fear of reprisal. Implementing a reporting system can help identify potential risks and improve safety practices.
- **Provide Training and Development**: Offer regular training sessions to ensure that employees understand their roles and responsibilities in maintaining a safe work environment. Training should cover hazard identification, risk assessment, and emergency response procedures.

5.3 Risk Assessment and Control Measures

A systematic approach to risk assessment is fundamental to the effective implementation of ISO 45001.

- **Conduct Comprehensive Risk Assessments**: Regularly assess workplace hazards and evaluate the associated risks. This should include site-specific assessments that consider the unique conditions and activities of each construction project.
- **Implement Control Measures**: Based on the results of risk assessments, develop and implement appropriate control measures to mitigate identified risks. This may include engineering controls, administrative controls, and personal protective equipment (PPE).
- **Review and Update Controls**: Continuously monitor the effectiveness of control measures and make adjustments as necessary. Regular reviews help ensure that safety practices remain relevant and effective in addressing emerging risks.

5.4 Continuous Monitoring and Improvement

Establishing mechanisms for continuous monitoring and improvement is essential for maintaining an effective OHS management system.

- **Performance Metrics**: Develop key performance indicators (KPIs) to measure OHS performance. These metrics can include incident rates, near misses, and compliance with safety procedures.
- **Conduct Regular Audits**: Implement internal audits to evaluate compliance with ISO 45001 and assess the effectiveness of the OHS management system. Audits provide valuable insights into areas for improvement and help identify nonconformities.
- **Management Reviews**: Conduct regular management reviews to assess the overall performance of the OHS management system. This includes evaluating progress toward objectives, reviewing audit findings, and identifying opportunities for improvement.

5.5 Communication and Awareness

Effective communication is vital for ensuring that all employees are aware of safety policies, procedures, and their roles in maintaining a safe work environment.

- **Develop Communication Channels**: Establish clear communication channels for disseminating safety information. This may include safety meetings, newsletters, bulletin boards, and digital platforms.
- **Promote Safety Awareness**: Conduct safety awareness campaigns to reinforce the importance of OHS and keep safety at the forefront of employees' minds. Use visual aids, posters, and training sessions to promote safety messages.
- **Feedback Mechanisms**: Implement feedback mechanisms that allow employees to share their thoughts and suggestions regarding safety practices. This can help identify areas for improvement and foster a culture of continuous learning.

5.6 Integration with Other Management Systems

Integrating ISO 45001 with other management systems can enhance overall efficiency and effectiveness.

- **Align with Existing Processes**: Review existing management systems (e.g., ISO 9001 for quality management and ISO 14001 for environmental management) and identify areas of overlap with ISO 45001. Aligning processes can streamline operations and reduce duplication of efforts.
- **Holistic Approach**: Adopt a holistic approach to management that considers the interconnections between quality, environmental, and occupational health and safety management. This can lead to improved overall performance and sustainability.

6. CASE STUDIES OF ISO 45001 IMPLEMENTATION IN CONSTRUCTION ORGANIZATIONS

This section presents case studies of construction organizations that have successfully implemented ISO 45001. These examples illustrate the practical application of the standard, the challenges faced, and the benefits realized through effective OHS management.

6.1 Case Study 1: Large Construction Firm

Background: A large construction firm operating in multiple regions faced high incident rates and increasing regulatory scrutiny. The organization decided to implement ISO 45001 to enhance its OHS management system and improve safety performance.

Implementation Process:

- **Leadership Commitment**: The CEO actively championed the initiative, allocating resources for training and system development.
- **Employee Involvement**: Safety committees were established at each project site, allowing workers to participate in safety discussions and decision-making.
- **Risk Assessment**: Comprehensive risk assessments were conducted for all ongoing projects, leading to the identification of critical hazards and the implementation of targeted control measures.

Results:

- **Reduction in Incident Rates**: Within the first year of implementation, the organization reported a 30% reduction in workplace incidents.
- **Improved Compliance**: The firm achieved full compliance with local and international OHS regulations, reducing the risk of legal penalties.
- **Enhanced Reputation**: The organization gained recognition for its commitment to safety, leading to increased business opportunities and client trust.

6.2 Case Study 2: Medium-Sized Construction Company

Background: A medium-sized construction company specializing in residential projects sought to improve its safety culture and reduce accidents. The management recognized the need for a structured approach to OHS and decided to implement ISO 45001.

Implementation Process:

- **Training and Awareness**: The company conducted training sessions for all employees to raise awareness about ISO 45001 and its benefits. Workers were educated on hazard identification and reporting procedures.
- **Continuous Monitoring**: The organization established key performance indicators (KPIs) to monitor OHS performance, including incident rates and employee feedback on safety practices.
- **Management Reviews**: Regular management reviews were conducted to assess the effectiveness of the OHS management system and identify areas for improvement.

