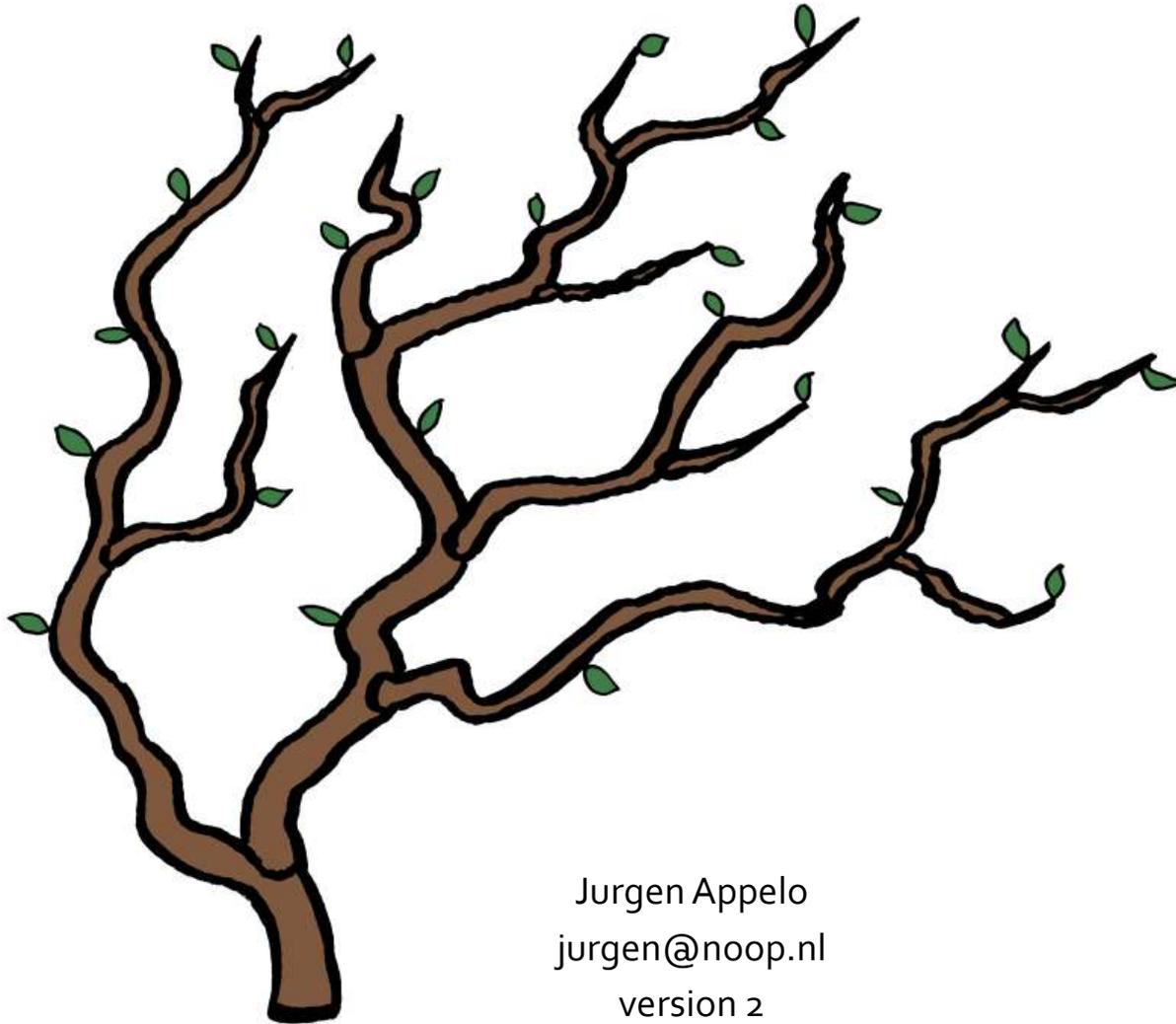


# The Dolt's Guide to **Self-Organization**



Jurgen Appelo  
jurgen@noop.nl  
version 2



*The Addison Wesley Signature Series*

A MIKE COHN SIGNATURE BOOK  
*Mike Cohn*

# MANAGEMENT 3.0

LEADING AGILE DEVELOPERS,  
DEVELOPING AGILE LEADERS

JURGEN APPELO

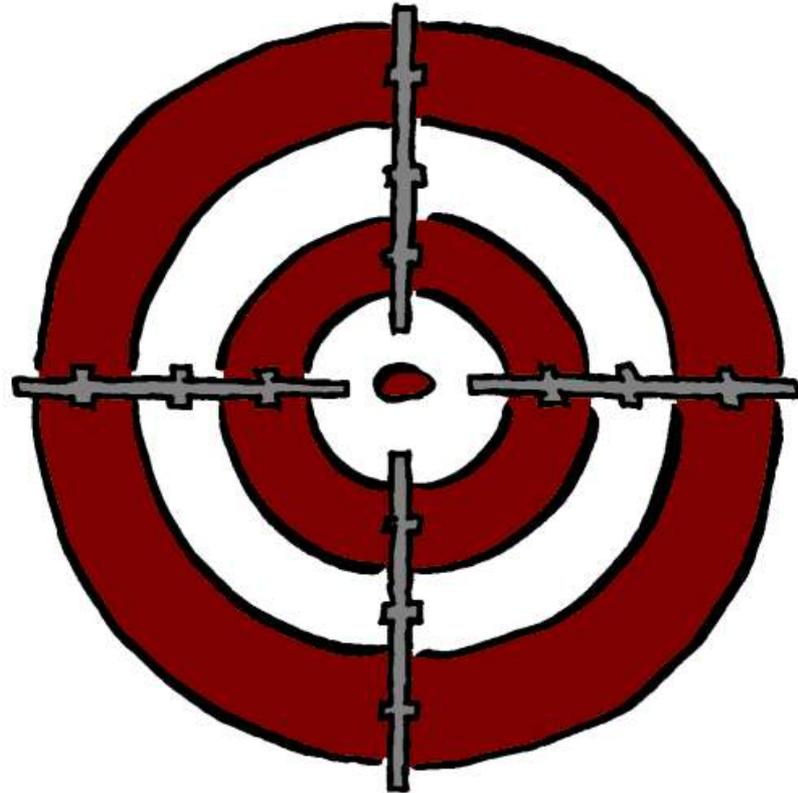


*Forewords by Robert C. Martin and Ed Yourdon*



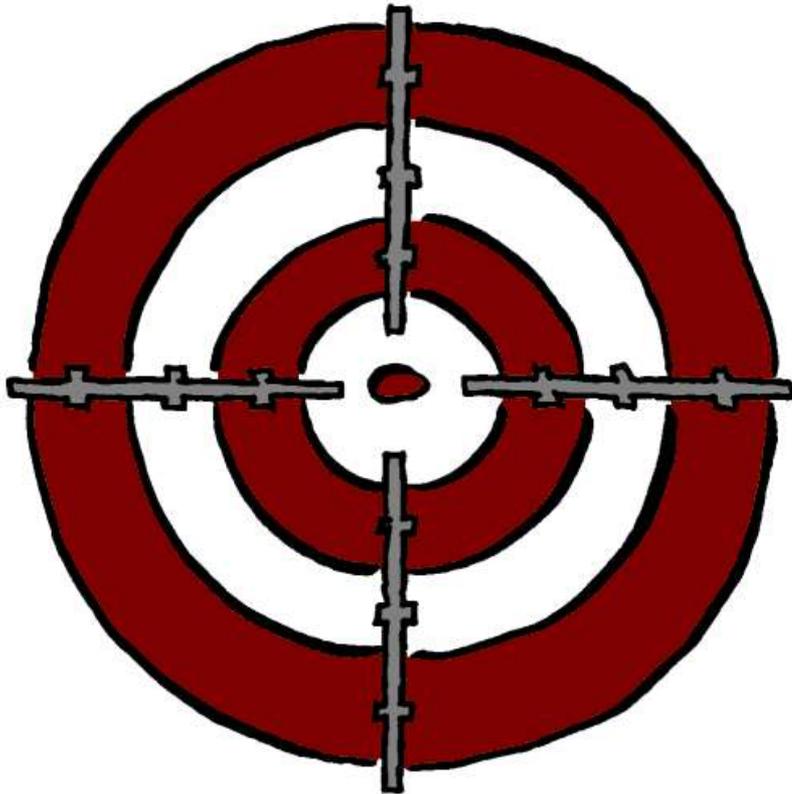
# Goal #1

OK, so what is self-organization *really*?



## Goal #2

How can we make self-organization *work*?



# Agenda



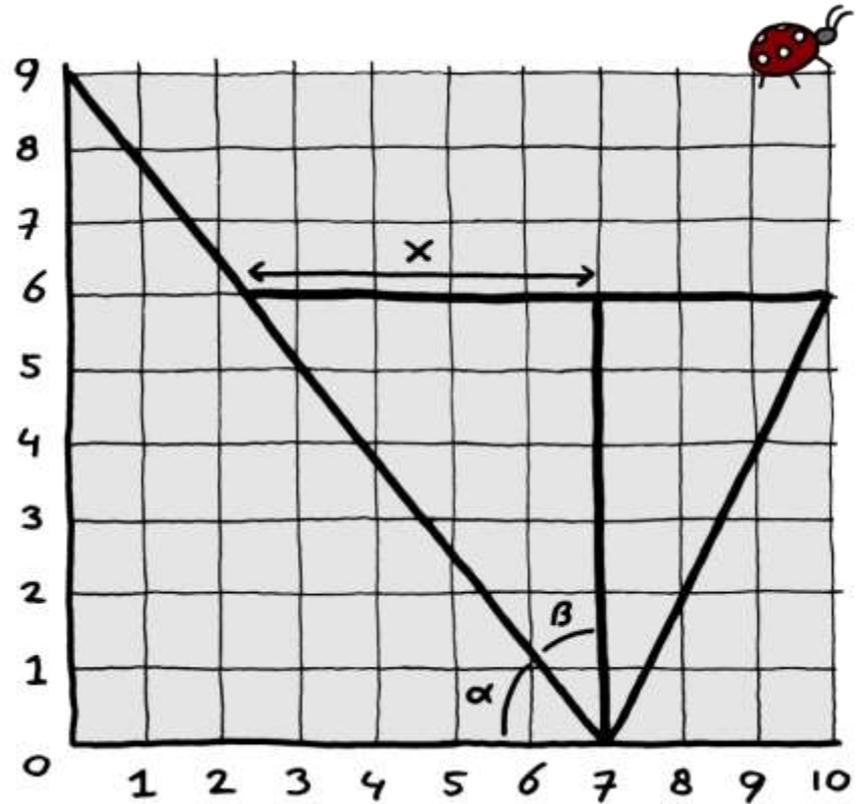
Self-organization

Direction

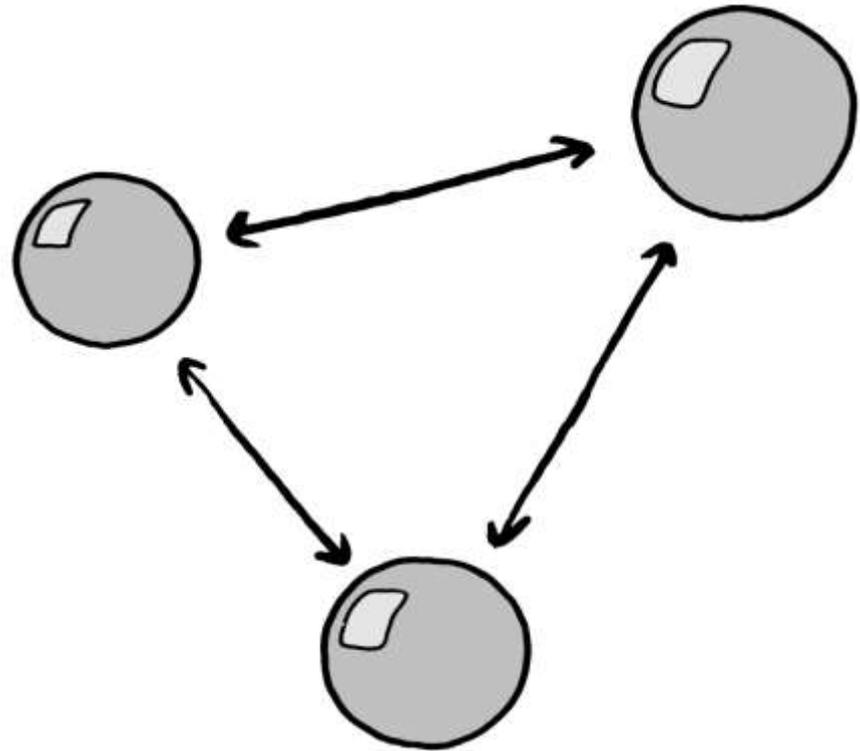
Delegation

Communication

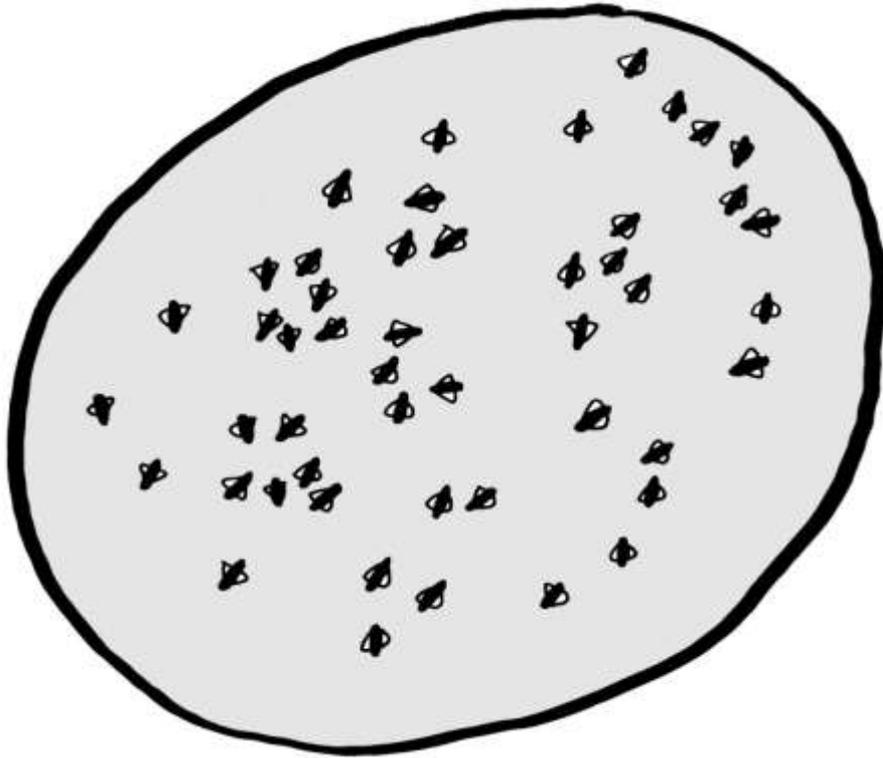
Conclusion



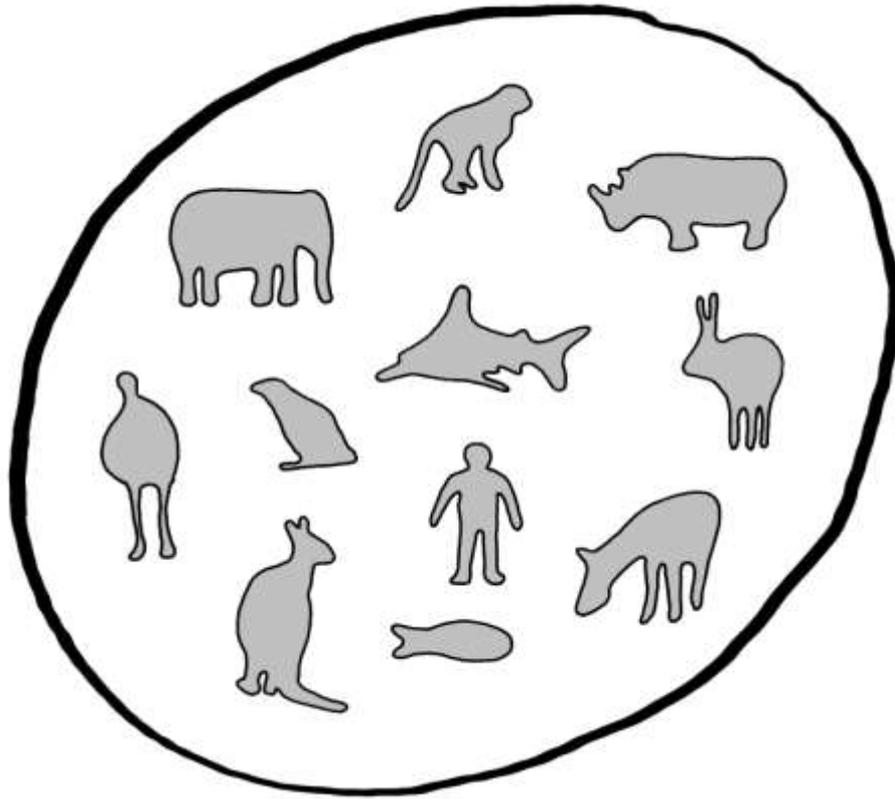
We have been taught about  
**linear** systems



