

Meetings, Availability and Collaboration

Martin Bäcklund

Let's start with a survey...

- Hi! Can you spare half an hour?
I have something I need to discuss with you.

- Sure! What about tomorrow at one o'clock?

- Oh, I'm busy then. What about at three?

- Sorry, I'm not available then. First free slot after
that is Thursday next week.
Would that work for you?

What is this?

A meeting request?

Or...

A collaboration need
that is waiting?

A collaboration need emerges!

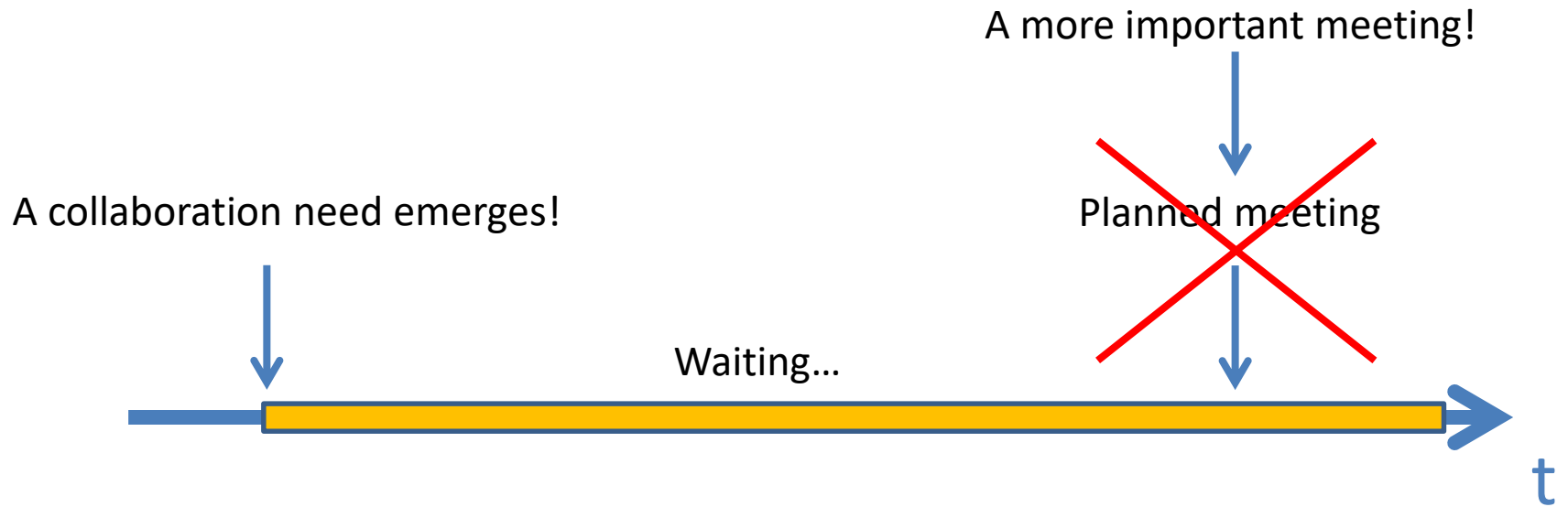
Collaboration!



A collaboration need emerges!

Planned meeting!

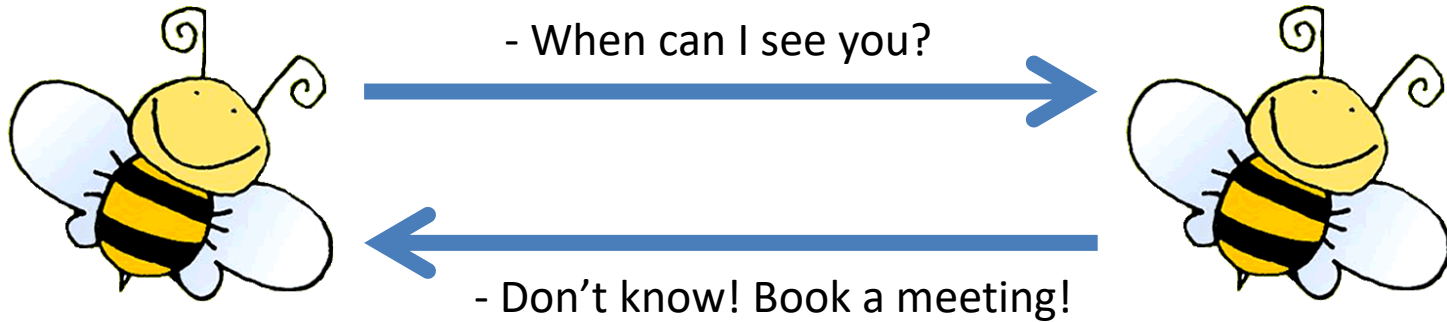


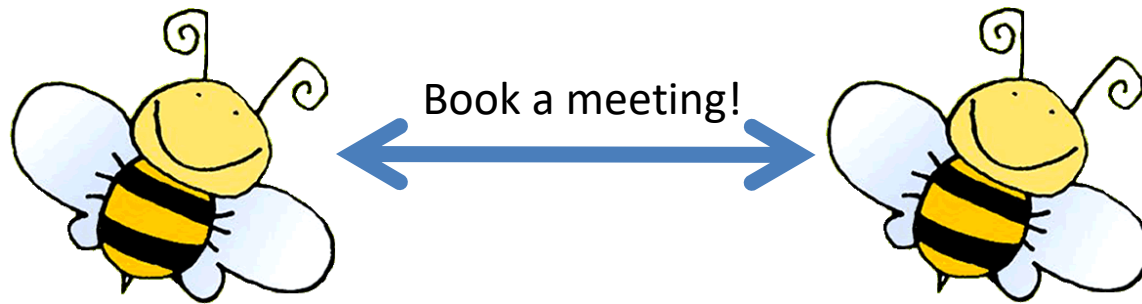


Why do we wait to collaborate?

