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JRS ENTERPRISE AND
DEVELOPMENT SOLUTION

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GST No-33DZMPR9279E1ZO

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SAP QM Syllabus with Real-Time Implementation

1. Introduction to SAP QM

- **Topics:**
 - Overview of SAP QM and its role in ERP
 - Integration with other SAP modules (MM, PP, SD, PM)
 - Key benefits: defect prevention, compliance, process improvement
- **Real-Time Implementation:**
 - Understanding business requirements for quality control in industries like manufacturing, pharmaceuticals, or automotive.
 - Mapping client quality processes (e.g., ISO 9001 compliance) to SAP QM functionalities.
 - Example: Configuring QM to ensure quality checks for incoming raw materials in a manufacturing plant, integrating with SAP MM for procurement.

2. Organizational Structure in SAP QM

- **Topics:**
 - Defining QM organizational units (plants, inspection locations)
 - Roles and responsibilities in quality management
- **Real-Time Implementation:**
 - Setting up plant-specific quality inspection processes in SAP for a multi-site organization.
 - Assigning quality inspectors and defining workflows for approvals.
 - Example: Configuring a plant in SAP S/4HANA to handle quality checks for a specific production line, ensuring traceability.

3. Master Data in SAP QM

- **Topics:**
 - Material Master: QM-specific data (inspection types, inspection plans)
 - Inspection Characteristics (qualitative and quantitative)
 - Inspection Methods, Sampling Procedures, and Catalogs
 - Quality Info Records
- **Real-Time Implementation:**

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- Creating material master data with inspection types for raw materials, in-process, and finished goods.
- Defining inspection characteristics (e.g., dimensional tolerances, chemical composition) for a product like automotive parts.
- Example: Setting up a quality info record to control vendor-specific inspection requirements for a steel supplier.

4. Quality Planning

- **Topics:**
 - Creating and managing Inspection Plans
 - Defining inspection specifications and acceptance criteria
 - Dynamic Modification Rules and Sampling Schemes
- **Real-Time Implementation:**
 - Developing inspection plans for a production process, such as checking weld strength in automotive assembly.
 - Using dynamic modification to adjust inspection frequency based on vendor performance.
 - Example: Implementing a sampling scheme to reduce inspection costs while maintaining quality standards for high-volume goods.

5. Quality Inspection

- **Topics:**
 - Types of Inspections: Goods Receipt, In-Process, Final Inspection
 - Inspection Lot Creation (manual and automatic)
 - Results Recording and Usage Decision
 - Stock Posting (quality to unrestricted/restricted)
- **Real-Time Implementation:**
 - Automating inspection lot creation for goods receipt against purchase orders in a warehouse.
 - Recording inspection results for critical parameters (e.g., pH levels in pharmaceuticals) and making usage decisions.
 - Example: Configuring SAP to trigger an inspection lot when raw materials arrive, with results recorded via Fiori apps for real-time updates.

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6. Quality Notifications

- **Topics:**
 - Creating and managing quality notifications
 - Handling defects, customer complaints, and vendor issues
 - Corrective and Preventive Actions (CAPA)
- **Real-Time Implementation:**
 - Setting up workflows for defect notifications, escalating issues to quality managers for root cause analysis.
 - Integrating notifications with CAPA processes to address recurring defects.
 - Example: Using SAP QM to log customer complaints about defective products and track corrective actions, like supplier retraining.

7. Quality Control and Monitoring

- **Topics:**
 - Statistical Process Control (SPC) and Control Charts
 - Vendor Evaluation and Quality Scores
 - Real-time monitoring using SAP Fiori dashboards
- **Real-Time Implementation:**
 - Implementing control charts to monitor production process stability (e.g., temperature control in chemical manufacturing).
 - Evaluating vendors based on defect rates and delivery compliance.
 - Example: Using Fiori tiles to display real-time defect rates for a production batch, enabling quick decision-making.

8. Quality Certificates

- **Topics:**
 - Generating Certificates of Analysis (CoA)
 - Managing outgoing quality certificates for customers
- **Real-Time Implementation:**
 - Automating CoA generation during sales delivery for compliance with customer requirements.
 - Customizing certificate templates to include specific quality parameters.

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- Example: Configuring SAP to print a CoA for pharmaceutical products, including batch-specific test results.

