

Software Engineering With UML

Module 1

Introduction to Design and Modeling Tools

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What You Will Learn



UML Design and Modeling

2

Working with Design and Modeling Tools

Reality vs Model

A model is a representation of reality, but it is a simplification or approximation that doesn't reflect all of reality (**Model is an Abstraction of Reality**)

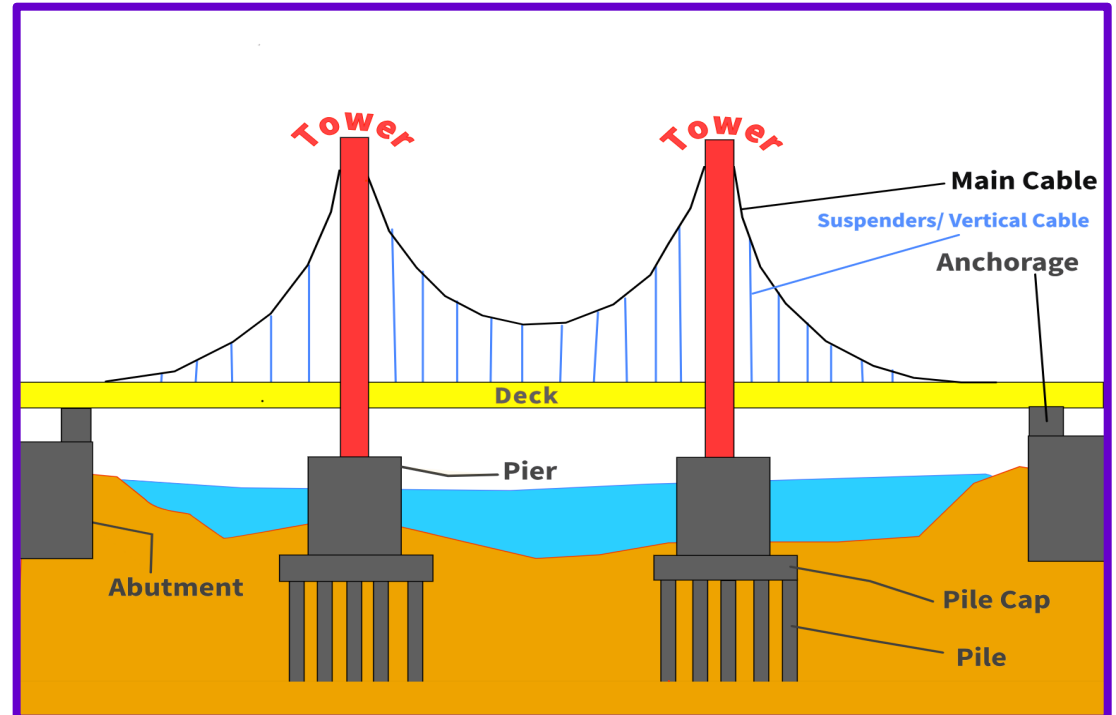
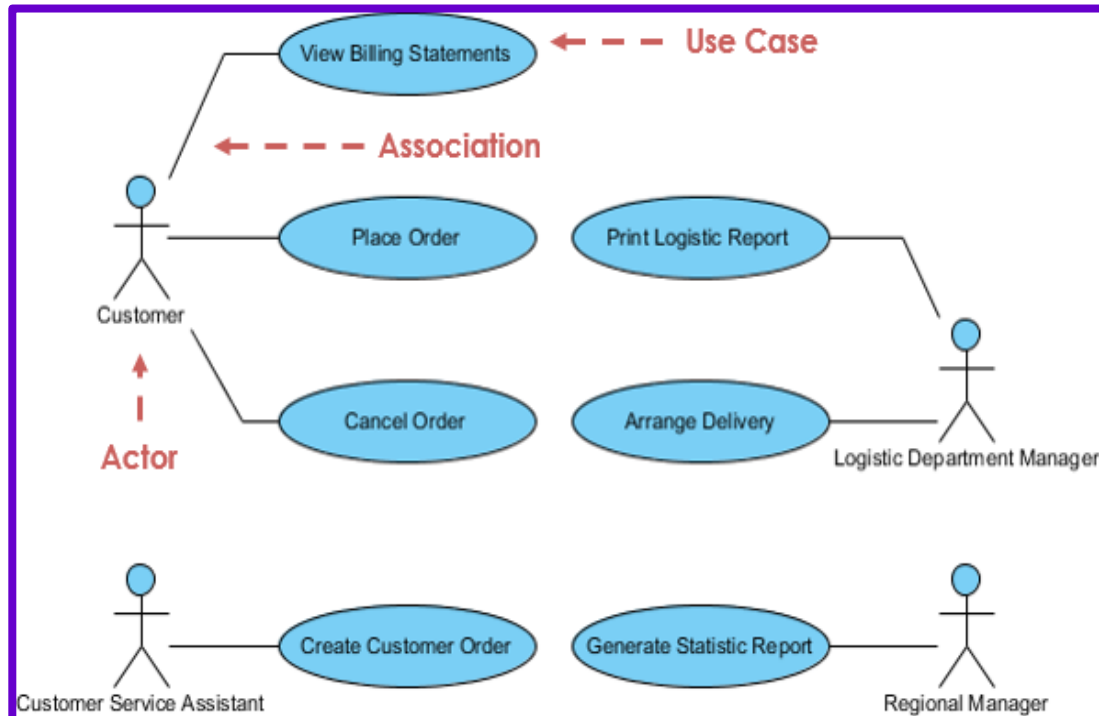
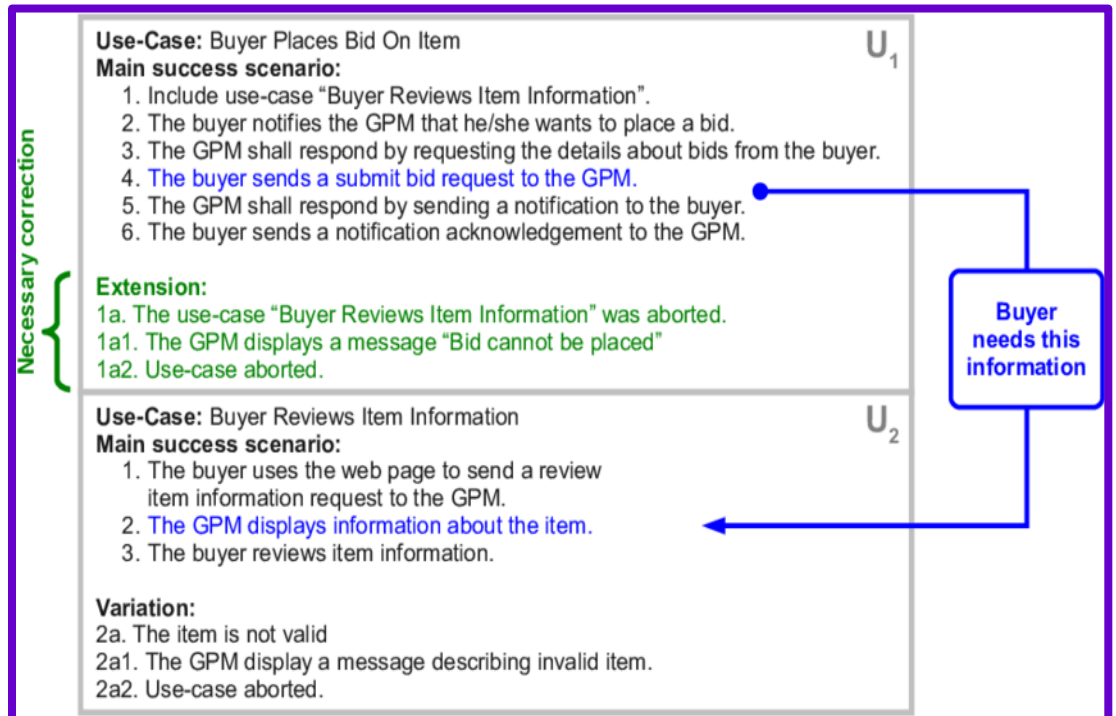