But then reality confronted us with  
**non-linear** systems



That is like teaching people all about  
**fruit flies**



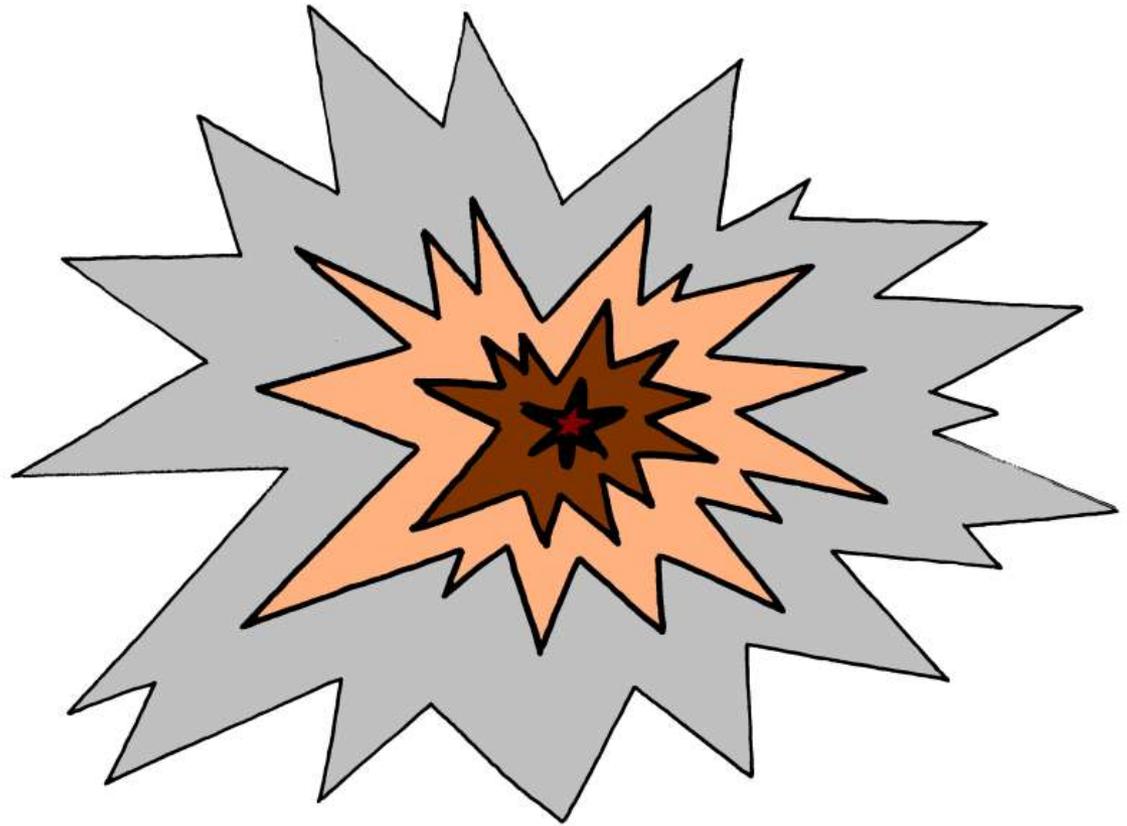
Huh?

And then lumping everything else together in  
the group of... **non-fruit flies**

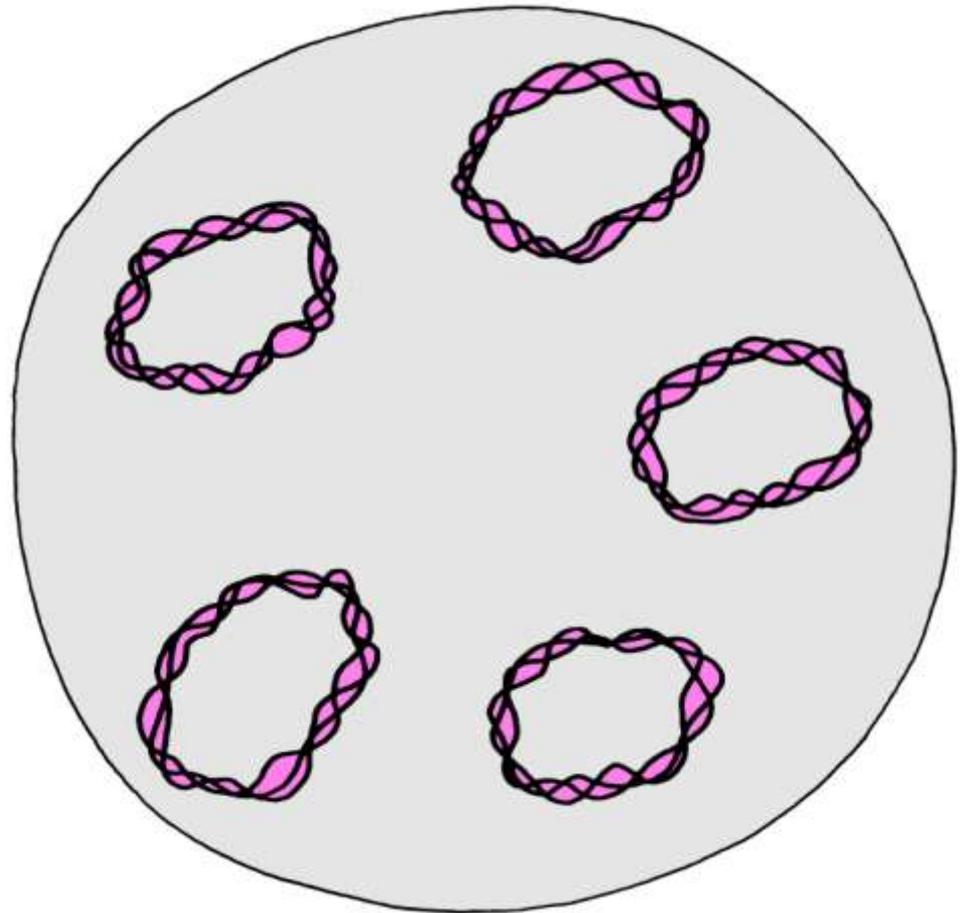
Let's adopt a more **realistic** approach

