Knowledge Architecture
The Path to Better Decisions in Your Organisation
About Me

Terry Franklin

- Software / Data Engineer & Technical Lead
- Co-founded Tourism Media in 2006
- Now working as independent consultant
What is Knowledge Architecture?
Knowledge Architecture is the process of designing systems that connect and add context to data, turning it into knowledge that can help make better decisions.
Why is it relevant?

- Many organisations are now data-dependent
- Many systems with many standards
- Organisations face increasingly complex problems
- Human networks intersecting with technology
Origins
Evolution
Industrial Era

- Production at scale
- Automation and removal of manual labour
- Inefficient
- Externalised costs to communities and environment
- Unable to adapt to complexity
Information Era

- Mainstream adoption of cloud-based data technologies
- ‘Big Data’ thinking - collect everything
- Data recognised as an asset
- Overwhelmed by volume, awkward storage
- Lacks connection and context
Knowledge Era

- Connection is more important than collection
- Data should always be considered in context
- Connected data + context = actionable knowledge
- Built to support better decisions
Benefits of Investing in Knowledge Architecture
1. Value of data goes up

- Connected data gives clearer picture
- Cause & effect relationships appear
- Context is enhanced
- Dimensions can be added
2. Supports innovation

- Increased visibility generates new ideas
- Cross-department conversations begin
- Source of true innovation
- Connect silos, don’t smash them
3. Knowledge sharing

- Minimises impact of generational change
- Capture experiences as part of daily workflow
- Records context of decisions made
Costs of Not Investing in Knowledge Architecture
1. Decision making suffers

◇ Disconnected data isn’t easily accessible

◇ Real-time decisions can’t benefit

◇ Cost of ad-hoc manual collection
2. Losing sight of mission

- “Can’t see the forest for the trees”
- Copying and transforming data
- Time spent amongst data rather than domain
3. Misunderstandings

- Different systems have different assumptions
- Discovering incompatibilities is actually good!
- Missing them can be costly
Enabling Technologies - Examples
1. Graph Databases

- Promote a more intuitive way of storing data
- Consist of **nodes** (nouns), **relationships** (verbs) and **properties** (adjectives)
- Able to grow and change over time
- Relationships are just as important as nodes
Example: Relational Model

<table>
<thead>
<tr>
<th>users</th>
<th>interactions</th>
<th>services</th>
<th>staff</th>
</tr>
</thead>
<tbody>
<tr>
<td>id: 172</td>
<td>id: 579823</td>
<td>id: 34</td>
<td>id: 62</td>
</tr>
<tr>
<td>name: Claire</td>
<td>user_id: 172</td>
<td>name: housing</td>
<td>name: Ryan</td>
</tr>
<tr>
<td>phone: 0412..</td>
<td>service_id: 34</td>
<td></td>
<td>role: support</td>
</tr>
<tr>
<td>email: claire@..</td>
<td>worker_id: 62</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Example: Graph Model

User
- name: Claire
- phone: 0412...
- email: claire@...

INTERACTED

Staff
- name: Ryan
- role: support

type: phone
date: 01-09-19
desc: emergency accom request
outcome: accom provided
duration: 3 nights
user rating: 8/10

Service
- name: Housing
  phone: 1300...

WORKS IN

duration: 3 years
previous: employment service
Graphs Can Facilitate:

- Changing environments and procedures
- Easier conversations about data
- More compelling questions
- Greater context
2. Event Platforms

◇ All data - everything - becomes streams of events

◇ Tables (latest state) or stream (changelog)

◇ Reveals trends & patterns in data

◇ Enable real-time response
Example: Non-Event Driven

Interaction #579283

User: Claire
Service: Housing
Staff: Ryan
Date: 01-09-2019

Description: request for emergency accommodation
Outcome: accom provided
Duration: 3 nights

User rating: 8/10
**Example: Event Driven**

**Interaction #579283**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Claire called Housing service, left message for callback</td>
</tr>
<tr>
<td>2</td>
<td>Ryan from Housing returned call, opened support request</td>
</tr>
<tr>
<td>3</td>
<td>Availability check - properties A, B &amp; C occupied, D vacant</td>
</tr>
<tr>
<td>4</td>
<td>Property D not suitable for user (too far away from school)</td>
</tr>
<tr>
<td>5</td>
<td>Re-check of availability - property E vacant and suitable</td>
</tr>
<tr>
<td>6</td>
<td>Property E confirmed for 3 nights</td>
</tr>
</tbody>
</table>
How to Get Started
1. Understand your situation

- Create a data inventory
- Speak to your people and Identify *their* problems
- Look for knowledge gaps
2. Define your strategy

- Design solutions to real problems in your environment
- Find appropriate tools
- Create a clear vision of outcomes
3. Get buy-in

◇ Culture is critical

◇ Start small, solve real problems

◇ Lead by example
Thanks!

Any questions?

- terry@franklindata.com.au
- https://www.linkedin.com/in/terryf82/
- https://insightabletimes.org