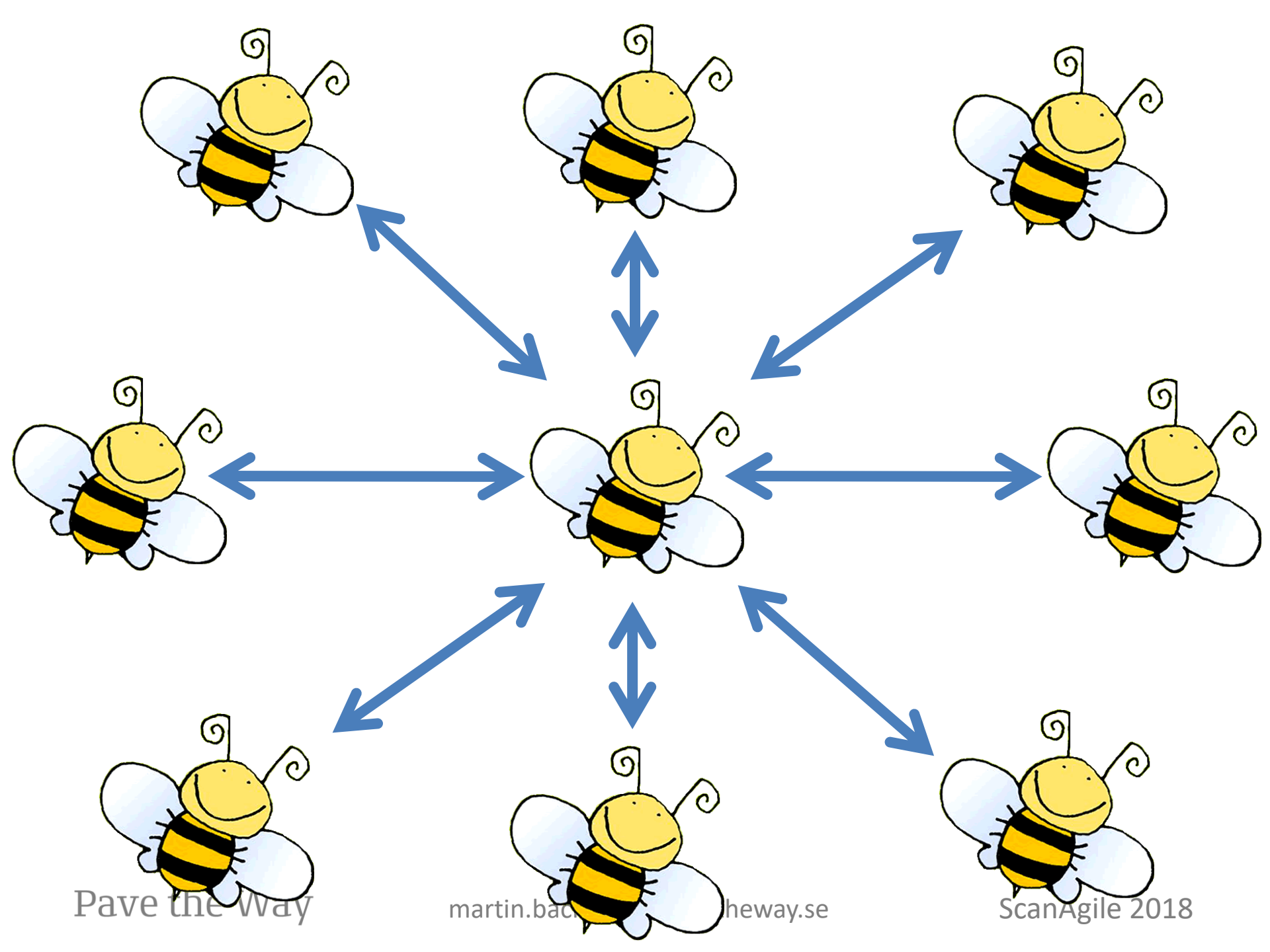
Think about your own calendar...

How many collaboration needs
do you have queued?









How many collaboration needs
are queued in your organization?

What is the total waiting time for those collaboration needs?

For a long time I had many meetings booked every day.

One approach I tried:

One un-booked hour each day.

The result?

The un-booked hour
often became booked.

Once I had to meet two
colleagues for half an hour.

The first available slot when we all could meet was three weeks later.

My wife:

- I don't want more than one hour of booked meetings per day.

Me:

???

My wife:

- Otherwise I have no time to talk to my personnel.

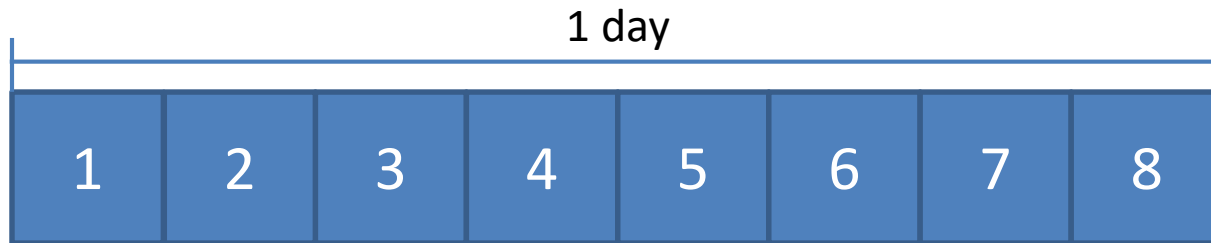
Me:

?!?

A simplified model...

Assume that...

Each work day consists of eight one-hour-periods...



The probability that one person is available the next one-hour-period is

$$\frac{S}{8}$$

where S is the average number of available one-hour-slots per eight-hour-day.

The probability that N people can meet the next one-hour-period is

$$\left(\frac{S}{8}\right)^N$$

The probability to NOT meet the next one-hour-period is

$$1 - \left(\frac{S}{8}\right)^N$$

The probability to NOT meet the next eight-hour-day is

$$\left(1 - \left(\frac{S}{8}\right)^N\right)^8$$

The probability to NOT meet within T days is

$$\left(1 - \left(\frac{S}{8}\right)^N\right)^{8T}$$

The probability to meet within T days is

$$1 - \left(1 - \left(\frac{S}{8} \right)^N \right)^{8T}$$

The probability to meet

$$P(S, N, T) = 1 - \left(1 - \left(\frac{S}{8} \right)^N \right)^{8T}$$

P = The probability to meet at the same one-hour-slot within T days.

