Technical Overview of ATG

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Agenda

- What is ATG?
- Components of ATG
- ATG Architecture

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Learning Objectives

At the end of this lesson you should be able to understand:

- ATG technical architecture and its core platform constructs
- The common components involved in servicing a web request
- The use of JSP Pages to output dynamic content
- The use of forms and form handlers to collect and store user input
- The use of Slots and Targeters in personalizing web sites.
- The physical layout of an ATG installation
- The various database schemas and how they connect to the server clusters.

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Section 1:
What is ATG?

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Introduction

- ATG Provides an open, server side environment for building and deploying dynamic, personalized applications for the web.
- ATG uses a component development model based on JavaBeans and JSPs.
- Applications are assembled by linking together component beans.
- ATG Data Anywhere Architecture™ provides a unified view of content and data across a business for organizations and their customers.
- Page designers build the front-end interface for the application out of JSPs that uses ATG's DSP tag library.
- The ATG nucleus components, JSPs, and the Database provide a flexible and dynamic web application.

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ATG Interactions
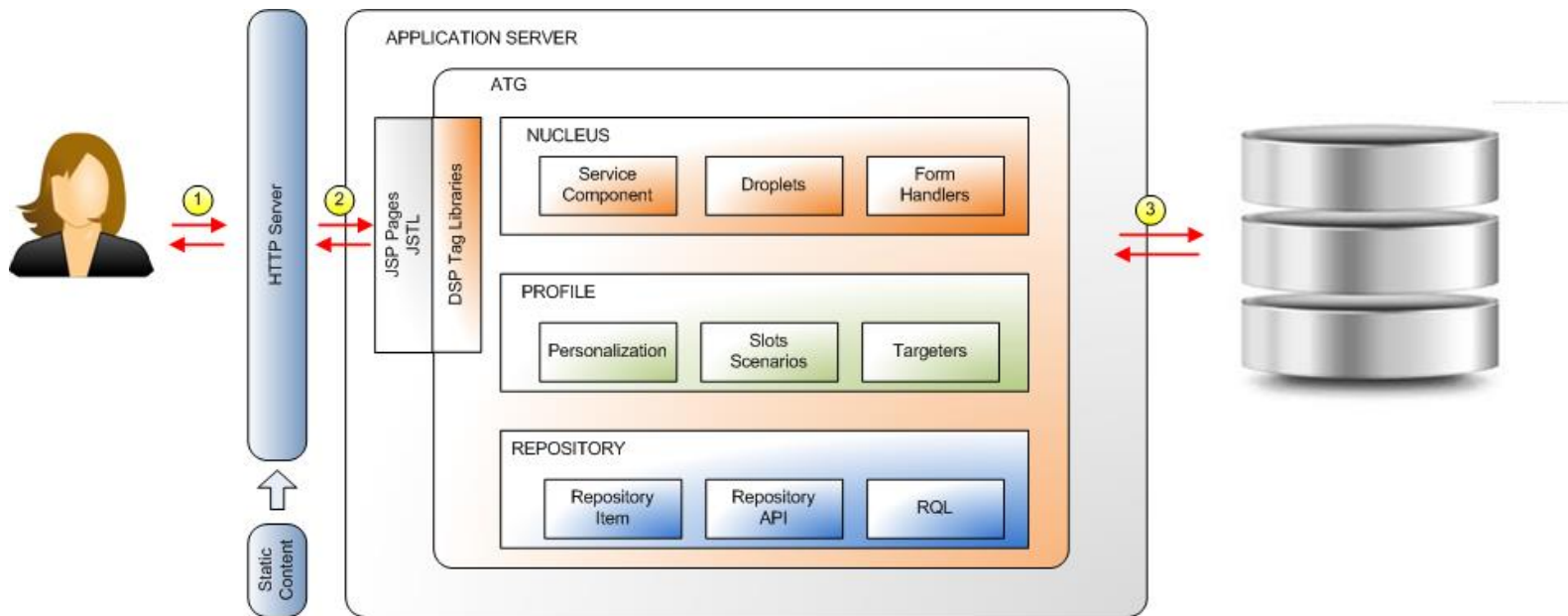
1. User requests a web site from the HTTP Server

2. The request is forwarded to the application server. Different parts of the application work on the request

3. Data is retrieved from the database, processed and forwarded back to the user.

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Nucleus

- Nucleus is ATG's base component model for building applications from Java Beans.
- Nucleus by itself provides no application-specific functions. Java Bean components implement the business functions.
- Nucleus organizes application components into a hierarchy.
- Nucleus manages the task of creating and initializing components based on configuration files. It does so when the application is first initialized (i.e. server startup).
- Any simple JavaBean can be a nucleus component. By implementing various interfaces, components can take advantage of Nucleus services and notifications.
- Nucleus provides the linkage between various components to achieve business objectives.