Diagram vs Model

Diagram is a **Visual Representation** of Model



Models are **abstract representations** of a system



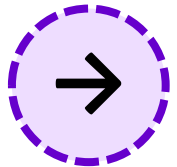
What is UML?

Is a **standardized modeling language** consisting of an **integrated set of diagrams**, developed to help system and software developers **for specifying, visualizing, constructing, and documenting the artifacts** of software systems, as well as for business modeling and other non-software systems

What You Will Learn




UML Design and Modeling



Design and Modeling Tools

General Design and Modeling Tools: Draw.io

 draw.io

Blog

Start Now

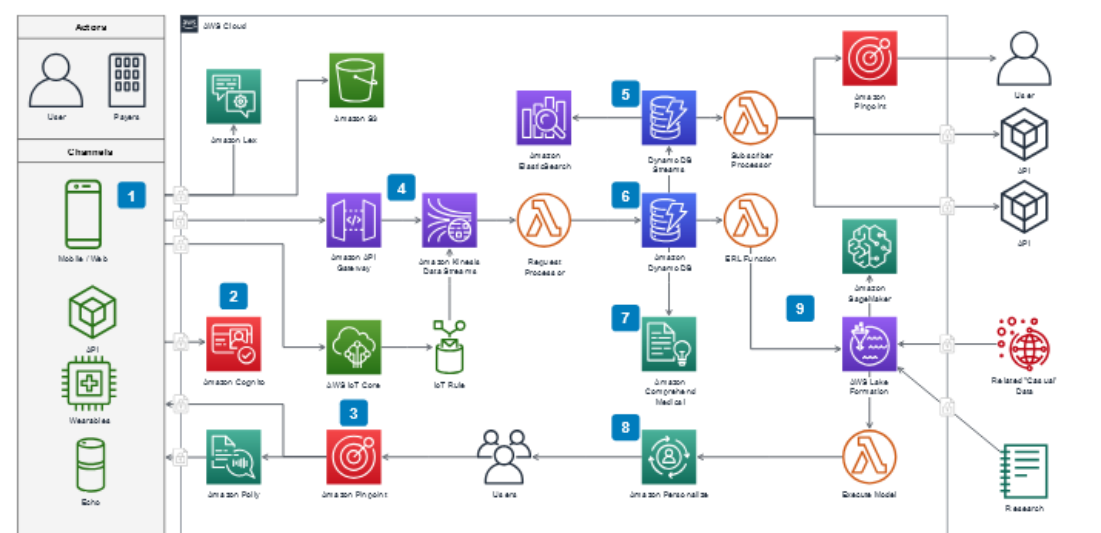
Security-first diagramming for teams.

Bring your storage to our online tool, or save locally with the desktop app.

Start

Download

No login or registration required.



General Design and Modeling Tools: Visio

The image shows the Microsoft Visio website interface. On the left, the Visio logo is displayed above the tagline "Work visually from anywhere, at any time." Below this are two buttons: "See plans and pricing" and "Sign in". On the right, a laptop screen displays the Visio application interface. The application window shows a flowchart titled "Contoso Environmental Clearance". The flowchart starts with a "Proposed Action" shape, leading to a decision diamond "Are impacts significant?". If "Yes", it proceeds to "Draft Environmental Impact Statement", then "Public Comment", then "Final Environmental Impact Statement", and finally "Record of Decision". If "No", it proceeds to "Conduct Environmental Assessment", then "Public Comment", then a decision diamond "Are impacts significant?". If "Yes", it leads to "Record of Decision". If "No", it leads to "Funding of no sig". The flowchart also includes a "Decision Notice" shape and a "Start/End" shape. The Visio application interface includes a ribbon with tabs like File, Home, Insert, Design, Review, and View. A "Shapes" task pane on the left lists various flowchart shapes like Process, Decision, Subprocess, Start/End, Document, Data, Database, External Data, and Custom shapes. A "Comments" pane on the right shows a comment from "Filip Safarik".

Microsoft | Microsoft 365 Visio Plans and pricing Features Resources

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Visio

Work visually from anywhere, at any time.

See plans and pricing Sign in

Contoso Environmental Clearance

Proposed Action

Are impacts significant?

Yes

Draft Environmental Impact Statement

Public Comment

Final Environmental Impact Statement

Record of Decision

No

Conduct Environmental Assessment

Public Comment

Are impacts significant?

