

VALE

Supply Chain Transformation

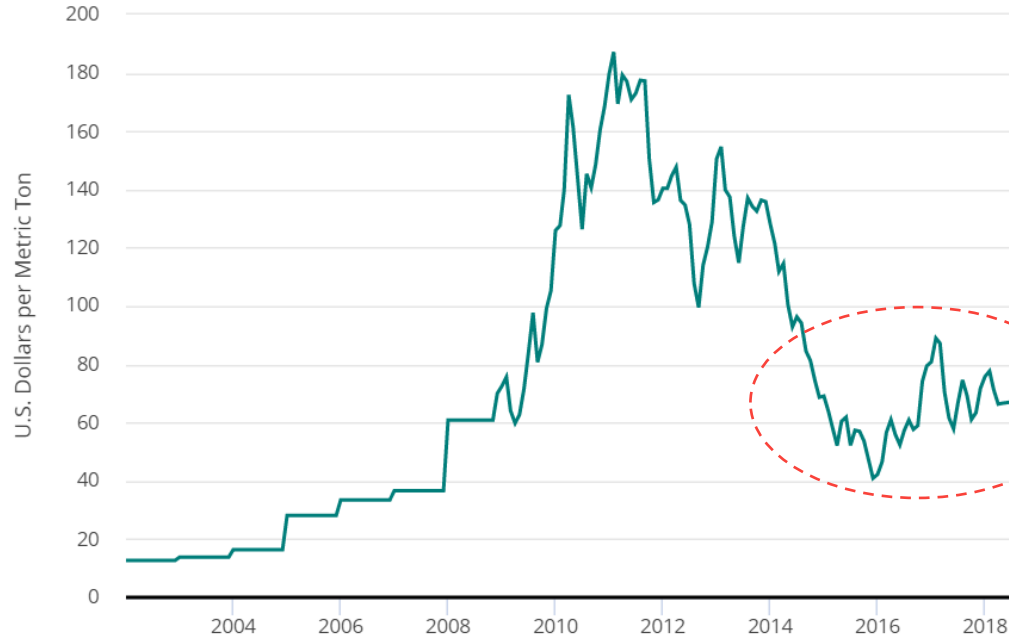
Integrated Operations Center Success Case

July, 2021



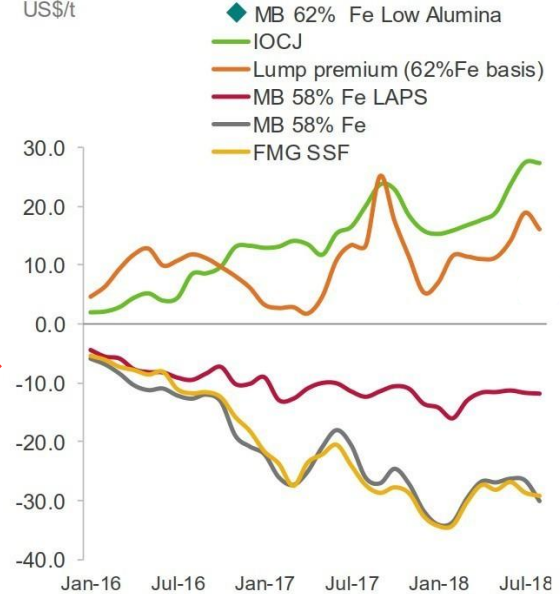
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Orchestration

Over the last decade, major changes drove the iron ore market towards a flight to quality, urging companies to rethink their competitiveness.



