

How Swarming Enables Enterprise Support to work better with DevOps

DevOps Enterprise Summit 2019

Jon Hall

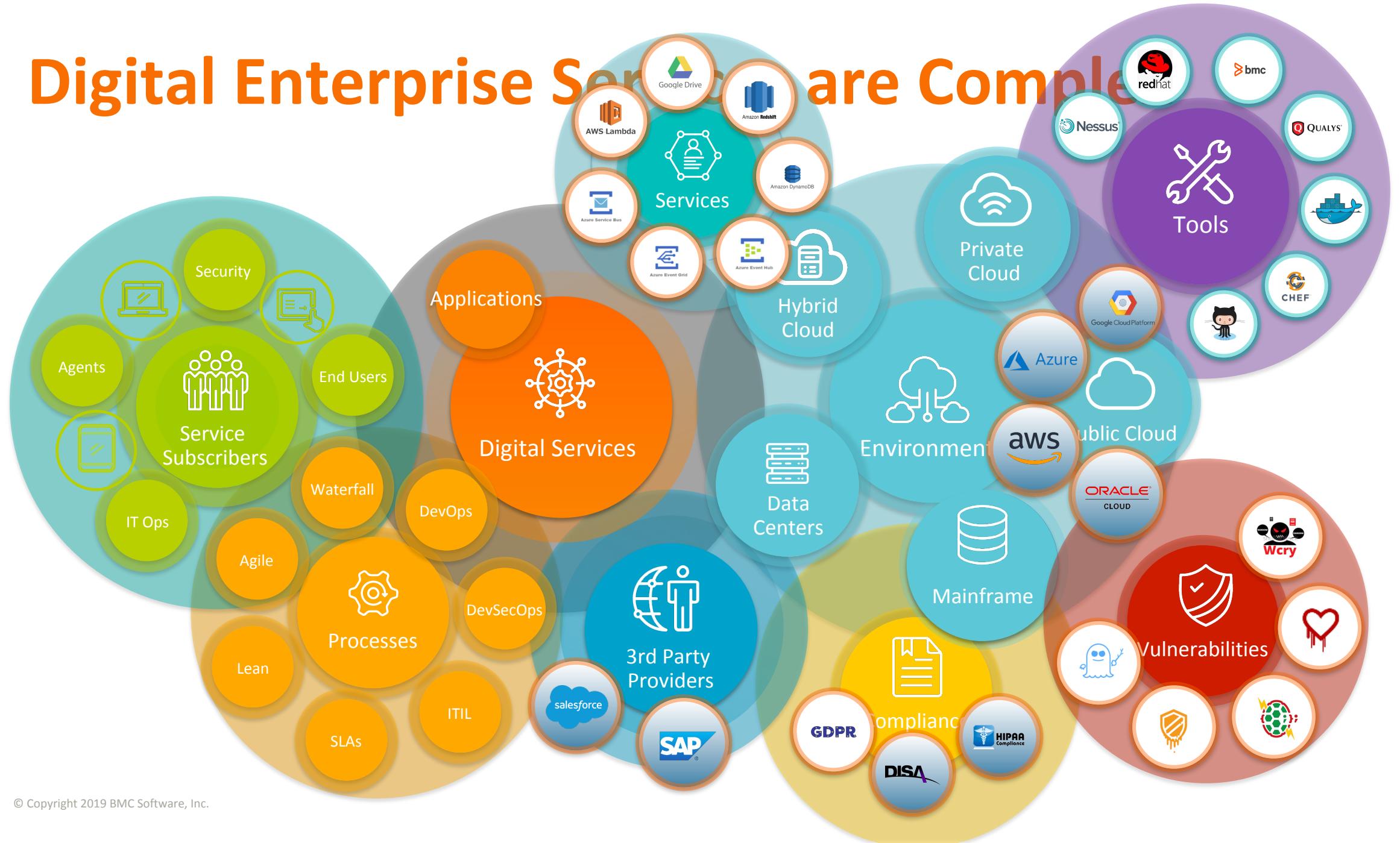
Principal Product Manager, BMC

 @jonhall_

Digital Enterprise services are complex



Digital Enterprise Services are Complex

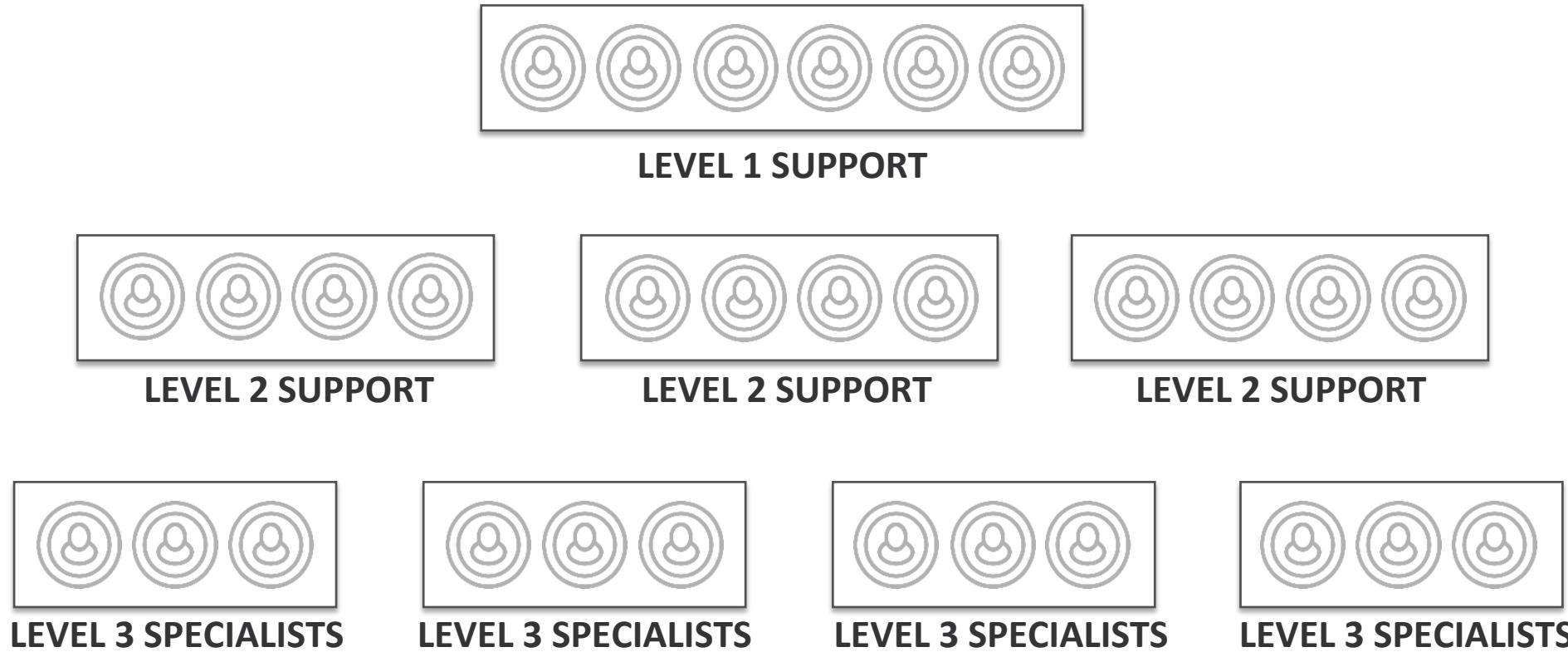


There is room for Tech Support to bring value to DevOps

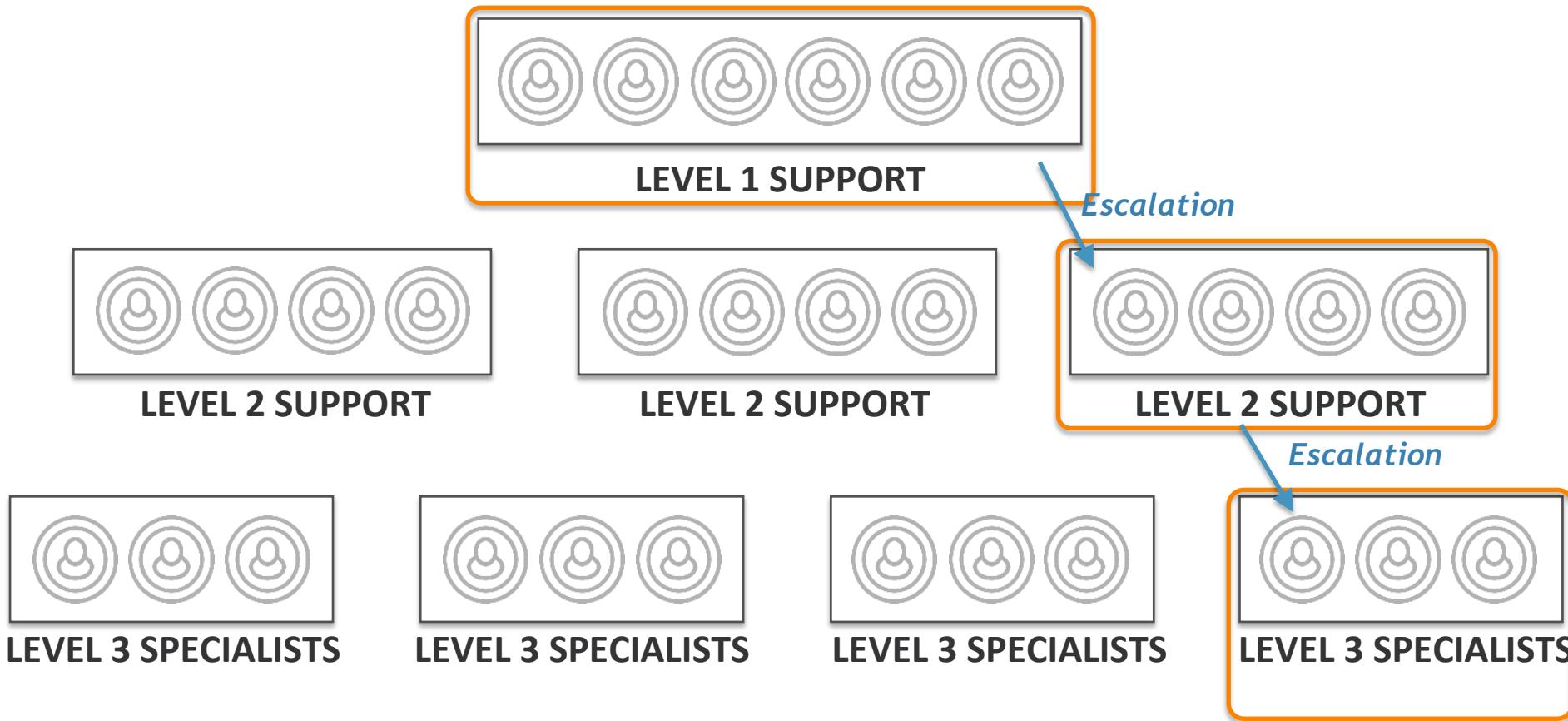
Time Spent	Elite	High	Medium	Low
NEW WORK	50%	50%	40%	30%
Unplanned work and rework	19.5%	20% ^a	20% ^a	20% ^a
Remediating security issues	5%	5% ^b	5% ^b	10%
