



Challenges and Solutions to Revamping an SDS system: A Journey in Upgrading Afton's Product Compliance system

Barbara Cotton, Sr. EHS Specialist - Regulatory

April 24, 2018

Passion for Solutions®

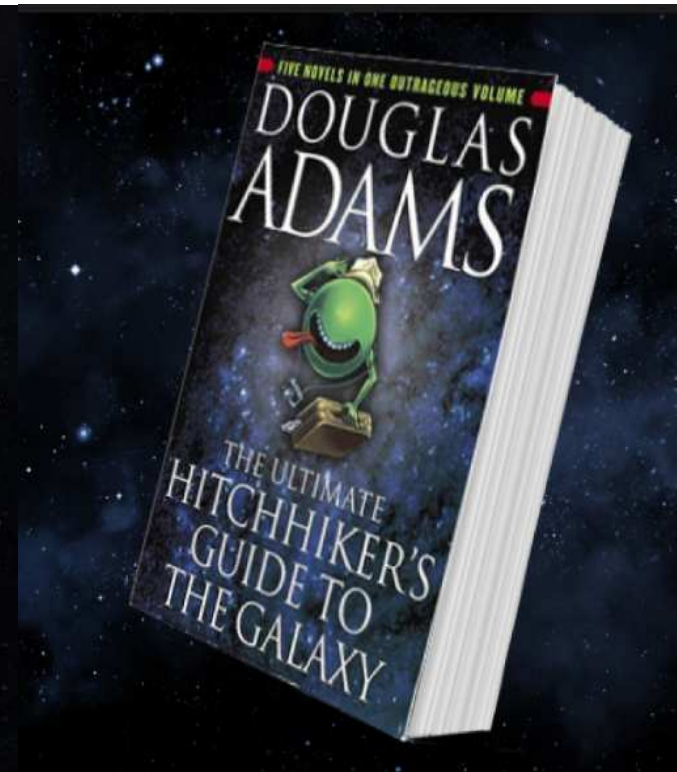
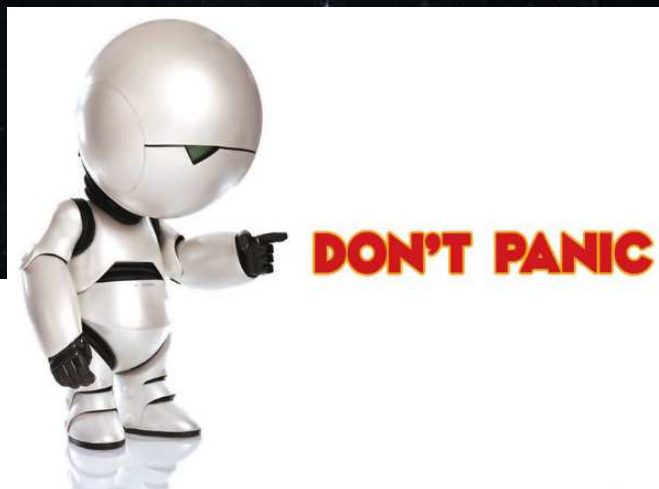
Abstract- Revamping a 20 Year Old System

- After almost 20 years of using our SDS authoring system, Afton undertook this project to update and re-deploy our SDS authoring system. This was prompted after we identified that the data structure, data maintenance, and processes had not kept up with the evolution of the system's programming functionalities, as well as, industry best-practices for improving regulatory library data management within the system.
- This session will provide an overview of the many challenges in the re-deployment project and their struggle in finding the right balance between customization and core functionality to meet both customer and internal requirements. Specifically, major elements of the project focused on building data integrity, improving efficiency, regulatory compliance in an ever-changing environment, and improving overall customer satisfaction.