Component

- A Component is the basic building block of an application.

- A well designed component can rely on the Nucleus to create, initialize, and establish relations between other components and Beans.

- Components should be used to centralize common functions. It can also be referenced by multiple components.

- A component is created by specifying a configuration file containing the class, scope, and other initialization properties.

- A component can have a scope of global, session, request, window or prototype.

- Component can be created using different initialization parameters with the same class. This promotes reuse and manageable code.

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Repository

- Repository is the foundation of persistent object storage, user profiling, and content targeting in ATG.

- A Repository is a data access layer that defines a generic representation of a data store.

- The Repository API uses a connector to translate the request into whatever calls are needed to access a particular data store.

- Connectors for relational databases and LDAP directories are provided out of the box.

- Custom connectors can be written to access any data store.

- An application would use multiple repositories from various sources to achieve business objectives.

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Profiles and Personalization

- ATG Personalization module provides user profiling, content management, and targeting functionality.

- A User Profile represents a user to the website.

- A User Profile holds values such as name, email, password, preferences, address book, etc.

- The Personalization modules use the user profile to display different content to each visitor depending on his or her preferences and requirements.

- The process of personalization involves grouping users into profile groups, content into content groups, and matching the content to the profile groups.

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Section 1
Check Your Understanding

Which ATG feature provides linkage between components to achieve business objectives?

a. HTTP Server such as Apache

b. Application Server such as JBOSS, Weblogic

c. ATG Scenario Engine

d. Nucleus

e. Spring Framework

f. Custom application code

Answer: d

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Section 1
Check Your Understanding

What is the process of serving the appropriate content to each user based on his or her profile?

a. Dynamic Page Generation

b. Web site creation

c. Personalization

d. Scenario Servicing

e. Segmentation

Answer: c

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Section 1 ✔
Check Your Understanding

How does ATG achieve unification of data access across multiple data sources such as SQL or LDAP?

a. Using ATG ETL Process

b. ATG Data Anywhere

c. ATG SQL Repositories

d. ATG Data Unifier™

e. Using Hibernate

Answer: b

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Section 1
Check Your Understanding

What technologies are used to develop and deliver dynamic front end pages to the end users?

a. JSP and DSP Tag Libraries

b. HTML5 and CSS

c. JHTML

d. Dynamic HTML Libraries

e. JavaScript

Answer: A

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Section 1 ✔
Check Your Understanding

Which java classes can be ATG Components?

a. Classes must extend GenericService

b. Classes must extend ATGComponent Class

c. Classes must implement GenericService

d. Any class

e. Any JavaBean

Answer: e

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Summary

- **Nucleus** is used to create and link components from JavaBeans.

- **Component** is a JavaBean whose life cycle is managed by the Nucleus.

- **Respositories** provide unifying data access layer to any data store.

- **User profile** is a representation of the web site user and contains attributes of the user.

- **Personalization** is the process of serving appropriate content to the user based on his or her profile that is stored within the ATG system.
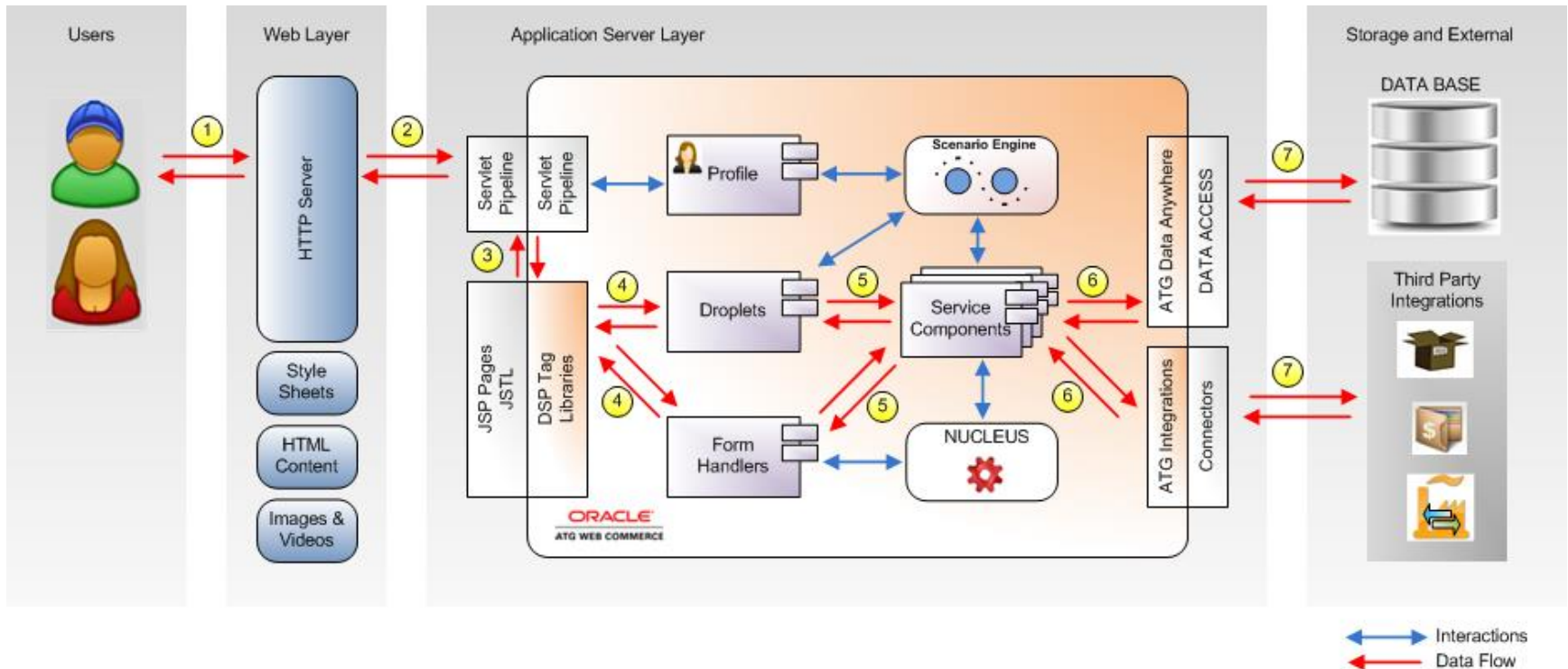
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Section 2:
Components of ATG System

