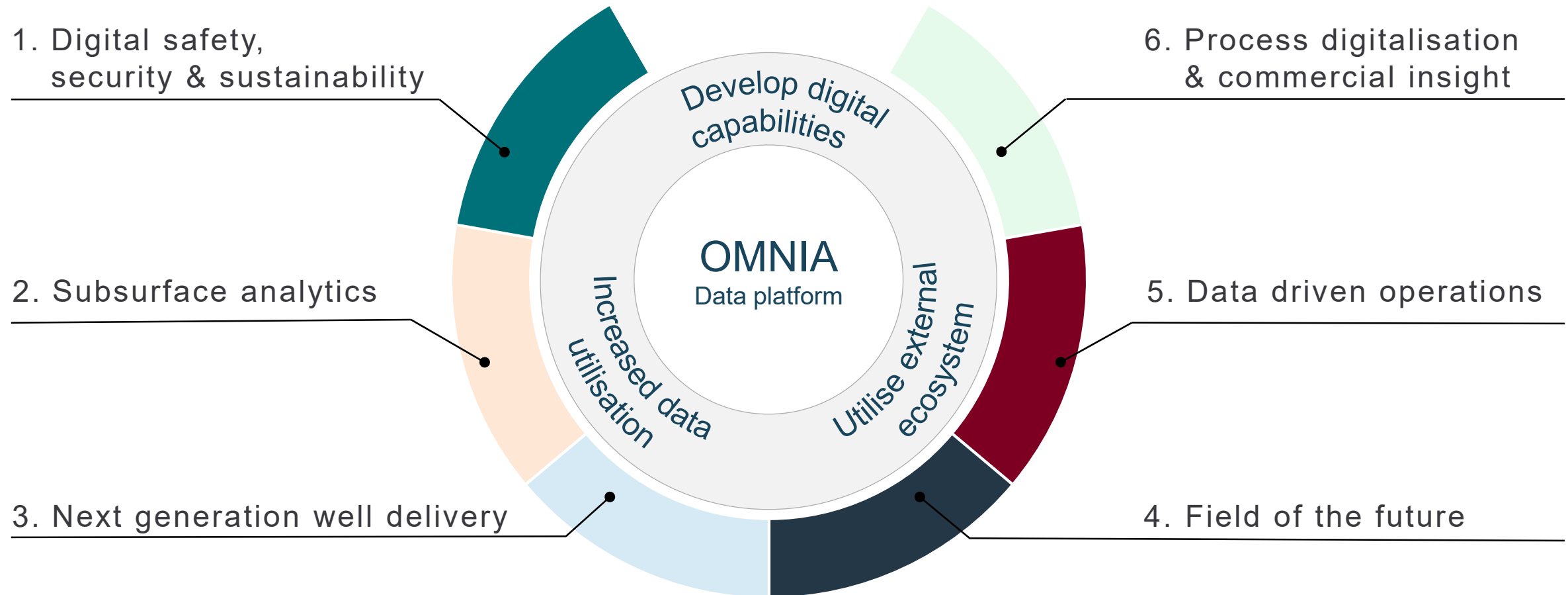# A data driven energy future - The ecosystem perspective

