NFM Ballistic Solution

Overview

Description

The document describes the specifications of the requirements and the proposed approach for the project aimed at changing the processes related to ordering and testing tests at the shooting range, as well as designing the ballistic system.

Change justification

1. Speed, security (access and availability) and functionality of the current solution (Excel)
2. Increased efficiency through improvements such as structure search, etc.
3. Integration with IoT devices
4. Lack of transparent UX of the current solution
5. Possibility for future improvements like AI/machine learning

Goal

Users have an intuitive system for creating test orders, performing tests, designing new ballistic systems and carrying out their tests (in the shortened path). Solution allows Power BI analysis of collected data from SQL DB.

Construction Creator

Description
App for creating Material, Material Stack, Operation, Construction, Product and Ballistic System

Requirements
1. Construction Creator app
    1.1. User can create Material, Material Stack, Operation, Construction, Product and Ballistic System.
    1.2. User can create Material, Material Stack, Operation, Construction, Product and Ballistic System from existing Material, Material Stack, Operation, Construction, Product and Ballistic System.
    1.3. During the creation of Material Stack and Construction costs, thickness and weight have to automatically calculate in case of add/remove new Material or Material Stack
    1.4. User can display all Material, Material Stack, Operation, Construction, Product and Ballistic System and edit Material
    1.5. Weight, Thickness and price are sum up to the final construction
    1.6. Materials as well as Material Stacks can be stitched with specific type of stitching

Approach
PowerApps, Canvas

- Data Visualization
- Custom UI and UX design
- Connectors with CDS

CDS

- Database

Microsoft Flow:

| Name	Category	Description
Create Material Stack And Construction record	Workaround/Integration	Create new record in NBS MaterialStackAndConstruction Entity. Relate selected **"Material Stacks"** with **"Construction"**
Create Construction Material Stack Stitching record	Workaround/integration	Create new record in NBS ConstructionMaterialStackOperation Entity. Relate selected MaterialStackAndConstruction with **"Operation"**
Create New ICW Product	Workaround/integration	Create new record in NBS ICW Product Entity. Relate selected **"Products"** with **"Ballistic System"**

Dictionary

Word/Phrase	Meaning	Synonyms
Construction	It's compound of multiple **"Material stacks"** in specific order and **"Operation"**	Composite, Solution

Product	It is a **"Construction"** with a specific geometry	Component of the System
Ballistic System	**"Product"** or set of **"Products"** that will be tested with **"Tested Product"**	ICW, In Conjunction With, Panel, Soft ballistic
Material	Basic ingredient of every **"Construction"**. It has its own price, weight and thickness	
Material Stack	Is a **"Material"** of 1 type stacked in a number of layers	
Operation	Type of stitching for **"Materials"** in **"Material Stack"** and for **"Material Stacks"** in **"Construction"**	
Shooting Order App	App to request a **"Shooting Test"** for the specific **"Product"**. Such test may be described with multiple properties i.e. client, project, custom standard detail etc	
Testing Dashboard App	App for conducting a **"Shooting test"**	
Construction Creator App	App for creating ballistic constructions	

