



SI Reference Point Status

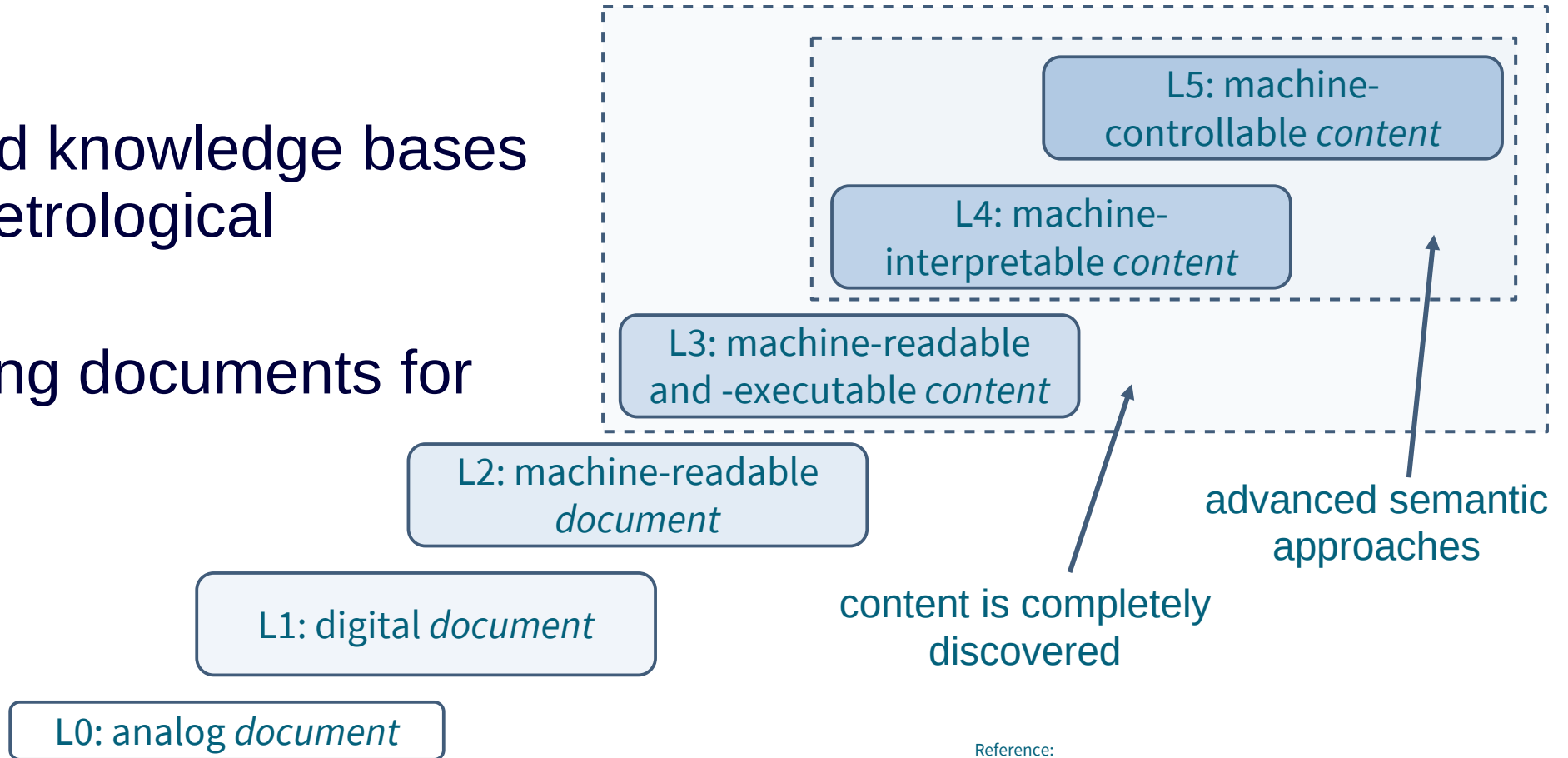
Frédéric Meynadier, BIPM Time Department