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A Typical Web Request Path

- Request processing starts at (1) and proceeds through the various layers in a sequence
- Droplets, Service components retrieve and process the data from the database and external vendors.

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The Web Request Path

1. User makes a HTTP Request to a Web application.

2. The web server receives the request, fulfills the static requests, and passes the request to an application server.

3. Application server processes some of the JSP and passes the rest through the dsp tag libraries to ATG.

4. The dsp tag libraries invokes droplets and form handlers.

5. A User Profile gets attached to the user.

6. The droplets and form handlers use the ATG Data Anywhere to access the repository.

7. The repository retrieves the data from the database.

8. The content may be personalized to the user.

9. HTML is generated dynamically and returned to the user.

Components of ATG System

- From the request path, we can identify the following key ATG components:
  - DSP Tag Libraries,
  - Profile,
  - Droplets,
  - Form Handlers,
  - Nucleus Components,
  - Repository and Repository Items,
  - Scenarios drives Personalization, Slots and Targeters.

DSP Tag Libraries

- Java provides JSTL or Java Standard Tag Libraries to work with JSP.

- ATG provides Dynamo Tag Libraries or DSP.

- DSP tag libraries let you access all data types in ATG's Nucleus framework.

- JSTL and DSP Tags look like html tags and co-exist in the HTML markup in the JSP page.

- Common dsp tags are:
  - Dsp:valueof : Print the value of a param on the page.
  - Dsp:droplet : Embed an ATG Servlet Bean on the page.
  - Dsp:include : Include another JSP Page in a page.

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Droplets

- A Droplet or an ATG Servlet Bean can generate HTML from a Java Object.

- It is a nucleus component that can be configured and used to encode business logic that should not be in the JSP (view) layer.

- ATG Droplets allow for clear separation of model, view, and controller design.

- Common ATG Droplets that are included with ATG:
  - ForEach: Iterate over a collection.
  - Switch: Conditionally execute JSP Code.
  - ItemLookupDroplet: Looks up an item from the repository.
  - TargetingForEach: Runs a personalization targeter.

- A typical project would have several custom droplets developed to handle specific requirements.

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Example of a JSP Page with DSP Tags

Student Array

John

Jim

Kevin

Andrew

```
<dsp:page><html><head><title>Test</title></head><body>

<dsp:droplet name="/atg/dynamo/droplet/ForEach">
  <dsp:param name="array" bean="/samples/StudentArray"/>
  <dsp:oparam name="outputStart">
    <p>The following students are registered:</p>
  </dsp:oparam>
  <ul>
  <dsp:oparam name="output">
    <li><dsp:valueof param="element"></dsp:valueof></li>
  </dsp:oparam>
  </ul>
</dsp:droplet>
</dsp:page>

</body></html>
<dsp:page>
```
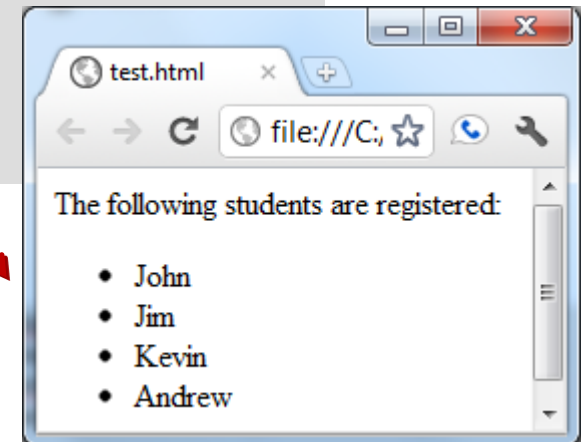
test.html

file:///C:

The following students are registered:

- John
- Jim
- Kevin
- Andrew

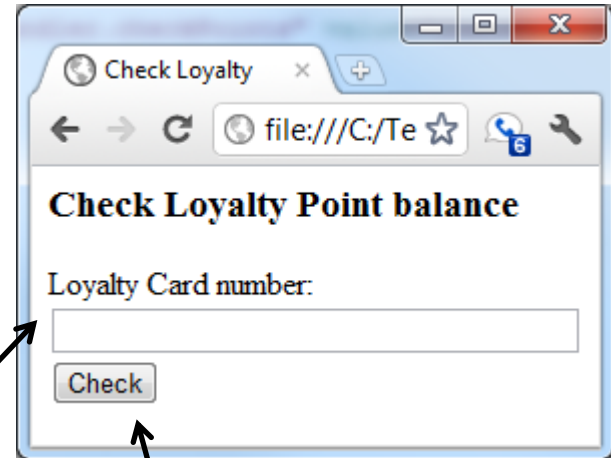**Enablement** 2.O

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Forms and Form Handlers

- ATG Forms and Form Handlers are used to accept user input, process them, and store them in the data store.

- ATG includes form handlers such as Search Form Handler, Profile Form Handler, and Repository Form Handler for most common tasks.

- These form handlers can be extended to add more functionality.

- For complex requirements, custom form handlers can be used to collect user input and process it.

- The forms are embedded on the page with dsp tags. Form handlers are called within a form tag.

- A typical project will have several custom form handlers that are developed to satisfy specific requirements.

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Form Handler on the Page

- Use dsp:form and dsp:input tags to embed form on page.
- Link to component properties with bean attribute.

```
<dsp:form id="loyaltyForm"  formid="loyaltyForm"
          method="post" action="myCheckPoints.jsp">
  Loyalty Card number:
   <dsp:input type="text" size="38"
       bean="MyLoyaltyFormHandler.cardNumber"
        required="true" value=""/>
   <br />
   <dsp:input type="submit"
       bean="MyLoyaltyFormHandler.checkPoints"/>
    <br />
</dsp:form>
```

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Scenarios

- A scenario is like a channel or pipe through which subjects (users) flow.

- Events and conditions can be added to control how the user flows.

- Action Elements carry out specific actions.
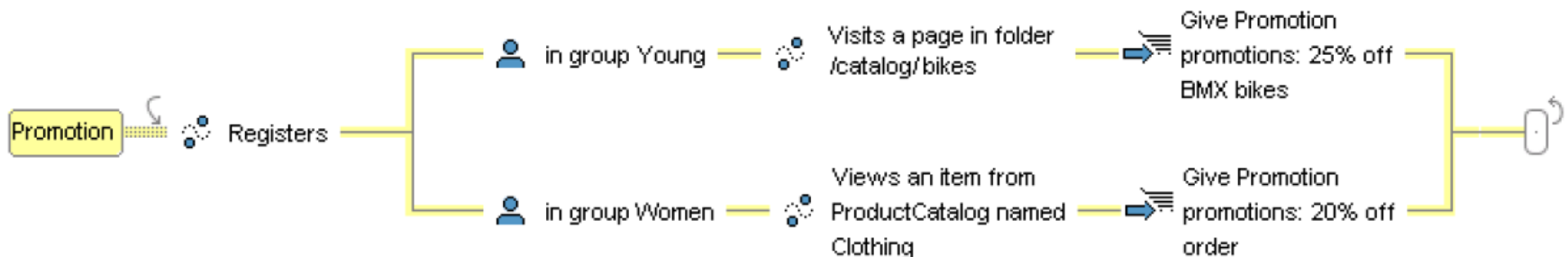
- This scenario gives a one-time promotion to newly registered users of a bike store.

- Scenarios are configured in the Admin Control Center by the development team.

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Scenarios: Personalization

- Personalization refers to serving content that matches the user interests.

- The steps for personalization are:
  - Set up visitor profile,
  - Create a profile group,
  - Set up content items,
  - Create content groups,
  - Match content items with target audience,
  - Track visitor behavior,
  - Analyze data.

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Scenarios: Targeter

- Targeting enables the display of dynamic, personalized content to web site visitors.

- A Targeter defines the items to display to a site visitor who meet the specified criteria.

- Targeters are the business rules that specify what content to show to which visitors.

