

ECMWF data decoding tools for users and operations

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ECMWF

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Requirements for GRIB decoder

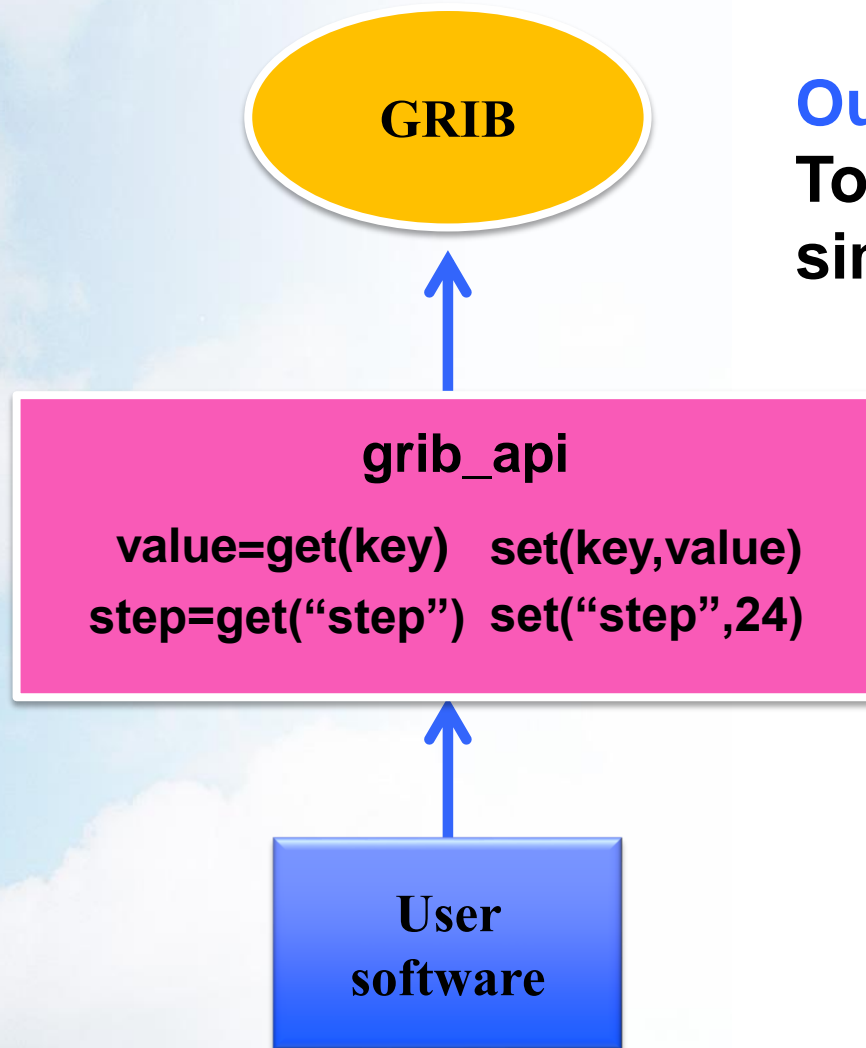
USERS

1. Easy to use
2. Easy to use
3. Easy to use
4. My programming language is ...
5. We don't want to change our software which is already working

