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Generative AI in Responsible Conversational Agent Integration: Guidelines for Service Managers

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ABSTRACT

Responsible integration of conversational agents (CAs) like chatbots is crucial for service firms to mitigate risks and foster positive outcomes. This article provides managerial guidelines through a Corporate Digital Responsibility (CDR) lens, focusing on CDR Culture, Management Structure, and Digital Governance across the service firm, software provider, and customers/society. It examines how organizational sensemaking processes of creation, interpretation, and enactment are triggered by CA-related issues and events. The research highlights the role of generative AI (GenAI) in implementing CDR factors and responsible CA software development lifecycle phases during development and integration. Guidelines are provided for leveraging GenAI to enhance CDR Culture, incorporate ethical considerations into CDR Management Structure, and enable robust Digital Governance mechanisms to prioritize customer/societal well-being. A multilevel framework illustrates reinforcing the guidelines through organizational sensemaking processes, and fostering responsible CA integration aligned with ethical principles and societal values.

Highlights

- Responsible integration of conversational agents requires managers to align their firm with software providers and customers.
- This alignment occurs via organizational sensemaking processes: creation, interpretation, and enactment.
- Managers should cultivate strong corporate digital responsibility culture, management structure, and digital governance.
- To foster the well-being of customers and society, managers should engage in conversational agent software development.
- Generative AI can aid managers in corporate digital responsibility across their firm, software providers and customers.

Introduction

Conversational agents (CAs), such as chatbots, virtual assistants, and robots with embedded conversational abilities, have proliferated in recent years, providing useful services in many domains. However, high-profile failures like Microsoft's Tay chatbot taking on offensive behaviors demonstrate that some agents exhibit unethical conduct, raising serious concerns about safe and inclusive artificial intelligence (AI) design. It is tempting to blame the technology itself for such problems, but a deeper look reveals a more nuanced reality - negative outcomes may largely stem from limitations and biases in the human-led design and development process across multiple levels and stakeholders. In this context, the concept of Corporate Digital Responsibility (CDR) factors — CDR Culture, Management Structure, and Digital Governance — emerges as a guiding framework crucial for mitigating risks and fostering positive outcomes. This article provides managerial guidelines to avoid faulty or misaligned development and integration practices of CA agents through multiple levels (service firm, software provider, and customer/society). Key is an inclusive development approach to steer these technologies towards curtailing their negative effects on society. In addition to guidelines, this article provides managers with avenues to leverage Generative Artificial Intelligence (GenAI) to support their implementation of such guidelines.

A CDR perspective on conversational agent development

CDR Culture sets the tone for responsible decision-making, Management Structure guides the allocation of resources for ethical considerations, and Digital Governance ensures ongoing monitoring and

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Table 1
CDR-specific organizational and constituent processes

CDR Factor	CDR Subfactor	Organizational sense making processes in CDR	Creation	Interpretation	Enactment
CDR Culture	Shared Value and Norms	Creating a common understanding and interpretation of what CDR means among employees and within the organization.	X	X	X
	Digital Cultural Competency	Making ambiguities explicit to help employees interpret and navigate the CDR challenges.		X	
	Ethical KPI's for Employees	Making employees comprehend CDR's relevance to their roles and align organization's CDR communication in relation to employee performance system.			X
CDR Management Structure	IT and Technology Executive Roles	Employing dedicated roles as focal points for interpreting and making sense of the complex ethical and responsible use of technology and data.		X	X
	Integrated Teams	Integrating CDR practices into teams to foster collaborative sensemaking in respective domains and shared understanding in daily operations and decision-making.	X	X	X
Digital Governance	Formulated and Embedded Processes	Supporting employees in understanding the formalized structure's purpose, components, and implications of their work and responsibilities.		X	X
	Safeguard Systems	Sharing a narrative that emphasizes the importance of human involvement in data-driven and algorithmic processes.			X
	Human Oversight	Constructing a sense of vigilance and responsibility, e.g., the idea that privacy and CDR audits are essential.		X	X

adherence to ethical guidelines. To foster the well-being of customers and society, service managers must grasp the intricacies of CA development, emphasizing ethical practices and aligning these technologies with societal values. Drawing from CDR literature, this approach mitigates risks associated with CAs and establishes service firms as responsible contributors to the broader community.

