MIS 5121:Business Processes, ERP Systems & Controls
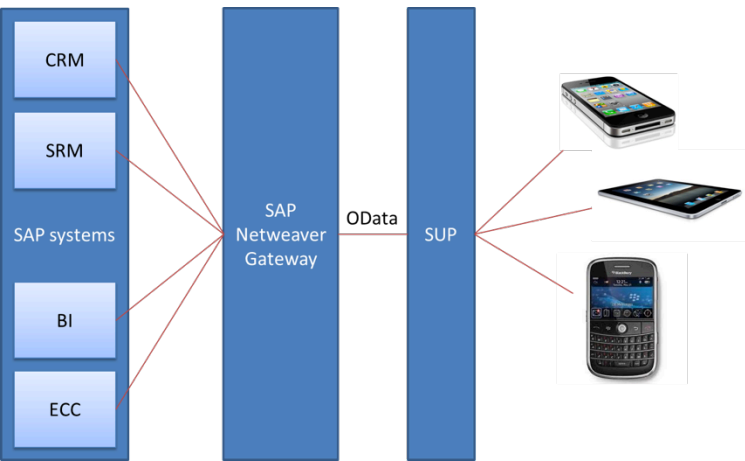# Week 11: *Change Management: SAP Landscape Instance and Clients*

FOX | MIS
Management Information Systems

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SAP System Characteristics

Integrated Database

➢ All transactions stored in one common database in thousands of tables

➢ Module automatically creates entries in other modules (e.g. OTC creates financial postings)

➢ Databases can be accessed by any module

➢ Auditors need to understand the flow of information

➢ Users view the system as Transactions, documents and reports

➢ SAP modules are transparent to users

Processing
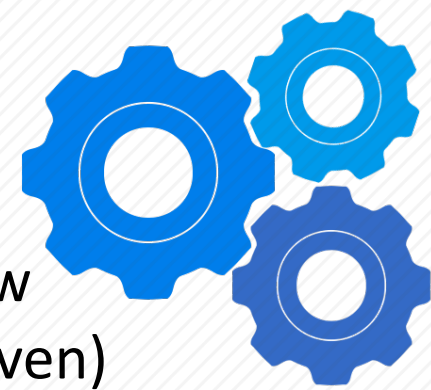
➢ During transaction processing, system initiates new transactions and postings automatically (event driven)

➢ If initiating transaction is invalid, inaccurate or incomplete, can impact other parts of organization

   ✧ Suggests needs for preventative controls rather than detective controls

➢ Data entry accuracy improved through use of default values, cross-field checking and alternate views into the data

➢ SAP uses online real-time processing

   ✧ Traditional 'batch' controls / processing and audit trails are no longer available
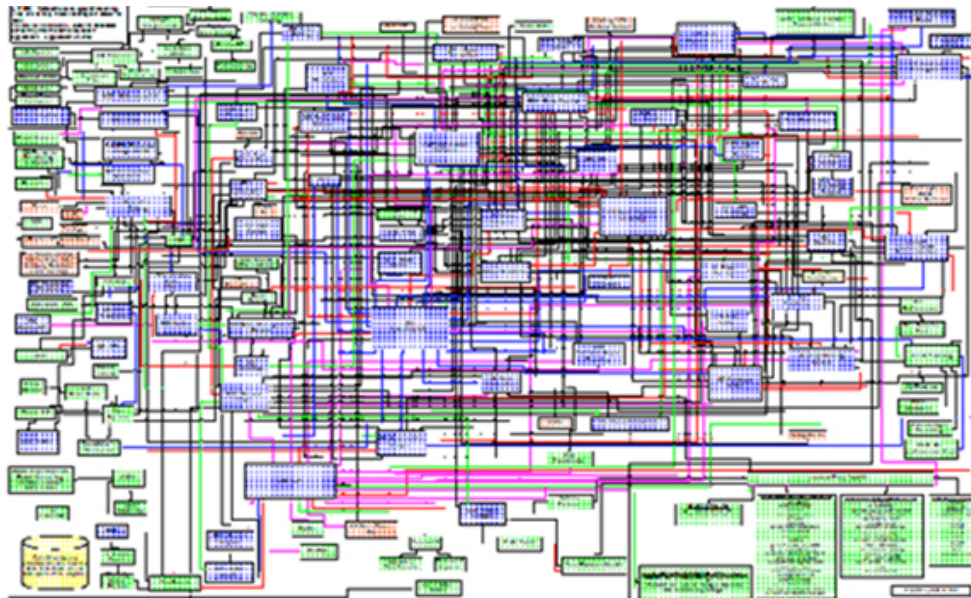
   ✧ Period closing is different in SAP

