
PHIPPY IN SPACE
ADVENTURES IN CLOUD-NATIVE RECOVERY

Brought to you by:

Story and Art by:
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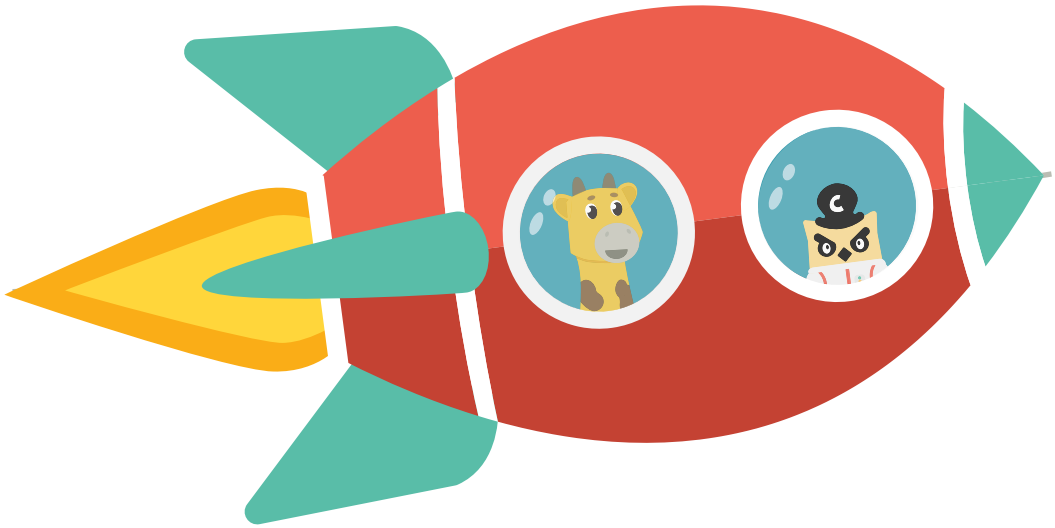
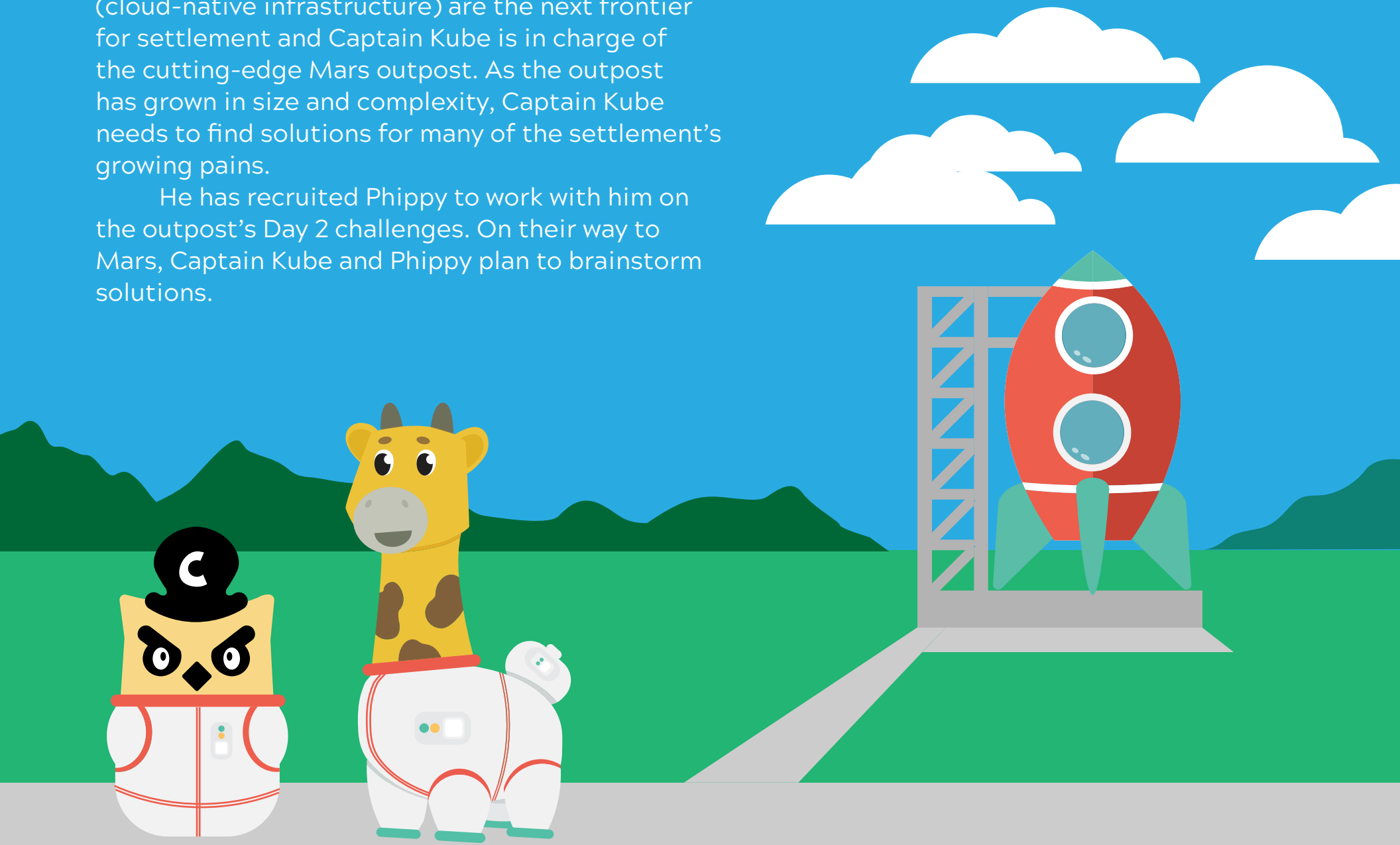
PHIPPY IN SPACE

ADVENTURES IN CLOUD-NATIVE RECOVERY



The not-so-distant future. Space outposts (cloud-native infrastructure) are the next frontier for settlement and Captain Kube is in charge of the cutting-edge Mars outpost. As the outpost has grown in size and complexity, Captain Kube needs to find solutions for many of the settlement's growing pains.

