



INTERSYSTEMS LEARNING SERVICES

# InterSystems Change Control



# **InterSystems Change Control**

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# ICC 200: Introduction to CCR



# Overview

- What is CCR?
- What is Perforce?
- Environments and Systems.
- Basic navigation within CCR.
- CCR Transport Basics.
- CCR Tiers.
- CCR workflow vocabulary.
- Little and often principle.
- Resources.



# Objectives

- Explain what the CCR application is and why it's important.
- Describe why CCR uses Perforce.
- Describe the following terms.
  - CCR Tier 0, 1, and 2.
  - CCR Systems and environments.
  - CCR Transport.
- Define the concept of little and often.
- Access the CCR online application and perform basic navigation.
- Access additional resources for learning and questions.



# Change Control Record Application (CCR)

- Custom workflow application built on InterSystems IRIS.
  - Application centrally hosted by InterSystems.
- Manages documentation, versioning, and flow of changes to application implementations.
  - Change = anything that could impact application functionality.
- “CCR” refers to application and individual change records.
- Many workflow options.
- Robust security model.
  - Only InterSystems employees can view records and code from other organizations.



# Perforce Helix

- Commercial Version Control System (VCS).
  - Database for flat file items.
    - Central storage for code and configuration.
  - Provides full versioning capabilities.
- CCR uses Perforce to:
  - Version exportable changes (code and configuration).
  - Automate merging of changes through workflow.
  - Provide snapshot of operating environment.
- Customers using CCR receive Perforce licenses.
  - Only able to access Perforce through CCR application.





# CCR Functionality

- Allow thorough documentation.
  - Fields for user to complete and automatically generated audit trails.
- Interact with Perforce on behalf of user.
- Facilitate movement of changes between Perforce and environments.
- Provide formal and recorded peer review.
- Provide formal and recorded authorization to move changes.



# CCR Scope of Use

- Can be used in any phase of project.
  - Early development with one environment to multi-environment workflow for business as usual changes.
- Users include anyone making, managing, or searching for changes made to an implementation.
  - Developers, project managers, support personnel.
- Organizations that use CCR include:
  - InterSystems.
  - Implementation partners / third party consultants.
  - End user customers.



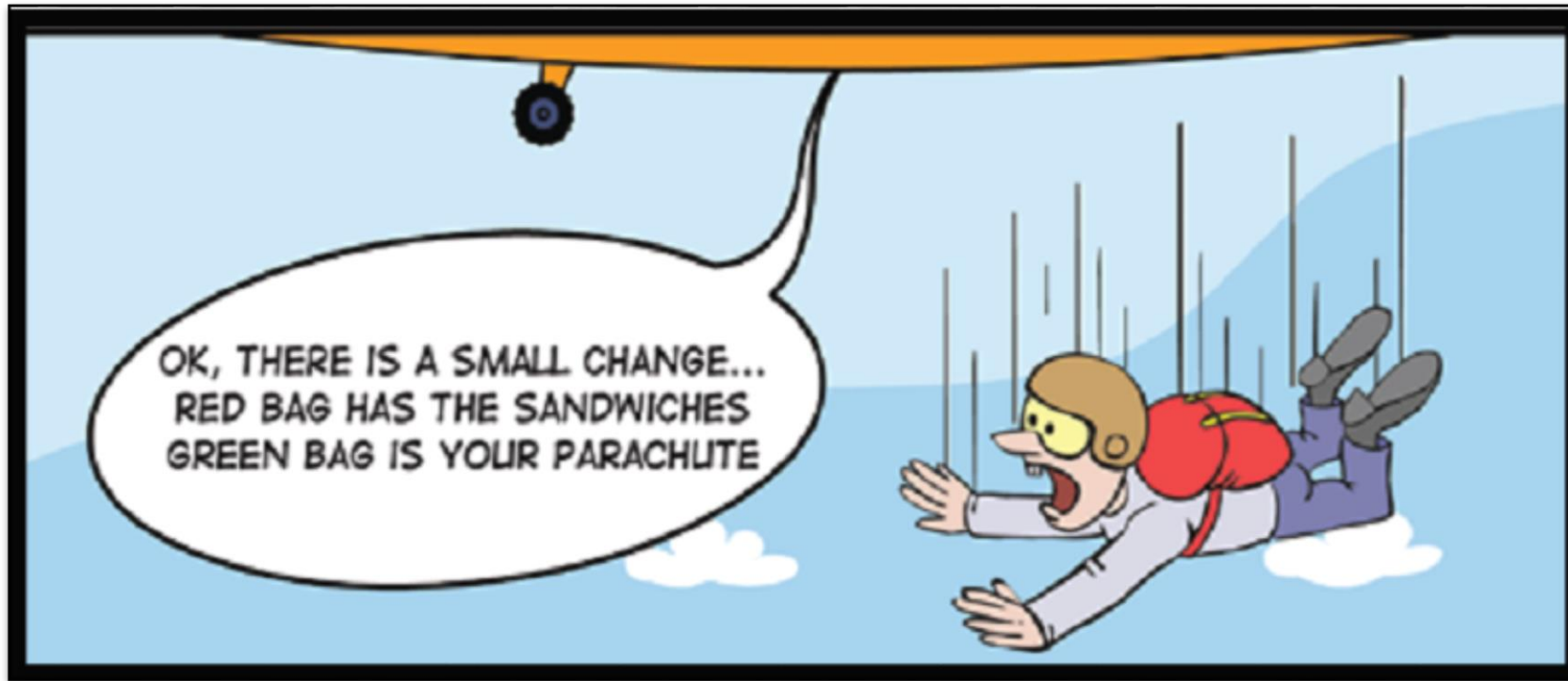
# CCR First Principles and Benefits of Using CCR

- CCR First Principles guide functionality of CCR.
  - Repeatable.
  - Revertible.
  - Discoverable.
- Benefits of using CCR include:
  - Identify recent changes during crisis.
  - Identify how to replicate changes in a new environment.
  - Catch missed implications and verify best practices followed.
  - Prevent unauthorized changes.



