



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.
  - Complete copy of code in 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 and benefits of CCR.
  - Repeatable.
    - Identify how to replicate changes in a new environment.
    - Catch missed implications and verify best practices followed.
    - Prevent unauthorized changes.
  - Revertible.
    - Ensure implementation of change allows for change to be undone.
  - Discoverable.
    - Identify recent changes during crisis.
- CCR functionality enables these 3 principles.



# Small Change $\neq$ 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.



# 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.



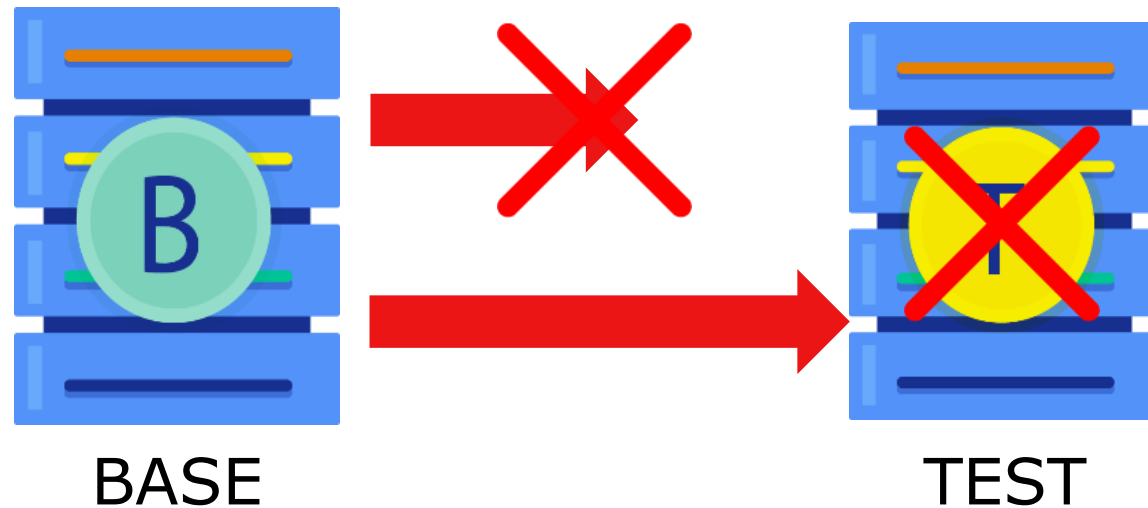
# Possible Environments in System

- 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.

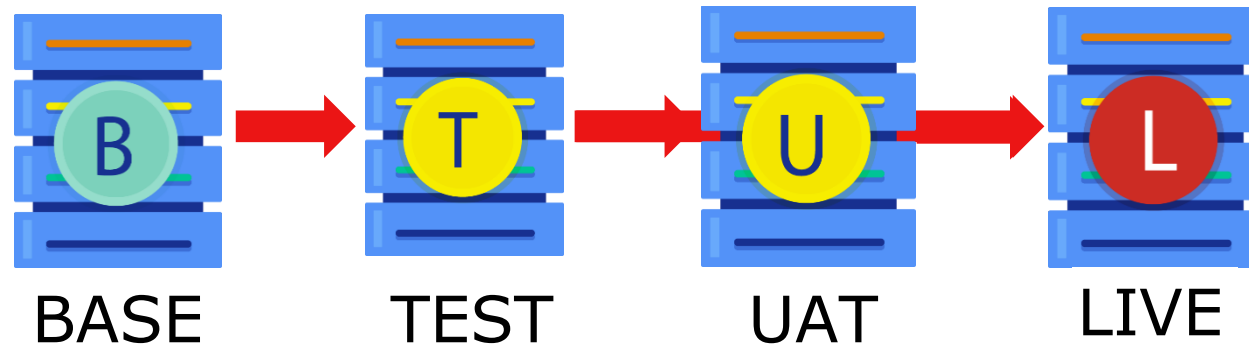


# Why multiple environments?

- 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.