He has recruited Phippy to work with him on the outpost's Day 2 challenges. On their way to Mars, Captain Kube and Phippy plan to brainstorm solutions.

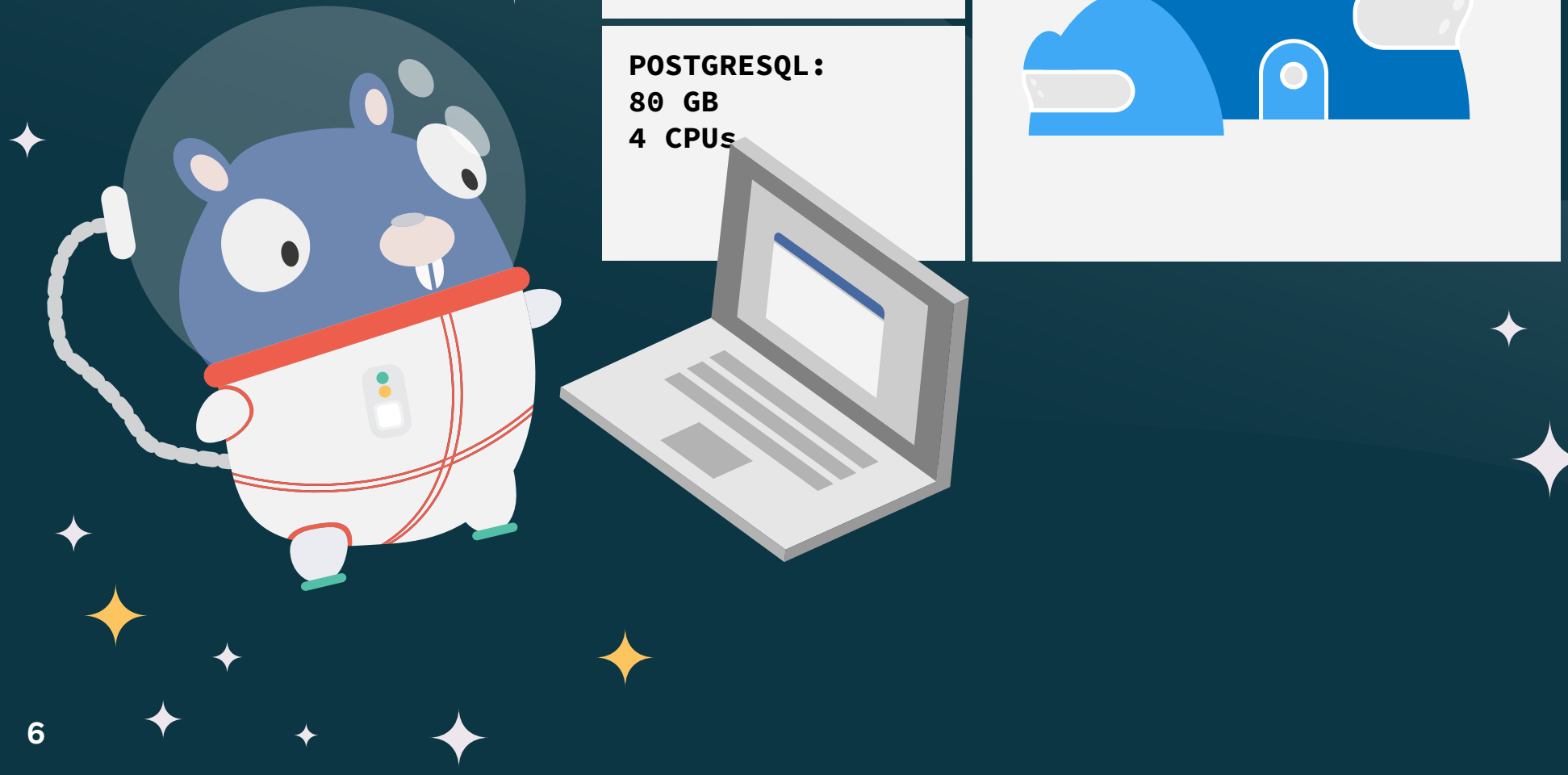


"Right now, the outpost platform (Kubernetes) is set up and there's enough compute, storage, and networking to support rapid growth," Captain Kube tells Phippy, "but we also want to protect ourselves from accidental failures and be able to replicate our outpost in case of outright disaster."

“Currently, at the outpost, storage is easy to use and self-service works in seconds. Citizens (developers) can also easily deploy changes to their homes (containerized applications),” explains Captain Kube.

"This includes easily building homes' libraries (databases and NoSQL systems), which are essential for outpost homes. Kubernetes takes care of keeping everything available and working smoothly."

Captain Kube continues, “The outpost infrastructure (Kubernetes) allows our citizens to build, improve, and update their homes (applications) quickly, no matter how complex they are.”

