

Weekly Content Release of Singapore Drug Dictionary (SDD), a SNOMED CT SG Extension

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31 October 2019
SNOMED CT EXPO





Agenda

1. Overview
2. Authoring & Publication Process
3. Authoring & Publication Challenges
4. Improvement Projects

Overview





An Overview of SDD – SNOMED CT SG Extension

- ◆ A national standard to unambiguously identify, code & interpret medicines:
 - ◆ Adopted in all Singapore Public Healthcare Institutions (PHIs) for prescribing and dispensing
 - ◆ Replaced previous 'national' procurement codes (Group Procurement Office (GPO) codes)
- ◆ SDD data set is released weekly since Nov-2016
- ◆ Available through a web-based terminology browser, SDD Lite



Public Healthcare Institutions in Singapore

Hospitals	No.	Admissions	Beds
Acute Hospital	10	455,272	9,071
Psychiatric Hospital	1	9,215	1,950
Community Hospital	4	8,277	799

Table 1. No. of hospitals, total admissions and total no. of beds in 2018

Primary Care Facilities	No.	Attendances
Polyclinic	20	6,323,800

Table 2. No. of polyclinics and total attendances in 2018



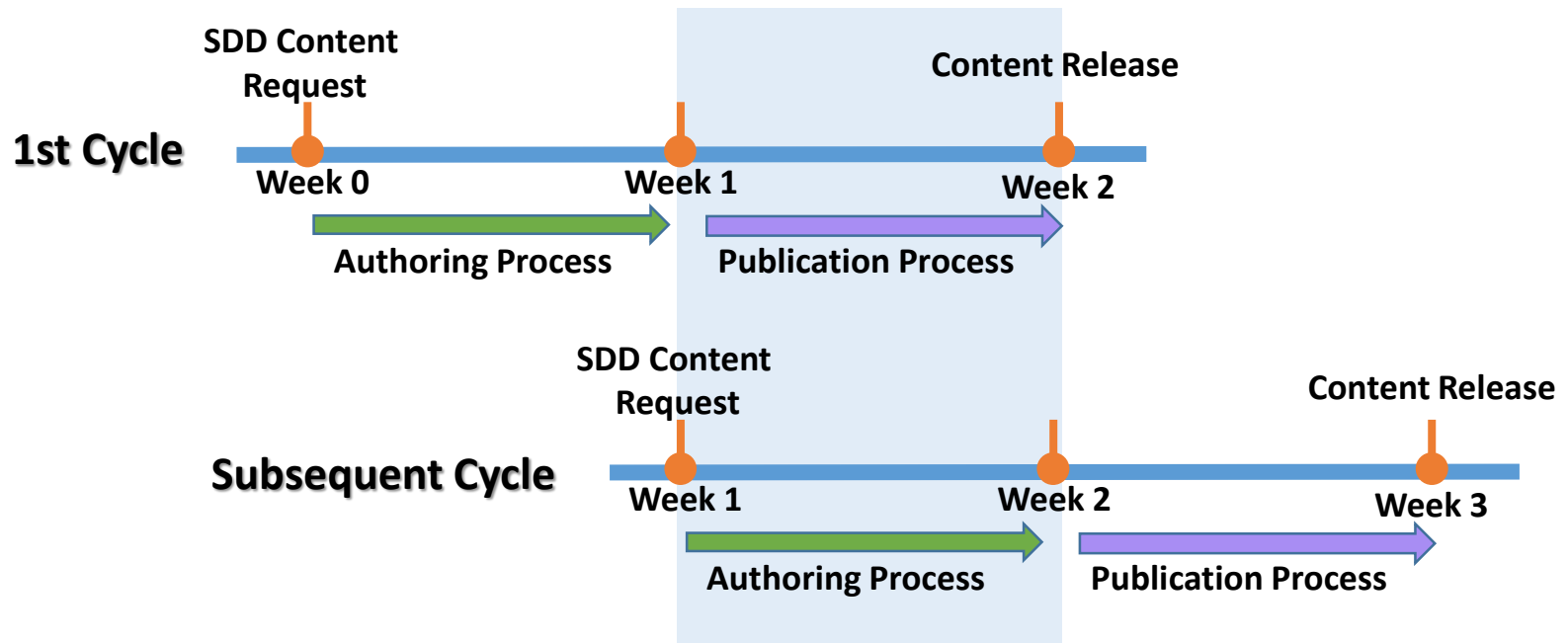
Why is Weekly Content Release needed?