Yes

Record of Decision

No

Funding of no sig

Decision Notice

Start/End

Specialized Design and Modeling Tools: Visual Paradigm

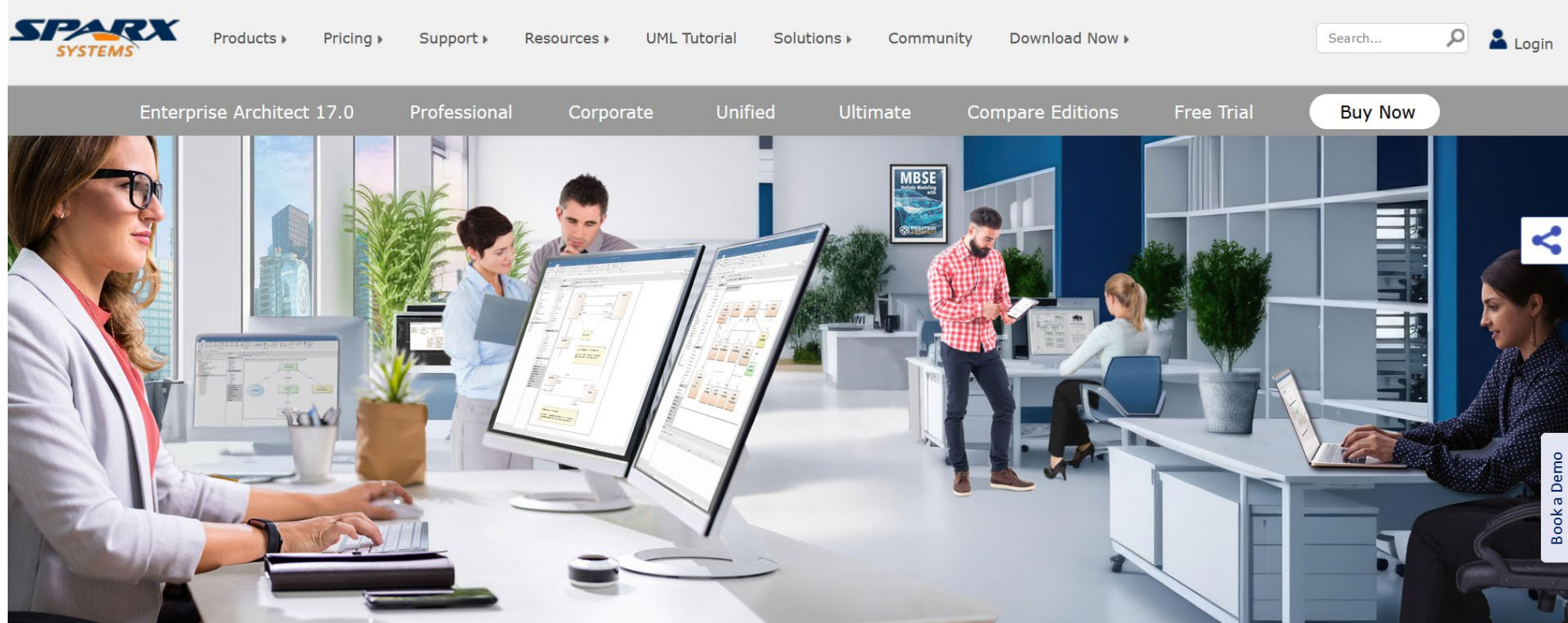
Visual Paradigm[What's New](#)[Features](#)[Tutorials](#)[Support](#)[Pricing](#)[Try Now](#)[Request Demo](#)[VP Online](#)

The #1 Development Tool Suite

that drives your project to success

A suite of design, analysis and management tools to drive your IT project development and digital transformation.

