CoRE: CRI

July 28th (Wednesday), 19:00-21:00 UTC
(21:00–23:00 CEST, 12:00–14:00 PDT)

The Web (~ 1990)

component	big web
hyperreferences	URI
transfer protocol	HTTP
representation format	HTML

The Thing Web (~ 2010): CoRE

component	thing web
hyperreferences	URI
transfer protocol	**CoAP**
representation format	**(CBOR-based formats)**

Time for a cleanup? (~ 2020)

component	thing web
hyperreferences	URI → **CRI**
transfer protocol	CoAP
representation format	(CBOR-based formats)

URI

[...] many implementations [...] support only an ad-hoc, informally-specified, bug-ridden, non-interoperable subset of half of RFC 3986.
— Klaus Hartke

RFC 3986, RFC 7252

RFC 3986: syntax of URIs, (implicit) data model
RFC 7252 maps that data model to CoAP options

Component	Structure	Separators
scheme	http:	
authority	//tzi.de	
path	(path segments)	/
query	(query elements)	& — CoAP
fragment	#page-5	

URI references: RFC 3986 "resolution procedure"

URIs relative to a base (document URI): occur in documents, not in transfer protocols

Example	Resolution from https://tzi.de/pa/t/h	What happens to Path Segments?
foo	https://tzi.de/pa/t/foo	discard last 1
/foo	https://tzi.de/foo	discard all
../foo	https://tzi.de/pa/foo	discard last 2
?bar	https://tzi.de/pa/t/h?bar	discard 0
//tzi.org/foo	e.g., https://tzi.org/foo	(new authority), discard all

CRI

Concise Resource Identifier:
Concise equivalent of URIs and URI references (RFC 3986)

New representation format for **URI data model**

draft-ietf-core-href defines **CRIs** and CRI references

-04 ("new-syntax")

— developed with Jim Schaad, since further optimized → efficient!
— requires a number of decisions (if-statements) on ingest ("parsing")

Abstract content:

`[ scheme, authority, discard, path, query, fragment ]`

(path and query are arrays;
authority has address/name + optional port)

-05 ("simplified-syntax")

— directly use the six-tuple, in two compacted variants:

— [scheme, authority, path, query, fragment]

— [discard, path, query, fragment]

— use cases **roughly** URI vs. relative reference

Cost of simplification: 2–4 bytes per relative CRI-reference

-06 ("authority anomaly")

URI	CRI
urn:x	["urn", null, ["x"]]
urn:/x/y	["urn", null, ["x", "y"]]
urn:/x	["urn", null, ["x"]]
Solution:	special-case non-rooted opaque
urn:x	["urn", true, ["x"]]

-06: parsed hostname

Component	representation	parsed out
scheme	"http" or -2	:
authority	["tzi", "de", 4711]	. and :
path	["pa", "th]	/
query	["qu", "e=ry"]	? and &
fragment	"fragment"	#

http://tzi.de:4711/pa/th?qu&e=ry#fragment

href-06: Status

— consistent design

— feature-complete

— implementations need updates to –06/publishing

— href was developed for CoRAL
- Klaus Hartke is currently taking time off from CoRAL
- Requirements from CRIs from other groups, e.g., attestation
- "Finishing" editors: Carsten Bormann, Henk Birkholz

— (1) More implementer reviews, (2) WGLC?