First, there was a

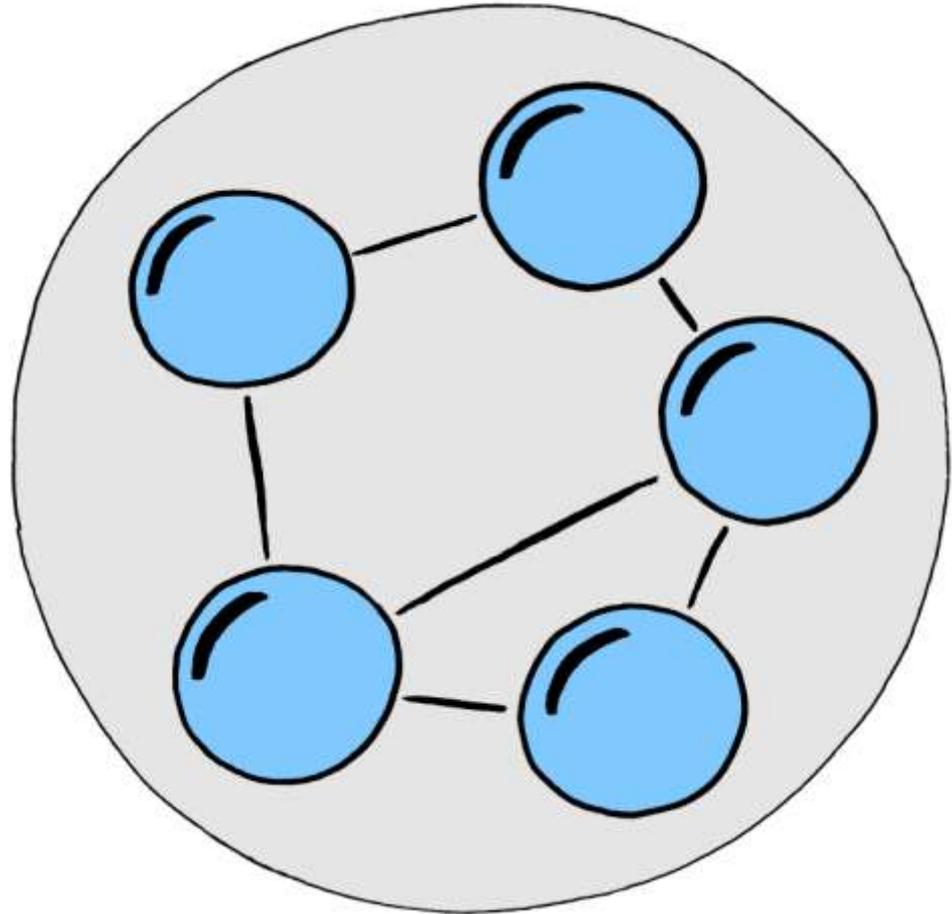
(big) **bang!**



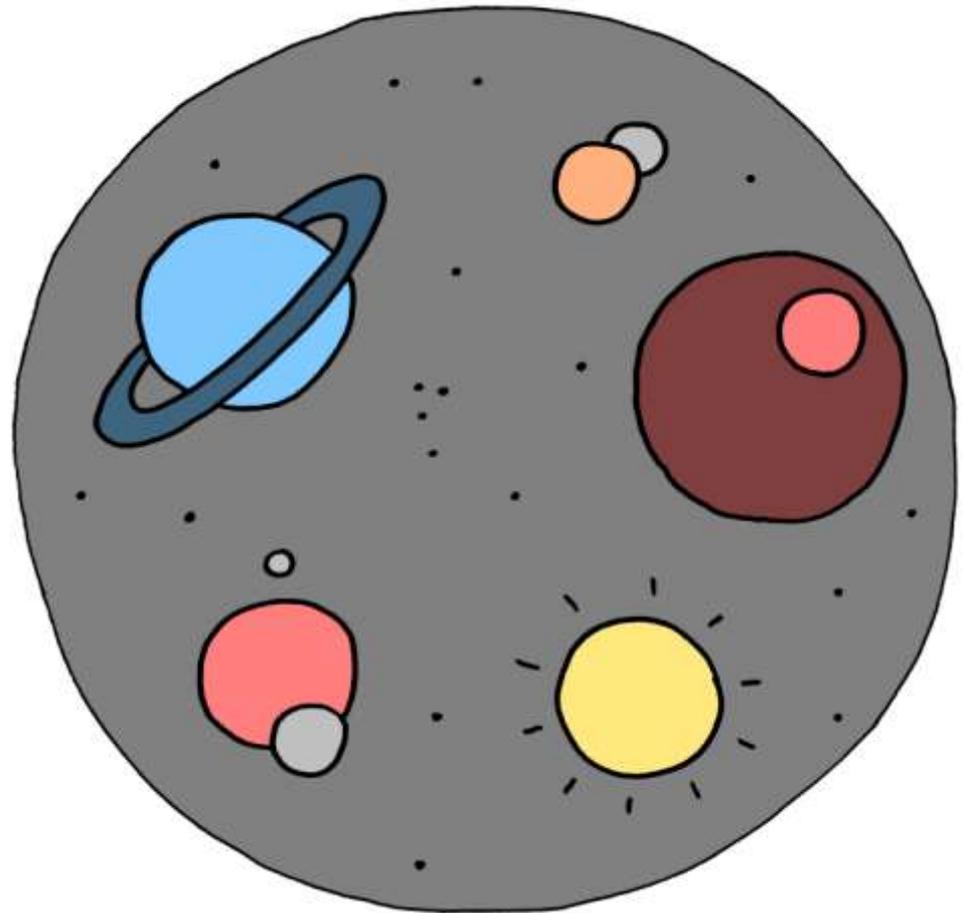
...and then strings formed particles



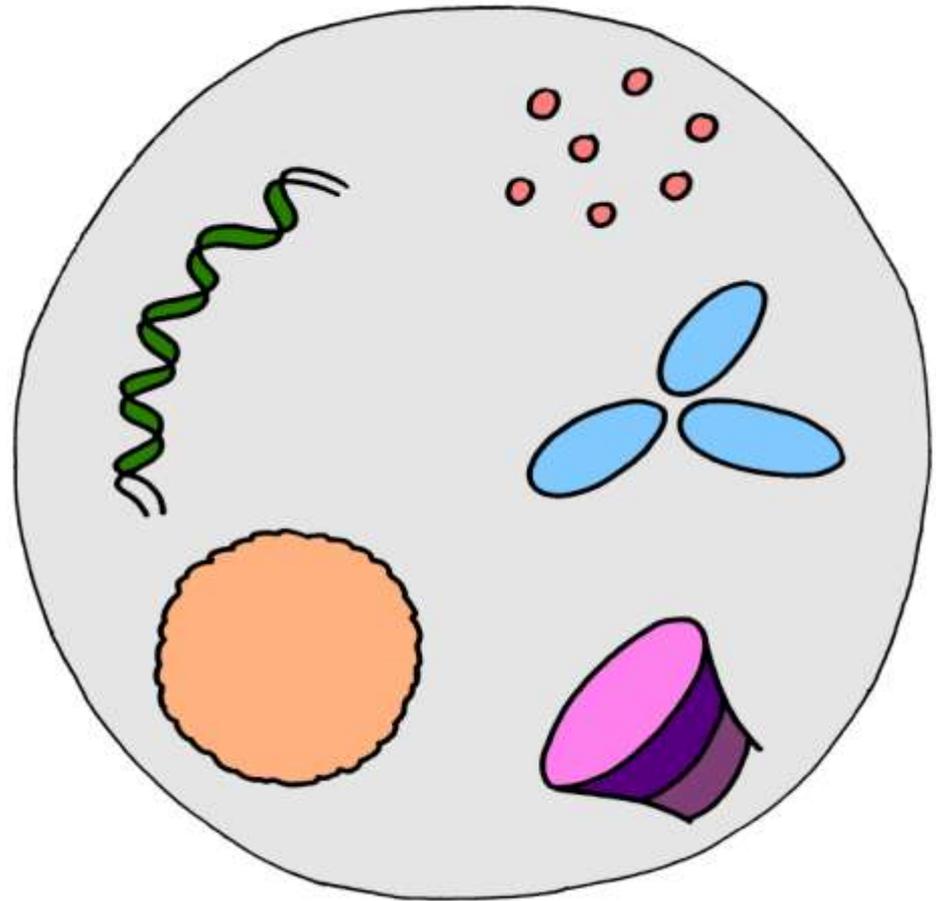
...and particles formed molecules



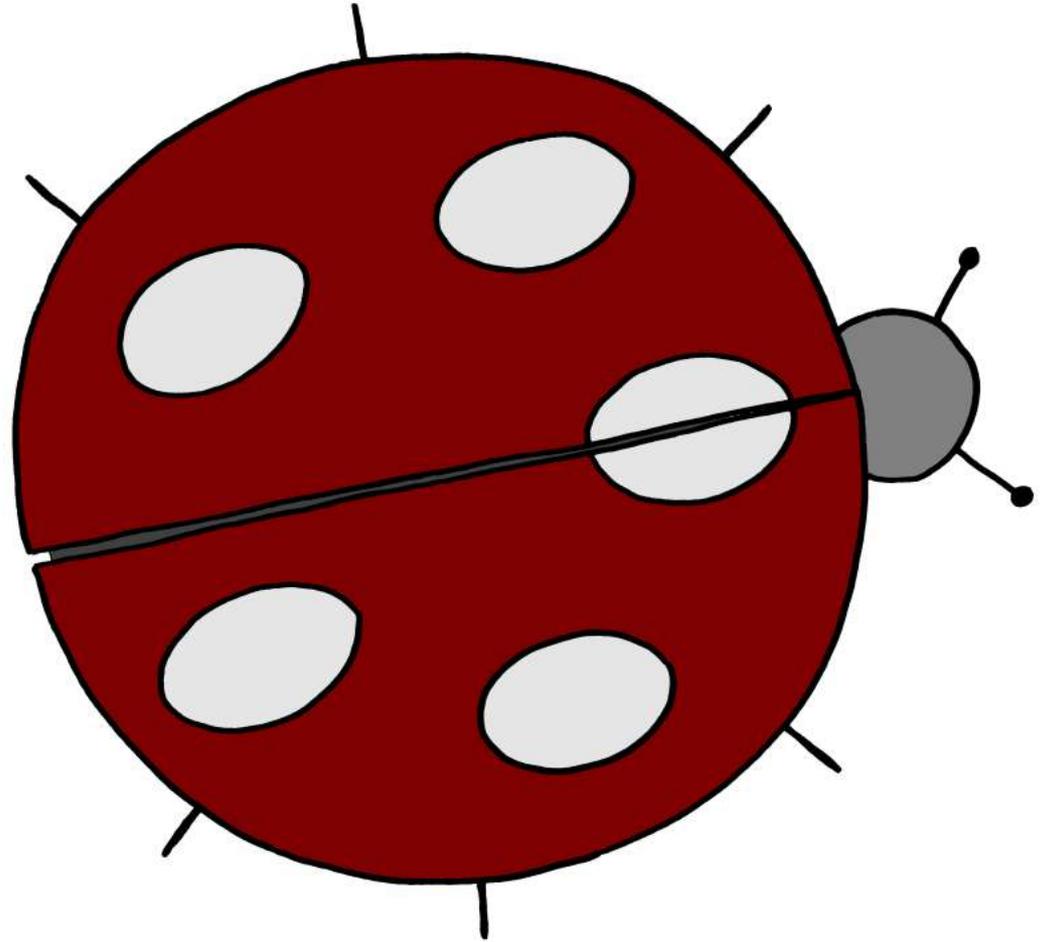
...and molecules formed solar systems



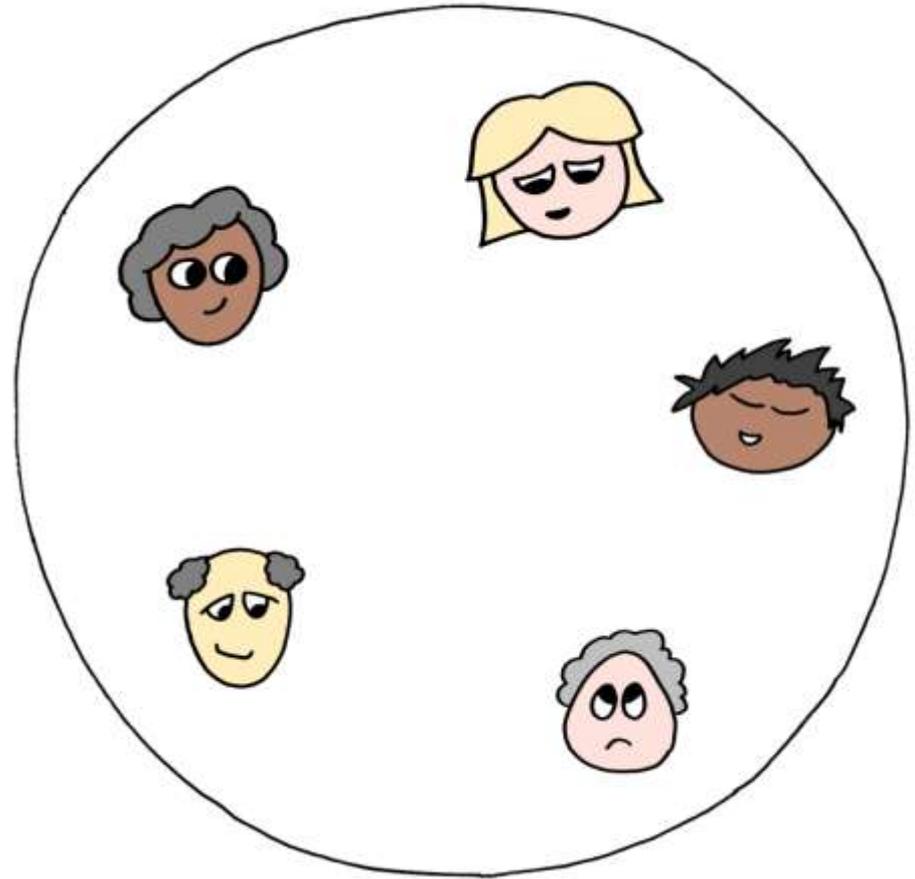
...and living cells



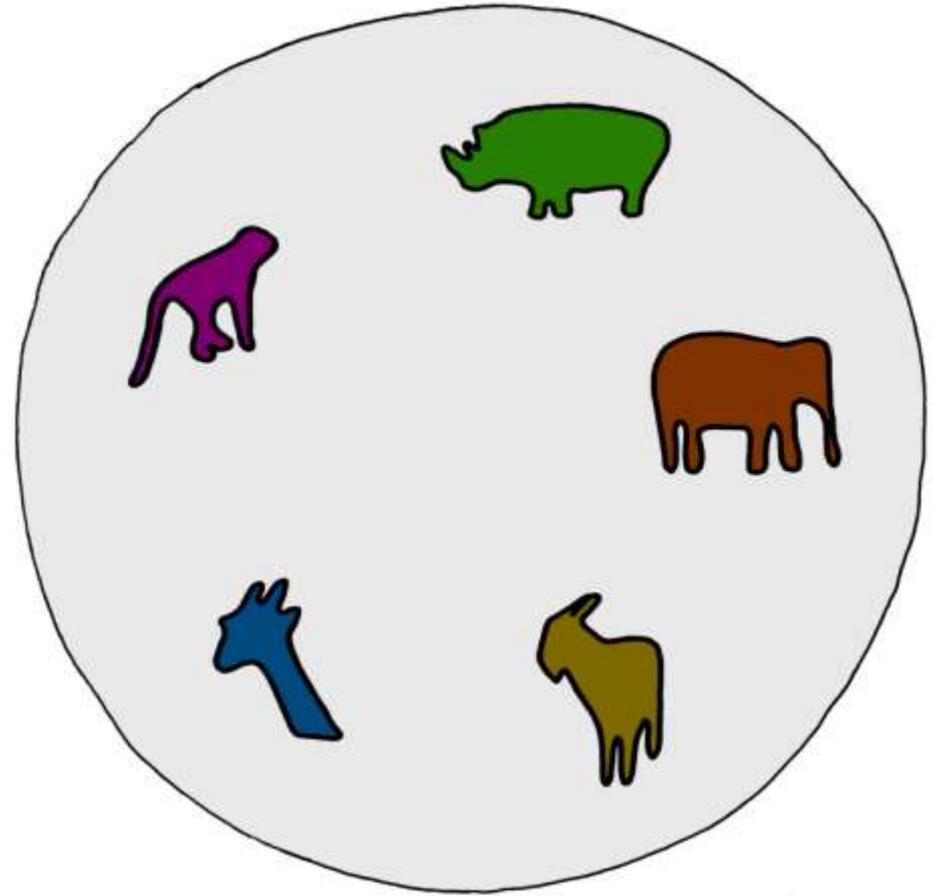
...and cells formed species



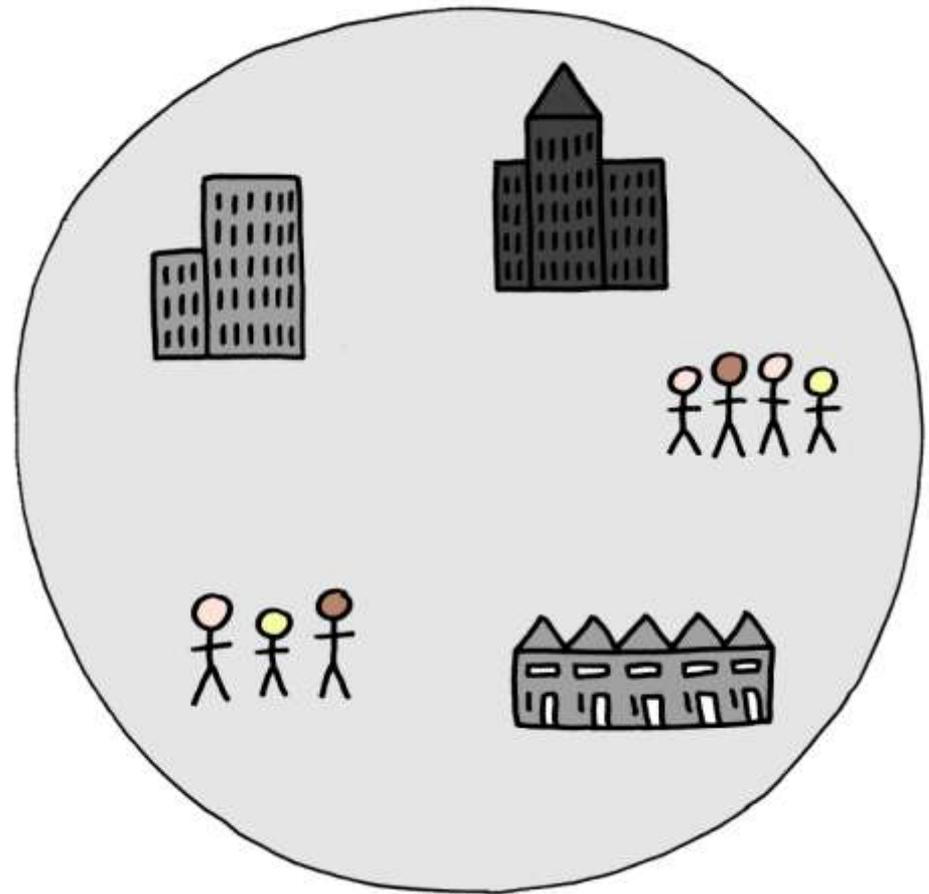
...and species formed groups



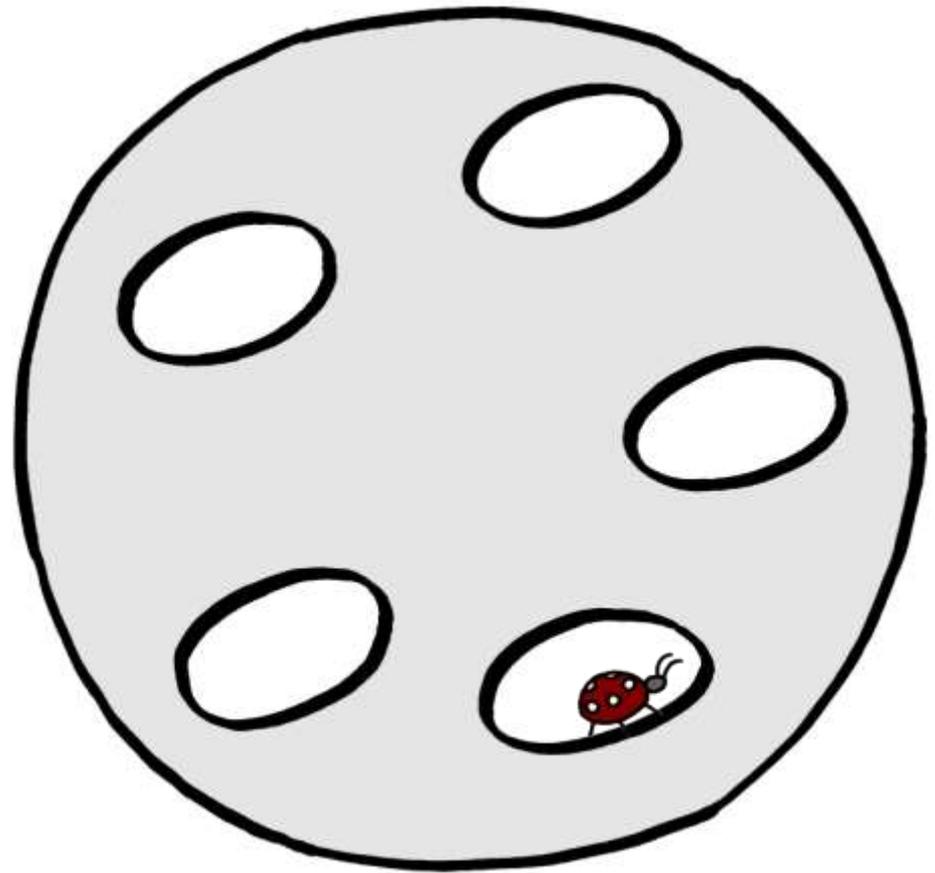
...and groups formed ecosystems



...and economies



...and every system organized itself.



# Self-organization... a definition

“Self-organization is a process of attraction and repulsion in which the **internal organization** of a system, normally an open system, increases in complexity **without being guided or managed** by an outside source.”

<http://en.wikipedia.org/wiki/Self-organization>

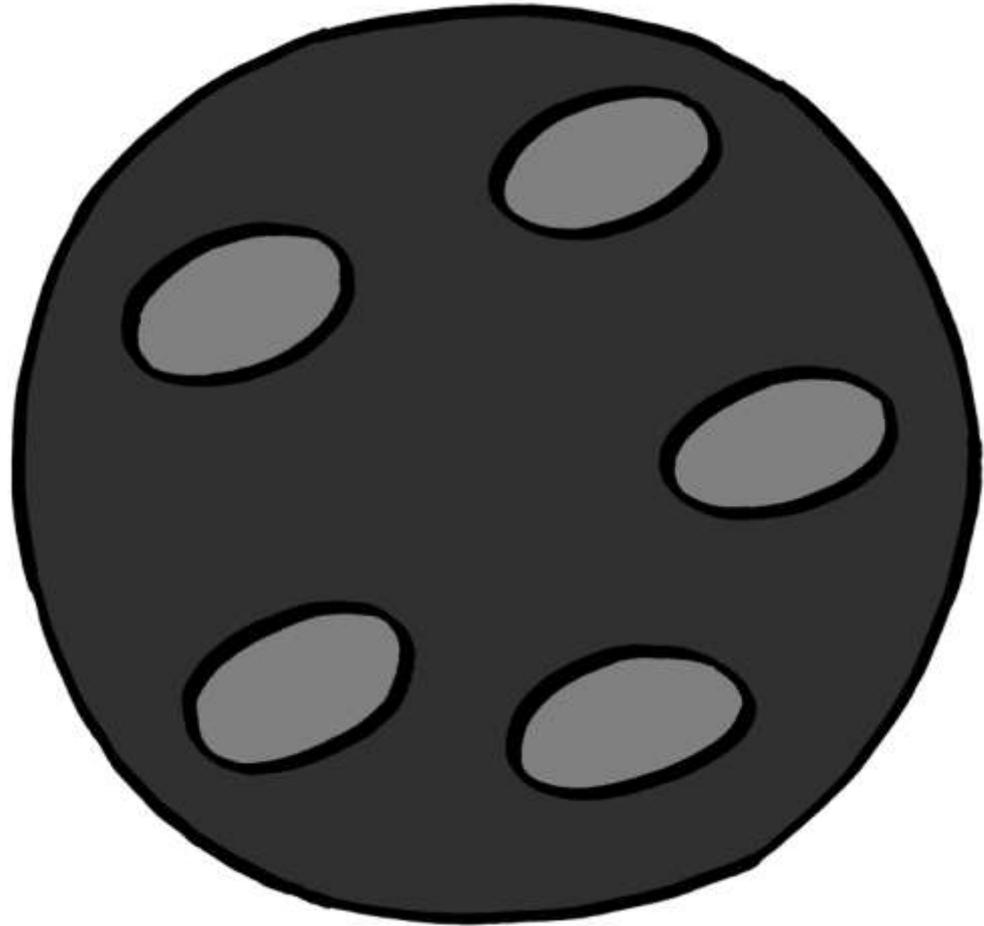
Organization **without**  
management?

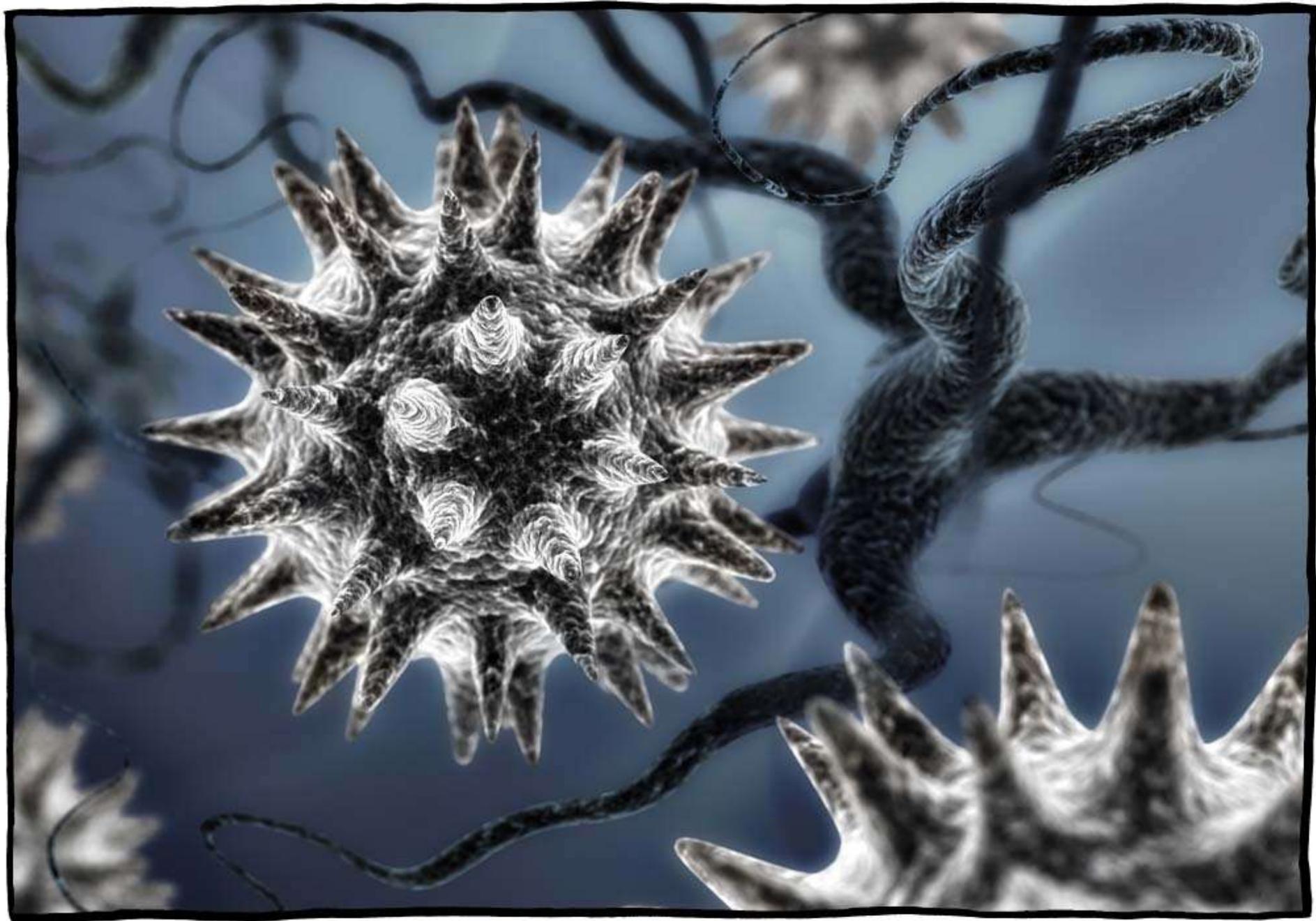


Cool!

but...

