

June 13, 2023

The General Manager **BSE Limited**Corporate Relationship Department
Phiroze Jeejeebhoy Towers
Dalal Street
Mumbai- 400 001

The Manager

National Stock Exchange of India Limited
Listing Department
Exchange Plaza
5th Floor, Plot No. C-1, Block-G
Bandra-Kurla Complex, Bandra(E)
Mumbai-400 051

BSE Scrip Code: 532281

NSE Scrip Code: HCLTECH

Subject: Presentation made in a Webinar hosted by Citi on 'Generative Al'

Dear Sir/ Madam,

Enclosed please find a presentation made to the investors today by Mr. Kalyan Kumar, *Global CTO and Head, Ecosystems* of the Company in a Webinar hosted by Citi on 'Generative Al'.

This is for your information and records.

Thanking you,

Yours faithfully, For **HCL Technologies Limited**

Manish Anand Company Secretary

Encl:a/a



HCLTech Supercharging Progress™



Generative Al@HCLTech

Kalyan Kumar (KK)

Global CTO and Head, Ecosystems, HCLTech

Twitter: @kklive

(https://www.hcltech.com/ai)



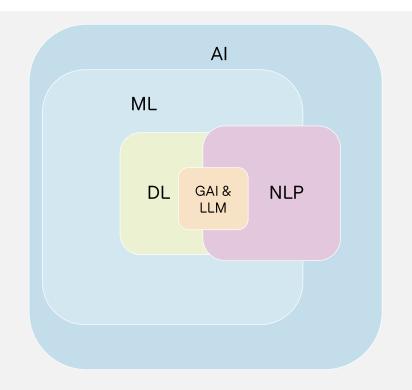
Topics

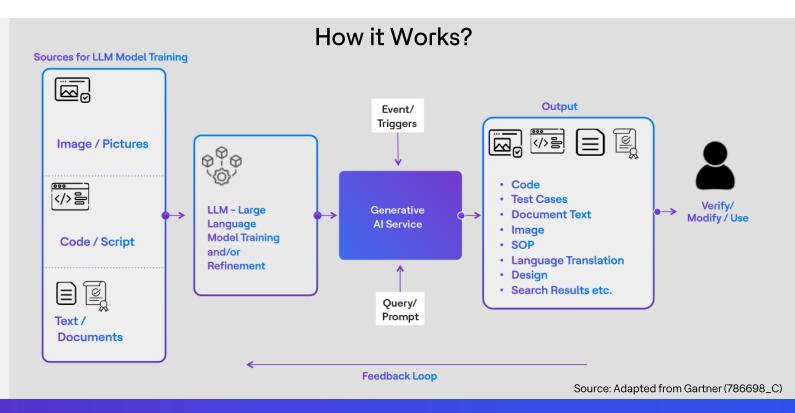
- Understanding Generative Al
- Value Streams around Generative Al
- Generative Al@HCLTech Services
- Generative AI@HCLSoftware
- Q&A



Understanding Generative Al









NLP (Natural Language Processing) (NLU and NLG)



Machine Translation



Synthetic Voice



Speech Recognition

Value Stream for Business Process Operations



Front Office (Customer Care / Service)

Middle Office (Supply Chain / Risk etc.)

Back Office (Finance / Procurement etc.)



Business Process
Observability /
Cases
(Issues / Request)



Process Analysis



Process Execution



Process Improvement



Customer
Value =
Customer
Experience

Gen Al Synergy:

- Search and Retrieval
- Intent Extraction and Response

Gen Al Synergy:

- Prompt Automation
- SOP generation
- Faster text generation & improved productivity

Gen Al Synergy:

- Knowledge Summarization
- Language Translation
- Assisted process reengineering



Value Feedback & Input

Value Stream for Application Development and Support





Data Management & Analytics

Software Development Processes



Customer
Requirements
/ Features /
Bugs



Analysis & Process Mining



Experiment & Pilot



Build, Operate & govern



Adopt and Change



Customer
Value =
Intelligent
Apps

Gen Al Synergy:

 Al Transformation Roadmap Development

Gen Al Synergy:

- Model Development
- Use/Test Case Generation

Gen Al Synergy:

- Automation Workflows
- Automated Code / Test / UI / UX Generation

Gen Al Synergy:

