Work Packages

This pattern provides some reusable breakdowns for work packages that will frequently occur when creating work packages for a project.

Overview

CxOne uses a work plan made up of work packages as the core model of activities that will occur on a project. The breakdown of work in the work plan forms the Work Breakdown Structure (WBS) for the project, and each leaf of the WBS is a work package.

The work plan can be though of as a model of all work for the project. How that model decomposes, abstracts, and relates different work packages to each other has a major impact on the efficiency and effectiveness of project management. See ***CxBest_WorkBreakdownStructure*** for more details on characteristics of work breakdowns.

There are repeatable patterns of work on most projects. Identifying these patterns can allow for rapid creation of a high-quality work plan. Adoption of standardized work package patterns increases team alignment on what activities each work package represents, which makes estimation and project management much easier.

This pattern contains some examples of fairly common work patterns that occur on projects. They can be used as-is in a project's work plan, or as the basis for creating custom project or organizational work package patterns.

How to Use the Pattern

Use the suggested patterns to create work package entries in a work plan.

The work package patterns may need to be customized to best match your development environment or project needs. When employing a pattern, only use the parts that match each situation (e.g., in the construction pattern below, you won't always need a requirements or design work package if that work is complete enough to begin construction).

Construction Unit Work Package Pattern

Many software projects employ iterative lifecycles where a large amount of project effort ends up in small cycles of requirements, design, coding, review, and testing pieces of functionality. Attempting to break out, estimate, and track the details of this work based on type of activity is not generally effective or efficient.

The construction unit pattern captures a set of work necessary to build a unit of software functionality (e.g., a use case, feature, module, class, screen, etc.). Depending on your lifecycle this may include detailed work on requirements, low-level design, user interface design, coding, various forms of reviews and testing, builds and integration, etc. The pattern breaks this work into work packages that model completion of work increments over contiguous period of time. System level integration, system testing and other work that normally occurs as part of the integration of a number of different construction units is not part of this pattern.

The table below captures the pattern and assumptions used with each work package item. Note that all analysis, artifact creation, quality control (reviews and testing), and immediate rework for a particular item are all combined into a single work package. Effort for all these activities needs to be considered when estimating and tracking the work package. Most construction units will not need all the activities listed below.

Work Package Pattern For Construction Units

Work Package	Work Package Includes
Requirements	• Requiremetns analysis, planning, meetings, discussions, research, etc. • Creation of requirements artifacts • UI prototyping and design • Reviews of requirements related artifacts • Immediate rework of any identified requirements issues
Design	• Design analysis, planning, meetings, discussions, research, etc. • Creation of high-level and low-level design artifacts • Test case development • Reviews of design related artifacts • Immediate rework of any identified design issues
1-N Feature Construction Work Packages	• Complete any remaining low-level or UI design activities • Construction analysis, planning, meetings, discussions, research, etc. • Creating product code • Unit test creation and automated test coding • Formal and informal reviews, inspections, and desk checks • Construction testing (includes ad hoc bench testing and unit testing) • Debugging of issues found during construction testing • Configuration data or infrastructure creation • Other activities that directly support construction • Immediate rework of any identified issues

Work Package	Work Package Includes
Quality Control	• All post-construction testing performed by independent party • Any reviews of deliverables or items that were not reviewed earlier • Immediate debugging / rework of any identified issues
Documentation	• Any work to create documentation related to the unit that was not part of earlier work packages

When using the construction unit pattern it is often useful to schedule requirements and design of later work packages to occur in parallel with the construction of current construction units. This allows estimates for upcoming construction work to be refined by information from the requirements and design work.

Recurring Milestone Work Package Pattern

Some project work recurrently deals with aggregates of work packages (e.g., running the daily build, project status meetings, system testing, etc.). This work is easier to model as overhead spread across a period of time than trying to allocate portions of the work to individual work packages.

The pattern below models common recurring project work on a per milestone basis. Many of these activities are driven by milestone convergences, and the milestone provides a good unit to break up the spread of this overhead across the project. Recurring milestone work can best be estimated as a percentage of overall work calibrated by historical data.

Work Package Pattern For Recurring Milestone Work

Work Package	Work Package Includes
Project Management	• Planning activities including estimation and scheduling. • Creation and update of planning artifacts • Planning and status meetings. • Other activities performed while wearing the project manager hat. • Any work related to formal client/sponsor management, including formal change control activities • Personnel issues • Project MBWA
Technical Management	• Activities performed while wearing a technical lead hat or technical lead activities if they are general in nature. • Technical coaching • Executing daily and release builds and automated testing • Setting up formal reviews • Dispositioning issues and defects
Infrastructure / Miscellaneous	• Creation and support of general team / development infrastructure • Training / Learning / Investigation • This category can be used to cover any work that is not part of another work package. If significant amounts of time are placed here, model what is occurring and break it into separate work packages.
General Quality Control	• Any testing that spans multiple work packages (e.g., system testing or integration testing) • Any testing that covers closed work packages (e.g., smoke, system, integration, or regression testing) • Any reviews that span multiple work packages or cover closed work packages
General Rework	• Investigating and fixing defects or issues in work packages that have already been closed • Any other work that requires revisiting closed work packages to address problems or small changes.