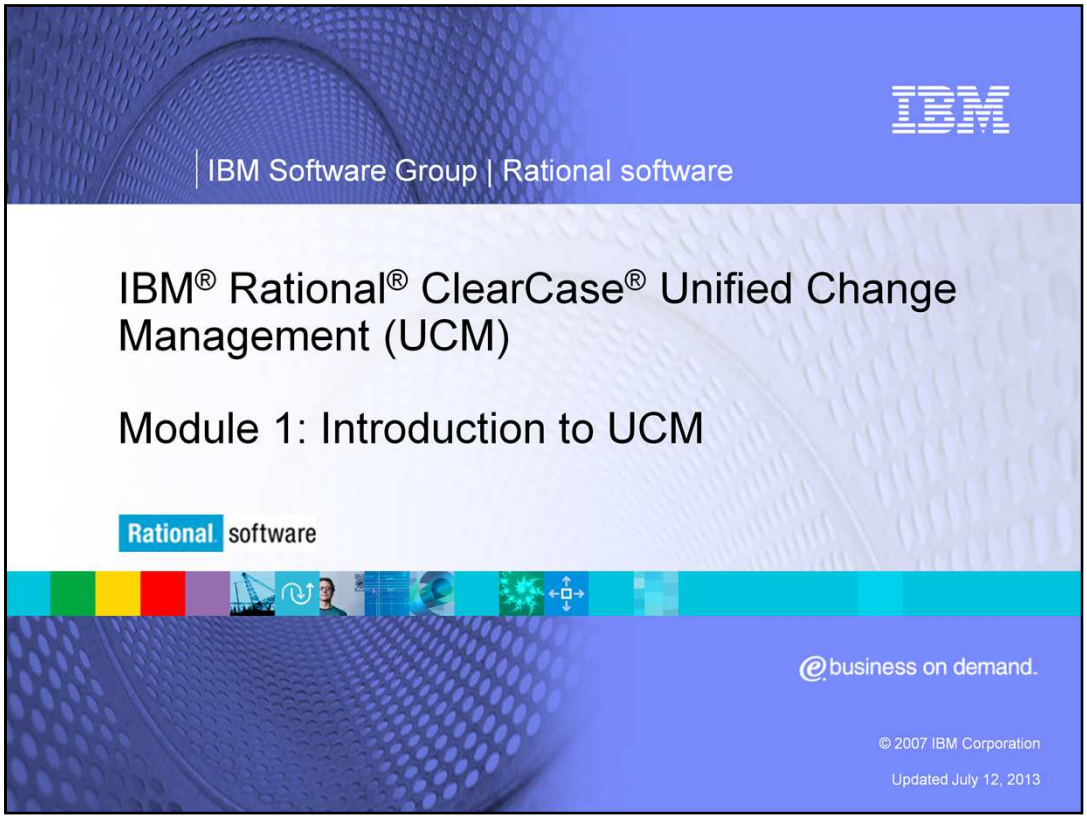
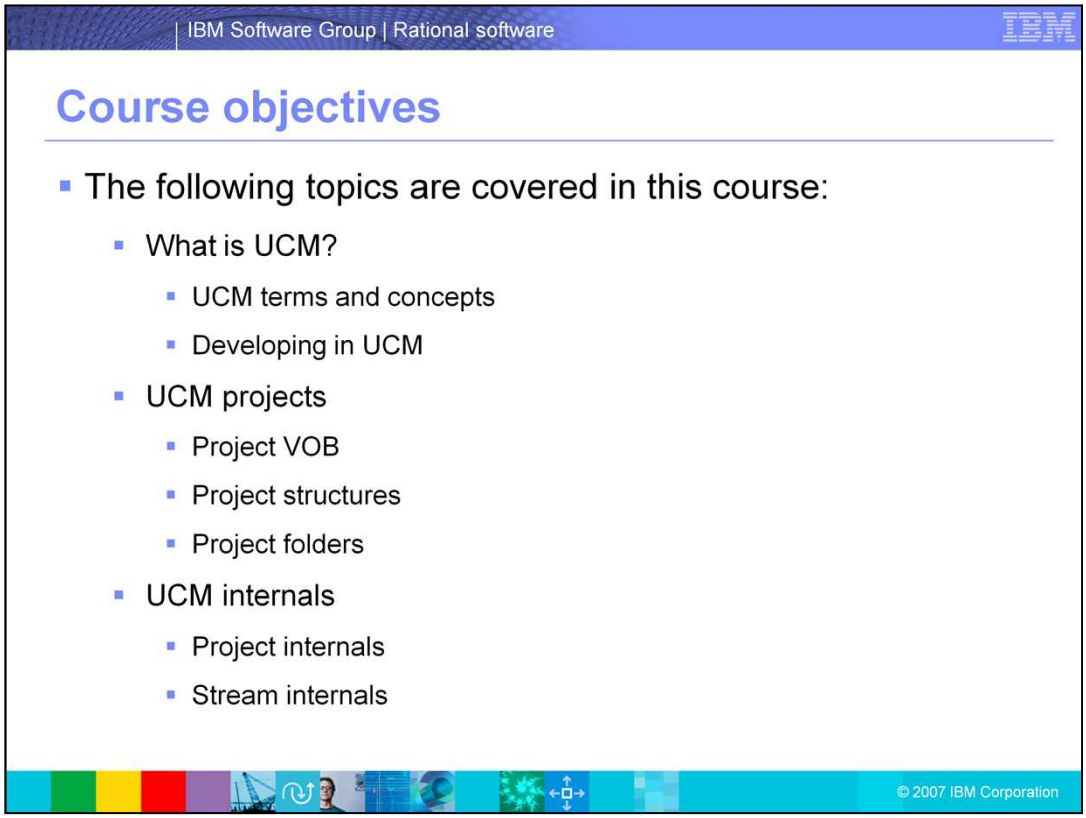
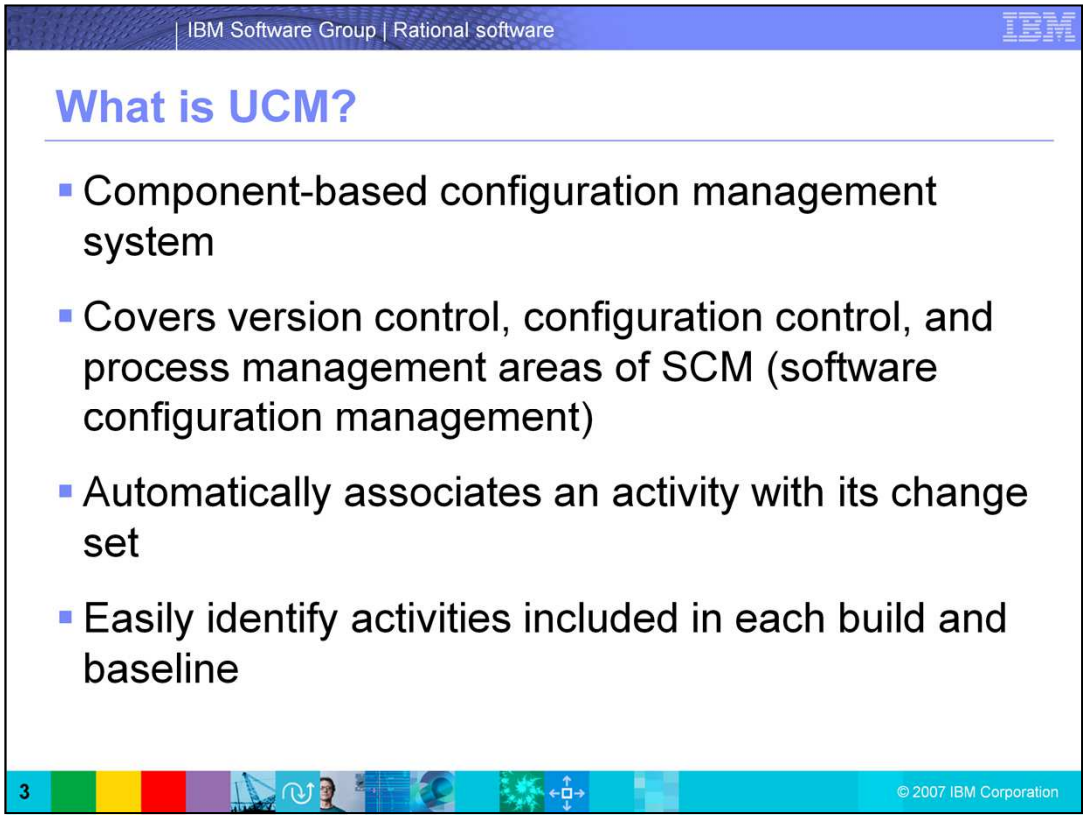


