

Platform Based Certification Scheme

Martin Hablutzel, Siemens Energy
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The need for a certification scheme

Hydrogen certification

Hydrogen consumers here and overseas will expect transparency around the environmental impacts of the hydrogen they use. While certification schemes generally focus on carbon emissions, there may also be scope to consider other impacts, such as water consumption.

Ideally a single global certification scheme will emerge that facilitates international trade as well as providing domestic consumers with the assurances they seek. Australia wants to be a leader in developing an international scheme. As far as practicable, any Australian domestic scheme should build on or harmonise with international certification schemes. We encourage Australian industry and customers to have a role in the design and development of the scheme. Consideration will be given to the European CertifHy framework in developing a certification scheme.

Australia does not want to see any international agreement about certification delaying investment in hydrogen production. One way to avoid this is to establish a minimal certification scheme that verifies and tracks production technology and production location. The scheme could be expanded later to include a common low-carbon threshold/standard for the promotion of hydrogen production installations based on their full life-cycle greenhouse gas performance, which allow countries to set their own definitions of international standards.

In order to tailor a supportive policy framework in function of the carbon emission reduction benefits of hydrogen in a transitional phase, and to inform customers, the Commission will work to swiftly introduce, based on impact assessments, EU-wide instruments. This would include a **common low-carbon threshold/standard for the promotion of hydrogen production installations based on their full life-cycle greenhouse gas performance**, which could be defined **relative to the existing ETS benchmark**⁴⁷ for hydrogen production. In addition, it would include a **comprehensive terminology and European-wide criteria for the certification of renewable and low-carbon hydrogen** possibly building on the existing ETS monitoring, reporting and verification and the provisions set out in the Renewable Energy Directive⁴⁸. This framework could be based on the full life-cycle greenhouse gas emissions⁴⁹, considering the already existing CertifHy⁵⁰ methodologies developed by industry initiatives, in consistency with the EU taxonomy for sustainable investments. The specific, complementary functions that Guarantees of Origin (GOs) and sustainability certificates already play in the Renewable Energy Directive can facilitate the most cost-effective production and EU-wide trading.

Measure 30

To ensure that a market can develop which contributes to the energy transition and to decarbonisation, as well as boosting export opportunities for German and European companies, there is a need for reliable sustainability standards and for a sophisticated quality infrastructure, proof (of origin) for electricity from renewable energy and for green hydrogen and its downstream products. At European level, we want to set sustainability and quality standards in the field of hydrogen and PtX products, and thus to actively foster the establishment of the international hydrogen market. This is support for the development of European rules, codes and standards in the various fields of application which will form the ground for the international market and ensure that the market ramp-up in Germany takes place in line with the needs of the energy transition. In parallel Germany will also intensify the dialogue on standards with other countries in order to pave the way towards a universalisation in international organisations.

Sources: Australia's National Hydrogen Strategy, European Commission: A hydrogen strategy for a climate-neutral Europe Brussels 8.7.2020, Germany: The National Hydrogen Strategy, Berlin June 2020

