# HCLTech Supercharging Progress™



# Generative Al@HCLTech

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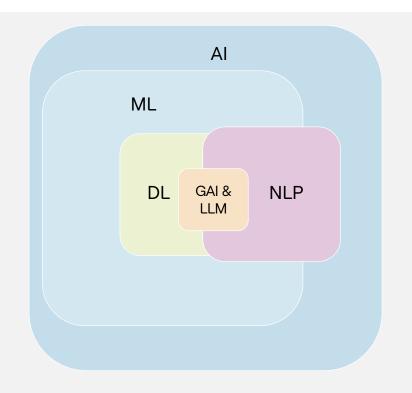
## **Topics**

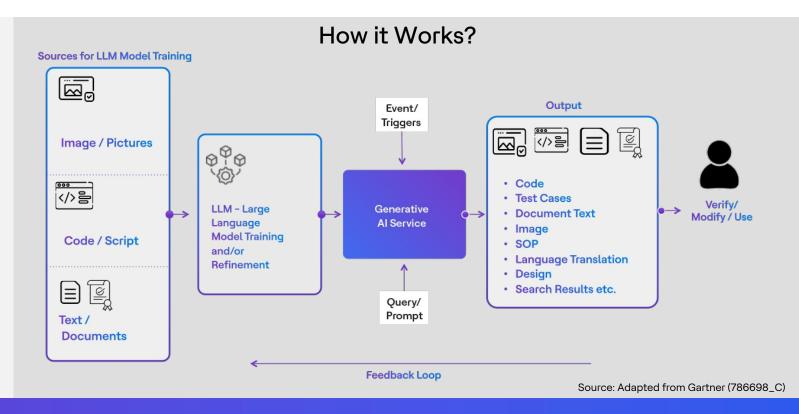
- Understanding Generative Al
- Value Streams around Generative Al
- Generative Al@HCLTech Services
- Generative AI@HCLSoftware
- Q&A



## **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



Custom & Packaged Software

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



Hybrid Infrastructure (Cloud / Networks / Edge / DC)

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 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

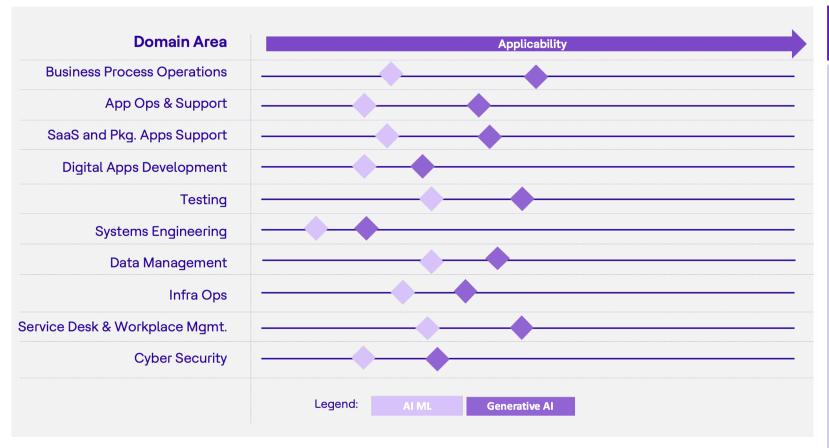
#### Gen Al Synergy:

