WORKSHOP 2

Demystifying Generative AI - Shape use cases where generative AI adds real value to the Health Sector

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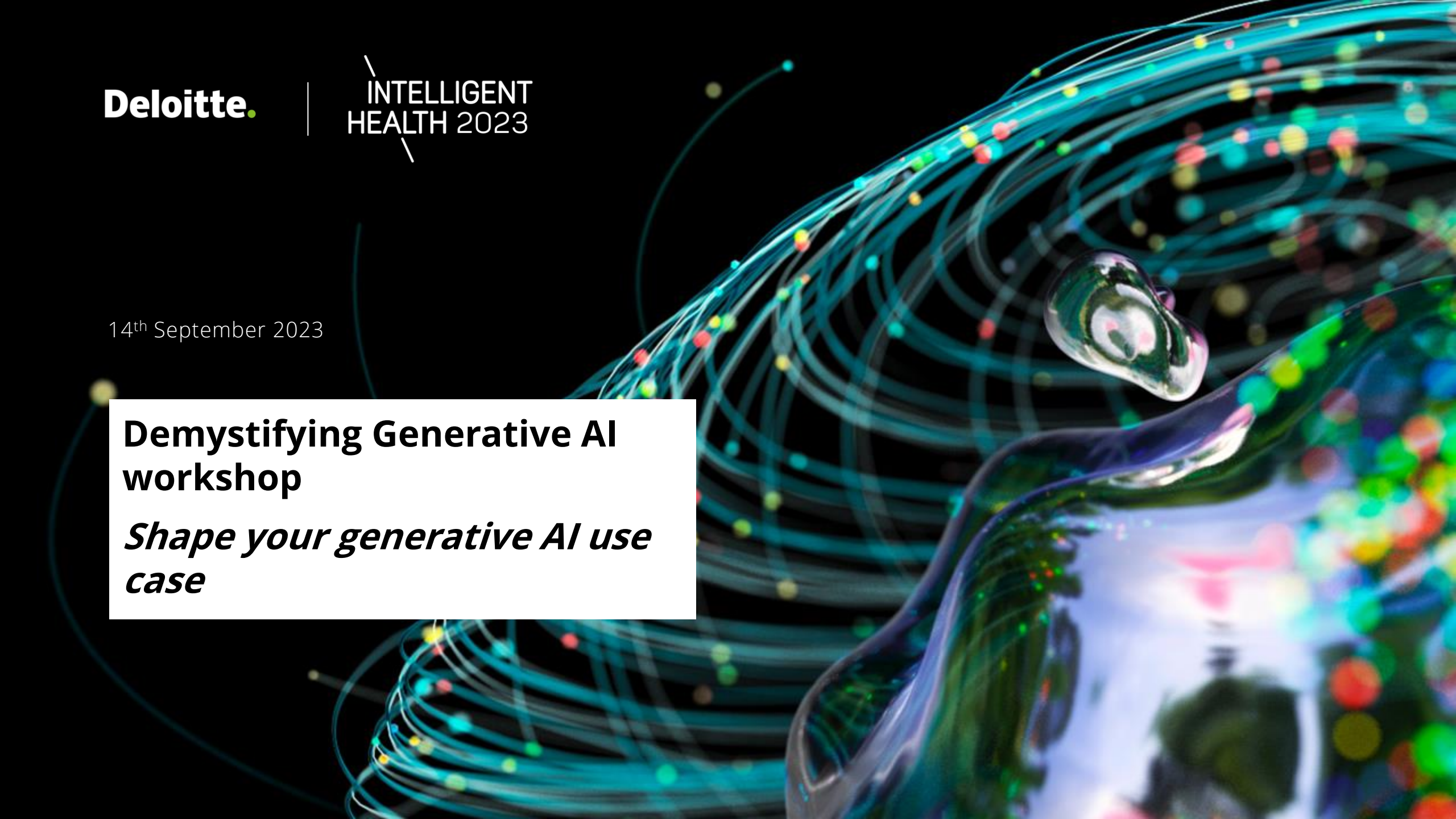
14th September 2023

Demystifying Generative AI workshop

Shape your generative AI use case



Demystifying the Future of Life Sciences with GenAI

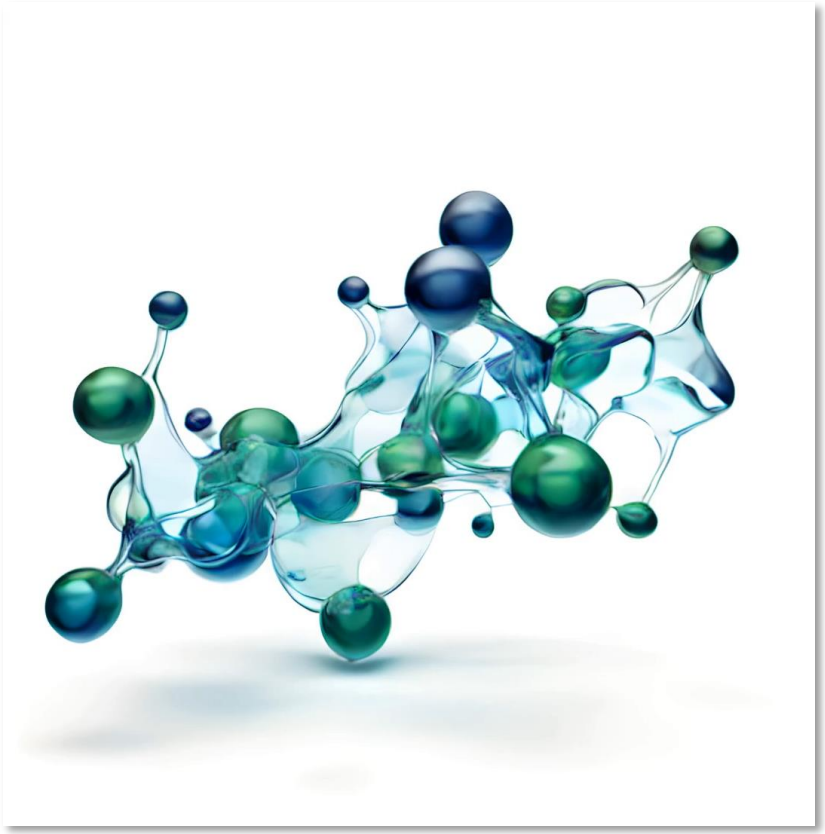
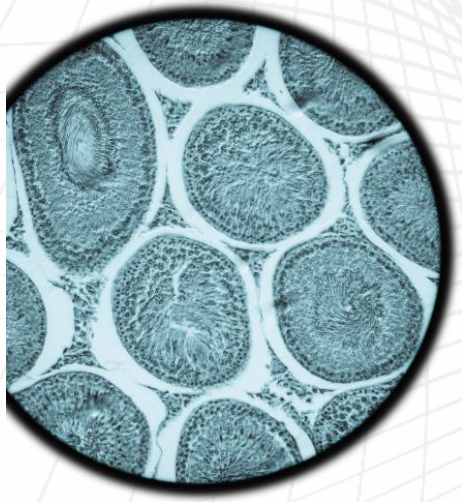


