



**NIEMOPEN**

# **MEP Builder**

## User Guide

**Version 3.3**

**2024**

## Document Change Record

Version Number	Date	Description
1.0	31 October 2021	Original
1.0	18 November 29, 2021	Update - Added Installation Instructions
1.0	29 November 2021	Update - Modified Installation Instructions
1.0	10 December 2021	Update - Added system memory requirements
2.0	12 April 2022	Update - Added Translate MEP U/I Workflow
2.0	27 July 2022	Update - Added Upload and Import UML documents, custom spreadsheets, and distribution statements
2.0	27 July 2022	Update - Added Search and mapping of Common NIEMOpen Components
2.0	27 July 2022	Update - Added upload and import UML documents, custom spreadsheets and distribution statements.
2.0	15 August 2022	Update – Added uninstall instructions
2.1	14 April 2023	Update – Added Custom Model Extension creation, Migration, Translate to JSON-LD, Release Lock
2.1	14 April 2023	Update – Added additional MEP artifact functionality: ReadMe, Change Log, Conformance Assertion, Artifact Checklist,
2.1	14 April 2023	Update – Modified installation requirements
3.0	10 July 2023	Update – Added Published Package Section
3.0	10 July 2023	Update – Added homepage functionality (Copy, translate, additional search features, export, delete)
3.0	10 July 2023	Update – Added CME functionality (NDR conformance, import code lists, edit elements in viewports, delete elements in viewports)
3.0	11 July 2023	Update- Added Translate to CMF, JSON Schema, and OWL
3.0	8 August 2023	Update- Corrected installation guide numbering
3.0	8 August 2023	Update- Corrected references to NIEMOpen vs MEP Builder, renamed file
3.1	14 December 2023	Remove the use of the Environment Variable in the docker files.
3.1	14 December 2023	Update- Modified My Home Tab functionality (Copy, Viewing/Opening a MEP, Published packages, migration changes, search results label)
3.1	14 December 2023	Update- Modified CME functionality (URI and Definition fields, Download Import Report feature, Definition validation)
3.1	14 December 2023	Update- Modified Translate and Subset Schema generation to include new warning messages, Modified Artifact Checklist to now show interactive options
3.1	14 December 2023	Update- Added Validate section, Added Business Rules section

3.2	1 March 2024	Updated Creation Guide steps
3.2	1 March 2024	Updated Custom Model Extension steps
3.2	1 March 2024	Updated Validate section to include new artifacts for validation
3.3	29 April 2024	Update- Metadata section of MEP Builder, Advanced Search- Owner field, Build and Validate screen options, CME Builder- Extensions added to Artifact Tree

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## **1 NIEMOPEN MEP BUILDER OVERVIEW**

The NIEMOpen MEP Builder is a tool designed to assist a user when constructing Message Exchange Packages (MEP)s, formerly known as Information Exchange Package Documentation (IEPD)s. This tool streamlines the process used to produce these packages to use with NIEMOpen.

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## **2 ENVIRONMENT OVERVIEW**

The NIEMOpen MEP Builder can be deployed to a server or downloaded as a stand-alone application. Once the application has been deployed to your server or downloaded and installed on your computer, the following software requirements apply:

- Windows10 operating system
- 64-bit processor with Second Level Address Translation (SLAT)
- 4GB system RAM
- BIOS-level hardware virtualization support must be enabled in the BIOS settings. (This setting may be controlled and restricted by your enterprise team if your computer is a part of an enterprise domain)
- Microsoft Edge, Google Chrome, or Firefox web browser
- Connection to the internet
- Username and Password (server instance)

Note: If you are an admin for your organization and desire to install a NIEMOpen Tool instance to your server, please consult the NIEMOpen Tool Admin Guide for server installation instructions.

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### 3 TOP MENU BAR

The top menu bar contains Current Release, Contact and User Profile. (Figure 3.1). Current Release will provide the current release number (Figure 3.2) Clicking “Contact” will invoke a pop-up to display advising you to contact [info@niemopen.org](mailto:info@niemopen.org) with any questions and/or comments regarding the NIEMOpen MEP Builder as illustrated in (Figure 3.3) The Sign in menu item will display the username while logged in. Also, clicking your username will invoke a dialog where you can choose to log out of the application or access your user profile modal. See Figure 3.4.



Figure 3.1

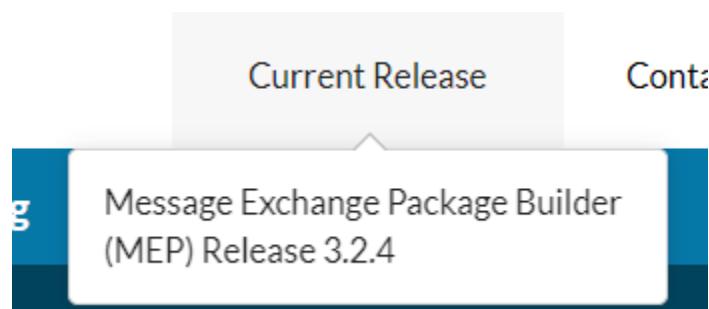


Figure 3.2

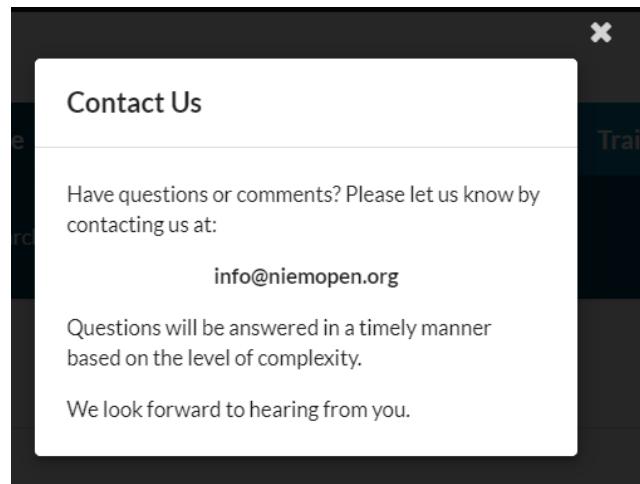


Figure 3.3

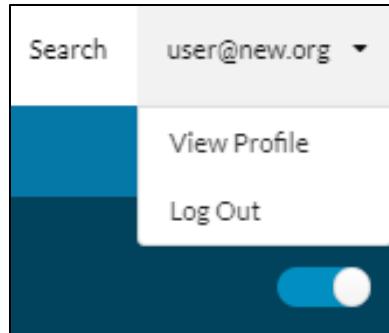


Figure 3.4

Accessing your user Profile via controls depicted on Figure 3.4. Accessing your profile is where you may update your account information and your password. To update your account information, click in the field you desire to change. Enter your changes and click “Save Changes”. Figure 3.5 and “confirm” Figure 3.6. Once you confirm, you will receive a successful notification banner.

My Profile

Account Information

First Name *	Last Name *
new	user
Email	Phone *
user@new.org	(909)111-2346
Password	
<a href="#">Update Password</a>	
<a href="#">Cancel</a> <a href="#">Save Changes</a>	

Figure 3.5

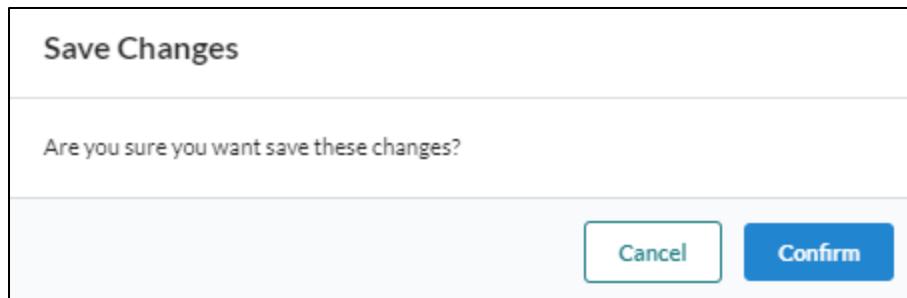


Figure 3.6

To update your password, click the “Update Password” link on your profile page and the update password dialog will render. Figure 3.7. You must have your existing password available as it is a required field. Once your existing password is entered, you can then enter your new password and confirm it by typing it again. Click “Save Changes” and confirm by clicking the “Confirm” button. See Figure 3.8. After confirmation, a notification banner will render if you are successful. If you have entered an incorrect existing password or if your new passwords do not match or do not meet the password criteria, you will receive a failure notification.

### **Password requirements:**

Minimum length of eight characters

At least one special non-alphanumeric character

At least one upper case letter

At least one lower case letter

At least one number (0-9)

**My Profile**

**Account Information**

First Name *	Last Name *
new	user
Email	Phone *
user@new.org	(909)111-2346
Existing Password *	
*****	
New Password *	Confirm New Password *
>Password	Confirm Password

Min length of 8 characters  
At least one special characters (non-alphanumeric characters)  
At least one Uppercase letter  
At least one Lowercase letter  
At least one Number (0-9)

**Cancel** **Save Changes**

Figure 3.7

**Save Changes**

Are you sure you want save these changes?

**Cancel** **Confirm**

Figure 3.8

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## 4 GETTING STARTED

The **Getting Started** page provides a link to example Packages. Clicking the link in Figure 4.1 will take you to a download site depicted in Figure 4.2 to download examples.

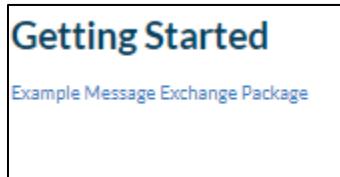


Figure 4.1

Name	Last modified	Size	Description
Parent Directory		-	
<a href="#">HelloWorld-1.0rev1.iedp.zip</a>	2018-07-31 15:33	203K	
<a href="#">conformance-assertion-example.docx</a>	2018-07-31 15:33	18K	
<a href="#">cot-niem-0.9rc3.iedp.zip</a>	2018-07-31 15:33	485K	

Apache/2.4.18 (Ubuntu) Server at reference.niem.gov Port 443

Figure 4.2

## 5 TRAINING TAB

Navigating to the **Training Tab** will take you to an interactive graphic (Figure 5.1) where you can follow training tracks on <https://niem.github.io/training/> (Figure 5.2) or view this User Guide. If you are already logged in or using the stand-alone version, you can also click the bottom link on the graphic to begin creating your Message Exchange Package (MEP). If you haven't logged in yet, clicking "Begin Building a MEP link will take you to the Login screen.

The screenshot shows a navigation bar with tabs: Getting Started, My Home, MEP Builder (selected), and Training. Below the tabs, the title "Message Exchange Package (MEP) Training & Documentation" is displayed. Three cards provide links to training resources:

- NIEM TRAINING**: This link will take you to training tools to include user-driven tutorials and reference content for both experienced and first-time NIEM users.
- NIEM MEP BUILDER USER'S GUIDE**: The MEP Builder user's guide is a resource that contains system requirements, guidance and information about NIEM MEP Builder features.
- BEGIN BUILDING A MEP**: Click this link to begin building a Message Exchange Package (MEP).

Figure 5.1



## Training

### Welcome to the new home of NIEM training

We recently modernized our training to include user-driven tutorials and reference content on GitHub. It's an evolution based on how people learn these days.

The content addresses the two types of training audiences we historically see:

1. Someone who is a newcomer to NIEM and needs to get up to speed on how to do things. This could include managing domain model content, developing an exchange, implementing an exchange, publishing a data set, or reusing the vocabulary. If this is you, please see the training tracks below.
2. Someone who is already familiar with NIEM and is looking for quick reference material to determine or verify how to do something. If this is you, please visit the Reference section.

This section represents our *work in progress*. As we knock out content, we push it out to the user community for feedback and use.

Just getting started? Head over to the [main site](#) to learn [About NIEM](#), [How to Get Started](#), and much more! Looking for information about a specific topic? See the [Reference](#) section for general documentation.

Figure 5.2

## 6 LOGIN

While the system is deployed in a stand-alone environment, Login credentials are not required. In this instance, you will be presented with the **My Home Tab** screen (see Figure 6.4) upon accessing the URL. Accessing via a public server, the user will be presented with a login screen (see Figure 6.3). If you don't have an account, you must request one via the "Create an Account" link. See Figure 6.1 and 6.2

Enter your information in the required fields and click "Register". A local Admin will contact you if your account has been approved and provide login credentials. If your account was not approved, an Admin will contact you to discuss reasons for denying the account request.

The screenshot shows a login form with two input fields for 'Username' and 'Password', followed by a teal 'Sign In' button. Below the button are two links: 'Forgot Username / Password?' and 'Don't have an account?'. The 'Don't have an account?' link is highlighted with a red oval.

Username  
Password  
Sign In  
Forgot Username / Password?  
Don't have an account?  
Create an Account

Figure 6.1

The screenshot shows an 'Account Registration' form with several input fields: 'First Name' and 'Last Name' (both marked with a red asterisk), 'Email' and 'Phone' (both marked with a red asterisk), 'Organization' (marked with a red asterisk), 'Role' (set to 'General User'), 'Password' and 'Confirm Password' (both marked with a red asterisk). At the bottom are 'Cancel' and 'Register' buttons.

Account Registration  
First Name \*  
Last Name \*  
Email \*  
Phone \*  
Organization \*  
Role ⓘ General User  
Password \*  
Confirm Password \*  
Cancel Register

Figure 6.2

Once your account request is approved, you can enter with your approved credentials, then click “Sign in” to gain access to the system. (Figure 6.3) Once you have logged in, you will be taken to the home page (See Figure 6.4)

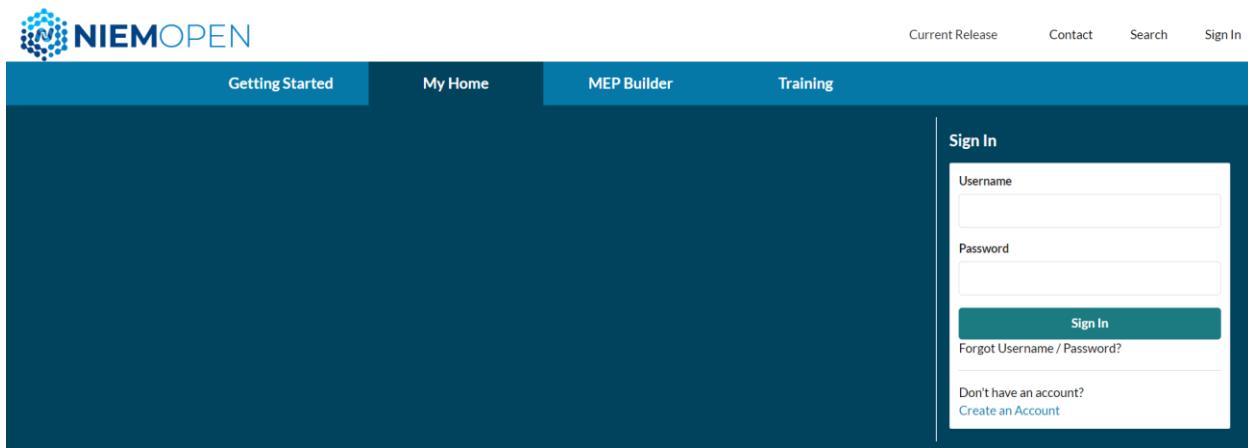


Figure 6.3

A screenshot of the NIEM OPEN website's Message Exchange Package (MEP) Home page. The top navigation bar includes links for 'Current Release', 'Contact', 'Search', and an email address 'bridgeman\_kelsey@bah.com'. Below the navigation is a blue header bar with tabs for 'Getting Started', 'My Home', 'MEP Builder', 'Training', and 'Administrator'. The main content area is titled 'Message Exchange Package (MEP) Home' and displays a table of 'Open/Unpublished' MEP packages. The table columns include View, Copy, Delete, Export, Migrate Release, Domain, Message Exchange Package, Summary Description, Format, and Release. Two rows of data are shown: one for version 3.0.522 (Domain: Justice, Format: XML, Release: 3.0) and another for version 4.1.522 (Domain: Justice, Format: XML, Release: 4.1). A 'Create New MEP' button is located in the top left of the main content area.

Figure 6.4

## 7 MY HOME TAB

This page is the landing page when you sign in using a server instance. For the stand-alone instance, after you navigate to local host URL you will land on this page as well. The functionality of the **My Home** tab is described below and highlighted in Figure 7.1:

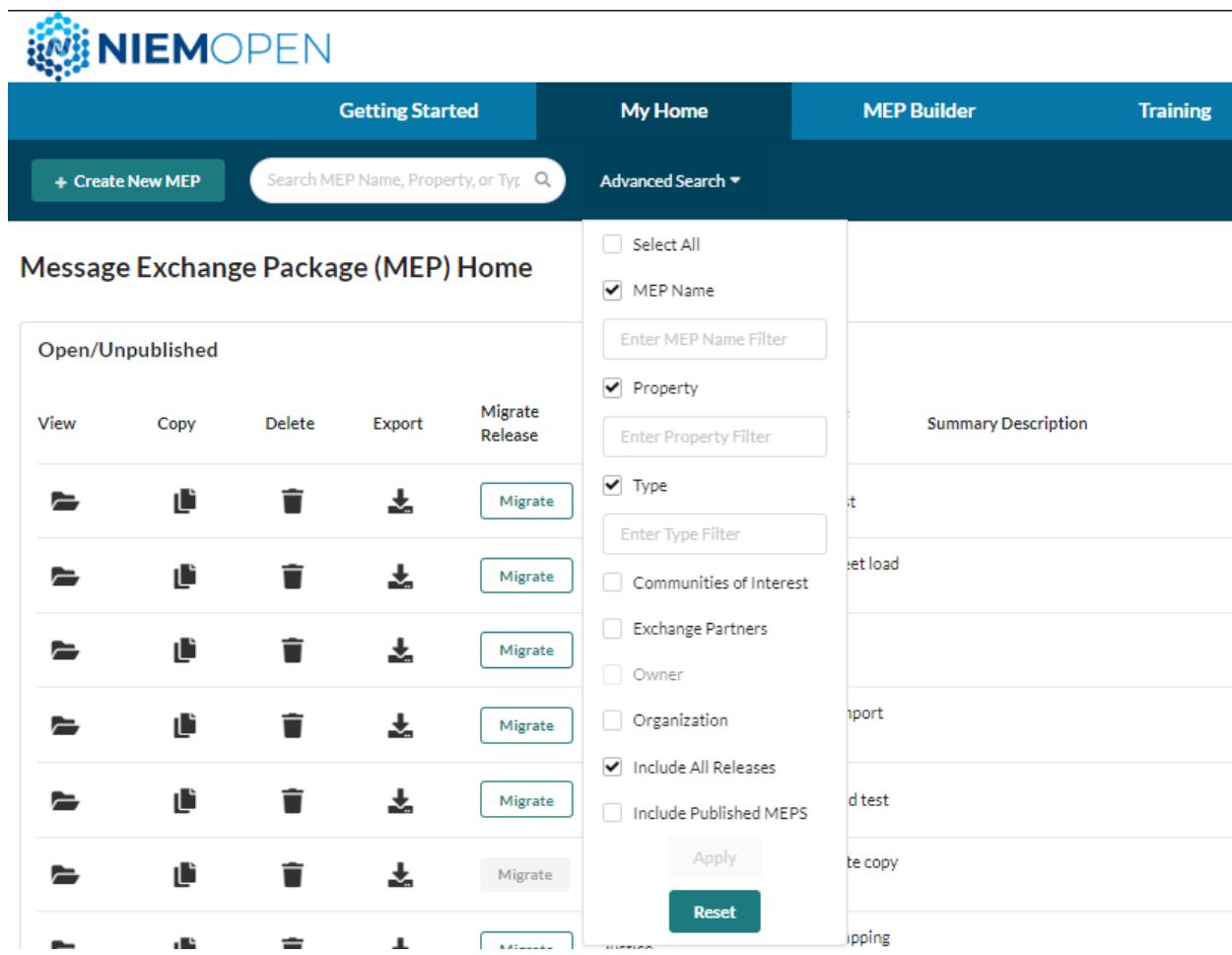
The screenshot shows the 'My Home' tab selected in a top navigation bar. Below the navigation bar is a search bar and an 'Advanced Search' dropdown. The main content area is titled 'Message Exchange Package (MEP) Home'. It features two main sections: 'Open/Unpublished' and 'Published'. The 'Open/Unpublished' section contains a table with five rows, each representing an MEP package. Each row includes icons for View, Copy, Delete, Export, and Migrate. The 'Migrate' button in the first row is highlighted with a red box and labeled 'F'. To the right of the table are several filter options: 'Select All' (unchecked), 'MEP Name' (checked), 'Enter MEP Name Filter', 'Property' (checked), 'Enter Property Filter', 'Type' (checked), 'Enter Type Filter', 'Communities of Interest' (unchecked), 'Exchange Partners' (unchecked), 'Owner' (unchecked), 'Organization' (unchecked), 'Include All Releases' (checked), and 'Include Published MEPS' (unchecked). The 'Published' section shows a message indicating 8 published packages and a note about enabling the 'Include Published MEPS' filter. A 'Reset' button is located at the bottom of this section.

Figure 7.1

- a. The **Create New MEP** button takes you to the **MEP Builder** page to begin building a MEP. See section labeled A in the figure.
- b. “**Search Repository**” button provides the functionality to search the repository by MEP Name, Property or Type. The search feature will show results including augmentations, parent types, and associations corresponding to the inputted search. See section labeled B in the figure.
- c. Advanced Search provides for a more refined and multifaceted search. This search also incorporates searches for Communities Of Interest, Exchange Partners, published MEPs and releases. See section labeled C in the figure.
- d. A list of saved unpublished MEP Packages that you can access via the View “folder” icon (📁). The Open/Unpublished section contains summary metadata from the saved package. The Domain, the MEP package name, Summary, Format and Release Number are displayed for each unpublished package saved.

Unpublished packages can be deleted by using the Delete “Trashcan” Icon (  ). See section labeled D in the figure.

- e. The **Published** section contains the Published packages available to the user. Published packages are published, so packages published by other users will appear in the Published section. These packages owned by another user can only be updated (Migrated, Translated, Deleted by the owner of the package). Published package functionality described below:
- Published Packages are hidden by default. To view available published packages, the **Include Published MEPS** selection needs to be enabled in the **Advanced Search** bar. (Figure 7.2)



The screenshot shows the NIEMOPEN MEP Home page. At the top, there is a navigation bar with tabs: Getting Started, My Home, MEP Builder, and Training. Below the navigation bar, there are buttons for '+ Create New MEP' and 'Search MEP Name, Property, or Type'. A dropdown menu for 'Advanced Search' is open, showing various filter options. The main content area is titled 'Message Exchange Package (MEP) Home' and displays a table of 'Open/Unpublished' packages. Each package row has columns for View, Copy, Delete, Export, and Migrate. The 'Delete' column contains a trashcan icon. The 'Migrate' column contains a button labeled 'Migrate'. The 'View' column contains a folder icon. The 'Copy' column contains a document icon. The 'Export' column contains a download icon. The 'Delete' column contains a trashcan icon. The 'Migrate' column contains a button labeled 'Migrate'. The 'View' column contains a folder icon. The 'Copy' column contains a document icon. The 'Export' column contains a download icon. The 'Delete' column contains a trashcan icon. The 'Migrate' column contains a button labeled 'Migrate'. The 'View' column contains a folder icon. The 'Copy' column contains a document icon. The 'Export' column contains a download icon. The 'Delete' column contains a trashcan icon. The 'Migrate' column contains a button labeled 'Migrate'. The 'View' column contains a folder icon. The 'Copy' column contains a document icon. The 'Export' column contains a download icon. The 'Delete' column contains a trashcan icon. The 'Migrate' column contains a button labeled 'Migrate'. The 'View' column contains a folder icon. The 'Copy' column contains a document icon. The 'Export' column contains a download icon. The 'Delete' column contains a trashcan icon. The 'Migrate' column contains a button labeled 'Migrate'. The 'View' column contains a folder icon. The 'Copy' column contains a document icon. The 'Export' column contains a download icon. The 'Delete' column contains a trashcan icon. The 'Migrate' column contains a button labeled 'Migrate'.

Figure 7.2

- Once enabled, published packages are visible and can be searched upon. In a Published Package card an ellipsis is in the top right corner, clicking on the ellipsis allows the user to perform actions.



Figure 7.4

- Copy** functionality is available for Open/Unpublished packages as well as Published packages. A good way to view/make changes to another user's package is by the Copy functionality. A copied package displays in the Open/Unpublished section (until the artifacts are complete and the new owner publishes it). Once user clicks Copy, a modal displays displaying the default name and giving the user the option to rename the new copy. (Figure 7.4, Figure 7.5)

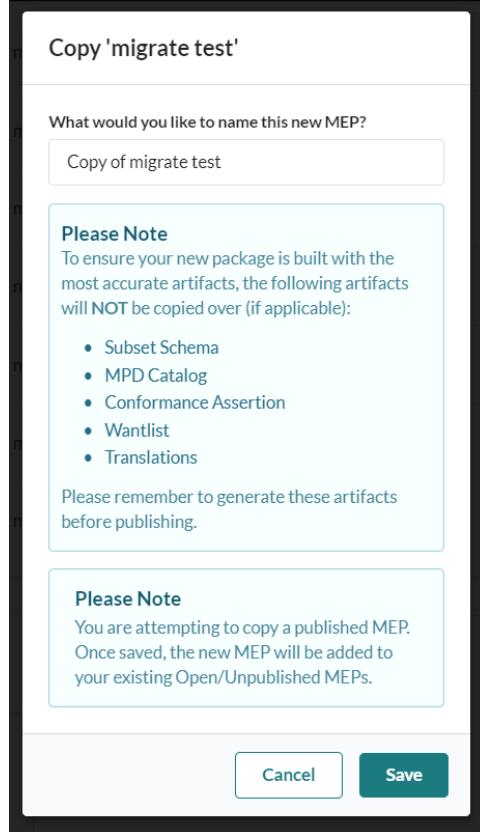


Figure 7.5

- The **Delete** functionality allows a user to permanently delete packages. Users are only able to delete packages in which they are the owner. Upon clicking delete, a message appears giving the user a warning that they are about to delete a package. (Figure 7.6)

## Confirm Delete - new

Are you sure you want to permanently delete this Message Exchange Package?

Cancel

Yes

Figure 7.6

- iii. The **Export** functionality allows the user to export the package to their computer.
- iv. **Migrate Release** functionality is described in **Section f** below.
- v. The **Translate** feature is available to translate the format of published packages. The formats available are:
  1. CMF (*packages created in NIEMOPEN 4.0 or higher*)
  2. JSON LD
  3. XML
  4. JSON Schema (*packages created in NIEMOPEN 4.0 or higher*)
  5. OWL (*packages created in NIEMOPEN 4.0 or higher*)

Once the format has been selected (multiple formats can be selected at a time), the new package formats will be added to the package artifacts and are listed on the published package card. (Figure 7.7)

### Published Message Exchange Package

#### Format Translation Completed

new's format translation has been successfully completed and added to its package artifacts.