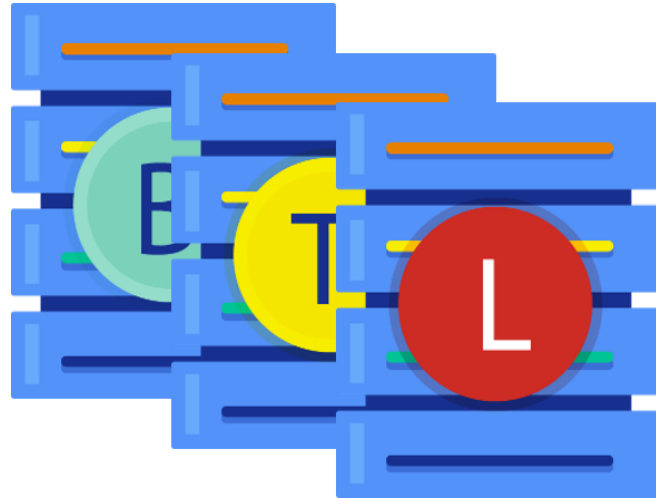


# Change Flow through Environments



# CCR System

- All environments included in workflow for particular application.
- Systems can be defined to have 1, 2, 3 or 4 Primary 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 iService and [learning.intersystems.com](https://learning.intersystems.com).



# Demo

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



# CCR Home Page

CREATE CCR

SysCode: 

Go ▶

*optional*

Search CCRs

Save Search

Organization:

InterSystems Corporation (ISCX) ▼

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

Save Filters and Pagination Options

CCR ID ^	System Code ^	Title ^	Related Items ^	Phase ^	State ^	Owner ^	Modify Date v	Org ^
<a href="#">ISCX28025</a>	LSApps	Upgrade LSAPPS to IRIS 2023.1.4	<a href="#">APPS-23640</a>	BASE	BASE_Complete	Joanna Masin-Buck	2024-04-30 11:57:58 -04:00	ISCX



# 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

Current State

In\_PREP

Organization

Best Health (BEST)

Open Date

May 17, 2023 14:08

Responsible Org

Best Health (BEST)

Phase

PREP

System

[Interoperability 2020 \(INTEROP2020\)](#)

Opened By

[smith, john](#)

Owner

[smith, john](#)

Description

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

Priority

Normal

CCRTier

0 - Documentation Only

iService Ticket(s)

JIRA(s)

Prerequisite

CCR(s)

Type - Subtype

Application Customization - InterSystems IRIS

Updates CC List

Tech Help(s)

Related CCR(s)

22 | InterSystems Change Control | Introduction to CCR | ICC200 v4.1

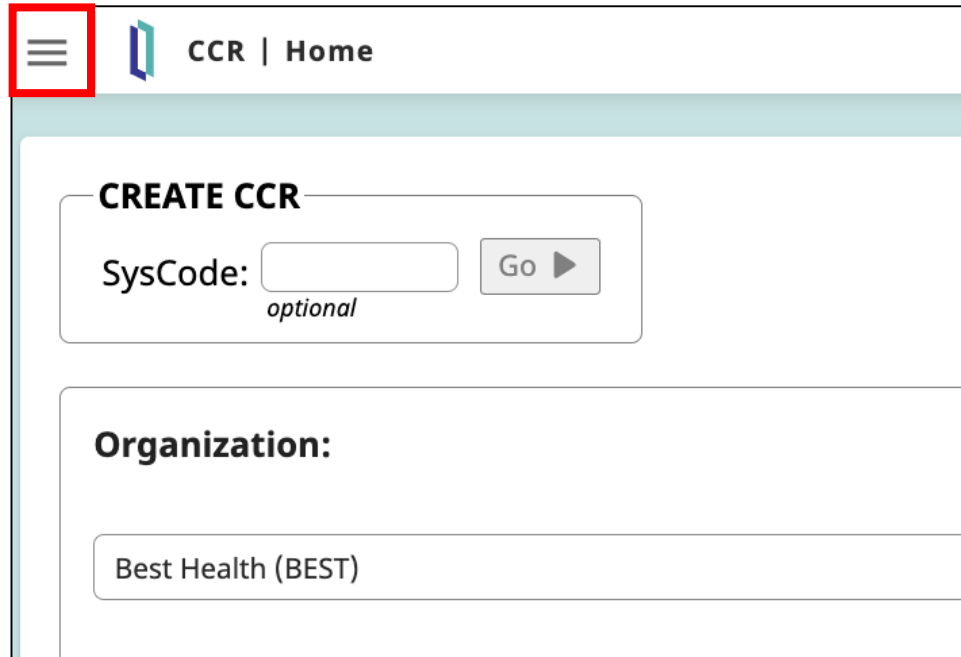
# CCR Home Page (cont.)

- 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.