Nina Reiersgaard

Enterprise Data Management, Equinor ASA

equinor

A company wide digital roadmap
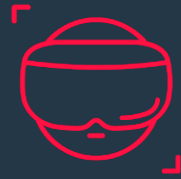

1. Digital safety, security & sustainability

2. Subsurface analytics

3. Next generation well delivery

4. Field of the future

5. Data driven operations

6. Process digitalisation & commercial insight

Develop digital capabilities

Increased data utilisation

Utilise external ecosystem

OMNIA
Data platform

The digital energy company

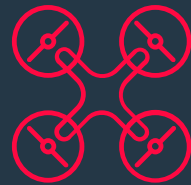**Changing the way we provide energy**

Always safe

High value

Low carbon

equinor

Make data available anytime, anywhere

Predicting and preventing safety and security incidents

The robots will make our work easier

Connecting minds and technology to become industry leader

<unit>g/cm3</unit><minDateTimeIndex>2009-01-19T09:10:05.000Z</minDateTimeIndex><maxDateTimeIndex>2009-
-19T15:31:32.000Z</maxDateTimeIndex><dataSource>General</dataSource><typeLogData>double</typeLogData>
uid="TEMP_DNI_RT"><mnemonic>TEMP_DNI_RT</mnemonic><unit>degC</unit><minDateTimeIndex>2009-01-
19T11:48:56.000Z</minDateTimeIndex><maxDateTimeIndex>2009-01-19T12:30:26.000Z</maxDateTimeIndex><curv
Temperature</curveDescription><dataSource>MWD</dataSource><typeLogData>double</typeLogData></logCurve
uid="GS_TV08"><mnemonic>GS_TV08</mnemonic><unit>m3</unit><minDateTimeIndex>2009-01-19T09:10:08.000Z
19T15:31:48.000Z</maxDateTimeIndex><curveDescription>MudPit Volume Average
8</curveDescription><dataSource>MudLog</dataSource><typeLogData>double</typeLogData></logCurveInfo><log
uid="NRPM_RT"><mnemonic>NRPM_RT</mnemonic><unit>unitless</unit><minDateTimeIndex>2009-01-19T09:10:53.0
01-19T14:10:20.000Z</maxDateTimeIndex><dataSource>General</dataSource><typeLogData>double</typeLogDat
uid="THKD"><mnemonic>THKD</mnemonic><unit>kkgf</unit><minDateTimeIndex>2009-01-19T09:10:05.000Z</minDa
19T15:31:47.000Z</maxDateTimeIndex><curveDescription>Total
Hookload</curveDescription><dataSource>Drilling</dataSource><typeLogData>double</typeLogData></logCurveInf
uid="PASS_NAME"><mnemonic>PASS_NAME</mnemonic><unit>unitless</unit><minDateTimeIndex>2009-01-
19T09:10:05.000Z</minDateTimeIndex><maxDateTimeIndex>2009-01-19T15:31:47.000Z</maxDateTimeIndex><curv
Name</curveDescription><dataSource>Drilling</dataSource><typeLogData>string</typeLogData></logCurveInfo><lo
uid="TOFF"><mnemonic>TOFF</mnemonic><unit>s</unit><minDateTimeIndex>2009-01-19T09:10:05.000Z</minDateT
19T15:31:47.000Z</maxDateTimeIndex><dataSource>General</dataSource><typeLogData>double</typeLogData><
uid="CRS4"><mnemonic>CRS4</mnemonic><unit>unitless</unit><minDateTimeIndex>2009-01-19T09:10:56.000Z</min
19T14:09:29.000Z</maxDateTimeIndex><dataSource>General</dataSource><typeLogData>double</typeLogData>