To provide timely access to SDD content to meet users' operational and clinical needs

- ◆ Previous 'national' GPO codes turnaround time was 3 days (flat, non-relational serialized codes)
- ◆ Procurement of new drug occurs anytime in the week

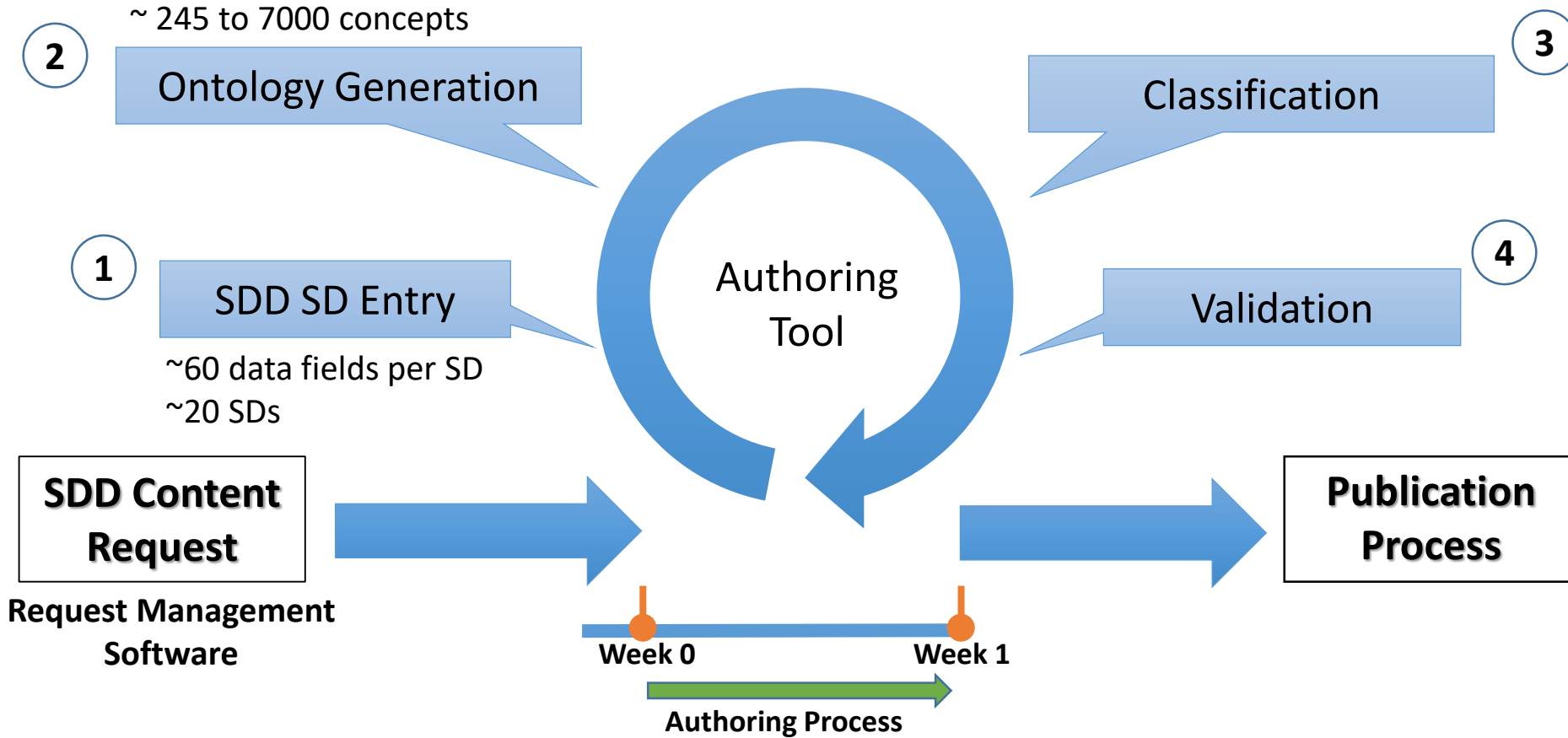
Authoring & Publication Process

Overlapping Cycles to Achieve Weekly Content Release



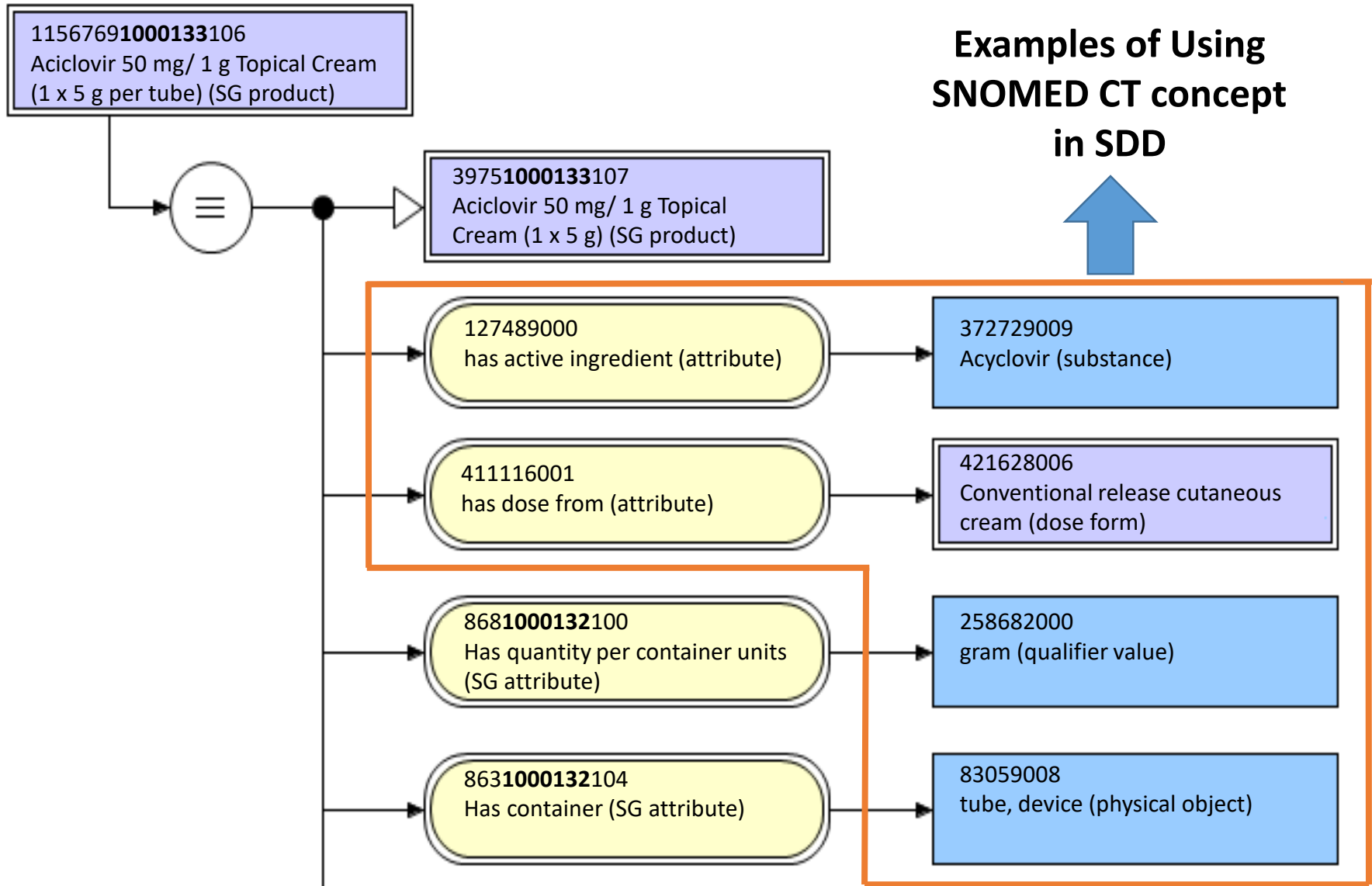
- Authoring for subsequent cycle commences whilst publication is in progress