Premiums and discounts

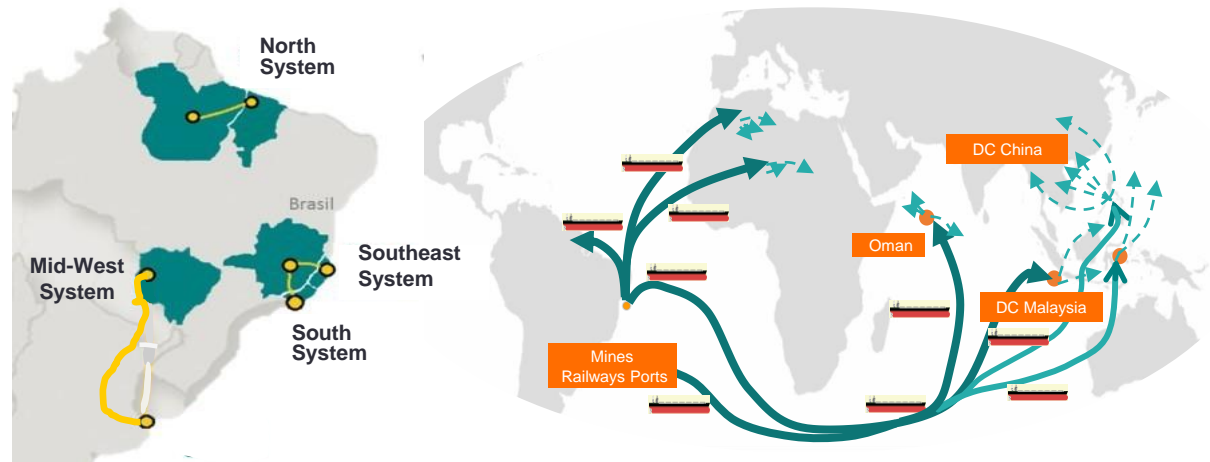
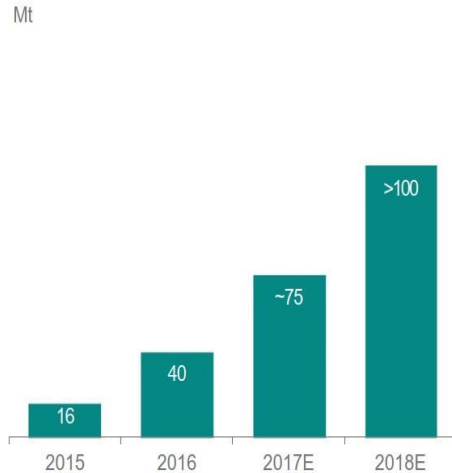
US\$/t



Vale reacted leveraging its blending strategy through a long and complex supply chain.

Global blended volume

Mt



22 Open pit mines



13 Pelletizing Plants



4 Rails
1 Waterway



4 Shipping Ports



18 Blending Ports

Establishing an IOC – Integrated Operations Center, launched in 2017, was an important value lever to enable Vale's business strategy.

IOC – Integrated Operations Center

Synchronize and optimize Vale's Iron Ore end-to-end value chain, enabling value-based decisions and maximizing margin

Key Value Opportunities

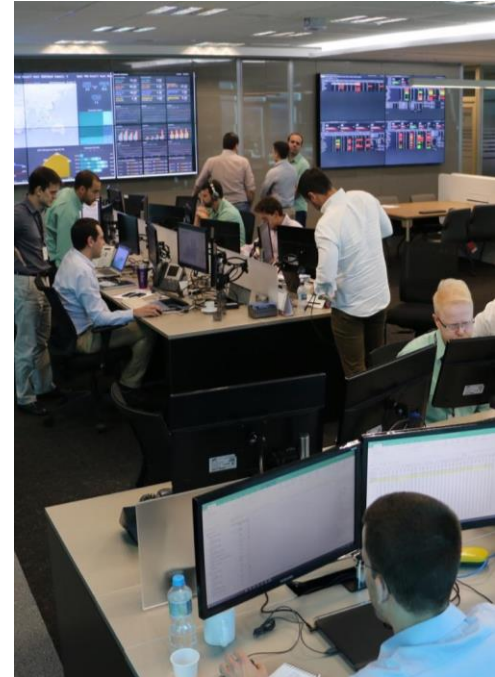
Leverage sales price realization and optimize quality management