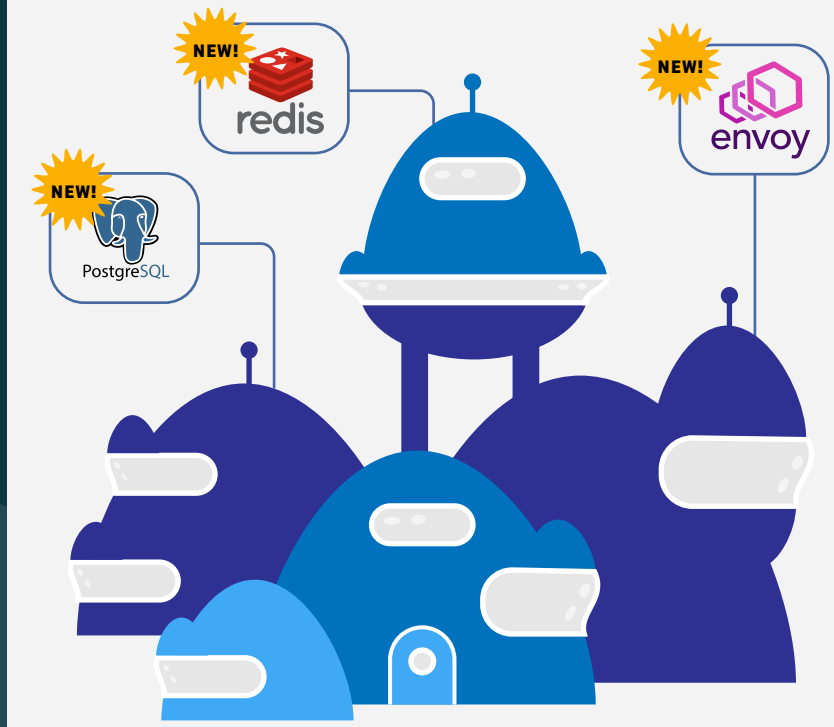


Update Options

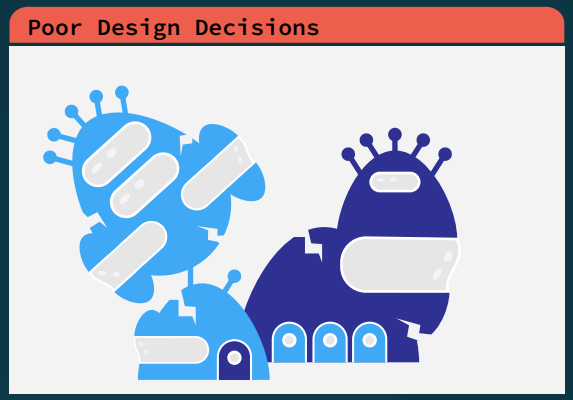
House configuration

- [x] Redis
- [x] Envoy
- [x] PostgreSQL
- [x] Go Server
- [x] Prometheus

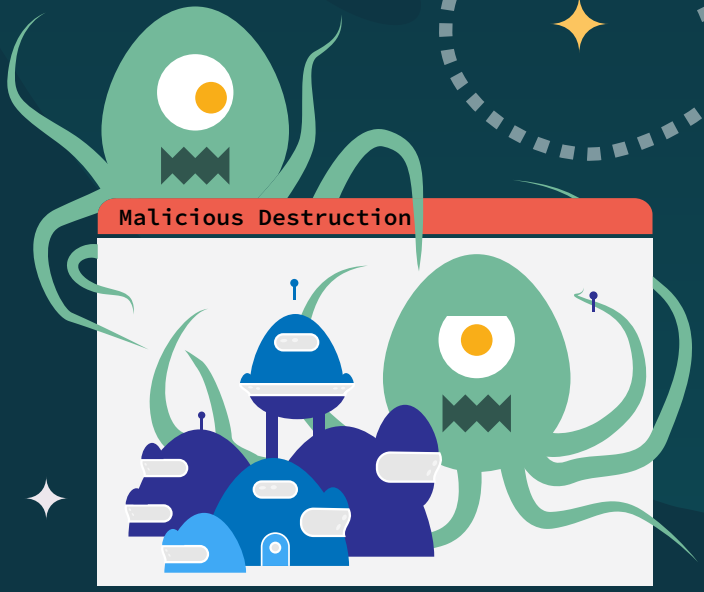
DEPLOYMENT STATUS:
SUCCESS!
TIME TAKEN: 37 SECS



"They just indicate how they want their home to be configured–e.g., if it needs to grow temporarily to accommodate guests, etc.–and the system takes care of it almost instantaneously."



"However," Captain Kube continues as Phippy listens carefully, "because home changes no longer go through a planning board approval process (change control) and citizens have complete control, it's also very easy to get things wrong–to even accidentally turn a mansion into a house of cards."



