



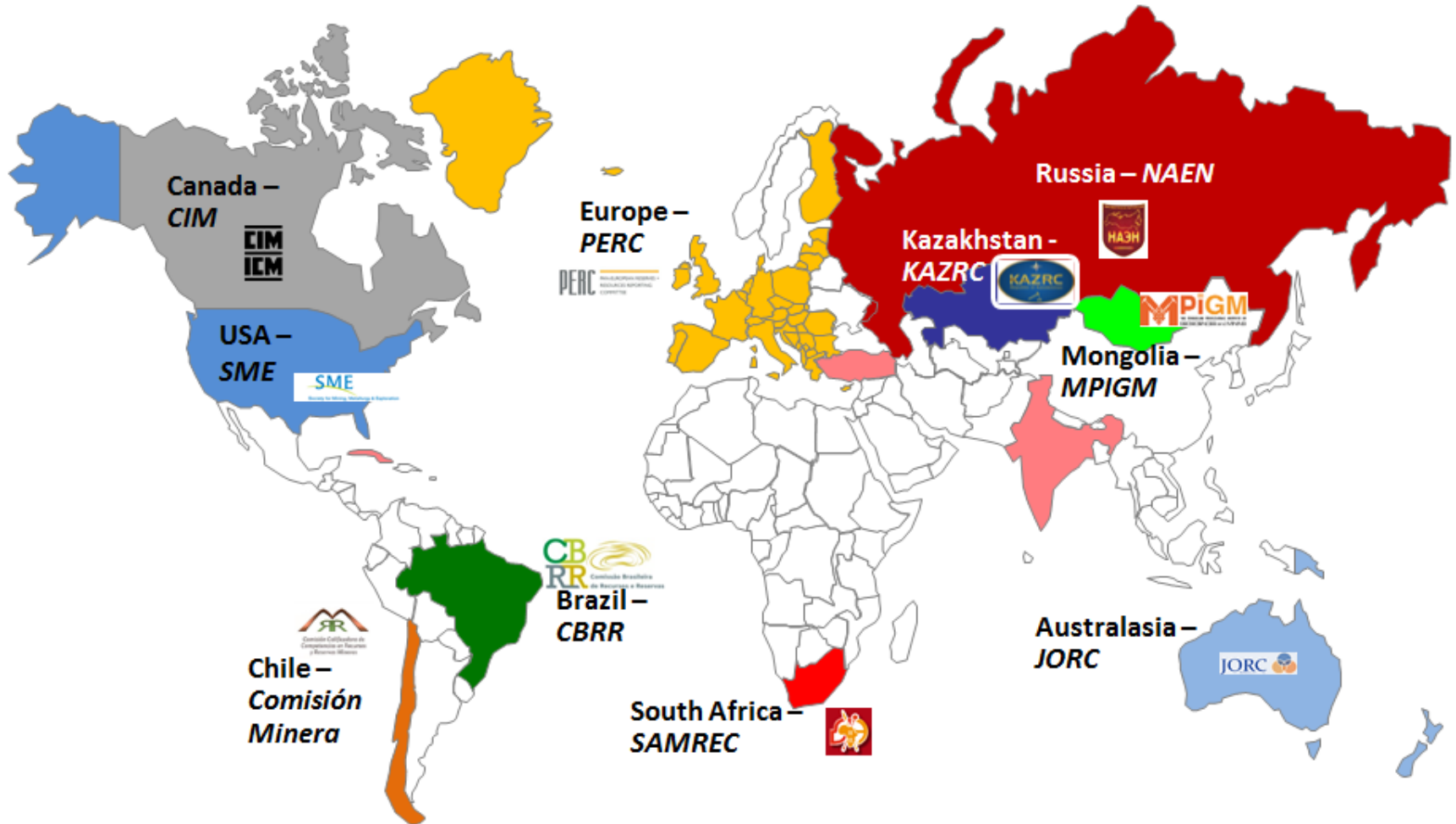
Role and Importance of Competent Persons

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May/2016



➤ **CRIRSCO - Committee for Mineral Reserves International Reporting Standards**



➤ **Eligibility for Membership of CRIRSCO**

“An National Reporting Organization (NRO) must meet the following criteria to be accepted for CRIRSCO Membership:

