



**Metra**

## Kick-off Meetings

SETUP THE PROJECT FOR SUCCESS

**STADLER**

# Project Kick-off – 6/19/24

<b>Topic</b>	<b>Presenter</b>	<b>Time</b>
Introduction Round Metra & Stadler	Stadler / Metra	01:00pm
Introduction of Metra	Metra	01:20pm
Introduction of Stadler US	Stadler	01:30pm
New Schedule	Metra	01:40pm
Stadler's Metra Project Outline	Stadler	01:45pm
Challenges of the Schedule	Stadler	02:10pm
Break		02:45pm
Stadler's Proposal on Formal Communication Procedures, Reporting Channels	Stadler	03:00pm
Questions about Contract, Tech. Spec., CDRL, Schedule, Collaboration etc.	Stadler	03:30pm
End		04:00pm

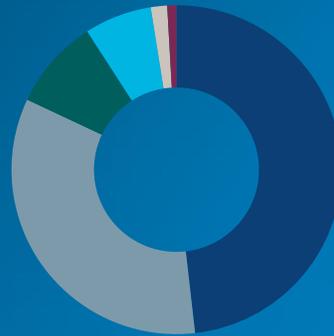
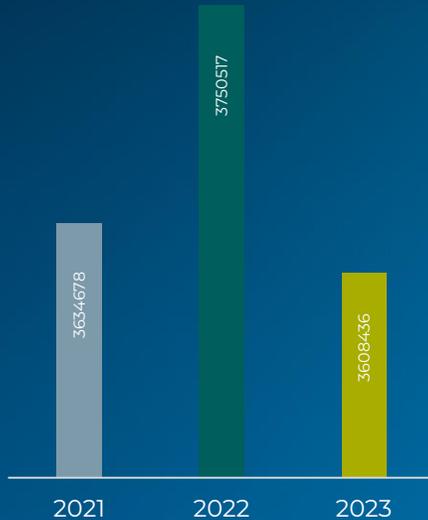
# 02

## Stadler US

Overview

# 2023 Results at a Glance

**Net revenue**  
In thousands of CHF



**Net revenue by geographical market**

- Germany, Austria, Switzerland
- Western Europe
- Eastern Europe
- America
- CIS
- Rest of the World

# 24.4

**Order Backlog in CHF Billion**  
Previous Year: 22.0

# 5.1%

**EBIT Margin**  
Previous Year: 5.5%

# 138.6

**Net profit in CHF million**  
Previous Year: 75.1

# 6.8

**Order Intake in CHF Billion**  
Previous Year: 8.6

# 37,159

**Registered shareholders as at 31 December 2023**  
Previous Year: 38,943

# 183.3

**EBIT in CHF million**  
Previous Year: 205.1

# 13,944

**Employees Worldwide**  
Previous Year: 13,431

# More than 9800 units sold in 43 countries



36

SMILE



2365

FLIRT / WINK



553

KISS



948

Tailor-made (multiple units / locomotives / cars)



2480

Locomotives



155

Wagon



782

METRO



1725

LRV



497

Regional rail shuttle



611

GTW

# Divisions 2024

## Switzerland



– Bussnang



– Rheintal



– Salt Lake City (US)

## Signaling



– Wallisellen  
(Switzerland)

## Germany



– Pankow



– Chemnitz

## Central Europe



– Siedlce (PL)



– Prague (CZ)



– Minsk (BY)

## Spain



– Valencia

– ERION

– ERION (FR)

## Components



– Winterthur



– Biel/Bienne



– Szolnok (HU)



– Środa (PL)

## Service



- Algeria
- Denmark
- Germany
- Finland
- France
- Italy
- Netherlands
- Norway
- Austria
- Poland
- Portugal
- Russia
- Serbia
- Sweden
- Switzerland
- Spain
- Turkey
- UK
- Hungary
- USA

**Employees Worldwide: 13,944**

Stadler Rail in the United States

# Stadler Rail Group & Stadler US

## Stadler Rail Group



Revenue: **3.8 billion USD**  
Employees: **13,000+**  
Locations: **15 all over the world**  
Established: **1942**

## Stadler US



Employees: **500**  
Facility Size: **300,000+ sq ft**  
Established: **2016**  
Projects in progress: **8: Caltrain, DART, USU, Caltrans, Caltrain EMU, Caltrain BEMU, MARTA, & Metra**

