Pragmatic Approach to Digital Transformation
In Downstream Distribution

Lily Chen – CEO of Diamond Key International
Covid-19 as Digital Accelerant

Challenges and Opportunities

Real World Examples
Covid-19 as the Digital Accelerant
Digital Transformation is no longer a Buzzword, but Linchpin of Survival.

97% of companies surveyed on-line from June 6\textsuperscript{th} to 24\textsuperscript{th} 2020 with 2,569 respondents between 200 to 300 each in Australia, France, United States, Germany, UK, Italy, Spain, Japan and Singapore report Covid-19 has sped up digital transformation.

78% of tech companies, 77% of energy companies and 74% of healthcare organizations say the pandemic sped up their digital transformation a great deal.

Digital Transformation Before and After Covid-19

Before:  
CEOs and top management blue sky  
IT professionals wish-list  
Business as usual with increased costs and headaches for digitalization  
Disconnect from strategy to reality

After:  
Internal infrastructure to enable remote work from home and anywhere  
Business Continuity Planning as MUST  
Business disrupted with digitalization transformation as survival  
Re-prioritise digital roadmap from essential operation needs to blue sky
- Enable our workforce to support customers from anywhere
- Transform the customer experience with improved responsiveness and engagement
- Proactively align BCP with each customer to eliminate operational risks

Digitalize the Customer Experience

- Cloud Telephony/IVR
- Knowledgebase Management
- Self-Service Portal
- Workflow Configuration
- Ticket Assignments
- Ticket Status
- Escalations
- Ticket Management
- Reporting

- Multi-International Oil Co.
- National Oil Co.
- Major International Oil Co.
- Independent Oil Co.
- Private Oil Co.
- Mining Co’s.
- Distributors.

“Standardise the system to enhance services provided to customers.”

“Increase customer experience by providing consistency across all channels.”

“Improve staff efficiency, productivity and collaboration to better serve customers.”
Four Critical Gaps as a Result of Covid-19 in Downstream Distribution

Network Connectivity
Resource Access
Supply Chain
Contingency Operation

DKI provides End-to-End terminal operation support to Petrochemical Terminals across 28 countries with engineers located in 8 countries
Challenges and Opportunities
Challenges of Implementing Digital Transformation – uncharted ocean

No.1: ROI on measurable return in terms of $$, benefits and values
No.2: Disjoint infrastructures with isolated and inconsistent information systems
No.3: Reluctance to replace aged legacy systems
No.4: Another traditional IT project which lacks the engagement with operational functions
No.5: Organization for Digital Readiness
No.6: Figure out Monster Data

60% of Operators Don’t Know How to Deal with Data
## Lacking clear strategy, skills, engineering support in Energy industry

What barriers to digital transformation has COVID-19 broken down within your organization?

