

ОЦЕНКА СТОИМОСТИ ОБЪЕКТА  
НА БАЗЕ BIM МОДЕЛИ  
Войтюк Кирилл

Оценки для стадий проектирования / Класс оценки	Уровень определенности условий	Методы / Методики	Погрешность
Инвестиционное предложение (грубый порядок величины) V класс Order of Magnitude Estimate	0% - 2%	Укрупненные удельные показатели	-20%...+20% <b>(-100%...+400%)</b>
ПредТЭО (порядок величины) IV класс Square Foot and Cubic Foot Estimates	1% - 15%	Объекты аналоги (НЦС) – Параметрический	-15%...+15% <b>(-25%...+75%)</b>
ТЭО (Бюджетная оценка) III класс Assemblies (or Systems) Estimate	10% - 40%	НЦКР (нормативы цены конструктивных решений) - частично ресурсный	-10%...+10% <b>(-10%...+25%)</b>
Проектная документация (точная) II класс Unit Price Estimate	30% - 70%	Единичные нормы и расценки	-5%...+5% <b>(-5%...+10%)</b>
Рабочая документация (фактические затраты) I класс	50% - 100%	Единичные нормы и расценки	<b>-3%...+3%</b>

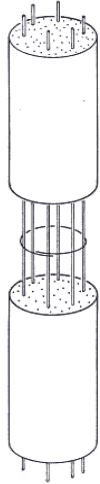
## Square Foot and Cubic Foot Estimates

<b>17100   S.F., C.F. and % of Total Costs</b>											
<b>17100   S.F. &amp; C.F. Costs</b>				UNIT	UNIT COSTS			% OF TOTAL			
					1/4	MEDIAN	3/4	1/4	MEDIAN	3/4	
400	0500	Masonry	R17100 -100	S.F.	5.65	11.10	17.20	6%	10%	15.50%	400
	2720	Plumbing		2.71	5.20	9.80	3.60%	6.70%	8%		
	2730	Heating & ventilating		4.64	6.70	12.95	6.20%	7.40%	13.50%		
	2900	Electrical		4.46	6.60	10.10	6.30%	8%	11.70%		
	3100	Total: Mechanical & Electrical		11.30	20.50	33.50	15.20%	25.50%	32.70%		
410	0010	<b>GARAGES, PARKING</b>	R17100 -100	S.F.	23	33	59				410
	0020	Total project costs		C.F.	2.21	3	4.37				
	2720	Plumbing		S.F.	.61	1.03	1.59	2.60%	3.40%	3.90%	
	2900	Electrical		↓	.96	1.46	2.14	4.30%	5.20%	6.30%	
	3100	Total: Mechanical & Electrical		↓	1.28	3.77	4.83	6.50%	9.40%	12.80%	
	3200										
	9000	Per car, total cost		Car	9,900	12,500	16,100				
430	0010	<b>GYMNASIUMS</b>	R17100 -100	S.F.	65.50	83.50	106				430
	0020	Total project costs		C.F.	3.26	4.17	5.40				
	1800	Equipment		S.F.	1.38	2.81	5.60	2.10%	3.40%	6.70%	
	2720	Plumbing		↓	4.14	5.10	6.10	5.40%	7.30%	7.90%	
	2770	Heating, ventilating, air conditioning			4.45	6.80	13.60	9%	11.10%	22.60%	
	2900	Electrical			4.95	6.15	8.15	6.60%	8.30%	10.70%	
	3100	Total: Mechanical & Electrical		↓	15.35	21	28.50	20.60%	26.20%	29.40%	
	3500	See also division 11480									

Точность оценки -15%...+15%

## B10 Superstructure

### B1010 Floor Construction



#### CONCRETE COLUMNS

**General:** It is desirable for purposes of consistency and simplicity to maintain constant column sizes throughout the building height. To do this, concrete strength may be varied (higher strength concrete at lower stories and lower strength concrete at upper stories), as well as varying the amount of reinforcing.

The first portion of the table provides probable minimum column sizes with related costs and weights per lineal foot of story height for bottom level columns.

The second portion of the table provides costs by column size for top level columns with minimum code reinforcement. Probable maximum loads for these columns are also given.

#### How to Use Table:

1. Enter the second portion (minimum reinforcing) of the table with the minimum allowable column size from the selected cast in place floor system.

