

# Field operations to economics: fine-grained decision making

PetroKazakhstan Inc. & Schlumberger  
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# Content

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# PKI group

PKI operations are located in South Turgai basin in south central Kazakhstan.

- 15 Production Contracts
- 5 Exploration Contracts
- 2 JVs
- 2 Joint agreements

PKI shareholders



**CNPC**



China National Petroleum Corporation

**KMG**



KazMunaiGas Exploration & Production JSC



**Schlumberger**

# Project overview

Objective: **Integration of Fields, Kyzylorda and Almaty offices**

Integrate three remote locations of company's different departments into one working environment:

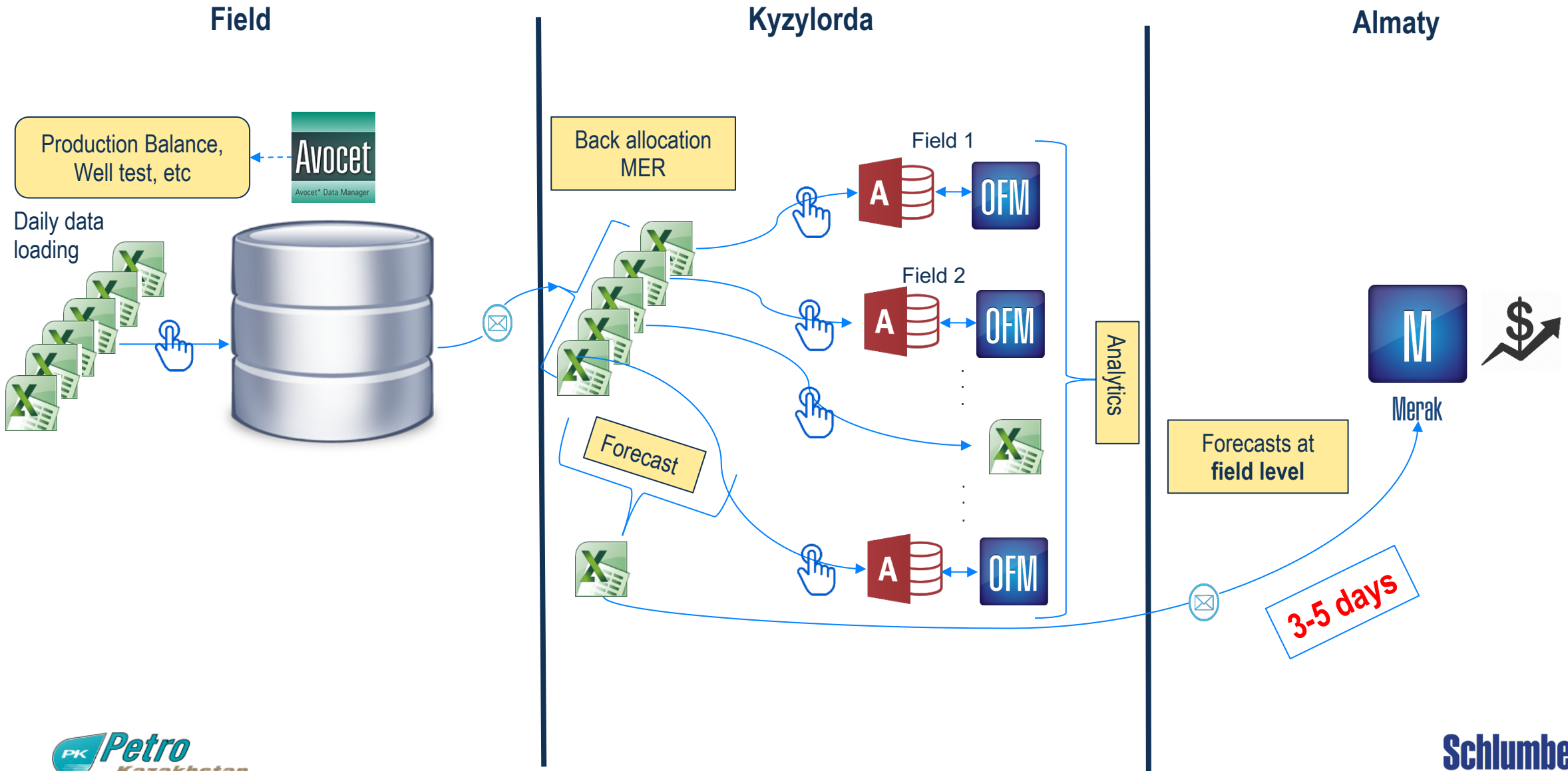
1. Field Operation –Fields
2. Engineering - City side office (Kyzylorda office)
3. Economics – Corporate office (Almaty) office