This presentation will cover Unified Change Management, or UCM.

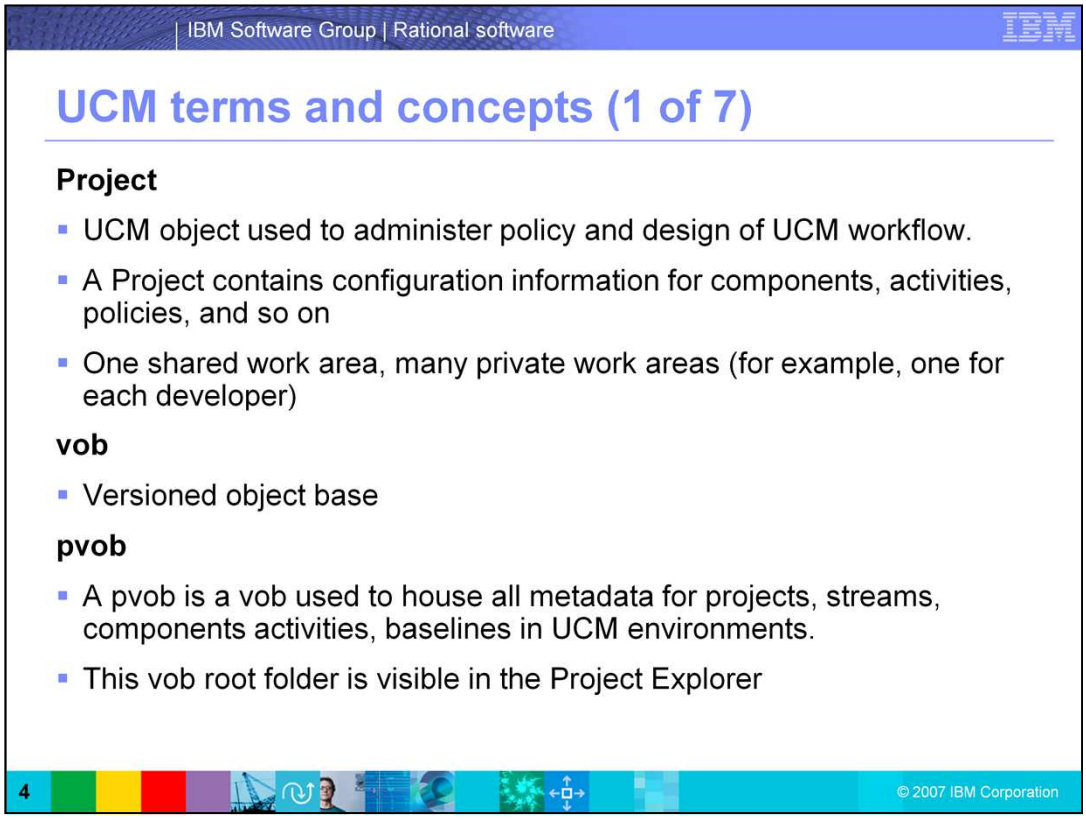


This Introduction to UCM course will begin with an introduction to UCM, then cover UCM terms and concepts, followed by Developing in UCM. The next module covers UCM projects including the project VOB, project structures, and project folders. The last module covers UCM internals including project internals and stream internals.



IBM Rational ClearCase Unified Change Management is a component-based configuration management system. When you specify the component architecture for a UCM project, it is useful to have a sense of how the number of components in the project affects the performance of the commands typically used by developers, project managers, and release engineers.

ClearCase UCM covers the *version control, configuration control,* and *process management* areas of the SCM domain. UCM raises the level of abstraction to manage changes in terms of activities, rather than manually tracking individual files. UCM automatically associates an activity with its change set, which encapsulates all project artifact versions used to implement the activity. This enables you to easily identify activities included in each build and baseline.



For the first-time user of ClearCase UCM, the terminology can sometimes be a bit overwhelming but do not be intimidated by it. For every tool there is a learning curve, some steeper than others. The first step is to start with terminology and jargon used with UCM.