9. Calibration and Test Equipment Management

- **Topics:**

- Managing test equipment and calibration schedules
- Integration with SAP PM (Plant Maintenance)

- **Real-Time Implementation:**

- Setting up calibration inspections for measuring devices to ensure accuracy in quality checks.
- Linking equipment maintenance schedules with quality inspections.
- Example: Configuring SAP to schedule calibration for a pressure gauge used in quality inspections, with alerts for overdue maintenance.

10. Integration with Other SAP Modules

- **Topics:**

- Integration with Materials Management (MM) for procurement
- Integration with Production Planning (PP) for in-process inspections
- Integration with Sales and Distribution (SD) for delivery inspections

- **Real-Time Implementation:**

- Configuring QM-MM integration to trigger inspections for vendor deliveries.
- Setting up in-process inspections during production orders in SAP PP.
- Example: Linking QM with SD to perform quality checks on outbound deliveries, ensuring only compliant products reach customers.

11. Configuration and Customization

- **Topics:**

- Configuring QM settings in SAP (inspection types, sampling procedures)
- Customizing Fiori apps for quality management
- User Exits and BAdIs for specific requirements

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- **Real-Time Implementation:**

- Customizing inspection types to align with industry-specific standards (e.g., FDA regulations for pharmaceuticals).
- Developing custom Fiori apps for mobile-based result recording.
- Example: Using a BAId to enforce additional quality checks for high-risk materials during goods receipt.

12. Reporting and Analytics

- **Topics:**

- Standard QM reports (vendor evaluation, defect analysis)
- Quality dashboards and KPIs in SAP S/4HANA
- SAP Analytics Cloud integration

- **Real-Time Implementation:**

- Generating reports to analyze defect trends and identify improvement areas.
- Creating KPI-aligned dashboards to track metrics like first-pass yield or defect rates.
- Example: Using SAP Analytics Cloud to visualize quality trends across multiple plants for a global manufacturer.

13. Stability Studies (Industry-Specific)

- **Topics:**

- Managing stability studies for pharmaceuticals
- Process flow for stability testing

- **Real-Time Implementation:**

- Setting up stability study protocols in SAP QM for drug shelf-life testing.
- Automating sample management for stability tests.
- Example: Configuring SAP to track stability samples and generate reports for regulatory submissions.

14. SAP QM Certification and Exam Preparation

- **Topics:**

- Overview of SAP QM certification (C_TPLM40_65, C_TS414_2021)

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- Key topics and sample questions
- Hands-on practice for certification

- **Real-Time Implementation:**

- Preparing for certification by working on real-world scenarios in a sandbox environment.
- Example: Simulating a full QM process (from inspection lot creation to usage decision) to practice for certification.

Real-Time Implementation Approach

- **Assessment and Planning:**

- Conduct workshops with stakeholders to map existing quality processes to SAP QM.
- Define project scope, timelines, and resource requirements.
- Example: Assessing a client's need for automated quality checks in a food processing plant to comply with HACCP standards.

- **Configuration:**

- Set up QM master data, inspection plans, and integration points in the SAP system.
- Use the "Crawl, Walk, Run" methodology, starting with basic "QM Lite" (inspection lots, usage decisions) and expanding to advanced features like SPC or stability studies.

- **Data Migration:**

- Migrate legacy quality data (e.g., inspection records, vendor scores) into SAP QM.
- Example: Importing historical defect data from Excel into SAP for trend analysis.

- **Testing:**

- Perform unit and integration testing to validate QM processes (e.g., goods receipt inspections, defect notifications).
- Example: Testing QM-MM integration to ensure inspection lots are triggered correctly for purchase orders.

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- **Training and Rollout:**

- Train end-users (quality inspectors, managers) on SAP QM processes using Fiori apps or GUI.
- Roll out QM in phases, starting with a pilot plant or department.
- Example: Training warehouse staff to record inspection results via mobile Fiori apps.

- **Support and Optimization:**

- Provide post-go-live support to address issues like incorrect inspection lot triggers.
- Continuously analyze QM data to optimize processes (e.g., reducing inspection frequency for reliable vendors).
- Example: Using SAP Analytics Cloud to identify recurring defects and implement process improvements.