SDS Authoring System Re-Boot: Overview

“It looked insanely complicated, and this was one of the reasons why the snug plastic cover it fitted into had the words **DON’T PANIC printed on it in large friendly letters.”** —Douglas Adams, *The Hitchhiker’s Guide to the Galaxy*

- 📊 Current vs. Future State
- 📊 Data Integrity & Regulatory Compliance
- 📊 Structuring Data
- 📊 Balance between customization and core
- 📊 Improving Efficiency
- 📊 Challenges



System: Current vs. Future State

“Would it save you a bit of time if I just gave up and went mad now.” —Douglas Adams, *The Hitchhiker’s Guide to the Galaxy*

OLD SYSTEM	NEW SYSTEM
Product Stewards responsible Data mgmt.	Core team responsible Data mgmt.
Prod Stewards enter Regulatory data	Regulatory Data Provider used
~7000 substances	~1400 substances
Toxicologists enter toxicity data and GHS C&L into T-Files used in compositions	T-Files removed converted data to substance level
Manual tracking via spreadsheets	Tox review 1x 3 years
Manual edits of System outputs for customization- used like a word processor	Automation of common phrases & conditions for custom outputs
Complex cheat sheets for product overrides	Cheat sheet information entered at substance level (SCL)
UVCB’s compositions 300% treated as mixtures	UVCB’s – partial solution
Manual calc. of ATEmix for product classifications	Historic product toxicity data extracted for use in Read Across

System Re-Boot: Data Integrity & Regulatory Compliance

“The Hitchhiker's Guide to the Galaxy is an indispensable companion to all those who are keen to make sense of life in an infinitely complex and confusing Universe, for though it cannot hope to be useful or informative on all matters, it does at least make the reassuring claim, that where it is inaccurate it is at least definitively inaccurate. In cases of major discrepancy it's always reality that's got it wrong.”

—Douglas Adams, *The Hitchhiker's Guide to the Galaxy*

Data Integrity - An infinitely complex and confusing topic

- ▲ Use of **Regulatory Content provider** as a foundation
- ▲ Review of **all existing data**
- ▲ **Ranking** the data for reliability
- ▲ **Weight of Evidence** approach
- ▲ **Periodic Review** once every 3 years
- ▲ **Merging data** from spreadsheets into SDS DB system

System Re-Boot: Structuring Data

“Do you find coming to terms with the mindless tedium of it all presents an interesting challenge?”

—Douglas Adams, *The Hitchhiker’s Guide to the Galaxy*

- ▲ Finding a **unique identifier** for each substance, RM and Product
- ▲ Finding a **link** to other internal Afton systems and other ad hoc DB’s
- ▲ Decision to **rebuild from scratch** and not migrate corrupted or old data
- ▲ **Leveraging newer SDS Authoring functionalities** for old problems
 - ▲ Trade secret names
 - ▲ UVCBs
 - ▲ Specific Concentration Limits (SCL)
 - ▲ Regional SDS’s

System Re-Boot – Structuring Data (continued)

“It is an important and popular fact that things are not always what they seem.” —Douglas Adams, *The Hitchhiker’s Guide to the Galaxy*

- ▲ **Regional vs. Country SDS differences**
- ▲ **Systemizing written notes** on how to apply GHS classifications based on toxicity test data
- ▲ **Customer customizations**
- ▲ **Raw material fungibility** – interchangeable materials allowing for supply chain and production flexibility
 - ▲ Functional equivalent ≠ chemically equivalent
- ▲ **Product Aliases (rebrands) and Customer Aliases**

Tug-of-War between Customization and Out of Box

“I think you ought to know I'm feeling very depressed.”

— Douglas Adams, *The Hitchhiker's Guide to the Galaxy*

Out of Box SDS vs. Customization.

- ▶ Battle between the wants and needs of internal and external customers.
- ▶ Many customizations are not regulatory driven but expect certain information.

Out of Box versus Customization

Std. algorithmic output	P-phrases, first aid, regulatory etc.
EINEC, ELINC listed	REACH Compliant, Non-compliant
Data provided cut-off limits	Override data supplied to match conc. LOC
Regulatory reportable substances	OEM (automotive) reportable substances

Wrestling Between Customization and Out-of-box SDS

“Come off it, Mr. Dent,” he said, “you can’t win, you know. You can’t lie in front of the bulldozer indefinitely.”

— Douglas Adams, *The Hitchhiker’s Guide to the Galaxy*

🏆 Grappling with how to effectively communicate information in a standard format.

Complex REACH like notification schemes, notified but not listed, import restrictions, etc.