OPERATIONS

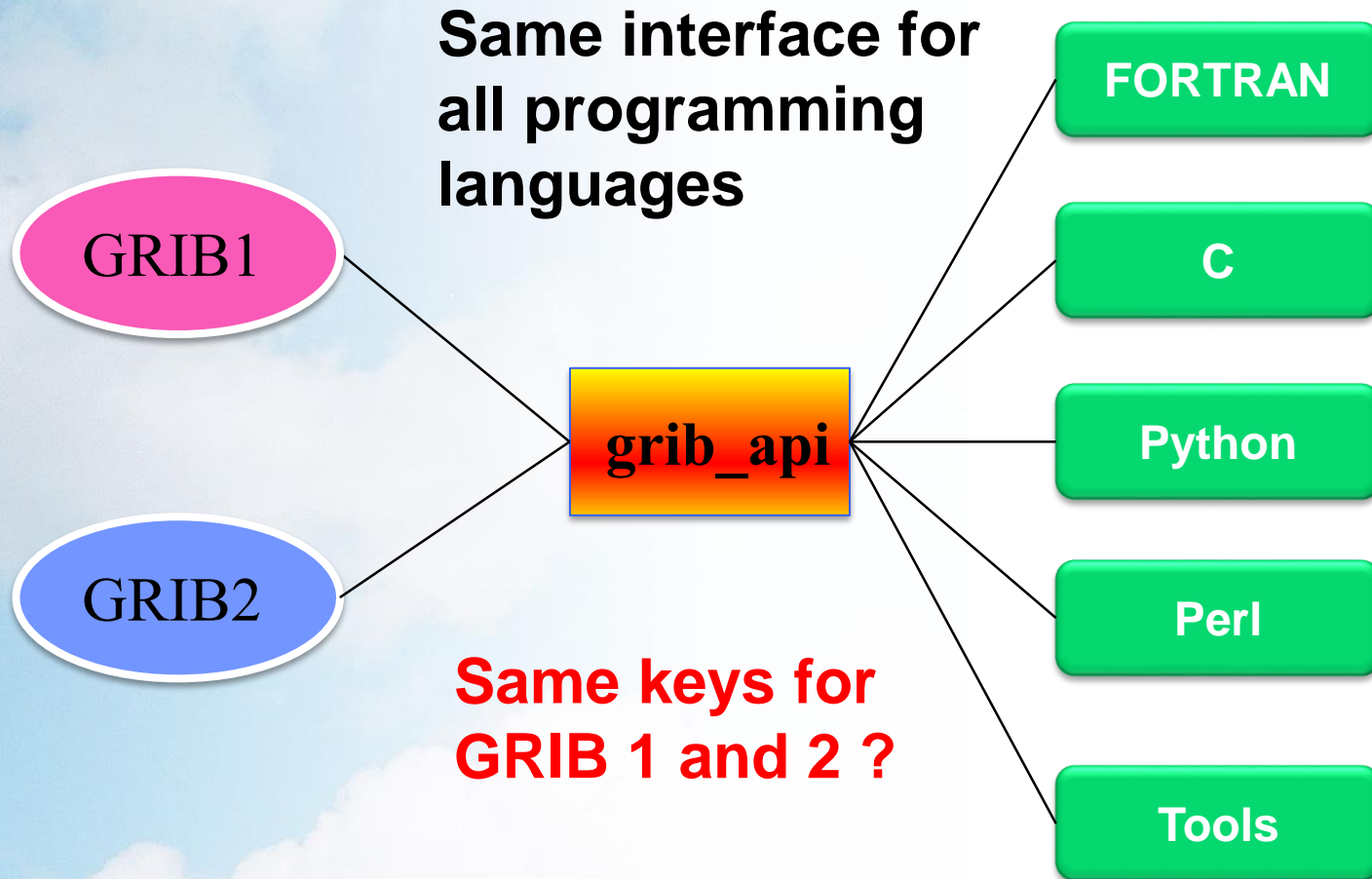
1. **Long term archiving.** After 20 years we need to be able to decode the archived data with the available decoder.
2. **Long term archiving.** Decoder has to be able to deal with changes in the format across the all archive. GRIB1->GRIB2
3. **Performance and HPC.**
4. **Data compression.**
5. **We don't want to change our software which is already working**

