



Norsk Hydro Datasphere journey

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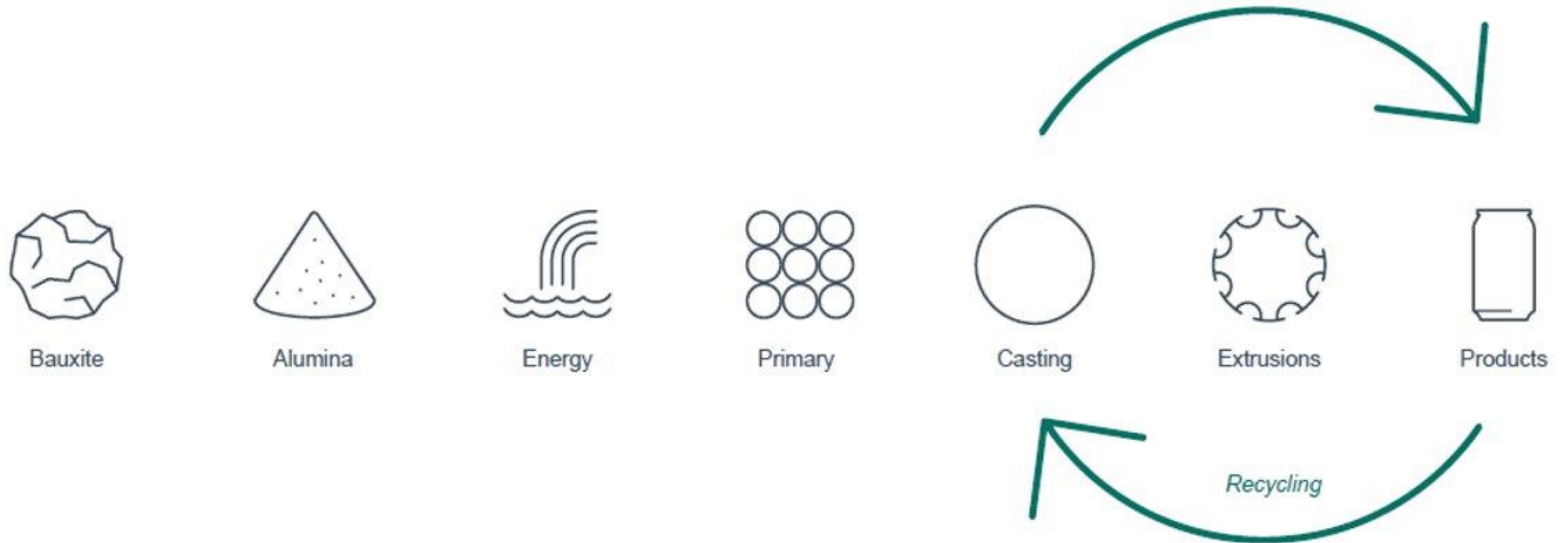
Agenda

- Hydro in a nutshell
- Original architecture before Datasphere
- Architecture with Datasphere
- Project progress
- The good, the bad and the ugly!