- Translation
- Knowledge Mining, Triaging and Search



Value Feedback & Input

Value Stream for Infrastructure & Operations





End User and Devices

Cyber-Security



Tech Observability & Ticket
(Incident / Request / Changes)

Projects



System /
Root Cause
Analysis (RCA)



Troubleshooting and Remediation



Restoration and Support



Customer
Value =
Service
Assurance

Gen Al Synergy:

- Analysis and potential RCA extraction
- Intent Extraction and Response

Gen Al Synergy:

- Remedial Script and SOP generation
- Assisted Threat modelling
- Enhance employee performance

Gen Al Synergy:

- Knowledge
 Summarization
- Language Translation



Value Feedback & Input

Value Stream for Systems and Product Engineering



Software Product Engineering

Silicon and Mechatronics

Operational Technologies



Customer
Need / System
Requirements



Plan & Feasibility



Design & Engineer



Build & Test



Support 2 & Maintenance



Customer
Value =
Al Enabled
Devices & Systems

Gen Al Synergy:

- Improved efficiency for feasibility analysis
- Assisted plan & Specification generation

Gen Al Synergy:

- Smart Factory Automation
- Software Engineering, Hardware & VLSI Design workflows
- UX Design & Content generation

Gen Al Synergy:

- Automated Code Generation & Review
- DevSecOps
- Code Testing & Optimization

Gen Al Synergy:

- System simulation & Monitoring
- Automated L1 Support
- Al enabled QC & Inspection



Anticipated Applicability across various IT Service activities



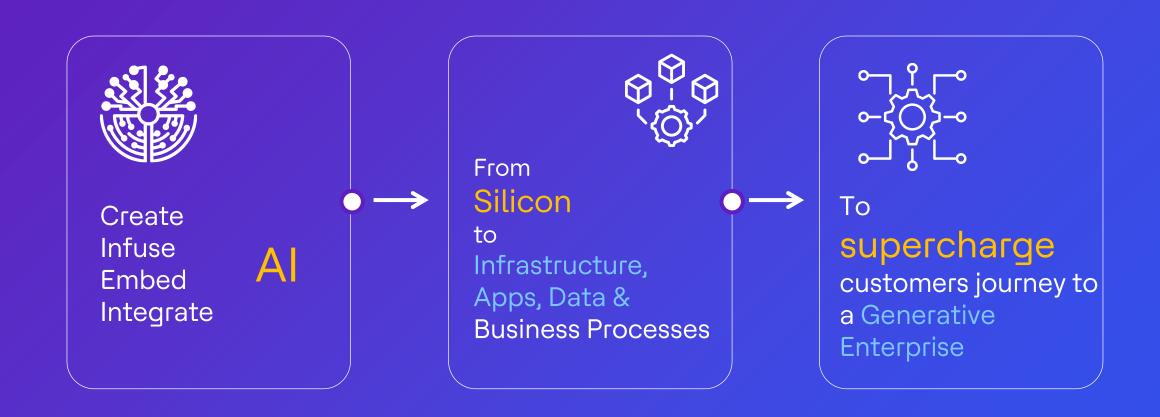


Dependencies	Risks
Experience in using LLM models	 Data privacy & copyright issues
/ GenAl skills • Functional or	 Uncertainty and explainability bias
Operational Complexity	 Costly production outages
 LLM Model Maturity 	Usage of
 Quality of Model training data 	Deepfakes • Accidental usage
Output Veracity	of sensitive data
and Changes required for use	 Data explosion and costs

Adoption in Enterprises will mirror Cloud Journey and the FinOps discipline to govern consumption will become extremely crucial.



AI Philosophy @HCLTech



Al @HCLTech Services

HCLTech

Al Services Span

- Noesis Al Framework
- Annotation and Labelling Services
- Trustworthy Al Services
- Embedded and Edge Al Services
 - Al Model as a Service

- Data Analytics and Engineering Services
- Machine Learning Operations

- Al Professional Services
- Al Edge Innovation

Al Ecosystems Span

Al Infrastructure Ecosystem

Generative Al

Services

Cloud / Compute / Data

Al Modeling Ecosystem

Al Foundation Modeling

Al Edge Innovation Ecosystem

Al Open Innovation

Hardware / Chip Accelerators





- AWS
- Microsoft

Upstream Modeling

- Google ML
- MS Azure Labs
- AWS ML
- IBM Watson

Ecosystem Tenants & Impact

Cloud HyperScalers

- Google Cloud
- Microsoft Azure
- AWS

Downstream Fine tuning

- OpenAl
- Google BERT
- Google LaMDA
- H2O.ai

Open Innovation Ecosystem

20+

VC & Trade Mission Partners

Al Champs

50+ Incubation Solutions (including Startup partners)

350+

Startup Partners

Potential Services Opportunities in GenAl





Prompt Engineering

Testing and refining prompts to optimize them for specific tasks, using techniques such as prompt tuning, blending, and synthesis.