Further improve sales and operations planning process

Increase productivity through synchronism

Further enhance vessel fleet, distribution and client fulfillment

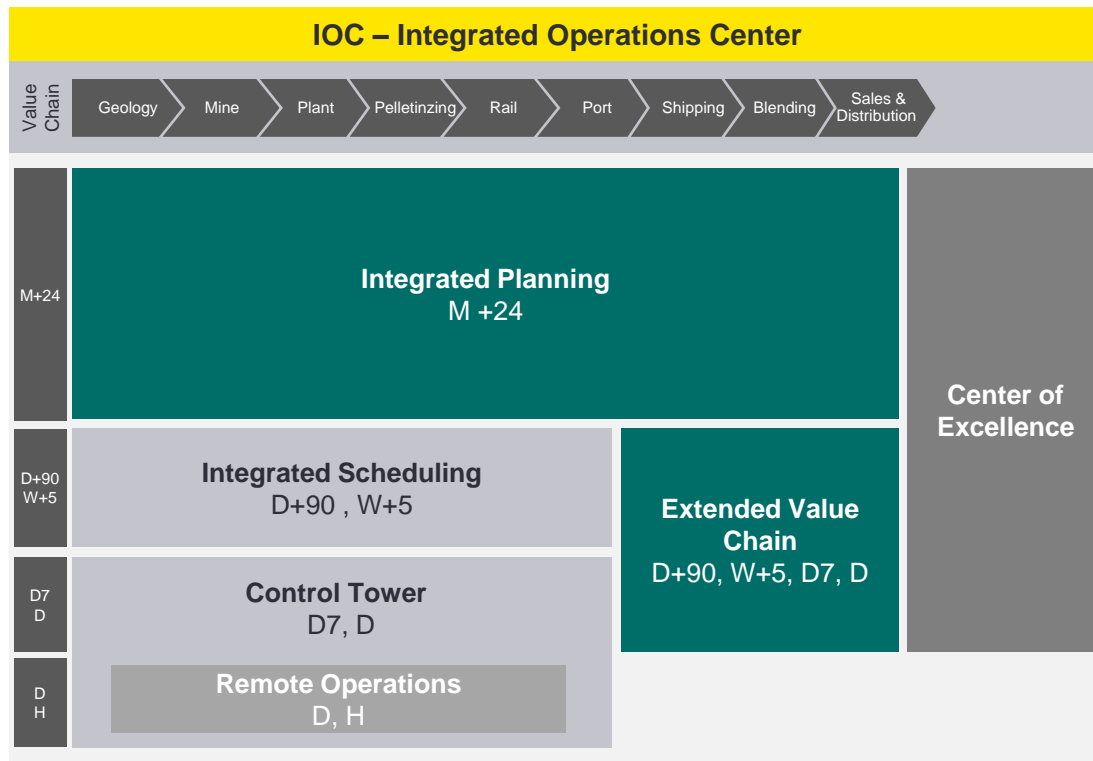
Improve end-to-end process / asset performance



Vale`s IOC components and Operating Model.



Vale's IOC components and Operating Model.



Global Integration

- ▶ Single area that integrates and optimizes planning across Vale
- ▶ Also handles scheduling for extended value chain (“sales & marketing”)

