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Global Learning for Operational Leaders



DIGITAL INNOVATION AND TRANSFORMATION | DIT-050

Python for Artificial Intelligence and Machine Learning

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Course content

Why Attend

Python is the most widely used language for artificial intelligence and machine learning, supported by a rich ecosystem of libraries that make it possible to move from raw data to working models quickly.

Professionals who can prepare data, train models and evaluate results in Python are in high demand across finance, energy, government, healthcare and technology.

Course Methodology

• This training course will utilise a variety of proven adult learning techniques to ensure maximum understanding, comprehension and retention of the information presented. This includes an interactive mixture of lecture-led learning, case studies, practical exercises and group discussions.

Course Objectives

• Understand core principles and best practices covered in Python for Artificial Intelligence and Machine Learning.

• Apply practical techniques to day-to-day operational challenges.

• Build an implementation action plan suitable for your organization.

Target Audience

• Data and business analysts moving into machine learning

• Engineers and technical specialists

• IT professionals and software developers new to AI

• Researchers and statisticians



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Course outline

Detailed course outline

Day-by-day outline for Python for Artificial Intelligence and Machine Learning.

Day 1 - Python Foundations for Data Work

• 09:00-09:34 | Setting Up the Environment: Installing Python, using Jupyter notebooks and managing packages with pip and conda

• 09:34-10:08 | Core Data Types: Numbers, strings, lists, dictionaries and tuples, and when to use each

• 10:08-10:42 | Control Flow: Conditions, loops and list comprehensions for efficient data processing

• 10:42-11:00 | Writing Functions: Parameters, return values, scope and writing reusable, readable code

• 11:00-11:30 | Coffee break

• 11:30-11:46 | Writing Functions: Parameters, return values, scope and writing reusable, readable code (continued)

• 11:46-12:20 | Working with Files: Reading and writing CSV, Excel and JSON data

• 12:20-12:53 | Error Handling and Debugging: Understanding tracebacks, try and except, and good debugging habits

• 12:53-14:00 | Lab: Write a script that loads, filters and summarises a business dataset

Day 2 - Data Preparation and Exploration with pandas and NumPy

• 09:00-09:34 | NumPy Essentials: Arrays, vectorised operations and why they are faster than loops

• 09:34-10:08 | pandas DataFrames: Selecting, filtering, sorting and creating new columns

• 10:08-10:42 | Data Cleaning: Handling missing values, duplicates, outliers and inconsistent formats

• 10:42-11:00 | Grouping and Aggregation: Group-by operations, pivot tables and merging datasets

• 11:00-11:30 | Coffee break

• 11:30-11:46 | Grouping and Aggregation: Group-by operations, pivot tables and merging datasets (continued)

• 11:46-12:20 | Exploratory Data Analysis: Descriptive statistics, distributions and correlations

• 12:20-12:53 | Data Visualisation: Charts with Matplotlib and Seaborn that reveal patterns and problems

• 12:53-14:00 | Lab: Prepare a customer dataset ready for modelling



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Day 3 - Supervised Machine Learning with scikit-learn

- 09:00-09:30 | The scikit-learn Workflow: Splitting data, fitting models, predicting and scoring
- 09:30-10:30 | Linear and Logistic Regression: Building baseline models and interpreting coefficients
- 10:30-11:00 | Decision Trees and Random Forests: Capturing non-linear patterns and reading feature importance
- 11:00-11:30 | Coffee break
- 11:30-12:00 | Gradient Boosting: Using XGBoost and LightGBM for high-performance tabular models
- 12:00-12:30 | Feature Engineering: Encoding categories, scaling numbers and creating new features
- 12:30-13:00 | Pipelines: Combining preprocessing and modelling steps to avoid data leakage
- 13:00-14:00 | Lab: Predict customer churn and compare several algorithms

Day 4 - Model Evaluation, Tuning and Unsupervised Learning

- 09:00-09:30 | Evaluation Metrics: Accuracy, precision, recall, F1, ROC-AUC, MAE and RMSE
- 09:30-10:00 | Cross-Validation: Getting reliable performance estimates on limited data
- 10:00-11:00 | Hyperparameter Tuning: Grid search, random search and practical tuning strategies
- 11:00-11:30 | Coffee break
- 11:30-12:00 | Handling Imbalanced Data: Resampling, class weights and threshold tuning
- 12:00-12:30 | Clustering: K-means and hierarchical clustering for segmentation
- 12:30-13:00 | Dimensionality Reduction: Principal component analysis for visualisation and compression
- 13:00-14:00 | Lab: Tune a fraud detection model and segment customers into groups