S = Average number of available one-hour-periods per person and day.

N = Number of people.

T = Number of eight-hour-days.

Everyone has the same availability

Availability	No of people	Days																																			
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30						
1	1	66%	88%	96%	99%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%			
	2	12%	22%	31%	40%	47%	53%	59%	64%	68%	72%	75%	78%	81%	83%	85%	87%	88%	90%	91%	92%	93%	94%	95%	96%	96%	97%	97%	97%	98%	97%	97%	98%	98%			
	3	2%	3%	5%	6%	8%	9%	10%	12%	13%	14%	16%	17%	18%	20%	21%	22%	23%	25%	26%	27%	28%	29%	30%	31%	32%	33%	34%	35%	36%	37%	37%	37%	37%			
	4	0%	0%	1%	1%	1%	1%	1%	2%	2%	2%	2%	3%	3%	3%	3%	3%	3%	4%	4%	4%	4%	4%	4%	5%	5%	5%	5%	5%	6%	6%	6%	6%	6%			
	5	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%		
	6	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%		
	7	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%		
	8	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
	9	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
	10	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
2	1	90%	99%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%		
	2	40%	64%	79%	87%	92%	95%	97%	98%	99%	99%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%		
	3	12%	22%	31%	40%	47%	53%	59%	64%	68%	72%	75%	78%	81%	83%	85%	87%	88%	90%	91%	92%	93%	94%	95%	96%	96%	97%	97%	97%	97%	97%	97%	98%	98%	98%		
	4	3%	6%	9%	12%	14%	17%	20%	22%	25%	27%	29%	31%	33%	35%	37%	39%	41%	43%	45%	47%	48%	50%	51%	53%	54%	56%	57%	58%	60%	61%	61%	61%	61%	61%		
	5	1%	2%	2%	3%	4%	5%	5%	6%	7%	8%	8%	9%	10%	10%	11%	12%	12%	13%	14%	14%	15%	16%	16%	17%	18%	18%	19%	20%	20%	21%	21%	21%	21%	21%		
	6	0%	0%	0%	1%	1%	1%	1%	2%	2%	2%	3%	3%	3%	3%	3%	3%	3%	4%	4%	4%	4%	4%	5%	5%	5%	5%	5%	6%	6%	6%	6%	6%	6%	6%	6%	
	7	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	
	8	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
	9	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	10	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
3	1	98%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%		
	2	70%	91%	97%	99%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
	3	35%	58%	73%	82%	89%	93%	95%	97%	98%	99%	99%	99%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
	4	15%	27%	38%	47%	55%	62%	67%	72%	76%	80%	83%	85%	87%	89%	91%	92%	93%	94%	95%	96%	97%	97%	98%	98%	98%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	
	5	6%	11%	16%	21%	26%	30%	34%	38%	41%	45%	48%	51%	54%	57%	59%	61%	64%	66%	68%	70%	71%	73%	75%	76%	77%	79%	80%	81%	82%	83%	83%	83%	83%	83%		
	6	2%	4%	6%	9%	11%	13%	14%	16%	18%	20%	22%	23%	25%	27%	28%	30%	32%	33%	35%	36%	37%	39%	40%	41%	43%	44%	45%	46%	48%	48%	49%	49%	49%	49%	49%	
	7	1%	2%	2%	3%	4%	5%	6%	6%	7%	8%	9%	10%	10%	11%	12%	13%	13%	14%	15%	15%	16%	17%	17%	18%	19%	20%	20%	21%	21%	22%	22%	22%	22%	22%		
	8	0%	1%	1%	1%	2%	2%	2%	3%	3%	3%	3%	4%	4%	4%	5%	5%	5%	6%	6%	6%	7%	7%	7%	8%	8%	8%	8%	9%	9%	9%	9%	9%	9%	9%	9%	
	9	0%	0%	0%	0%	1%	1%	1%	1%	1%	1%	1%	1%	2%	2%	2%	2%	2%	2%	2%	2%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	
	10	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	
4	1	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%		
	2	90%	99%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
	3	66%	88%	96%	99%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
	4	40%	64%	79%	87%	92%	95%	97%	98%	99%	99%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	5	22%	40%	53%	64%	72%	78%	83%	87%	90%	92%	94%	95%	96%	97%	98%	98%	99%	99%	99%	99%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	6	12%	22%	31%	40%	47%	53%	59%	64%	68%	72%	75%	78%	81%	83%	85%	87%	88%	90%	91%	92%	93%	94%	95%	96%	96%	97%	97%	97%	97%	97%	97%	97%	97%	97%	97%	
	7	6%	12%	17%	22%	27%	31%	36%	39%	43%	47%	50%	53%	56%	58%	61%	63%	66%	68%	70%	71%	73%	75%	76%	78%	79%	80%	82%	83%	84%	85%	85%	85%	85%	85%	85%	
	8	3%	6%	9%	12%	14%	17%	20%	22%	25%	27%	29%	31%	33%	35%	37%	39%	41%	43%	45%	47%	48%	50%	51%	53%	54%	56%	57%	58%	60%	61%	61%	61%	61%	61%	61%	
	9	2%	3%	5%	6%	8%	9%	10%	12%	13%	14%	16%	17%	18%	20%	21%	22%	23%	25%	26%	27%	28%	29%	30%	31%	32%	33%	34%	35%	36%	37%	37%	37%	37%	37%	37%	
	10	1%	2%	2%	3%	4%	5%	5%	6%	7%	8%	8%	9%	10%	10%	11%	12%	12%	13%	14%	14%	15%	16%	16%	17%	18%	18%	19%	20%	20%	21%	21%	21%	21%	21%	21%	
5	1	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%		
	2	98%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
	3	89%	99%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
	4	73%	93%	98%	99%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	5	55%	80%	91%	96%	98%	99%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	6	39%	63%	77%	86%	91%	95%	97%	98%	99%	99%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	7	26%	46%	60%	70%	78%	84%	88%	91%	94%	95%	96%	97%	98%	99%	99%	99%	99%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	8	17%	31%	43%	53%	61%	68%	73%	78%	82%	85%	87%	90%	91%	93%	94%</																					

What happens if one person in a group has a low availability (1/8)?

