Petrel Guru: from geological expertise automation to prompt scientific methodological assistance

Rustam Faizov
Geologist
Gazpromneft Science & Technology Center

What's Next?

SIS Global Forum 2017

September 13–15
Le Palais des Congrès de Paris

Schlumberger
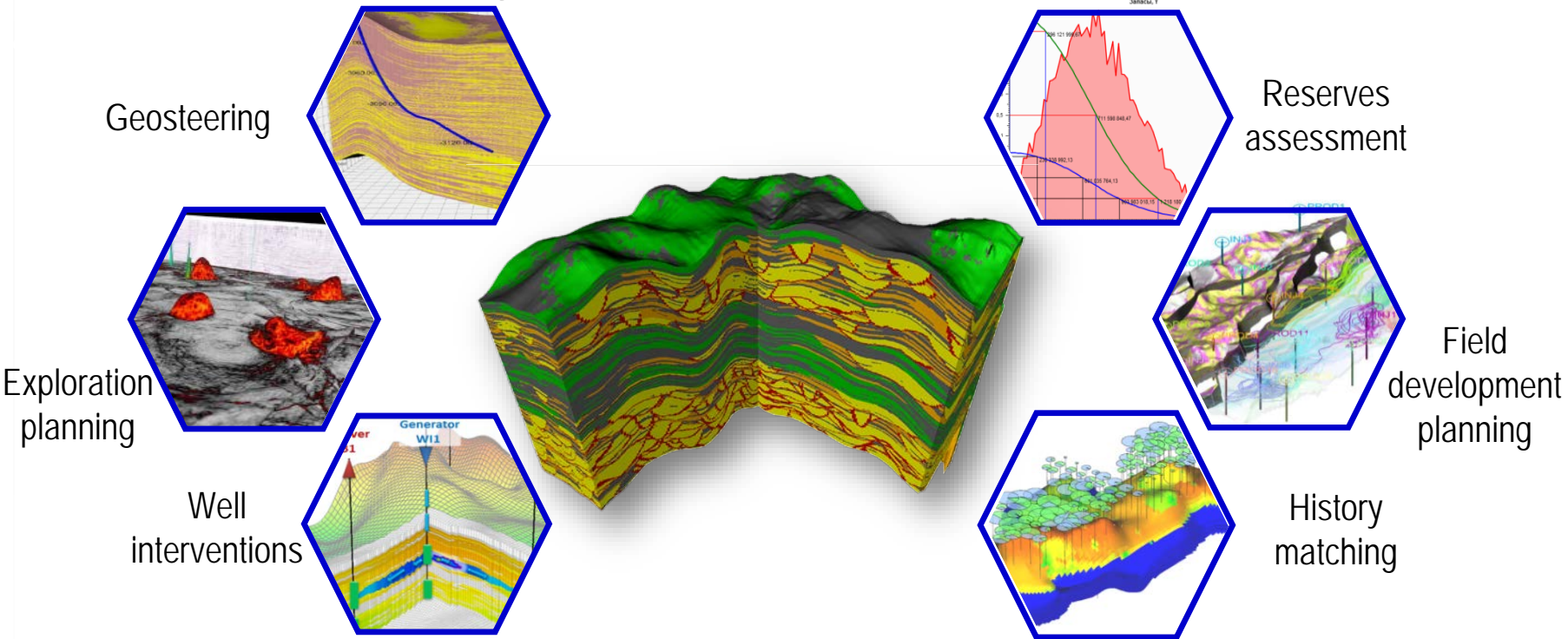