# Small Change ≠ Small Risk

- All changes should go through CCR process.
  - Including those involving non-exportable items.



# Part 1: CCR Environments and Systems



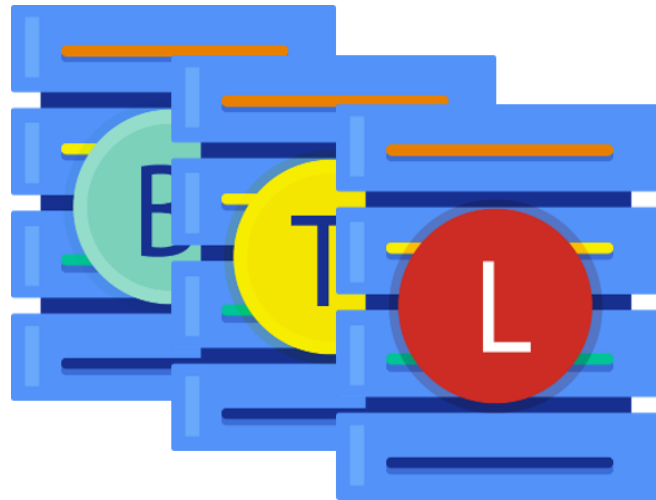
# CCR Environment

- Hardware and software that provides standalone copy of functionality for an application.
- Example: one namespace of IRIS for Health with application code and configuration, on server running Red Hat.



# CCR System

- All environments included in workflow for particular application.
- Systems can be defined to have 1, 2, 3 or 4 Primary Environments.



# 4 Possible Primary CCR Environments

- BASE.
  - Initial environment where all changes originate.
    - Exception: LIVE-only Systems.
- TEST.
  - Testing environment for validation.
- UAT.
  - Secondary testing environment.
- LIVE.
  - Production environment.





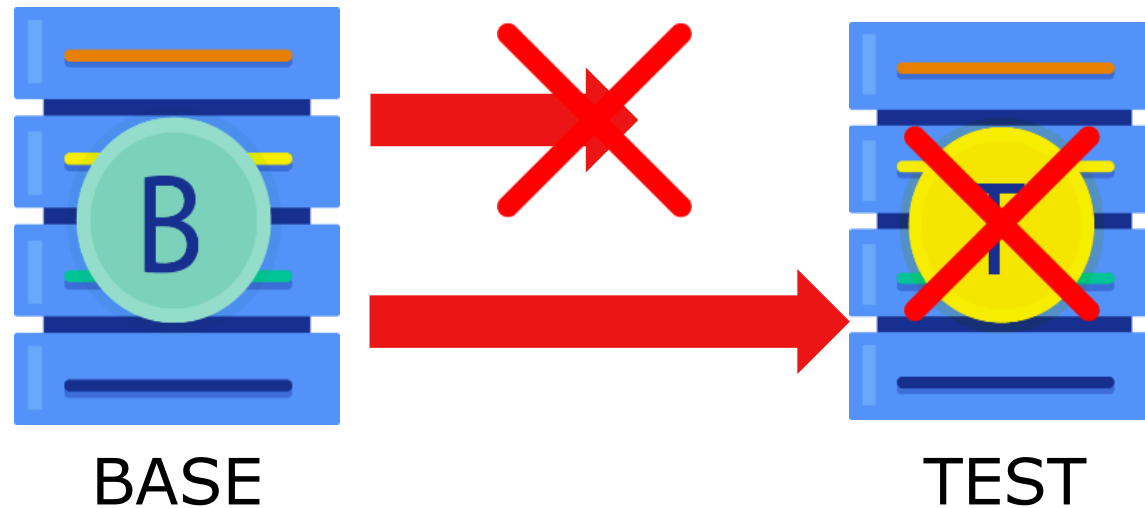
# Possible Environments in System

- 1 environment:
  - BASE or LIVE only.
- 2+ environments:
  - 1 must be BASE.
- Most common to have BASE, TEST, and LIVE.
- Non-BASE environments in multi-environment workflows:
  - Locked from manual changes outside CCR process.
  - Require customer authorization to receive changes.

