IJSSCS
International Journal of Social Science and Community Service
https://ijsscs.com/index.php/journal
Online ISSN 3047-5406

Analysis of Remaining Project Cost Estimate Temporary Schedule (ETS) & Final Project Time Estimate All Schedule (EAS)

Edwin Octavianto Saputra[1], Haris Muhammadun[2], Risma Marleno[3]*

[1-3] Master of Civil Engineering Study Program, Faculty of Engineering, Universitas 17 Agustus 1945 Surabaya, Indonesia

E-mail: [1)] edwinocta26@gmail.com

ARTICLE INFO

Article History
Received : 20.06.2024
Revised : 25.07.2024
Accepted : 30.07.2024
Article Type: Research Article

*Coresponding author:
Edwin Octavianto Saputra
edwinocta26@gmail.com

ABSTRACT

The wheat silo and pellet silo structure repair project phase 3 by PT ISM Bogasari Surabaya is an annual infrastructure maintenance and strengthening activity aimed at supporting the smooth production process. Therefore, it is crucial to complete the project on time according to the contract to proceed to the next stage of repair and avoid delays that could result in cost overruns. This study uses Earned Value Method (EVM) analysis to address these issues and assess the performance of costs and implementation time as the project progresses. The indicators used in the analysis include the calculation of Estimated To Complete (ETC) and Estimated At Complete (EAC) for forecasting project completion costs, and Estimated Temporary Schedule (ETS) and Estimated All Schedule (EAS) for forecasting project completion time. Based on the results of the cost and time performance analysis, the EAC value is 0.77% smaller, which is Rp. 21,825,605,678, compared to the contract value. The time to complete the EAS project is 481 days, with an addition of 26 days, resulting in a 0.6% longer project completion time.

Keywords: Cost, Earned Value Method, Scheduling, Time

1. Introduction

Construction projects are complex activities, do not occur routinely, require significant investment of cost, time and resources, and have specification limitations. The project aims to achieve the goals of the stakeholders. However, often in the implementation process, there are constraints that result in failure to achieve the expected goals together (Marleno et al., 2018). In the process of working on a project, it is always related to the cost, time and quality of the construction. The initial stage in a construction project is the planning stage. Planning project activities is a very important issue because planning activities is the basis for the project to run and for the project to be completed with the optimal time.

In the process of working on a construction project, it will always be influenced by previous activities, starting from the planned ideas and planning. In the construction of a construction project, project cost control is important in the process of managing project costs. In the activities of a project, there will be many problems such as excessive use of materials, unskilled labor and project completion time that is not on time, causing cost overruns that are not in accordance with planning (Nurkholis & Abduh, 2022). Cost and time control is part of overall construction project management. In addition to the assessment of the quality aspect, the performance of a project can also be assessed from the aspects of cost and time. The costs that have been incurred and the time used to complete a job must be measured on an ongoing basis for deviations from the plan.

The existence of significant cost and time deviations provides an indication of poor project management. In addition, time is very important in project implementation. With time, it can be determined when a job

ends. In fact, it can also be known whether a job is wasteful or efficient if it cannot be managed properly. At the project planning stage, it is necessary to estimate the duration of the project implementation time. The reality in the field shows that the completion time of a project varies, as a result the estimated completion time of a project cannot be ensured to be kept (Wahyu Santoso, 2017).

The level of accuracy of the estimated project completion time is determined by the level of accuracy of the estimated duration of each job in the project. In addition to the accuracy of the time estimate, the confirmation of the relationship between the activities of a project is also necessary for the planning of a project. To estimate time and cost in a project, optimization is required. In running a project, it is very rare to find a project that runs exactly as specified. Generally, there are delays from what was planned, both time and work progress, but there are also projects that have accelerated from the original planned schedule (Oetomo et al., 2017).

To improve effectiveness in monitoring and controlling project activities, the Earned Value Analysis method can be applied. This method was developed to make estimates or projections of the future state of the project. The problem in this study is how to evaluate construction projects by applying Earned Value Analysis and calculating how much the amount of direct and indirect costs that have been incurred is more than the predetermined budget and how much delay / progress is needed to complete the construction project, if conditions are still like when reporting evaluation and control is the responsibility of a project manager. In a small project, the control process can be done directly. But for larger scale projects the control is done indirectly. Therefore, in the process of project evaluation and control, a single information system is needed that can assess the progress and performance of the project (Putra et al., 2024).

