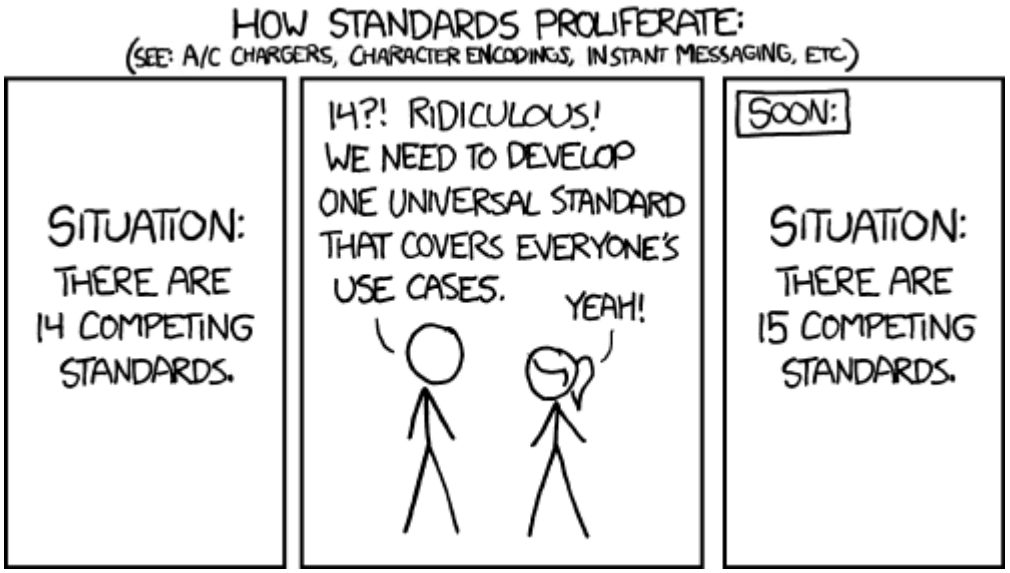
IEEE P1788

Face to Face Meeting

Tübingen, 25.7.2011


HOW STANDARDS PROLIFERATE:
(SEE: A/C CHARGERS, CHARACTER ENCODINGS, INSTANT MESSAGING, ETC)
SITUATION: THERE ARE 14 COMPETING STANDARDS.
14?! RIDICULOUS! WE NEED TO DEVELOP ONE UNIVERSAL STANDARD THAT COVERS EVERYONE'S USE CASES.
YEAH!
SOON:
SITUATION: THERE ARE 15 COMPETING STANDARDS.

Website

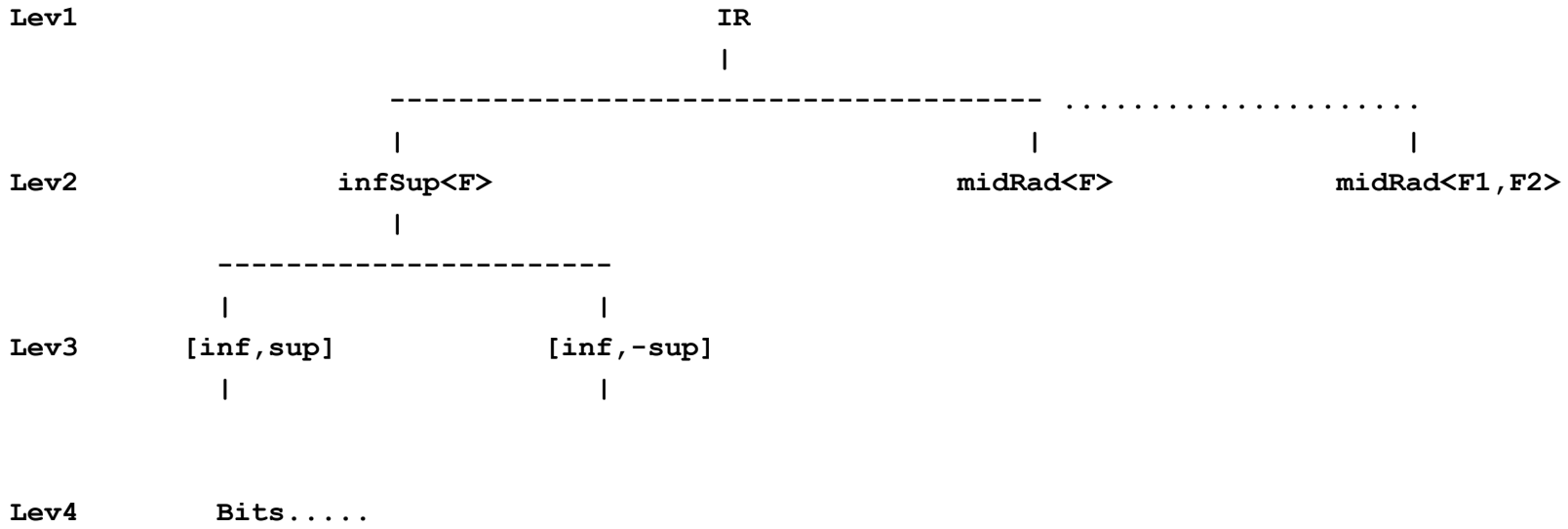
- http://grouper.ieee.org/groups/1788/

- Motions
- Draft of Standard
- Mailing List

Level-Structure

Relationships between specification levels for interval arithmetic (for a given format)		
Level 1	Number system $\mathbb{R}$. Set $\overline{\mathbb{IR}}$ of allowed intervals over $\mathbb{R}$. Principles of how $+$, $-$, $\times$, $\div$ and standard functions are extended to intervals.	Mathematical Model level.
	$\downarrow$ *interval hull* total, many-to-one[d] — *identity map* $\uparrow$ total, one-to-one[c]	
Level 2	The set $\overline{\mathbb{IF}}$ of "machine intervals" in $\overline{\mathbb{IR}}$	Interval datum level.
	"represents" $\uparrow$ partial, many-to-one, onto[b]	
Level 3	Representation of nonempty $[\underline{x}, \overline{x}]$ as two FP numbers $\underline{x}, \overline{x}$, or alternative. Repres'n of $\emptyset$.	Representations of interval data.
	"encodes" $\uparrow$ partial, many-to-one, onto[a]	
Level 4	Encodings `0111000...`	Bit strings.

More Details on Levels …



Contents of P1788

- Elementary Functions
  - Reverse Mode
- Comparisons
- Exception Handling
  - Decorations

Still Open …

- Accuracy
  - Modes ?
- Constructors
  - NaI ?

General Discussion

- Goal of Standardization
  - Conformity
- Target Group (Potential Users)
- Implementations
  - Hardware
  - Software
    - Languages