Everyone has the same availability

Availability	No of people	Days																																				
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30							
1	1	66%	88%	96%	99%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%							
	2	12%	22%	31%	40%	47%	53%	59%	64%	68%	72%	75%	78%	81%	83%	85%	87%	88%	90%	91%	92%	93%	94%	94%	95%	96%	96%	97%	97%	97%	98%							
	3	2%	3%	5%	6%	8%	9%	10%	12%	13%	14%	16%	17%	18%	20%	21%	22%	23%	25%	26%	27%	28%	29%	30%	31%	32%	33%	34%	35%	36%	37%							
	4	0%	0%	1%	1%	1%	1%	1%	2%	2%	2%	2%	3%	3%	3%	3%	3%	3%	4%	4%	4%	4%	4%	5%	5%	5%	5%	5%	6%	6%								
	5	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%							
	6	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%						
	7	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%						
	8	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%					
	9	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%				
	10	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%			
2	1	90%	99%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%						
	2	40%	64%	79%	87%	92%	95%	97%	98%	99%	99%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%				
	3	12%	22%	31%	40%	47%	53%	59%	64%	68%	72%	75%	78%	81%	83%	85%	87%	88%	90%	91%	92%	93%	94%	94%	95%	96%	96%	97%	97%	97%	98%	98%	98%					
	4	3%	6%	9%	12%	14%	17%	20%	22%	25%	27%	29%	31%	33%	35%	37%	39%	41%	43%	45%	47%	48%	50%	51%	53%	54%	56%	57%	58%	60%	61%	61%	61%					
	5	1%	2%	2%	3%	4%	5%	5%	6%	7%	8%	8%	9%	10%	10%	11%	12%	12%	13%	14%	14%	15%	16%	16%	17%	18%	18%	19%	20%	20%	21%	21%	21%					
	6	0%	0%	0%	1%	1%	1%	1%	2%	2%	2%	2%	3%	3%	3%	3%	3%	3%	4%	4%	4%	4%	5%	5%	5%	5%	6%	6%	6%	6%	6%	6%	6%					
	7	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%				
	8	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%			
	9	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%		
	10	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%		
3	1	98%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%				
	2	70%	91%	97%	99%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%			
	3	35%	58%	73%	82%	89%	93%	95%	97%	98%	99%	99%	99%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%		
	4	15%	27%	38%	47%	55%	62%	67%	72%	76%	80%	83%	85%	87%	89%	91%	92%	93%	94%	95%	96%	97%	97%	98%	98%	98%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%		
	5	6%	11%	16%	21%	26%	30%	34%	38%	41%	45%	48%	51%	54%	57%	59%	61%	64%	66%	68%	70%	71%	73%	75%	76%	77%	79%	80%	81%	82%	83%	83%	83%	83%	83%			
	6	2%	4%	6%	9%	11%	13%	14%	16%	18%	20%	22%	23%	25%	27%	28%	30%	32%	33%	35%	36%	37%	39%	40%	41%	43%	44%	45%	46%	48%	48%	49%	49%	49%	49%	49%		
	7	1%	2%	2%	3%	4%	5%	6%	6%	7%	8%	9%	10%	10%	11%	12%	13%	13%	14%	15%	15%	16%	17%	17%	18%	19%	20%	20%	21%	21%	22%	22%	22%	22%	22%			
	8	0%	1%	1%	1%	2%	2%	2%	2%	3%	3%	3%	4%	4%	4%	5%	5%	5%	6%	6%	6%	7%	7%	7%	8%	8%	8%	8%	8%	9%	9%	9%	9%	9%	9%	9%		
	9	0%	0%	0%	0%	1%	1%	1%	1%	1%	1%	1%	1%	2%	2%	2%	2%	2%	2%	2%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%		
	10	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	
4	1	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%			
	2	90%	99%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%		
	3	66%	88%	96%	99%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%		
	4	40%	64%	79%	87%	92%	95%	97%	98%	99%	99%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
	5	22%	40%	53%	64%	72%	78%	83%	87%	90%	92%	94%	95%	96%	97%	98%	98%	99%	99%	99%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
	6	12%	22%	31%	40%	47%	53%	59%	64%	68%	72%	75%	78%	81%	83%	85%	87%	88%	90%	91%	92%	93%	94%	94%	95%	96%	96%	97%	97%	97%	97%	97%	97%	97%	97%	97%		
	7	6%	12%	17%	22%	27%	31%	36%	39%	43%	47%	50%	53%	56%	58%	61%	63%	66%	68%	70%	71%	73%	75%	76%	78%	79%	80%	82%	83%	84%	85%	85%	85%	85%	85%			
	8	3%	6%	9%	12%	14%	17%	20%	22%	25%	27%	29%	31%	33%	35%	37%	39%	41%	43%	45%	47%	48%	50%	51%	53%	54%	56%	57%	58%	60%	61%	61%	61%	61%	61%	61%		
	9	2%	3%	5%	6%	8%	9%	10%	12%	13%	14%	16%	17%	18%	20%	21%	22%	23%	25%	26%	27%	28%	29%	30%	31%	32%	33%	34%	35%	36%	37%	37%	37%	37%	37%	37%		
	10	1%	2%	2%	3%	4%	5%	5%	6%	7%	8%	8%	9%	10%	10%	11%	12%	12%	13%	14%	14%	15%	16%	16%	17%	18%	18%	19%	20%	20%	21%	21%	21%	21%	21%	21%		
5	1	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%		
	2	98%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
	3	89%	99%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
	4	73%	93%	98%	99%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	5	55%	80%	91%	96%	98%	99%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	6	39%	63%	77%	86%	91%	95%	97%	98%	99%	99%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	7	26%	46%	60%	70%	78%	84%	88%	91%	94%	95%	96%	97%	98%	99%	99%	99%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
	8	17%	31%	43%	53%	61%	68%	73%	78%	82%	85%	87%	90%	91%	93%	94%	95%	96%	97%	97%	98%	98%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	
	9	11%	21%	30%	37%	44%	51%	56%	61%	65%	69%	72%	76%	78%	81%	83%	85%	8																				

What happens if one person in a group has a high availability (7/8)?

How much availability do we need to meet for
one hour with 85% probability?

How much availability do we need to meet for one hour with 85% probability?