**UVCB substances w/ reportable constituents – compositions > 100%
Most treat as mixture**

Section 15- Inventory status- no longer listed or not-listed

Toxicity data that doesn’t support classification – tackling the answer to minimize questions

Adding info to ease import e.g. Tariff #'s, ECN#, etc.



Identifying reportable impurities

System Re-Boot - Improving Efficiency

“Research. Government archives. Detective work. Few lucky guesses. Easy.”

—Douglas Adams, *The Hitchhiker’s Guide to the Galaxy*

Regulatory Data Provider

- ▲ Consistent data entry with quarterly updates

Data maintenance on ~1400 vs. ~7000 substance

Entering **only active raw materials and products**

CAS level data driving regulatory and inventory statuses

- ▲ No more manual entry at raw material and product levels

Removal of T-Files and **written instructions using specific concentration limits for GHS classification**

Use of Trade Secret Software functionality

- ▲ Removal of custom rule

System Re-Boot – Challenges to Go-Live!

“Space,” it says, “is big. Really big. You just won't believe how vastly, hugely, mind bogglingly big it is. I mean, you may think it's a long way down the road to the chemist's... —Douglas Adams, *The Hitchhiker's Guide to the Galaxy*

- ▲ Data scrubbing & Load
- ▲ Software Limitations
- ▲ UVCB's
- ▲ Scope Creep
- ▲ Finding Common Ground
- ▲ Different Expectations & Perceptions
- ▲ Silo Organization
- ▲ Group Consensus
- ▲ Timelines and Dedicated Resources



System Re-Boot: Challenges

“Nothing travels faster than the speed of light with the possible exception of bad news, which obeys its own special laws.”

—Douglas Adams, *The Hitchhiker’s Guide to the Galaxy*

Data Scrubbing and Load

- ▲ Manual load of data – TIME CONSUMING.

Software limitations and data structure


- ▲ The toxicity data uploads caused several hard errors due to how the data was formatted and programmed
 - Misdirected error flag in programming
 - Software Provider assisted in work around for data entry
 - Required fields where some data may not be available
 - Programming quirk for irritancy required duration of treatment and observational period if corrosive
- ▲ No option for “not an irritant based on test data” in software

System Re-Boot – UVCB Challenge

There is a theory which states that if ever anyone discovers exactly what the Universe is for and why it is here, it will instantly disappear and be replaced by something even more bizarre and inexplicable.

There is another which states this has already happened.

- Douglas Adams
- *“Hitchhiker’s Guide to the Galaxy”*

 **UVCB’s** or Substances of **Unknown** or **Variable** composition, **Complex** reaction products or **Biological** materials

- ▲ Prior to software update, Afton treated UVCB’s as a Mixture
- ▲ Compositions > 100% which affected ATEmix calculations
- ▲ Still confusing outputs in Section 3

UVCB References

- **EPA TSCA Guidance: “Chemical Substances of Unknown or Variable Composition, Complex Reaction Products and Biological Materials: UVCB SUBSTANCES”**

<https://www.epa.gov/sites/production/files/2015-05/documents/uvcb.pdf>

- **EU “Guidance in a Nutshell for identification and naming of substances under REACH and CLP” V. 2.0 – Apr. 2017**

https://echa.europa.eu/documents/10162/13643/nutshell_guidance_substance_en.pdf/cca556cd-4f68-4b38-a29b-58cb6da31a93

System Re-Boot - UVCB's Continued

- ▶ **Additional layer of complexity resides in how US OSHA and CA WHMIS essentially hybridize a UVCB with a mixture. The Regulatory community wants industry to report constituents within a UVCB that would require reporting if they were a single substance.**
 - ▶ https://www.osha.gov/OshDoc/Directive_pdf/CPL_02-02-079.pdf
- ▶ **Another facet is the potential for over classifying a product that uses UVCB's that are carcinogens. The overall classification of a UVCB driving the product classification, when it is a known constituent in that UVCB below a trigger level should no longer be classified.**
 - ▶ Example: Aromatic solvents where, naphthalene is the reason for CARC status. Let's say spec max. is 3%, then 9.9% of the total aromatic solvent would be 0.03% naphthalene.