- Targeters are configured in the ATG Business Control Center by merchandizers.

- Targeters are embedded on the JSP Page using targeting droplets.

Example of a Targeter

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Scenarios: Slot

- Slots are containers that can be used to display and manage dynamic items on the web site.
- Scenarios can be used to fill slots with content.
- Slots have better caching capabilities than targeters.
- They also add features such as rotating content elements, expiring them from slot, generating a request when the slot is empty, etc.
- Typically, a scenario uses a targeter to fill the items in a slot.
- Slots are created and configured by the development team in the source code.

Other features of ATG

- **Multi site**: ATG provides multisite capability with configurable sharing of features.

- **Internationalization**: ATG provides internationalization support. Static content and product content could be localized to a specific locale. Pricelists and product catalogs can be set for countries.

- **Access Control**: ATG provides fine grain access control for administration of the site.

- **ATG Messaging**: ATG messaging features allow synchronous and asynchronous messages to be sent and received allowing for construction of scalable decoupled sites.

- **Web services**: All ATG Nucleus components can be accessed and invoked through web services allowing for flexibility of integration.

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Section 2
Check Your Understanding

Name three components that are invoked during the handling of a typical request from the user.

a. DSP Tag Libraries

b. Cybersource integration module

c. Spring Framework

d. Droplet

e. Repository

f. B2C Commerce Module

Answer: a, d, e

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Section 2
Check Your Understanding

Name two Common ATG Droplets that ships with ATG.

a. ForEach

b. StartNucleus

c. ItemLookupDroplet

d. PageRendererDroplet

e. Page

Answer: a, c

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Section 2 ✔
Check Your Understanding

What three actions does a typical Form Handler perform?

a. Integrate to an external service provider

b. Accept user input

c. Validate and Process user input

d. Email the user input to a specified address

e. Store the results in a database

f. Perform audit trail logging for complaince

Answer: b, c, e

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Section 2 ✔
Check Your Understanding

Select two statements that are true about Scenarios?

a. Scenarios are managed in the BCC

b. Scenarios are like workflows triggered by events

c. Scenarios can send an email or give a promotion to the user

d. Scenarios are ways a user can navigate a web site

e. Scenarios let you specify common navigation paths and gently guide the user by providing visual queues such as links and bread crumbs

Answer: b, c

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Section 2 ✔
Check Your Understanding

What is a Targeter?

a. A goal of user purchase conversion that can be tracked towards as an objective

b. A business rule that maps content to site users and visitors

c. A workflow that specifies the guided navigation to achieve higher conversion

d. A container for content items to be rendered on the web site for the users.

Answer: b

Section 2
Check Your Understanding

Select two true statements about Slots?

a. Slots are containers that can be used to display and manage dynamic items on a web site.

b. Slots are boxes of real estate on pages like the home page or product pages

c. Slots have a set of business rules associated with them that define the content they contain

d. Slots provide a workflow for segmenting the users into buckets for personalization purposes.

e. Slots are typically filled by scenarios or targeters

Answer: a, e

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Summary

- As a web request from a user travels through the application layer, various ATG components are invoked.

- DSP Tag Libraries are tag libraries that provide specific ATG functionality.

- Droplets are nucleus components that may be invoked using dsp:droplet tag.

- Forms and FormHandlers are used to collect user input and process them.

- Repository provides generic access to the backend data store.