# Economist's duties

1. Current projects monitoring: well level economics calculation, analyze performance, suggest recommendations.
2. New projects evaluations: well level economics calculation, determine Brake Even Point (BEP), approve or suggest corrections.
3. Consolidated evaluations: calculating remaining value of company's assets.
4. Reports preparation.

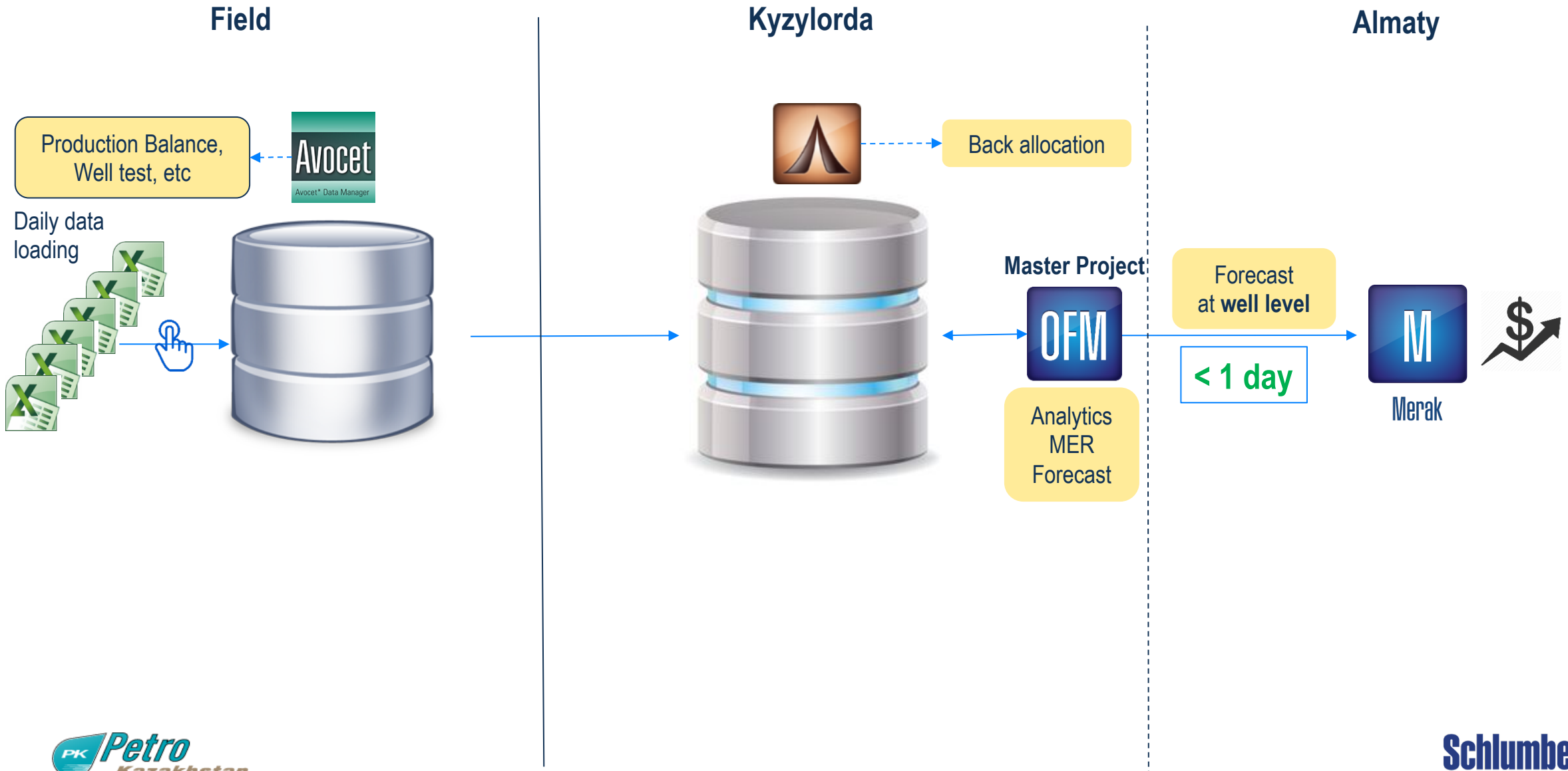
# Architecture – past practice



# Weaknesses of the existed workflow

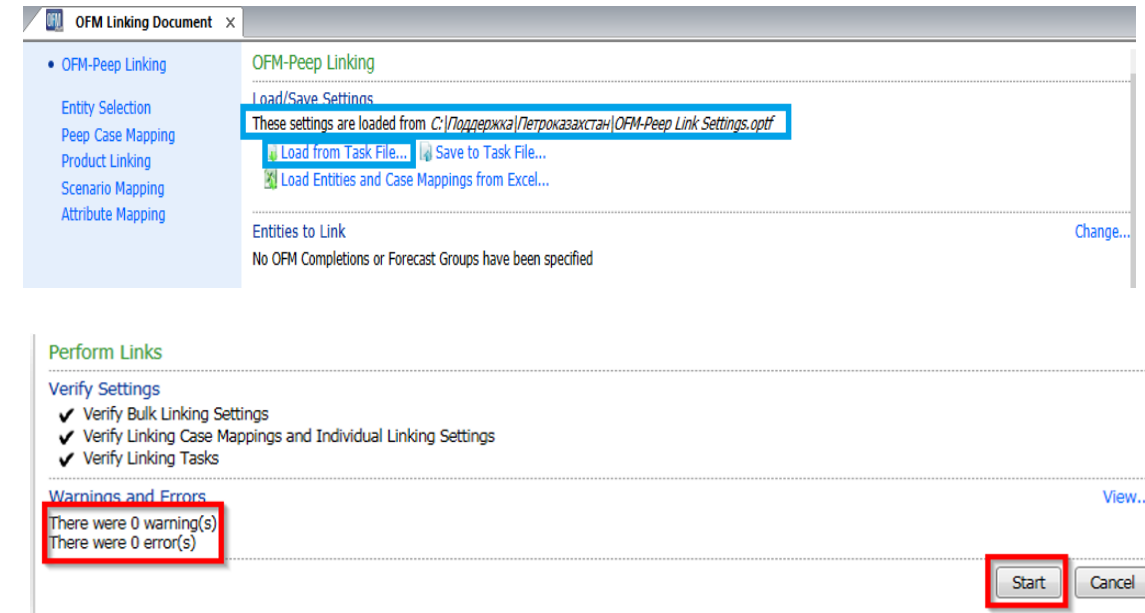
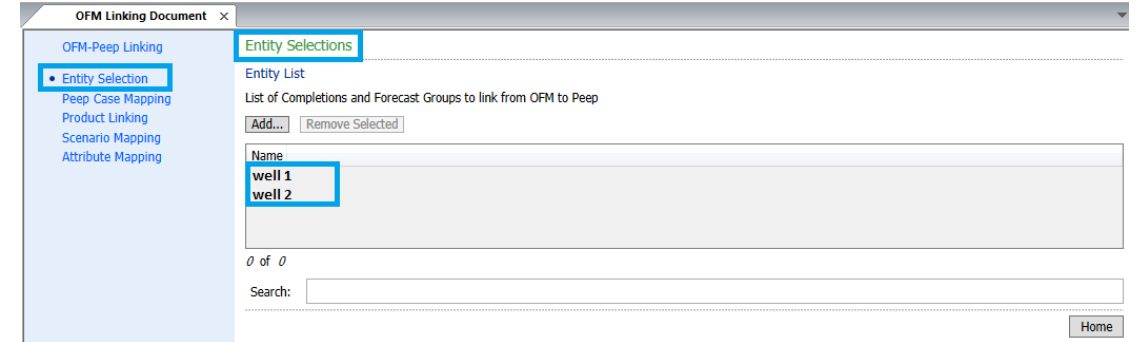
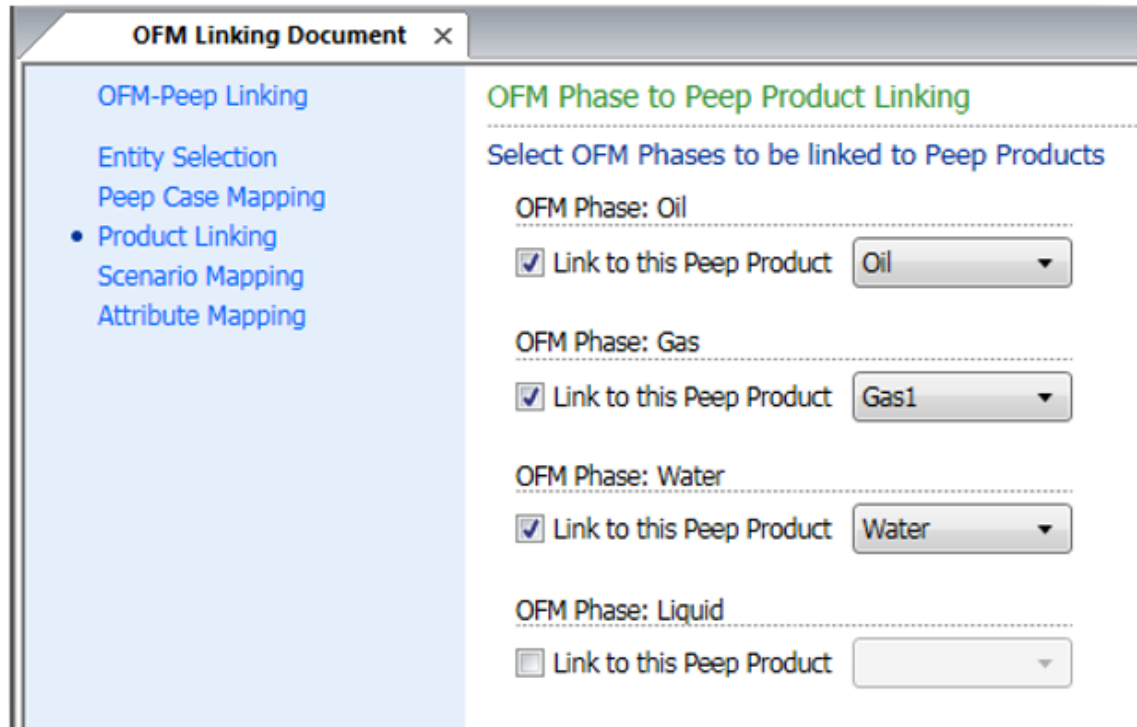
