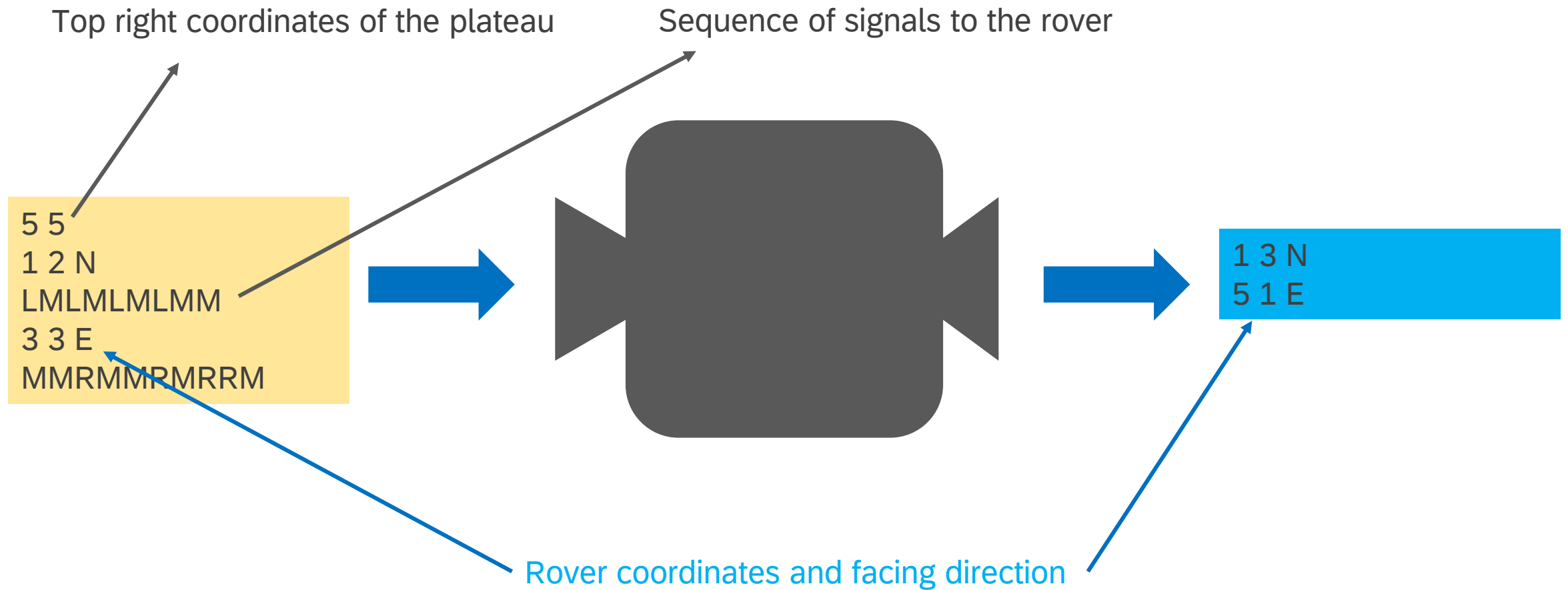


Mars Rover Project

github.com/bunlusarac/MarsRoverProject/

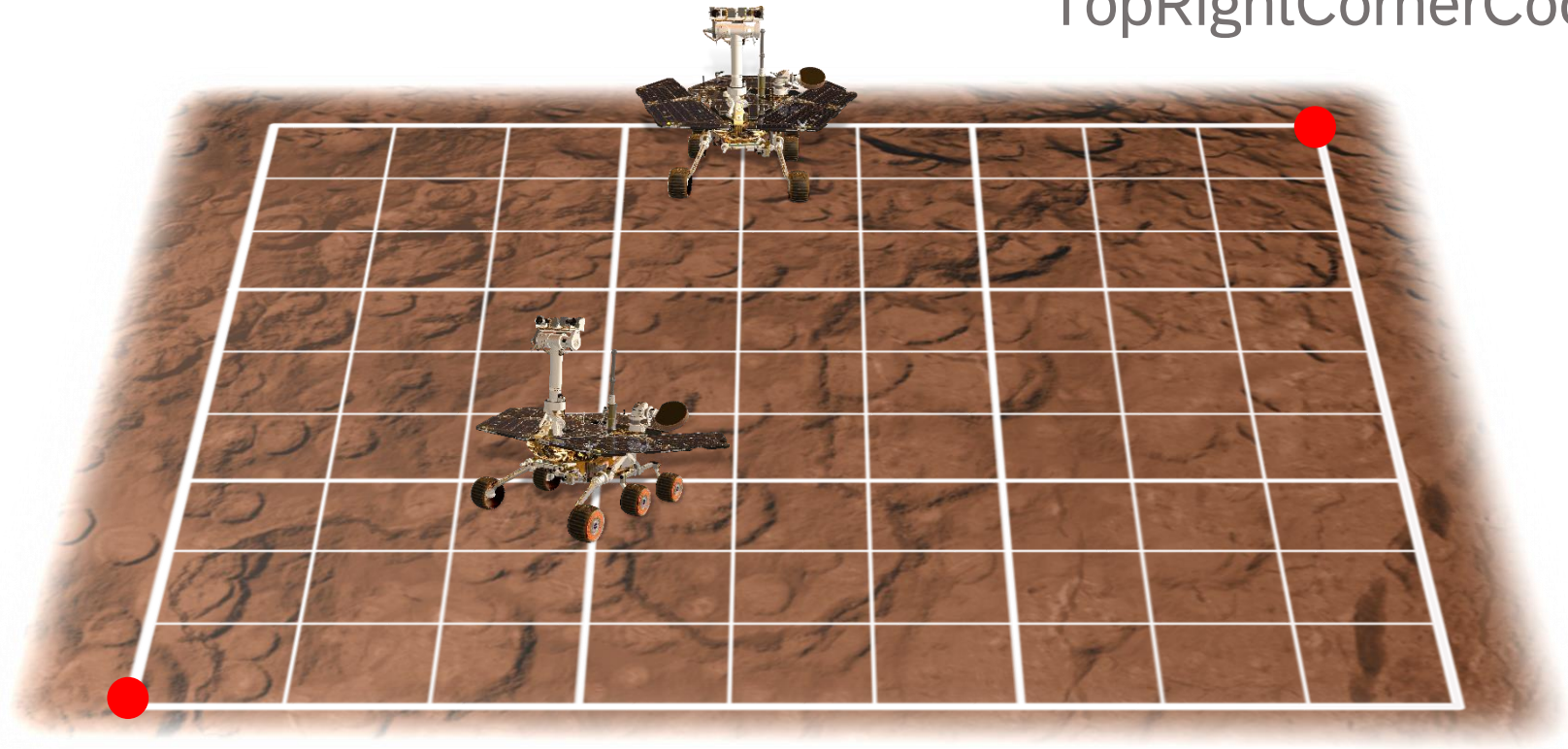
Problem



Plateau

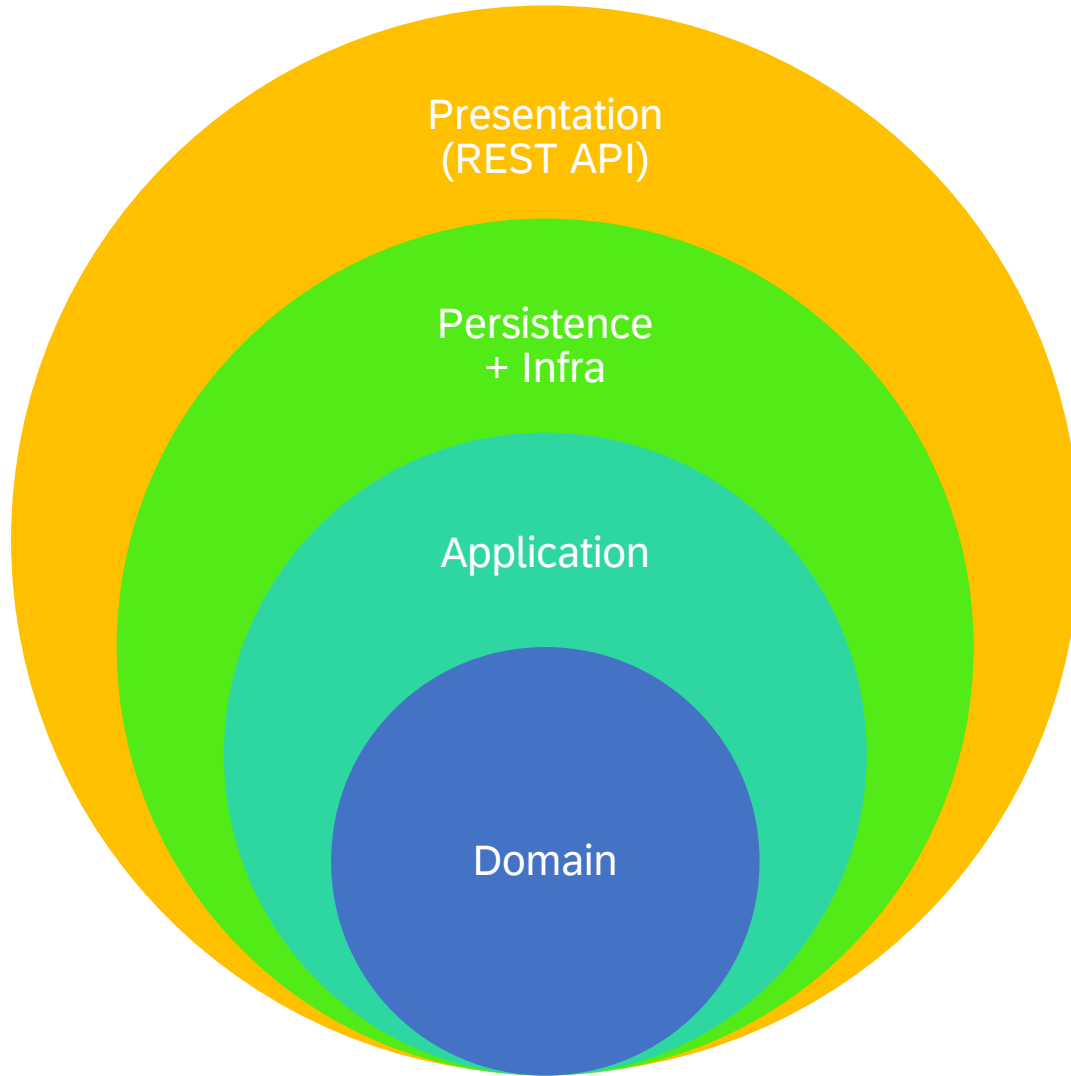
List<Rover> Rovers

TopRightCornerCoords



BottomLeftCornerCoords

Architecture (Onion)



- ParseController (/api/parse)
- Plateu and Rover DTO's