Fig. 1: Video entirely generated using GenAI

Agenda

Objective

Learn how to shape your own use case where generative AI adds real value to the Health Sector



11h15 | **Welcome and Introduction – 5’**

11h20 | **Get AI Inspired – 15’**

Key benefits and use cases of Generative AI for life Sciences and healthcare – 5’

Select use-case to go through (according to audience): (R&D or Patient Engagement) – 10’

11h35 | **A day in the life – Experience the key GenAI building blocks – 30’**

Identify Generative AI suitability to unlock Business Value– 15’

Assessing Feasibility and Risks**:** Ethical Implications and Risks Mitigation – 15’

12h05 | **Ignite – 10’**

Playback to the group

Reflection on how to bring the use-case to the concrete stage

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Welcome and Introductions

Meet your Deloitte coaches

We are excited to welcome you and help you shape your Generative AI use-case today

Strategy, Innovation & Technology

Antonio Russo
Innovation Partner, Strategy & Analytics Lead (CH)

Aditya Kudumala
Partner Strategy & Analytics (FR)

Wolfram Von Ehren
Senior Director Business Operations (CH)

Sebastian Burnett
Director, Strategy & Analytics (UK)

Legal & Cyber

Paul De Blasi
Partner Tax & Legal (CH)

Reto Haeni
Partner Cyber & Strategic Risk (CH)

Moderation

Berit Gerritzen
Director, AI&Data (CH)

Arthur Benzaquin
Senior Consultant, AI & Data (CH)

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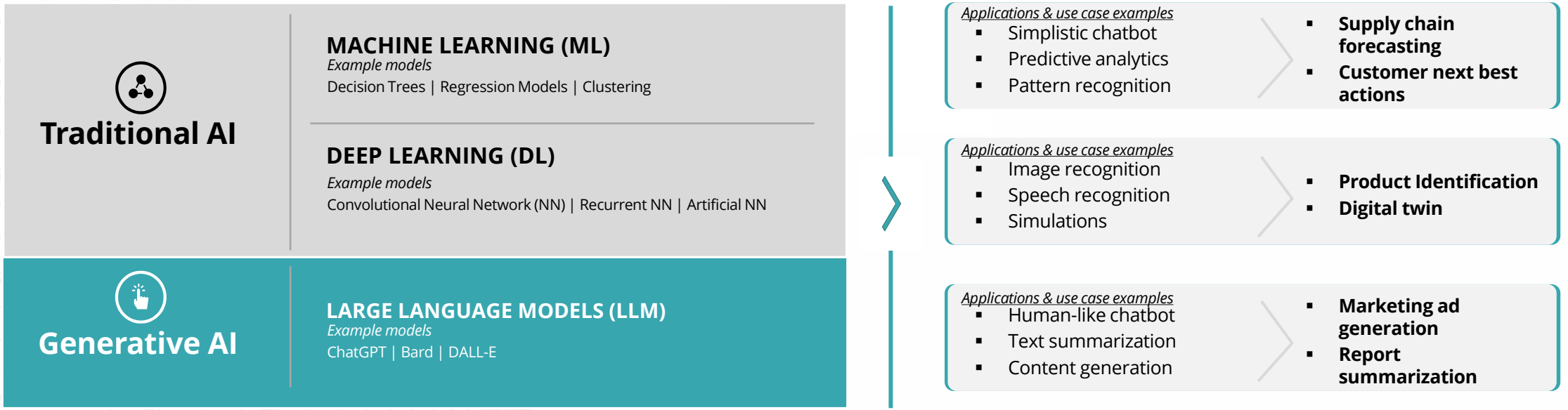
Get AI Inspired

Discover how Generative AI enables value for your organization

Large Language Models Are The **New Frontier of Gen AI**

We are excited to welcome you and help you shape your Generative AI use-case today



The secret sauce of LLMs (Generative AI) is that they have been **trained on billions of data points and can interpret human language** with exceptionally high fluency

