



Digital Academy Program

Date : 22nd April 2024

About us

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The Manipal Group

Education



Assessments



Health Care



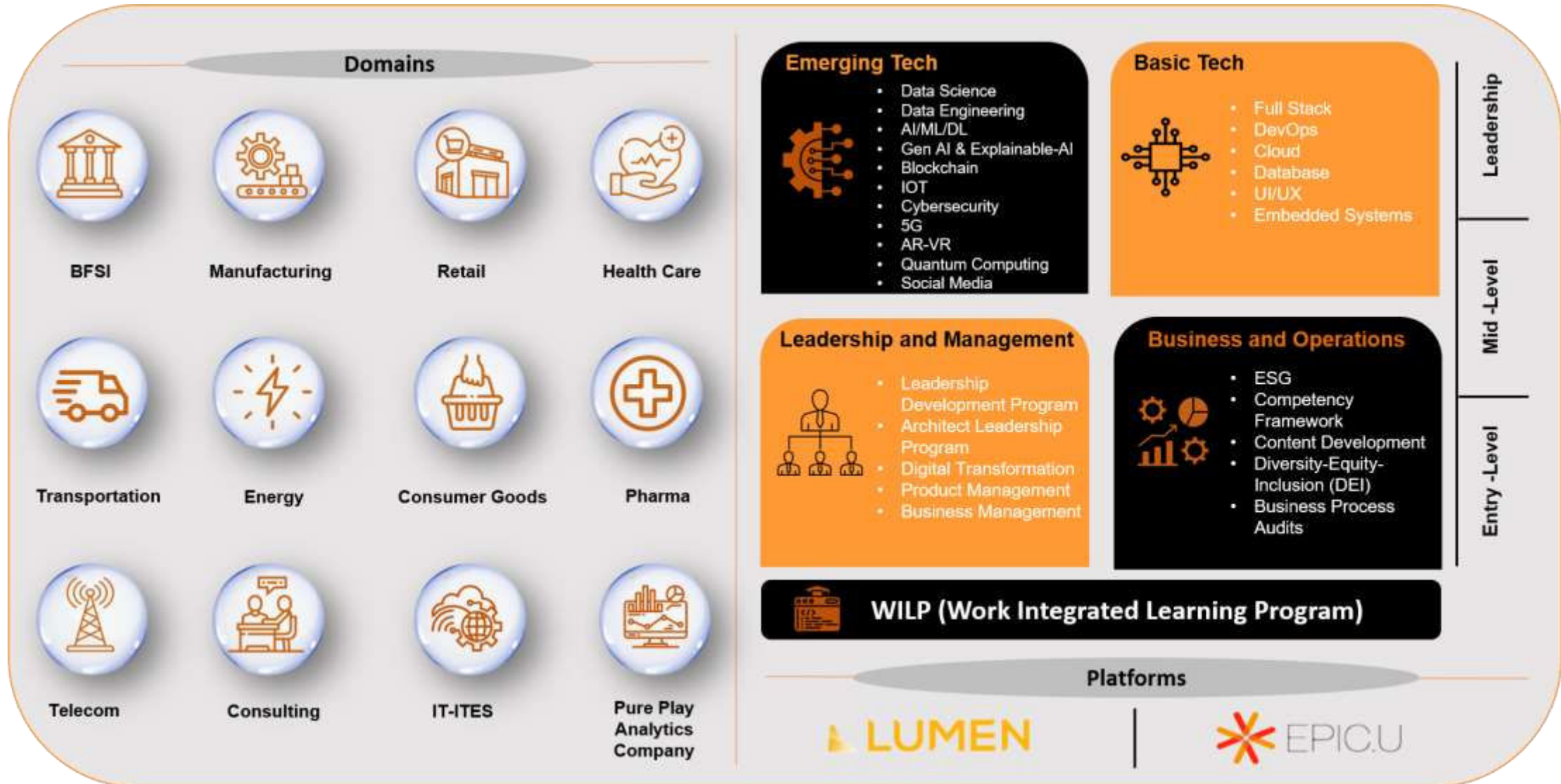
Health Insurance



Charting New Frontiers
In The Knowledge &
Health Industry



We Offer Transformation Solution Across Diverse Verticals



Program Catalogue

Basic Tech	Emerging Tech	Leadership & Soft Skills	Business & Operations	Role Based	OEM	WILP	Freshers Training	Assessments
Full Stack	Data Science	Digital Transformation	ESG	Product Management	Salesforce	PG Certificate Programs	Pre Joining Program	Leadership
DevOps	Data Engineering	Leadership Development	DEI	Project Management	Oracle	PG Diploma Program	Bootcamp	Functional
Cloud	AI/ML	Architect Leadership Program	Business Process Audits	Product Engineering	Google	Masters Program	Incubation Centre	Technical
Database	Generative AI	Architect Readiness Program	Content Development	Business Analyst	Microsoft	Integrated Masters	Project Mentoring	Digital Quotient
UI/UX	Blockchain	Business Management	IR 4.0	Architect Competency Program	ISQAB	PhD Program		Question Bank
Embedded Systems	IOT	First Time Managers	Market Analytics		SAP	TAPMI –MBA - BFSI		
Data Smart	Cybersecurity	Soft Skills	HR Analytics		Adobe	MAHE (MSc.DS, MSc.BA)		
Testing	5G				VMware	MAHE (PGCP LSCM)		
SDLC	AR/VR				Guidewire	MUJ – BBA, BCA, BCOM		
	Quantum Computing				Informatica	MUJ (MBA,MCA,MCOM,MA JMC)		
	Metaverse				ServiceNow	MIT (PGCP DS & ML)		
	Social Media				Others			

Platforms



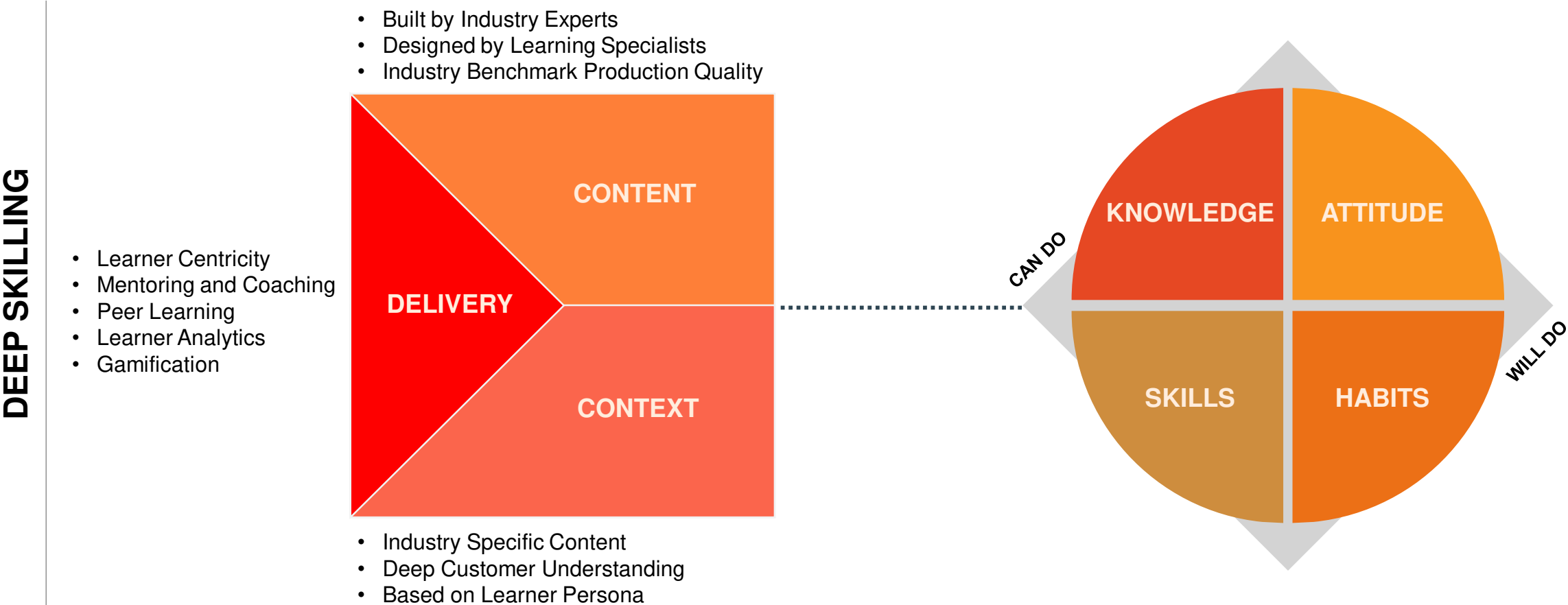


Sandbox Environment

Program Design Approach

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UNext's Value Proposition



We commit to:

Improving knowledge levels

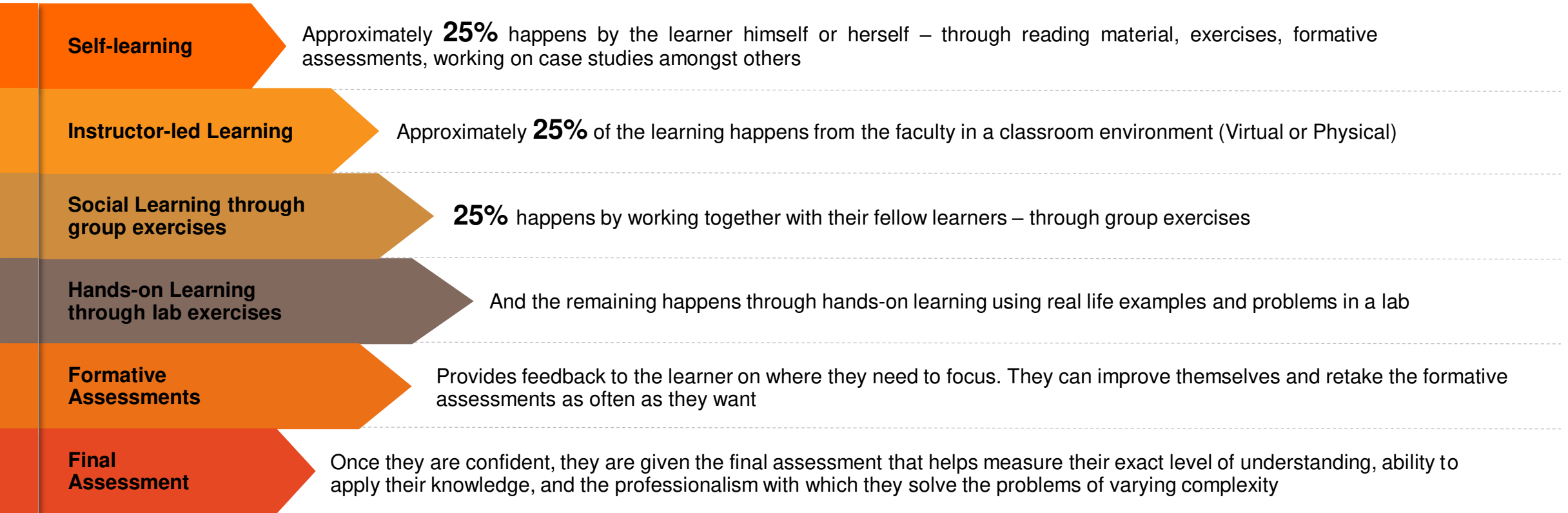
Enhancing Skills

Changing Attitudes

And Crafting new Habits

Through our tested pedagogical methods.

Our Approach



Coaching by faculty helps improve the learner's attitude, and level of professionalism

- We work with our clients to understand the complexity of the problems the learners are expected to handle when they join projects
- We use Customer specific case studies, situations, and problem statements.

Context

Objective

Participants will possess an in-depth understanding of data analysis, interpretation, and utilization. They will be equipped with advanced skills in data visualization, data engineering, machine learning, and artificial intelligence



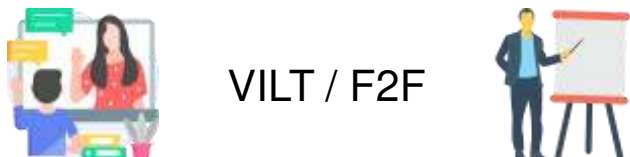
Target Audience Profile

All the Employees across Tata Power



Mode of Training

VILT / F2F



No of Participants

30 per batch

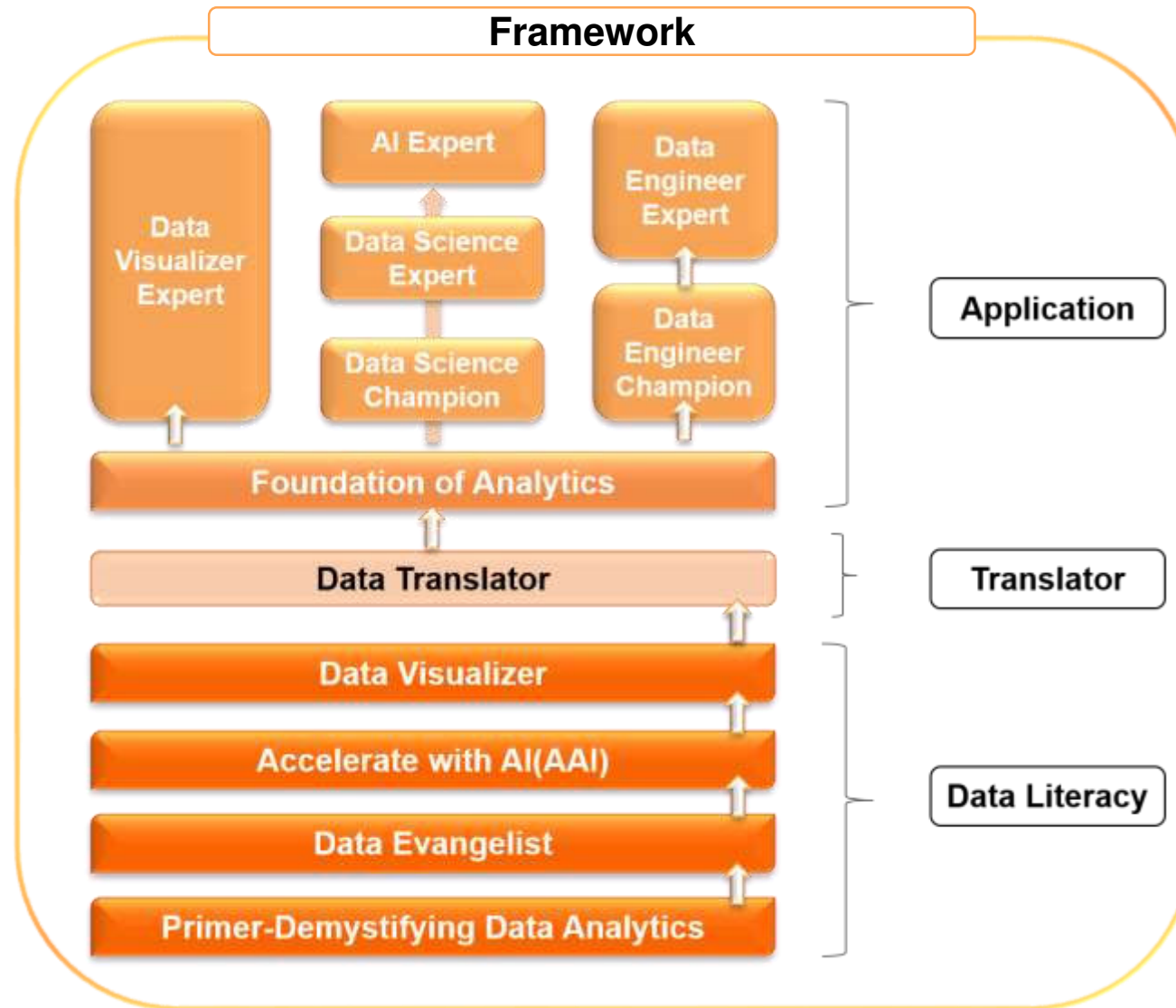


Duration

464 Hours



Upskilling Program – Academy of Analytics



Program Summary

No	Program	Duration	Browse
1	Primer-Demystifying Data Analytics	8 Hours	
2	Data Evangelist	16 Hours	
3	Accelerate with AI(AAI)	16 Hours	
4	Data Visualizer	16 Hours	
5	Data Translator	32 Hours	
6	Foundation of Analytics	48 Hours	
7	Data Science Champion	48 Hours	
8	Data Science Expert	56 Hours	
9	Artificial Intelligence Expert	64 Hours	
10	Data Visualizer Expert	24 Hours	
11	Data Engineer Champion	64 Hours	
12	Data Engineer Expert	72 Hours	
Total Duration - 464 Hours			

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Primer-Demystifying Data Analytics

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Program Flow

❖ Pre-program Assessment

- ✓ MCQ based Pre-program Assessment covering the program topics. This will help baseline participants knowledge

❖ Program Orientation

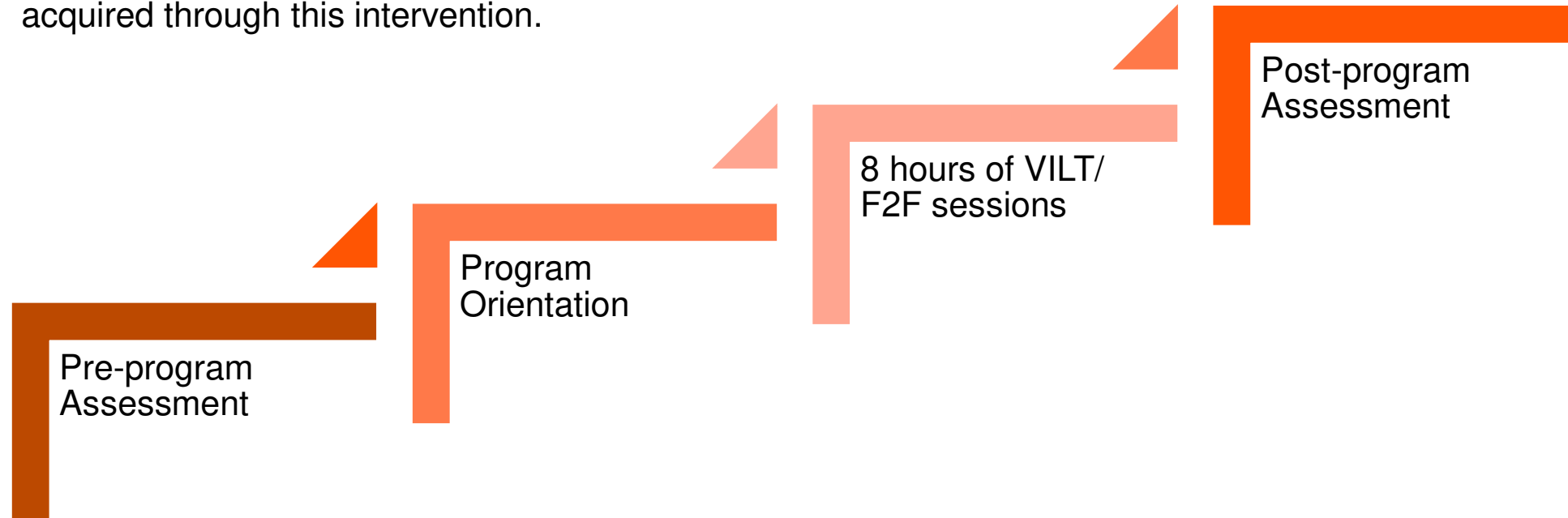
- ✓ In this session we will introduce participants on course coverage, learning outcomes, and expectations from the participants themselves