Figure 7.7

- f. The **Migrate Release** section provides the functionality to migrate Unpublished packages to a different release. See section labeled F in the figure.
  - a. Begin by clicking **Migrate** you can select the desired release. (Note: The selection will not allow a user to migrate backwards) (Figure 7.8)
  - b. A summary will appear after confirming **Migrate** in which details of the migration will display. (Figure 7.9)
  - c. Original MEP and migrated MEP will both appear on the Open/Unpublished table of My Home



Figure 7.8

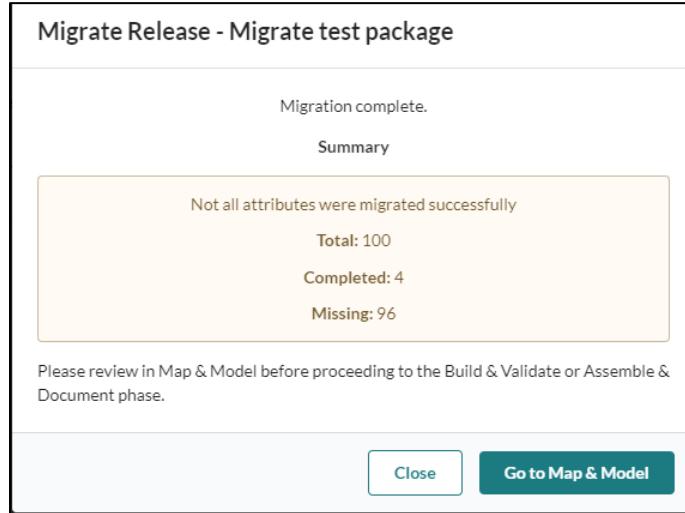


Figure 7.9

## 8 MEP BUILDER TAB

### a. MEP Builder Page Navigation: (Figure 8.1)

- (1) **Metadata** area - MEP Metadata fields, Save, Save and Close and Hints toggle. **TIP** - Prior to uploading any files to include in your MEP package, you must first enter a MEP Name in the “MEP Name” field
- (2) **Left Navigation** area - Lifecycle Phases, Message Exchange Package artifacts and Message Exchange Package Build Components.
- (3) **Workspace** - Interactive MEP Lifecycle Graphic, MEP Mapping Spreadsheet Import and modification.

NIEMOPEN

Current Release Contact

Getting Started My Home MEP Builder Training Administrator

MEP Metadata

MEP Name:  Release:  Version:  Status:  Status No.:  Point of Contact:  Email:  Save Save & Close

Show less Description:  Organization Name:  Organization Type:  Communities of Interest:  Exchange Partners:

1

2

3

Create a New Message Exchange Package

Welcome to the Message Exchange Package Creation Guide

This view will help guide you through each of the six Message Exchange Package Lifecycle phases where you will create and compile the artifacts needed for your new Message Exchange Package.

When you're ready to get started, select Scenario Planning from the left side navigation pane or from the diagram below.

Message Exchange Package Creation Guide

Lifecycle Phases

Scenario Planning

Analyze Requirements

Map & Model

Build & Validate

Assemble & Document

Publish & Implement

Message Exchange Package Artifacts

Message Exchange Package Build Components

SCENARIO PLANNING

- Business Process Diagrams
- Use Case Diagrams
- Sequence Diagrams

ANALYZE REQUIREMENTS

- Sample XML Instances
- Business Requirements

MAP & MODEL

- Exchange Content Model
- Mapping Document

BUILD & VALIDATE

- WantList
- Subset Schema

- Build Custom Model Extensions
- Validate package artifacts for conformance

ASSEMBLE & DOCUMENT

- Master Document
- Catalog

- Change Log
- Business Rules

PUBLISH & IMPLEMENT

- Conformance Assertion
- Publish the MEP to a repository and implement the exchange.

Figure 8.1

- b. **Metadata fields:** Starting from the top of the page, the metadata fields allow you to enter data specific to the MEP package. This section is expandable and is collapsed in the default state (Figure 8.2). Figure 8.3 shows the section in the expanded state. Available fields in the metadata section are listed below.

- (1) **MEP Name** - The name of the MEP package. (Required)
- (2) **Release** - This field only contains valid release numbers and defaults to the latest version (Required)
  - a. Moving forward in the workflow (or clicking ‘Save’ or ‘Save and Close’), will display a pop-up verifying the selection of the release (Figure 8.4), confirming the selection will then ‘lock’ the release field (Figure 8.5).
- (3) **Version** (Required)
- (4) **Status**
- (5) **Status No.**
  - a. Only available if the Status field is completed. (Required, (when status field is completed))
- (6) **Point of Contact** - User enters desired POC here.

- (7) Email - Contact email if desired.
- (8) Description - A summary describing the MEP.
- (9) Organization Name - (Required)
- (10) Organization Type - Describes type of organization listed above.
- (11) Communities of Interest tag
- (12) Exchange Partners tag

Getting Started My Home MEP Builder Training Administrator

MEP Metadata **MEP Name \*** **Release \*** **Version 1 \*** **Status** **Status No.** **Point of Contact** **Email**

Show more  5.2 1 Status Status   Save Save & Close Hints

Figure 8.2

Getting Started My Home MEP Builder Training Administrator

MEP Metadata **MEP Name \*** **Release \*** **Version 1 \*** **Status** **Status No.** **Point of Contact** **Email**

5.2 1 Status Status   Save Save & Close Hints

Description Organization Name \* Organization Type Communities of Interest Exchange Partners

Figure 8.3

#### Confirm MEP Metadata

You are creating this MEP under NIEM Release 5.2.

Before proceeding, please confirm MEP Name and NIEM Release to ensure proper mapping of properties and types, conformance attestation, and to enforce the appropriate NDR Rules.

<b>MEP Name *</b>	<b>NIEM Release *</b>
<input type="text"/> MyMEP	<input type="text"/> 5.2
<b>Organization Name *</b>	
<input type="text"/> Joint Staff	

**Cancel**

**Confirm**

Figure 8.4

Getting Started My Home MEP Builder Training Administrator

MEP Metadata **MEP Name \*** **Release \*** **Version 1 \*** **Status** **Status No.** **Point of Contact** **Email**

Show more  5.2 1 Status Status   Save Save & Close Hints

Figure 8.5

## 8.1 LIFECYCLE PHASES.

(1) **Scenario Planning** - To begin constructing the MEP package, begin with “Scenario Planning” by clicking on the MEP Graphic in the workspace or clicking the left navigation area. If you have started the scenario planning workflow and have not entered a MEP name in the metadata field, the upload document functionality is by default disabled (Figure 8.6)



Figure 8.6

(a) Once a MEP name has been entered, you can upload a document by clicking the “Upload Document” button. See Figure 8.7.



Figure 8.7

(b) Once the “Upload Document” button has been pressed, the upload document dialogue will display see (Figure 8.8). Here you can either drag and drop a file or browse for a file within you computer directory structure.

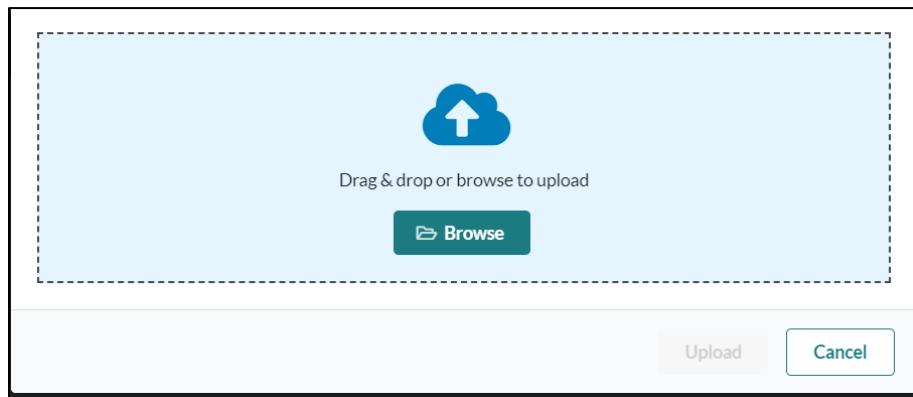


Figure 8.8

(c) Once the file has been selected, the system provides notification via a checkmark that the file is in the queue. Next, select the Artifact Type for example “Mapping Spreadsheet” as depicted in figures (8.9 and 8.10). Artifact tags to chose from include:

- Business Rules
- Catalog File
- Change Log
- Conformance Assertion
- Distribution Statement
- Mapping Spreadsheet
- NIEMOPEN Ext Schema
- NIEM Schema Subset
- Other
- ReadMe
- SampleFile
- Scenario Planning Diagram

(d) Also, expand the Message Exchange Package Artifacts to see your file in the tree structure. See Figure 8.11

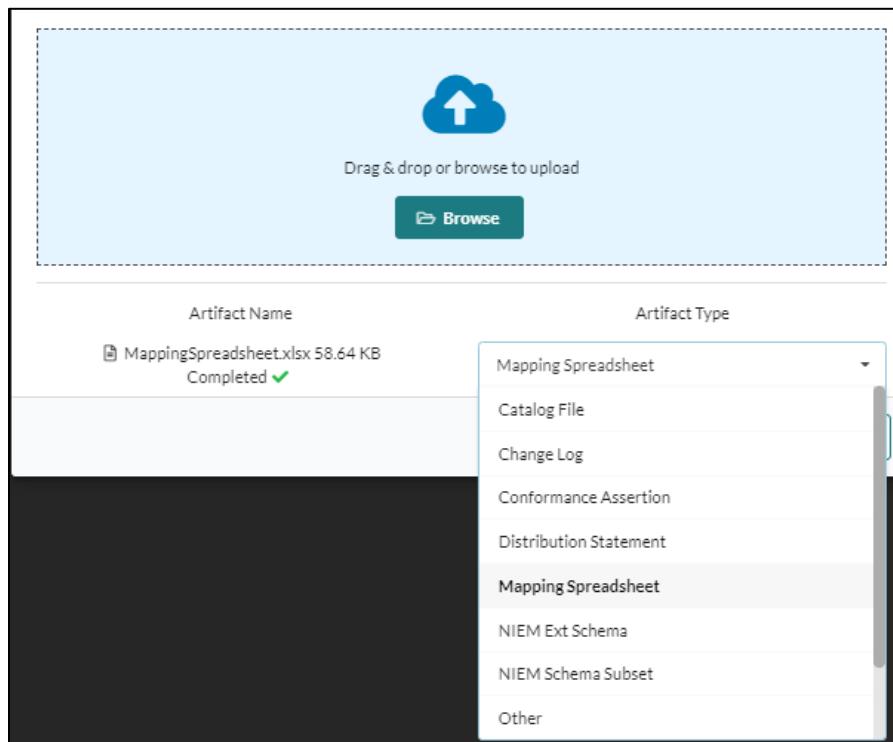


Figure 8.9

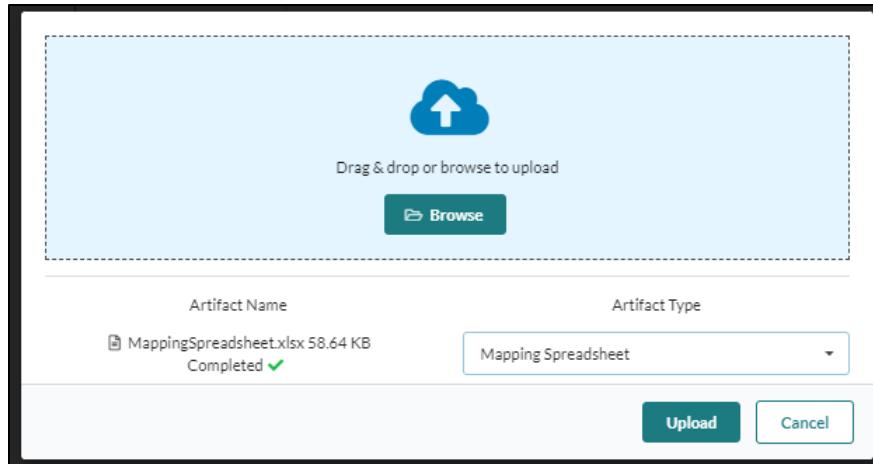


Figure 8.10

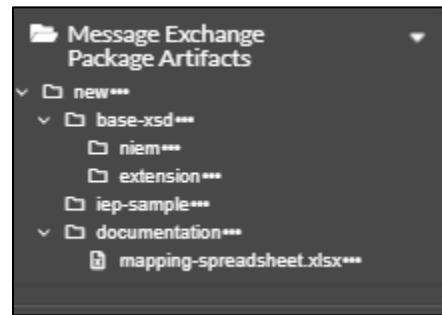


Figure 8.11

**(2) Analyze Requirements** - In this phase, the tool provides the ability to:  
 (a) Download a Mapping Template. Figure 8.12.

Current Release      Contact

MEP Name: MyMEP      Release: 4.2      Revision:      Status:      Point of Contact:      Email:

Message Exchange Package Creation Guide

Lifecycle Phases

- Scenario Planning
- Analyze Requirements (selected)

Data Requirements

+ Upload New Document

Download Data Mapping Template

Analyze Requirements

In this phase, the information exchange scenario will be broken down into finer detail to understand the data requirements.

In this phase, you may upload supporting documentation as well as begin to do collection of these data requirements. You may utilize any of the following methods:

- Download a standardized data mapping spreadsheet to record data requirements.
- Import data requirements from a standardized data mapping spreadsheet.
- Enter data requirements via an online form or table.

DataMappingTemplate.xlsx

Figure 8.12

- (b) Upload Documents - See upload document details in the previous section.
- (c) Import a Mapping Spreadsheet – The systems can import both standard mapping spreadsheets and custom mapping spreadsheets.
- (d) A mapping spreadsheet can be imported into the mapping grid and modified within the application via the “Import Mapping Spreadsheet button”.
  - Standard Mapping Spreadsheet - Select “NIEM Mapping Spreadsheet, then select the desired document. Next, click the **load** button and the file will populate the grid on the workspace. See Figure 8.13 below.

The screenshot shows a user interface for managing data requirements. On the left, a sidebar titled "Data Requirements" contains buttons for "Upload New Document" and "Download Data Mapping Template". The main area is titled "Analyze Requirements" and contains the following content:

**In this phase, the information exchange scenario** will be broken down into finer detail to understand the data requirements.

Define your business rules and requirements, which define the exchange, as well as the expectations of the exchange.

In this phase, you may upload supporting documentation as well as begin to document data requirements. To assist in the collection of these data requirements, you may utilize any of the following methods:

- Download a standardized data mapping spreadsheet to record data requirements
- Import data requirements from a standardized data mapping spreadsheet
- Enter data requirements via an online form or table

**Import Mapping Spreadsheet**

Figure 8.13

- Custom Mapping Spreadsheet - Select “Custom Mapping Spreadsheet”, then select the desired document. Next, click the **load** button and the file will populate the grid on the workspace. The workflow for incorporating a custom mapping spreadsheet has two paths. With a header row or without a header row.
  - i. Header Row. You must select if the spreadsheet has a header.

Map Custom Headers - CustomeSpreadsheetHeader.xlsx

Does your Custom Spreadsheet have column headers?

Yes  
 No

**Cancel** **Next**

Figure 8.14

1. Enter the row the header row resides.

Map Custom Headers - CustomeSpreadsheetHeader.xlsx

Does your Custom Spreadsheet have column headers?

Yes  
 No

What row are your column headers in?

1|

**Cancel** **Next**

Figure 8.15

2. Click Next
3. Map spreadsheet columns to the standard mapping document columns by using the pop up dialog in figure.

Map Custom Headers - CustomeSpreadsheetHeader.xlsx

Spreadsheet Column	NIEM Mapping Spreadsheet	Reset All
Pname	→ Property - Source - Property Name	Clear
Data	→ Property - Source - Data Type	Clear
Description	→ Property - Source - Definition	Clear
Mapping Code	→	Clear
Description	→	Clear
Notes	→	Clear
Target NS Prefix	→	Clear
Property Name 2	→	Clear
Qualified Data Type	→	Clear
Definition 2	→	Clear
Substitution Group 2	→	Clear
Is Abstract? default=FALSE	→	Clear
Style default=element	→	Clear
Keywords	→	Clear
Example Content	→	Clear
Usage Info	→	Clear

**Go Back** **Cancel** **Map**

Figure 8.16

4. Click “Map” and you will see the data render in the mapping grid.
- ii. Without Header Row. This time you will pick “No header row”
  1. Click Next and map your columns to the NIEM Mapping Spreadsheet column names using the mapping interface provided. Figure 8.17

Map Custom Headers - Custom Mapping Spreadsheet No Header.xlsx

Does your Custom Spreadsheet have column headers?

Yes  
 No

Which column(s) would you like to map?

a to d

**Cancel** **Next**

Figure 8.17

- Once you have completed your mapping, click “Map” and you will be taken to the mapping grid. See Figure 8.18.

Map Custom Headers - Custom Mapping Spreadsheet No Header.xlsx

Spreadsheet Column	NIEM Mapping Spreadsheet	Reset All
A	→ Property - Source - NS Prefix	Clear
B	→ Property - Source - Property Name	Clear
C	→ Property - Source - Data Type	Clear
D	→ Property - Source - NS Prefix	Clear

**Go Back**

**Mapping**

Value      Code

Property - Source - NS Prefix  
Property - Source - Property Name  
Property - Source - Data Type  
Property - Source - Definition  
Property - Source - Sample Value  
Property - Mapping - Code  
Property - Target - NS Prefix  
Property - Target - Property Name

**Cancel** **Map**

Figure 8.18

The screenshot shows the NIEM Data Quality tool's main interface with a modal dialog titled "Import Mapping Spreadsheet". The dialog contains a dropdown menu set to "MappingSpreadsheet.xlsx", two radio button options ("NIEM Mapping Spreadsheet" and "Custom Mapping Spreadsheet" with the former selected), and a large blue "Load" button.

Figure 8.19

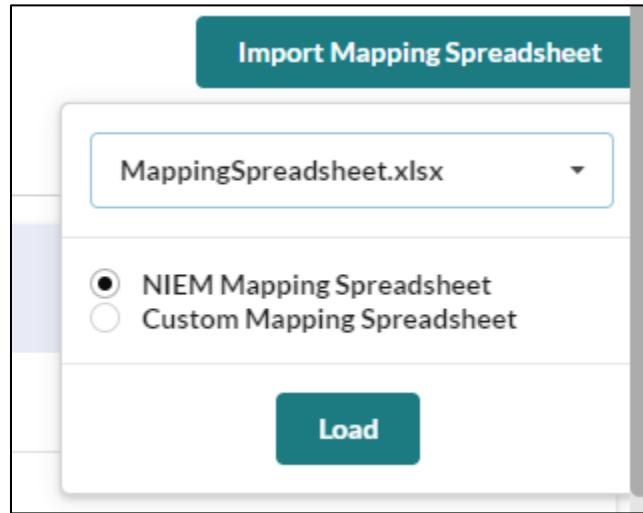


Figure 8.20

Now that the grid has populated, you can export the data sheet in .csv or .pdf format by clicking the Download Icon.

The screenshot shows the Semantic Modeler interface with the 'Property' tab selected. At the top, there are tabs for Property, Type, Type-Has-Property, Codes | Facets, Namespace, Local Terminology, Type Union, and Metadata. Below the tabs is a toolbar with download and add buttons. The main area is a table titled 'Mapping' with columns for Actions, Source, Mapping, and Target. The Source section includes columns for NS Prefix, Property Name, Data Type, Definition, Sample Value, and Code. The Target section includes columns for NS Prefix, Property Name, Qualified Data Type, Definition, and Subs Group. There are also filter icons for each column. A message at the bottom right says 'No records to display'.

Mapping									
Actions	Source				Target				
	NS Prefix	Property Name	Data Type	Definition	Sample Value	Code	NS Prefix	Property Name	Qualified Data Type

Figure 8.21

(3) **Map & Model** - Here you can edit the mapping sheet within the workspace and Map results for the “Property” and “Type” tabs to your mapping spreadsheet. You can also map from :

(a) Click the plus sign to add a row.

The screenshot shows the Semantic Modeler interface with the 'Property' tab selected. The mapping spreadsheet now contains two rows of data. The first row maps 'actor' (Property Name) to 'Person' (Data Type). The second row maps 'countryOfOrigin' (Property Name) to 'Country' (Data Type). Each row has a 'Map' button, a pencil icon for editing, and a trash icon for deleting. A green checkmark is visible next to the 'actor' row, indicating it has been successfully mapped. A note below the rows specifies: 'A director of e.g. tv, radio, movie, video games etc., or in an event. Actors can be associated with individual items or with a series, episode, clip. Supersedes actors.' and 'The country of the principal offices of the production company or individual responsible for the movie or program.' Both rows have an 'add' status.

Mapping									
Actions	Source				Target				
	NS Prefix	Property Name	Data Type	Definition	Code	NS Prefix	Property Name	Qualified Data Type	
		actor	Person	An actor, e.g. in tv, radio, movie, video games etc., or in an event. Actors can be associated with individual items or with a series, episode, clip. Supersedes actors.					
		countryOfOrigin	Country	The country of the principal offices of the production company or individual responsible for the movie or program.					

Figure 8.22

(b) Click the pencil to edit a row. The green checkmark confirms and the red “x” cancels. See Figure 8.23

A screenshot of a search interface. At the top, there are five small edit icons (represented by a pencil icon inside a rounded rectangle). Below them is a row of fields with dropdown arrows: 'new' (highlighted in blue), 'actor', 'Person', 'An actor, e.g. in tv, radio, movie, video games', 'add', and 'N'. To the left of these fields are two small icons: a green checkmark and a red 'X'. The entire interface is enclosed in a thin black border.

Figure 8.23

(c) Click the trash can to delete a row. The green checkmark confirms and the red “x” cancels. See Figure 8.24

A screenshot of a confirmation dialog. It shows a row of fields with edit icons at the top. Below the fields, a message reads: "Are you sure you want to delete this row?". To the left of the message are two small icons: a green checkmark and a red 'X'. To the right of the message, there is a detailed description: "The country of the principal offices of the production company or individual responsible for the movie or program." Below the description are three buttons: "Map" (highlighted in blue), "Edit", and "Delete" (represented by a trash can icon). Further down, there are buttons for "Country", "add", and "cancel". The entire dialog is enclosed in a thin black border.

Figure 8.24

(d) Map Results – Click the search and append results to your mapping spreadsheet as follows:

- Click the “Map Button” which will result in a searchable dialog. See Figure 8.25
- Review the results and select the element to map to your mapping spreadsheet by clicking the radio button.
- Click the “Map button” to append your selection to the mapping spreadsheet.

A screenshot of a dialog box titled "Map NIEM Components". At the top, it says "Search Type: Property". Below that is a search bar with the placeholder "SearchString" and the word "Actor" typed into it. To the right of the search bar are two buttons: "Search NSCI" and "Search Common Components". At the bottom of the dialog are two buttons: "Map" (highlighted in blue) and "Cancel". The entire dialog is enclosed in a thin black border.

Figure 8.25

Map NIEM Components							
Search Type Properties			Search String	Actions			
<b>SGT Results</b>							
Select to Map							
Prefix	Name	Type Prefix	Type Name	Definition			
<input type="radio"/>	oJfs	nc	TextType	A description of the specific cultural needs of a juvenile and family.			
<input type="radio"/>	ChargeEnhancingFactor		ChargeEnhancingFactorType	A factor or reason that makes a charge more serious.			
<input type="radio"/>	ChargeEnhancingFactorAugmentationPoint			An augmentation point for ChargeEnhancingFactorType.			
<input type="radio"/>	ChargeEnhancingFactorDescriptionText	nc	TextType	A description of a factor or reason that makes a charge more serious.			
<input type="radio"/>	ChargeEnhancingFactorReferenceDate	nc	DateType	A reference date for an enhancing charge factor or reason.			
<input type="radio"/>	ChargeEnhancingFactorStatusText	nc	TextType	A status of a factor or reason that makes a charge more serious.			
<input type="radio"/>	ChargeEnhancingFactorText	nc	TextType	A factor or reason that makes a charge more serious.			
<input type="radio"/>	ChargeReducingFactorText	nc	TextType	A factor which may make a charge less serious or limit the penalty.			
<input type="radio"/>	IncidentFactor		IncidentFactorType	A factor involved that has an effect on an incident.			
<input type="radio"/>	IncidentFactorAugmentationPoint			An augmentation point for IncidentFactorType.			
<input type="radio"/>	IncidentFactorCode	ucr	IncidentFactorCodeType	A circumstance of factor in an incident.			
<input type="radio"/>	IncidentFactorDescriptionText	nc	TextType	A description of a circumstance or factor involved in an incident.			
<input type="radio"/>	IncidentFactorInvolvedIndicator	nlam-ns	Boolean	True if a factor in an incident is known to be true; false if it is suspected, estimated, or otherwise.			
<input type="radio"/>	IncidentFactorNIBRSAggregatedAssaultHomicideCode	ucr	AggregatedAssaultHomicideFactorsCodeType	A circumstance of factor in an incident.			
<input type="radio"/>	IncidentFactorNIBRSIncitationCode	ucr	IncidentBiasIncitationCodeType	A circumstance of factor in an incident.			

Figure 8.26

\*View the results of your mapping in the Mapping spreadsheet. See Figure 8.27

Property Name	Data Type	Definition	Code	NS Prefix	Property Name	Qualified Data Type
<input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>
actor	Person	An actor, e.g. in tv, radio, movie, video games etc., or in an event. Actors can be associated with individual items or with a series, episode, clip. Supersedes actors.	add	j	ChargeEnhancingFactor	ChargeEnhancingFactor

Figure 8.27

(e) To Map “Type” and set Cardinality complete the following steps:

- On the “Type” tab of your mapping spreadsheet, click the Map button beside the row you wish to search results.
- Click select from the default results or search for another string.
- When you find the desired results expand Name results and select the elements you wish to add by clicking the check box(s) in the “add” column.
- Set the Cardinality at 0.1,1.1, 0.unbounded, 1.unbounded. See Figure 8.28
- Click the Map button to append these results to the mapping spreadsheet. See Figure 8.29-8.31

SSGT Results

Select to Map	Prefix	Name	Definition															
<input type="radio"/>	xs	duration	A data type for a duration of time with the format PnYnMnDTnHnMnS, where nY is the number of years, nM is the number of months, nD is the number of days, nH is the number of hours, nM is the number of minutes, and nS is the number of seconds.															
<input type="radio"/> <b>j</b>			<b>▼ TermType</b> <table border="1"> <thead> <tr> <th>Add</th> <th>Element Name</th> <th>Cardinality</th> </tr> </thead> <tbody> <tr> <td><input checked="" type="checkbox"/></td> <td>j:TermDuration</td> <td>0..1</td> </tr> <tr> <td><input checked="" type="checkbox"/></td> <td>j:TermLifeIndicator</td> <td>1..1</td> </tr> <tr> <td><input type="checkbox"/></td> <td>j:TermMaximumDuration</td> <td>0..unbounded</td> </tr> <tr> <td><input type="checkbox"/></td> <td>j:TermMinimumDuration</td> <td>0..unbounded</td> </tr> </tbody> </table> <p>A data type for a duration length either in specific terms or as a range.</p>	Add	Element Name	Cardinality	<input checked="" type="checkbox"/>	j:TermDuration	0..1	<input checked="" type="checkbox"/>	j:TermLifeIndicator	1..1	<input type="checkbox"/>	j:TermMaximumDuration	0..unbounded	<input type="checkbox"/>	j:TermMinimumDuration	0..unbounded
Add	Element Name	Cardinality																
<input checked="" type="checkbox"/>	j:TermDuration	0..1																
<input checked="" type="checkbox"/>	j:TermLifeIndicator	1..1																
<input type="checkbox"/>	j:TermMaximumDuration	0..unbounded																
<input type="checkbox"/>	j:TermMinimumDuration	0..unbounded																

Confirm SSGT Mapping Selection  
Map j:TermType to 'Duration'?

