S사 Cloud-native Application Architect (CAA) 훈련과정

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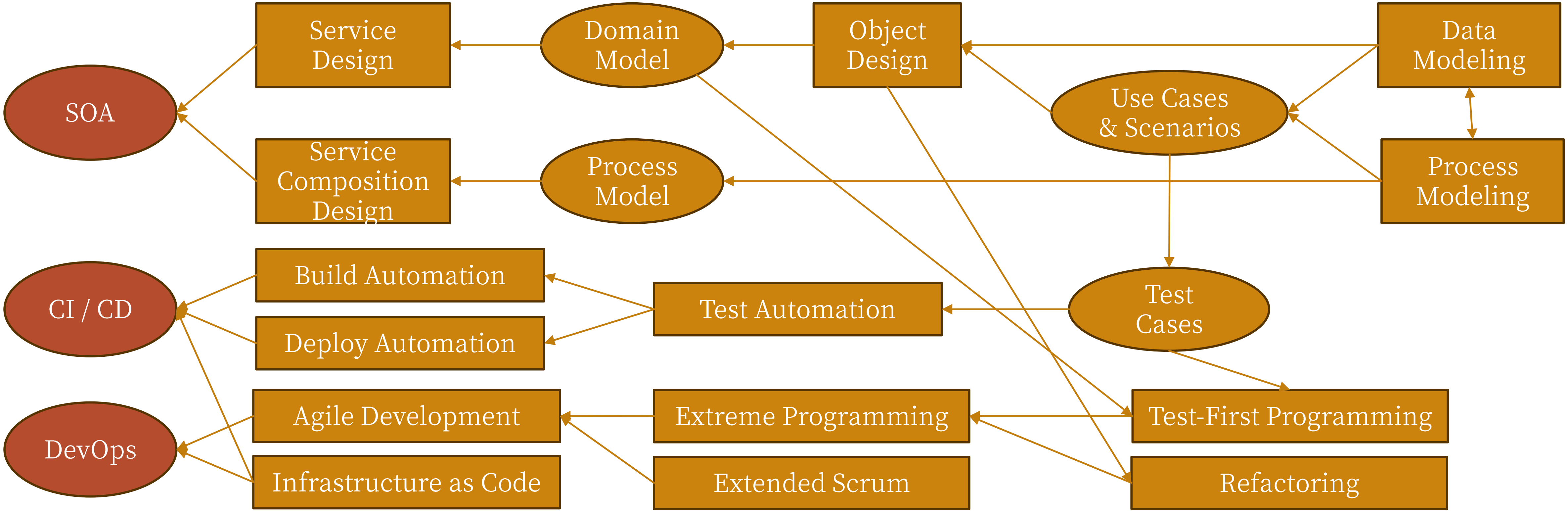
Cloud-Native Application

- Service-Oriented Architecture: Macro, Mini, Micro, Nano Services
- Infrastructure Automation: Automated CI / CD Pipeline
- DevOps Teams: Full-Stack, Full-Cycle Engineers

Fast Release Cycles
of Zero-Bug, Sustainable
Independent Services
by DevOps Teams
using PaaS & IaaS



CAA 훈련과정: Learning Map (of Practices)

