



# AI is not Magic

## *Managing a team of analysts*

Dr. Eliezer Kanal

January 6, 2020

Software Engineering Institute  
Carnegie Mellon University  
Pittsburgh, PA 15213

Copyright 2020 Carnegie Mellon University.

This material is based upon work funded and supported by the Department of Defense under Contract No. FA8702-15-D-0002 with Carnegie Mellon University for the operation of the Software Engineering Institute, a federally funded research and development center.

The view, opinions, and/or findings contained in this material are those of the author(s) and should not be construed as an official Government position, policy, or decision, unless designated by other documentation.

NO WARRANTY. THIS CARNEGIE MELLON UNIVERSITY AND SOFTWARE ENGINEERING INSTITUTE MATERIAL IS FURNISHED ON AN "AS-IS" BASIS. CARNEGIE MELLON UNIVERSITY MAKES NO WARRANTIES OF ANY KIND, EITHER EXPRESSED OR IMPLIED, AS TO ANY MATTER INCLUDING, BUT NOT LIMITED TO, WARRANTY OF FITNESS FOR PURPOSE OR MERCHANTABILITY, EXCLUSIVITY, OR RESULTS OBTAINED FROM USE OF THE MATERIAL. CARNEGIE MELLON UNIVERSITY DOES NOT MAKE ANY WARRANTY OF ANY KIND WITH RESPECT TO FREEDOM FROM PATENT, TRADEMARK, OR COPYRIGHT INFRINGEMENT.

[DISTRIBUTION STATEMENT A] This material has been approved for public release and unlimited distribution. Please see Copyright notice for non-US Government use and distribution.

This material may be reproduced in its entirety, without modification, and freely distributed in written or electronic form without requesting formal permission. Permission is required for any other use. Requests for permission should be directed to the Software Engineering Institute at [permission@sei.cmu.edu](mailto:permission@sei.cmu.edu).

Carnegie Mellon® and CERT® are registered in the U.S. Patent and Trademark Office by Carnegie Mellon University.

DM20-0006

# Overview

# What is the purpose of a manager?



# No-manager experiments

Zappo's holocracy

Google Project Oxygen

- No managers = directionless, lack basic resources
- Project Oxygen found 10 characteristics of good managers

# Project Oxygen's manager behaviors

1. Be a good coach.
2. Empower teams and don't micromanage.
- 3. Create an inclusive team environment, showing concern for success and well-being.**
4. Be productive and results oriented.
5. Be a good communicator -- listen and share information.
6. Have a clear vision/strategy for the team.
7. Support career development and discuss performance.
- 8. Have the expertise to advise the team.**
9. Collaborate.
10. Be a strong decision maker.

# Other behaviors to be found!



Note: YMMV, companies are different

Personal experience:

- Advocate for your team!
- Beyond collaboration... networking



# What does an analytics team do?





# Analytics functions



Helping people make decisions (analytics)

Automating (“AI”, “ML”, automation)



Designing the way stories are told (metrics)

Apply data, statistical, ML, AI tools to specific problems



Know what technique to use when

# Stuff analytics teams shouldn't do

- Non-analytics software development
- IT management (typically devops and/or database)
- Dedicated support for deployed applications
- Sales

*Analysts are typically expensive resources, with a focused skill set.  
Use them that way!*

# Hiring & Retention

# Hiring Hard Facts

“Hiring is an Always thing”

High turnover, 3 year tenure  
is normal

“Hire only the best” fallacy

Determine need *before* hiring



# Technical hiring wishlist

Skill set  
match

Quick  
Learner

Collaborative

Willing to work

Communication



# Hiring process – Look for the above!



## Sourcing

- Aggressive search
- Search right sites

## Phone screen

- Basic skills
- Personality check
- Coding testing (?)

## Onsite

- Communication!
- Problem solving
- Collaborative

*This is hard for everyone, no one has all the answers*

# Retention

Turnover is normal!

Set deliberate, realistic goals

It's not always about money  
(but it usually is)

Exit interviews! Fixes may be  
easier than you think

Treat ex-employees nicely,  
they will talk about you



# Managing the team

# People management

Don't micromanage

Trust, trust, trust

Apologize!