Working on defects identified by end users	10%	10% ^c	10% ^c	20%
Customer support work	5%	10%	10%	15%

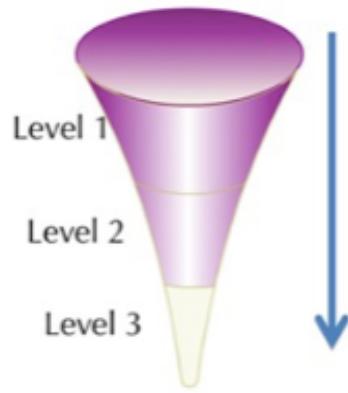
2018 State of DevOps Report

Classic “Tiered” Support Structure



Deconstructing the “Tiered” Support Structure





Tiered support

Silos and hierarchies

Directed

Linear, rigid

Measured on activity

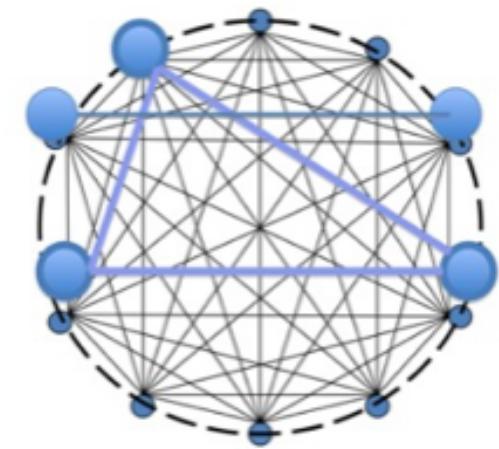
Swarming

Network

Collaborative

Dynamic, loopy

Measured by value creation



Swarming...

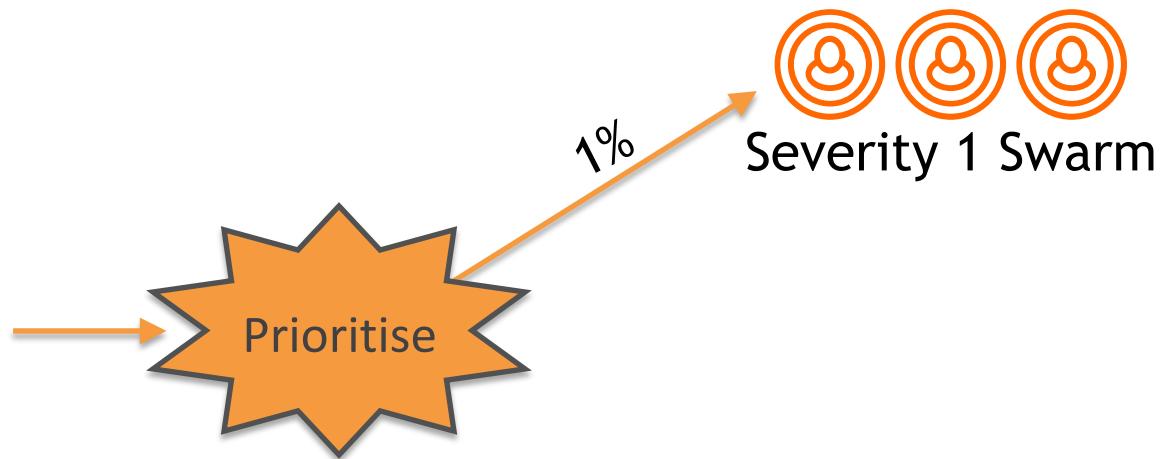
involves removing the tiers of support, and calling on the collective expertise of a “swarm” of analysts.