Technical R/3 Environment
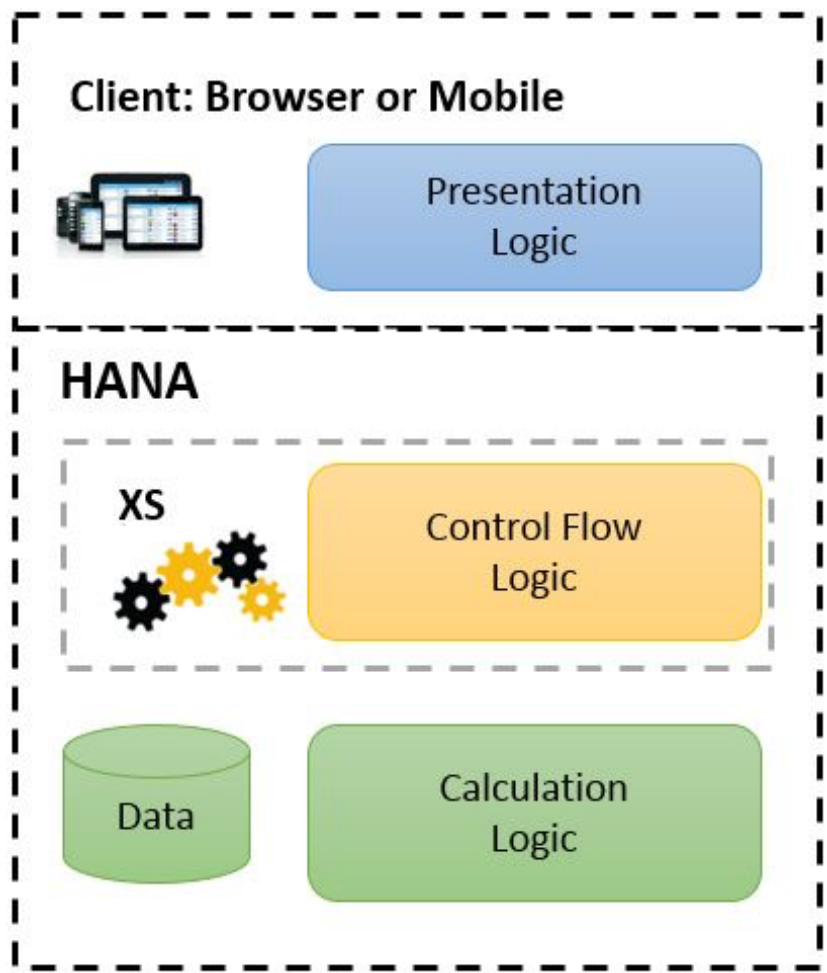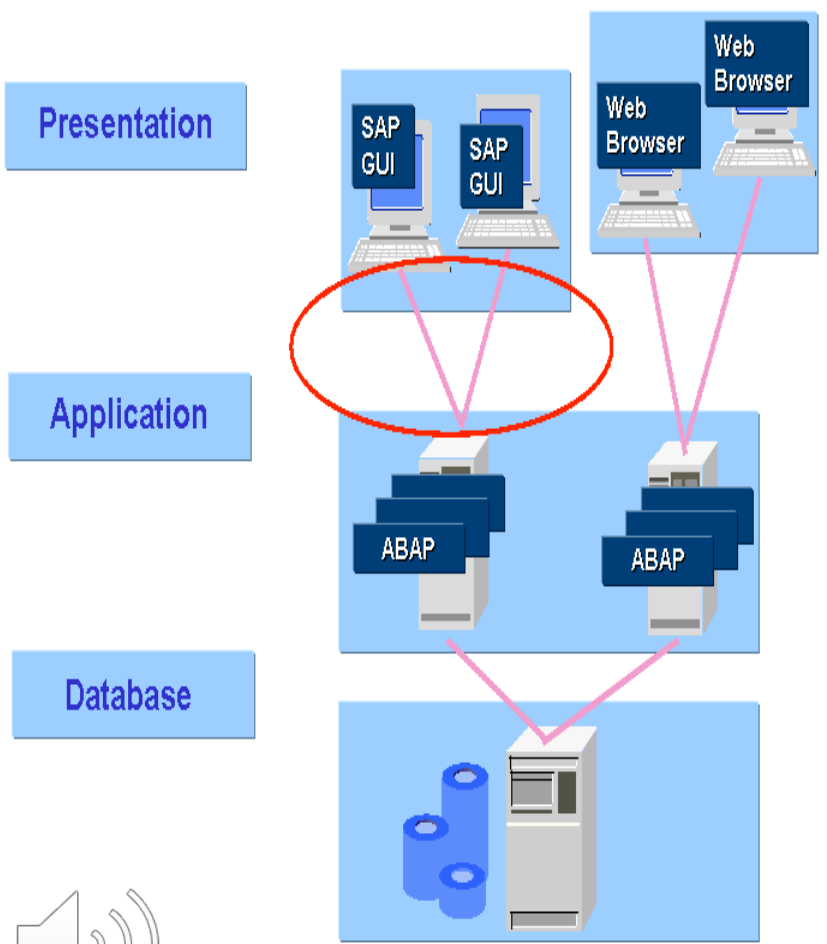
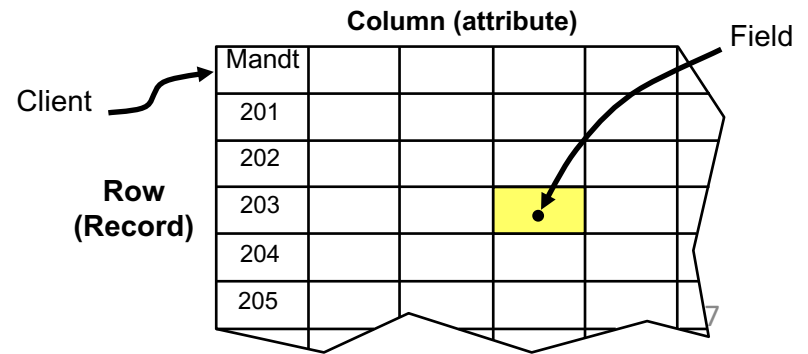# High Technical Complexity