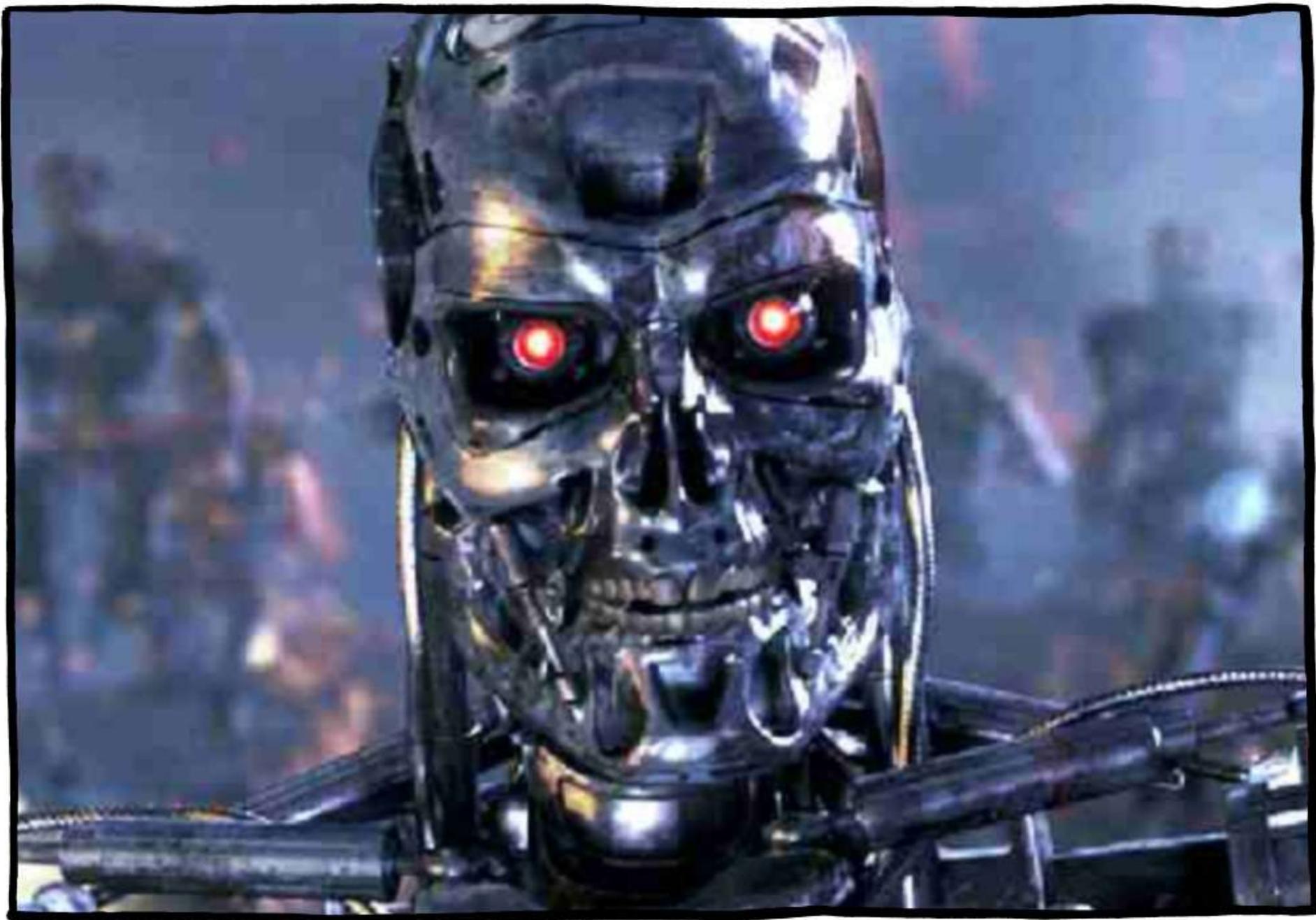
Self-organization has a **dark side...**





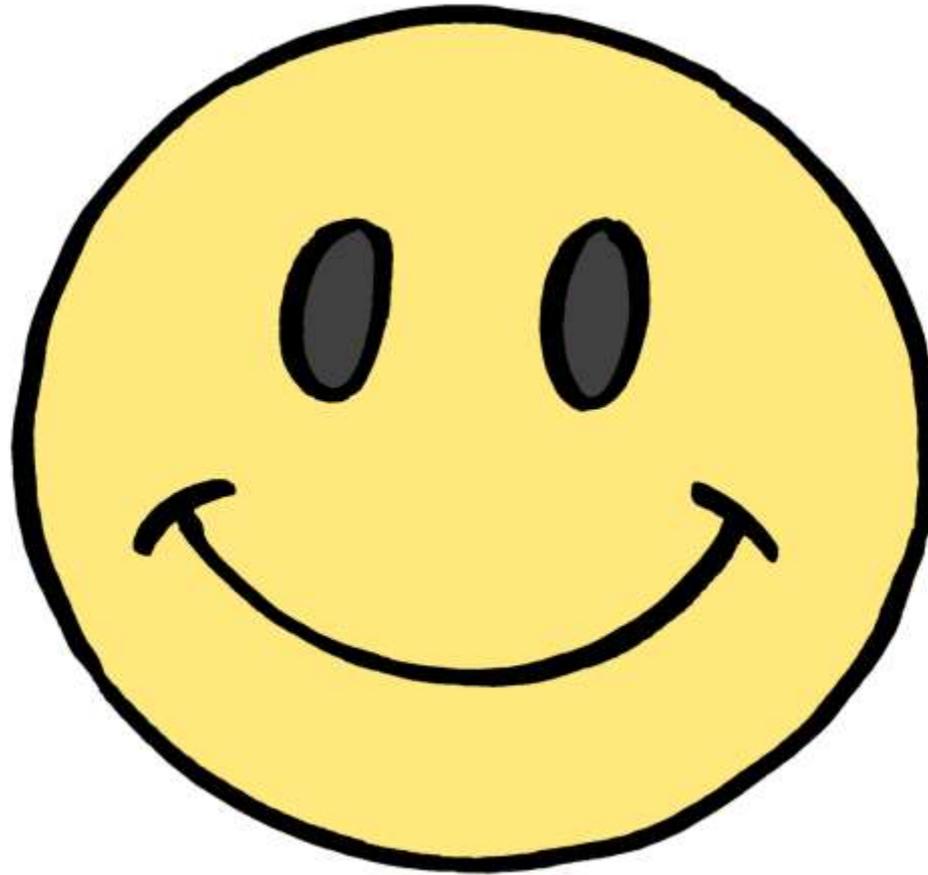






“We humans are **obsessed with purpose**. [...] The question of purpose, which doesn't necessarily have to have an answer, is one that leaps to the front of the human mind, whether it is appropriate or not.”

- Richard Dawkins



But people care...  
about **value**.









“Self-organization requires that the system is surrounded by a **containing boundary**. This condition defines the "self" that will be developed during the self-organizing process.”

<http://amauta-international.com/iaf99/Thread1/conway.html>

The **containing boundary** has a chance to

**direct** self-organization

towards **value**

# Agenda



Self-organization

Direction

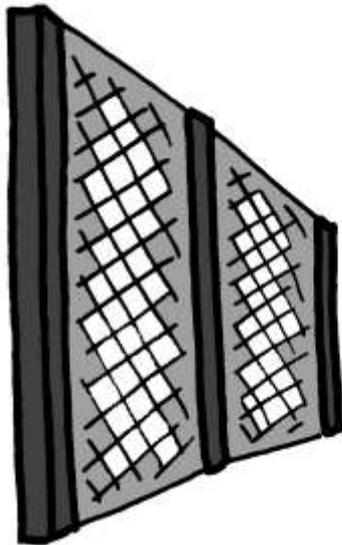
Delegation

Communication

Conclusion

Don't go here!

Go there!



Directed self-organization



# Governance + leadership

Don't go here!



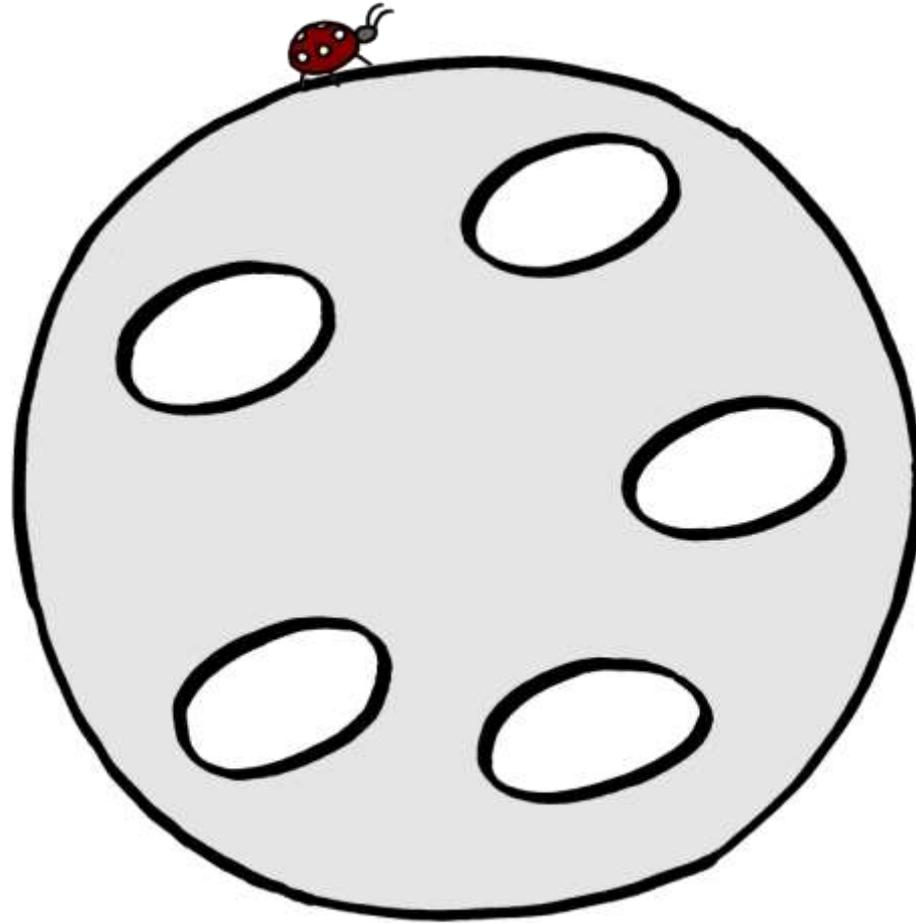
Go there!

# Managers are like **gardeners**

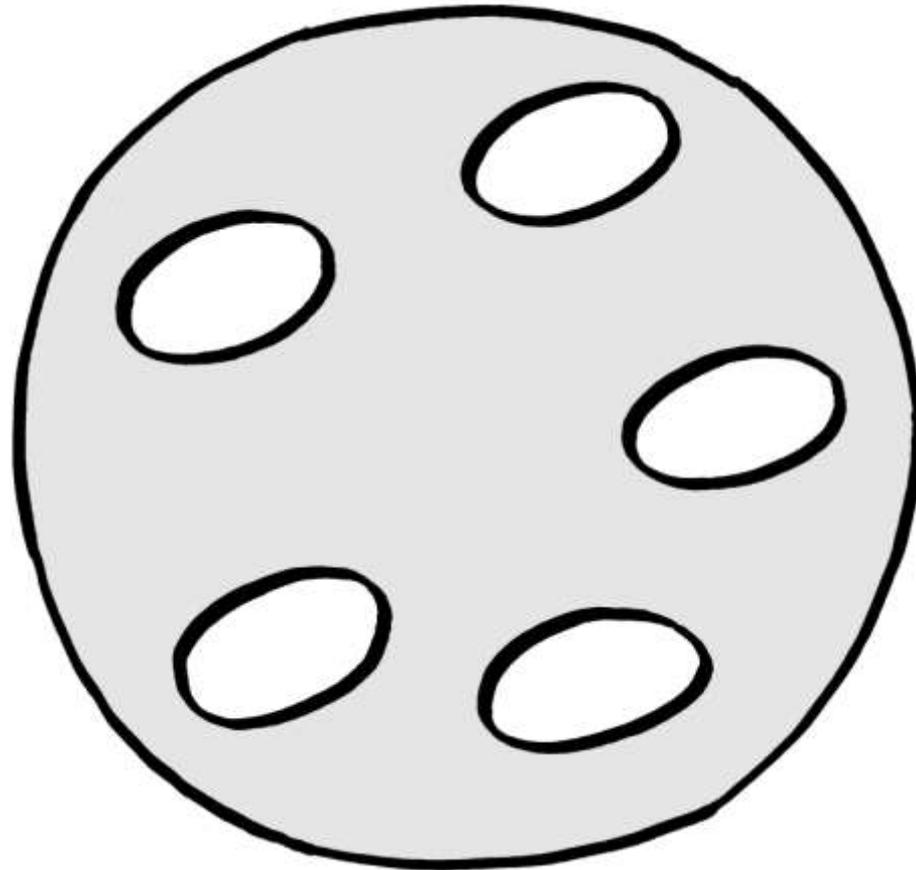
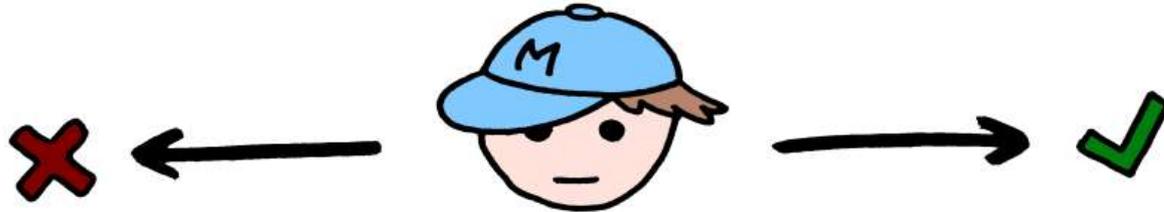
They let self-organization (anarchy) do useful work while steering the system toward valuable results



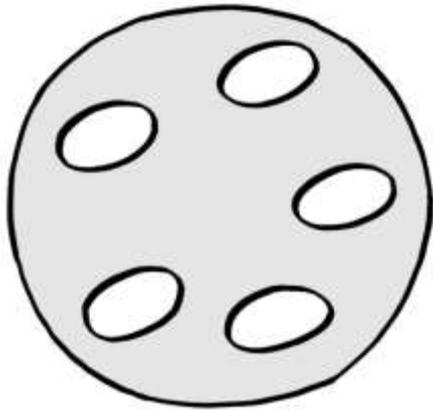
Self-organization is the **norm**



Management is the **special case**



# Three levels of self-organization



## Self-organized

For example: a software development team

## Self-selected (= self-designed)

Self-organized *and* system selects its own members  
For example: founders of a start-up business

## Self-directed (= self-governed)

Self-selected *and* no direction outside the system  
For example: criminal organization

And then there's

# Emergence...

## Supervenience

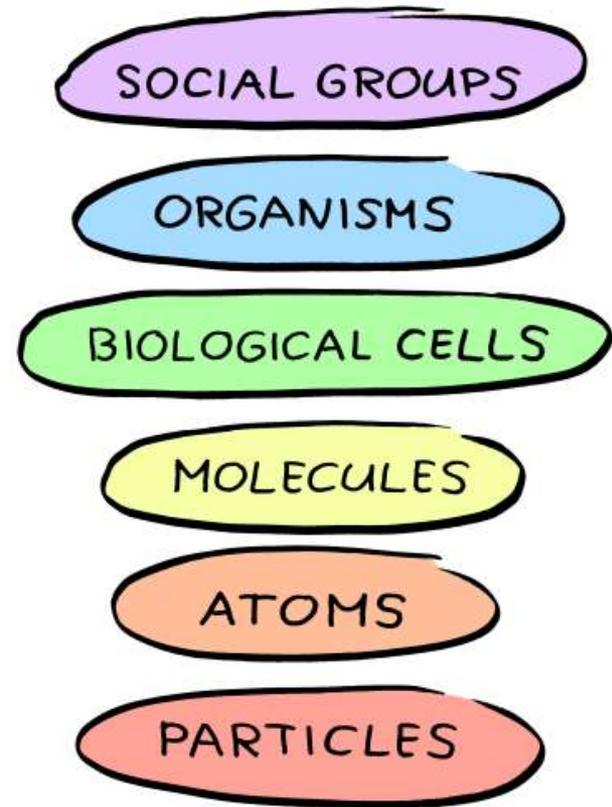
Emergent properties appear at a higher level that didn't exist in the components

## Not just aggregation

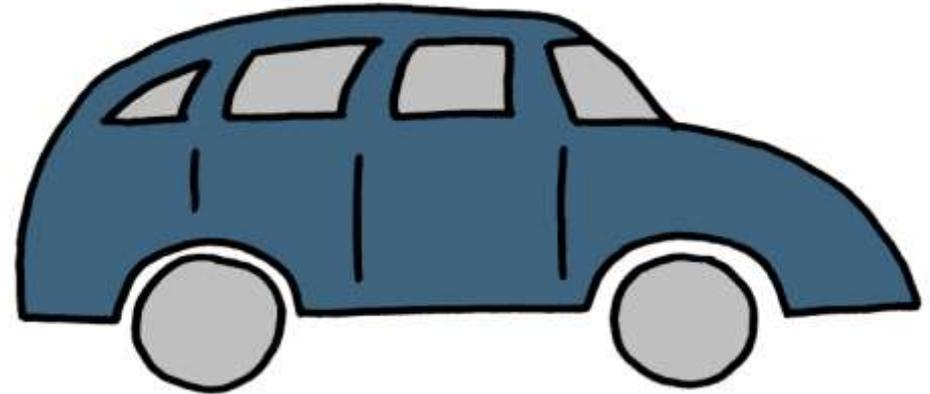
Impossible to "build" the system as an aggregate from the components