GenAI refers to a subset of AI that involves the use of algorithms to generate human-like outputs, whether it is text, images, voice, or other forms of content. Striving for responsible CA development and integration within firms, GenAI can play a crucial role in aiding service managers in this effort through leveraging the CDR factors as will be discussed.

CDR factors across the service firm, the software provider, and the customer/society

Understanding and implementing CDR factors is pivotal across the service-firm, software providers, and customers and society. In this context, service managers play a central role in shaping the ethical development and integration of responsible CA agents in their firms. To foster the well-being of customers and society, service managers must grasp the intricacies of CA development and integration practices aligning with software providers and customer and societal values in doing so. Furthermore, managers need to engage their firm's resources and stakeholders to foster CDR culture, management structure, and digital governance as the firm interacts with the software provider and customers and society. As such this paper, aims to arm managers with CDR-centric guidelines and GenAI uses that aid the process of incorporating responsible CAs in firms.

Service firms learn from issues and events related to conversational agents

Organizations demand a structured approach to learn from the situations they encounter around CAs. This aligns with organizational sensemaking processes where employees and teams or entire organizational units assign meaning to these issues or events, before delving into broader affective and cognitive interpretation and finally taking action to restore the situation or creating a new state. This organizational learning or sensemaking involves three constituent processes: *creation, interpretation,* and *enactment*, aimed at responding to the dynamic environment. It can be argued that within the context of CDR, CA events trigger contextualized organizational sensemaking processes and, contingent upon CDR factors, its constituent processes.

CA related issues and events that organizations encounter are multifaceted, exhibiting variations in their predictability and the extent of their impact. While the classification of CA events should not be seen as dichotomous but rather continuous, sitting on two continua—from predictable to unpredictable, and from minor to major events, this classification allows us to illustrate and conceptualize organizational sensemaking for responsible CA development.

Major predicted CA events usually interrupt common ways of achieving goals and therefore force most organizational actors into significant sense-making and planning efforts concerning how to carry out their work stipulated by the planned change initiative. For a CA, such a change might be the introduction of new data privacy regulations (e.g., GDPR, CCPA), where the CA needs to be updated to handle customer data more securely, implement data access and deletion requests, and inform users about data collection practices.

Minor predicted CA events, in contrast, have a more subtle but still significant impact on maintaining the quality of service, in our case, on responsible CA operations. An example is an e-commerce chatbot programmed to provide information about products based on a catalog that frequently updates with minor changes like price adjustments, stock availability, or product descriptions. The CA's development and integration team must constantly monitor the catalog for updates and develop algorithms to adapt its responses accordingly.

Major unpredicted CA events severely interrupt organizational activities and trigger intensive sensemaking efforts, sometimes even leading to the collapse of sensemaking and, thus, of ongoing organizational activities. An example is an AI-based chatbot used for customer support in a technology company facing a major data breach that compromises customer data.

Minor unpredicted CA events vary from glitches in day-to-day ongoing activities, such as minor team misunderstandings, to more severe interruptions of a smaller part of organizational activity, which require sense-making efforts to be restored satisfactorily. An example is a chatbot for a multinational company that handles queries in multiple

Table 2
Role of GenAI for responsible CA implementation at service firms.

CDR Factor	Role of GenAI
CDR Culture	*Scenario Simulations and Training:* GenAI can simulate real-world scenarios that employees might encounter, presenting ethical challenges and dilemmas. This allows employees to understand how to apply CDR values in practical situations.
	Cultural Sensitivity in AI Algorithms: Organizations can leverage GenAI to develop AI algorithms that are culturally sensitive and bias avoidant. This aligns with responsible AI development and promotes a culture of inclusivity and diversity.
	Integration with Key Performance Indicators (KPIs): Use GenAI to analyze existing KPIs and suggest modifications to align them with CDR goals and objectives.
CDR Management Structure	*Executive Role Definition:* Based on company strategy, GenAI can assist in defining executive positions and job profiles (e.g., Chief Digital Responsibility Officer), with the responsibilities and skills required
	Training and awareness program: GenAI can generate educational materials to train employees, especially data scientists and analysts, about their roles within firm CDR and the significance of responsible practices and AI literacy.
Digital Governance	*Continuous Monitoring and Improvement:* Firms can use GenAI for continuous monitoring and feedback loops, suggesting improvements and updates to the established CDR policies and processes.
	Risk Assessment and Mitigation: Employment of GenAI to execute risk assessment by simulating potential scenarios where digital technologies may pose risks. The AI can help in identifying vulnerabilities and proposing mitigation strategies.
	Incorporate Human Oversight Mechanisms: GenAI can support implementing human oversight in the AI development and deployment process. This includes having human reviewers, moderators, or decision-makers to ensure that the AI-generated content aligns with ethical and responsible standards.