❖ ILT Sessions

- ✓ 8 hours of VILT/ F2F sessions

❖ Post-program Assessment

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Program Details - Primer-Demystifying Data Analytics

S. No.	Modules	Topics	Learning Outcomes	Duration (hrs)	Assessments
1	Introduction to Analytics	• Introduction to Analytics and Data science • Evolution of Analytics • Identifying & evaluation of use cases • Key fundamentals, learning paths & roles in analytics	• Participants will learn the broader way of using data to draw insights	1	Assessment 1
2	Driving Business Value	• Data driven decision making • Value discovery framework • Strategic initiatives and analytics projects	• Participants will learn that how to take decisions from data	1	
3	Basics of Analysis	• Types of Analytical Problems • Challenges faced in analytics journey • Business problem overview - Case Study example	• Participants will understand business problems via various case study	2	
4	Advanced analytics	• Overall Analytics and Data Science technical Landscape • Overview of Statistical and Machine Learning techniques • Applications of algorithms, implementation and challenges • Process flow of a typical Machine Learning based solution • Overview of AI based applications in data science	• Participants will understand the concepts of Machine Learning techniques	2	
5	Data Governance and Privacy	• Modern Macro and Micro Drivers for effective Data Governance • Organizational alignment and cross-functional engagement • Internal/ External Roles and Responsibilities • Effective Data Leadership within an organization's value network	• Data Governance and Privacy	2	
Total Duration – 8 Hours					

Data Evangelist

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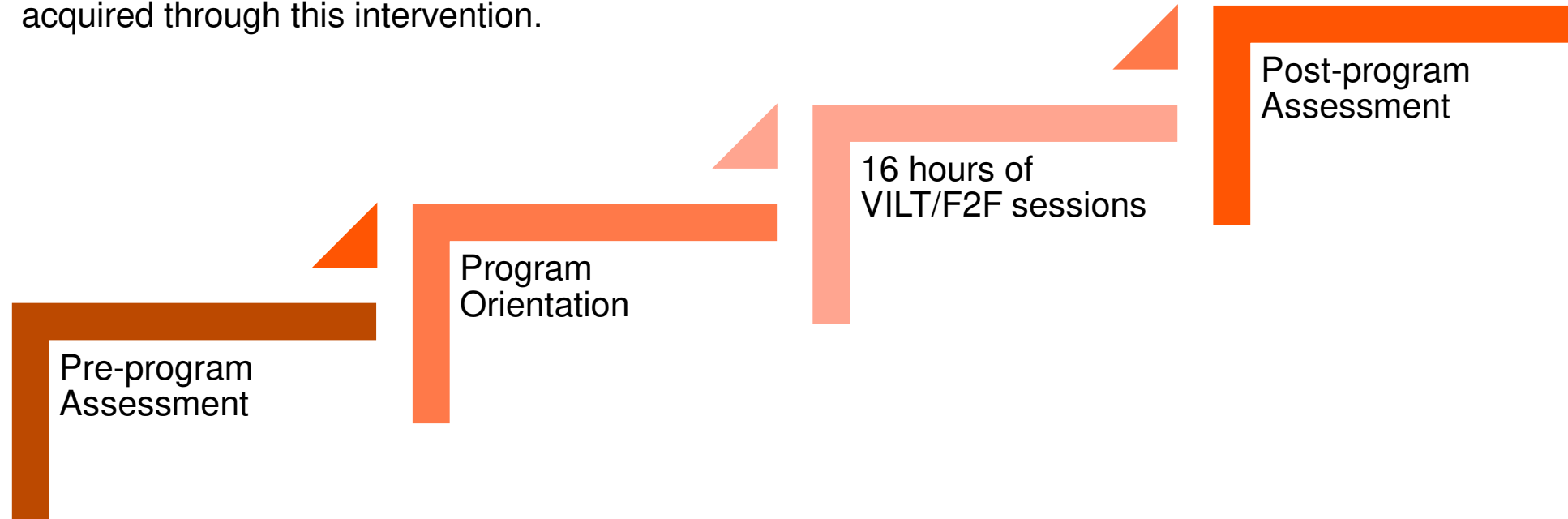
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❖ ILT Sessions

- ✓ 16 hours of VILT/F2F sessions

❖ Post-program Assessment

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Program Details - Data Evangelist

S. No.	Modules	Topics	Learning Outcomes	Duration (hrs)	Assessments
1	Overview of AI &b ML	• CRISP -DM framework • Learning Paths and Role in AI & ML • Challenges , Use Cases	• Sensitised on AI and Machine Learning applications in business	2	Assessment 1
2	Exploratory Data Analysis	• Business Problem • Data understanding - Uni variate, Bi variate and Multi variate analysis using Excel • Drawing insights from the analysis	• Framing business problem • Data analysis techniques	6	
3	Inferential Analytics	• Introduction to inferential statistics • Hypothesis frame work • applications of Hypothesis framework in business problems	• Application of Inferential statistics in business problem - Hands-on using Excel	4	
4	Introduction to predictive analytics	• Linear Regression	• Applications of linear regression in business problems	2	
5	Overview of Big data & cloud	• Introduction to Bigdata & Cloud	• Overview of Big data , Cloud and other tools used in Analytics/ data science space	2	
Total Duration – 16 Hours					

Accelerate with AI(AAI)

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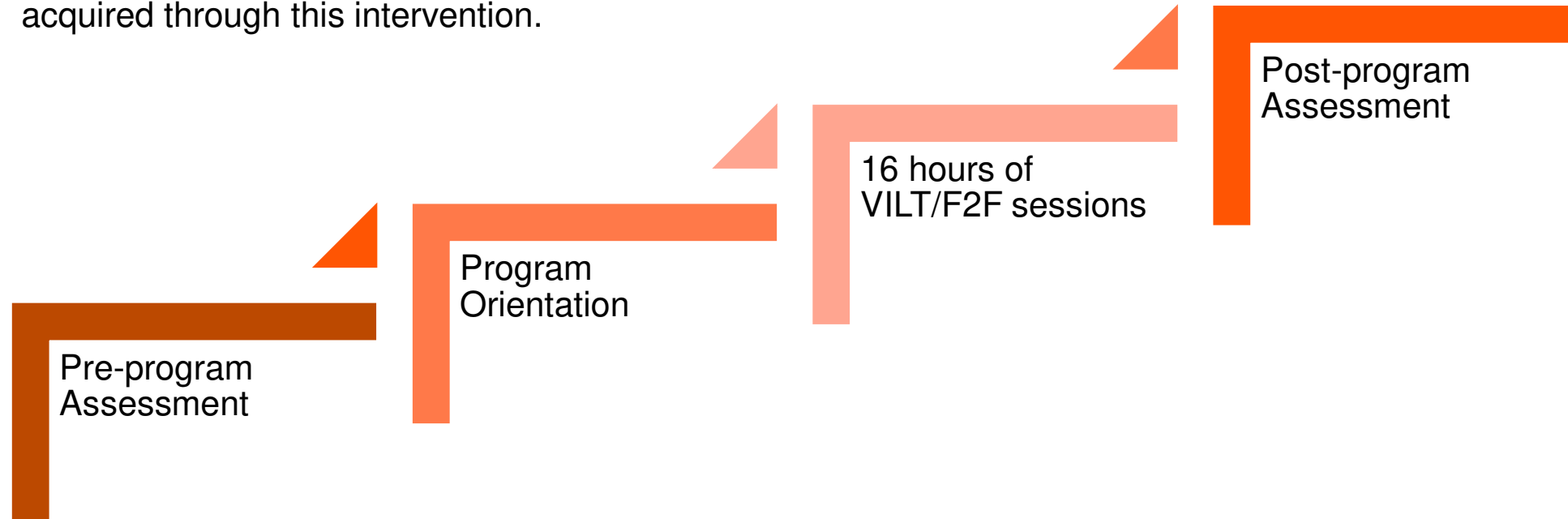
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❖ ILT Sessions

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Program Details – Accelerate with AI (AAI)