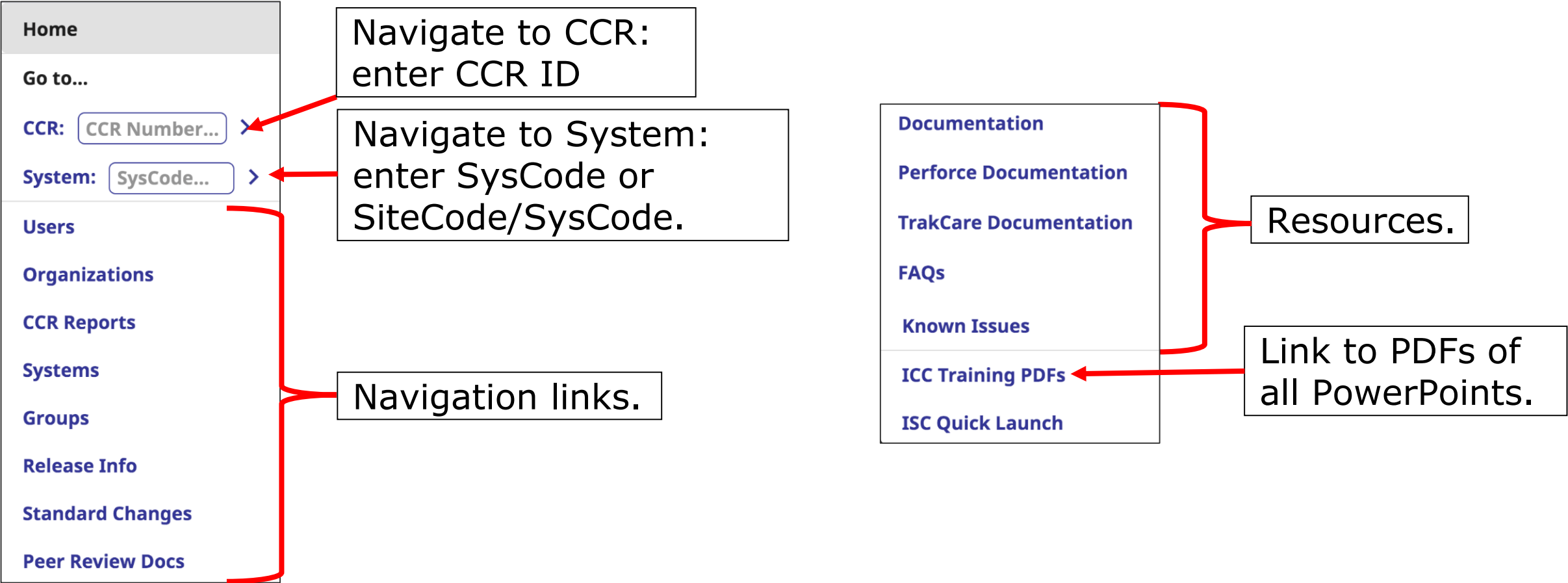


The screenshot shows the top-left corner of the CCR | Home page. A red box highlights the navigation menu icon, which consists of three horizontal lines. To the right of the icon is the text "CCR | Home". Below the header, there is a form with the following elements:

- CREATE CCR**
- SysCode:**  **Go** 
- optional*
- Organization:**
- 



# Navigation Menu (cont.)



# CCR FAQ

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

**Documentation**

**Perforce Documentation**

**TrakCare Documentation**

**FAQs** **2**

**Known Issues**



# CCR System Details Page

- Contains configuration details for each CCR System.
- Menu > Systems.

System

LSApps

☐ Show Deprecated

Info

CCRs

Advanced Controls

Recent Changelists

Field Audit

Undeployed Itemsets

LSApps (LSApps)

+ Create CCR

System Code

LSApps

Perforce Branch

//custom\_ccrs/us/ISCX/LSApps/

Workflow Flags

BASE; TEST; LIVE

System Name

LSApps

Description

%SYS namespace for Learning Services applications (and Code)

