Model-Based Systems Engineering – “How to pack my suitcase right?”

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OFFICINE GALILEO
ISCUS
RAPID

I pack my suitcase and take with me…

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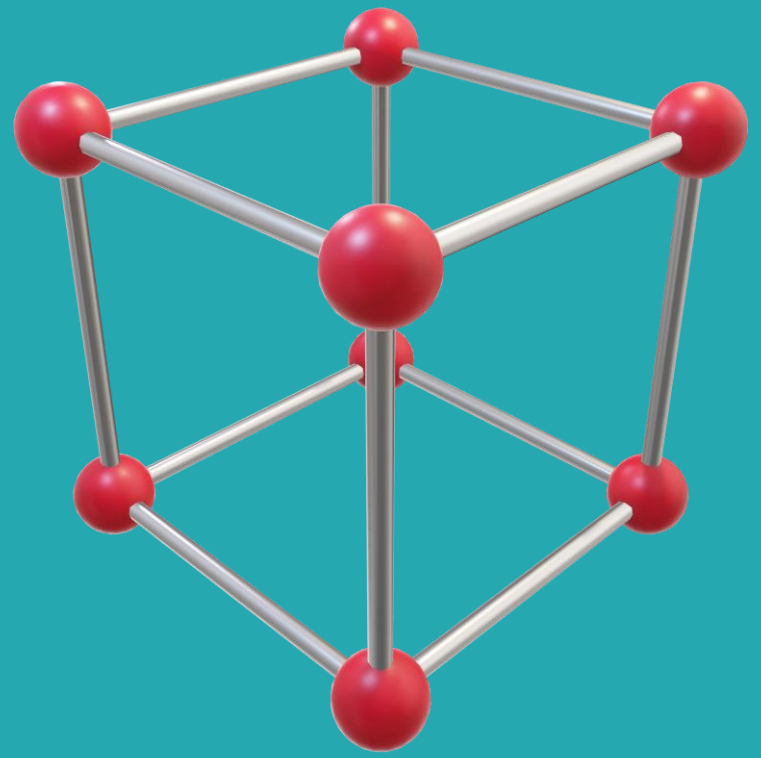
chrome
acer
Nikon
NEW LO

How might Model-based systems engineering help to be prepared for the next vacations?



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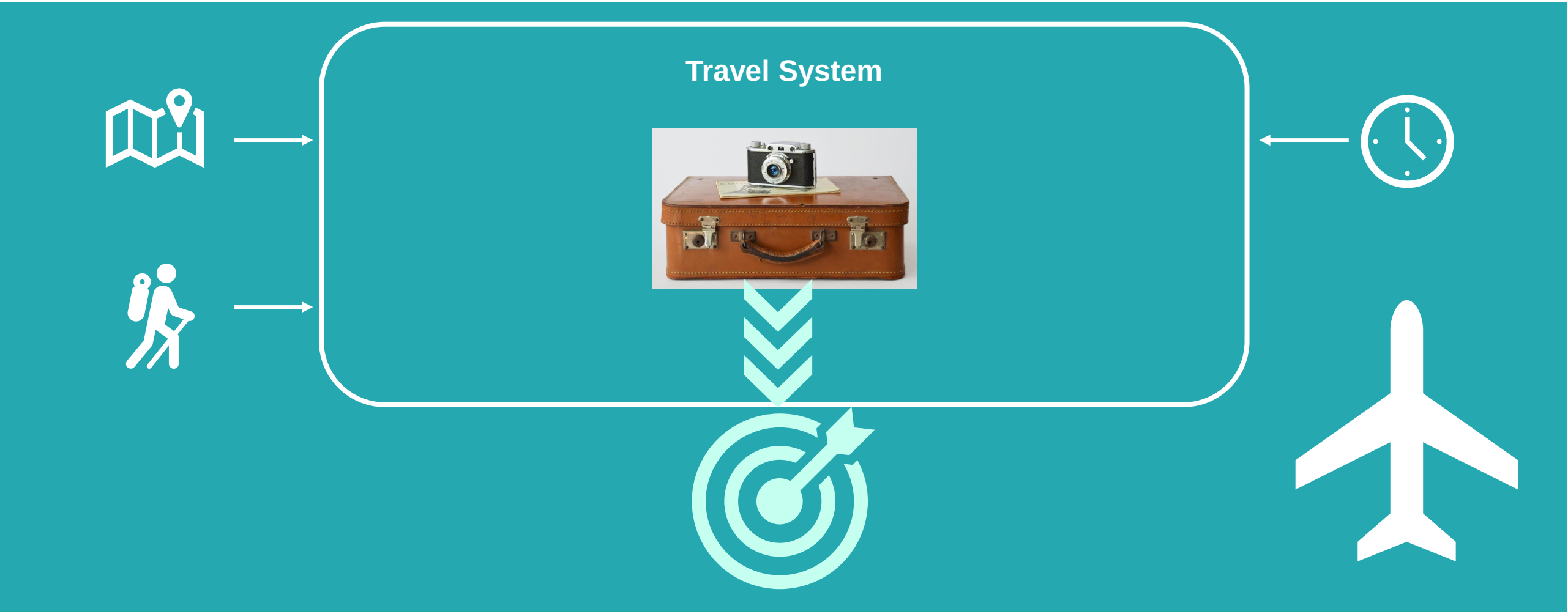
Let’s imagine we see our suitcase also as a system…