uid="GS_DMEA"><mnemonic>GS_DMEA</mnemonic><unit>m</unit><minDateTimeIndex>2009-01-19T09:10:08.000Z
19T15:31:48.000Z</maxDateTimeIndex><curveDescription>Total
Depth</curveDescription><dataSource>MudLog</dataSource><typeLogData>double</typeLogData></logCurveInfo>
uid="SRV_HX"><mnemonic>SRV_HX</mnemonic><unit>unitless</unit><minDateTimeIndex>1900-01-01T00:00:00.000
01T00:00:00.000Z</maxDateTimeIndex><dataSource>General</dataSource><typeLogData>double</typeLogData
uid="SRVAZI"><mnemonic>SRVAZI</mnemonic><unit>dega</unit><minDateTimeIndex>1900-01-01T00:00:00.000Z</
01T00:00:00.000Z</maxDateTimeIndex><dataSource>General</dataSource><typeLogData>double</typeLogData
uid="GS_G_NC4"><mnemonic>GS_G_NC4</mnemonic><unit>ppm</unit><minDateTimeIndex>2009-01-19T09:10:12.
01-19T15:21:45.000Z</maxDateTimeIndex><curveDescription>Nor-butane
(NC4)</curveDescription><dataSource>GeoService</dataSource><typeLogData>double</typeLogData></logCurvel
uid="TEFNEG"><mnemonic>TEFNEG</mnemonic><unit>dega</unit><minDateTimeIndex>2009-01-19T09:10:20.000Z</
19T14:09:44.000Z</maxDateTimeIndex><dataSource>General</dataSource><typeLogData>double</typeLogData></
uid="A40H_UNC_RT"><mnemonic>A40H_UNC_RT</mnemonic><unit>ohm.m</unit><minDateTimeIndex>2009-01-
19T09:10:11.000Z</minDateTimeIndex><maxDateTimeIndex>2009-01-19T14:10:08.000Z</maxDateTimeIndex><curv
Resistivity 40-in. at 2 MHz</curveDescription><dataSource>IMP_ARC</dataSource><typeLogData>double</typeLogD
uid="ANGLX"><mnemonic>ANGLX</mnemonic><unit>dega</unit><minDateTimeIndex>2009-01-19T11:49:26.000Z</m
19T12:30:56.000Z</maxDateTimeIndex><dataSource>General</dataSource><typeLogData>double</typeLogData>
uid="SGY"><mnemonic>SGY</mnemonic><unit>m/s2</unit><minDateTimeIndex>2009-01-19T11:49:05.000Z</minDate
19T12:30:32.000Z</maxDateTimeIndex><curveDescription>Survey raw grav
transax</curveDescription><dataSource>Survey</dataSource><typeLogData>double</typeLogData></logCurveInfo>
uid="SDEP_CONT_RT"><mnemonic>SDEP_CONT_RT</mnemonic><unit>m</unit><minDateTimeIndex>2009-01-
19T09:10:05.000Z</minDateTimeIndex><maxDateTimeIndex>2009-01-19T15:31:47.000Z</maxDateTimeIndex><curv
Depth</curveDescription><dataSource>MWD</dataSource><typeLogData>double</typeLogData></logCurveInfo><l
uid="GS_CFIA"><mnemonic>GS_CFIA</mnemonic><unit>m3/min</unit><minDateTimeIndex>2009-01-19T09:10:08.00
01-19T15:31:48.000Z</maxDateTimeIndex><curveDescription>Cement flowrate In
(avg)</curveDescription><dataSource>GeoService</dataSource><typeLogData>double</typeLogData></logCurveln
uid="GS_DBTM"><mnemonic>GS_DBTM</mnemonic><unit>m</unit><minDateTimeIndex>2009-01-19T09:10:08.000Z
19T15:31:48.000Z</maxDateTimeIndex><curveDescription>Bit
Depth</curveDescription><dataSource>MudLog</dataSource><typeLogData>double</typeLogData></logCurveInfo>
19T14:09:53.000Z</maxDateTimeIndex><dataSource>General</dataSource><typeLogData>double</typeLogData>