No of people	Availability (hours/day) needed for a certain wait time (days) (85% prob)																			
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2	4	3	3	2	2	2	2	2	2	2	2	2	2	2	2	1	1	1	1	1
3	5	4	4	4	3	3	3	3	3	3	3	3	3	3	3	2	2	2	2	2
4	6	5	5	4	4	4	4	4	4	4	4	3	3	3	3	3	3	3	3	3
5	6	6	5	5	5	5	5	4	4	4	4	4	4	4	4	4	4	4	4	4
6	7	6	6	5	5	5	5	5	5	5	5	5	5	5	5	4	4	4	4	4
7	7	6	6	6	6	6	5	5	5	5	5	5	5	5	5	5	5	5	5	5
8	7	7	6	6	6	6	6	6	6	6	5	5	5	5	5	5	5	5	5	5
9	7	7	7	6	6	6	6	6	6	6	6	6	6	6	6	6	5	5	5	5
10	7	7	7	7	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
11	7	7	7	7	7	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
12	8	7	7	7	7	7	7	6	6	6	6	6	6	6	6	6	6	6	6	6
13	8	7	7	7	7	7	7	7	7	6	6	6	6	6	6	6	6	6	6	6
14	8	7	7	7	7	7	7	7	7	7	7	7	7	6	6	6	6	6	6	6
15	8	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	6	6	6	6
16	8	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7
17	8	8	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7
18	8	8	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7
19	8	8	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7
20	8	8	8	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7

How much availability do we need to meet for one hour with 85% probability?

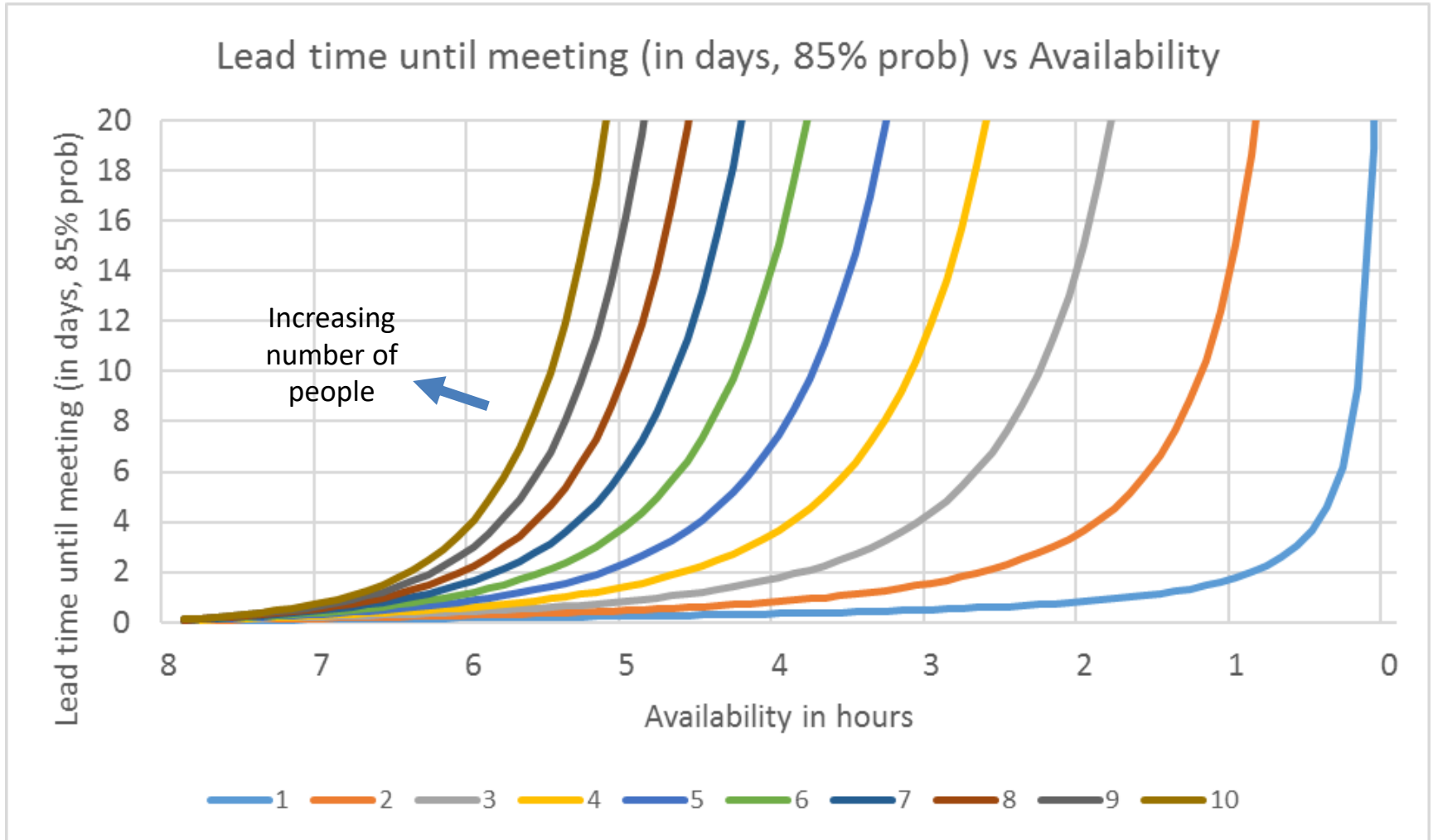
No of people	Availability (hours/day) needed for a certain wait time (days) (85% prob)																			
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2	4	3	3	2	2	2	2	2	2	2	2	2	2	2	2	1	1	1	1	1
3	5	4	4	4	3	3	3	3	3	3	3	3	3	3	3	2	2	2	2	2
4	6	5	5	4	4	4	4	4	4	4	4	3	3	3	3	3	3	3	3	3
5	6	6	5	5	5	5	5	4	4	4	4	4	4	4	4	4	4	4	4	4
6	7	6	6	5	5	5	5	5	5	5	5	5	5	5	5	4	4	4	4	4
7	7	6	6	6	6	6	5	5	5	5	5	5	5	5	5	5	5	5	5	5
8	7	7	6	6	6	6	6	6	6	6	5	5	5	5	5	5	5	5	5	5
9	7	7	7	6	6	6	6	6	6	6	6	6	6	6	6	6	5	5	5	5
10	7	7	7	7	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
11	7	7	7	7	7	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
12	8	7	7	7	7	7	7	6	6	6	6	6	6	6	6	6	6	6	6	6
13	8	7	7	7	7	7	7	7	7	6	6	6	6	6	6	6	6	6	6	6
14	8	7	7	7	7	7	7	7	7	7	7	7	7	6	6	6	6	6	6	6
15	8	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	6	6	6	6
16	8	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7
17	8	8	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7
18	8	8	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7
19	8	8	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7
20	8	8	8	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7

What if we increase the number of people?

