From STE to S1000D to IoT
How Simplified Technical English, Combined with S1000D and IoT, Improves Profitability

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Etteplan – a growth company

Rapidly growing and developing engineering services company

Our customers are global machine and equipment manufacturers

We stand out by the high-level competence and service attitude

Founded 1983 | Nasdaq Helsinki Ltd

~250
REVENUE, USD MILLION 2017

> 3,000
NUMBER OF PERSONNEL

Revenue by geographical area 2017 (2016)

- Finland 68% (68%)
- Sweden 21% (23%)
- China 3% (2%)
- Central Europe 8% (7%)

Revenue by service area 2017 (2016)

- Engineering services 56% (61%)
- Embedded systems and IoT 25% (19%)
- Technical documentation 19% (20%)

Revenue by customer segment 2017

- Forest and paper 13%
- Energy and power transmission 13%
- Industrial machinery and components 12%
- Lifting and hoisting equipment 11%
- Mining 11%
- ICT 7%
- Transportation and vehicle 6%
- Aerospace and defense 4%
- Medical technology 4%
- Metal 4%
- Consumer products 2%
- Others 13%
Expertise and services

1. Engineering
2. Embedded systems & IoT
3. Technical documentation
Industrial service business is a critical component of our competitiveness.
How IoT is transforming service

• Maintenance is increasingly seen as a strategic business function

• IoT isn’t just about how assets and devices are connected

• It’s how leading firms are improving service, building better products and boosting workforce productivity
Impact on technical publications: Emphasis on the Service / Aftermarket Business

- Maintenance is increasingly seen as a **strategic business function**
- IoT isn’t just about how assets and devices are **connected**
- It’s how leading firms are **improving service, building better products and boosting workforce productivity**
From reactive to predictive maintenance

<table>
<thead>
<tr>
<th><strong>Time-to-Failure</strong></th>
<th><strong>Months</strong></th>
<th><strong>Weeks</strong></th>
<th><strong>Days</strong></th>
<th><strong>Failure</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Maintenance Program / Model</td>
<td>Predictive (based on usage and wear characteristics to predict failure)</td>
<td>Condition-monitoring (based on standard asset operation)</td>
<td>Preventive (based on time or operational cycles)</td>
<td>Reactive (based on asset failure)</td>
</tr>
</tbody>
</table>

**Vibration sensor**

- Vibration detected, corrective action taken
- Wear evidence
- Performance decrease
- Audible Noise
- Hot to touch

Motor Fails must be repaired or replaced
With IoT, service organizations can:

- Remotely diagnose and repair customer equipment
- Proactively address maintenance issues
- Improve first-time fix rates
What kind of challenges are we addressing?

• Aging field service personnel
• Knowledge loss
• Information is becoming more complex
• Massive volumes of maintenance information
• Geographically separated service centers
• Non-native speakers or inexperienced maintenance personnel
• Various levels of technical skills
• Shorter response times
Content 4.0

The Emergence of Content 4.0 for Industry 4.0

<table>
<thead>
<tr>
<th>Information 1.0</th>
<th>Information 2.0</th>
<th>Information 3.0</th>
<th>Information 4.0</th>
</tr>
</thead>
<tbody>
<tr>
<td>One Format</td>
<td>Many Formats</td>
<td>Many Formats</td>
<td>Many Formats</td>
</tr>
<tr>
<td>One Owner</td>
<td>One Owner</td>
<td>Many Owners</td>
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<tr>
<td>One Delivery</td>
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<td>Many Deliveries</td>
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<tr>
<td>One Publisher</td>
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<td>One Publisher</td>
<td>Many Publishers</td>
</tr>
</tbody>
</table>

Content 1.0

- Publications

Content 2.0

- Topics

Content 3.0

- Components

Content 4.0

- Molecules & Objects

Industry 1.0

Industry 2.0

Industry 3.0

Industry 4.0

Illustration collaboratively produced by Marie Girard (IBM) & Joe Gollner (Gnostec)
1. **S1000D** for structure
   1. Reuse (single sourcing)
   2. Easier to manage
   3. Faster to find information
   4. Multiple publication formats
   5. Data exchange

2. **Simplified Technical English** for content

3. **Simplified Technical Illustration** for structure and simplification of illustrations – from 3D to reusable SVGs

4. Experienced documentation specialists
Content starts with clarity at the source: Simplified Technical English

- Official Specification, ASD-STE100
- Issue 7 (January 2017)
- STE makes technical English easy to understand
  - Writing rules
    - Keep it simple, be specific, be consistent
  - Standardizing terms
    - One word = one meaning
    - Core dictionary (3000) plus company dictionary