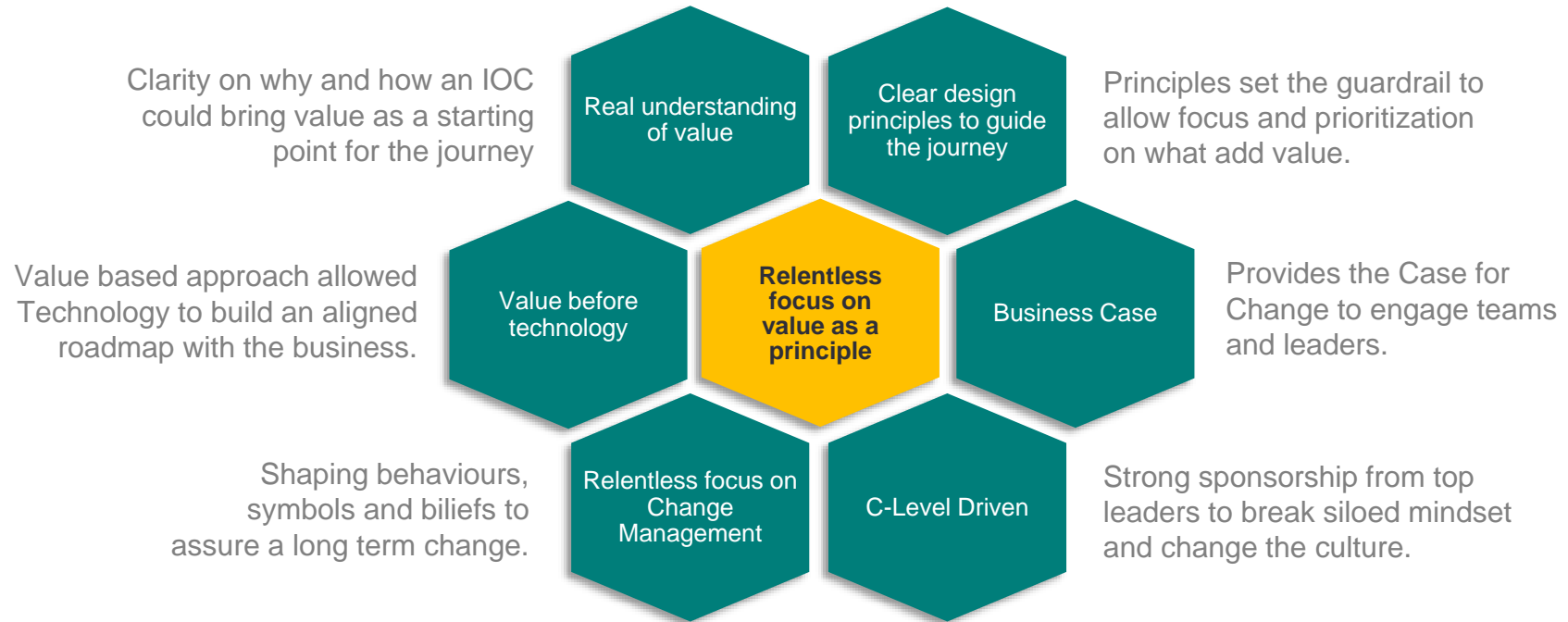
Integration per System

- ▶ Mine to port scheduling integrated with control room monitoring
- ▶ Organized per system
- ▶ 3 System IOC's