Specialized Design and Modeling Tools: SPARX Enterprise Architect



 ENTERPRISE ARCHITECT 17.0

Specialized Design and Modeling Tools: Diagram as Code Tools like Mermaid

```
from diagrams import Cluster, Diagram
from diagrams.aws.compute import ECS
from diagrams.aws.database import ElastiCache, RDS
from diagrams.aws.network import ELB
from diagrams.aws.network import Route53

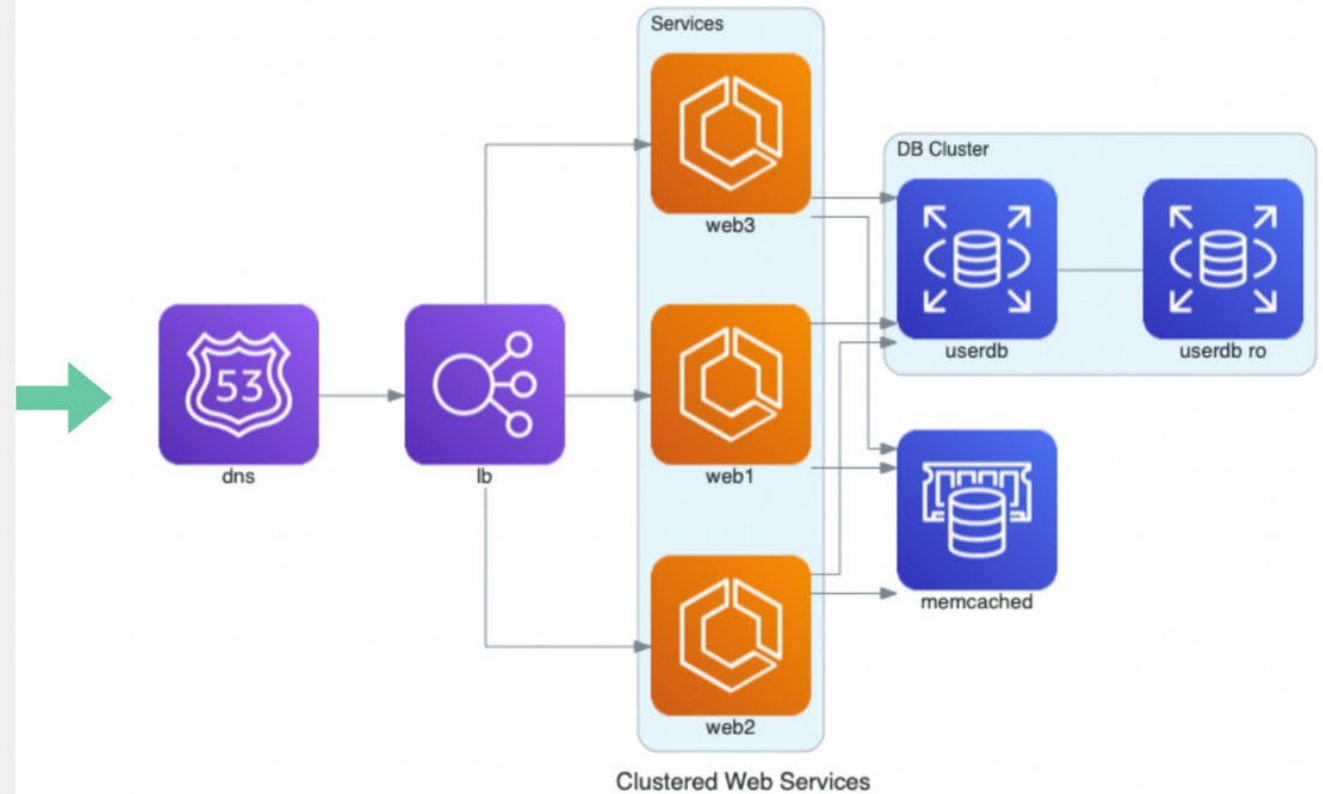
with Diagram("Clustered Web Services", show=False):