If the total load on the column does not exceed the allowable working load shown, use the cost per L.F. multiplied by the length of columns required to obtain the column cost.

2. If the total load on the column exceeds the allowable working load shown in the second portion of the table, enter the first portion of the

table with the total load on the column and the minimum allowable column size from the selected cast in place floor system.

Select a cost per L.F. for bottom level columns by total load or minimum allowable column size.

Select a cost per L.F. for top level columns using the column size required for bottom level columns from the second portion of the table.

$$\frac{\text{Btm.} + \text{Top Col. Costs/L.F.}}{2} = \text{Avg. Col. Cost/L.F.}$$

Column Cost = Average Col. Cost/L.F. x Length of Cols. Required.

See reference section to determine total loads.

#### Design and Pricing Assumptions:

Normal wt. concrete,  $f_c = 4$  or 6 KSI, placed by pump.  
Steel,  $f_y = 60$  KSI, spliced every other level.

Minimum design eccentricity of 0.1t. Assumed load level depth is 8' (weights prorated to full story basis). Gravity loads only (no frame or lateral loads included).

Please see the reference section for further design and cost information.

## Assemblies (Systems) Estimates

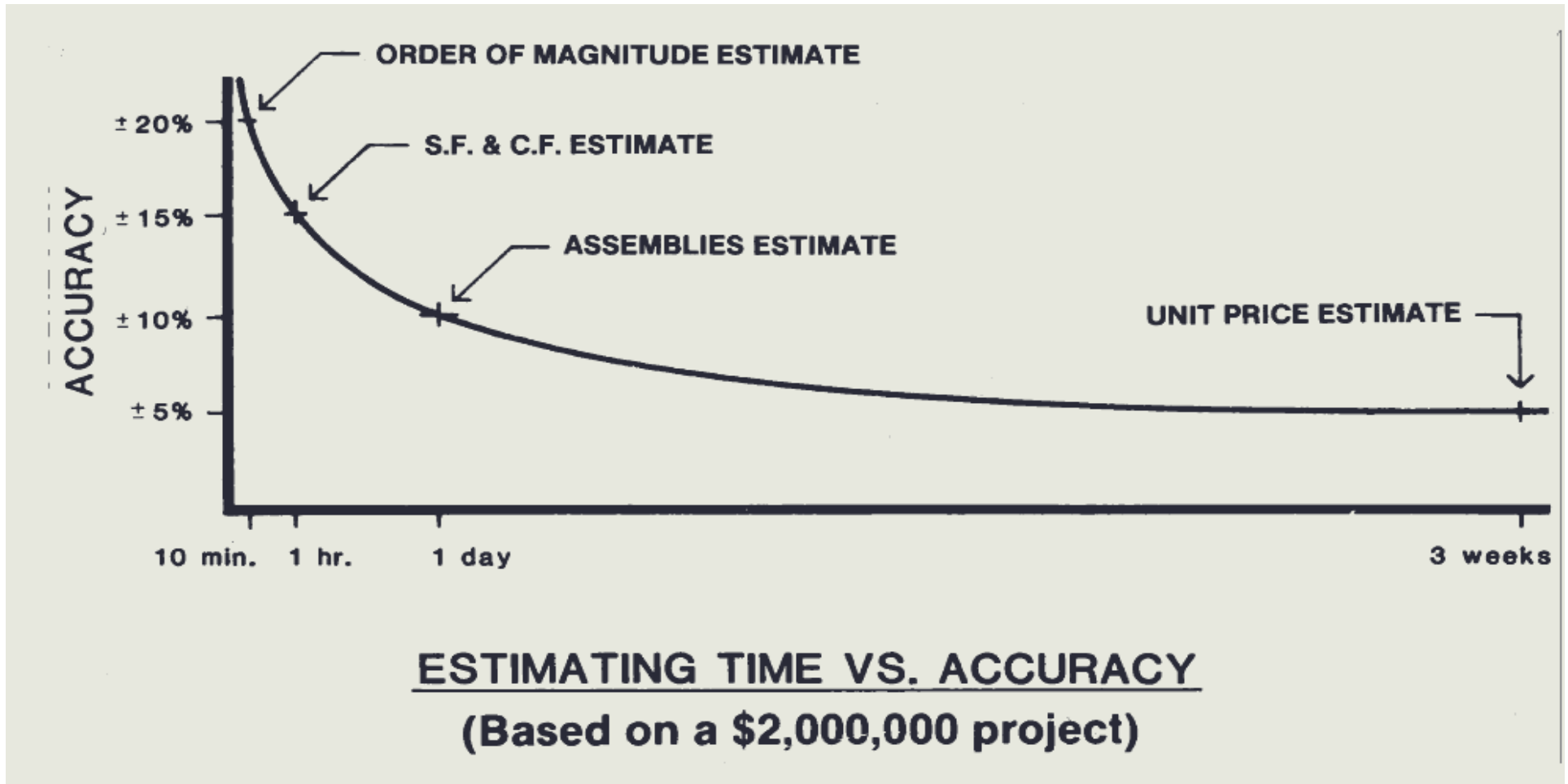
Этот тип оценки рекомендуется использовать в качестве бюджетных инструментов в стадии планирования проекта. Точность оценки -10%...+10%