Hydro in a nutshell

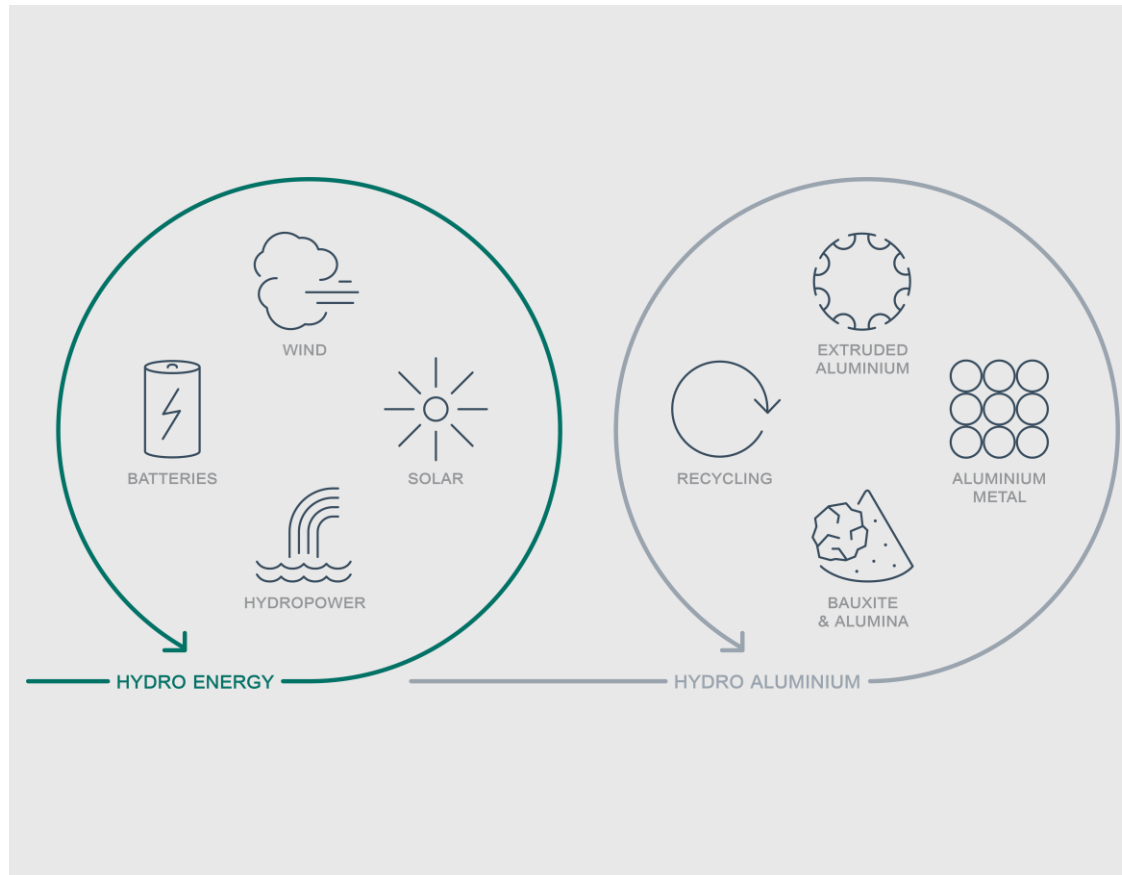
Hydro value chain



Building businesses for a more sustainable future



A leading industrial company with basis in renewable energy and aluminium



- Global provider of aluminium raw materials, products and solutions and of renewable energy
- First-class operations within renewable energy, raw materials, primary aluminium metal, extruded solutions and recycling
- 30,000 employees at 140 locations in 40 countries
- Market cap ~NOK 130 billion/ ~USD 15 billion^{*)}
- Annual revenues NOK 138 billion (2020)
- Included in Dow Jones Sustainability Indices, Global Compact 100, FTSE4Good