Architecture

Project database diagram https://dbdesign.online/model/3TJ612sF5wXE
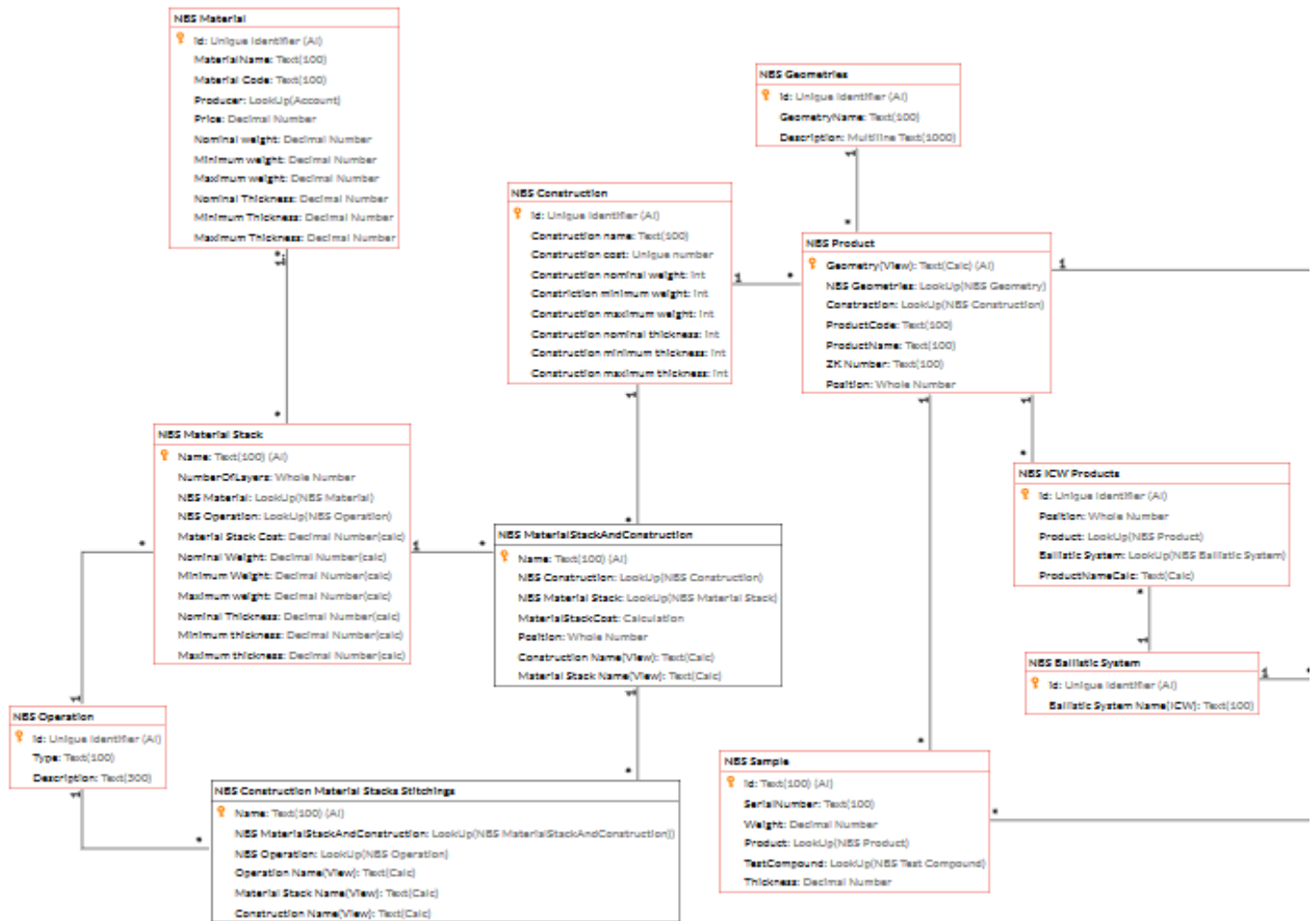
CDS Entities Description

NBS Material			
Display name	**Data type**	**Required**	**Additional notes**
NBS Material	Unique Identifier	Yes	
Material Name	Text(100)		Primary field
Material Code	Text(100)		
Producer	Lookup		Account
Price	Decimal Number		
Nominal weight	Decimal Number		
Minimum weight	Decimal Number		
Maximum weight	Decimal Number		
Nominal Thickness	Decimal Number		
Minimum Thickness	Decimal Number		
Maximum Thickness	Decimal Number		

NBS Material Stack			
Display name	**Data type**	**Required**	**Additional notes**
NBS Material Stack	Unique Identifier	Yes	
Name	Text(100)		Primary field
Number of Layers	Whole Number		
NBS Material	Lookup		NBS Material
NBS Operation	Lookup		NBS Operation
Material Stack Cost	Decimal Number		Calculation field
MS Nominal weight	Decimal Number		Calculation field
MS Minimum weight	Decimal Number		Calculation field
MS Maximum weight	Decimal Number		Calculation field
MS Nominal Thickness	Decimal Number		Calculation field
MS Minimum Thickness	Decimal Number		Calculation field
MS Maximum Thickness	Decimal Number		Calculation field