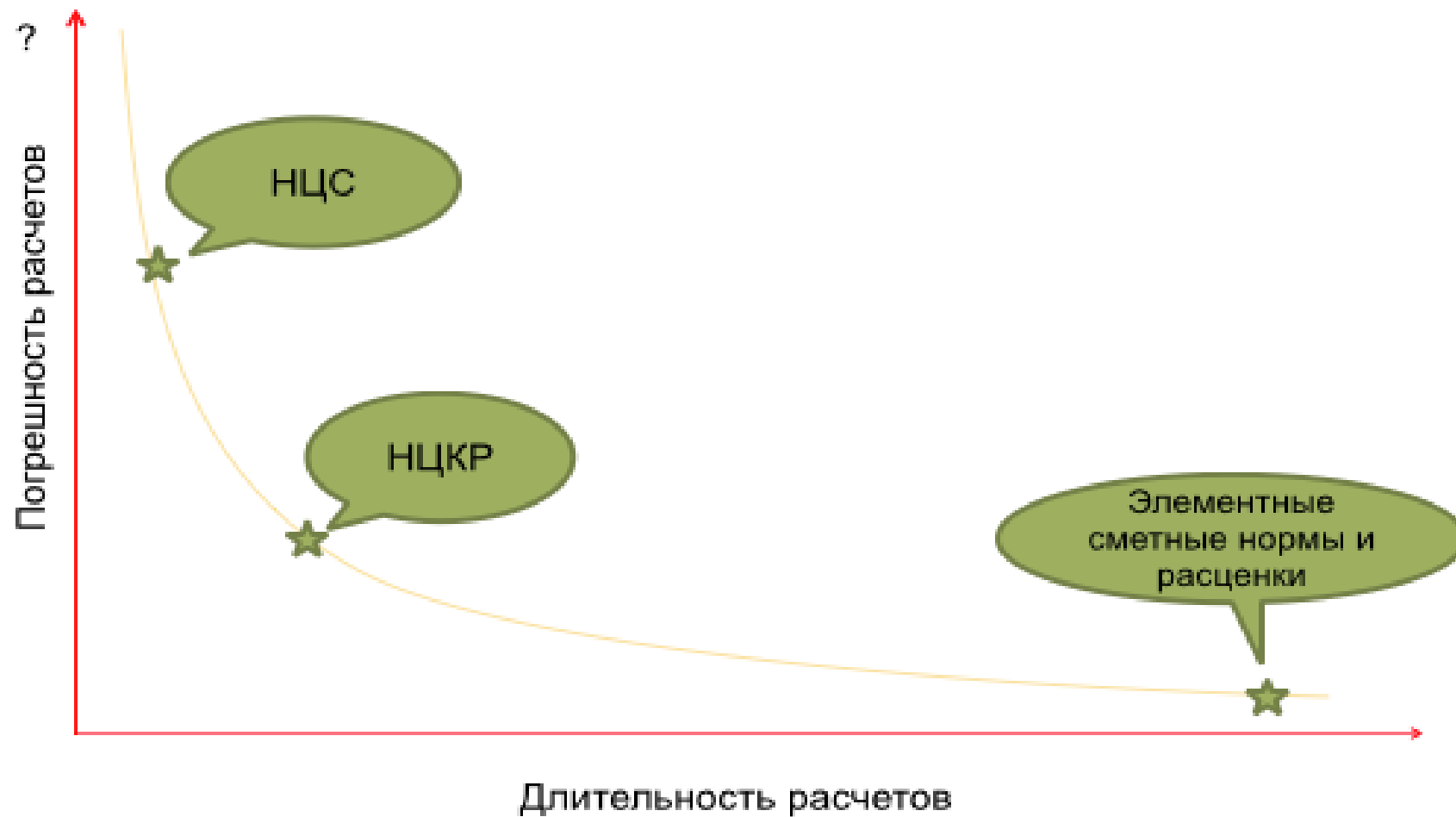
System Components	QUANTITY	UNIT	COST PER V.L.F.		
			MAT.	INST.	TOTAL
<b>SYSTEM B1010 201 1050</b>					
<b>ROUND TIED COLUMNS, 4 KSI CONCRETE, 100K MAX. LOAD, 10' STORY, 12" SIZE</b>					
Forms in place, columns, round fiber tube, 12" diam 1 use	1.000	L.F.	2.56	12.95	15.51
Reinforcing in place, column ties	1.393	Lb.	3.54	6.15	9.69
Concrete ready mix, regular weight, 4000 psi	.029	C.Y.	3.28		3.28
Placing concrete, incl. vibrating, 12" sq./round columns, pumped	.029	C.Y.		2.09	2.09
Finish, burlap rub w/grout	3.140	S.F.	.13	3.23	3.36
<b>TOTAL</b>			<b>9.51</b>	<b>24.42</b>	<b>33.93</b>