**Map** **Cancel**

Figure 8.28

Actions				Source		Mapping	Target				
	NS Prefix	Type Name	Parent/Base Type	Definition	Code	NS Prefix	Type Name	Elements In Type	Parent/Base Type	Definition	Style
<input type="button" value="Map"/>	<input type="button" value="Edit"/>	<input type="button" value="Delete"/>	accessModeSufficient	A list of single or combined accessModes that are sufficient to understand all the intellectual content of a resource. Expected values include: auditory, tactile, textual, visual.	add						Object
<input type="button" value="Map"/>	<input type="button" value="Edit"/>	<input type="button" value="Delete"/>	accessModeSufficient	A list of single or combined accessModes that are sufficient to understand all the intellectual content of a resource. Expected values include: auditory, tactile, textual, visual.	add						Object
<input type="button" value="Map"/>	<input type="button" value="Edit"/>	<input type="button" value="Delete"/>	CreativeWork	Thing	no match						Object
<input type="button" value="Map"/>	<input type="button" value="Edit"/>	<input type="button" value="Delete"/>	Duration	Quantity	map	j	TermType	j:TermDuration(0..1) j:TermLifeIndicator(1..1)		A data type for a duration length either in specific terms or as a range.	Object

Figure 8.29

Map NIEM Components

Common NIEM Component Results					
Select to Map	Prefix	Name	Type Profile	Type Name	Definition
*	nc	CaseHistory	item-ns	gYear	A year a case is opened.
<input type="radio"/>	nc	PersonEyeColorAbstract			A data concept for a color of the eyes of a person.
<input type="radio"/>	nc	PersonEyeglassesAbstract			A data concept for a kind of glasses or other eyewear.

Confirm Common Component Mapping Selection  
Map nc:CaseHistory to 'gYear'

**Map** **Cancel**

Figure 8.30

The screenshot shows a table mapping from a source 'actor' to a target 'CaseYearDate'. The columns include: Actor, Source, Mapping, Target, and various metadata fields like Namespace, Local Terminology, Type Union, and Metadata.

Actor	Source	Mapping	Target	Namespace	Local Terminology	Type Union	Metadata									
ID Prefix	Property Name	Data Type	Definition	Sample Value	Code	ID Prefix	Property Name	Qualified Data Type	Definition	Business Group	Is Abstract	Style	Keywords	Example Content	Usage Info	
T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	
An actor, e.g. In tv, radio, movie, video, game, etc., or in an event. Actors can be associated with individual items or entire series, episode, clip, Superheroes, actors.																
				add	nc	CaseYearDate	gYear	A year a case is opened.				false	element			

Figure 8.31

#### (4) Build & Validate - This Phase will allow you to:

The screenshot shows the 'Build & Validate' section of the guide. It includes options for selecting a nullable default value (True), including documentation, and generating a subset schema. A summary box states: "Now that the NIEM elements have been selected, the next step is to create the schemas and artifacts that meet NIEM standards." Below it, a note says: "In this phase, the wantlist and Subset Schema will be generated together and added to the Message Exchange Package Artifacts."

Figure 8.32

- Select a Nillable Default Value**
- Include documentation**
- Build Custom Model Extensions**

If needed, create Custom Model Extensions ....

- To begin, click the Build Custom Model Extension button.
- Choose what type of extension you would like to add to your package. **"Data Element"** or **"Container"** (Figure 8.33)

#### A. Data Element Workflow

- Choose Type of Data Element - Choose from the following:
  - Boolean
  - Codes
  - Date
  - Decimal
  - Integer
  - Text

- Enter a Data element Name (Figure 8.33)

- Choose a Specific Type (Figure 8.33)

4. Define the Data Element (Figure 8.33)
5. Click the **Create Element** button to create the element
6. A "View my elements" area that contains your created element (Figure 8.34)
  - A toggle exists to display and hide the created data elements from view

Custom Model Extension Builder - CatalogTest3.0

**Create Element** ⓘ

Please choose, name, and define the element you wish to create.

What type of element would you like to create? \*

- Data Element
- Container

What type of Data Element? \*

Date

What would you like to name this Data Element? \* Specific Type \*

Birthday

YYYY/MM/DD

Please define this Data Element. \*

My Birthday

**Create Element**

**View My Data Elements**

You currently have no elements.

**Cancel** **Build**

Figure 8.33

Custom Model Extension Builder - CatalogTest3.0

**Create Element** [?](#)

Please choose, name, and define the element you wish to create.

What type of element would you like to create? \*

- Data Element
- Container

What type of Data Element? \*

What would you like to name this Data Element? \* Specific Type \*

Please define this Data Element. \*

(What this data represents, is made up of, will be used for, etc.)

[Create Element](#) [Cancel](#) [Build](#)

Figure 8.34

## B. Container Workflow

1. Choose Type of Container - Choose from the following:
  - New Container
  - Based on Existing Container
  - Root Element
2. Enter a Container Name
3. Define the Container
4. To choose elements you would like to add to the container, select a namespace to choose from.

CUSTOM MODEL EXTENSION BUILDER - CatalogTest3.0

What type of element would you like to create? \*

- Data Element
- Container

What type of container? \*

New Container

What would you like to name this new Container? \*

New Container

Please define this Container. \*

This is my new container

Add Container Elements [?](#)

Please choose elements to add to your new container.

Which namespace would you like to choose elements from? \*

Name

[View My Containers](#)

You currently have no containers.

[View My Container Elements](#)

[Cancel](#) [Build](#)

Figure 8.35

5. Next, select the Container Element(s) you'd like to add.

6. Click the "Add" button. This button is disabled until a namespace and at least one element has been selected.

The screenshot shows the 'Custom Model Extension Builder - Catalog test.v0' interface. A modal dialog titled 'Add Container Elements' is open. It contains fields for defining a new container, selecting a namespace, and choosing elements to add. On the right, there's a 'View My Container Elements' section which is currently empty. At the bottom are 'Cancel' and 'Build' buttons.

Figure 8.36

7. A "View my Container elements" area contains each added Container Element

- A toggle exists to display and hide the created data elements from view

## 8. Click the **Create Element** Button

The screenshot shows the 'Add Container Elements' dialog. It includes fields for selecting a namespace and adding elements, and a large 'Create Element' button at the bottom left. The 'Add' button is located to the right of the element selection field.

Figure 8.37

9. A "View my Container Elements" area that contains your created element

- A toggle exists to display and hide the created data elements from view

View My Data Elements

Name	
Date:Birthday	
Total: 1	<input type="button" value="Fullscreen"/>

View My Containers

Name	
New Container (1)	
Total: 1	<input type="button" value="Fullscreen"/>

10. A Create Element control exists to create the element
11. If you are ready to create, push the “Create Element” Button
12. If needed, Data Elements can be **Edited** via the pencil icon in the viewport. After making changes, select **Save Changes** and the Element will close. If changes do not need to be saved, you may select **Cancel Edits**.

View My Data Elements

Name	Edit	Delete
Boolean:myNewElementIndicator	<input type="button" value="Edit"/>	<input type="button" value="Delete"/>
Code:otherdataelementCodeType	<input type="button" value="Edit"/>	<input type="button" value="Delete"/>
Total: 2	<input type="button" value="Fullscreen"/>	

13. Additionally, Elements can be **Deleted** by selecting the trash can icon in the viewport. An **Undo** option is available for 5 seconds and then the Data Element is permanently deleted.

myNewElementIndicator has been deleted.		<a href="#">Undo</a>
Name	<a href="#">Edit</a>	<a href="#">Delete</a>
Code:otherdataelementCodeType		

Total: 1 [Fullscreen](#)

Figure 8.38

14. The Build Custom Model Extensions Modal includes the fields URI and Definition. (Figure 8.39)

a. A Uniform Resource Identifier (URI) identifies a resource.

- i. May be an absolute URI (e.g., <http://example.org/incident182#person12>)
- ii. May be a relative URI (e.g., #person12)

b. A Definition is for the entire extension.

15. Click **Build** to build the extension and **Confirm** (Figure 8.39)

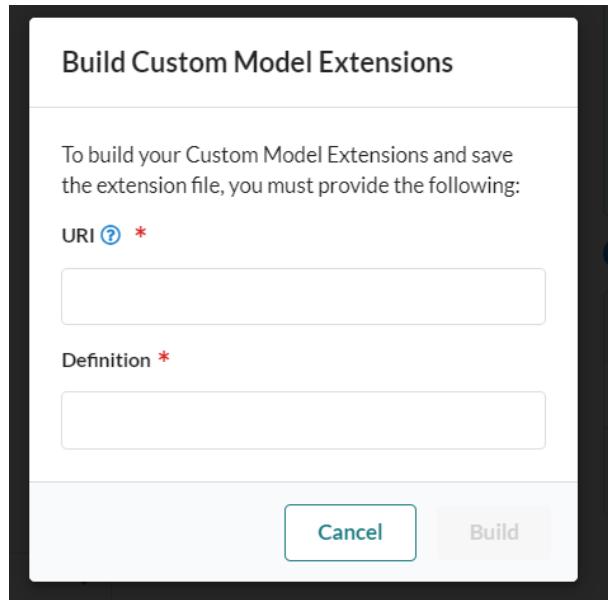


Figure 8.39

16. You will see a notification message once you've click build confirming build success and the extension will show up in the artifact tree in the extension folder (extension.xsd). (Figure 8.40)

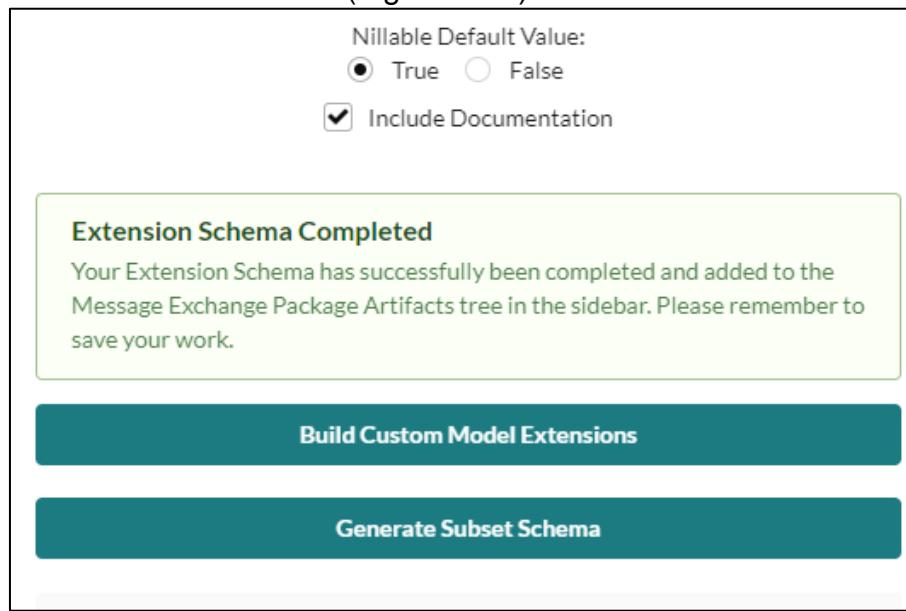


Figure 8.40

17. The Custom Model Extension Builder has incorporated the **NIEMOpen Naming and**

**Design Rules** to aid in enforcing **conformance**. Links to the NDR site, tool tips, and error messages appear throughout the CME Builder to remind the user of the conformance requirements. These rules vary depending on the NIEMOpen release.

### C. How to Build a CodeType Element

1. The CodeType Data Element has a few differences.
2. Once the initial information is completed, the workflow moves to the **Add Codes** section. The user can either add codes manually in this section, or (following the standardized Code List template, import their own code list for the CME)

Add Codes 

Please add codes individually or [import](#) a .csv or .xlsx Code List file.

To download a standardized Code List template, please click [here](#).

What type of code would you like to create? \*



What is the Key? \*  What is the Value? \*



 View My Code List 

You currently have no code elements.

#### iv. Generate a Subset Schema

- Click the “Generate Subset Schema” button to generate the wantlist and subset schema. See Figure 8.41
- A green notification will notify you that the Subset Schema has been generated and you can see the schema and wantlist populate the MEP Artifacts area of the left Nav. See figure 8.42

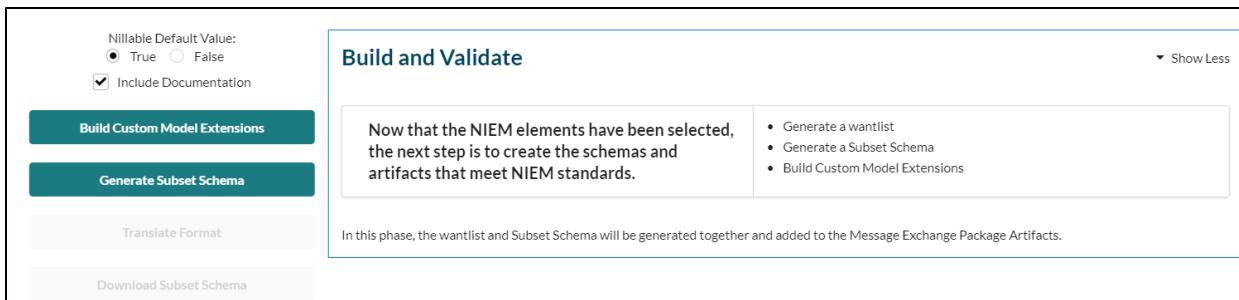


Figure 8.41

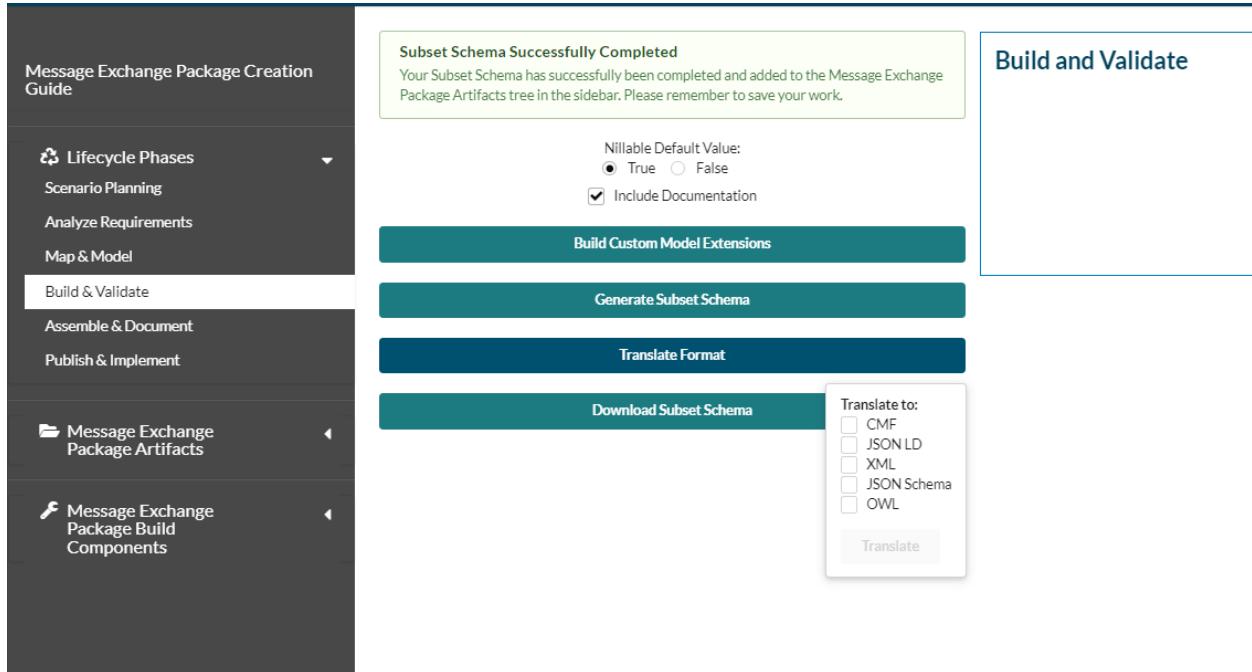


Figure 8.41

## v. Translate Format

At this point you may also want to Translate your files to another format.

- You may do so by clicking the Translate Format button and checking the desired format followed by the Translate button
  - i. The format options of CMF, XML, JSON Schema, and OWL utilize the API 2.0 to perform the translations. Selecting these options will result in a

Figure 8.42

new folder named Transforms to be created in the Artifact Tree. See Figure 8.44

vi. Download a Subset Schema.

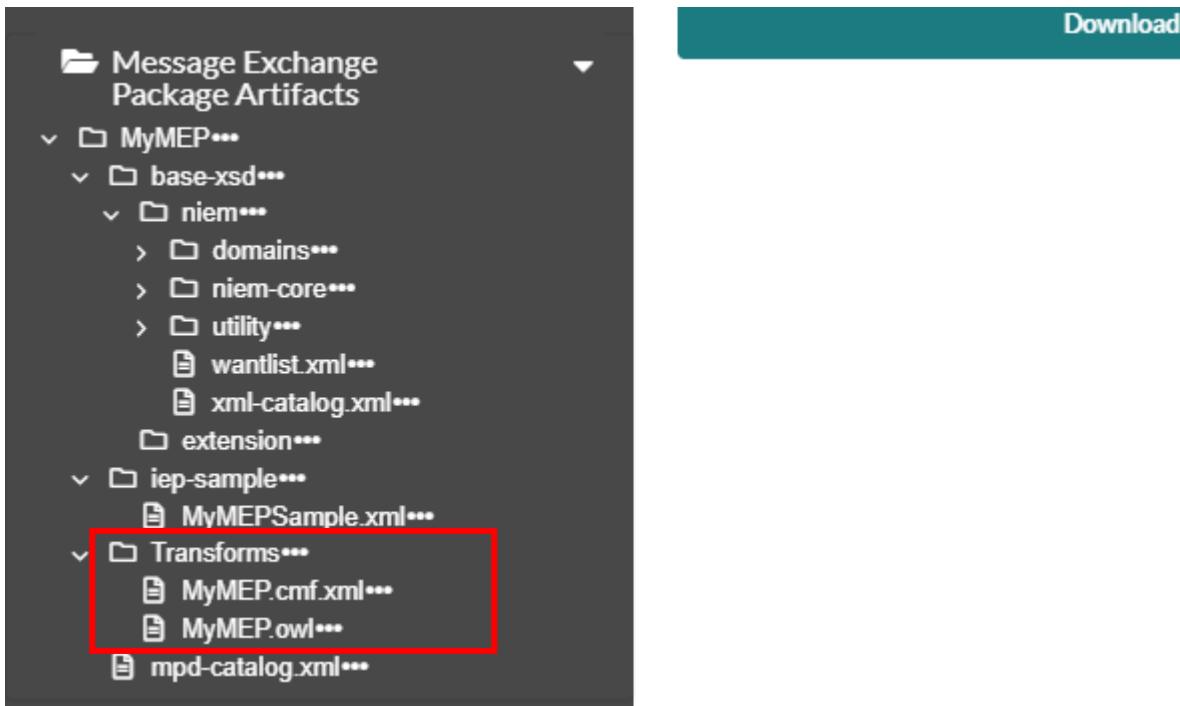


Figure 8.44

- After generating the Subset Schema, the package can be downloaded and available to open. The standard windows download dialogue will render at the top right of your screen. See figure 8.45
- After downloading the Subset Schema, you can open the download folder in the Windows File Explorer. You will see the schema files, including the “Wantlist” if applicable. See Figure 8.46



Figure 8.45

Name	Type	Compressed size	Password p...	Size
domains	File folder			
utility	File folder			
niem-core.xsd	XSD File	2 KB	No	
wantlist.xml	XML File	1 KB	No	
xml-catalog.xml	XML File	1 KB	No	

Figure 8.46

### vii. Validate MEP/IEPD

- The validation process is available after generating a Subset Schema.
- The validation process validates multiple package artifacts for conformance via an API connection. Artifacts can either Pass or Fail validation. Results will display for each individual artifact and the reports are downloadable. Conformance standards differ for each NIEMOpen Release, so results may vary upon when migrating a package. Any changes made to the package will clear validation results as well as copying/migrating a package.

To begin:

#### A. Select Validate Artifacts Button

**Subset Schema Successfully Completed**

Your Subset Schema has successfully been completed and added to the Message Exchange Package Artifacts tree in the sidebar. Please remember to save your work.

Nullable Default Value:

True
  False

 Include Documentation

[Build Custom Model Extensions](#)
[Generate Subset Schema](#)
[Translate Format](#)
[Download Subset Schema](#)

**Build and Validate**

Now that the NIEM elements have been selected, the next step is to create the schemas and artifacts that meet NIEM standards.

▼ Show I

- Generate a wantlist
- Generate a Subset Schema
- Build Custom Model Extensions
- Validate package artifacts for conformance

In this phase, the wantlist and Subset Schema will be generated together and added to the Message Exchange Package Artifacts.

**Artifact Validator**

☰

To run validation, please click "Validate Artifacts".

[Validate Artifacts](#)

## B. Validation Results Display

### Artifact Validator

#### Please Note

Making changes to your packages will erase validation results, requiring you to validate artifacts again before publishing.

[Validate Again](#)

[Download Results](#)

Schema XML

PASS

Schema NDR

PASS

iepd-catalog.xml

PASS

mpd-catalog.xml

PASS

Copy of migrate test

PASS

#### Validation Results:

```
▼ {  
  ▼ tests: [  
    ▼ {  
      status: "passed",  
      id: "validate-xsd",  
      description: "Validate XML schema files against the W3C specification",  
      severity: "info",  
      category: "validation",  
      comments: "Validation succeeded",  
      ran: true,  
      runtime: 0.012,  
      ▼ results: [  
        ▼ {  
          testId: "validate-xsd",  
          status: "passed",  
          entity: "",  
          entityCategory: "",  
          message: "",  
          location: "",  
          line: "",  
          column: "",  
          comment: ""  
        }  
      ]  
    }  
  ]  
}
```

(5) **Assemble & Document** – Here you can prepare and package all related artifacts and files for the MEP.

#### Assemble & Document

▼ Show Less

During the Assemble and Document Phase, you prepare and package all related files for the MEP into a single, self-contained, self-documented, portable archive file. You then should perform a peer review to ensure artifact consistency within the MEP and with other MEPs

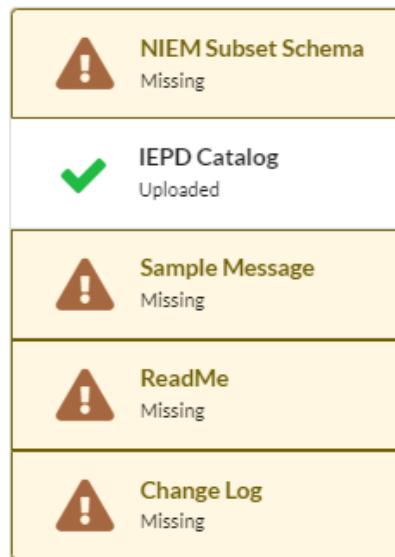
- Generate and upload the remaining artifacts for a MEP by completing the following forms:
  - ReadMe
  - Change Log
  - Business Rules
- Generate a Model Package Description (MPD) Catalog
- Assemble MEP using the default MPD Specification package structure

- (a) Required Artifact Checklist (Figure 8.47) is an automated checklist that shows the status of required artifacts and updates the status as they are created. (Note: the Checklist also appears in the Publish & Implement Phase)
- a. A green checkmark indicates which artifacts are complete and uploaded to the current package.(Figure 8.47)
  - b. Items highlight with a warning symbol means highlighted required artifacts are missing.
  - c. The System not only checks which artifacts are completed and still outstanding, it also prevents you from going any further in the MEP publishing workflow until the applicable required items are complete.
  - d. Each section of the checklist is interactive and clicking into the title takes the user to appropriate area of the MEP Builder to complete the artifact.
    - i. NIEM Subset Schema- Navigates user to the Build & Validate screen to Generate Subset Schema
    - ii. IEPD Catalog- Automated generation by system
    - iii. Sample Message- Navigates user to the Analyze Requirements screen to upload the Sample Message
    - iv. ReadMe- Navigates user to an editable ReadMe tab of the Assemble & Document screen
    - v. ChangeLog- Navigates user to an editable ChangeLog tab of the Assemble & Document screen
  - e. Once all the required documents are accounted for by the system, the “Publish Button” will be enabled.

### Required Artifact Checklist

Before you are able to publish, all items below must be marked as 'Uploaded' and present in the artifact tree.

Please click missing item(s) to complete.



[Proceed to Publish & Implement ▶](#)

Figure 8.43

- (b) The Readme tab (See Figure 8.48) is a free form area and the system displays what type of information is expected in a Readme file as listed below:
- f. Purpose of the IEPD
  - g. Scope of its deployment, usage, and information content
  - h. Business value and rationale for developing it
  - i. Type of information it is intended to exchange, in business terms
  - j. Identification (or types) of senders and receivers
  - k. Typical interactions between senders, receivers, and systems
  - l. References to other documentation within the IEPD

ReadMe Change Log Business Rules

Please complete this form or [upload](#) a file to generate a ReadMe artifact that will serve as the common starting point and is the required minimum for human-readable documentation.

**MEP contents, purpose, uses, and definitions \***

A readme should include information that describes the following:

- Purpose of the MEP
- Scope of its deployment, usage, and information content
- Business value and rationale for developing it
- Type of information it is intended to exchange, in business terms
- Identification (or types) of senders and receivers
- Typical interactions between senders, receivers, and systems
- References to other documentation within the MEP
- Links to external documents that may be needed to understand and implement the MEP

**Create**

Figure 8.48

- m. Links to external documents that may be needed to understand and implement
  - i. There is an “upload” link within text of the readme tab which allows the user to upload a file. (Figure 8.49)
    1. Once a file has been uploaded in the supported format, a “Creation Success message shall display.

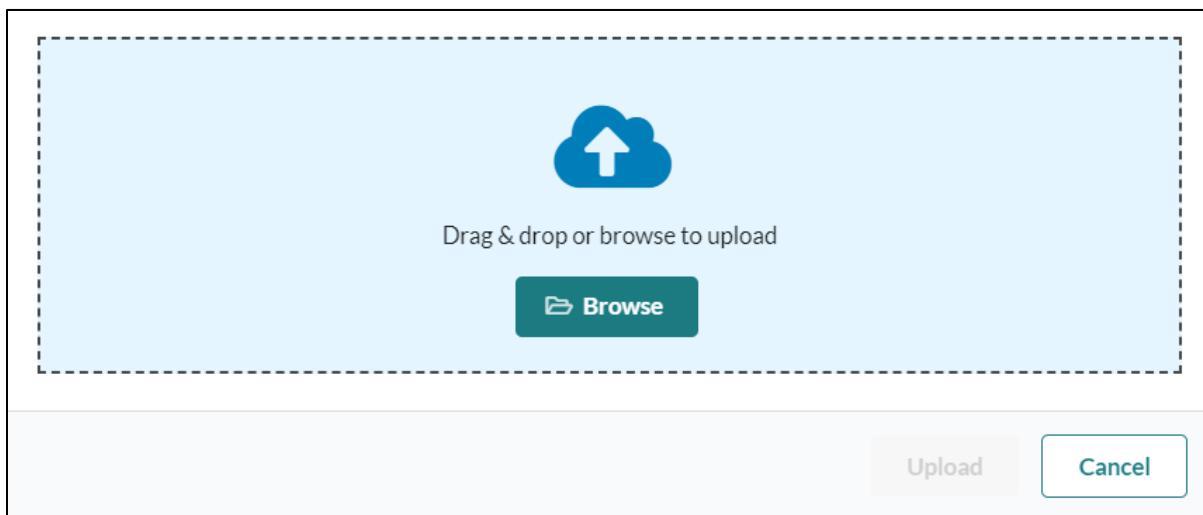
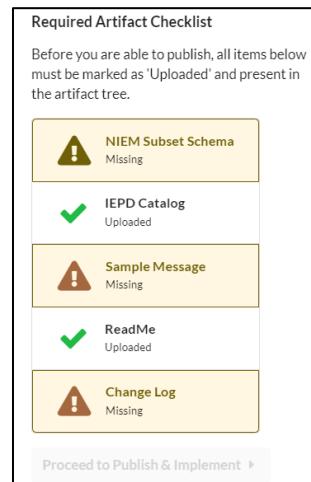


Figure 8.49

- n. Editing of the file can be performed by using the edit pencil and save control is available as well.

