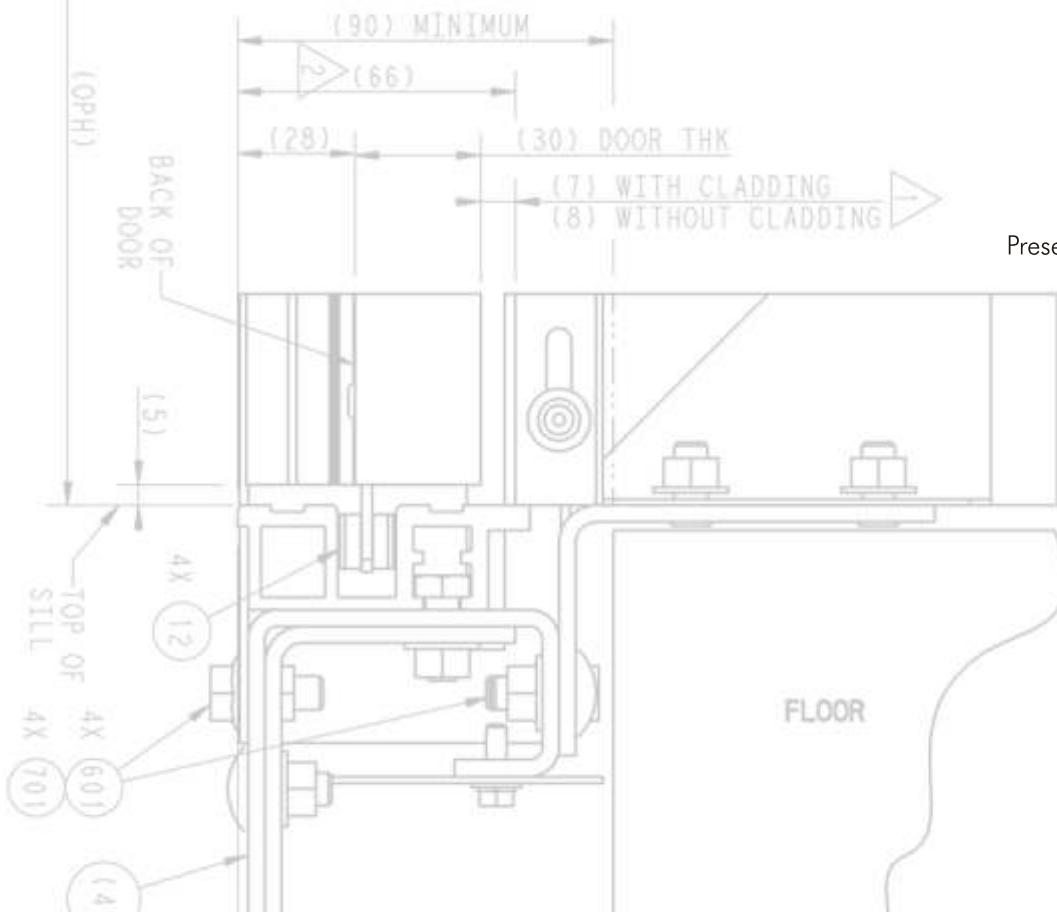
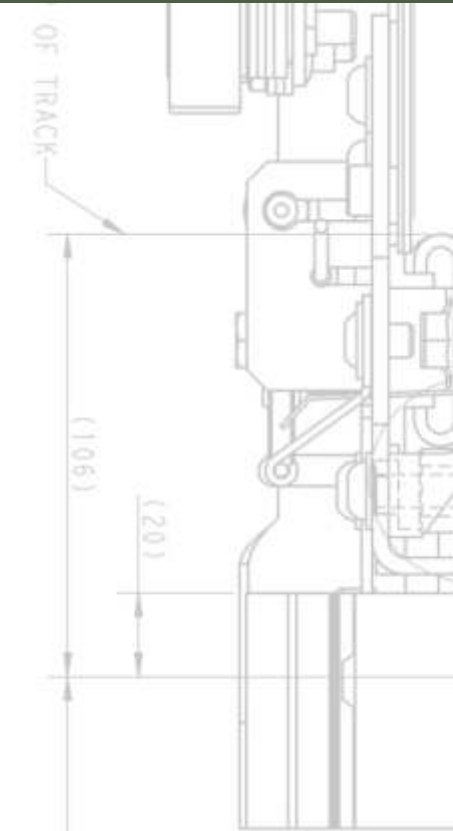