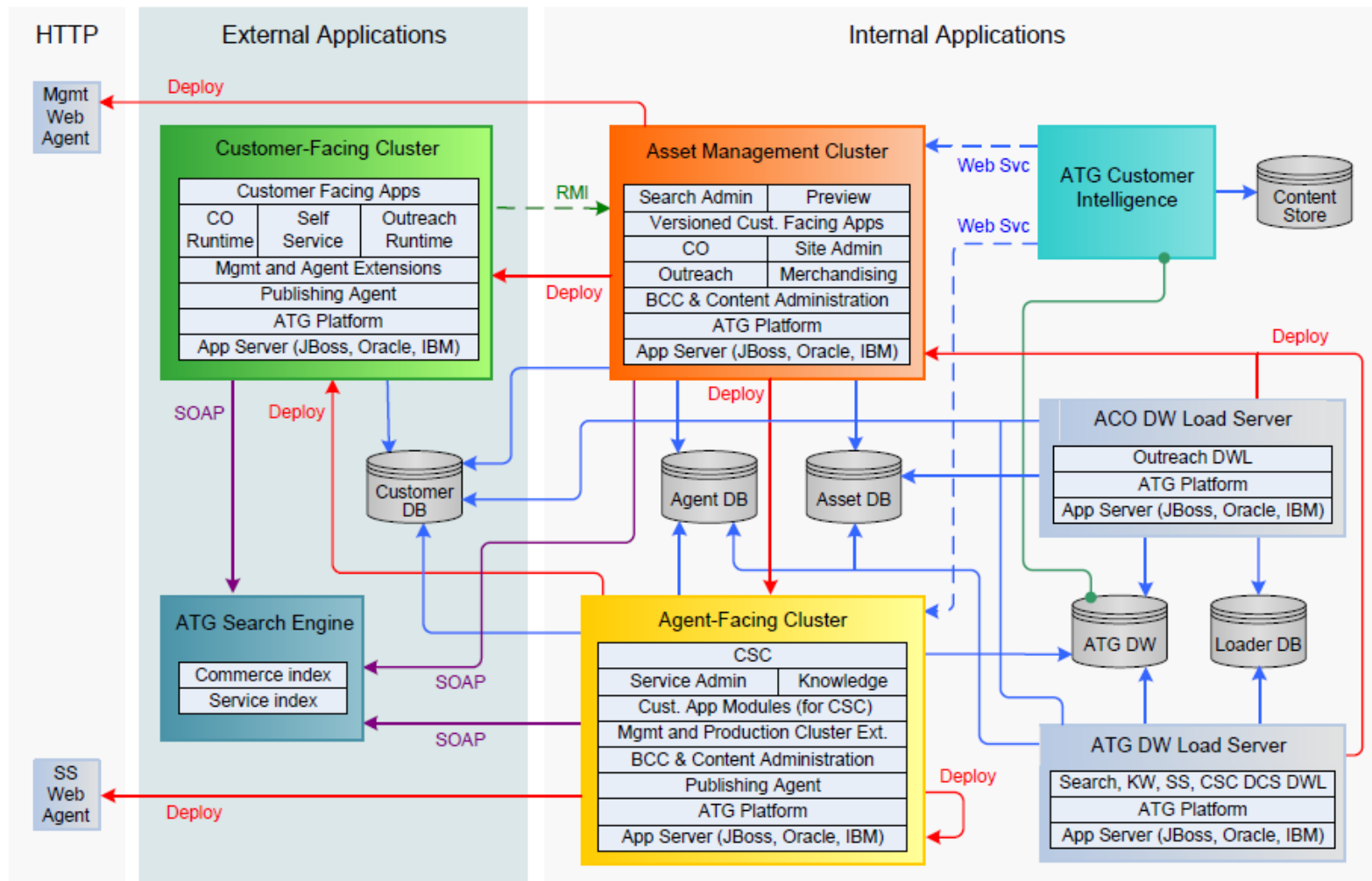- Scenarios drives personalization, slots and targeters.

Section 3:
ATG Architecture

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Physical Layout of an ATG Installation

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Customer Facing Cluster

- The main customer facing site sits here.

- Leverages DAS, DPS, DSS, DPS modules. Optionally leverages Multisite, B2BCommerce, B2CCommerce modules.

- Primary responsibilities of this cluster:
  - Serve personalized dynamic content to the user,
  - Provide a location to showcase products and services, (Requires B2BCommerce/B2CCommerce)
  - Provide a purchase path so users can buy products, (Requires B2BCommerce/B2CCommerce)
  - Enable account management functionality to the user.

- Intended Users:
  - Site visitors and customers.

- There is usually more than one server in this cluster depending on user and transactional volume of the site.

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ATG Search Cluster

- All site search functionality is enabled from this cluster.

- Leverages ATG Search module.

- Primary responsibilities and functionalities are:
  - Provide simple keyword search for the site,
  - Provide facetted navigation in category pages,
  - Index Product Catalog for fast search and retrieval,
  - Allow search administration to define and improve user experience.

- Intended Users:
  - Customers via the customer facing cluster,
  - Merchandizers and administrators via BCC.

- There are typically one or more servers in this cluster depending on search volume.

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Asset Management Cluster

- All site and content administration is enabled by this cluster.

- Leverages ATG BCC, Publishing, and CA modules.

- Primary responsibilities and features are:
  - Enable administration of site including multi site administration,
  - Enable merchandizing of product catalog and assets,
  - Provide secured access control to administrators and merchandisers,
  - Provide a workflow to streamline content administration functions,
  - Provide front end to Search, ACI, CO, etc.

- Intended users:
  - Administrators of site, search, ACI, CO, etc.
  - Merchandizers.

- There is typically only one server in this cluster.

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Agent Facing Cluster

- All order management capability is provided by this cluster.

- Leverages ATG Modules Agent.

- Primary functionality:

  - Order Management functionality such as order creation, status check, returns, refunds, reships, etc.

  - User management functionality such as registration, password check, etc.

- There is typically one or more servers in this cluster.