Travel System as a Black Box influenced by different external factors



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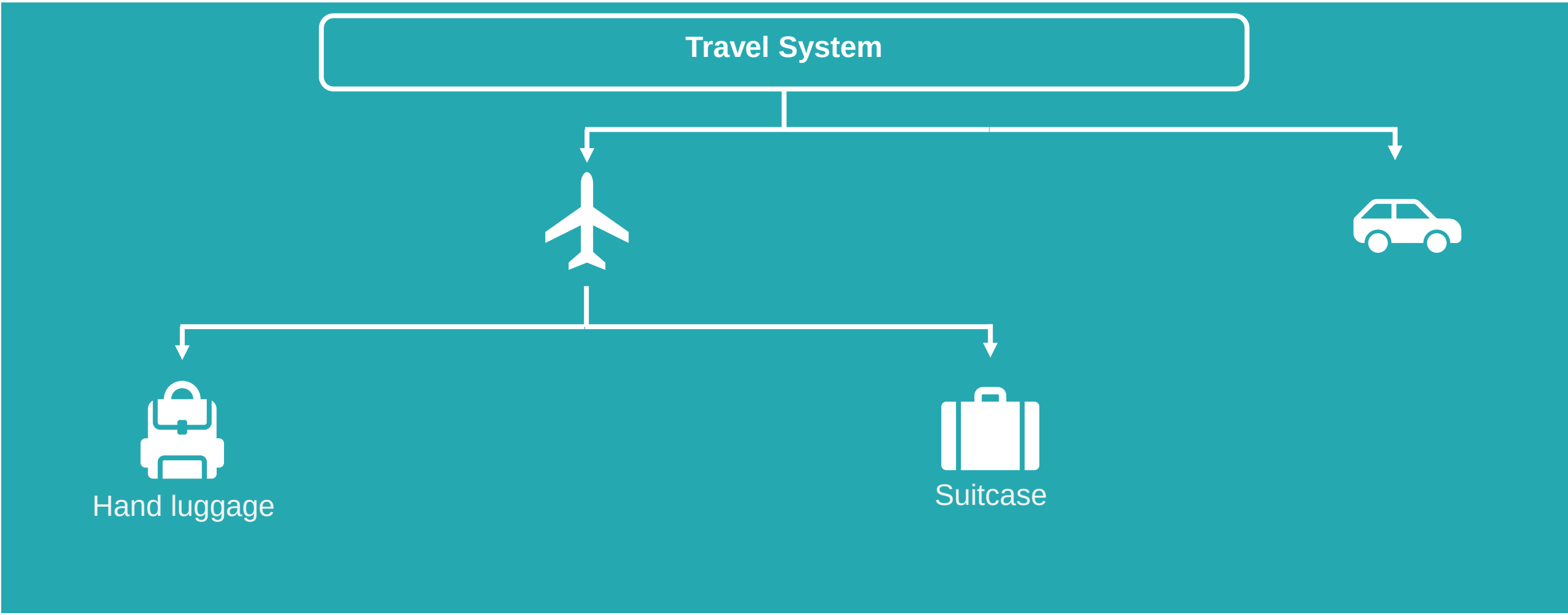
Travel System as a White Box with different sub systems

Let’s focus on the travel type



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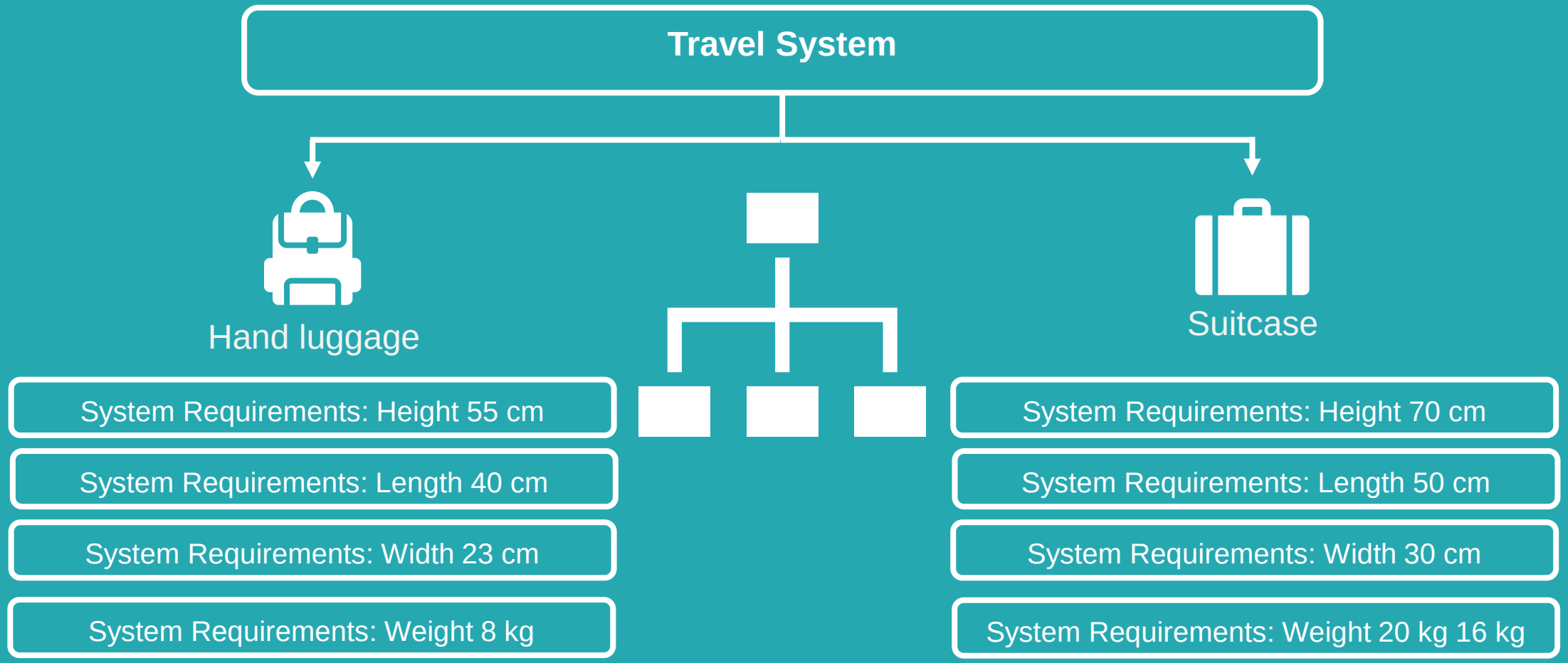
The selected travel type has different system requirements for the luggage



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Based on our travel system we have specific needs – stakeholder requirements