The case for Re-using 3D assets



Presented to



Otis

A United Technologies Company

November 2007



Idea farms

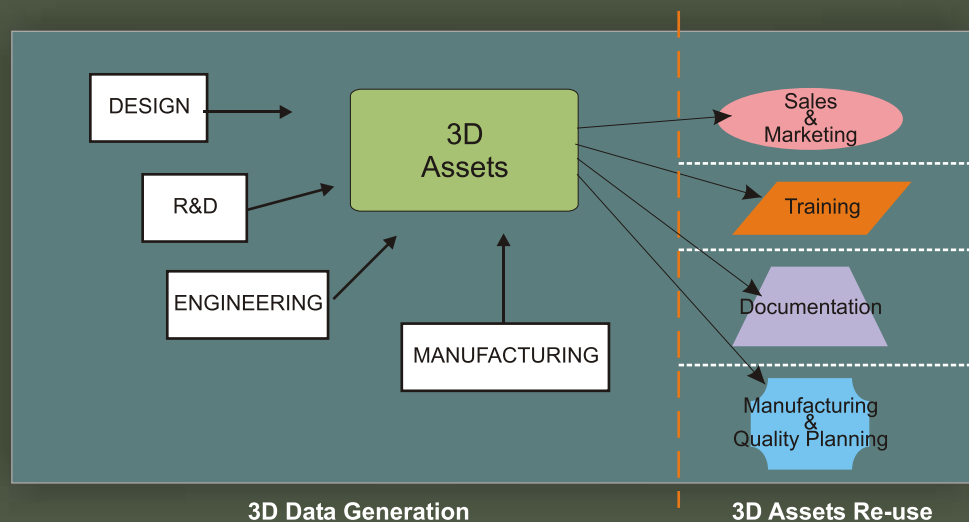
Otis manufactures elevators, escalators and moving walkways. As a part of its core business, Otis generates a significant amount of 3D design data across its various engineering functions (Research & Development, Design, Engineering, Manufacturing).

Ideafarms is a smart-sourcing organization based out of India that partners with globalized corporations

- by "understanding the core of the client's business",
- to deliver value in non-core areas,
- through using IT and related competencies,
- by bringing together interdisciplinary skills.

Ideafarms had proposed a customized solution for the field installation and maintenance group. While developing the concept, we saw the potential of leveraging 3D design data to create deliverables across non-engineering functions.

By creating customized assets for other functions, we see savings - **reduced time, increased accuracy and higher productivity** - among other potential benefits. Deriving these benefits depends upon a combination of strategic actions, organizational capabilities and enabling technologies to directly re-purpose these assets for use in non-engineering functions such as *Sales & Marketing, Training, Documentation and Manufacturing & Quality Planning*.





Using 3D design assets for:

- *interactive and more accurate deliverables,*
- *deliverables that are easier to author,*
- *deliverables that are easier to consume,*
- *lower costs,*
- *less time to market.*

Our Concept

Although 3D solid models are traditionally used in engineering areas of manufacturing companies, we have noticed a recent trend where organizations are beginning to leverage their existing 3D investments across other business functions. Doing so empowers them to significantly change how they execute processes, training and other deliverables. 3D data can be used to create interactive and more accurate deliverables and since the data already exists, it can be used to accurately represent the actual product. Furthermore, the concept of concurrent product development is emerging where organizations can begin planning or authoring processes prior to the design release. By doing so, not only are they able to save costs, but also improve time to market.