Product

Cache

CCR Tier

1 - Source Control

Environment Details

⌵ Exp

BASE

✓

TEST

✓

LIVE

✓

Architect Controls



# 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.



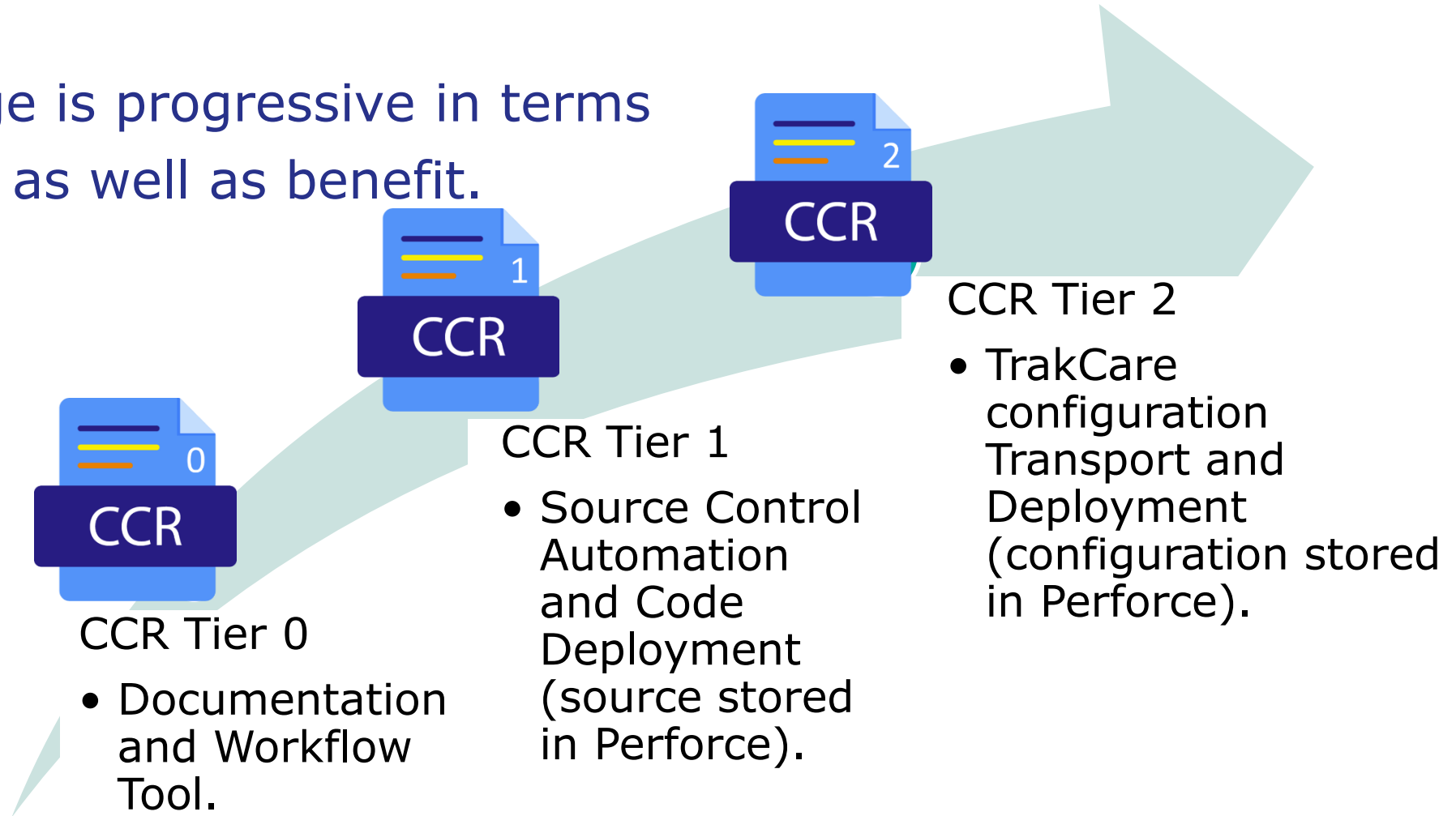
# CCR Usage Tiers

- 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.