languages. Over time, the societal meanings of certain words or phrases in one language subtly change. The existing chatbot's language models may result in misinterpretations or culturally insensitive responses.

In aggregate, CA events trigger organizational sensemaking and its three processes creation, interpretation, and enactment, contingent upon CDR factors (Table 1).

GenAI guidelines for service firms across CDR factors

The guidelines in Table 2 help service managers to leverage GenAI in the implementation and integration of Responsible CAs.

The software development lifecycle enables the development of conversational agents

CAs comprise an interface that customer interacts with, and an underlying set of AI algorithms and systems that aid in processing the interaction's inputs and outputs. For instance, a chatbot could use a natural language processing machine learning algorithm to break down the sentence a customer writes into a meaningful command. It then could use a more advanced large language model based on GenAI to process the customer's input, and output an appropriate response. As such, CA solutions could be made up of varying arrangements of AI algorithms and data sets that vary in complexity. Since CAs are essentially data-driven software solutions, they follow a development process involving many stakeholders that contribute to designing, developing, and integrating such programs, referred to as the Software Development Lifecycle. The CA Software Development Lifecycle phases resemble the following:

1. Requirements Gathering. Involves gathering requirements from stakeholders and defining what capabilities, functionality, constraints, and standards the software needs to have. This stage is crucial in defining a CA's behavior and service.
2. Design and Planning. Involves conceptualizing and planning the architecture of the CA software and interface, and focuses on technical decisions that govern how the software will operate and meet the requirements developed in the previous phase.
3. Implementation. Involves translating the design into functional software including the CA algorithms and interfaces, and involves active coding and prototyping.
4. Testing and Monitoring. Evaluates the implemented software and includes testing individual pieces of code, various algorithms and functions, user interface, and broadly verifies the CA functions (responsibly) as intended.
5. Maintenance. Involves ongoing support and monitoring of the CA including bugs, performance issues, and new requirements addressed through updates and patches.

A CDR-focused software development lifecycle

Service managers integrating CAs that promote positive responsible outcomes into their service offerings should incorporate CDR factors pertaining to their organization's issues and events, into the CA Software Development Lifecycle. Firstly, integrating CDR culture into the Software Development Lifecycle phases fosters shared commitments to responsible values via training, oversight incentives and continuous improvement. Secondly, CDR management structure ensures leadership support and cross-functional collaboration on ethical practices. Finally, digital governance enables formally embedding ethical policies, auditing mechanisms and human oversight. As such, poor implementation and misalignment of service and responsible objectives can occur if service managers are not aware or involved with the software provider in how their firms integrate CA agents via the Software Development Lifecycle. Furthermore, managers can make use of GenAI to implement CDR-focused Software Development Lifecycles that can be categorized into the creation, interpretation, and enactment processes. Table 3 provides managerial CDR guidelines in line with each CA Software Development Lifecycle phase along with possible GenAI uses per creation, interpretation, and enactment processes.

Conversational agent implementation affects customers and society

Managers are facing an era in which AI, particularly through CAs like chatbots, has revolutionized how service firms interact with customers. CAs are widespread across various industries, including healthcare, education, and e-commerce, reshaping business operations and customer interactions. This integration, while beneficial, brings forth critical issues like ethical concerns, data privacy, and the potential for job displacement.

The introduction of the Artificial Intelligence Act (AIA) by the European Union in April 2021 marked a significant step in regulating AI, including CAs, with a focus on ethical usage. The AIA categorizes AI systems by risk, mandating transparency and accountability in AI development. This includes clear disclosures of AI involvement in CAs and prohibiting high-risk AI practices like behavior manipulation. This regulation also affects software providers and their entire Software Development Lifecycle, necessitating compliance and adherence to ethical standards.