Differentiate manager and peer communications

Managing attrition with remaining team

# Work management

One-on-one meetings, always

Track experimentation!

Expectations for ownership

Devops is critical



*This is software engineering... treat it as such!*

# Work management – *Customer relationships*

Be explicit on expectations, responsibilities

Explain ahead of time any possible risks

Document what's expected!

## Program Name

### Project Description

Praesent commodo cursus magna, vel scelerisque nisl consectetur et. Etiam porta sem malesuada magna mollis euismod. Maecenas faucibus mollis interdum. Vivamus sagittis lacus vel augue laoreet rutrum faucibus dolor auctor. Maecenas faucibus mollis interdum. Cras mattis consectetur purus sit amet fermentum. Ceram sociis natoque penatibus et magnis dis parturient montes, nascetur ridiculus mus. Duis mollis, est non commodo luctus, nisi erat porttitor ligula, eget lacinia odio sem nec elit. Maecenas faucibus mollis interdum. Integer posuere erat a ante venenatis dapibus posuere velit aliquet. Vivamus sagittis lacus vel augue laoreet rutrum faucibus dolor auctor.

Donec ullamcorper nulla non metus auctor fringilla. Duis mollis, est non commodo luctus, nisi erat porttitor ligula, eget lacinia odio sem nec elit. Vestibulum id ligula porta felis euismod semper. Aenean eu leo quam. Pellentesque ornare sem lacinia quam venenatis vestibulum. Integer posuere erat a ante venenatis dapibus posuere velit aliquet.

Cras mattis consectetur purus sit amet fermentum. Praesent commodo cursus magna, vel scelerisque nisl consectetur et. Fusce dapibus, tellus ac cursus commodo, tortor mauris condimentum nibh, ut fermentum massa justo sit amet risus. Maecenas sed diam eget risus varius blandit sit amet non magna. Integer posuere erat a ante venenatis dapibus posuere velit aliquet. Fusce dapibus, tellus ac cursus commodo, tortor mauris condimentum nibh, ut fermentum massa justo sit amet risus. Aenean eu leo quam. Pellentesque ornare sem lacinia quam venenatis vestibulum. Maecenas sed diam eget risus varius blandit sit amet non magna. Vestibulum id ligula porta felis euismod semper. Morbi leo risus, porta ac consectetur ac, vestibulum at eros. Morbi leo risus, porta ac consectetur ac, vestibulum at eros. Cras justo odio, dapibus ac facilisis in, egestas eget quam. Duis mollis, est non commodo luctus, nisi erat porttitor ligula, eget lacinia odio sem nec elit. Lorem ipsum dolor sit amet, consectetur adipiscing elit.

### Deliverables & Timeline

Dates	Deliverable
1/31	Nullam id dolor id nibh ultricies vehicula ut id elit.
2/15	Donec id elit non mi porta gravida at eget metus.
4/30	Vivamus sagittis lacus vel augue laoreet rutrum faucibus dolor auctor. Duic sociis natoque penatibus et magnis dis parturient montes, nascetur ridiculus mus.
5/31	Integer posuere erat a ante venenatis dapibus posuere velit aliquet.

# Work management – *Handling failure*

# Matrix management

Standard for analytics in many vertically-aligned companies

Trust the SMEs!

Define roles

Problems, recognition still your responsibility

Networking is a critical skill here



# Crisis management



# Crisis management

Don't be a fire chief

- Have a fireman available if needed, not your whole team

Dedicate resources to improvement

Dashboards, scheduled reports, ad-hoc queries



# Bad apples discussion



# Bad apples discussion

One bad experience = years of aversion

Bad apple outweighs technical skill

Don't be afraid to terminate!



# Bad apples – *Managing the customer*



# Rewarding people

Verbal rewards are free! Used generously!

Don't embarrass! Only do public if they're comfortable

Many ways to give rewards:

- Project choice
- Research time
- New hardware
- Take to lunch
- Time off
- Training

# Managing management

Use caution when promoting  
your best engineer to manager

Management training is often hit  
or miss



Oversight, metrics, strategy

Should do technical work



## Challenges:

- Keeping managers fresh
- Keeping engaged
- Avoiding job scope creep



# Recap