➤ System usually resides on multiple computers

  ✧ Using different servers and databases

  ✧ Coordination is a challenge

➤ Legacy systems may be interfaces

➤ Distributed systems and bolt-on's contribute to complexity

Change Management: SAP Landscape Instances and Clients

Column (attribute)

Field

Mandt				
201				
202				
203				
204				
205				

Client

Row (Record)

Landscape: Instance and Clients
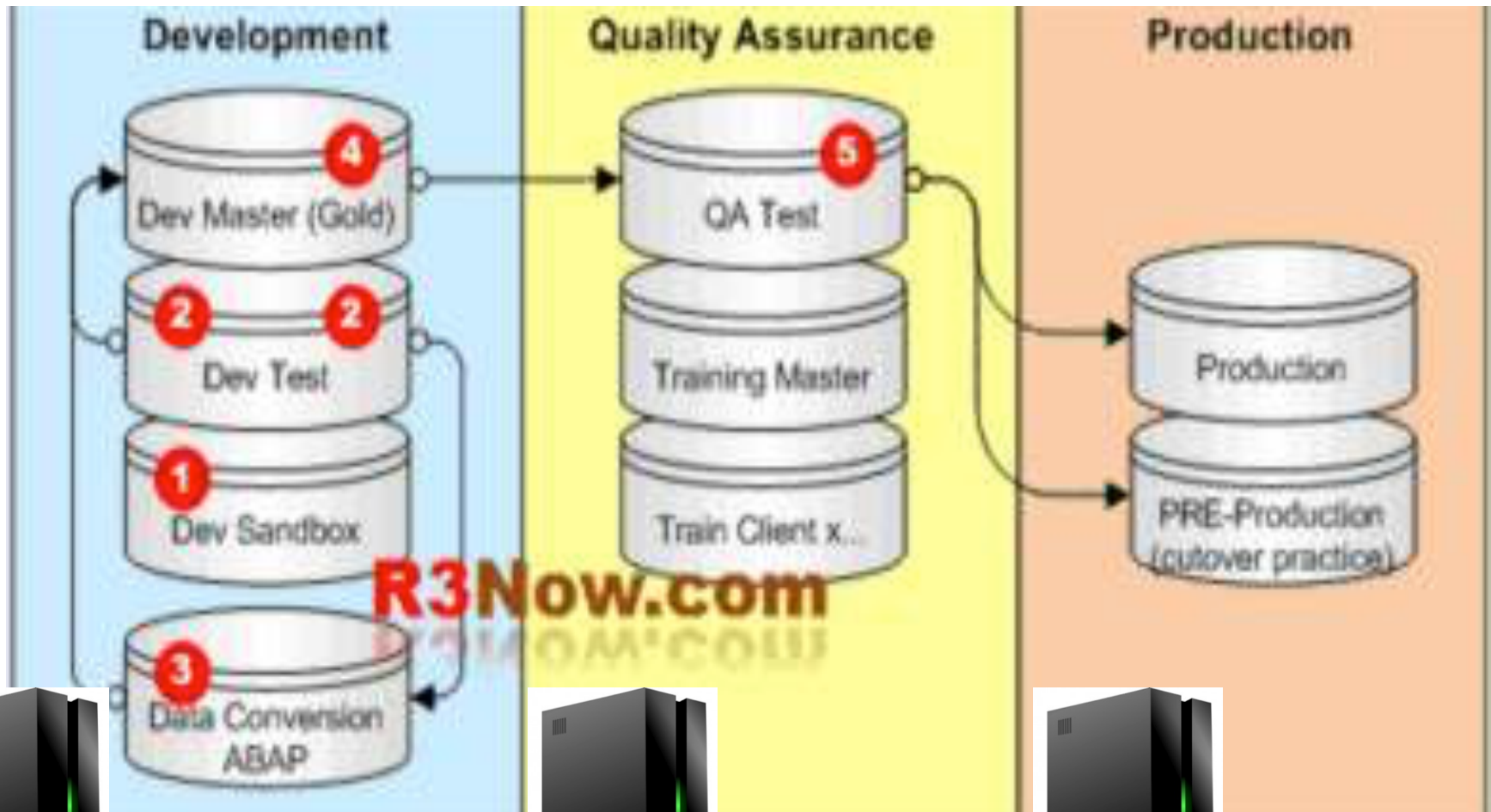
- **SAP Instance**
  - Instance also referred to as a system
  - An Instance has a dedicated physical database
  - One installation of SAP software (source code / modules) and related logical database is an instance
  - Instance shares SAP and developed software 'code' base
  - Documentation of instances (systems) and clients often called: **'Client / System Landscape'**

Minimum Rec'd SAP Landscape

Landscape: Instance and Clients

- ## **SAP Clients**

  - Client is highest organization level with SAP System

  - At least one client per system (e.g. '100')