**Over 9,800 trains sold all over the world**

Timeline and Map

# Projects in North America

20 GTW NJT



2002

1

6 GTW CMTA



2007

2

11 GTW DCTA



2011

3

8 GTW eBART



2016

4

4 GTW CMTA



2017

5

10 Custom Coaches  
Rocky Mountaineer



2018

6

8 FLIRT TEXRail



2019

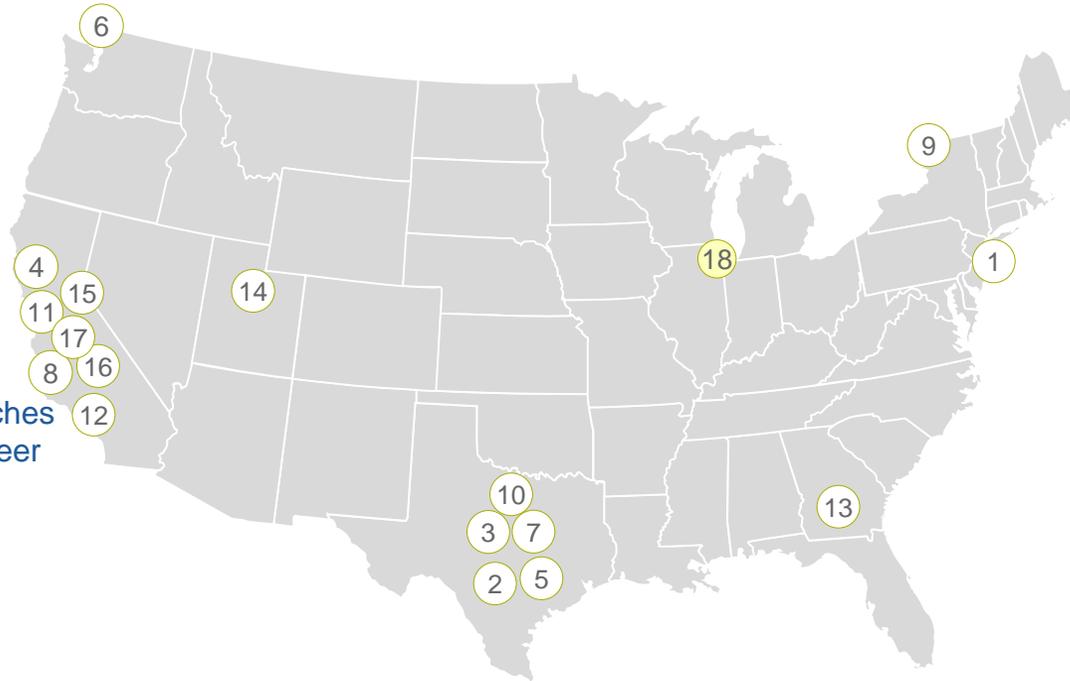
7

3 FLIRT SBCTA



2020

8



8 FLIRT DMU



2022 - 2023

9

7 FLIRT Ottawa



2022

10

23 KISS Caltrain



2021 - 2026

11

1 H<sub>2</sub> FLIRT  
SBCTA



2024

12

56 METRO MARTA



2024 - 2029

13

1 FLIRT USU



2025

14

1 KISS Caltrain Option  
BEMU KISS



15

10 Caltrans H<sub>2</sub>



2027 - 2028

2027

16

4 KISS Caltrain



17

8 FLIRT BEMU  
Metra



2028

2027-2028

18

# Our Products in an Overview

## FLIRT



- Propulsion Systems:
- Battery
  - Hydrogen
  - Diesel
  - Overhead Catenary

Seating Capacity – up to 480

Customizable Platform Height

## KISS



- Propulsion Systems:
- Diesel
  - Overhead Catenary
  - Battery

Seating Capacity – up to 800

Customizable Platform Height

## METRO



- Propulsion Systems:
- Battery
  - Overhead Catenary

Seating Capacity – up to 350

Customizable Platform Height

## LIGHT RAIL VEHICLES



- Propulsion Systems:
- Overhead Catenary
  - Off wire capabilities

Seating Capacity – up to 140

- Customizable Platform Height:
- High Floor
  - Low Floor
  - 70 – 80% Low Floor

## TAILOR MADE



- Options:
- Cog Rail
  - Coaches
  - Shunting Locomotives
  - Research & Development Projects

## Stadler Rail Services (SRS)

- Full Service – Comprehensive maintenance
- TSSSA – Tailored service support
- Spare part management
- Modernization – Upgrade of existing vehicles
- Overhaul of vehicles and components
- Repair of vehicles
- Digital solutions – Remote monitoring and condition based maintenance

## Stadler Signaling

- ETCS – EU Train Control System
- CBTC – Comm. Based Train Control
- ATO – Automated Train Operation
- Anti-Collision
- PZB & FRED – On Board & Wayside
- Interlocking – Control and Safety
- Subsystems
- Dynamic Passenger Information
- Services
- Smart Object Controller
- Field Elements

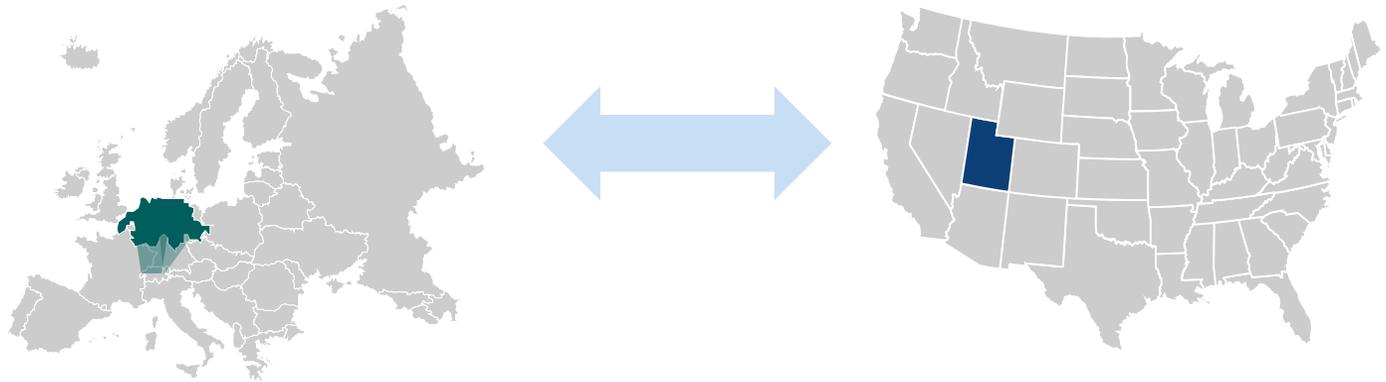
# Stadler US Invests in Future Generations

## TRAC – YOUTH APPRENTICESHIP PROGRAM



- Started in 2019 as the first apprenticeship program in Utah
- First class graduates in summer 2022
- Based on the Swiss model
- Program begins in senior year of high school
- Official associates degree from SLC Community College plus job-based education

## KNOWLEDGE EXCHANGE SWITZERLAND AND USA



### HOW IT WORKS

- Employees in various areas train with teams in Switzerland to learn and bring this knowledge back to their teams in the US
- Colleagues from Stadler locations around the world spend extended periods of times at Stadler US to teach or gain knowledge from here

### WHAT WE GAIN IN ADDITION TO KNOW-HOW

- Vast cultural exchange throughout all areas of the company as well as knowledge transfer
- Establishing of international network for employees and departments

## PROUD TO PARTNER WITH



# 03

## Stadler's Metra Project Outline

Eight Trainsets of 2-car battery FLIRT with options for additional eight 3- to 4-car Trainsets

# Summary of Program & Train Specifications



## Train Specifications

Type	FLIRT BEMU 2-Car
Max Speed	79 mph
Axle Arrangement	Bo'+2'2'+Bo'
Power	1 MW at wheel
Charging System	DC Fast Charging Separate Contract
Size of Train	L 170' W TBD