S. No.	Modules	Topics	Learning Outcomes	Duration (hrs)	Assessments
1	Introduction to AI	• Overview of Artificial Intelligence • Evolution of AI in Business landscape	• Understanding AI & Generative AI	2	Assessment 1
	Generative AI is a game changer	• Overview of Generative AI • Evolution of Generative AI • Neural Networks, GANs, Transformers,LLMs,Chat-GPT-3,4 & BARD etc.. • Overview of Prompt Engineering • Risks of Generative AI			
2	AI applications in Customer Engagement	• Customer's energy usage Analytics , Customer Insights • Call centre solutions - Live support for 24/7 & Agent performance solutions • Chatbots - Enhancing customer satisfaction by reducing TAT • Sentiment Analytics - Reducing the Customer churn	• Applications in customer engagement	4	
3	AI applications in Operations & Efficiency	• Data Digitalization • AI Powered Resource Management • Asset Performance Analytics in renewable energy sector • Preventive Maintenance Analytics • Smart Forecasting - LSTM Model for better forecasting of Climate	• Understanding AI applications cases in Operations & efficiency	4	
4	Different AI -Use cases	• Text Analytics - LLM models • Image Analytics - Computer Vision (CV) Models • Software code optimization - GitHub's Copilot & Code Whisperer • Audio Analytics -Whisper by Open AI • Video Analytics -AR & VR	• Understanding AI applications cases in different areas	4	
5	AI for Financial Services	• Financial Report Generation; Expense Management • Automated Invoice Processing; Cashflow Optimization • Talent Acquisition Analytics using AI; Employee Engagement & Retention using AI • AI applications in L& D - Personalized learning; AI chatbots ; • Automation - Communication tasks, Administrative tasks	• Understanding AI applications in Financial Services	2	
Total Duration – 16 Hours					

Data Visualiser

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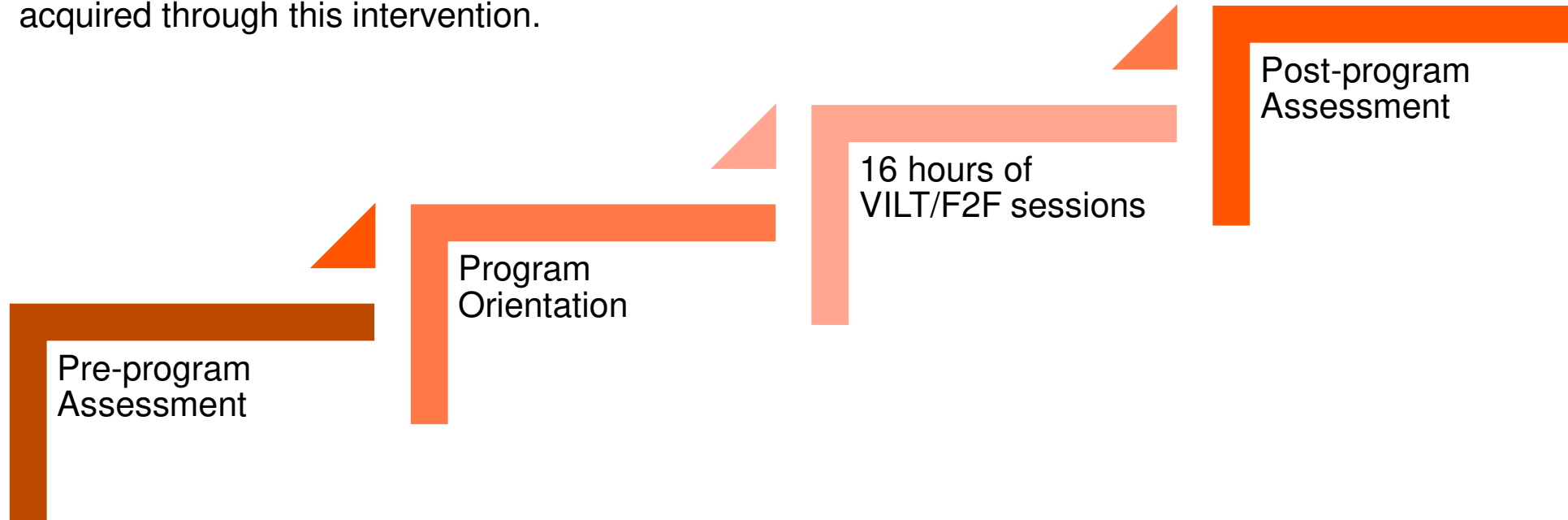
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❖ ILT Sessions

- ✓ 16 hours of VILT/ F2F sessions

❖ Post-program Assessment

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Program Details - Data Visualizer

S. No.	Modules	Topics	Learning Outcomes	Duration (hrs)	Assessments
1	Introduction	- Understanding Power BI and exploring its interface - Power BI Data source connection - Connecting to various sources (CSV, Excel etc) - Introduction to Power Query, Understanding Power Query Interface	Participants will be able to understand and explore data using power bi tool	8	Assessment 1
2	Exploration of Data	Data Manipulation and Data Profiling in Power Query (Removing Empty rows, working with filters, working with filters, appending queries, working with columns, appending queries, promoting row as header, Date Formatting errors, pivoting and unpivoting data, splitting columns, creating groups, Identifying Outliers, Handling Missing values, Univariate and Bivariate Analysis, Import Data from multiple sheets			
3	Data Modelling	Understanding Relationships, Many-to-one and one-to-one, cross-filter direction, many-to-many, M-Language Vs DAX			
4	Visuals and Reports	Tables, Matrix, Column Charts, Bar Charts, Cards, Slicers, Understanding tooltips and Interactions, diving into hierarchies and Drill Mode, Data Colours and Conditional Formatting, Formatting report pages and visuals, Working with report themes, Understanding default summarization and sorting, understanding filter types (visual, page and report), Working with multi-row card, Creating combined visuals and waterfalls, using custom visuals, creating bookmarks, slicer synchronisation, filter types, adding bookmarks to filters, Additional Visualizations	Participants will be able to plot various graphs. Also, they will be able to perform services in Power BI Service	8	
Total Duration – 16 Hours					

Data Translator

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❖ Program Orientation

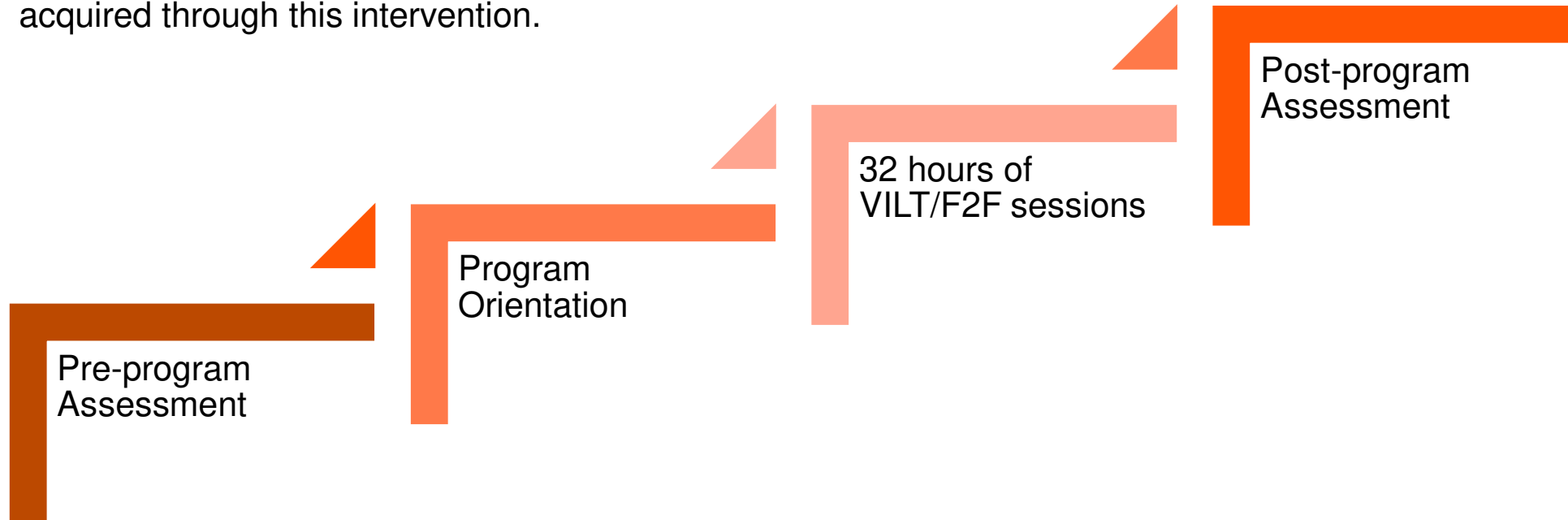
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❖ ILT Sessions

- ✓ 32 hours of VILT/ F2F sessions

❖ Post-program Assessment

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Program Details - Data Translator

S. No.	Modules	Topics	Learning Outcomes	Duration (hrs)	Assessments
1	Understanding Business Requirement	Meaning, Templates, Documentation and Use-Cases	It details the objectives, expectations and needs of a new project	4	Assessment 1
2	Understanding Problem Definition	Meaning, Templates, Documentation and Use-Cases	It defines the smart ways of defining problem	4	
3	Project Planning	Project Initiation Documentation, Project Planning and Management, Use-Cases, Project Plan Templates, Agile Methodology	It will provide participants with the use of specific knowledge, skills, tools and techniques to deliver value to people	4	
4	Risk Management	Risk related to doing a project, Limitations, Risk Management Articulation, Risk Management Process	Participants will be able to calculate the uncertainties and predict influence on business	4	Assessment 2
5	CRISP-DM, Analytics Playbook	Data Science Process	Participants will understand the data science process in each phase	4	
6	Data Analysis	Identifying business use-cases, Knowing more about future analytics roles and pathways for learning journey, How to build content aware proposition and instincts to insightful organization, Exposure to couple of case studies across industries to deliver business outcomes for decision-making (descriptive to advanced analytics), Building Hypothesis, Understanding of what project we are going to do, how we will get success, understanding data modelling, Use-Cases, Templates	Participants will understand that how to start delivering business outcomes leveraging data analytics	4	
7	Data Discovery	Data Mining, Data Mapping, Knowledge Discovery, Templates, Use-Cases, Exposure to modelling techniques, Exploratory Data Analysis, Supervised and Unsupervised Modelling techniques, Case studies to showcase how to translate a use-case to deployable models and solutions	Participants will be able to understand adequate data easily. Participants will be able to identify the analytics technique suitable for a use-case	4	
8	Consuming Data using Visual Tools	Fundamentals of Visualisation tools and techniques, Basic Analytics technologies	Participants will understand data with the help of visualisations	4	
Total Duration – 32 Hours					

