Detailed computation of the risk assessment

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1. Detailed computation of the risk assessment

The risk of an impact of an attack goal at a valid scenario is computed as follows:

$$R_T(G_i, S_j) = I_T(G_i) \times P_{MAX}(G_i, S_j)$$

such that:

$f : S_j \mapsto G_i$: f is given by Table 1
$T \in$ {monetary,privacy,integrity,trust}
$i \in$ {1,2...,5}
$j \in$ {1,2...,22}

Table 1: Possible scenarios per attack goal

Attack goal	**Label**	**Scenarios**
Gain knowledge about the data-market	G_1	$S_1, S_3, S_4, S_7, S_8, S_{10}, S_{12}, S_{20}$
Access sensitive data on the nodes of the network	G_2	$S_1, S_3, S_4, S_7, S_8, S_{10}, S_{12}, S_{20}$
Manipulate and modify blockchain information	G_3	$S_1, S_{10}, S_{11}, S_{14}, S_{15}, S_{16}, S_{17}, S_{18}, S_{19}, S_{21}$
Sabotage activities	G_4	$S_1, S_2, S_5, S_6, S_7, S_8, S_9, S_{10}. S_{11}, S_{12}, S_{13}, S_{14}, S_{15}. S_{16}, S_{17} S_{18}, S_{19}, S_{21}, S_{22}$
Induce participants in the blockchain network to make errors	G_5	$S_1, S_2, S_5, S_6, S_7, S_8, S_9, S_{10}. S_{11}, S_{12}, S_{13}, S_{14}, S_{15}. S_{16}, S_{17} S_{18}, S_{19}, S_{21}, S_{22}$

In Table 2, we present the results of the combined risk assessment for a given attack goal, scenario and impact type:

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Table 2: Combined risk assessment - m : Monetary, p : Privacy, in : Integrity, t : Trust

			Monetary		Privacy		Integrity		Trust	
Goal	**S_j**	**P_{MAX}**	**I_m**	**R_m**	**I_p**	**R_p**	**I_{in}**	**R_{in}**	**I_t**	**R_t**
G_1	S_1	9	1	9	2	18	-	-	1	9
	S_3	7	1	7	2	14	-	-	1	7
	S_4	8	1	8	2	16	-	-	1	8
	S_7	6	1	6	2	12	-	-	1	6
	S_8	7	1	7	2	14	-	-	1	7
	S_{10}	4	1	4	2	8	-	-	1	4
	S_{12}	5	1	5	2	10	-	-	1	5
	S_{20}	6	1	6	2	12	-	-	1	6
G_2	S_1	9	2	18	3	27	-	-	2	18
	S_3	7	2	14	3	21	-	-	2	14
	S_4	7	2	14	3	21	-	-	2	14
	S_7	6	2	12	3	18	-	-	2	12
	S_8	7	2	14	3	21	-	-	2	14
	S_{10}	5	2	10	3	15	-	-	2	10
	S_{12}	5	2	10	3	15	-	-	2	10
	S_{20}	6	2	12	3	18	-	-	2	12
G_3	S_1	8	3	24	2	16	4	32	4	32
	S_{10}	8	3	24	2	16	4	32	4	32
	S_{11}	11	3	33	2	22	4	44	4	44
	S_{14}	7	3	21	2	14	4	28	4	28
	S_{15}	5	3	15	2	10	4	20	4	20
	S_{16}	5	3	15	2	10	4	20	4	20
	S_{17}	6	3	18	2	12	4	24	4	24
	S_{18}	7	3	21	2	14	4	28	4	28
	S_{19}	6	3	18	2	12	4	24	4	24
	S_{21}	8	3	24	2	16	4	32	4	32
G_4	S_1	10	3	30	-	-	2	20	3	30
	S_2	12	3	36	-	-	2	24	3	36
	S_5	7	3	21	-	-	2	14	3	21
	S_6	5	3	15	-	-	2	10	3	15
	S_7	7	3	21	-	-	2	14	3	21
	S_8	7	3	21	-	-	2	14	3	21
	S_9	6	3	18	-	-	2	12	3	18
	S_{10}	7	3	21	-	-	2	14	3	21
	S_{11}	10	3	30	-	-	2	20	3	30
	S_{12}	6	3	18	-	-	2	12	3	18
	S_{13}	6	3	18	-	-	2	12	3	18
	S_{14}	7	3	21	-	-	2	14	3	21
	S_{15}	6	3	18	-	-	2	12	3	18
	S_{16}	5	3	15	-	-	2	10	3	15
	S_{17}	5	3	15	-	-	2	10	3	15
	S_{18}	9	3	27	-	-	2	18	3	27
	S_{19}	6	3	18	-	-	2	12	3	18
	S_{21}	8	3	24	-	-	2	16	3	24
	S_{22}	11	3	33	-	-	2	22	3	33
G_5	S_1	10	2	20	-	-	3	30	3	30
	S2	12	2	24	-	-	3	36	3	36
	S_5	6	2	12	-	-	3	18	3	18
	S_6	5	2	10	-	-	3	15	3	15
	S_7	7	2	14	-	-	3	21	3	21
	S_8	7	2	14	-	-	3	21	3	21
	S_9	5	2	10	-	-	3	15	3	15
	S_{10}	4	2	8	-	-	3	12	3	12
	S_{11}	11	2	22	-	-	3	33	3	33
	S_{12}	6	2	12	-	-	3	18	3	18
	S_{13}	5	2	10	-	-	3	15	3	15
	S_{14}	8	2	16	-	-	3	24	3	24
	S_{15}	4	2	8	-	-	3	12	3	12
	S_{16}	4	2	8	-	-	3	12	3	12
	S_{17}	5	2	10	-	-	3	15	3	15
	S_{18}	8	2	16	-	-	3	24	3	24
	S_{19}	4	2	8	-	-	3	12	3	12
	S_{21}	7	2	14	-	-	3	21	3	21
	S_{22}	12	2	24	-	-	3	36	3	36