27/06/2025



Motivation

- provide trusted knowledge bases to describe metrological information
- prepare existing documents for L3+



The principal pillars of SI Reference Point



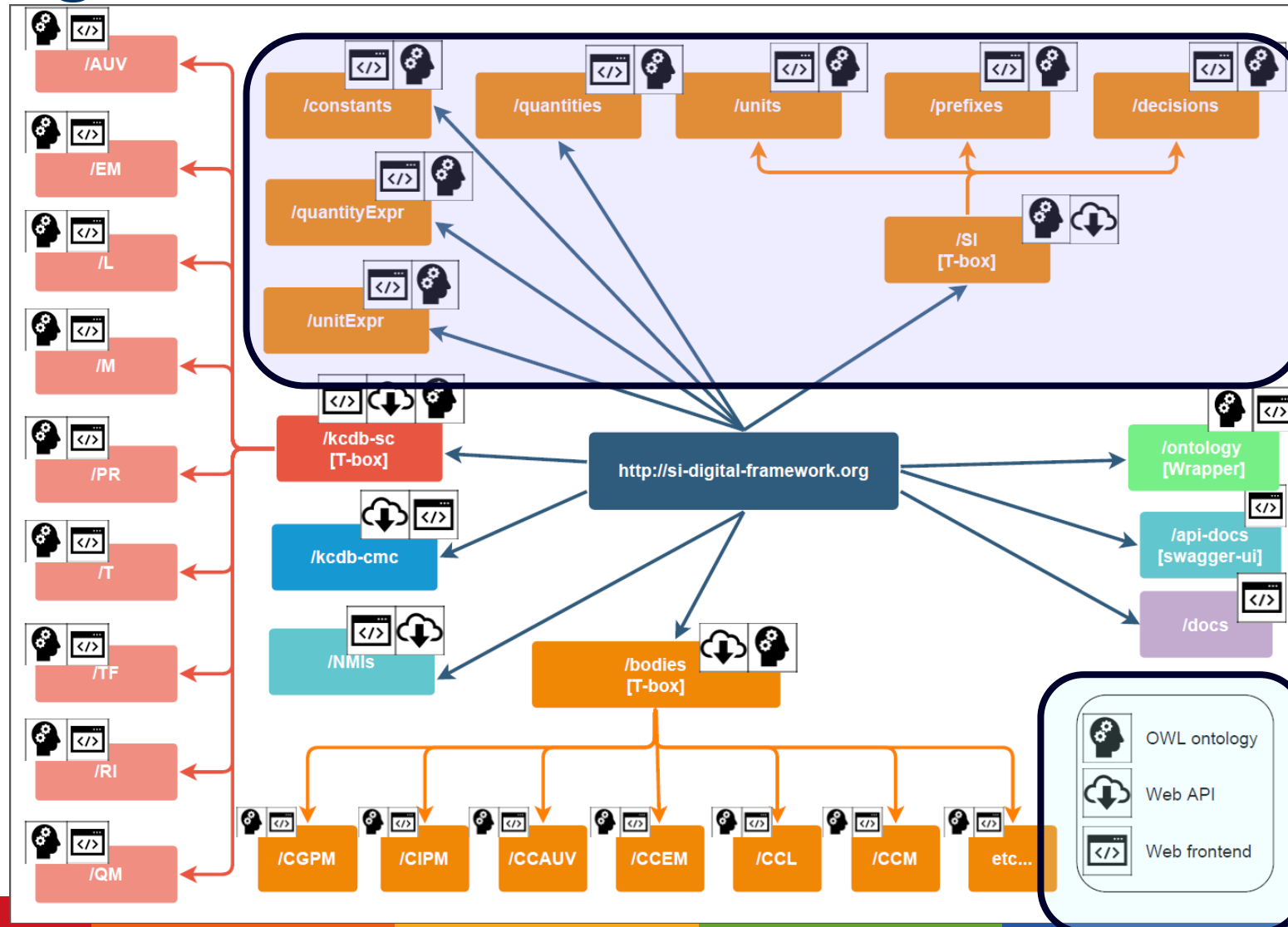
- SI units
- SI prefixes
- Defining constants
- Selected quantities
- Decisions concerning the SI

Information encoded in knowledge graphs (serialized as TTL / JSON-LD)

Usable by both humans and machines.