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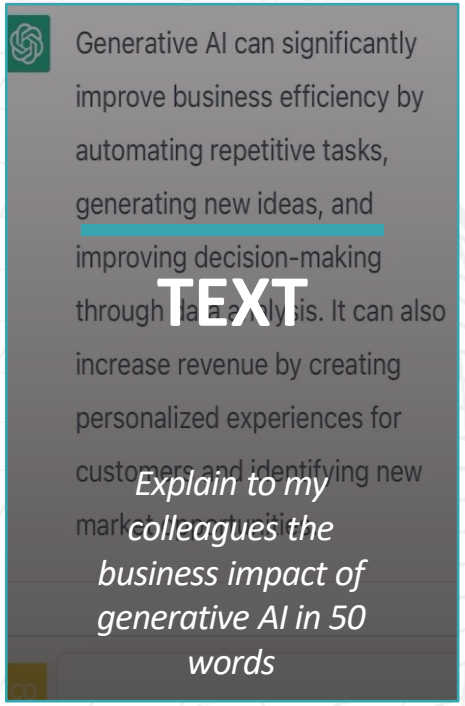
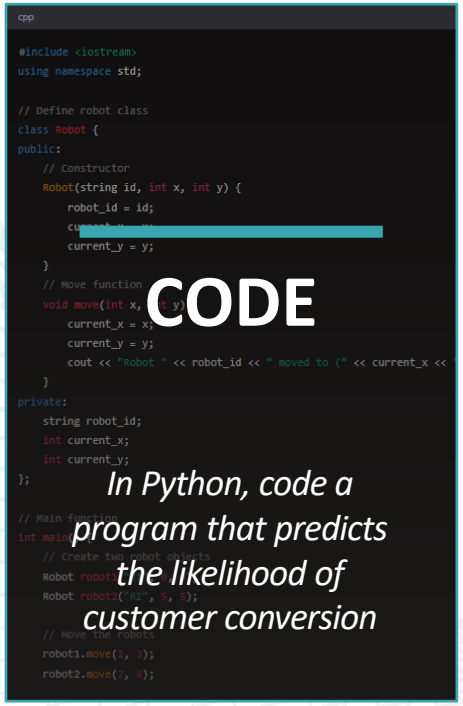
Generative AI **Modalities**



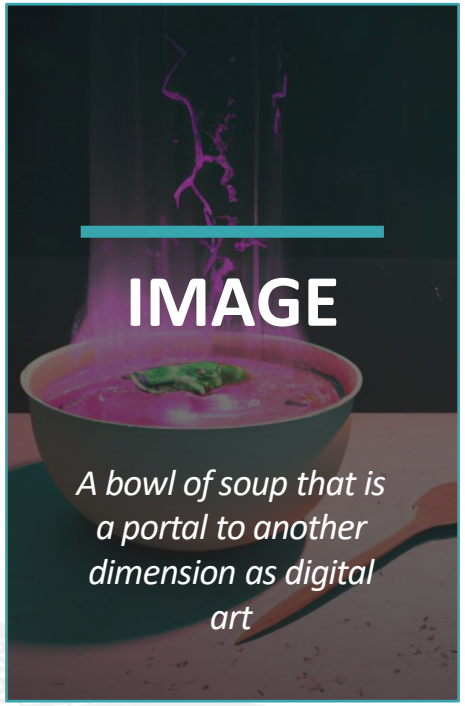
TEXT

Explain to my colleagues the business impact of generative AI in 50 words



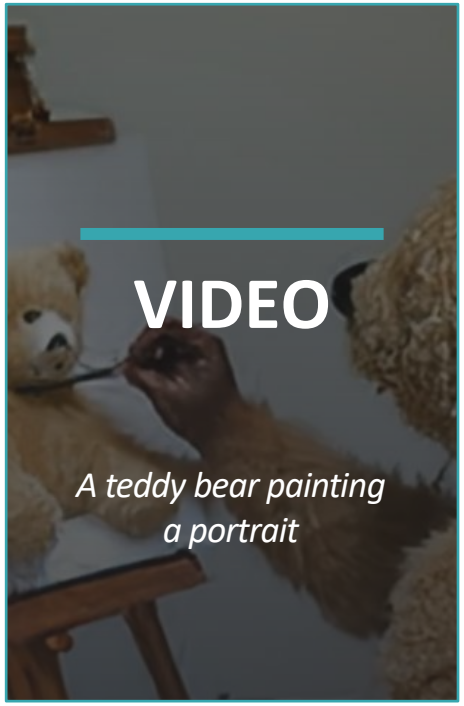
CODE

In Python, code a program that predicts the likelihood of customer conversion



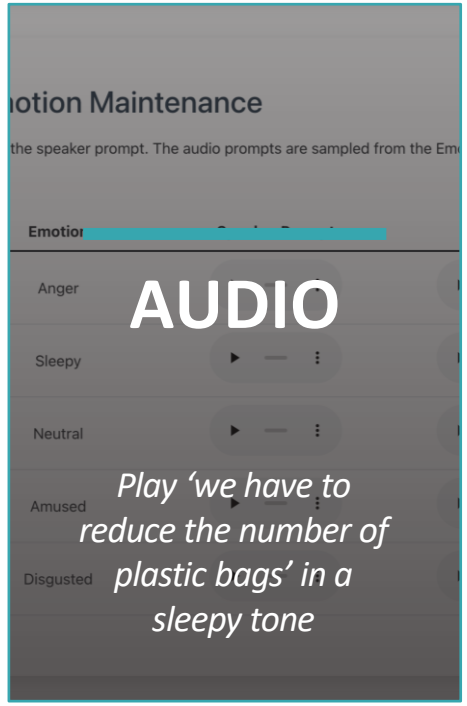
IMAGE

A bowl of soup that is a portal to another dimension as digital art



VIDEO

A teddy bear painting a portrait



AUDIO

Play 'we have to reduce the number of plastic bags' in a sleepy tone

Though the content that is output may differ, the general process of data collection, training, and generation remains the same across all modalities

Generative AI **Value Plays**

EFFICIENCY PLAY

Improve operational performance through improved productivity by doing more with less

- **Automate** processes
- **Optimize** costs
- **Drive** consistency
- **Reduce** FTEs
- **Remove** waste
- **Improve** speed

*"What if you could **improve your operations while increasing margins and profitability?"***

EXPERIENCE PLAY

Provide fit-for-purpose and customized experiences to patients, partners, and employees