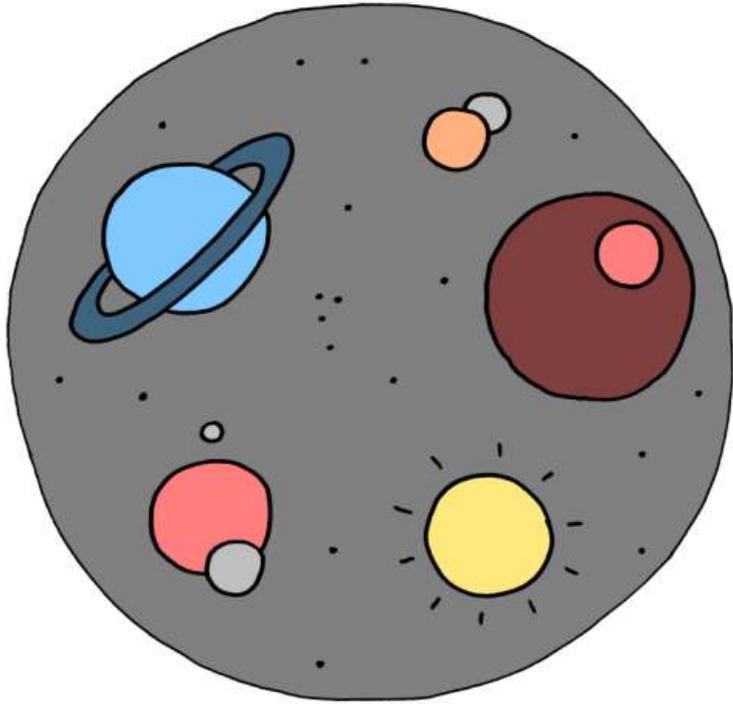
## Downward causality

The emergent properties have a real effect on the lower-level components



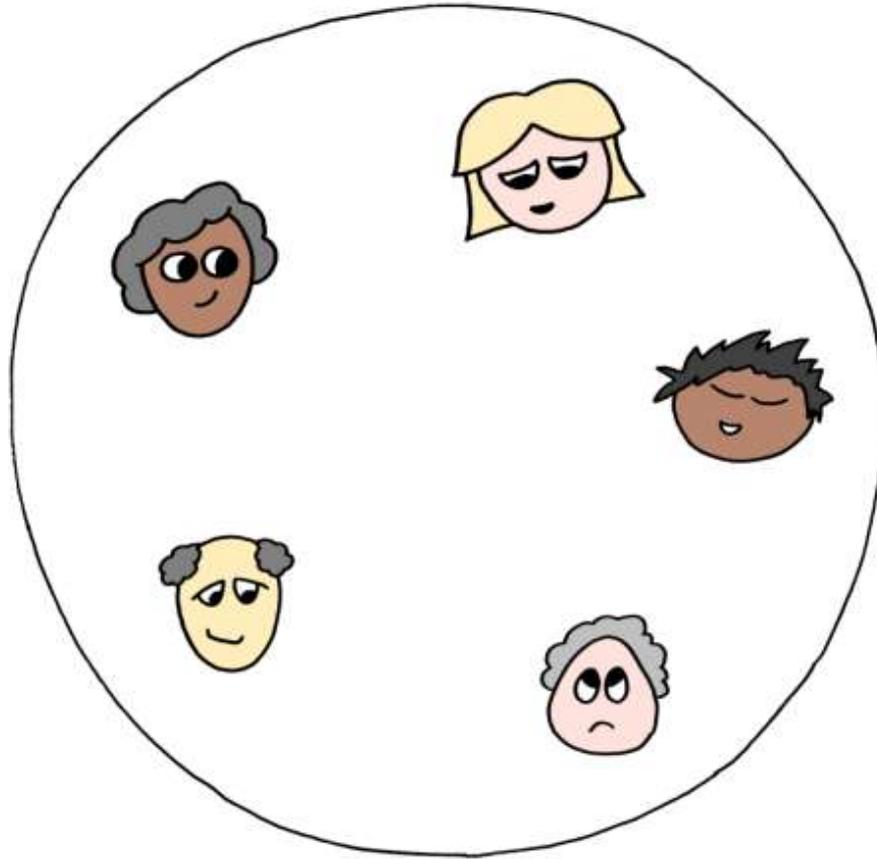
Emergent,  
but *not* self-organizing





Self-organizing,  
but *not* emergent

A development  
**team**



Emergent +  
self-organizing

# The Darkness Principle

“Each element in the system is **ignorant** of the behavior of the system as a whole [...] If each element ‘knew’ what was happening to the system as a whole, all of the complexity would have to be present in that element.”

[http://iscepublishing.com/ECO/ECO\\_other/Issue\\_6\\_3\\_10\\_FM.pdf](http://iscepublishing.com/ECO/ECO_other/Issue_6_3_10_FM.pdf)

# The Law of Requisite Variety

“If a system is to be stable the number of states of its control mechanism must be **greater than or equal** to the number of states in the system being controlled.”

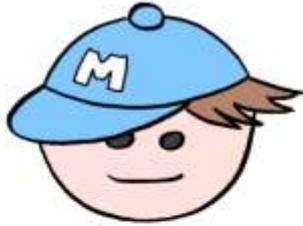
[http://en.wikipedia.org/wiki/Variety\\_%28cybernetics%29](http://en.wikipedia.org/wiki/Variety_%28cybernetics%29)

# In human terms...

A team is **too complex** to manage by just one person.

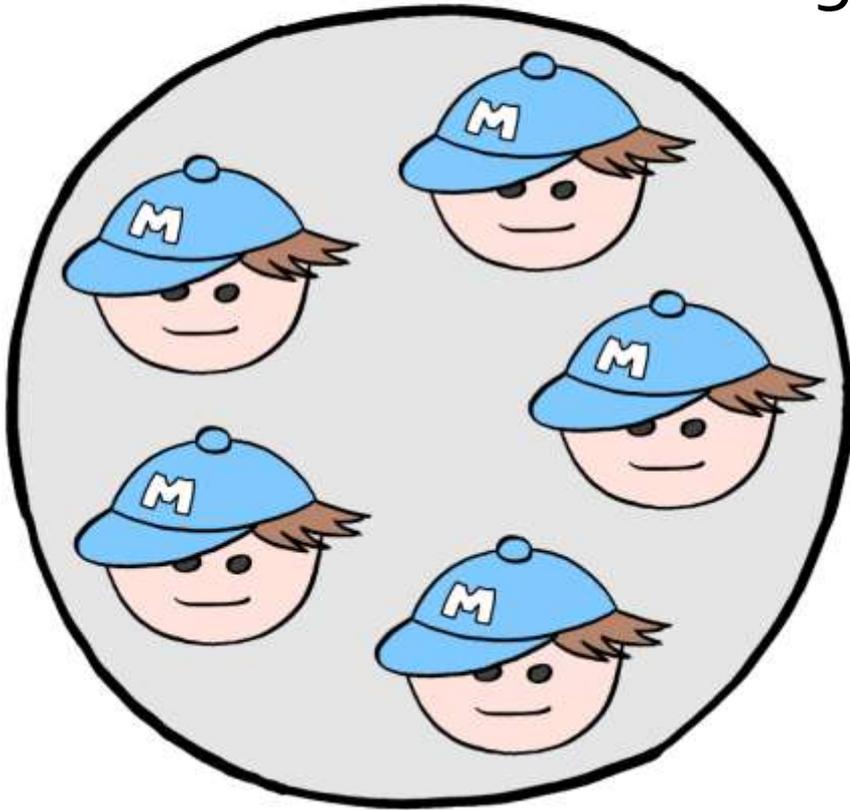
**Only people** have the ability to manage complexity.

Therefore, management requires...



**Distributed**

governance and leadership



# Agenda

Self-organization

Direction

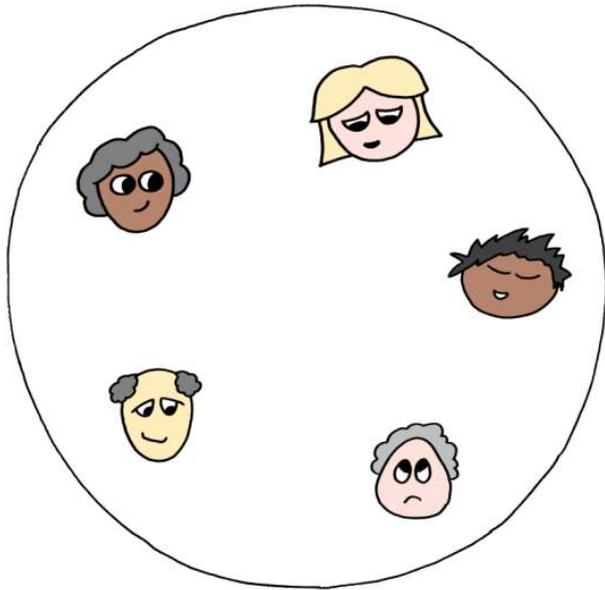


Delegation

Communication

Conclusion

# Three levels of **maturity** in empowerment



**Light** (low impact)

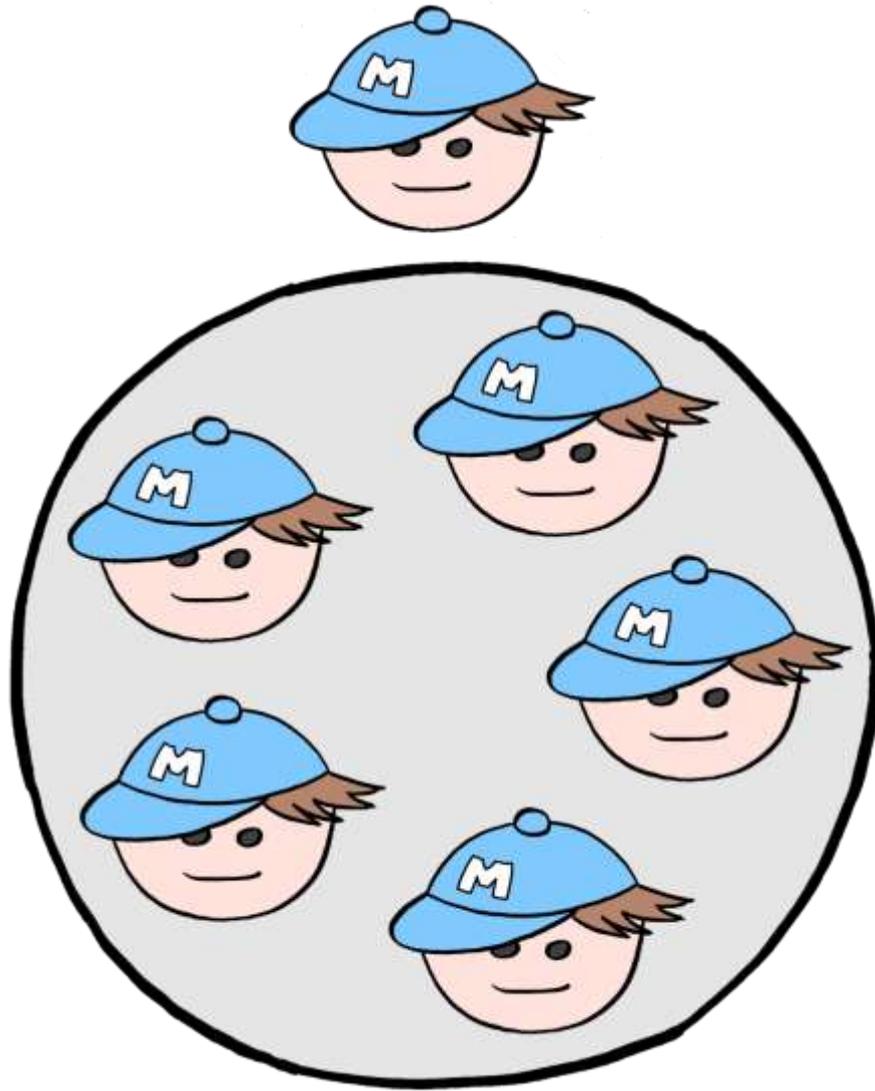
Example: coding guidelines, workshops

**Moderate** (medium impact)

Example: self-education, tool selection

**Advanced** (high impact)

Example: self-selection, open salaries



Question:  
Does handing over power  
to others make you  
**powerless?**

Answer: NO

## Zero-Sum

Football  
Elections  
Judiciary  
...

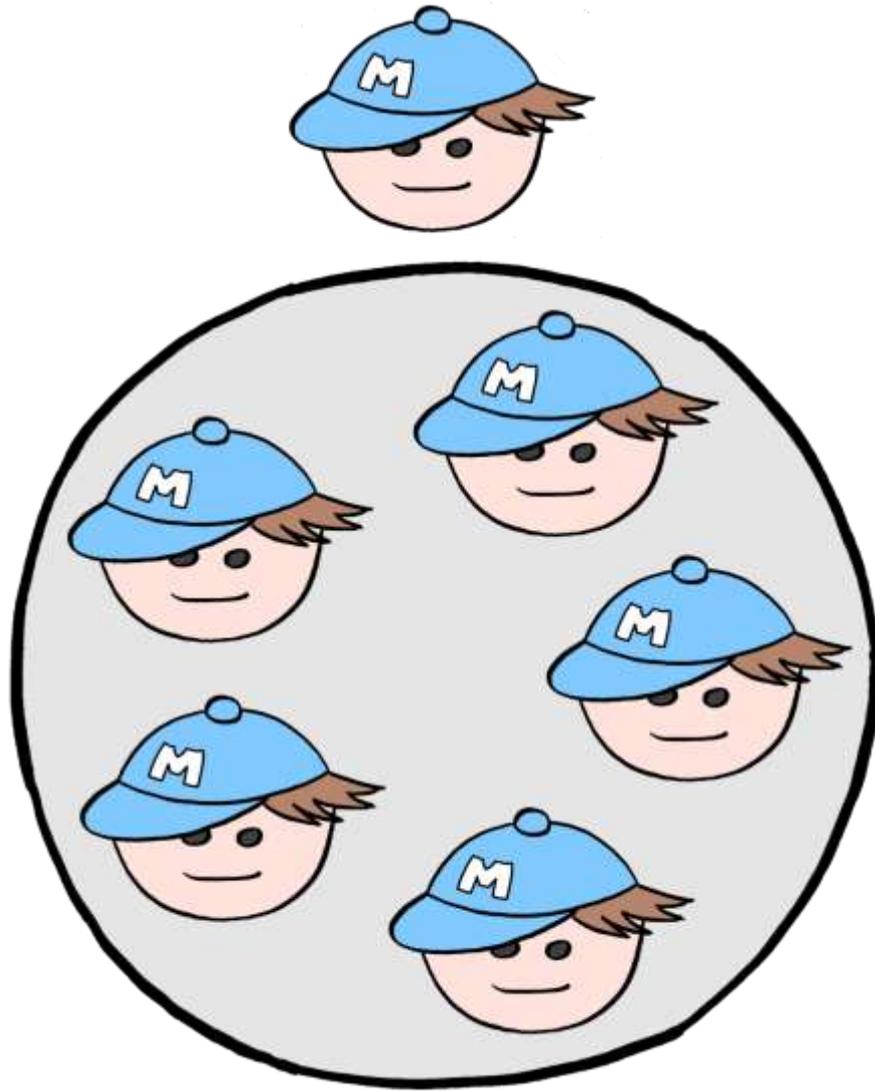
I win and you lose

## Non-Zero-Sum

Free markets  
Social networks  
Teamwork  
...

We all win!

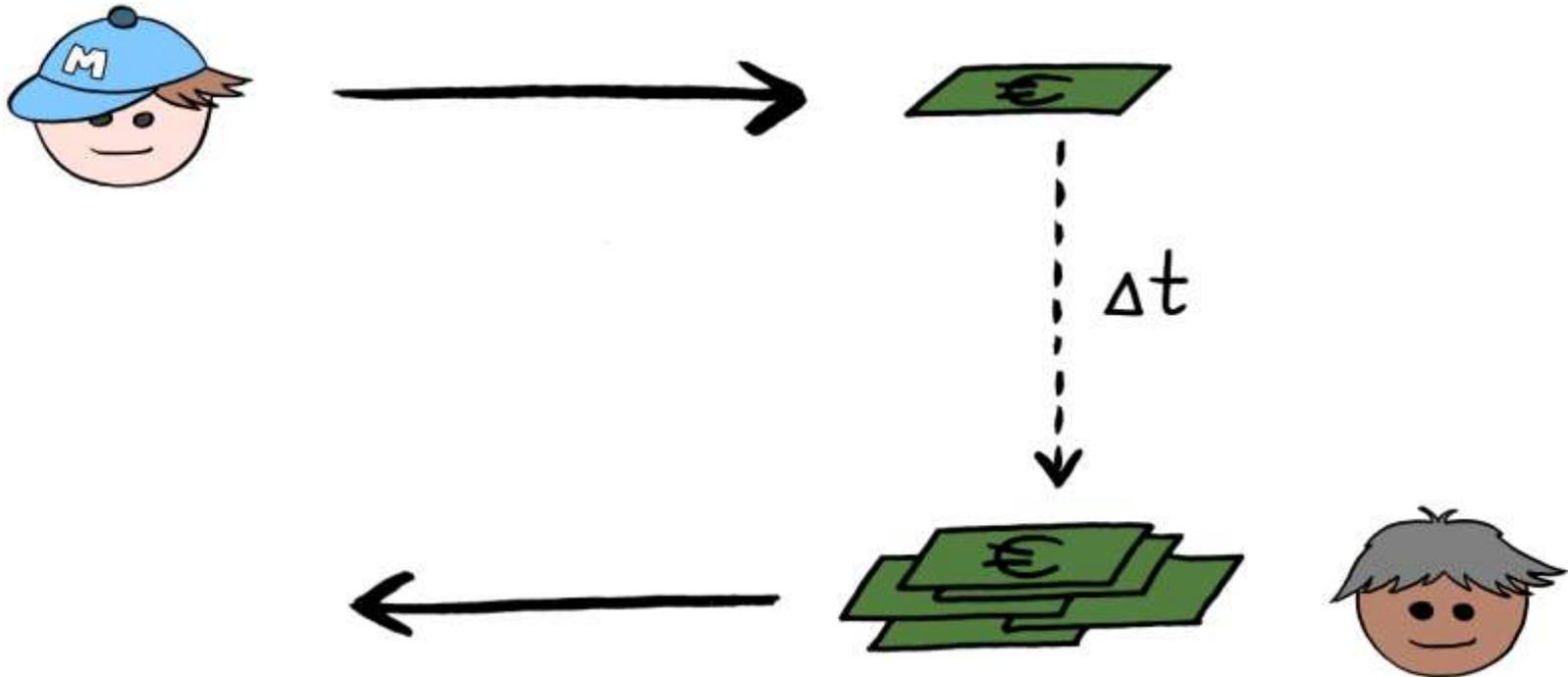
<http://en.wikipedia.org/wiki/Zero-sum>



## Non-Zero-Sum

Powerful teams make their managers more powerful.

