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CTC16:
INTRODUCING PARALLEL DEVELOPMENT AND
TESTING CENTRE OF EXCELLENCE TO AN
ESTABLISHED MAINFRAME ENVIRONMENT

CADRE/CA DATACOM TECHNICAL CONFERENCE
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ABSTRACT

Any mature mainframe environment contains a mixture of technologies - some old, some new - some "standard" and many "non-standard".

In this session we describe how a large life insurance and pensions company implemented full parallel development methods, with Change Management and Testing Centre of Excellence standards to handle the disparate technologies present.

We describe the initial project goals, challenges, implementation methods, and lessons learned from this user experience.

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For the last 15 years he has worked with a variety of z/OS and z/VSE clients on projects ranging from OS and software upgrades to Web enablement and XML interfaces.

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ONCE UPON A TIME...

Simple Development path to Production

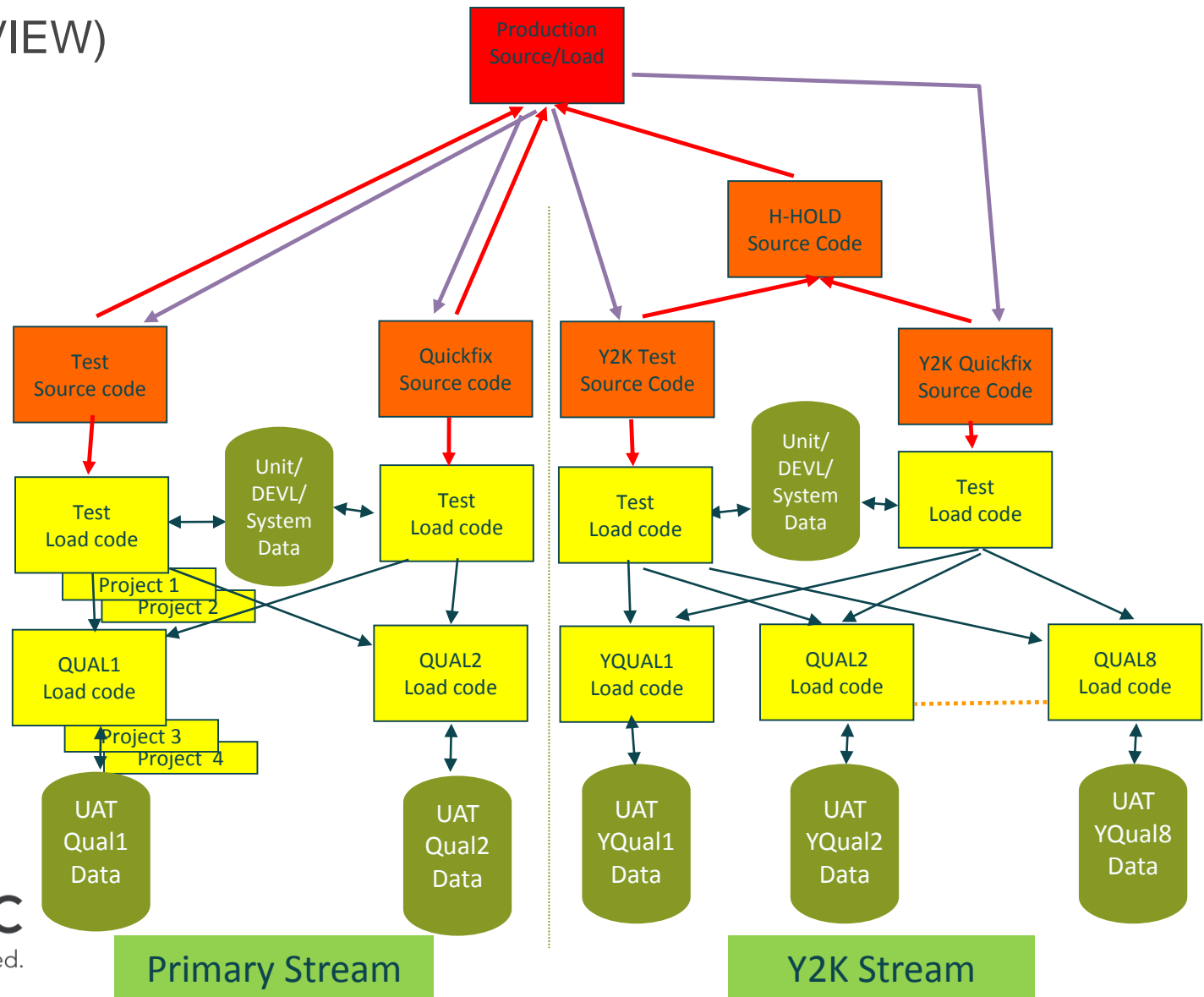
- Development, QA, UAT, Production
- Simple “Source Management” products to provide 3GL version control
- Home-grown change management routines sufficient
- Many 4GLs (including CA Ideal) rely on this structure