		Abstraction Level		
		Conceptual Level	Specification Level	Execution Level
System Stack	UX	Design Thinking, Lean Startup, UX Storyboard, Customer Journey Map	UI Wireframes	Authentication & Authorization, Client-Side Rendering, Single Page Application (SPA), MVVM, HATEOAS, Microfrontend
	Business Process	Business Model Canvas, Enterprise Architecture, Business Strategy in ArchiMate, Business Architecture in ArchiMate	Business Process Modeling in BPMN, Business Process Reengineering (BPR), Business Process Management (BPM)	BPM Life Cycle, OO Implementation of Business Processes, Service Orchestration vs. Choreography, Process-Centric Low Code Development Platforms (HP aPaaS)
	SOA Services	UML Use Case Diagram, Use Case Scenarios, UML Activity Diagram, Test Cases	Quality Attribute Utility Tree, Quality Attribute Scenario, Attribute-Driven Design (ADD), Design Concepts Catalog, Architecture Decision Record (ADR), Architecture Tradeoff Analysis Method (ATAM), Evolutionary Architecture Design Software Design Process, Object Design Principles, Object Design Patterns, Class Responsibility Assignment(Use Case Realization), Domain-Driven Design (DDD), Domain Model in UML Class Diagram, GRASP Patterns, CRC Card, UML Sequence Diagram Service-Oriented Architecture (SOA), Microservice Architecture (MSA), Macro, Mini, Micro & Nano Services, OO, SOA & MSA Design Principles and Patterns, SOA Design Checklist, Microservice Prerequisites Service-Oriented Business Architecture in ArchiMate, Business Process Partitioning, Block-Diagonal (Use Case X Class) Affinity Matrix, Event Storming, Bounded Contexts, Context Map in Domain Model, Hexagonal Architecture, Service Architecture in SoaML, Service Composition in UML Sequence Diagram, Legacy Transformation, Strangler Pattern	Extreme Programming (XP), Test Driven Development(TDD), Test First Programming (TFP), Java Test Code, Java Implementation Code, Refactoring, Code Smell Service Implementation using Service Chassis, HATEOAS, Service Registry, API Gateway, Event Sourcing, Publish/ Subscribe Messaging, Event Shunting, Event Store, Service Composition with UI REST API, GraphQL, RPC, Circuit Breaker, Event-Driven MSA, Contract Testing Docker, Kubernetes, Ingress, Probe, Persistent Volume, ConfigMap, Service Reliability Engineering, Service Mesh, Istio, CI/CD, Monitoring, Logging, Tracing, A/B Testing, Canary, Blue/Green, GitOps
	Data	Conceptual-Level Data Model in UML Class Diagram, Conceptual-Level Data Model in ER Diagram, (Business Activity X Business Object) Affinity Matrix	Object-Relational Mapping(ORM) Algorithm, Relational Database Schema in ER Diagram	SQL DDL Script, MySQL Database, JPA, ORM Framework, 2PC, Event Store, Change Data Capture (CDC), Distributed Transaction, ACID vs. BASE, CQRS, Orchestration Saga, Choreography Saga
System Development Process		Agile Development Process, Scrum, Business Requirements Metamodel, Software Requirements & Design Metamodel, Agile Business Analysis, Agile Architecture, Release Plan, Product Backlog, Sprint Plan, Sprint Backlog, Kanban Board, Extreme Programming (XP), DevOps, Enterprise Agile Framework, SAFe		