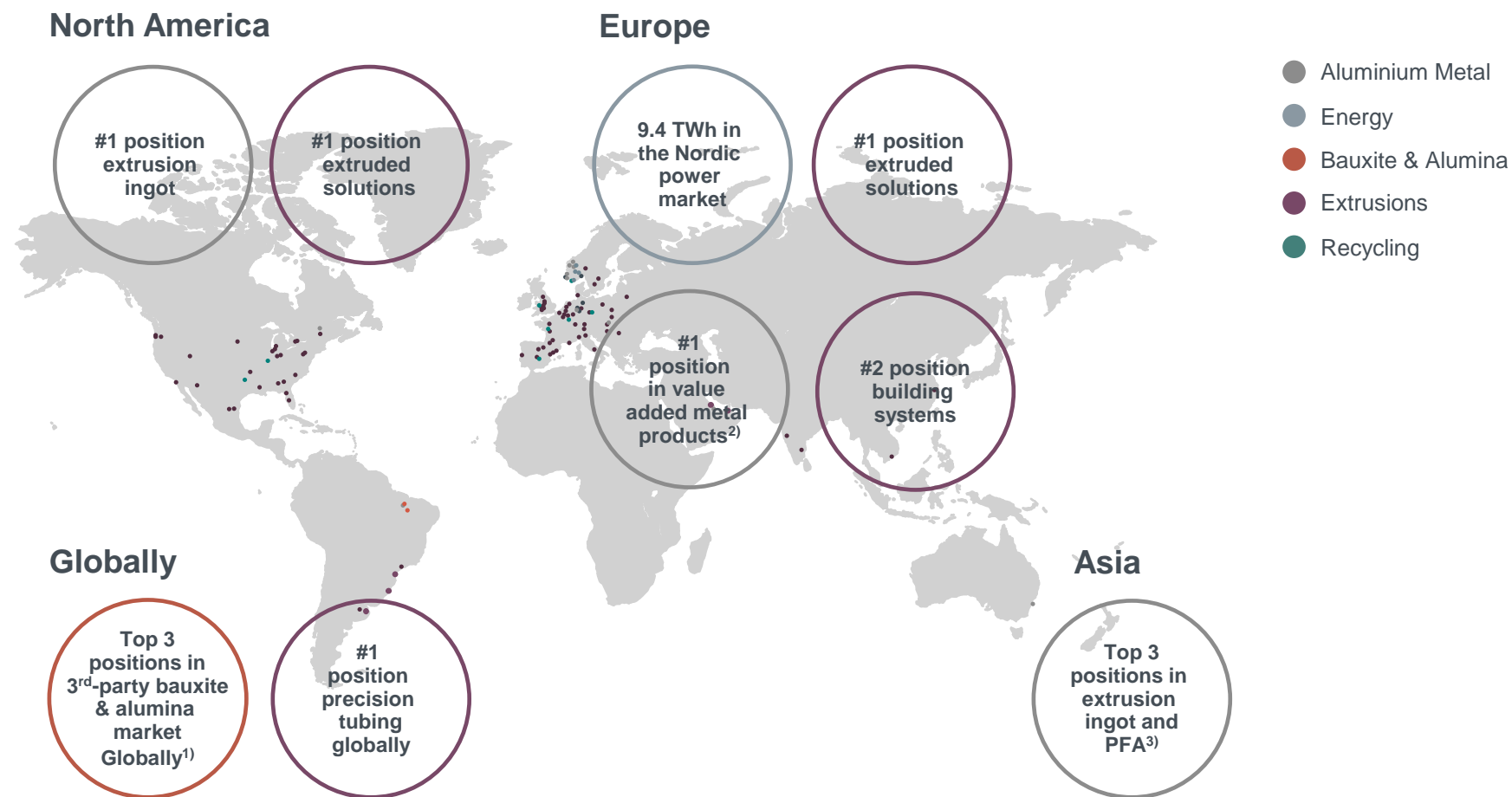
^{*)} 1) As per October, 2021

Global reach, local presence

Built on market understanding, customer closeness and competence

The aluminium and energy company

- High-quality bauxite and alumina production in Brazil
- Primary production in Norway, Germany, Qatar, Slovakia, Brazil, Canada, Australia
- 9.4 TWh captive hydropower production (operating 13.4 TWh renewables production)
- World leader in aluminium extruded profiles
- Remelting in the U.S., European recycling network
- Unparalleled technology and R&D organization