<https://www.serviceinnovation.org/intelligent-swarming/>

**“I have probably *doubled* my knowledge of the products in a year because of Swarming...
and I have been here a long time”**

Senior Support Analyst, BMC

Swarming Process at BMC



Severity 1 Swarm

- **Rapid responders**
 - Three agents on a scheduled one-week rotation
 - Primary focus: Provide immediate response, and resolve as soon as possible

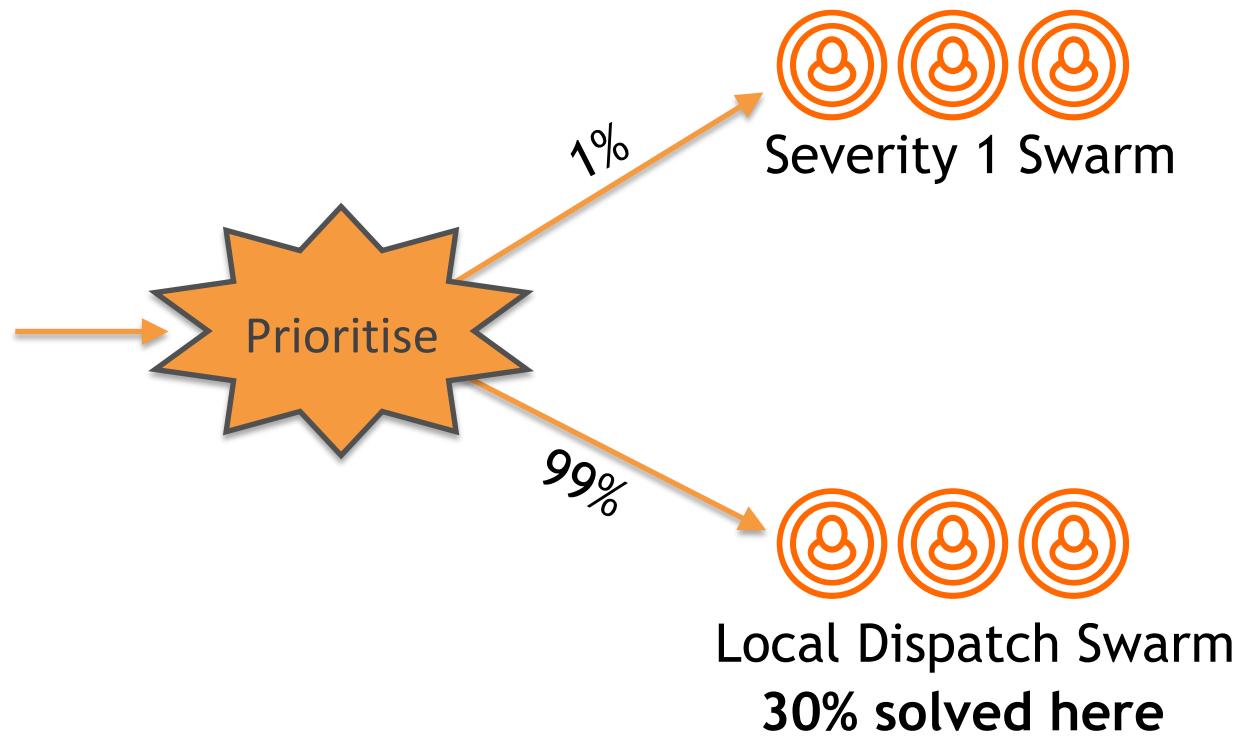


Swarm lead
Communications



Other members
Research, coordinate, test

Swarming Process at BMC



Dispatch Swarm

- “Cherry pickers”
 - Meet every 60-90 minutes
 - Primary focus: Can new tickets be resolved immediately?
 - Also: Validation of ticket details before assignment to specialists

