# Speckle-GSA data extraction and visualization

1. Problems
   1. Absence of a “properties” table in Speckle. Either Speckle stored the raw GSA data in a hidden table or simple discarded the data during the conversion, there is no simple way of accessing this data.
   2. Inability to insert additional databases/info into the stream. Using the SpeckleGSA client provides easy conversion but in turns limit control over the data fed to Speckle. We are currently unable to 1) append CSV datasheet to the stream as other software clients via web browser, and 2) rigid data structure, if we augmented the database/JSON, speckle might not be reading the data properly.
   3. JSON limitations. The object-orientated hierarchy of JSON may bring runtime problems for certain sort/filter functions.
2. Comparison of a database-based / Speckle-based system:

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|  | Database | Speckle |
| Data | * Offers a more complete, customizable control on the data included in tables. * Organized in table🡪 more human readable and could be documented in a different place, easy to spot problems | * JSON format, storing data by element and nodes. * Organized by record🡪 might not be ideal for record keeping but have the advantage that individual records could be updated . |
| Efficiency | * Quick for both record-based searching and field-based searching, as it has index keys and a flat structure. | * Record-based searching is comparable, however the nested structure might prove to be time consuming to do sequential search layer-by-layer. However, with smaller datasets it should be negligible. |
| Integration | * Will need to find another application/query interface for users to distillate the data they need. * Visualization might be difficult as how can we organized the data and generate charts have not examples to learn from | * Carbon: straight integration but will need to figure out how the plugin works. * If working, implementation of extra functionality should be easy via new JS functions. |
| Difficulty/ required actions | * Nic on whether additional functionality is possible, or if there are alternative methods | * Sean and the Carbon team, on their experience on creating a Speckle plugin |

1. Action plan
   1. Ask Nic whether it is possible to have customization of the data before sending it into Speckle.
   2. Call Sean to understand the structure and working principle of the Carbon tool, see how the overcome the problem of adding extra tables/info into Speckle.
   3. Decide on the methodology; Purely DB/ Hybrid/ Purely speckle (Carbon)
   4. Identify useful fields within Speckle, insights into potential uses apart from user cases.
   5. Convert the database, if possible, see if different GSAs will alter the data structure.
   6. Try out the “Processor” function in the web client, whether the local codes could be stored elsewhere.