Authoring Process



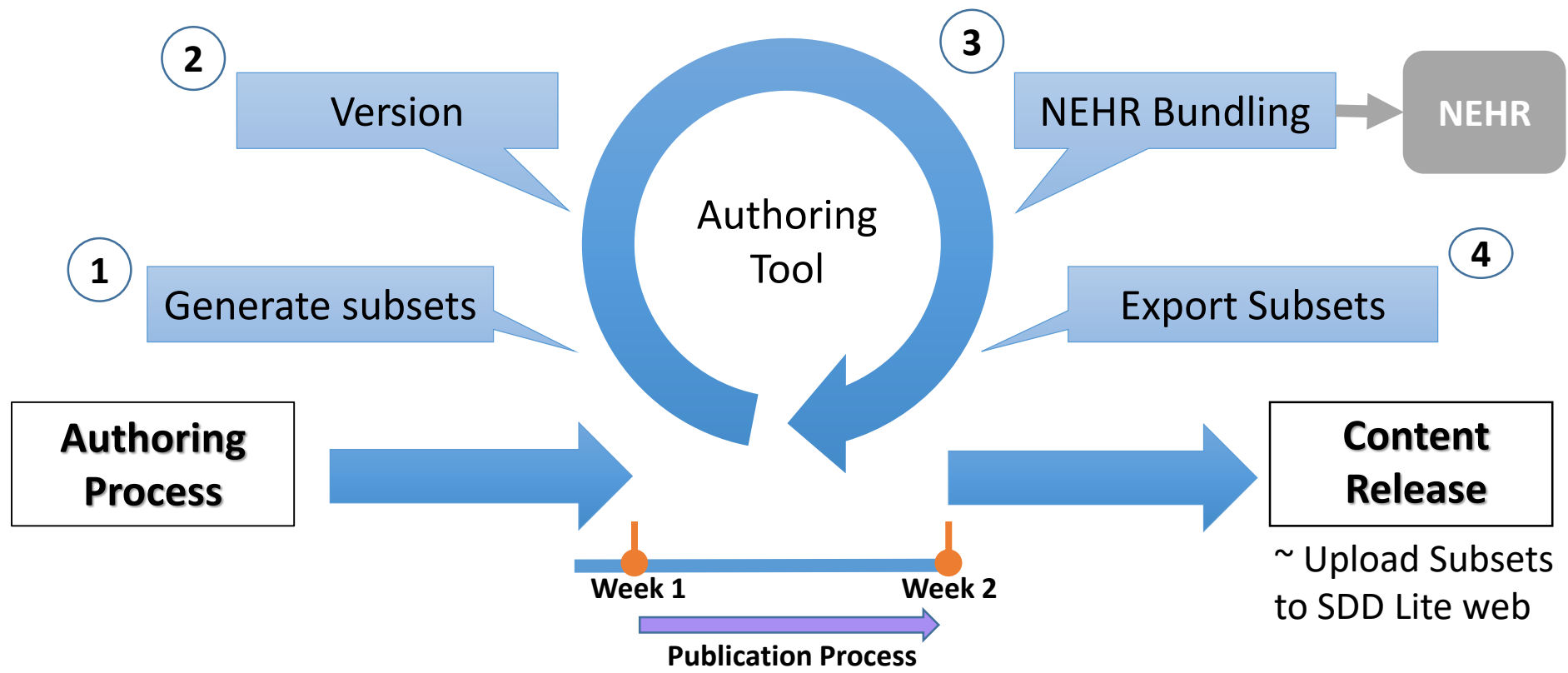
SD – Source Drug

Approach to creating the SDD extension from SNOMED CT





Publication Process



Browsing and Searching SDD concepts in SDD Lite Web through attributes

The screenshot shows the SDD Lite Web search interface. At the top, there is a search bar with the text "Type here to find concepts" and a user profile icon for "ivy.li@ihis.com.sg". Below the search bar, there are navigation tabs: "SDD Drug Product List" (selected), "SDD model", and "Out of scope SDL items".

The search filters are as follows:

- Ingredient: Paracetamol (exact match)
- Dose Form: Tablet (and descendants)
- Brand: Panadol

A "Quick Filter (note: 5 mg not 5mg)" is present, and the search results are "19 results". The results are displayed in a table with columns: SDD Code, Preferred Term, and SDD Class. The first few results are highlighted with a red box:

SDD Code	Preferred Term	SDD Class
0001-13-50X-4	PANADOL ACTIFAST [Paracetamol] 500 mg Tablet	MTPR
0002-73-61X-9	PANADOL COLD & FLU CAPLET [Paracetamol 500 mg + Phenylephrine Hydrochloride 5 mg] Tablet	MTPR
0614-92-74X-6	PANADOL COLD RELIEF PE CAPLET [Paracetamol 500 mg + Phenylephrine Hydrochloride 5 mg] Tablet	MTPR
0367-73-82X-6	PANADOL COUGH & COLD CAPLET [Paracetamol 250 mg + Guaifenesin 100 mg + Phenylephrine Hydrochloride 5 mg] Tablet	MTPR
0001-13-51X-1	PANADOL COUGH PLUS CAPLET [Paracetamol 500 mg + Dextromethorphan Hydrobromide 15 mg + Pseudoephedrine Hydrochloride 30 mg] Tablet	MTPR
0001-13-52X-8	PANADOL EXTEND CAPLET [Paracetamol] 665 mg Sustained-Release Tablet	MTPR
0002-38-68X-9	PANADOL EXTRA CAPLET [Paracetamol 500 mg + Caffeine 65 mg] Tablet	MTPR
8093-53-91X-6	PANADOL EXTRA WITH OPTIZORB CAPLET [Paracetamol 500 mg + Caffeine 65 mg] Tablet	MTPR



PHIs use SDD 13D codes compressed from SDD 18D codes
e.g. 113501000133104 — 1-to-1 —> 0001-13-50X-4

Authoring & Publication Challenges

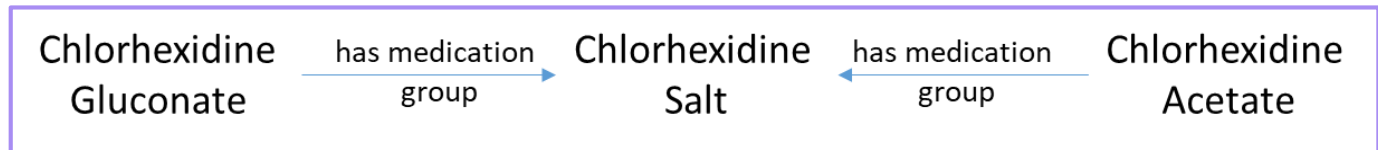
Challenge 1: Intricate Authoring Process

◆ Increased adoption, Increases volume of demand

◆ Grouping Terms

◆ Group characteristics that are not clinically significant

e.g.



◆ Exempted Drug Products

◆ Extemporaneous Preparations

◆ **Availability** of information to create new content

◆ **Complex manual** processes:

◆ Multiple sequential tasks dependent on preceding steps

◆ Manual tracking of code requests using spreadsheet

Challenge 2: Complexity of Model

- ◆ 38 use case layers to support diverse use cases
 - ◆ Over 300,000 active concepts
 - ◆ Over 2 million descriptions
- ◆ Requires **rigorous validation** to ensure accuracy

