Overview of current & future SURBANA JURONG Urban planning tools
Developing customized smart family components that could be used to create 3 different structural plans.

1. Saving in Time
2. Reduction in errors and discrepancies

<table>
<thead>
<tr>
<th>Zone</th>
<th>Borehole No</th>
<th>Dia</th>
<th>ESTIMATED PILE PENETRATION FROM PLATFORM LVL (m)</th>
<th>MIN. EMBEDDED PILE LENGTH(m) INTO COMPETENT STRATUM (SPT ≥ 60)</th>
<th>Nos of piles</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>600</td>
<td></td>
<td></td>
<td></td>
<td>21</td>
</tr>
<tr>
<td>A</td>
<td>700</td>
<td></td>
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<td>7</td>
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<tr>
<td>B</td>
<td>600</td>
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<td></td>
<td>26</td>
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<tr>
<td>B</td>
<td>700</td>
<td></td>
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<td>6</td>
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<td>22</td>
</tr>
</tbody>
</table>

Grand total: 62
Using Revit’s API customised add-ons were developed to handle repetitive tasks.

- Calculate pile group capacity
- Auto number for pile group, column, beam
- Auto calculate slab thickness using gradient
- Auto generate sewer long section using data from plan
Surbana Jurong In-house IT team used Revit’s API to develop a tool to copy and connect sanitary pipes automatically between floors.
Surbana Jurong In-house IT team used Revit’s API to develop a tool to auto design and layout the lightning protection system.
Collaborations with technology companies for joint research programmes to develop Computational BIM tools
Urban planners formulate policies that

• **Optimizing** the effectiveness of **land use & infrastructure**.

• **Plans**, **develop** and **Manage** urban and suburban townships via **economic**, **environmental** and **social** trends.

Addressing issues:
1. Environmental sustainability (energy, resource management, pollution management etc)
2. Traffic accessibility and congestion
3. Security
4. Land values
5. Legislation and zoning codes.

Currently planners are designing township, based on metrics and observations of trends in an adhoc methodology... at best their solutions are guided by their training and Data obtained and collated by disparate studies.
Sj Urban Planning objectives - Smart Hub Data Analytics

WHAT IF...

Smart Cities are planned, developed and Managed by intelligent and purposeful collation of Data Analytics:

Urban planning data collated intelligently and analysed via a one stop data depository

Where urban planning data are obtained then injected for analysis by Urban Planning Tools incorporating advanced computer visualisation and computer simulation techniques.

• Reports and metrics that is gathered from the Ground (Public Feedback)
Sj Urban Planning objectives - Computer simulation & Data analytics in design

WHAT IF...
• Create 3D Urban planning models (using both existing and virtual building models), add roads, carparks, water features.
• Then export alternative designs for review by urban planning tools for wind, energy or water simulation.

1. User run simulations based on a repository of sensor and other data.
2. Simulation data is reinjected into dashboards for comparison against ‘live’ data.

0-latency, straight-thru planning in minutes
Sj Smart Urban Planning objectives - Public feedback at design stage

Currently:

Planners and architects: Use BIM

BIM Models: for Submissions/ Tender / Project Co-ordination

Brochures and Presentation media for Public feedback of development and offer 2D extractions of plans, sections or elevations.

Occasionally 3D renderings printed on a 2D media.

WHAT IF...

Public feedback garnered via 3D augmented reality

Use of 3D Oculus, Hololens technology or CAVE simulator