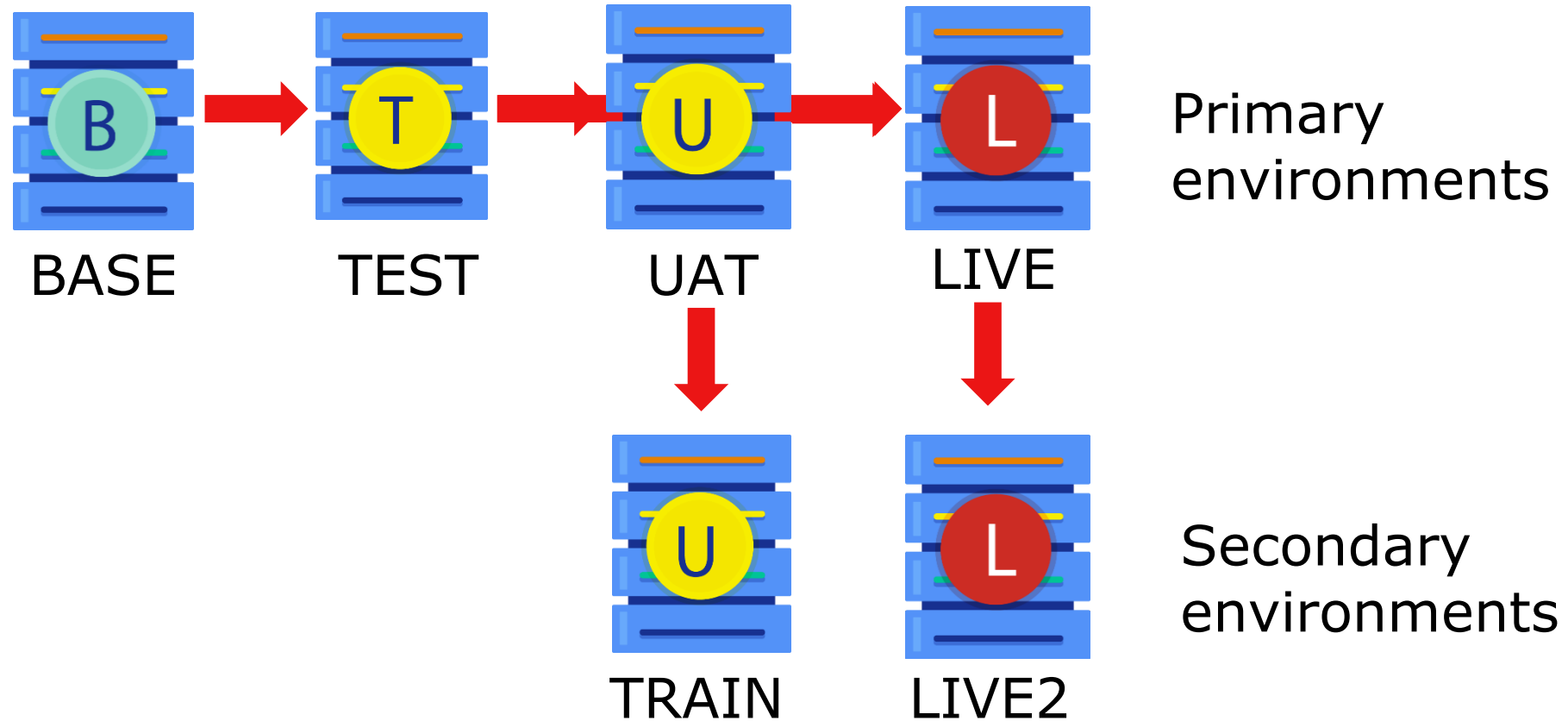


# Why multiple environments?

- Process of moving changes is tested.
  - Moving a change can fail.
- Functionality tested.
  - Isolating changed items helps verify functionality.
  - The change can fail to meet requirements or specifications.



# Change Flow through Environments



# Quiz: CCR Environments

Question:

What are the three most common CCR Primary Environments called?

- A. SCRATCH. 
- B. BASE. 
- C. TEST. 
- D. TRAIN. 
- E. UAT. 
- F. LIVE. 



# Quiz: CCR Environment Usage

## Question:

In which CCR environment must all changes originate if there are 3 environments in the System?

- A. TEST.
- B. BASE.
- C. LIVE.

## Answer:

B. BASE. All changes take place in BASE first prior to being moved to other environments in the CCR System.



# Part 2: Introduction to CCR Application



# Log In

- [ccr.intersystems.com](https://ccr.intersystems.com).
- Use InterSystems SSO credentials to login.
  - Same as WRC and [learning.intersystems.com](https://learning.intersystems.com).



# Demo

- Home page.
- Side navigation.
- System Details Export.





# CCR Home Page

☰ CCR | Home 👤 Sam Schafer (ISCX)

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**CREATE CCR**

SysCode:    
*optional*

**Organization:**

**Restrictions:**

- All (No restrictions)
- Only those I have been involved with
- Only where I am the current owner
- Only those I opened

**Options:**

- Include Inactive
- Critical Only
- Pending Peer Review

Show CCRs with  in their

CCR ID	System Code	Title	Related Items	Phase	State	Owner	Modify Date ↓	Org
<a href="#">BEST0006</a>	INTEROP2020	Setup Users		BASE	In_BASE	Sam Schafer 👤	2024-01-03 09:21:56 -05:00	ISCX

