A Design Issue:

Note: The design issue give below was part of Midterm II in Fall 2019. A solution will be provided by Thursday, November 19, 2020. Try your luck before that!

Three junior architects were discussing a design requirement for their recent software product. The design requirement goes like this: In order to send and receive a large sensitive information over the internet to a remote server, a compression and encryption modules are to be employed for this purpose. This means the data needs to be encrypted and then compressed before sending it over and upon receiving, the data needs to be uncompressed and decrypted for further processing. The discussion was extended to a debate and the architects were told to present their design solutions.

Hamza was first to present his design. He strongly believed that Adapter pattern is to be employed because then the developers have the liberty to use any algorithm or replace it in case an improved version is available in the market.

On the other hand, Haniya explained that not only these 2 classes are needed in the software, but there are couple of more classes from different APIs they are using, such as event loggers to log each transaction and XML convertor to transfer the data into XML format for another subsystem. Therefore, she thinks that Façade pattern would be much suitable here because then they do not have to create separate adapters for each of the API classes but rather use just one class which caters for several subsystems.

Hammad has an opinion to oppose both of the above options. He presented that Bridge pattern is clearly applied here because Encryption and Compression are specifically for each record, whereas all other external modules are applied in general on the data records. He has an opinion that Encryption and Compression are aspects and not the core responsibilities of data records.

What is your opinion given the summary provided above? Whose design is better? Do you have even better design idea to be employed here other than the above ones? Provide strong reasons for your option. Do you think that the information is enough to conclude a design decision? In the case you think the given information is incomplete, explain with strong reasons why do you think we cannot decide about the design to be employed?