“Ow! My brains!”

—Douglas Adams, *The Hitchhiker's Guide to the Galaxy*

System Re-Boot – Challenges in Scope Creep

**I love deadlines,
I love the
whooshing sound
they make as they
fly by.**

Douglas Adams

- 📌 Somewhere along the time line it became important to include all the new toxicity, ecotoxicity and GHS classifications from Toxicologists and Ecotoxicologist.
- 📌 A separate project extracted out all toxicity data from historical product testing to be uploaded.
- 📌 Coordination with timing of uploads and data verification

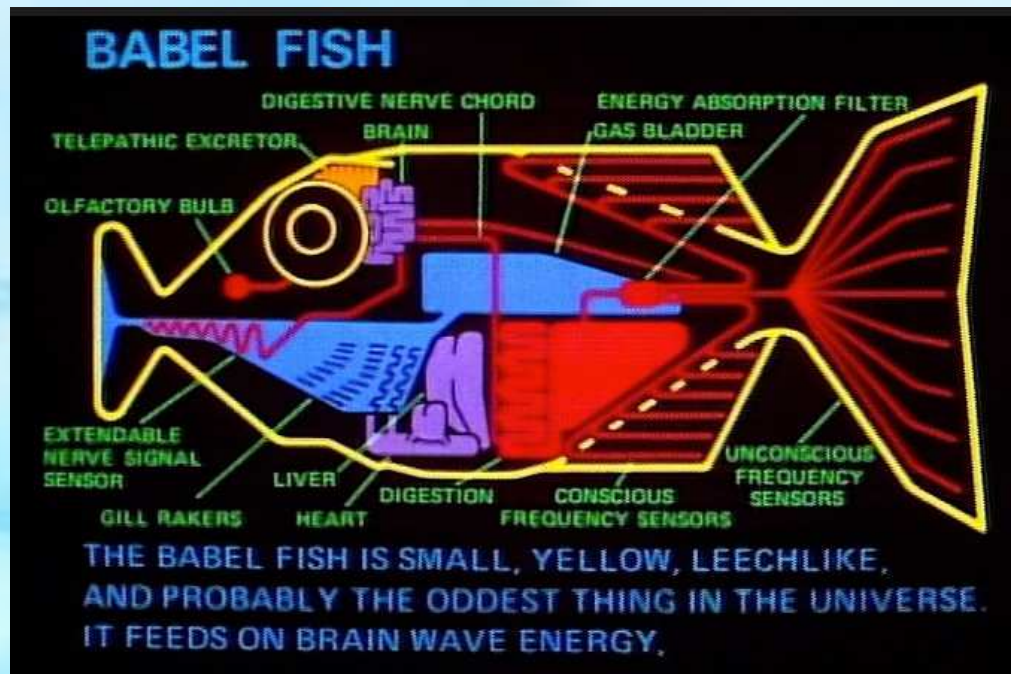
System Re-Boot – Challenges

Finding common ground

- ▶ Defining technical terms (e.g. programming, chemical, etc.) speaking the same language
- ▶ What can we live with or without

Different expectations and perceptions

- ▶ Words mean different things to different people. Communication between people is not always clear and consistent, and it's not easy to get everyone on the same page. Nor is it easy to get everyone to share in your vision for the system.



System Re-Boot – Challenges

“Fifteen years was a long time to be stranded anywhere, particularly somewhere as mind-boggingly dull as Earth.”

—Douglas Adams, *The Hitchhiker’s Guide to the Galaxy*

Timelines and shifting sands...

- ▲ Management support
 - Needs to understand that this is NOT a 4-6 month process unless you have clean data and choose an out-of-the-box solution.
- ▲ Competing projects and regulatory deadlines. Mgmt. needs to make decision on priorities.
- ▲ Project planning – map it out
- ▲ Up front data analysis – find your gaps early!
- ▲ Include time for glitches, unforeseen issues and for problem solving

Dedicated resources

- ▲ Defining your “A-team”
 - Technical leaders
 - Knowledgeable workers
- ▲ Ensure that team is not divided between project and day work

System Re-Boot – Challenges

“Perhaps I'm old and tired, but I always think that the chances of finding out what really is going on are so absurdly remote that the only thing to do is to say hang the sense of it and just keep yourself occupied.”

