Avoiding the 'Tipping Point to Failure'

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Presentation Outline

• The Problem
• The ‘Tipping Point’
• Three Primary Causes
  – The bow-wave effect
  – Change overload
  – Relationships
• Early warning indicators
• Conclusion

Have you ever noticed?

• All projects usually start out OK
• Most projects continue for a while OK
• Some projects actually finish OK
• Others suddenly crash!
• This paper looks at why:
  – Most crashes are unexpected
  – The consequences are severe
  – Recovery is very difficult

The ‘Tipping Point’

• Very few projects slide elegantly into failure:
  – You have some control in a steady slide
The ‘Tipping Point’

• Most projects fall off a cliff:

• And you have no control once you are over the edge:
The ‘Tipping Point’

• The Tipping Point is a construct within Complexity Theory. It:
  – Describes the way natural systems can absorb influences with minimal (or predictable) change until the ‘tipping point’ is reached and then there is a sudden catastrophic change.
  – The ‘tipping point’ cannot be predicted in advance

See: A Simple View of ‘Complexity’ in Project Management

The ‘Tipping Point’

• The Tipping Point:
  – Once a system has ‘tipped’ the change is irreversible
  – Experience of similar systems ‘tipping’ provide an indication of what to expect
  – But it is never the same twice!

• Malcolm Gladwell’s book:
The ‘Tipping Point’

• Project teams are ‘complex adaptive systems’ that function by communicating
• The ‘team’ includes:
  – Client / end user
  – Designers and specifies
  – External agencies / authorities / senior management
  – The core ‘workers’ and managers
  – Suppliers and subcontractors

The ‘Tipping Point’

• CRPR, the Complex Responsive Process of Relating. Successful teams:
  – Use information exchange within relationships to create the knowledge needed to fulfill their objectives
  – Social Capital of the team:
    • Existing knowledge of each individual
    • Effectiveness of the relationships (communication)
    • Ability to process new information to create new knowledge
    • Willingness to create and use the new knowhow
The ‘Tipping Point’

• Teams can adapt to change
  – Change and stress can strengthen teams
  – All teams can absorb some levels of change and stress with limited or (predictable) damage
    • Repair and recovery is practical
  – Excessive stress destroys teams
    • The ‘tipping point’
    • Repairing the damage is not possible – reconstruction is needed

The ‘Tipping Point’

• A dysfunctional team:
  – Spends time fighting
  – Does not communicate
  – Does not solve problems efficiently
  – Does not develop the new knowledge needed to deliver the project efficiently
  – Winning is more important than doing

• Communication failure = project failure

See: Complexity Theory
The ‘Tipping Point’

- Research into projects shows a similar effect: Pavel Barseghyan

http://pavelbarseghyan.wordpress.com/

Within ‘normal’ work, the range of outcomes tends to a ‘normal’ distribution. After the ‘tipping point’ there are extreme outliers that become unpredictable.

http://pavelbarseghyan.wordpress.com/
The ‘Tipping Point’

- Research into projects shows a similar effect: The Helmsman complexity cliff

When complexity increases beyond the organization’s capability, the performance decreases significantly.

This applies to both:
- The organisation
- And the project!

The ‘Tipping Point’

Two basic facts:
1. Once a system has tipped it can never go back to its original state!
2. You cannot predict the tipping point in advance
   - But you can recognize similar trends and patterns to know one is approaching.
Project Complexity

• There are four basic dimensions to every project:
  – Its inherent size;
  – The degree of technical difficulty in creating the output (complication);
  – The degree of uncertainty involved in the project; and
  – The complexity of the relationships both within the project team (‘small p’ politics) and surrounding the project.

• In combination these create the innate ‘complexity quotient’ for the project
• The innate complexity of the project should be compensated by the skills of the project organisation and the team
• The Helmsman model is built around organisational ability to manage complexity

See: Project Size and Categorisation
The Tipping Point to Failure

### Helmsman Complexity Scale

**Combines:**
1. Context / Stakeholder
2. Social Factors
3. Ambiguity
4. Technical Complexity
5. Project Management maturity