<table>
<thead>
<tr>
<th>Barriers</th>
<th>Technology</th>
<th>Financial Services</th>
<th>Retail &amp; eCommerce</th>
<th>Healthcare</th>
<th>Energy</th>
<th>Construction</th>
<th>Manufacturing &amp; Automotive</th>
<th>Professional Services</th>
</tr>
</thead>
<tbody>
<tr>
<td>Getting executive approval or buy-in</td>
<td>35%</td>
<td>42%</td>
<td>32%</td>
<td>36%</td>
<td>43% ▲</td>
<td>37%</td>
<td>39%</td>
<td>34%</td>
</tr>
<tr>
<td>Lack of a clear transformation strategy</td>
<td>39%</td>
<td>37%</td>
<td>37%</td>
<td>36%</td>
<td>54% ▲</td>
<td>46%</td>
<td>32%</td>
<td>27%</td>
</tr>
<tr>
<td>Reluctance to replace legacy software</td>
<td>37%</td>
<td>40%</td>
<td>36%</td>
<td>38%</td>
<td>27%</td>
<td>36%</td>
<td>30%</td>
<td>28%</td>
</tr>
<tr>
<td>Insufficient budget</td>
<td>33%</td>
<td>36%</td>
<td>32%</td>
<td>41%</td>
<td>35% ▲</td>
<td>36%</td>
<td>37% ▼</td>
<td>26%</td>
</tr>
<tr>
<td>Lack of skills and know-how</td>
<td>33% ▲</td>
<td>39%</td>
<td>30%</td>
<td>34%</td>
<td>53% ▲</td>
<td>39%</td>
<td>26%</td>
<td>23%</td>
</tr>
<tr>
<td>Lack of time</td>
<td>42%</td>
<td>31% ▲</td>
<td>35%</td>
<td>27%</td>
<td>35% ▲</td>
<td>24%</td>
<td>31% ▼</td>
<td>29%</td>
</tr>
<tr>
<td>Lack of engineering support</td>
<td>33%</td>
<td>42%</td>
<td>32%</td>
<td>29%</td>
<td>53% ▲</td>
<td>35%</td>
<td>24%</td>
<td>26%</td>
</tr>
<tr>
<td>Bureaucracy</td>
<td>31%</td>
<td>32% ▼</td>
<td>30%</td>
<td>27%</td>
<td>19%</td>
<td>21%</td>
<td>23%</td>
<td>31%</td>
</tr>
<tr>
<td>Not applicable, we had no barriers</td>
<td>8%</td>
<td>2%</td>
<td>4%</td>
<td>10%</td>
<td>1%</td>
<td>11%</td>
<td>7%</td>
<td>9%</td>
</tr>
<tr>
<td>None of these</td>
<td>2%</td>
<td>4% ▲</td>
<td>2%</td>
<td>0%</td>
<td>1% ▲ ▲</td>
<td>0%</td>
<td>4% ▼</td>
<td>4% ▼ ▲</td>
</tr>
<tr>
<td>Average # of barriers broken down due to COVID-19</td>
<td>2.8</td>
<td>3.0</td>
<td>2.6</td>
<td>2.7</td>
<td>3.2</td>
<td>2.7</td>
<td>2.4</td>
<td>2.3</td>
</tr>
</tbody>
</table>
Opportunities and Benefits: **Pro-active** CAPEX, operations and maintenance planning.

- **Agile investment decisions** – direct capex spending to the biggest opportunities by predicting and benchmarking KPI’s
- **Free up resources** – reduce the time required to identify, assess and resolve operational issues
- **Minimise slow downs** – optimise the scheduling of maintenance by predicting the windows that have the least impact
- **Reduce unplanned outages** – create leading indicators of equipment health so you can take corrective action early
- **Manage stakeholder expectations** – quantify how step changes in operating conditions will impact performance
- **Become the ‘terminal of choice’** – reduce gate-to-gate time and improve customer experience by using optimisation and classification tools to improve loading efficiency
- **Reduce ‘human factor’ safety risks** – create leading indicators of human performance with real-time analytics to predict potentially dangerous scenarios
- **Optimise storage strategies** – monitor and predict the variation in product demand to ensure tank capacity is optimised to achieve a high number of tank turns
**Improve real-time visibility** at heart of digital transformation (DX).

DKI’s digital solutions are used by companies to improve the **visibility of business operations** in a way that helps to identify, develop and otherwise **create new strategic business opportunities** that support becoming the ‘terminal of choice’.

A key differentiator is that our approach allows us to make useful predictions about not only **systemic behaviour** but also **human behaviour** leading to significant improvements in **customer experience** through areas such as:

- Safety Performance
- Asset Utilisation
- Operational Efficiency
- Stock Management
Choosing the **Proven** Technology Giving the **Immediate** Benefits:

- **User Interface / API**
- **Prediction Modelling**
- **Digital Twin Modelling**
- **Maintenance Data**
- **Equity, OSP & Manual Sites**
- **Real-time Operation**
03 Real World Examples
How has DX transformed a major fuel distribution network (before)

