list of model parameters

| Variable Type | Variable Names | Equation | Unit of Measure | | Description | | Exogenous/ Endogenous | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Constant | Initial Planned Project Labor-hours | 7,200 | Labor-hour | | Assume the initial project planned 7200 labor-hours | | Exogenous | |
| Constant | No. of Labor | 15 | Labor | | Assume 15 labor work on this project | | Exogenous | |
| Constant | Labor Working-hours per Week | 40 | Labor-Hour/(Week×Labor) | | Assume 40 hours per week for each labor | | Exogenous | |
| Constant | Seed | 1 | Dimensionless | | Steam ID | | Exogenous | |
| Auxiliary | Performance Factor | Random triangular | Dimensionless | | Performance Factor = Earned labor-hours/Actual labor-hours, without considering scope changes, RFIs, and rework. | | Exogenous | |
| Flow | Factored Labor Work Rate |  | Labor-hour/Week | | Earned labor-hours for each week without the impacts of rework, RFIs, and scope change. | | Endogenous | |
| Auxiliary | Stop Indicator |  | | Dimensionless | | Indicator for stopping the simulation when Project Labor-hours to be Completed is reaching Labor Working-hours per Week to ensure no negative hours will be generated. | |  |
| Auxiliary | RFI Rate | Random triangular | Dimensionless | | RFI Rate = Labor-hours require RFI/Initial planned project labor-hours. Generate random RFI rate using a triangular distribution from the minimum RFI rate to the maximum RFI rate with a peak at the most likely RFI rate. | | Exogenous | |
| Auxiliary | Scope Change Rate on the Initial Project Scope | Random triangular | Dimensionless | | Scope Change Rate on the Initial Project Scope = Scope change labor-hours/Initial planned project labor-hours. | | Exogenous | |
| Auxiliary | % of RFI for Scope Change | Random triangular | Dimensionless | | % of RFI for Scope Change = Scope change labor-hours generated from RFI/Labor-hours requiring RFI. | | Exogenous | |
| Auxiliary | Meet Requirement Rate | Random triangular | Dimensionless | | Meet Requirements Rate = 1 - (Rework labor-hours/Initial planned project labor-hours). | | Exogenous | |
| Flow | Labor Work Rate for Initial Project Scope |  | Labor-hour/Week | | Equal to Effective Labor Work Rate until all initial project scope is completed. | | Endogenous | |
| Stock | Initial Planned Project Labor-hours Completed | Integal (Labor Work Rate for Initial Project Scope, 0) | Labor-hour | | Labor-hours that are required to complete the initial planned project scope during the construction. The initial value is set up at 0. | | Endogenous | |
| Flow | RFI Generation Rate (Initial Scope) | Labor Work Rate for Initial Project Scope × RFI Rate | Labor-hour/Week | | Labor-hours of the initial project scope for each week that require RFIs | | Endogenous | |
| Flow | RFI Generation Rate (Scope Change on Initial Scope) |  | Labor-hour/Week | | Labor-hours of the scope changes of the initial project scope for each week that require RFIs | | Endogenous | |
| Stock | Wasted Labor-hours Due to RFIs | Integal (RFI Generation Rate (Initial Scope) + RFI Generation Rate (Scope Change on Initial Scope), 0) | Labor hour | | Labor-hours lost due to waiting for RFI response; the initial value is 0. | | Endogenous | |
| Flow | Scope Change Generation Rate on Initial Scope |  | Labor-hour/Week | | Labor-hours generated from the initial scope for scope change | | Endogenous | |
| Flow | Scope Change Generation Rate on RFI |  | Labor-hour/Week | | Labor-hours generated from RFI responses for scope change | | Endogenous | |
| Flow | Effective Labor Work Rate |  | Labor-hour/Week | | Labor-hours per week to complete tasks which meet requirements， including the delay caused by RFI | | Endogenous | |
| Flow | Rework Generation Rate |  | Labor-hour/Week | | Labor-hours per week to complete tasks which don’t meet requirements. | | Endogenous | |
| Constant | Time to Discover Rework | 3.05 | Week | | The average time between the completion of a task and discovering it needs to be redone. The value is assumed. | | Exogenous | |
| Flow | Rework Discovery Rate |  | Labor-hour/Week | | Labor-hours per week require rework. | | Endogenous | |
| Stock | Generated Rework | Integal (Rework Generation Rate - Rework Discovery Rate, 0) | Labor-hour | | Labor-hours that are required to rework; the initial value is 0. | | Endogenous | |
| Stock | Project Labor-hours to be Completed | Integal (Scope Change Generation Rate on Initial Scope + Scope Change Generation Rate on RFI + Rework Discovery Rate - Effective Labor Work Rate - Rework Generation Rate,7200) | Labor-hour | | Labor-hours that are required to complete the project; the initial value is 7,200 labor-hours | | Endogenous | |
| Stock | Work Completed Meet Requirement | Integal (Effective Labor Work Rate,0) | Labor-hour | | Labor-hours are used for work that meets requirements. the initial value is 0. | | Endogenous | |
| Stock | Project Total Factored Labor-hours | Integal (Effective Labor Work Rate + Rework Generation Rate + RFI Generation Rate (Initial Scope) + RFI Generation Rate (Scope Change on Initial Scope), 0) | Labor-hour | | Total factored labor-hours that are required to complete the project; the initial value is 0. Total factored labor-hours include effective labor hours, rework generation rate, and RFI Generation rate (on the initial scope and scope change). | | Endogenous | |