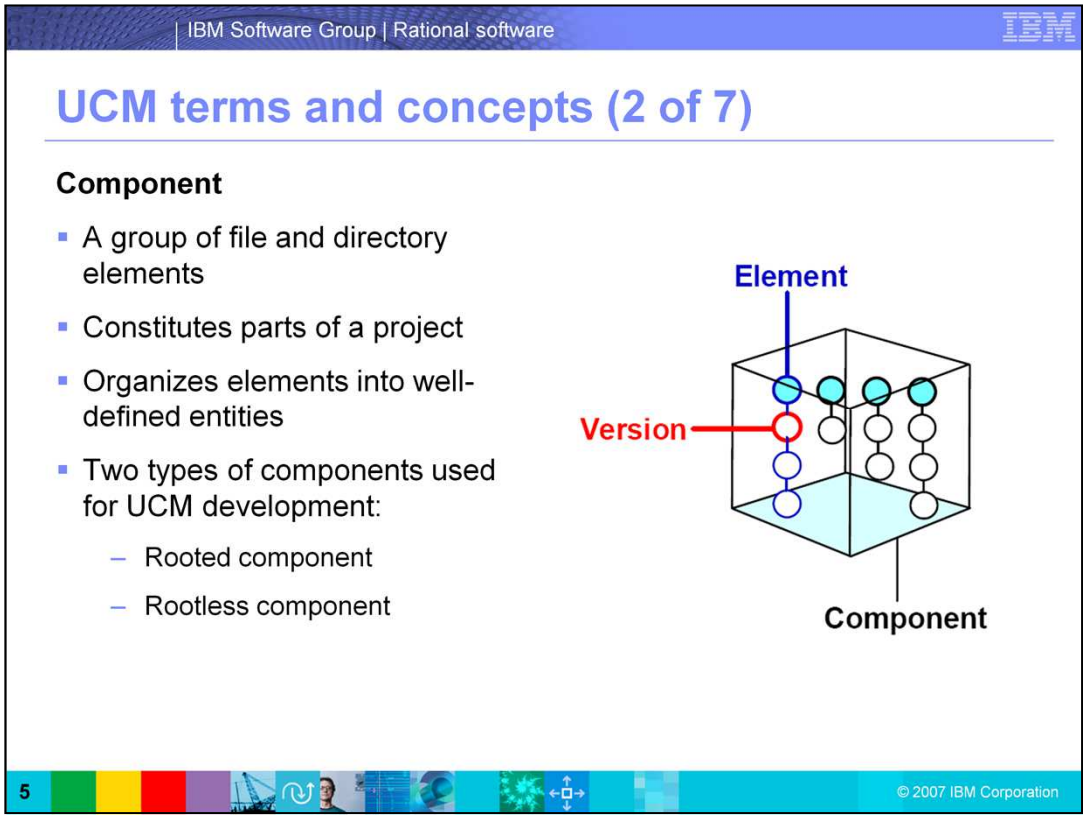
Project

A UCM *project* is a logical unit that is mapped to the development structure of an application or system. A project contains the configuration information (for example, components, activities, policies) needed to manage and track the work on a specific product of a development effort, such as an auction Web site or an order fulfillment process for an e-business. A basic UCM project in ClearCase consists of one shared work area and many private work areas.

Objects under version control in ClearCase are stored with their histories in repositories called VOBs. VOB stands for versioned object base.

pvob

A *pvob* is a vob used to house all metadata for projects, streams, components activities, baselines in UCM environments. This vob root folder is visible in the Project Explorer.



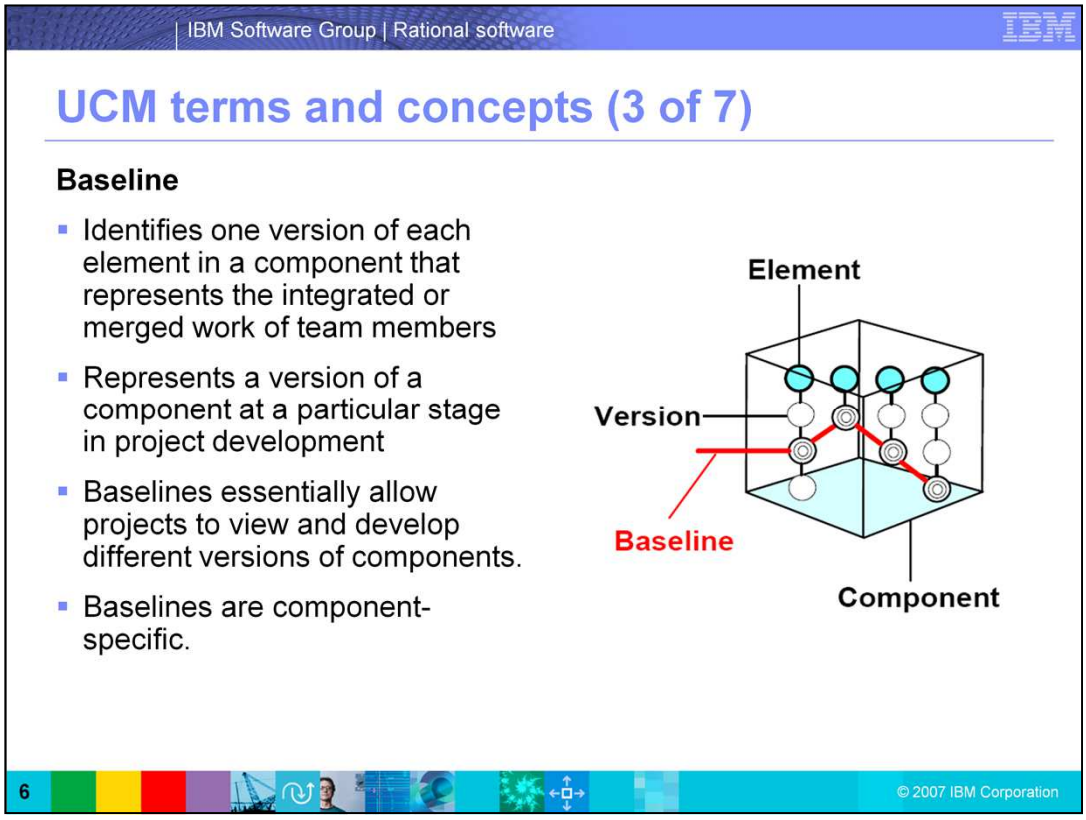
Component

A ***component*** is a group of files and directory elements (this might be a library, DLL, JAR, an executable, or any set of assets) that are released as a unit and are related by being located in a specific directory tree. Components provide separation of concern and organize elements into well-defined entities. A VOB can host one or more components, but a component without any elements does not have to be in a VOB. Similarly, components constitute parts of a project, and projects often share components.

There are two types of components in UCM: a rooted component and a rootless component.

A Rooted Component is a UCM object linked to a Vob Root or Directory within a Vob.