Suitcase

- Dividers
- Hidden laundry bag
- Colour: Green

Stakeholder Requirements

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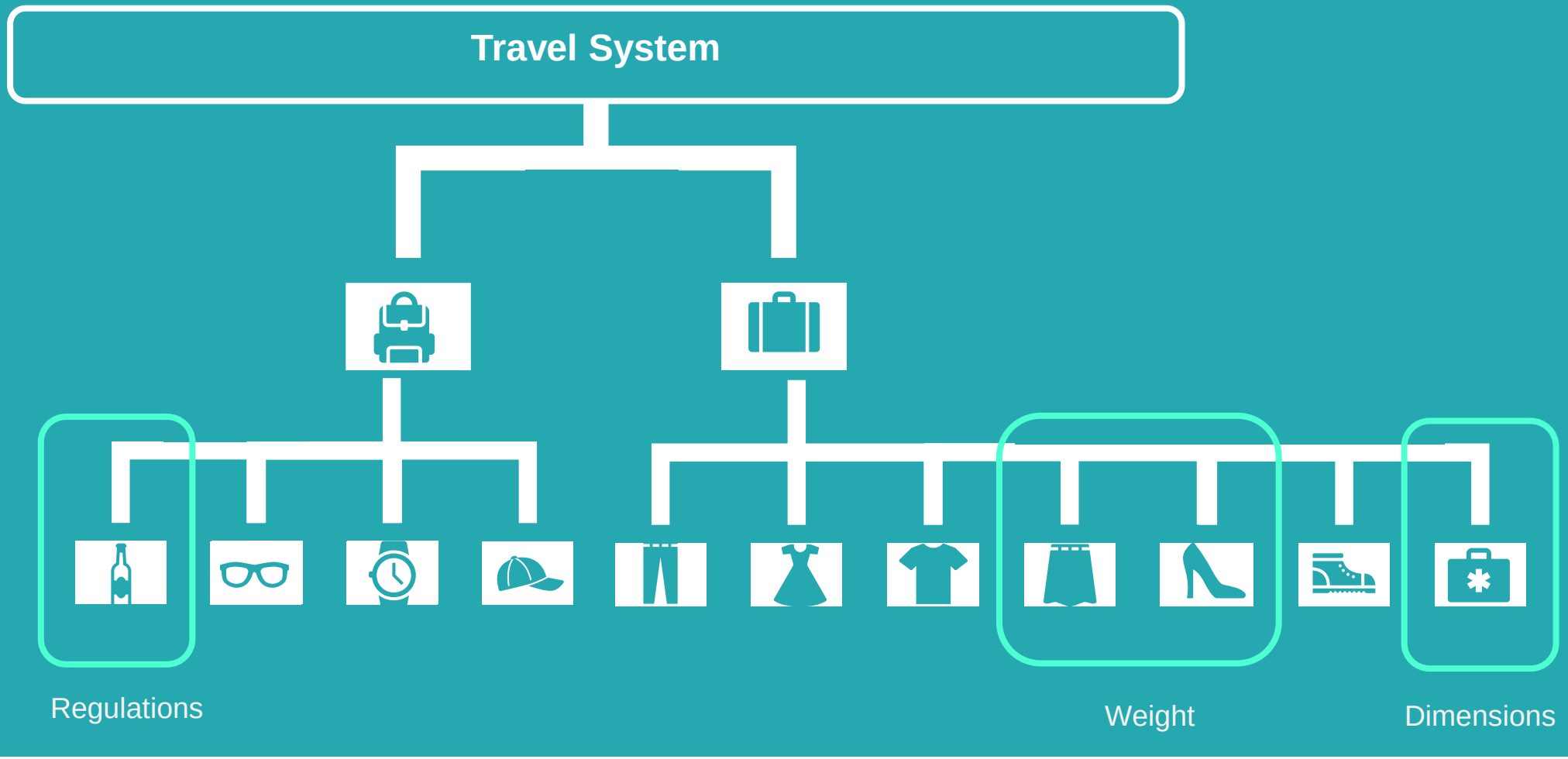
What's in it for me?

Identifying possible risks, nonconformances, …



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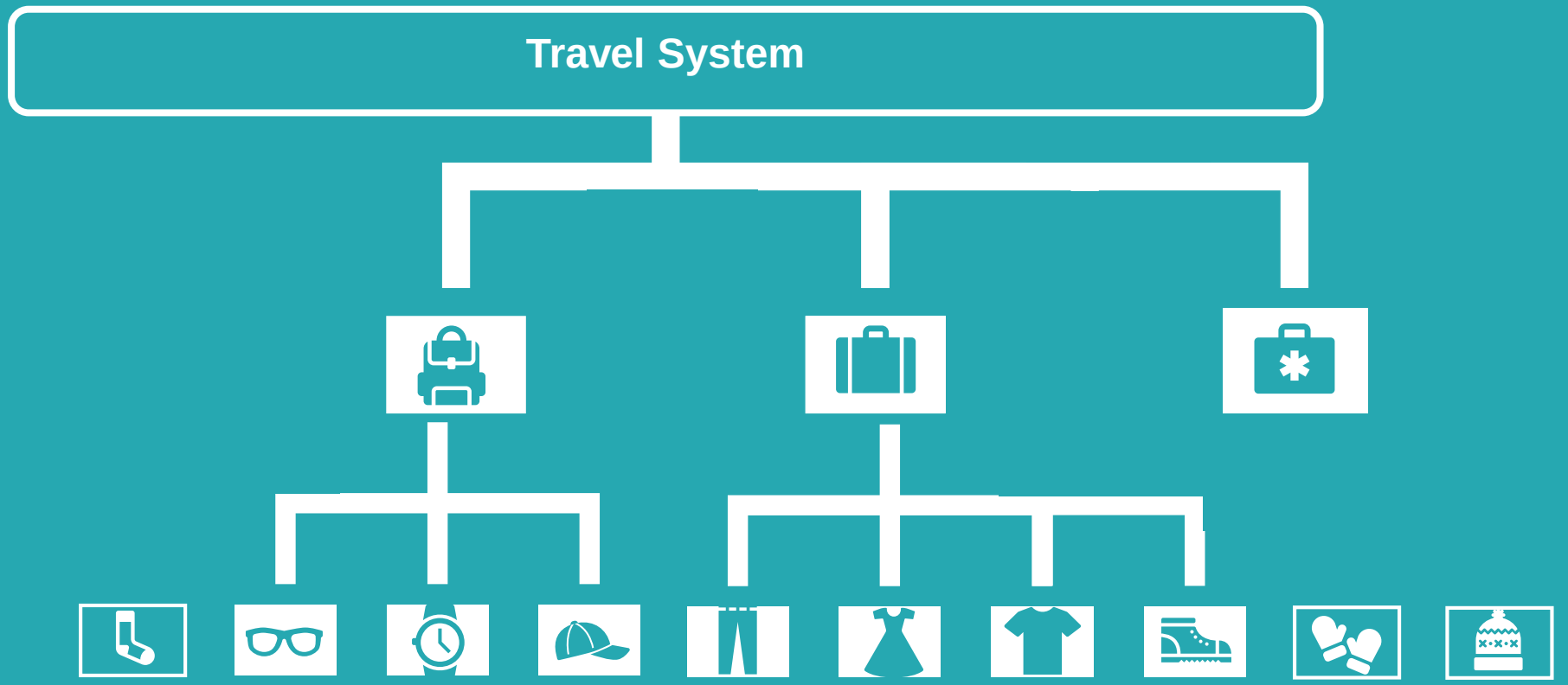
What's in it for me?

Adapt your stakeholder requirements based on feasible system artefacts & variability