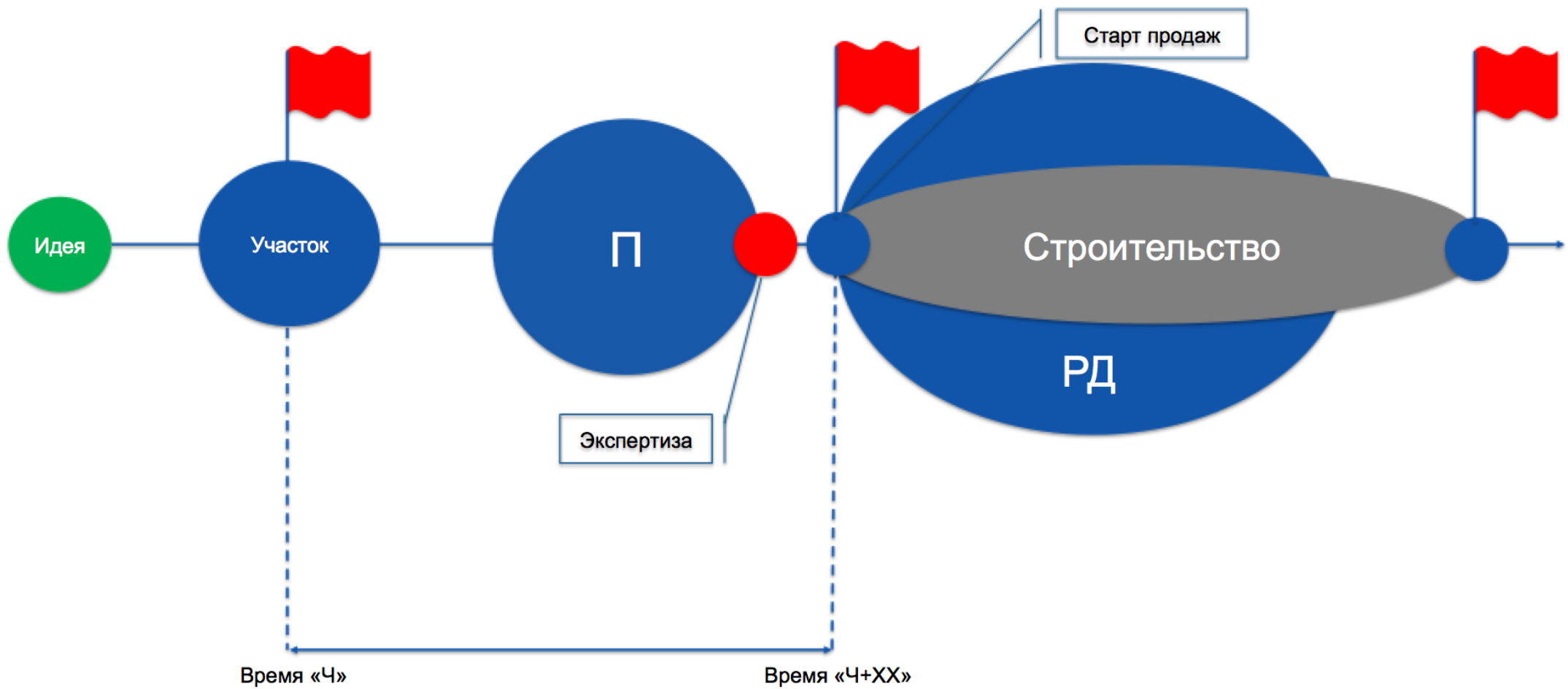
## Unit Price Estimate

Необходимы рабочие чертежи и полные технические спецификации. Это самый точный вид оценки, но и самый трудоемкий. Точность оценки - 5%...+5%

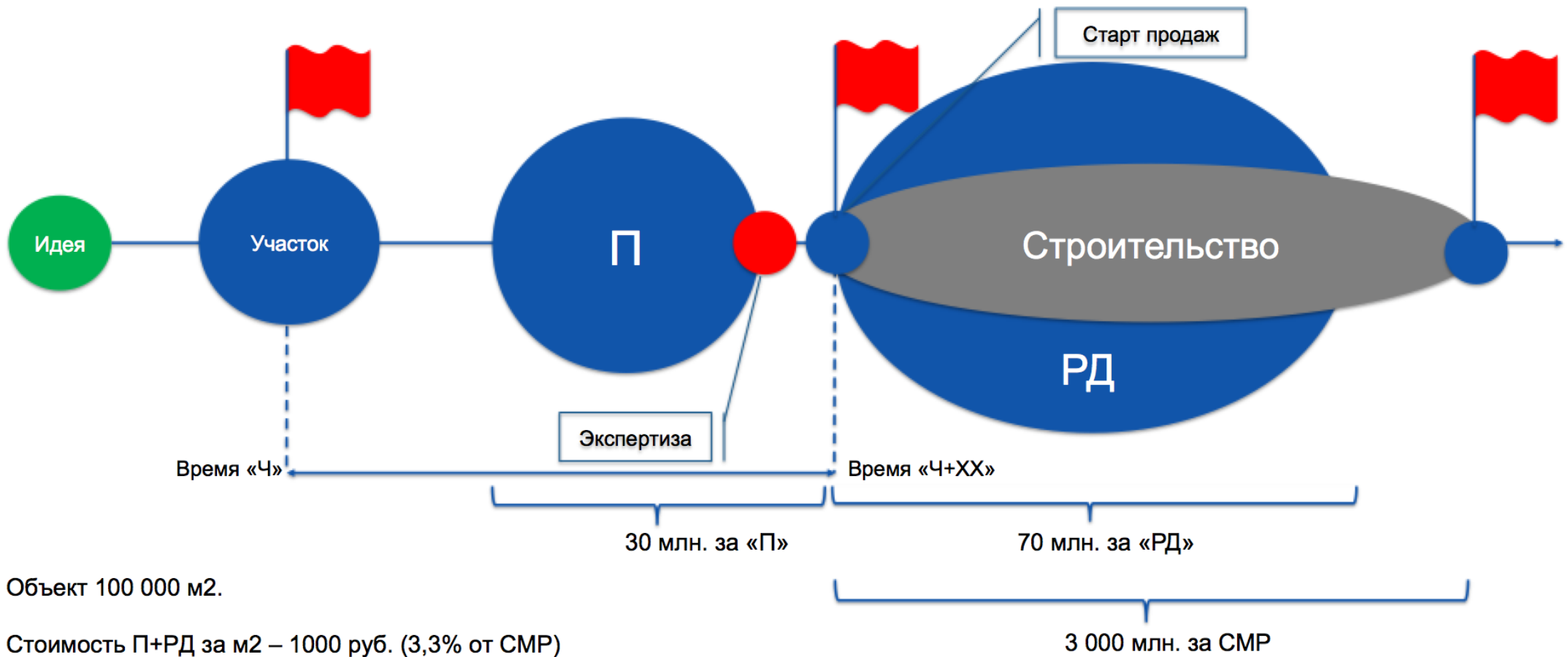
<b>13 05 05.45 Selective Demolition, Lightning Protection</b>		Crew	Daily Output	Labor-Hours	Unit	Material	2010 Bare Costs		Total	Total Incl O&P
							Labor	Equipment		
0010	<b>SELECTIVE DEMOLITION, LIGHTNING PROTECTION</b>									
0020	Air terminal & base, copper, 3/8" diam. x 10", to 75' h	1 Clab	16	.500	Ea.		16.55		16.55	25.50
0030	1/2" diam. x 12", over 75' h		16	.500			16.55		16.55	25.50
0050	Aluminum, 1/2" diam. x 12", to 75' h		16	.500			16.55		16.55	25.50
0060	5/8" diam. x 12", over 75' h		16	.500			16.55		16.55	25.50
0070	Cable, copper, 220 lb per thousand feet, to 75' high		640	.013	L.F.		.41		.41	.64
0080	375 lb per thousand feet, over 75' high		460	.017			.58		.58	.89
0090	Aluminum, 101 lb per thousand feet, to 75' high		560	.014			.47		.47	.73
0100	199 lb per thousand feet, over 75' high		480	.017			.55		.55	.85
0110	Arrester, 175 V AC, to ground		16	.500	Ea.		16.55		16.55	25.50
0120	650 V AC, to ground		13	.615	"		20.50		20.50	31.50