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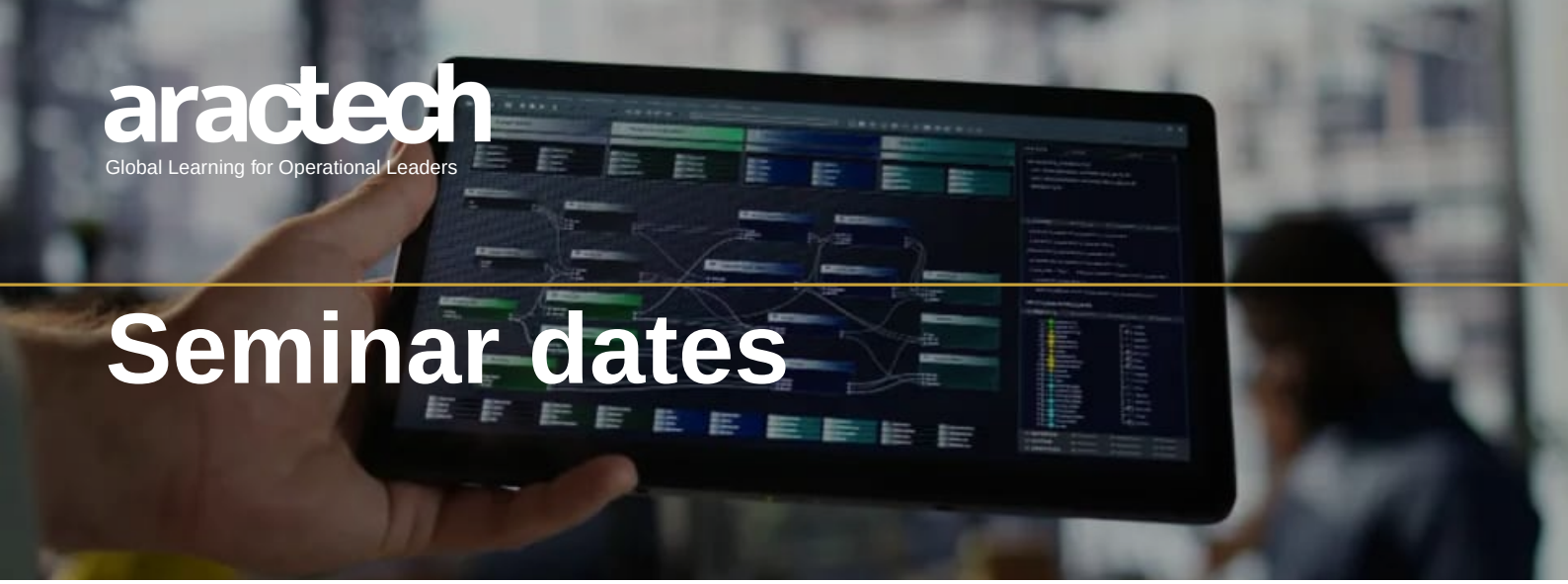
Day 5 - Deep Learning Introduction and Model Deployment

- 09:00-09:34 | Neural Network Basics: Neurons, layers, activation functions and how networks learn
- 09:34-10:41 | Building a Network: Creating and training a simple model with Keras or PyTorch
- 10:41-11:00 | Working with Text and Images: An introduction to embeddings and convolutional networks
- 11:00-11:30 | Coffee break
- 11:30-11:45 | Working with Text and Images: An introduction to embeddings and convolutional networks (continued)
- 11:45-12:19 | Using Pre-trained Models: Applying transfer learning and models from public model hubs
- 12:19-12:53 | Saving and Loading Models: Serialising models and reproducing results
- 12:53-13:27 | Serving Predictions: Exposing a model through a simple web API
- 13:27-14:00 | Capstone: Participants complete an end-to-end project and present their findings



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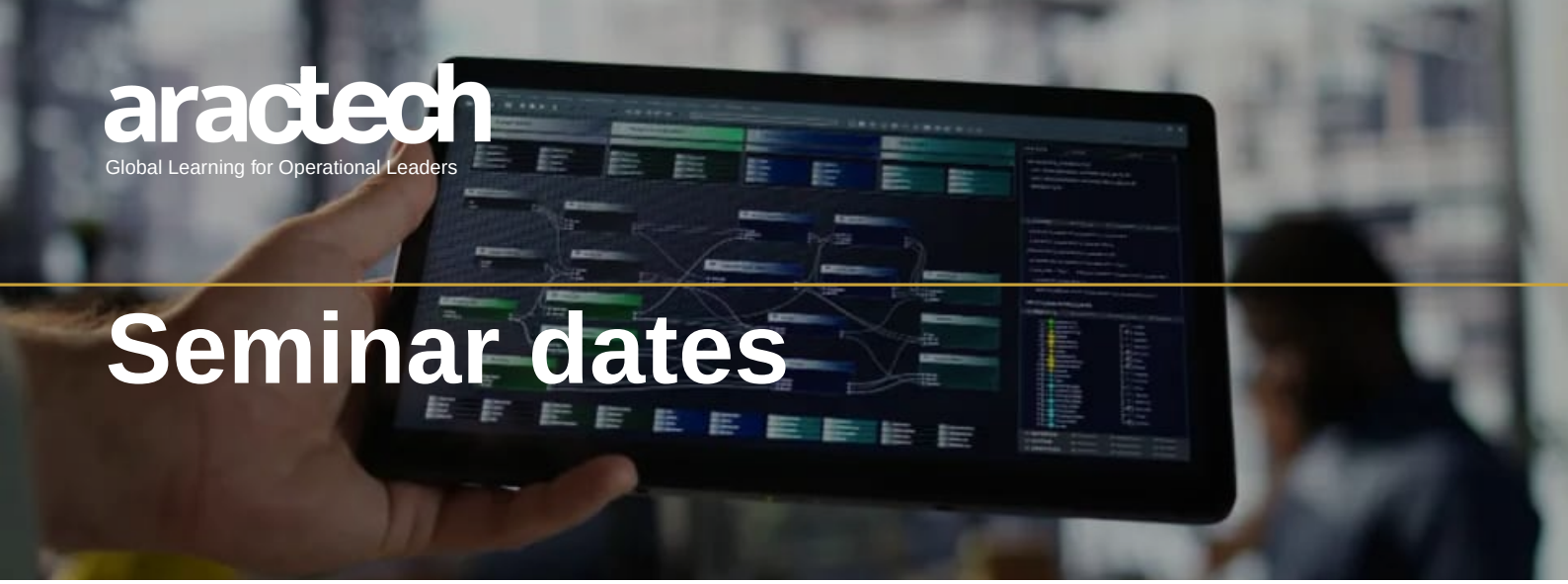
Seminar dates