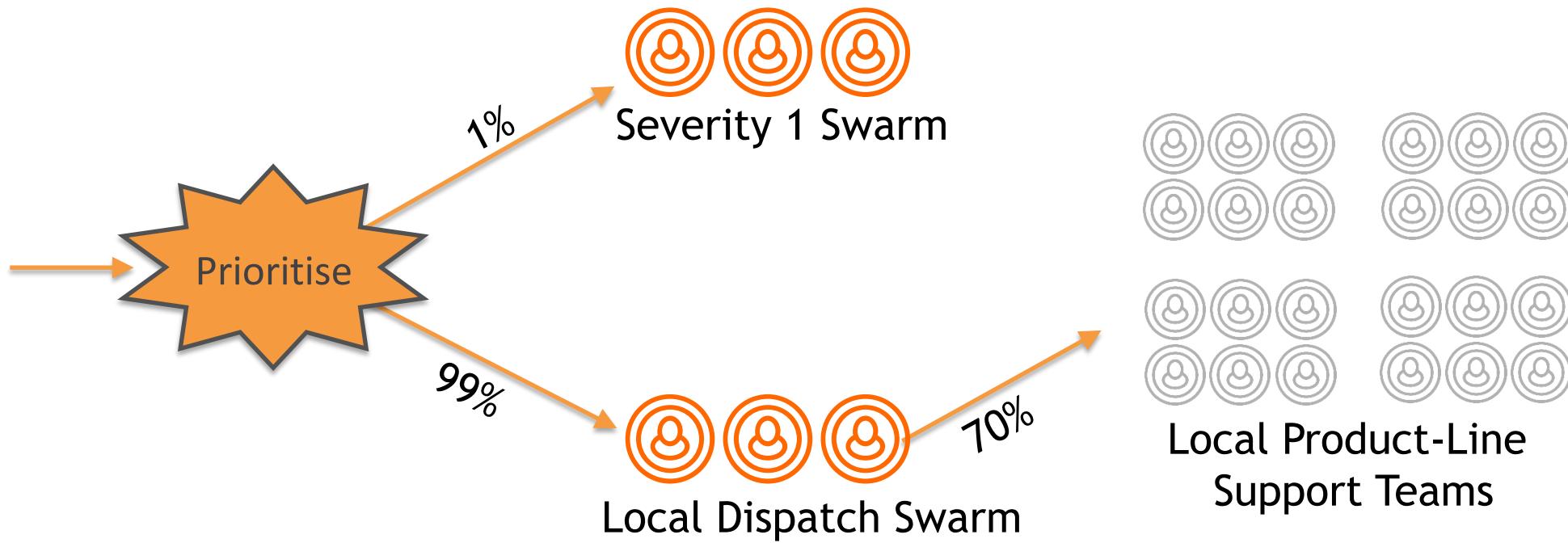


Experienced analyst

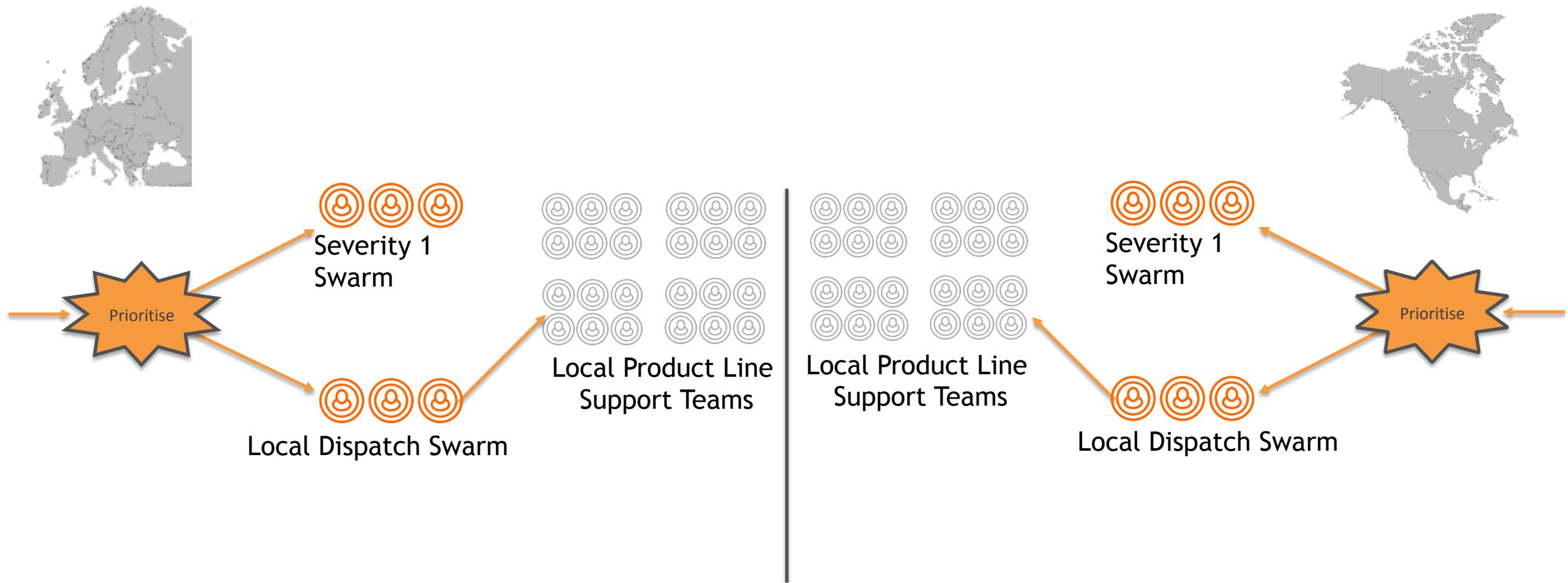


Less-experienced analyst

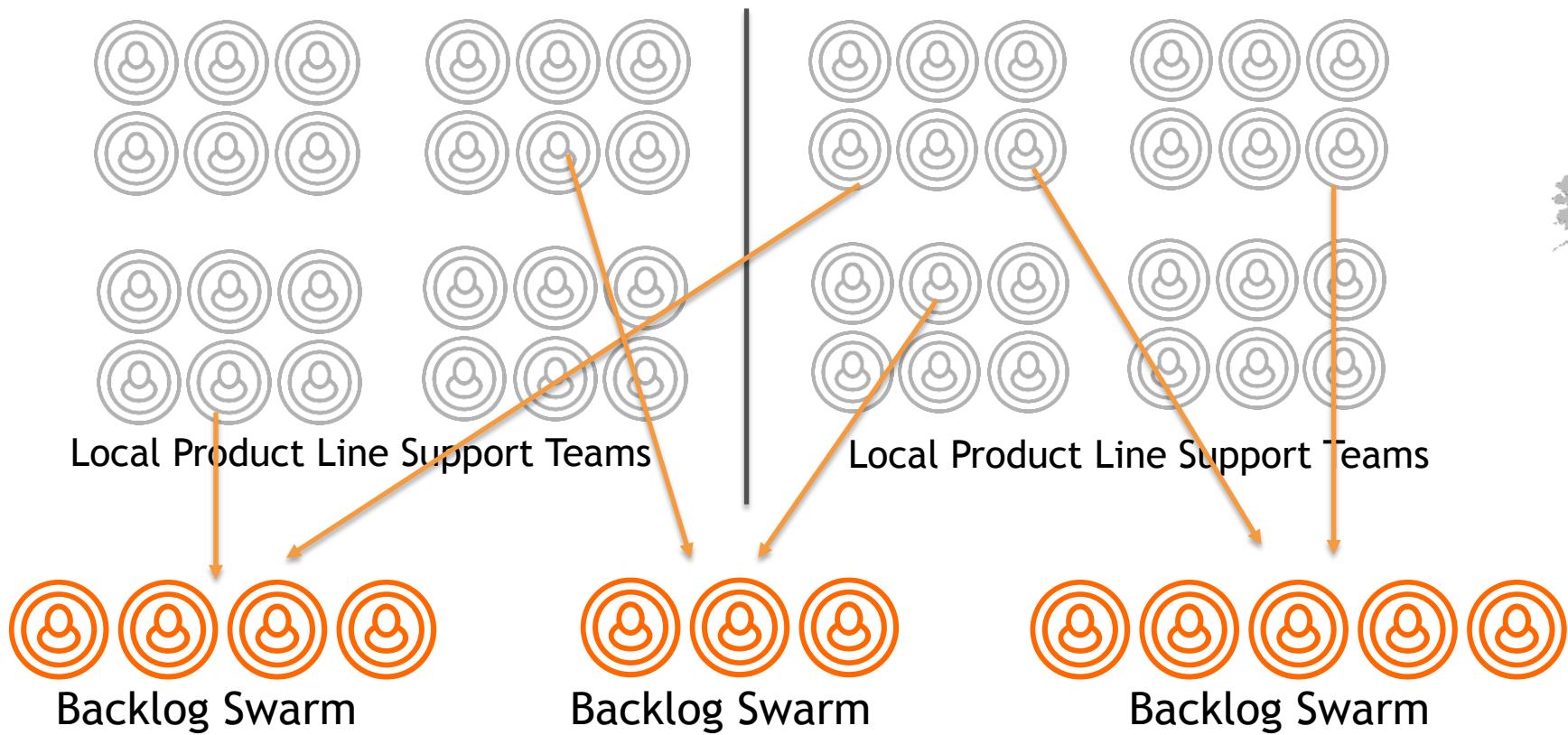
Swarming Process at BMC



Swarming Process at BMC



Swarming Process at BMC



Backlog Swarms

- **Global fixers of troublesome tickets**
 - Meet regularly (often several times a day)
 - Primary focus: Challenging 3rd-line tickets
 - Replace reassignments and individual assignments



Experienced analysts



R&D Engineers

Things we had to do to make it work

- Guidelines, not rules
- Metrics had to change (swarming breaks traditional ones!)
- Some people needed help to became more customer facing
- Banned ticket tennis and direct escalations to experts
- New tooling practices, particularly mobile and chat

Results at BMC

- 25% median resolution time improvement
- Customer satisfaction up 8 points
- More issues closed in <2 days
- Significant reduction in backlogs
- Halved on-boarding time
- Freed resources for innovative offerings

“Swarming works better than conventional processes.

I am able to get *multiple experiences* from swarm attendees of similar cases they have worked.

If there are no experiences, then it's *perspectives*:
Decades of experience”

Senior Support Analyst, BMC

Swarming appearing in ITSM frameworks



Tip

Some organizations use a technique called **swarming** to help manage incidents. This involves many different stakeholders working together initially, until it becomes clear which of them is best placed to continue and which can move on to other tasks.