- Rover ProblemDetails
- Rover and Plateau entities
- RoverErrorCode, RoverFacingDirection, RoverRotationDirection enums
- RoverException
- BaseEntity and IAggregateRoot

Architecture (DDD)

Rover extends BaseEntity

- Vector2 **Position**
- Plateau **Plateau**
- RoverFacingDirection **FacingDirection**
- RoverFacingDirection[][]
RotationStateTransitionTable
- Dictionary<char,RoverRotationDirection>
SignalToRotationDirection
- Dictionary<char,RoverFacingDirection>
SignalToFacingDirection
- Vector2[] **TransitionVectorTable**
- **Move**(int times)
- **Rotate**(RoverRotationDirection rotDir)
- **InterpretSequence**(string sequence)

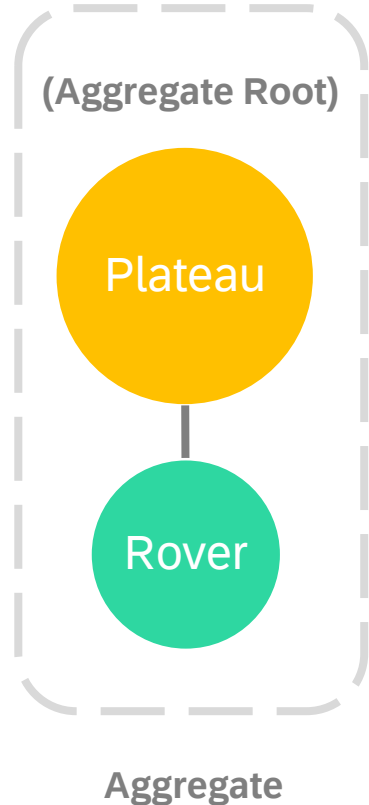
Plateau extends BaseEntity, AggregateRoot