`grib_api` key/value or get/set approach

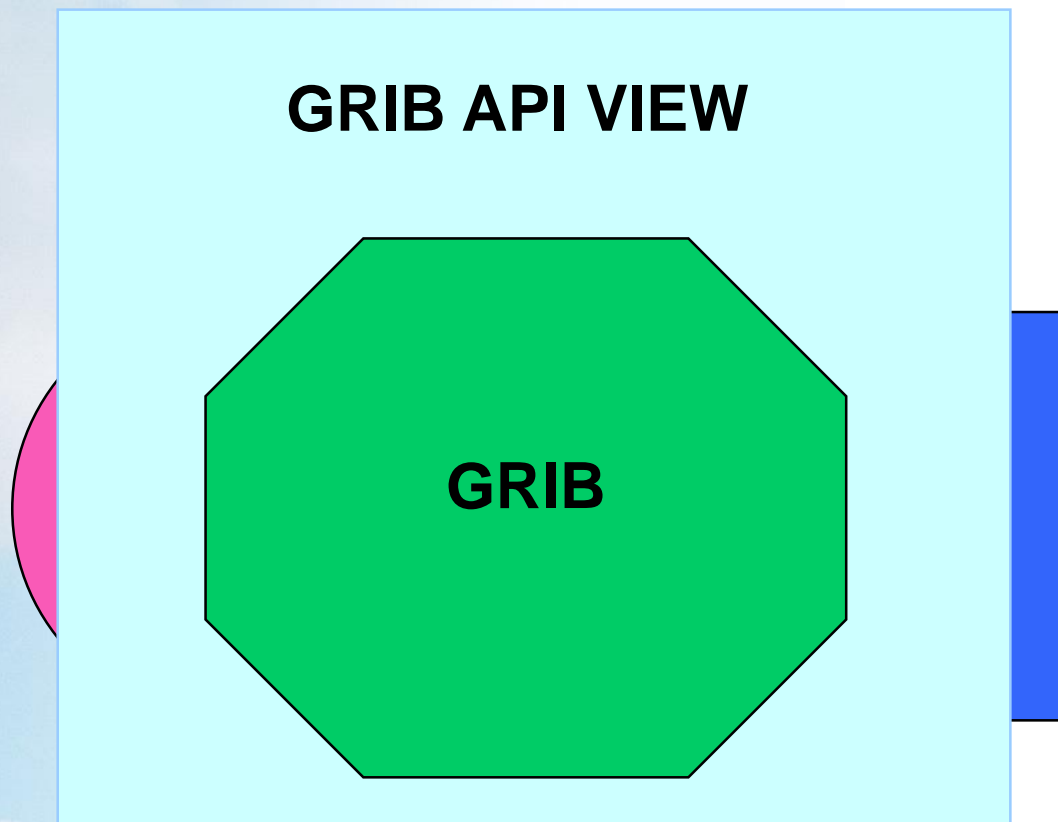


Our mission
To provide a
simple interface

grib_api: GRIB1 and GRIB2 decoder/encoder



GRIB 1 vs. 2




GRIB 1 vs. 2

 **VIRTUAL** latitudeOfFirstGridPointInDegrees=40


 **CODED** latitudeOfFirstGridPoint=40000

 **CODED** latitudeOfFirstGridPoint=40000000


GRIB 1 vs. 2

 **VIRTUAL**

shortName=2t

 **CODED**

indicatorOfParameter=11
indicatorOfTypeOfLevel=105
level=2

 **CODED**

discipline=0
parameterCategory=0
parameterNumber=0
scaleFactorOfFirstFixedSurface=0
scaledValueOfFirstFixedSurface=2
typeOfFirstFixedSurface=103