IMAGINE ...

IMAGINE ...

... that your customer can **see and experience** your elevator and interactively configure it to his specifications.

Sales & Marketing

As quality and product features are increasingly considered a given, organizations always look for new ways of providing value to their customers.

In such a scenario, the sales group can immediately add value by giving customers a way to 'virtually' experience the actual product.

Existing 3D design data can be re-purposed as an asset to produce real-time **interactive simulations** of products on the web or stand-alone **marketing presentations** to help customers see the product and perhaps even customize it. This helps to crunch the sales cycle and to solicit customer feedback in the earliest stages of design.



Interactive Digital Catalog



Inspect products "virtually" in 3D.

Waterloo, 2003

Extrusion-line Configurator



The tool allows the user to view product specifications and interact with a 3D demo of the product dynamically.

Waterloo, 2003

Tire Building Machine



Virtual experience of the 3D world. The solution allows the sales people to focus on the content while technology does the rest.

Krupp Elastomertechnik, 2003

IMAGINE ...

... if the field engineer could use his cell phone to access an interactive guide, **in real time and specific** to a particular configuration.



Installation & Maintenance

If a picture is worth a thousand words, 3D-enabled training materials are worth a million. The integration of 3D design data into training is a relatively new process, but one that holds great promise. It offers a presentation style that is more easily consumed when compared with traditional training methods.

The **Virtual guide for**

Installation & Maintenance: **\Elevator** is a simulated demo envisaged for Otis. The tool aims to provide the field installation & maintenance teams a way to interactively view various assemblies. It can also be used for understanding the sequence of installation. It may be extended further into a business information tool.

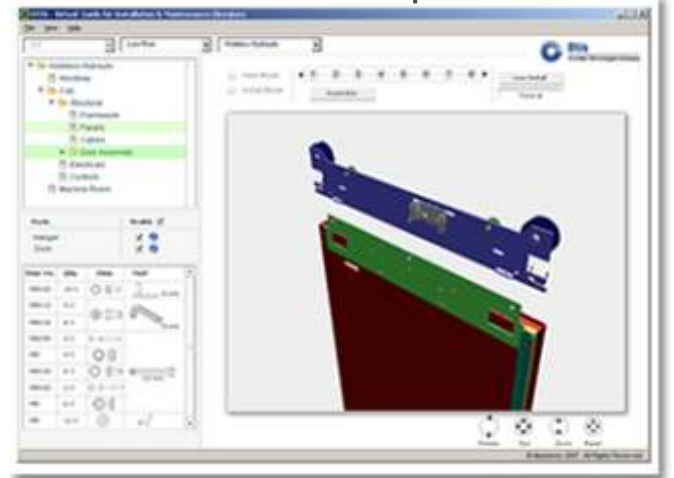
Interactive Installation Guide



Real-time 3D navigation tool gives the feel of the real world scenario and allows the field staff to identify the products and place components easily.