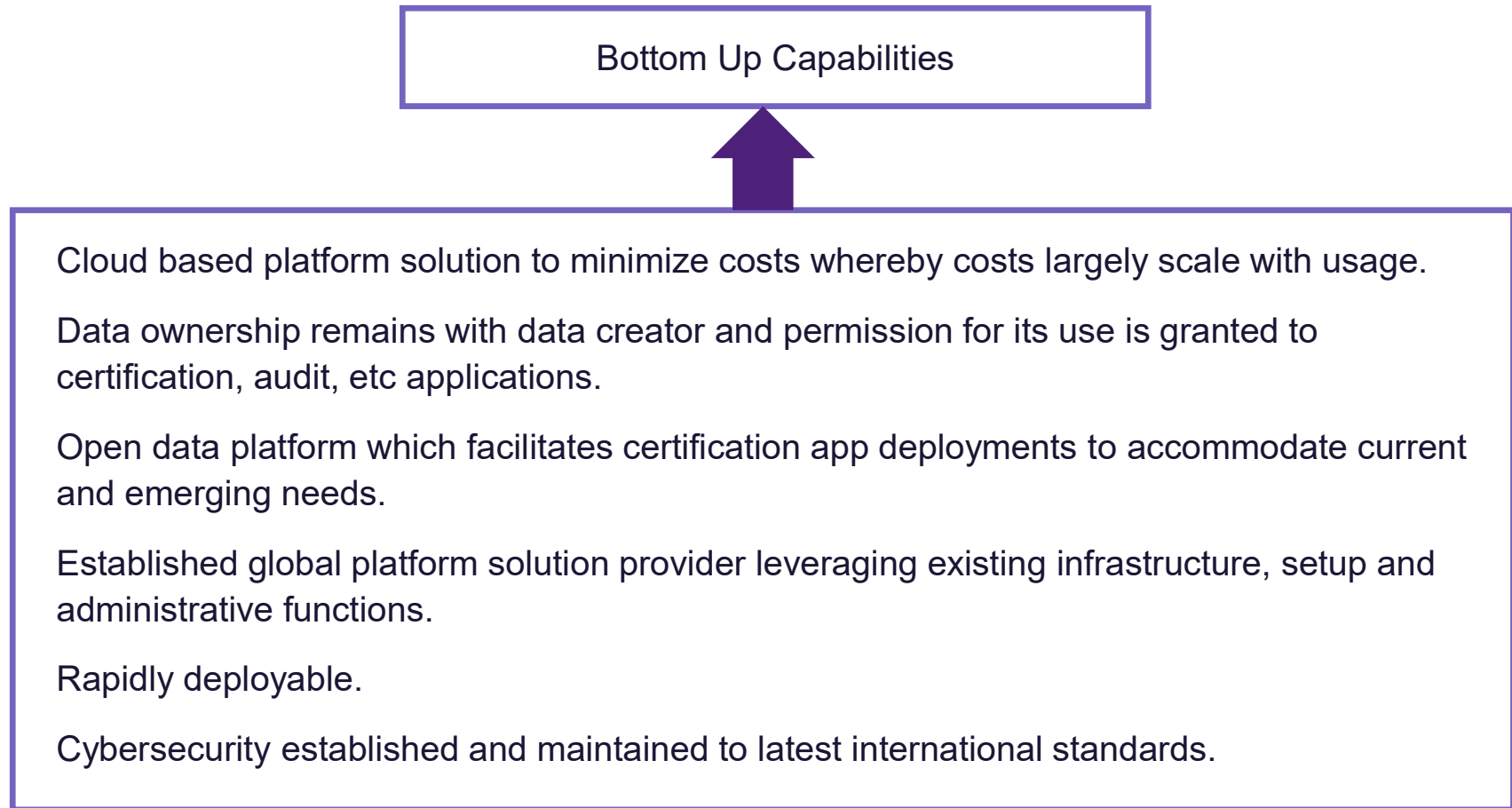
Certification scheme needs

- Robust
- Reliable sustainability standards
- Internationally accepted
- Sophisticated quality infrastructure
- Guarantees of Origin
- Transparency
- Global certification scheme
- Swiftly introduce
- Emerging global rules and regulations