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



## **Anticipated Applicability across various IT Service activities**



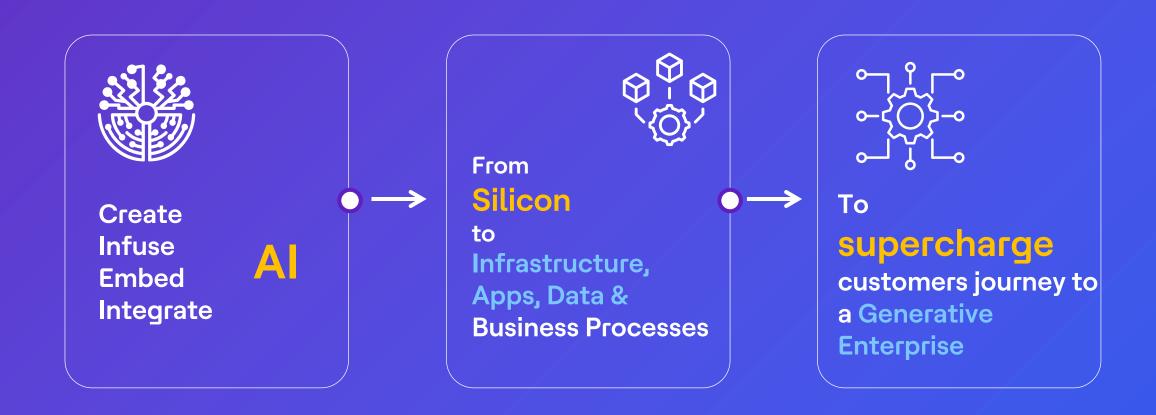


Dependencies	Risks
<ul> <li>Experience in using LLM models</li> <li>/ GenAl skills</li> </ul>	Data privacy & copyright issues
	<ul> <li>Uncertainty and</li> </ul>
<ul> <li>Functional or Operational</li> </ul>	explainability bias
Complexity	<ul> <li>Costly production outages</li> </ul>
LLM Model	3.3.5
Maturity	<ul> <li>Usage of Deepfakes</li> </ul>
<ul> <li>Quality of Model</li> </ul>	
training data	<ul> <li>Accidental usage of sensitive data</li> </ul>
<ul> <li>Output Veracity</li> </ul>	
and Changes required for use	<ul> <li>Data explosion and costs</li> </ul>

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



# AI Philosophy @HCLTech



## Al @HCLTech Services



#### Al Services Span

- Noesis Al Framework
- Generative AI
   Services

- 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

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** 

#### **HCLTech**

#### GenAl Services

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

#### **GenAl Products**

- Products
- Cloud / XaaS

**Enterprises** GenAl SW & HW Licensing & **Cloud Subscription** Platform & HW Access & Support Consult Crosto Intiso Intograte

GenAl Services and **Products** 

Generative

**HCLTech Services & HCLSoftware** 

Microsoft, AWS, Google Cloud, NVIDIA, Intel, IBM, OpenAl etc.

GenAl

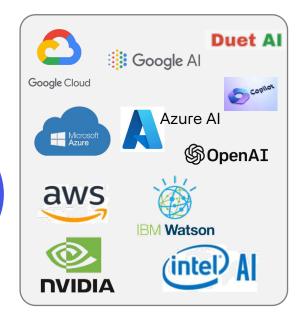
**Ecosystem** 

#### Create / Embed / Pluqin

GenAl Software / Cloud Platforms / GenAl Hardware

Engineering Services / ISV / OEM and PSO

#### **Key Ecosystem Partnerships**



### **GenAl Lab**

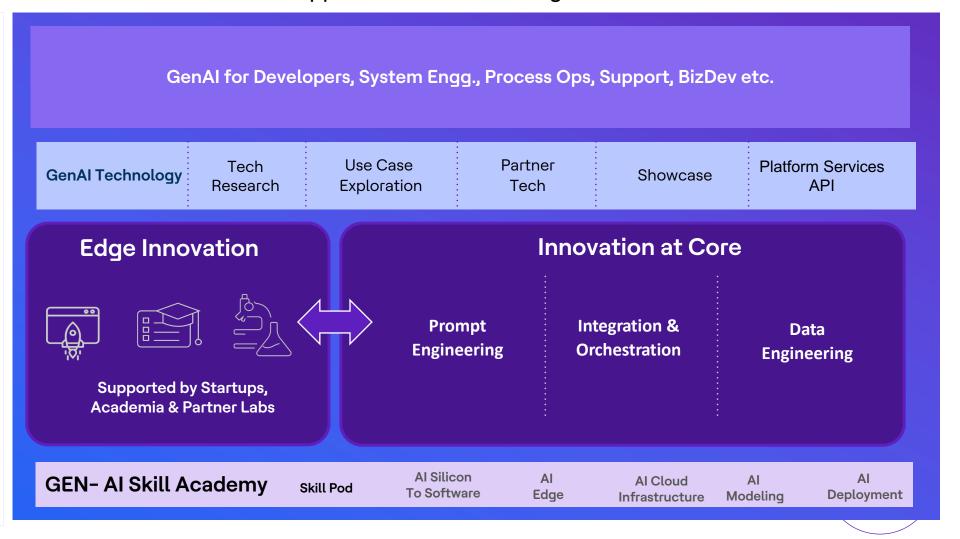
# What GenAl Lab does

- 1 Offering
- Incubation Engine

3 Ecosystem Innovation

Skill Engineering

#### GenAl Lab supports teams in building solutions and services



HCL

# 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 Query Agent Language Understanding Conversation Flow Control ChatGPT (LLM)

## GenAl Case Study 2 - Sales Bot



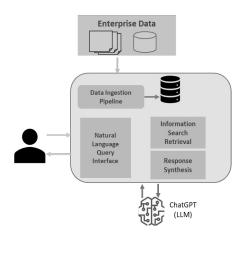
# Retrieval Augmented Generation (RAG)