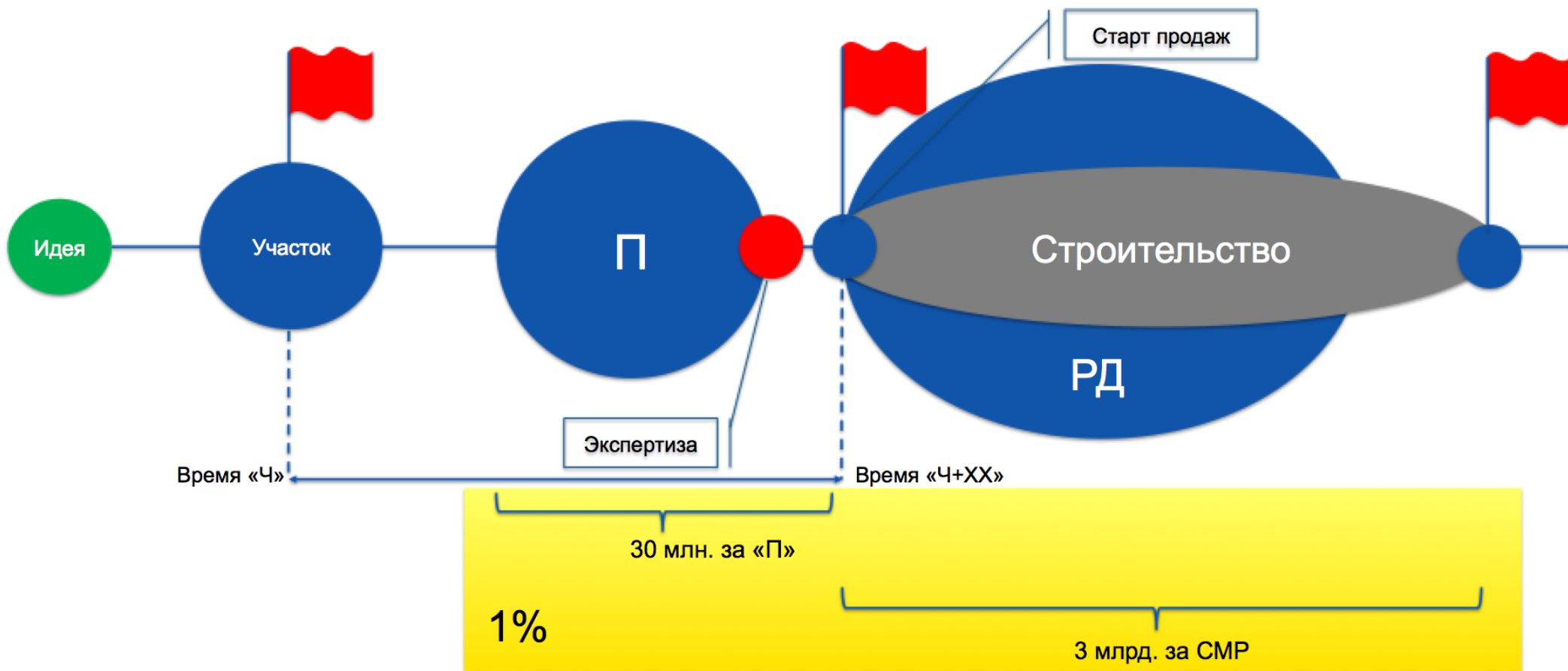




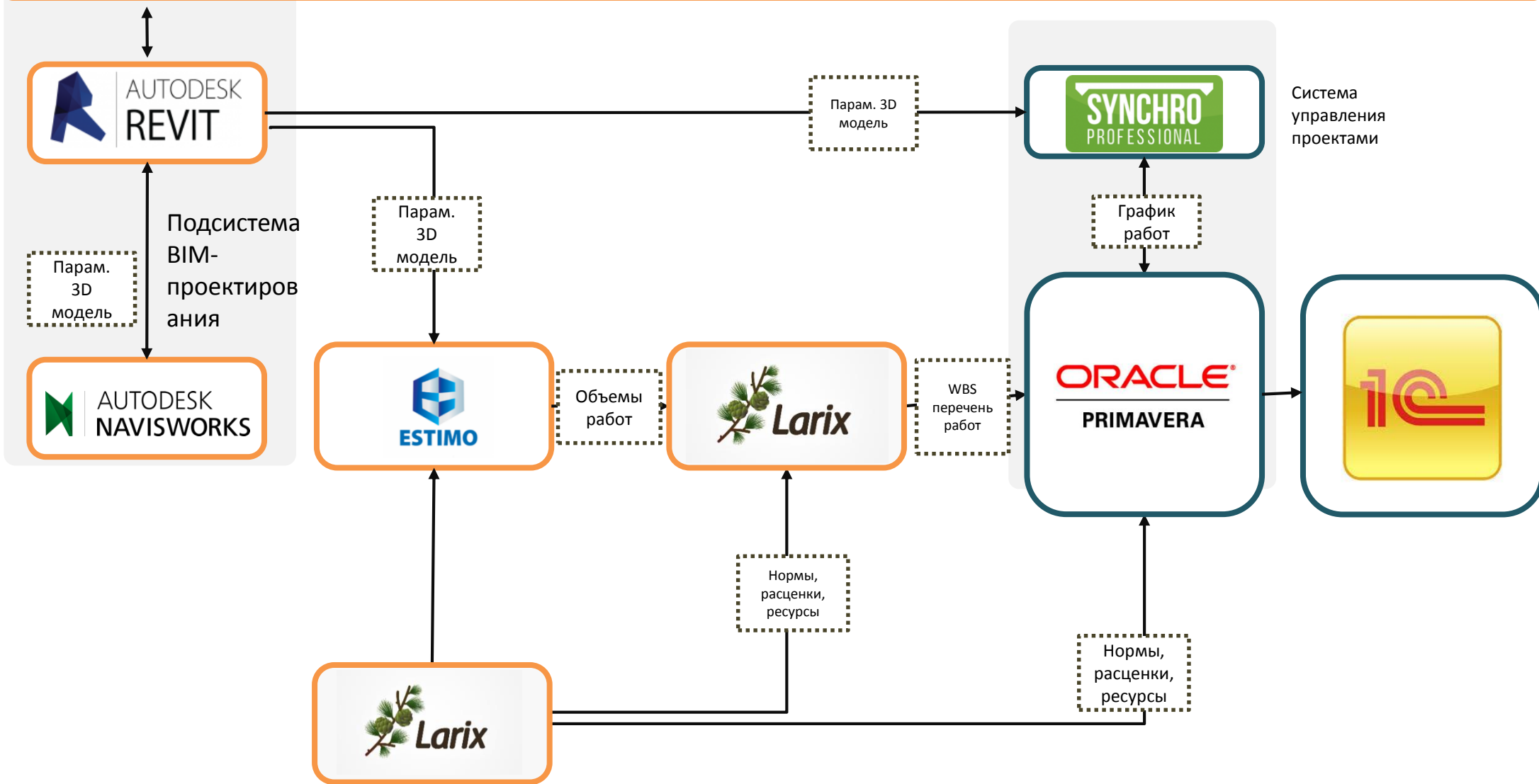
Объект 100 000 м2.

Стоимость П+РД за м2 – 1000 руб. (3,3% от СМР)

Стоимость СМР за м2 – 30 000 руб.



# AUTODESK VAULT



Спасибо за внимание!



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