COCOMO Analysis of ASWF Projects

July 26, 2023

- **COCOMO** stands for the *constructive cost model*, a cost estimation model for software projects based on line of codes and github analysis.

- Presented by John in our last board strategy meeting

- More information here

/* ACADEMY
SOFTWARE
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Total Physical Source Lines of Code (SLOC)

140,405

Development Effort Estimate

35.96 (431.48) *Person-Years (Person-Months)*

*(Basic COCOMO model, Person-Months = 2.4 * (KSLOC**1.05))*

Schedule Estimate

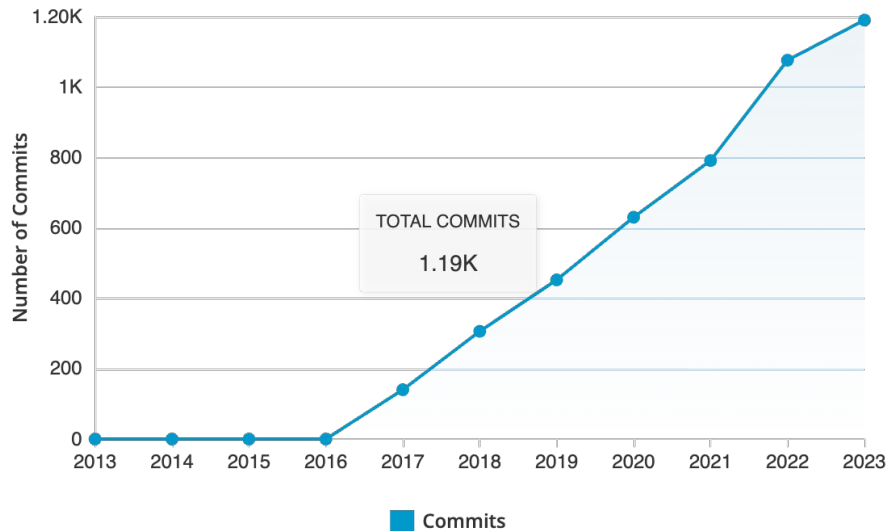**2.09 (25.07)** *Years (Months)*

*(Basic COCOMO model, Months = 2.5 * (person-months**0.38))*

Total Estimated Cost to Develop

$4,857,282

(average salary = $56,286/year, overhead = 2.40).

generated using David A. Wheeler's 'SLOCCount'

80% of contributions (3x multiplier in value[1])

This means Lucasfilm invested…

- 28.7 years of developer effort
- $3.8M of R&D costs

and leveraged (3x multiplier[1])…

- **107.8 years** of developer effort
- **$14.5M** of R&D investment

(1) Source: https://www.mckinsey.com/industries/technology-media-and-telecommunications/our-insights/developer-velocity-how-software-excellence-fuels-business-performance#

4x R&D ROI

About the valuation of our projects
Academy Software Foundation projects overall value

Project	Total Physical Source Lines of Code (SLOC)	Development Effort Estimate, Person-Years	Development Effort Estimate, Person-Months	Schedule Estimate, Years	Schedule Estimate, Months	Total Estimated Cost to Develop
OpenColorIO	205,912	53.39	640.73	2.4	28.84	$7,212,881
RAW to ACES Utility	6,906	1.52	18.26	0.63	7.54	$205,508
Open Shading Language (OSL)	107,691	27.22	326.59	1.88	22.56	$3,676,461
OpenEXR	244,167	62.66	751.94	2.39	28.63	$8,464,751
Rez	77,771	19.34	232.04	1.65	19.81	$2,612,163
MaterialX	140,699	36.04	432.43	2.09	25.1	$4,867,962
OpenTimelineIO	105,476	24.49	293.84	1.35	16.21	$3,307,768
OpenCue	100,719	25.37	304.41	1.83	21.96	$3,426,827
OpenVDB	300,931	80.06	960.73	2.83	33.99	$10,815,134
OpenFX	30,286	7.18	86.2	1.13	13.6	$970,388
OpenAssetIO	220,875	56.88	682.53	2.42	29.04	$7,683,325
Open Review Initiative	575,674	153.99	1847.85	3.32	39.81	$20,801,620
OpenImageIO	144,825	37.14	445.62	2.11	25.38	$5,016,447
TOTALS	**2,261,932**	**585.28**	**7023.17**	**26.03**	**312.47**	**$79,061,235**

- Validate assumptions/numbers.
- Discuss how to best convey this as a value to members/downstream users.