- 1. Produce and be responsible for maintaining a reporting standard that is compatible with the Template* and which is recognised as the standard for Public Reporting, or has the wide support of professional bodies, in the country/region.*
- 2. Agree to conduct international consultation with NROs represented on CRIRSCO before making amendments to its National or Regional reporting standard.*
- 3. Include credible, self regulating, professional bodies that provide disciplinary systems and codes of ethics that govern the behaviour of Competent Persons or equivalents as defined in the Template.*
- 4. Commit to engaging in CRIRSCO activities. CRIRSCO alone “*



➤ JORC 2012

“To be recognised as an RPO (Reporting Professional Organisation), an organisation must satisfy the following criteria:

- 1. be a self-regulatory organisation covering professionals in the mining and/or exploration industry;*
- 2. admit members primarily on the basis of their academic qualifications and professional experience;*
- 3. require compliance with the professional standards of competence and ethics, established by the organisation, anywhere in the world (not just within the home jurisdiction of the organisation);*

and 4. have disciplinary powers, including the power to suspend or expel a member for breaches of professional standards of competence or ethics anywhere in the world. “



➤ **Competent Person as the CRIRSCO Standard Definitions 2012**

“A Competent Person is a minerals industry professional (NRO to insert appropriate membership class and organisation including Recognised Professional Organisations) with enforceable disciplinary processes including the powers to suspend or expel a member.

A Competent Person must have a minimum of five years relevant experience in the style of mineralisation or type of deposit under consideration and in the activity which that person is undertaking.

Note that various CRIRSCO members use a different term for the Competent Person, e.g. Canada (Qualified Person) and Chile (Qualified Competent Person). These alternative terms are considered to be directly equivalent to Competent Person.”



➤ ***Competent Person as the CRIRSCO Standard Definitions 2012***

1. Relevant Experience in the mining industry
2. Relevant experience in the deposit type
3. Affiliation to a professional association with a code of ethics and enforceable disciplinary process, including powers to expel
4. International recognition granted by agreements between the professional associations



➤ **Key Guiding Principles for a Competent Person**

1. Competence, Transparency and Materiality
2. A Competent Person is always responsible for data validation and any public report should be signed by a CP
3. The Competent Person must express an independent opinion
4. A common glossary of key terms (Standard Definitions)

NI-43101:

The Qualified Person(s) should be clearly satisfied that they could face their peers and demonstrate competence and relevant experience in the commodity, type of deposit and situation under consideration.

If doubt exists, the person must either seek or obtain opinions from other colleagues or demonstrate that he or she has obtained assistance from experts in areas where he or she lacked the necessary expertise.



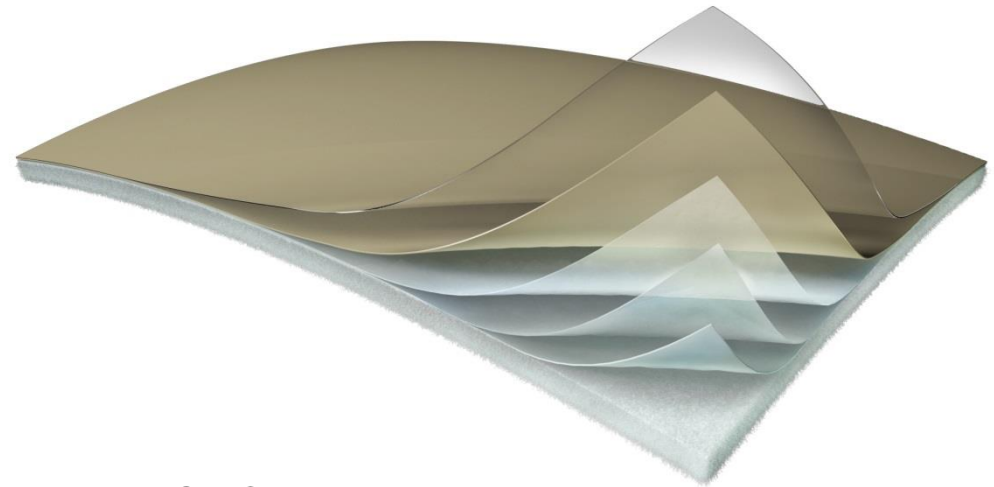
➤ **Minimum Requirements for the CRIRSCO members**

	CBRR (Brazil)	SME (USA)	ChCM (Chile)	NI 43101 (CIM, Canada)	PERC (Europe)	Samrec (South Africa)	JORC (Australia)	MRC (Mongolia)	NAEN (Russia)
Minimum Years of Experience in the Mining Industry	10	5	10	5	5	5	5	5	5
Minimum Years of Relevant Experience in the deposit type	5	5	5	5	5	5	5	5	5
Minimum Years in a Position of Responsibility	3	3	-	-	-	-	-	-	-
Areas of Expertise	Yes	Yes	Yes	No	No	No	No	No	No
Denomination	Qualified Professional	Competent Person	Qualified Competent Person	Qualified Person	Competent Person	Competent Person	Competent Person	Competent Person	Competent Person



➤ **Management of Mineral Resources and Mineral Reserves at Vale S.A.**

Vale has a system of “layered responsibility” for documenting the information supporting the MRMR estimates, describing the methods used, and ensuring the validity of the estimates.