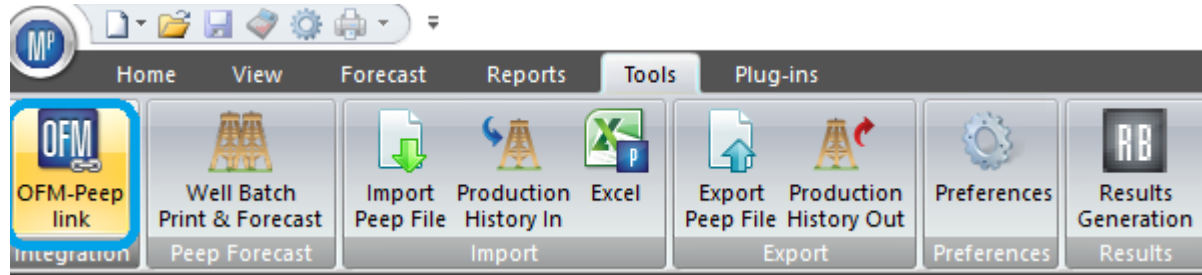
1. Data exchange via email
2. Additional job needs to be done by engineers to prepare data for economists
3. Economists need to reformat engineers data to prepare for use
4. Extensive amount of manual work involved
5. Separate database for each oilfield

