KEY TAKEAWAYS

• Well positioned to become a key player in digital transformation across our industries
• 25% investment of annual turnover in R&D 2017/18
• Taking important positions with our digital platform Kognifai and key application areas
KONGSBERG DIGITAL | AS IS

Maritime Simulations

Market leading simulator solutions, supporting everything from mandatory STCW training to advanced integrated crew training for maritime, naval and offshore industries.

NOK ~ 400 mill

Note: Total FTE inc. 11 admin

Oil&Gas

Real-time data aggregation, visualization and advisory solutions for all phases of well construction. Multiphase flow simulation solutions for engineering studies, operator training, and real-time production and flow assurance.

NOK ~ 300 mill

Renewables & Utilities

Products and services to the renewable energy sector in co-operation with eSmart Systems AS. Kongsberg EmPower - open platform with full integration of sensors and systems providing smart data and decision support.

NOK ~ 20 mill

Digital Platform

Kognifai – KONGSBERGS digital ecosystem. The ecosystem supports collaboration and knowledge-sharing between all companies that are part of it; customers, partners, KONGSBERG applications and 3rd party applications.

NOK ~ 30 mill

~ 750 MNOK
489 FTE
11 Locations
MARITIME SIMULATIONS  |  MARKET POSITION

- **MERCHANT**: 800 MNOK
  - Kongsberg: 30%
  - Others: 70%

- **OFFSHORE**: 100 MNOK
  - Kongsberg: 50%
  - Others: 50%

- **NAVY & COAST GUARD**: 1,000 MNOK
  - Kongsberg: 10%
  - Others: 90%
OIL & GAS | MARKET POSITION

DRILLING & WELLS

Top 20 operators by E&P spending 2017

- Saudi Aramco
- PetroChina
- Petrobras
- Shell
- ExxonMobil
- Gazprom
- Rosneft
- BP
- Chevron
- Statoil
- Total
- Pemex
- Eni
- Sinopec
- ConocoPhillips
- Sonatrach
- CNOOC
- PDVSA
- Lukoil
- Pars Oil & Gas

- 8 out of the top 20 E&P companies by spending are K-Spice and/or LedaFlow customers
- Over 400 installations
- Stronghold in the North Sea and the GoM

PRODUCTION ASSURANCE

Top 20 operators by E&P spending 2017

- Saudi Aramco
- PetroChina
- Petrobras
- Shell
- ExxonMobil
- Gazprom
- Rosneft
- BP
- Chevron
- Statoil
- Total
- Pemex
- Eni
- Sinopec
- ConocoPhillips
- Sonatrach
- CNOOC
- PDVSA
- Lukoil
- Pars Oil & Gas

- 11 out of the top 20 E&P companies by spending are SiteCom customers
- Over 10,000 drilling operations
- 40-50 large customers and 10,000 users
ANALYTICS MATURITY MODEL

descriptive reporting
what happened? what is happening?

business reporting scorecard

financial results staff performance scorecard

diagnostic discover & explore
why is it happening? where is the problem? what are the trends?

agile dashboards cause and effects

risk analysis workforce analytics

predictive forecast
what is likely to happen next?

predictive modeling regression analysis

strategy & growth analysis customer analytics

prescriptive anticipate
what should I do? what is the next best action?

artificial intelligence machine learning simulation

analytical applications with simulated outcome

the increasing value of analytics
APPLICATION AREAS

Platform as a Service (PaaS)

Condition Monitoring & Asset Lifecycle Optimization

Production Optimization

Digital Twins

Drones & Advanced Analytics

Cyber Security & Data Management
DIGITAL TWIN CONCEPT

FIELD WIDE DIGITAL TWIN
- Includes all aspects of all assets across a field

ASSET WIDE DIGITAL TWIN
- Includes all aspects of one specific asset, e.g. an unmanned production platform

SYSTEM WIDE DIGITAL TWIN
- Includes one specific system end to end, from input to output and everything in between

SUB-SYSTEM DIGITAL TWIN
- Includes a part of a system, a sub-system, e.g. a compressor train

COMPONENT DIGITAL TWIN
- Includes one isolated component and all its functions, for example a pump

Visualization & Interaction

Completeness of scope

Required organizational maturity

Digital platform

Data & Analytics

People & Processes

Engineering & Simulation
OUR DIGITAL TWIN CONCEPT INCLUDES

- Documentation of all equipments, design parameters and executed jobs on the asset
- Overview of procurement, logistics, supplier and cost items – enabling planning and budgeting
- A dynamic view of interdependencies and linkages between all tags on the asset - enabling simulation and optimization of key processes
- Maritime Operations
- The full 3D representation of structure and piping
- 3D representation, exact location and meta information about individual equipment / features
- Overview of the process facility, its linkages and key performance parameters
HIGHLIGHTS | 2017

- Signed contracts and partnerships ~100 MNOK
- Digital Twin & Production Optimization Projects
- Maritime Operations Offshore Wind Farms
- eSmart launched ThunderCloud
- SimWave Contract Awarded 87 MNOK
- Fred. Olsen SCADA Project
- Organization Build Up
- (KM/KDI)
WORLD CLASS
THROUGH PEOPLE, TECHNOLOGY AND DEDICATION