- o. Once saved, the file shall appear in the Artifact Tree under the “Documentation” folder as “readme.txt” and a green checkmark shall appear beside the “ReadMe” in the Required Artifact Checklist.



*Figure 8.50*

- p. Note: ReadMe can also be completed in the Publish & Implement Phase

(b) Change Log, like ReadMe, is a freeform text area.

The image shows a screenshot of a web-based application for managing changes. At the top, there is a navigation bar with three tabs: "ReadMe", "Change Log" (which is highlighted in blue), and "Business Rules". Below the tabs, a message says: "Please complete this form or [upload](#) a file to log and generate a summary of changes applied to a published MEP since previous versions." There is a required field labeled "Details and explanation of changes" marked with an asterisk (\*). The text area contains the following content:

```
2021-09-17: Version 2.0
Update to NIEM 5.0
Removed PersonFictionalCharacterIndicator
Removed ItemLengthMeasure
Added GML objects to sample instance
Added PersonDefenestrationIndicator
Added ContactEmailID
```

At the bottom left is a teal "Create" button.

*Figure 8.51*

- a. The default file upload format will be (.doc, .pdf.rtf,.txt) If uploaded in this format the “Change Log” text area will accommodate and render the text contained in these files via the upload link that appears within text of this tab.
- b. If a user uploads a file in the supported formats, a “Change Log Creation success message shall render letting you know that the Change Log artifact was successfully created.
  - i. If you don’t upload your file in the supported format, a warning will render notifying you To view or edit within the tool, please export this file, save as a text file (.doc, .pdf,.rtf,.txt) and upload again.
- c. There is a create button which will allow you to create the Change Log file within the tool.
  - i. Note: If have already uploaded a supported file, there will be a save button where the create button would be.
- d. You may edit the file by pressing the edit “Pencil”s.
- e. The Artifact Checklist will update showing Change Log as ‘Uploaded’

Required Artifact Checklist

Before you are able to publish, all items below must be marked as 'Uploaded' and present in the artifact tree.

<span style="color: red;">!</span>	NIEM Subset Schema	Missing
<span style="color: green;">✓</span>	IEPD Catalog	Uploaded
<span style="color: red;">!</span>	Sample Message	Missing
<span style="color: green;">✓</span>	ReadMe	Uploaded
<span style="color: green;">✓</span>	Change Log	Uploaded
<span style="color: red;">!</span>	Conformance Assertion	Missing

[Publish](#)

Figure 8.52

- (c) The Business Rules tab allows the user to create Business Rules files inside of the MEP Builder Tool.

ReadMe Change Log Business Rules

You do not currently have Business Rules defined.

Click the "Add Rule" button and complete the form or [upload](#) a file to define, confine, or constrain MPDs in your MEP. Most file types are accepted except for .exe, .zip, and .tar.

Business Rules Artifacts are not required for publishing.

[+ Add Rule](#)

Figure 8.53

- To begin select the Add Rule button. The user now has the option to either upload a Business Rule file (any file type accepted except for .exe, .zip, or .tar).

ReadMe Change Log Business Rules

Please complete this form, [upload](#) a file, or select the "Add" button to define, confine or constrain MPDs in your MEP. Most file types accepted except for .exe, .zip, and .tar.

<p>File Name *</p> <input type="text" value="example-rule"/> <span>.txt</span>	<p><b>Business Rules: New Rule</b></p> <p><b>Business policies and/or procedure statements *</b></p> <p>A person MUST have a last name.</p> <p>An activity date must precede an activity end date.</p> <p>Every arrest must have a related incident.</p>
--	--

[Create](#) [Cancel](#)

- The user must add a unique name for the File Name and add relevant Business Rules into the text box. Then Select Create button and the file is added to the Artifact Tree and the Package itself.

- c. Packages that are uploaded must be in the format .txt in order for the contents to display in the text box.
- (6) **Publish & Implement** – In this phase you can update ReadMe and Change Log (first seen in Assemble & Document Phase) and you can complete the required Conformance Assertion section. Additionally in this section you can implement the MEP into production and publish the MEP for search, discovery, and reuse.

**Publish & Implement**

During the last phase, the Publish and Implement phase, you implement the MEP into production and publish the MEP for search, discovery, and reuse

▼ Show Less

- If you haven't already done so, complete and/or generate any remaining artifacts for a MEP by completing the following forms:
  - ReadMe
  - Change Log
  - Conformance Assertion (required)\*
- Internally publish a MEP
- Publish MEP metadata directly to the publicly-hosted NIEM MEP Registry

Figure 8.54

- (a) Conformance Assertion is required to provide verification that the package has been validated and conforms to all of the NDR rules
- Naming format: You may name the files what you wish as long as filename contains the words “Conformance Assertion”. However, it is required to reflect that in the catalog for the IEPD.
  - The Conformance Assertion form contains the following fields:
    - i. URI
    - ii. Author
    - iii. Author's Email
    - iv. Certification Date
    - v. Details
    - vi. A check box where you may confirm the assertion.
  - The Assert button is disabled until this assertion conformation is performed.

ReadMe Change Log Conformance Assertion

Please complete this form or [upload](#) a file to increase the level of confidence that this MEP was checked for NIEM conformance and quality.

URI

Author \* Email \* Certification Date

Rick Wash	Wash_Richard@bah.com	mm/dd/yyyy <input type="button" value="..."/>
-----------	----------------------	---

Details \*

How NIEM conformance was verified: a. Automatic (tool) checks were performed with XML Schema tools identified below. b. Manual (subjective) checks on conformance rules were performed by the author/certifier. c. A general manual (and subjective) cross-check for adherence to conformance rules and quality assurance was performed by a colleague of the author who understands NIEM and XML Schema. d. Business requirements associated with the information exchange defined by this IEPD were verified by the author.

Tools employed: a. NIEM Schema Subset Generator (SSGT) (for NIEM 3.0) generated all subset schema documents. b. oXygen XML Developer was used to cross-validate XML schemas and XML instances. c. Xerces 2.7.0-0 was used for cross-validation of XML schemas and XML instances.

Results: a. No known major issues remain. b. All XML artifacts are well-formed and valid. c. Author and SMEs verified that several warnings by tools are not relevant to this IEPD. e. CrashDriver.xsd passes NDR tests for an extension schema f. extension.xsd passes NDR tests for an extension schema g. lepd-catalog.xml is valid against lepd-catalog.xsd for version 5.0

By checking this box, you assert that this MEP conforms to NIEM specifications and associated rules \*

Figure 8.55

- Once active, you may click the **Assert** Button (Figure 8.56) and the “Conformance Assertion” will be checked off in the Required Artifact Checklist. (Figure 8.57)

By checking this box, you assert that this MEP conforms to NIEM specifications and associated rules \*

Figure 8.56

- Now the publish button is active and you can publish the MEP. (Figure 8.57)

**Required Artifact Checklist**

Before you are able to publish, all items below must be marked as 'Uploaded' and present in the artifact tree.

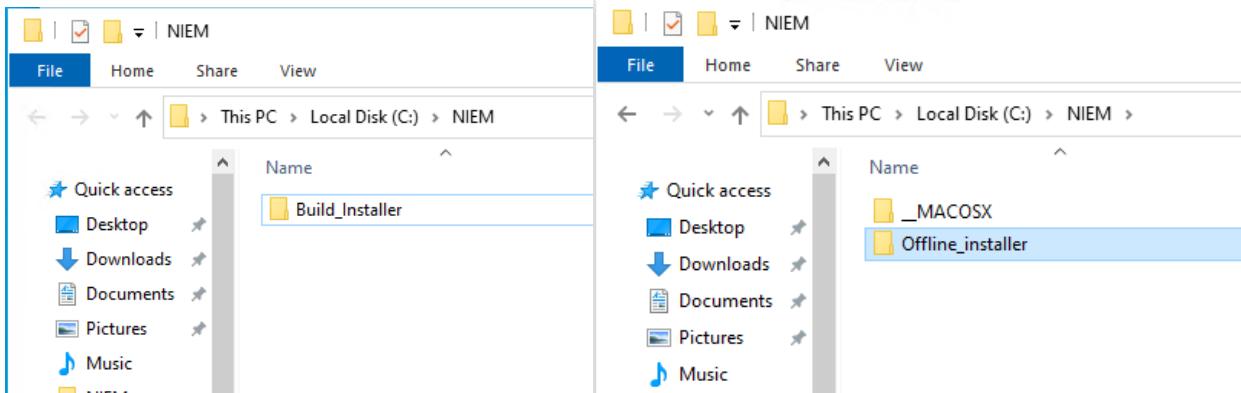
✓ NIEM Subset Schema Uploaded
✓ IEPD Catalog Uploaded
✓ Sample Message Uploaded
✓ ReadMe Uploaded
✓ Change Log Uploaded
✓ Conformance Assertion Uploaded

**Publish**

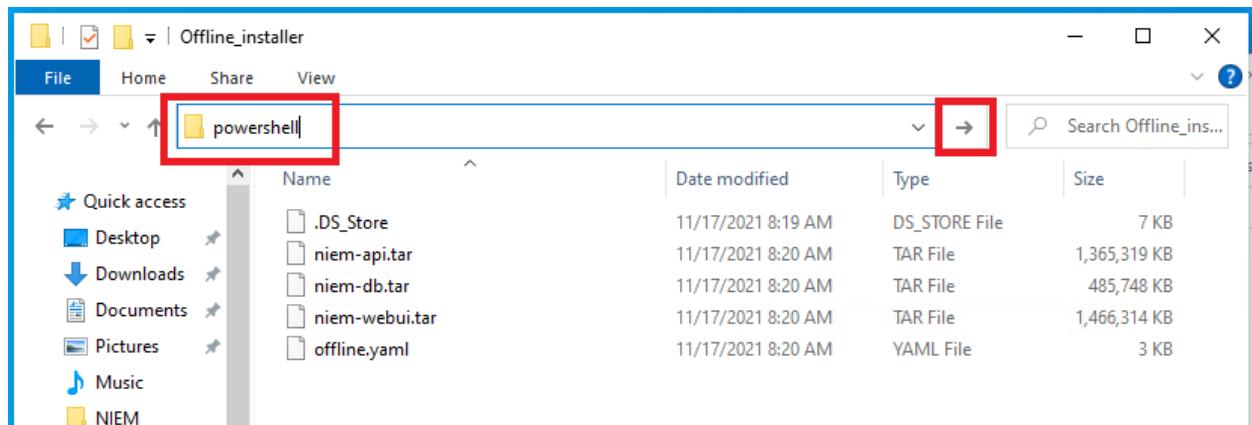
Figure 8.57

## 9 MEP BUILDER TOOL UNINSTALL INSTRUCTIONS.

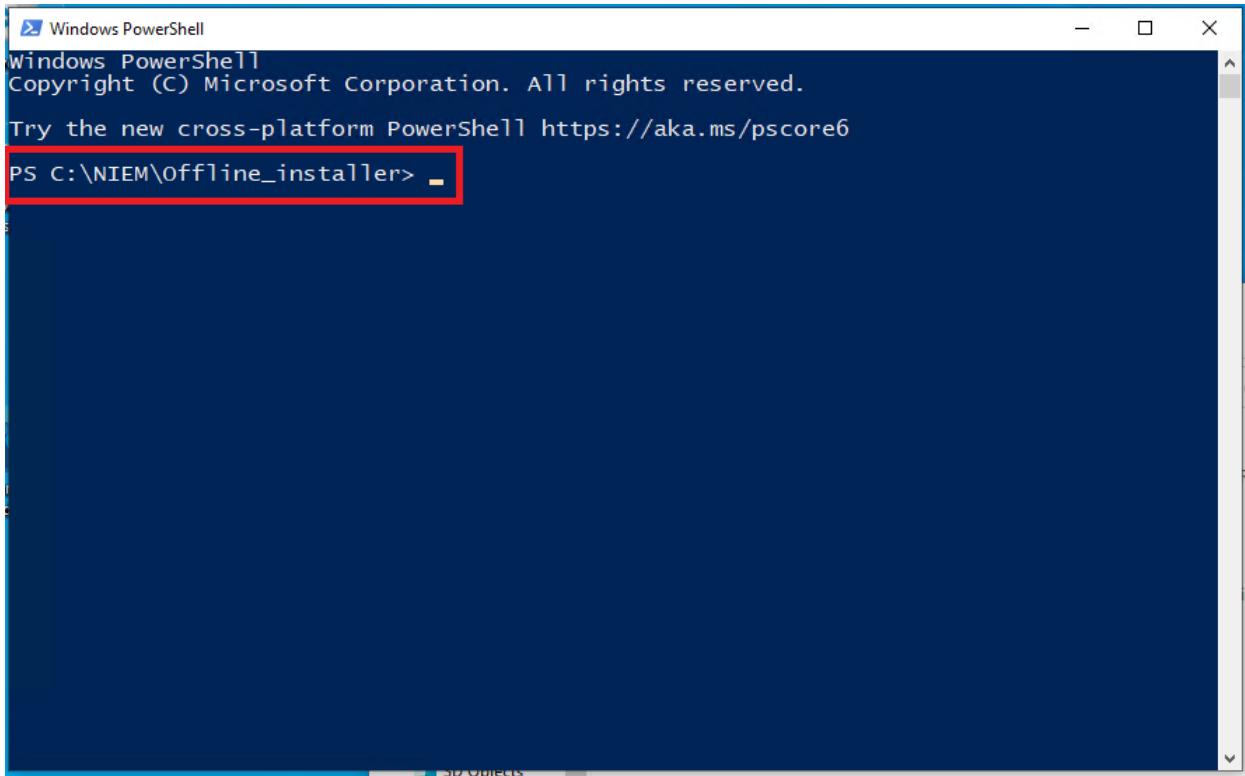
1. If you have an existing version installed on your machine, follow these instructions to remove (uninstall) the old version prior to installing a new version.
2. Open File Explorer and navigate to the C:\NIEM directory



3. Inside the NIEM folder, depending on which installation process you followed, you will see either the Build\_Installer folder or the Offline\_Installer folder.
4. Open the installer folder you see.
5. Type 'powershell' in the directory path field and either type 'Enter' on your keyboard or click the arrow to go to powershell.



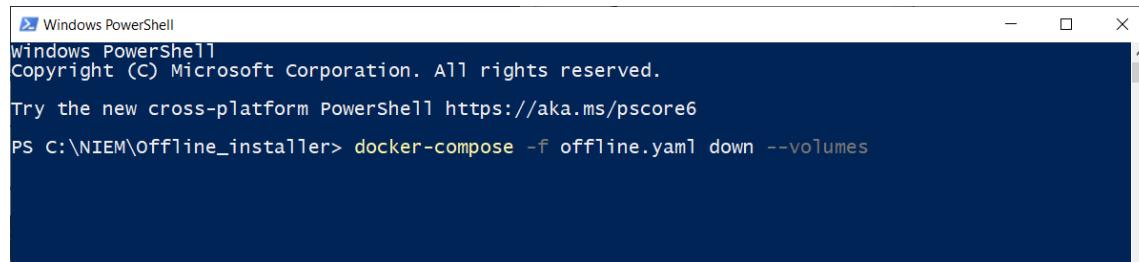
6. A PowerShell window should appear. Verify that the directory listed is the path to your appropriate installer folder.



A screenshot of a Windows PowerShell window titled "Windows PowerShell". The window shows the following text:  
Windows PowerShell  
Copyright (C) Microsoft Corporation. All rights reserved.  
Try the new cross-platform PowerShell <https://aka.ms/pscore6>  
PS C:\NIEM\offline\_installer> -  
The command "->" is highlighted with a red rectangle.

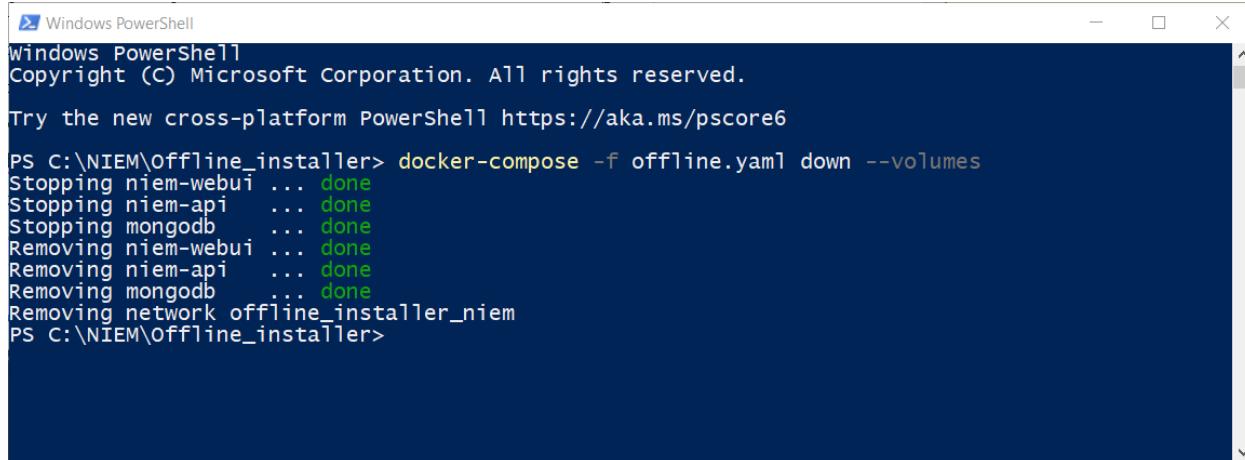
7. Type or copy/paste the appropriate command for your installer:
  - a. \*\*NOTE\*\* There are two '-' marks (hyphen/dash) before the word 'volumes'

Installer Type	Command to Run
Build_Installer	docker-compose -f fresh_build.yaml down --volumes
Offline_Installer	docker-compose -f offline.yaml down --volumes



A screenshot of a Windows PowerShell window titled "Windows PowerShell". The window shows the following text:  
Windows PowerShell  
Copyright (C) Microsoft Corporation. All rights reserved.  
Try the new cross-platform PowerShell <https://aka.ms/pscore6>  
PS C:\NIEM\Offline\_installer> docker-compose -f offline.yaml down --volumes

8. Click the Enter key on the keyboard to run the above command
9. It will take a few minutes for the containers to be removed. It will be completed when you see several 'done' statuses and the directory path as shown at the bottom of the image below.

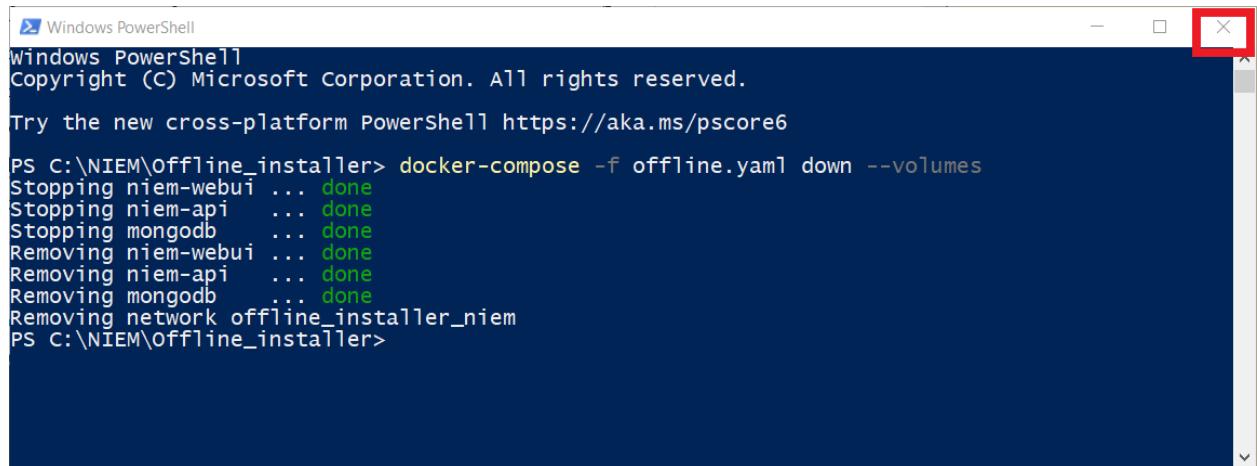


```
Windows PowerShell
Copyright (C) Microsoft Corporation. All rights reserved.

Try the new cross-platform PowerShell https://aka.ms/pscore6

PS C:\NIEM\Offline_installer> docker-compose -f offline.yaml down --volumes
Stopping niem-webui ... done
Stopping niem-api ... done
Stopping mongodb ... done
Removing niem-webui ... done
Removing niem-api ... done
Removing mongodb ... done
Removing network offline_installer_niem
PS C:\NIEM\Offline_installer>
```

10. Close the Powershell window by clicking the 'X' in the upper right corner.

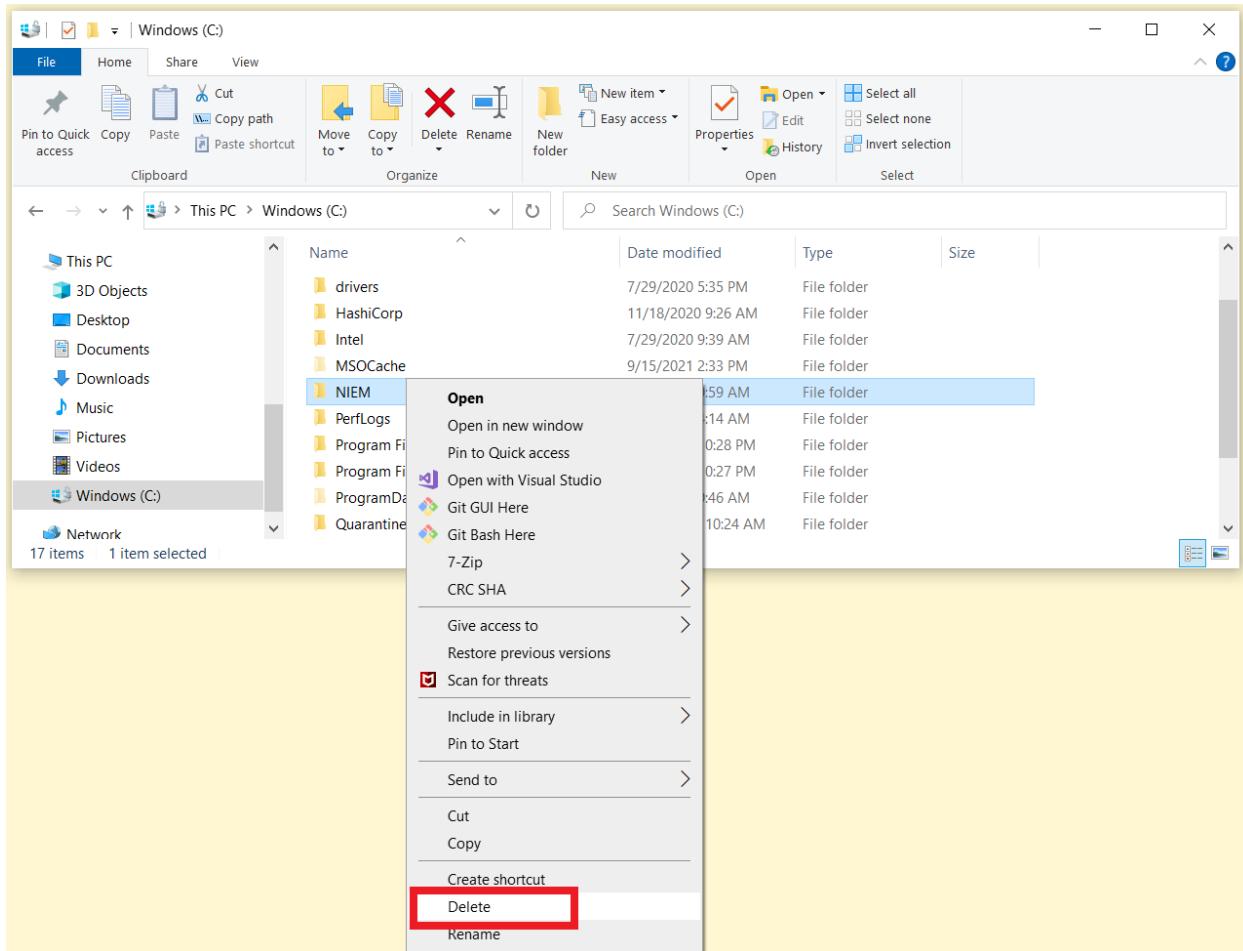


```
Windows PowerShell
Copyright (C) Microsoft Corporation. All rights reserved.

Try the new cross-platform PowerShell https://aka.ms/pscore6

PS C:\NIEM\Offline_installer> docker-compose -f offline.yaml down --volumes
Stopping niem-webui ... done
Stopping niem-api ... done
Stopping mongodb ... done
Removing niem-webui ... done
Removing niem-api ... done
Removing mongodb ... done
Removing network offline_installer_niem
PS C:\NIEM\Offline_installer>
```

11. In the File Explorer, navigate to C:\ and delete the NIEM folder by right clicking the NIEM folder and selecting Delete.



12. The uninstall process is complete.

---

## 10 MEP BUILDER TOOL INSTALLATION INSTRUCTIONS

### 1. Prerequisites

- Administrator privileges
- Access to a command-line
- Account for the Github (optional)
- Account for Docker Hub
- Install Docker
  - <https://docs.docker.com/desktop/windows/install/>

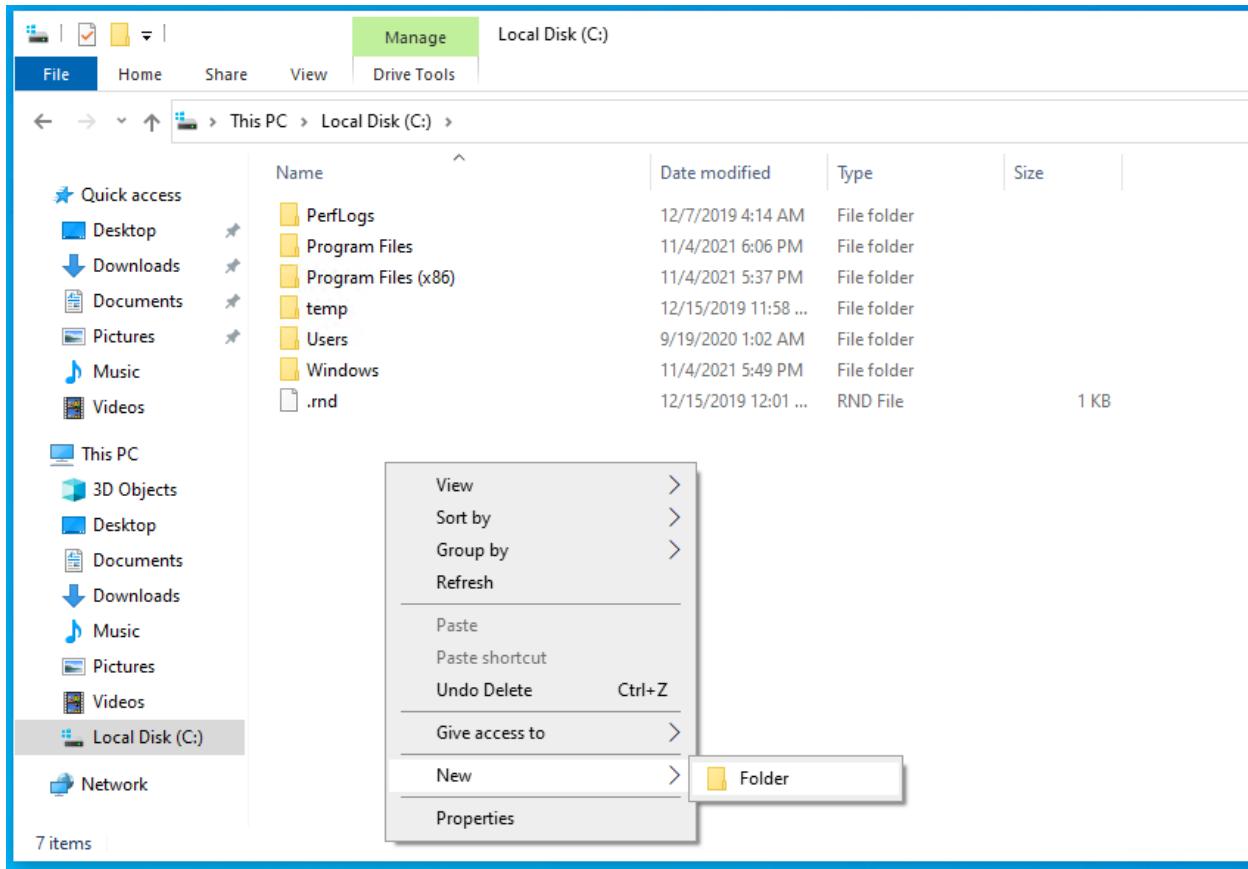
\*\*Note\*\*

At the time this was written all defaults were selected during install which utilized WSL2.