Content

➢ QC standardization and optimization

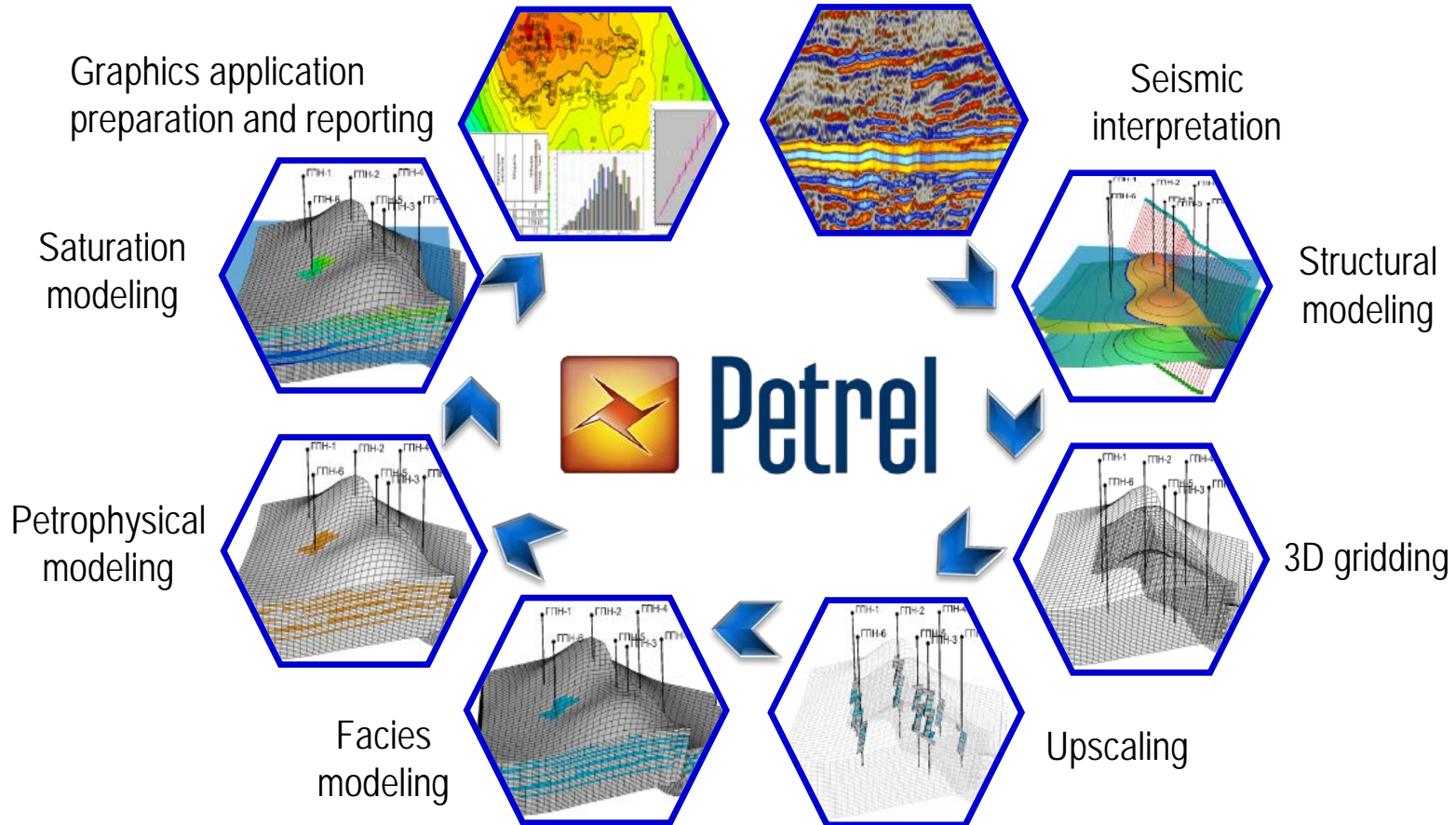➢ Automation of the report generation

➢ Corporate knowledge management system

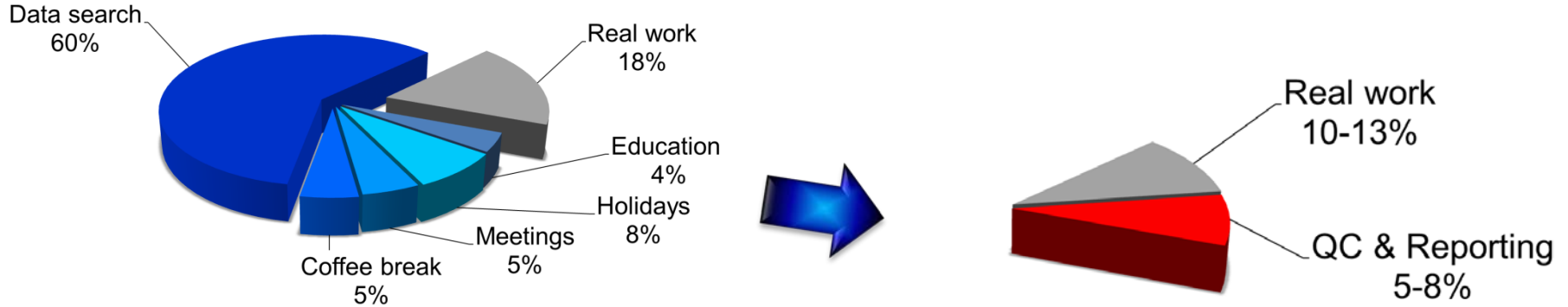# 3D geomodel is an important tool
for reservoir management and monitoring