No of people	Availability (hours/day) needed for a certain wait time (days) (85% prob)																			
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2	4	3	3	2	2	2	2	2	2	2	2	2	2	2	2	1	1	1	1	1
3	5	4	4	4	3	3	3	3	3	3	3	3	3	3	3	2	2	2	2	2
4	6	5	5	4	4	4	4	4	4	4	4	4	3	3	3	3	3	3	3	3
5	6	6	5	5	5	5	5	4	4	4	4	4	4	4	4	4	4	4	4	4
6	7	6	6	5	5	5	5	5	5	5	5	5	5	5	5	4	4	4	4	4
7	7	6	6	6	6	6	5	5	5	5	5	5	5	5	5	5	5	5	5	5
8	7	7	6	6	6	6	6	6	6	6	5	5	5	5	5	5	5	5	5	5
9	7	7	7	6	6	6	6	6	6	6	6	6	6	6	6	6	5	5	5	5
10	7	7	7	7	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
11	7	7	7	7	7	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
12	8	7	7	7	7	7	7	6	6	6	6	6	6	6	6	6	6	6	6	6
13	8	7	7	7	7	7	7	7	7	6	6	6	6	6	6	6	6	6	6	6
14	8	7	7	7	7	7	7	7	7	7	7	7	7	6	6	6	6	6	6	6
15	8	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	6	6	6	6
16	8	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7
17	8	8	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7
18	8	8	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7
19	8	8	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7
20	8	8	8	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7

Let's draw the model in another way...

Recognize this graph?

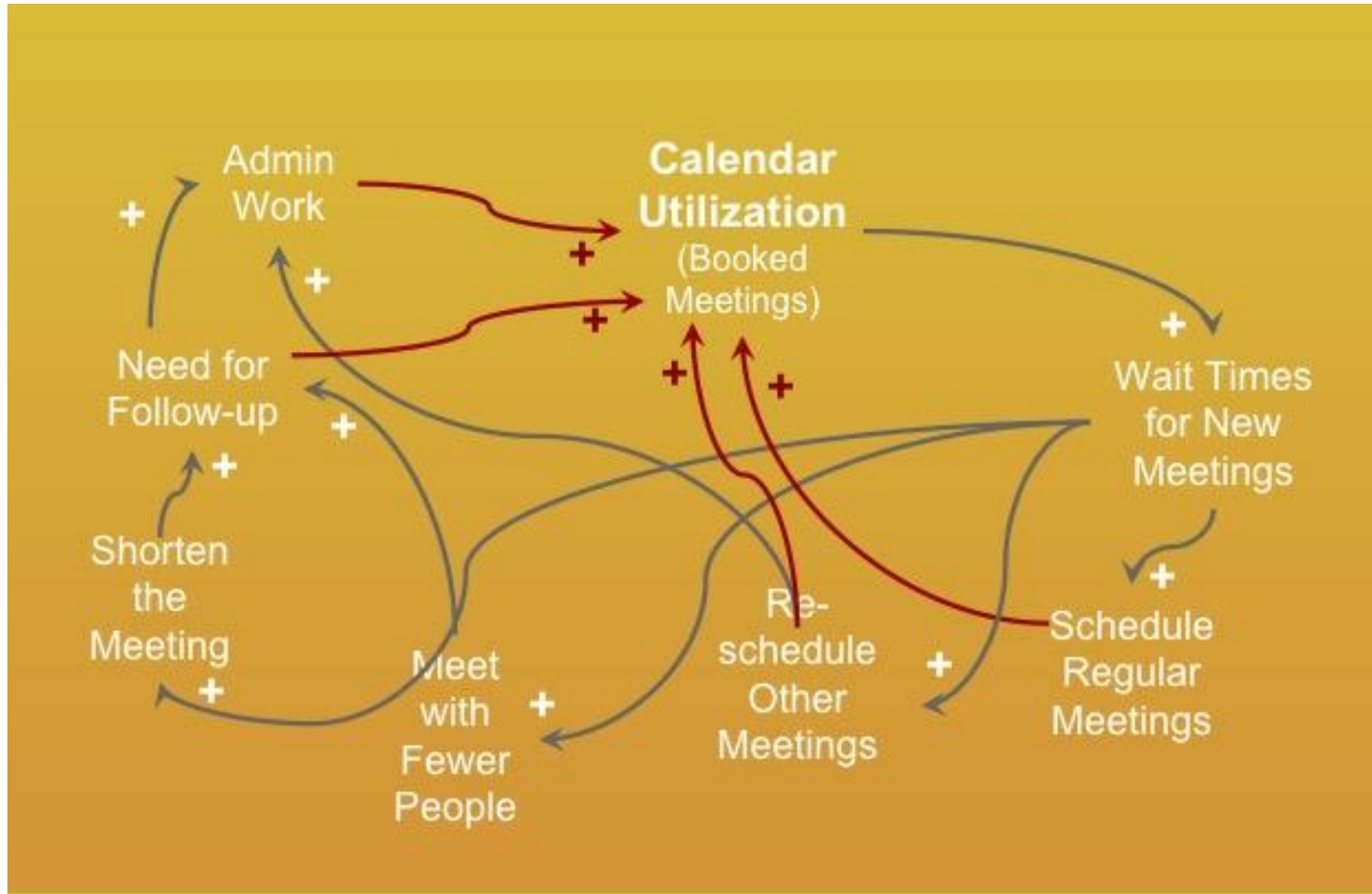


Hypothesis:

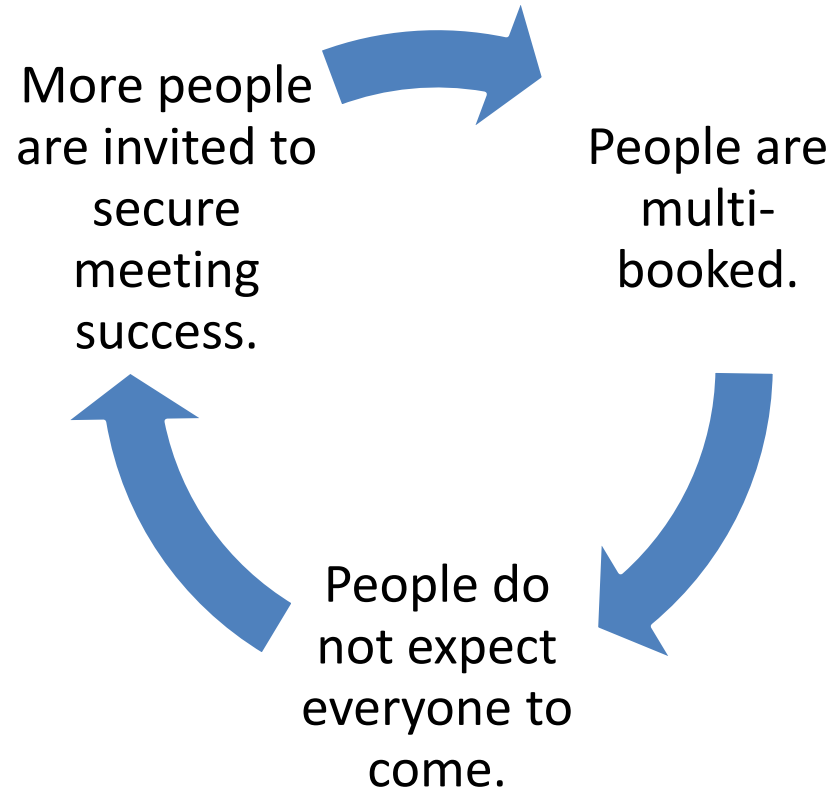
Planned meetings increase the need for
planned meetings.

Do we book meetings because
we are booked in meetings?

Arne Roock's picture...



High load phenomena



How far can we get
without planned meetings?

Hypothesis:

A high number of planned meetings is a signal there are collaboration needs queued up and waiting.

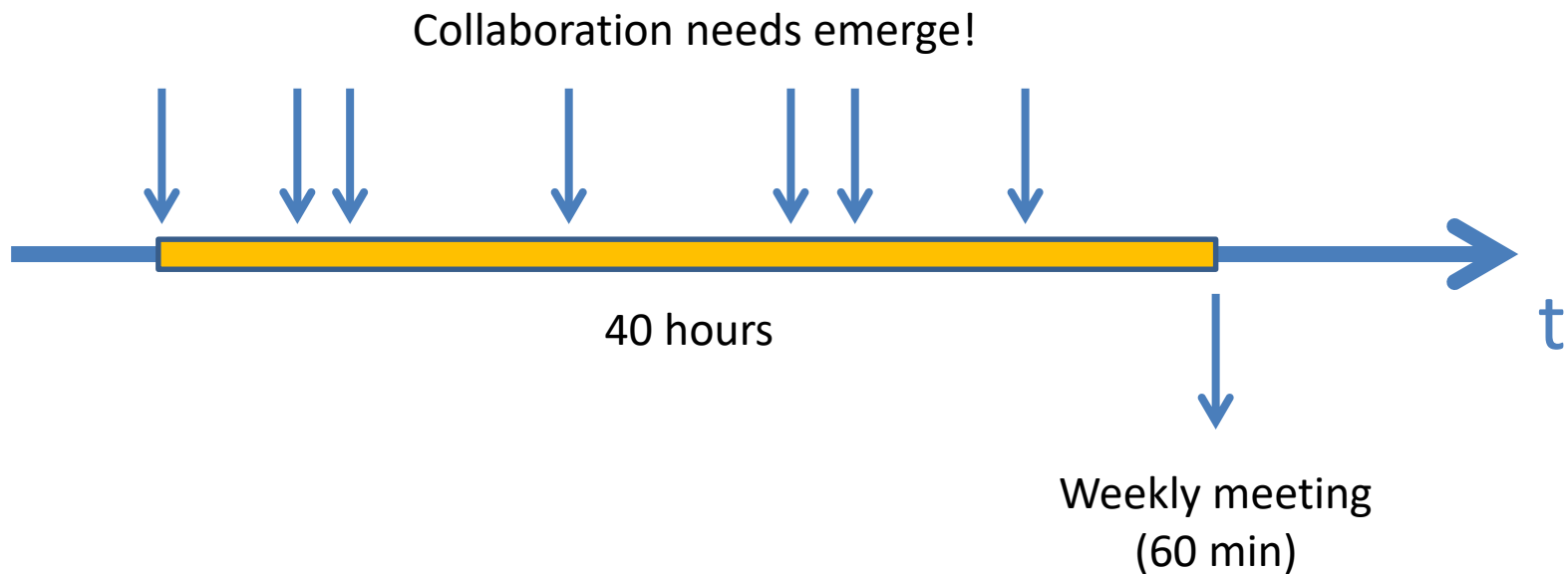
We know how to reduce queues and
lead times...

Reduce batch size...

Limit Work in Process...