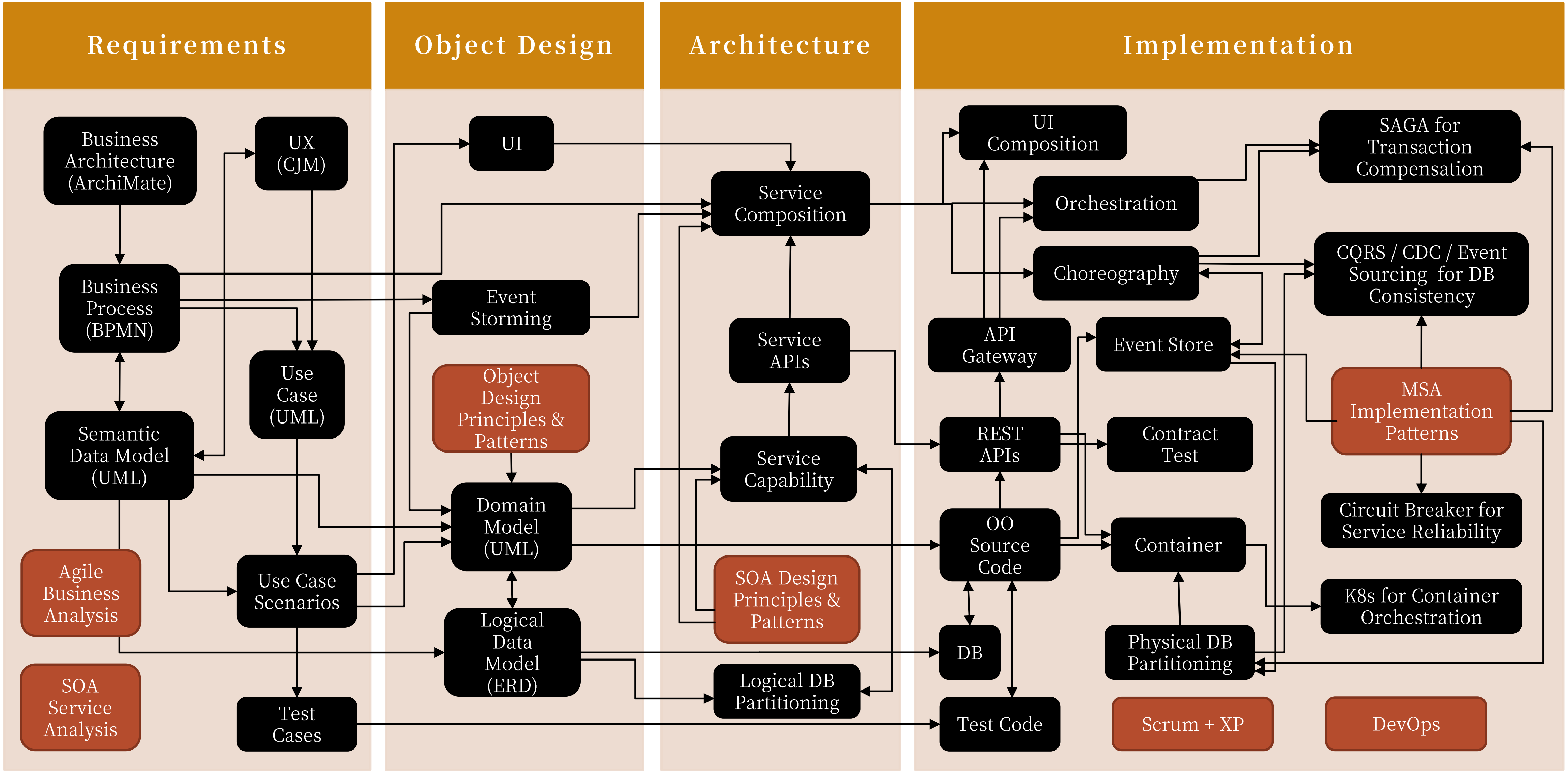
CAA 훈련과정: Curriculum

CA (Cloud Application) 교과과정	
주제	과목
CA 요구분석	1. Business Architecture & Process Design
	2. Semantic Data Modeling and Use Case Analysis
CA 설계	3. Architecture Design, Object Design and Database Design
	4. Definition of Cloud Native Applications and Design Strategies
CA 구현	5. Implementation of Cloud Native Application (Service-Based Application)
	6. Agile SOA Development, Extreme Programming & DevOps
	7. Inter-Service Communication with RPC & Event Driven Model (Part 1)
	8. Inter-Service Communication with RPC & Event Driven Model (Part 2)
CA 배포	9. Service Testing, Packaging and Deployment
	10. SDS Case Study

