

Patract's | Metis M1 (ink! and Ask! Standard Library) | intake review report

Reference Links

- [Motion #93 | Patract's treasury proposal about Metis M1 \(ink! and Ask! Standard Library\)](#)
 - [Report #566 | Patract's treasury report for Metis M1 \(Wasm Contract Library\)](#)
 - [github.com | patractlabs/metis: Wasm contract standard library by Patract Labs](#)
 - [Overview - The Documentation of Metis](#)
 - [Review Form](#)
-

M1 Objective

2.1 Implement basic component macros

Macros	Keyword	Descp
contract	<code>`#[metis_lang::contract]`</code>	To define the contract following metis contract standard.
import	<code>`#[import(xxx)]`</code>	To generate code to implement the components.
metis	<code>`#[metis(xxx)]`</code>	To define the metis component.
stub	<code>`#[metis_lang::stub]`</code>	To implement stub in metis.
reentrancy_guard	<code>`#[metis_lang::reentrancy_guard]`</code>	Helper macro for the reentrancy_guard component.
supports	<code>`#[metis::supports()]`</code>	Helper macro for the ERC165 supports api.
hash	<code>`metis::hash!()`</code>	To calculate the hash of a string during compilation.
selector_id	<code>`metis::selector_id!()`</code>	To calculate the selector_id of a message.

Validation Setup

Components	Discp
Reference App	`metis/example`
europa-ui	`europa-ui-v0.3.30-x86_64-linux.AppImage`

Verification Status

Component	Test Cases	Status	Demonstrates
token	erc721.test.ts	OK	`#[metis_lang::contract]   #[import(xxx)]   #[metis()]`
	erc721.burnable.test.ts	OK	`#[metis_lang::contract]   #[import(xxx)]   #[metis()]`
	erc721.enumerable.test.ts	OK	`#[metis_lang::contract]   #[import(xxx)]   #[metis()]`
	erc721.pausable.test.ts	OK	`#[metis_lang::contract]   #[import(xxx)]   #[metis()]`
	erc721.urlstorage.test.ts	OK	`#[metis_lang::contract]   #[import(xxx)]   #[metis()]`
	erc777.test.ts	OK	`#[metis_lang::contract]   #[import(xxx)]   #[metis()]`
	erc1155.test.ts	OK	`#[metis_lang::contract]   #[import(xxx)]   #[metis()]`
governance	timelock_controller.test.ts	OK	`#[metis_lang::contract]   #[import(xxx)]   #[metis()]`
security	reentrancy-guard.test.ts	OK	`#[metis_lang::contract]   #[import(xxx)]   #[metis()]   #[metis_lang::reentrancy_guard]`
access-control	access-control.test.ts	OK	`#[metis_lang::contract]   #[import(xxx)]   #[metis()]`
	ownable.test.ts	OK	`#[metis_lang::contract]   #[import(xxx)]   #[metis()]`
tools	erc165.test.ts	OK	`#[metis_lang::contract]

	s		<code>#[import(xxx)] #[metis()] #[metis::supports()]`</code>
utils	escrow.test.t s	OK	<code>`#[metis_lang::contract]   #[import(xxx)]   #[metis()]`</code>

Verification Execution Summary

[Gist](#) | [Console Traces Link](#)

> Test-01 | `./tests/token/erc721.test.ts` | OK

211 passing | 4 pending

ERROR output: undefined; debugMessage: 06:36:36

✓ return empty string by default
- reverts when queried for non existent token id
base URI
- base URI can be set
- base URI is added as a prefix to the token URI
- token URI can be changed by changing the base URI

211 passing (8m)
4 pending

Contract	Message	Min		Max		Avg		Calls
		EstimateGas	Weight	EstimateGas	Weight	EstimateGas	Weight	
erc721	set_approval_for_all	11057516493	11554854493	16112383940	15179345240	13038860330	15084621836	188
ownable_erc20	approve	13050980952	13548318952	17771169900	18027424353	15148505799	15423180731	70
ownable_erc20	transfer_from	19667892130	22329650118	19667892130	22329650118	19667892130	22329650118	5
erc721_token_receiver	add_accept_token	5426960803	6437084732	6357106114	6437084732	5433557578	6437084732	141
timelock_controller_receiver	set_receive_status	3549094582	4046432582	3549094582	4046432582	3549094582	4046432582	142
erc721	safe_transfer_from_with_data	23388493755	26050251743	23388493755	26050251743	23388493755	26050251743	10
erc721	safe_transfer_from	23324431990	25986189978	23324431990	25986189978	23324431990	25986189978	10
erc721_token_receiver	del_accept_token	5196260766	7086006494	5196260766	7086006494	5196260766	7086006494	1

example ▶

> Test-02 |

`./tests/token/erc721.burnable.test.ts` | OK

211 passing | 4 pending

```
_mint
✓ reverts with a null destination address
with minted token
✓ emits a Transfer event
✓ creates the token (5079ms)
✓ reverts when adding a token id that already exists
```