- Vector2 **TopRightCornerCoords**
- Vector2 **BottomLeftCornerCoords**
- ICollection<Rover> **Rovers**
- bool **ContainsPoint**(Vector2 point)

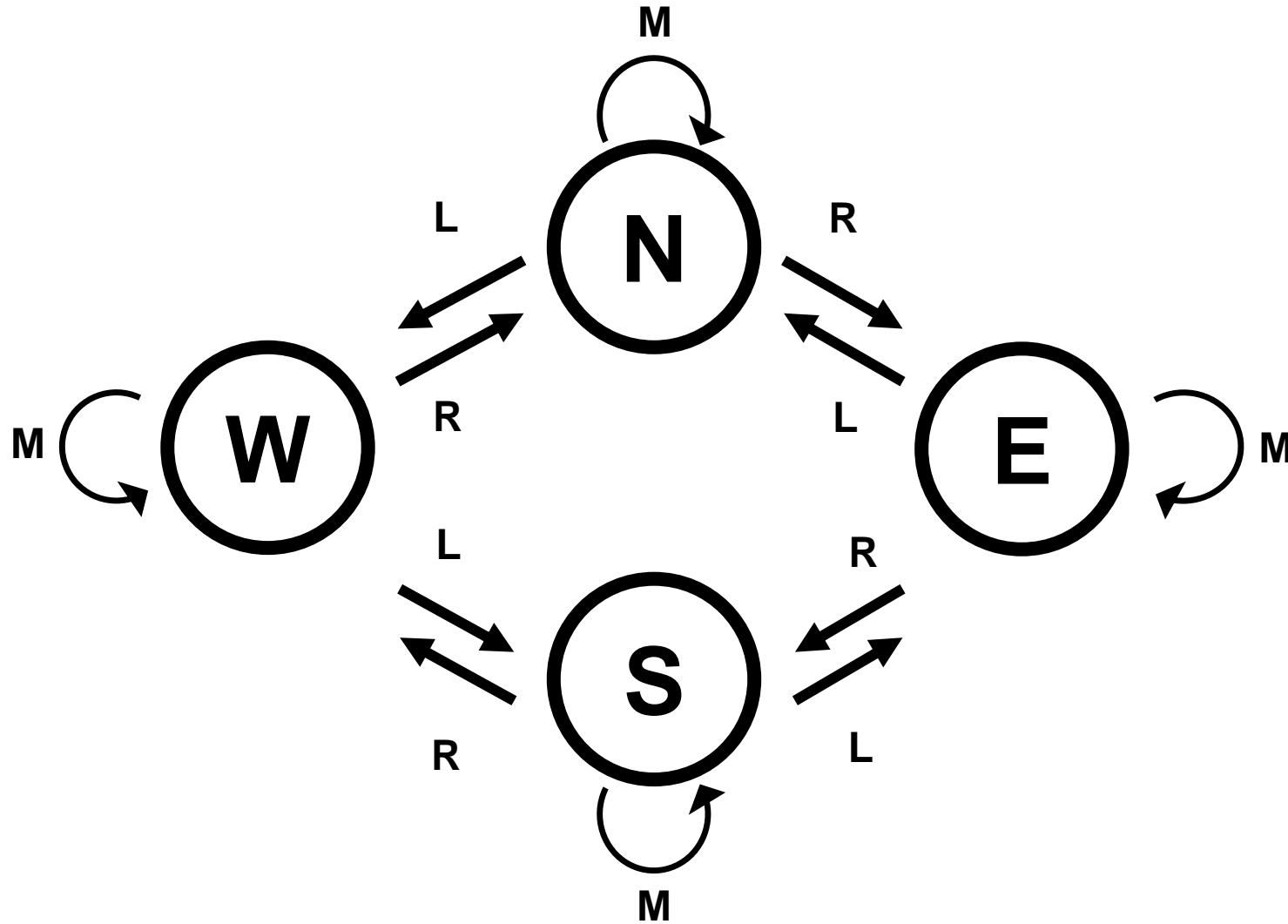
BaseEntity (abstract)