Fuel Supplier Company
15 Terminals, 8 Automated, 7 Manual

• 4 discrete types of Automation
• Disjoint operations
• Obsolete equipment
• Non standard – local evolution
• Limited visibility into operations
• Manual Stock transparency

Legend
1 Head Office
3 Terminals
5 3rd Parties
How has DX transformed a major fuel distribution network (after):

**Fuel Supplier Company**

- 15 Terminals
- Standardised TAS
- 8 Automated TAS
- 7 Virtual TAS
- Integrated existing equipment and new bottom loading skids
- Centralised Visibility into
  - Stock
  - Operations
  - Distribution Planning
  - Maintenance
- ERP connectivity
- 3rd Party Drawer Companies

**Legend**

1. Head Office
2. Terminals
3. 3rd Parties
How has Digital Twin helped to save CAPEX in a fast changing environment:

Analysis conducted at one client site identified a USD 1.25mil CAPEX saving. Results showed that queuing times would drop 25% by swapping a large CAPEX project with a smaller, targeted modification to existing infrastructure.

**SAFETY**

Machine Learning algorithms that cut through the alarm flooding and separate human and systemic trends

**PRODUCTIVITY**

Identified how to increase terminal efficiency 35% while keeping bay utilisation at relatively high at 45%

**PROVE IDEAS**

Verify improvement initiatives objectively, many of the best changes are counterintuitive.

**CUSTOMER EXPERIENCE**

Reduced driver waiting times by 40% and loading times by 20% on average.
Linking CAPEX to Operation IMPACT using Digital Twin data to make best decision

Evaluating CAPEX investments should not just be financial viability – it is also about operational impact. It’s possible for two different investment options to have the same ROI but very different effects on operations.

Consider the impact of adding an ethanol blend arm to a loading bay, roughly the same cost, very different results:

<table>
<thead>
<tr>
<th>Bay 1</th>
<th>Bay 2</th>
<th>Bay 3</th>
<th>Bay 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>30.2 min Loading Time</td>
<td>22.4 min Loading Time</td>
<td>22.9 min Loading Time</td>
<td>23.1 min Loading Time</td>
</tr>
</tbody>
</table>
DX as the most effective tool to understand and deal with alarm flooding

*Alarms – the slowdowns hidden in plain sight*

Alarms are a useful proxy for operating efficiency – more alarms typically indicate less efficient operations. Loads that experience alarms are guaranteed to take longer to complete – many of the alarms are **avoidable slowdowns**.
DX as the most effective tool to understand and deal with alarm flooding

*Death by a thousand cuts – each delay is small but adds up quickly*

In the case of Terminal C, 20% of loads had at least one alarm which caused lost loading time equivalent to 3.5% of annual throughput or 2,600 loads or a 11 day shutdown.

Resolving these kind of issues not only makes the terminal safer, but also represents an easy throughput gain and better customer experience.
DKI TIDE as DX tool: three clicks to quickly identify the cause

Overview of all site alarms

Click 1 – Drill down to site details

Click 2 – Drill down to bay level

Click 3 – Drill down to cause and solution
DKI TIDE as DX tool – managing **safety** related to 3rd party equipment and drivers

Filter by Customer and by Carrier

**Alarm correlations**

- **Good performers**
- **Poor performers**
Each terminal is unique: load profiles, product growth and demand distributions.

Being the ‘terminal of choice’ means that each terminal needs to be tailored to suit local conditions – context specific customer experience. To get ahead of your competitors you need to be able to rapidly digitalize the exchange of loading data with your customers (PIDX as an example), and shift limited resources to capitalize on the best opportunities.

- Visibility – how well are my terminals performing today?
- Perspective – how do my terminals compare against each other and the broader industry?
- Foresight – what should my priorities be today, to succeed tomorrow?

**Digital Transformation** – turn historical, real-time, predicative data into actionable insights to improve safety, reduce operation costs, enhance efficiency and your customer experience.
We are here for you
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Regional Office Locations
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Cape Town, South Africa
Kenya
Bristol, UK
Morocco

Think big
Act small
Deliver real