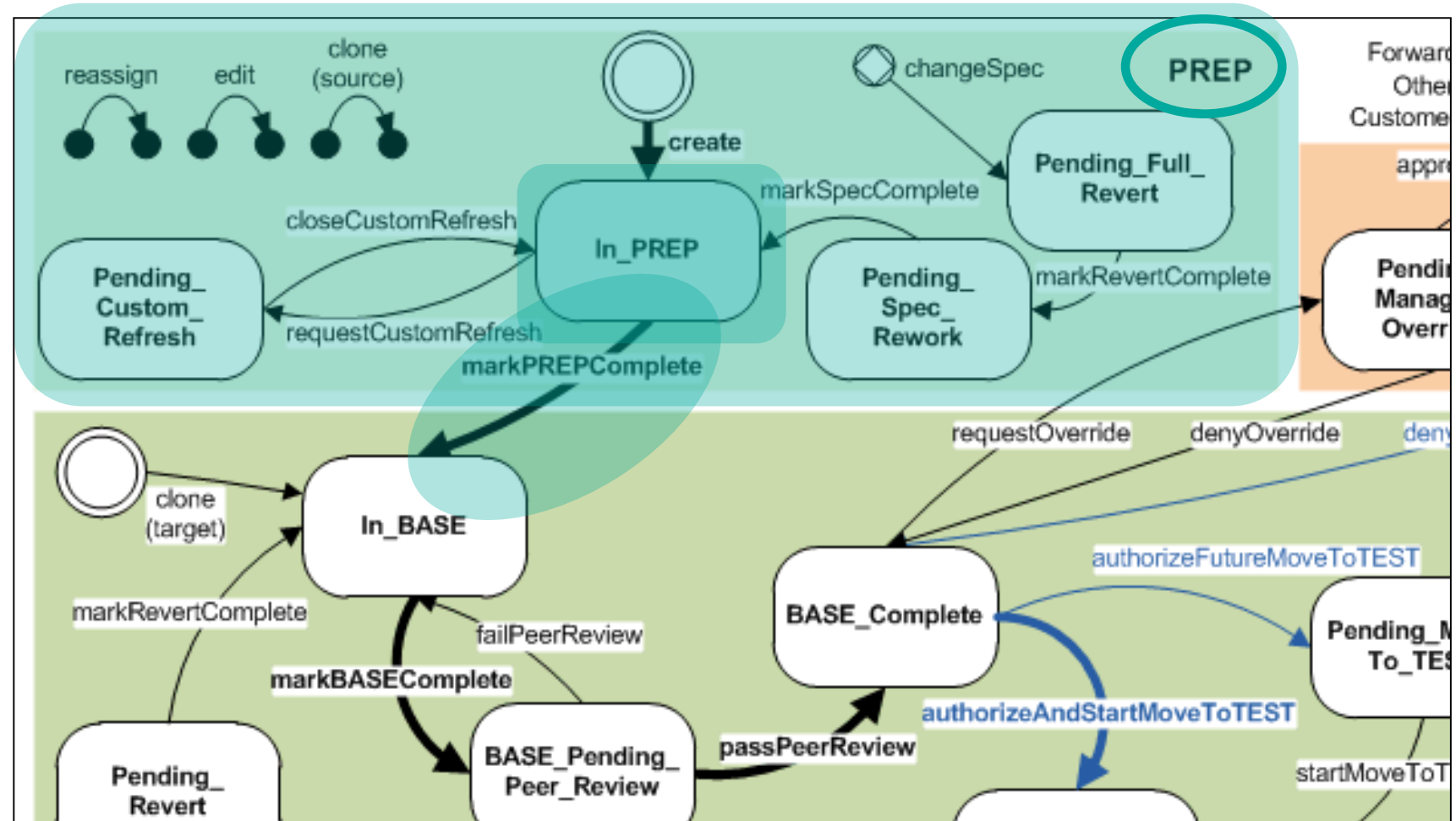


# Part 4: CCR Workflow Overview



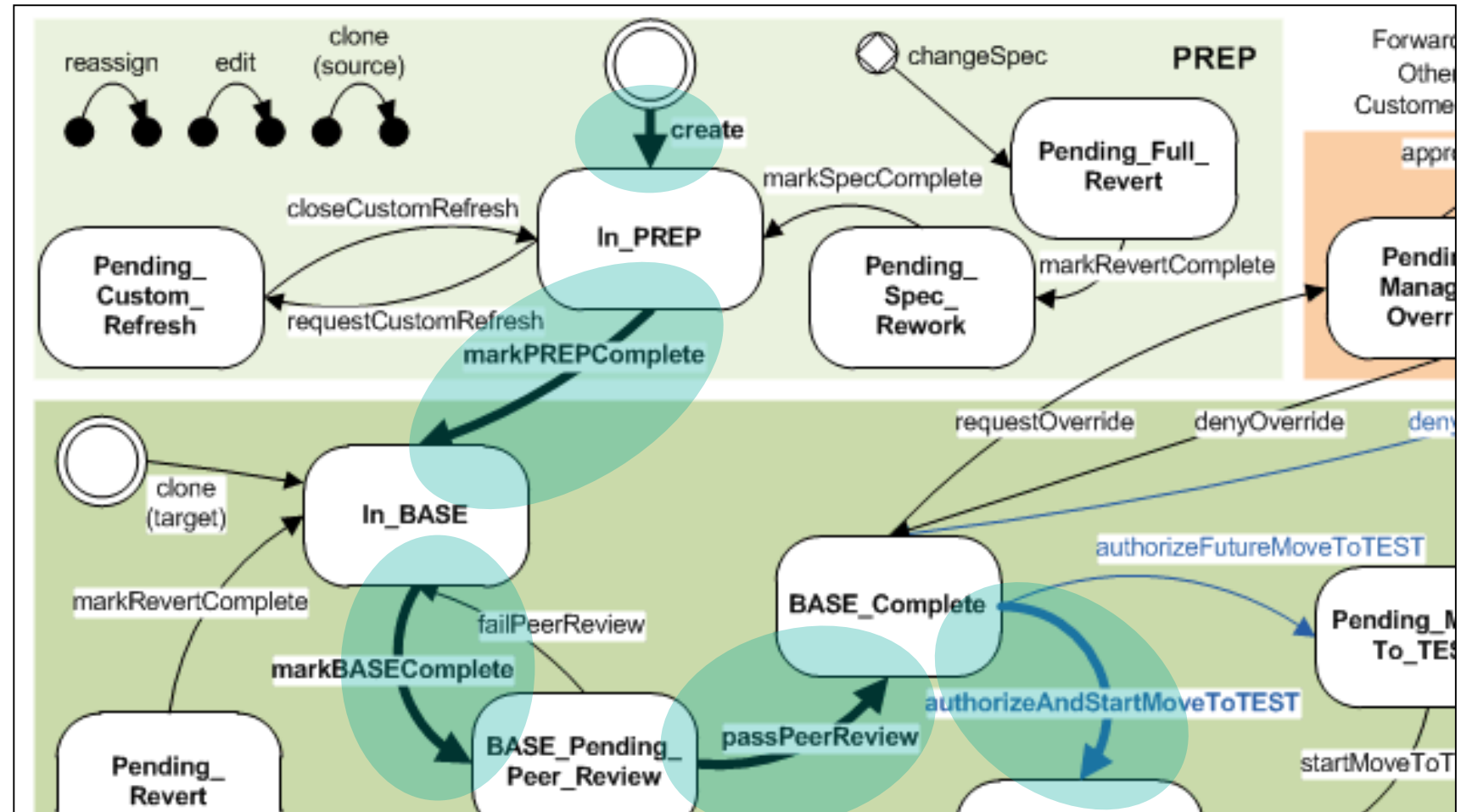
# CCR Workflow Vocabulary

- 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: Principle of Little and Often