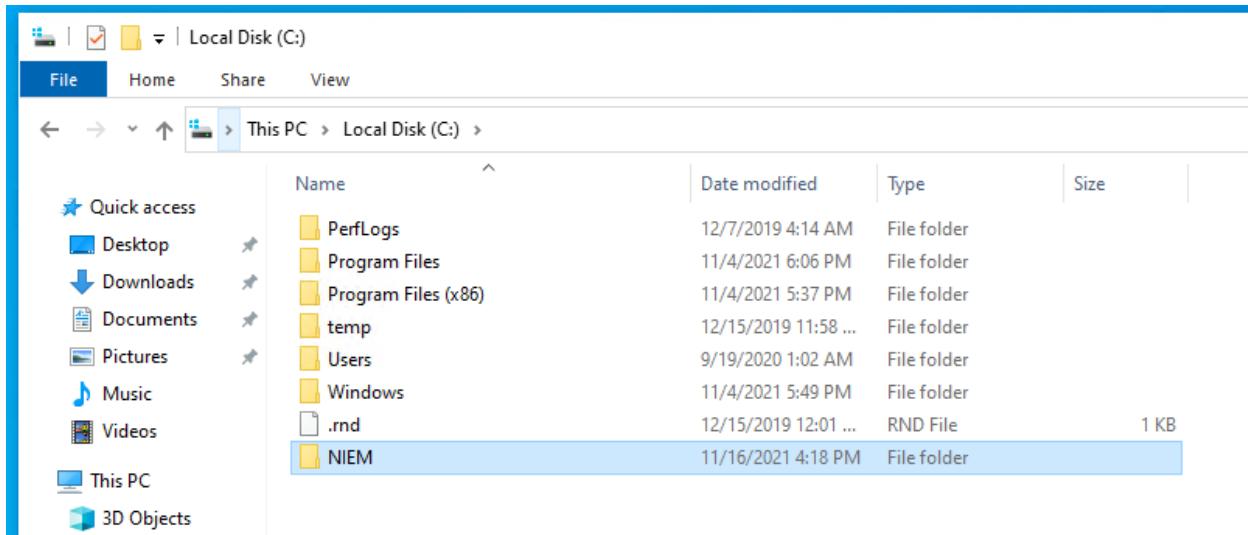
### 2. Create Project Directory

This is an optional section to create the directory where the project files will be stored. Follow these steps to create the project directory:

- a. Open the File Explorer and navigate to the C:\ drive
- b. Right-click in the white space and select New > Folder



c. Name this folder 'NIEM'



### 3. Download & Install NIEMOpen MEP Builder

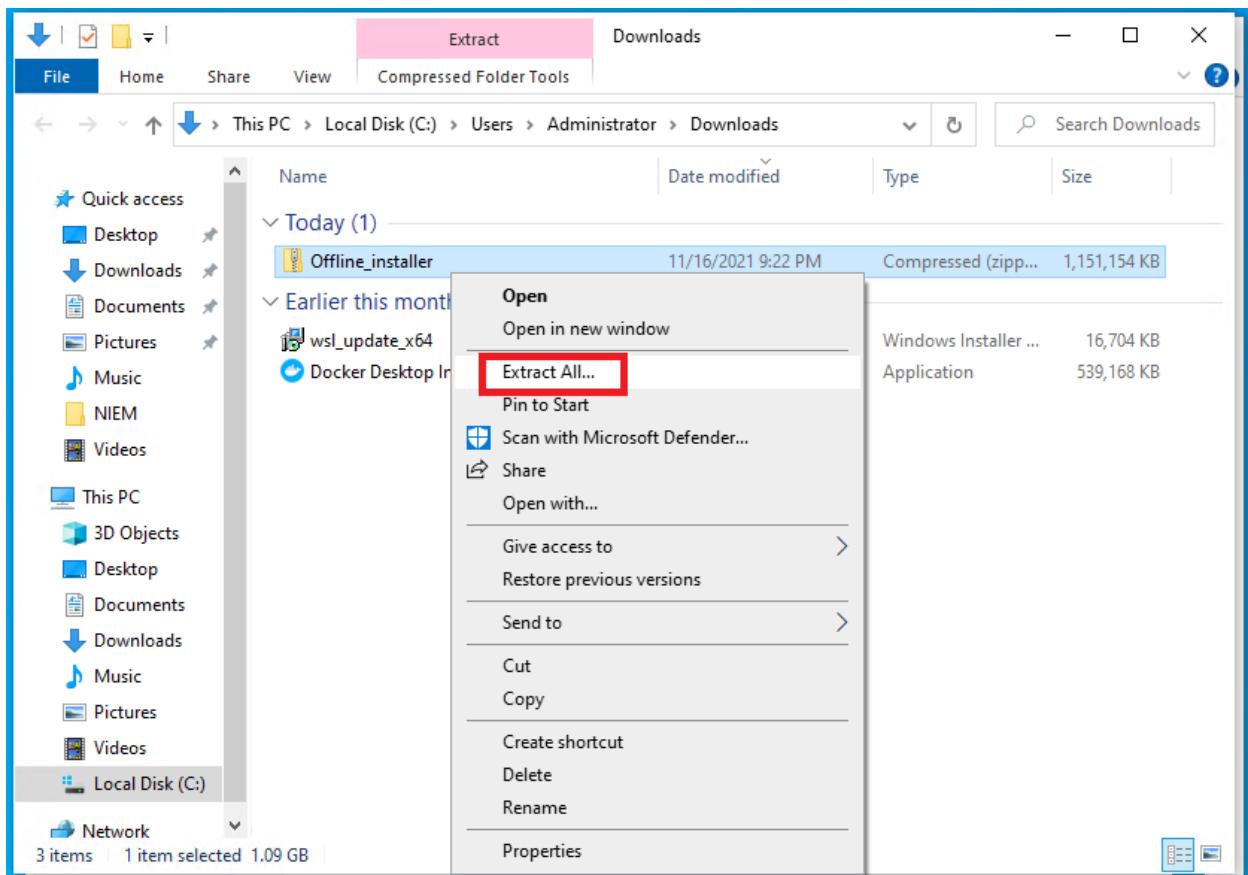
The following section provides three installation instruction options. Choose to follow only one of the following options which best suit your environment and needs:

- a. **Offline Installer (Recommended)** - Recommended for most users and/or for air gapped / non-internet connected devices.
- b. **Online Installer** - For computers with access to GitHub and an internet connection.
- c. **Build Installer** - For developers who want to rebuild the application.

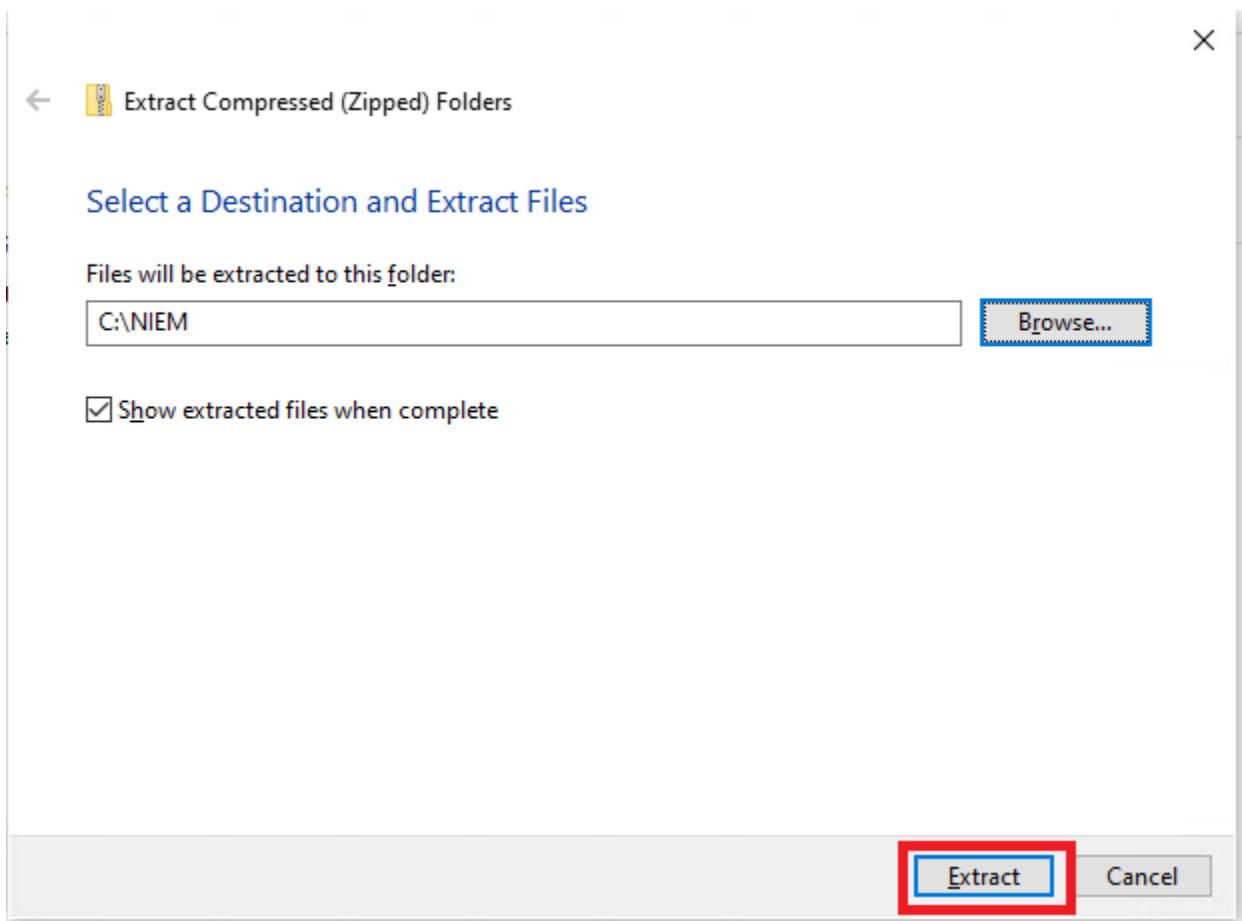
### 4. Option 1: Offline Installer

To begin the offline install process, you must first have the Offline\_Installer.zip file downloaded to your computer.

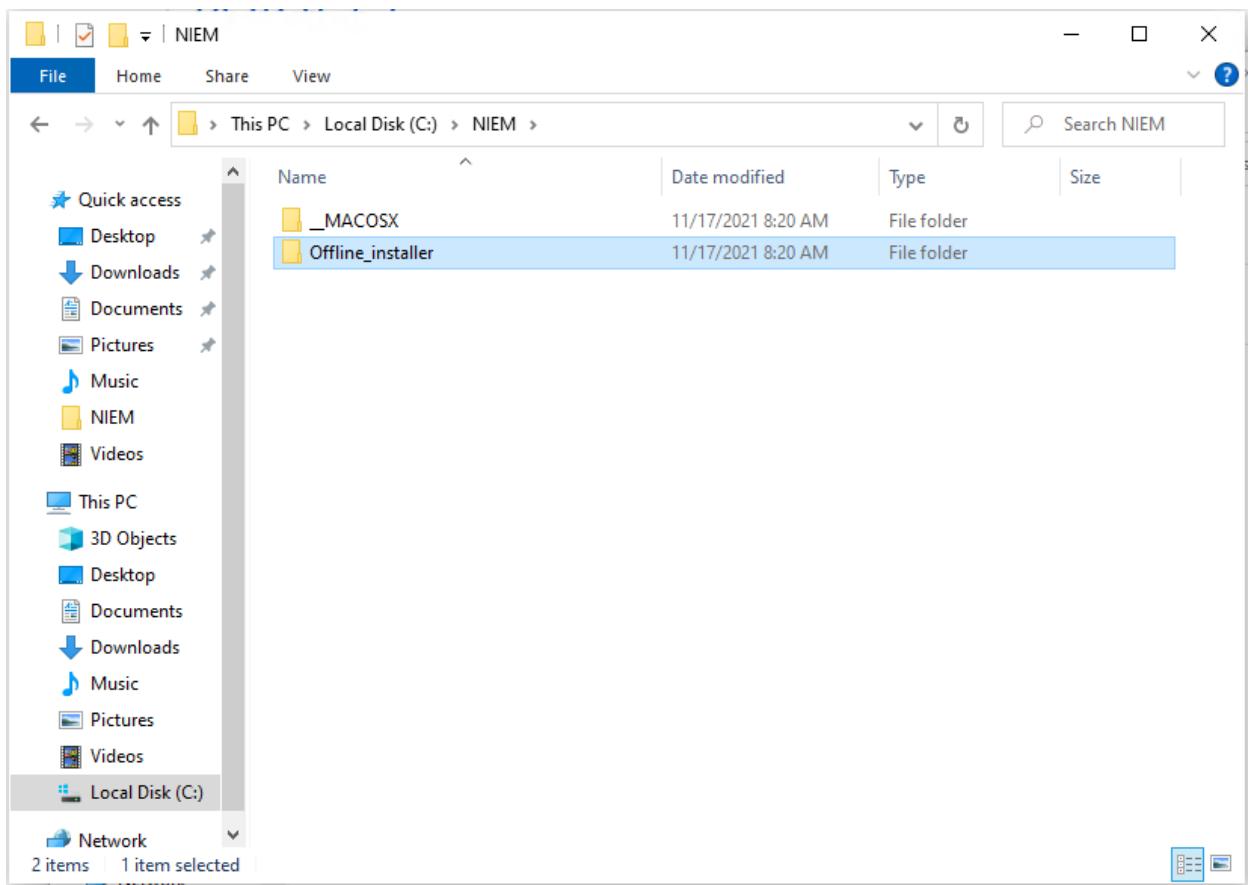
1. Navigate to the zip file in the file explorer. Right-click on the zip file and select 'Extract All...'



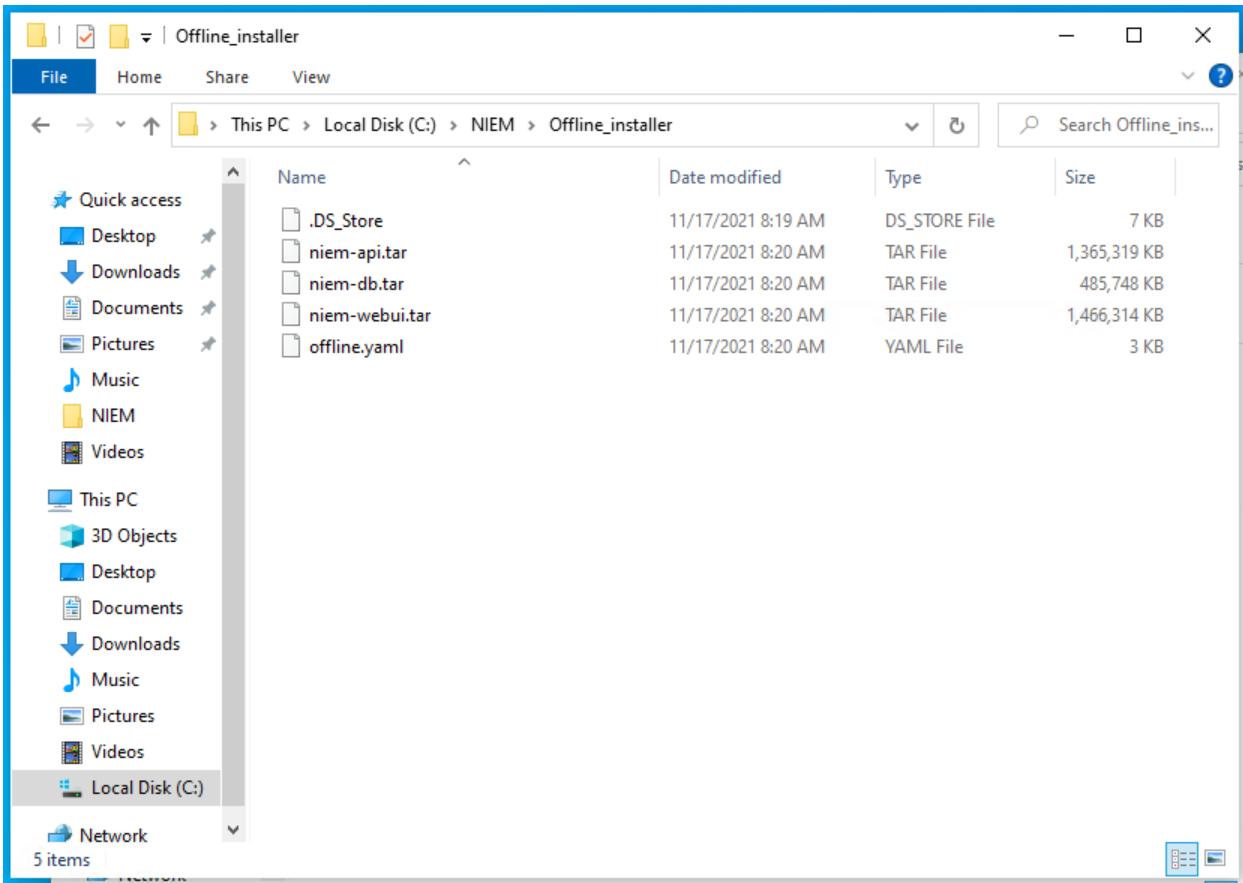
2. Click 'Browse' and browse and select the folder location you wish to extract the project files. If the earlier steps were followed in the 'Create Project Directory' section, select the C:\NIEM directory.
3. Click 'Extract'



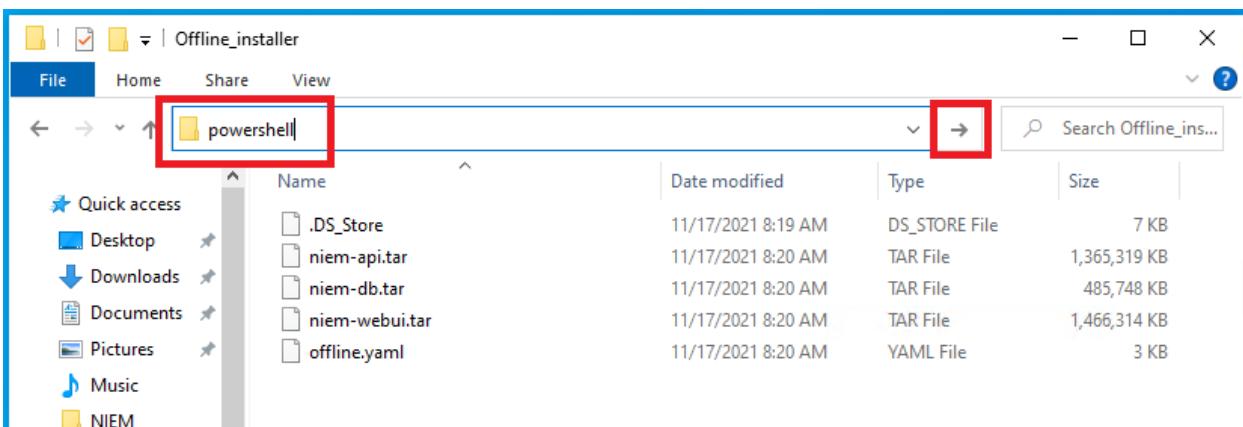
4. If the extracted files do not automatically pop-up upon completed extraction, navigate to the directory to where they were extracted.



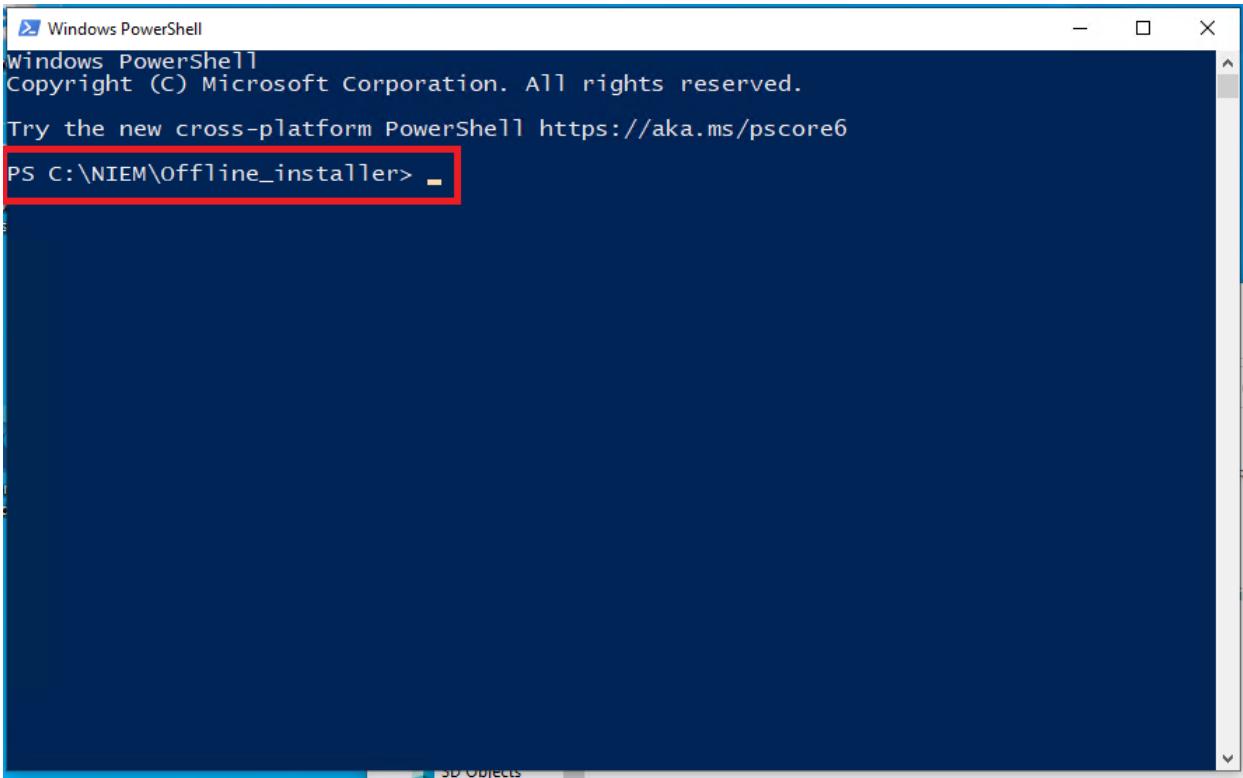
5. Open the 'Offline\_installer' folder



6. Type 'powershell' in the directory path field and either type 'Enter' on your keyboard or click the arrow to go to powershell.