PT Indofood Sukses Makmur Tbk. Bogasari Surabaya Division began operations on July 10, 1972, located at Jl. Nilam Timur No. 16 Tanjung Perak, Surabaya. Occupying an area of ± 14 Ha. With a milling capacity of 5,900 tons of wheat / day and a total flour production of 1.6 million tons per year. In the procurement and storage of raw materials in the form of wheat grain before being processed into flour, it needs to be stored in a place called silo, and the silo owned by Bogasari is a concrete silo. Silos owned by Bogasari are divided into 2 types, namely wheat silos for storing wheat and pellet silos for storing pellets, namely the remaining processed wheat skin that has been wasted which is usually used for animal feed mixture. in Bogasari there are 4 complexes, namely the old pellet silo totaling 18 pieces with a height of 42 m, the new pellet silo totaling 24 pieces with a height of 40 m, the old wheat silo totaling 36 pieces with a height of 50 m, and the new wheat silo totaling 48 pieces with a height of 36.95m. Silo buildings are needed for the continuity of production, therefore maintenance of these buildings is carried out periodically every 20 years.

In the work of the Wheat Silo & Pellet Silo Phase 3 Structure Repair Project, 24 silos were carried out which absorbed a budget of Rp. 28,011,000,000 (Twenty Eight Billion Eleven Million Rupiah) which must be completed within an estimated time of 455 calendar days. During the work process of this silo repair project, bulk production loading and unloading activities continue to run, this results in increasingly complex and complicated construction projects, as well as weather factors when it rains which are always accompanied by strong winds due to the location around the waterfront, which often hinders work at heights using gondolas & access into silos which are only in the form of manholes complicating the installation of supporting equipment in the work, so proper project management is needed so that the project does not exceed the specified time limit. Based on the background description above, the purpose of this study is to analyze the estimated remaining cost of the Estimate Temporary Schedule (ETS) project & the final time of the Estimate All Schedule (EAS) project.

2. Methodology

The subject of this research is the analysis of cost and time performance using the Earned Value method on construction projects. The research object in this study is the Wheat Silo & Pellet Silo Phase 3 Structure Repair Project at PT. ISM Bogasari Surabaya. The research will be conducted on the Wheat Silo & Pellet Silo Phase 3 Structure Repair Project of PT. ISM Bogasari Flour Mill Surabaya, which is located at Jl. Nilam Timur No. 16 Tanjung Perak Surabaya, and will be implemented in February 2024.

In the research conducted on the Wheat Silo & Pellet Silo Phase 3 Structure Repair Project of PT ISM Bogasari Flour Mill Surabaya, data collection as research material was obtained from the implementing contractor. The types of data collected are secondary data types and literature studies, including the project implementation schedule (Time Schedule). There are two types of S curves, namely the S Curve (Master Schedule) which is a reference or plan for the time of work / implementation of each, and the actual project S curve which is updated every week on the time schedule plan according to the weight of the progress of the work that has been carried out and which has not been carried out.

From the actual time schedule, it will be known that the work has progressed performance (progress plus) or decreased performance (progress minus) from the initial plan. Other data is the Cost Budget Plan (RAB) which is the budgeted cost to complete all work items. RAB is listed in the work contract between the project owner and the implementing contractor which consists of unit price analysis, wage list, and material prices. Furthermore, the Project Weekly Report is a progress report on the achievement of project achievements that have been achieved in one weekly period. In this project, cut off progress is carried out every Saturday so that the weekly progress period starts from Sunday to Saturday. This weekly report contains the volume and weight of work progress in that weekly period. Finally, Actual Cost is the cost that has been incurred for work that has been completed.

Data analysis techniques using the Earned Value Analysis method include two aspects, cost and time:

a. Calculation based on Cost Aspects

Calculate the value of CV (Cost Variance), CPI (Cost Performance Index), ETC (Estimate to Complete), EAC (Estimate at Complete).

CV = EV – AC dan CPI = EV / AC
ETC= (BAC – EV) / CPI and EAC= AC + ETC

b. Calculation Based on Time Aspect

Calculate the value of SV (Schedule Variance), SPI (Schedule Performance Index), TE (Time Estimate).