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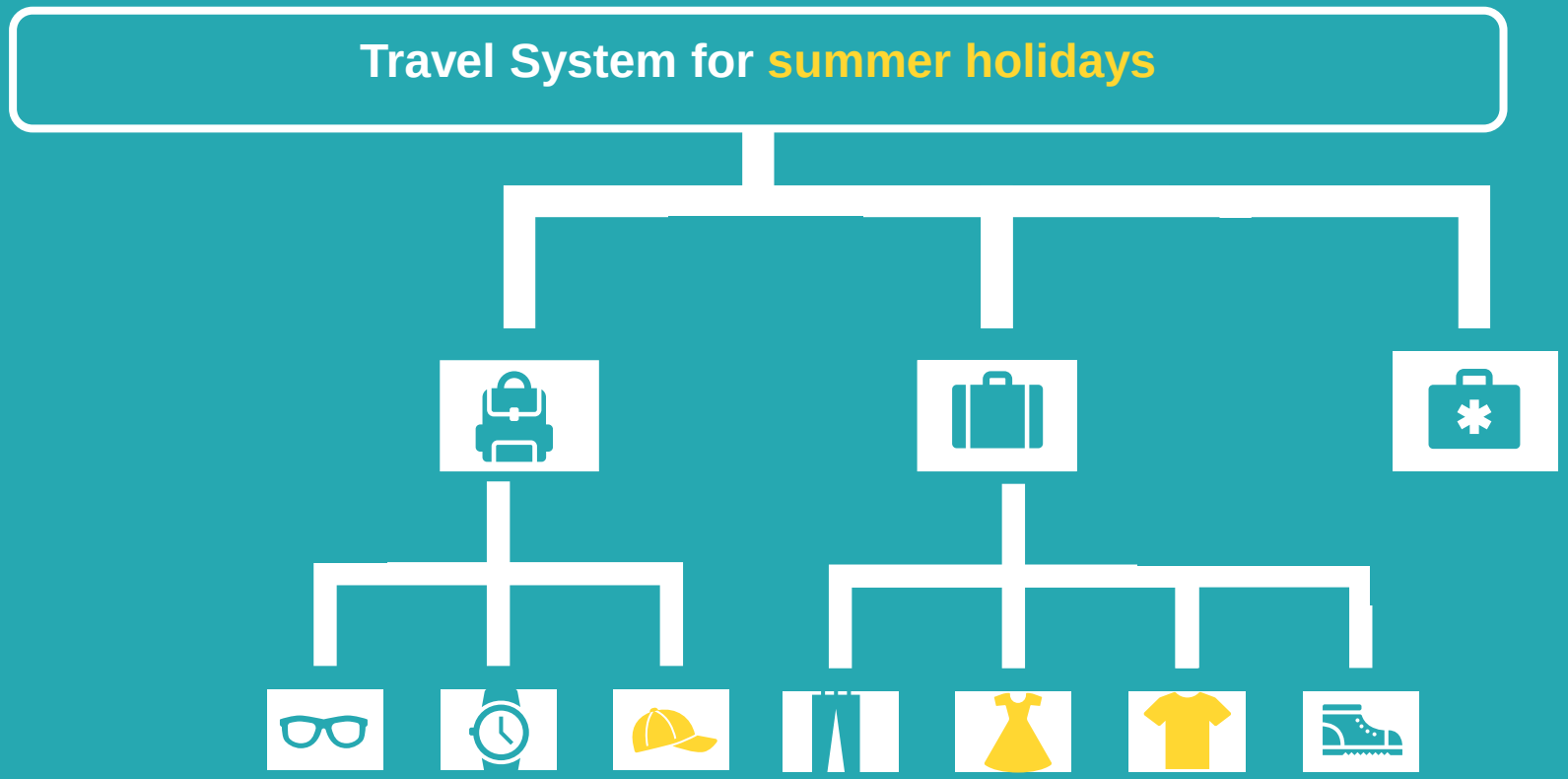
What's in it for me?

Adapt your system approaches for different holidays



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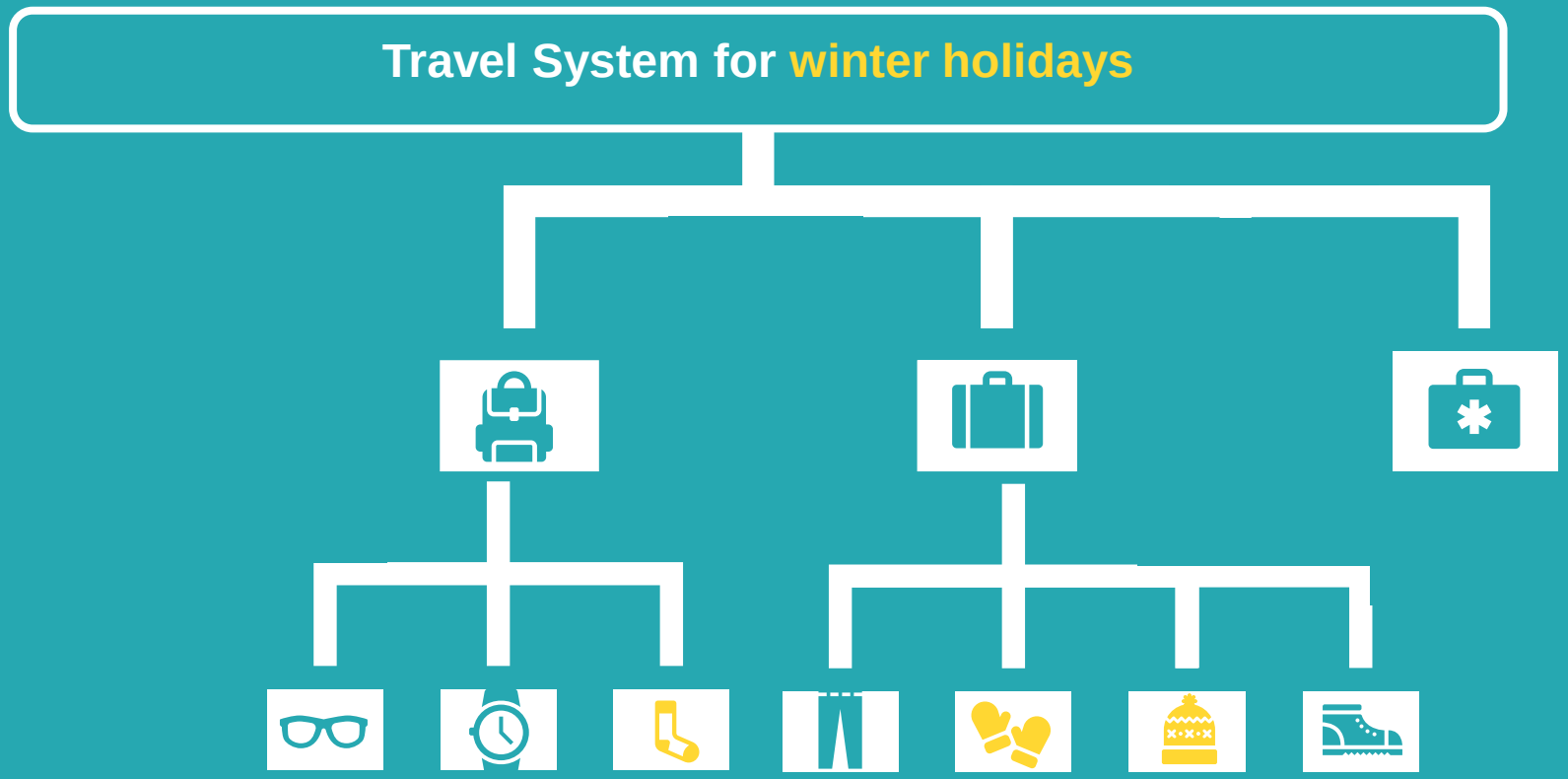