ITIL® 4 Foundation (2019)



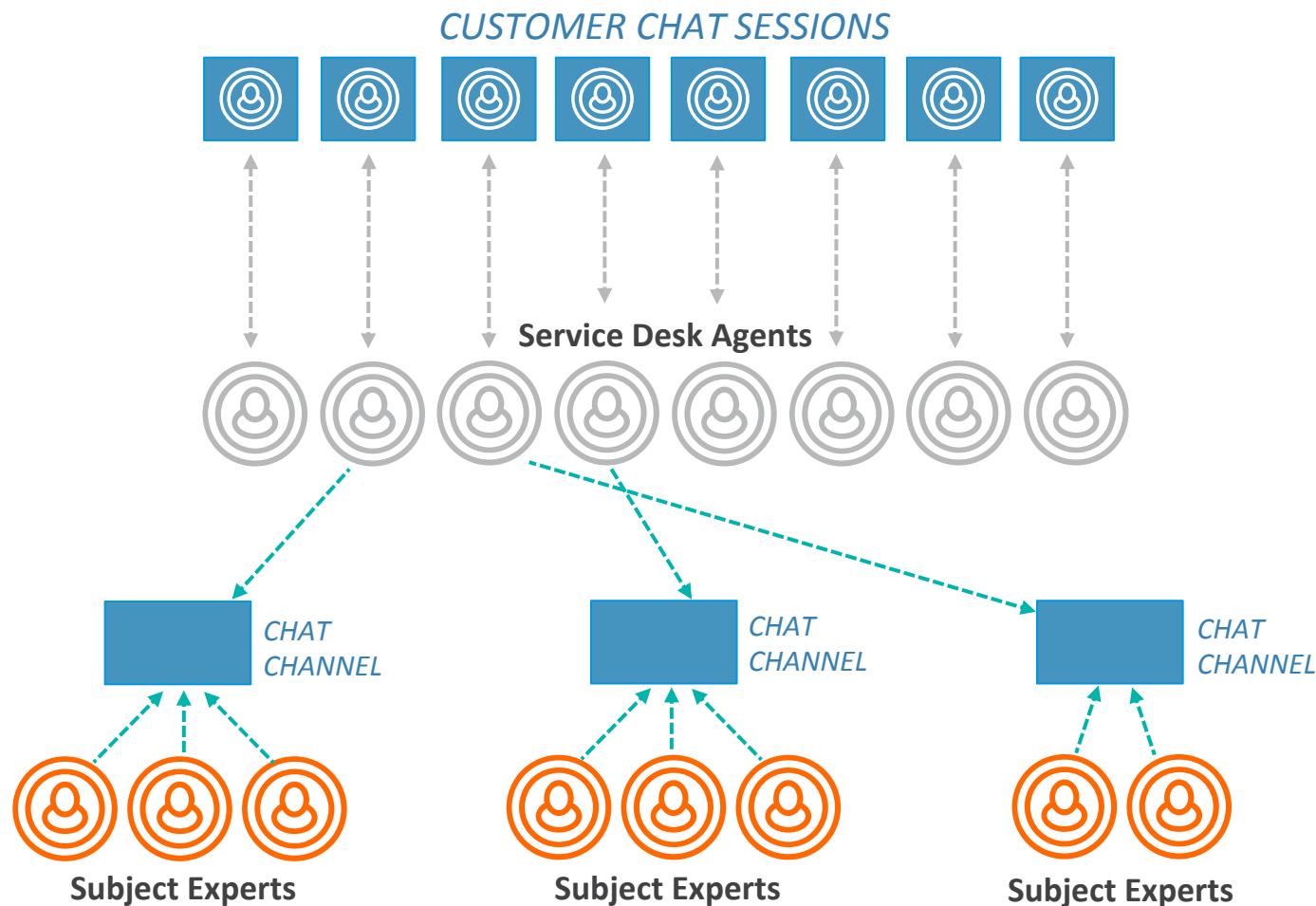
Real World Example

Using swarms for support

Swarming is originally an Agile software development concept, which refers to a situation where everyone on the team works on the same story or task at the same time. In this real-world segment, swarming is applied to improve an organization's response to service consumers and to increase knowledge sharing within the teams providing the consumer response.

VeriSM – A service management approach for the digital age (2017)

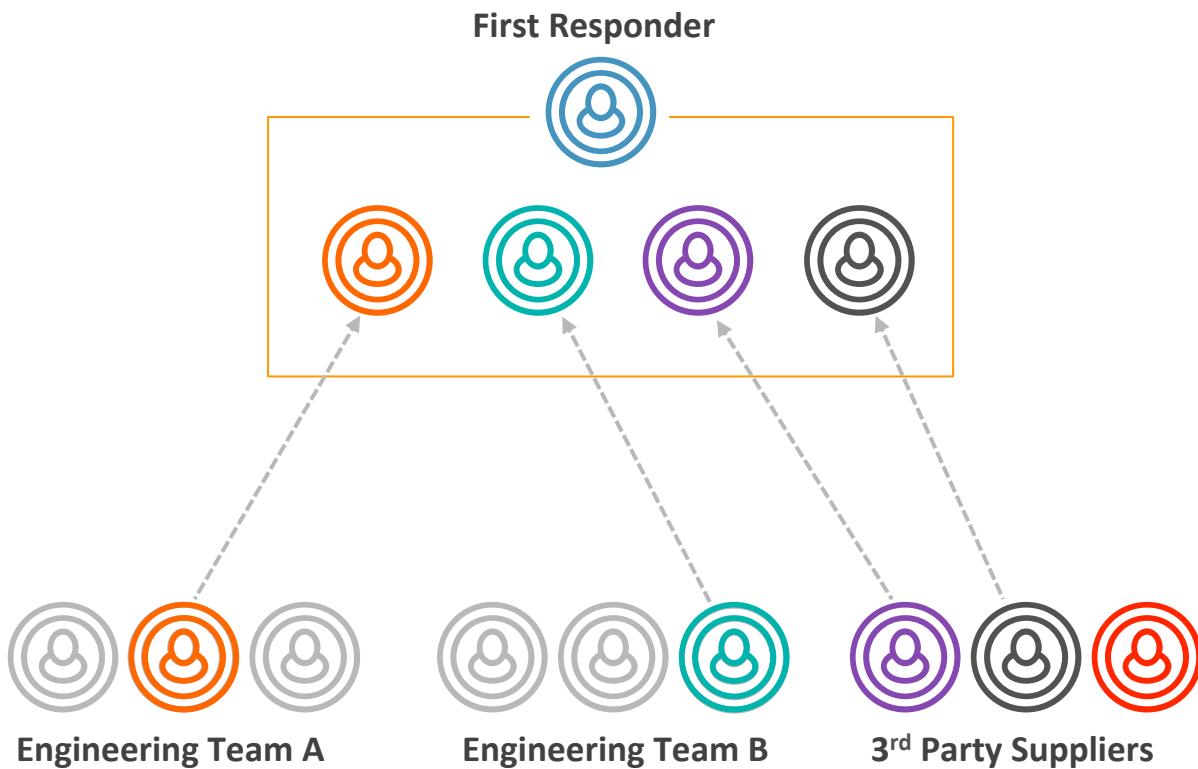
Swarming at a Global Telco: Expert support for service desk



- Regional chat-based service desk at a global Telco
- Agents can put customer on-hold for 3 minutes
- Subject experts wait in “always-on” chat channels

Swarming example: Auto manufacturer's connected cars team

Challenge: how to scale support to millions of new vehicles every year.