NBS Operation			
Display name	**Data type**	**Required**	**Additional notes**
NBS Operation	Unique Identifier	Yes	
Type	Text(100)		Primary field
Description	Text(300)		

NBS Product			
Display name	**Data type**	**Required**	**Additional notes**
Geometry (View)	Text		Calculation field
Position	Whole Number		
Product Code	Text		
Construction	Lookup		NBS Construction
Product Name	Text	Yes	Primary Field
NBS Geometries	Lookup		NBS Geometry
ZK Number	Text		

NBS Geometry			
Display name	**Data type**	**Required**	**Additional notes**
NBS Geometry	Unique Identifier	Yes	
Geometry Name	Text(100)		Primary field
Description	Multiline Text(1000)		

NBS Construction			
Display name	**Data type**	**Required**	**Additional notes**
NBS Construction	Unique Identifier	Yes	
Construction Name	Text(100)		Primary field
Construction Cost	Decimal Number		Calculation field
Construction Nominal weight	Decimal Number		Calculation field
Construction Minimum weight	Decimal Number		Calculation field
Construction Maximum weight	Decimal Number		Calculation field

Construction Nominal Thickness	Decimal Number		Calculation field
Construction Minimum Thickness	Decimal Number		Calculation field
Construction Maximum Thickness	Decimal Number		Calculation field

NBS ICW Product			
Display name	**Data type**	**Required**	**Additional notes**
Id	Autonumber		Primary Field
BallisticSystem	Lookup		NBS Ballistic System
Product	Lookup		NBS Product
Product Name Calc	Text		Calculation field
Position	Whole Number		

NBS Ballistic System			
Display name	**Data type**	**Required**	**Additional notes**
Ballistic System Name(ICW)	Text	Yes	Primary Field

NBS MaterialStackAndConstruction			
Display name	**Data type**	**Required**	**Additional notes**
Name	Text(100)		Primary field
NBS Construction	Lookup		NBS Construction
NBS Material Stack	Lookup		NBS Material Stack
MaterialStackCost	Decimal Number		Calculation field
Position	Whole Number		
Construction Name(View)	Text(100)		Calculation field
Material Stack Name(View)	Text(100)		Calculation field

NBS Construction MaterialStack Stitching			
Display name	**Data type**	**Required**	**Additional notes**
Name	Text(100)		Primary field
NBS MaterialStackAndConstruction	Lookup		NBS MaterialStackAndConstruction
NBS Operation	Lookup		NBS Operation
Operation Name(View)	Text(100)		Calculation field
Construction Name(View)	Text(100)		Calculation field
Material Stack Name(View)	Text(100)		Calculation field

Components

1. Navbar component.

Requirements 1.1.