SPI = EV /PV and SV = EV – PV

ETS = Remaining Time / SPI and EAS = Finish time + ETS

3. Results and Discussion

Cost Budget Plan (RAB), is the cost allocated to each work item. RAB is contained in the contract between the owner and the implementing contractor, in the contract there is also an analysis of unit prices, a list of wages and material prices. RAB data is used in the calculation of planned value and earned value.

Table 1. Cost Budget Plan

No.		Uraian Pekerjaan	Jumlah Harga	
A		**Preparation & Administrasi**		
I		PREPARATION & ADMINISTRATION		
	A	MOBILIZATION & DEMOBILAZATION	Rp	900.000.000
	B	DIREKSI KIT	Rp	149.402.290
	C	TEMPORARY EQUIPMENT	Rp	400.000.000
	D	ADMINISTRATION & REPORTING	Rp	2.500.000.000
	E	ASURANSI	Rp	50.000.000
	F	KESELAMATAN KERJA	Rp	1.380.000.000
B		**Wheat Silo Lama (A)**		
I		PREPARATION WORK		
	A	SILO OUTSIDE	Rp	180.000.000
	B	SILO INSIDE	Rp	630.000.000
	C	SILO ROOF	Rp	150.000.000
II		REPAIR WORK		
	A	SILO OUTSIDE	Rp	2.456.910.000
	B	SILO INSIDE	Rp	3.888.030.000
	C	SILO ROOF	Rp	1.034.052.000
C		**Wheat Silo Baru (B)**		
I		PREPARATION WORK		
	A	SILO OUTSIDE	Rp	180.000.000
	B	SILO INSIDE	Rp	630.000.000
II		REPAIR WORK		
	A	SILO OUTSIDE	Rp	1.397.825.410
	B	SILO INSIDE	Rp	3.404.086.000
	C	SILO ROOF	Rp	366.000.000
D		**Pellet Silo Lama (A)**		
I		PREPARATION WORK		
	A	SILO OUTSIDE	Rp	180.000.000
	B	SILO INSIDE	Rp	630.000.000
	C	SILO ROOF	Rp	150.000.000
II		REPAIR WORK		
	A	SILO OUTSIDE	Rp	788.856.500
	B	SILO INSIDE	Rp	698.804.800
	C	SILO ROOF	Rp	841.881.000
E		**Pellet Silo Lama (B)**		
I		PREPARATION WORK		
	A	SILO OUTSIDE	Rp	180.000.000
	B	SILO INSIDE	Rp	630.000.000
	C	SILO ROOF	Rp	150.000.000
	D	MAT FOUNDATION	Rp	50.000.000
II		REPAIR WORK		
	A	SILO OUTSIDE	Rp	1.289.121.500
	B	SILO INSIDE	Rp	863.406.800
	C	SILO ROOF	Rp	366.000.000
	D	MAT FOUNDATION	Rp	1.496.623.700
JUMLAH			**Rp**	**28.011.000.000**

3.1. Calculation Estimate To Complete (ETC)

ETC from contract value minus BCWS then divided by CPI:

ETC calculation in week 1

ETC = (Total Budget – BCWP) / CPI
ETC = (Rp. 28.011.000.000 - Rp. 64.425.300) / 1
ETC = Rp. 27.946.574.700

Table 2. Estimate To Complete

Week	Contract Value (Rp)	EV (BCWP) (Rp)	CPI	ETC (Rp)
1	28.011.000.000	64.425.300	1.000	27.946.574.700
2	28.011.000.000	92.436.300	1.435	19.458.392.882
3	28.011.000.000	215.684.700	1.638	16.965.971.677
4	28.011.000.000	386.551.800	1.278	21.619.133.374
5	28.011.000.000	624.645.300	1.219	22.474.004.081
6	28.011.000.000	885.147.600	1.145	23.692.200.197
7	28.011.000.000	1.224.080.700	1.048	25.560.973.337
8	28.011.000.000	1.498.588.500	0.939	28.246.868.327
9	28.011.000.000	1.498.588.500	0.939	28.246.868.327
10	28.011.000.000	1.915.952.400	0.917	28.460.388.172
11	28.011.000.000	2.257.686.600	0.949	27.127.249.475
12	28.011.000.000	2.661.045.000	0.954	26.577.426.505
13	28.011.000.000	3.053.199.000	0.964	25.896.580.671
14	28.011.000.000	3.361.320.000	0.989	24.916.718.200