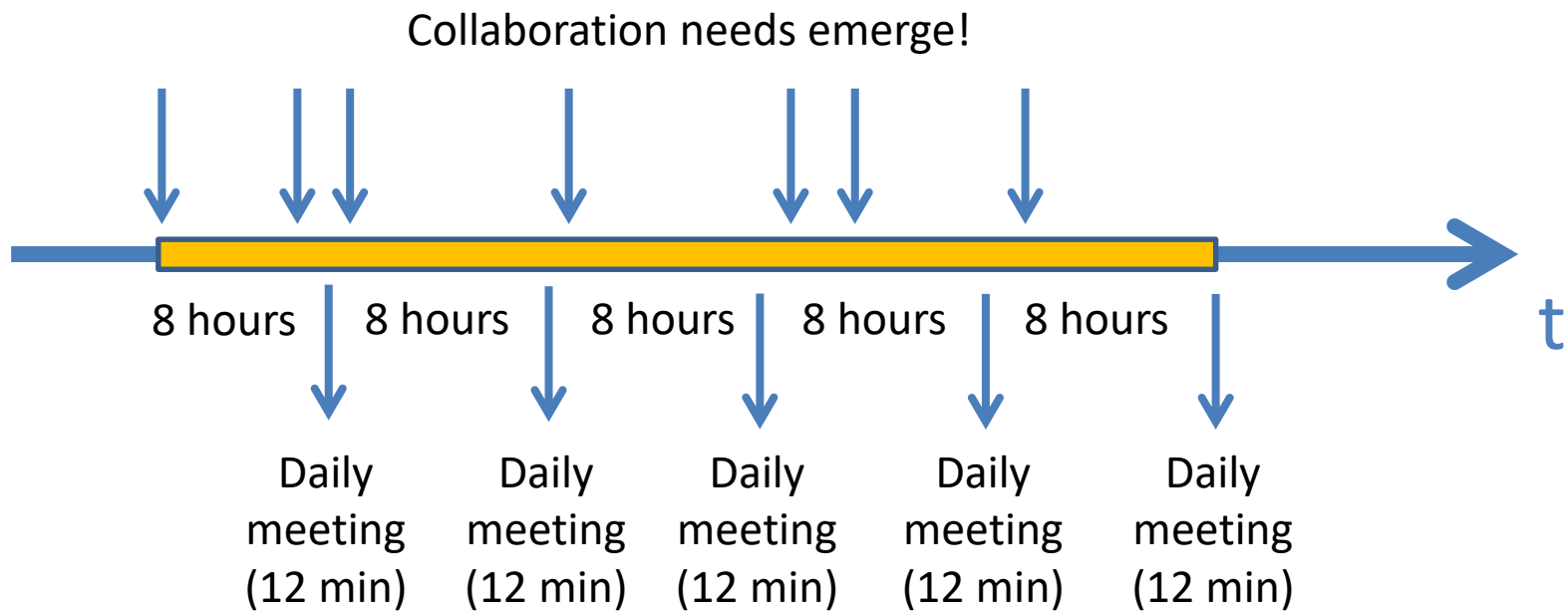
Let's try reducing batch size...

The weekly meeting



40 hour interval => 20 hours average lead time

The daily meeting



8 hour interval => 4 hours average lead time

Going from weekly to daily meetings
also reduces the number of
collaboration needs that are queued.

In a sense, work in process is reduced.

You also get
almost the same reaction time
as a group of people
that has members with
7/8 one-hour-slot availability.

How quickly can 7/8-available-hours-people meet? (One-hour slots)

Availability	No of people	Hour to meet							
		1	2	3	4	5	6	7	8
7	1	88%	98%	100%	100%	100%	100%	100%	100%
7	2	77%	95%	99%	100%	100%	100%	100%	100%
7	3	67%	89%	96%	99%	100%	100%	100%	100%
7	4	59%	83%	93%	97%	99%	99%	100%	100%
7	5	51%	76%	88%	94%	97%	99%	99%	100%
7	6	45%	70%	83%	91%	95%	97%	98%	99%
7	7	39%	63%	78%	86%	92%	95%	97%	98%
7	8	34%	57%	72%	81%	88%	92%	95%	97%
7	9	30%	51%	66%	76%	83%	88%	92%	94%
7	10	26%	46%	60%	71%	78%	84%	88%	91%

What you don't get is
the same amount of
collaboration time...

What if we would remove almost
all booked meetings?

Let's assume this means we can count
with 15 minute slots instead...

Let's only allow
4x15 minutes pre-booked meetings
in average per person per day.

How quickly would people meet?

(15 minute slots, 4 booked slots average)

Slots per day	Availability	No of people	15 minute-periods to meet																
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
32	28	1	88%	98%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
32	28	2	77%	95%	99%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
32	28	3	67%	89%	96%	99%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
32	28	4	59%	83%	93%	97%	99%	99%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
32	28	5	51%	76%	88%	94%	97%	99%	99%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
32	28	6	45%	70%	83%	91%	95%	97%	98%	99%	100%	100%	100%	100%	100%	100%	100%	100%	100%
32	28	7	39%	63%	78%	86%	92%	95%	97%	98%	99%	99%	100%	100%	100%	100%	100%	100%	100%
32	28	8	34%	57%	72%	81%	88%	92%	95%	97%	98%	99%	99%	99%	100%	100%	100%	100%	100%
32	28	9	30%	51%	66%	76%	83%	88%	92%	94%	96%	97%	98%	99%	99%	99%	100%	100%	100%
32	28	10	26%	46%	60%	71%	78%	84%	88%	91%	94%	95%	97%	97%	98%	99%	99%	99%	99%

Collaboration needs are now met
within one hour instead...

Collaboration need lead time average:

Weekly meetings:	20 hours
Daily meetings:	4 hours
On demand (high availability):	1 hour

What drives the number of meetings
apart from “habit”?

Meeting techniques and structure?

The sheer amount of “stuff” going on
and how it is structured?

Leadership and Culture?

Some overload strategies

Root cause strategies

Collaboration batch size reduction

Work in process reduction

Collaboration transaction cost reduction

Collaboration lead time reduction

[...]

Coping strategies

"Best effort" meetings

Skipping meetings

Personal WIP-limits

Scheduled unplanned collaboration time

[...]

Postponing strategies

Collaboration reduction

Collaboration via representatives

Silofication

Action Points

[...]

Some things to try...

Weekly meetings with multiple issues?

=>

Replace with daily short meetings?

Status report meetings?

=>

Replace with visualizations and stand-up meetings?

No time for unplanned collaboration?

=>

Reserve common time for unplanned collaboration?

A model is a model,
reality is always more complex...

Next time you urgently need to collaborate with two people...

Can you do that within a day, without anyone having to reschedule something else?

How come?

Thank you!

Martin Bäcklund

@mgbacklund

martin.backlund@pavetheway.se

[linkedin.com/in/mgbacklund](https://www.linkedin.com/in/mgbacklund)