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 to request a shooting test for a specific product. Such test may be described with multiple properties i.e. client, project, standard extensions etc.

Requirements

1. Shooting Orders app
   1.1. Any user should be able to list orders with 3 types of View: QA View, R&D View, All Columns View

QA View	R&D View	All Columns View
Order Name	Queue No	Queue No
Project	Order Name	Order Name
ZK Number	Client	Contact Person
ZP Number	Project	Priority
Product	Institute	Reason for priority
Produced	Contact Person	Order Status
Planned Shipping	Priority	Project
Shipped	Reason for priority	Client
Deadline	Order Status	Institute
Sample Serial Numbers	ZK Number	ZK Number
Sample Quantity	ZP Number	ZP Number
QA Notes	Deadline	Product
Standard Detail	Produced	Produced
Pattern	Planned Shipping	Planned Shipping
Verified by QA	Shipped	Shipped
Test result	Shipped date	Shipped date
Report number	Shipment Tracking Info	Shipment Tracking Info
Root of test	Sample Serial Numbers	Received
	Sample Quantity	Deadline
	Product	Sample Serial Numbers
	Received	Sample Quantity
	R&D Note	QA Notes
	Ballistic System	R&D Note
	Standard Detail	Ballistic System
	Pattern	Standard Detail
	Bullet type	Pattern
	Additional test info	Bullet type
	Test Origin Type	Additional test info
	Test Goal Type	Test Origin Type
	IsShotTest	Test Goal Type
	V50 Target	IsShotTest
	V50 Minimum Required	V50 Target
	PBFS-Target	V50 Minimum Required
	PBFS-Tolerance	PBFS-Target
	Threat	PBFS-Tolerance
	Conditioning	Threat
	Backing Type	Conditioning
	No of shots	Backing Type
	Operator	No of shots
		Operator
		Verified by QA
		Test result

		Report number
		Root of test

1.2. Any user should be able to Choose form (QA or R&D) and Create a new order. A new order accepts following information to be filled

QA Form

Category	Field	Type	Additional notes
Context Info	Order Name	Text	
	Project	Search box	Quick create new Project
General Info	ZK number	Text	
	ZP number	Text	
	Product	Search box	Quick create new Product
	Produced	Yes/No	
	Planned Shipping	Data	
	Shipped	Yes/No	
	Deadline	Data	
	Sample Serial Numbers	Text	
	Sample Quantity	Number	
	QA Notes	Text	
Standard Detail	Standard Detail	Search box	Quick create new Standard Detail
	Pattern	Custom app	User can select pattern picture from a gallery or upload new picture. Pictures will be stored in SharePoint
After Test	Verified by QA	Yes/No	
	Test result	Positive/Negative	
	Report number	Text	
	Root of test	Text	

R&D Form

Category	Field	Type	Additional notes
Context Info	Order Name	Search box	
	Client	Search box	Quick create new Client
	Project	Search box	Quick create new Project
	Institute	Search box	Quick create new Institute
	Contact Person	Search box	Users taken from O365 tenant
General Info	Priority	Choice	
	Reason for priority	Multiline Text	
	Order Status	Choice	
	ZK Number	Text	
	ZP Number	Text	
	Deadline	Date picker	
	Produced	Yes/No	
	Planned Shipping	Date picker	
	Shipped	Yes/No	
	Shipped date	Date Picker	
	Shipment Tracking Info	Text	
	Sample Serial Numbers	Text	
	Product	Search box	Quick create new Product
	Received	Yes/No	
	R&D Note	Text	

Ballistic System And Standard Info	Ballistic System	Search box	Quick create new Ballistic System
	Standard Detail	Search box	Quick create new Standard Detail
	Pattern	Custom app	User can select pattern picture from a gallery or upload new picture. Pictures will be stored in SharePoint
Test Info	Bullet type	Search box	Quick create new Bullet type
	Additional test info	Text	
	Test Origin Type	Choice	
	Test Goal Type	Choice	
	IsShotTest	Yes/No	
	V50 Target	Number	
	V50 Minimum Required	Number	
	PBFS-Target	Number	
	PBFS-Tolerance	Number	
	Threat	Text	
	Conditioning	Text box	
	Backing Type	Search box	Quick create new Backing Type
	No of shots	Number	
	Operator	Search box	Users taken from O365 tenant

1.3. User can edit Standard details or add a new standard detail extending original standard detail list. Standard details are defined by following fields:

Field	Type
Standard	Search box
Test Stab/Shot	Choice
Level of Protection	Text
Bullet mass	Number
Bullet type	Search box
Nom Velocity	Number
Min Velocity	Number
Max Velocity	Number
BFS Requirement	Text
Condition requirement	Text
Panel Size	Text
Shots per panel	Number
Additional Notes	Text