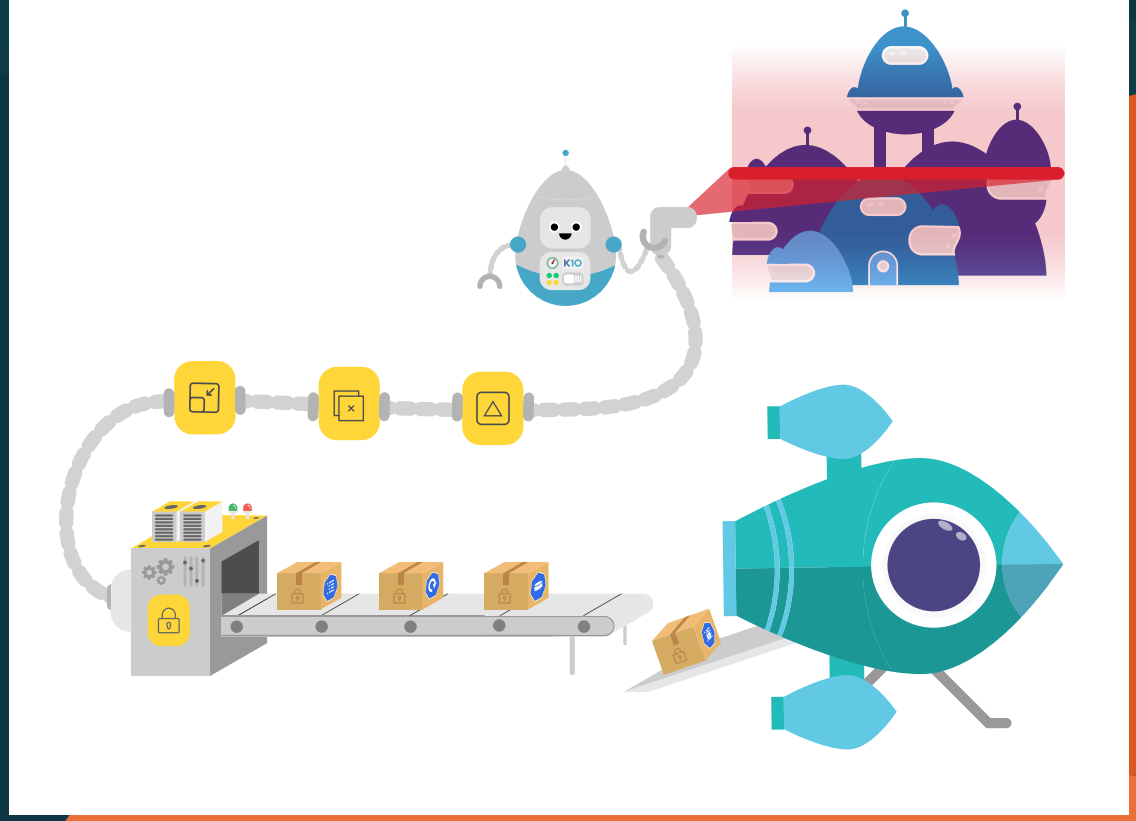
"There can also be any number of accidents in space, and we should also be prepared for malicious destruction. Our current systems only allow us to bring back the house, they don't bring back any contents inside it."

Phippy pauses for a second and replies, “Sounds like what we need is an insurance policy (backup and disaster recovery platform) to restore homes to a known good state instantly–and this has to include all the home’s custom data, not just the structure. It also has to be flexible enough to account for extreme diversity in home design and outpost infrastructure.”

“Exactly!” exclaims Captain Kube.

"Additionally," Phippy continues, "depending on the backup policy requirements, we can use our backup robots to create restore points–small compressed packages containing all records for each house. But to be more efficient, they should only capture changes to the house architecture and library content since the last backup."

Backup



“They can ship these packages to a local warehouse for fast recovery. Then the warehouses will clone the packages and send them to a space station (offsite backup), so if a catastrophe takes out the warehouse, there’s still a copy available.”

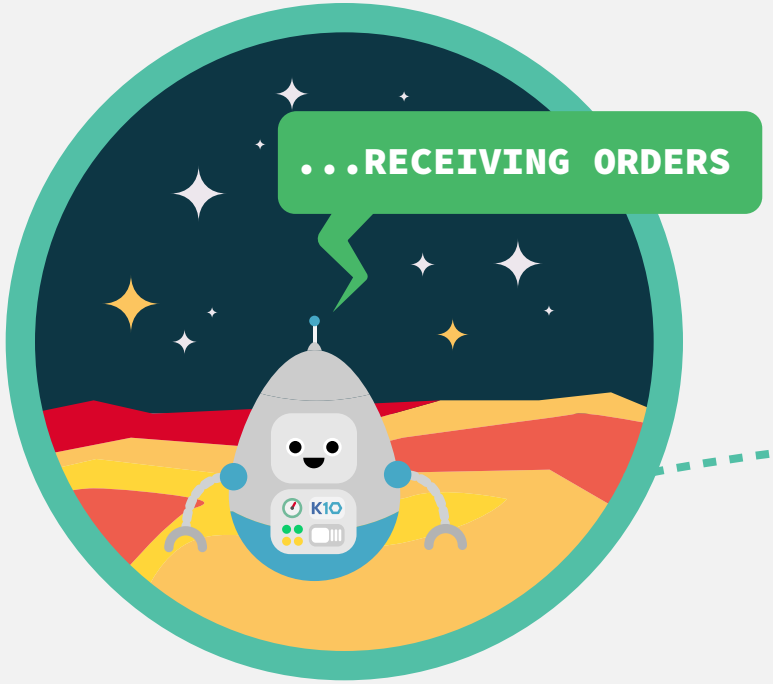
“I like this!” muses Captain Kube. “Of course, there’s also the issue of integrating these solutions with our current ecosystem...”