Available seminar dates

Live dates and pricing for Python for Artificial Intelligence and Machine Learning generated from the course details page.

Date	Location	Format	Fee
4 - 8 January 2027	Paris	Classroom	**€2,210**
11 - 15 January 2027	Dubai	Classroom	**€2,745**
18 - 22 January 2027	Amsterdam	Classroom	**€2,415**
25 - 29 January 2027	Dubai	Classroom	**€2,745**
1 - 5 February 2027	Oslo	Classroom	**€4,200**
8 - 12 February 2027	Cape Town	Classroom	**€1,895**
15 - 19 February 2027	Istanbul	Classroom	**€2,250**
22 - 26 February 2027	Dublin	Classroom	**€3,360**
1 - 5 March 2027	Barcelona	Classroom	**€2,175**
8 - 12 March 2027	Cape Town	Classroom	**€1,895**



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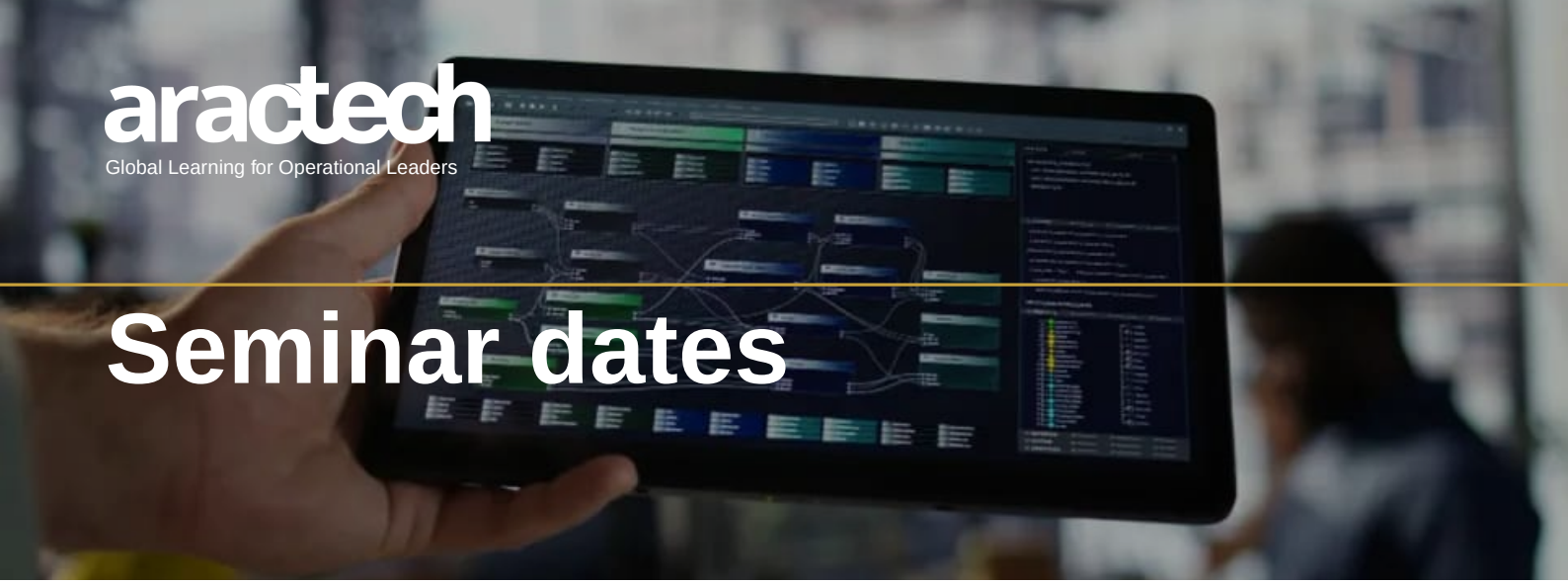
15 - 19 March 2027	Frankfurt	Classroom	**€2,215**
22 - 26 March 2027	Dubai	Classroom	**€2,745**
5 - 9 April 2027	Kuala lumpur	Classroom	**€2,425**
12 - 16 April 2027	London	Classroom	**€2,815**
19 - 23 April 2027	Manchester	Classroom	**€3,360**
26 - 30 April 2027	Dubai	Classroom	**€2,745**
3 - 7 May 2027	Cape Town	Classroom	**€1,895**
10 - 14 May 2027	Paris	Classroom	**€2,210**
17 - 21 May 2027	Liverpool	Classroom	**€3,360**
24 - 28 May 2027	Amsterdam	Classroom	**€2,415**



