

# Extended IoT Development Training for MindSphere

## Product Sheet



This four-day training provides insights into MindSphere essentials like its architecture and IoT data model. Moreover, you will learn more about the MindConnect API, which enables you to build your own custom agent for MindSphere. Development fundamentals will be explained, first by gaining Cloud Foundry knowledge and ending in using MindSphere APIs and pushing an application to MindSphere, all the while learning about MindSphere's security concepts, permission model, request routing, and advanced areas of development for MindSphere. You will become familiar with the MindSphere DevOps workflow to push an application to a MindAccess Operator Plan and operate an application.

### Training Sepsifics

#### Content

- MindSphere essentials
  - MindSphere architecture
  - Digital twin
  - MindSphere IoT data model
  - Device onboarding
- MindConnect API
  - Creating an agent
  - Authorization & authentication
  - Data ingestion & mapping
- Development fundamentals for MindSphere
  - Cloud Foundry
  - Environment set-up
  - Pushing an application
  - Dashboard application
    - Asset Management API
    - IoT time series services
    - IoT time series aggregates service

	<ul style="list-style-type: none"> <li>• Advanced development for MindSphere <ul style="list-style-type: none"> <li>– Advanced backend application <ul style="list-style-type: none"> <li>▪ Usage of backing services</li> <li>▪ JSON Web Token details / token validation</li> </ul> </li> <li>– Background processes <ul style="list-style-type: none"> <li>▪ Application credentials / token management API</li> <li>▪ Tenant credentials</li> </ul> </li> <li>– Notification services API</li> <li>– Local application development and remote debugging</li> <li>– Asset Management API advanced</li> <li>– Self-hosted applications</li> <li>– Operator workflow / MindSphere application lifecycle</li> <li>– Sub-tenant details</li> </ul> </li> </ul>
Duration	four days (9m – 5pm)
Prerequisites	<ul style="list-style-type: none"> <li>• First development experience with: <ul style="list-style-type: none"> <li>– Node.js (JavaScript)</li> <li>– HTML</li> </ul> </li> <li>• Basic knowledge of RESTful API and database</li> <li>• Laptop with USB port with ability to connect to the internet via Wifi or cable</li> </ul>
Training methods	<ul style="list-style-type: none"> <li>• Interactive lectures</li> <li>• Hands-on exercises</li> </ul>
Out of scope	<ul style="list-style-type: none"> <li>• Participant’s travel expenses and travel arrangements</li> </ul>

## Definitions

Public Training	Open classroom training that is booked per person with content predefined by Siemens, offered at a location designated by Siemens
Onsite Training	Training that is booked per training with content predefined by Siemens, delivered at a specific customer’s site
Definitions	Capitalized terms used herein shall have the definition ascribed to them in this Product Sheet or in the MindSphere Agreement.

## Public Training

Location	Location provided by Siemens
Included in price	Training is priced per person and includes training, training material, and lunch for non-Siemens (external) participants.
Availability	The schedule for upcoming trainings is provided online. Trainings are available on a first-come, first-served basis.

Booking and confirmation	Once a training is booked, availability is checked, and a confirmation email with detailed information will be sent.
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## Onsite Training

Location	Location provided by customer and subject to agreement by Siemens in Siemens' sole discretion. Location, including specific address, must be agreed at least two weeks prior to training start date.
Number of participants	Maximum of ten participants
Included in price	Training is priced as a package and includes training and training material
To be provided by customer	<ul style="list-style-type: none"> <li>• Organization of training room and catering</li> <li>• Shipping and usage of training racks</li> </ul>
Availability	Training availability is based on demand and is subject to availability of trainer(s)
Booking and confirmation	Training dates confirmed by Siemens after order intake.

## Support

Online support	For questions and support regarding classroom, public, and online training programs, please contact: <a href="mailto:training@mindsphere.io">training@mindsphere.io</a> .
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