- Guid Id

IAggregateRoot (interface)



Finite state machine



	L	R	M
N	W	E	N
E	S	N	E
S	E	W	S
W	S	N	W

Rover::Rotate()

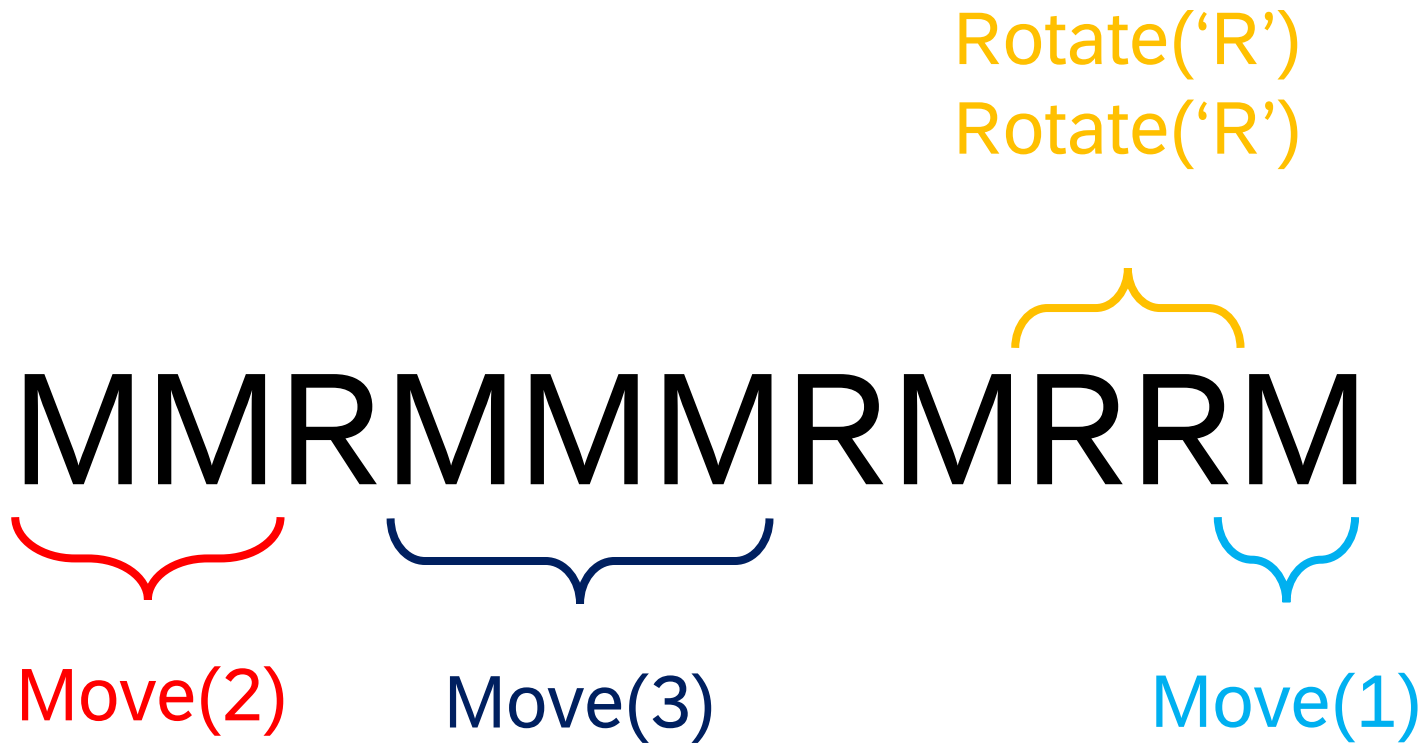
RotationStateTransitionTable

	L	R
N	W	E
E	S	N
S	E	W
W	S	N

RotationStateTransitionTable[East][Right] =

New Direction = RotationStateTransitionTable[currentFacingDirection][rotationDirection]

Rover::InterpretSequence()



Rover::Move()

$$||v|| = 1$$

TranslationVectorTable = $\left[\downarrow, \rightarrow, \uparrow, \leftarrow \right]$