  - Master data is stored and Business transactions occur within a client

  - Single logical database (linked to system / instance) may contain several clients

  - Production Client typically represents a logical grouping of multiple companies

Column (attribute)

Field

| Mandt				
201				
202				
203				
204				
205				

Client

Row (Record)
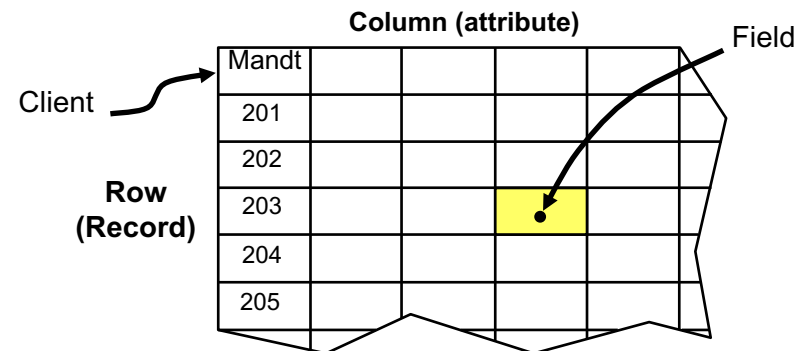
Landscape: Typical Development Clients

- **Dev 100: Golden Configuration Client**
  - Final approved configuration (by Business Process Mgrs)
  - Linked to development system in other landscapes (BW, CRM, etc.)
  - Development work done in this client
  - No master data or transaction data

- **Dev 110: Unit Test Client**
  - Refreshed from Dev 130 as-needed
  - Unreleased changes moved here to be tested
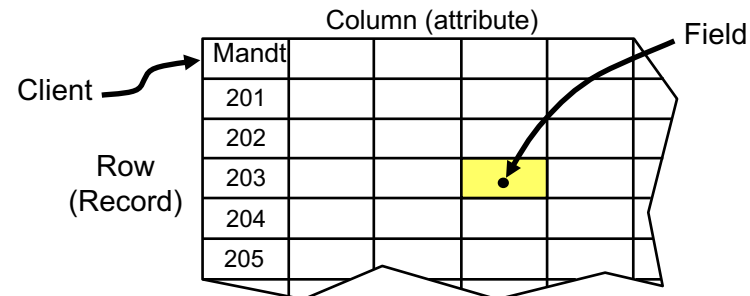 - Configuration transported from client 100 for testing
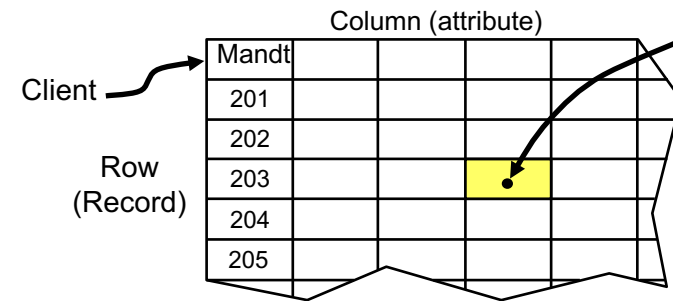
Landscape: Typical Development Clients

- **Dev 120: Data Load Client**
  - Refreshed from DEV 100 as-needed
  - Owned by Data team for testing data loads, data transformation

- **Dev 130: Clean Master Data Client**
  - 'Clean' master data created by data management and
  - Unreleased changes moved here to be tested
  - Configuration transported from client 100 for testing

Typical SAP Landscape

Development System	Quality-Assurance System	Production System
Type of Users:	Type of Users:	Type of Users:
-	-	-
-	-	-
-	-	-
Type of Work:	Type of Work:	Type of Work:
-	-	-
-	-	-
-	-	-

Typical SAP Landscape

Development System

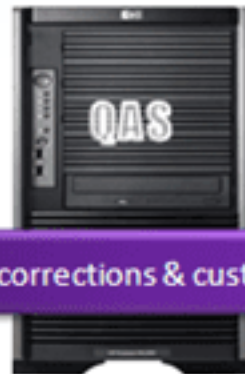**Type of users:**
Developers,
Consultants,
Key Users