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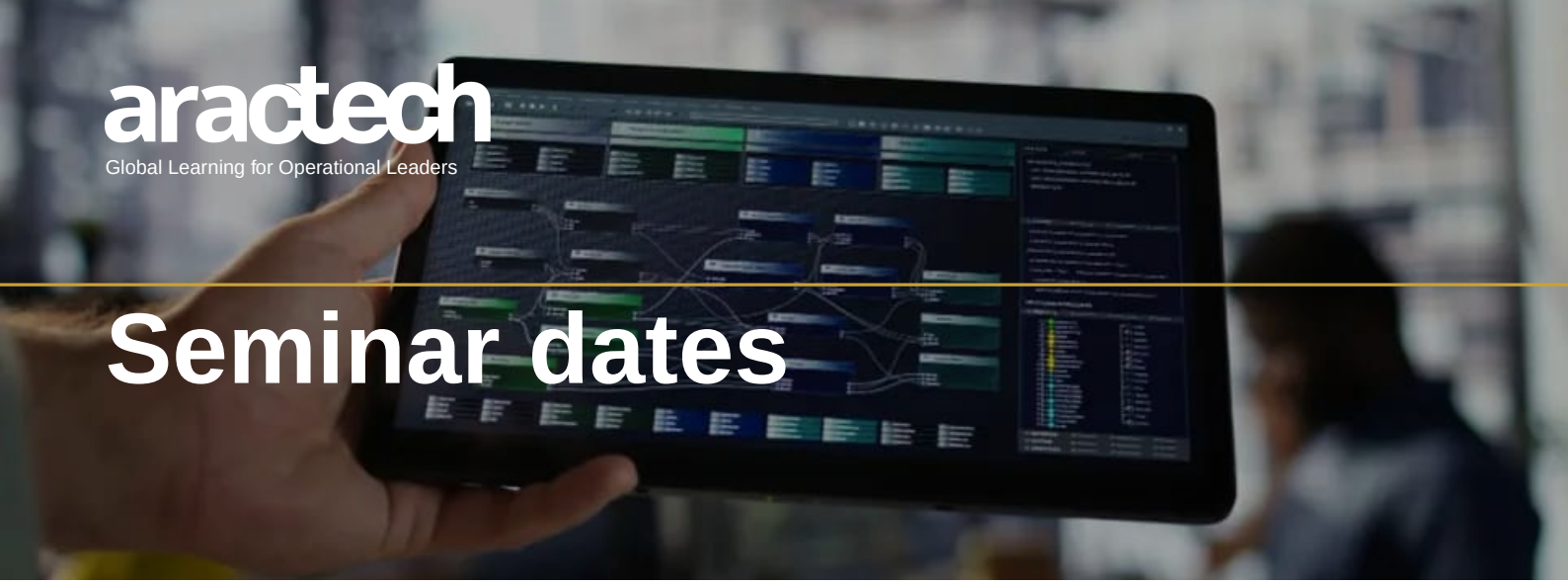
7 - 11 June 2027	Dubai	Classroom	**€2,745**
14 - 18 June 2027	London	Classroom	**€2,815**
21 - 25 June 2027	Cape Town	Classroom	**€1,895**
5 - 9 July 2027	Brussels	Classroom	**€3,400**
12 - 16 July 2027	Dubai	Classroom	**€2,745**
19 - 23 July 2027	Barcelona	Classroom	**€2,175**
26 - 30 July 2027	Cape Town	Classroom	**€1,895**
2 - 6 August 2027	Frankfurt	Classroom	**€2,215**
9 - 13 August 2027	Dubai	Classroom	**€2,745**
16 - 20 August 2027	Kuala lumpur	Classroom	**€2,425**