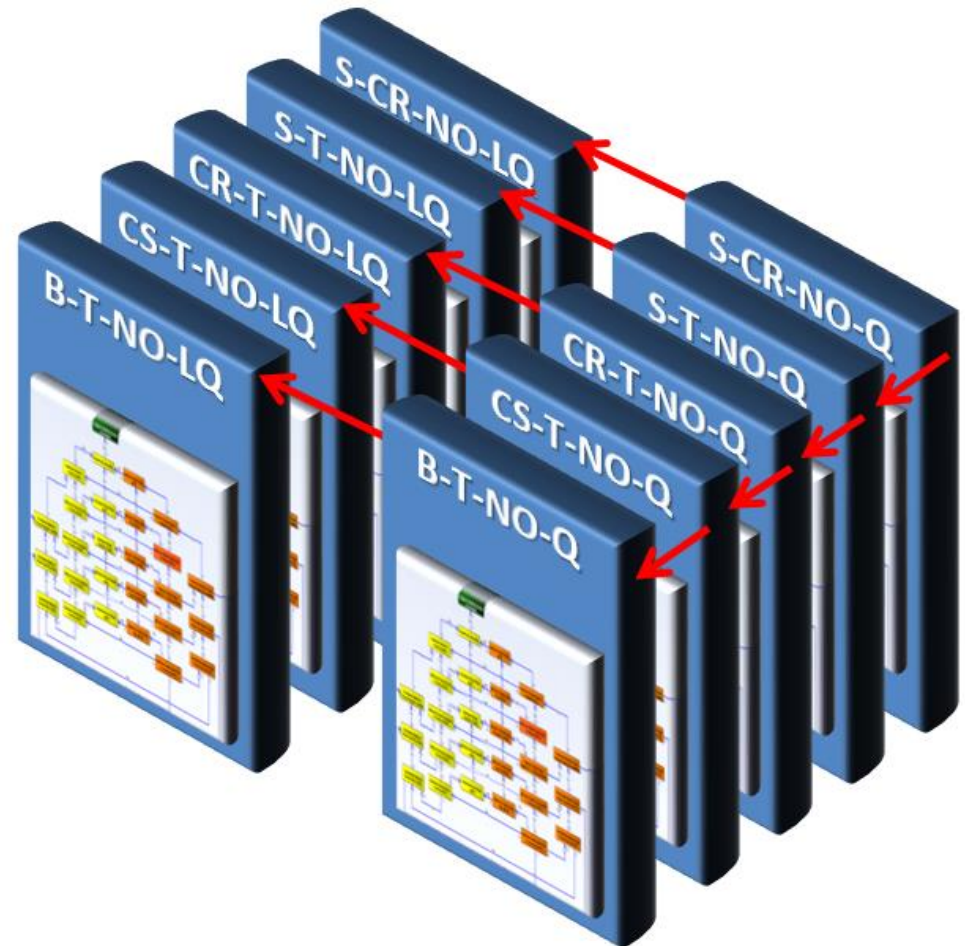
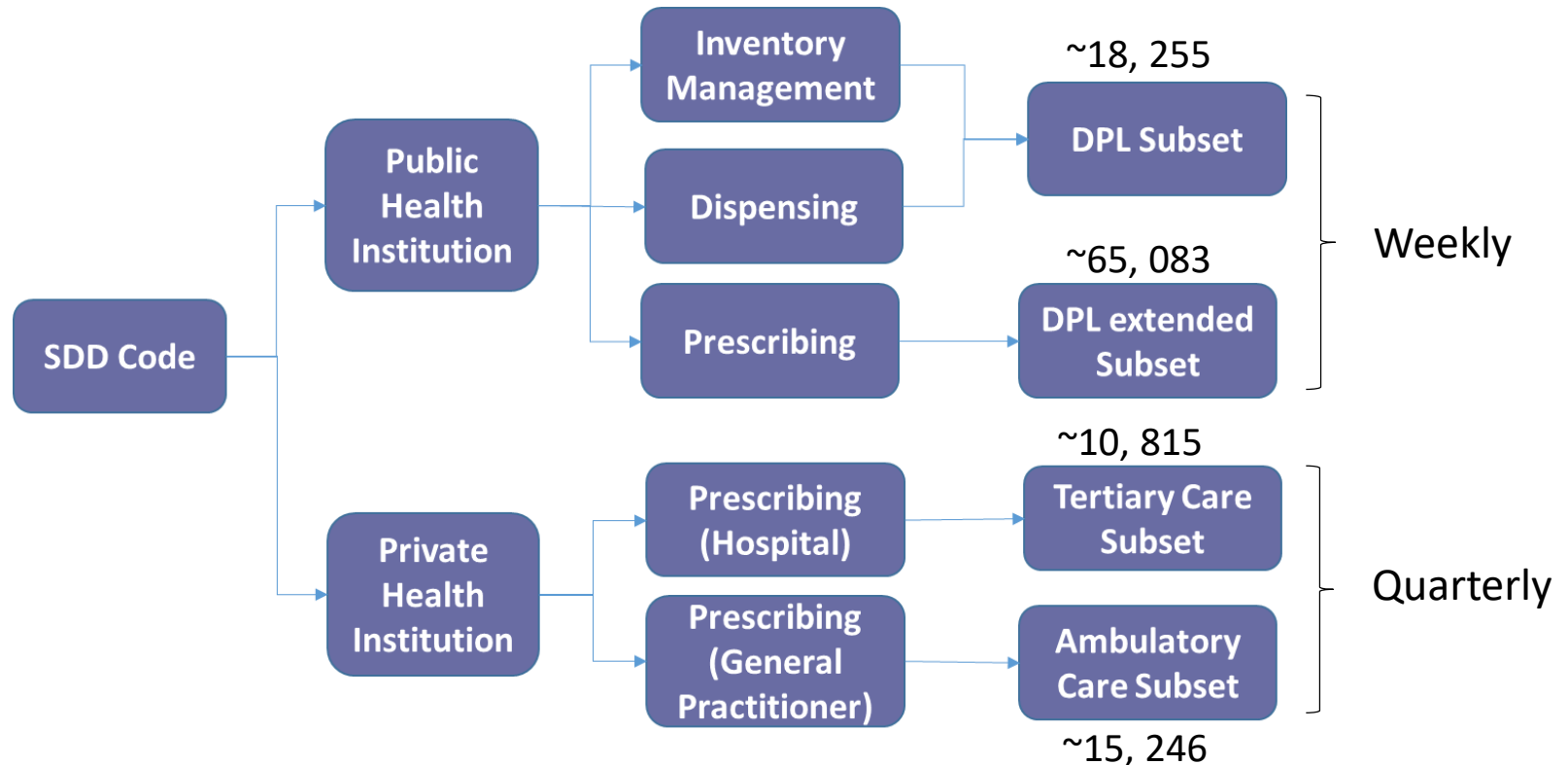