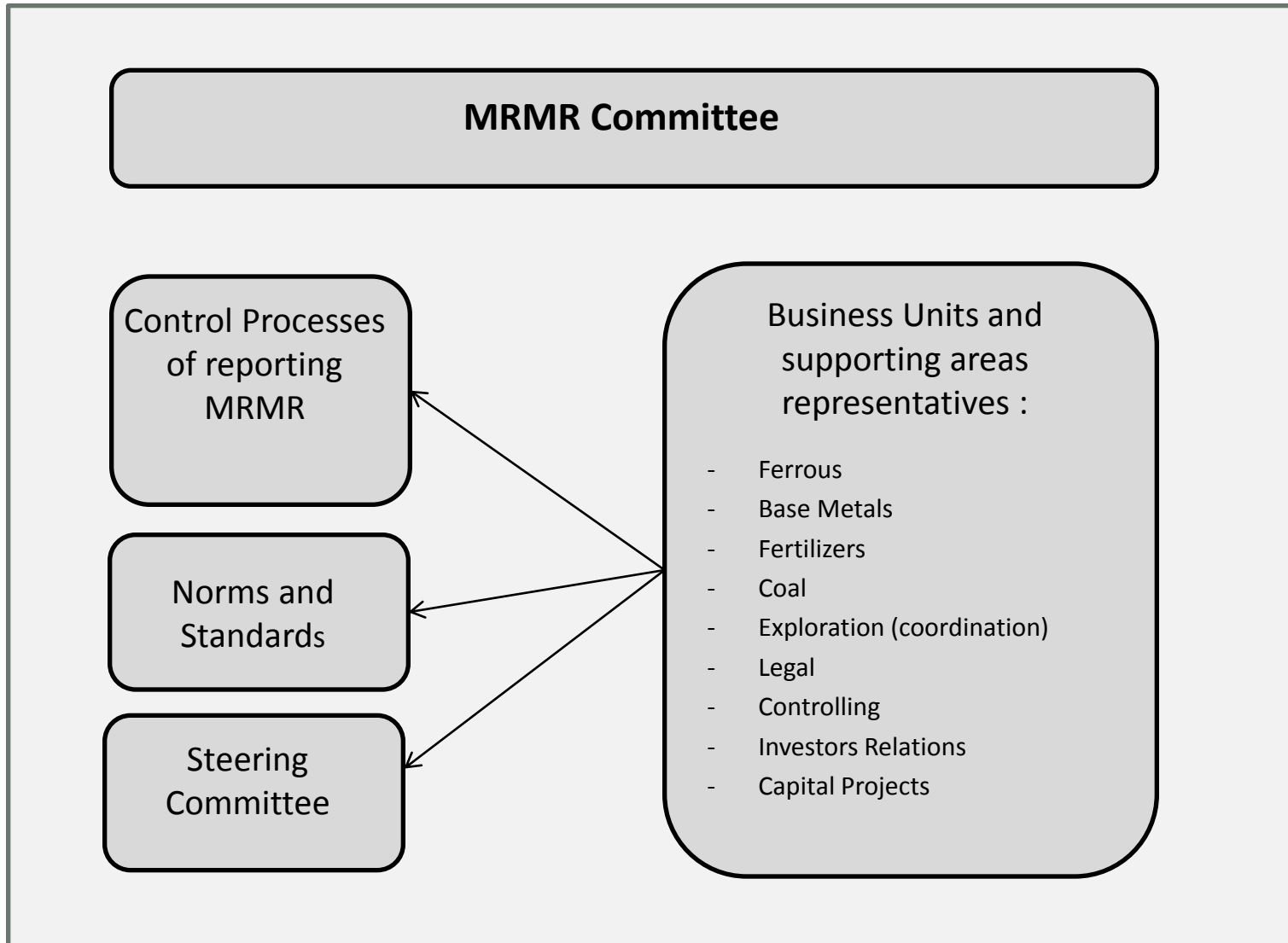


This chain of certifications extends upward to the CEO and the CFO, and helps to support the SOx certifications that they are required to provide annually in Vale’s Form 20-F annual report filed with the SEC.