Items per page:  Items 1 - 1 of 1



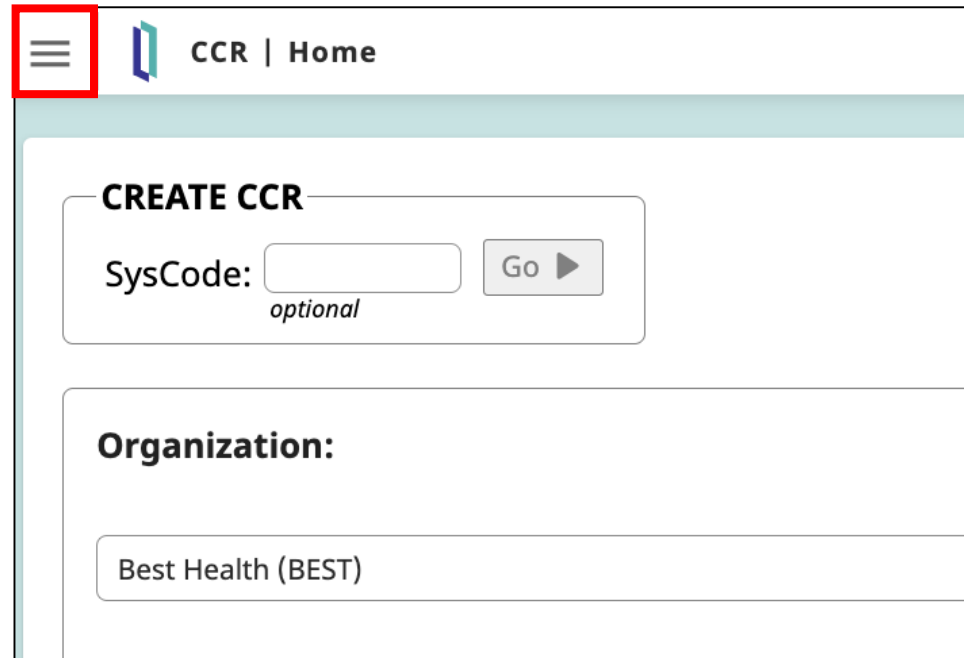
# CCR Home Page (cont.)

- Capabilities:
  - Create CCR.
  - Show CCRs for all Systems across Organization.
- Notable filters:
  - Restriction of Only those I have been involved with.
  - Option to Include Inactive.
    - Closed, cancelled, and merged CCRs not shown by default.
  - Search based on Title or Description.



# Navigation Menu

- Available from top-left corner of every page.



The screenshot shows the top-left corner of a web application interface. A red square highlights a hamburger menu icon (three horizontal lines) in the top-left corner. To its right is the text "CCR | Home" next to a logo. Below the header, there is a section titled "CREATE CCR" containing a form with a "SysCode:" label, an input field, and a "Go" button with a play icon. The word "optional" is written below the input field. Below this is a section titled "Organization:" with a dropdown menu showing "Best Health (BEST)".



# Navigation Menu (cont.)

The screenshot shows a navigation menu with the following items: Home, Go to..., CCR: CCR Number..., System: SysCode..., Users, Organizations, CCR Reports, Systems, Groups, Release Info, Standard Changes, and Peer Review Docs. Red arrows point from callout boxes to the CCR and System input fields, and a bracket groups the items from Users to Peer Review Docs.

Navigate to CCR:  
enter CCR ID

Navigate to System:  
enter SysCode or  
SiteCode/SysCode.

Navigation links.

The screenshot shows a 'Documentation' menu with the following items: Documentation, Performce Documentation, TrakCare Documentation, FAQs, Known Issues, ICC Training PDFs, and ISC Quick Launch. Red arrows point from callout boxes to the 'Resources.' and 'Link to PDFs of all PowerPoints.' items.

Resources.

Link to PDFs of  
all PowerPoints.



# CCR FAQ

- Number of unread FAQ shown in navigation menu.
  - Great resource for delta training!
- Notification disappears after viewing the CCR FAQs page.
- Any InterSystems employee can update or create FAQ.