- **Personalize** content
- **Differentiate** services
- **Enhance** quality and outcomes
- **Amplify** creativity
- **Knowledge** Shift

*"What if you could **personalize communications to each of your patients & HCPs at 0 additional cost?"***

CAPABILITY PLAY

Develop and enhance enterprise digital and data capabilities that are enabled by GenAI

- **Generate** new insights
- **Extend** asset utility
- **Augment** workforce skills
- **Improve** decisioning
- **Improve** adaptability

*"What if you could **augment the skills of healthcare practitioners, by giving them access to real-time information and decision-making support?"***

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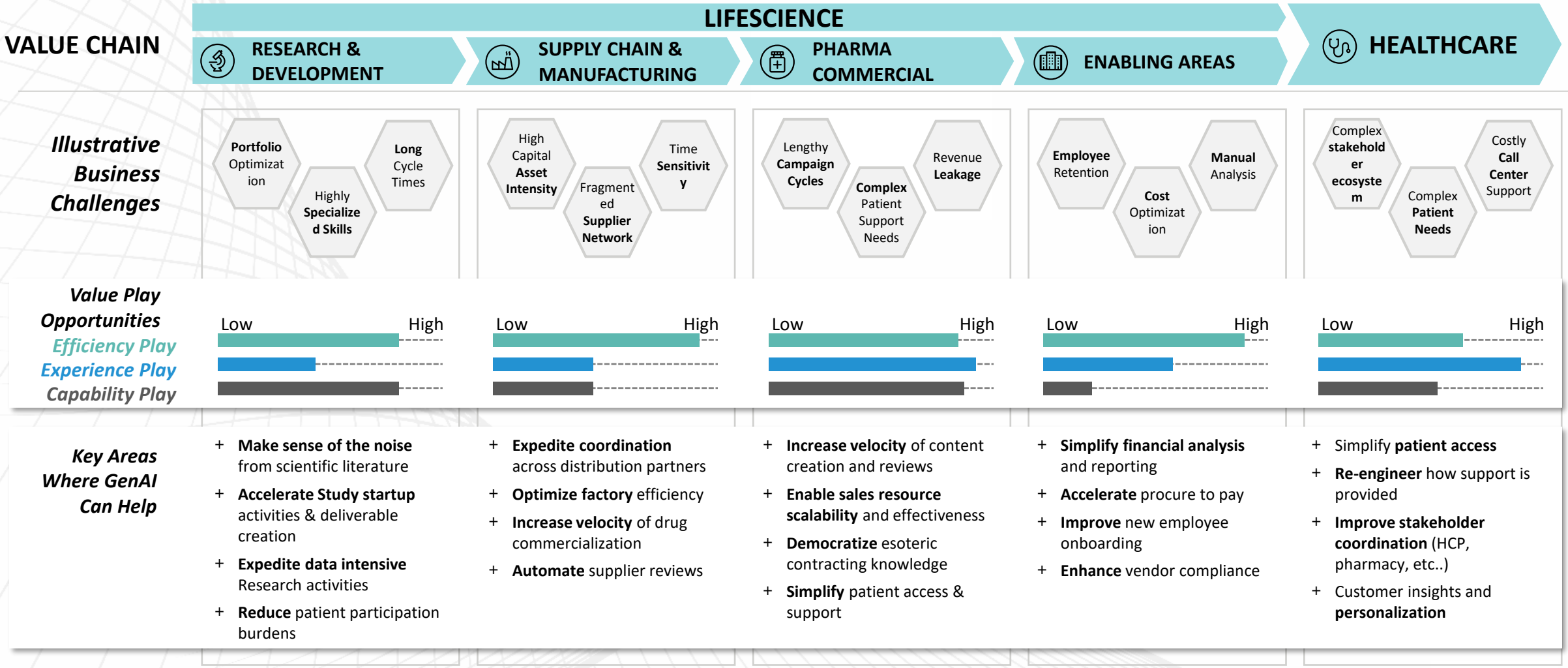
Where can Generative AI **Unlock Value**



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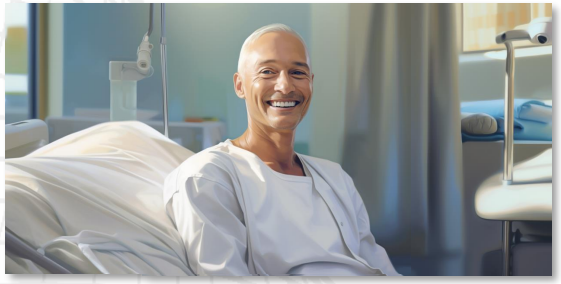
“A day in the life”

Experience the key GenAI building blocks

We present two Use-Cases scenarios for in-Depth Analysis

Personalized Clinical trial Engagement



Generative AI can tailor outreach to potential trial participants, address participation concerns, and boost retention with personalized engagement

ENVIRONMENT CONTEXT

- Securing the right clinical trial participants is vital for patient trust, safety, regulatory approval, and reimbursement
- **Current process is costly, time-consuming, and largely manual**

CURRENT CONSTRAINTS

Clinical trials often miss recruitment goals: ~37% of sites fall short and 10% enrol no patients

80% of research sites fail to meet their patient enrolment deadlines

Patient dropout rates are approximately 30%

Digital Patient CGT Support

Generative AI can streamline patient services, allowing organizations to swiftly expand operations to more patients

ENVIRONMENT CONTEXT

Delivering cell and gene therapies demands intricate coordination among stakeholders like providers / care-site and payers, specialty pharmacies-

CURRENT CONSTRAINTS

Cumbersome experience for patient and providers

Scalability constraints

Costly outcome monitoring

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We will go through 2 exercises together

