



# Blockchain Developers: Ethereum

Duration 2 day(s) (DEV-BLOCKCHAIN-ETHEREUM)

Focus on the Ethereum universe of the Blockchain

## Description

Often confused with Bitcoin, blockchain technology ecosystems (or Distributed Ledger Technology) are among the technologies offering the most breakthrough potential. While the Internet and related protocols allow "only" to exchange information, the blockchain technological ecosystem will allow the exchange of values, perfect traceability or even remote contracting. This 2 days classroom training will allow you to dive into the Ethereum universe, one of the two main business ecosystem of the sector.

## Goals

- Understand how Ethereum works (architecture, wallets, oracles)
- Create your own Ethereum blockchain
- Develop a Decentralized Application from scratch
- Discover the ecosystem and the main tools (Truffle, Metamask, Web3js)

### *Public*

Technical: Developer, Architect

### *Prerequisites*

Blockchain databases for developer

### *Structure*

50% Theory, 50% Practice

## Program

\*\* red wire lab: develop a Smart Online Betting Contract (React + Ethereum) \*\*

# Day 1

## Morning

- Facilities update (10 min)
- Ethereum in detail (1hr 30 min - 2 hr)
  - Architecture
  - Smart contracts
  - Gas
  - D-app
  - Demo of a D-app
- Presentation of Geth, Parity, Mist? (20 min)
- Lab 1: Mount your local Ethereum blockchain (docker image + Ganache or Etherscan plugger) (30 min)
- Solidity: the bases (structure of a SM, constructor, variables, methods, visibility ...) (1 hr)

## Afternoon

- Presentation and demo Remix IDE (15 min)
- Presentation of the red wire lab (demo of our final lab) (10 min)
- Lab 2: Create a basic smart contract and play with Remix IDE (1 hr)
- Industrialization of devs with Truffle (10 min)
- Deployment of Smart Contracts (15 min)
- Presentation and demo of Ganache (10 min)
- Lab 3: Running a smart basic contract with Truffle (30 min)
- Deployment of our SM on Ganache, then on the blockchain of Lab 1, then on the testnet Ethereum (45 min)

# Day 2

## Morning

- Write unit tests with Truffle (30 min)
- Lab 4: Creation and recovery of games with unit tests on Truffle and interfacing our React app with the games managed in the blockchain (2 hr 30 min)
- How to interface a blockchain with a web app (metamask, web3js) (30 min)

## Afternoon

- Solidity: advanced concepts (1 hr)
- Lab 5: Betting management (1 hr)
- Introduction to Oracles (30 min)
- Focus on securing smart contracts (10 min)
- The cost of using the Ethereum blockchain (15 min)
- The next evolutions of Ethereum (15 min)

# BONUS

- Oracle with Oraclize (30 min)
- Lab: Develop a match recovery oracle with Oraclize (1 hr)
- HMI Hosting: IPFS, Swarm (20 min)