Illustration of Use Case Layers

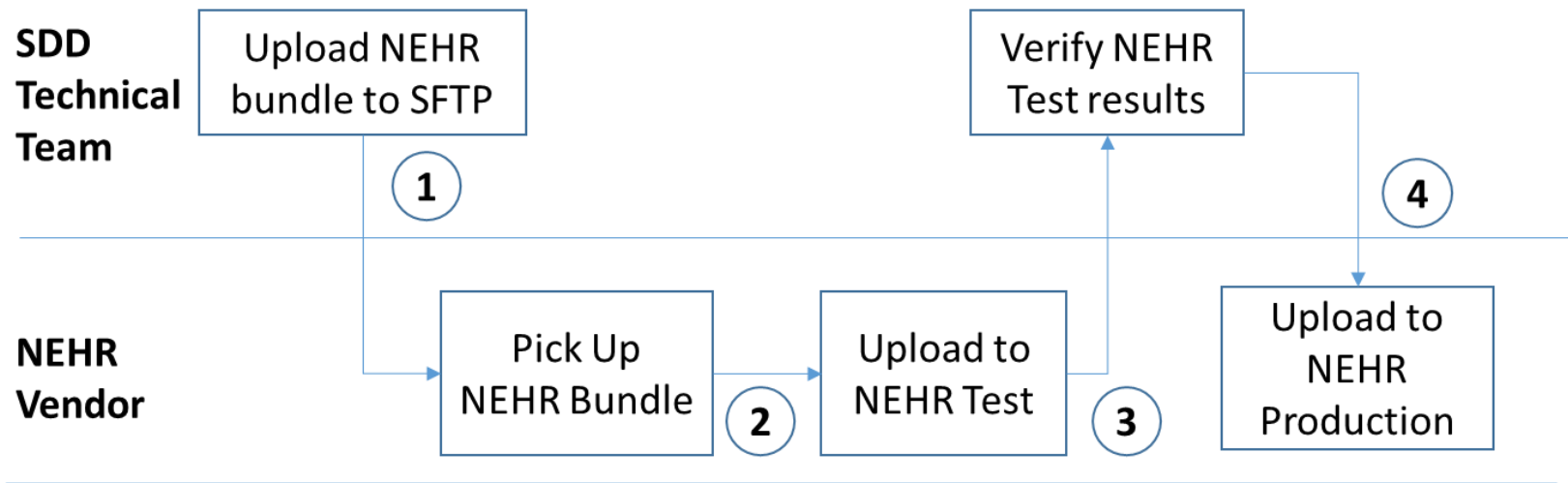
Challenge 3: Complex Filtering

- ◆ Significant time and effort required for customised and manual filtering for diverse requirements