Competent Persons have a key role in this process, from data generation at site level until corporate validation of consolidated reports.



➤ *Management of Mineral Resources and Mineral Reserves at Vale S.A.*



➤ **Current members of the Committee**

MRMR Committee

Exploration

Member/Coord.: Edson Ribeiro
Technical Support: Celeste Queiroz
Marcelo Vidigal

Ferrous (Iron Ore and Manganese)

Member: Renato Mastrela
Alternate: Lilian Grabellos

Base Metals (Nickel and Copper)

Member: Chris Davis
Alternate: Cassio Diedrich

Fertilizers (Phosphate and Potash)

Member: Arildo Oliveira
Alternate: Marcelo Lopes

Coal

Member: Julian Diaz
Alternate: Eduardo Etchart

Investors Relations

Member Rogerio Nogueira
Alternate: Andrea Gutman

Controlling

Member Marcelo Botelho
Alternate: Murilo Muller

Legal

Member Mariangela Bartz
Alternate: Maria isabel Vieira

Capital Projects

Member Luiz Oliveira
Alternate: Odilon Paraense



➤ *Roles and Responsibilities*

MRMR Committee:

The MRMR Committee, which consists of Committee Representatives from each Business Unit, is responsible for the governance of Vale S.A. Mineral Reserve and Mineral Resource reporting. The Committee will meet at least once a year.

MRMR Committee Coordinator:

The MRMR Global Committee coordinator, with input from the MRMR Committee Representatives, is accountable and responsible for standardizing and monitoring the MRMR reporting process

Business Unit Director (DI):

The Business Unit Director is responsible for the declaration of Mineral Reserves and the nomination of Committee Representatives (CRs). The Director should be aware that the nomination represents a commitment to the corporation and that the professional must meet internal standards of liability. The nomination should be formalized through a letter or corporate email.



➤ *Roles and Responsibilities*

Committee Representative (CR):

The Committee Representative is a mining professional appointed by the BU's Director (DI) as its representative member of the MRMR Committee. It is the representative's duty to ensure compliance with the Global guidelines in their respective business unit. It is desirable, but not mandatory, that the Committee's Representative is a Qualified Person (QP).

Qualified Person (QP):

A Qualified Person is a mining professional (engineer or geologist) that has at least five years of experience relevant to the style of mineralization and type of deposit under consideration and specific activity for which is considered and recognized as qualified. A QP must be a member of a recognized professional organization that has an ethic code and professional conduct regulation.

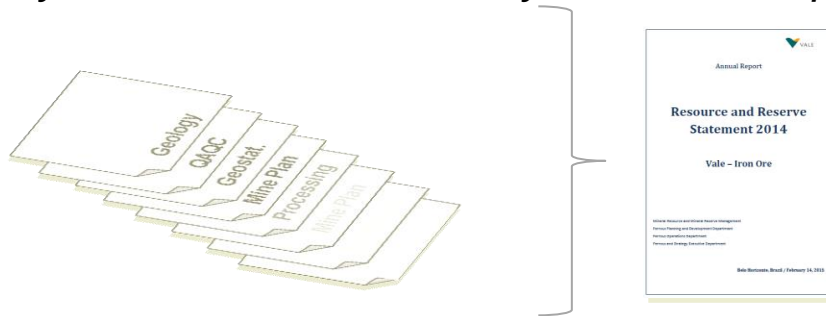
Responsible Person (RP):

A Responsible Person is a mining professional with appropriate qualifications and experience to be responsible for the total or partial execution of mineral resource or mineral reserves estimation.



➤ Sequential validation

Mineral Reserve and Mineral Resource estimates are prepared by RPs and are subsequently reviewed and certified by the QPs as input to the annual MRMR statement.



Based on that, each MRMR committee representative (CRs) fill their respective sections on the Form 20-F annual report and send the Form 20-F drafts and the MRMR statements to the coordination of the committee for certification.



After verifying the MRMR statement compliance with the Vale's Global Guidelines, the coordination informs the Investor Relation Department that the Reserves at Form 20-F were certified and can be signed to be filed with the SEC.