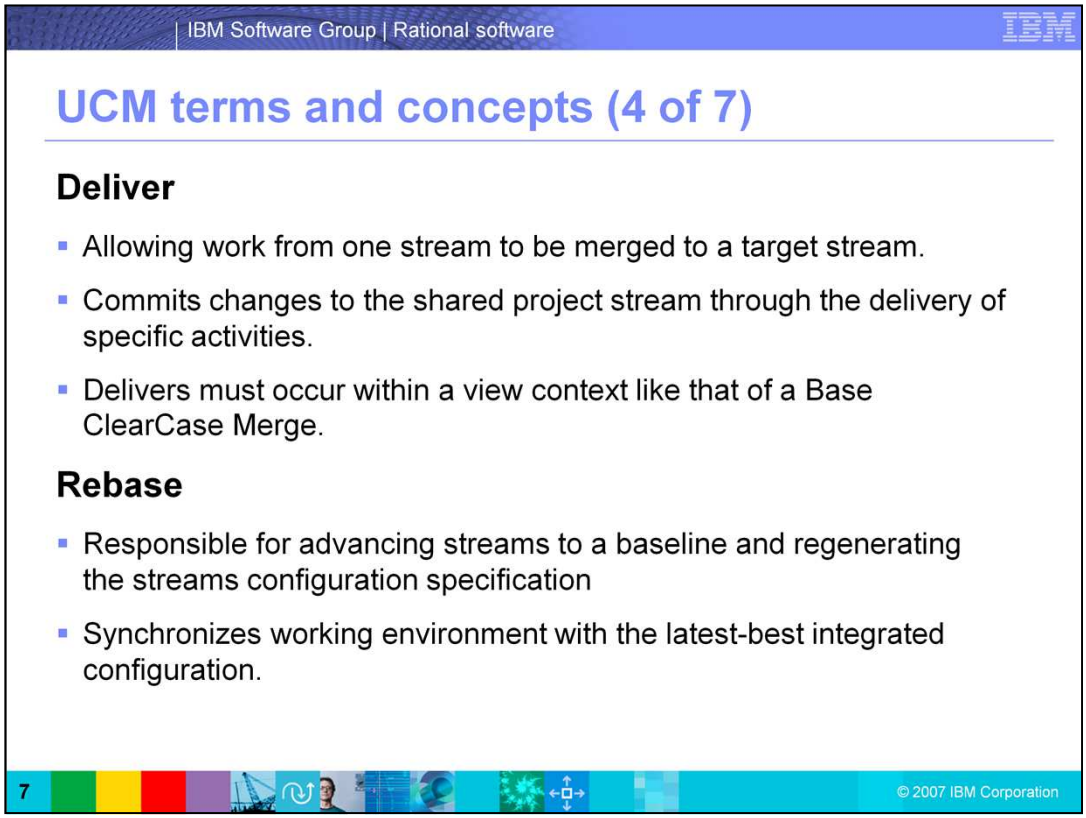
A Rootless Component is a UCM object containing no Root Directory. (This type of Component is used for Composite Baselines)



Baselines

A ***baseline*** identifies one version of each element in a component that represents the integrated or merged work of team members. It represents a version of a component at a particular stage in project development, such as the first design, a beta release, or a final product release. Throughout the project cycle, the project manager creates and recommends baselines and changes their attributes to reflect project milestones. A baseline is the means of communication between team members, allowing them to share new changes developed in the development streams. For example, A UCM object linked to a ClearCase Label tracks the development of a component.

When developers join the project, they populate their work areas with the versions of directory and file elements represented by the project's recommended baselines. Alternatively, developers can join the project at a feature-specific development stream level, in which case they populate their work areas with the development stream's recommended baselines. This practice ensures that all members of the project team start with the same set of files.



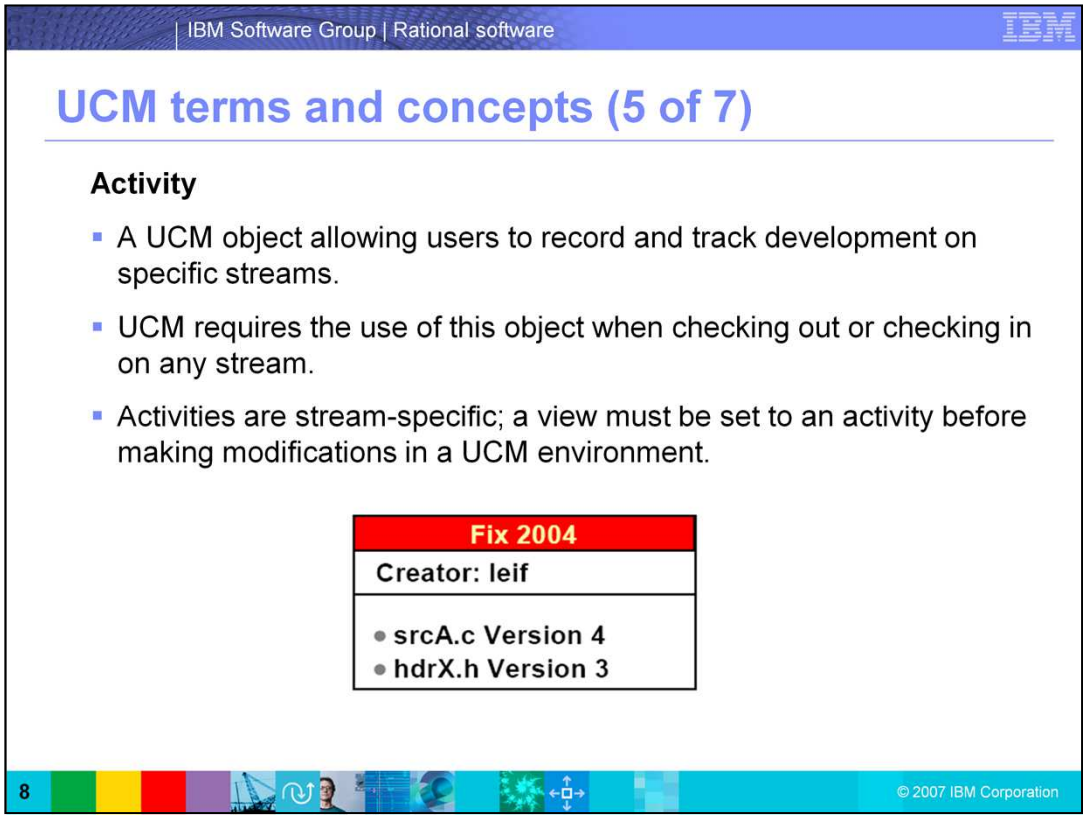
Deliver

A ***deliver*** function is a UCM function allowing work from one stream to be merged to another or to a default target stream. Deliver commits changes to the shared project stream through the delivery of specific activities. Note that delivers must occur within a view context like that of a Base ClearCase Merge.

Rebase

A ***rebase*** function is a UCM function responsible for advancing streams to a baseline and regenerating the streams configuration specification. Rebase synchronizes working environment with the latest-best integrated configuration. Note that rebases, at times, require merging -- which must be done in a view context.

By performing a rebase before delivery, you reduce surprises at delivery time, which improves the stability of the integration environment.