- First responder initiates and coordinates swarms for big issues
- Other teams have 1 person on rotation for swarming
- Swarms may also involve 3rd parties (e.g. Amazon, Microsoft)
- Swarm grows and shrinks as needed

Global car manufacturer: Connected Vehicles Division

Challenge: how to scale support to millions of new vehicles *every year*.

- “*You’ve got to go where people are*” – *Senior developer*
- Tiered support would mean 4-5 days to get to the right team
- First Responders instigate and coordinate ad-hoc swarms for big issues
- Other teams have 1 person on rotation for swarming
- Swarm grows and shrinks as necessary
- Swarm may include engineers from Amazon, Microsoft, etc.

Issues reported by Swarming early adopters

- Perceived increase in “per record” cost
- Difficult to evaluate individual contributions
- “Cradle to grave” ownership across time zones
- Dominant individuals
- Finding the right people for a swarm is difficult

So... what does this all have to do with DevOps?

“IT organizations that have tried to custom-adjust current tools to meet DevOps practices have a failure rate of 80%”

DevOps and the Cost of Downtime: Fortune 1000 Best Practice Metrics Quantified (IDC, 2014)

DevOps challenges Service Desk orthodoxies...

- New services and applications suddenly appear
- Lost visibility when issues go to developers
- Lack of knowledge sharing
- New kinds of customer, especially external

...but enterprise realities challenge DevOps

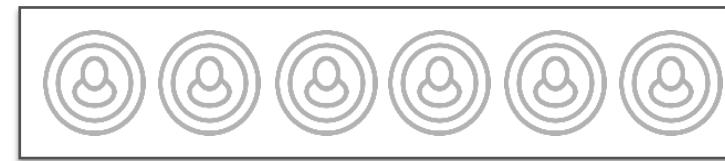
- Scaling customer support
- Understanding the context of an issue
- Adaptation to life “on call”
- What to prioritise? Fix bugs or build new stuff?
- How to process alerts, particularly if noisy/low-quality.

How to annoy a DevOps practitioner



- Work-in-progress queues
- Asynchronous communication
- Single role teams
- Individual over-exposure
- Lack of knowledge sharing

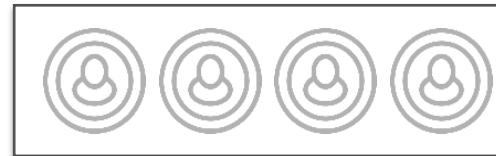
Where have we seen those things before?



LEVEL 1 SUPPORT



LEVEL 2 SUPPORT



LEVEL 2 SUPPORT



LEVEL 2 SUPPORT



LEVEL 3 SPECIALISTS



LEVEL 3 SPECIALISTS



LEVEL 3 SPECIALISTS



LEVEL 3 SPECIALISTS

Swarming aligns *really* well to DevOps

- Autonomy and self-organisation
- Knowledge transfer and skills development
- ChatOps, not email
- Prevention of accumulation of queued work
- Protection of individuals from burnout

Swarming as a means of delivering Cynefin?

- Wait... What?
- Pronounced “kuh-nev-in”
- Developed by Dave Snowden while at IBM in 1999
- *“Decision support framework which comes from a mixture of complexity theory and cognitive science... the opposite of a one-size fits all model”*



- **Obvious** and **Complicated** domains:
 - Repeating relationship between cause and effect
 - With **Complicated** you need to do analysis to *find* that relationship
- **Complex** domain:
 - Understanding the problem requires experimentation and analysis.
 - May, over time, be able to move to **Complicated**
- **Chaotic** domain:
 - Dramatic and unconstrained
 - Focus on damage limitation, try to move to another domain

Complex systems fail in complex ways

“10% of nodes enter a simultaneous crash loop cycle, about five times a day, at unpredictable intervals. It clears up before we can debug it”

“We run a platform, and it’s hard to distinguish between problems that users are inflicting on themselves, and problems in our own code, since they all manifest as the same errors or timeouts”.

“I have 20 microservices and three datastores across three regions, and everything seems to be getting a little slower over the past 2 weeks

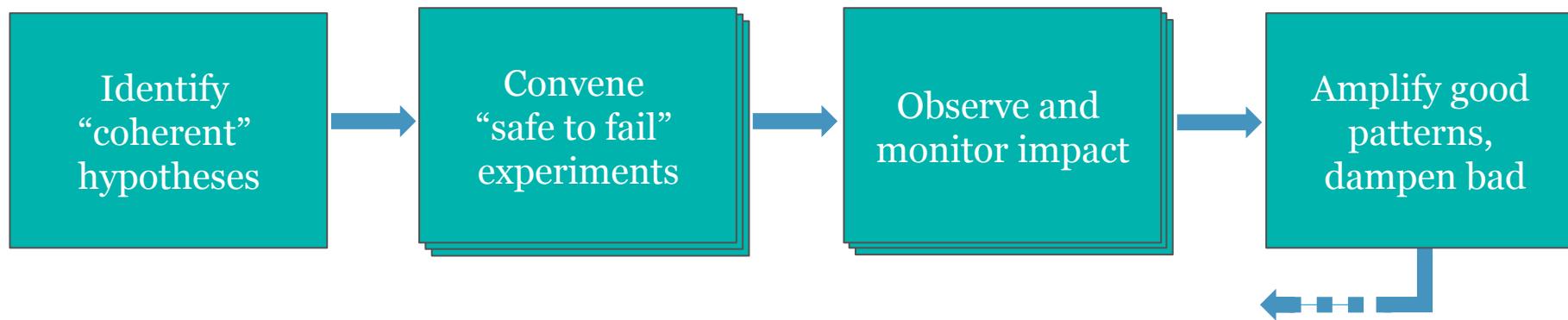
...but nothing has changed that we know of.

Latency is usually back to the historical norm on Tuesdays”

So... who do you assign to?

Cynefin approach in a Complex system

- “*Sense, Analyse, Respond*”
- Identify multiple hypotheses
- Gain understanding of the system by interacting with it.
- Create predictability, increase constraints, hopefully to enable move to **Complicated**



“Complex” Domain

- “*Probe, Sense, Respond*”



Phase 1: Initial analysis

- * Understand issue
- * Identify participants for information gathering

“Complex” Domain

- “*Probe, Sense, Respond*”