1) Outside China

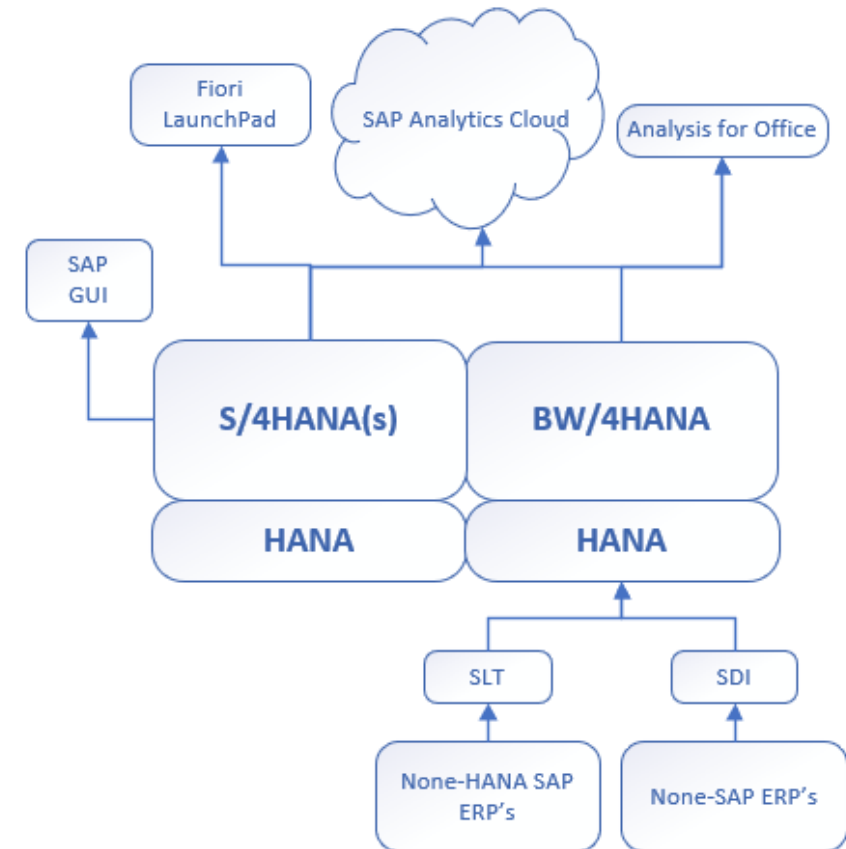
2) Extrusion ingot, sheet ingot, primary foundry alloys and wire rod

3) Primary Foundry Alloys

Original architecture
before Datasphere

Original architecture before Datasphere

- Hydro will leverage the power of both on-prem and cloud solutions
- Business processes and analytics is be done using S/4HANA
 - S/4HANA Analytics enables real-time operational analysis
- Consolidated and none-HANA solutions will use BW/4HANA
 - BW/HANA can run as a side-car for older SAP systems enabling real-time analytics
 - BW/HANA can consolidate data from multiple SAP systems in real-time
- State of the art analytics and planning tools
 - SAP Analytics Cloud (SAC)
 - Analysis for Office (AO)
- Common user management, authorizations and interfaces





Reasoning for SAP Datasphere

Add SAP DS to extend current functionality

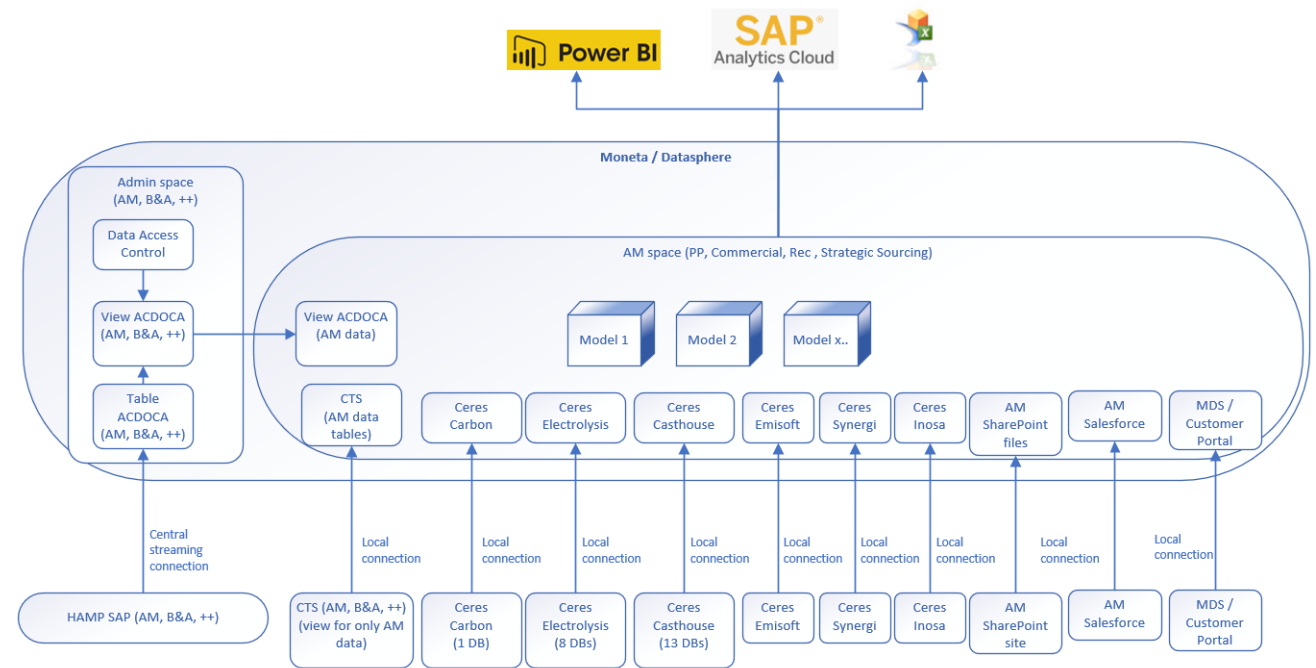
- Additional functionality with SAP Datasphere:
 - Skilled business users to model and develop in a secure and compliant environment
 - Tight integration to Azure services like SQL, data lake, O365 SharePoint, etc
 - Data science capabilities for advanced analysis and machine learning
 - Datasphere is a key component in the SAP Ecosystem being a data platform for cloud solutions like
 - Ariba
 - SuccessFactors
 - Concur
 - APM
 - Sustainability Footprint Management*
 - Etc.
 - Datasphere runs on SAP BTP tightly integrated with other components like Integrations, API Management, runtimes etc for keeping the core clean principle