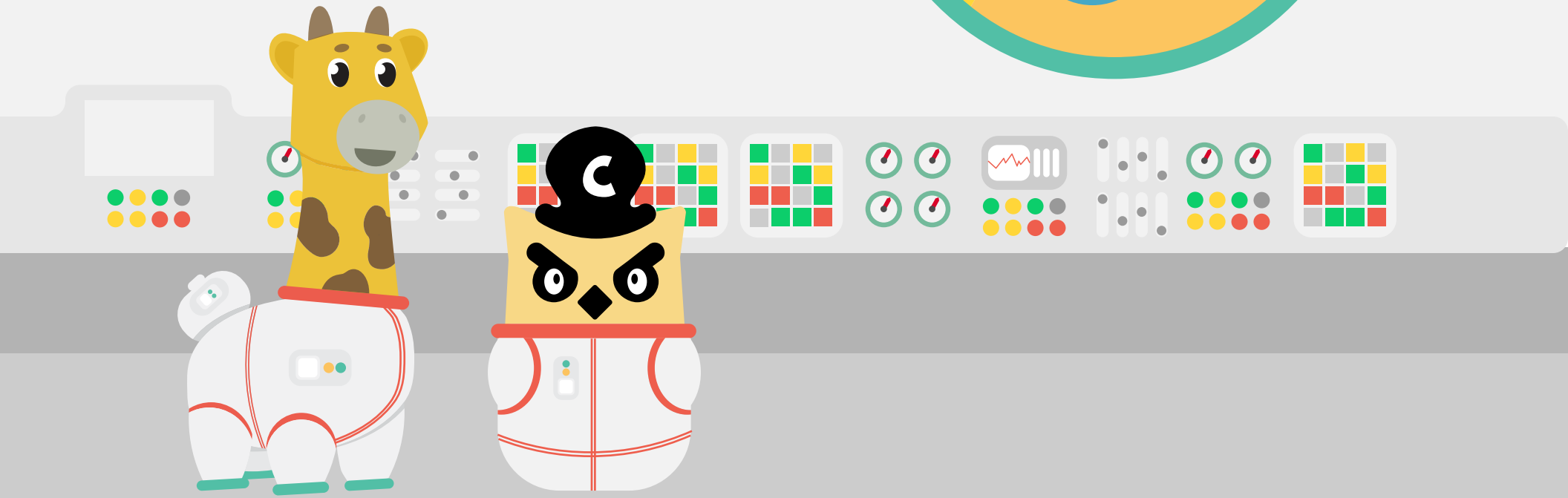
"Infrastructure built for Earth (VM-based backup) does not work on the outpost," says Captain Kube. "We depend heavily on automation (CI/CD) and standard monitoring (Prometheus), and we provide every citizen with secure (RBAC) self-service abilities (CRD-based APIs)."

“Fortunately,” Phippy explains, “our Backup Ruby robots are purpose-built for outposts precisely because they integrate exactly into the operations you just described. They allow citizens (devs) to customize backup and recovery to their preferences, while natively integrating into the outpost administrators’ (ops) existing monitoring, automation, and security systems. Earth-based solutions are definitely too unwieldy for development in this new world.”

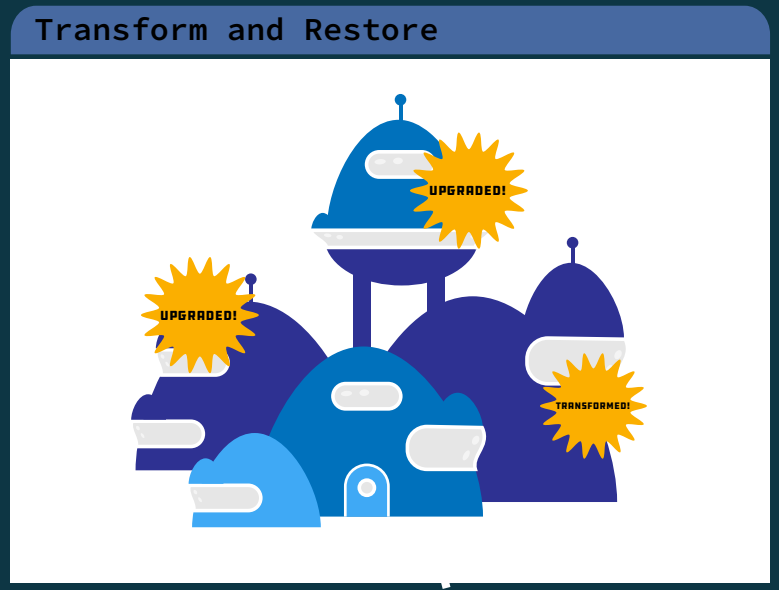
“Given our accelerated pace of development, how will restores of old backups work with rapid outpost upgrades (Kubernetes API changes) or things in the backup that aren’t up to code (expired SSL certificates or secrets)?” asks Captain Kube.

“The backup platform needs an intelligent transformation engine,” replies Phippy.