Data Engineering

- Creation and Capture
- Gen Al driven
 Engineering
- Gen Al driven Insights



Integration and Orchestration of Intelligent Apps

Orchestration across NLP, Generative AI Systems, knowledge Systems for Text, Image, Video, Audio



Responsible Al

An AI system that enables:
Privacy and Security

- Inclusion
- Fairness
- Traceability
- Accountability
- Trustability Of Results
- Reliability
- Change Management





GenAl Ecosystem @HCLTech

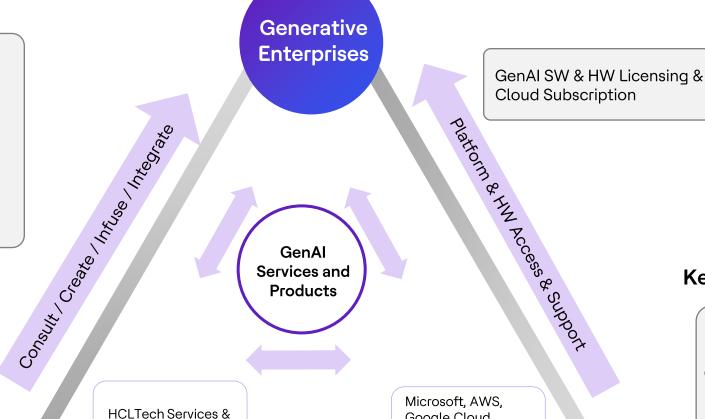
HCLTech

GenAl Services

- Ops (Business Processes & IT)
- Dev & Support
- System & Product Engg.
- GenAl Lab

GenAl Products

- Products
- Cloud / XaaS



HCLSoftware

HCLTech

Google Cloud, NVIDIA, Intel, IBM, OpenAI etc.

GenAl

Ecosystem

Create / Embed / Plugin

GenAl Software / Cloud Platforms / GenAl Hardware

Engineering Services / ISV / OEM and PSO

Key Ecosystem Partnerships





GenAl Lab

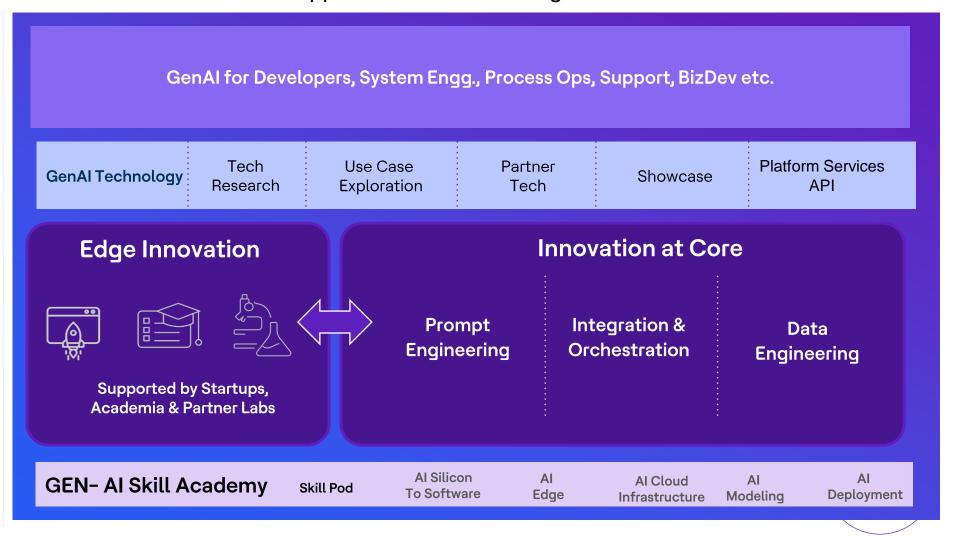
What GenAl Lab does

- 1 Offering
- 2 Incubation Engine

3 Ecosystem Innovation

Skill Engineering

GenAl Lab supports teams in building solutions and services



GenAl Case Study 1 - Patient Query Understanding



Human Like Conversation Agent

Business Objective

To develop a LLM powered Medical Conversational Agent to generate tailored response for patient's query, save healthcare worker times and prepare a condensed summary for physician to facilitate swift and efficient treatment.