However, the use of CAs is not without challenges. Over-reliance on these technologies can diminish human-to-human interactions, particularly in sensitive areas like healthcare. There is also the risk of AI

Table 3
Guidelines for a responsible CA software development life cycle.

CDR Factors	Software Development Lifecycle Phases	Guidelines	GenAI Uses	Creation	Interpretation	Enactment
CDR Culture	**Requirements Gathering**	Service managers should prioritize the establishment of a culture that values ethical AI and data practices and ensure that the organization's values and service objectives align with responsible CA development.	Implement training programs leveraging GenAI to create interactive modules that emphasize ethical considerations. This helps in fostering a culture of awareness and commitment to ethical AI practices from the start.	X		
	Design and Planning	Service managers should allocate resources for ethical considerations in design and planning, fostering a culture of open communication and inclusiveness in teams.	Employ GenAI to generate scenarios and case studies that highlight potential ethical issues and biases in CA development. This can facilitate discussions and awareness during project design.		X	
	Implementation	Service managers should establish a culture of responsibility, allocate resources, and define protocols for addressing ethical concerns during the integration phase.	Implement learning programs to promote AI literacy powered by GenAI content, providing staff with up-to-date information on ethical design practices throughout the implementation and testing and monitoring phases			X
	Testing and Monitoring	Service managers should encourage ongoing awareness, learning, and adaptation to ethical standards to ensure CAs are tested and monitored for any ethical breaches.				
	Maintenance	Service managers should embed a sense of responsibility to parties taking over CA maintenance, implementing long-term practices to maintain and enforce ethical standards even when service objectives change.	Use GenAI to simulate failure point scenarios from the real-time data collected by the CA to help foresee and adapt to cultural changes in the organization and society.			X
CDR Management Structure	**Requirements Gathering**	Service managers should actively participate in defining ethical guidelines and principles, aligning them with the organization's goals at the onset of CA development.	Employ GenAI for generating initial drafts of ethical guidelines and principles based on industry best practices. Managers can then refine and customize these drafts to align with the organization's goals during requirements gathering.	X		
	Design and Planning	Service managers should ensure that leadership provides support and allocates resources for comprehensive ethical planning.	Leverage GenAI to assist in creating resource allocation plans for ethical considerations during project design and planning. This can help managers ensure that there are sufficient and adequate resources dedicated to responsible design tasks.	X	X	
	Implementation	Service managers need to ensure leadership support for ethical practices, allocate necessary resources, and establish protocols to address ethical concerns throughout implementation.	Utilize GenAI for automated reporting and analysis of adherence to ethical guidelines. This helps managers to promptly identify and address any ethical concerns, ensuring leadership support for ethical practices during testing and execution.	X		X
	Testing and Monitoring	Service managers should implement robust monitoring and control systems, conduct regular ethical impact assessments, and ensure that ethical guidelines are consistently followed.				
	Maintenance	Service managers need to ensure that leadership provides continued support for ethical practices during the maintenance phase.	Leverage GenAI for automated reporting on the sustained commitment and real-time CA data to responsible practices during maintenance. This ensures that leadership stays informed and continues to provide support for ongoing ethical practices.	X		X
Digital Governance	**Requirements Gathering**	Service managers should establish governance frameworks and policies that ensure ethical considerations are followed during requirements gathering.	Utilize GenAI to automate the creation of initial governance frameworks and policies. This can provide a starting point for managers to tailor the governance structure for responsible CA integration.	X	X	
	Design and Planning	Service managers should enforce governance policies to ensure that ethical guidelines are part of the project design and planning process.	Use GenAI to automate the integration of ethical guidelines into project planning documentation. This ensures that ethical considerations are embedded in the design and planning phase.		X	X

(*continued on next page*)

Table 3 (*continued*)