## Program Overview

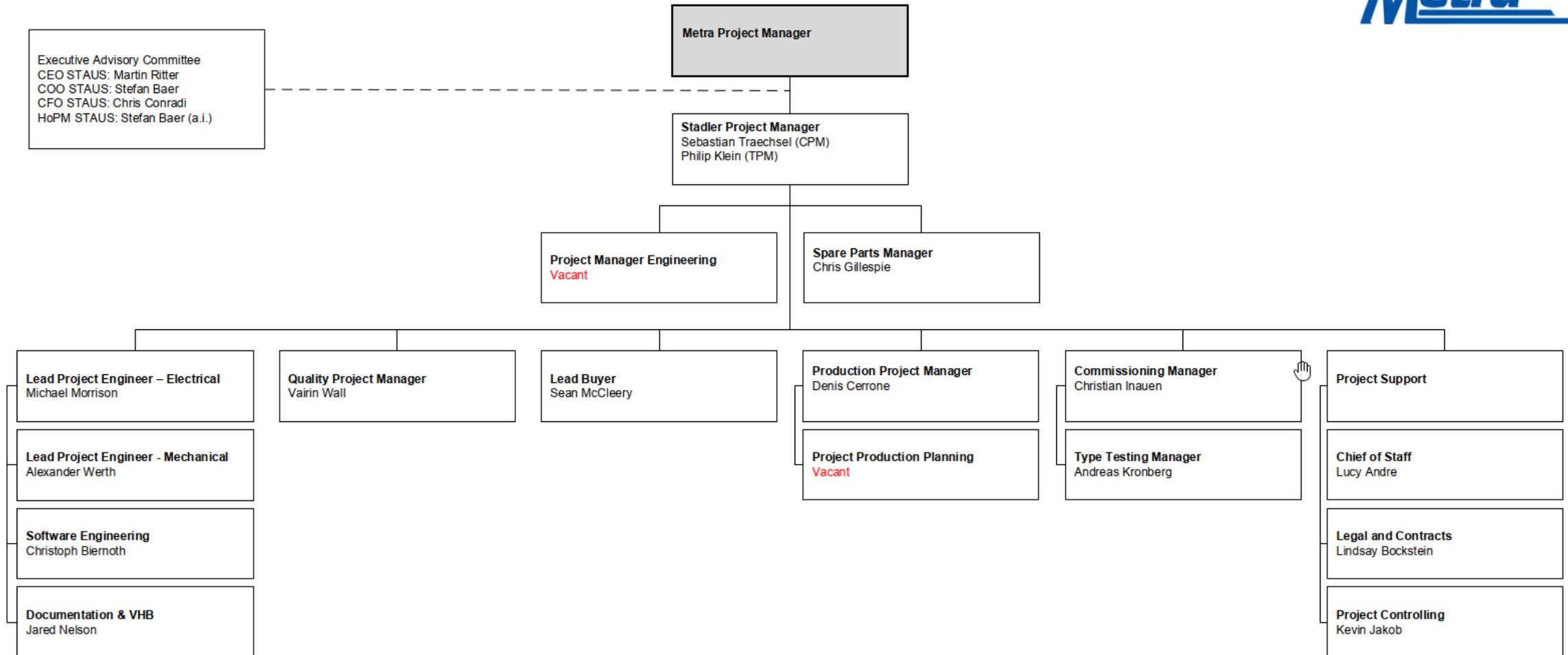
Customer	Metra
Award	February, 22 <sup>nd</sup> 2024
Notice to Proceed	June 4 <sup>th</sup> , 2024
Due Date	June 2028
Base Order	8 x FLIRT 2-cars
Options	8 x FLIRT 2-cars with optional Up to 16 x 3 <sup>rd</sup> car (w/o toilet) Up to 16 x 4 <sup>th</sup> car (with toilet)



# Organizational-Chart



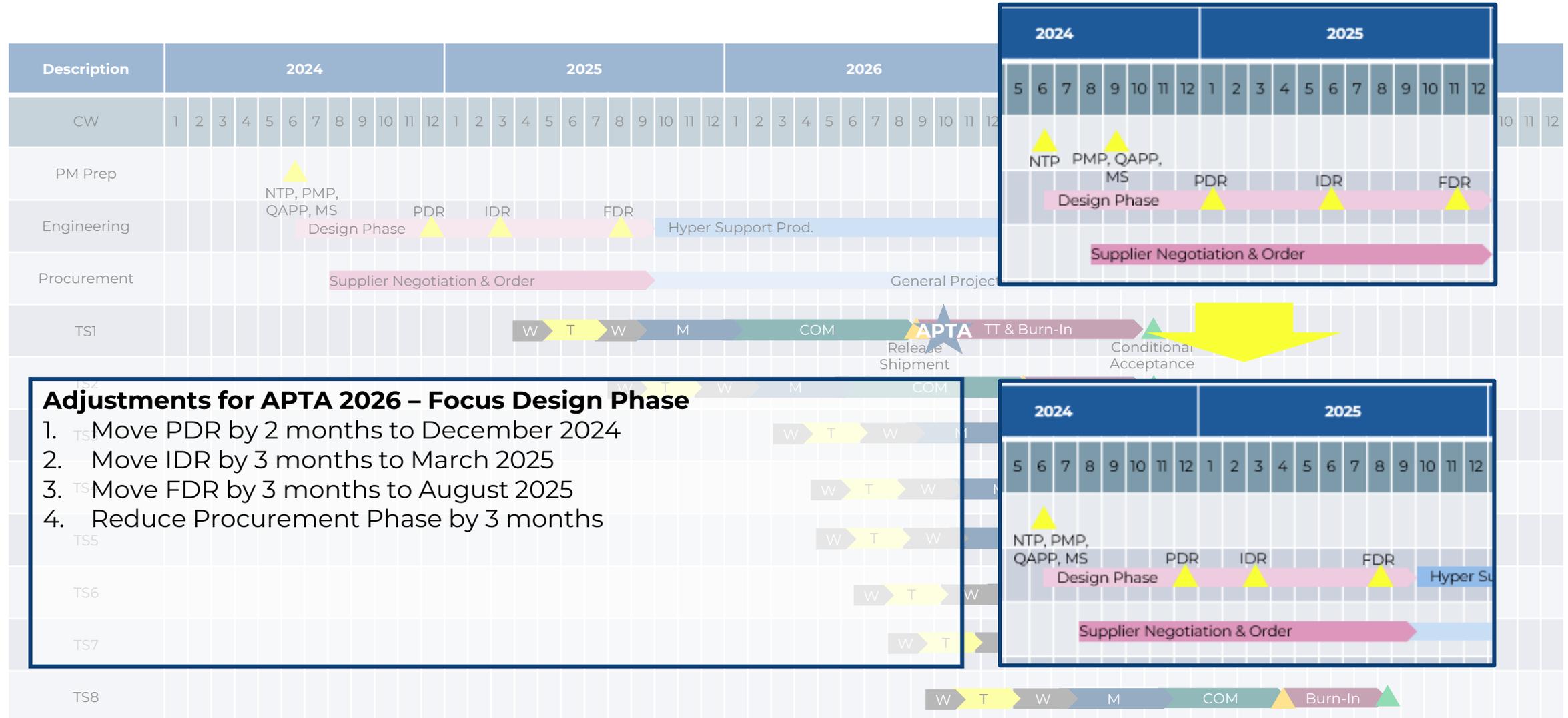
## L-4608 Metra Project Organization Chart