Screens

1. Screen 1: Material
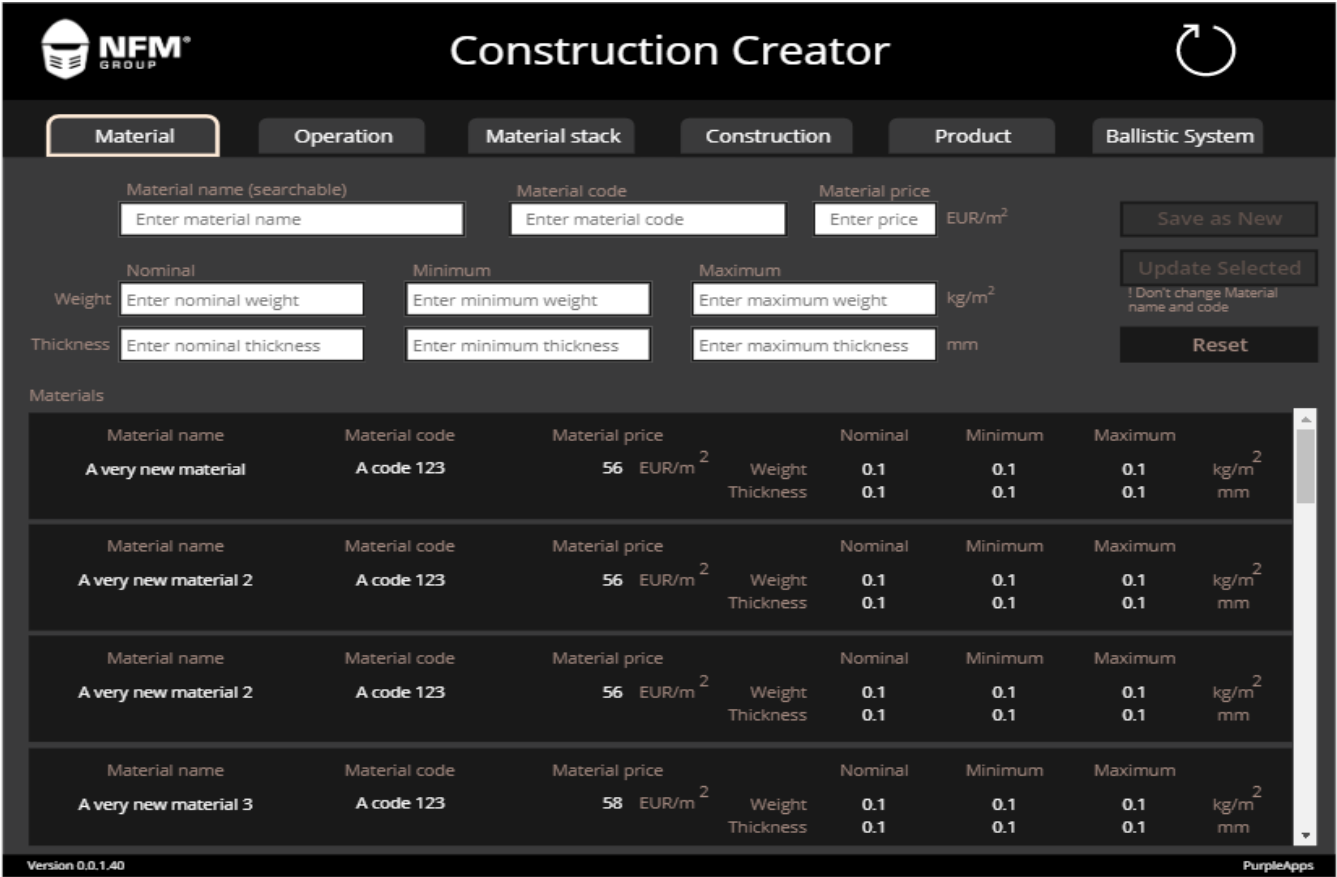
Requirements: 1.1., 1.2., 1.4.

2. Screen2. Operation

Requirements: 1.1, 1.2, 1.4.

3. Screen 3. Material Stack

Requirements: 1.1., 1.2., 1.3., 1.4., 1.6..

4. Screen 4. Construction

Requirements: 1.1, 1.2., 1.3., 1.4., 1.5., 1.6.

5. Screen 5. Product

Requirements: 1.1., 1.2., 1.4.

6. Screen 6. Ballistic System

Requirements: 1.1., 1.2., 1.4.

Use Cases

UC 1: Create new Element (Material, Operation, Material Stack, Product, Ballistic System)

UC1-Screen 1a	UC1-Screen 1b	UC1-Screen 1c
Action: User can enter name of Element and check if this element have already exist.	Action: User enter necessary data for new Element	Action: Operator can Save new Element

UC 2: Create new Element (Material, Operation, Material Stack, Product, Ballistic System) from existing Element

UC1-Screen 1a	UC1-Screen 1b	UC1-Screen 1c
Action: User can enter name of Element and find it in existing.	Action: User select existing Element to copy data	Action: Operator change necessary data
UC1-Screen 1c		
Action: Operator can Save new Element		

UC 3: Update Material

UC1-Screen 1a	UC1-Screen 1b	UC1-Screen 1c
Action: User can enter name of **"Materiala"** and check if this element have already exist.	Action: User select existing **"Material"** to update	Action: Operator can Update selected **"Material"**