CDR Factors	Software Development Lifecycle Phases	Guidelines	GenAI Uses	Creation	Interpretation	Enactment
	Implementation	Service managers should implement monitoring and control systems, conduct regular ethical assessments, and ensure consistent adherence to ethical guidelines during execution.	Implement automated monitoring systems powered by GenAI to track and assess the development process for ethical considerations. This ensures that ethical guidelines are consistently adhered to, and any deviations are promptly identified and addressed.		X	X
	Testing and Monitoring	Service managers should implement robust monitoring and control systems, conduct regular ethical impact assessments, and consistently follow ethical guidelines.				
	Maintenance	Service managers must ensure that leadership provides continued support for adhering to ethical practices during maintenance.	Utilize automated governance frameworks powered by GenAI for the ongoing maintenance phase. This includes periodic reviews and updates on real-time CA data to ensure that ethical guidelines are maintained, and changes are caught and rectified in a timely fashion.		X	X

Table 4
Guidelines for a responsible CA for customers and society.

CDR Factor	Role of GenAI	Creation	Interpretation	Enactment
CDR Culture	*Customizing CAs to Industry Needs:* Tailor the functionality and interaction style of CAs to fit the specific needs of the industry and customer base. For example, in healthcare, CAs should be sensitive and informative, while in e-commerce, they might be more focused on efficiency and sales support.	X	X	
	Balancing AI and Human Interaction: Avoid over-reliance on CAs, especially in sectors where human empathy and understanding are crucial, such as healthcare. Firms should find a balance between automated and human services to maintain a personal touch.		X	X
	Ethical Integration of Conversational Agents: Service firms should prioritize the ethical use of Conversational Agents (CAs) in line with the Artificial Intelligence Act (AIA). This includes clear disclosure of AI involvement in customer interactions and avoiding high-risk AI practices such as behavior manipulation.	X	X	X
CDR Management Structure	*Ongoing Training and Development:* Invest in continuous AI literacy training for staff to stay up-to-date of AI advancements and ethical practices. Ensure that employees are equipped to work alongside CAs and understand their capabilities and limitations.		X	X
	Promoting Transparency and Accountability: Be transparent with customers about the use of CAs and the nature of AI-driven interactions. Establish accountability mechanisms for any issues arising from CA interactions.		X	X
Digital Governance	*Addressing AI Bias and Data Privacy:* Implement strategies to identify and mitigate AI biases to prevent societal inequalities. Additionally, uphold stringent data privacy standards to protect customer information, build trust and comply with legal requirements.	X	X	X
	Incorporating Feedback Mechanisms: Regularly collect and analyze feedback from both customers and employees about their interactions with CAs. Use this feedback to refine the AI systems, ensuring they meet user needs and ethical standards.	X		X
	Utilizing GenAI for Enhanced Interactions: Employ GenAI to create user-friendly, accessible content and tutorials, making technology more approachable for all users. GenAI can also facilitate personalized experiences and provide interactive learning opportunities.			X
	Ensuring Compliance with AIA: Stay informed about the latest developments in AI legislation, particularly the AIA, and ensure compliance across all operations involving CAs. This includes adhering to the risk categorization and regulation standards set by the AIA.			X
	Leveraging GenAI for Security and Ethics: Use GenAI to educate customers and employees about the ethical and security aspects of AI and CAs. This helps in promoting responsible technology usage and understanding its implications.		X	X

biases, which can deepen societal inequalities. To combat these issues, feedback mechanisms are vital. They ensure that CAs remain helpful and ethical, enabling service firms and software developers to gather input throughout the Software Development Lifecycle, from initial design to deployment and maintenance. GenAI can serve as a powerful tool to enhance this process. It can generate user-friendly content and tutorials, aiding in AI literacy and empowering individuals to use such technology more effectively. By providing personalized learning experiences and interactive simulations, GenAI helps users grasp complex concepts and develop practical skills in a safe environment. Moreover, it can address ethical and security aspects of technology, promoting responsible usage.