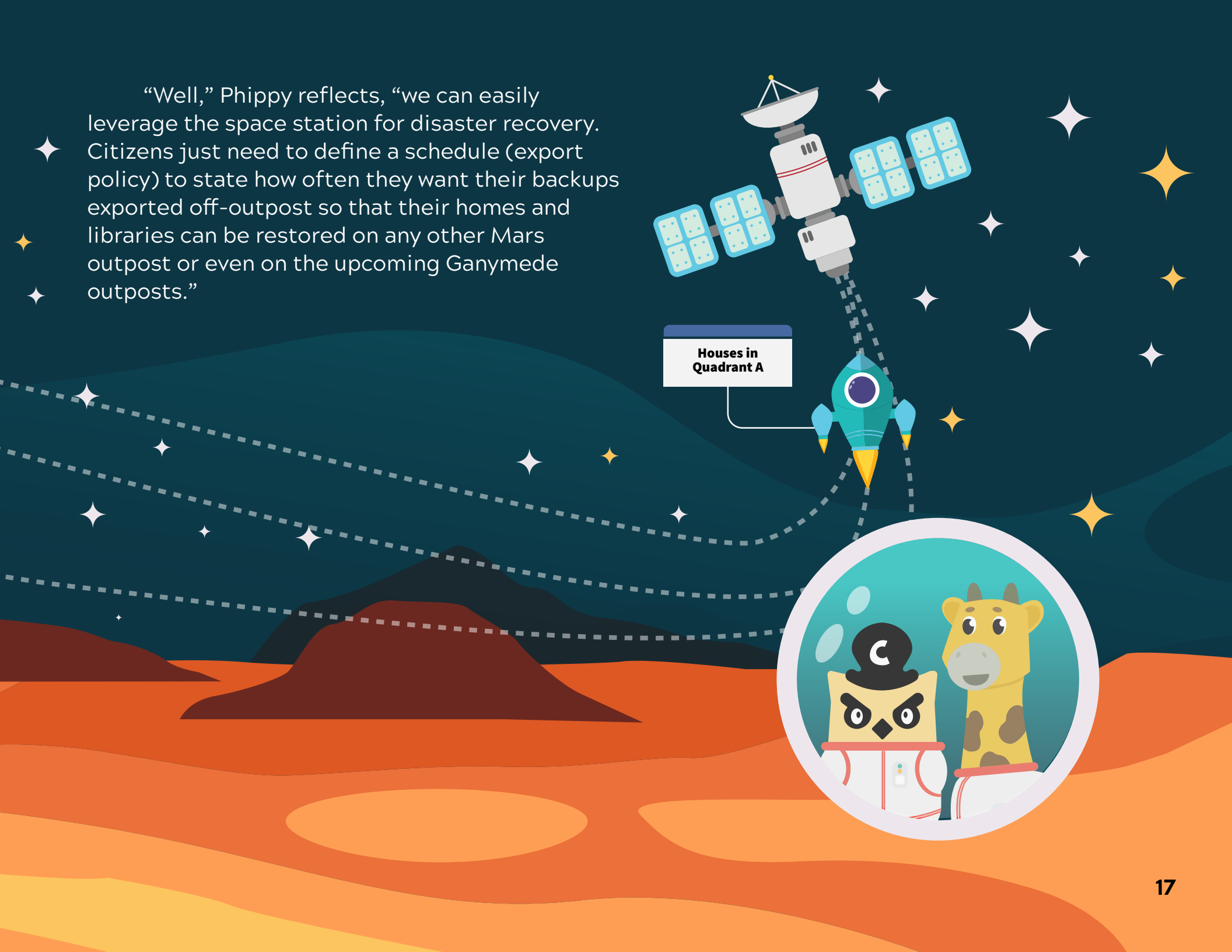
“It will recognize these challenges and apply changes to enable the house to work with the latest outpost infrastructure (update to latest Kubernetes APIs) and bring the house up to code by regenerating (requesting a new SSL certificate) any obsolete architectural components.” Phippy explains. “This will allow fast restores without requiring any manual work from outpost citizens.”