UC 4: Create Construction
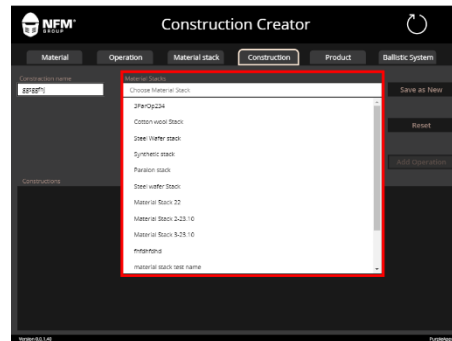
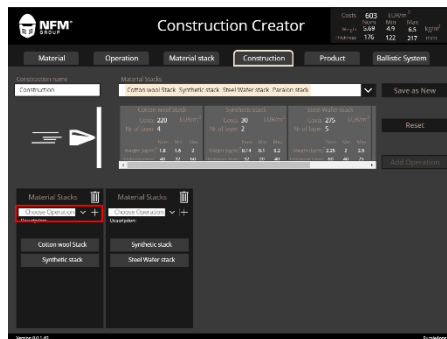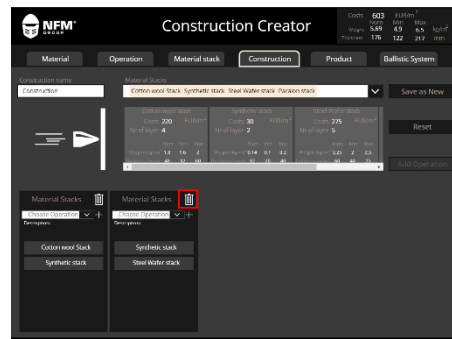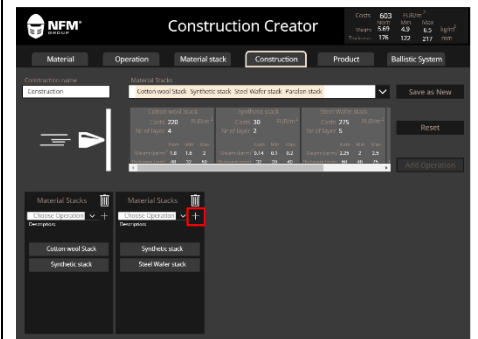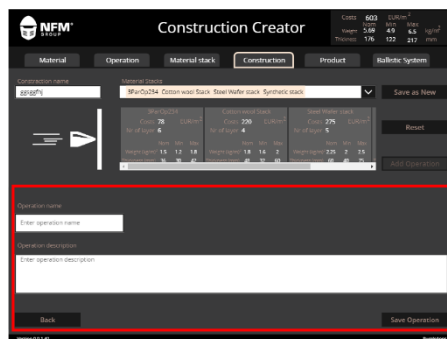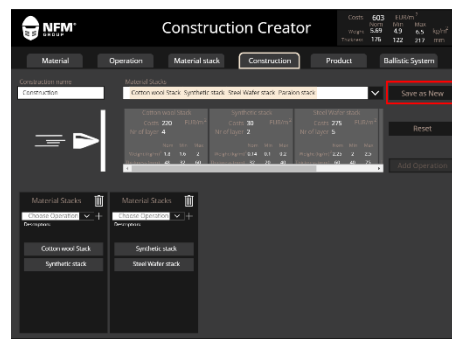| UC4-Screen 1a	UC4-Screen 1b	UC4-Screen 1c
Action: User can enter name of **"Construction"** and check if this element have already exist.	Action: User select **"Material Stacks"**	Action: User choose **"Material Stacks"** and press Add Operation
UC4-Screen 1d	UC4-Screen 1e	UC4-Screen 1f
Action: User choose **"Operation"** for selected **"Material Stacks"**	Action: User can delete **"Material stacks"** for Operation	Action: User can add new **"Operation"**
UC4-Screen 1g	UC4-Screen 1e	
Action: User can save **"Operation"** data or return back to Screen 1f	Action: User saved New Construction	