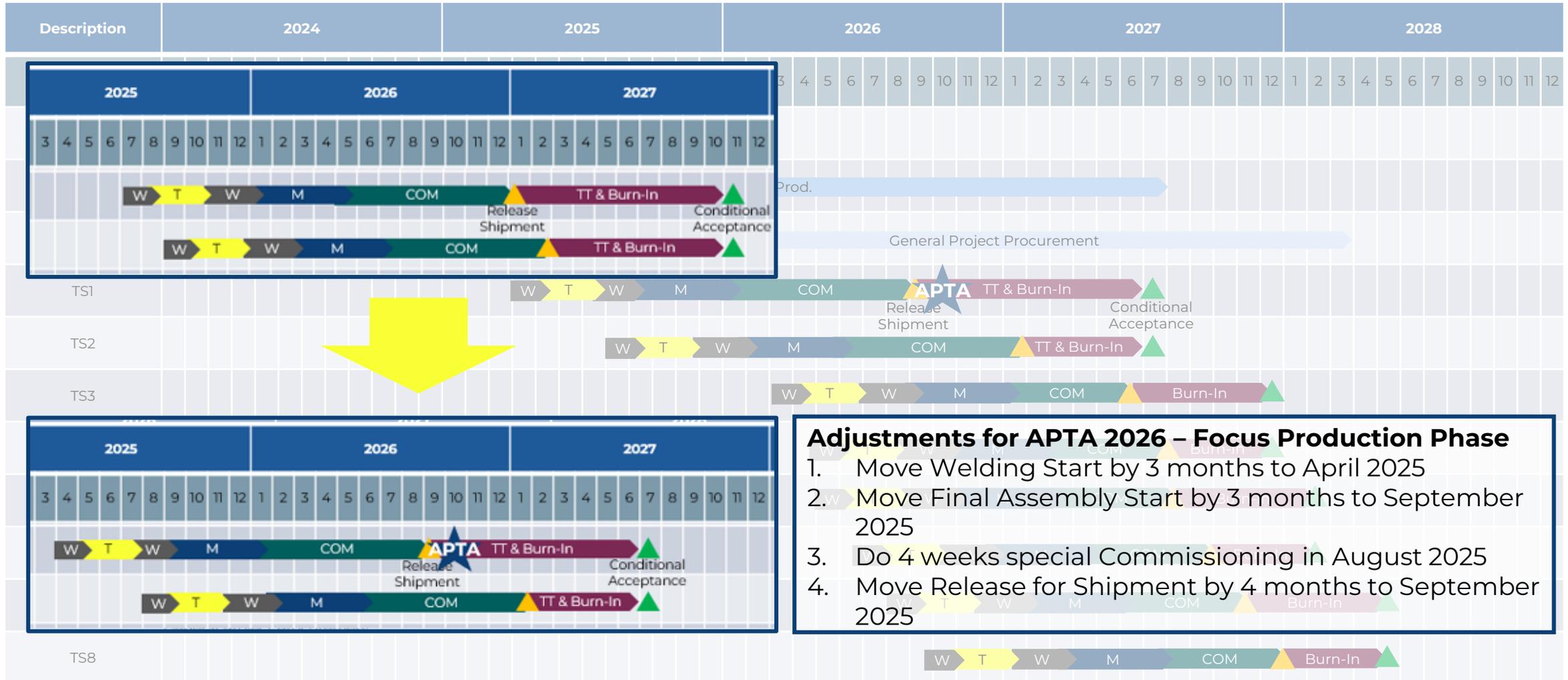
# Program Schedule – FLIRT Running @ APTA



## Adjustments for APTA 2026 – Focus Design Phase

1. Move PDR by 2 months to December 2024
2. Move IDR by 3 months to March 2025
3. Move FDR by 3 months to August 2025
4. Reduce Procurement Phase by 3 months

# Program Schedule – FLIRT Running @ APTA



**Adjustments for APTA 2026 – Focus Production Phase**

1. Move Welding Start by 3 months to April 2025
2. Move Final Assembly Start by 3 months to September 2025
3. Do 4 weeks special Commissioning in August 2025
4. Move Release for Shipment by 4 months to September 2025

# Challenges for the Schedule APTA 2026

## Workshop Collection

**ENGINEERING**

- Positive that it is an of-the-shelf product
- Battery Design
- Give dates early to Metra to expedite schedule
- FAI schedule has to be defined early

**PROCUREMENT**

- Lead Time has to be managed carefully

**PRODUCTION**

- ...

**TESTING**

- Transportation to APTA can take up to 3-4 Weeks
- Infrastructure for TT is in place at Chicago

**OPERATING**

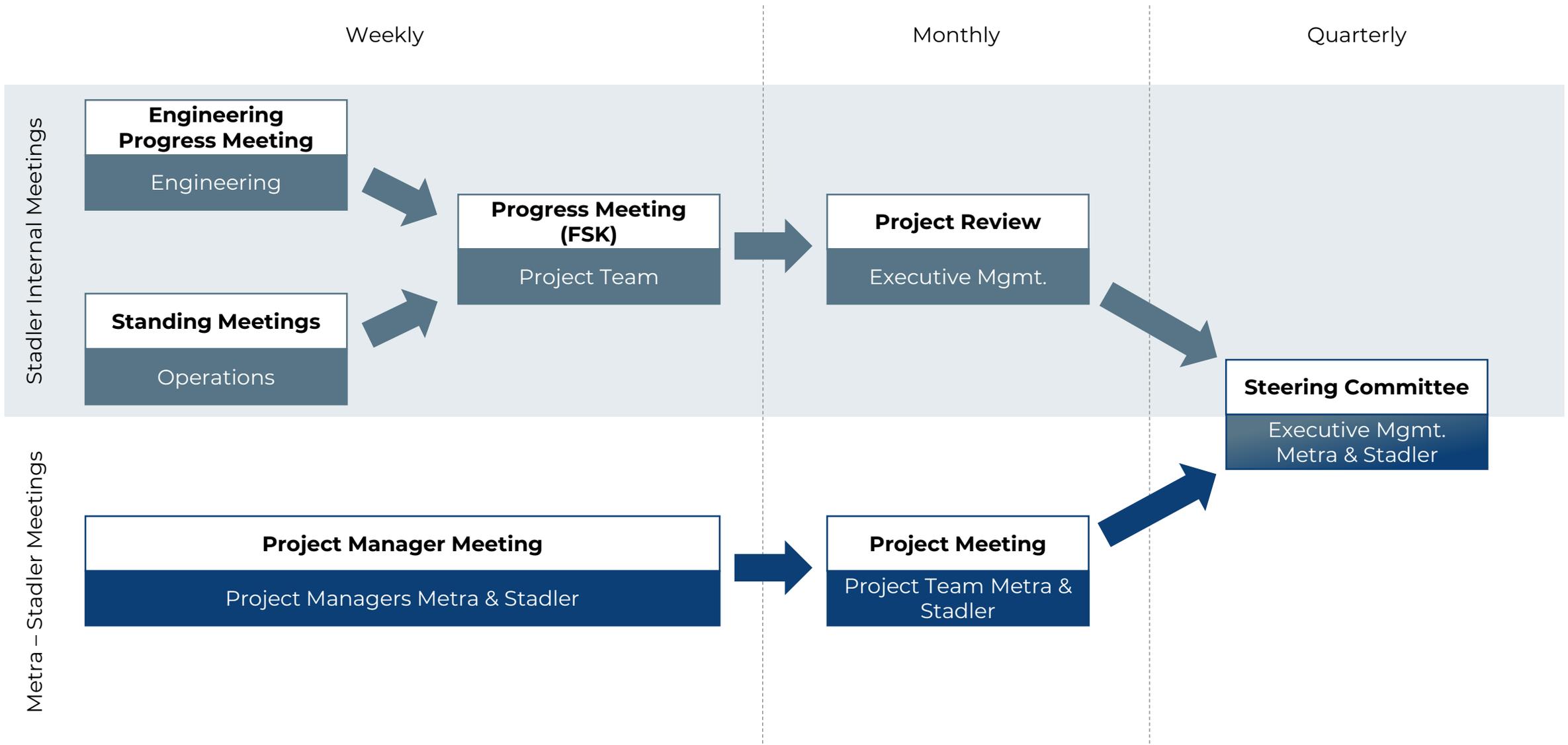
- Define operation and revenue service schedule after testing experiences
- Define interface of charging structure
- Shunting of the grading crossings

