**Software Requirements Specifications**

**For: Track Controller(s) / Wayside Controller(s)**

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Note: SRS organized by feature

**Specific Requirements**

**External Interface Requirements:**

**1 User Interfaces**

1.1 Manual Override Interface

* 1. Display which tracks are busy
  2. Display which track trains are one
  3. Display current and previous Velocity, Authority, and Distance Instructions from CTC

1. **Hardware Interface**
   1. Two-way Communication Bridge to Track Circuit
   2. Two-way Communication Bridge from CTC Office
2. **Software Interface**

3.1.1 Inputs from CTC Office

3.1.1.1 Train authority

3.1.1.2 Track Speed limits

3.1.2 Outputs to CTC Office

3.1.2.1 State of the Track

3.1.2.2 State of the Railway Crossing

3.1.2.3 State of Trains (including signals from trains)

3.1.3 Outputs to Track Circuit

3.1.3.1 Train Authority

3.1.3.2 Train Speed

3.1.3.3 Train Direction

3.1.3.4 Lights for Railway Crossing

3.1.3.5 Crossbar for Railway Crossing

3.1.4 Inputs from Track Circuit

3.1.4.1 Detection of Broken Rails

3.1.4.2 Detection of presence of Trains

1. **Communication Interface**
   1. There is a two-way interface from the CTC Office
   2. There is a two-way interface between the Track Circuit

FOR DESIGN PART:

**System Features:**

1. **System Feature 1:** *Set Switches*
   1. **Introduction/Purpose of feature**
      1. Allows a train to switch from one track to another
   2. **Stimulus/Response sequence**
      1. Stimulus: CTC Office signals that Train A is to switch to Track 1.
      2. Response: Send signal to Track Circuit to change Train A to Track 1.
   3. **Associated Function Requirements**
      1. **Functional Requirement 1:** *Pull Instructions from CTC Office*
      2. **Functional Requirement 2:** *Verify if Track is available*
      3. **Functional Requirement 3:** *Sets Lights on track: to Red.*
      4. **Functional Requirement 4:** *Send Signal to Track Circuit to Switch Train Tracks*
2. **System Feature 2:** *Set Lights*
   1. **Introduction/Purpose of feature**
      1. Allows environment to know when a train is coming or not.
   2. **Stimulus/Response sequence**
      1. CTC Office signals for a Train to change tracks.
      2. Send a Red Light Signal to that track.
3. Track Circuit signals a train is coming on the track.
4. Change Lights on the track to Red.
5. Track Circuit signals no train is on the track.
6. Change lights on the track to Green.
   1. **Associated Function Requirements**
      1. **Functional Requirement 1:** *Pull Instructions from CTC Office*
      2. **Functional Requirement 2:** *Pull Instructions from Track Circuit*
      3. **Functional Requirement 3:** *Verify if Track is available*
      4. **Functional Requirement 4:** *Set Lights on track*
7. **System Feature 3:** *Pass along Velocity, Authority and Distance Information*
   1. **Introduction/Purpose of feature**
      1. To pass along the Velocity, Authority, and Distance a train can travel on a track.
   2. **Stimulus/Response sequence**
      1. CTC pushes Velocity, Authority, and Distance Instructions
      2. Push Velocity, Authority, Distance Instructions to Track Circuit
   3. **Associated Function Requirements**
      1. **Functional Requirement 1:** *Pull Instructions from CTC Office*
      2. **Functional Requirement 2:** *Pass VAD Info*

**Performance Requirements**

1. Instructions from Track Circuit must be pulled at least every 0.333 seconds.
2. Instructions from CTC Office must be pulled at least every 0.333 seconds.
3. Instruction must be pushed to Track Circuit at least every 0.333 seconds.

**Design Constraints**

1. Each Wayside Controller needs to be visible from the user Interface

**Software System Attributes**

**Other Requirements**