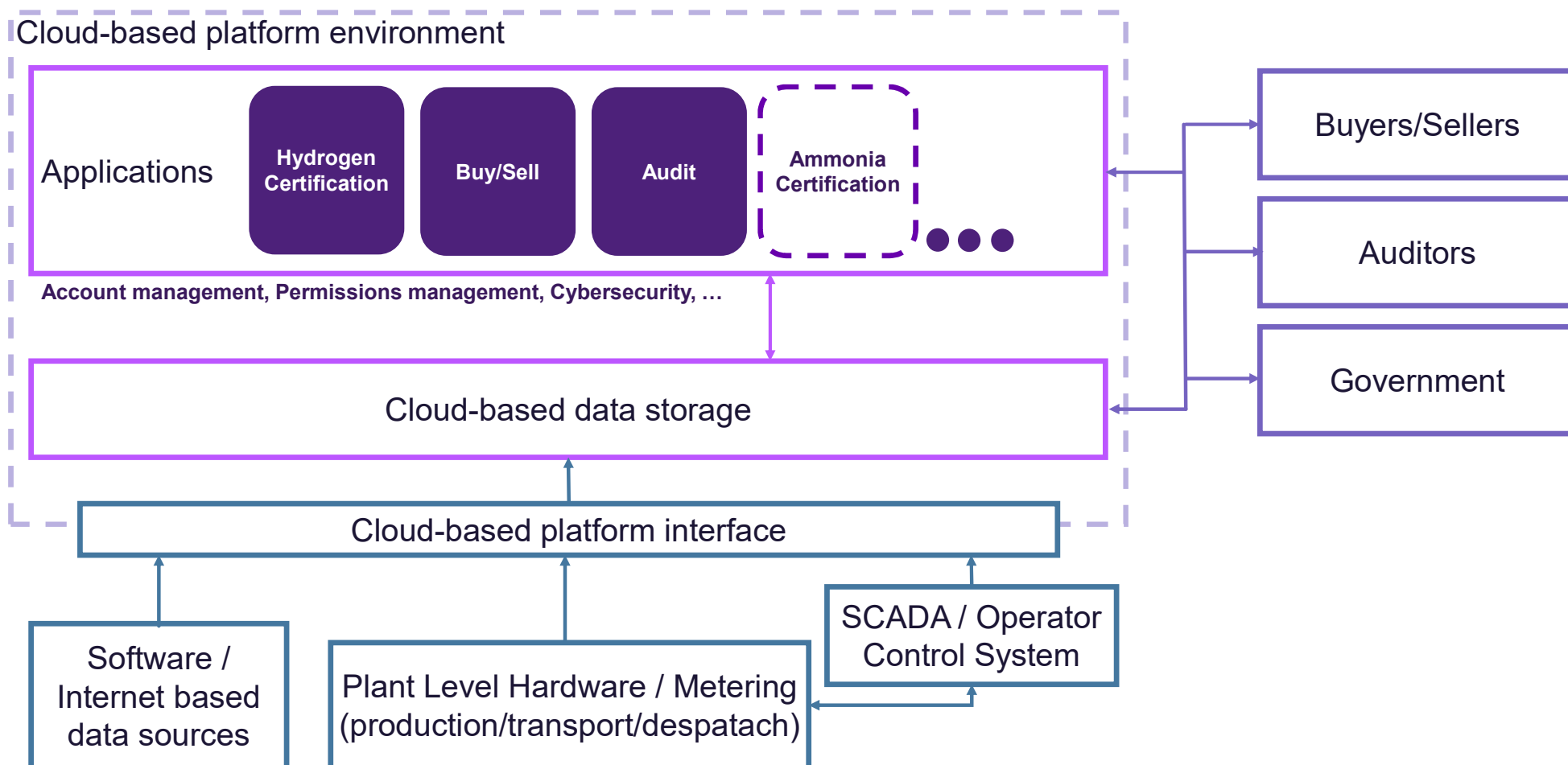


Top Down Requirements

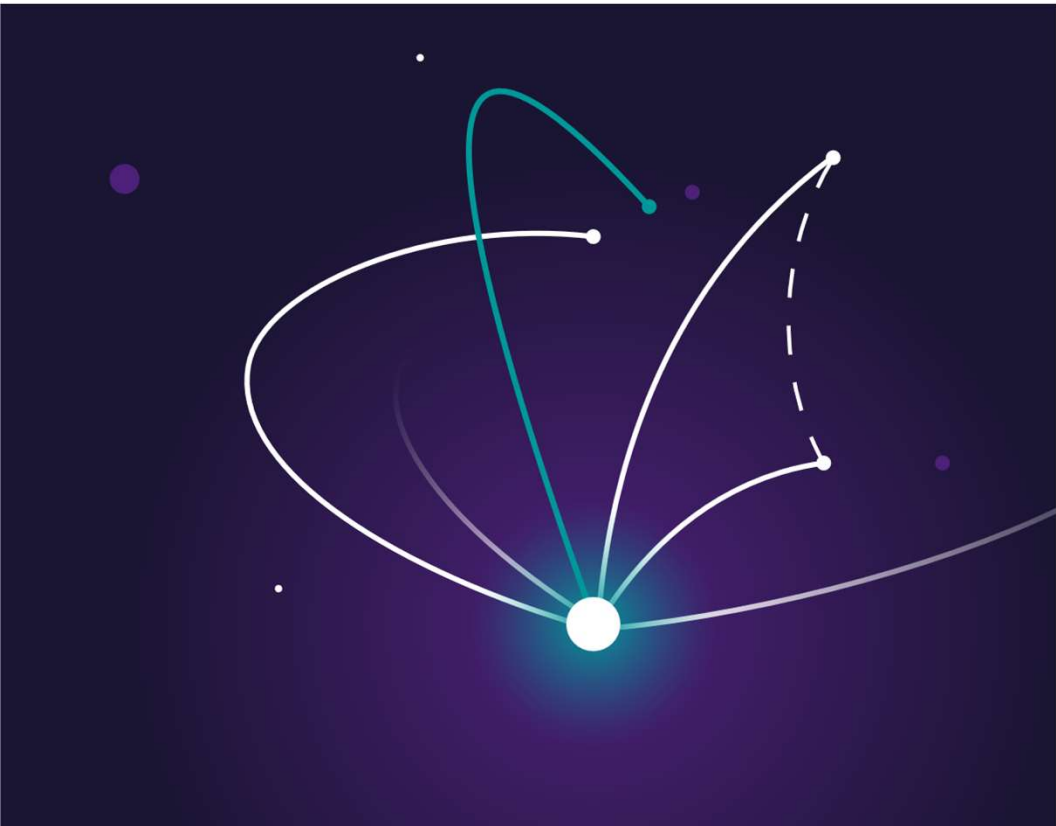
Attributes of a platform based certification scheme



What a platform based certification scheme might look like



Contact page



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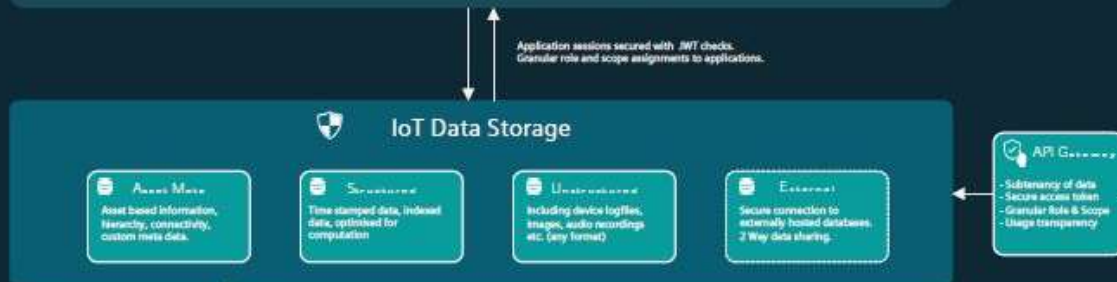
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Hydrogen Certification Platform Architecture

MINDSPHERE® CLOUD LAYER



MindConnect Layer

SOUTHBOUND HARDWARE LAYER

Agent based communication, supporting structured and unstructured data upload.

Live data from various data sources, supporting all common protocols (OPC-UA, pub/sub, MQTT, Sigfox, LoRaWAN etc.)