Foundation of Analytics

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Program Flow

❖ Pre-program Assessment

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❖ Program Orientation

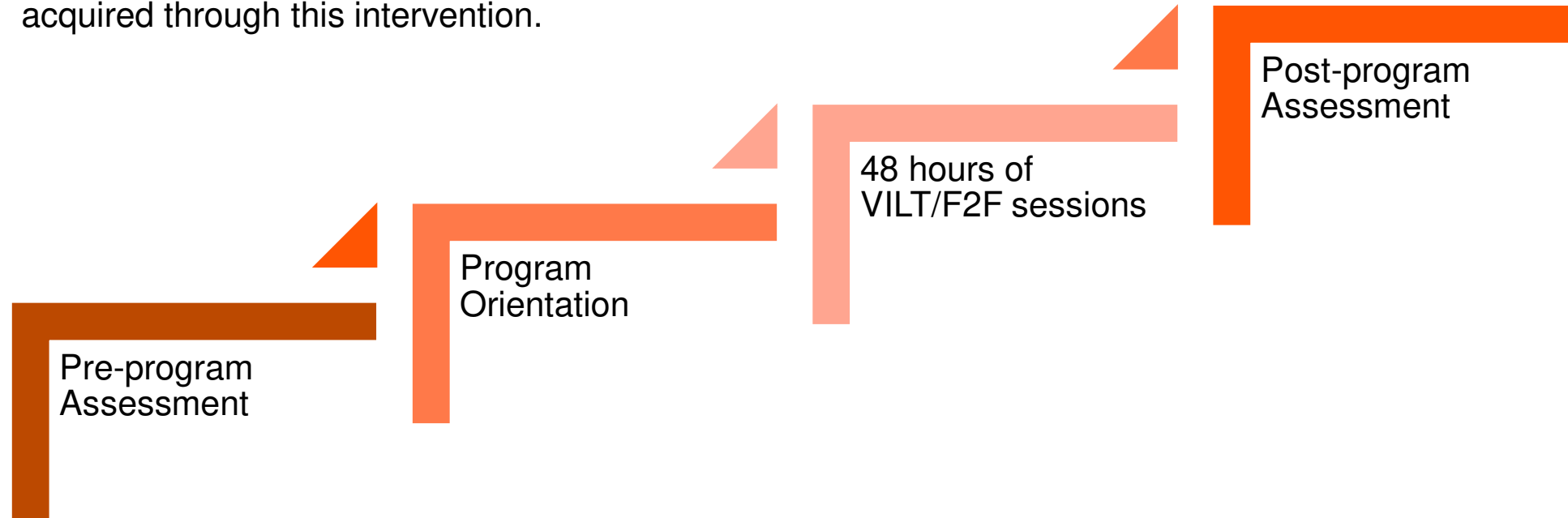
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❖ ILT Sessions

- ✓ 48 hours of VILT/ F2F sessions

❖ Post-program Assessment

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Program Details - Foundation of Analytics

S. No.	Modules	Topics	Duration (hrs)
1	Python	• '- Introduction • - Python Basics: Python data types, Variables, naming conventions, Operators, expressions, Control structures, Functions, parameters • - Python Data Structures: Lists, tuples, sets, Dictionaries, Indexing, slicing, List comprehensions • - Python OOPS, • - Design Patterns • - Python Libraries and Packages • - Introduction to web scraping • - Introduction to APIs and their uses	8
2	Data Platform Environments	• Overview - Staging, Dev, QA, Production, Deployment Strategies, architecture, Release process, Tools, Best Practises	8
	Data Engineering	• "- Basics: Pipelines, Code Quality, Tools, data engineering skills - Frameworks, Modern Data Ecosystem- Types of data structures, file formats, sources of data, Data Models"	
3	Data Engineering	• "- Stages - extraction, cleaning, transformation, aggregation- Relational and non-relational databases, data warehouses, data marts, and data lakes- Security, Authentication, Authorization" • - SQL querying, with Python application, Pivot & Unpivot, Query Optimization	8
4	Data Science	• Introduction to Maths and Statistics • Data Preparation: Data Cleaning, missing value treatments, outlier handling, encoding techniques, Variable Transformation, Dimensionality Reduction, Anomaly Detection	8
5	Data Analysis	• Exploratory Data Analysis:(EDA): Correlation, Univariate Analysis, Bi-variate Analysis, ANOVA • Hypothesis testing and sampling theory: Central Limit Theorem, Chi-Square test, Z-test, F-test and t-test. Concept of p-value	8
6	Visualization	• '- Power BI, Data Source Connections, Power Query, Relationships, DAX, basic visuals • - Python Matplotlib, Plotly	8
Total Duration – 48 Hours			

Data Science Champion

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❖ Program Orientation

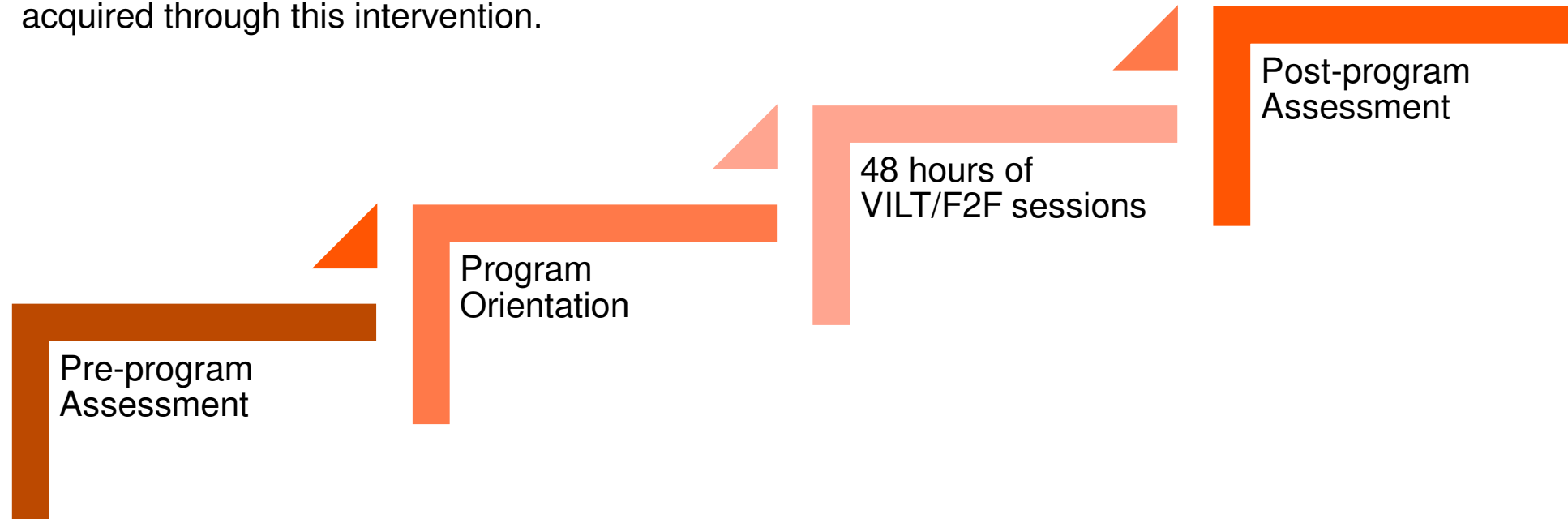
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❖ ILT Sessions

- ✓ 48 hours of VILT/F2F sessions

❖ Post-program Assessment

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Program Details - Data Science Champion

S. No.	Modules	Topics	Learning Outcomes	Duration (hrs)	Assessments
1	Python for Data Science	Basic Python Data structures: Numbers, strings, lists, Control Structures: Conditional and Looping structures, User defined functions	- Understand and implement different data structures in Python. - Be able to work with Data frames, loops and iteration functions in Python	4	Assessment 1
		- Advanced Data Structures : Dictionary, tuples, files. Importing data from flat files, csv files - Introduction to Numpy	- Creating important data structures, Read data from different types of sources - Understanding working with numeric multidimensional data. Mathematical Operations like matrix operations	4	
		Data Manipulation using Pandas	Introduction to pandas Series, Creating a Dataframe, Accessing elements of a Dataframe in pandas.	4	
		Data Manipulation: Filtering, Sorting, Selecting, Working with dates, joining data frames, groupby, merge, pivot etc	Be able to do manipulate tabular data, Be able to subset, reorder and produce group-wise summaries, Be able to merge data frames	4	
2	Data Exploration and Preparation using Python (Using Statistical Techniques)	- Introduction to Statistics : Measures of central tendency and dispersion. - Introduction to Probability: Conditional Probability, Baye's theorem, Probability distributions: Bionomial, Poisson, Normal, Uniform and Exponential Distributions	- Be able to understand the key features from the data, variability in the data. - Understanding the need for probability, dependencies among variables in the dataset. Nature and structure of data distributions.	4	Assessment 2
		Data Preparation: Data Cleaning, missing value treatments, outlier handling, encoding techniques, Variable Transformation, Dimensionality Reduction, Anomaly Detection	Be able to prepare the raw-data by treating outliers, dealing with missing values. Understanding categorical and numerical data and the conversion.	4	
		Exploratory Data Analysis:(EDA): Correlation, Univariate Analysis, Bi-variate Analysis, ANOVA	Understanding the relationship between the variables, impact of combinations of two or more variables. Analysis of variance among multiple models and choosing the best using F Test	8	
		Data Visualization: using matplotlib and seaborn	Be able to create static plots with matplotlib and seaborn.	4	
		Hypothesis testing and sampling theory: Central Limit Theorem, Chi-Square test, Z-test, F-test and t-test. Concept of p-value	Be able to understand the assumption to be made on population data and testing the assumptions on sampled data. Checking the correctness of the tests and accepting/rejecting the hypothesis based on test results	4	
3	MLOps	MLOps	Participants will be able to increase the pace of model development and production	4	
4	Capstone Project			4	
Total Duration – 48 Hours					