GRIB 1 vs. 2

VIRTUAL

shortName=2t

CODED

centre=98

table2Version=128

indicatorOfParameter=167

ECMWF local code



CODED

discipline=0

parameterCategory=0

parameterNumber=0

scaleFactorOfFirstFixedSurface=0

scaledValueOfFirstFixedSurface=2

typeOfFirstFixedSurface=103

GRIB 1 vs. 2

VIRTUAL

paramId=167

CODED

centre=98

table2Version=128

indicatorOfParameter=**167**

ECMWF local code



CODED

discipline=0

parameterCategory=0

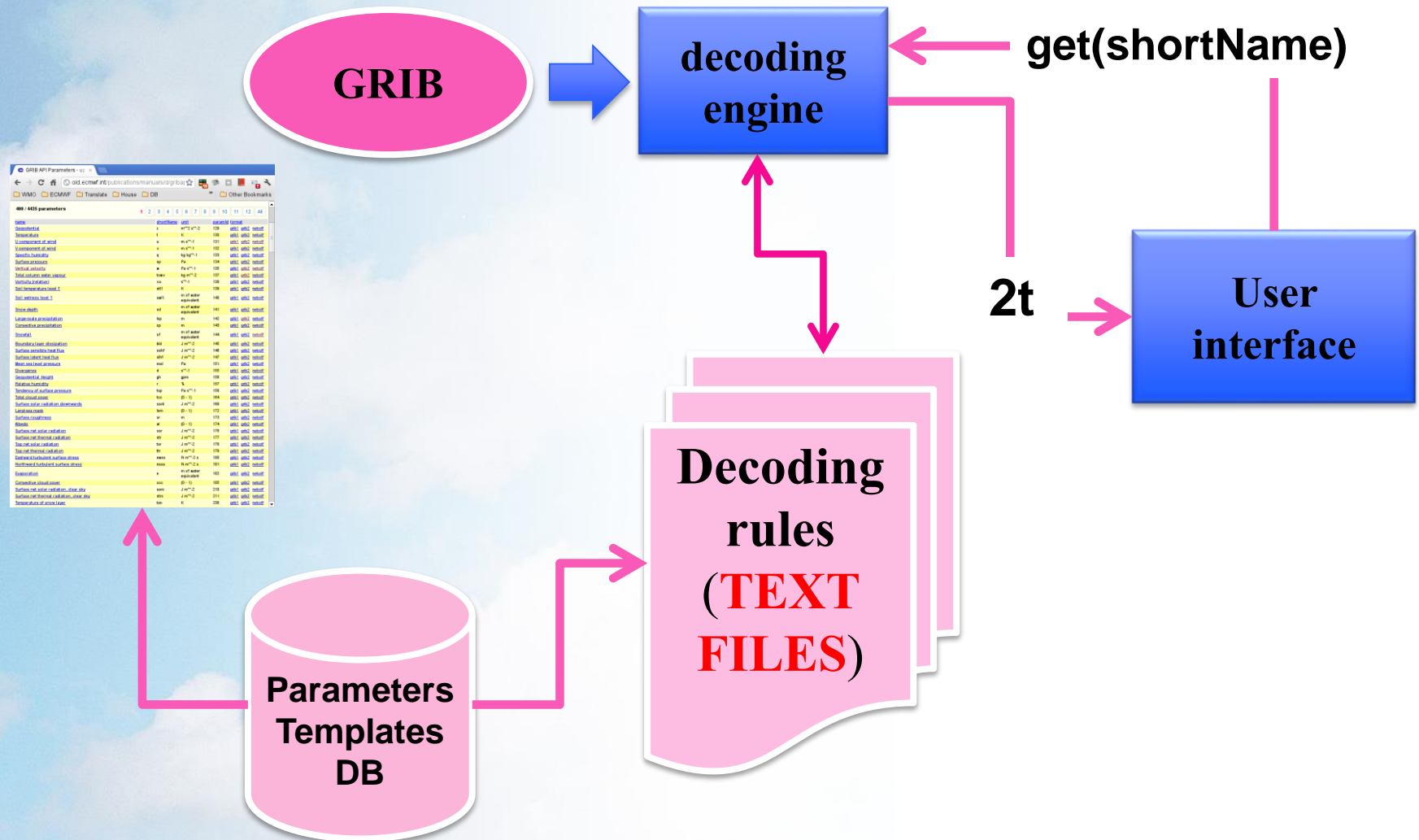
parameterNumber=0

scaleFactorOfFirstFixedSurface=0

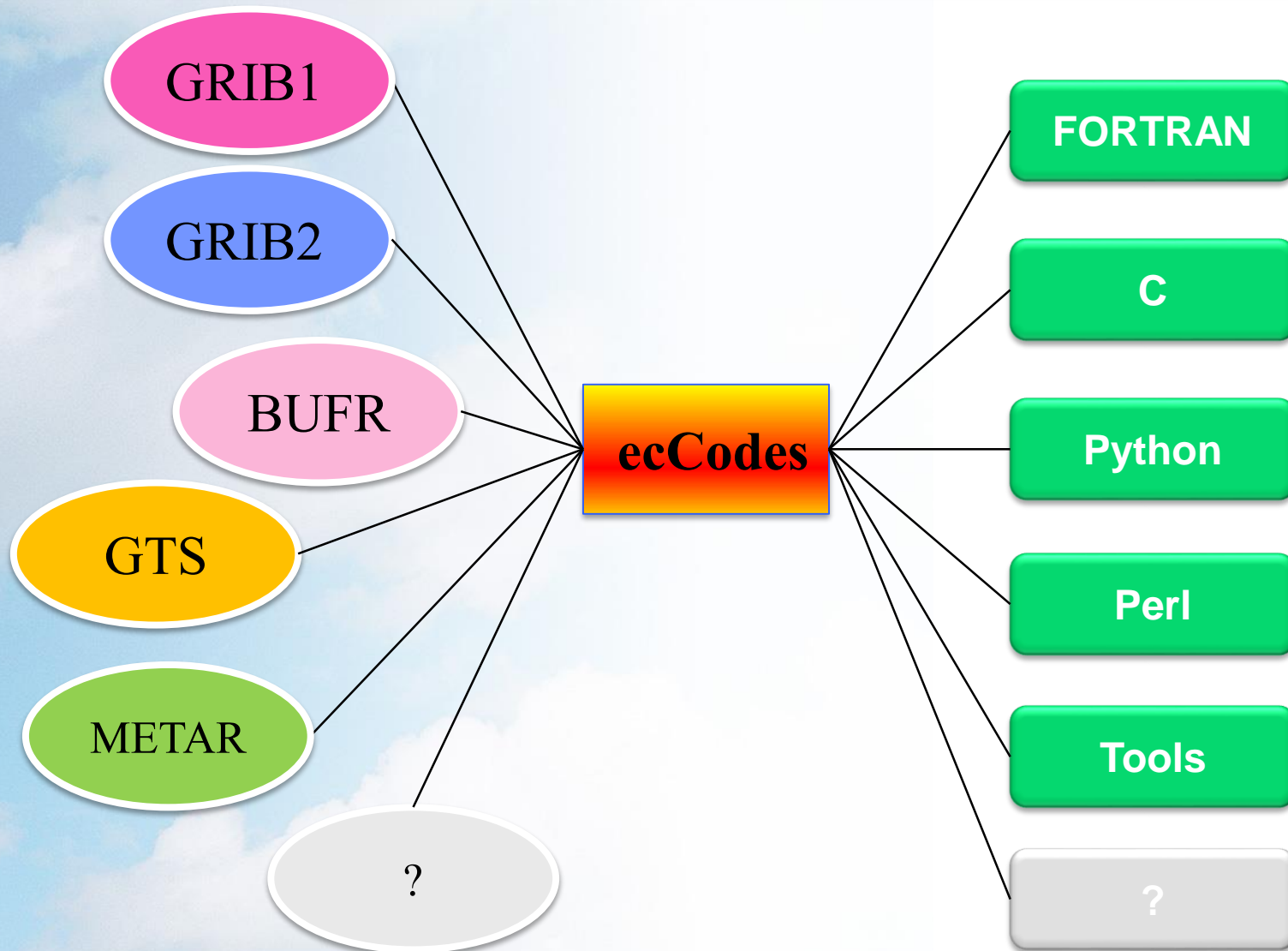
scaledValueOfFirstFixedSurface=2

typeOfFirstFixedSurface=103