Technical Solution

- Identify the pre-medical questions to be asked
- Use ChatGPT to build the conversational agent
- Generating text based on given context or condition (Conditional prompting) the agent determine the patient's answers and fill up the relevant fields in a form
- Summarize the conversation for better look up by health associates

Medical Questionnaire Medical Questionnaire Medical Query Agent Conversation Flow Control Control ChatGPT (LLM)

GenAl Case Study 2 - Sales Bot



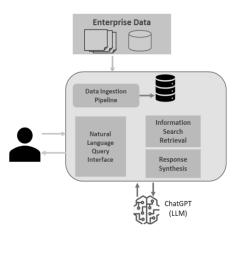
Retrieval Augmented Generation (RAG)

Business Objective

To develop a LLM powered Question Answering system that ingests sales data from different verticals and answers to user specific questions to help understand sales related activities

Technical Solution

- Data Ingestion pipeline to extract data from sources into vector DB.
- Creating Q&A agent which have access to custom tools
- Retrieves semantically similar documents based on the question.
- Similar documents are stuffed to LLM along with the question to ask for extracting the answer.





Key Take Aways

HCLTech with its engineering heritage has been involved in co-creating AI Technology stack for last 2 decades

We have deployed at scale
AlOps in our operations and
engineering business for over
a decade and have carved
those IPs to fuel the
intelligent automation
(DRYiCE) product line in
HCLSoftware

We have been implementing
Al solutions with over 150+
use cases across our clients in
our Digital Services

We are an early adopter of
GenAl technologies as a
customer
(Microsoft / OpenAl Co-Pilot
at HCLTech and Google
DuetAl & GITHUB Co-Pilot at
HCLSoftware)

We are in the launch partner program for all the major hyperscalers on their GenAl stack

We have a GenAI labs which is leading all our efforts in this space

HCLSoftware

Generative Al@HCLSoftware

Kalyan Kumar (KK)

CPO, HCLSoftware

Twitter: @kklive

HCLSoftware Cloud Strategy

Move to Industry Oriented Clouds



Common Connector and Gateways for integrations Common Data pipeline, service and extensibility

Unified Access Layer









Generative AI Play

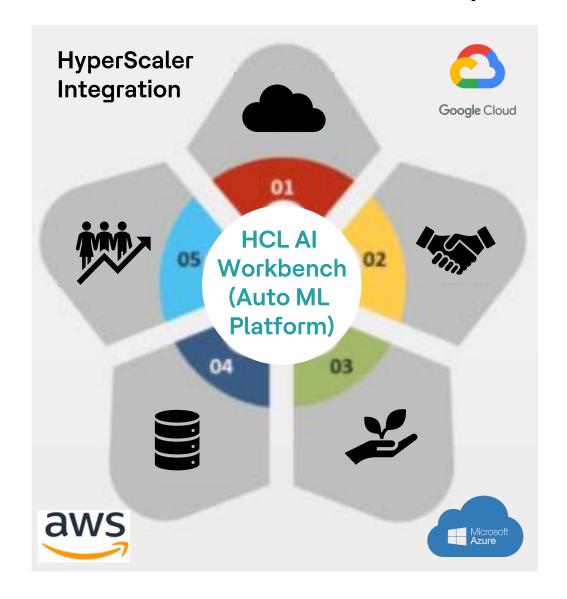
Al/ML/NLP/Cognitive Services/GenAl

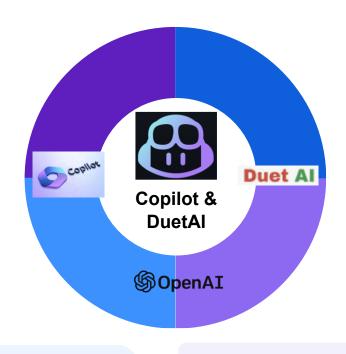
Ubiquitous Distributed Cloud Ecosystem (Public/Sovereign/Edge/Telco/Private)

