A Systematic Review on Online Bitcoin Visualizations

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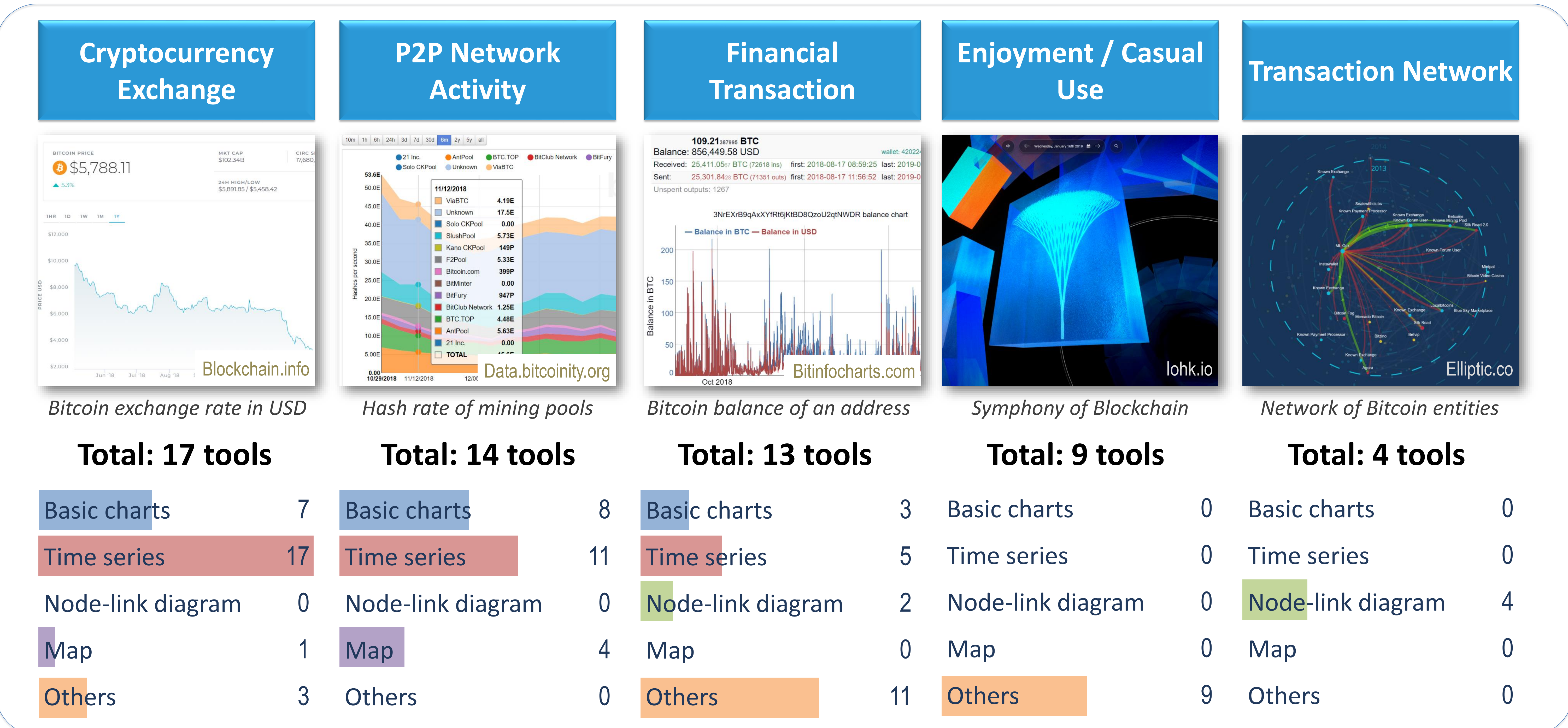
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1. WHAT IS BITCOIN?

- Bitcoin is **a cryptocurrency** that allows users to exchange digital currency without centralized control.
- Transactions are permanently stored in a public dataset called the **blockchain**.
- Bitcoin **miners** verify transactions, group them, and append new blocks to the end of the blockchain.

2. SYSTEMATIC REVIEW

- **Keywords:** *Bitcoin x {analysis, analytics, visualization, visual analytics, dashboard, graph, chart}*
- **Data collection:** We used Google Search to retrieve the first 100 results for each keyword.
- **Result:** 46 online Bitcoin visualizations, categorized based on analysis tasks and visual representations.

Cryptocurrency Exchange	P2P Network Activity	Financial Transaction	Enjoyment / Casual Use	Transaction Network

Bitcoin exchange rate in USD — *Hash rate of mining pools* — *Bitcoin balance of an address* — *Symphony of Blockchain* — *Network of Bitcoin entities*

	Total: 17 tools		Total: 14 tools		Total: 13 tools		Total: 9 tools		Total: 4 tools
Basic charts	7	Basic charts	8	Basic charts	3	Basic charts	0	Basic charts	0
Time series	17	Time series	11	Time series	5	Time series	0	Time series	0
Node-link diagram	0	Node-link diagram	0	Node-link diagram	2	Node-link diagram	0	Node-link diagram	4
Map	1	Map	4	Map	0	Map	0	Map	0
Others	3	Others	0	Others	11	Others	9	Others	0

3. BITCOIN ANALYSIS TASK DOMAINS

- **Cryptocurrency exchange:** analyze market statistics, e.g. exchange rate, volume, and market capitalization.
- **P2P network activity:** gain an overview of activities in the peer-to-peer network e.g. Bitcoin mining
- **Financial transaction:** see details and basic statistics of individual transactions, blocks, and Bitcoin users.
- **Enjoyment/casual uses:** attract public attention to Bitcoin real-time transactions.
- **Transaction network:** understand connections between addresses via transactions.

4. DISCUSSION

- The online tools we saw are meant to show an overview of Bitcoin data or attract public attention.
- Time series are the most common visualization type, mostly used to present aggregated statistics.
- We still miss visual analytics tools for experts to explore Bitcoin data based on entities *(people, enterprises)*, historic events *(halving days, attacks)*, or group activities *(e.g. miners)*.