

**EXAMENSARBETE** Comparing Event Matching Algorithms for Content-Based Publish-Subscribe Systems**STUDENTER** Jonathan Frisk, Linnea Johnsson**HANDLEDARE** Per Andersson (LTH), Oscar Bäckström (Volvo Car AB)**EXAMINATOR** Flavius Gruian (LTH)

# Subscribe to My Data - Quickly!

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There is an abundance of data in the world, and sorting the relevant from the irrelevant can be time consuming. One solution is to use subscriptions. Multiple algorithms exist to efficiently handle subscriptions. But when and how are they effective?

Generally, two of the algorithms perform the best and is faster than not using an event matching algorithm. However, they consume more memory and add new subscriptions more slower. Furthermore, they can perform differently depending on the scenario. At specific scenarios they can be slower than not using any algorithm. Thus, the report's results should be taken into account before choosing which algorithm to use. But what are the problems? Let us explore with an example.

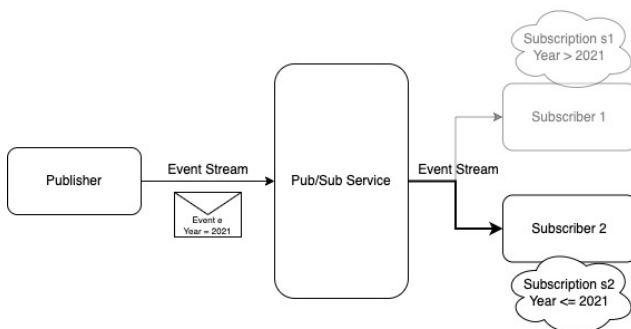


Figure 1: A small subscription example.

During all of your waking time, your brain constantly gets and process new information from all of your senses - sight, hearing, smell, touch, and balance. While most of the information is irrelevant and ignored, some are taken action upon. Imagine this - you are walking on a calm and quite street. Suddenly, a car drives directly towards you

and is about to hit you. Continuously, your eyes sends visual information, or events, to your brain of what the eyes have seen. Your brain then comprehends this information and send it to the relevant parts of your body, i.e. matches it to the systems that has subscribed to this information. Now, your brain comprehends the danger and directly sends signals to the correct muscles, as your muscles have subscribed to data regarding disturbances on your walk. The muscles then uses this information to react as fast as they can to move your body away from the oncoming car in order to save you from danger. The car passes and you are safe, this time your brain handled the information was fast enough!

But what if the street is crowded with a crowd of screaming people, flashing lights, and you are having a conversation with a friends at the same time as multiple fast cars are heading right towards you? Would you react fast enough? Maybe, but it would at least be a lot harder for your brain to filter what data should be acted upon and sent to the correct muscles.

This same problem exists in a magnitude of digital systems, e.g. stock-trading, notifications, analytics, and marketing. These all need to handle a lot of data that is sent to them, analyze it and later send it to interested subscribers only. And all of this needs to be done efficiently enough.