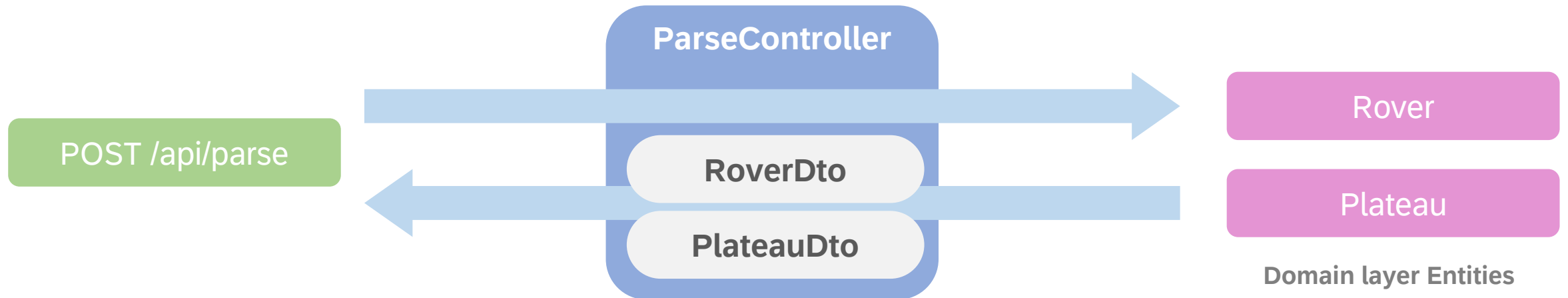
TranslationVectorTable[currentFacingDirection]

$$\begin{Bmatrix} x \\ y \end{Bmatrix} + \text{times} \begin{Bmatrix} 1 \\ 0 \end{Bmatrix}$$

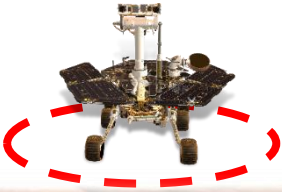
ParseController

POST

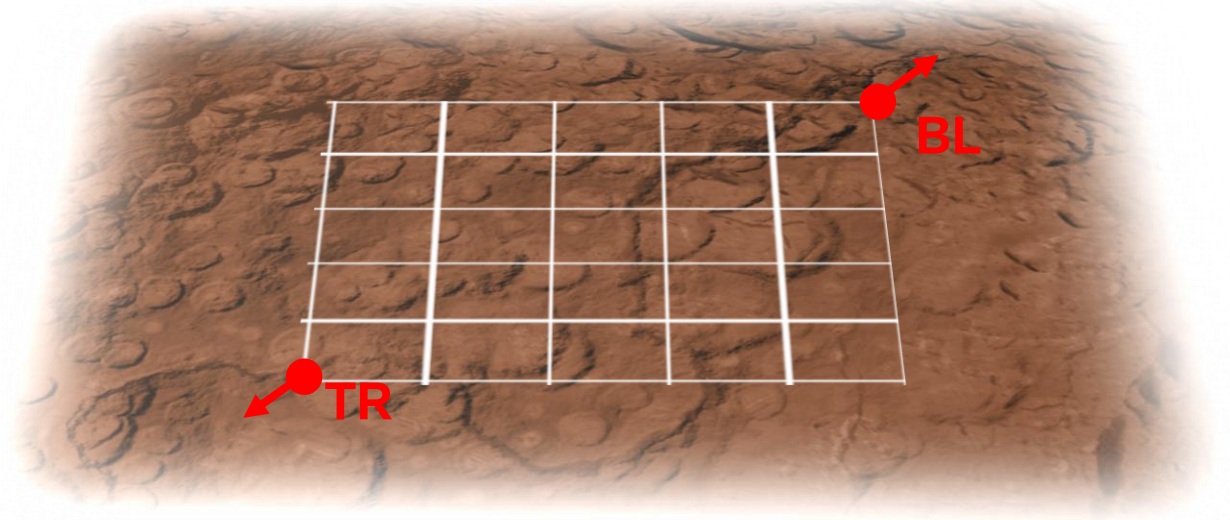
/api/parse



Errors



RoverErrorCode.OutOfBounds



RoverErrorCode.InvalidPlateauDimensions

MMR**A**MM**■**R

RoverErrorCode.InvalidSignal

Mars Rover Project

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