# Architecture – adopted solution





# Direct automated OFM-PEEP linking



# Advantages of the new workflow

1. Single space where production forecast data is stored
2. Engineers do only their job – additional work is not required
3. Economists get production forecasts directly in Merak – formatting is not required
4. Single database for all oilfields

# Economical analysis Merak: PEEP

Peep Version 2017.1 - BEP OFX 2020 @65\_380\_F [Case]

Home View Forecast Reports Tools Plug-ins

Go to report: BEP(Plugin)

Report navigation: Previous Page, Next Page, Zoom In, Zoom Out

Column display: Real, Nominal

Report Unit settings: Units: <Document's Units>, Scale: <Document's Scaling>

Calculate, Export

Case documents: All Cases (2748 D...), no value, no value, no val..., no v...

BEP OFX 2020 @65\_380\_F [Case]

BEPToolPlugin

Расчет точки безубыточности

Проекты

- BEP OFX 2020 @65\_380\_F

Parameter	Value	Units	Category
Analysis Quarter	Q2		Petrokazakhstan
Analysis Type	BEP		Petrokazakhstan
Analysis Year	BEP		Petrokazakhstan
BEP NPV Price	BEP AFE post-completion		
BEP NPV Vol	Drilling new well analysis		
Case Version	OFM		Petrokazakhstan
Field	Other requests		Petrokazakhstan
Legal Entity	Remaining value		Petrokazakhstan
	PKKR		Petrokazakhstan

# Economical analysis in Merak: BEP

**BEP** – define the minimum required production rate for a new drilling well.

- calculating for each oil field
- to cover investments related to drilling well (drilling and infrastructure)