Activity

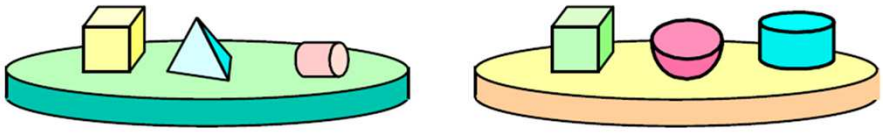
An ***activity*** is an object that records the set of files (*change set*) that a developer creates or modifies to complete and deliver a development task, such as a bug fix as shown here. Second, UCM requires the use of this object when checking out/in on any stream. Third, keep in mind that activities are stream-specific; that is, a view must be set to an activity before making modifications in a UCM environment.

Examples of other activities include: an update to a help file or the addition of a menu item to a GUI component. Note the activity title typically indicates the cause of the change (or is a link to ClearQuest).

UCM terms and concepts (6 of 7)

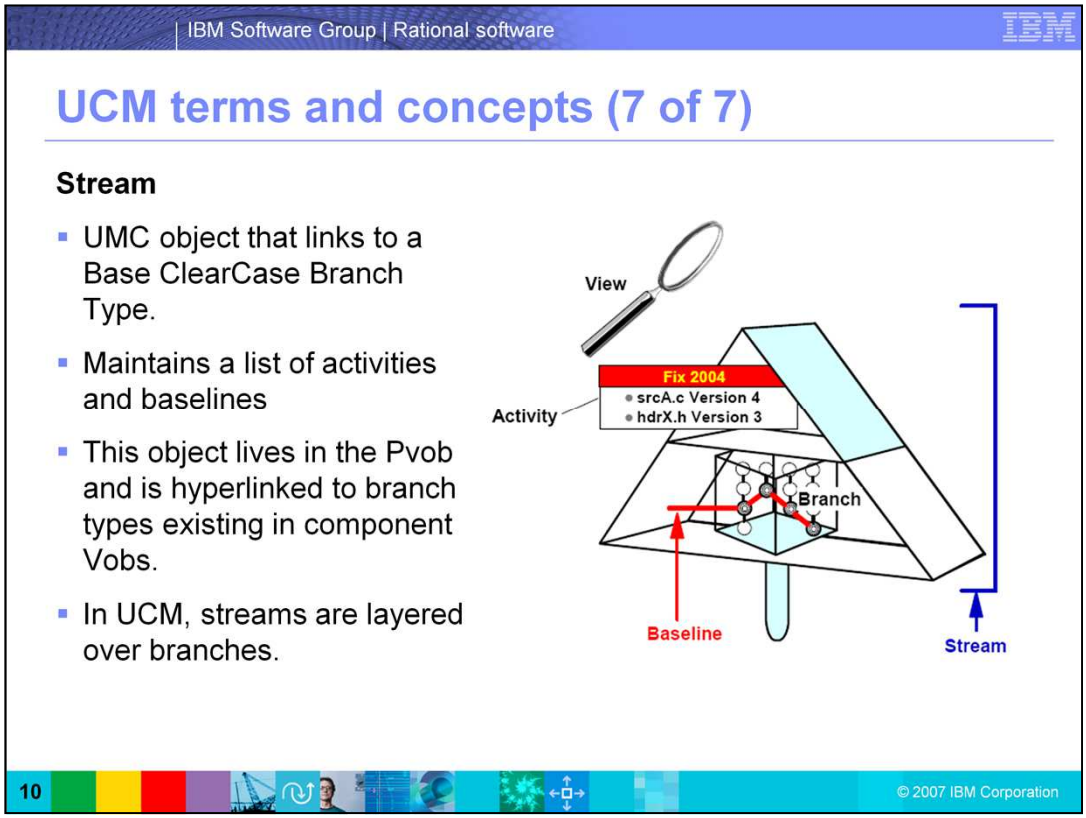
Work Area

- Development area associated with a change.
- In base ClearCase, a view is a directory tree that shows a single version of each file in your project, and the view is your *work area*.
- In UCM however, a *work area* consists of a view and a *stream*.



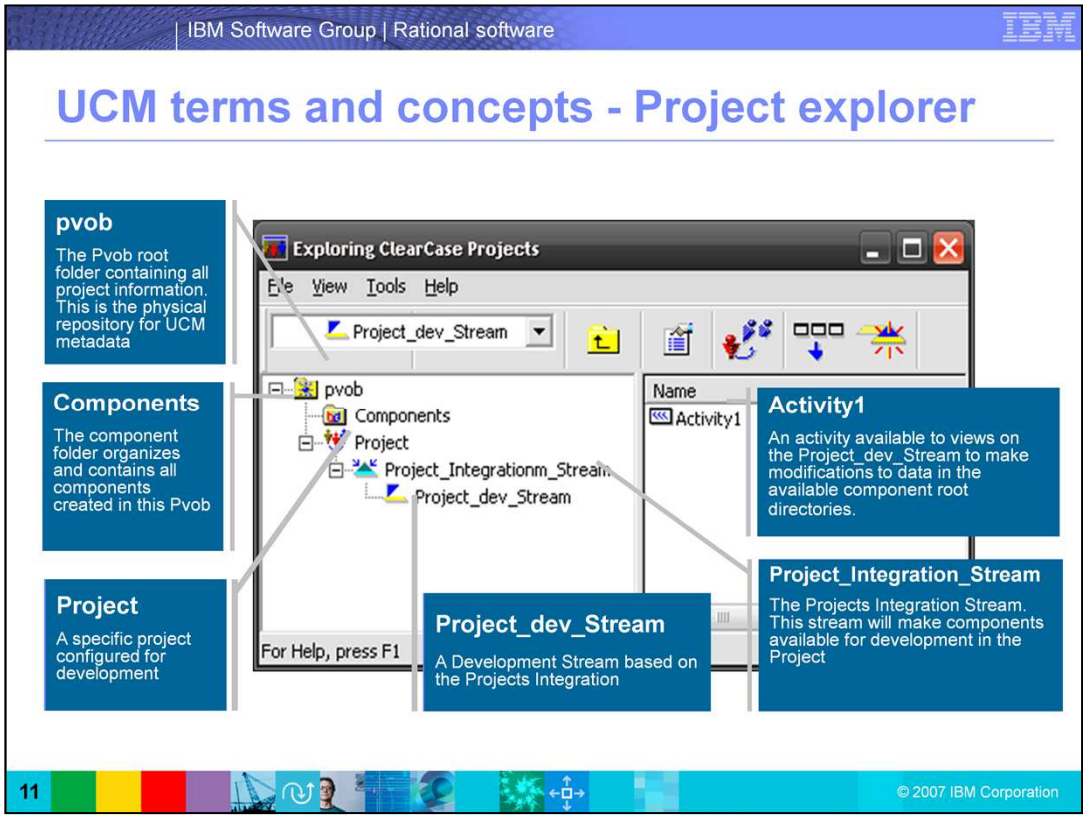
My work area | Your work area

A ***work area*** is a development area associated with a change. In base ClearCase, a view is a directory tree that shows a single version of each file in your project, and the view is your *work area*. In UCM however, a *work area* consists of a view and a *stream*.