7. A PowerShell window should appear. Verify that the directory listed is the path to your Online\_Installer folder.



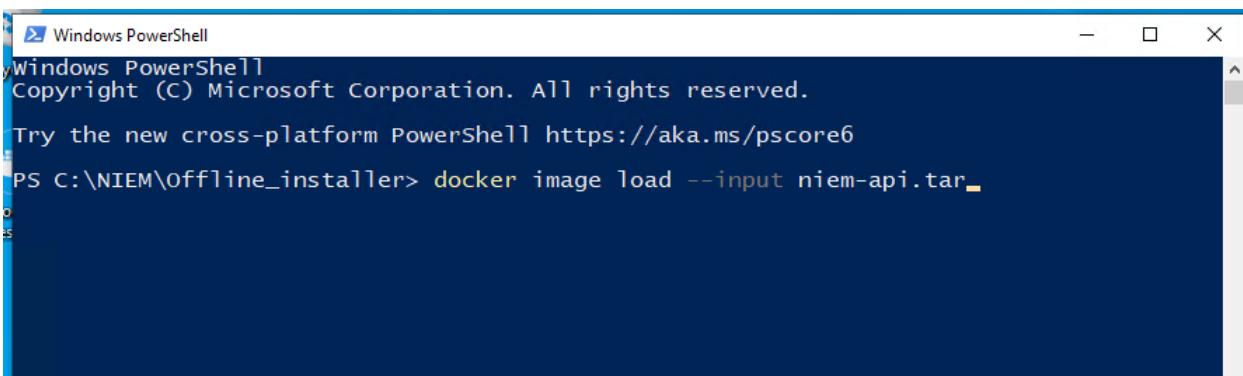
```
Windows PowerShell
Copyright (C) Microsoft Corporation. All rights reserved.

Try the new cross-platform PowerShell https://aka.ms/pscore6

PS C:\NIEM\offline_installer> -
```

8. Type or copy/paste the following command: docker image load --input niem-api.tar

\*\*NOTE\*\* There are two '-' marks before the word 'input'



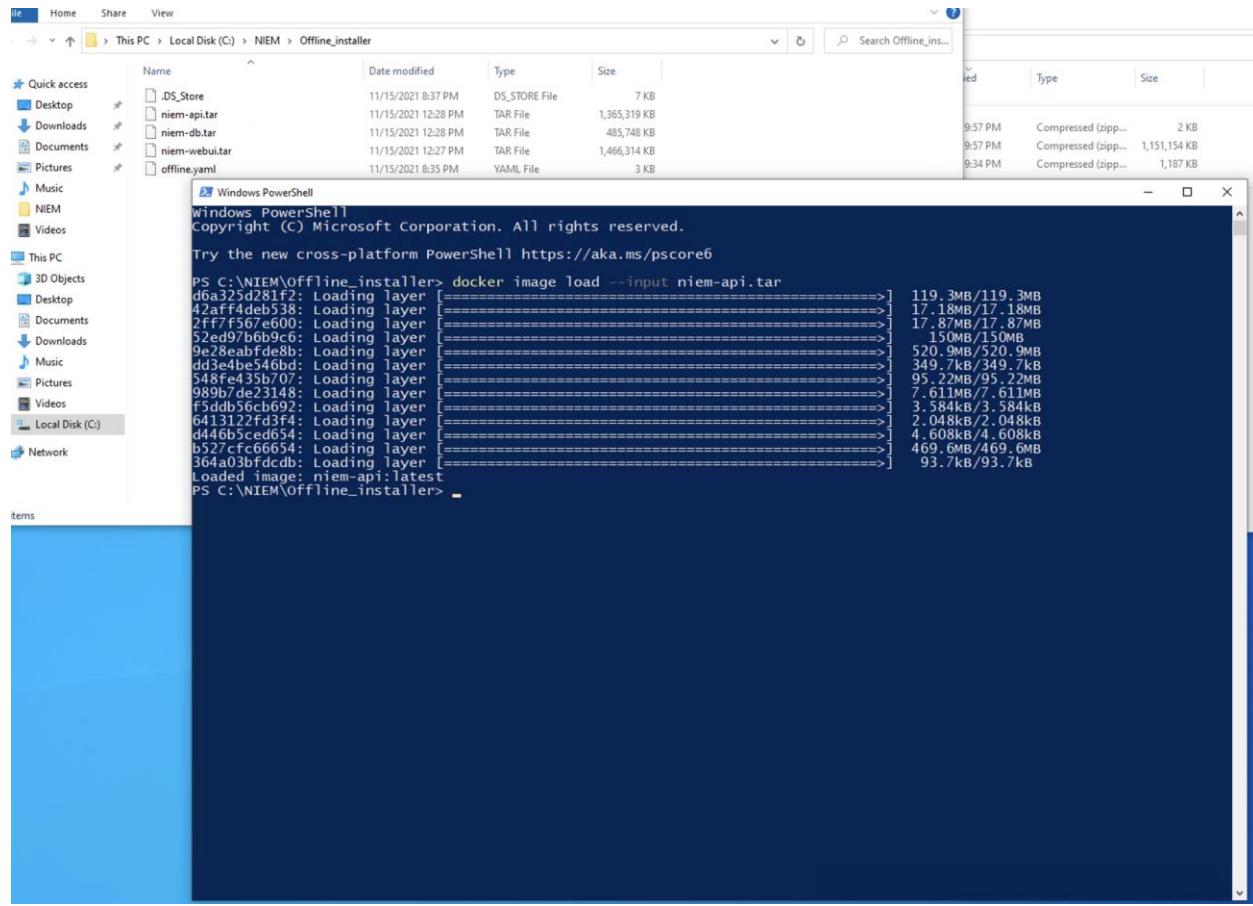
```
Windows PowerShell
Copyright (C) Microsoft Corporation. All rights reserved.

Try the new cross-platform PowerShell https://aka.ms/pscore6

PS C:\NIEM\Offline_installer> docker image load --input niem-api.tar -
```

9. Click the Enter key on the keyboard to run the above command

\*\*NOTE\*\* It will take a few minutes for the image to be loaded. It will be completed when you see the 'loaded image' name and the directory path as shown at the bottom of the image below



10. Repeat steps 8-9 for the following commands:

1. docker image load --input niem-db.tar

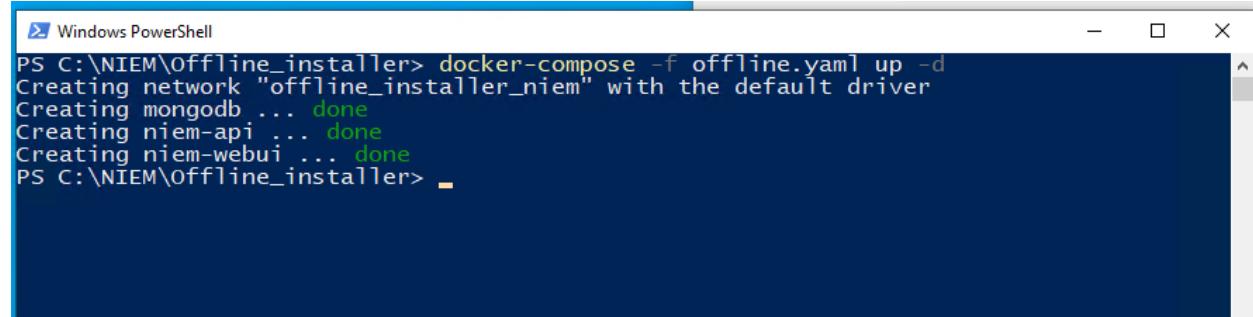
2. docker image load --input niem-webui.tar

11. Type or copy/paste the following command:

1. docker-compose -f offline.yaml up -d

12. Click the Enter key on the keyboard to run the above command

It will take a few minutes for the image to be loaded. It will be completed when you see three 'done' statuses and the directory path as shown at the bottom of the image below



13. You can now run the application by going to your browser and typing the URL 'localhost:3000'

**\*\*NOTE\*\*** Upon initial startup, the webpage may continue to load for a few more moments before it is actually ready.

The screenshot shows a web browser window titled 'NIEM Package Builder' with the URL 'localhost:3000'. The page has a dark blue header with the 'NIEM' logo and navigation links for 'Getting Started', 'My Home', 'MEP Builder', and 'Training'. Below the header is a search bar and a button to 'Create New MEP'. The main content area is titled 'Message Exchange Package (MEP) Home' and contains two sections: 'Open/Unpublished' and 'Published Message Exchange Package'. The 'Open/Unpublished' section has columns for View, Copy, Delete, Download, Domain, Message Exchange Package, Summary Description, Format, and Release. The 'Published Message Exchange Package' section contains five items, each labeled 'Super Hero' and 'Message Exchange Package Justice 4.2'. Each item has a green shield icon and a description: 'The process for reporting the discovery of a super hero.' Below each item are 'Download' and 'Copy' buttons.

## 5. Option 2: Online Installer

1. Navigate to the NIEM GitHub page and click on the **Releases** link

The screenshot shows a GitHub repository page for 'NIEM / NIEM' (Internal). The top navigation bar includes 'Code', 'Issues', 'Pull requests', 'Actions', 'Projects', 'Wiki', 'Security', 'Insights', and 'Settings'. Below the navigation is a summary bar with 'main' (1 branch), '1 tag', and a green 'Code' button. The main content area displays a list of commits from 'Brooks-Philip' adding offline and freshbuild. To the right, there's an 'About' section with a note: 'No description, website, or topics provided.' Below it is a 'Readme' section and a red-bordered 'Releases' section. A red arrow points from the 'Releases' section to the 'Create a new release' link. The bottom right shows a 'Packages' section with three entries: 'webui', 'api', and 'db'.

## 2. Select the release you would like to deploy

The screenshot shows the 'Releases' tab of the GitHub repository. It features two tabs: 'Releases' (selected) and 'Tags'. A red box highlights the title 'Beta 0.9.3'. Below the title, it says 'v0.9.3' and 'Brooks-Philip released this 20 hours ago'. The release notes mention 'adding offline and freshbuild'. At the bottom, there's a link to 'Assets 5' and an 'Edit' button.

## 3. View that the release will have several assets.

Pre-release

→ v0.9.3

-O 01d170b

Compare ▾

## Beta 0.9.3

Brooks-Philip released this 20 hours ago

v0.9.3

adding offline and freshbuild



### Assets 5

Build\_Installer.zip

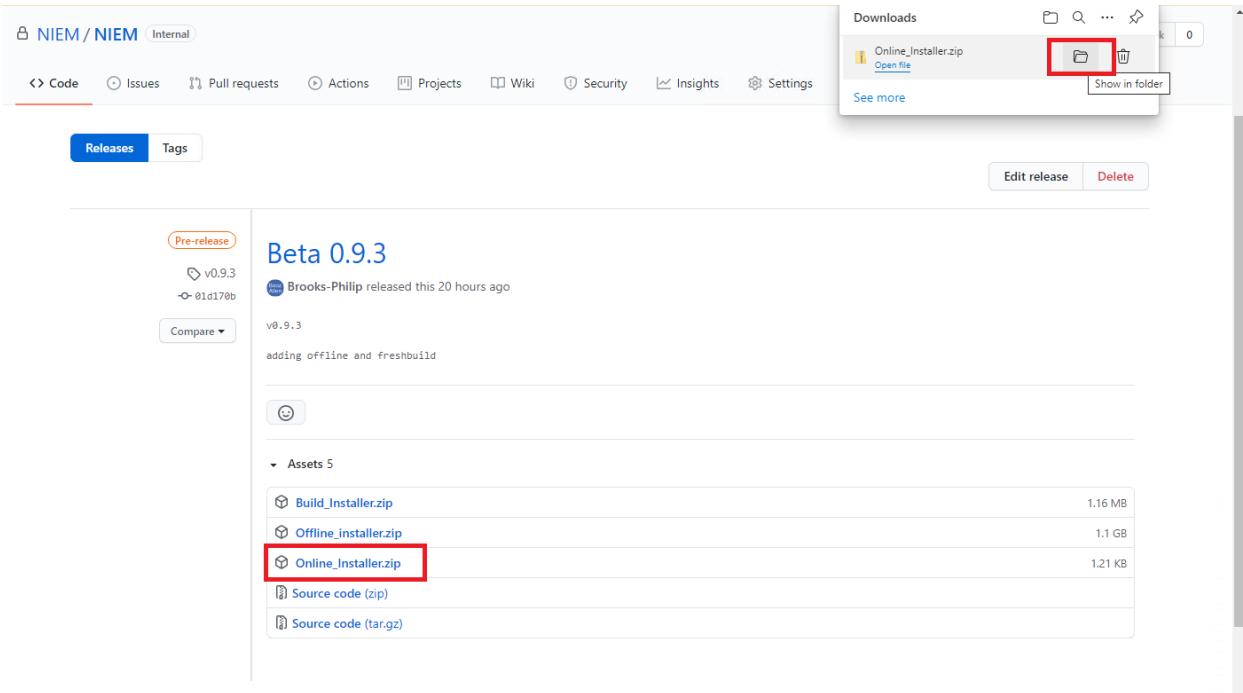
Offline\_installer.zip

Online\_Installer.zip

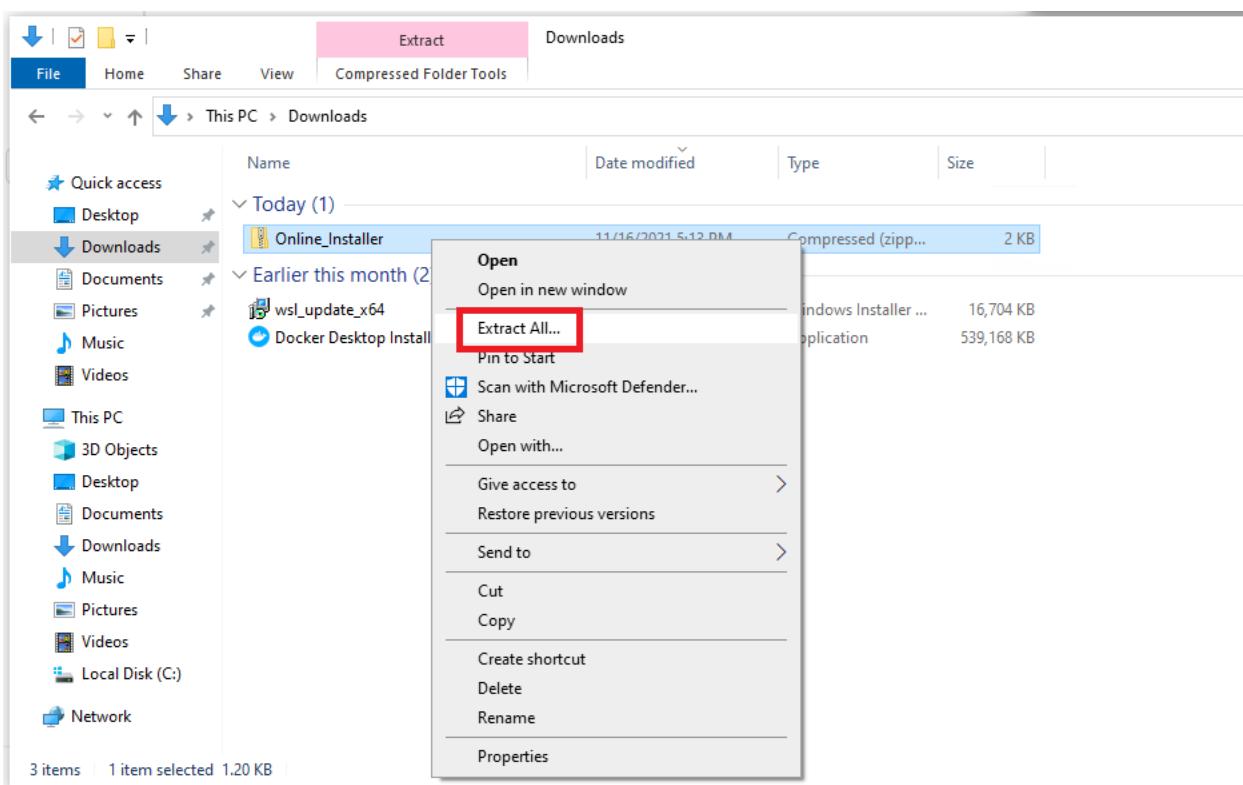
Source code (zip)

Source code (tar.gz)

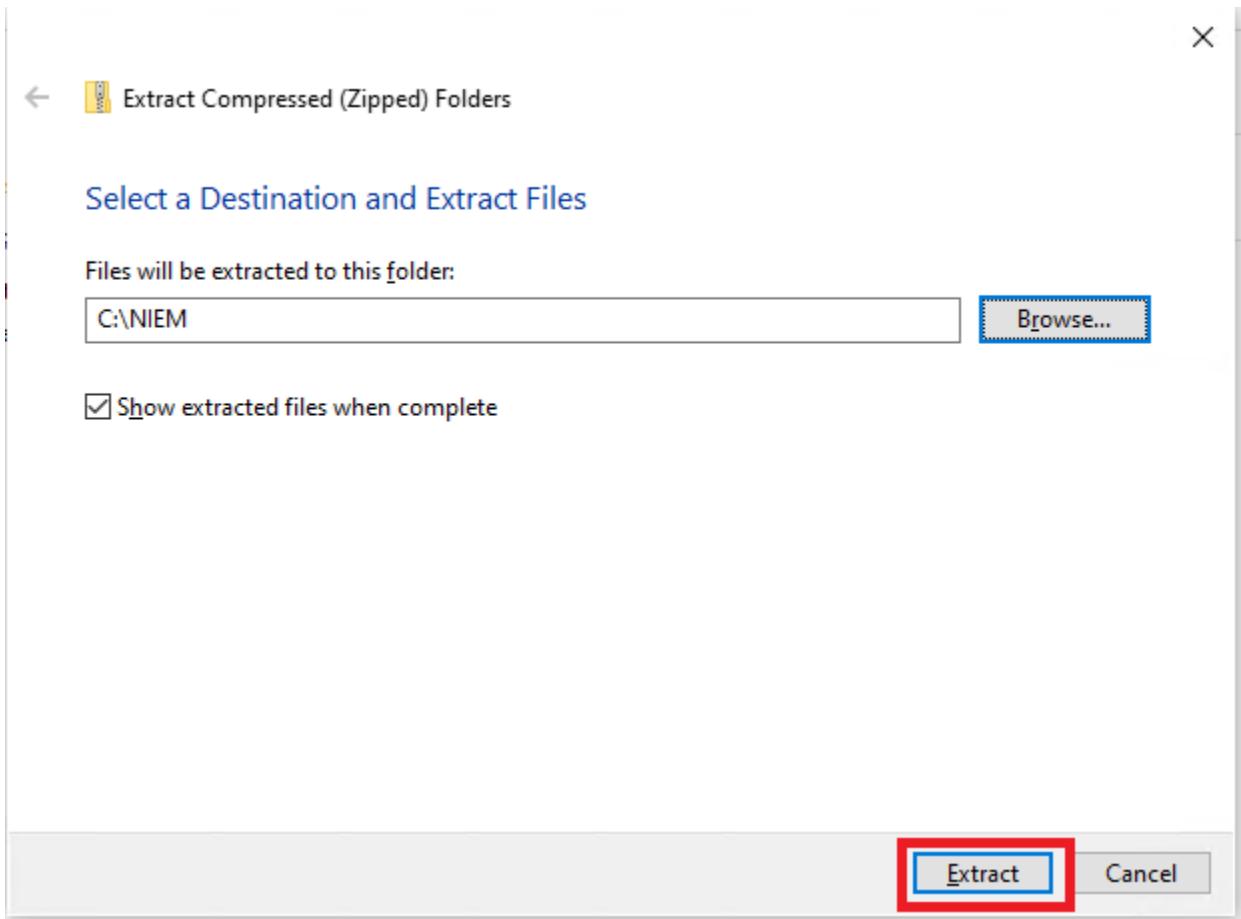
4. Click on 'Online\_Installer.zip' to download it to your machine



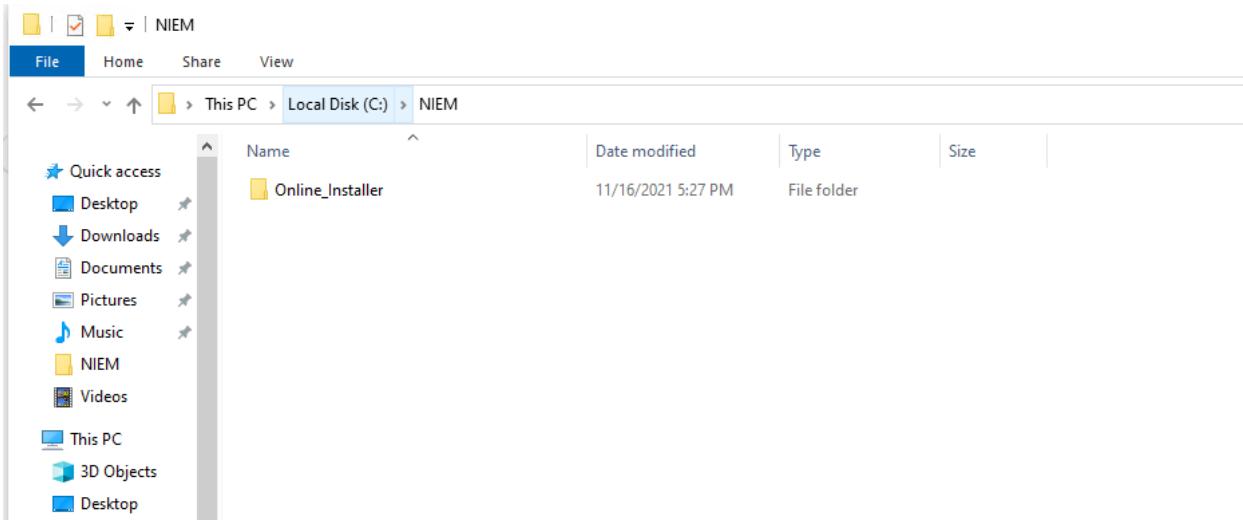
5. View the zip file by either clicking 'Show in Folder' on the browser download pop-up (see image above) or navigating to your system's default download folder
  
6. Right-click on the zip file and select 'Extract All...'



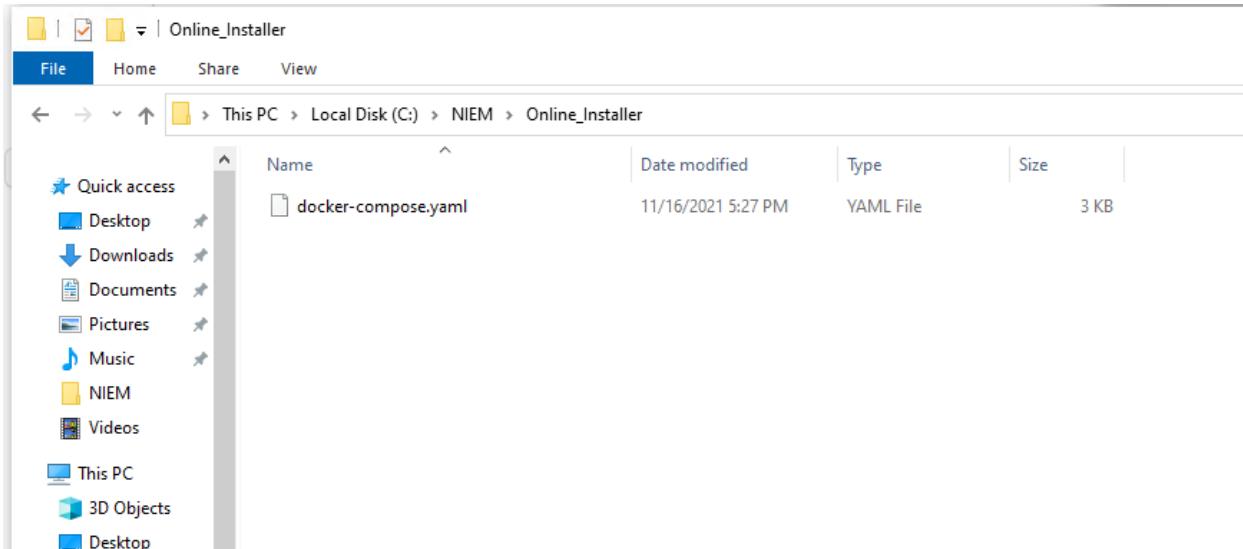
7. Click 'Browse' and browse and select the folder location you wish to extract the project files. If the earlier steps were followed in the 'Create Project Directory' section, select the C:\NIEM directory.
8. Click 'Extract'



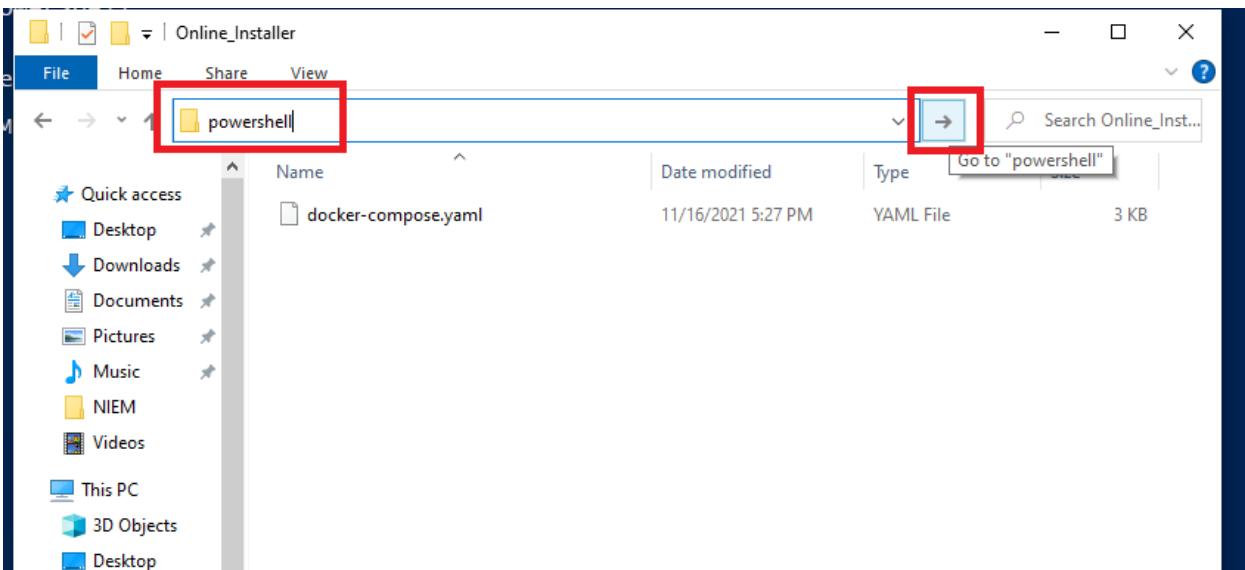
9. If the extracted files do not automatically pop-up upon completed extraction, navigate to the directory to where they were extracted.



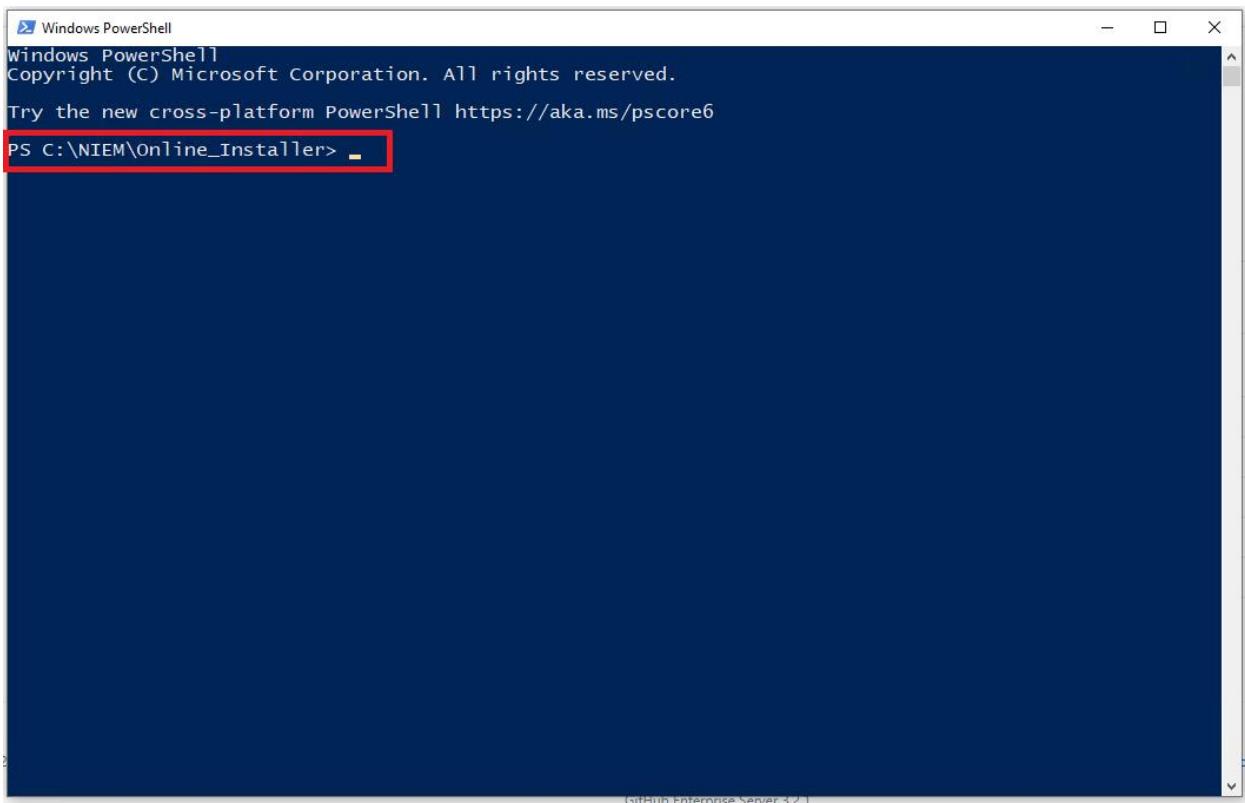
#### 10. Open the 'Online\_Installer' folder



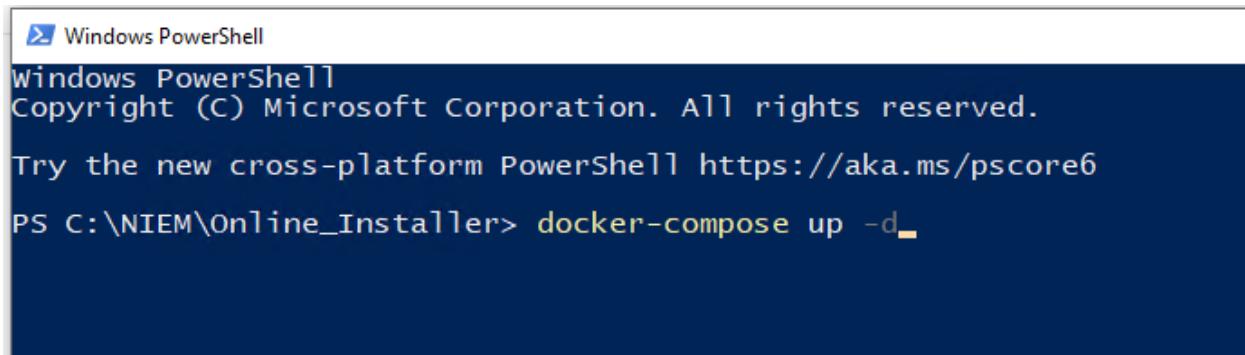
#### 11. Type 'powershell' in the directory path field and either type 'Enter' on your keyboard or click the arrow to go to powershell.



