



The Rewarding (and Rocky) Road from SAS Applications Programmer to SAS Software Developer

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Agenda

- Case Study
- Introduction
- Career path of a SAS programmer
- Comparative career analysis
 - Application programmer role
 - Software developer role
- Challenges and Recommendations
- Conclusion

Case Study

A sad story of SAS developers trying their hand at software development...



Introduction



A brief history

- Jeff Abolafia
- Carrie Dundas-Lucca
- How we came to collaborate

Career Path of a SAS Programmer

Entry Level

- Project Work
- Simple tasks
 - Data listings
 - Statistical analysis on existing datasets

Experienced

- Project Work
- More advanced tasks
 - Displays
 - Dataset programming
 - Dataset validation

Advanced

- Automate tasks with simple macros
- Experts at project-related activities

Master...leading into Software Developer

- Develop suites of macros to solve complex problems
- Experts at advanced programming tasks

Comparative Career Analysis

Key Attribute	Application Programmer	Software Developer
Project Specifications	• Written by others • Delivered to programmer • Programmer might provide minimal feedback or input • Spreadsheet format	• Participates in collection and documentation activities
Validation approach	• Double independent programming • Outputs reviewed by statistician • Minimal documentation	• Testing software to confirm it meets user requirements • Risk analysis and mitigation • Extensive documentation
Project outputs	• Executable SAS programs	• Software
Project timeline	• Multiple months • Delivery of programs equates to the end of the project	• Multiple months • Delivery of software is only the beginning; software requires ongoing updates and support
Required skills	• SAS • CDISC standards • Other statistical programming languages and tools • Microsoft Office	• Ability to write/design software • Communication • Collaboration
Mindset	• FDA is my client • Team of one	• Users are my clients • Team member

Challenges

Mindset



Communication



Documentation



Validation



Challenges: Mindset

- It is not what you think they need
- Project and task duration
- Will it ever end



Challenges: Communication

- More, more, and more
- Communication format
- Communication streams



Challenges: Documentation

- More, more, and more
 - Extensive
 - More often
- Diversity of documentation
- Your input is key



Challenges: Validation

- It's a whole new ballgame
 - Approach is specific to each project
 - Test code, functionality, user requirements
 - Develop test scripts
 - Fix the code if it doesn't pass muster
 - Maintenance



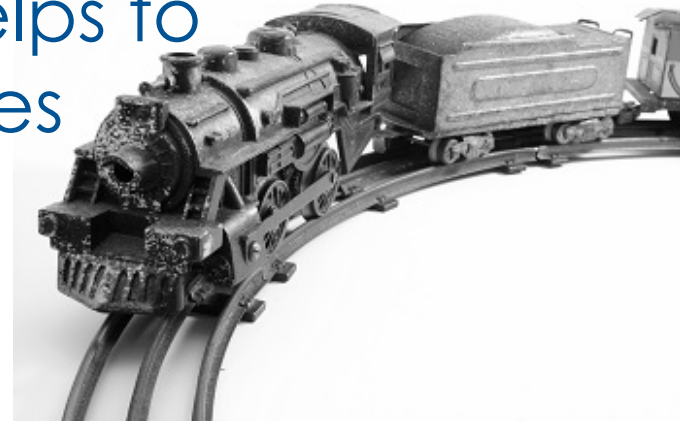
Recommendations and the Challenges they address

- **See the Train Coming!**

- ✓ Acknowledgement that a career transition is taking place helps to address all of the challenges

- **Provide Training**

- ✓ Mindset, Communication, Documentation, and Validation



Recommendations and the Challenges they address



Make some new friends

- Mindset, Documentation, Validation



Embrace collaboration and change

- Documentation and Validation



If you enjoy it, do it!

- Documentation and Validation

Conclusion

- Rewarding, especially if done right
- Acknowledge challenges
- Implement recommendations
- Develop your own solutions
- Share your experience!

The End

Thank you for attending our presentation.

Send questions or comments to:

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