- ◆ DPL – Drug Product List
- ◆ Figures as of Sep 2019

Challenge 4: Previous Dependency on External Work Processes

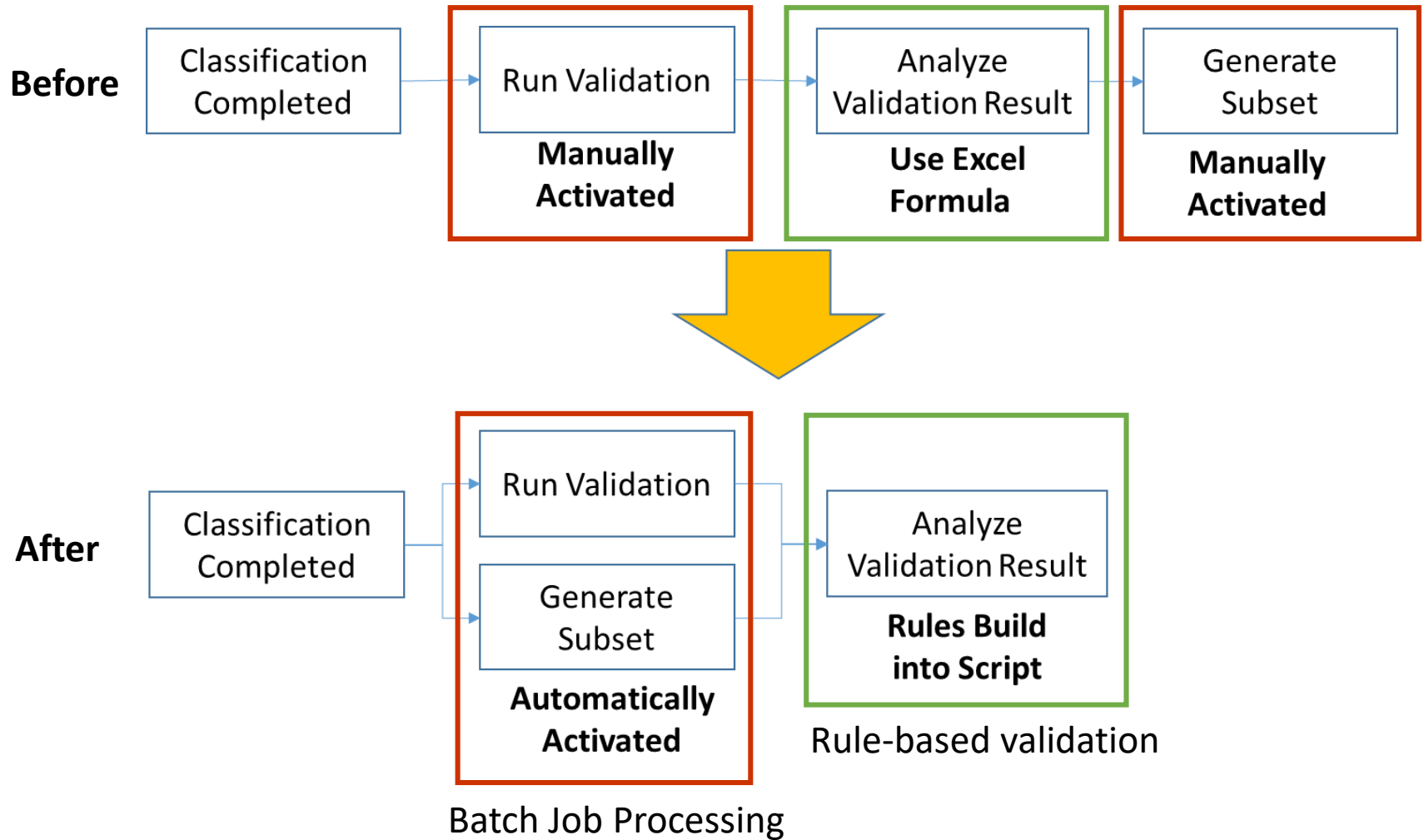


- ① SDD to inform vendor via email
- ② Vendor pick up NEHR bundle and upload to NEHR Test
- ③ Vendor to send test results to SDD via email
- ④ SDD to verify the results and inform vendor via email

Improvement Projects

- Automate Processes
- Batch Job Scheduling
- Request Management Software

Improvement 1: Automate processes to reduce manual intervention





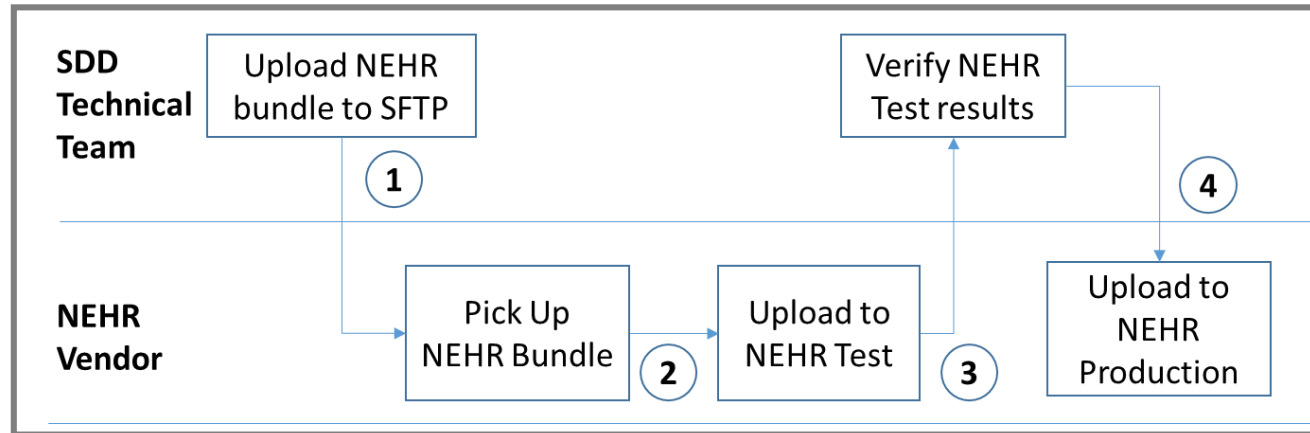
Improvement 1: Benefits

- Utilize non-productive time
 - Public holidays and weekends
- Reduce human error
 - Missed process/ intervention
- Increase accuracy
 - Rule-based validation