Results:

- **Cultural Shift**: The implementation of ISO 45001 led to a significant cultural shift within the organization, with employees becoming more engaged in safety practices and reporting hazards proactively.
- **Incident Reduction**: The company experienced a 25% decrease in accidents over two years, contributing to a safer work environment.

- **Increased Employee Morale**: Employees reported higher job satisfaction and morale, attributing this to the organization's commitment to their safety and well-being.

6.3 Case Study 3: Small Construction Firm

Background: A small construction firm with limited resources faced challenges in managing safety effectively. The management recognized the need for a structured approach to OHS and decided to implement ISO 45001 to enhance safety practices.

Implementation Process:

- **Resource Optimization**: The firm leveraged existing resources by integrating ISO 45001 with its quality management system, reducing duplication of efforts.
- **Simplified Procedures**: The organization developed simplified safety procedures tailored to its specific operations, making it easier for employees to understand and follow.
- **Employee Engagement**: Workers were actively involved in the development of safety procedures, fostering a sense of ownership and accountability.

Results:

- **Improved Safety Practices**: The implementation of ISO 45001 led to improved safety practices, with employees more aware of hazards and safety protocols.
- **Cost Savings**: The firm experienced cost savings due to reduced incidents and associated expenses, allowing for reinvestment in safety initiatives.
- **Enhanced Client Trust**: The organization's commitment to safety improved its reputation, leading to increased client trust and new business opportunities.

7. RECOMMENDATIONS FOR EFFECTIVE ADOPTION OF ISO 45001

To successfully adopt ISO 45001 and enhance occupational health and safety (OHS) management in the construction industry, organizations should consider the following actionable recommendations:

7.1 Foster Leadership Commitment

- **Engage Top Management**: Ensure that top management is actively involved in the implementation process. Their commitment should be visible through participation in safety initiatives, allocation of resources, and communication of the importance of OHS.
- **Establish Clear Objectives**: Set clear, measurable objectives for OHS performance that align with the organization's overall goals. This helps create a shared vision for safety and encourages accountability at all levels.

7.2 Involve Employees

- **Create Safety Committees**: Establish safety committees that include representatives from various levels of the organization. This promotes collaboration and allows employees to voice their concerns and suggestions regarding safety practices.
- **Encourage Reporting**: Develop a culture that encourages employees to report hazards, near misses, and safety concerns without fear of reprisal. Implementing a user-friendly reporting system can facilitate this process.

7.3 Conduct Comprehensive Risk Assessments

- **Regularly Assess Risks**: Conduct thorough risk assessments for all construction activities and projects. This should include site-specific assessments that consider the unique conditions and hazards associated with each project.
- **Implement Control Measures**: Based on risk assessment findings, develop and implement appropriate control measures to mitigate identified risks. Ensure that these measures are communicated effectively to all employees.

7.4 Provide Training and Resources

- **Invest in Training**: Offer regular training sessions to ensure that employees understand their roles and responsibilities in maintaining a safe work environment. Training should cover hazard identification, risk assessment, and emergency response procedures.
- **Allocate Resources**: Ensure that adequate resources—financial, human, and technological—are allocated to support the implementation of ISO 45001. This includes investing in safety equipment, training programs, and necessary infrastructure.

7.5 Establish Continuous Monitoring and Improvement

- **Develop Performance Metrics**: Establish key performance indicators (KPIs) to measure OHS performance. Regularly track and analyze these metrics to identify trends and areas for improvement.
- **Conduct Regular Audits**: Implement internal audits to evaluate compliance with ISO 45001 and assess the effectiveness of the OHS management system. Use audit findings to inform continuous improvement efforts.

7.6 Enhance Communication and Awareness

- **Develop Communication Channels**: Establish clear communication channels for disseminating safety information. This may include safety meetings, newsletters, bulletin boards, and digital platforms.
- **Promote Safety Awareness**: Conduct safety awareness campaigns to reinforce the importance of OHS and keep safety at the forefront of employees' minds. Use visual aids, posters, and training sessions to promote safety messages.

7.7 Integrate with Other Management Systems

- **Align with Existing Processes**: Review existing management systems (e.g., ISO 9001 for quality management and ISO 14001 for environmental management) and identify areas of overlap with ISO 45001. Aligning processes can streamline operations and reduce duplication of efforts.
- **Adopt a Holistic Approach**: Consider the interconnections between quality, environmental, and occupational health and safety management. A holistic approach can lead to improved overall performance and sustainability.

8. CONCLUSION

The implementation of ISO 45001:2018 in the construction industry represents a pivotal advancement in the pursuit of occupational health and safety (OHS) management. This standard provides a comprehensive framework that empowers organizations to systematically identify and mitigate risks, enhance safety culture, and ensure compliance with legal and regulatory requirements.

Throughout this report, we have highlighted the critical importance of ISO 45001 in fostering a safer work environment, particularly in the construction sector, which is characterized by its inherent risks and dynamic work conditions. The successful

adoption of ISO 45001 not only leads to a significant reduction in workplace incidents and accidents but also promotes employee engagement, morale, and overall organizational performance.

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