Type of work:
Customizing,
Development,
Unit Testing

Quality-Assurance System

Type of users:
Developers,
Consultants,
Key Users

Type of work:
Integration and
Quality testing

Production System

Type of users:
End users

Type of work:
Productive
execution of
transactions
with real
business data

DEV

QAS

Developments, corrections & customizing settings

PRD

Client Dependent vs. Independent

System/Instance

Client Dependent

Dev 100 Master (Gold)	Dev 110 Dev Test	Dev 180 Data Conversion	Dev 900 Sandbox
- Master Data - Transaction Data - User Management / Data	- Master Data - Transaction Data - User Management / Data	- Master Data - Transaction Data - User Management / Data	- Master Data - Transaction Data - User Management / Data

Client Independent

- Programs (ABAP)
- Data Dictionary
- Parameters
- Authorization Objects

> Repository Objects (Client Independent Config
      - Currency, UOM's
      - Pricing Tables
> Transactions

Abc

Key Information Technology Risks

- System Security
- Information Security Administration
- Data Migration
- Data Interface
- **Instance Profile Security**
- Change Management
- Transport Security
- Table Security
- Data Dictionary, Program and Development Security
- Logs and Traces
- Firefighter access
- Powerful User ID's and Profiles
- Background Processing (Batch vs. foreground: real-time)

Landscape: Instance Security

➢ Also referred to as 'Application Server Parameters'

➢ Needs to be configured on each logical instance

➢ Must review parameters on all application servers

➢ Default SAP Parameters do not provide adequate level of security

➢ May vary depending on business's Security Policies

Critical Instance Profile Parameters

Parameter / Description	SAP Default	Recommended
Login/min_password_lng Minimum password length	3	5
Login/min_password_lng # days after which password must change	0	30-60 Days
Login/fails_to_session_end # times bad password to end session	3	3
Login/fails_to_user_lock # times bad password to lock out	12	3
Login/failed_user_auto_unlock Auto unlock of user at midnight	1 (Auto unlock)	0 (remains locked)

Critical Instance Profile Parameters

Parameter / Description	SAP Default	Recommended
Auth/rgc_authority_check Check authorization for remote function calls (Client/system to other)	0	1 (RFC's are checked)
Rdisp/gui_auto_logout # seconds to auto disconnect inactive users	0	3600
Login/disable_multi_gui_Login Block multi logon if set to 1	0	1

Setting System Change Options

- Transaction: SE06
- Changes affect entire system / instance
- Affects Client Independent objects
- **PRD Global setting should be 'Not Modifiable'**

System Change Option

| Menu | | ◄ | Save | Back | Exit | Cancel | System | Display <-> Chang |

| Global Setting | | Modifiable ▾ |

Software Component	Technical Name	Modifiable
SAP Enterprise Extension PLM, SCM, Fin…	EA-APPL	Modifiable
SAP Enterprise Extension Defense Forces	EA-DFPS	Modifiable

Risk and *Recommendation*
Instance Profile Parameters

Risks:

➢ SAP Default settings do not provide adequate control over system

➢ Settings not configured could result in system's security being compromised and unauthorized access

Recommendations:

Review all parameter values different than recommended – understand why company has chosen non-recommended value

PRD (Production) Instance Security

➢ Focus of audits are the PRD System

➢ PRD often the standalone environment referred to as the 'Live' system

➢ Only thoroughly tested configuration changes should be transported to PRD to assure integrity of this environment

➢ No configuration access should be allowed in PRD

➢ Direct changes in PRD (Occasionally required) handled with strict policies, procedures, approvals.