—Douglas Adams, *The Hitchhiker's Guide to the Galaxy*

Silo organization

- ▶ Multiple data integrity projects on-going in various sectors of the company impacting Re-Boot project.
 - Reorganization of raw materials
 - Deactivation of raw materials
 - Toxicology and Ecotoxicology separate projects

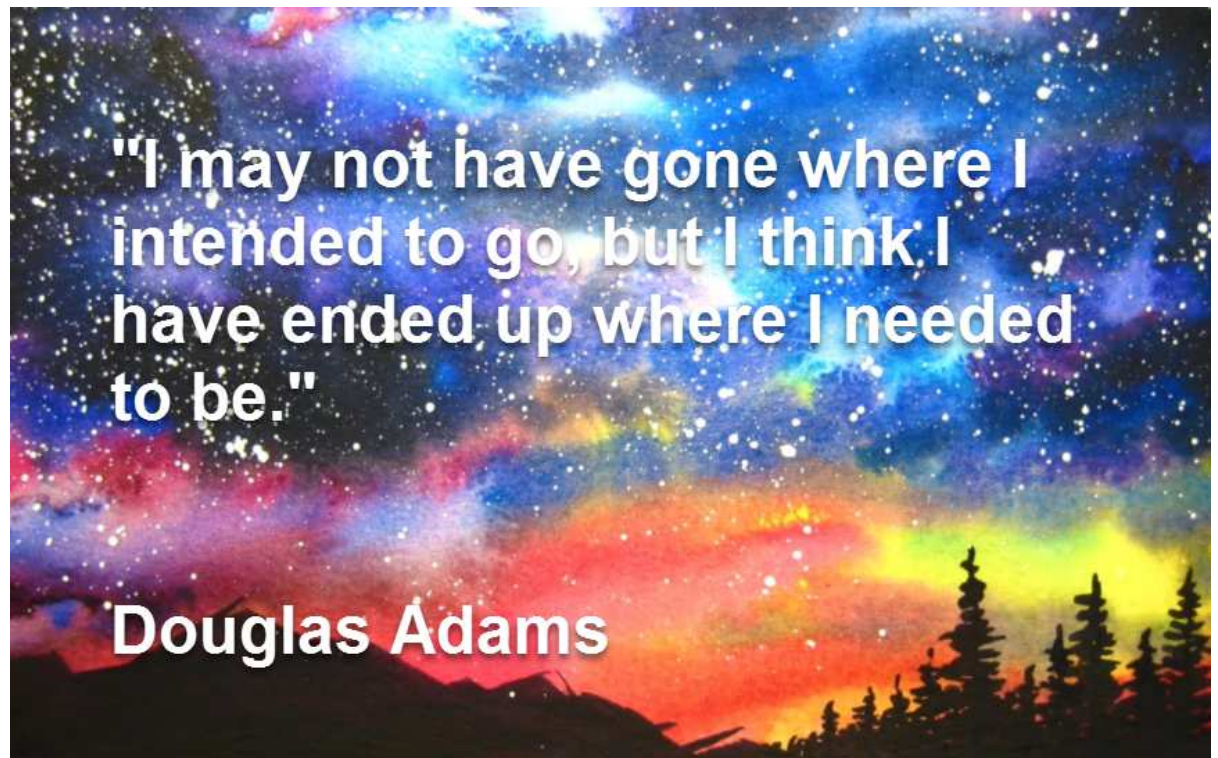
Group consensus

- ▶ The art and science of balancing a global standardized outputs with required regulatory elements. (An EU SDS is not compliant globally!)
- ▶ Defining actual needs vs. wants and don't likes.

In Summary

On our Re-Boot journey, I believe we have made considerable improvements in:

- ▶ Leveraging software functionality
- ▶ Improved regulatory compliance
- ▶ Standardization of outputs
- ▶ Consistent data structure
- ▶ Minimized customizations
- ▶ Data we can trust
- ▶ Increased efficiency



QUESTION:
LIFE, THE
UNIVERSE and
EVERYTHING...

THE ANSWER:
42