# 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 ✕

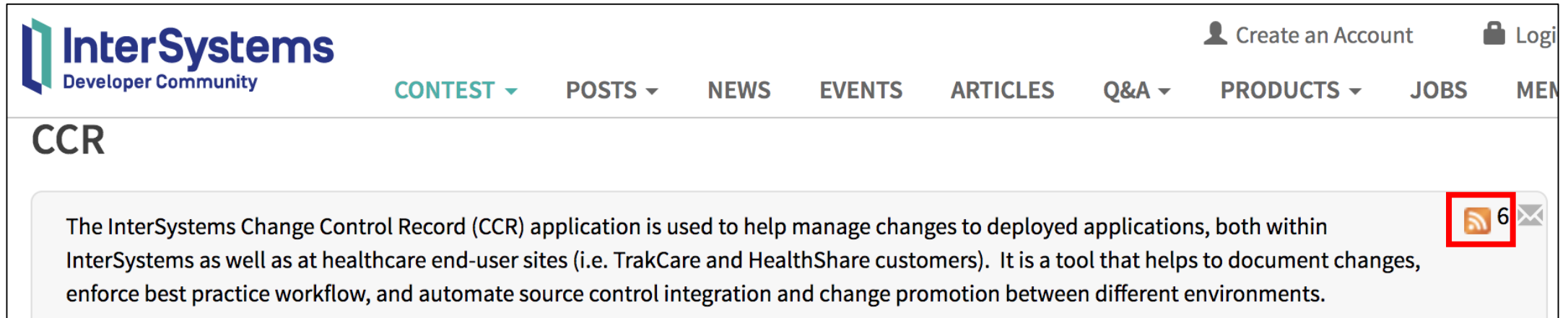
**Tags**

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.



# 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.