211 passing (14m)
4 pending

		Min		Max		Avg		
Contract	Message	EstimateGas	Weight	EstimateGas	Weight	EstimateGas	Weight	Calls
erc721	set_approval_for_all	11057920848	11555258848	16112788295	15179749595	13039264685	15085026191	188
ownable_erc20	approve	13052991934	13550329934	17773180882	18029435335	15150516781	15425191713	70
ownable_erc20	transfer_from	19669903112	22331661100	19669903112	22331661100	19669903112	22331661100	5
erc721_token_receiver	add_accept_token	5426960803	6437084732	6357106114	6437084732	5433557578	6437084732	141
timelock_controller_receiver	set_receive_status	3549094582	4046432582	3549094582	4046432582	3549094582	4046432582	142
erc721	safe_transfer_from_with_data	23390498660	26052256648	23390498660	26052256648	23390498660	26052256648	10
erc721	safe_transfer_from	23326442972	25988200960	23326442972	25988200960	23326442972	25988200960	10
erc721_token_receiver	del_accept_token	5196260766	7086006494	5196260766	7086006494	5196260766	7086006494	1

example > |

> Test-03 |

`./tests/token/erc721.enumerable.test.ts` | OK

211 passing | 4 pending

211 passing (6m)
4 pending

			Min		Max		Avg	
Contract	Message	EstimateGas	Weight	EstimateGas	Weight	EstimateGas	Weight	
erc721	set_approval_for_all	14687987383	15185325383	19742854830	18809816130	16669331220	187150	
ownable_erc20	approve	16704836774	17202174774	21426459834	21693174968	18807778026	190879	
ownable_erc20	transfer_from	23840467343	26511408349	23840467343	26511408349	23840467343	265114	
erc721_token_receiver	add_accept_token	5423997591	6434121520	6354142902	6434121520	5430594366	643412	
timelock_controller_receiver	set_receive_status	3546131370	4043469370	3546131370	4043469370	3546131370	404346	
erc721	safe_transfer_from_with_data	27561068968	30232009974	27561068968	30232009974	27561068968	302320	
erc721	safe_transfer_from	27497007203	30167948209	27497007203	30167948209	27497007203	301679	
erc721_token_receiver	del_accept_token	5193297554	7083043282	5193297554	7083043282	5193297554	708304	

example > git:master*

> Test-04 |

```
./tests/token/erc721.pausable.test.ts | OK
```

211 passing | 4 pending

211 passing (11m)
4 pending

			Min	Max	Avg		
Contract Calls	Message	EstimateGas	Weight	EstimateGas	Weight	EstimateGas	Weight
erc721 73385 188	set_approval_for_all	11096768042	11594106042	16151635489	15218596789	13078111879	151238
ownable_erc20 05467 70	approve	13087305688	13584643688	17807494636	18063749089	15184830535	154595
ownable_erc20 42276 5	transfer_from	19862384288	22524142276	19862384288	22524142276	19862384288	225241
erc721_token_receiver 1520 141	add_accept_token	5423997591	6434121520	6354142902	6434121520	5430594366	643412
timelock_controller_receiver 9370 142	set_receive_status	3546131370	4043469370	3546131370	4043469370	3546131370	404346
erc721 21659 10	safe_transfer_from_with_data	23578463671	26240221659	23578463671	26240221659	23578463671	262402
erc721 67783 10	safe_transfer_from	23514409795	26176167783	23514409795	26176167783	23514409795	261761
erc721_token_receiver 3282 1	del_accept_token	5193297554	7083043282	5193297554	7083043282	5193297554	708304

example > git:master*

> Test-05 |

```
./tests/token/erc721.urlstorage.test.ts | OK
```

211 passing | 4 pending

211 passing (6m)

4 pending

			Min		Max		Avg	
Contract	Calls	Message	EstimateGas	Weight	EstimateGas	Weight	EstimateGas	Weight
erc721	40456 188	set_approval_for_all	11533035113	12030373113	16587902560	15654863860	13514378950	155601
ownable_erc20	30964 70	approve	13534038846	14031376846	18254227866	18510473864	15631560500	159062
ownable_erc20	99701 5	transfer_from	20150950096	22812699701	20150950096	22812699701	20150950096	228126
erc721 token receiver	1520 141	add_accept_token	5423997591	6434121520	6354142902	6434121520	5430594366	643412
timelock_controller_receiver	9370 142	set_receive_status	3546131370	4043469370	3546131370	4043469370	3546131370	404346
erc721	01326 10	safe_transfer_from_with_data	23871551721	26533301326	23871551721	26533301326	23871551721	265333
erc721	39561 10	safe_transfer_from	23807489956	26469239561	23807489956	26469239561	23807489956	264692
erc721 token receiver	3282 1	del_accept_token	5193297554	7083043282	5193297554	7083043282	5193297554	708304

example >

git:master*

> Test-06 | `./tests/token/erc777.test.ts` | OK

2 passing

2 passing (3s)