Stream

A ***stream*** is a ClearCase object that that links base ClearCase branch types. Streams maintain a list of activities and baselines and determines which versions of elements appear in your view. This object lives in the Pvob and is hyperlinked to branch types existing in Component Vobs. In UCM, streams are layered over branches, so that you do not have to manipulate the branches directly. Note: This figure shows the ClearCase convention of representing streams.

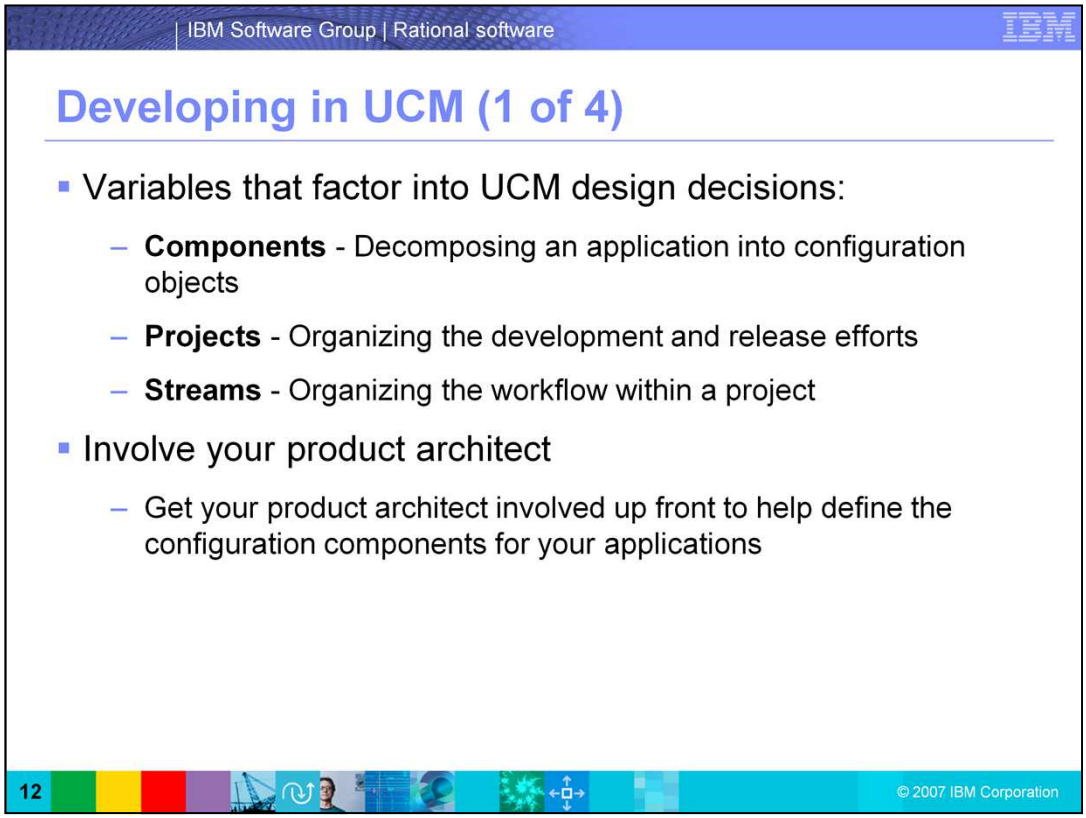


To help you put all of the terms together, this is an example of a ClearCase Project Explorer window highlighting the concepts and terms covered in the prior slides.

The **ClearCase Project Explorer** is the GUI interface to the UCM metadata. Project Explorer looks the same on UNIX and Windows, though Windows provides some additional functionality (a component browser and some drag-and-drop features).

The callout boxes shown here for pvob, components, project, project dev stream, activities, and project integration stream, provides additional detail about how each component fits into the project explorer window.

(leave a pause for 10 or more seconds)



UCM design overview

Now that you understand the basic UCM objects, you probably have more questions, like:

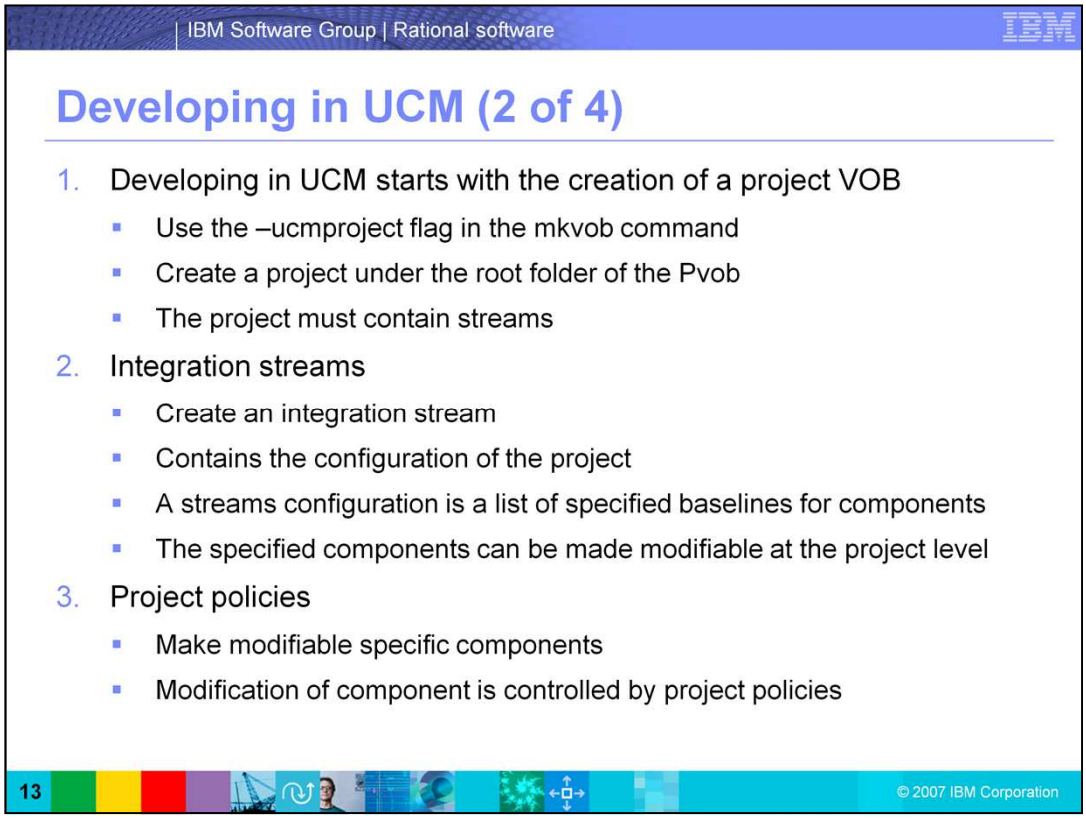
What is the best way to put the objects together into a usage model? How many components should I use and at what level should they be defined? Or how many projects should I have?