**BEP(Plugin)**  
BEP OFX 2020 @65\_380\_F  
(Nominal values)

BEP Plugin  
BEP NPV Price  
BEP NPV VOL 0.999999971530346

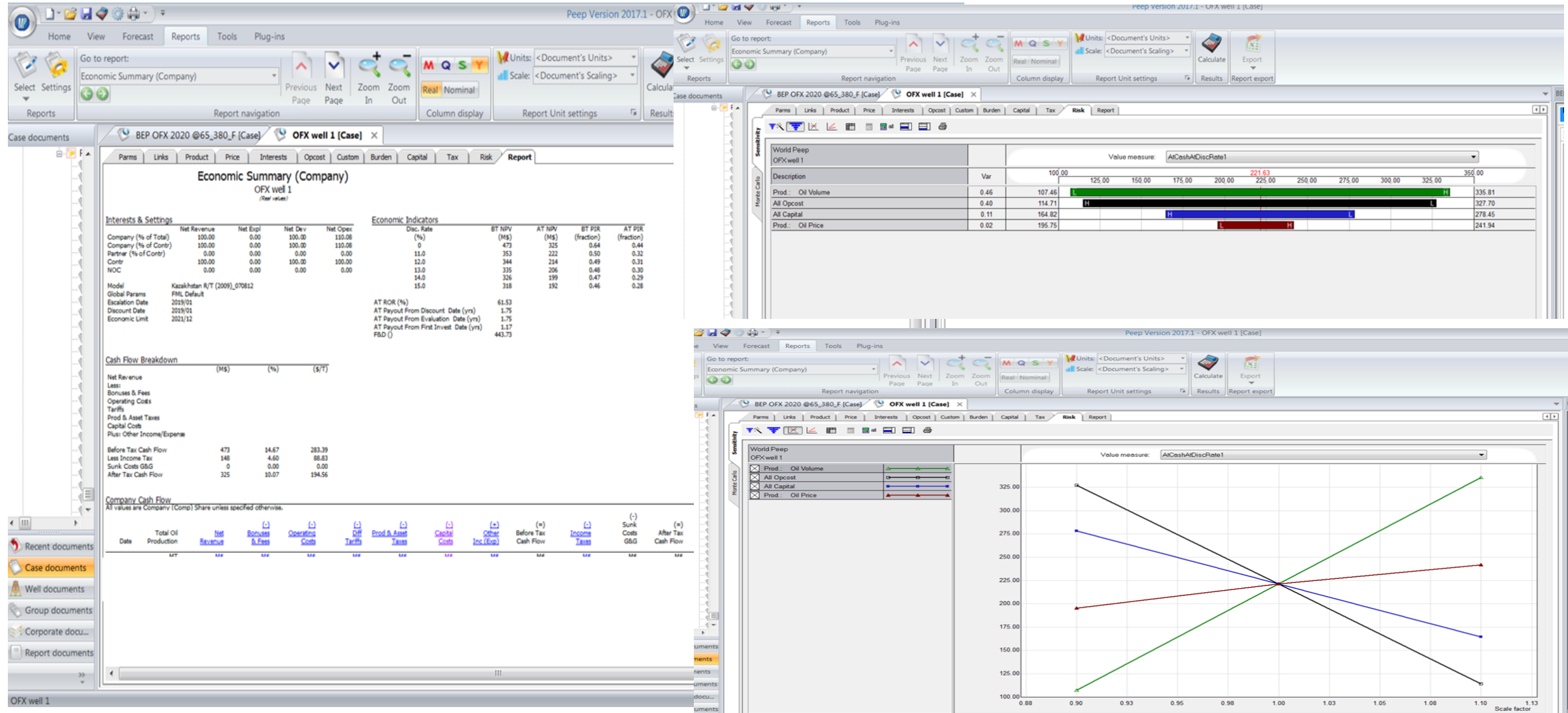
Test BEP Values

Date	Oil Rate	Oil Volume	AT NPV @DiscRate1
	T/d	MT	M\$
2020(12)	10.85	3.85	-226
2021(12)	4.91	1.74	177
2022(12)	2.21	0.78	49
Total	5.99	6.37	0

Date	Oil Number of Wells	Oil Rate T/d	Oil Volume MT (7.10)	Oil Density Degrees API
2020(12)	1.00	10.85	3.97	42.76
2021(12)	1.00	4.91	1.79	42.76
2022(12)	1.00	2.21	0.81	42.76
2023(12)	1.00	1.00	0.36	42.76
2024(12)	1.00	0.45	0.16	42.76
2025(12)	0.00	0.00	0.00	42.76
2026(12)	0.00	0.00	0.00	42.76
2027(12)	0.00	0.00	0.00	42.76
2028(12)	0.00	0.00	0.00	42.76
2029(12)	0.00	0.00	0.00	42.76
2030(12)	0.00	0.00	0.00	42.76
2031(12)	0.00	0.00	0.00	42.76
2032(12)	0.00	0.00	0.00	42.76
2033(12)	0.00	0.00	0.00	42.76
2034(12)	0.00	0.00	0.00	42.76
2035(12)	0.00	0.00	0.00	42.76
2036(12)	0.00	0.00	0.00	42.76
2037(12)	0.00	0.00	0.00	42.76
2038(12)	0.00	0.00	0.00	42.76
2039(12)	0.00	0.00	0.00	42.76
2040(12)	0.00	0.00	0.00	42.76
2041(12)	0.00	0.00	0.00	42.76
2042(12)	0.00	0.00	0.00	42.76
2043(12)	0.00	0.00	0.00	42.76
2044(12)	0.00	0.00	0.00	42.76

# Economical analysis in Merak: Project analysis



# Executive Summary

This project allowed:

1. Eliminate manual work and related human factor
2. Decrease time for expenditure authorizations from 4 days to < 1 day
3. Save additional time for deep economic analysis at well level
4. Speed up overall budget planning process
5. Make a well-by-well decision

Thank you!  
Questions?