**Documentation**

**Perforce Documentation**

**TrakCare Documentation**

**FAQs** **2**

**Known Issues**



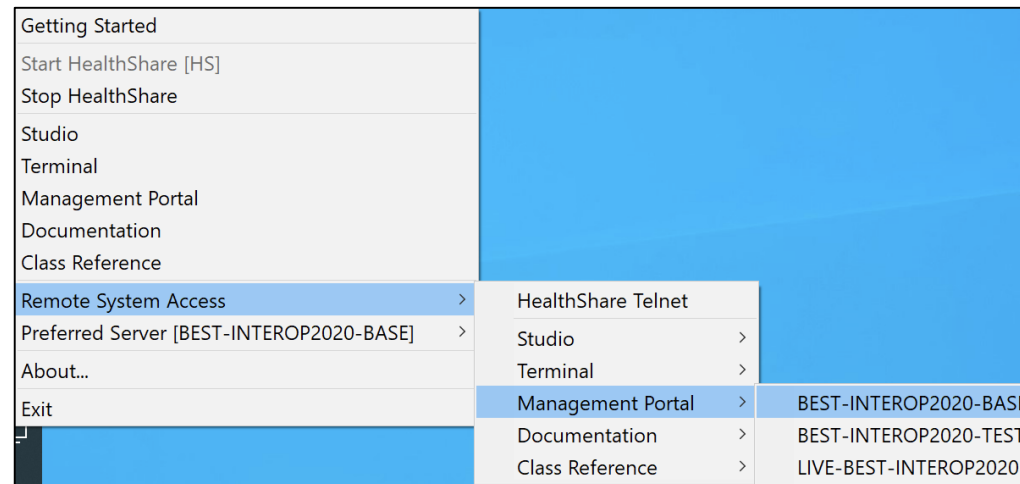
# CCR System Details Page

The screenshot shows the CCR System Details page for 'Integration (Integ)'. The top navigation bar includes a menu icon, the text 'CCR | System', and a user profile for 'Sam Schafer (ISCX)'. The main content area is divided into sections: 'Organization' (InterSystems University Training Org (ISCU)), 'System' (Integration (Integ)), and a 'Show Deprecated' checkbox. Below this is the 'Integration (Integ)' section, which includes a 'Create New CCR' button, 'System Code: Integ', 'Perforce Branch: //custom\_ccrs/us/ISCU/Integ/', and 'Workflow Flags: BASE; TEST; UAT; LIVE;'. To the right is the 'Environment Details' section, which contains a table of environments: 'BASE' and 'TEST', each with a dropdown arrow. Two buttons, 'Export (Studio)' and 'Export (VSCode)', are located above the environment list. A red box highlights the 'Export (VSCode)' button, with a red arrow pointing to it from a text box that says 'Export VS Code - ObjectScript Workspace. Double click file to open in VS Code.' Another red box highlights the 'Export (Studio)' button, with a red arrow pointing to it from a text box that says 'Windows only: Export registry file of environments for InterSystems Launcher.'



# Windows: Configure Launcher

- To configure the InterSystems launcher for remote system access to environments:
  - Go to System Details page for desired System.
  - Click Export button.
  - Run registry file (administrator credentials required).



# CCR Record

[View in Classic UI](#) [help](#) [merge](#) [clone](#) [reassign](#) [changeSpec](#) [cancel](#) **Next Transition:** [markPREPComplete](#)

**InPREP** ▶ InBASE ▶ BASEPendingPeerReview ▶ BASEComplete ▶ PendingManualMoveToTEST ▶ InTEST ▶ TESTPendingPeerReview ...

## BEST0012 - New License Key Activated

<b>Current State</b>	In_PREP	<b>Phase</b>	PREP
<b>Organization</b>	Best Health (BEST)	<b>System</b>	<a href="#">Interoperability 2020 (INTEROP2020)</a>
<b>Open Date</b>	May 17, 2023 14:08	<b>Opened By</b>	<a href="#">smith, john</a>
<b>Responsible Org</b>	Best Health (BEST)	<b>Owner</b>	<a href="#">smith, john</a>

**Description**

Current license key expires at the end of the month. Activating new license key that expires April 4, 2025

<b>Priority</b>	Normal	<b>CCRTier</b>	0 - Documentation Only
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**iService Ticket(s)**

**JIRA(s)**

**Prerequisite CCR(s)**

**Related CCR(s)**

**Tech Help(s)**

**Type - Subtype** Application Customization - InterSystems IRIS

**Updates CC List**





# Part 3: Introduction to CCR Usage Tiers



# CCR Transport – What does it do?

- Mechanism for moving changes between environments, CCR, and Perforce.
- Updates in BASE flagged as changed and exported.
- Exported items transported from BASE into Perforce (source control).
- Items transported out of source control into next environment.