Then came Y2K

- “Temporary” clone to allow parallel remediation effort
- Extra parallel runtime environments
- Retrofit to “Primary” development stream
- Home-grown change management routines become more complex
- Integrity compromised

THE EXISTING ENVIRONMENTS

(SIMPLISTIC VIEW)



WEAKNESSES OF THE EXISTING INFRASTRUCTURE

Not a true parallel development environment

- All Common components (copybooks, Database tables structures, data) shared within each of the two streams
- A single “Development” route to Live
 - Applications and data structures must be retrofitted before promotion
- Projects forced to co-exist within limited environments

All supporting procedures hard-coded with the existing environments

- Inflexible – requiring large effort to add just one runtime environment
- Unable to cope with full parallel development requirements

Existing environments out of synch – incomplete audit/ enforcement

- History of overlays and missing changes

PROJECT REQUIREMENTS AND EVALUATION

IMMEDIATE PROJECT REQUIREMENT

Very large concurrent project about to start

- Two-year lifecycle
- Multi-drop intermediate releases to Production
- Updating core common components
 - Database table structures
 - Common subroutines
 - Common copybooks
- Requires exclusive access to development and runtime environments
- Regulatory, immovable deadlines

Multiple intermediate-sized projects

- Cannot co-exist with the common component changes
- Critical business need and/or regulatory deadlines

Production support and “Small Change” must continue.

PROJECT REMIT

INTRODUCE FULL PARALLEL DEVELOPMENT ENVIRONMENTS

Each with full control of source

Fully dynamic JCL generation

- Requires standard naming conventions

Conversion of home-grown region control dialogs to use standard tools/languages

“Push-button” ability to create new application streams

Flexible application stream structure

- One “Build” (Development) environment per stream
- Multiple runtime (QA/UAT) regions possible
- Single “Release” environment for planned implementations
- Fast-path Application stream for Production Support
- Additional “snapshot” regions for Technical Testing and Education

PROJECT REMIT (CONTINUED)

IMPLEMENT SOFTWARE CONFIGURATION MANAGEMENT TOOL

Eliminate reliance on hard-coded in-house routines

Replace basic existing Source Management products/tools

- CA MetaCOBOL+ source in CA Librarian Master files
- CA Ideal source managed within CA Ideal
 - Parallel development (version/status control) only within one development region
 - Incompatible with parallel development regions
- Some source held in PDS's (No source management)

Implement standard promote/demote/approval/audit procedures

- Customisation required to handle “unrecognised” entities

PROJECT REMIT (CONTINUED)

IMPLEMENT TESTING CENTRE OF EXCELLENCE STANDARDS

Consistent naming standards across all platforms

Eliminate “recompile prior to production”

Consolidation of projects into a “Release” environment

Isolation of source control on a per-project basis

Full regression testing

Technical Testing environments with full end-to-end capabilities

- including switchable external interfaces

Consistent refresh and desensitisation process for all environments.

TCoE covers a lot more than this

- These were the deficiencies identified in the existing infrastructure/procedures

THE APPLICATION ESTATE

Standard technologies handled by all SCM products

IBM COBOL (and other 3GLs)

IBM DB2

IBM Websphere MQ

Assembly source

Migration of source from CA Librarian

Other significant technologies at this site

CA Datacom

CA Ideal

CA MetaCOBOL+

Other packaged software

- Some with application source stored within DB2 tables

SCM TOOL EVALUATION

Market leaders

- CA Endevor
- Serena ChangeMan ZMF

Neither has direct interfaces to the “non-standard” technologies

- Both have clients who have customised the product to handle these technologies
- Entities must be “exported” from the internal repositories into a format that SCM tool can handle
- Significant customisation required for promotion/demotion processors and export/import and “Ripple back”

ESTABLISHING THE NEW ENVIRONMENTS

ESTABLISHING THE BASELINE

Multiple existing source repositories

- CA Librarian (Assembly, COBOL, MetaCOBOL, URTs)
- CA Ideal (4GL)
- CA Datacom DataDictionary (Database Structures, Dataviews)
- PDS members in many uncontrolled datasets

Resolving inconsistencies between existing streams

- Source with no Load
 - Cancelled/"parked" developments?
 - Redundant/Decommissioned applications
- Load with no Source
 - Reverse engineer or Re-create?
 - Load supplied as part of a package
- Different source/load versions in each environment. Which is current?