Architecture with Datasphere

Architecture with Datasphere



- Our existing BW/4HANA system will continue to run, but all new solutions will be built in Datasphere
- All S/4HANA data flow into a central Admin space where we
 - Build reusable models that can be used by all business areas
 - Add row level security to filter out only the business areas data
 - Share the reusable models with the business area spaces
- In the business area space, the business users are “the king”
 - Professional analytics developers support them
- Business users can choose to use:
 - SAC or Power BI (import model only) for dashboards
 - SAP Analytics Cloud, add-in for Microsoft Office for Excel
 - Jupyter, Databricks, etc for data science (HANA Cloud connection)



Project progress

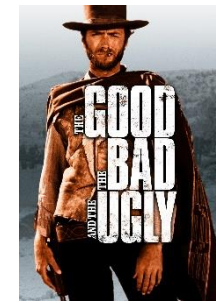
Project progress

- Hydro decided to implement SAP Datasphere as their data warehouse just before x-mas 2022
 - Evaluated against Azure Synapse, Databricks and Snowflake
- Implementation project started 01.01.2023:
 - Technical setup in Jan and Feb
 - First sprint start March (6 weeks sprints)
 - The project steering committee prioritize solutions to be developed from a backlog
 - Initial setup is a two-year project with cost of 16,3 MNOK
- One out of four main business areas running the implementation
 - Two waiting to start and one decided not to use Datasphere
- Solutions developed so far include the processes
 - Sales
 - Procurement and material movements
 - Finance
 - Production
 - Hedging



The good, the bad
and the ugly!

The good, the bad and the ugly!



The good!

- In general, Datasphere is REALLY REALLY GOOD!
- Real-time access to S/4HANA data and other sources
 - Re-use existing CDS view development
- Good integration to cloud sources like Azure SQL, Data Lake, SharePoint, etc
- Good self-service business user modelling environment
 - Both SQL and Python
- Very powerful dependency analyzer and analyzing lineage
- Tight integration to SAC and AfO
 - Also, Datasphere connector in Power BI (Beta)
- Integration to the BTP platform

The bad!

- Datasphere is still an immature platform missing
 - Load hierarchies from S/4HANA support
 - Advanced Process/Task chain functionality
 - Query variables (customer exits style)
- Both SQL and Python editors are light weight
- No Analysis for Office standard edition support for Analytical Models
 - Need to use SAC add-in for Microsoft Office
- No odata interface on the Analytical Model
 - Power BI can only consume depreciated Analytical Dataset
- It is close to impossible to get consultants with Datasphere experience!

The ugly!

- Instability in DP Agent for real-time replication from S/4HANA
 - Better now!
- Not possible to load and use hierarchies from S/4HANA!
- Some apps are not included in role / access concept (Data Marketplace, Data Sharing Cockpit, etc)
- No “folder” functionality to group objects in the modelling environment
 - Easily get chaos in modelling objects!

Thank you!



Hydro

Industries that matter