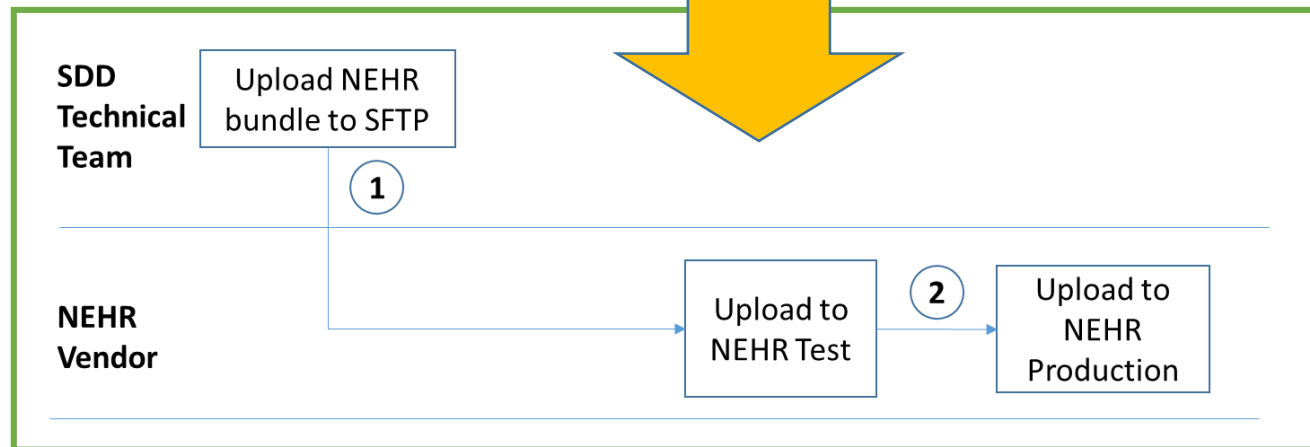


Improvement 2: Reduce Dependency On External Processes

Before



After



- ① Scheduled batch job to pick up NEHR bundle and upload to NEHR Test
- ② Automate scripts to verify test results



Improvement 2: Benefits

- ◆ Increase efficiency

- ◆ Reduce dependency on external processes

- ◆ Faster deployment to the NEHR production environment

- ◆ Rule-based verification eliminated human checks



Improvement 3: Enhance Request Management Workflow

- Improvement method:
 - Adopt 'Request Management Software':
 - To track new requests for SDD content
 - To track requests for new amendments
 - As a centralised information repository



Improvement 3: Benefits

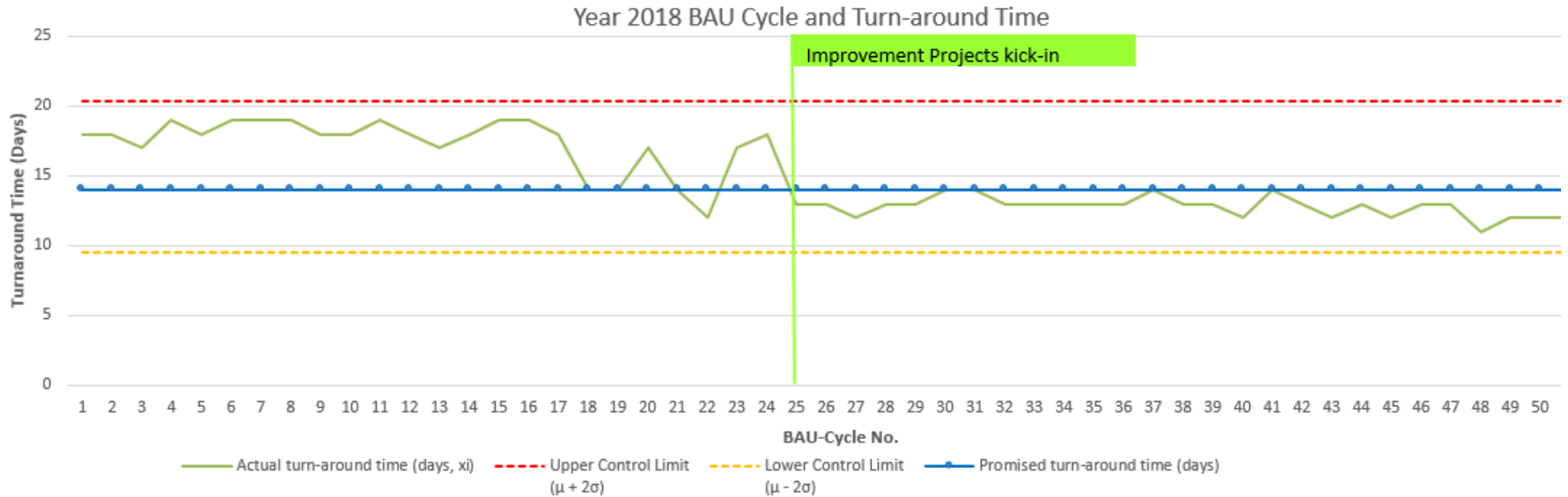
◆ Increase Efficiency

- ◆ Systematic tracking of issues based on status
- ◆ Allows prioritization of issues

◆ Facilitate communication

- ◆ Allows collaborative commenting
- ◆ Allows assignment of issues effectively
- ◆ Allows sharing of supporting documents

Final Outcomes: Meeting 7-day publication cycle and 14-day turnaround time



Significant reduction of average turnaround time

From 17 days to 14 days



Next Steps

- Explore SDD Re-modelling
- Evaluate removal of Universal Restriction

In order to

- Reduce authoring complexity
- Further improve turnaround time
- Reduce maintenance effort

End of Presentation
—— Thank you ——



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