Data

is the key to innovation

<unit>g/cm3</unit><minDateTimeIndex>2009-01-19T09:10:05.000Z</minDateTimeIndex><maxDateTimeIndex>2009-01-19T15:31:32.000Z</maxDateTimeIndex><dataSource>General</dataSource><typeLogData>double</typeLogData></logCurveInfo><logCurveInfo uid="TEMP_DNI_RT"><mnemonic>TEMP_DNI_RT</mnemonic><unit>degC</unit><minDateTimeIndex>2009-01-19T11:48:56.000Z</minDateTimeIndex><maxDateTimeIndex>2009-01-19T12:30:26.000Z</maxDateTimeIndex><curveDescription>MWD DNI Temperature</curveDescription><dataSource>MWD</dataSource><typeLogData>double</typeLogData></logCurveInfo><logCurveInfo uid="GS_TV08"><mnemonic>GS_TV08</mnemonic><unit>m3</unit><minDateTimeIndex>2009-01-19T09:10:08.000Z</minDateTimeIndex><maxDateTimeIndex>2009-01-19T15:31:48.000Z</maxDateTimeIndex><curveDescription>MudPit Volume Average 8</curveDescription><dataSource>MudLog</dataSource><typeLogData>double</typeLogData></logCurveInfo><logCurveInfo uid="NRPM_RT"><mnemonic>NRPM_RT</mnemonic><unit>unitless</unit><minDateTimeIndex>2009-01-19T09:10:53.000Z</minDateTimeIndex><maxDateTimeIndex>2009-01-19T14:10:20.000Z</maxDateTimeIndex><dataSource>General</dataSource><typeLogData>double</typeLogData></logCurveInfo><logCurveInfo uid="THKD"><mnemonic>THKD</mnemonic><unit>kkgf</unit><minDateTimeIndex>2009-01-19T09:10:05.000Z</minDateTimeIndex><maxDateTimeIndex>2009-01-19T15:31:47.000Z</maxDateTimeIndex><curveDescription>Total Hookload</curveDescription><dataSource>Drilling</dataSource><typeLogData>double</typeLogData></logCurveInfo><logCurveInfo uid="PASS_NAME"><mnemonic>PASS_NAME</mnemonic><unit>unitless</unit><minDateTimeIndex>2009-01-19T09:10:05.000Z</minDateTimeIndex><maxDateTimeIndex>2009-01-19T15:31:47.000Z</maxDateTimeIndex><curveDescription>Pass Name</curveDescription><dataSource>Drilling</dataSource><typeLogData>string</typeLogData></logCurveInfo><logCurveInfo uid="TOFF"><mnemonic>TOFF</mnemonic><unit>s</unit><minDateTimeIndex>2009-01-19T09:10:05.000Z</minDateTimeIndex><maxDateTimeIndex>2009-01-19T15:31:47.000Z</maxDateTimeIndex><dataSource>General</dataSource><typeLogData>double</typeLogData></logCurveInfo><logCurveInfo uid="CRS4"><mnemonic>CRS4</mnemonic><unit>unitless</unit><minDateTimeIndex>2009-01-19T09:10:56.000Z</minDateTimeIndex><maxDateTimeIndex>2009-01-19T14:09:29.000Z</maxDateTimeIndex><dataSource>General</dataSource><typeLogData>double</typeLogData></logCurveInfo><logCurveInfo uid="GS_DMEA"><mnemonic>GS_DMEA</mnemonic><unit>m</unit><minDateTimeIndex>2009-01-19T09:10:08.000Z</minDateTimeIndex><maxDateTimeIndex>2009-01-19T15:31:48.000Z</maxDateTimeIndex><curveDescription>Total Depth</curveDescription><dataSource>MudLog</dataSource><typeLogData>double</typeLogData></logCurveInfo><logCurveInfo uid="SRV_HX"><mnemonic>SRV_HX</mnemonic><unit>unitless</unit><minDateTimeIndex>1900-01-01T00:00:00.000Z</minDateTimeIndex><maxDateTimeIndex>1900-01-01T00:00:00.000Z</maxDateTimeIndex><dataSource>General</dataSource><typeLogData>double</typeLogData></logCurveInfo><logCurveInfo uid="SRVAZI"><mnemonic>SRVAZI</mnemonic><unit>dega</unit><minDateTimeIndex>1900-01-01T00:00:00.000Z</minDateTimeIndex><maxDateTimeIndex>1900-01-01T00:00:00.000Z</maxDateTimeIndex><dataSource>General</dataSource><typeLogData>double</typeLogData></logCurveInfo><logCurveInfo uid="GS_G_NC4"><mnemonic>GS_G_NC4</mnemonic><unit>ppm</unit><minDateTimeIndex>2009-01-19T09:10:12.000Z</minDateTimeIndex><maxDateTimeIndex>2009-01-19T15:21:45.000Z</maxDateTimeIndex><curveDescription>Nor-butane (NC4)</curveDescription><dataSource>GeoService</dataSource><typeLogData>double</typeLogData></logCurveInfo><logCurveInfo uid="TEFNEG"><mnemonic>TEFNEG</mnemonic><unit>dega</unit><minDateTimeIndex>2009-01-19T09:10:20.000Z</minDateTimeIndex><maxDateTimeIndex>2009-01-19T14:09:44.000Z</maxDateTimeIndex><dataSource>General</dataSource><typeLogData>double</typeLogData></logCurveInfo><logCurveInfo uid="A40H_UNC_RT"><mnemonic>A40H_UNC_RT</mnemonic><unit>ohm.m</unit><minDateTimeIndex>2009-01-19T09:10:11.000Z</minDateTimeIndex><maxDateTimeIndex>2009-01-19T14:10:08.000Z</maxDateTimeIndex><curveDescription>IMP/ARC Non-BHcorr Attenuation Resistivity 40-in. at 2 MHz</curveDescription><dataSource>IMP_ARC</dataSource><typeLogData>double</typeLogData></logCurveInfo><logCurveInfo uid="ANGLX"><mnemonic>ANGLX</mnemonic><unit>dega</unit><minDateTimeIndex>2009-01-19T11:49:26.000Z</minDateTimeIndex><maxDateTimeIndex>2009-01-19T12:30:56.000Z</maxDateTimeIndex><dataSource>General</dataSource><typeLogData>double</typeLogData></logCurveInfo><logCurveInfo uid="SGY"><mnemonic>SGY</mnemonic><unit>m/s2</unit><minDateTimeIndex>2009-01-19T11:49:05.000Z</minDateTimeIndex><maxDateTimeIndex>2009-01-19T12:30:32.000Z</maxDateTimeIndex><curveDescription>Survey raw grav transax</curveDescription><dataSource>Survey</dataSource><typeLogData>double</typeLogData></logCurveInfo><logCurveInfo uid="SDEP_CONT_RT"><mnemonic>SDEP_CONT_RT</mnemonic><unit>m</unit><minDateTimeIndex>2009-01-19T09:10:05.000Z</minDateTimeIndex><maxDateTimeIndex>2009-01-19T15:31:47.000Z</maxDateTimeIndex><curveDescription>Continuous Survey Depth</curveDescription><dataSource>MWD</dataSource><typeLogData>double</typeLogData></logCurveInfo><logCurveInfo uid="GS_CFIA"><mnemonic>GS_CFIA</mnemonic><unit>m3/min</unit><minDateTimeIndex>2009-01-19T09:10:08.000Z</minDateTimeIndex><maxDateTimeIndex>2009-01-19T15:31:48.000Z</maxDateTimeIndex><curveDescription>Cement flowrate In (avg)</curveDescription><dataSource>GeoService</dataSource><typeLogData>double</typeLogData></logCurveInfo><logCurveInfo uid="GS_DBTM"><mnemonic>GS_DBTM</mnemonic><unit>m</unit><minDateTimeIndex>2009-01-19T09:10:08.000Z</minDateTimeIndex><maxDateTimeIndex>2009-01-19T15:31:48.000Z</maxDateTimeIndex><curveDescription>Bit Depth</curveDescription><dataSource>MudLog</dataSource><typeLogData>double</typeLogData></logCurveInfo><logCurveInfo uid="GS_DRTM"><mnemonic>GS_DRTM</mnemonic><unit>m</unit><minDateTimeIndex>2009-01-19T09:10:08.000Z</minDateTimeIndex><maxDateTimeIndex>2009-01-19T15:31:48.000Z</maxDateTimeIndex><curveDescription>Lagged Total Depth</curveDescription><dataSource>MudLog</dataSource><typeLogData>double</typeLogData></logCurveInfo><logCurveInfo uid="TCHR"><mnemonic>TCHR</mnemonic><unit>unitless</unit><minDateTimeIndex>2009-01-19T09:10:12.000Z</minDateTimeIndex><maxDateTimeIndex>2009-01-19T15:21:45.000Z</maxDateTimeIndex><curveDescription>Time chrom sample</curveDescription><dataSource>MudLog</dataSource><typeLogData>double</typeLogData></logCurveInfo><logCurveInfo uid="HKLI"><mnemonic>HKLI</mnemonic><unit>kkgf</unit><minDateTimeIndex>2009-01-19T09:10:05.000Z</minDateTimeIndex><maxDateTimeIndex>2009-01-19T15:31:47.000Z</maxDateTimeIndex><dataSource>General</dataSource><typeLogData>double</typeLogData></logCurveInfo><logCurveInfo uid="ESD_RT"><mnemonic>ESD_RT</mnemonic><unit>g/cm3</unit><minDateTimeIndex>2009-01-19T11:49:17.000Z</minDateTimeIndex><maxDateTimeIndex>2009-01-19T12:30:47.000Z</maxDateTimeIndex><curveDescription>Equivalent Static Density, Real-Time</curveDescription><dataSource>General</dataSource><typeLogData>double</typeLogData></logCurveInfo><logCurveInfo