1.4. User should be able to view order details
1.5. User can start test

Approach

PowerApps, Model Driven, Canvas

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

CDS

- Database

Microsoft Flow:

Name	Category	Description
Set Standard Detail Name	Automation	Automaticaly set Standard Detail name

Dictionary

Word/Phrase	Meaning	Synonyms
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
Standard	Name which includes different **"Standard Details"**	
Standard Detail	Individual requirements for **"Shooting test"**	
Ammo Type	•	Bullet type
Shot Test	Specific steps in specific order due to check if a **"Ballistic System"** can stand shooting according to a standard	Ballistic test, Shooting Test
Stab Test	Specific steps in specific order due to check if a **"Ballistic System"** system can stand stabs according to a standard	
Test Goal Type	V50 or P-BFS	
Shooting Order	Request of a **"Shooting test"** for the specific **"Product"**	Test Order
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
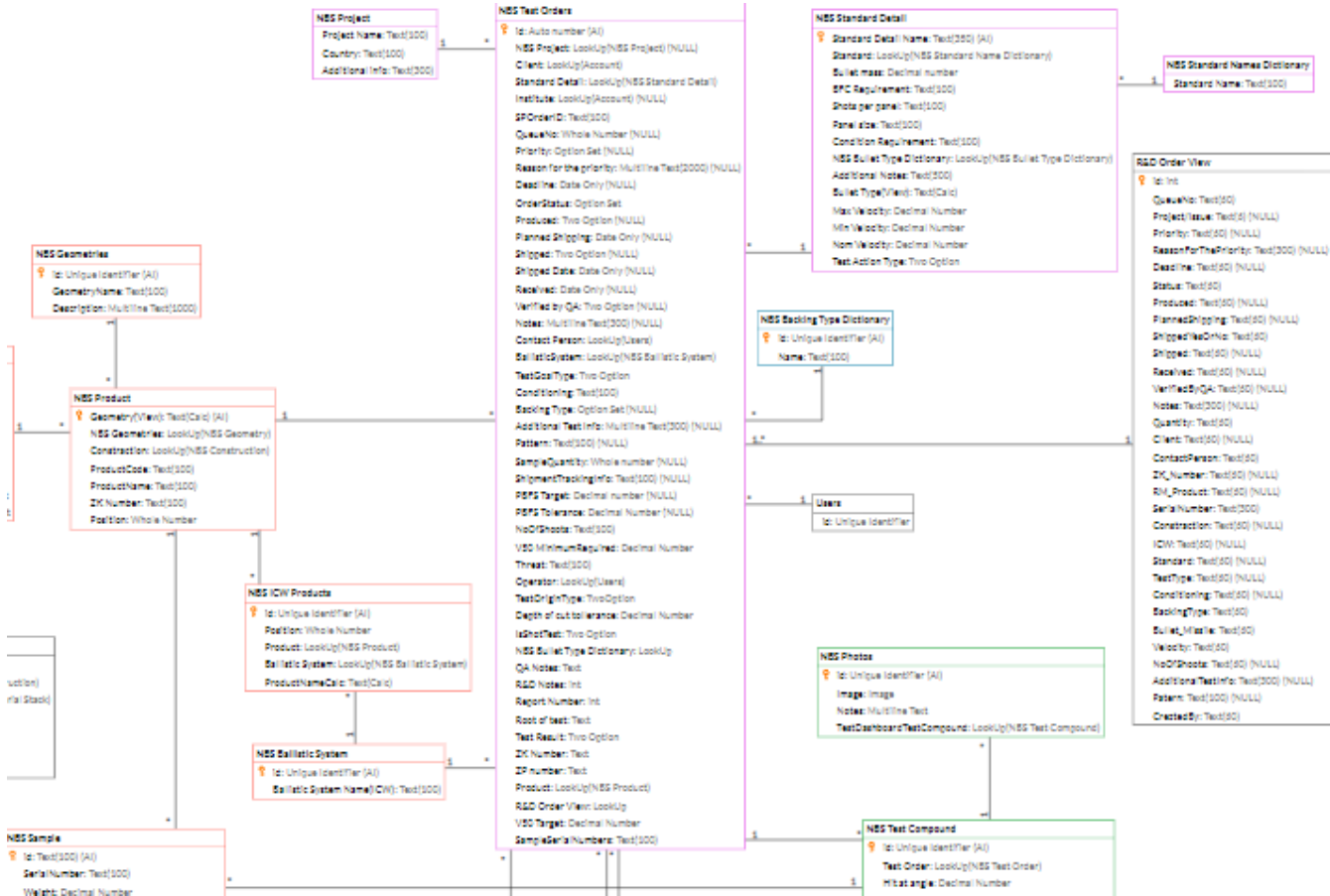
CDS Entities Description