Data Science Expert

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Program Flow

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❖ Program Orientation

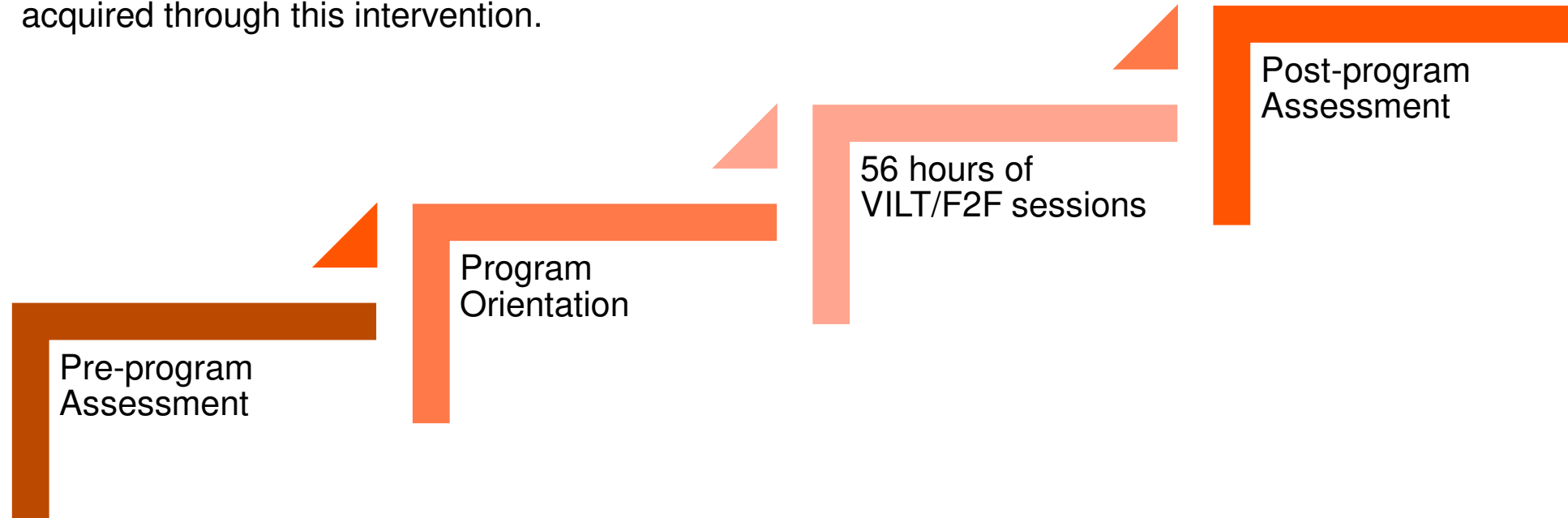
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❖ ILT Sessions

- ✓ 56 hours of VILT/F2F sessions

❖ Post-program Assessment

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Program Details - Data Science Expert

S. No.	Modules	Topics	Learning Outcomes	Duration (hrs)	Assessments
1	Data Science - Supervised Learning	What is Supervised Learning, How Supervised Learning works, Supervised Learning Algorithms, Comparison between Supervised learning Vs Unsupervised learning Vs Semi-Supervised learning, Supervised Learning Examples, Challenges of Supervised Learning	Participants will be able to understand the meaning of Supervised learning with proper examples	2	Assessment 1
		Linear Regression - Explanation with its Use Case, Logistic Regression - Explanation with its Use Case, Classification - Explanation with its Use Case, Naïve Bayes Classifiers and Support Vector Machines- Explanation with its Use Case, K Nearest Neighbors - Explanation with its Use Case, Decision Trees and Random Forest - Explanation with its Use Case , Xgboost - Explanation with its Use Case, Handling Imbalanced Data, Confusion Matrix	Participants will be able to classify data or predict outcomes	16	
2	Data Science - Unsupervised Learning	K-Means Clustering - Explanation and its use case, Hierarchical Clustering - Explanation and its use case, Gaussian Mixture Models - Explanation and its use case	Participants will get understanding of classifying unlabelled data	8	Assessment 2
3	Time Series Forecasting	- Introduction to Time Series - Autoregressive Moving Average Models (ARMA), - Autoregressive Integrated Moving Average Models (ARIMA), - Holt Winter's Method	Participants will get insight of the given dataset's features that change over time	8	
4	Optimization	Linear Programming, Genetic Algorithm, Genetic Algorithm, Monte Carlo Simulation, Simulated Annealing	Participants will get insight of how to optimize by using Machine Learning	8	
5	Natural Language Processing	Tokenization, Stemming, Lemmatization, Stop Words, Part of Speech Tagging, Named Entity Recognition, Text Classification, Semantics and Sentiment Analysis, LSTM, GRU, Text Generation	Participants will get insight of how to study textual language	8	
6	Capstone Project			6	
Total Duration – 56 Hours					

Artificial Intelligence Expert

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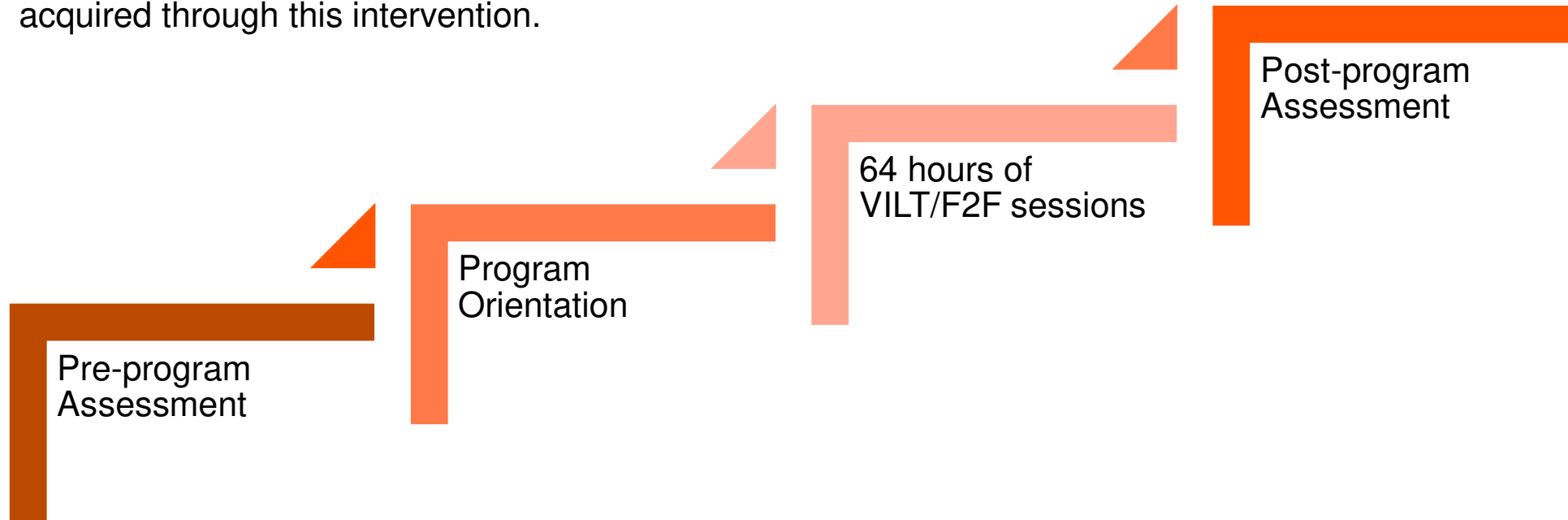
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❖ ILT Sessions

- ✓ 64 hours of VILT/F2F sessions

❖ Post-program Assessment

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Program Details - Artificial Intelligence Expert