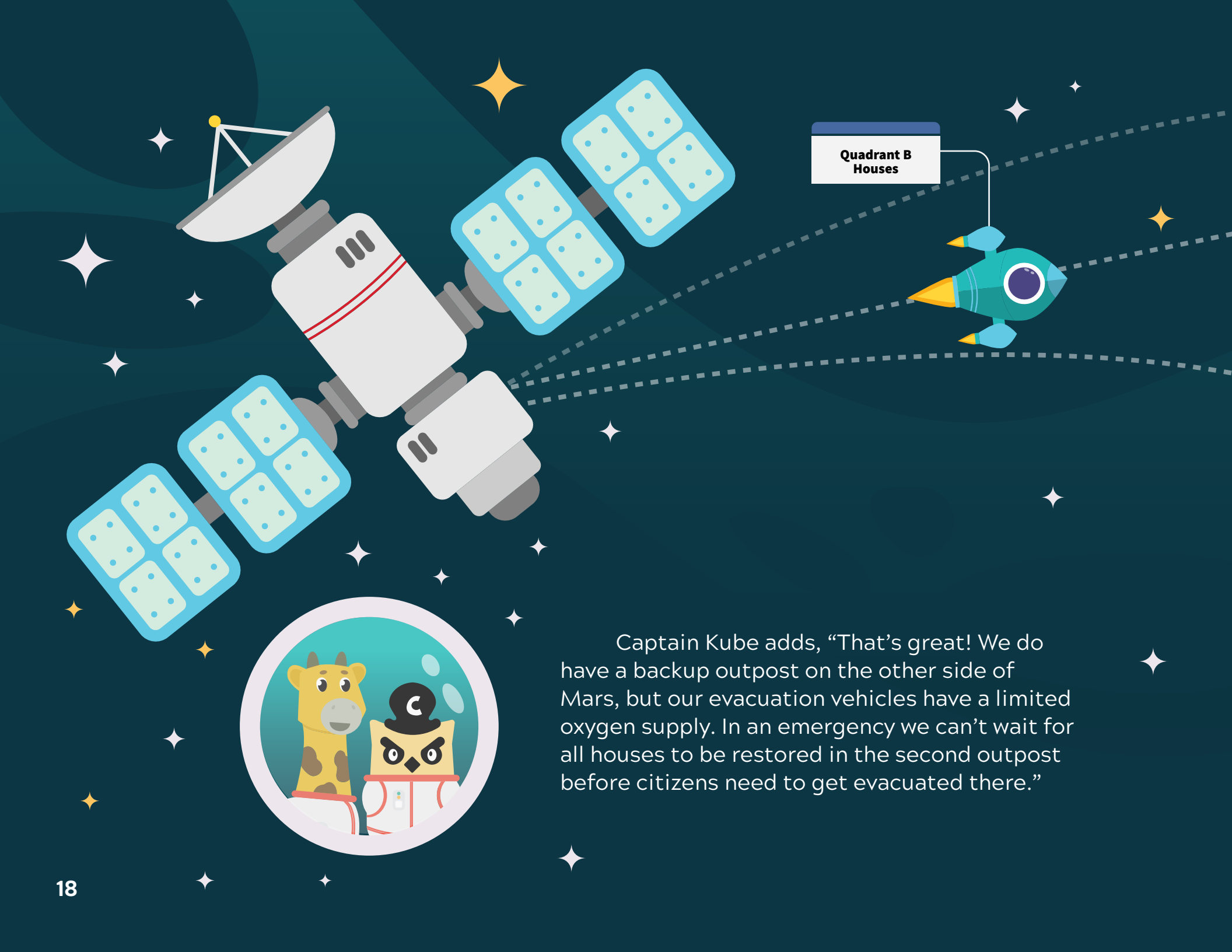


Captain Kube is excited about Phippy's ideas, but voices a lingering concern.

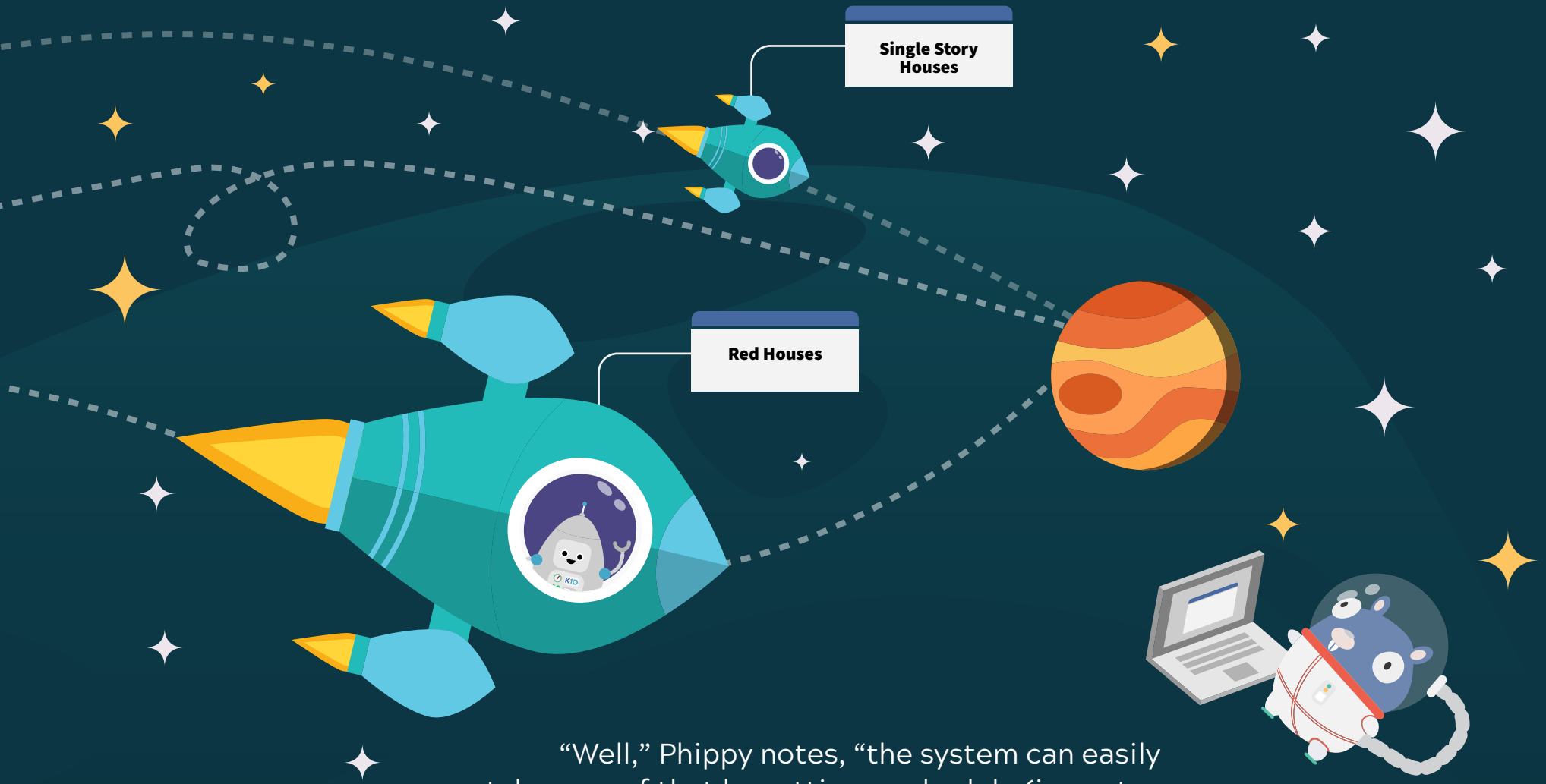
"Phippy, while we now have solid solutions to protect individual homes and buildings in the outpost, what happens if the entire outpost is compromised? For instance, what if we have oxygen supply problems? Or a widespread fire?"

"Well," Phippy reflects, "we can easily leverage the space station for disaster recovery. Citizens just need to define a schedule (export policy) to state how often they want their backups exported off-outpost so that their homes and libraries can be restored on any other Mars outpost or even on the upcoming Ganymede outposts."





Captain Kube adds, “That’s great! We do have a backup outpost on the other side of Mars, but our evacuation vehicles have a limited oxygen supply. In an emergency we can’t wait for all houses to be restored in the second outpost before citizens need to get evacuated there.”