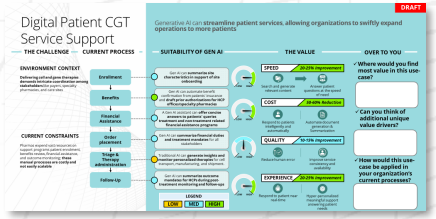
You will have the chance to experience the Deloitte frameworks on one of the selected use-cases or leveraging your own use-case from scratch. Then play the key results back to the group

1

VALUE FRAMEWORK

15’

- ✓ Suitability of Generative AI
- ✓ Expected Value from use-case
- ✓ **Over to you!**



2

FEASIBILITY & RISK FRAMEWORK

15’

- ✓ Feasibility & Risks considerations
- ✓ Key mitigations considerations
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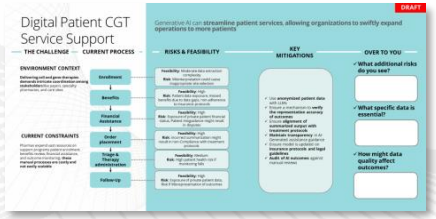

3

SHARE BACK TO THE GROUP

2’ / group

- ✓ What additional value drivers? Why?
- ✓ How would this apply in your organization?
- ✓ How might data impact patient outcomes?
- ✓ **Your input!**

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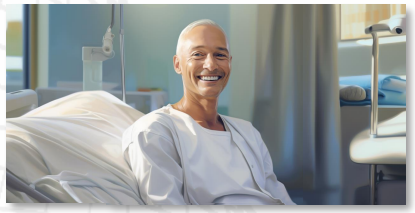
Join your table and start the exercise!

Table 1 & 2

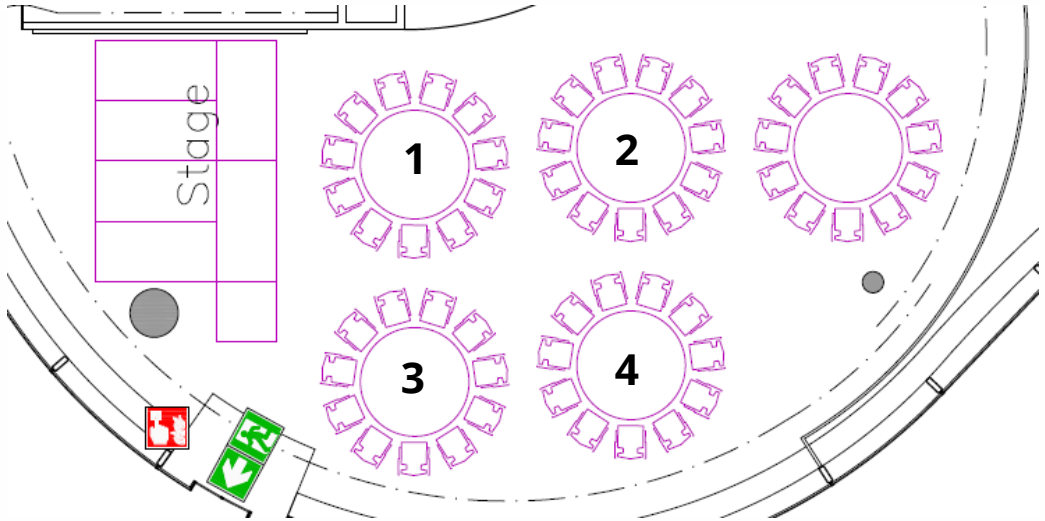


Personalized Clinical trial Engagement

Table 3 & 4

Digital Patient CGT Support

FLOOR PLAN



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Exercise – Value, Feasibility and risk framework

You will have the chance to experience the Deloitte frameworks on one of the selected use-cases or leveraging your own use-case from scratch. Then play the key results back to the group

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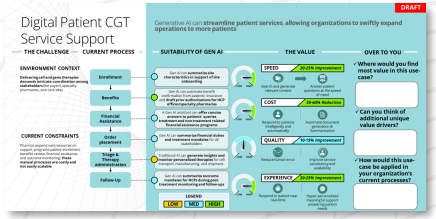

2

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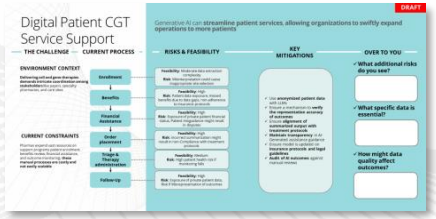

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SHARE BACK TO THE GROUP

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Play back to the group

Playback to the group

SHARE BACK TO THE GROUP

2’ / group

- ✓ What additional value drivers? Why?
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- ✓ **Your input!**

The Path to GenAI: From Data to Intelligence

The secret to GenAi – meticulous data preparation.

GenAi brings incredible potential to deliver transformative business value. With all the hype, it is easy to forget about the less exciting but highly critical step – ensuring access **to quality, reliable and trustworthy data** for model development. Takeda Global Manufacturing, Quality and Supply Chain have been on a journey to **get their data GenAi ready**, leveraging **ML DevOps for continuous improvement.**

Susan Tillmann
Head Data, Analytics and Digital,
Global Manufacturing & Supply
Takeda

Clare Bornstein
Advanced Analytics Platform Lead
Global Manufacturing & Supply
Takeda

Nishant Sinha
Director AI and Automation, Deloitte

Join us at 14:50 as we share our experience, lessons learned, practical strategies applied on our path from data to intelligence.

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What action will you and your organisation take?