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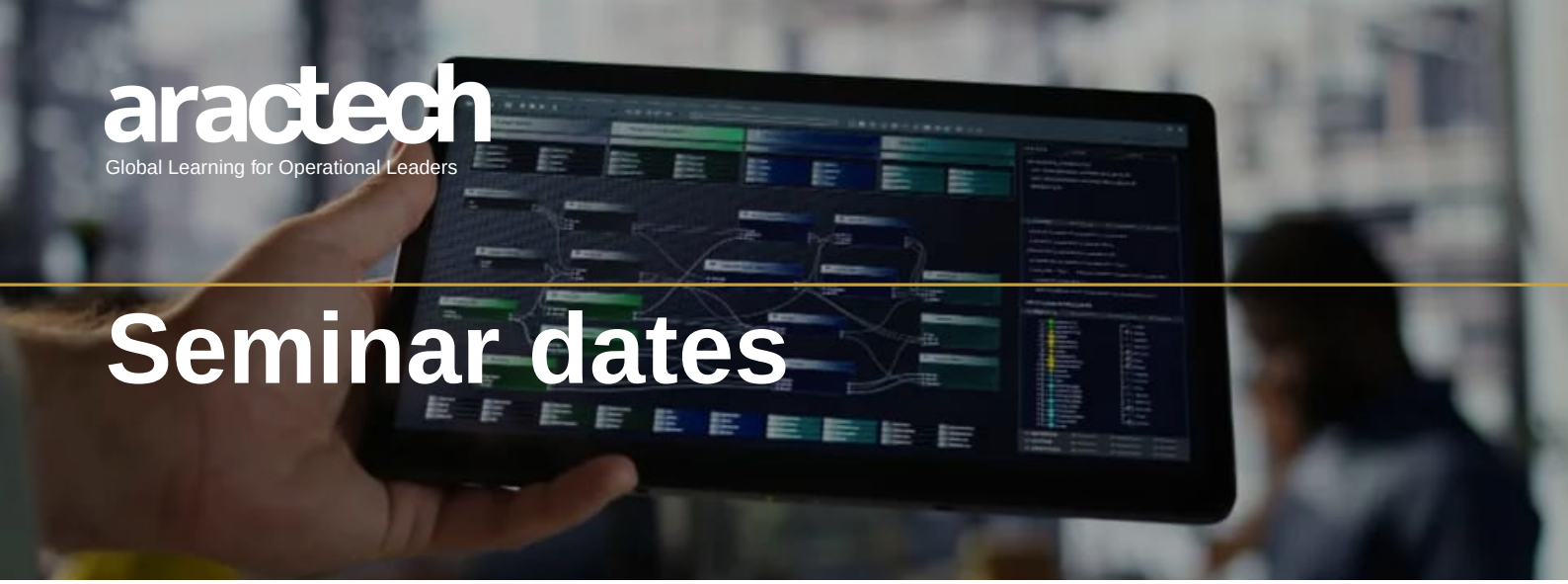
23 - 27 August 2027	Eindhoven	Classroom	**€3,400**
6 - 10 September 2027	Istanbul	Classroom	**€2,250**
13 - 17 September 2027	Dubai	Classroom	**€2,745**
20 - 24 September 2027	Cape Town	Classroom	**€1,895**
4 - 8 October 2027	Paris	Classroom	**€2,210**
11 - 15 October 2027	Dubai	Classroom	**€2,745**
18 - 22 October 2027	Rotterdam	Classroom	**€3,400**
25 - 29 October 2027	Dubai	Classroom	**€2,745**
1 - 5 November 2027	London	Classroom	**€2,815**
8 - 12 November 2027	Cape Town	Classroom	**€1,895**



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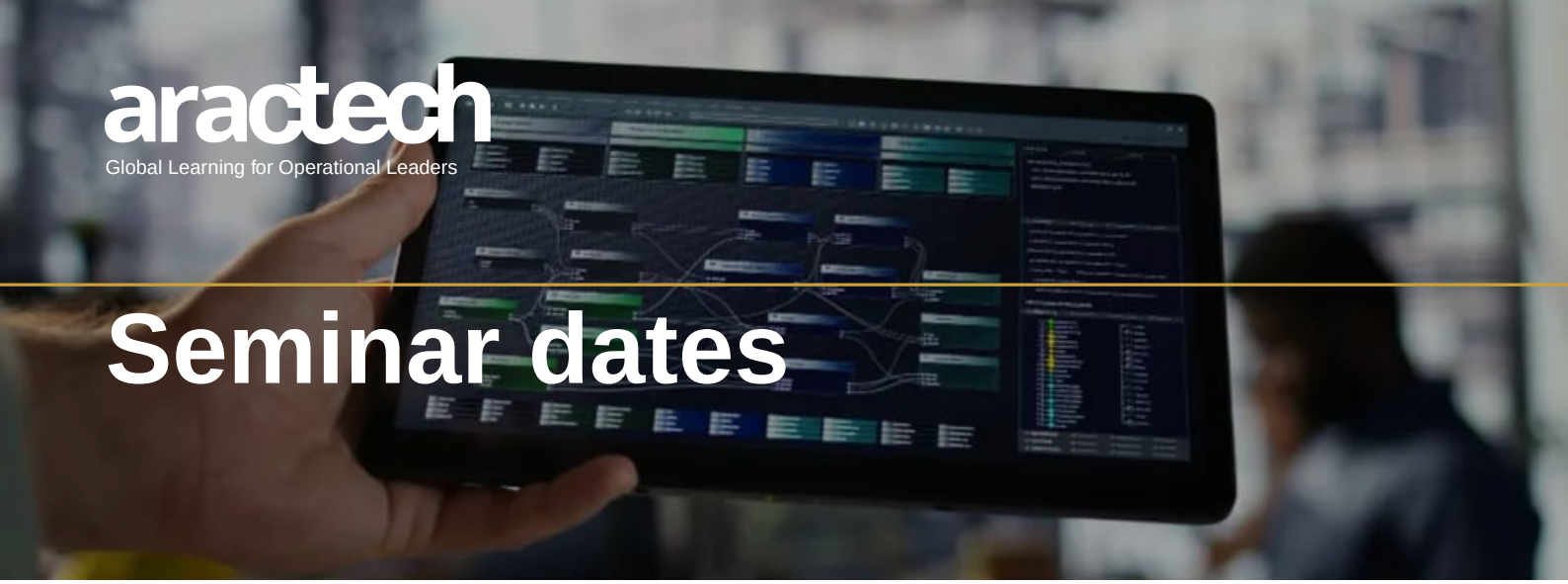
15 - 19 November 2027	Istanbul	Classroom	**€2,250**
22 - 26 November 2027	Dubai	Classroom	**€2,745**
6 - 10 December 2027	Dusseldorf	Classroom	**€3,400**
13 - 17 December 2027	Cape Town	Classroom	**€1,895**
20 - 24 December 2027	Frankfurt	Classroom	**€2,215**
27 - 31 December 2027	Dubai	Classroom	**€2,745**
4 - 8 January 2027	Online / Live	Online / Live	**€1,515**
11 - 15 January 2027	Online / Live	Online / Live	**€1,515**
18 - 22 January 2027	Online / Live	Online / Live	**€1,515**
25 - 29 January 2027	Online / Live	Online / Live	**€1,515**



