



Use of source code in ITU standards

- An overview -

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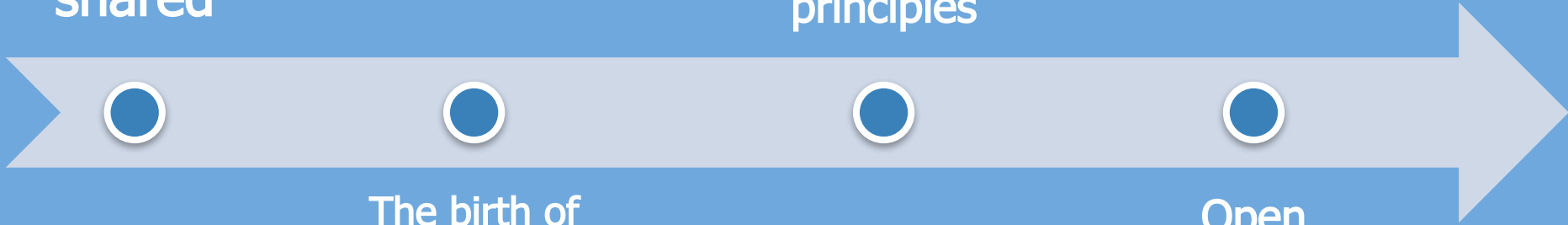
Timeline

Source
code
shared

GNU's not Unix:
a question of
principles

The birth of
proprietary code ...
and the reaction
(late 1970s – mid 1980s)

Open
Source:
being
pragmatic



Algorithms described in prose

- ❑ Implement proprietary (closed) code / hardware and describe (prose) for exact operation with pseudo-code
- ❑ Verification with test files ("test vectors") with near 100% code coverage



In ITU standards – the case of codecs

Algorithm development: support tools (1990)

- ❑ Unified to facilitate development
- ❑ Transition from hardware models to software models
- ❑ Common support tools, portable across many diverse systems
- ❑ Shareable with feedback to the community; not for implementation

...and it was good: use of shared code to describe complex algorithms

- ❑ No more "code to prose" translation; simple sets of test vectors
- ❑ Faster innovation: more sophisticated algorithms with better performance

A map

Other type of license

Speech/audio codecs post 1996:

G.711.0 G.711.1
G.718 G.719
G.722.1 G.722.2
G.723.1 **G.729** G.729.1

(ITU Software Copyright Guidelines: free use to support testing and implementation)

Voice performance estimation: P.861 and P.862

Also: many non-ITU speech codecs

Open source license

Internal: (closed group)
Video codec "Test Model" &
H.264.2, H.265.2 for conformance testing ("BSD")

External:
H.761 (NC/GPL2), H.762 (LSK/BSD)
H.264 (x264/GPL2), T.81 (IJG)

G.191 – Software Tool Library (GPL1)

Reference

Normative

OpenITU

An open source platform and project

Started: September 2017

Experience will assess how governance should be updated

G.191 STL
diminishing
community in
ITU-T

- Open to the community at large in GitHub:
[OpenITU/STL](#)

Simple initial
governance

- Open source code evolution based on contributions and adoption based on merits
 - Regression testing for backward compatibility
 - Meet documented library functional philosophy and tool requirements
- When sufficient set of new features are adopted, issue a new release
- Release is brought to ITU-T SG12 for approval under ITU's conventional process



Remarks



Significant experience in ITU with the normative use of code

- ❑ Development by closed groups (groups of companies)
- ❑ Free uses defined (reference for implementation; basis for testing)

Open source licenses used in certain projects

- ❑ Development under ITU or ITU/ISO/IEC membership rules: "closed groups"

One experiment with open source project – OpenITU/STL

- ❑ Low risk project – allow people to be open minded
- ❑ Simple governance as starting point: no change to expected processes within each communities

```
$(this).parent().remove();  
var l=parseInt($("#limi  
T=50,$("#limi  
$("#add_custom_top").b  
$("#hideCustomBox")?$(  
},400)),$("#mode-o  
multi").toggleClass("mo  
).on("click",".kw-wo  
);if(t=o.length>2?!1  
lings(".count-word-li  
(this).parent().remov  
click to add"><span  
(#word-list-out .odrz_
```

Thank
you!