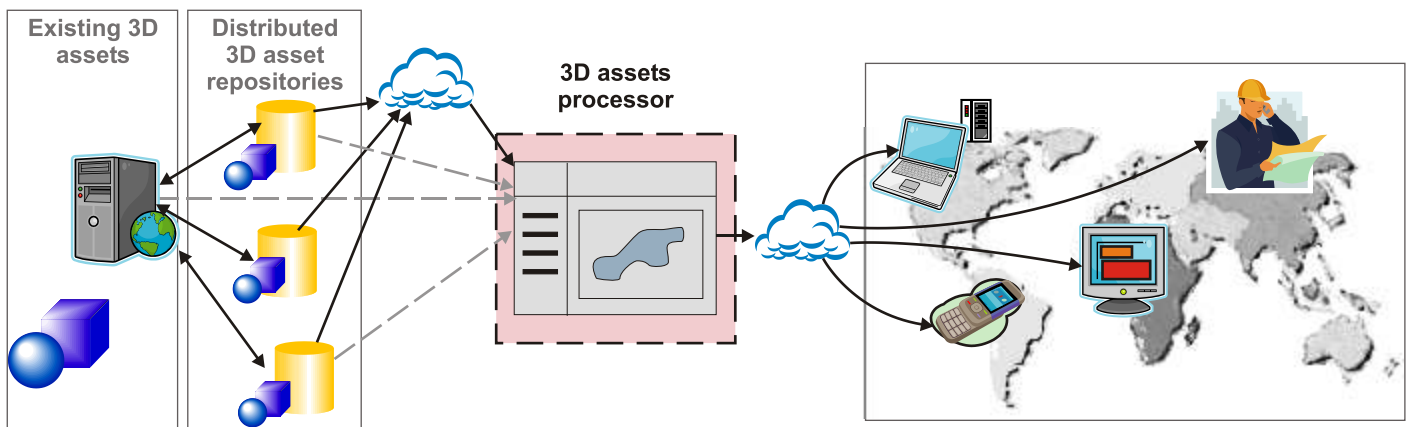
Waterloo, 2003

Concept of a Virtual Guide



Concept: Interactive guide for field installation & maintenance teams.

Otis, 2007



Design based documentation communicates more clearly & efficiently and is easier to update as design changes are made.



Technical Illustrations

The use of technical illustrations in manufacturing organizations ranges from technical documents and customer manuals to online communication. The effort put into creating technical illustrations is sometimes wasted if the design changes.

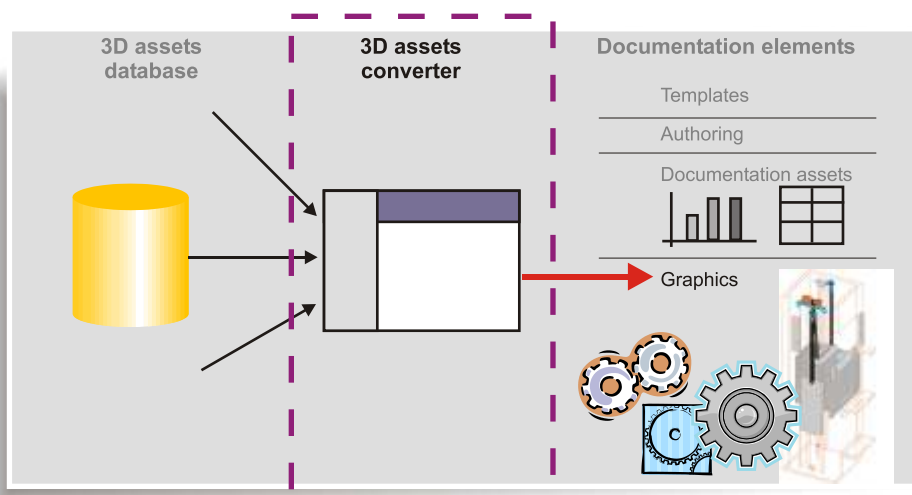
Illustrations generated by re-using 3D data are accurate and offer the flexibility of generating multiple graphic variations. It also ensures that the impact of last-minute design

... **IMAGINE**

... a graphic tool that produces 10 **accurate illustrations** in the time it takes you to draw 1.

changes is minimized.

Needless to say that, since output can be made available in various formats, the potential to re-use such assets is expected to be very high, especially in **generating artworks for print and online** use.