uid="SRV_GX"><mnemonic>SRV_GX</mnemonic><unit>unitless</unit><minDateTimeIndex>1900-01-01T00:00:00.000Z</minDateTimeIndex><maxDateTimeIndex>1900-01-01T00:00:00.000Z</maxDateTimeIndex><dataSource>General</dataSource><typeLogData>double</typeLogData></logCurveInfo><logCurveInfo uid="GS_CHKP"><mnemonic>GS_CHKP</mnemonic><unit>kPa</unit><minDateTimeIndex>2009-01-19T09:10:08.000Z</minDateTimeIndex><maxDateTimeIndex>2009-01-19T15:31:48.000Z</maxDateTimeIndex><curveDescription>Casing (choke) pressure</curveDescription><dataSource>GeoService</dataSource><typeLogData>double</typeLogData></logCurveInfo><logCurveInfo uid="SHY"><mnemonic>SHY</mnemonic><unit>nT</unit><minDateTimeIndex>2009-01-19T11:49:11.000Z</minDateTimeIndex><maxDateTimeIndex>2009-01-19T12:30:38.000Z</maxDateTimeIndex><curveDescription>Survey raw mag transverse</curveDescription><dataSource>Survey</dataSource><typeLogData>double</typeLogData></logCurveInfo><logCurveInfo uid="TIME"><mnemonic>TIME</mnemonic><unit>s</unit><minDateTimeIndex>2009-01-19T09:10:05.000Z</minDateTimeIndex><maxDateTimeIndex>2009-01-19T15:31:48.000Z</maxDateTimeIndex><curveDescription>Time</curveDescription><typeLogData>date time</typeLogData></logCurveInfo><logCurveInfo uid="GS_HKLD"><mnemonic>GS_HKLD</mnemonic><unit>kkgf</unit><minDateTimeIndex>2009-01-19T09:10:08.000Z</minDateTimeIndex><maxDateTimeIndex>2009-01-19T15:31:48.000Z</maxDateTimeIndex><curveDescription>Weight On Hook</curveDescription><dataSource>MudLog</dataSource><typeLogData>double</typeLogData></logCurveInfo><logCurveInfo uid="RHX"><mnemonic>RHX</mnemonic><unit>unitless</unit><minDateTimeIndex>2009-01-19T09:10:26.000Z</minDateTimeIndex><maxDateTimeIndex>2009-01-19T14:09:53.000Z</maxDateTimeIndex><dataSource>General</dataSource><typeLogData>double</typeLogData></logCurveInfo><logCurveInfo uid="MBOT"><mnemonic>MBOT</mnemonic><unit>unitless</unit><minDateTimeIndex>2009-01-19T09:10:05.000Z</minDateTimeIndex><maxDateTimeIndex>2009-01-19T15:31:47.000Z</maxDateTimeIndex><curveDescription>On Bottom Status</curveDescription><dataSource>Drilling</dataSource><typeLogData>double</typeLogData></logCurveInfo><logCurveInfo uid="FVOC"><mnemonic>FVOC</mnemonic><unit>m3</unit><minDateTimeIndex>2009-01-19T14:50:21.000Z</minDateTimeIndex><maxDateTimeIndex>2009-01-19T15:31:48.000Z</maxDateTimeIndex><curveDescription>Fill/gain volume obs. (cum)</curveDescription><dataSource>Hydraulics</dataSource><typeLogData>double</typeLogData></logCurveInfo><logCurveInfo uid="SHKTOT_RT"><mnemonic>SHKTOT_RT</mnemonic><unit>unitless</unit><minDateTimeIndex>2009-01-19T11:49:29.000Z</minDateTimeIndex><maxDateTimeIndex>2009-01-19T12:30:56.000Z</maxDateTimeIndex><curveDescription>MWD Total Shocks</curveDescription><dataSource>MWD</dataSource><typeLogData>double</typeLogData></logCurveInfo>

equinor

2019

VOLVE

14 —————————
Years of experience on
CO_2 storage and handling

SLEIPNER

equinor

3000

Different data systems

OMNIA

Open Subsurface Data Universe

NCS Integrated operations centre

Annual reduction in CO_2 emissions

3.2 Million tonnes

by 2030

Increased value for production on NCS

2 Billion USD

2020-2025

Subsurface teams with
software developers

50%
Of Equinor's
data volume

Reservoir experience platform
scaled to over
20 assets

1

Scale up successfully

2

Reimagine the way
we work

3

Innovation together
with our ecosystems

A data driven energy future, the ecosystem perspective

Nina Reiersgaard

Enterprise Data Management, Equinor ASA