Writing Rules
Grammar & Style
Approx. 60 rules

Core Dictionary
approved words
non-approved words

Company Dictionary
Company specific terminology
STE Implementation

1. Dictionary (and sentence database) building (4-6 weeks), based on cross-section of documentation
2. Checker software
3. Training of authors (optional but recommended)
4. Support
   1. Roadmap, define milestones (review, feedback)
   2. Technical and linguistic support (SLA)
Survey Results

• Up to 30% in cost savings on translation and localization
• Up to 40% in reduced word count
• Quality improvement in writing and translations
• Up to 30% in reduced product cycle time
• Up to 40% reduction in overall documentation cost
• Efficient conversion of legacy documents
• Future proof content (publish concise content to mobile devices)
Connecting STE to IoT

- IoT enables real-time data and context sensitivity / awareness, so information must also be responsive, molecular
- With STE you achieve clarity and a structure that better facilitates use in IoT thanks to clear and concise use of topics
- STE will support your digitalization and IoT strategies even better
Step 1:
Baseline measurement.
Compliance Rating: 70.71%

Step 2:
Standardize on terminology by expanding the Meggitt dictionary including approved and non-approved words.
New compliance rating: 87.22%

Step 3:
Re-write the manual using STE rules and HyperSTE.

New compliance rating: 92.11% plus reduction of 40%.

Before a document is released it should have a minimum compliance rating of 90%.
How does this impact service information?

- **Applicability of content** – product identification and what to do next
- **Information modules** – less documents
- **Assembled** – human and non-human information integrated into valid “compounds”
- **Data types** – connect data (internet) with products (things)
- **Spontaneous** – triggered by context and events
- **Offered** – rather than delivered
- **Dynamic** – continuously updated
- **Online** – searchable and findable
- **Delivery mechanism** – delivery model to allow information to be published on mobile devices (PDF vs app vs experience)
Support maintenance using smart information

- When you perform a task, detailed task information is given
- All information, reference and learning materials is at hand
- You can record what you’ve done and make comments for improvements
- App is supplied with information and data from different sources
Current vs future experience, example

Structured service information published as paper/PDF format and as electronic service information portal.

Service information triggered by an event (service request in a maintenance system) and merged with service procedures and “thing data” like sensor readings and fault codes.
Business Case Calculation
Field operations excellence

5200 employees at Customer X → 50% of the employees searching information

10% improvement in availability of Technical Information → 5% increase in work performance

20920h (41840 h total work hours every day)

20920h * 5% = 1046h (Work time saving every day)

130 full time employee time saving and business efficiency on annual basis

It is realistic to say that 50% of the service people could save 5% of their work time by improving availability of Technical Information.
Make your existing service business more valuable with digital inspection tools, intelligent IoT data and service information

- Access all client and job details, anywhere, anytime
- Use digital inspection tools and checklists to ensure jobs are done right
- View all parts & service documentation, technical bulletins and related information
- Provides real-time visibility into remote devices, check their status or view reports on the current operational performance
- Integrate with on-premises and SaaS (software as a service) applications via prebuilt integrations
Job management & history

- Access all client and job details, anywhere, anytime
- Access a full service history, including notes, photos and messages
- Bring up past and future jobs instantly
- Search for anything from client name to job numbers
- Get directions and instructions to the job sites
- Easy to integrate with existing EAM and other enterprise systems
Augmented Instructions

**Today**

Structured service information published as paper/PDF format and as electronic service information portal.

**With AR application**

This view: Relevant information provided to the technician in the service tablet/mobile tool, also offline.

Service information triggered by the technician and merged with service procedures and "thing data" like sensor readings and fault codes.
Live Support Tool

This view: The back office personnel can support the maintenance task by adding explanatory comments right on top of the video stream.

This view: This is the video stream view as the technician sees it in the field.
Objectives for AR/VR applications

To improve the profitability of the service business by reducing or preventing downtime, by providing the end user with the right information, whenever and wherever needed:

• Minimized time to find and troubleshoot issues
• Engaging way to give technical information to end user
• Easy to understand
• Quick and easy access
• Learning and training
• Connectivity for spare parts ordering
• Feedback function to help keep the content up-to-date
• Ability to get published on multiple devices (Hololens, iPad, future proof)
• Connectivity to technical content from CMS/PLM, etc. for long term applicability (vs. one off implementation)
Request our free booklet and ask for a complimentary business case analysis

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Thank you
for your attention!

Questions?