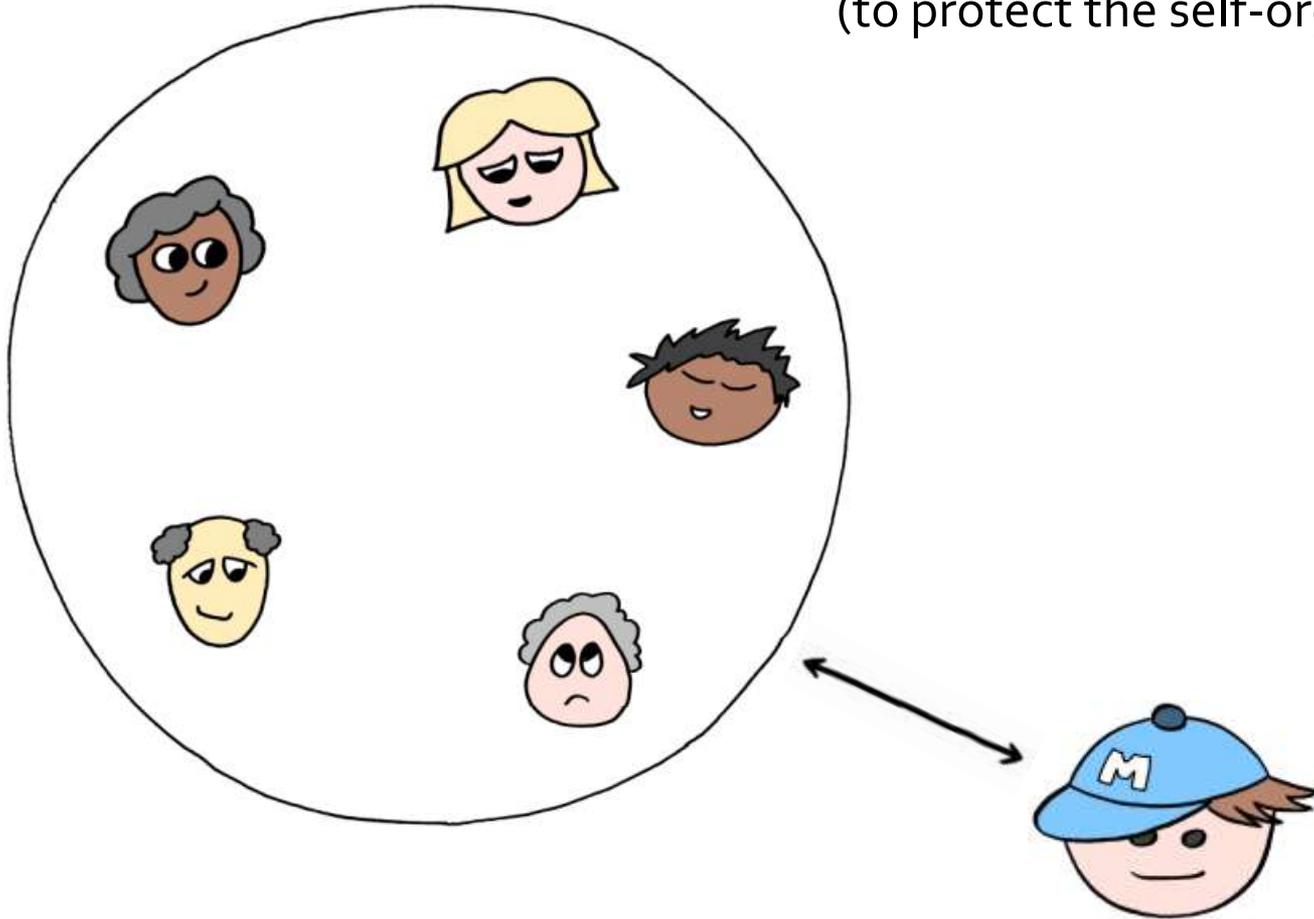
# Empowerment is an **investment**



Beware of the **micromanagement trap**  
(no patience while waiting for ROI)

# Manage individuals

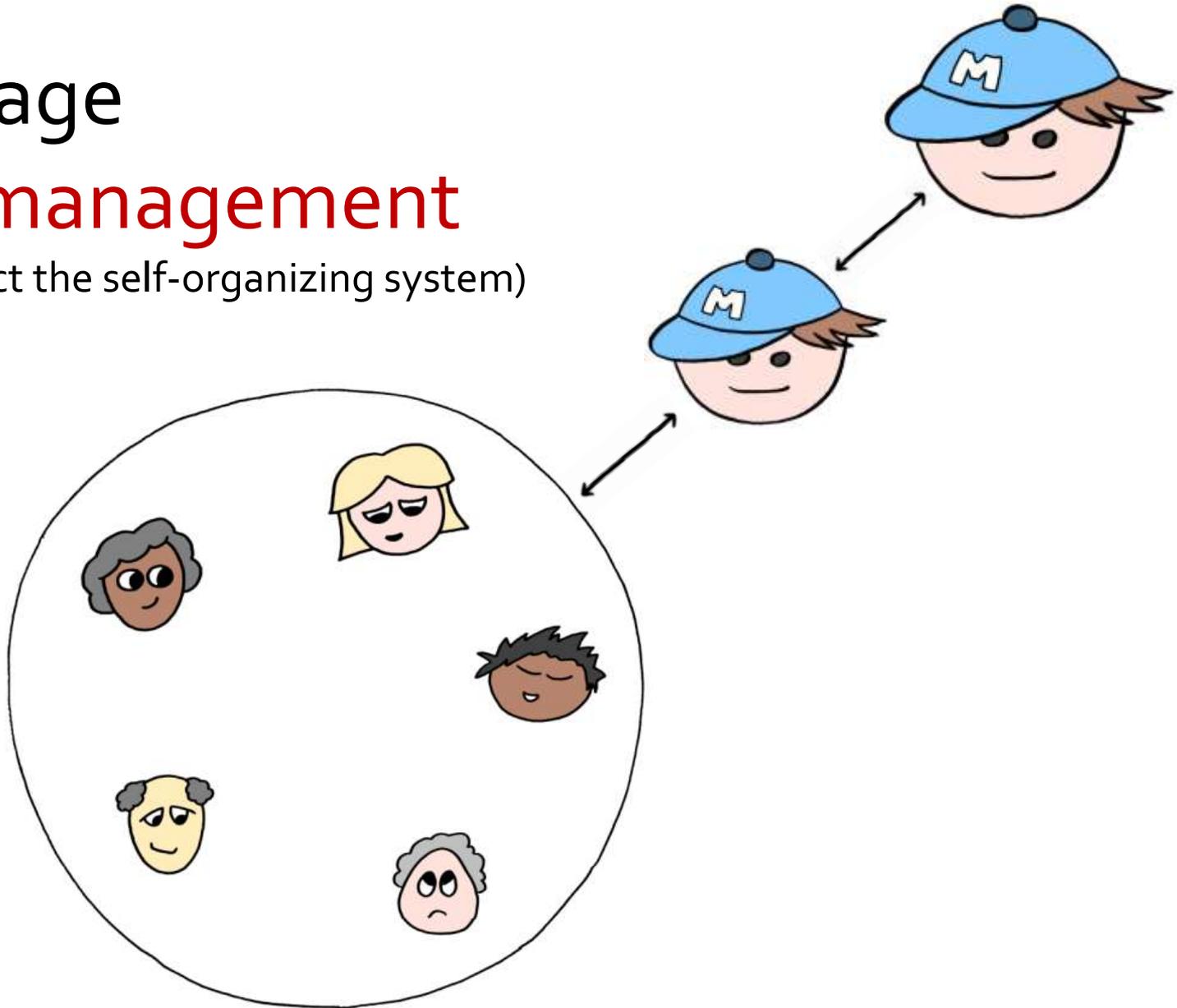
(to protect the self-organizing system)

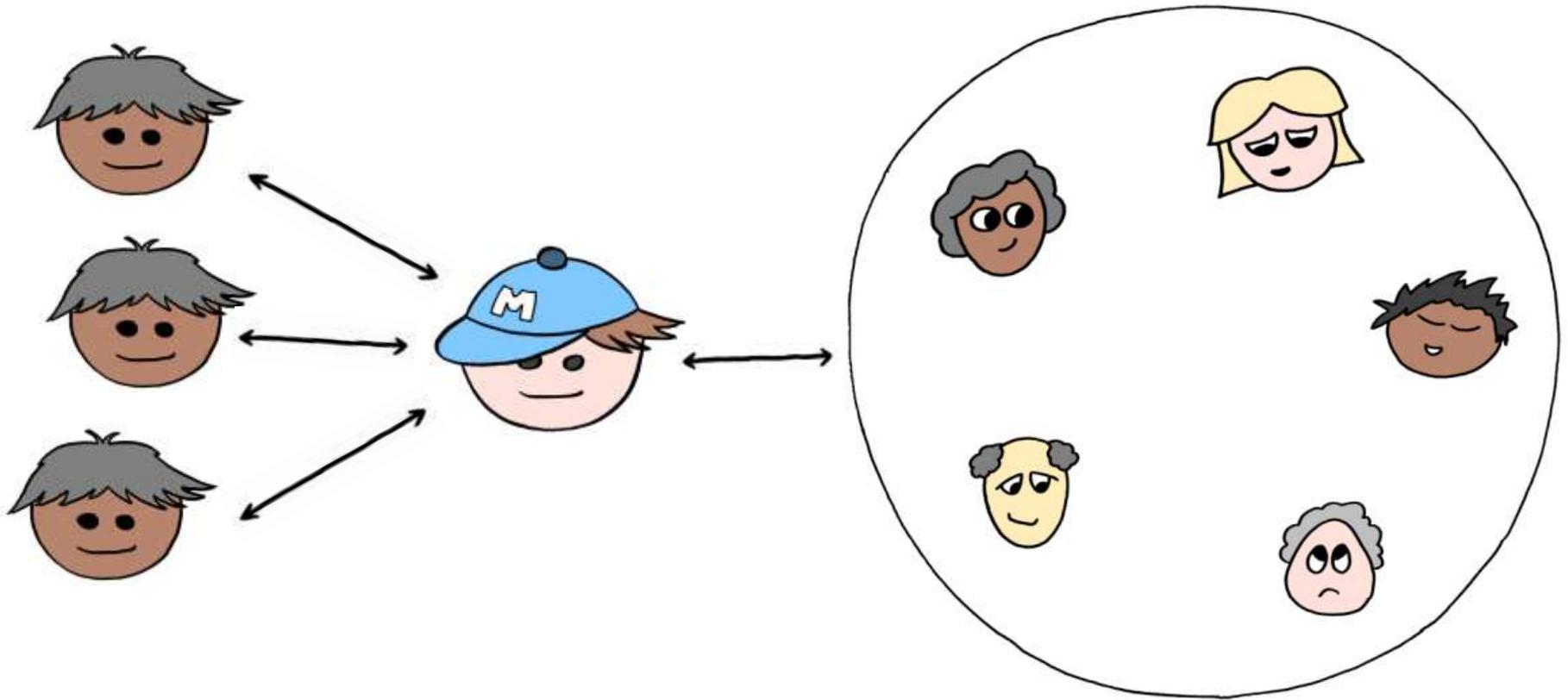


# Manage

## top management

(to protect the self-organizing system)





Manage  
the **environment**  
(to protect the self-organizing system)

# Agenda

Self-organization

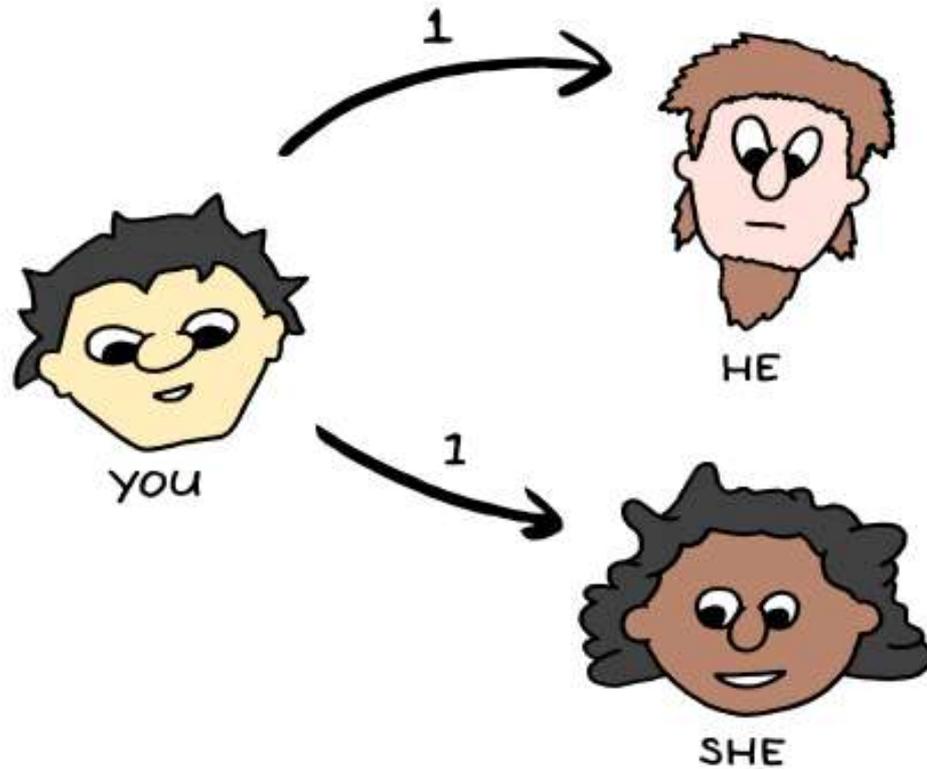
Direction

Delegation

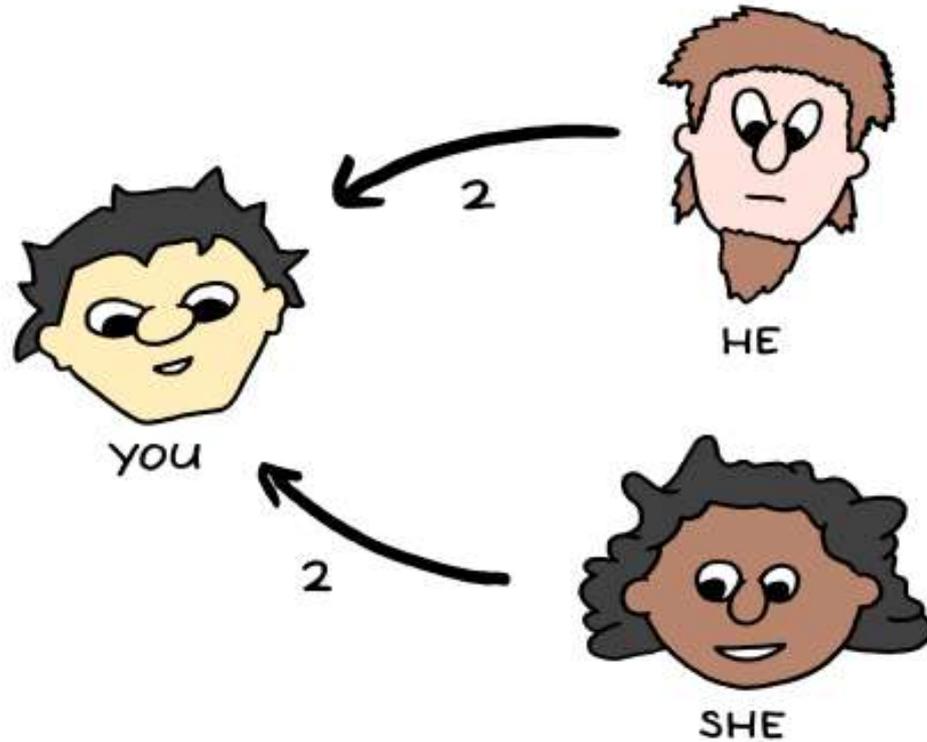


Communication

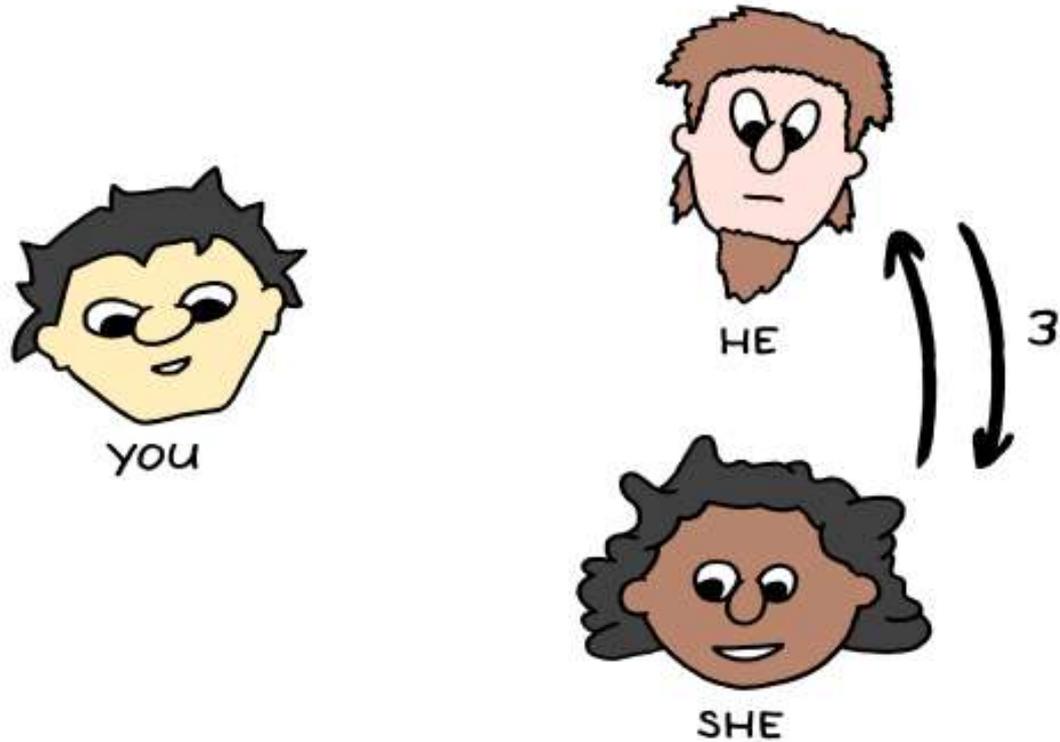
Conclusion



- 1) Trust your people  
(communicate this clearly)