WHAT TO INCLUDE IN THE BASELINE

3GL source/load and standard DBMS entities

4GL source/load and non-standard DBMS entities

- Check-Out/Check-In procedures for developers and DBAs
- Special handling for express promotion/demotion

JCL/PROCS/INCLUDE/PARMLIB?

- Needs careful consideration
- In a perfect world - yes
- Will usually be a major conversion effort

Region control

- DBA's/Systems Programmers may be reluctant
- Advantages outweigh disadvantages

Re-baseline procedures need to be developed while the SCM implementation project is in progress

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ESTABLISHING TCOE NAMING STANDARDS

Essential for dynamic generation of JCL for all components

Do not underestimate the complexity of this task

- Many historical standards.
- Many different teams need to be involved
 - Infrastructure support/operations, Security and Development
 - Multiple platforms, not just mainframe

8 characters to play with? Think again.

- DB2 Subsystem / MQ Connection

ESTABLISHING TCOE NAMING STANDARDS (CONTINUED)

Our started task environment name format TTTLSSNI

TTT – Region type (e.g. CIC for CICS, MUF for Datacom)

L – Tier Level (B=Build Q=QA U=UAT etc.)

- Shared software libraries at tier level simplifies upgrades

SS – Application Stream number – allows up to 99 streams

N – Region number - allows for 9 UAT regions within this stream

I – Region type indicator (e.g. allows for Read-Only/Update regions)

CONVERSION OF JCL GENERATORS

Re-developed from CA Roscoe RPFs to Rexx/ISPF

- Converted to fully dynamic JCL generation
- Dialogs for Developers, Operations and DBAs
- Converted home-grown report-scrappers to use standard product facilities where possible
 - Many enhancements to base products since RPFs were originally developed.
 - CA Sysview Rexx interface provides many query/management features that we could utilise
 - Eliminates upgrade headaches

All SCM customisations and JCL generators now controlled within SCM

NEW JCL GENERATORS AND PROCEDURES

New generators for “push-button” clones and refreshes

- Re-implementation of region-specific data
 - Embedded JCL and other environmental data
- Different handling of Build vs. Runtime environments
- Snapshot Runtime environments can include project codebase

Central “reload” environment for refreshes from Production

- Security isolated region
- Snapshot restore from Production
- Centralised desensitisation suite executed
- Full/partial snapshot refreshes from the resulting infobase

Cut-down data volumes?

- No - DASD requirement and Performance Impact
- Yes – Complexity of data subset identification and collection

IMPLEMENTATION

THE CUTOVER

Single route to production

All development/infrastructure teams involved

Establishing the go-live date

- Long-term Projects due to go live after, move to SCLM now
- Short-term projects use existing change procedures

“Quiesce period” around Go-Live

- A month with no production release
- Only need to cater for emergency changes

NEW INFRASTRUCTURE DELIVERS

Full parallel development environment

- Multiple independent “Development” environments
- Currently five development streams but with the flexibility to add more
- Dedicated stream for Production Support “Emergency Changes”