Thank you!

https://mkto.deloitte.com/Intelligent-Health-booth.html

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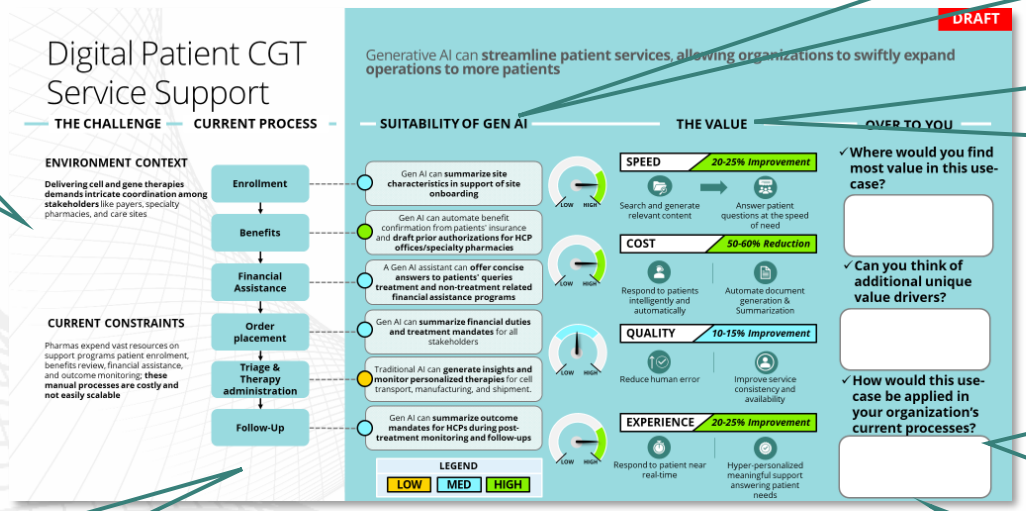
Appendix

Introducing the Value Exercise

THE CHALLENGE
Determine the challenge, considering **current circumstances, the main stakeholders involved, and present constraints**

CURRENT PROCESS
Identify the key steps of the current process to **highlight key point with lack of standardization** and **segregate the application opportunities**



GEN AI SUITABILITY
Identify and evaluate the impact that Generative AI can have into a specific process step to solving real business problems

THE VALUE
Understand what are the **key Value drivers** and enabling capabilities of applying Generative AI across the current process

IMPLEMENTATION
Discover hurdles from a regulatory, ethics, risk or change management perspective and strategies to overcome

OVER TO YOU
Augment the existing framework **with your "own" insights**

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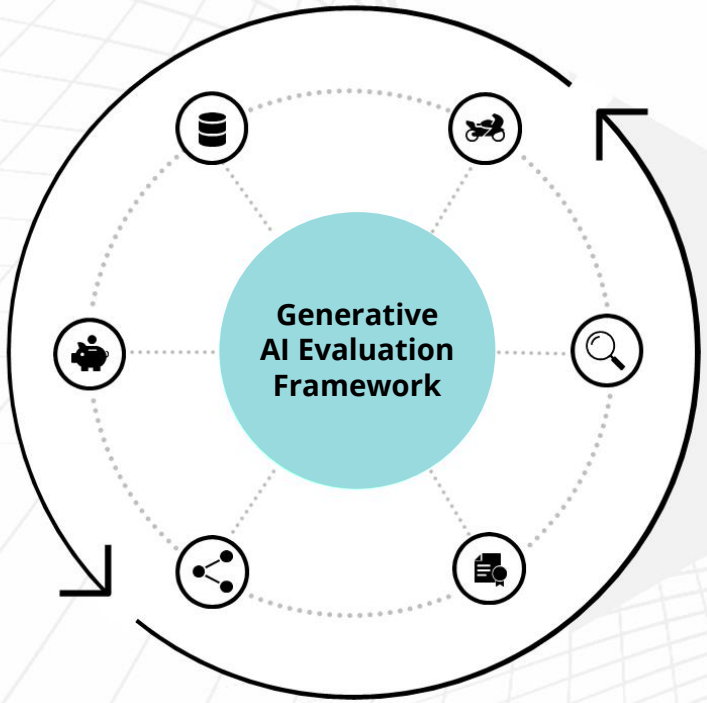
Introducing the Feasibility and Risk Framework



Dimension	Evaluation Factor	Considerations
ABILITY TO EXECUTE	**Data Availability & Quality**	✓ Are large volumes of clean data available that can be utilized as samples for GenAI training? ✓ Is a high diversity of data available to mitigate bias potential? ✓ How difficult is it to obtain and access data?
	Process Standardization & Governance	✓ Are the target processes well documented? ✓ Do the target processes contain known "accurate" and "inaccurate" outcomes that can be used to evaluate the GenAI model's performance?
	Nature of Input Prompts & Expected Outputs	✓ How frequent and complex are the outputs of the GenAI model? (e.g., 20-page documents vs. bullet points) ✓ Will system integrations be required to facilitate data inputs or outputs interpretations?
	Change Management	✓ Is the usability of GenAI embedded in the e2e process- and application landscaope providing a seamless user experience? ✓ Is the impact of workload and –content to the employees and the organization known and well managed to avoid lack of adoption?
DEGREE OF RISK	**Bias**	✓ Is my data over/under representative of a population cohort, region, gender, demographic group? ✓ Can steps be taken to mitigate bias during training? Are there any metrics that will be used to track bias? ✓ What level of impact criticality a biased output would have on the end user?
	Ethical Use	✓ Is an appropriate process in place ensuring that the model does not tread across lines of plagiarism and copyright violations? ✓ Will the solution be subject to independent oversight and review ensuring responsibility?
	Hallucination	✓ Is there a possibility to assess and validate attributions to the source information? ✓ Is an appropriate governance model in place to ensure the "human-in the loop"? (e.g., workforce upskilling, structured oversight, ubiquitous documentation)
	Cybersecurity	✓ Have the risks for data exfiltration, Data/Model poisoning, model stealing and adversarial attacks being addressed? ✓ Is there a security architecture in place that addresses the key areas of security control Infrastructure and Network, Access Management, Monitoring and Data Protection?
	IP Protection	✓ Will information be shared with third parties through prompt engineering resulting to potential data leakage?
	Patient Health and Safety	✓ Is the model capable to process and provide medical information in prescience manner to avoid mistakes which can lead to adverse consequences to human health? ✓ Can the model consider appropriate emotional tone in the conversation to account for individual health status and ability to understand information?