Week	Contract Value (Rp)	EV (BCWP) (Rp)	CPI	ETC (Rp)
15	28.011.000.000	3.809.496.000	0.977	24.770.951.153
16	28.011.000.000	4.257.672.000	0.968	24.534.687.474
17	28.011.000.000	4.705.848.000	0.961	24.248.455.771
18	28.011.000.000	5.238.057.000	0.940	24.234.308.326
19	28.011.000.000	5.630.211.000	0.949	23.594.473.578
20	28.011.000.000	6.190.431.000	0.933	23.380.591.580
21	28.011.000.000	6.666.618.000	0.937	22.779.298.437
22	28.011.000.000	7.254.849.000	0.932	22.278.803.004
23	28.011.000.000	7.759.047.000	0.936	21.641.076.130
24	28.011.000.000	8.235.234.000	0.956	20.690.563.339
25	28.011.000.000	8.683.410.000	0.993	19.470.988.248
26	28.011.000.000	9.159.597.000	1.019	18.505.505.697
27	28.011.000.000	9.607.773.000	1.036	17.759.382.324
28	28.011.000.000	10.027.938.000	1.047	17.179.349.732
29	28.011.000.000	10.448.103.000	1.057	16.621.186.705
30	28.011.000.000	10.952.301.000	1.057	16.142.502.890
31	28.011.000.000	11.344.455.000	1.069	15.596.593.963
32	28.011.000.000	11.764.620.000	1.077	15.085.924.286
33	28.011.000.000	12.184.785.000	1.085	14.589.223.483
34	28.011.000.000	12.548.928.000	1.098	14.081.529.857
35	28.011.000.000	12.969.093.000	1.102	13.644.926.436
36	28.011.000.000	13.501.302.000	1.100	13.185.161.253
37	28.011.000.000	13.949.478.000	1.102	12.762.666.554
38	28.011.000.000	14.285.610.000	1.121	12.245.200.882
39	28.011.000.000	14.677.764.000	1.132	11.781.084.481
40	28.011.000.000	15.125.940.000	1.137	11.334.080.556
41	28.011.000.000	15.378.039.000	1.163	10.861.124.940
42	28.011.000.000	15.630.138.000	1.187	10.428.324.624
43	28.011.000.000	15.966.270.000	1.213	9.931.619.474
44	28.011.000.000	16.302.402.000	1.260	9.294.454.082
45	28.011.000.000	16.554.501.000	1.282	8.936.456.919
46	28.011.000.000	16.918.644.000	1.274	8.704.928.384
47	28.011.000.000	17.478.864.000	1.263	8.337.941.000
48	28.011.000.000	17.758.974.000	1.283	7.988.171.678

Source: 2024 Analysis Results

ETC calculation in week 48

ETC = (Total Budget – BCWP) / CPI
ETC = (Rp. 28.011.000.000 - Rp. 17.758.974.000) / 1,283
ETC = Rp. 7.988.171.678

3.2. Calculating Estimate At Complete (ETC)

EAC of ACWP plus ETC:

ETC calculation for week 1
EAC = ACWP + ETC
EAC = Rp. Rp. 64.425.300 + Rp. 27.946.574.700
EAC = Rp. 28.011.000.000

The next week's calculation can be seen in table 3 below:

Table 3. Estimate At Complete

Weeks	AC (ACWP) (Rp)	ETC (Rp)	EAC (Rp)
1	64.425.300	27.946.574.700	28.011.000.000
2	131.651.700	19.458.392.882	19.522.818.182
3	302.518.800	16.965.971.677	17.097.623.377
4	512.601.300	21.619.133.374	21.921.652.174
5	773.103.600	22.474.004.081	22.986.605.381
6	1.168.058.700	23.692.200.197	24.465.303.797
7	1.596.627.000	25.560.973.337	26.729.032.037
8	1.596.627.000	28.246.868.327	29.843.495.327
9	2.089.620.600	28.460.388.172	30.550.008.772
10	2.378.133.900	27.127.249.475	29.505.383.375
11	2.789.895.600	26.577.426.505	29.367.322.105
12	3.168.044.100	25.896.580.671	29.064.624.771
13	3.397.734.300	24.916.718.200	28.314.452.500
14	3.899.131.200	24.770.951.153	28.670.082.353
15	4.397.727.000	24.534.687.474	28.932.414.474
16	4.896.322.800	24.248.455.771	29.144.778.571
17	5.574.189.000	24.234.308.326	29.808.497.326
17	5.574.189.000	24.234.308.326	29.808.497.326
18	5.935.530.900	23.594.473.578	29.530.004.478
19	6.633.004.800	23.380.591.580	30.013.596.380
20	7.114.794.000	22.779.298.437	29.894.092.437
21	7.787.058.000	22.278.803.004	30.065.861.004
22	8.291.256.000	21.641.076.130	29.932.332.130
23	8.616.183.600	20.690.563.339	29.306.746.939
24	8.616.183.600	20.690.563.339	29.306.746.939
25	8.747.835.300	19.470.988.248	28.218.823.548
26	8.991.531.000	18.505.505.697	27.497.036.697
27	9.579.762.000	17.759.382.324	27.031.023.324
28	9.887.883.000	17.179.349.732	26.759.111.732
29	10.364.070.000	16.142.502.890	26.506.572.890
30	10.867.883.000	16.142.502.890	26.506.572.890
31	10.924.169.000	15.596.593.963	26.212.762.963
32	11.616.290.000	15.085.924.286	26.010.214.286
33	11.232.411.000	14.589.223.483	25.821.634.483
34	11.428.488.000	14.081.529.857	25.510.017.857
35	11.764.620.000	13.644.926.436	25.409.546.436
36	12.268.818.000	13.185.161.253	25.453.979.253
37	12.660.972.000	12.762.666.554	25.423.638.554
38	12.745.005.000	12.245.200.882	24.990.205.882
39	13.305.225.000	11.384.080.556	24.689.305.556
40	13.969.093.000	11.384.080.556	24.689.305.556
41	13.221.192.000	10.861.124.940	24.082.316.940
42	13.165.170.000	10.428.324.624	23.593.494.624
43	13.165.170.000	9.931.619.474	23.096.789.474
44	12.941.082.000	9.294.454.082	22.235.536.082
45	12.913.071.000	8.936.456.919	21.849.527.919
46	13.277.214.000	8.704.928.384	21.982.142.384
47	13.837.434.000	8.337.941.000	22.175.375.000
48	13.837.434.000	7.988.171.678	21.825.605.678

Source: 2024 Analysis Results

ETC calculation in week 48:

EAC = ACWP + ETC
EAC = Rp. Rp. 13.837.434.000 + Rp. 7.988.171.678
EAC = Rp. 21.825.605.678

3.3. Calculating Estimate Temporary Schedule (ETS)

ETS of Remaining time divided by SPI:

ETS calculation for week 1
ETS = Remaining time / SPI
ETS = 448 / 0,852
ETS = 525,913 days

3.4. Calculating Estimate All Schedule (EAS)

EAS of Finish Time plus ETS:

EAS calculation for week 1
EAS = Finish Time + ETS
EAS = 7 + 525,913
EAS = 532,913 days

Table 4. Estimate Temporary Schedule & Estimate All Schedule

Weeks	SPI	Plan Time (Days)	Finish Time (Days)	Remaining Time (Days)	ETS (Days)	EAS (Days)	Time Difference (Days)
1	0,852	455	7	448	525,913	532,913	-77,913
2	0,786	455	14	441	561,273	575,273	-120,273
3	0,740	455	21	434	586,182	607,182	-152,182
4	0,812	455	28	427	526,014	554,014	-99,014
5	0,861	455	35	420	487,803	522,803	-67,803
6	0,895	455	42	413	461,358	503,358	-48,358
7	0,960	455	49	406	422,723	471,723	-16,723
8	1,070	455	56	399	372,897	428,897	26,103
9	1,070	455	63	392	366,355	429,355	25,645
10	1,100	455	70	385	350,102	420,102	34,898
11	1,056	455	77	378	357,834	434,834	20,166
12	1,051	455	84	371	353,036	437,036	17,964
13	1,038	455	91	364	350,642	441,642	13,358
14	1,008	455	98	357	354,025	452,025	2,975
15	1,023	455	105	350	342,279	447,279	7,721
16	1,034	455	112	343	331,717	443,717	11,283
17	1,043	455	119	336	322,000	441,000	14,000
18	1,069	455	126	329	307,888	433,888	21,112
19	1,058	455	133	322	304,378	437,378	17,622
20	1,078	455	140	315	292,195	432,195	22,805
21	1,072	455	147	308	287,294	434,294	20,706
22	1,079	455	154	301	278,919	432,919	22,081
23	1,046	455	161	294	273,834	434,834	20,166
24	1,074	455	168	287	274,310	442,310	12,690
25	1,006	455	175	280	278,194	453,194	1,806
26	982	455	182	273	278,009	460,009	-5,009
27	966	455	189	266	275,306	464,306	-9,306