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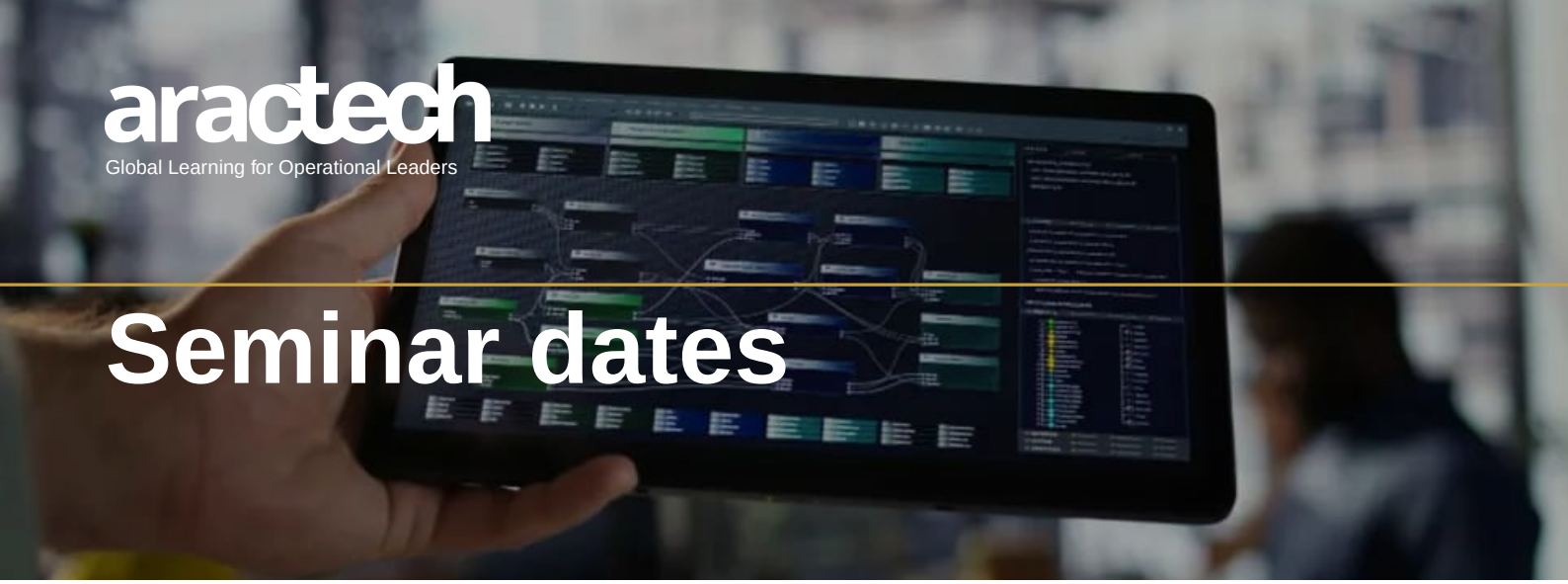
1 - 5 February 2027	Online / Live	Online / Live	**€1,515**
8 - 12 February 2027	Online / Live	Online / Live	**€1,515**
15 - 19 February 2027	Online / Live	Online / Live	**€1,515**
22 - 26 February 2027	Online / Live	Online / Live	**€1,515**
1 - 5 March 2027	Online / Live	Online / Live	**€1,515**
8 - 12 March 2027	Online / Live	Online / Live	**€1,515**
15 - 19 March 2027	Online / Live	Online / Live	**€1,515**
22 - 26 March 2027	Online / Live	Online / Live	**€1,515**
5 - 9 April 2027	Online / Live	Online / Live	**€1,515**
12 - 16 April 2027	Online / Live	Online / Live	**€1,515**