12. A PowerShell window should appear. Verify that the directory listed is the path to your Online\_Installer folder.



13. Type or copy/paste the following command: docker-compose up -d
- \*\*NOTE\*\* Depending on the permissions of the container repo you may be required to login with "docker login" and a personal access token will need to be created in Github.

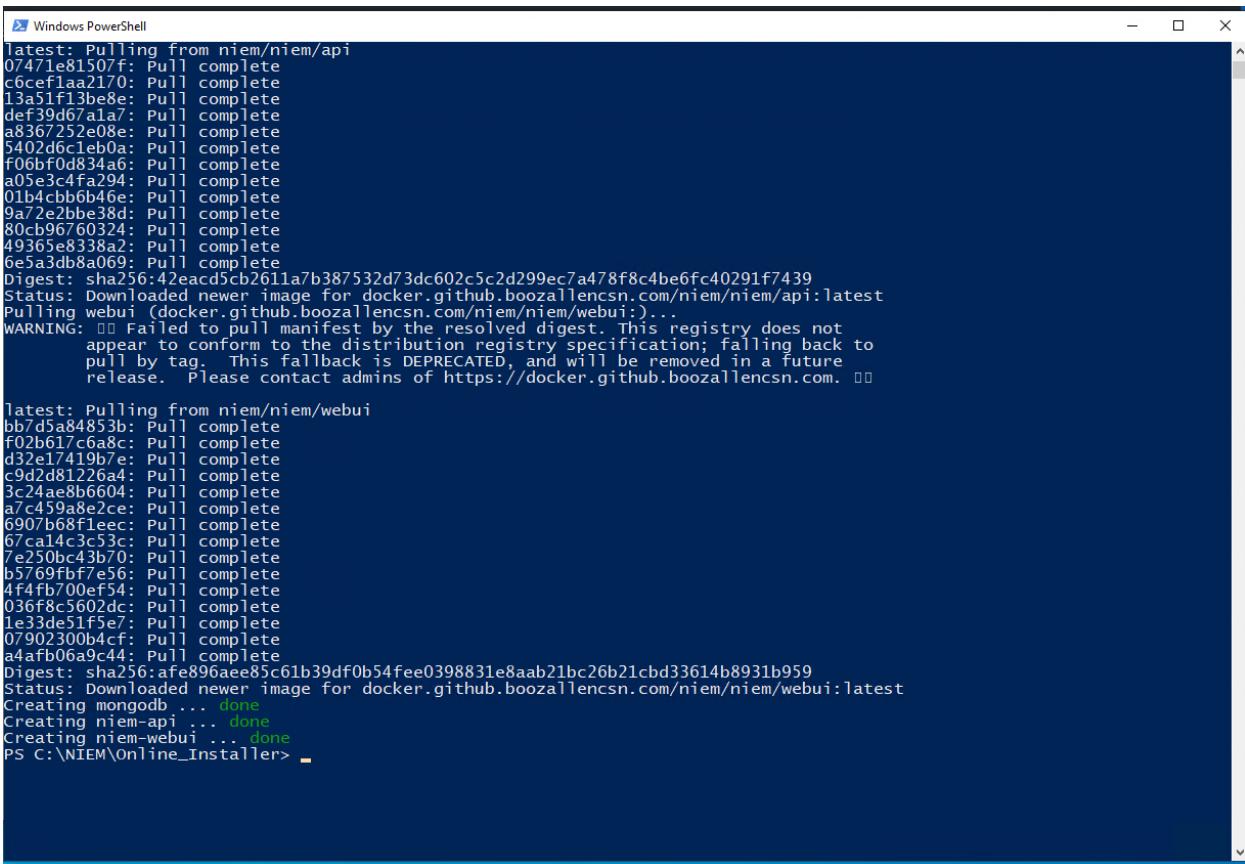


```
Windows PowerShell
Copyright (C) Microsoft Corporation. All rights reserved.

Try the new cross-platform PowerShell https://aka.ms/pscore6

PS C:\NIEM\Online_Installer> docker-compose up -d
```

14. Click the Enter key on the keyboard to run the above command
15. It will take a few minutes for the images to be pulled. They will be completed when you see three 'done' statuses and the directory path as shown at the bottom of the image below



```
Windows PowerShell
latest: Pulling from niem/niem/api
07471e8150f: Pull complete
c6cef1aa2170: Pull complete
13a51f13be8e: Pull complete
def30d67a1a7: Pull complete
a8367252e08e: Pull complete
5402d6c1eb0a: Pull complete
f06bf0d834a6: Pull complete
a05e3c4fa294: Pull complete
01b4ccb6b46e: Pull complete
9a72e2bbe38d: Pull complete
80cb96760324: Pull complete
49365e8338a2: Pull complete
6e5a3db8a069: Pull complete
Digest: sha256:42eacd5cb2611a7b387532d73dc602c5c2d299ec7a478f8c4be6fc40291f7439
Status: Downloaded newer image for docker.github.boozallencsn.com/niem/niem/api:latest
Pulling webui (docker.github.boozallencsn.com/niem/niem/webui:...)...
WARNING: ⚠️ Failed to pull manifest by the resolved digest. This registry does not
         appear to conform to the distribution registry specification; falling back to
         pull by tag. This fallback is DEPRECATED, and will be removed in a future
         release. Please contact admins of https://docker.github.boozallencsn.com. ⚠️

latest: Pulling from niem/niem/webui
bb7d5a84853b: Pull complete
f02b617c6a8c: Pull complete
d32e17419b7e: Pull complete
c9d2d81226a4: Pull complete
3c24ae8b6604: Pull complete
a7c459a8e2ce: Pull complete
6907b68f1eec: Pull complete
67ca14c3c53c: Pull complete
7e250bc43b70: Pull complete
b5769fb7e56: Pull complete
4f4fb700ef54: Pull complete
036f8c5602dc: Pull complete
1e33de51f5e7: Pull complete
07902300b4cf: Pull complete
a4afb06a9c44: Pull complete
Digest: sha256:afe896aee85c61b39df0b54fee0398831e8aab21bc26b21cbd33614b8931b959
Status: Downloaded newer image for docker.github.boozallencsn.com/niem/niem/webui:latest
Creating mongodb ... done
Creating niem-api ... done
Creating niem-webui ... done
PS C:\NIEM\Online_Installer>
```

16. You can now run the application by going to your browser and typing the URL 'localhost:3000'

The screenshot shows the NIEM Package Builder application running in a web browser at localhost:3000. The main header includes the NIEM logo and navigation links for Current Release, Contact, and Search. Below the header, there's a top navigation bar with tabs for Getting Started, My Home, MEP Builder (which is active), and Training. A search bar and a 'Create New MEP' button are also present. The main content area is titled 'Message Exchange Package (MEP) Home'. It has two sections: 'Open/Unpublished' and 'Published Message Exchange Package'. The 'Published' section contains five items, each labeled 'Super Hero' and 'Message Exchange Package Justice 4.2'. Each item has a green shield icon and a brief description: 'The process for reporting the discovery of a super hero.' Below each item are 'Download' and 'Copy' buttons. A note states: 'This functionality is not currently operational. Below is an example of what Published MEP data may look like in a future release.'

## 6. Option 3: Build Installer

1. Navigate to the NIEM GitHub page and click on the **Releases** link

The screenshot shows the GitHub repository page for 'NIEM / NIEM'. The top navigation bar includes links for Watch (0), Star (0), Fork (0), and Settings. Below the navigation, there are buttons for Code, Issues, Pull requests, Actions, Projects, Wiki, Security, Insights, and Settings. The main content area shows a list of commits by 'Brooks-Philip' with details like commit hash, time, and number of commits. On the right side, there's an 'About' section with a note: 'No description, website, or topics provided.' Below it is a 'Readme' section with a red arrow pointing to a 'Releases' button, which is highlighted with a red box. The 'Releases' button has a red arrow pointing to it. Further down are sections for 'Packages' (with three entries: webui, api, db) and 'README.md'.

2. Select the release you would like to deploy

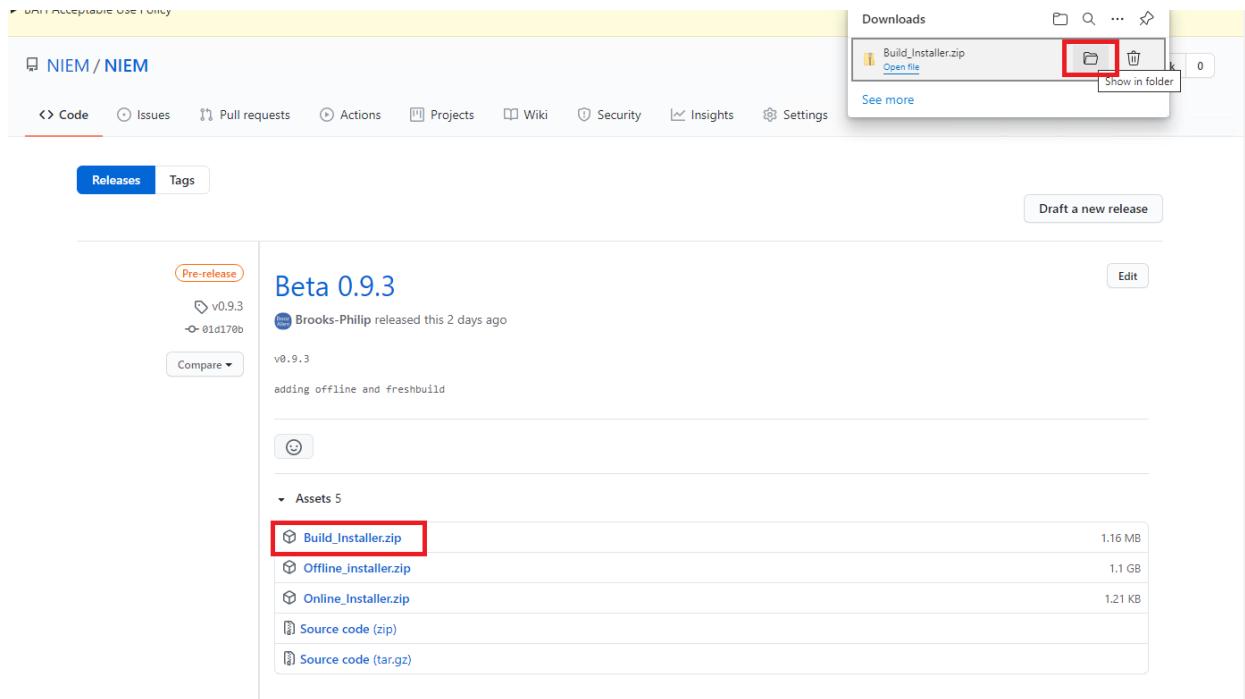
A screenshot of a GitHub release page for the repository 'NIEM / NIEM'. The release is titled 'Beta 0.9.3' and is marked as a 'Pre-release'. It was created by 'Brooks-Philip' 20 hours ago. The release notes state 'adding offline and freshbuild'. A red box highlights the title 'Beta 0.9.3'. There are five assets listed under the 'Assets' section.

3. View that the release will have several assets.

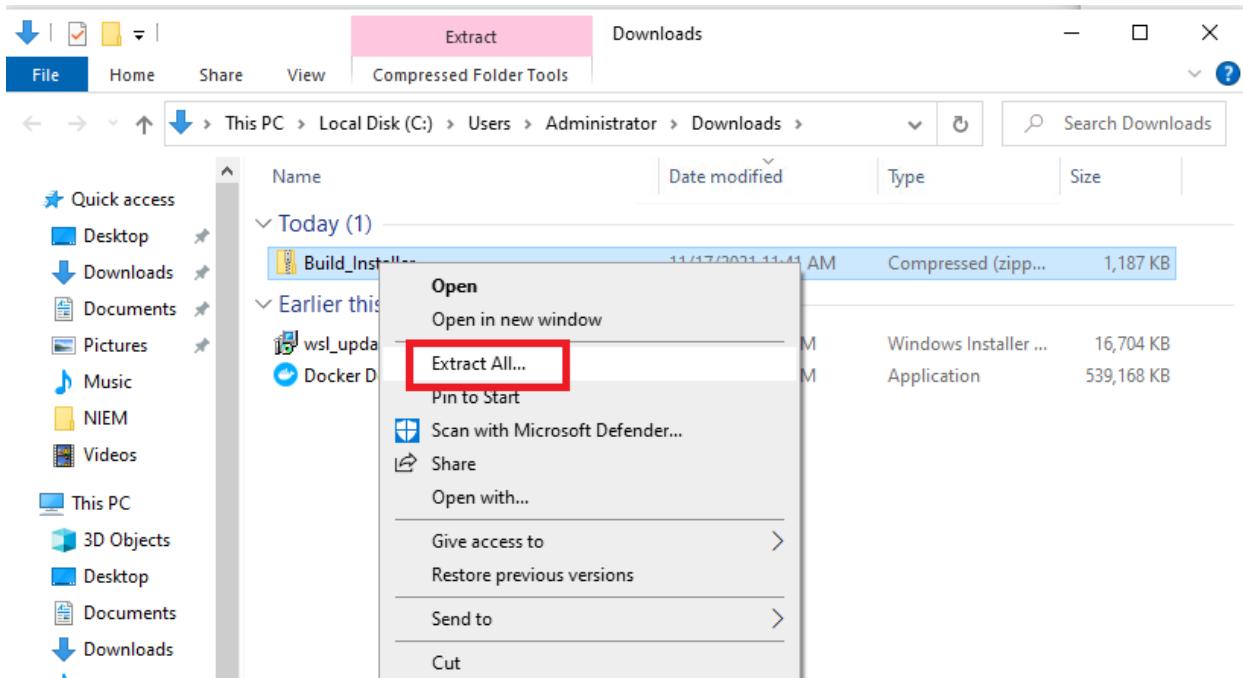
A screenshot of the same GitHub release page for 'Beta 0.9.3'. The 'Assets' section is highlighted with a red box. It contains five items:

- Build\_Installer.zip
- Offline\_installer.zip
- Online\_Installer.zip
- Source code (zip)
- Source code (tar.gz)

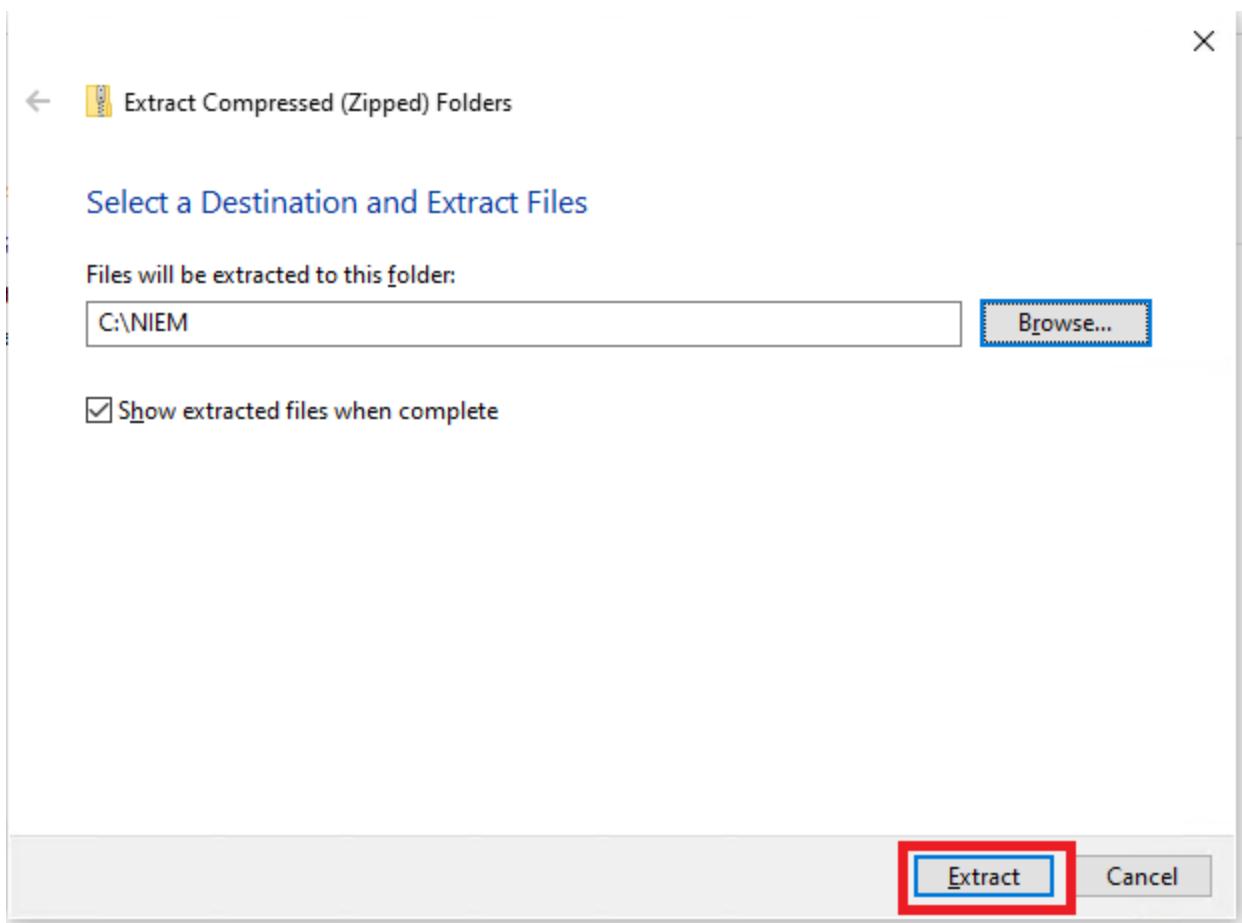
- 
4. Click on 'Build\_Installer.zip' to download it to your machine



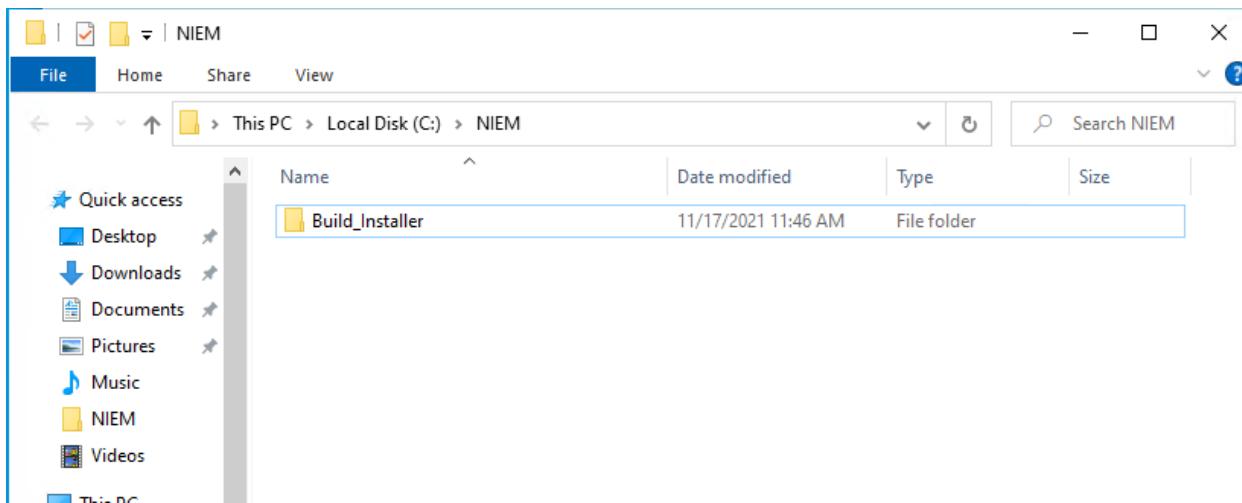
5. View the zip file by either clicking 'Show in Folder' on the browser download pop-up (see image above) or navigating to your system's default download folder
6. Right-click on the zip file and select 'Extract All...'



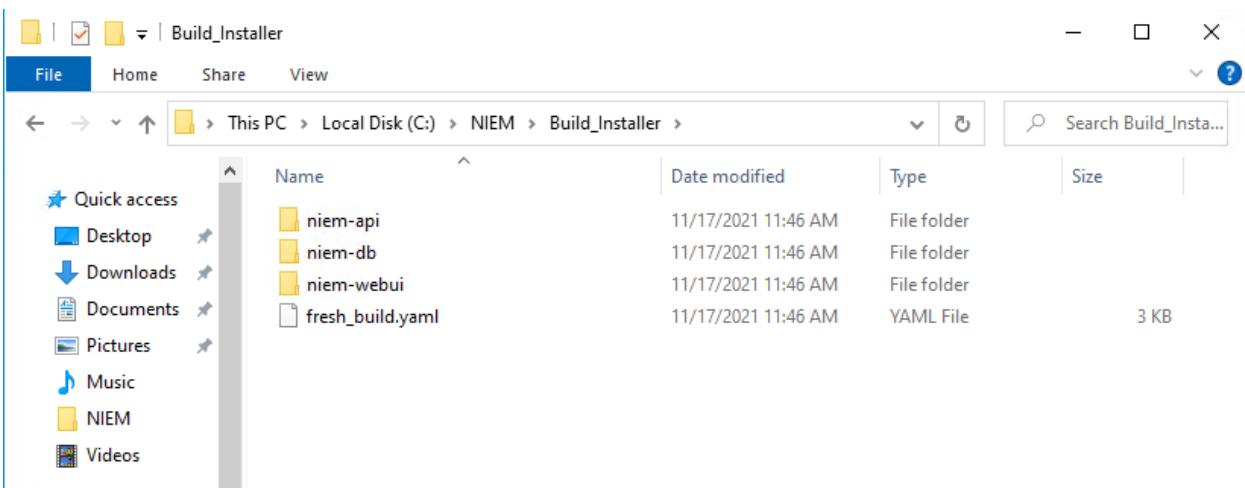
7. Click 'Browse' and browse and select the folder location you wish to extract the project files. If the earlier steps were followed in the 'Create Project Directory' section, select the C:\NIEM directory.
8. Click 'Extract'



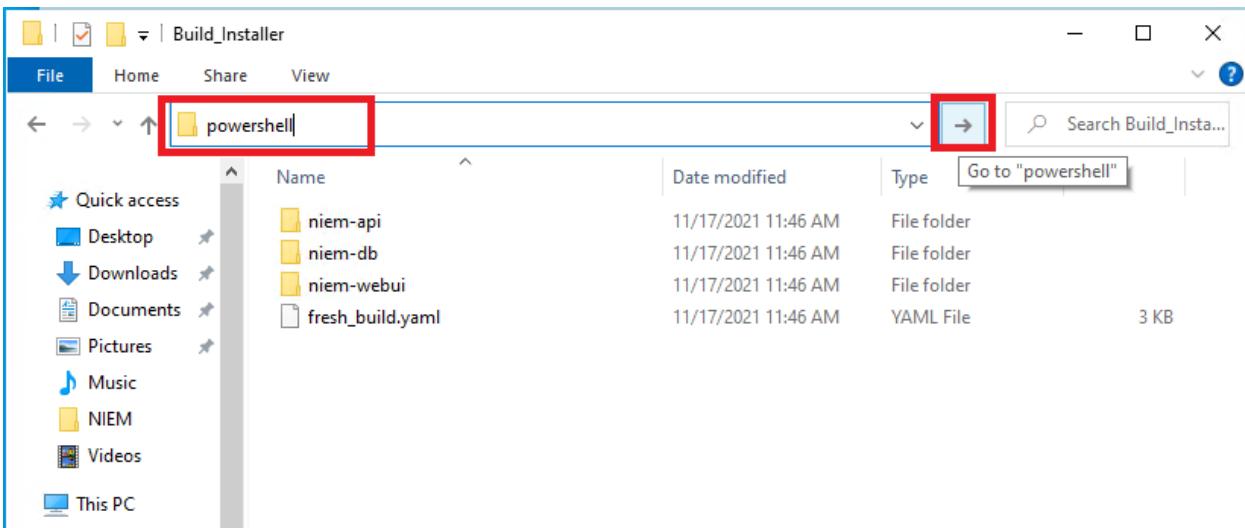
9. If the extracted files do not automatically pop-up upon completed extraction, navigate to the directory to where they were extracted.



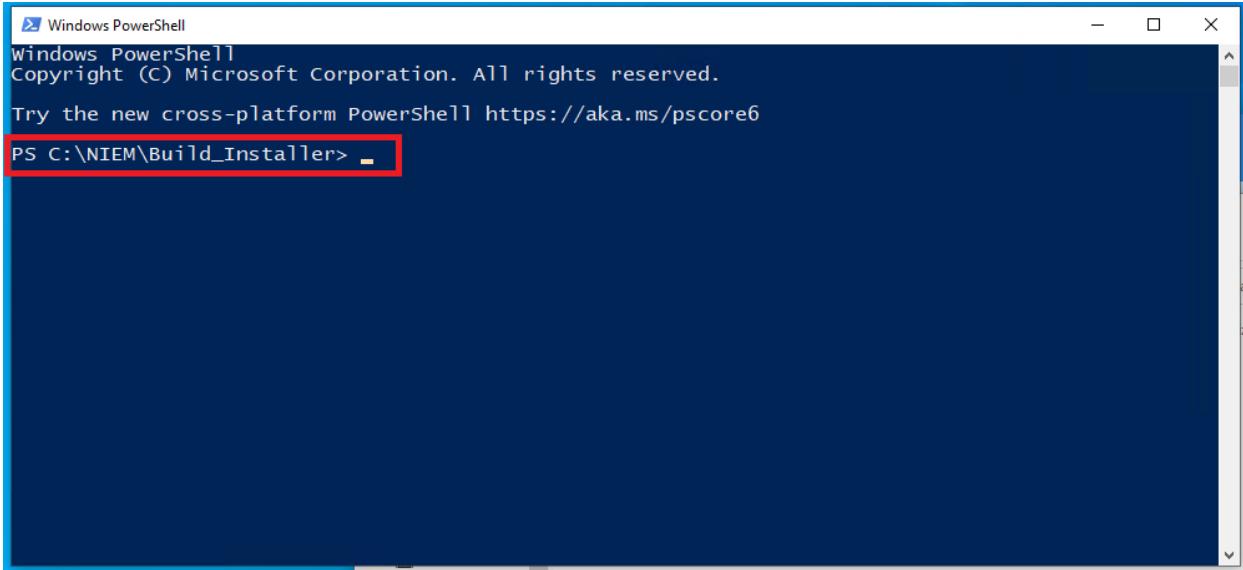
10. Open the 'Build\_Installer' folder



11. Type 'powershell' in the directory path field and either type 'Enter' on your keyboard or click the arrow to go to powershell.



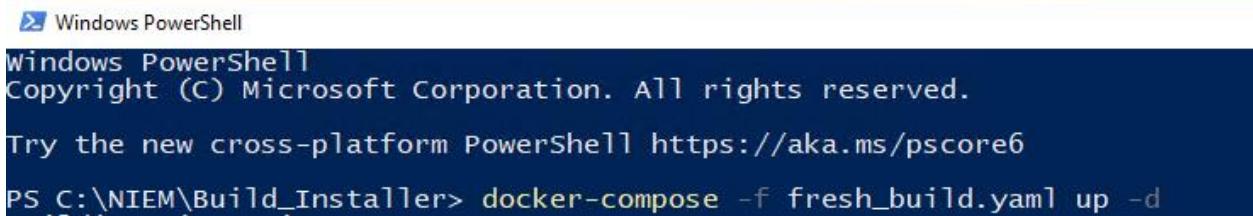
12. A PowerShell window should appear. Verify that the directory listed is the path to your Build\_Installer folder.