		Min		Max		Avg		
Contract	Message	EstimateGas	Weight	EstimateGas	Weight	EstimateGas	Weight	Calls
erc777	mint	17030122479	17995898253	17030122479	17995898253	17030122479	17995898253	2

example ▶

> Test-07 | `./tests/token/erc1155.test.ts` | OK

3 passing (3s)

3 passing (3s)

		Min		Max		Avg		
Contract	Message	EstimateGas	Weight	EstimateGas	Weight	EstimateGas	Weight	Calls
erc777	mint	17030122479	17995898253	17030122479	17995898253	17030122479	17995898253	1
erc1155	mint_test	13670265964	14571498326	13670265964	14571498326	13670265964	14571498326	2

example ▶

```
> Test-08 |
`./tests/governance/timelock_controller.test.ts` |
OK
```

4 passing (6s)

4 passing (6s)

		Min	Max	Avg	
Contract	Message	EstimateGas	Weight	EstimateGas	Weight
erc1155	mint_test	13670265964	14571498326	13670265964	14571498326
timelock_controller_receiver	add_accept_caller	6038993230	7050620723	6038993230	7050620723
timelock_controller_receiver	set_receive_status	3130781655	3628119655	3130781655	3628119655

example ▶ git:master*

> Test-09 |

`./tests/security/reentrancy-guard.test.ts` | OK

5 passing (6s)

```

}
  ✓ reentrant diff should failed (1175ms)

5 passing (6s)

```

		Min		Max		Avg		
Contract	Message	EstimateGas	Weight	EstimateGas	Weight	EstimateGas	Weight	Calls
reentrancy_guard_traits	flip	1149404463	1646742463	1149404463	1646742463	1149404463	1646742463	3
reentrancy_guard_caller	set_call_type	1930922784	2428260784	1930922784	2428260784	1930922784	2428260784	2

example > git:ma

> Test-10 |

`./tests/access-control/access-control.test.ts` |

OK

16 passing (15s)

```

  ✓ Renouncing granted role multi-times should error (1019ms)
  ensure role should ok
  ✓ sender roles not had should error (808ms)
  ✓ sender had role should ok (797ms)
  ✓ sender had other role should error (784ms)

16 passing (15s)

```

		Min		Max		Avg		
Contract	Message	EstimateGas	Weight	EstimateGas	Weight	EstimateGas	Weight	Calls
reentrancy_guard_traits	flip	1149404463	1646742463	7236788380	7734126380	5701710209	6199048209	4

example > git:ma

> Test-11 |

`./tests/access-control/ownable.test.ts` | OK

5 passing (4s)

5 passing (4s)

Contract	Message	Min		Max		Avg		Calls
		EstimateGas	Weight	EstimateGas	Weight	EstimateGas	Weight	
reentrancy_guard_traits	flip	7210323997	7707661997	7210323997	7707661997	7210323997	7707661997	1
ownable_erc20	transfer	10586413020	11549676748	10586413020	11549676748	10586413020	11549676748	1

example > █ git:mas

> Test-12 | `./tests/tools/erc165.test.ts` | OK

5 passing (4s)

5 passing (4s)

Contract	Message	Min		Max		Avg		Calls
		EstimateGas	Weight	EstimateGas	Weight	EstimateGas	Weight	
reentrancy_guard_traits	flip	2510771606	3008109606	2510771606	3008109606	2510771606	3008109606	3
erc165	set	2528214761	3025552761	2528214761	3025552761	2528214761	3025552761	4

example > █

```
> Test-13 | `./tests/utis/escrow.test.ts` | OK
```

2 passing (2s)

2 passing (2s)

Contract	Message	Min		Max		Avg		Calls
		EstimateGas	Weight	EstimateGas	Weight	EstimateGas	Weight	
erc165	set	2528214761	3025552761	2528214761	3025552761	2528214761	3025552761	1
escrow	deposit	6593614636	7090952636	6593614636	7150756690	6593614636	7120854663	2
escrow	withdraw	7143738927	7641076927	7143738927	7641076927	7143738927	7641076927	1

example ▶

Minor Observations

> Panic message warnings ``ERROR output: undefined; debugMessage:`` - known behaviour



fy

`ERROR output: undefined; debugMessage:` is not a error, because a panic in a query will not show error to client, and the testcase need to check to assert!, in now version of europa, all panic msg not return to client, so we just keep this error for a warning



> Unable to find example for ``metis::hash!()`` as part of ``example/contracts``



shamb0 | nodle.io

Yes I saw that, fine,

Does it not get used as part of component building ? other macros are demonstrated as part of `example/contracts` , looks like only hash got missed



fy

16:27

the hash! marco is just as helper tool for cross-calling in some component, likely in `erc721`, so it will not in example contracts