Setting System Security: Clients

Client → | Mandt | ← Fie
| 201
| 202
| 203
| 204
| 205

- Transaction: SCC4

- Settings for all clients in an instance

- May be different btw DEV & PRD

- PRD should be 'No Change Allowed'

- Options authorized per security Policy / Procedures

- Only system administrator able to change options

- Process for system open/close
  - Defined / Documented
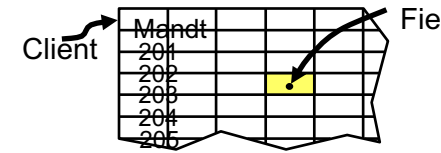 - Rarely used
  - Closely Monitored
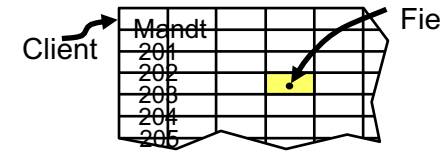
Display View "Clients": C

Menu | ◀ | E

Client	Name
000	SAP AG
001	Auslieferungsmandant R11
066	EarlyWatch
300	GBI 2.30 Config (896)
301	GBI 2.30 Config (896)
302	GBI 2.30 Config (896)
303	GBI 2.30 Config (896)
304	GBI 2.30 Config (896)
305	GBI 2.30 Config (896)

Setting System (Client) Security

Std currency USD

Client role Training/Education

Changes and Transports for Client-Specific Objects

- (•) Changes without automatic recording
- ( ) Automatic recording of changes
- ( ) No changes allowed
- ( ) Changes w/o automatic recording, no transports allowed

Cross-Client Object Changes

No changes to cross-client Customizing objects ▾

- Changes to Repository and cross-client Customizing allowed
- No changes to cross-client Customizing objects
- No changes to Repository objects
- No changes to Repository and cross-client Customizing objs

Client Copy and Comparison Tool Protection

Protection level 0: No restriction ▾

- Protection level 0: No restriction
- Protection level 1: No overwriting
- Protection level 2: No overwriting, no external availability

Recd: 'No Changes Allowed' in PRD to prevent unauthorized changes to Client-specific objects

Recd: 'No Changes to Repository and Cross-client customizing Objs' in PRD to prevent unauthorized changes to Client-independent objects

Recd: Level 1 or 2 in PRD to prevent overwriting when using client copy or client comparison tools

Client → Mandt   Fie
201
202
203
204
205

Change Management
SAP System

- **SAP System Characteristics**
  - Concept of Integration
  - Real-time Processing Implications
  - Complexity

- **SAP Instances and Clients**
  - Instance vs. Client
  - Typical SAP Landscape – what happens where
  - Instance / Client Security: Risks & Recommendations

Extra Slides

Setting System Change Options

- Client Independent Object Modifiable if these parameters are 'Modifiable'

  – Global Setting

  – Software component of object

  – Namespace or Name Range

System Change Option

| Menu | | ◀ | Save | Back | Exit | Cancel | System | Display <-> Chang |

Global Setting	Modifiable ⌄

Software Component	Technical Name	Modifiable
SAP Enterprise Extension PLM, SCM, Fin…	EA-APPL	Modifiable
SAP Enterprise Extension Defense Forces…	EA-DFPS	Modifiable
EA-FIN	EA-FIN	Modifiable
SAP Enterprise Extension Financial Services	EA-FINSERV	Modifiable
SAP Enterprise Extension Global Trade	EA-GLTRADE	Modifiable
SAP Enterprise Extension HR	EA-HR	Modifiable
Sub component EA-HRCAR of EA-HR	EA-HRCAR	Modifiable

Namespace/Name Range	Prefix	*Modifiable
Customer Name Range		Modifiable
General SAP Name Range		Modifiable
IS-M: CH Version		Modifiable

Setting System Change Options

- Transaction: SE06

		Software Component		
		Modifiable	**Restricted**	**Not Modifiable**
Namespace	**Modifiable**	Existing Objects can be changed	Existing objects can be repaired	
		New objects have SAP System ID of original System	New objects have SAP System ID of original System	
	Not Modifiable			

No Changes Possible