Geosteering

Reserves assessment

Exploration planning

Field development planning

Well interventions

History matching

3D geological modeling process

Graphics application preparation and reporting

Seismic interpretation

Saturation modeling

Structural modeling

Petrophysical modeling

3D gridding

Facies modeling

Upscaling

Factors impacting on geomodel quality

➢ Volume and quality of input data

➢ Software functionality

➢ Authors experience

➢ Error detection on early steps of geological modeling

➢ Consistent approach for 3D geological modeling and its quality control

Routine in geoscientist work

Data search 60%
Real work 18%
Education 4%
Holidays 8%
Meetings 5%
Coffee break 5%

Real work 10-13%
QC & Reporting 5-8%

Luca Cosentino. Integrated Reservoir Studies. 2001

KEY PROBLEMS

Time-consuming

Human errors

Misreading of uniform requirements

Focused specialization of application software

ADAPT

Wasteful attitude to knowledge
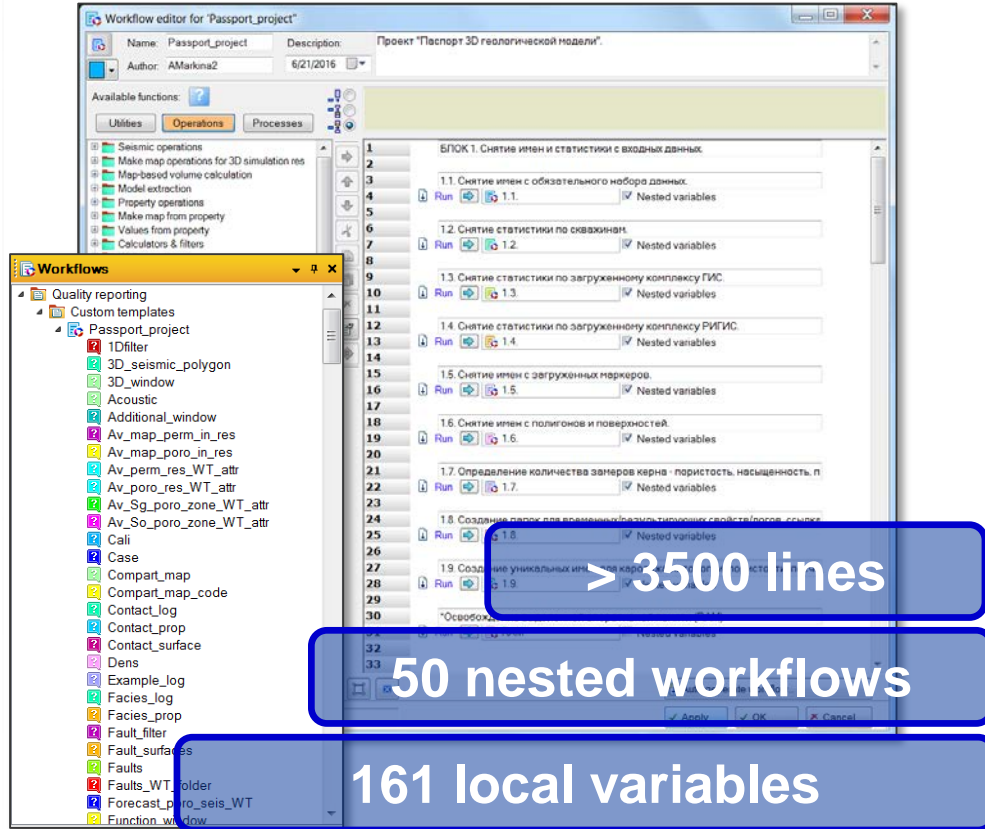
3D model passport
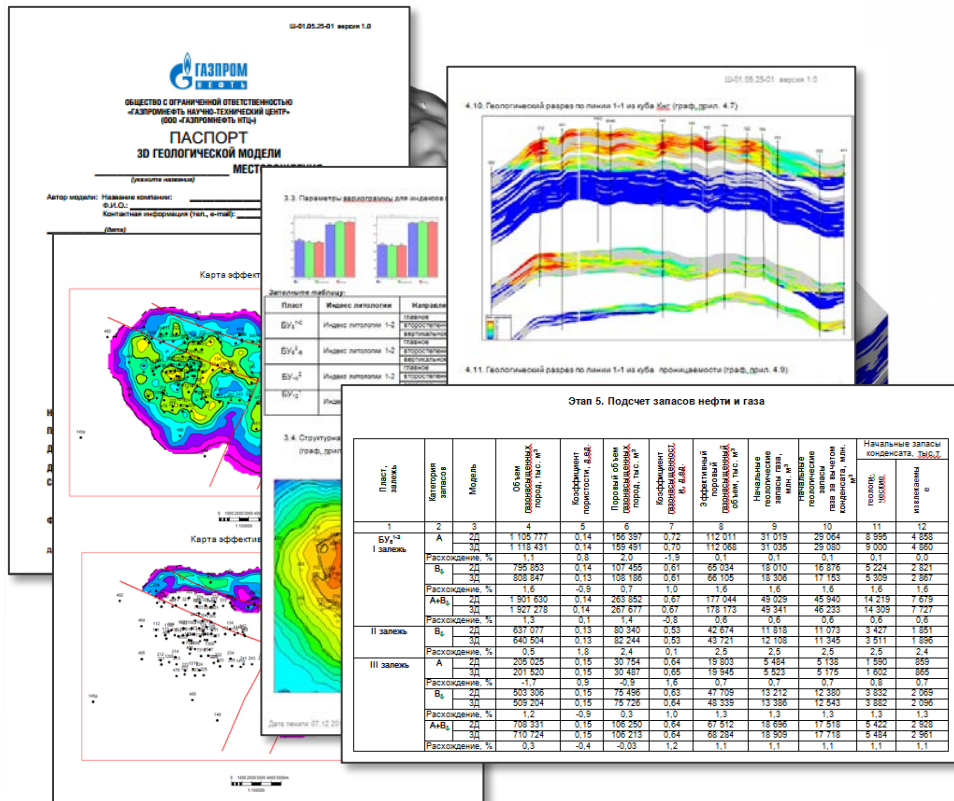
Passport content:

➤ Overview

➤ Histograms and cross-plots

➤ Maps and geological cross-sections

➤ Tables

3D model passport automatic preparation workflow

WORKFLOW parts

- Input data analysis
- 3D grid analysis
- Structural modeling analysis
- Facies modeling analysis
- Petrophysical modeling analysis
- Reserves calculation
- Visualization
- Report generation

> 3500 lines

50 nested workflows

161 local variables

Test & Report Manager

Test & Report Manager is the main interface of the Quality reporting module.

Workflow + report template

Data entry. Test generation

Completed reports

3D model passport

- ≈ 80% of 3D model passport generation were automated

  - Data initialization
  - Calculation of object's statistical parameters
  - Mapping
  - Comparison of well data and geological model outputs

3D model passport

- ≈ 80% of 3D model passport generation were automated

  - Data initialization
  - Calculation of object's statistical parameters
  - Mapping
  - Comparison of well data and geological model outputs

- User-friendly interface

3D model passport

- ≈ 80% of 3D model passport generation were automated

  - Data initialization
  - Calculation of object's statistical parameters
  - Mapping
  - Comparison of well data and geological model outputs

- User-friendly interface

- Graphics application formatting in accordance with requirements

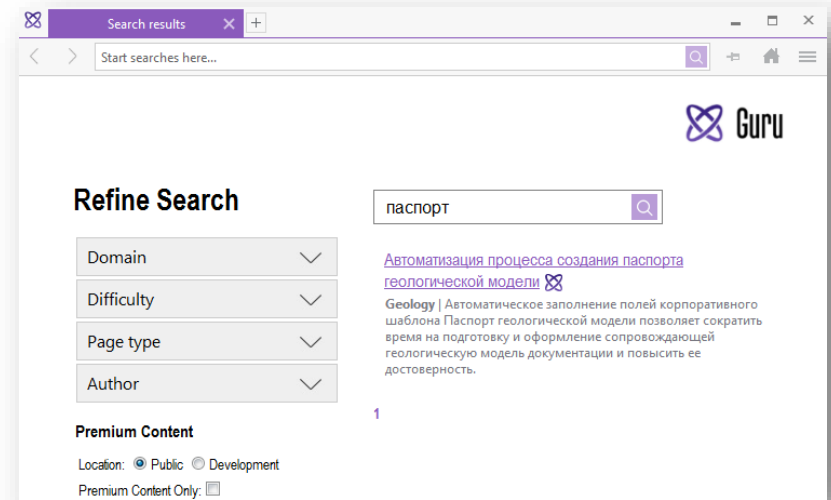# 3D model passport

- ≈ 80% of 3D model passport generation were automated

  - Data initialization
  - Calculation of object's statistical parameters
  - Mapping
  - Comparison of well data and geological model outputs

- User-friendly interface

- Graphics application formatting in accordance with requirements

- Quick access

Uniqueness

Petrel Guru

- Powerful tool for automatic report generation

- Context help

- Platform for knowledge storage

Corporate knowledge management system in Gazprom Neft

Refine Search

- Domain
- Difficulty
- Page type
- Author

- Schlumberger
- ГКЗ
- Dmitry Kremnev
- Rustam Faizov
- Aleksey Sizykh
- Руслан Гизатуллин
- Дарья Жигулина
- Schlumberger Russia
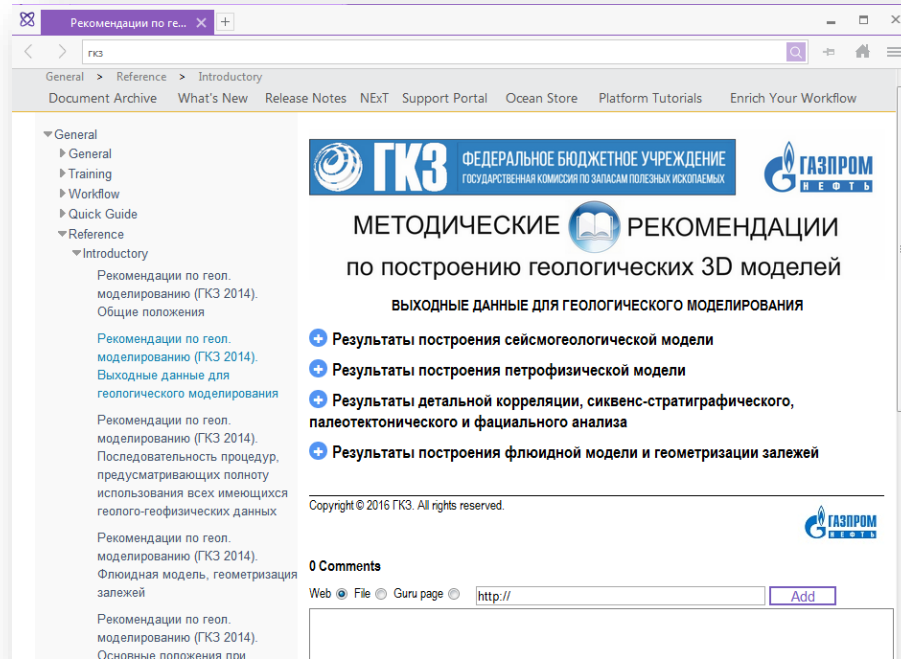- Оксана Горбовская

X² Theory Page

Quick Guide

73 articles

Quality Check

General

Workflow

Corporate knowledge management system in Gazprom Neft

- Guidance document

State Commission for Reserves, Moscow, 2014

FUNCTION:

- *"…quality improvement of geomodels, which are provided to State Commission for Reserves…"*