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Appendix – Print-Outs

Digital Patient CGT Service Support

Digital Patient CGT Service Support

Generative AI can streamline patient services, allowing organizations to swiftly expand operations to more patients

VALUE FRAMEWORK EXERCISE

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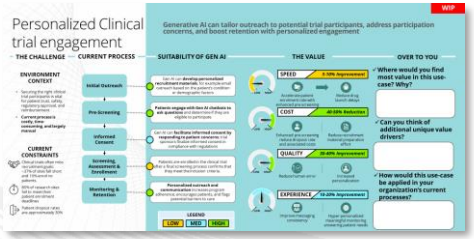

FEASIBILITY & RISK FRAMEWORK EXERCISE

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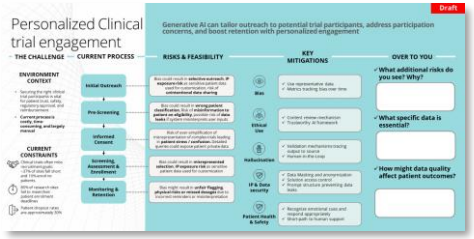

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Digital Patient CGT Service Support

Generative AI can **streamline patient services, allowing provider & payer organizations to swiftly expand operations to more patients**

THE CHALLENGE

ENVIRONMENT CONTEXT

Delivering cell and gene therapies demands intricate coordination among stakeholders like payers, specialty pharmacies, and care sites

CURRENT CONSTRAINTS

- Cumbersome experience for patient and providers
- Scalability constraints
- Costly outcome monitoring

CURRENT PROCESS

1. **Enrollment**
2. **Benefits**
3. **Financial Assistance**
4. **Order placement**
5. **Triage & Therapy administration**
6. **Follow-Up**

SUITABILITY OF GEN AI

- Gen AI can **summarize site characteristics in support of site onboarding**
- Gen AI can automate benefit confirmation from patients' insurance and **draft prior authorizations for HCP offices/specialty pharmacies**
- A Gen AI assistant can **offer concise answers to patients' queries on treatment and non-treatment related financial assistance programs**
- Gen AI can **summarize financial duties and treatment mandates** for all stakeholders
- Traditional AI can **generate insights and monitor personalized therapies,** including cell transport, manufacturing, and shipment.
- Gen AI can **summarize outcome mandates for HCPs during post-treatment monitoring and follow-ups**

LEGEND

LOW | MED | HIGH

THE VALUE

SPEED — *20-25% Improvement*

Search and generate relevant content → Answer patient questions at the speed of need

COST — *50-60% Reduction*

Respond to patients intelligently and automatically

Automate document generation & Summarization

QUALITY — *10-15% Improvement*

Reduce human error

Improve service consistency and availability

EXPERIENCE — *20-25% Improvement*

Respond to patient near real-time

Hyper-personalized meaningful support answering patient needs

OVER TO YOU

✓**Where would you find most value in this use-case? Why?**

✓**Can you think of additional unique value drivers?**

✓**How would this use-case be applied in your organization's current processes?**

Digital Patient CGT Service Support

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CURRENT PROCESS

Enrollment → **Benefits** → **Financial Assistance** → **Order placement** → **Triage & Therapy administration** → **Follow-Up**

RISKS & FEASIBILITY

Enrollment	Process needs to be sufficiently digitized / standardized to apply AI. Incomplete data / misinterpretation could lead to incorrect site selection
Benefits	Patient data exposure, missed benefits due to data gaps, timely access to the claims data
Financial Assistance	Patient misguidance might result in disputes; Risk of exposure of patient financial status
Order placement	Incorrect summarization might result in non-Compliance with treatment protocols
Triage & Therapy administration	Compliance risks, potential harm to the patient health in case treatment procedure is not followed properly or cell material is damaged.
Follow-Up	Exposure of private patient data, Patient health risk due to model hallucinations and misrepresentation of the medical context

KEY MITIGATIONS

Patient Health & Safety	✓ Specialized models trained on medical data ✓ Prompts engineered to personalise tone of the conversation ✓ Short-path to human support
Bias	✓ Use representative data ✓ Metrics tracking bias over time
Ethical Use	✓ Content review mechanism ✓ Human-in-the-loop ✓ Trustworthy AI framework
Hallucination	✓ Validation mechanisms tracing output to source ✓ Human-in-the-Loop
Cybersecurity	✓ Secure architecture (Infrastructure and Network, Access Management, Monitoring and Data Protection)
IP & Data security	✓ Information Sharing and Third-Party Risk Assessment

OVER TO YOU

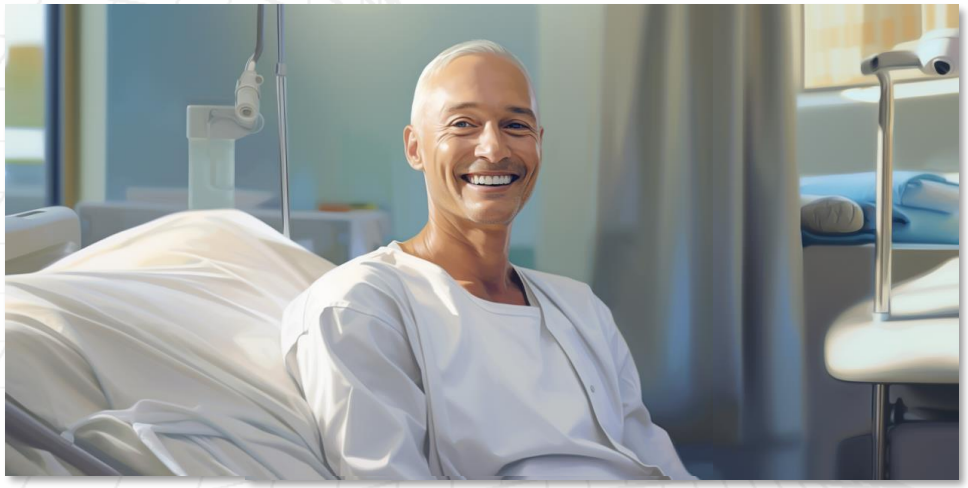
✓**What additional risks do you see? Why?**