➤ *Qualified Person*

A QP does not need to be an expert in all activities related to the evaluation of resources and reserves, but should have enough knowledge to make a critical analysis of the following items:

- Situation of mining rights and licenses required for the project or operation;
- Quality of geological exploration data and integrity of the geological database;
- Methodology used in geological modeling and resource estimation;
- Criteria used in the resource classification;
- Methodology used in the mine development plan;
- Geotechnical and hydrogeological studies carried out for mine development;
- Cutoff grades and economic parameters used in the benefit function or equivalent;
- Mineral processing tests and main products characteristics;
- Studies of tailing dams and waste piles;
- Level of engineering design that supports the project construction;
- Economic parameters used (hurdle rate, costs, sustaining and growth capex, selling price, etc.)



➤ **MRMR Statement report**

Annually each QP will submit to the Committee coordination, a corporate Mineral Resource and Mineral Reserve statement report including, but not limited to, the following information:

- ✓ Description of the projects /mine operations (location, mining methods, beneficiation process, marketable products and logistics);
- ✓ Status of the legal and environmental permits and licenses and eventual issues;
- ✓ Three year historical prices and exchange rates used for the financial viability test;
- ✓ Indication of the level of the study completed to support the mineral resources and reserves of projects/new operations;
- ✓ Projected exhaustion date for each project or mine operation;
- ✓ The table of stated Mineral Resources as additional to Mineral Reserves;
- ✓ The table of Mineral Reserves, preferably expressed as marketable products or including an indication of respective Metallurgical recoveries;
- ✓ Explanation of the changes in previous year MRMR statement;
- ✓ Reconciliation analysis for the annual production;
- ✓ Risk Analysis of the stated Mineral Reserves;



➤ QPs certificates



CERTIFICATE OF QUALIFIED PERSON

To: Vale S.A.

Re: [Mineral Reserve and/or Mineral Resource] Estimates for [name of the deposit] Operations as at December 31, [year]

I, [name of the Qualified Person], do hereby certify that:

1. I am current [Manager/Director/Geologist/ Engineer] and a full time employee of Vale.
2. I graduated with a degree in Geology/Engineering from the University [name of the institution] in [date] and [mention of other titles].
3. I am a member of the [Association of Professional Engineers and Geoscientists and its jurisdiction] since [year].
4. I have worked as a mining professional for a total of [number] years since my graduation from university and I have experience with the mine operations and projects covered in the [name of the deposit or business unit] [Mineral Reserve and/or Mineral Resource] [year] Statement.
5. I am qualified for the role I have played in preparing, supporting or supervising the preparation of [name of the deposit] [Mineral Reserve and/or Mineral Resource] Estimates and I am satisfied that the Statement of those Estimates were prepared by Vale's experienced geologists and engineers and is in accordance with the technical definitions required by the U.S. Securities and Exchange Commission guidelines and [name of recognized Code/Guidelines] standards for [Mineral Reserve and/or Mineral Resource] reporting
6. I am not aware of any material fact or material change with respect to the subject matter of the [Mineral Reserve and/or Mineral Resource] of Vale S.A. that is not reflected in the Vale's S.A annual statement where the omission to disclose it would make the Annual Reports misleading.

[Date]

[Signature of Qualified Person]

[Print name of Qualified Person]

[Email of the Qualified Person]



To: Vale S.A.

cc:

Re: Mineral Reserve and/or Mineral Resource Estimates for [name of the deposit] Operations as at December 31, [date] (the "Estimates")

I hereby confirm the following in respect of the [name of the deposit] Estimates and the Report:

1. I have reviewed the [name of the deposit] Estimates and the Report.
2. I am satisfied that the sections or applicable subsections of the [name of the deposit] Report referred to in the table below for which I am responsible were prepared in accordance with the SEC-USA guidelines and [name of recognized Code/Guidelines] standards for Mineral Reserve reporting.
3. The undersigned have met with each other to discuss the Estimates and the [name of the deposit] Report and I have not identified any errors or other concerns that would materially affect the Estimates and the [name of the deposit] Report.
4. I am qualified for the role I have played in preparing, supporting or supervising the preparation of the Estimates and the [name of the deposit] Report and I believe that each of the persons reporting to me is qualified to provide the information on which I have relied.
5. I understand that all or portions of the Estimates and the [name of the deposit] Report may be disclosed to the public and are being relied on by Vale S.A., its subsidiaries and third parties.
6. To the best of my knowledge and belief, no events have occurred subsequent to the dates of the [name of the deposit] Report through to the date of this certificate that would require adjustment to the Estimates and the [name of the deposit] Report.

Dated:

Name:

Title:

Affiliation:

Area of Responsibility/Sections:

Signature:

Obrigado !



Edson Ribeiro

Presidente do Comitê de Registro CBRR
Representante CRIRSCO

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