Well, the answer is: It depends.

This section will break down the variables that factor into UCM design decisions by taking a closer look at the objects that most determine your usage model: Components, projects, and streams.

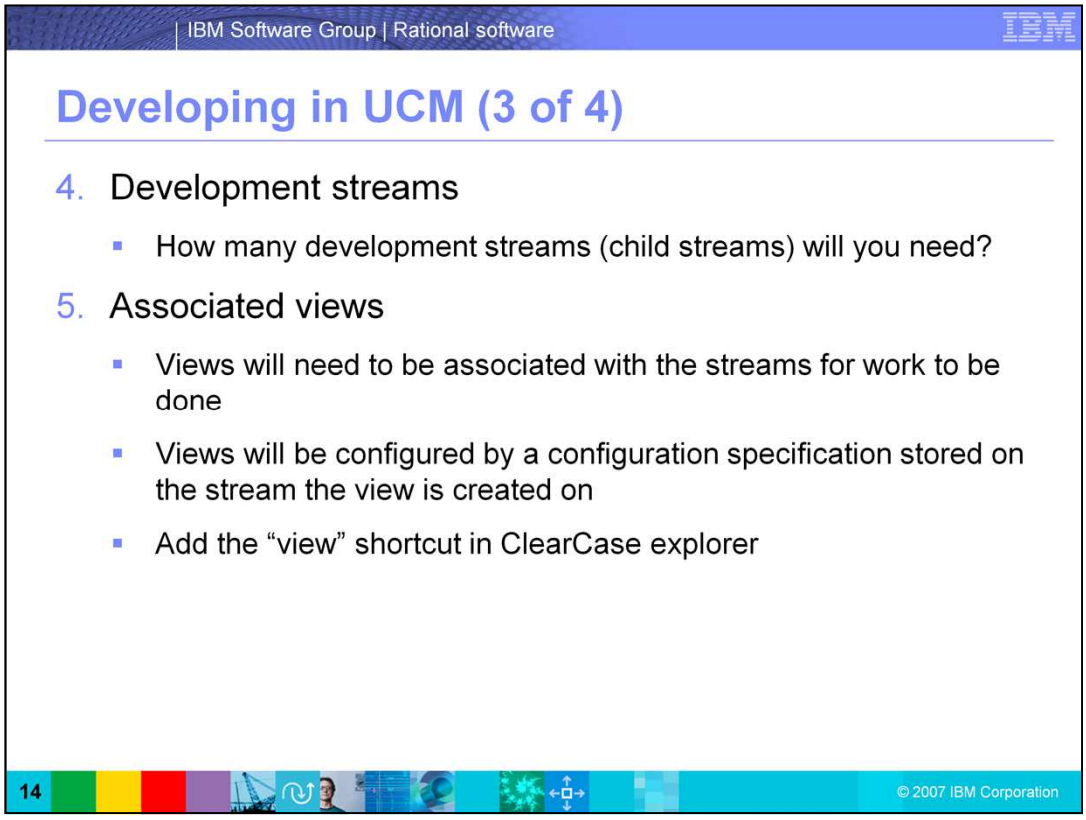
Components, projects, and streams define the structure of the configuration and how, at a high level, the team works together during development.

Make sure to get your product architect involved up front to help define the configuration components for your applications!



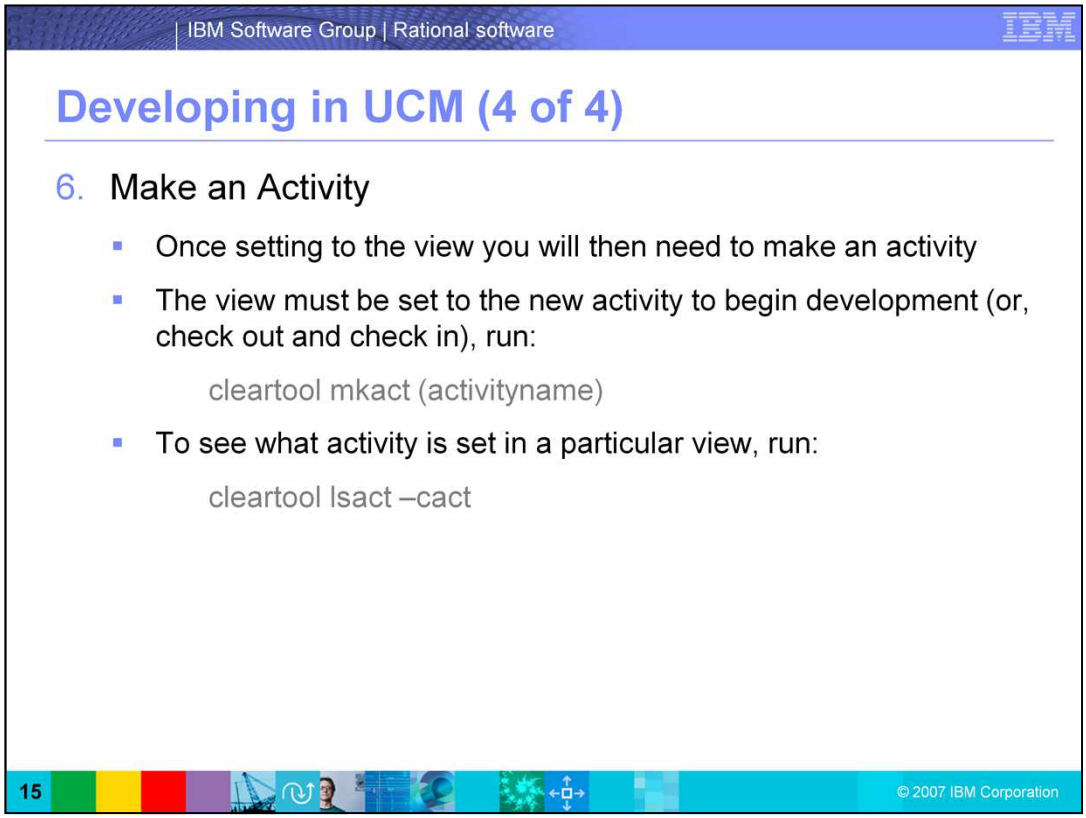
Developing in UCM starts with the creation of a project VOB (or pVOB). Creating a Pvob requires the use of the dash ucmproject flag in the mkvob command. You then need to create a Project beneath the Root Folder of the Pvob. Note that the project must contain streams in order for development to be possible

Next, you must create an integration stream. The Integration Stream will contain the Configuration of the Project. A Streams Configuration is a list of specified Baselines for components. This will make the components available to the project. Once the Integration Stream is configured, the specified components can be made modifiable at the Project level. Modification of Component is controlled by Project Policies.