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3 - 7 May 2027	Online / Live	Online / Live	**€1,515**
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17 - 21 May 2027	Online / Live	Online / Live	**€1,515**
24 - 28 May 2027	Online / Live	Online / Live	**€1,515**
7 - 11 June 2027	Online / Live	Online / Live	**€1,515**
14 - 18 June 2027	Online / Live	Online / Live	**€1,515**
21 - 25 June 2027	Online / Live	Online / Live	**€1,515**
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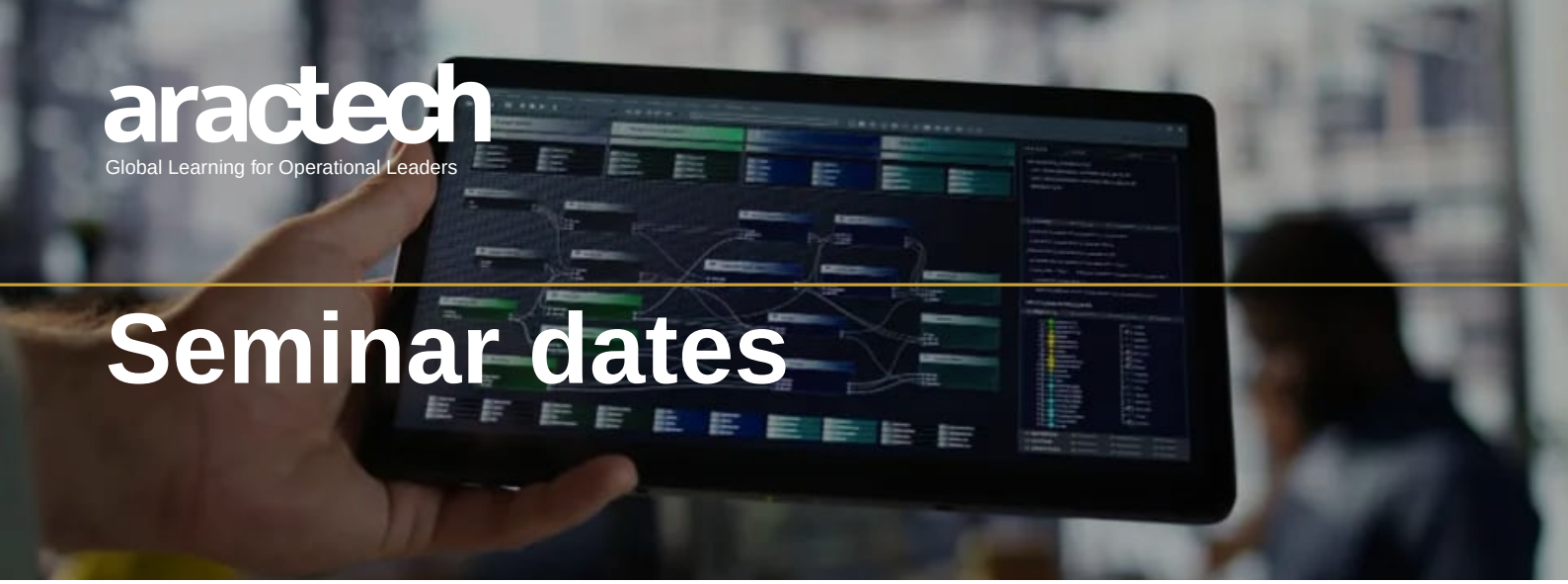