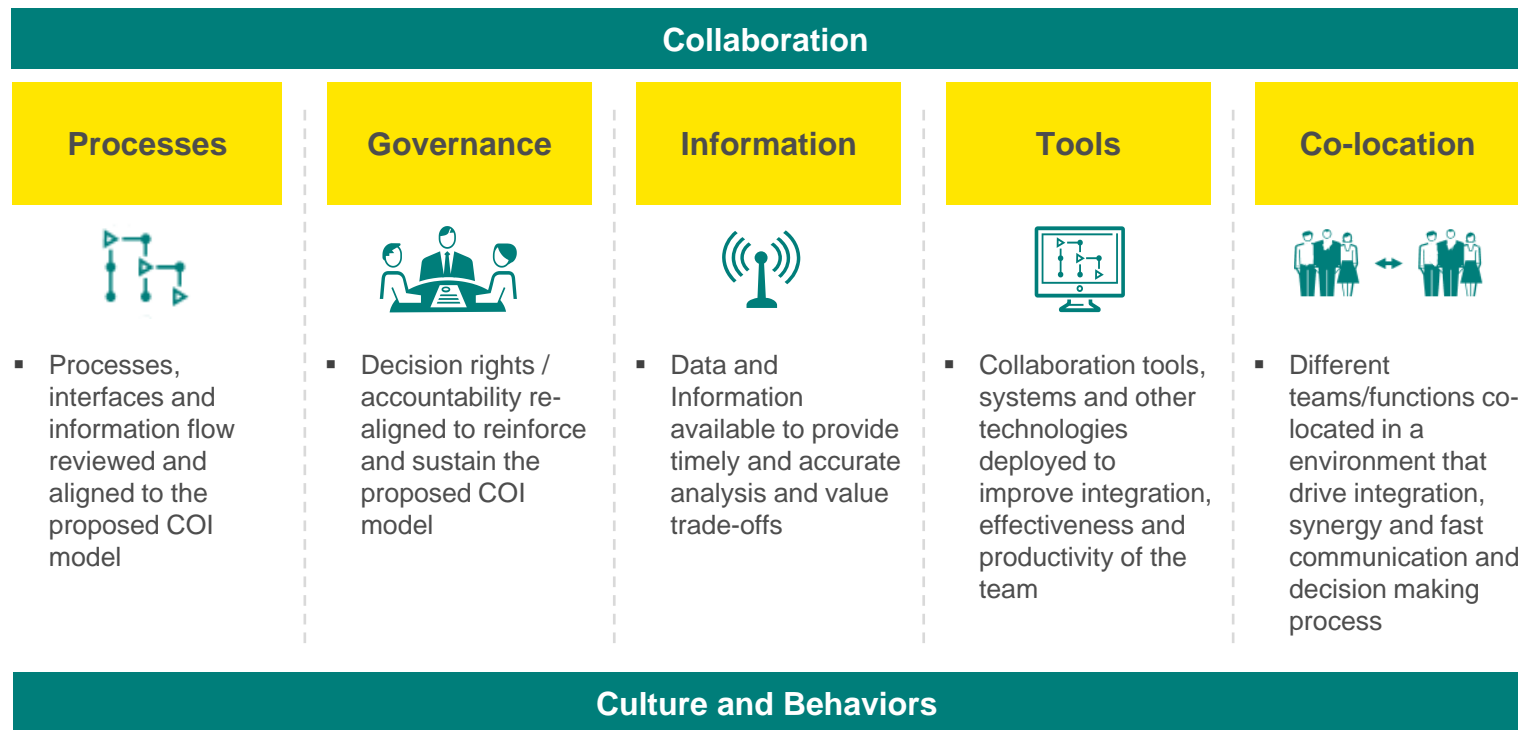
Center of Excellence (CoE)

- ▶ Provides support for asset and process performance improvement
- ▶ Organized across Vale per process and/or asset type

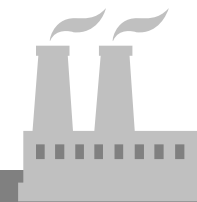
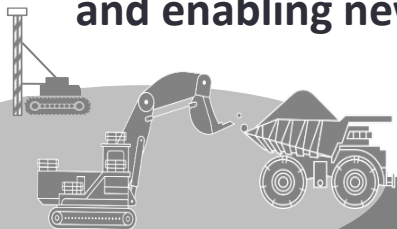
Some of the key success factors of this specific IOC journey can be summarized as described below.



Comprehensive approach towards transformation covering all business dimensions.