NBS Test Order			
Display name	**Data type**	**Required**	**Additional notes**
Additional Test Info	Multiline Text(300)		
Backing Type	Lookup		NBS Backing Type Dictionary
Ballistic System	Lookup		NBS Ballistic System
Client	Lookup		Account
Conditioning	Text(100)		
Contact Person	Lookup		Users
Deadline	Date Only		
Depth Of Cut Tolerance	Decimal Number		
Institute	Lookup		Account
IsShotTest	Two Option		True: Shot, False: Stab
NBS Bullet Type Dictionary	Lookup		NBS Bullet Type Dictionary
No of Shoots	Text(100)		
Notes	Multiline Text(300)		
Operator	Lookup		Users
Order Name	Text(100)		Primary Field
Order Status	Option Set		
Pattern	URL		

PBFS - Target	Decimal Number		
PBFS - Tolerance	Decimal Number		
Planned Shipping	Date Only		
Priority	Option Set		
Produced	Two Option		
NBS Project	Lookup		NBS Project
QA notes	Text		
Queue No	Whole Number		
R&D Notes	Text		
R&D Order View	Lookup		
Reason for the priority	Multiline Text		
Received	Date Only		
Report number	Text		
Root of test	Text		
Sample Quantity	Whole Number		
Sample Serial Numbers	Text		
Shipment Tracking Info	Text		
Shipped	Two Option		
Shipped Date	Date Only		
SP Order ID	Text		
Standard Detail	Lookup		NBS Standard Detail
Standard Detail Picker	Text		
NBS Product	Lookup		NBS Products
Test Goal Type	Two Options		True: V50, false: P-BFS
Test Origin Type	Two Options		True: TS, false: DS
Test Result	Two Options		
Threat	Text		
V50 Minimum Required	Decimal Number		
V50 Target	Decimal Number		
Verified by QA	Two Options		
ZK number	Lookup		NBS ZK Number Dictionary
ZP number	Text		

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

NBS Standard Detail			
Display name	**Data type**	**Required**	**Additional notes**
Additional Notes	Text		
NBS Bullet Type Dictionary	Lookup		NBS Bullet Type Dictionary
Bullet mass	Decimal Number		
Bullet Type (View)	Text		Calculation field
Level of Protection	Text		
Max Velocity	Decimal Number		
Min Velocity	Decimal Number		
Nom Velocity	Decimal Number		
BFS Requirement	Text		
Condition Requirement	Text		
Panel size	Text		
Shots per panel	Whole Number		
Standard	Lookup		NBS Standard Names Dictionary
Standard Detail Name	Text		Primary Field, Calculation
Test Action Type	Two Option		True: shot, False: stab

NBS Standard Name Dictionary			
Display name	**Data type**	**Required**	**Additional notes**
Standard name	Text	Yes	Primary Field

NBS Bullet Type Dictionary			
Display name	**Data type**	**Required**	**Additional notes**
Name	Text	Yes	Primary Field
Bullet Calliber	Decimal Number		
Bullet Name With Producer Name	Text		Calculation field
Bullet Weight	Decimal Number		
Producer Account	Lookup		Account