    dns = Route53("dns")
    lb = ELB("lb")

    with Cluster("Services"):
        svc_group = [ECS("web1"),
                     ECS("web2"),
                     ECS("web3")]

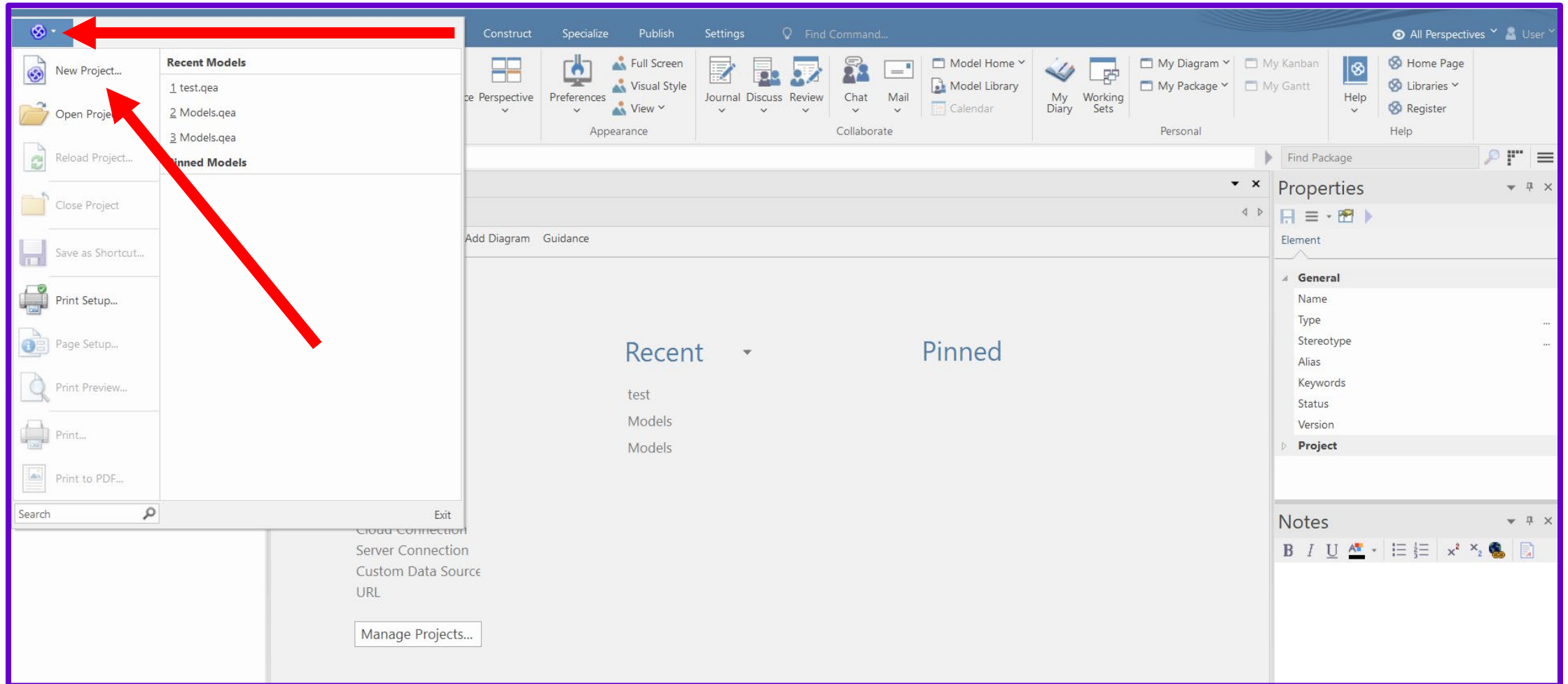
    with Cluster("DB Cluster"):
        db_primary = RDS("userdb")
        db_primary - [RDS("userdb ro")]

    memcached = ElastiCache("memcached")

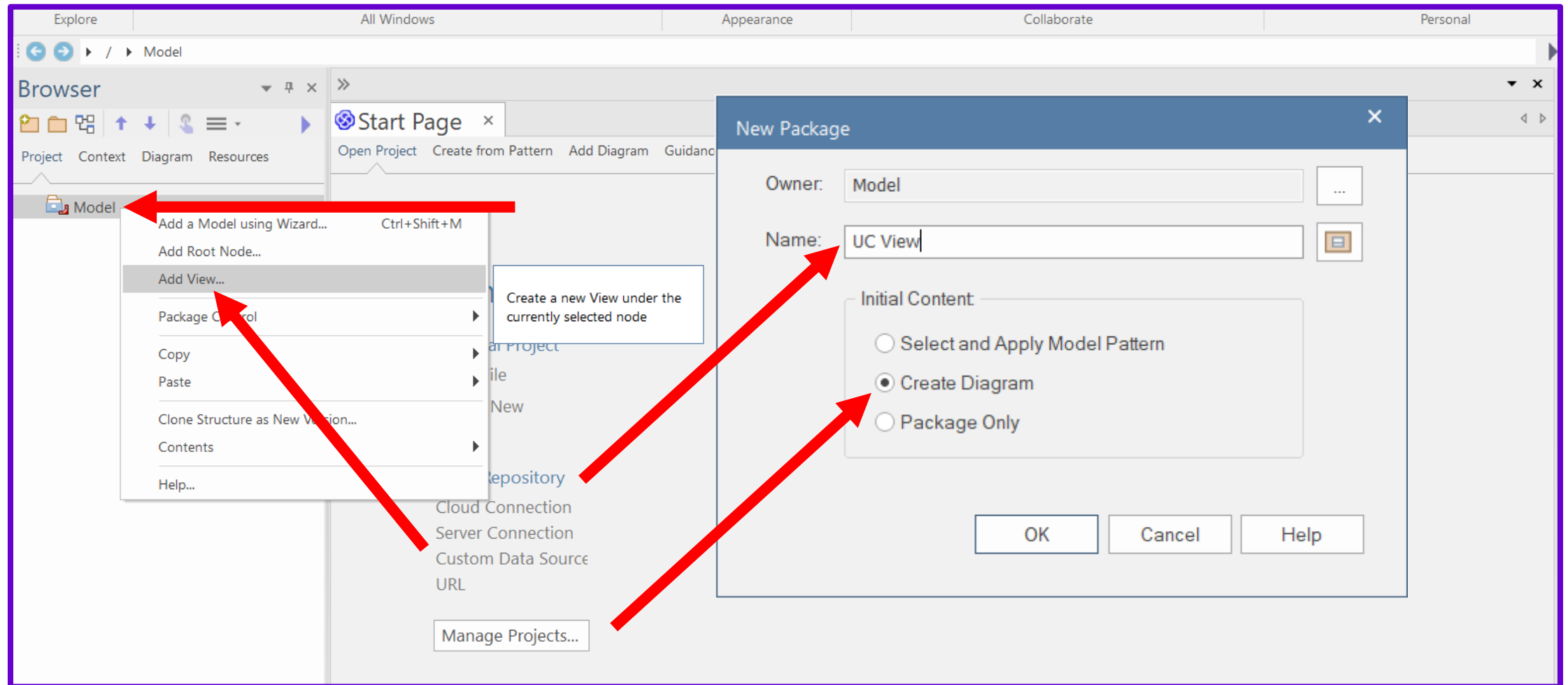
    dns >> lb >> svc_group
    svc_group >> db_primary
    svc_group >> memcached
```