# 04

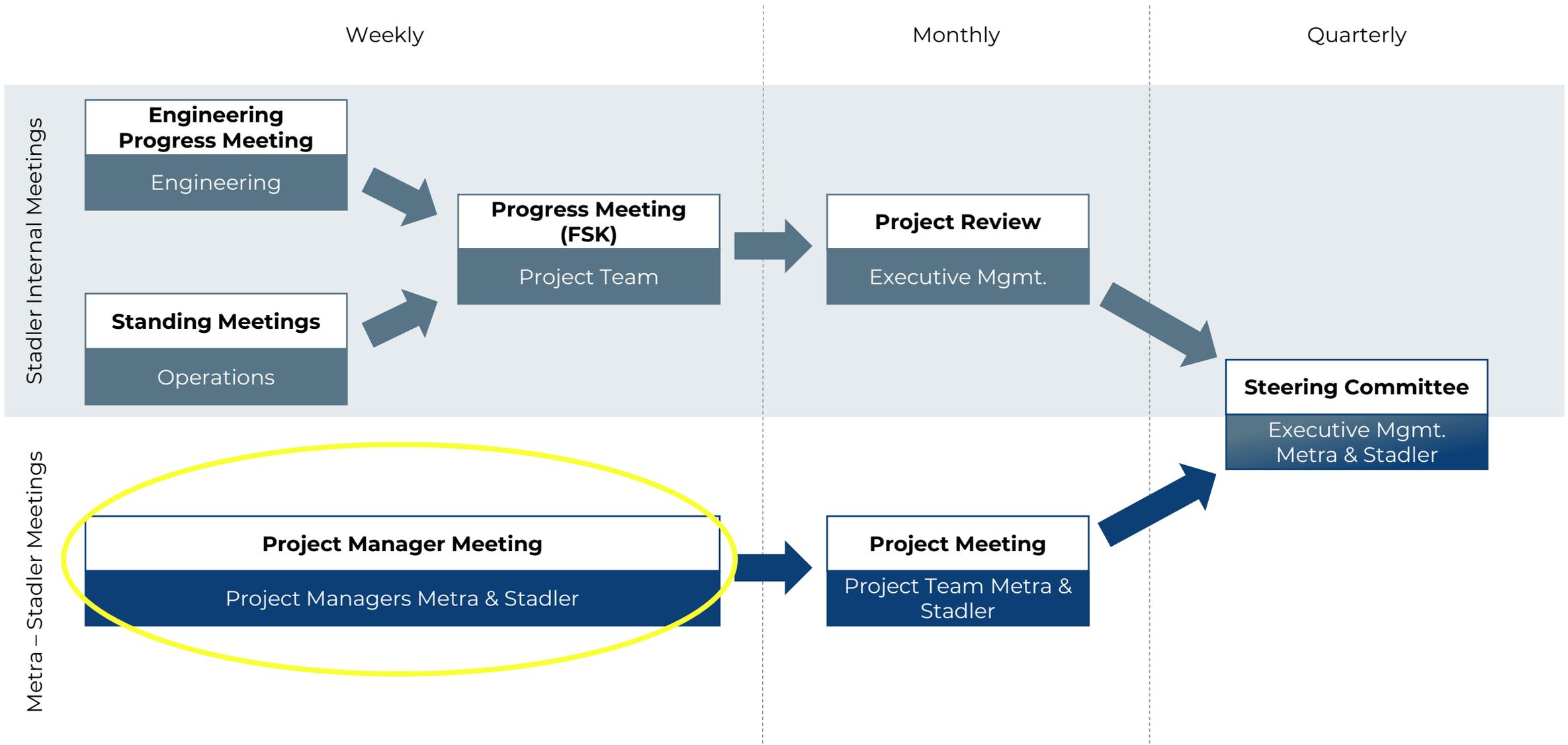
## Formal Communication Procedures, Reporting Channels