CAA 훈련과정: 과목별 학습 Practices

과목	학습 Practices
1. Business Architecture & Process Design	CX Analysis, Enterprise Architecture, Business Process Modeling, Business Process Reengineering (BPR), Business Process Management(BPM), Business Process Modeling Language, Business Process Modeling Heuristics
2. Semantic Data Modeling and Use Case Analysis	UML Class Diagramming at Conceptual-Level, Entity Relationship Diagramming at Conceptual-Level, Business Object Modeling (Conceptual-Level Data Modeling or Semantic Modeling), Use Case Modeling, Use Case Scenario Writing, UI Wireframe Design, Test Case Generation, Business Requirements Metamodel, Agile Business Analysis, Release Planning, Sprint Planning, Software Requirements & Design Metamodel, Extreme Programming
3. Architecture Design, Object Design and Database Design	Quality Attribute Scenario, Attribute-Driven Design (ADD), Architecture Tradeoff Analysis Method (ATAM), Evolutionary Architecture Design, Software Design Process, Class Responsibility Assignment(Use Case Realization), Domain Modeling, GRASP Patterns, Refactoring, Object-Relational Mapping(ORM) Algorithm, Object Design Principles, Object Design Patterns, DDD Patterns, Refactoring, Code Smell, Service-Oriented Architecture (SOA), Microservice Architecture (MSA), Macro, Mini & Micro Service, OO, SOA & MSA Design Principles and Patterns, SOA Design Checklist, Microservice Prerequisites
4. Definition of Cloud Native Applications and Design Strategies	Agile Delivery, Monolithic vs. Microservices Architecture, HTTP/REST, Asynchronous Messaging, Cloud Native Applications, Event-Driven Architecture, BizDevOps Process, Domain-Driven Design, Bounded Context, Ubiquitous Language, Core / Supporting / Generic Domain, Service Composition Strategy, Event Storming, Context Mapping
5. Implementation of Cloud Native Application (Service-Based Application)	Hexagonal Architecture, Microservice Chassis, Spring Boot, Spring Data Rest, @RestController, @Entity, @Repository, @Service, Publish/Subscibe Messaging, Apache Kafka, REST Maturity Model, HATEOAS, Monolith to Microservices, Strangler Pattern, API Gateway, Service Registry, Proxy Pattern, @FeignClient, Event-shunting, Event Store, Change Data Capture, Kafka Connect, Axon, Oauth 2.0, JWT, Service Composition with UI, Client-Side Rendering, Web Component, MVVM, SPA, Micro-frontends
6. Agile SOA Development, Extreme Programming & DevOps	EA Approach, BA Approach and Event Storming Approach to Service Analysis, DDD Approach to Service Design, Service Architecture Design using SoaML, Business Process Lifecycle, OO Approach, SOA Approach and Low Code Development Approach to Business Process Implementation, Agile Process, Scrum, Scrum Prerequisites, Agile Business Analysis, Agile Architecture, Extreme Programming (XP), Enterprise Agile Framework, SAFe, Extreme Programming(XP), Test Case Generation, Test Driven Development(TDD), Test First Programming (TFP), Refactoring, CI, CD, Deployment Pipeline, DevOps, Microservice Implementation using Spring Boot, Microservice Deployment using Docker
7. Inter-Service Communication with RPC & Event Driven Model (Part 1)	RPC, Circuit Breaker, Istio, 2 Phase Commit, Event-driven Architecture, Pub/Sub, Distributed Transaction, Eventual Consistency (BASE), Choreography Saga
8. Inter-Service Communication with RPC & Event Driven Model (Part 2)	HATEOAS, Composite Services, GraphQL, CQRS, Event Sourcing
9. Service Testing, Packaging and Deployment	Contract Testing, Consumer-Driven Contract, Docker, Kubernetes, Ingress, Probe, Persistent Volume, ConfigMap, Service Reliability Engineering, Service Mesh, Istio, CI/CD, Monitoring, Logging, Tracing, A/B Testing, Canary, Blue/Green, GitOps
10. SDS Case Study	

Overview of Cloud-Native App Dev't Practices



CAA 훈련과정: 직무별 필요역량

CA (Cloud Application) 교과과정		직무 별 필요역량				
주제	과목	BA	Architect	Developer	Project Manager	System Admin
CA 요구분석	1. Business Architecture & Process Design	C	V	U	V	N
	2. Semantic Data Modeling and Use Case Analysis	C	V	U	V	N
CA 설계	3. Architecture Design, Object Design and Database Design	V	C	U	V	V
	4. Definition of Cloud Native Applications and Design Strategies	N	V	C	V	U
CA 구현	5. Implementation of Cloud Native Application (Service-Based Application)	N	V	C	V	U
	6. Agile SOA Development, Extreme Programming & DevOps	V	V	C	V	N
	7. Inter-Service Communication with RPC & Event Driven Model (Part 1)	N	V	C	V	U
	8. Inter-Service Communication with RPC & Event Driven Model (Part 2)	N	V	C	V	U
CA 배포	9. Service Testing, Packaging and Deployment	N	V	C	V	U
	10. SDS Case Study					

전문용어 정의 및 관련 정보

- 본 과정에서 가르치는 용어, 개념, 기법 등은 선진국에선 이미 완전히 성숙된 Common Best Practice만 다루기 때문에 영어로 검색하면 간략한 정의 뿐 아니라 방대한 정보와 참고자료를 조회할 수 있습니다.
- 모든 IT 전문용어를 영어로 공부해야, 평생 자가학습을 통해 개인과 회사의 경쟁력을 세계 일류 수준으로 발전시켜 나아갈 수 있습니다.
- 교재에 있는 용어의 정의와 관련 정보를 즉각 찾을 수 있는 가장 좋은 방법은
  - Wikipedia, Google, Bing, DuckDuckGo 등 검색 엔진 창에 용어를 넣어 검색하거나,
  - ChatGPT에게 " What is 용어? " 를 물어 보는 겁니다.
- 지식의 6단계—① remembering, ② understanding, ③ applying, ④ analyzing, ⑤ evaluating, ⑥ creating—중, 용어의 개략적 의미를 기억하는 최하 수준에서는 간략한 정의를 읽어 두는 정도가 적합하고, 용어와 관련된 이론 및 프랙티스를 이해하고, 적용하고, 분석하고, 평가하고, 새로 개선/창출하는 보다 높은 수준에 도달하기 위해서는, 웹의 검색과 Hyperlink를 이용한 관련 정보/자료의 접근을 통해, 점증적 심층 지식의 탐색과 학습이 효과적입니다.