Corporate knowledge management system in Gazprom Neft

- **Guidance document**

M-01.05.23-03 version 1.0, 2015
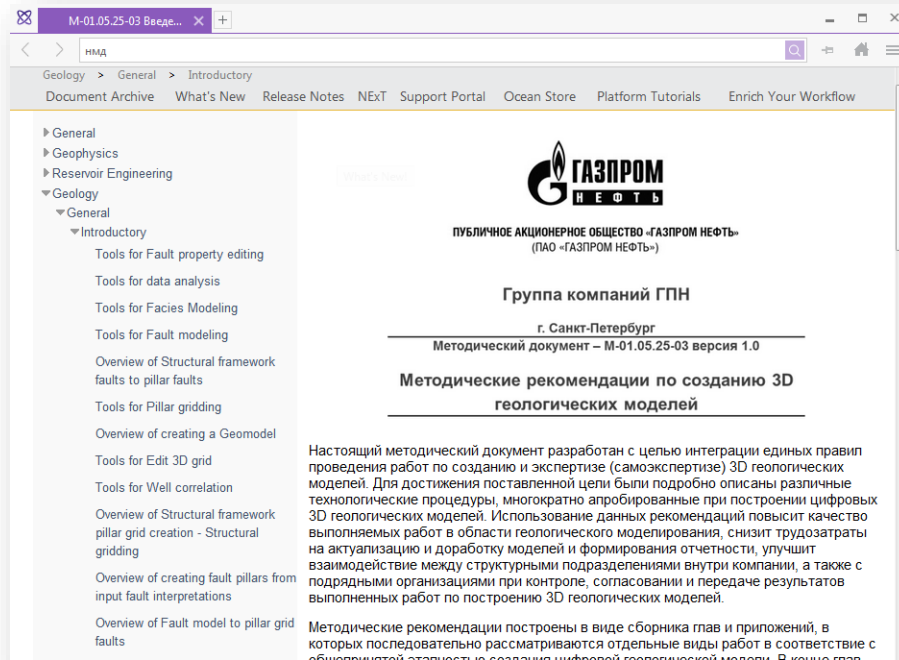
FUNCTION:

- Integraton of uniform rules in 3D geomodels generation and its expertise
- Quality improvement in geological modeling process