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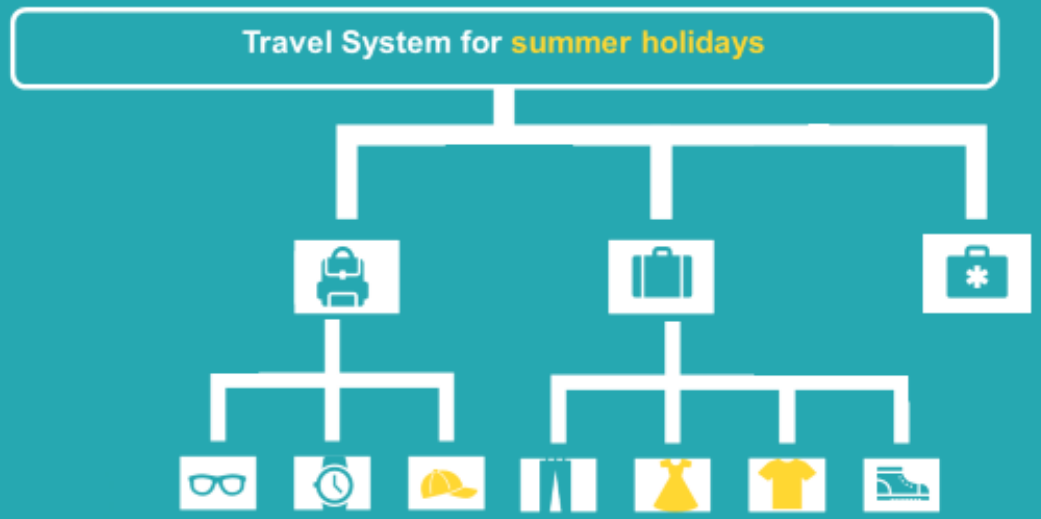
What's in it for me?

Reuse your specific system approaches for upcoming holidays



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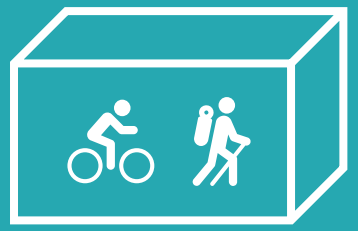
Four Phases of System Development

1) Operational Analysis



2) System Analysis

3) Logical Architecture

4) Physical Architecture

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How to approach step by step?
Phase 1: What is the black box system about?

Requirements

1) Operational Analysis

Functions

2) System Analysis

Logic

3) Logical Architecture

Physics

4) Physical Architecture

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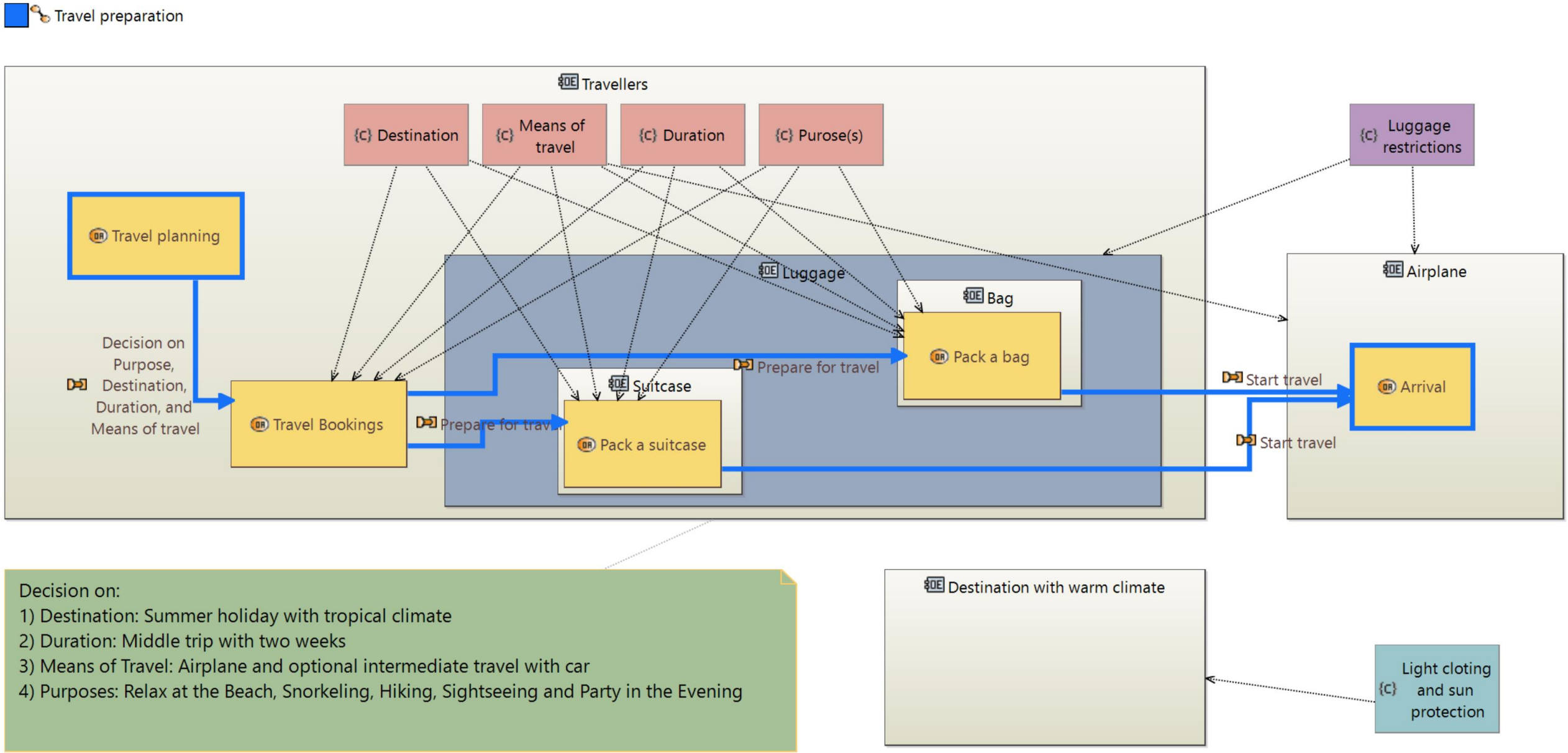
Phase 1: Operational Analysis

Black-Box-Perspective without exact knowledge of system boundary, to specify system context



How to approach step by step this MBSE journey?
Phase 2: From Black Box to White Box