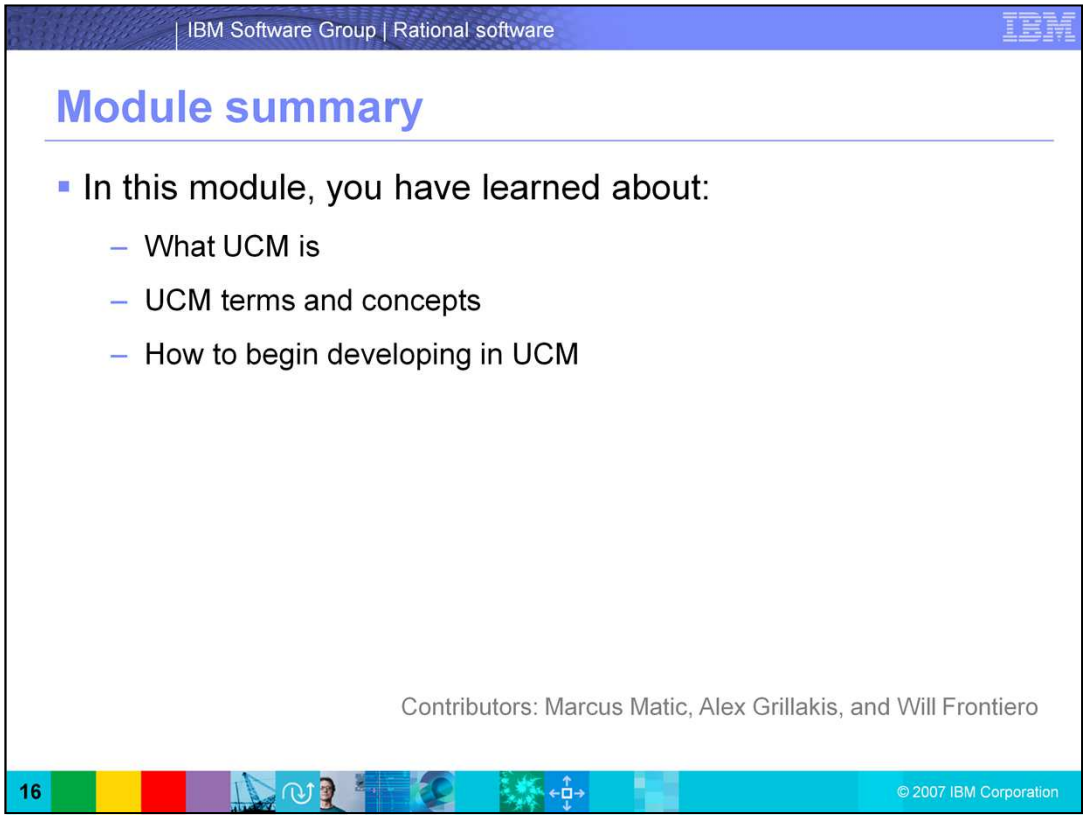
Next, consider the development streams. After configuring the Projects Modifiable component list, you can then decide how many development streams (child streams) you will need.

Once Development streams are created views will need to be associated with the streams for work to be done. Views will be configured by a configuration specification stored on the stream the view is created on. You can then add the “view” shortcut in ClearCase explorer.



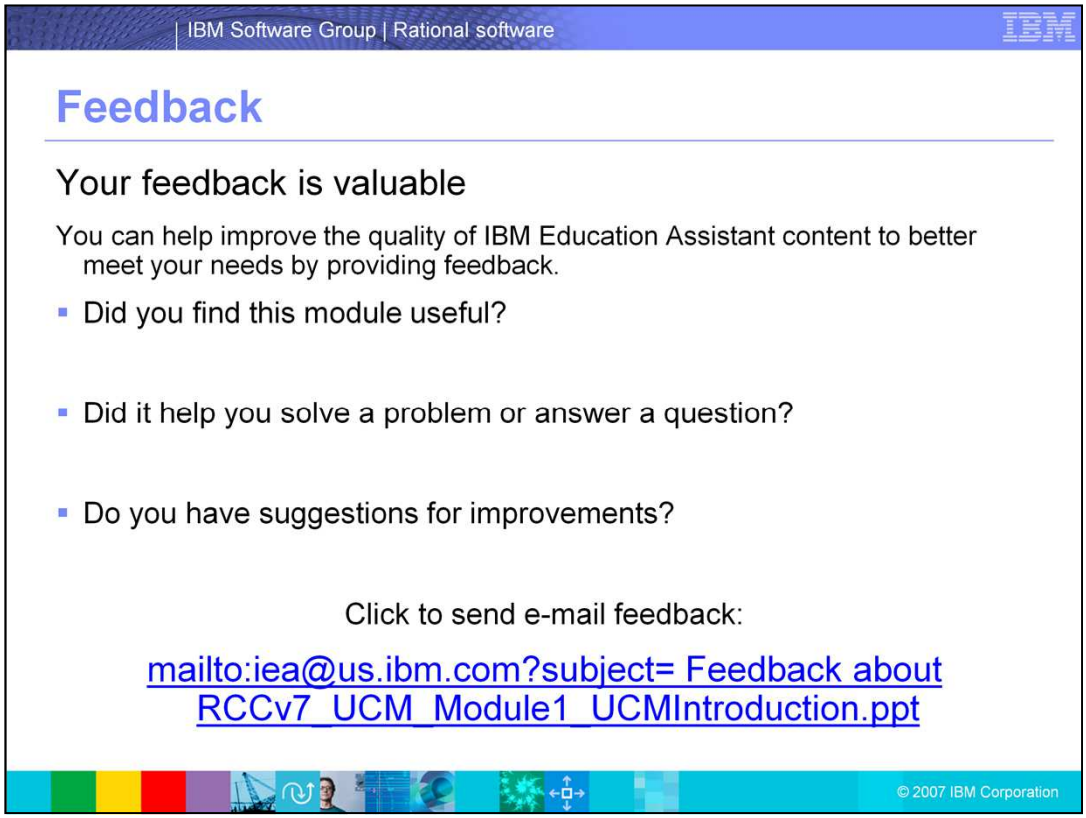
Make an Activity. Once setting to the view you will then need to make an activity. The view must be set to the new activity to begin development. Once the activity is set in the view, then you can begin developing in UCM. To see what activity is set in a particular view, run the command: cleartool lsact dash cact

This command lists the current activity for that view.



In this module, you have learned about, what UCM is, UCM terms and concepts, and how to begin developing in UCM.

At this stage, you have enough background information to begin developing in UCM. The next module will cover how to create your UCM Projects, including Project VOBs, Project Structures, and Project Folders.



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