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23 - 27 August 2027	Online / Live	Online / Live	**€1,515**
6 - 10 September 2027	Online / Live	Online / Live	**€1,515**
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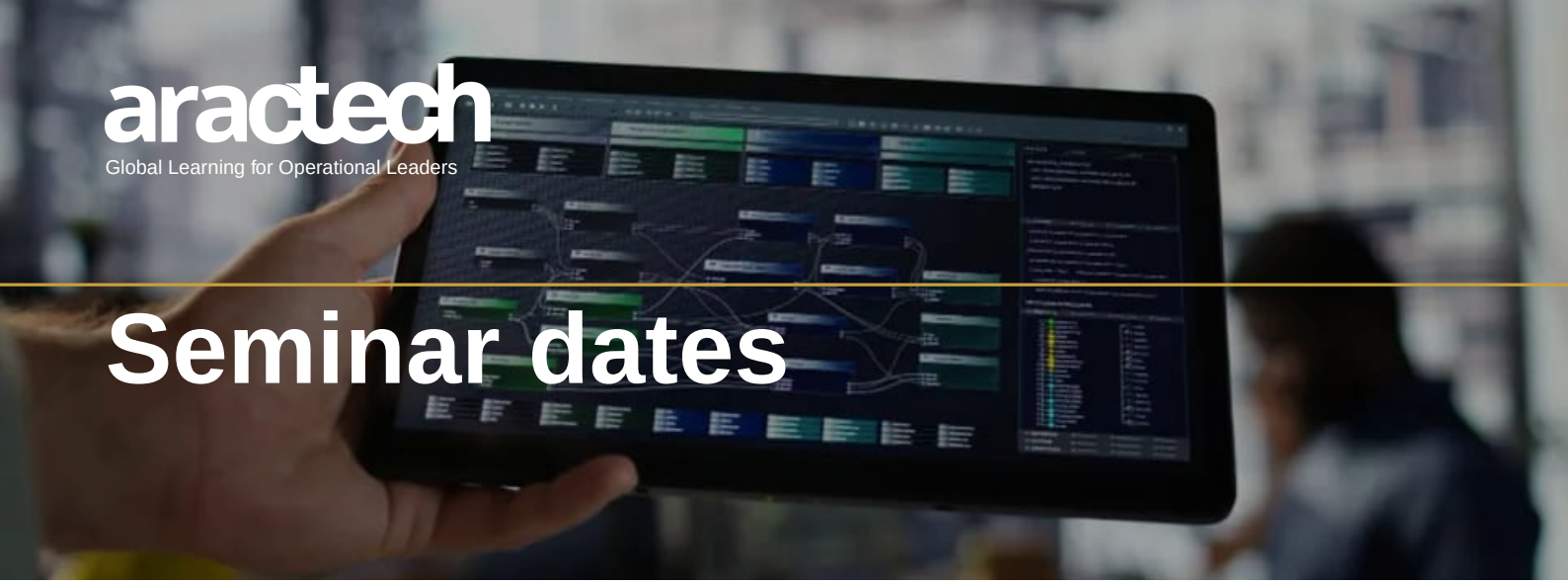

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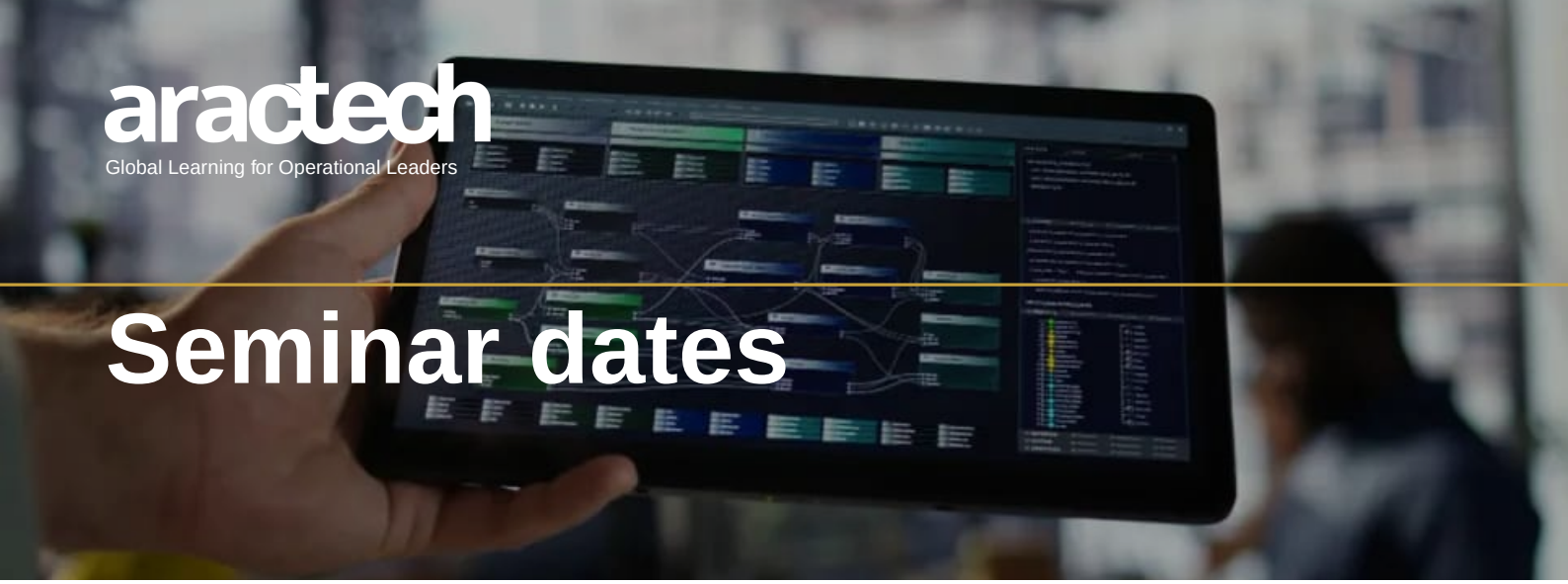

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