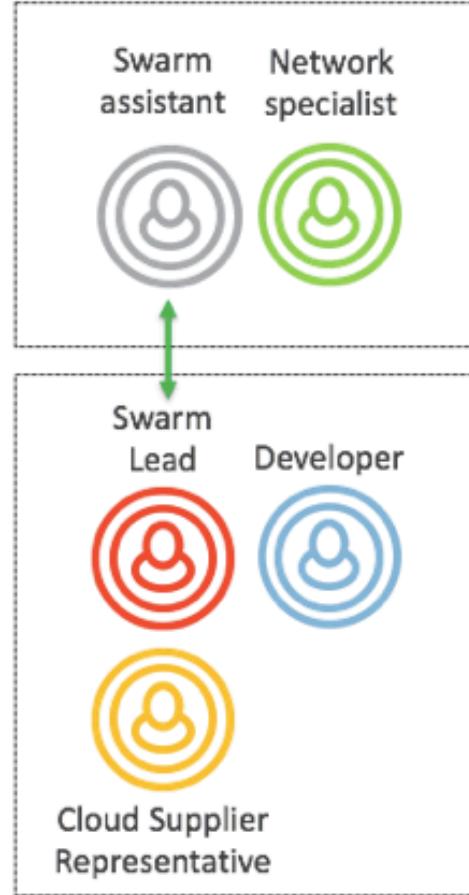
Phase 1: Initial analysis →

- * Understand issue
- * Identify participants for information gathering



Phase 2: Start to Probe →

- * Gather data and insights
- * Theorise options
- * Determine subgroups



Phase 3: Continue to Probe →

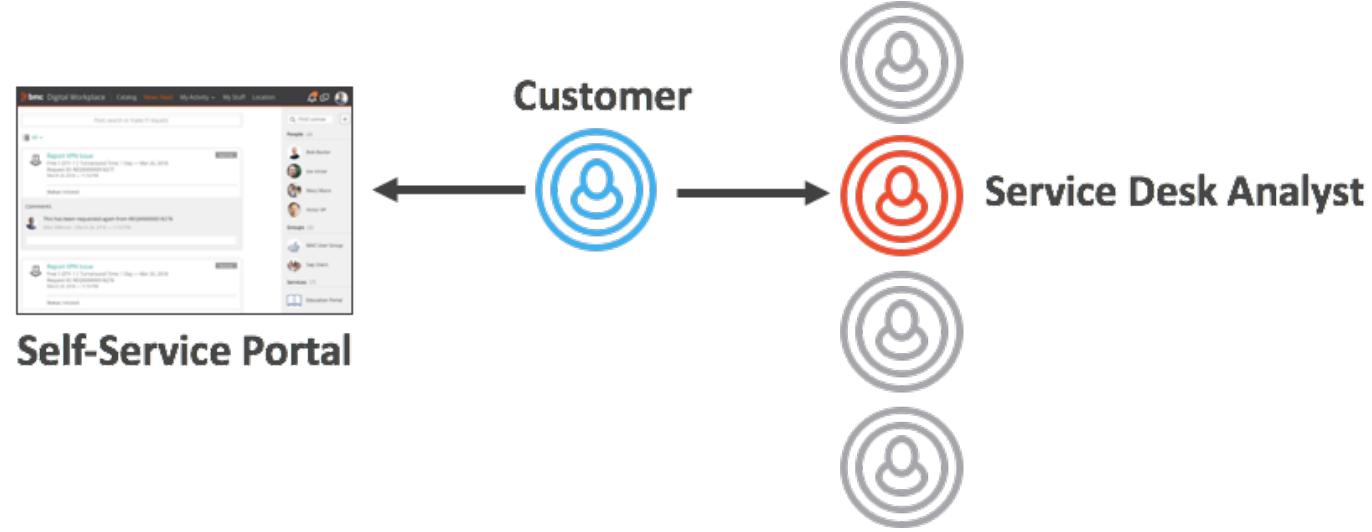
- * Investigate theories
- * Communicate between Lead and Assistant
- * Eliminate false theories and determine next steps



Phase 4: Respond →

- * Assemble swarm team required to solve
- * Resolve issue and document steps

“Obvious” Domain



- “*Sense, Categorise, Respond*”
- Can apply **best practice**
- Template/knowledge-driven resolution
- Self service

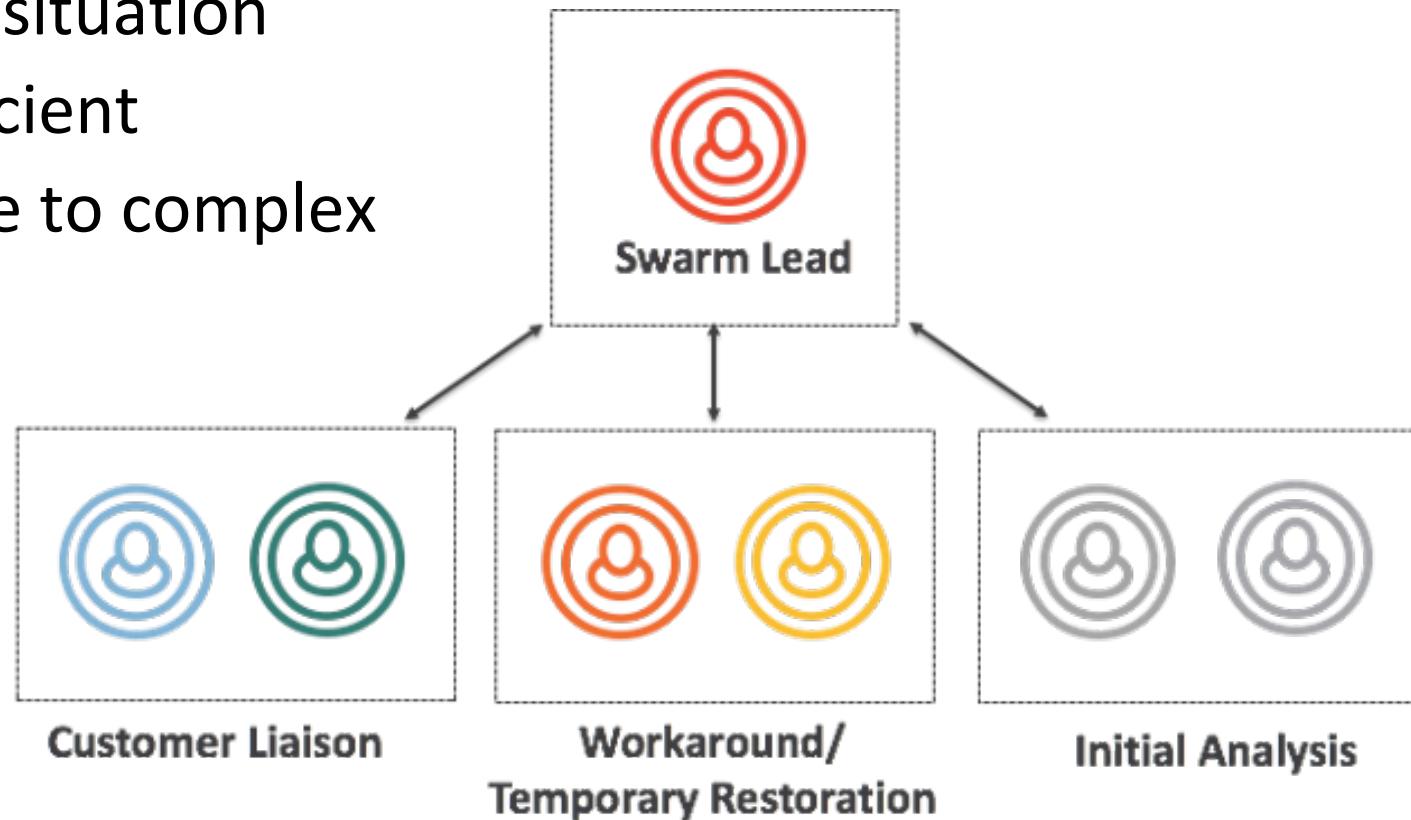
“Complicated” Domain



- “*Sense, Analyse, Respond*”
- **Good practice.**
- Dispatch-type swarm – pair up agents with varied experience
- Capture detailed knowledge for organizational learning