#### **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
HCI Software

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

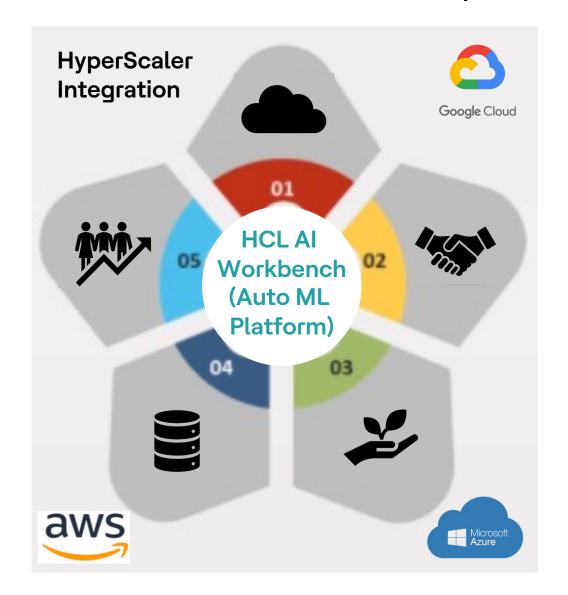
Al/ML/NLP/Cognitive Services/GenAl

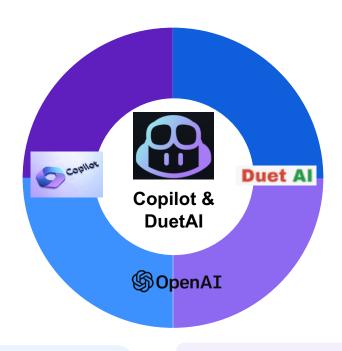
Ubiquitous Distributed Cloud Ecosystem (Public/Sovereign/Edge/Telco/Private)

# Al Philosophy @HCLSoftware



## Create: Generative AI in partnerships with Hyperscalers







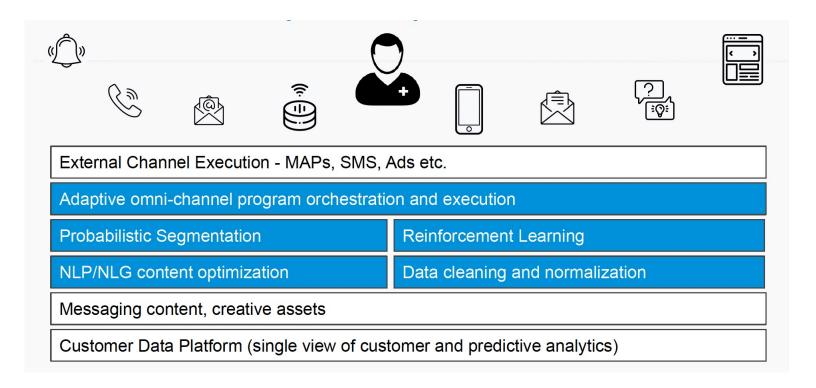
# Pair Programmer :

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

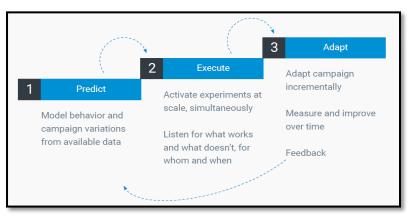
# ChatGPT Like experience:

- 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







**HCLSoftware** 

Powered By



# Plugin: Infuse and Leverage Generative Al

HCLSoftware Portfolio & Cloud Vision

#### **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

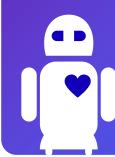
# **HCL PromptO**

• (Generative AI Engine) -**Automated Prompt** Engineering

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

#### Data, Analytics and Insights

- **HCL Actian Avalanche CDP**
- **HCL Actian Vector**
- **HCL** Actian Zen

**Data Cloud** 

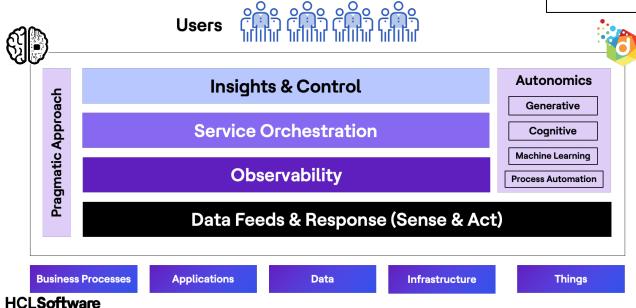


 Enhanced **Predictive** modeling, business forecast, sentiment analysis and strategic decisions

Infusing GenAl into Intelligent Automation Cloud







# Outcome based Subscription Licensing

# Thank You