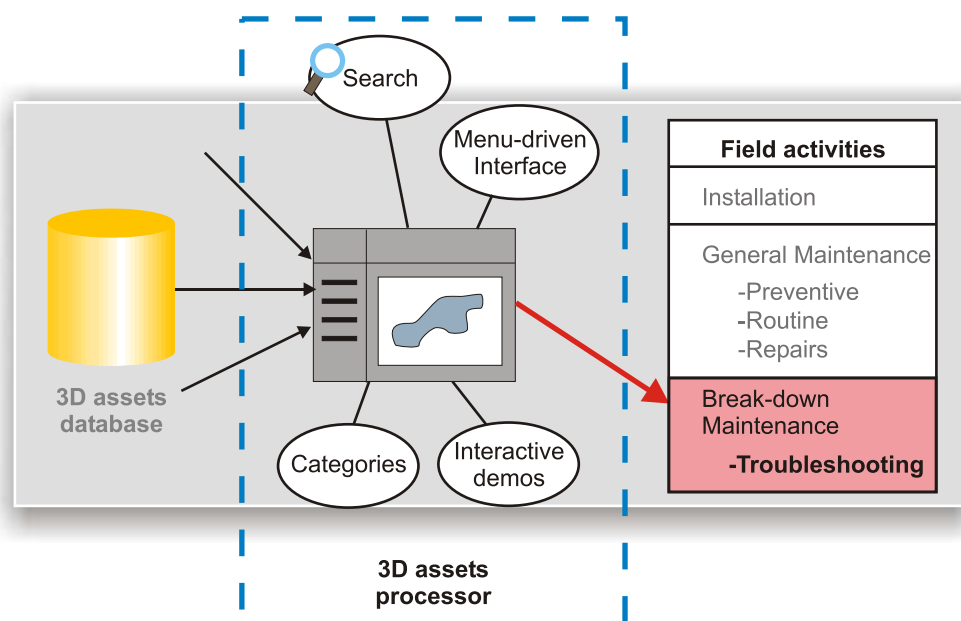
Real-time Troubleshooting



It is not difficult to imagine how 3D design assets used for field installation and maintenance engineers can be logically extended into creating troubleshooting guides. It may however require intelligent handling of the algorithms used for assessment as well as some stochastic modeling to predict scenarios. Such a guide could have symptom-based scenarios which the troubleshooting staff can quiz instead of referring to a 500-page manual.

... IMAGINE

... your troubleshooting personnel can **interactively view several possible scenarios** for why the elevator door is jammed.



Leaving some thoughts on the table . . .

This thought paper is intended as a means to share a few ideas about how to maximize returns from past investments of time and effort that were needed to keep the business running. It is not based on a presumption that what we have tried to articulate is not already part of the current business practices.

Our experience in working with globalized corporations shows us that some of the ideas we have discussed here are not so easy to implement and sustain. This is not because organizations do not have either the vision or the wherewithal, in terms of resources, to implement these

strategies - it is more a question of being able to work with people from multiple disciplines, across continents, in a sustainable manner and within the contexts of a specific business mandate.

Having successfully demonstrated a few of our concepts, at least in part, we believe there is substantial merit in helping build the strategy for extending the use of 3D assets to other business areas.

We are hoping that this paper will form the first cornerstone for continuing a dialog along the lines of the ideas and concepts discussed through this paper.



Ideafarms

(Div. Confidign Solutions P. Ltd.)

Ideafarms is an IT smart-sourcing company, providing enhanced business value to its globalised clients through disruptive thinking and innovation. Our approach constantly keeps us **“farther up the learning curve to ensure sustained and verifiable value delivery to our stakeholders”**. This is why we build at the core of our clients’ business processes & methods and within their cultural contexts.

Business, technology and communication abilities come together at Ideafarms to provide business value to our clients in cost-effective ways.

Our tiered value-chain divisions rest on fundamental enablers so you get what you pay for - sometimes more but never less.

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Otis elevator company is the world's leading manufacturer of elevators, escalators, moving walkways and other horizontal transportation systems with a presence in more than 200 countries and territories. With their strong values of quality and integrity, Otis aims to be recognized as a worldwide leader in service excellence. Their technological innovations consistently set the standards for safety, functionality and reliability that the rest of the industry attempts to match.

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