Meeting Schedule and Structure, Regular Reporting & Letters and Filing Tools

# Meeting Structure



# Meeting Structure

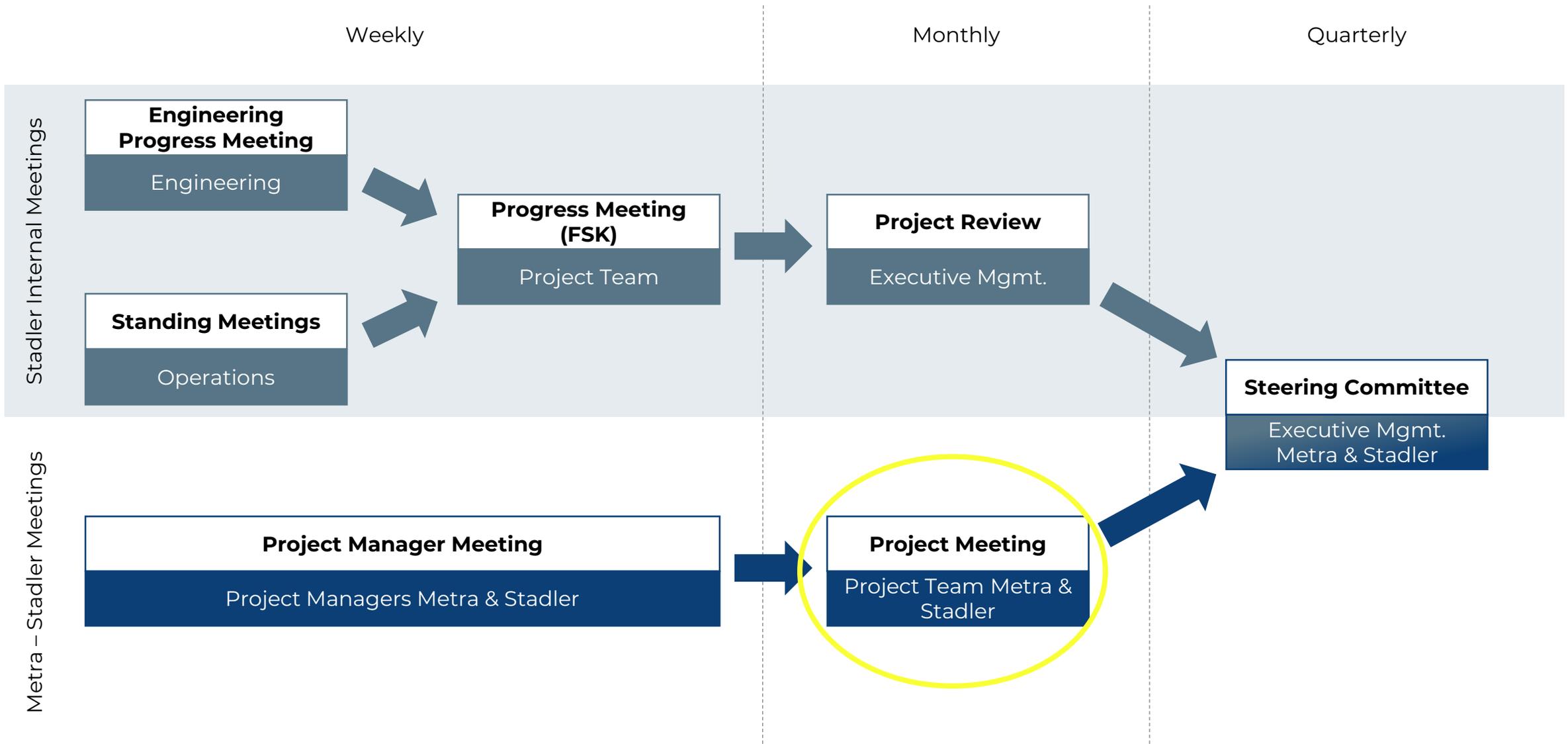


# Project Manager Meeting – Metra & Stadler

What	Frequency	Participants	Agenda
Project Manager Meetings	Weekly	<ul style="list-style-type: none"><li>• Metra PM</li><li>• Metra project engineer</li><li>• Stadler CPM (<b>host</b>)</li><li>• Stadler TPM</li></ul>	<ol style="list-style-type: none"><li>1. Open to current relevant topics</li><li>2. Review Q&amp;A Sheet</li></ol>

**Decision to be made: Starting in July – what day of the week?**

# Meeting Structure

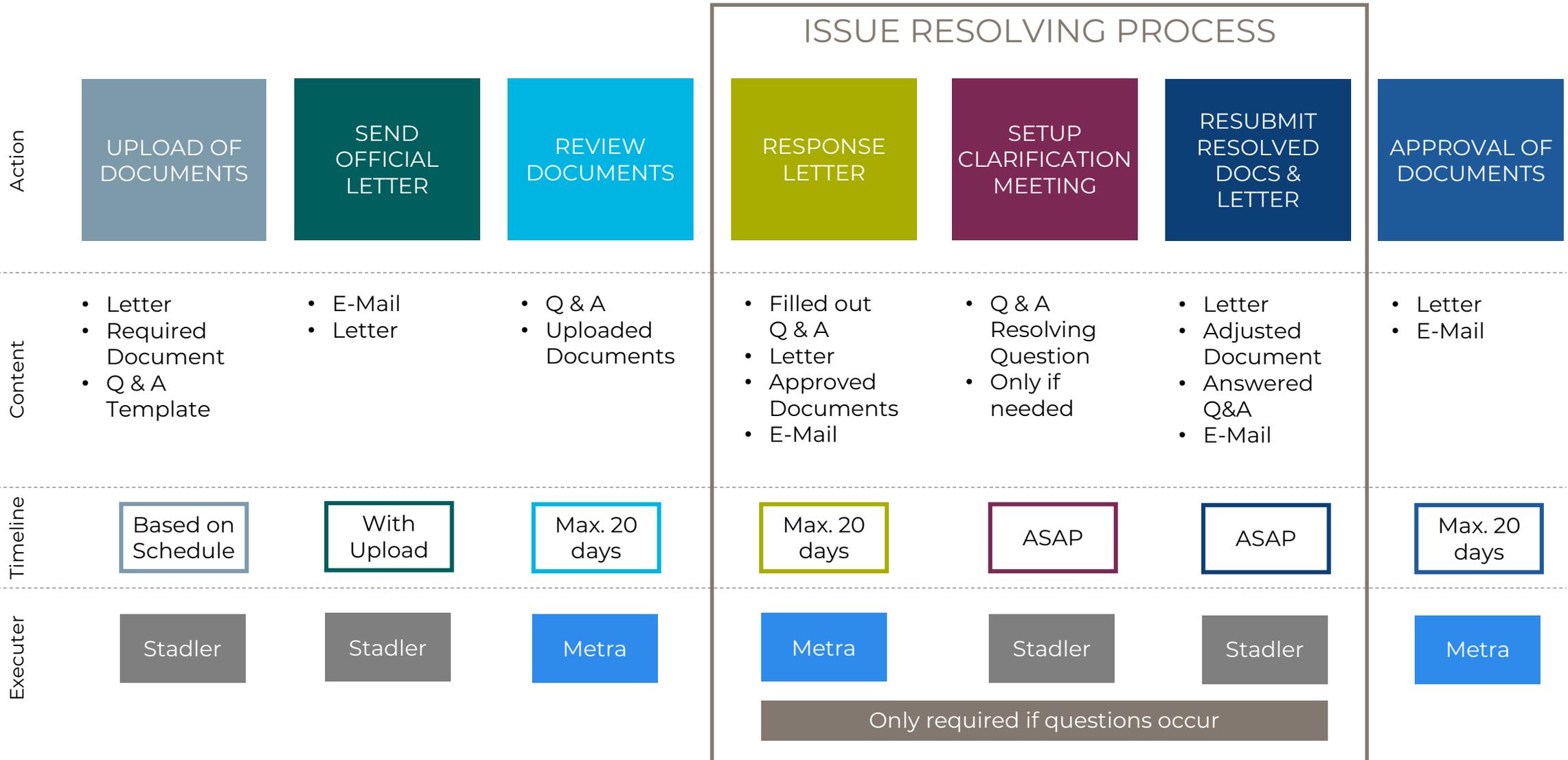


## Project Team Meeting – Metra & Stadler

What	Frequency	Participants	Agenda
Monthly Project Meeting	Monthly	<ul style="list-style-type: none"><li>• Metra PM</li><li>• Metra engineers</li><li>• CPM (<b>host</b>)</li><li>• TPM</li><li>• Metra principle consultant</li><li>• Additional relevant specialists as needed</li></ul>	<ol style="list-style-type: none"><li>1. Project progress previous month</li><li>2. 6 week project look-a-head</li><li>3. Open submittals Metra</li><li>4. Open letters/responses Stadler</li><li>5. Open quality items</li><li>6. Open engineering dispositions</li><li>7. Project deliverables tracking matrix</li><li>8. Other topics as necessary</li></ol>