Key Considerations for Real-Time Implementation

- **Time and Effort:** Implementing advanced QM features (e.g., detailed results recording, sample management) requires significant data setup and testing. Start with basic functionalities to meet tight project timelines.
- **System Landscape:** Ensure compatibility with existing systems (e.g., LIMS for lab management) and decide whether to use SAP QM or standalone tools for specific functions like CAPA.
- **Industry-Specific Needs:** Tailor QM configurations to meet regulatory requirements (e.g., FDA for pharmaceuticals, IATF for automotive).
- **User Adoption:** Use Fiori apps to simplify workflows and improve user experience, especially for mobile-based inspections.
- **Consulting Support:** Engage SAP consultants for complex implementations, especially for integration with MM, PP, or SD.

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Example Real-Time Scenario

A pharmaceutical company implements SAP QM to comply with GMP regulations:

1. **Master Data:** Configures material master for active ingredients with inspection types for goods receipt and stability testing.
2. **Inspection Planning:** Creates inspection plans for pH, purity, and microbial tests.
3. **Quality Inspection:** Triggers inspection lots for incoming raw materials, records results via Fiori, and makes usage decisions.
4. **Notifications:** Logs defects (e.g., out-of-spec pH) and initiates CAPA to address supplier issues.
5. **Certificates:** Generates CoA for finished drugs, integrating with SD for customer delivery.
6. **Reporting:** Uses SAP Analytics Cloud to track defect trends and ensure regulatory compliance.

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SAP QM Integration Syllabus with Real-Time Implementation

1. Overview of SAP QM Integration

- **Topics:**
 - Importance of integration in SAP ERP and S/4HANA
 - Key integration points: Materials Management (MM), Production Planning (PP), Sales and Distribution (SD), Plant Maintenance (PM), Warehouse Management (WM)
 - Cross-module data flow and process alignment
- **Real-Time Implementation:**
 - Mapping end-to-end business processes (e.g., procure-to-pay, order-to-cash) to include quality checks.
 - Ensuring seamless data flow between modules to avoid manual interventions.
 - Example: Configuring QM to trigger quality inspections during goods receipt (MM) and final product delivery (SD) for a manufacturing company.

2. Integration with SAP Materials Management (MM)

- **Topics:**
 - Quality inspection during goods receipt (GR) against purchase orders
 - Quality Info Records for vendor-specific inspection controls
 - Stock movements: Quality stock, unrestricted, restricted
 - Source inspections and vendor evaluations
- **Real-Time Implementation:**
 - Setting up QM-MM integration to automatically create inspection lots when goods are received against a purchase order.
 - Configuring Quality Info Records to enforce inspections for critical vendors (e.g., raw material suppliers in pharmaceuticals).
 - Managing stock in quality inspection status until usage decision is made.
 - Example: For an automotive parts supplier, configuring SAP to inspect incoming steel coils, moving compliant stock to unrestricted use and defective stock to blocked status.

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3. Integration with SAP Production Planning (PP)

- **Topics:**
 - In-process inspections during production orders
 - Integration with routings and work centers
 - Quality checks for semi-finished and finished goods
 - Handling production-related defects and rework
- **Real-Time Implementation:**
 - Configuring inspection points in production routings to perform in-process quality checks (e.g., dimensional checks during assembly).
 - Linking QM with PP to trigger inspection lots at specific production stages.
 - Managing rework orders for defective batches in production.
 - Example: In a food processing plant, setting up QM to inspect product quality (e.g., moisture content) during mixing, with results recorded in SAP.

4. Integration with SAP Sales and Distribution (SD)

- **Topics:**
 - Quality inspections during sales order processing and delivery
 - Generating Certificates of Analysis (CoA) for customers
 - Handling customer complaints via quality notifications
- **Real-Time Implementation:**
 - Configuring QM-SD integration to perform final inspections before goods are shipped to customers.
 - Automating CoA generation with batch-specific quality data during delivery.
 - Linking customer complaints in SD to QM notifications for root cause analysis.
 - Example: For a chemical manufacturer, generating a CoA with pH and purity data for each batch shipped, integrated with SD delivery documents.