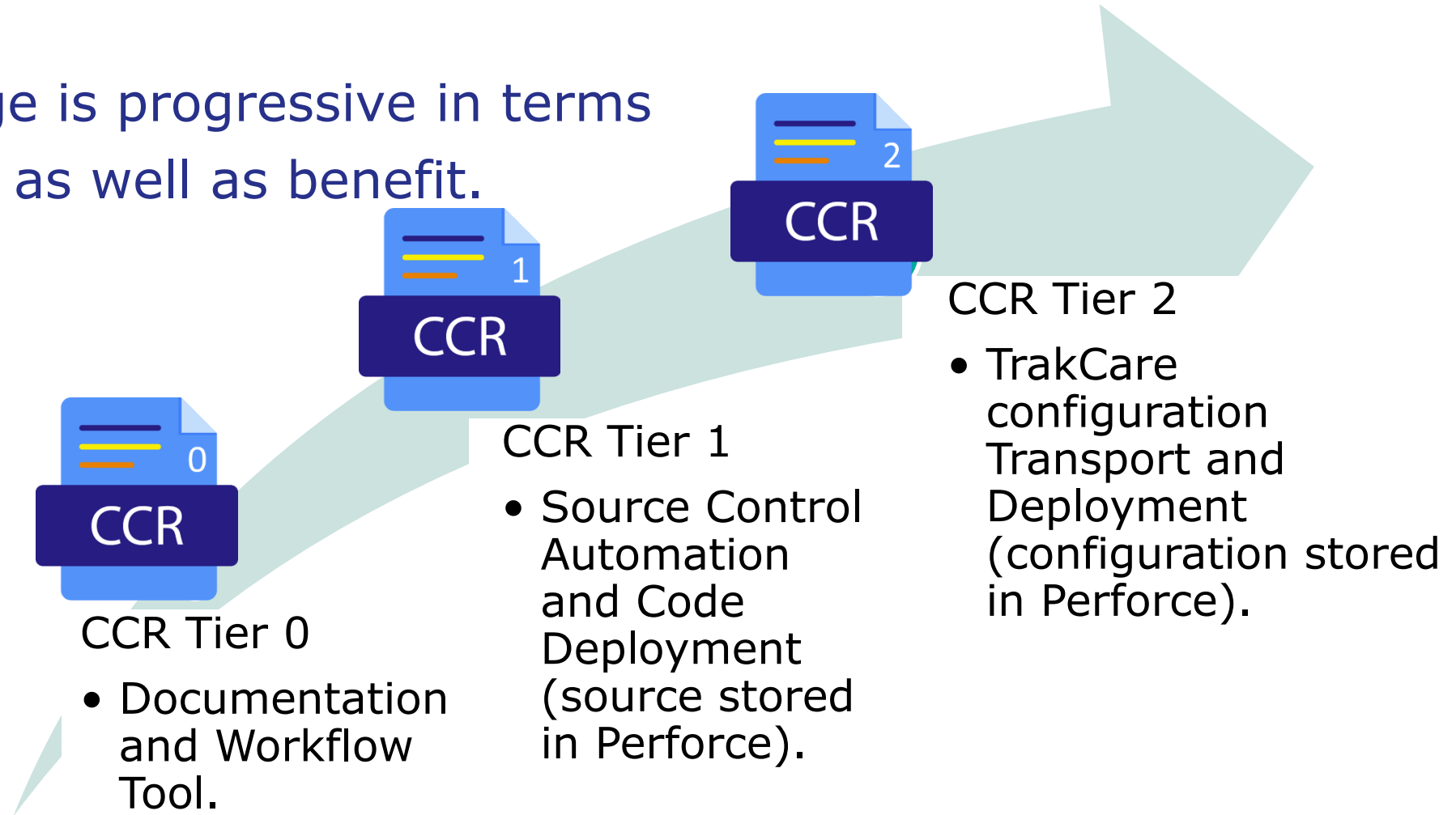
# CCR Usage Tiers

- There are different tiers of CCR usage for a project.
  - Provides flexibility for many types of applications to use CCR.
- Projects should determine their appropriate Tier of usage.
- Documentation and training applicable to a Tier should be fully understood prior to enabling that Tier.



# CCR Usage Tiers (cont.)

- Tiered usage is progressive in terms of complexity as well as benefit.





# Example Tier 0 Changes

- File system path changes.
- Memory settings.
- User creation.
- Patching.
- Upgrades.
- Any manual change to the environment or System.



# Example Tier 1 Changes

- Classes.
- Routines.
- Reports.
- CSP Pages.
- JavaScript.
- Integration logic.
- DTL.
- Productions.

# Example Tier 2 Changes

- TrakCare Code Tables
  - Layouts.
  - Security groups.
  - Workflow.

# Quiz: CCR Tiers and Source Control

## Question:

At which CCR Tier(s) are changes versioned and stored in Perforce? Select one.

- A. CCR Tier 0.
- B. CCR Tier 1.
- C. CCR Tier 2.
- D. CCR Tiers 0 and 1.
- E. CCR Tiers 1 and 2.
- F. CCR Tiers 0, 1 and 2.





# Quiz: CCR Tiers and Source Control (cont.)

Answer:

E. CCR Tiers 1 and 2.

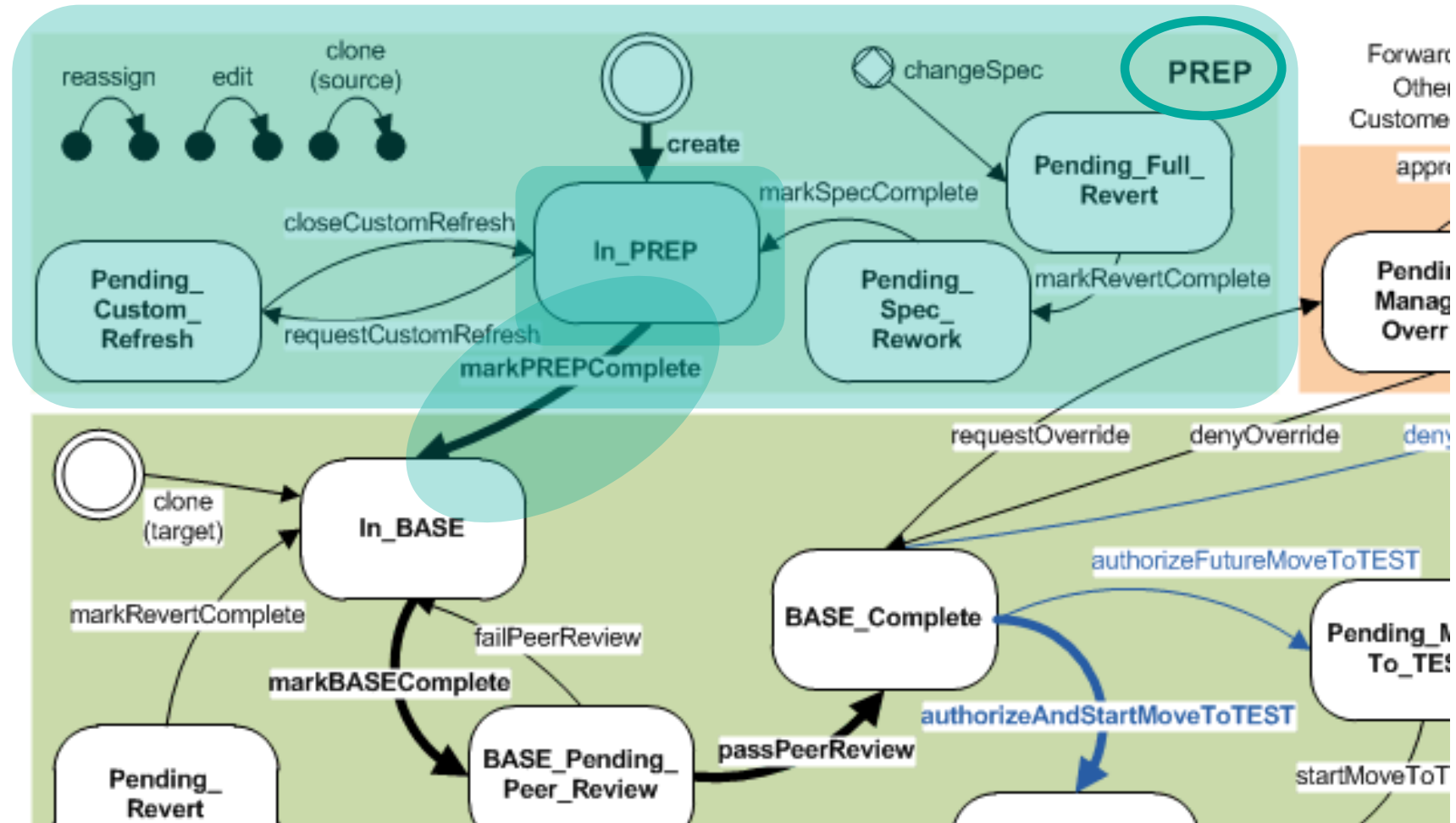


# Part 4: CCR Workflow Overview



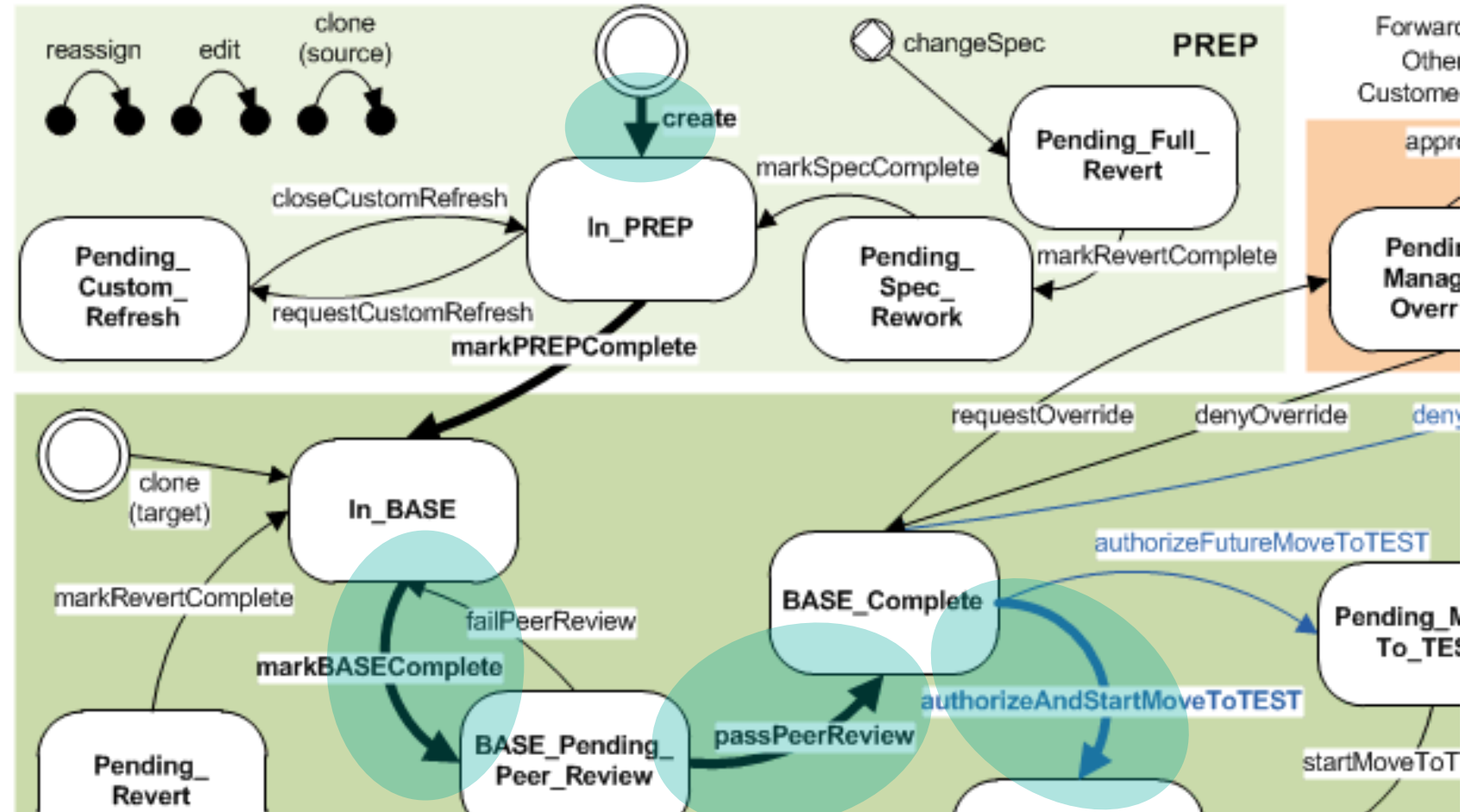
# CCR Workflow Vocabulary

- State = current position within workflow.
  - In\_PREP.
- Phase = collection of states.
  - PREP.
- Transition = move between CCR states.
  - markPREPComplete.



