Automating Local Government Spatial Transactions with State Government

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Spatial Data Supply Chain

Current Supply Chains
- Lack of automation
- Restrictive policy
- Inflexible outputs

Applied Research
- Transaction-based self service
- Machine readable processes
- Critical path analysis
Current Spatial Transactions with Government

- Current processes are manual
- Humans process rules and make decisions

Characteristics
- Phone/fax
- Email
- Delays/backlogs
- Customer Frustration
- Limited human resources
This Research

• Self-Service
• Automation - artificial intelligence for decision making

Characteristics
• Reduce transaction times
• Faster feedback
• More effective use of human resources
Image courtesy from Landgate
Sample Rules

Plot(?P), hasAdjacentRoad(?P, ?R), hasLocality(?P, ?PL), hasLocality(?R, ?RL), status(?R, "Existing"), SameAs (?PL, ?RL) -> isAllowed(?P, true)
Road(?R1), Road(?R2), hasRoadLink(?R1, ?R2), status(?R2, "Existing"), notEqual(?R1, ?R2) -> isAllowed(?R1, true)

Transaction flow

Onto Graf
Example Rule (from policy)

A plot must be in the same suburb as the road it has frontage with

<table>
<thead>
<tr>
<th>Instance from DB</th>
<th>Request from GUI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proposed_Plot (A)</td>
<td></td>
</tr>
<tr>
<td>Existing_Road (Bradford St)</td>
<td>Proposed_Frontage (A, Bradford St)</td>
</tr>
<tr>
<td>Property_Locality (A, Coolbinia)</td>
<td></td>
</tr>
<tr>
<td>Road_Locality (Bradford St, Coolbinia)</td>
<td></td>
</tr>
<tr>
<td>Proposed_Plot (D)</td>
<td></td>
</tr>
<tr>
<td>Existing_Road (Lonsdale St)</td>
<td>Proposed_Frontage (D, Lonsdale St)</td>
</tr>
<tr>
<td>Property_Locality (D, Coolbinia)</td>
<td></td>
</tr>
<tr>
<td>Road_Locality (Lonsdale St, Yokine)</td>
<td></td>
</tr>
</tbody>
</table>

Results of applying rules:

Adopt_plot (A):

Approved

Adopt_plot (D):

Not Approved