CAA 훈련과정: 툴 설치 가이드

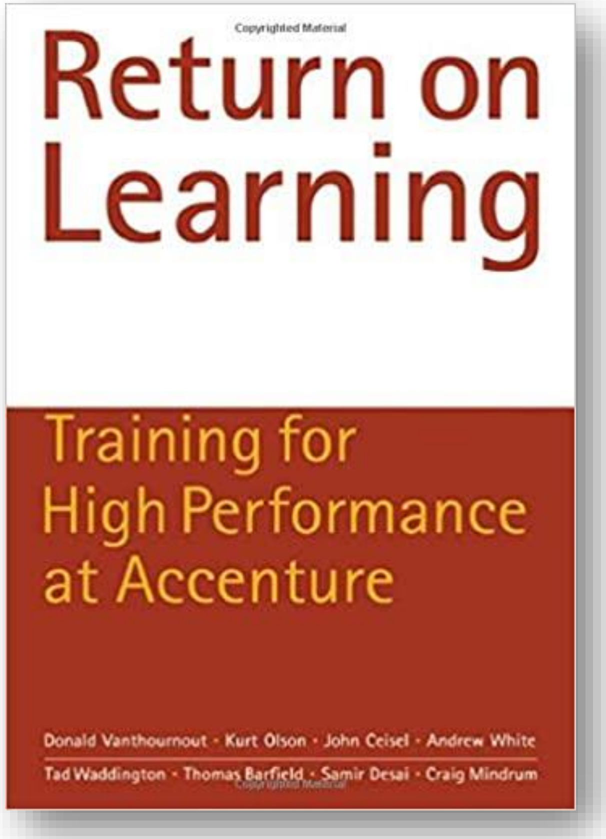
툴	사용일정	사용 목적	다운로드
Archi	Day 1	Business Strategy Modeling	https://www.archimatetool.com/download “Windows 64-bit Installer” 선택
		Business Architecture Modeling	
Visual Paradigm Professional Edition Trial Version		Process Modeling in BPMN	https://www.visualparadigm.com/editions/professional “Try Free for 30 Days” 설치
	Day 2	Use Case Modeling in UML Use Case Diagram	
		Data Modeling in UML Class Diagram	
		Use Case Scenarios, UI Wireframes	
	Day 3	Domain Modeling in UML Class Diagram	
Java SE Development Kit	Day 6	Test-Driven Development (TDD)	https://www.oracle.com/java/technologies/downloads/#java8 Windows x64 Installer 설치
IntelliJ Community Edition			https://www.jetbrains.com/idea/download/#section=windows Community edition 설치

학습효과 극대화를 위한 학습전략

- What you will learn: Over 100 of the state-of-the-art, global best practices for software engineering—a trend dubbed “cloud-native app development” that encompasses agile DevOps, microservice architecture, and infrastructure automation.
- Your learning goal: Apply what is learned to your software development and /or operation team so that the business performance (i.e., KPIs) of your team improves continuously.
- What you need to decide: Which practices are desirable (i.e., valued by your customers), feasible (i.e., effectively and efficiently carried out) and viable (i.e., bringing in financial profits) for your team business.

학습효과 극대화를 위한 학습전략

- Your learning strategy:
  - If a practice is desirable, feasible and viable, you should make a collective decision to apply it to your project or team and set up and implement an adoption plan.
  - If a practice is desirable, but neither feasible nor viable yet, before adopting the practice, you should make a collective decision to build an environment and competencies of your team so that the practice becomes feasible and viable.
- Your adoption strategy:
  - The adoption will require further studies using reference books, MOOC courses provided by Udemy, Pluralsight, etc. and coding websites such as Codecademy, CodeGym, etc.



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