The SI Reference point within the (wider) SI Digital framework



Construct Units from expressions

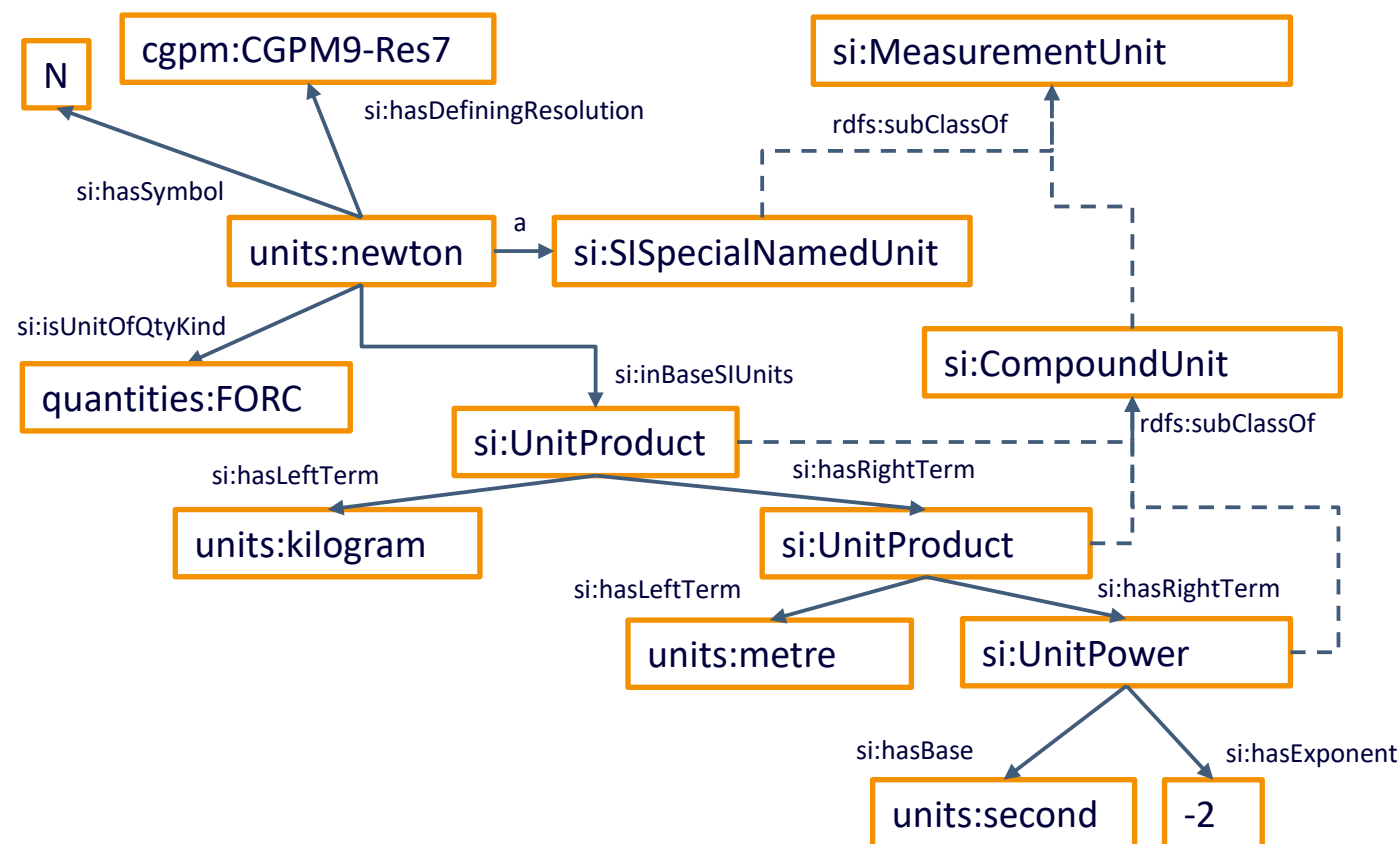


$$\text{Unit Equation: } N = \text{kg m} / \text{s}^2$$

Turtle Syntax:

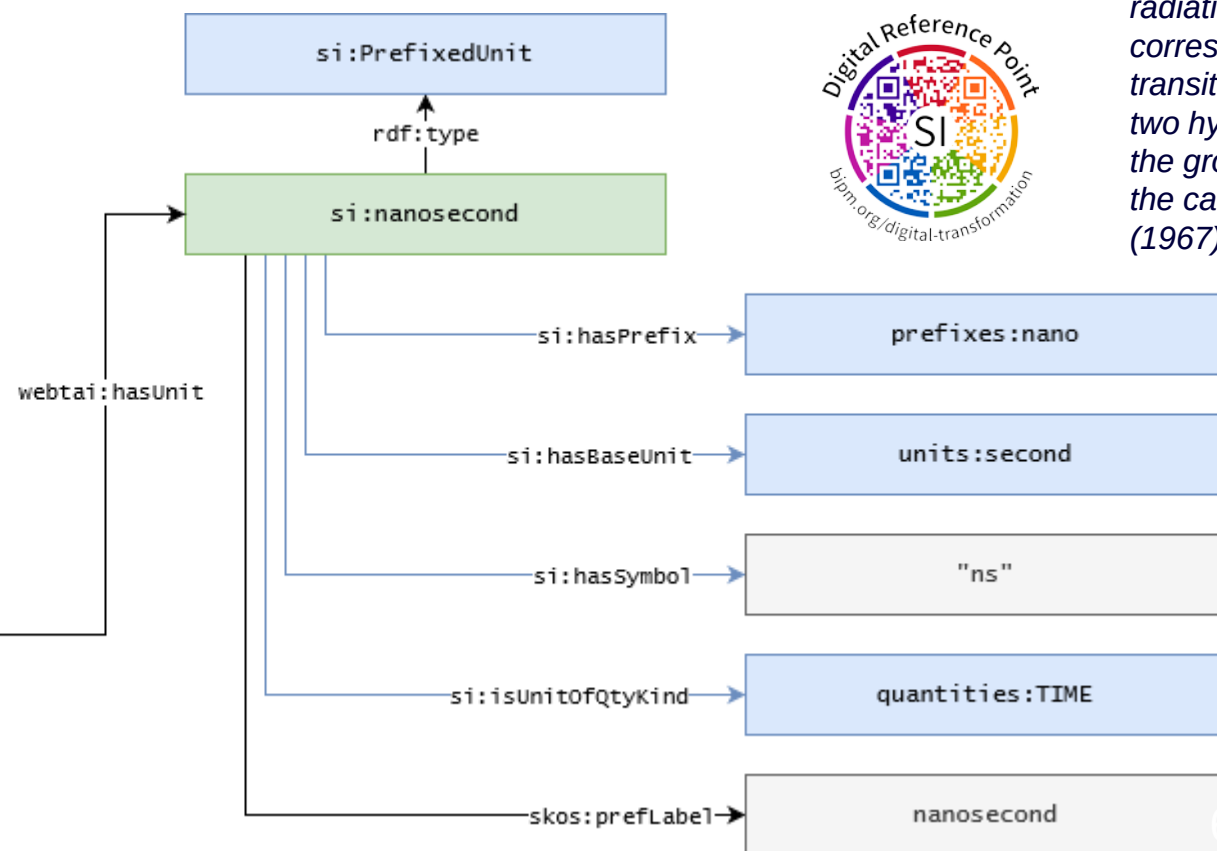
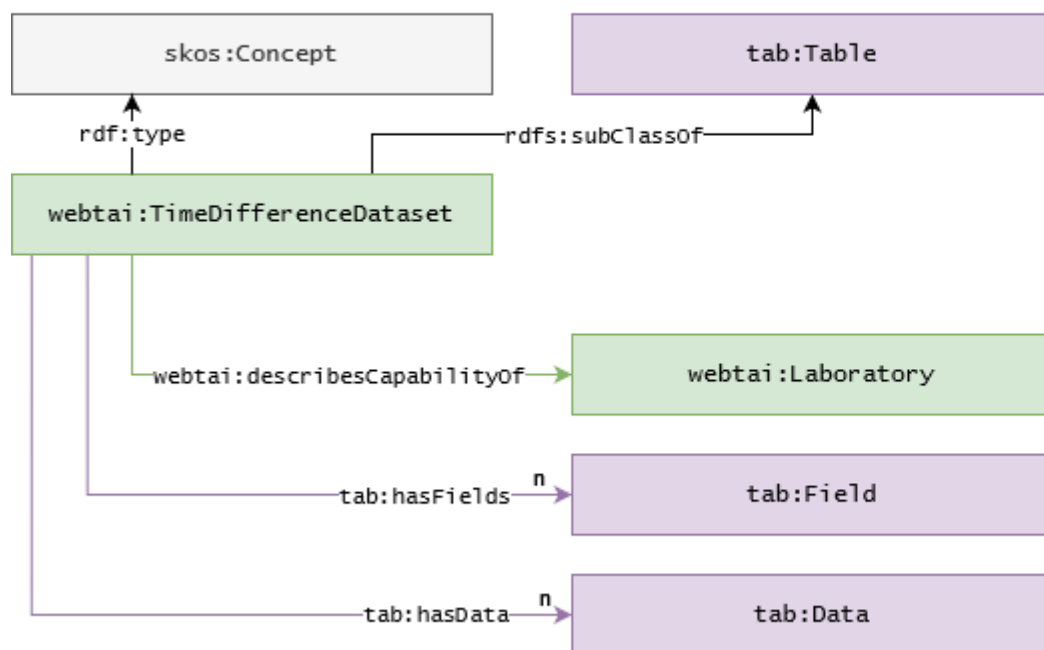
```
units:newton a si:SISpecialNamedUnit ;
  si:hasDefiningResolution cgpm:CGPM9-Res7 ;
  si:hasSymbol "N"^^xsd:string ;
  si:hasUnitTypeAsString "Named SI derived unit"@en,
    "Unité SI dérivée ayant un nom spécial"@fr ;
  si:inBaseSIUnits [ a si:UnitProduct ;
    si:hasLeftUnitTerm units:kilogram ;
    si:hasRightUnitTerm [ a si:UnitProduct ;
      si:hasLeftUnitTerm units:metre ;
      si:hasRightUnitTerm [ a si:UnitPower ;
        si:hasNumericExponent "-2"^^xsd:short ;
        si:hasUnitBase units:second ] ] ] ;
  si:isUnitOfQtyKind quantities:FORC ;
  si:prefixRestriction false ;
  skos:prefLabel "newton"@en,
    "newton"@fr .
```