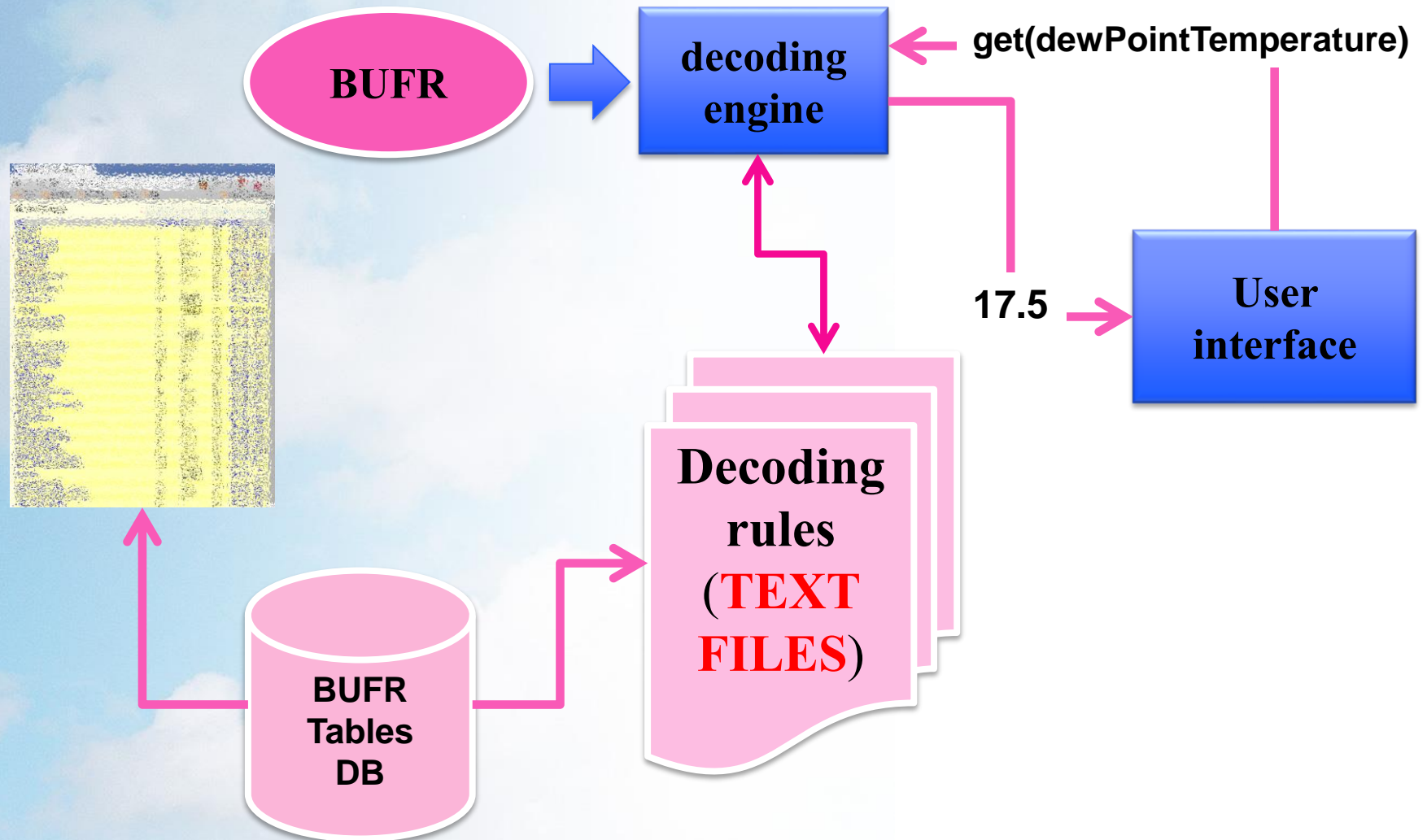
grib_api design



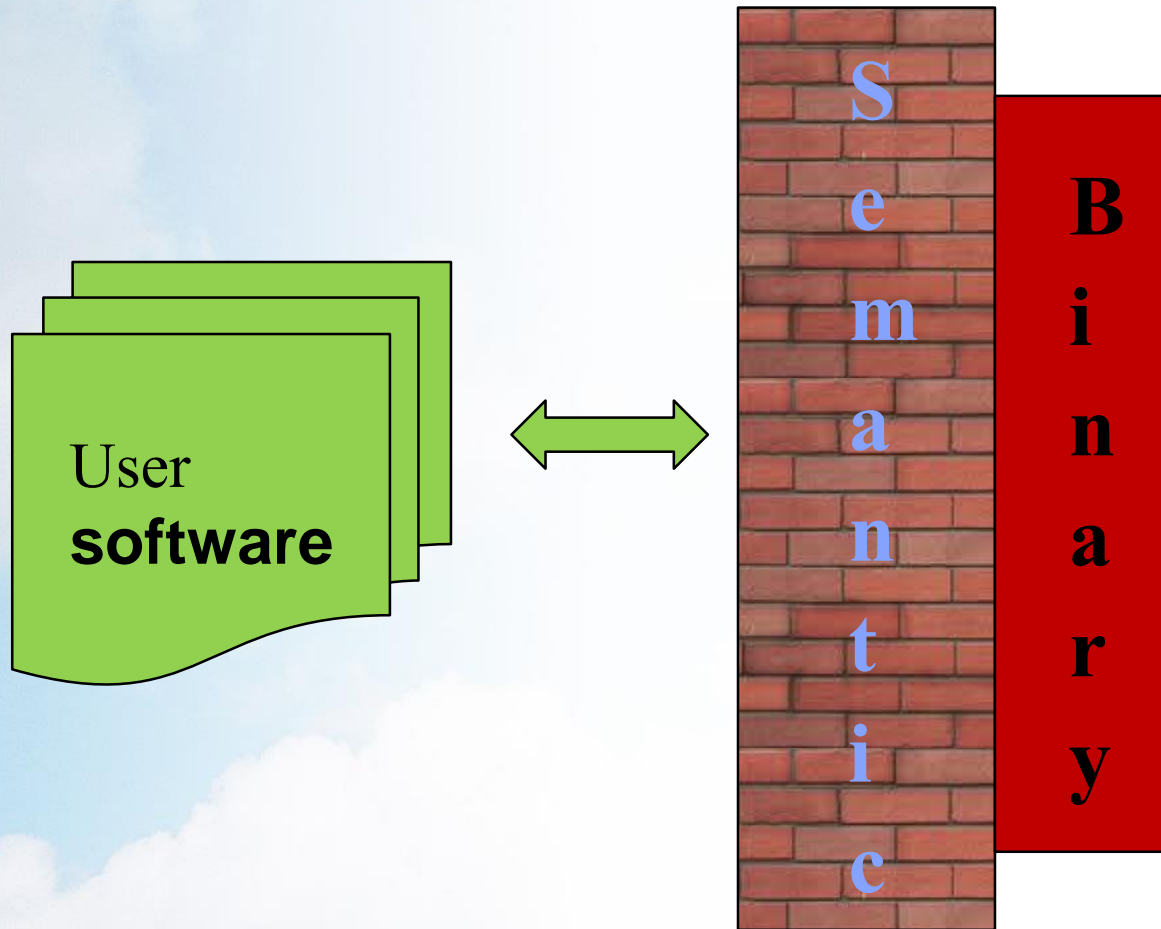
ecCodes: decoding more formats with the same paradigm



ecCodes design



ecCodes view



Thanks