S. No.	Modules	Topics	Learning Outcomes	Duration (hrs)	Assessments
1	Deep Learning Foundation	Introduction to Deep Learning, Why Deep Learning	Participants will understand deep learning and its terminologies	8	Assessment 1
		Artificial Neural Networks, Difference between Machine Learning and Deep Learning, Forward Propagation, Backward Propagation, Weight Initialization, Loss Function, Gradient Descent, Activation Function, Optimizers			
2	Image Analysis	Computer Vision: Image Basics with OpenCV, Image Processing	Participants will understand to analyse images	12	
		Convolution Neural Networks: Convolution Layer, Fully Connected Layer, Pooling, Padding, Activation Functions in CNN, Discussion about various CNN Architectures, CNN Use-Cases			
3	Natural Language Generation	Content Determination, Document Structuring, Aggregation	Participants will get understanding of generating or narratives in natural language	8	Assessment 2
4	Chatbot	How to create Chatbot	Participants will learn how to create Chatbot	12	
5	Recommendation Systems	Content Based Filtering, Neighbourhood Based Collaborative Filtering, Restricted Boltzmann Machines, Auto-Encoders for Recommendations	Participants will be able to create recommendation systems	12	
6	Reinforcement Learning	Reinforcement Learning	Participants will be able to learn about adaptive learning from the environment	4	
7	Capstone Project			8	
Total Duration – 64 Hours					

Data Visualizer Expert

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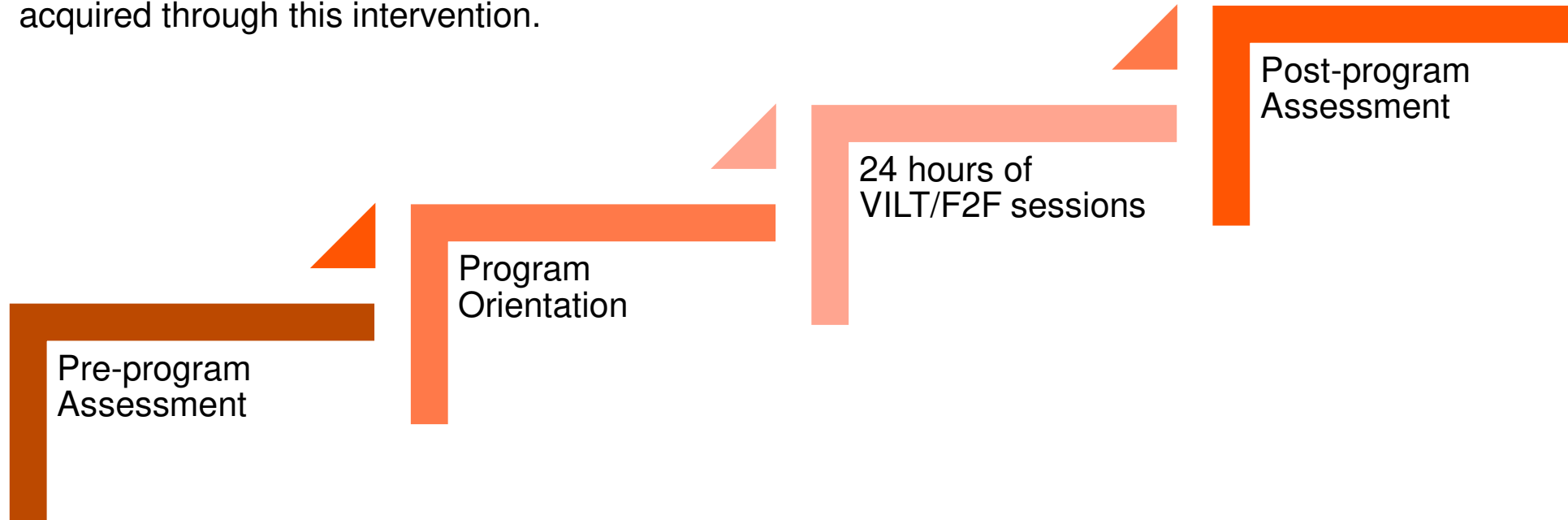
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❖ ILT Sessions

- ✓ 24 hours of VILT/F2F sessions

❖ Post-program Assessment

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Program Details - Data Visualizer Expert

S. No.	Modules	Topics	Learning Outcomes	Duration (hrs)	Assessments
1	Data Analysis using DAX	• Purpose & Scope of Data Analysis Expressions (DAX) • DAX Calculations and Measures • Filter, Aggregation • DAX Context: Row Context and Filter Context Usage • DAX Entities: Calculated Columns and Measures in Fields • DAX Operators & Symbols. Usage. Operator Priority • DAX Functions and Types: Table Valued Functions • Time Intelligence Functions with DAX • YTD, QTD, MTD Calculations with DAX • DATESYTD, DATESQTD, DATESMTD • ENDOFYEAR, ENDOFQUARTER, ENDOFMONTH • FIRSTDATE, LASTDATE, DATESBETWEEN • CLOSINGBALANCEYEAR, CLOSINGBALANCEQTR • SAMEPERIOD and PREVIOUSMONTH, QUARTER • DAX: Syntax, Functions & Context. Real-time DAX Usage • Using DAX to create new models from existing data	Participants will learn Data analysis and will be able to perform complex calculations. Also, will be able to apply row level security in power bi report pages	8	Assessment 1
2	Row Level Security	Introduction to RLS, Dynamic & Static RLS, RLS using Filters, Hierarchical RLS in PowerBI, RLS Mapping in PowerBI Cloud		4	
3	Other Visualization Features	• Scheduling of import/refresh of data and scheduling of export of visual/data to excel or ppt • Query Folding • Live connection Mode (PowerBI Datasets) • How to Create Dataflow, and use dataflow in Power BI desktop • Create Data alerts • Real-time Visualization • Dashboard	Participants will learn about importing and exporting reports, and other features	8	Assessment 2
4	Capstone Project			4	
Total Duration – 24 Hours					

Data Engineer Champion

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Program Flow

❖ Pre-program Assessment

- ✓ MCQ based Pre-program Assessment covering the program topics. This will help baseline participants knowledge

❖ Program Orientation

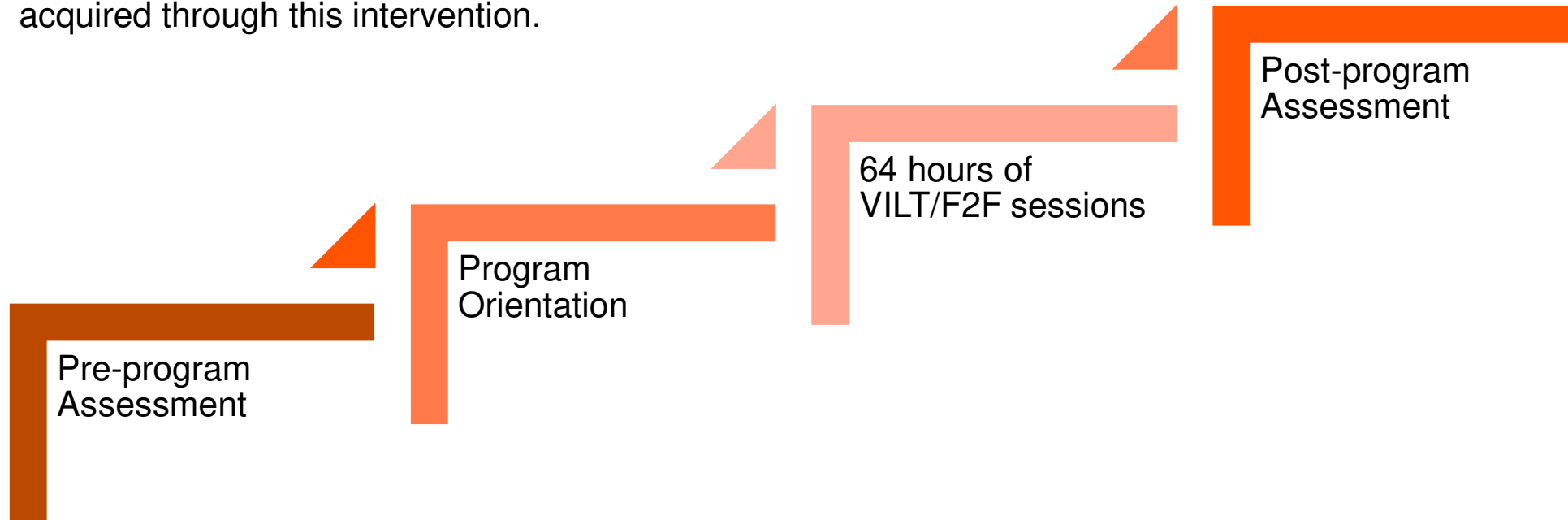
- ✓ In this session we will introduce participants on course coverage, learning outcomes, and expectations from the participants themselves

❖ ILT Sessions

- ✓ 64 hours of VILT/F2F sessions

❖ Post-program Assessment

- ✓ MCQ based Post-program Assessment will be rolled out to gauge the depth of knowledge participants have acquired through this intervention.