2) Earn trust from your people  
(consistent behavior)

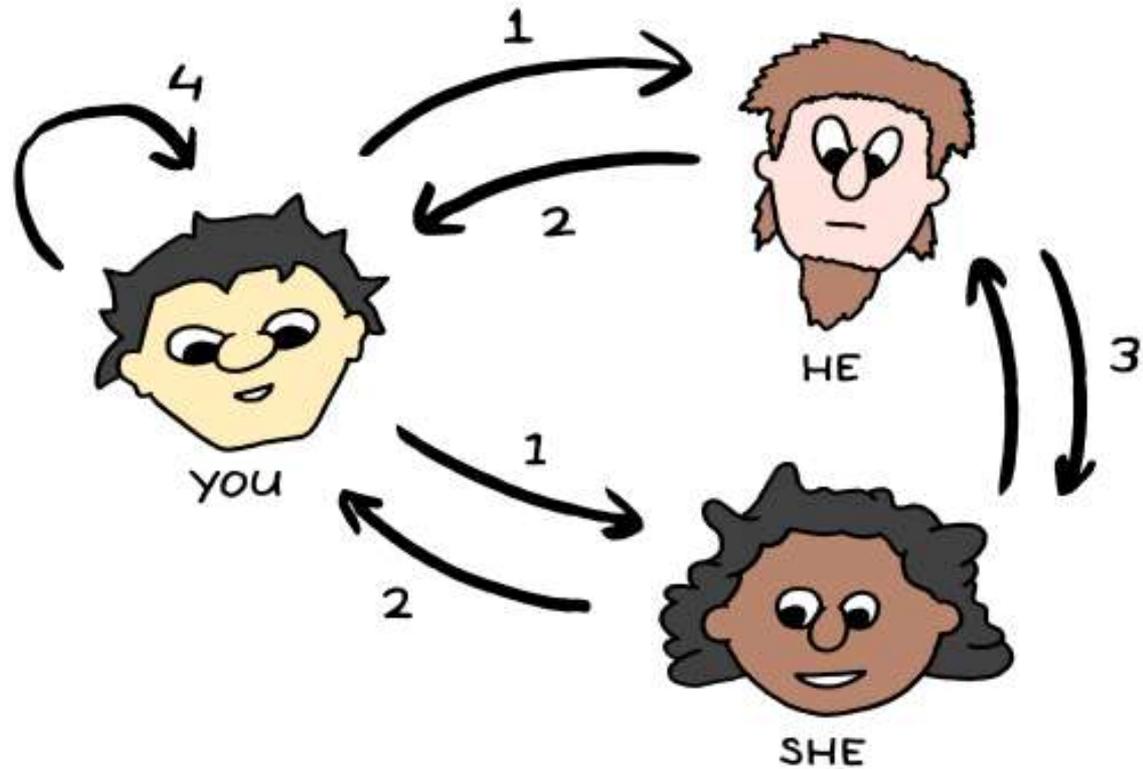


3) Help people to trust each other  
(mingle, don't meddle)



4) Trust yourself  
(stay true to your own values)

# The four types of trust





# Key Decision Areas

Make explicit list with  
“areas of authorization”

Prepare project schedules  
Select key technologies  
Set documentation standards  
Etc...

People should not walk into  
“invisible electric fences”



# Key Decision Areas

However...

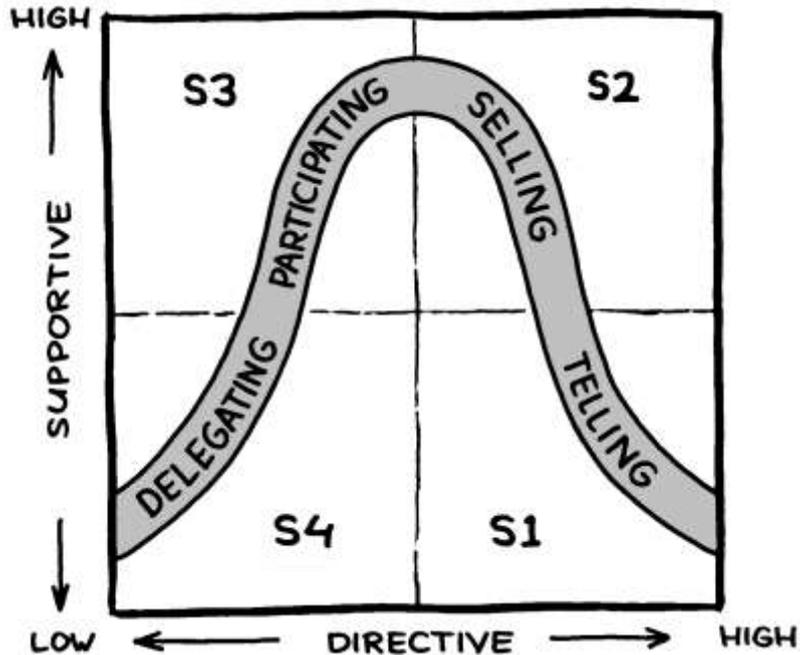
Authorization per key decision area is not a “binary” thing

# Situational Leadership

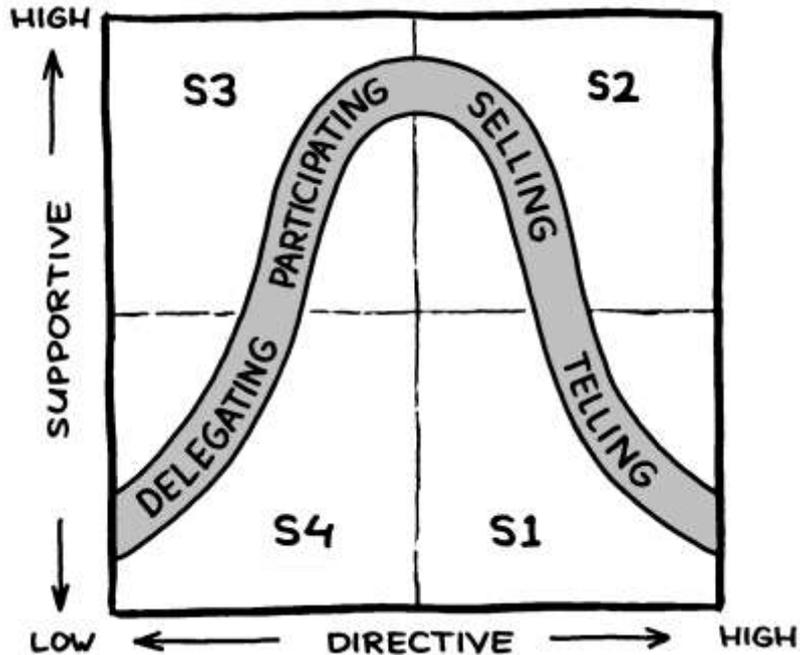
Four different “leadership styles”

1. Telling
2. Selling
3. Participating
4. Delegation

Work your way to level 4



# Situational Leadership



However...

It might be good to distinguish between informing people (*push* your opinion) vs. consulting them (*pull* their opinions)

# RACI Matrix

	ROLE 1	ROLE 2	ROLE 3	ROLE 4
TASK 1	R	C	I	A
TASK 2	I	I	R	A
TASK 3	C	R	A	I
TASK 4	A	R	I	
TASK 5	R	A	C	I
TASK 6	C	C	A+R	I

Involvement depends on tasks

**R**esponsible

**A**ccountable

**C**onsulted

**I**nformed

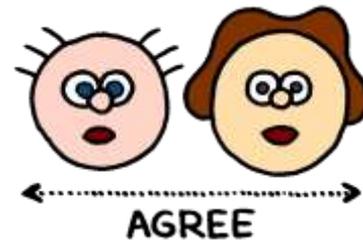
Make explicit what people can expect from whom

# RACI Matrix

	ROLE 1	ROLE 2	ROLE 3	ROLE 4
TASK 1	R	C	I	A
TASK 2	I	I	R	A
TASK 3	C	R	A	I
TASK 4	A	R	I	
TASK 5	R	A	C	I
TASK 6	C	C	A+R	I

However...

Key decision areas are better than tasks, and there should be no separation of accountable versus responsible



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## The Seven Levels of Authority

We will now **merge** the ideas  
behind the previous examples...

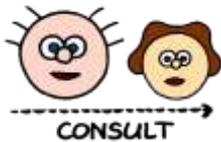
# The Seven Levels of Authority



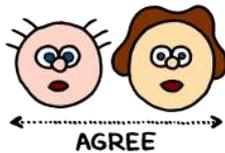
1. Tell: make decision as the manager



2. Sell: convince people about decision



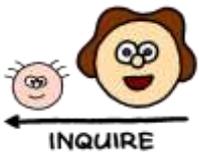
3. Consult: get input from team before decision



4. Agree: make decision together with team



5. Advise: influence decision made by the team



6. Inquire: ask feedback after decision by team



7. Delegate: no influence, let team work it out



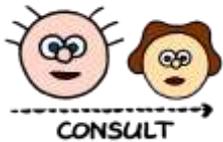
TELL

1. Relocate to other office building



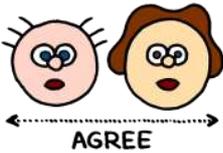
SELL

2. Replace waterfall with Agile



CONSULT

3. Select tool vendors



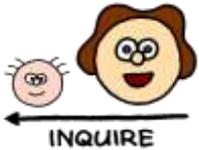
AGREE

4. Agile adoption strategy



ADVISE

5. Architectural patterns



INQUIRE

6. Design and deployments



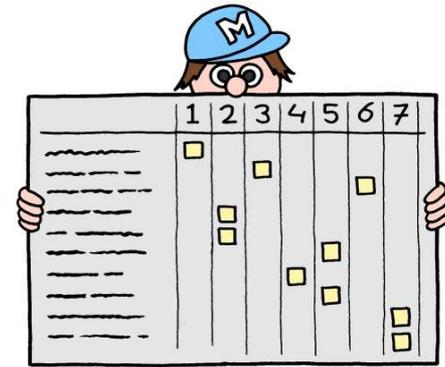
DELEGATE

7. Coding and testing

EXAMPLE

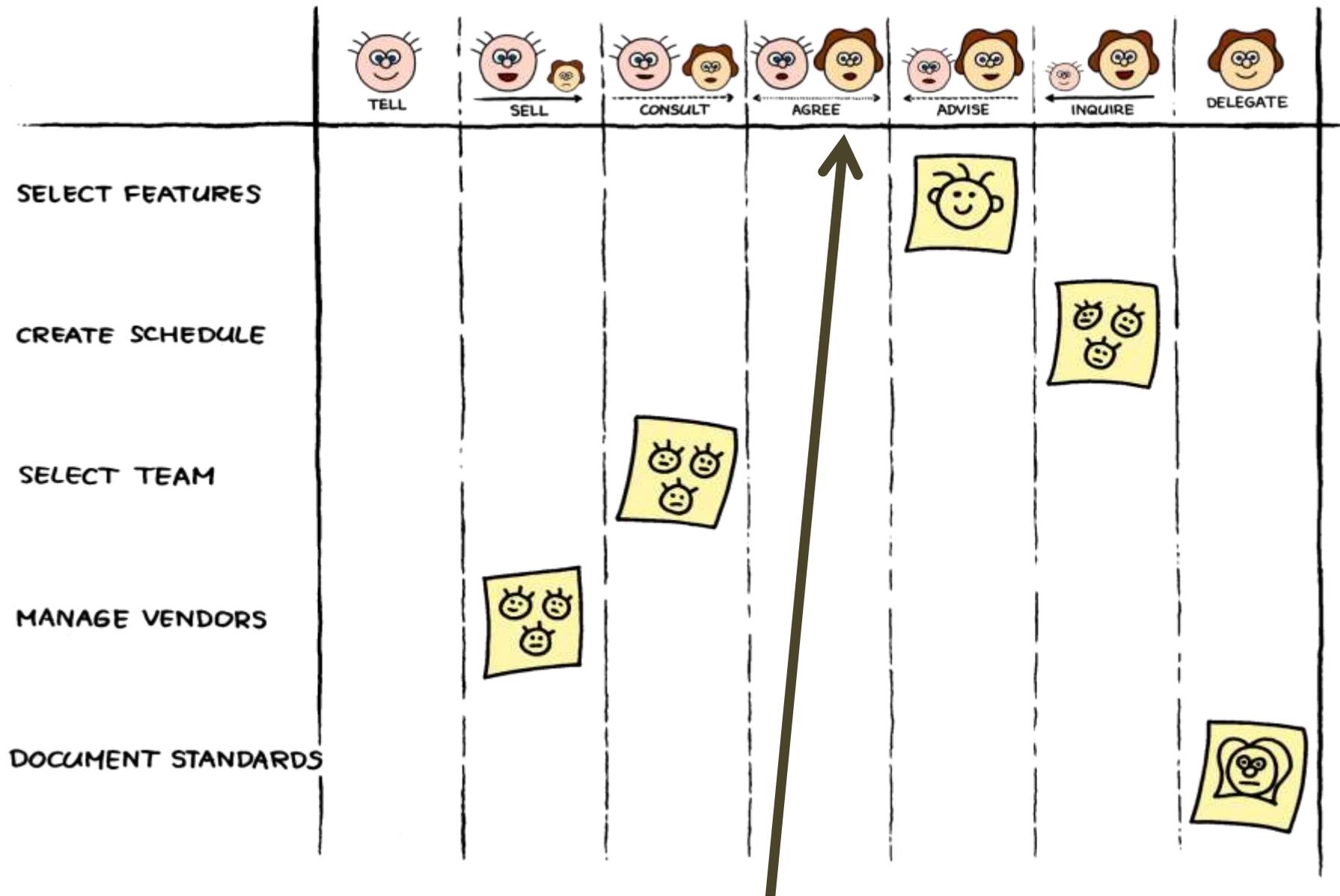
The optimal level of authority depends on people's **competence** and the organizational **impact** of decisions