- Decreasing labor costs for reporting and geomodel update and correction
- Interaction improvement between departments and contracting organizations

Corporate knowledge management system in Gazprom Neft

- Checklists
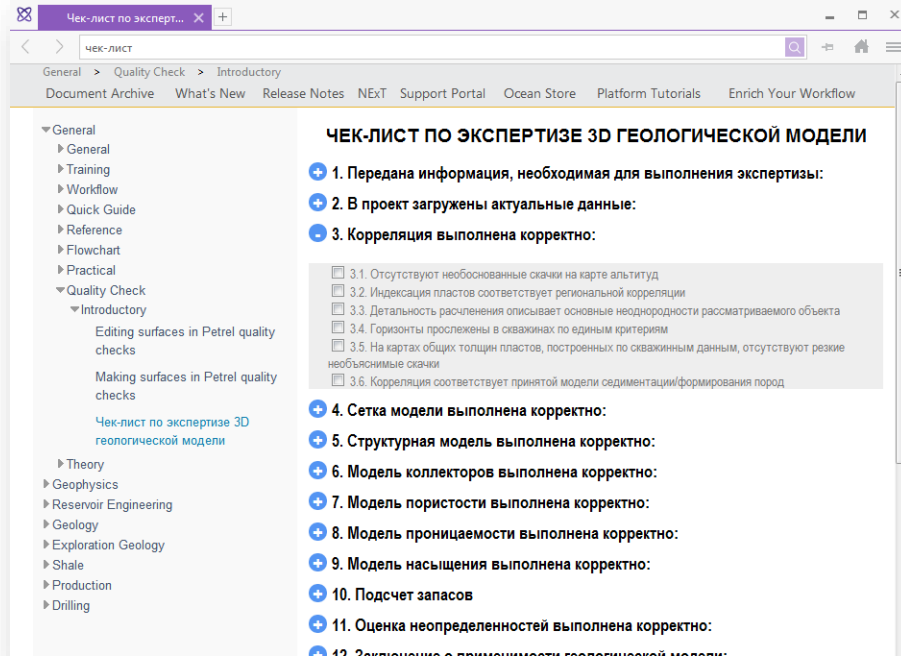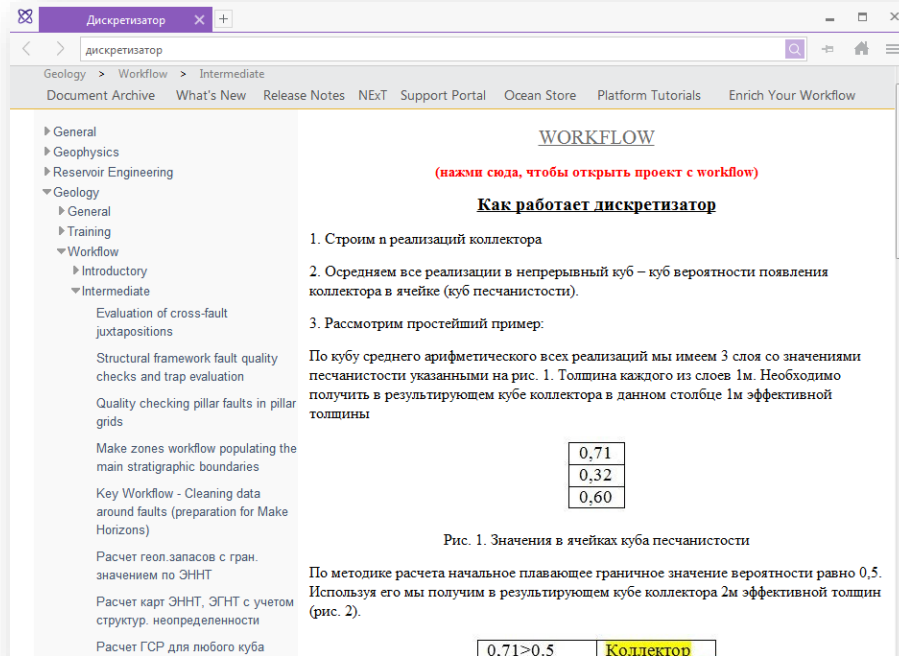
FUNCTION:

- Memo, which is accessible both for experts and authors of geomodels
- Results documentation

Corporate knowledge management system in Gazprom Neft

- Lifehacks, workflows

FUNCTION:

- Time cutting for searching answers and solutions
- Cautious knowledge storage

Corporate knowledge management system in Gazprom Neft

- Textbooks and educational content

FUNCTION:

- Training of new employees and recent graduates
- Studying of new procedures in geomodeling process, new functions in software.
- e-learning

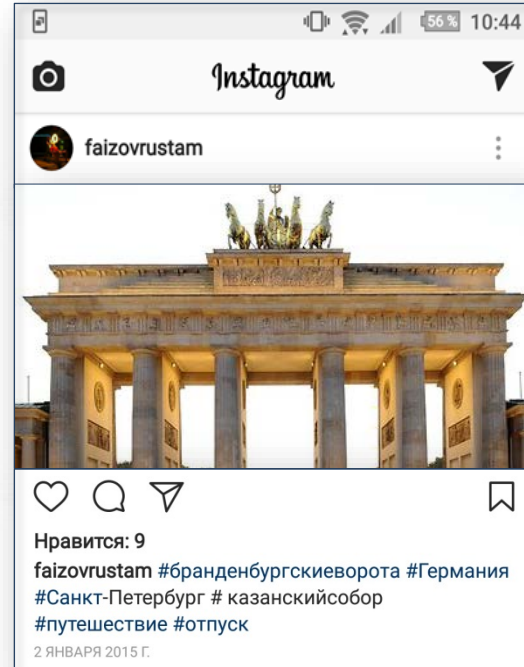# Corporate knowledge management system in Gazprom Neft

- ## User manual

FUNCTION:

- Implementation of own software
- Cross-software skills development

Corporate knowledge management system in Gazprom Neft

- Context information search

Corporate knowledge management system in Gazprom Neft

- Context information search

Achievements

Petrel Guru usage in Gazpromneft STC showed up the following advantages:

- **Quick report generation**

	without Petrel GURU	with Petrel GURU
First reporting	≈ 10 hours	≈ 1 hour
Subsequent reporting	≈ 5-10 hours	≈ 30 min.

- **High level of quality control**

- **Qualified answers and solutions**

Thanks for your attention!

Questions?