Al Philosophy @HCLSoftware



Create: Generative AI in partnerships with Hyperscalers







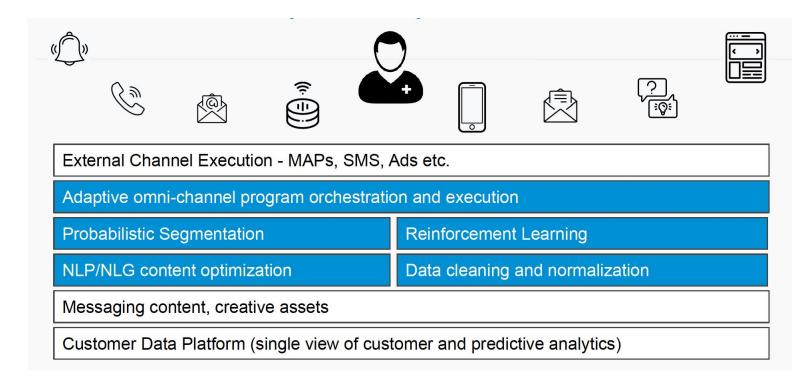
Pair Programmer :

- Code generations
- Test case generation
- Multi programming language and IDE support
- GenAl driving Product Velocity

ChatGPT Like experience :

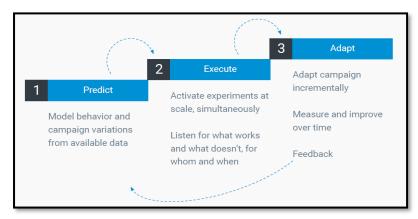
- Chat interface for Developers for Interaction
- Code explanations and Doc generation
- Unit test and code generation
- Bug Fixes

Embed: Generative Al





Reinforcement Learning of the partner platform



https://drive.google.com/file/d/1m5yzGH QpLXvFDpZC_O3UvtIsiqU8ZZ3s/view?us p=drivesdk

A very simple effective use of GenAl to manage email campaign in Unica...



Powered By-



Plugin: Infuse and Leverage Generative Al

Portfolio & Cloud Vision **HCLSoftware**

Digital Transformation

HCL Commerce, HCL Unica, HCL DX, HCL VoltMX etc.

Business Cloud

AppDev Cloud

Generative Al Applicability Areas

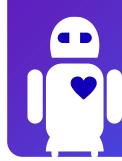


- Integration with **HCL VoltMX**
- Co-pilot Reduce development effort
- Prototype Generation

Al and Intelligent **Automation**

- HCL AlOps / IntelliOps
- HCL AEX
- HCL BiqFix

Automation Cloud



- Enabling Emotional Intelligence
- Responding to natural language queries and commands
- (Generative AI Engine Orchestrator) - Model Chaining

Insights **HCL Actian Avalanche CDP**

Data, Analytics and

- **HCL Actian Vector**
- **HCL** Actian Zen

Data Cloud



 Enhanced **Predictive** modeling, business forecast, sentiment analysis and strategic decisions

- **HCL PromptO**
- (Generative AI Engine) -**Automated Prompt** Engineering

- (Generative Al Engine) • Document Summarization
- (Generative AI Engine) - Code Generation
- (Generative Al Engine) - LLMs Optimization

Infusing GenAl into Intelligent Automation Cloud

Value creation via XaaS / MSP



from HUMAN LED AND AUTOMATION ASSISTED.





Workload **Automations** To drive the effort and cost matrix.



Operational Intelligence To drive the reliability of the infrastructure. Network and

software stack across data

centers.

to



To drive the stability of products and drive customer satisfaction level.

Disruptions



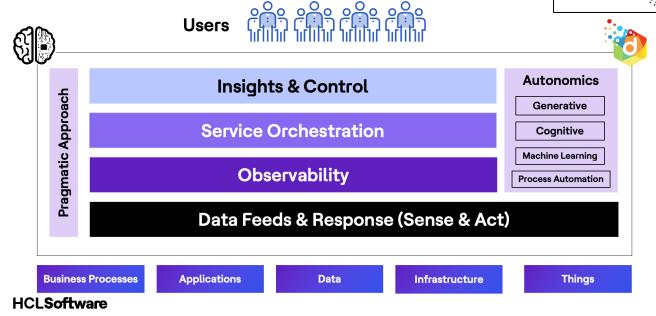
Self-service Workflows

To provide a quick and simple catalog, for clients and level 1.









Outcome based **Subscription Licensing**

Thank You