EXTERNAL ACCESS



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Australia: National Hydrogen Strategy



AUSTRALIA

has a robust, internationally
accepted, provenance
certification scheme in place

Australia will spearhead development of an international certification scheme for hydrogen, working closely with local and international companies. We will ensure the emerging global rules and regulations for hydrogen trade do not disadvantage Australia, by working with like-minded countries and in multi-lateral forums.

Hydrogen certification

Hydrogen consumers here and overseas will expect transparency around the environmental impacts of the hydrogen they use. While certification schemes generally focus on carbon emissions, there may also be scope to consider other impacts, such as water consumption.

Ideally a single global certification scheme will emerge that facilitates international trade as well as providing domestic consumers with the assurances they seek. Australia wants to be a leader in developing an international scheme. As far as practicable, any Australian domestic scheme should build on or harmonise with international certification schemes. We encourage Australian industry and customers to have a role in the design and development of the scheme. Consideration will be given to the European CertifHy framework in developing a certification scheme.

Australia does not want to see any international disagreement about certification delaying investment in hydrogen production. One way to avoid this would be to quickly establish a minimal certification scheme that verifies and tracks production technology, scope 1 and scope 2 carbon emissions, and production location. The scheme could be expanded later to include water consumption and other factors. Such an approach would allow countries to set their own definitions of 'green' or 'low-emissions' hydrogen, with reference to agreed international standards.

Hydrogen certification

- 4.16 Agree that Australia will seek to play a lead role in the design and development of an international guarantee of origin scheme.
- 4.17 Agree that, as far as practicable, any Australian domestic scheme should build on or harmonise with international certification schemes.
- 4.18 Agree to initially develop an international certification scheme that verifies and tracks:
 - Production technology
 - Carbon emissions associated with production (scope 1 and scope 2)
 - Production location.
- 4.19 Agree that in addition to the above, any subsequent expansion of an international certification scheme could include water consumption and other factors.

Clean

Carbon intensity of Australian hydrogen production meets community, customer and consumer expectations and is decreasing over time

Australia has a robust certification scheme in place that is internationally accepted

European Commission: A hydrogen strategy for a climate-neutral Europe

- Work to introduce a **comprehensive terminology and European-wide criteria for the certification** of renewable and low-carbon hydrogen (by June 2021).

In order to tailor a supportive policy framework in function of the carbon emission reduction benefits of hydrogen in a transitional phase, and to inform customers, the Commission will work to swiftly introduce, based on impact assessments, EU-wide instruments. This would include a **common low-carbon threshold/standard for the promotion of hydrogen production installations based on their full life-cycle greenhouse gas performance**, which could be defined **relative to the existing ETS benchmark**⁴⁷ for hydrogen production. In addition, it would include a **comprehensive terminology and European-wide criteria for the certification of renewable and low-carbon hydrogen** possibly building on the existing ETS monitoring, reporting and verification and the provisions set out in the Renewable Energy Directive⁴⁸. This framework could be based on the full life-cycle greenhouse gas emissions⁴⁹, considering the already existing CertifHy⁵⁰ methodologies developed by industry initiatives, in consistency with the EU taxonomy for sustainable investments. The specific, complementary functions that Guarantees of Origin (GOs) and sustainability certificates already play in the Renewable Energy Directive can facilitate the most cost-effective production and EU-wide trading.

Furthermore, the EU should promote in **multilateral fora** the development of international standards and the setting up common definitions and methodologies for defining overall emissions from each unit of hydrogen produced and carried to final use as well as international sustainability criteria. The EU is already highly involved in IPHE, and co-leads the new clean hydrogen mission under Mission Innovation and the Clean Energy Ministerial Hydrogen initiative (CEM H2I). International collaboration could also be expanded through international standardisation bodies and global technical regulations of the United Nations

Source: European Commission: A hydrogen strategy for a climate-neutral Europe Brussels 8.7.2020

Germany: The National Hydrogen Strategy

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Source: Germany: The National Hydrogen Strategy, Berlin June 2020