Implied Graph (excerpt):



How to link data to units ?

What is “ns”?



“The second is the duration of 9 192 631 770 periods of the radiation corresponding to the transition between the two hyperfine levels of the ground state of the caesium 133 atom (1967)”

Links



<https://si-digital-framework.org/> : the root URI and web endpoint

https://github.com/TheBIPM/SI_Digital_Framework : public github repository where files and documentation are available, and issues can be raised.

Current version : 1.0beta, **comments and feedback welcome.**

An article is currently in redaction

A machine-actionable knowledge model of the SI Brochure

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May 2025

Abstract. A common understanding of measurement data is fundamental to our society and the Système International (SI) is a central development in that regard. To

Further development



Feature requests and remarks begin to accumulate

Several levels of importance / impact /sensitivity

Within FORUM-MD : SI Digital Framework Task Group (Chair: Anna Cypionka, BIPM) is intended to help gathering feedbacks and steer development, in coordination with decisions concerning the SI Brochure (e.g. inclusion of unit “1”)

Development resources are limited and rely on collaboration between the BIPM staff members and a team of contributors (currently : S. Chalk (UNF), G. Dudle (METAS, now OST), M. Gruber (PTB), J.-L. Hippolyte (NPL))

A new Liaison Officer for Digital Transformation should start Q4 2025



Thank you.

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