Databases

- Typically the following schemas exist for the site:
  - Catalog Schema (CATALOG_A and CATALOG_B)
    - Two schemas called catalog A and catalog B act in a active/passive manner.
    - Provides catalog used by the customers from the customer facing cluster.
  - Core Schema (CORE)
    - Transactional data from site including user's profile(users), order transactions(order), promotions, etc.
  - Publishing Schema (PUB)
    - Holds versioned product catalog data. When approved, pushes the current version to the CATALOG Schema.
  - Other Schemas
    - Agent schema for Agent Facing Cluster.
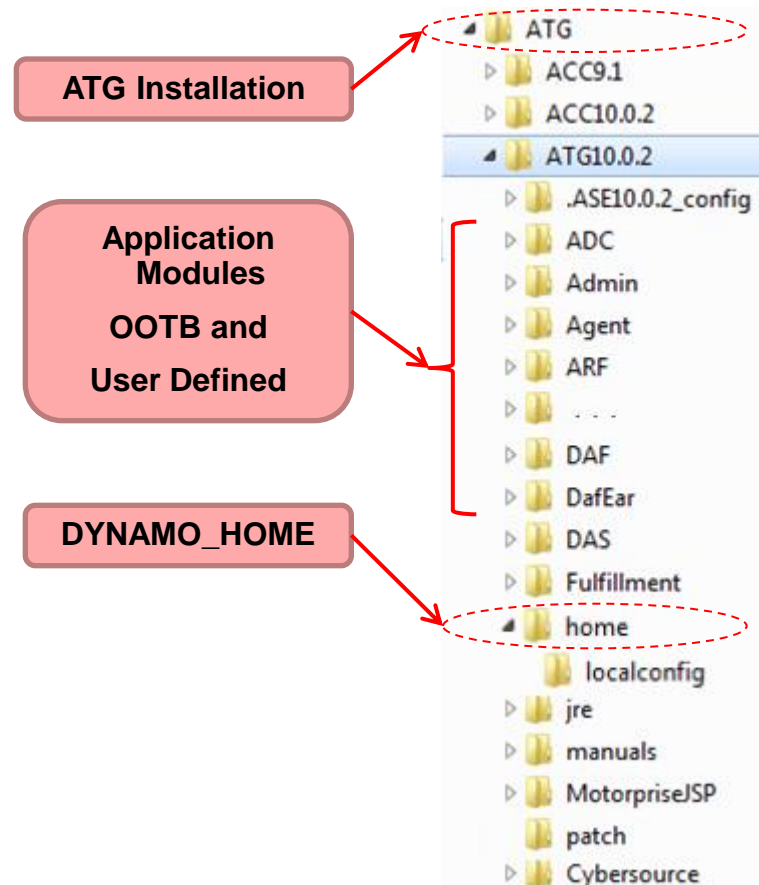   - Data warehousing schema.

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Databases and Connections
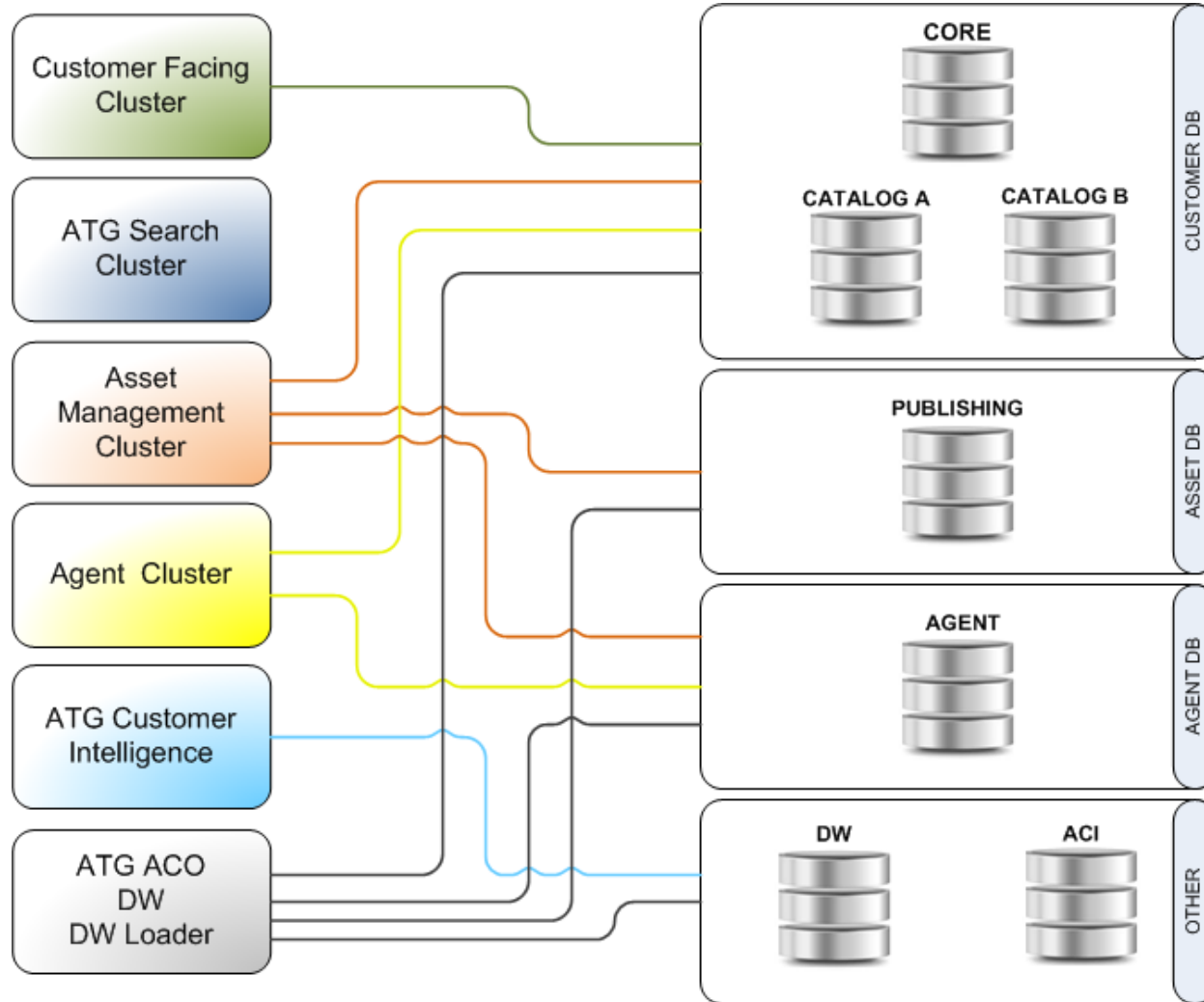
* Logical Data Schemas are shown. Some or all of the schemas may live in the same physical server.