Requirements

1) Operational Analysis

Functions

2) System Analysis

Logic

3) Logical Architecture

Physics

4) Physical Architecture

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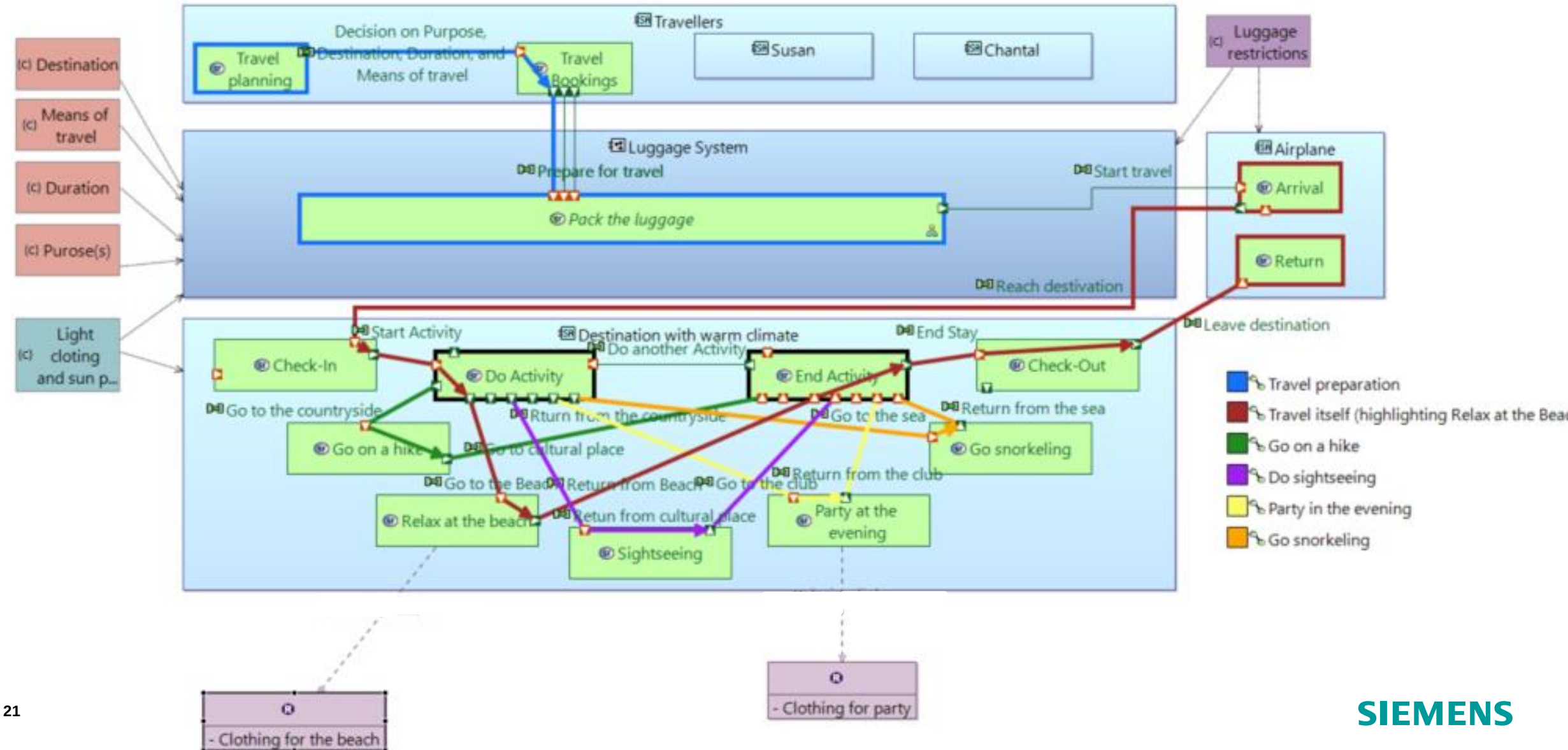
Phase 2: System Analysis

White-Box-perspective with exact knowledge of system boundary and mapped requirements



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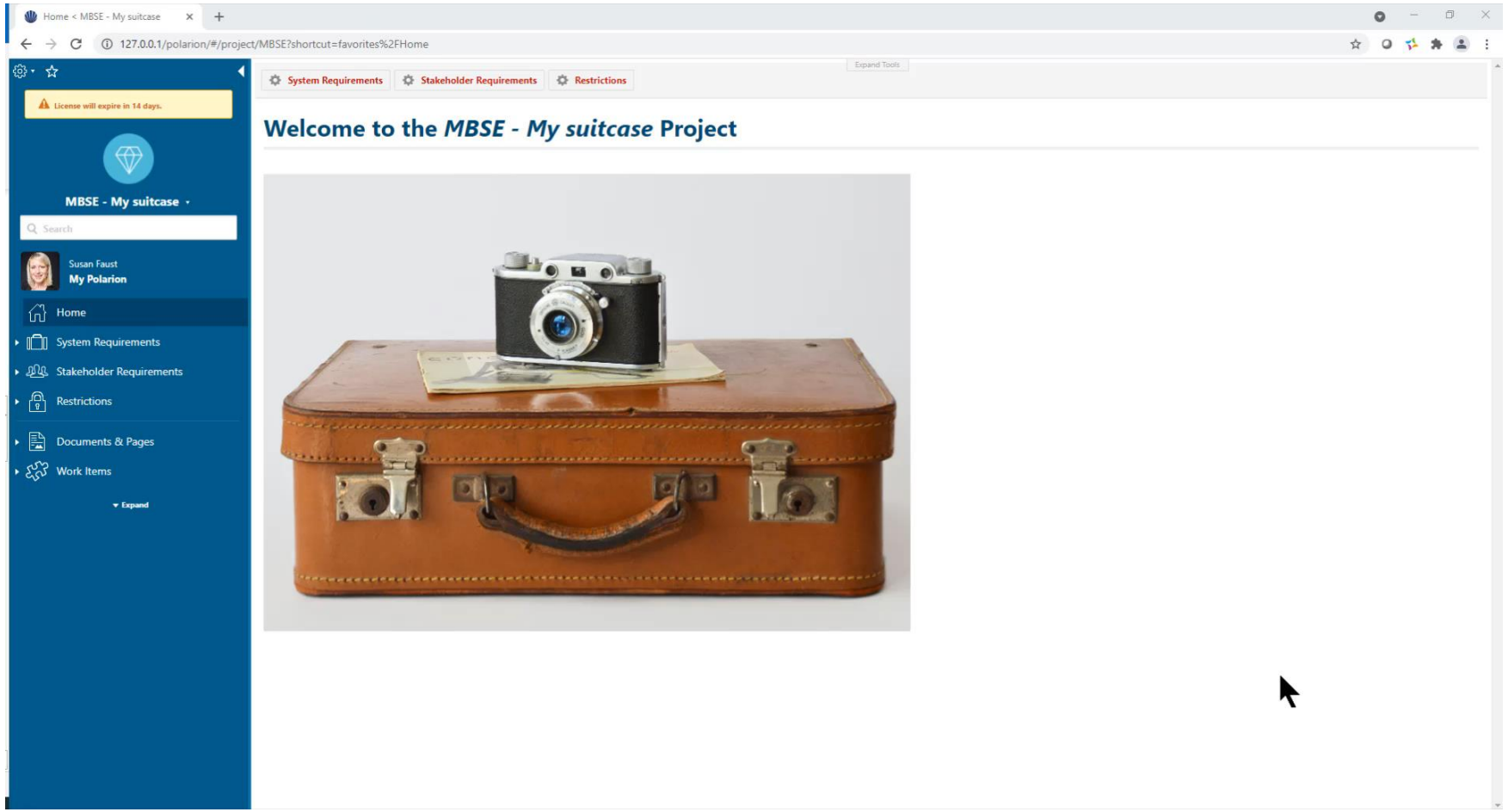
Phase 2: System Analysis