A screenshot of a Windows PowerShell window. The title bar says "Windows PowerShell". The content area shows the following text:  
Windows PowerShell  
Copyright (C) Microsoft Corporation. All rights reserved.  
Try the new cross-platform PowerShell <https://aka.ms/pscore6>  
PS C:\NIEM\Build\_Installer> -

13. Type or copy/paste the following command:

- docker-compose -f fresh\_build.yaml up -d



A screenshot of a Windows PowerShell window. The title bar says "Windows PowerShell". The content area shows the following text:  
Windows PowerShell  
Copyright (C) Microsoft Corporation. All rights reserved.  
Try the new cross-platform PowerShell <https://aka.ms/pscore6>  
PS C:\NIEM\Build\_Installer> docker-compose -f fresh\_build.yaml up -d

14. Click the Enter key on the keyboard to run the above command

15. The container images will build and deploy. This process initially takes about 20-30 min. Once the deployment is complete, you will see three 'done' statuses and the directory path as shown at the bottom of the image below

```

[+] Windows PowerShell
[+] Building 377.9s (13/13) FINISHED
  => [internal] load build definition from Dockerfile
  => transferring dockerfile: 218B
  => [internal] load .dockerignore
  => transferring context: 2B
  => [internal] load metadata for docker.io/library/node:latest
  => [auth] library/node:pull token for registry-1.docker.io
  => [internal] load build context
  => transferring context: 1.50MB
  [1/7] FROM docker.io/library/node@sha256:f6e0923d1b188633ac57d122de36889490c6422d0f251a5c3f489a2802542698
  => resolve docker.io/library/node@sha256:f6e0923d1b188633ac57d122de36889490c6422d0f251a5c3f489a2802542698
  => sha256:0a1069189e296e9f2c2b1d914dc281c4f2c02ae2011215a31549f4be36ee42d 7.60kB / 7.60kB
  => sha256:6dc0a3fbad512a29895b41453b01aaa9cb6ffdd8a98196672ac9cba3da4bc 7.60kB / 7.60kB
  => sha256:647act3d48c2780e00cd27bb0984367415f270d78477e9d5b238e6ebd5290da 54.93MB / 54.93MB
  => sha256:e1ad2231829e42e6f095971b5d2dc143d97db2d0870571baa4d29ecd599db62cb 10.87MB / 10.87MB
  => sha256:f6e0923d1b188633ac57d122de36889490c6422d6f251a5c3f489a2802542698 1.21kB / 1.21kB
  => sha256:b0296:ef003473d9adc0e20868d9d60af83b0871919bce92419f65c974aa8ce 5.15MB / 5.15MB
  => sha256:5576ce26bf1df088da60e0eb5162dc2cde1b69f865d2815aba802d29e7181ae862b 54.57MB / 54.57MB
  => sha256:a06b7f31b095b:fa01d8ba10e600a192ba43a1311f50216cf6fa9a45d0f435e 196.50MB / 196.50MB
  => sha256:2f540184b4cf3892d9380c16523990a19bb9e5cbcad8fe2e87aad1d613d3e78 4.20kB / 4.20kB
  => extracting sha256:647act3d48c2780e00cd27bb0984367415f270d78477e9d5b238e6ebd5290da
  => extracting sha256:b0296:ef003473d9adc0e20868d9d60af83b0871919bce92419f65c974aa8ce
  => sha256:b8b4c8e22bcbcdabb22d6c846e610f4f1fc7b8aa417c3985ac8781e3826d3d9682 2.27MB / 2.27MB
  => sha256:48e4c368fbe9fc4f1b5048320e81b87cbc5db112d6135fa29d2a21f59e7clf6 4508 / 4508
  => extracting sha256:e1ad2231829e42e6f095971b5d2dc143d97db2d0870571baa4d29ecd599db62cb
  => extracting sha256:5576ce26bf1df68da60e0eb5162dc2cde1b69f865d2815aba802d29e7181ae862b
  => extracting sha256:a06b7f31b095b:fa01d8ba10e600a192ba43a1311f50216cf6fa9a45d0f435e
  => extracting sha256:2f540184b4cf3892d9380c16523990a19bb9e5cbcad8fe2e87aad1d613d3e78
  => extracting sha256:48e4c368fbe9fc4f1b5048320e81b87cbc5db112d6135fa29d2a21f59e7clf6
  => extracting sha256:48e4c368fbe9fc4f1b5048320e81b87cbc5db112d6135fa29d2a21f59e7clf6
  [2/7] COPY . /niem-webui
  [3/7] WORKDIR /niem-webui
  [4/7] RUN npm install -g npm@6.14.11
  [5/7] RUN npm install
  [6/7] RUN echo "npm start" > startup.sh
  [7/7] RUN chmod +x startup.sh
  => exporting to image
  => exporting layers
  => writing image sha256:f6ef414f8362b30577dd0922816ac63425a8ba1c487afa35f72f2d5948db7f89
  => naming to docker.io/library/niem-webui

```

Use 'docker scan' to run Snyk tests against images to find vulnerabilities and learn how to fix them  
 WARNING: Image for service webui was built because it did not already exist. To rebuild this image you must use 'docker-compose build' or 'docker-compose up --build'.  
 Creating mongodb ... done  
 Creating niem-api ... done  
 Creating niem-webui ... done  
 PS C:\NIEM\Build\_Installer>

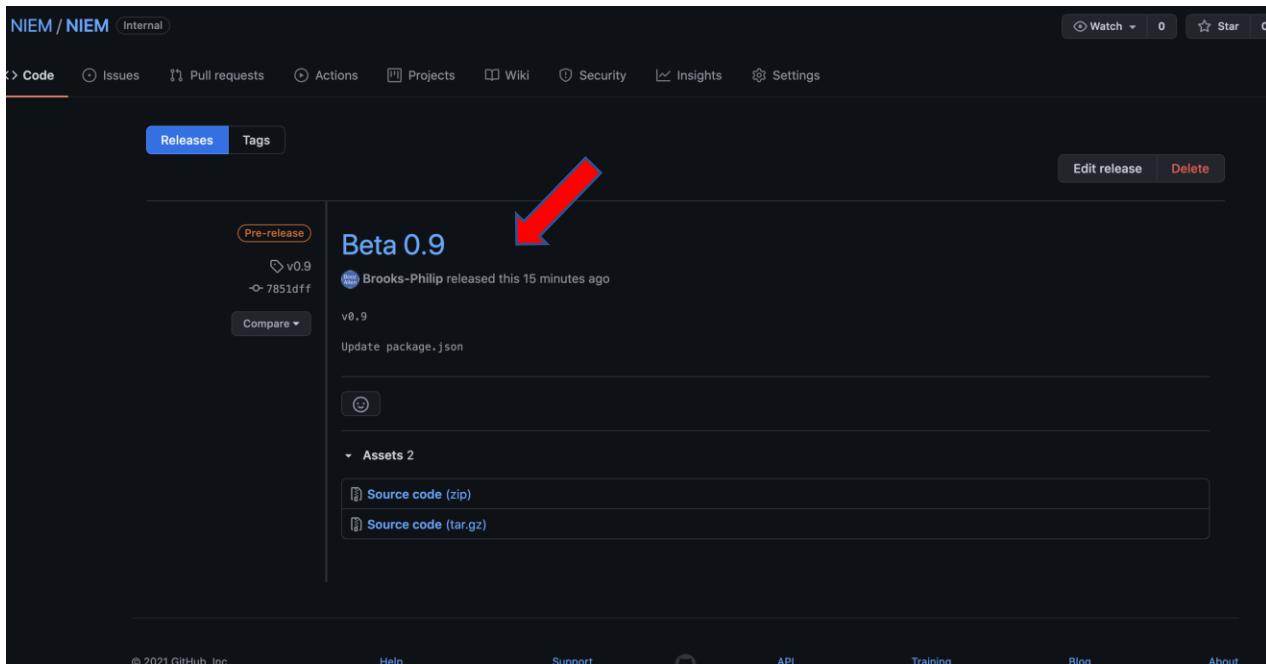
16. You can now run the application by going to your browser and typing the URL 'localhost:3000'

- \*\*NOTE\*\* Upon initial startup, the webpage may continue to load for a few more moments before it is actually ready.

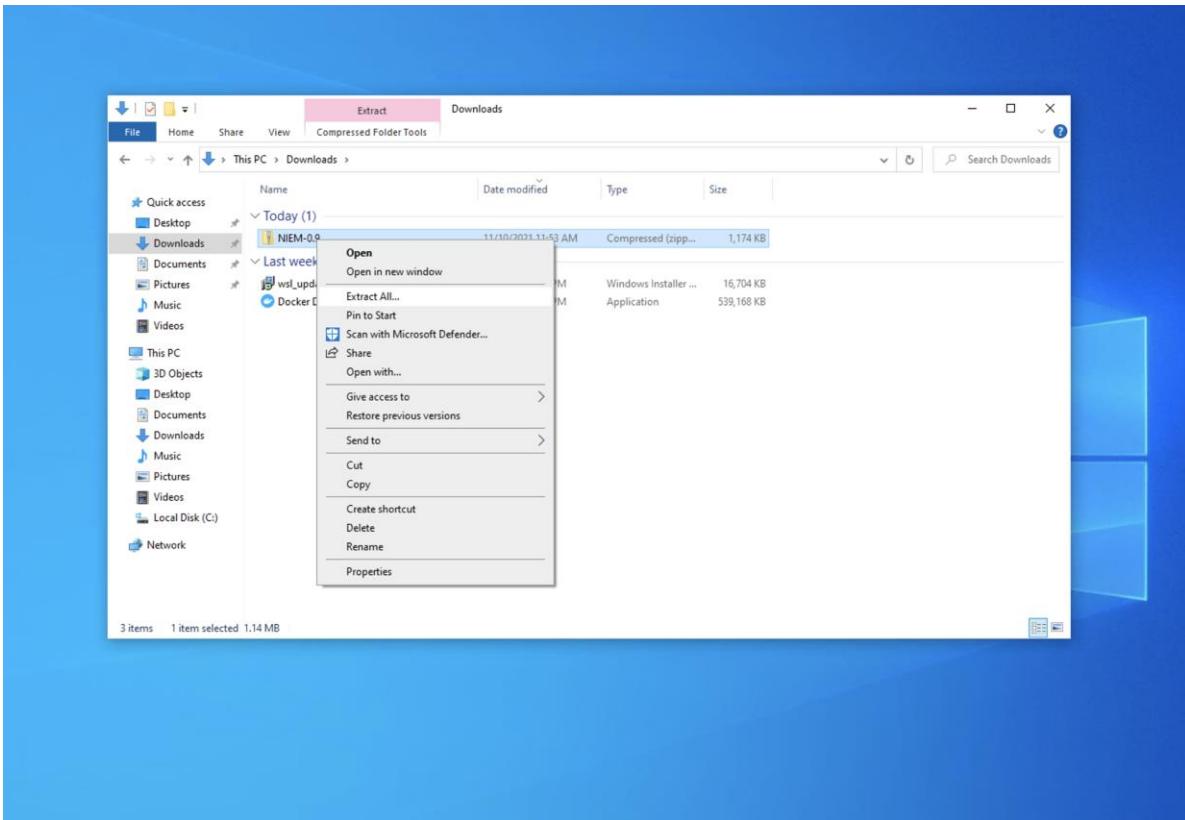
The screenshot shows the NIEM Package Builder MEP Builder interface. At the top, there is a navigation bar with links for "Getting Started", "My Home", "MEP Builder" (which is highlighted in blue), and "Training". Below the navigation bar, there is a search bar labeled "Search MEP Repository" and a button labeled "+ Create New MEP". The main content area is titled "Message Exchange Package (MEP) Home". It contains two sections: "Open/Unpublished" and "Published Message Exchange Package". The "Open/Unpublished" section has buttons for "View", "Copy", "Delete", "Download", "Domain", "Message Exchange Package", and "Summary Description", along with "Format" and "Release" buttons. The "Published Message Exchange Package" section contains five items, each representing a "Super Hero" package. Each item has a "Download" and "Copy" button below it.

Super Hero	Message Exchange Package	Justice	4.2	Description	Download	Copy
Super Hero	Message Exchange Package	Justice	4.2	The process for reporting the discovery of a super hero.	<a href="#">Download</a>	<a href="#">Copy</a>
Super Hero	Message Exchange Package	Justice	4.2	The process for reporting the discovery of a super hero.	<a href="#">Download</a>	<a href="#">Copy</a>
Super Hero	Message Exchange Package	Justice	4.2	The process for reporting the discovery of a super hero.	<a href="#">Download</a>	<a href="#">Copy</a>
Super Hero	Message Exchange Package	Justice	4.2	The process for reporting the discovery of a super hero.	<a href="#">Download</a>	<a href="#">Copy</a>

Click the source code asset corresponding to the operating system you are deploying NIEM on. (Zip for Windows; tar.gz for Linux)



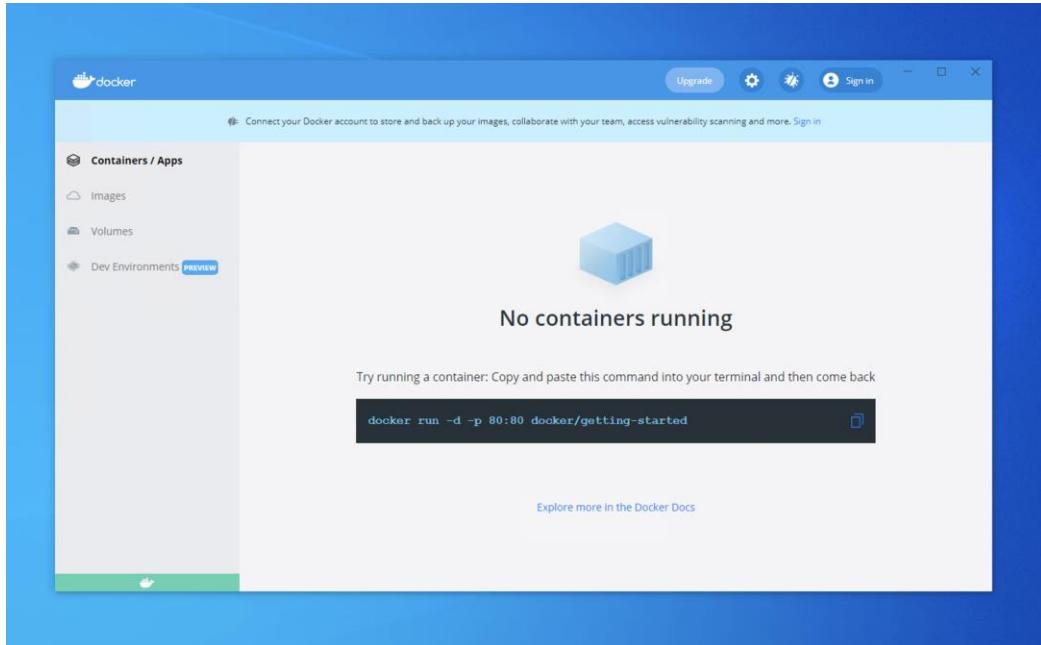
Navigate to the downloaded archive. **Right click** and select “Extract All”



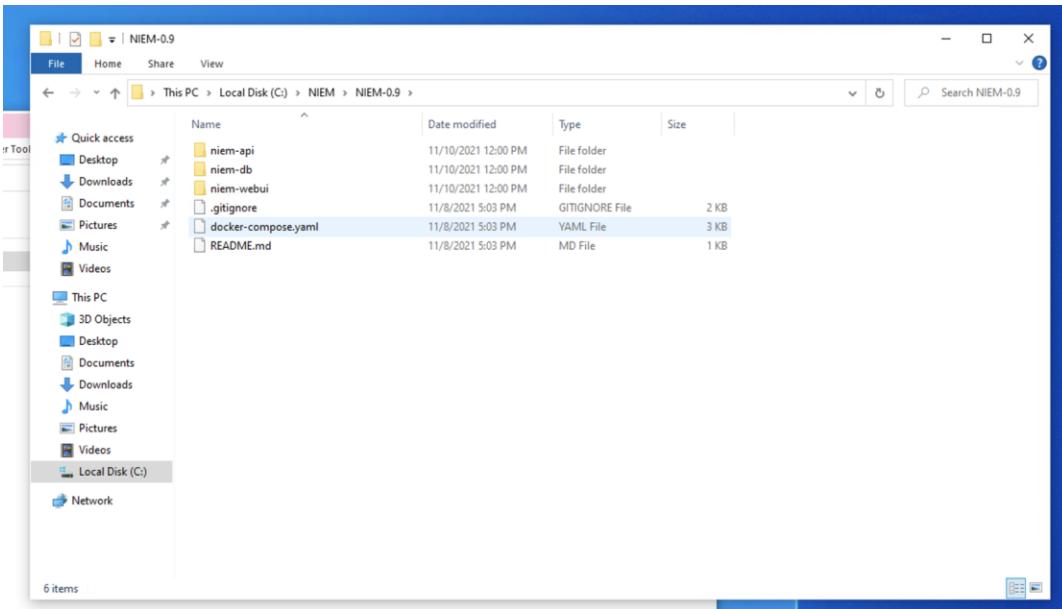
Extract the folder to a location on your C Drive. Then Select **Extract**

Final step... docker-compose up -d offline.yaml

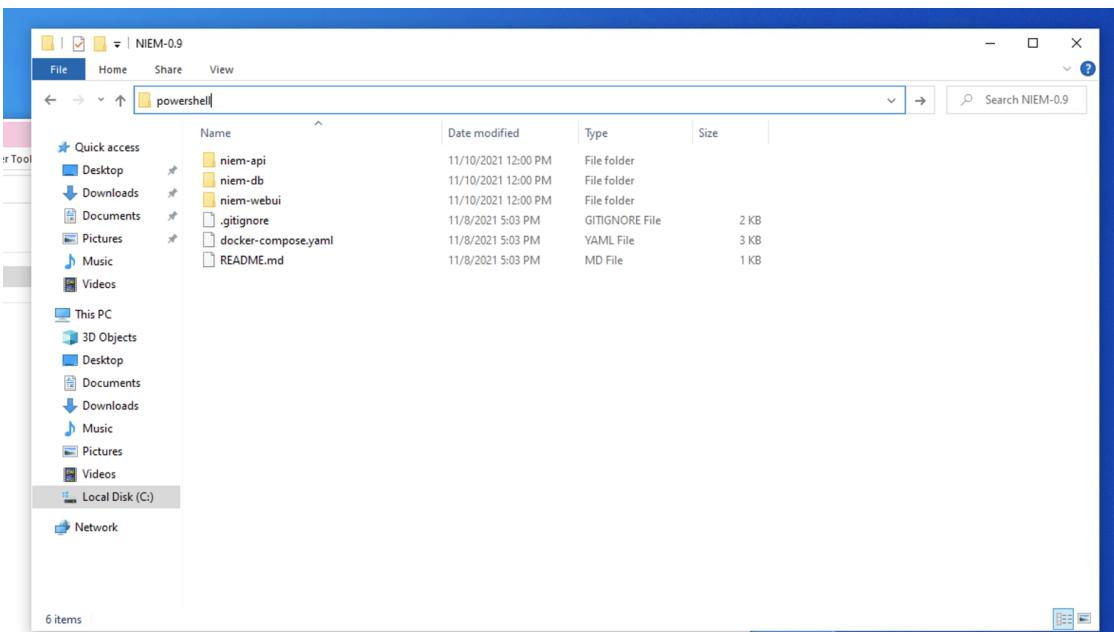
1. Ensure Docker is running by opening Docker Desktop. Notice the Green Bar at the bottom left.



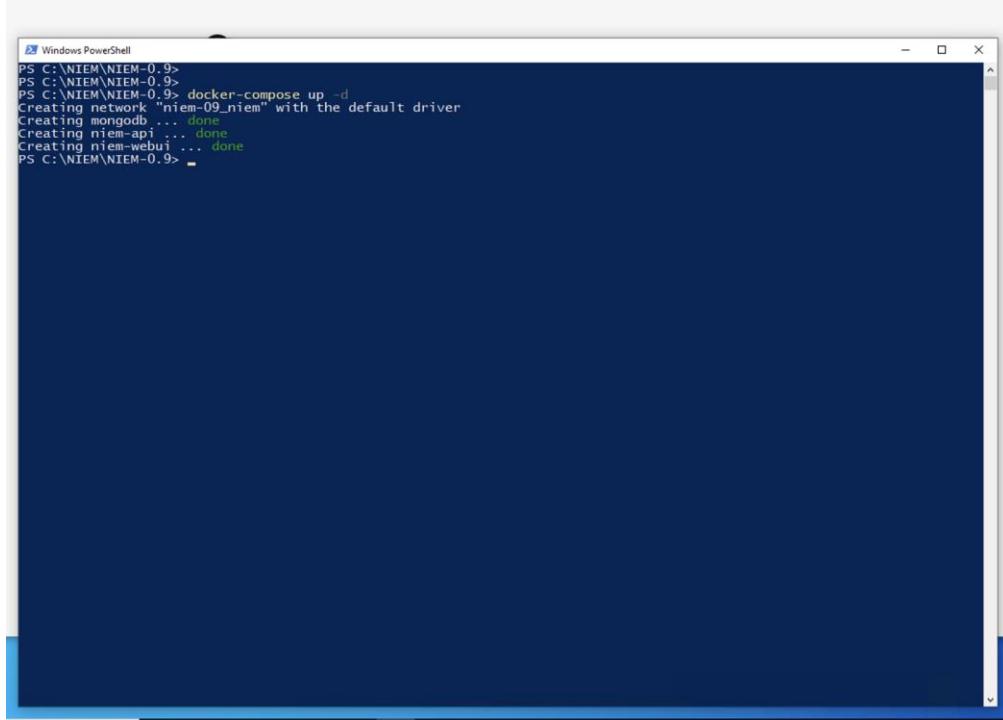
2. In Windows Explorer Navigate to the directory where you extracted the NIEM archive.



3. In the address bar type “powershell” and hit **Enter** to open a Powershell in the NIEM\_DIR.

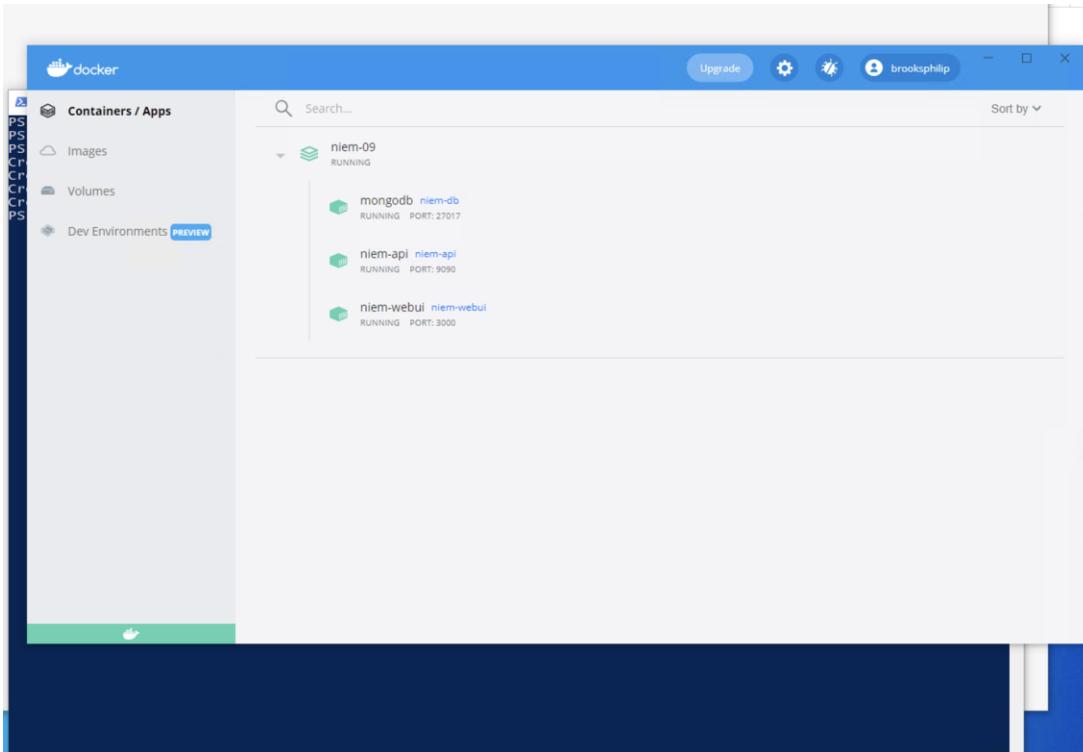


- 
4. In the newly opened Powershell **Type** “docker-compose up -d fresh\_build.yaml” and hit **Enter**.

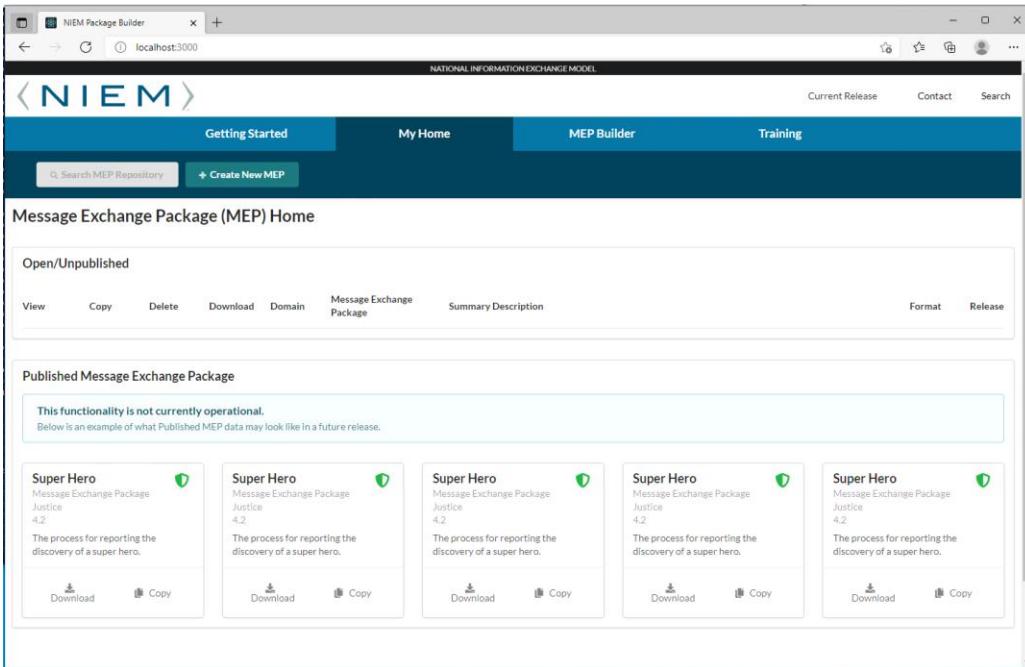


```
Windows PowerShell
PS C:\NIEM\NIEM-0.9>
PS C:\NIEM\NIEM-0.9>
PS C:\NIEM\NIEM-0.9> docker-compose up -d
Creating network "niem_09_niem" with the default driver
Creating mongodb ... done
Creating niem-api ... done
Creating niem-webui ... done
PS C:\NIEM\NIEM-0.9>
```

5. The container images will build and deploy. This process initially takes about 20-30 min. Once the deployment is complete you will be able to see them running in the Docker Desktop UI.



6. Open a browser and navigate to localhost:3000.



7. The NIEMOpen MEP BuilderOpen Application is now up and running