# CCR Workflow Vocabulary

- Default workflow refers to typical workflow for most CCRs in System.



# Part 5: Best Practices



# Principle of Little and Often

- Critical to successful usage of CCR.
- Minimize number of changes in 1 CCR.
  - All or none of the changes in a CCR progress through the workflow.
    - Difficult to isolate 1 change to progress separately.
  - Reduces the probability of blocked workflow due to dependencies.
  - Enables clear documentation of the impact of a CCR.
    - Better titles and descriptions due to more narrowly defined changes.
- Progress CCRs quickly (but safely).
  - Do not allow CCRs to remain mid-workflow for too long (weeks).
  - Minimize time between starting change and completing in all environments.



# Part 6: Resources



# Developer Community

- [community.intersystems.com](https://community.intersystems.com).
- Please post your questions so that others may benefit from answer too.
- When creating post, enter group corresponding to InterSystems product and CCR for tag.

### Related Group and Topics

**Group \***

HealthShare ✕

**Tags**

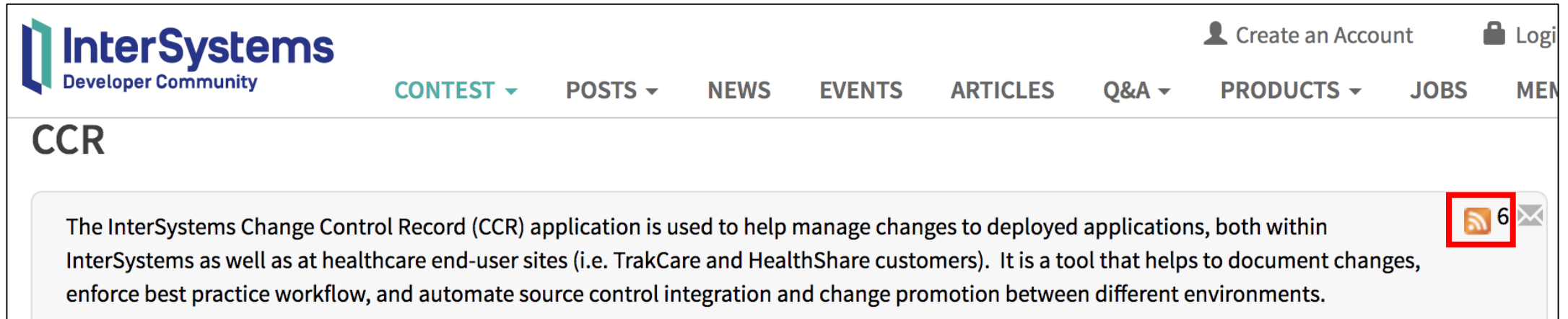
CCR ✕





# Developer Community (cont.)

- To subscribe to posts with CCR tag:
  - Go to [community.intersystems.com/tags/ccr](https://community.intersystems.com/tags/ccr).
  - Click envelope icon on right.





**InterSystems**  
Developer Community

CONTEST ▾ POSTS ▾ NEWS EVENTS ARTICLES Q&A ▾ PRODUCTS ▾ JOBS MEM

## CCR

The InterSystems Change Control Record (CCR) application is used to help manage changes to deployed applications, both within InterSystems as well as at healthcare end-user sites (i.e. TrakCare and HealthShare customers). It is a tool that helps to document changes, enforce best practice workflow, and automate source control integration and change promotion between different environments.

 6 



# Learning Resources

- [All Course Content PDF.](#)
  - Merge of all PDFs of all training slides.
  - Also available from navigation menu.
- InterSystems Change Control (ICC) online learning.
  - Go to [learning.intersystems.com](https://learning.intersystems.com) and search for CCR.
  - Growing catalog of courses available, new courses announced on Developer Community.
  - No exercises available online.



# Learning Resources (cont.)

- CCR Online FAQs.
  - Major functionality changes and updates posted here.
- CCR Online Documentation.
  - See full workflow diagram under State Diagram tab.



# Additional InterSystems-Internal Resources

- For InterSystems Employee use:
- [ccrusers@InterSystems.com](mailto:ccrusers@InterSystems.com) internal mailing list for CCR questions
  - All users of CCR should join this mailman list to be kept up to date with CCR-related announcements, enhancements, outage notifications, etc.
  - InterSystems users are expected to keep their customer in the loop on new enhancements, planned outages, etc.



# Additional InterSystems-Internal Resources

- [perforce@InterSystems.com](mailto:perforce@InterSystems.com) internal mailing list for Perforce questions.
- [iknow/sites/AppS/CCR](#) Application Project site on iKnow.



# Summary

- What are the key points for this module?



# Demonstration

- Overview of using CCR to document and progress a change.