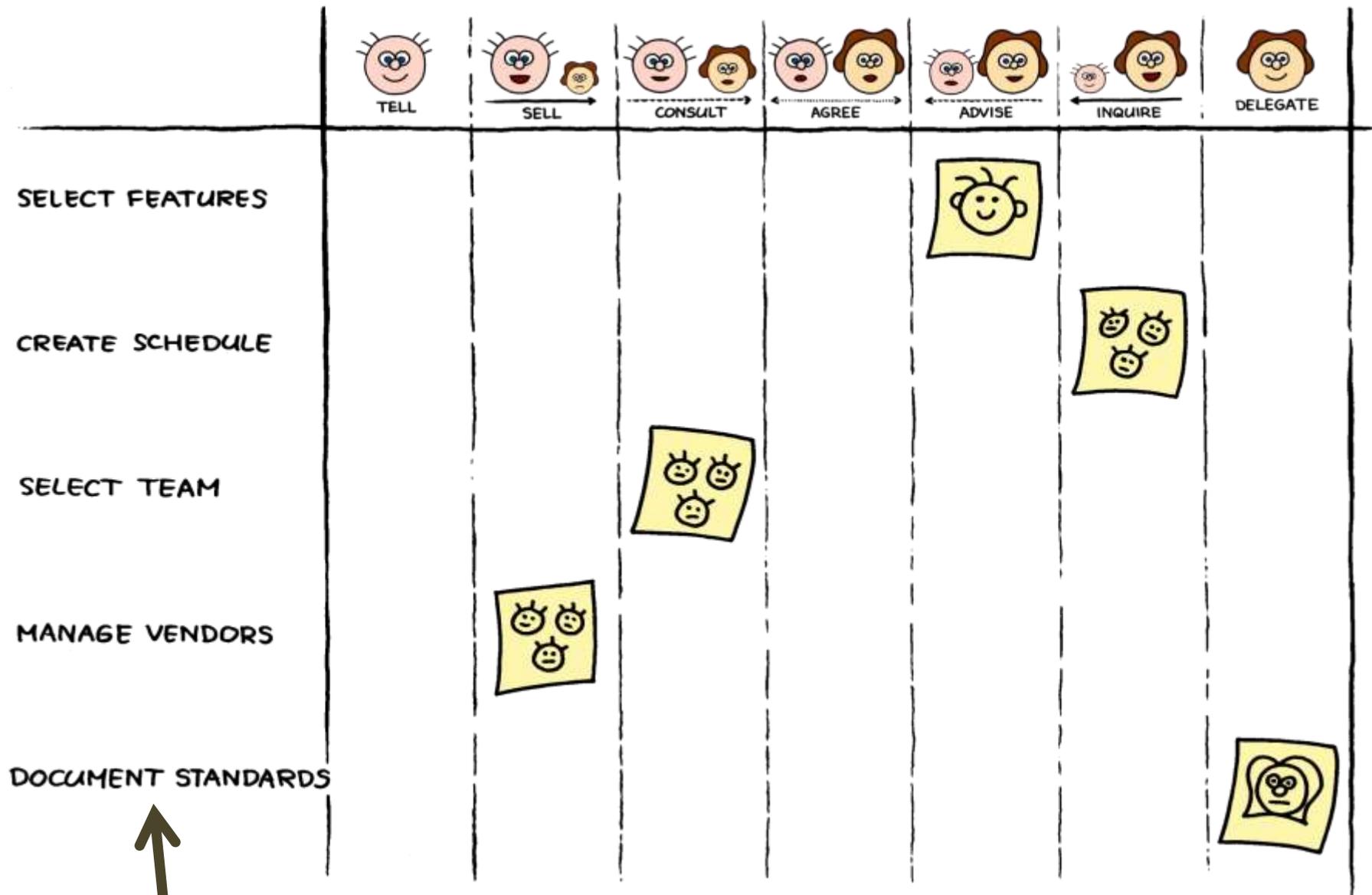


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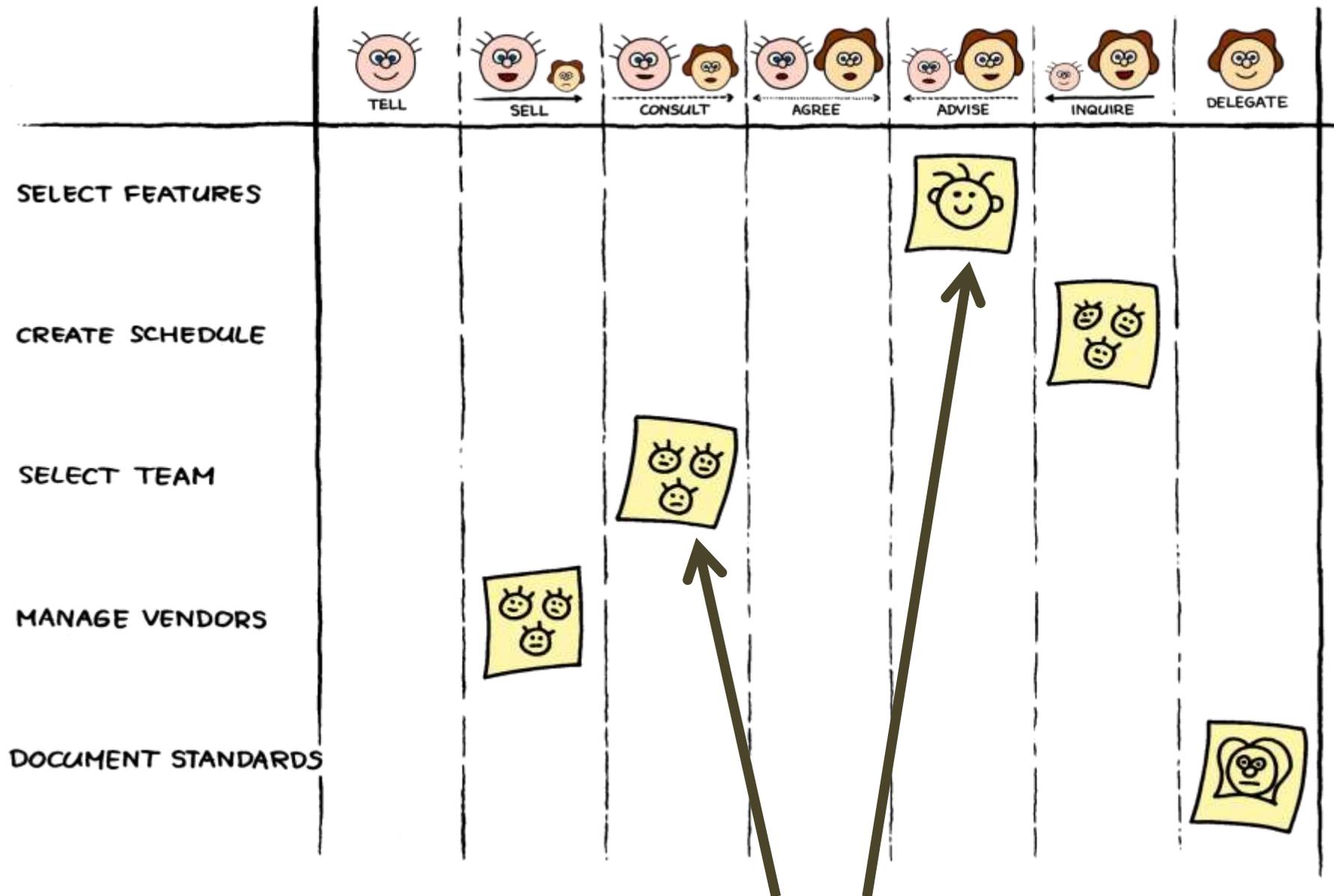
## Authority Boards



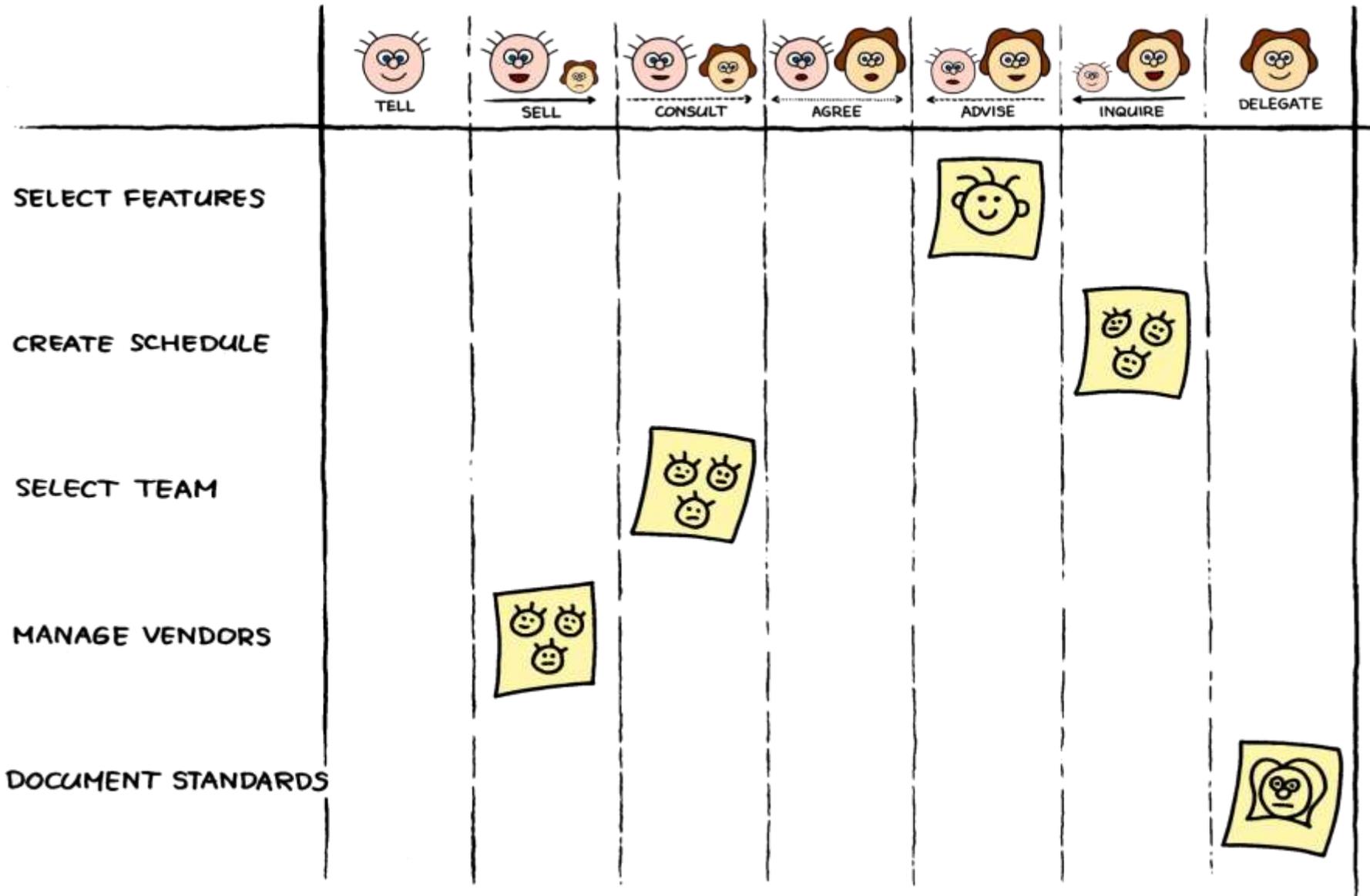
Seven Levels of Authority



Key Decision Areas

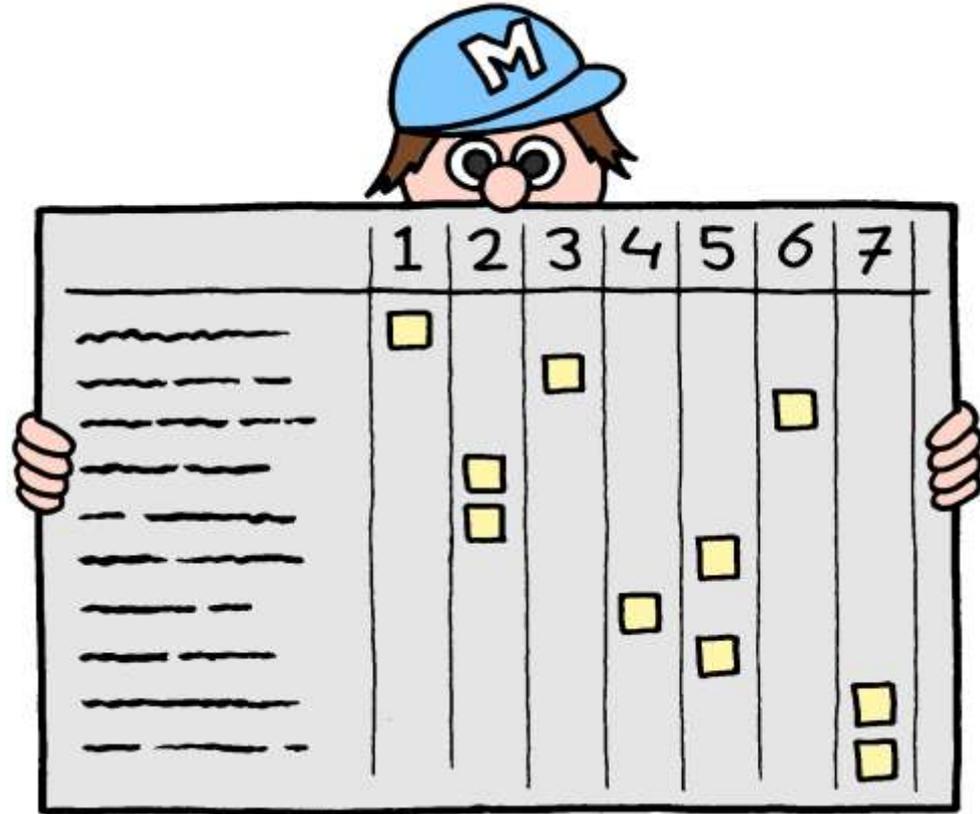


teams or people



flow from left to right 

Authority boards are



controlled by the manager

# Agenda

Self-organization

Direction

Delegation

Communication



Conclusion

# Self-organization is the norm



# Management is the special case



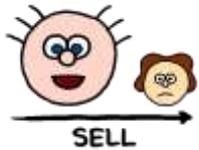
# Management = governance *and* leadership



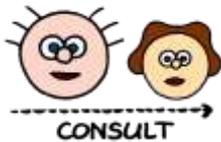
# The Seven Levels of Authority



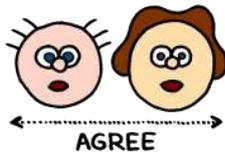
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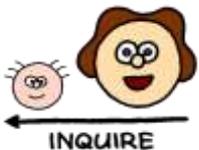
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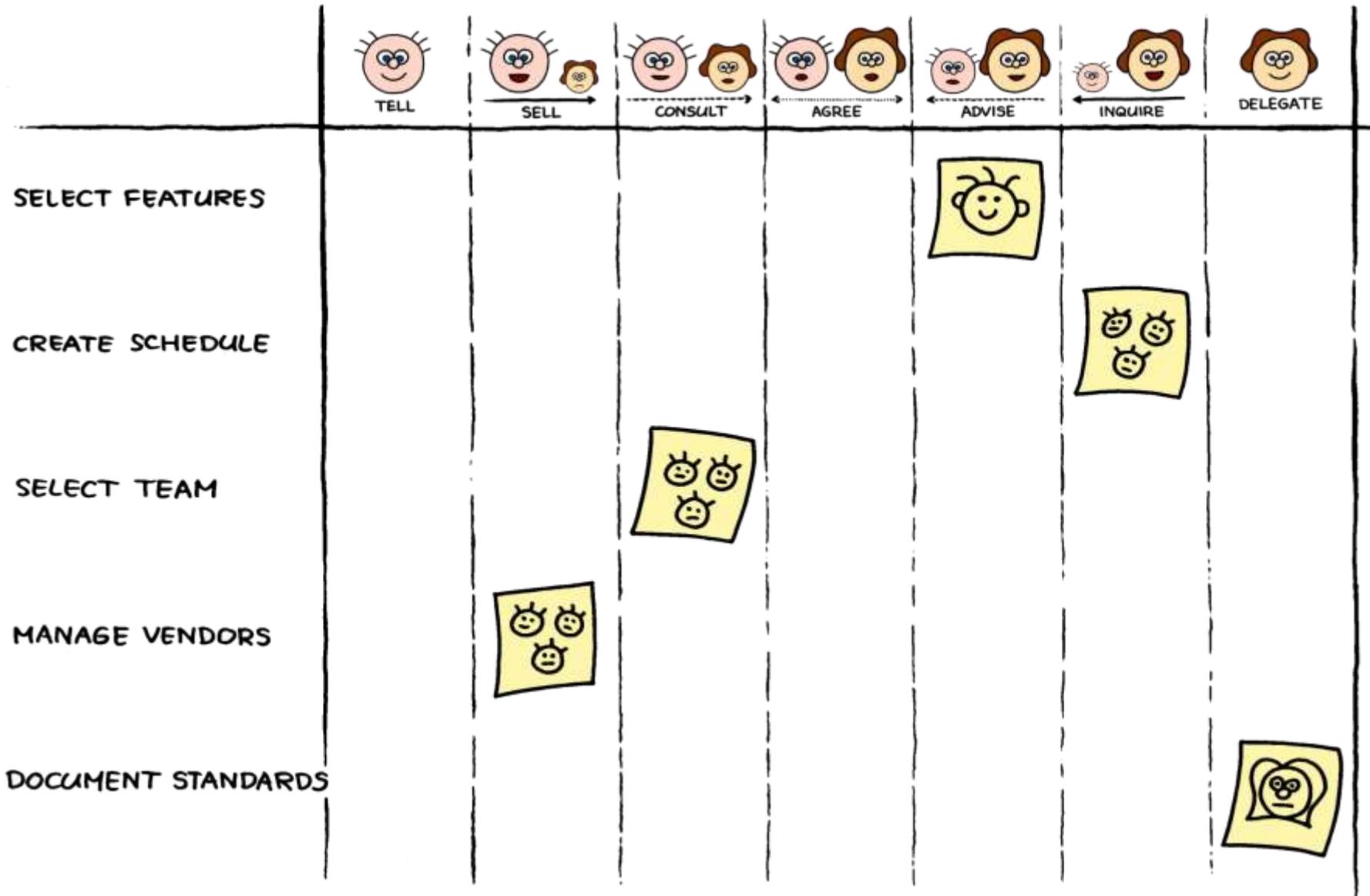
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7. Delegate: no influence, let team work it out



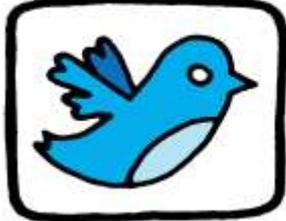
flow from left to right 

The End





[slideshare.net/jurgenappelo](https://www.slideshare.net/jurgenappelo)



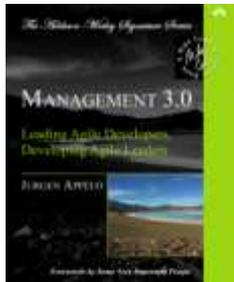
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[noop.nl](http://noop.nl) (blog)



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