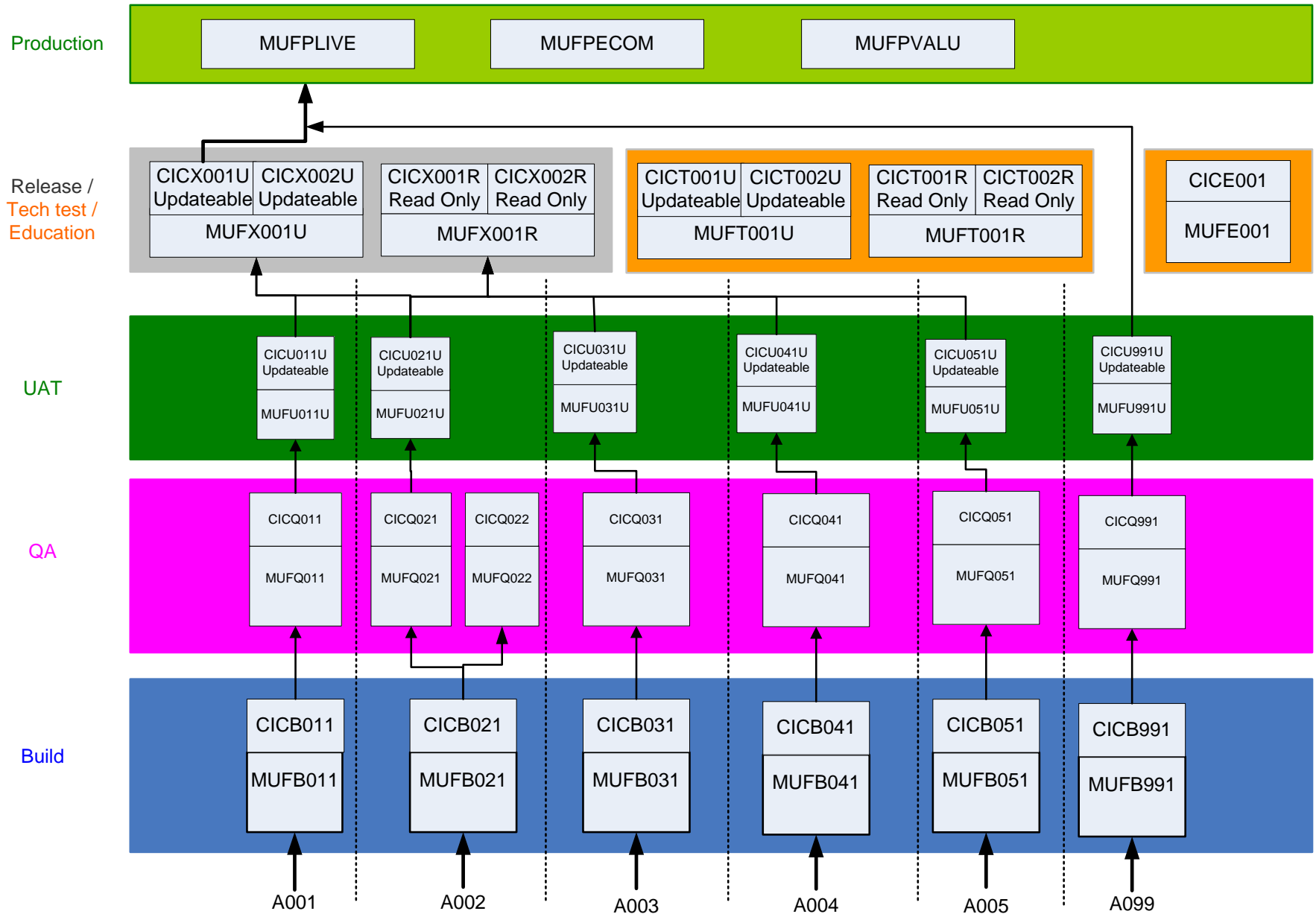
All supporting procedures fully dynamic

- Additional environments can be created much more easily (subject to resource)

SCM delivers control/audit over promotion/demotion during Project development - no more recompiles

Ripple Back ensures parallel streams can receive Database/Application changes immediately after implementation

WHAT THE PROJECT TEAMS SEE



THE “MASTER” DATADITIONARY REPOSITORY

Required as a central repository for Unique Identifiers

- Table names
- Dataview names
- Various other unique database/table/key internal identifiers