Technology took co-leadership role in this transformation shaping the end-state design and enabling new capabilities to Vale iron ore business



Visibility and Information

Increase the assertiveness of information and democratize access to it



Integrated Chain Planning

Reduce adherence deviations by leveraging operational discipline



Simulators and Optimizers for Decision Making

Optimize the preparation of plans and support the decision-making process in the long to short term



Prediction and Traceability

Production chain predictability and iron ore quality traceability



Market Intelligence, Marketing and Customer Relationship

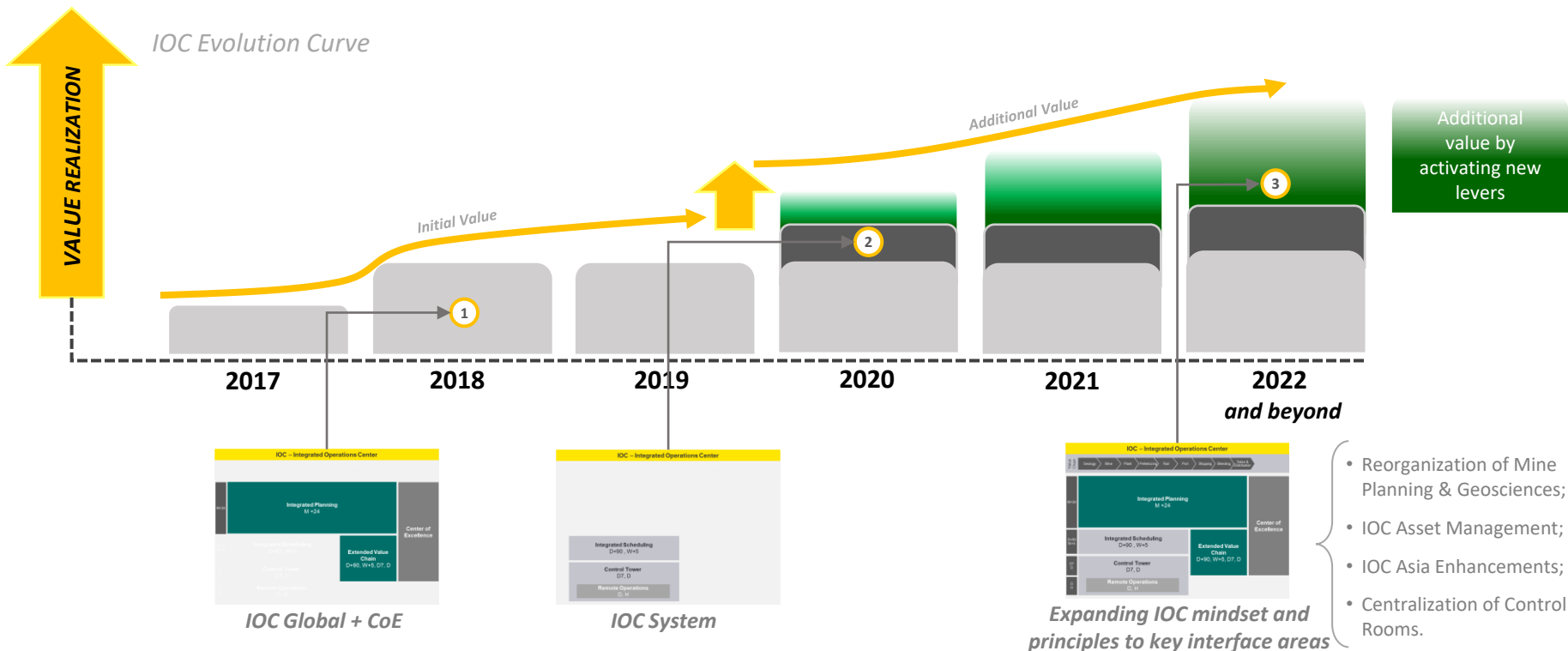
SIEMENS

- Tactical Desk
- Event Mgmt. System

SIEMENS

- ROM Quality Control

The evolution of the IOC Program enables additional value generation by expanding the model and principles to value chain interface areas



Value generation through **IOC implementation**
(Global IOC, CoE and System COI)

Additional value generation by expanding current IOC model mindset and principles to key interfaces areas in the Value Chain