NBS Backing Type Dictionary			
Display name	**Data type**	**Required**	**Additional notes**
Backing Type	Text	Yes	Primary Field
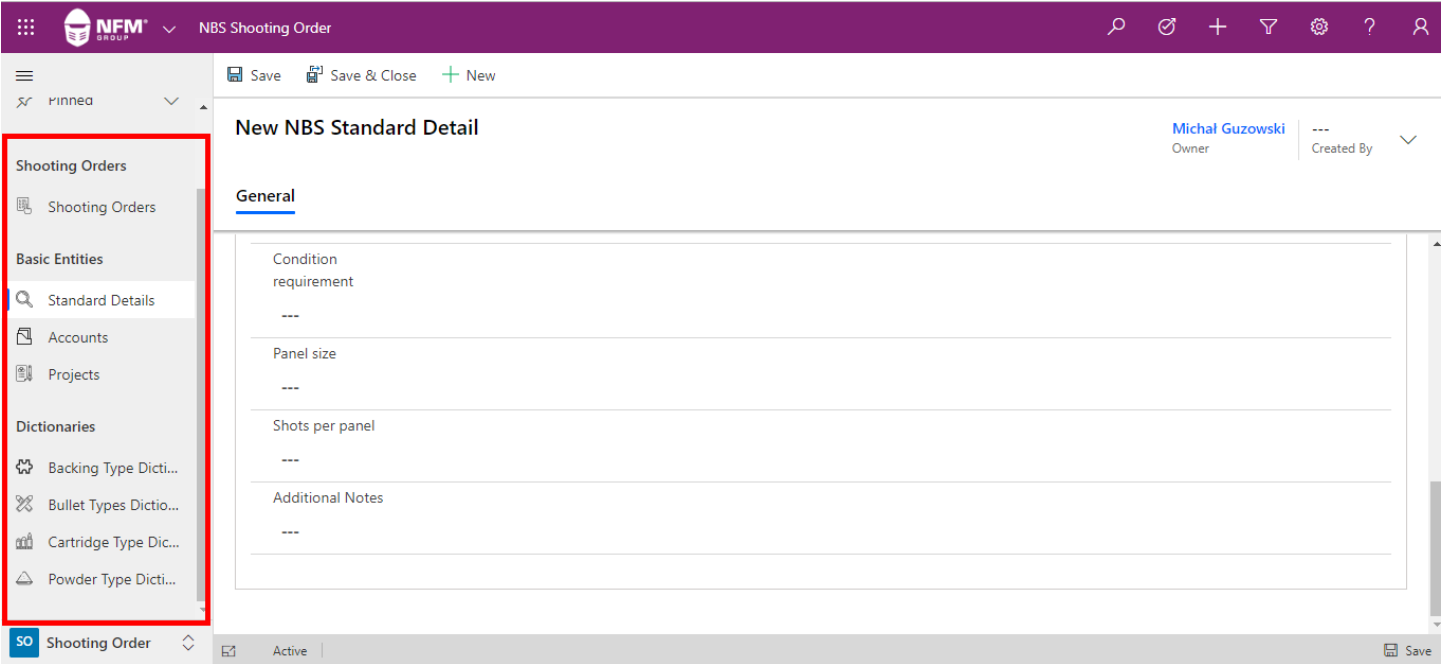
1. Screen 1: Shooting Order Lists
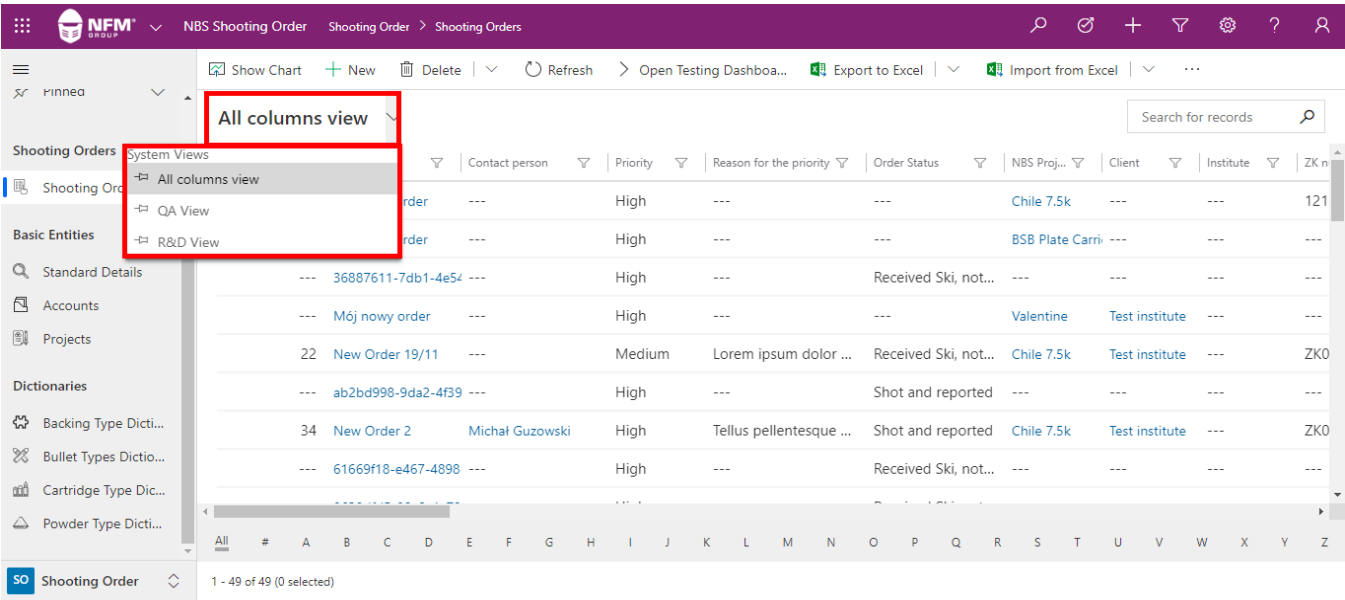
Requirements: 1.1., 1.4., 1.5.

2. Screen2. Create new Shooting Order

Requirements: 1.2., 1.5.

3. Screen 3. Shooting Order Detail

4. Screen 3a. Standard Detail List

Requirements: 1.3.

5. Screen 3b. Create new Standard Detail

Requirements: 1.3.