**Decision to be made: Starting in July – what day and what week of the month?**

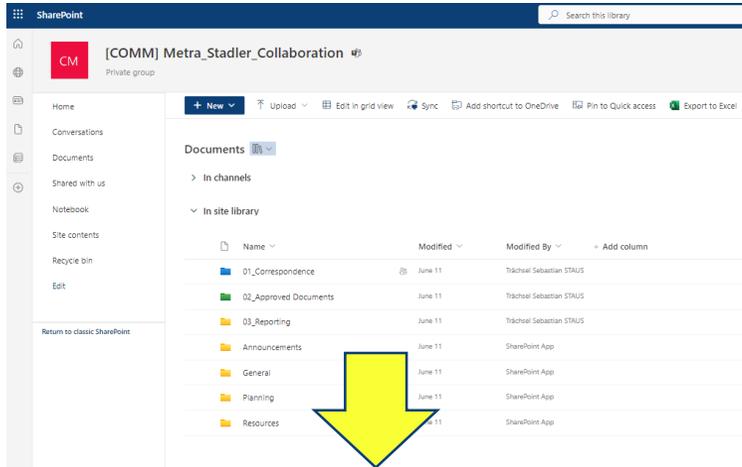
# Letter and Document Approval Process



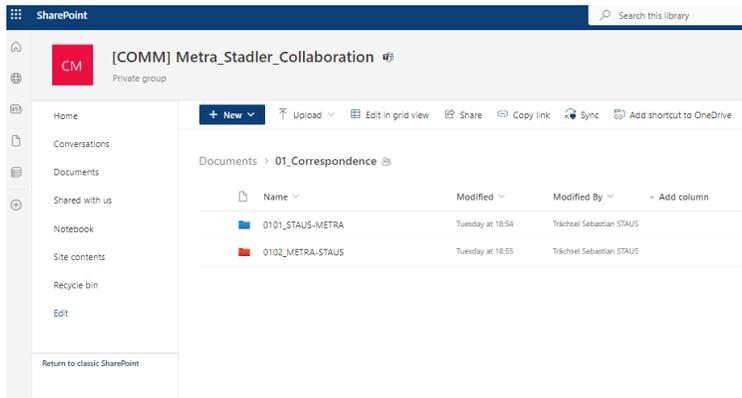
# Formal Communication Procedures, Reporting Channels

## Folder Structure

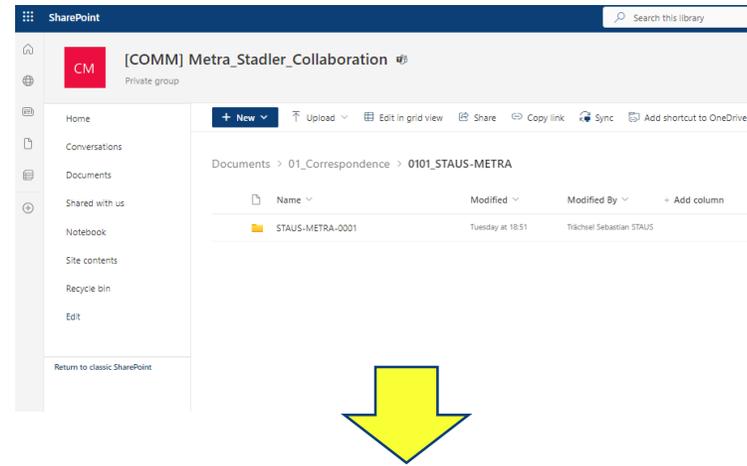
### 1. Top Level Folder



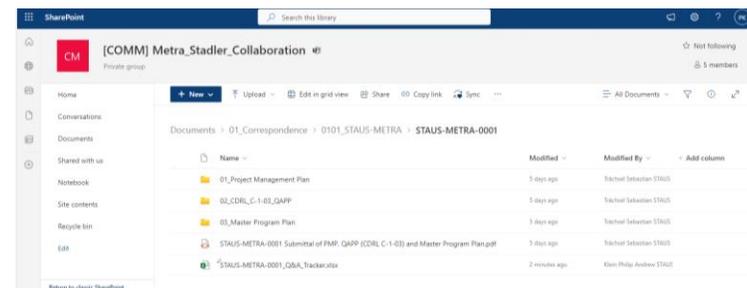
### 2. Correspondence Folder



### 3. From STAUS to Metra

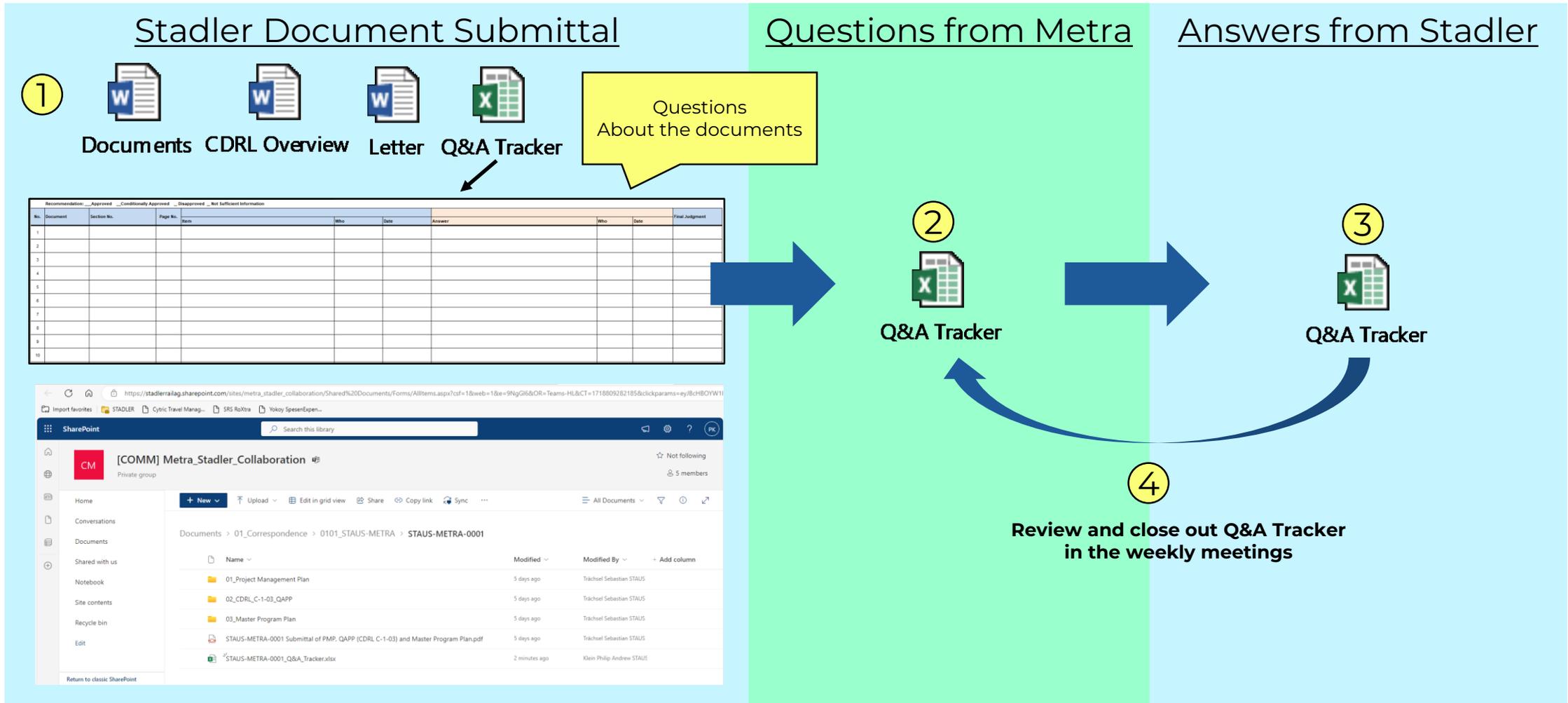


### 4. Inside a Letter Folder





# Stadler Document Submittal: STAUS-METRA\_0000\_Q&A\_Tracker



# 05

## Questions about the Project

Contract, Tech. Spec., CDRL, Schedule,  
Collaboration etc.