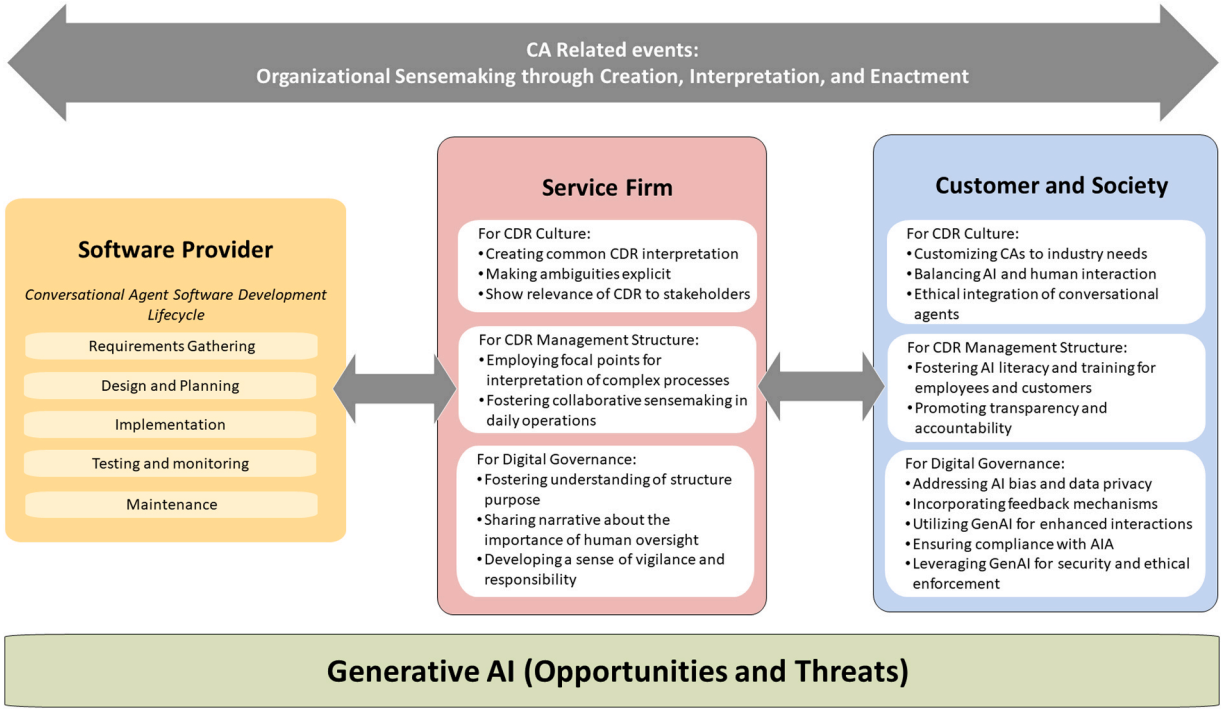

Fig. 1. A multilevel CDR perspective on responsible conversational agent development, integration , and utilization.

GenAI guidelines to foster the well-being of customers and society

Below are three sets of practical guidelines that help service firms to achieve this goal (Table 4).

A framework to foster CDR for responsible CA integration

Managers can make use of the following framework (Fig. 1) to approach responsible CA integration within their firms from a CDR perspective using the organizational sensemaking processes (creation, interpretation, and enactment) to reinforce the guidelines and GenAI uses previously discussed across their firm, software providers, and customers and society.

Guidelines to cultivate a strong CDR culture

In sum, managers should emphasize CA impact on customers and society, highlighting that a robust CDR Culture not only shapes internal organizational sensemaking but also ensures CAs align with societal values. Utilize GenAI to create engaging e-learning modules that instill AI literacy and awareness of ethical considerations among development teams during development and integration. Foster a culture of responsibility, as this not only enhances customers' experiences but also strengthens the service firm's reputation and trustworthiness in the eyes of the broader community.

Guidelines to establish a comprehensive management structure

Highlight the impact on customers by demonstrating that the Management Structure prioritizes responsible AI development, contributing to positive user perceptions. Leverage GenAI to automate the generation of ethical guidelines and governance frameworks during the design phase. Clearly define resource allocation for ethical assessments, ensuring the Management Structure guides organizational sensemaking throughout the testing and implementation phase and beyond, creating lasting value for both customers and society.

Guidelines to implement robust digital governance

Highlight the positive impact on customers by demonstrating that responsible CA integration aligns with customer expectations and service objectives concerning inclusiveness and ethical practices. Utilize GenAI to automate the development and maintenance of ethical guidelines and governance frameworks into the responsible CA development documentation. Implement GenAI automated monitoring systems to foster accountability during execution, contributing to trustworthy CAs and establishing the service firm as a socially responsible entity in the broader community.

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