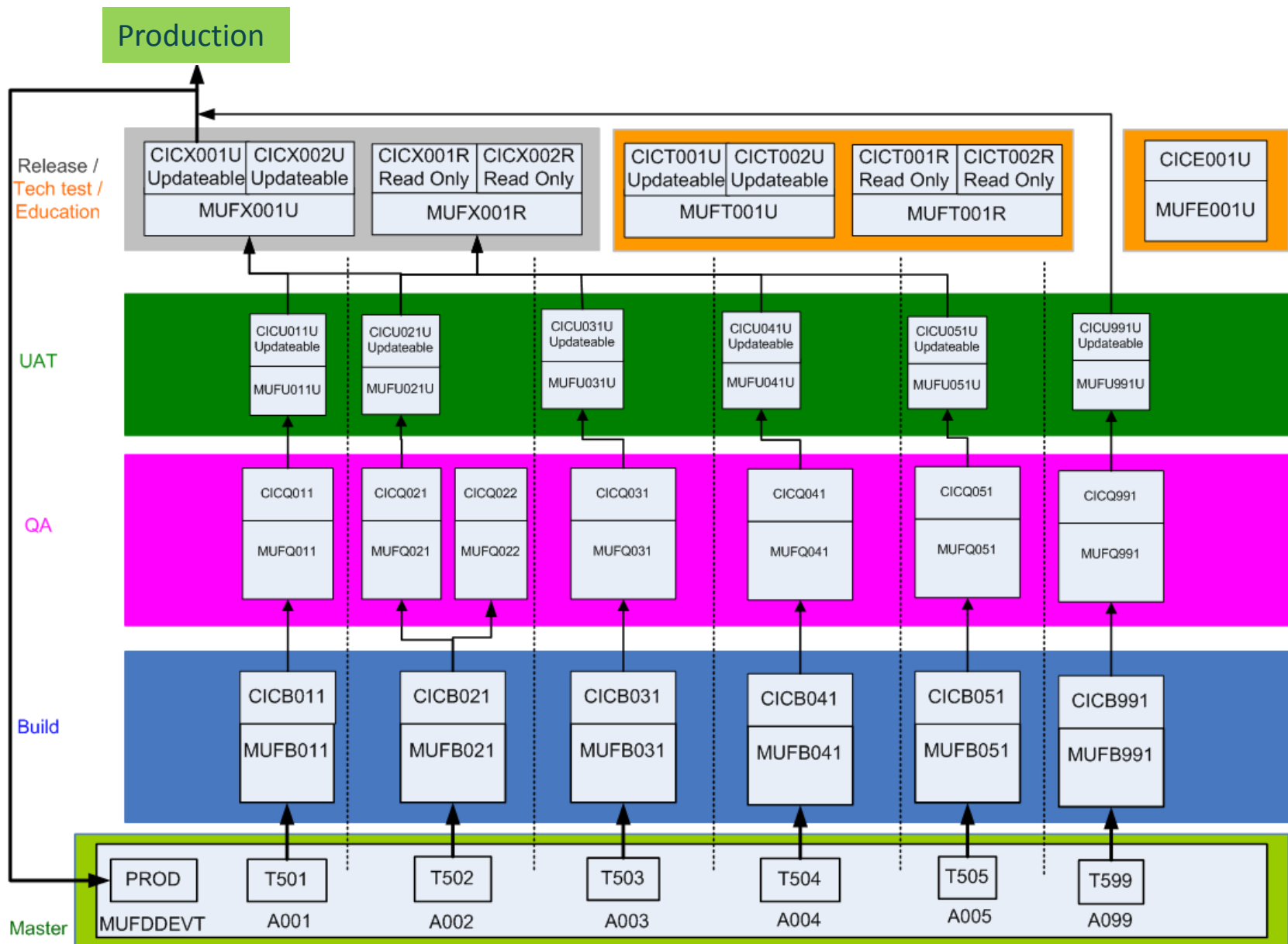
Also provides a true reflection of Production table structure definitions

Repository for Inventory and Cross-Reference applications

- Provides relationship information between entities that SCM does not recognise as standard

Separate 24x7 region for repository

- Provides resilience when one of the Build regions is unavailable



RIPPLE BACK

Implements Production changes in the other parallel environments

- A production release may contain changes from multiple packages in multiple streams

SCM handles 3GL automatically

Special requirements for entities that are not natively supported by SCM

- CA Ideal
 - “Identify” step in runtime environments
 - Source import/compilation/mark-to-prod in Development environments
- CA Datacom
 - Logical and Physical implementation, including reformatting

RIPPLE BACK

(CONTINUED)

SCM products have extra-cost features that may be suitable

- None came close to matching our requirements

Production release triggers generation of Ripple Back emails to each active Project Manager

- List of Changed components
 - Important for common subroutines/tables that may not explicitly be included in their packages
- List of Conflicting components
 - Which change is to take precedence?
- Full audit log of changes and decisions

RIPPLE BACK AND THE ENVIRONMENTS TEAM

Ensures consistency across parallel development environments

Project teams quickly convinced of the need to process Ripple Back immediately

- For all significant project implementations
- Can only be delayed temporarily if no conflicting components

“Environments team” are police of the environments estate

- SCM provides complete visibility of active projects
- Full audit trail of all entities
- Manage switches of connectivity as required
- First-line support of all environmental and SCM issues

PROJECT DELIVERED

- ✓ Introduce full parallel development environments
- ✓ Implement standard Software Configuration Management tool
- ✓ Implement Testing Centre of Excellence standards

- ✓ The major 2 year parallel development project has now completed all its significant core changes successfully without impacting the concurrent projects and production support

THANK YOU

ANY QUESTIONS?

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