Program Details - Data Engineer Champion

S. No.	Modules	Topics	Learning Outcomes	Duration (hrs)	Assessments
1	Data Engineering	Data Engineering Refresher	Participants will get Refresher in Data engineering, Pipelines,Code Quality,Tools, Refresh the data engineering skills and preparatory sessions for other sessions	4	Assessment 1
		Data Engineering Ecosystem	Participants will Understand Data Engineering Frameworks, Modern Data Ecosystem, Data Engineering stages - cleaning , transformation, aggregation, best practises , ETL and ELT Processes , Data Models , different types of data repositories such as relational and non-relational databases, data warehouses, data marts, and data lakes different types of data structures, file formats, sources of data , Security , Authentication , Authorization		
2	Data Repositories	Data Modelling	Participants will be introduced to SQL: PostgreSQL overview, PostgreSQL Architecture, PostgreSQL Database Engine DDL, DML operations , data modelling and how to represent one-to-many and many-to-many relationships in PostgreSQL	3	
		Conceptual Database Design	Participants will learn SQL querying to do operations such as identifying nulls, special characters, blank rows/columns, and run distributions, run data summaries, merge tables, get unique counts, SQL querying with Python application,Introduction to Pivot & Unpivot, Aliasing pivot columns, Pivoting multiple columns, Query Optimization Techniques	5	
		SQL queries	Pivoting multiple columns, Query Optimization Techniques		
		Data-warehouses	Participants will understand the Basics of Data warehousing, OLTP vs OLAP, Facts and Dimensions	2	
		Data-marts	Participants will understand the Basics of Datamarts, Benefits of a Data Mart, Types of Data Marts	2	Assessment 2
3	FastAPI framework	FastAPI framework	Participants will understand the Basics of Fast API, Typer- the fast API of CLIs, Interactive API docs, different data formats, working with HTTP methods, content negotiation, REST standards, REST clients, Best Practices	8	
4	Hive	Hive Architecture Hive Framework Best Practises	Participants will understand the Hive Architecture,File Formats stored - Parquet/ORC/Avro Hive tables, commands, Hands-on Hive - Pre-processing and Data transformations on Big Data Data Storage, Data Types in HiveHive Query Language Features, , Partitions in Hive, Handling different data	8	Assessment 3
5	Airflow	Workflow Frameworks Introduction to Airflow Airflow Architecture, Airflow Schedulers, Cron Airflow DAGs	Participants will understand the Workflow frameworks,workflow use cases for data engineering Participants will understand Apache Airflow , Overview , anatomy of airflow DAG, running airflow locally, running airflow with docker, airflow operators Airflow DAG Scheduling, managing variables, managing connections, environment variable, apache airflow plug-ins,Triggering workflows,troubleshooting issues raised by pipeline alerts	8	
6.1	Azure Data Engineering	Azure Data Engineering	Participants will understand the concept of Azure Data Engineering ,Azure Basic Data Engineering Services such as Azure Storage, Azure relational Databases such as Azure SQL , Azure No SQL databases such as Azure Cosmos DB, Azure Datafactory , Best Practices,Migrate current data applications & pipelines to cloud	20	
6.2	Google Cloud Platform Data Engineering (Optional)	GCP Data Engineering	Participants will understand the concept of GCP Data Engineering ,GCP Basic Data Engineering Services such as GCP Storage, GCP relational Databases such as Cloud SQL , GCP No SQL databases such as Bigtable,Cloud Firestore, Google Cloud Dataflow Best Practices,Migrate current data applications & pipelines to cloud		
7	Capstone Project			4	
Total Duration – 64 Hours					

Data Engineer Expert

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Program Flow

❖ Pre-program Assessment

- ✓ MCQ based Pre-program Assessment covering the program topics. This will help baseline participants knowledge

❖ Program Orientation

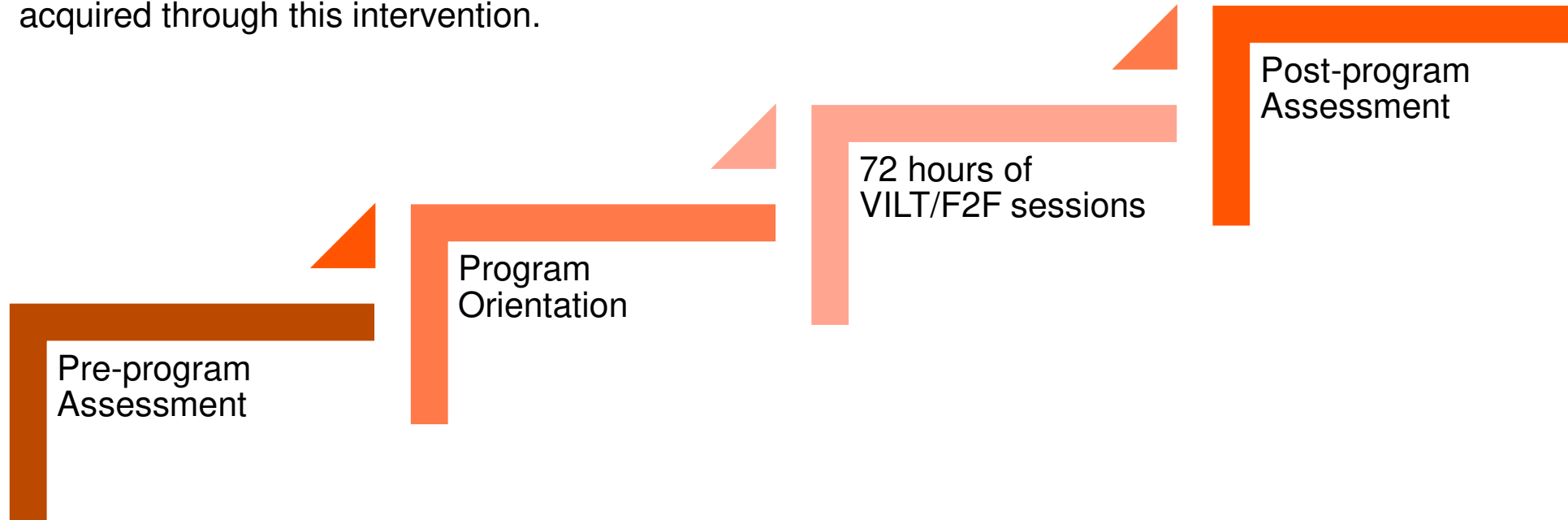
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❖ ILT Sessions

- ✓ 72 hours of VILT/F2F sessions

❖ Post-program Assessment

- ✓ MCQ based Post-program Assessment will be rolled out to gauge the depth of knowledge participants have acquired through this intervention.



Program Details - Data Engineer Expert (1/2)

S. No.	Modules	Topics	Learning Outcomes	Duration (hrs)	Assessments
1	Spark	• Spark Introduction	Participants will understand Spark, Spark RDDs, Transformations and Actions,pySpark SQL - Overview,SparkSession and Dataframes	8	Assessment 1
		• Spark Ecosystem	DataFrames from different data formats/ sources and RDDs,Debugging spark applications,logs walkthrough		
2	Kafka	• Streaming Frameworks Paradigm	Participants will understand DataFrames cleaning operations, aggregations , joins	2	
		• Introduction Kafka • Kafka Architecture • Kafka DataModel • Kafka Clients	Participants will understand the concept of Streaming Frameworks,Kafka use cases for data engineering	4	
		Participants will understand Kafka fundamentals,Kafka architecture - partitions, brokers, topics, offsets, configuring topics, kafka Leaders, followers,Understand node failures/in-sync replication leader election/re-balance,real Time use cases			
3	NoSQL DB , Cassandra	• NOSQL Paradigm	Participants will understand NoSQL DataStores , CAP Theorem,NoSQL use cases for data engineering	1	Assessment 2
		• Columnar databases • Introduction to Cassandra • Setting up Cassandra • Cassandra Data Model • Cassandra Data Management • Cassandra Queries	Participants will understand Columnar databases overview, Cassandra Architecture Data distribution Designing Data Modelling Partition Key, Clustering Key, Composite Partition Key Data Storage real Time use cases	6	
4	Elastic Search	• Introduction to Elasticsearch , ELK Stack	Participants will get to know the concepts of Elastic Search, Elastic Search Architecture, Basic usage of Elastic Search,CRUD Operations, Data modelling with Elastic Search, Query string search ,JSON search ,Full text vs Phrase search ,Pagination, Sorting , Filters, Fuzzy queries	6	
5	GraphDB, Neo4j	• Graph Database Overview	Participants will understand that What is a Graph? Why Graphs? Graph Problems such as Social Networking ,Biological Networks , Graph Databases, Graph Analytics,Graph Properties, Edges , Nodes , Graph Database Concepts	1	
		• Introduction to Neo4j • Neo4J Components • Neo4j Datamodel, Querying Data	Participants will get to know about Neo4j , Installing, and Running Neo4j,Basic Queries in Neo4j With Cypher	6	

Program Details - Data Engineer Expert (2/2)

S. No.	Modules	Topics	Learning Outcomes	Duration (hrs)	Assessments
6	Micro-services	Microservices	Participants will understand About Monolithic architecture ,What are Microservices ,Service Oriented Architecture Vs Microservices About APIgateway in Microservices,Creating Microservice CRUD operations ,Understand Docker and deploy Microservices app in Docker technology,Microservices API, Integration with other applications	6	Assessment 3
7	Data Engineering Tools Expert Session (Governance)	Governance	Participants will understand about Data Governance, data governance frameworks, data quality,OSI PI, Roles	4	
8.1	Azure Data Engineering	Azure Data Engineering Expert Services	Participants will understand Azure Advanced Data Engineering Services such as Azure Data Engineering Pipelines, Azure Databricks, Azure Synapse Warehouse Service , Best Practices,Migrate current data applications & pipelines to Cloud	20	
8.2	Google Cloud Platform Data Engineering (Optional)	GCP Data Engineering Expert Services	Participants will understand GCP Advanced Data Engineering Services such as GCP Data Engineering Pipelines, GCP Databricks,Big Query , Dataproc , Best Practices, Migrate current data applications & pipelines to Cloud		Assessment 4
9	Capstone Project				
Total Duration – 72 Hours					

The background of the slide is a dark, textured surface with a pattern of diagonal lines. These lines are composed of small, glowing, golden-brown particles or fibers that create a sense of depth and movement. The overall effect is reminiscent of a microscopic view of a material or a digital data stream.

Thank You