ATG Folder Structure

- The folder structure shows the development installation of ATG.

- The Application and user defined modules are present as shown.

- DYNAMO_HOME is a system environment variable that must point to home directory as shown.

- In a production deployment all the required modules are packed into the ear archive.

ATG Installation

Application Modules

OOTB and

User Defined

DYNAMO_HOME

ATG
- ACC9.1
- ACC10.0.2
- ATG10.0.2
  - .ASE10.0.2_config
  - ADC
  - Admin
  - Agent
  - ARF
  - . . .
  - DAF
  - DafEar
  - DAS
  - Fulfillment
  - home
    - localconfig
  - jre
  - manuals
  - MotorpriseJSP
  - patch
  - Cybersource

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ATG Modules: Framework

- The following are the common ATG Framework Modules:

Module Name	Description
DAS	ATG Core - Dynamo Application Server
DAS-UI	ATG Control Center Components
DAF	Dynamo Application Framework
DPS	ATG Personalization - Dynamo Personalization Services
DSS	ATG Scenarios - Dynamo Scenario Server
DCS	Dynamo Commerce Server
PublishingAgent	Dynamo Publishing Agent
B2CCommerce	ATG Consumer Commerce
Fulfillment	ATG Fulfillment
REST	ATG REST Services

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Section 3 ✔
Check Your Understanding

Select two components can be found in a recommended system architecture for ATG?

a. A Content Delivery Network (CDN)

b. A Compliance Management Server (Audit)

c. Agent Facing Cluster (CSC)

d. B2B Commerce Server (B2BCommerce)

e. ATG Customer Intelligence (ACI)

f. Product Information Management Cluster (PIM)

Answer: c, e

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Section 3
Check Your Understanding

Which two schemas hold ATG Product Catalog information?

a. ATG CORE Schema

b. ATG CATALOG A Schema

c. ATG CATALOG B Schema

d. ATG DW Schema

e. ATG PROD Schema

f. ATG BCC Schema

Answer:

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Section 3 ✔
Check Your Understanding

Pick three module that contains the core technology framework of ATG, Personalization and Scenarios

a. B2CCommerce Module

b. DAF Module

c. DSP Module

d. DPS Module

e. DSS Module

f. DynamoCore Module

Answer: b, d, e

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Section 3 ✔
Check Your Understanding

Which environment variable is used to configure the location of ATG home folder?

a. ATG_HOME

b. DYNAMO_HOME

c. JBOSS_HOME

d. JAVA_HOME

e. ATG10_HOME (for version 10.xx.xx)

f. It is configured in the dasEnv.bat(/.sh) in ATG\home\localconfig folder.

Answer: b

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Summary

- The Customer facing cluster serves the site content to all site visitors.

- ATG Search Cluster performs search on behalf of the customers via the customer facing cluster.

- Asset Management Cluster is used by Merchandizers to manage product catalog.

- Agent Facing Cluster is used by Agents for Order Management functions.

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Q&A

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