White-Box-perspective with exact knowledge of system boundary and mapped requirements



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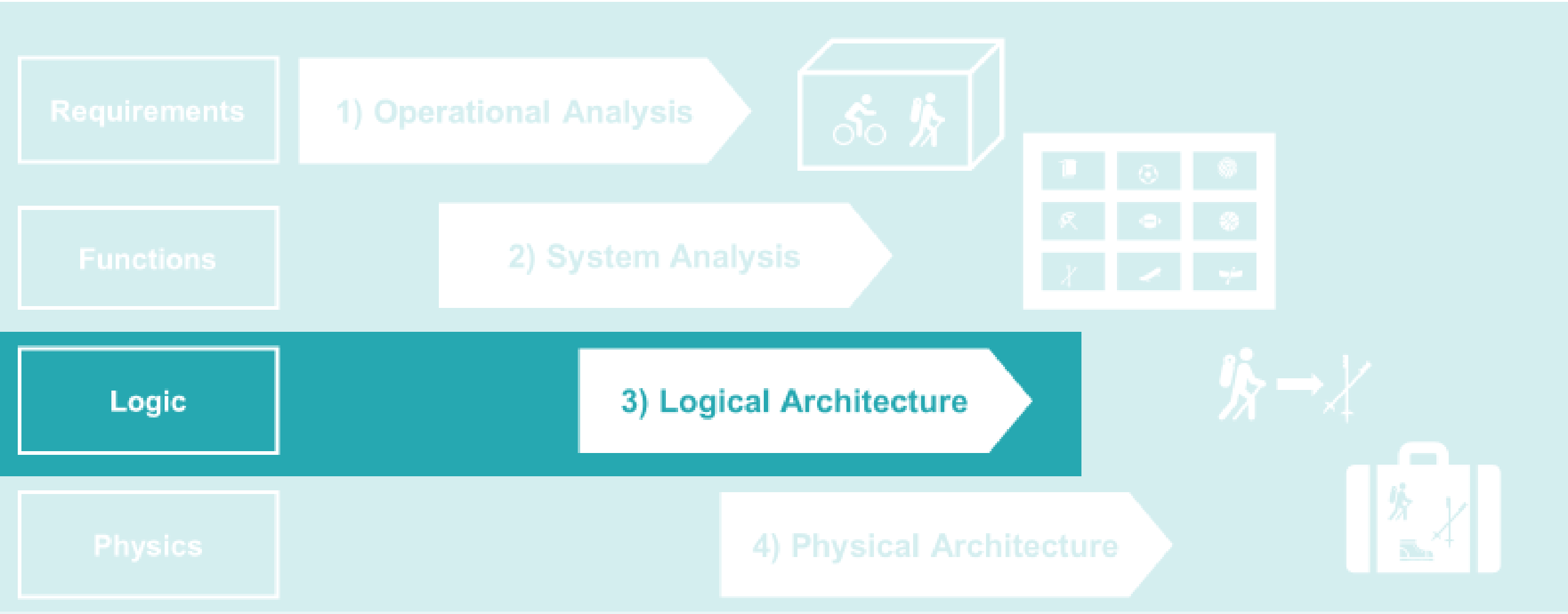
How to approach step by step this MBSE journey?
Phase 3: Map System Purpose with System Items



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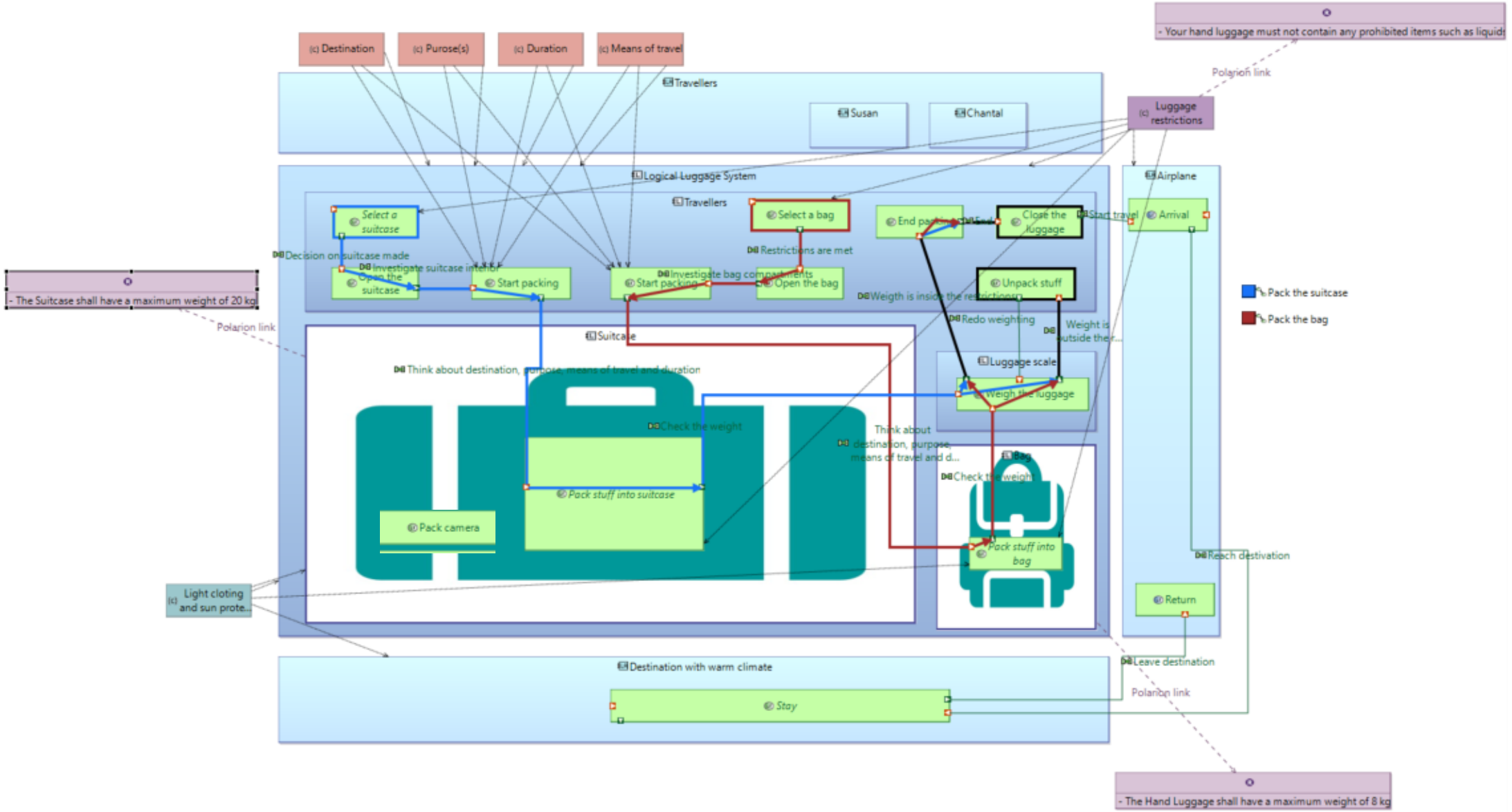
Phase 3: Logical Architecture