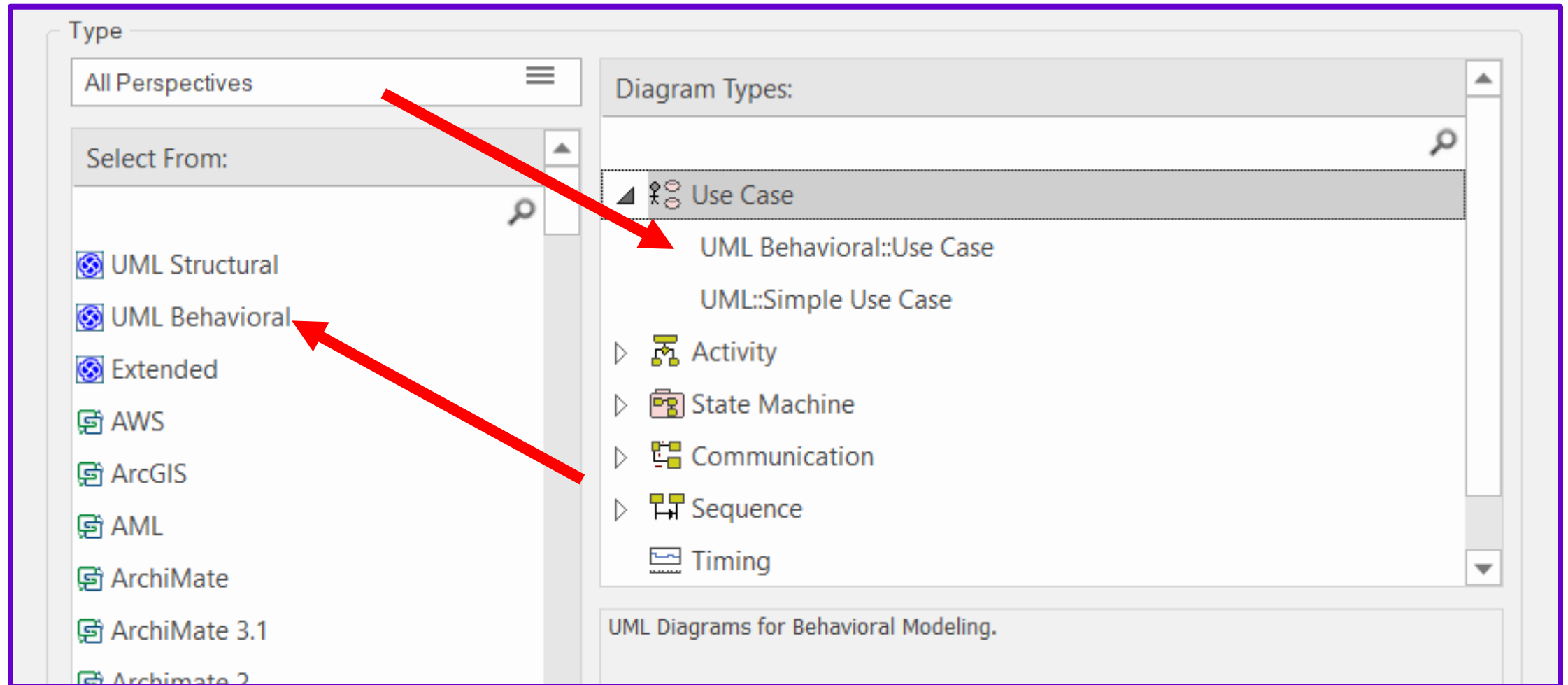
Step 1: Create new project



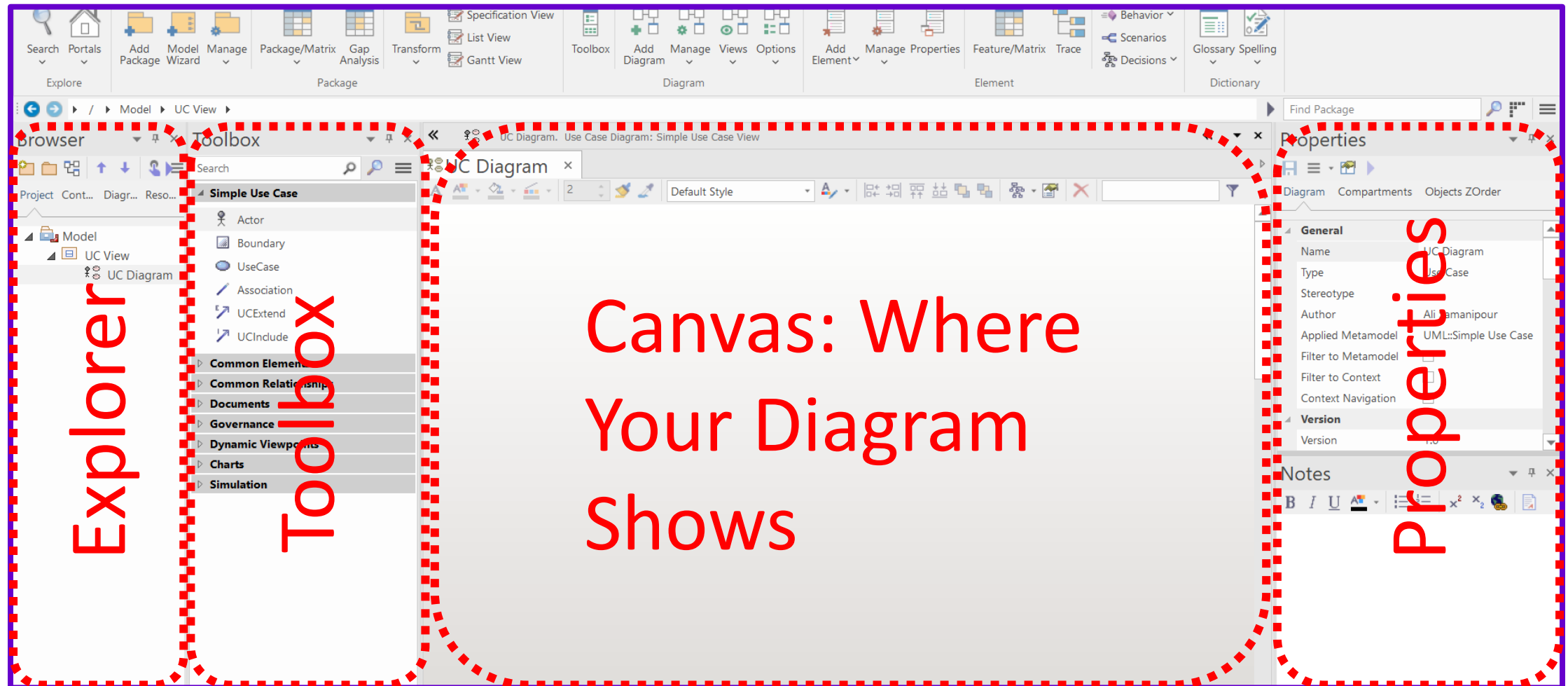
Step 2: Add View (Package) to Model



Step 3: Search & Select Diagram Type



Step 4: Start Modeling



What You Will Learn

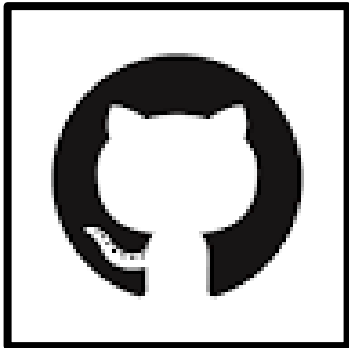


Scrum Rituals: Daily Standups & Sprint Planning



Scrum Artifacts: User Stories

Access to Course Resources



**[https://github.com/samanipour/
Software-Engineering-With-
UML.git](https://github.com/samanipour/Software-Engineering-With-UML.git)**