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5. Integration with SAP Plant Maintenance (PM)

- **Topics:**
 - Calibration of test equipment and measuring devices
 - Managing equipment maintenance schedules
 - Linking calibration results to quality inspections
- **Real-Time Implementation:**
 - Setting up QM-PM integration to schedule and track calibration of test equipment (e.g., pressure gauges, thermometers).
 - Ensuring only calibrated equipment is used for quality inspections.
 - Example: In a pharmaceutical lab, configuring SAP to flag overdue calibrations for analytical balances, preventing their use in quality tests until recalibrated.

6. Integration with SAP Warehouse Management (WM) / Extended Warehouse Management (EWM)

- **Topics:**
 - Managing quality stock in warehouse processes
 - Inspection lot processing in WM/EWM
 - Stock transfer between quality and unrestricted bins
- **Real-Time Implementation:**
 - Configuring QM-WM integration to hold stock in quality inspection bins until cleared by usage decisions.
 - Automating stock transfers in the warehouse based on QM results.
 - Example: In a retail distribution center, setting up SAP to move inspected goods from quality bins to unrestricted bins after passing quality checks.

7. Integration with SAP Batch Management

- **Topics:**
 - Managing batch-specific quality inspections
 - Batch traceability and quality data linkage
 - Batch determination based on quality parameters

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- **Real-Time Implementation:**

- Configuring QM to perform batch-specific inspections for traceability (e.g., in pharmaceuticals or food industries).
- Linking batch characteristics to inspection results for compliance reporting.
- Example: In a dairy plant, using QM to track batch quality data (e.g., fat content) and ensure only compliant batches are released for sale.

8. Integration with SAP Fiori and Analytics

- **Topics:**

- Using Fiori apps for mobile-based quality inspections
- Real-time quality dashboards and KPIs
- Integration with SAP Analytics Cloud for advanced reporting

- **Real-Time Implementation:**

- Deploying Fiori apps for quality inspectors to record results on mobile devices in real-time.
- Creating dashboards to monitor quality KPIs like defect rates or inspection cycle times.
- Example: Implementing a Fiori app for warehouse staff to record goods receipt inspection results, with real-time updates to a quality dashboard.

9. Integration with External Systems

- **Topics:**

- Connecting SAP QM with Laboratory Information Management Systems (LIMS)
- Integration with third-party quality tools via APIs
- Data exchange for regulatory compliance (e.g., FDA, ISO)

- **Real-Time Implementation:**

- Using SAP's API services to connect QM with a LIMS for lab test data integration.
- Ensuring compliance data (e.g., test results) is shared with regulatory bodies.
- Example: In a pharmaceutical company, integrating SAP QM with a LIMS to automatically transfer test results for active ingredients, reducing manual data entry.

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10. Configuration for Integration

- **Topics:**
 - Setting up integration points in SAP (e.g., movement types, inspection types)
 - Customizing workflows for cross-module processes
 - Using BAdIs and User Exits for specific integration needs
- **Real-Time Implementation:**
 - Configuring movement types (e.g., 101 for GR, 321 for quality-to-unrestricted) to align QM with MM/MM.
 - Customizing workflows to escalate quality issues across modules (e.g., from QM to MM for vendor issues).
 - Example: Using a BAdI to enforce additional quality checks during goods receipt for high-risk materials in a chemical plant.

11. Testing and Validation of Integration

- **Topics:**
 - Unit testing for individual integration points (e.g., QM-MM, QM-PP)
 - Integration testing for end-to-end processes
 - User acceptance testing (UAT) with business users
- **Real-Time Implementation:**
 - Testing QM-MM integration to ensure inspection lots are triggered correctly for goods receipts.
 - Conducting UAT with quality inspectors to validate in-process inspection workflows in PP.
 - Example: Simulating a procure-to-pay process in a sandbox environment to verify QM triggers for vendor deliveries and stock movements.

12. Real-Time Monitoring and Optimization

- **Topics:**
 - Monitoring integration performance using SAP Solution Manager
 - Analyzing integration logs for errors (e.g., failed inspection lot creation)
 - Optimizing processes based on integration data

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- **Real-Time Implementation:**

- Using Solution Manager to track QM-MM integration issues, such as delays in inspection lot creation.
- Optimizing inspection frequency based on vendor performance data from QM-MM integration.
- Example: Reducing inspection frequency for reliable vendors by analyzing QM-MM data, saving time and costs.