# Stadler Question Submittal: STAUS-METRA-PROJECT\_Q&A\_Tracker

## 1 Questions from Stadler



### PROJECT Q&A

Recommendation	Approved	Conditionally Approved	Disapproved	Not Sufficient Information	Final Judgment				
Doc. No.	Section No.	Page No.	Issue	Who	Date	Answer	Who	Date	Final Judgment
1	Metra SSPP	Section 16	43	1. What is the unit of measure for the probability of occurrence in the Risk Management Likelihood Scale "A"?	Stadler Philip Klein	June 13, 2024			
2	Metra Specification for CDRL	CDRL C-1-10 Construction for SW QAP	117	1. It requires the C-1-10 and C-21-27 reference the same CDRL, Software Quality Assurance?	Stadler Philip Klein	June 13, 2024			
3	Metra Specification for CDRL	CDRL C-21-27 SW QAP	143	1. Are there maintenance training been done?	Stadler Philip Klein	June 13, 2024			
4	Metra Specification for CDRL	CDRL C-1-10 Construction for SW QAP	117	1. How many maintenance training been done?	Stadler Philip Klein	June 13, 2024			
5	Metra Specification for CDRL	CDRL C-21-27 SW QAP	143	1. How many maintenance training been done?	Stadler Philip Klein	June 13, 2024			
6	Metra Specification for CDRL	CDRL C-1-10 Construction for SW QAP	117	1. How many maintenance training been done?	Stadler Philip Klein	June 13, 2024			
7	Metra Specification for CDRL	CDRL C-21-27 SW QAP	143	1. How many maintenance training been done?	Stadler Philip Klein	June 13, 2024			
8	Metra Specification for CDRL	CDRL C-1-10 Construction for SW QAP	117	1. How many maintenance training been done?	Stadler Philip Klein	June 13, 2024			
9	Metra Specification for CDRL	CDRL C-21-27 SW QAP	143	1. How many maintenance training been done?	Stadler Philip Klein	June 13, 2024			
10	Metra Specification for CDRL	CDRL C-1-10 Construction for SW QAP	117	1. How many maintenance training been done?	Stadler Philip Klein	June 13, 2024			



## 2 Answers from Metra



### PROJECT Q&A

Summary of Questions

Number of questions	Topic	Priority
1	Metra's SSPP	HIGH
1	Metra's CDRL's	MEDIUM
15	Metra's Training Requirements	HIGH
1	Type Testing in Chicago	HIGH
1	Service and Maintenance Manuals	LOW
1	Metra's Technical Specification	MEDIUM

### Metra SSPP

MIL-STD 882  
Risk Analysis and Assessment

The identified risks are subjected to analysis based on the standard likelihood-by-severity formula. The likelihood is measured based on how likely the risk is expected to be realized. The severity is measured based on the potential consequences expected from realizing the risk. A combination of both quantitative and qualitative inputs is used to determine likelihood and severity. Data used to determine frequency include records of the work performed and event intervals (quantitative) along with feedback from employees and management. Data used to determine severity includes any history of risk realization (incidents/accidents/equipment failures) or reported close calls, along with employee experience and feedback from Safety. Performing this analysis yields a result that enables each risk to be assessed using two scales. The scales measure likelihood and severity, as determined by the risk analysis. The likelihood scale has a letter-based value range of A to E, based on MIL-STD-882E methodology. The higher the grade, the more likely the risk is expected to be realized. The risk management likelihood scale is depicted in the following table:

Probability	Value	Qualitative Meaning	Quantitative Meaning
Frequent	A	Likely to occur frequently to an individual asset or subsystem. Continuously experienced in the asset or subsystem.	Probability of occurrence greater than or equal to 10 <sup>-1</sup> (10%).
Probable	B	Will occur several times in the life of an asset or subsystem. Will occur frequently in the asset or subsystem.	Probability of occurrence less than 10 <sup>-1</sup> (10%) but greater than or equal to 10 <sup>-2</sup> (1%).
Occasional	C	Likely to occur sometime in the life of an asset or subsystem. Will occur several times in the asset or subsystem.	Probability of occurrence less than 10 <sup>-2</sup> (1%) but greater than or equal to 10 <sup>-3</sup> (0.1%).

### Example

Table 5: Likelihood of Occurrence

Frequency	Level	Within Specific Individual Items	Within a Fleet or Inventory
Frequent	A	Qualitative: Likely to occur often in the life of an item. Exposed to the hazard once a day. Quantitative: Mean Time Between Events (MTBE) is less than 1000 operating hours.	Continuously experienced
Probable	B	Qualitative: Will occur several times in life of an item. Exposed to the hazard once a week. Quantitative: MTBE is equal to or greater than 1000 operating hours and less than 100,000 operating hours.	Will occur frequently
Occasional	C	Qualitative: Likely to be occur sometime in life of item. Exposed to the hazard once a month. Quantitative: MTBE is equal to or greater than 100,000 operating hours and less than 1,000,000 operating hours.	Will occur several times
Remote	D	Qualitative: Unlikely but possible to occur in life of item. Exposed to the hazard once per year. Quantitative: MTBE is equal to or greater than	Unlikely, but can be reasonable expected to occur

### EN Specification

Table C.1 — Frequency of occurrence of hazardous events with examples for quantification (based)

Frequency level	Description	Example of a frequency range based on a single item operating 24 hr/day	Example of equal occurrences in a fleet of a single item operating 8000 hrs/yr
Frequent	Likely to occur frequently. The event will be frequently experienced.	Expected to happen more than once within a period of approximately 6 weeks	more than about 1 times
Probable	Will occur several times. The event can be expected to occur often.	approximately once per 6 weeks to once per year	about 15 to 150 times
Occasional	Likely to occur several times. The event can be expected to occur several times.	approximately once per 1 year to once per 10 years	about 2 to 15 times
Rare	Likely to occur sometimes in the system life cycle. The event can reasonably be expected to occur.	approximately once per 10 years to once per 1,000 years	perhaps once at n
Improbable	Unlikely to occur but possible if can be assumed that the event may exceptionally occur.	approximately once per 1,000 years to once per 100,000 years	not expected to h within the lifetime
Highly improbable	Extremely unlikely to occur it can be assumed that the event will not occur.	once in a period of approximately 100,000 years or more	extremely unlikely

NOTE: The example given in this table relate to a single item (type dependent on the number of systems and/or the number of s.p. operations). Where the frequency is constant, the expected mean time before of the frequency. For a frequency level bandwidth this formula is to be used:

EXAMPLE 1: For a rate of 10<sup>-4</sup> yr<sup>-1</sup>:  
 10<sup>-4</sup> yr<sup>-1</sup> = 10,000 h which means an expected event frequency of approximately:  
 - 1.2 years in case of 24 h operation  
 - or 2 years in case of assumed 5,000 h operating time per year.

The expected occurrence or number of events in a time period is determined by multiplying by the given rate or frequency of occurrence. The time period should

2024 | 19. Type Testing at Chicago | 3. Training Heavy Maintenance | 2. SW QAP | 1. SSPP

Tabs with information about the questions



**Metra**

Questions from Metra and  
Stadler

**STADLER**