Weeks	SPI	Plan Time (Days)	Finish Time (Days)	Remaining Time (Days)	ETS (Days)	EAS (Days)	Time Difference (Days)
28	957	455	196	259	270,575	466,575	-11,575
29	949	455	203	252	265,512	468,512	-13,512
30	949	455	210	245	258,159	468.159	-13,159
31	940	455	217	238	253,279	470,279	-15,279
32	933	455	224	231	247,500	471,500	-16,500
33	928	455	231	224	241,508	472,508	-17,508
34	918	455	238	217	236,375	474,375	-19,375
35	913	455	245	210	229,957	474,957	-19,957
36	916	455	252	203	221,531	473,531	-18,531
37	915	455	259	196	214,104	473.104	-18,104
38	903	455	266	189	209,382	475,382	-20,382
39	894	455	273	182	203,534	476,534	-21,534
40	893	455	280	175	196,065	476,065	-21,065
41	878	455	287	168	191,257	478.257	-23.257
42	864	455	294	161	186,391	480,391	-25,391
43	848	455	301	154	181,558	482,558	-27,558
44	833	455	308	147	176,552	484,552	-29,552
45	822	455	315	140	170,321	485,321	-30,321
46	820	455	322	133	162,286	484.286	-29.286
47	825	455	329	126	152,654	481.654	-26,654
48	818	455	336	119	145,465	481,465	-26.465

Source: 2024 Analysis Results

ETS calculation in week 48

ETS = Remaining time / SPI
ETS = 119 / 0,818
ETS = 145,465 days

EAS calculation in week 48

EAS = Finish Time + ETS
EAS = 336 + 145,465
EAS = 481,465 days

4. Conclusion

Based on the analysis that has been done, the things that can be concluded from this research are the estimated cost to complete the project of Rp. 21,825,605,678 which is 0.77% smaller than the contract value of Rp. 28,011,000,000. While the time to complete the project is 481 days. With the addition of 26 days with the rate of change in project completion time is 0.6% longer than 455 days of contract duration. Acceleration of work can be completed earlier than the schedule if done by arranging additional working hours or additional labor, which will affect the costs incurred will be greater than the initial cost determined because the estimated profit is still more than 10%, from a reasonable profit. It is hoped that there will be further research on controlling the scheduling of each job.

5. References

Marleno, R., Surjokusumo, S., Oetomo, W., Setiawan, M. I., & Abdullah, D. (2018). The influence of stakeholder factors affecting the success of construction projects in Indonesia. Journal of Physics: Conference Series, 1114(1), 12135.

Nurkholis, N., & Abduh, M. (2022). Analisis cost varians dan schedule varians menggunakan metode earned value pembangunan kantor kelurahan di kota pasuruan. Seminar Keinsinyuran Program Studi Program Profesi Insinyur, 2(1). https://doi.org/10.22219/skpsppi.v3i1.5046

Oetomo, W., Priyoto, P., & Uhad, U. (2017). Analisis Waktu dan Biaya dengan Metode Crash Duration pada Keterlambatan Proyek Pembangunan Jembatan Sei Hanyu Kabupaten Kapuas. Media Ilmiah Teknik Sipil, 6(1), 8–22.

Putra, H. R., Koespiadi, K., & Oetomo, W. (2024). Cost And Time Analysis Using Methods Earned Value. Asian Journal of Engineering, Social and Health, 3(1). https://doi.org/10.46799/ajesh.v3i1.204

Wahyu Santoso. (2017). Analisis Percepatan Proyek Menggunakan Metode Crashing Dengan Penambahan Jam Kerja Empat Jam Dan Sistem Shift Kerja. Tesis, 1, 89.

Copyrights