**APMG – International**

**Keith Williams**

**Helmsman Institute Pty Ltd**

<table>
<thead>
<tr>
<th>Helmsman Scale</th>
<th>Organisational Level</th>
<th>Difficulty Level</th>
<th>Project Characteristics</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 4</td>
<td>SME</td>
<td>Minor</td>
<td>Projects that can be done by smaller organisations.</td>
<td>Build new custom home</td>
</tr>
<tr>
<td>4 - 5</td>
<td>Small</td>
<td></td>
<td>Projects normally performed in the business units of large organisations.</td>
<td>Product maintenance and competitive enhancements to ongoing business operations</td>
</tr>
<tr>
<td>5 – 6</td>
<td>Large</td>
<td>Core</td>
<td>Standard core projects in the top 50-300 organisations. Normally have executive attention.</td>
<td>Regulatory, environmental, business upgrades, GST, Y2K, Clean fuels</td>
</tr>
<tr>
<td>6 - 7</td>
<td>Large</td>
<td></td>
<td>Largest projects commonly undertaken across the top 50-300 organisations. Normally have board attention.</td>
<td>Merger integration, core system replacement, A3BD introduction</td>
</tr>
<tr>
<td>7 – 8</td>
<td>National</td>
<td>Large National</td>
<td>Largest projects commonly undertaken in the Nation. Create noticeable impacts on the economy.</td>
<td>BHP Olympic dam, National Broadband Network Some defence projects</td>
</tr>
<tr>
<td>8 - 9</td>
<td>National significant</td>
<td></td>
<td>Rare and highly complex projects, seldom undertaken in the Nation. Create significant impacts on the national economy.</td>
<td>Snowy River scheme, Sydney Olympics, Collins submarines</td>
</tr>
<tr>
<td>9 – 10</td>
<td>International</td>
<td>International</td>
<td>Significant multi-national project</td>
<td>Hadron Collider, Joint Strike Fighter, BASEL II</td>
</tr>
</tbody>
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### Project Complexity

- The ability to manage ‘complexity’ is innate to the organisation – the location of the ‘cliff’ depends on the organisational capabilities
- Assuming the initial project, the organisational capabilities and the team design are balanced…….
Project Complexity

- Most project teams can manage a ‘bit more’ complexity caused by the actions of others in the ‘team’
- Until the ‘tipping point’ is reached
- This is the space where project control systems add value!
- Three basic sources of ‘added complexity’ are:

Cause 1

- Burning contingencies too quickly
  - Caused by inadequate output
  - Consuming float and delaying non-critical work
  - Over consuming calculated risk management contingencies
  - Frequently hidden (end dates are ‘OK’)
  - **Tipping point**: Sudden massive increase in output required when the project ‘hits the wall’ but no spare capacity
Cause 2

- Excessive change
  - Change orders / changing requirements
  - Changes in strategy
  - Changes in project team (eg, suppliers)
  - Under control, changes incorporated and communicated in a timely manner

  - **Tipping point**: changes not incorporated
    - Rework and delay – late communication
    - Changes to changes to fix issues

Cause 3

- Failing relationships
  - Inefficient communication
  - Ineffective problem solving
  - Emergence of the ‘blame game’
  - In control – open communication and trust
  - **Tipping point**: All communication verified (eg, in writing) – no trust.
    - Slow and ineffective communication
    - Ineffective problem solving and limited knowledge creation

See: [http://www.stakeholdermapping.com/](http://www.stakeholdermapping.com/)
Causes of a ‘Tipping Point’

• All three causes interact and feed off each other
• Management cannot cope with the issues and complexity
• Relationships fail, communication breaks down
• Project ‘tips’ into failure

Problems cannot be solved at the level of awareness that created them.

Albert Einstein

Once a project has tipped, the current team is incapable of reversing the problem.
Early Warning Indicators

- Project controls can help predict the emergence of a ‘tipping point’
- Timely management action to reinforce the current team may avoid the ‘cliff’
- But the indicators are subtle and previous experience of a ‘tipping point’ is essential

Early Warning Indicators

- Productivity issues (cause 1)
  - Measure the consumption of ‘float’
  - Use Earned Schedule and TCPI(t)
  - Measure consumption of contingencies
- Solution
  - Identify the problem early
  - Identify the cause (usually management)
  - Take strong corrective actions early
  - Trust your planners and controls people!
The Tipping Point to Failure

Early Warning Indicators

- Excessive change (cause 2)
  - Measure the time to **resolve** changes
  - Measure the # late changes (rework)
  - Measure the # open changes (trends)
- Solution
  - Understand what is ‘normal’
  - Identify abnormalities early
  - Add appropriate resources early
  - Work with the source of the changes

Early Warning Indicators

- Relationship breakdown (cause 3)
  - Assess stakeholder relationships regularly
  - Plan to build robust relationships and test their effectiveness
  - Track trends: overall and key individuals
- Solution
  - Don’t let key relationships fail!
  - Get outside help if needed
  - Pre-plan escalation paths
Early Warning Indicators

- Organisational resilience is the key:
  - Open and robust communication
  - Some spare capacity and unused capability
  - Willingness to seek help and accept assistance
  - Focus on problem solving and outcomes (not the ‘blame game’)
  - Management prepared to make decisions and change decisions as things emerge

Dealing with Disaster

- Remember everyone is in the ‘same boat’ – including the client!
- The current team can only ‘hold the line’
- Massive support is needed quickly to:
  - Rebuild relationships
  - Determine the scale of the problem
  - Stop the situation getting worse (triage)
  - Repair the damage
  - Establish a new capability to finish
Conclusions

• Once you have ‘tipped into failure’ it is too late!
• The team that ‘tipped’ cannot recover themselves
• Look for the warning signs and act early
• But the preventative action cost money and introduces its own complexity

Conclusions

• Preparation is the key
  – Understand the organisation’s capability
  – Understand the project team’s capability
  – Understand you clients capability
  – Pack your parachutes....
Conclusions

- Backed up by rigorous surveillance

Questions Please

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