Function-based structure decomposition to map general functions to logical solution components



How to approach step by step this MBSE journey?

Phase 4: What is the physic of your suitcase?

Requirements

Functions

Logic

Physics

1) Operational Analysis

2) System Analysis

3) Logical Architecture

4) Physical Architecture

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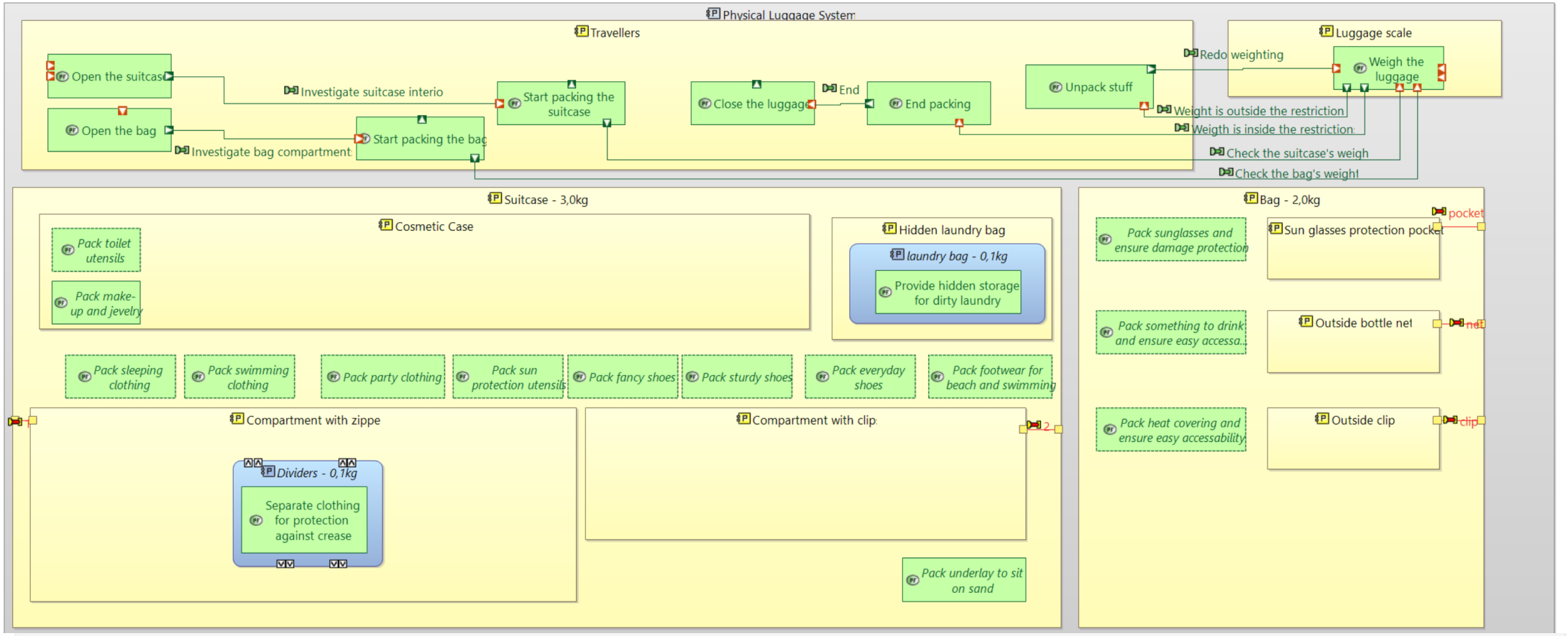
P: Physical Architecture

Physics-based structure decomposition to specify general physical components and function fulfillment



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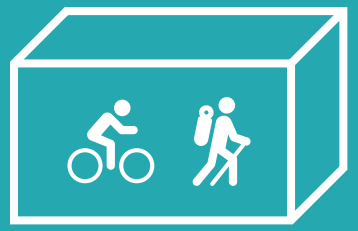

2) System Analysis

3) Logical Architecture

4) Physical Architecture

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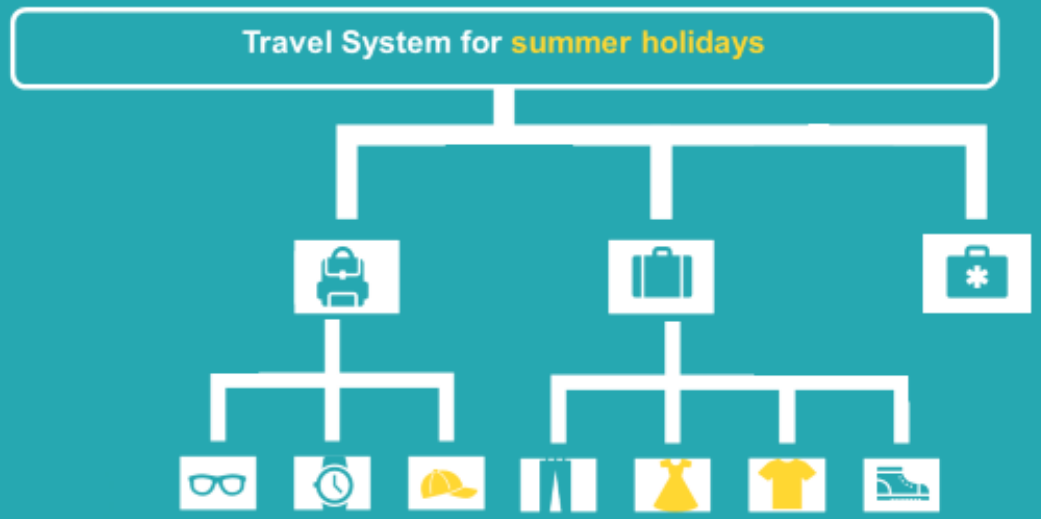
Outlook
Reuse your specific system approaches for upcoming holidays



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Disclaimer: All models have been created by Siemens Polarion 20 R1 and System Modeling Workbench Version 5.0.1