✓**What specific data is essential?**

✓**How might data quality affect patient outcomes?**

Personalized Clinical trial Engagement

Personalized Clinical trial Engagement



Generative AI can tailor outreach to potential trial participants, address participation concerns, and boost retention with personalized engagement

VALUE FRAMEWORK EXERCISE

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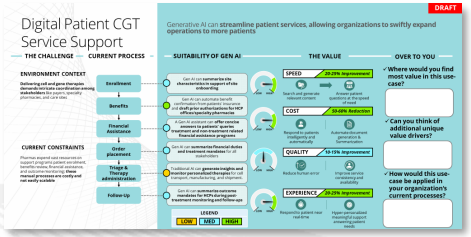

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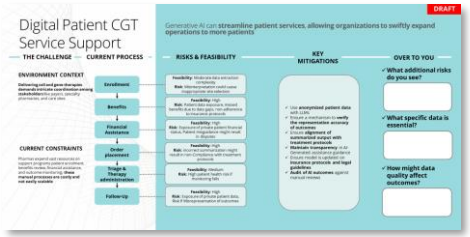

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Personalized Clinical trial engagement

Generative AI can tailor outreach to potential trial participants, address participation concerns, and boost retention with personalized engagement

THE CHALLENGE

ENVIRONMENT CONTEXT

- Securing the right clinical trial participants is vital for patient trust, safety, regulatory approval, and reimbursement
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CURRENT CONSTRAINTS

Clinical trials often miss recruitment goals: ~37% of sites fall short and 10% enrol no patients.

80% of research sites fail to meet their patient enrolment deadlines

Patient dropout rates are approximately 30%

CURRENT PROCESS

Initial Outreach

Pre-Screening

Informed Consent

Screening, Assessment & Enrollment

Monitoring & Retention

SUITABILITY OF GEN AI

Gen AI can **develop personalized recruitment materials**, for example email outreach based on the patient's condition or demographic factors

Patients engage with Gen AI chatbots to ask questions and determine if they are eligible to participate

Gen AI can **facilitate informed consent by responding to patient concerns**; trial sponsors finalize informed consent in compliance with regulations

Patients are enrolled in the clinical trial after a final screening process confirms that they meet the inclusion criteria.

Personalized outreach and communication increases program adherence, encourages patients, and flags potential barriers to care

LEGEND

LOW | MED | HIGH

THE VALUE

SPEED *5-10% Improvement*

Accelerate patient enrolment rate with enhanced pre-screening → Reduce drug launch delays

COST *40-50% Reduction*

Enhanced pre-screening reduce dropout rate and associated costs

Reduce recruitment material preparation effort

QUALITY *30-40% Improvement*

Reduce human error

Increased personalization

EXPERIENCE *10-20% Improvement*

Improve messaging consistency

Hyper-personalized meaningful monitoring answering patient needs

OVER TO YOU

✓**Where would you find most value in this use-case? Why?**

✓**Can you think of additional unique value drivers?**

✓**How would this use-case be applied in your organization's current processes?**

Personalized Clinical trial engagement

Generative AI can **tailor outreach to potential trial participants, address participation concerns, and boost retention with personalized engagement**

THE CHALLENGE

ENVIRONMENT CONTEXT

- Securing the right clinical trial participants is vital for patient trust, safety, regulatory approval, and reimbursement
- **Current process is costly, time-consuming, and largely manual**

CURRENT CONSTRAINTS

Clinical trials often miss recruitment goals: ~37% of sites fall short and 10% enrol no patients.

80% of research sites fail to meet their patient enrolment deadlines

Patient dropout rates are approximately 30%

CURRENT PROCESS

Initial Outreach

↓

Pre-Screening

↓

Informed Consent

↓

Screening, Assessment & Enrollment

↓

Monitoring & Retention

RISKS & FEASIBILITY

Initial Outreach	Bias could result in **selective outreach**, **Restricted data exposure risk** as sensitive patient data used for customization, risk of **unintentional data sharing**
Pre-Screening	Incomplete data sets could result in **wrong patient classification**, Risk of **misinformation to patient on eligibility**, possible risk of **data leaks** if system misinterprets user inputs
Informed Consent	Risk of over-simplification of misrepresentation of complex trials leading in **patient stress / confusion.** Hallucinations can lead to failure to obtain regulatory approval and delays
Screening, Assessment & Enrollment	Bias could result in **misrepresented selection**, **Restricted data exposure risk** as sensitive patient data used for customization
Monitoring & Retention	Bias might result in **unfair flagging**, **physical risks and failure to follow protocol** due to incorrect reminders or misinterpretation

KEY MITIGATIONS

Patient Health & Safety	✓ Recognize emotional cues and respond appropriately ✓ Short-path to human support
Bias	✓ Use representative data ✓ Metrics tracking bias over time
Ethical Use	✓ Content review mechanism ✓ Human-in-the-loop ✓ Trustworthy AI framework
Hallucination	✓ Validation mechanisms tracing output to source ✓ Human-in-the-Loop
Cybersecurity	✓ Secure architecture (Infrastructure and Network, Access Management, Monitoring and Data Protection)
IP & Data security	✓ Information Sharing and Third-Party Risk Assessment

OVER TO YOU

✓**What additional risks do you see? Why?**

✓**What specific data is essential?**

✓**How might data quality affect patient outcomes?**