“Chaotic” Domain

- “*Act, Sense, Respond*”
- Sub-swarms
- Deal with the acute situation
- Try to discover sufficient information to move to complex

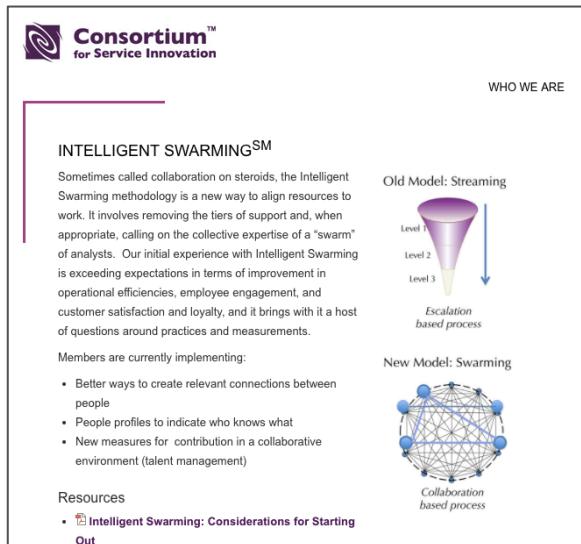


What next?

- Service Management needs to evolve its practices and tooling deliver specific new *value* to you.
- We need to listen to how support is affecting *your* role, as your impact grows in your enterprise.
- You are **agents of change** in enterprises, with a good opportunity to influence thinking.

Some more information

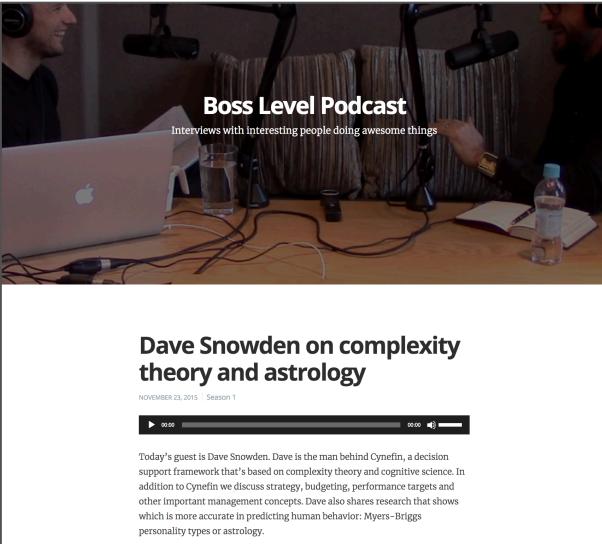
Consortium for Service Innovation: Intelligent Swarming



The page features the Consortium logo and a section titled "INTELLIGENT SWARMING™". It compares the "Old Model: Streaming" (a funnel with three levels) to the "New Model: Swarming" (a network of interconnected nodes). A list of members currently implementing the model includes: Better ways to create relevant connections between people, People profiles to indicate who knows what, and New measures for contribution in a collaborative environment (talent management). Resources include a link to "Intelligent Swarming: Considerations for Starting Out".

serviceinnovation.org/intelligent-swarming

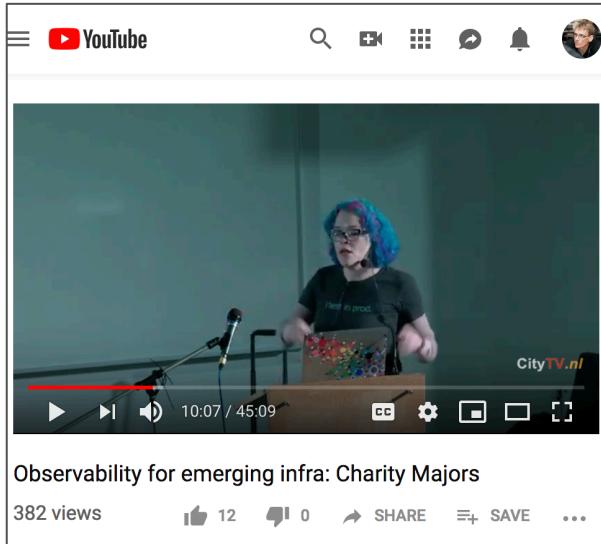
Boss Level Podcast: Dave Snowden on Cynefin



The image shows two men in a studio setting, one with headphones and a laptop, the other with a microphone. Below the video frame is the title "Boss Level Podcast" and the subtitle "Interviews with interesting people doing awesome things". The video player shows the title "Dave Snowden on complexity theory and astrology" and the date "NOVEMBER 23, 2015 | Season 1". A description below the video states: "Today's guest is Dave Snowden. Dave is the man behind Cynefin, a decision support framework that's based on complexity theory and cognitive science. In addition to Cynefin we discuss strategy, budgeting, performance targets and other important management concepts. Dave also shares research that shows which is more accurate in predicting human behavior: Myers-Briggs personality types or astrology."

<http://www.bosslivelppodcast.com/dave-snowden-on-complexity-theory-and-astrology/>

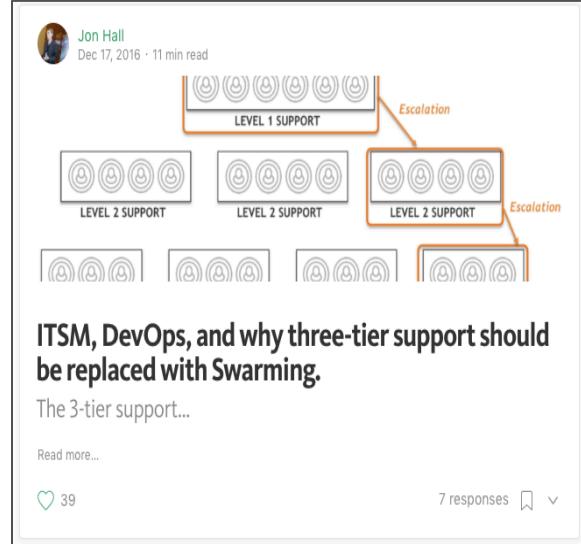
Charity Majors at #cfgmgmtcamp Observability for emerging infra



A YouTube thumbnail showing a woman with blue hair speaking at a podium. The video player interface shows the title "Observability for emerging infra: Charity Majors", 382 views, 12 likes, 0 dislikes, and a timestamp of 10:07 / 45:09. The channel name "CityTV.nl" is visible.

[@mipsytipsy](https://www.KeA.com/watch?v=fOdtgHu_KeA)

Long-form blog on why Swarming works better for DevOps



The post by Jon Hall discusses ITSM, DevOps, and why three-tier support should be replaced with Swarming. It features a diagram illustrating a traditional 3-tier support structure (Level 1, Level 2, Level 3) versus a swarming approach where multiple support teams are interconnected. The swarming model is shown as a network of nodes, while the 3-tier model is shown as separate vertical stacks. The post includes a heading "The 3-tier support...", a "Read more..." button, and a "7 responses" section.

[@jonhall_](http://medium.com/@jonhall_)

(I've just tweeted these links)  @jonhall_