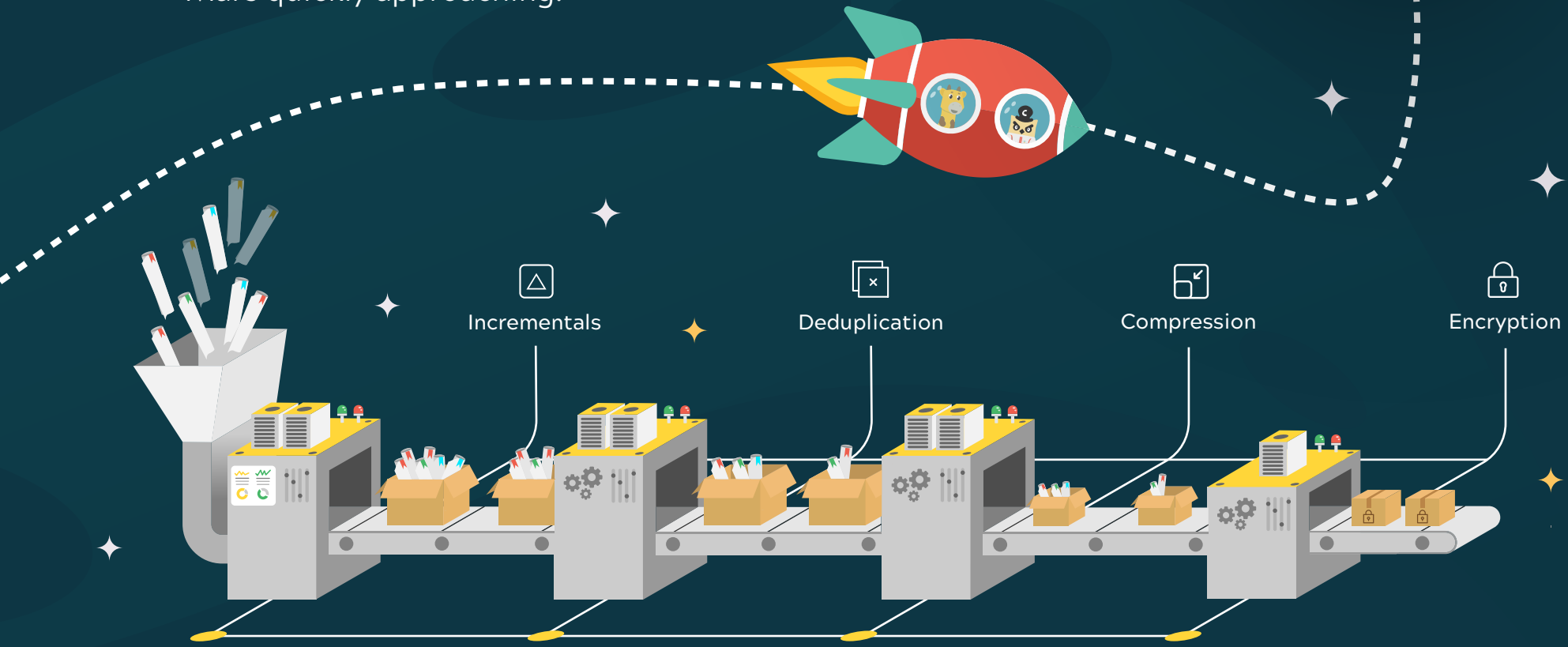
"Well," Phippy notes, "the system can easily take care of that by setting a schedule (import policy). The schedule will tell the Backup Ruby robots in the secondary location to periodically refresh the homes. If disaster strikes, switchover will be instantaneous!"

"Phippy," Captain Kube adds, "with outpost growth, protection will need to extend past the infrastructure layer and extend its reach into the house. Given multiple libraries (polyglot persistence) in many houses, and the increased consistency requirements, backup needs to be custom to the library in use."

Phippy smiles, "No problem! The backup platform I am building has a deep integration into libraries. In fact, we'll have a community bank of these integration blueprints that citizens can customize."

"And that's not all!" Phippy continues. "Even for general backup, we'll dig deep into the infrastructure (direct storage integration, data transformation) to ensure that the least amount of work is done (incrementals, deduplication, compression, encryption) for efficiency reasons. To save on costs, Backup Ruby also disappears when not in use, unlike Earth's always-on systems."

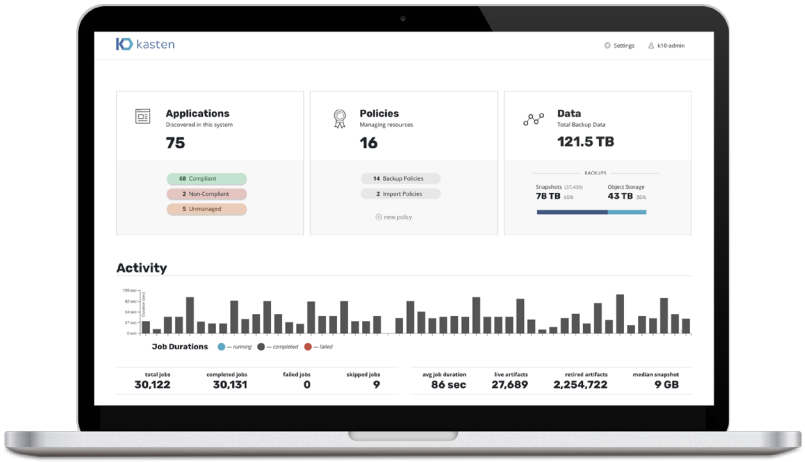
Phippy and Captain Kube look out the spaceship's window and see Mars quickly approaching.



“Phippy, your protection and disaster recovery solution for the Mars outpost sounds perfect! It will allow us to scale faster than we had thought, and we won’t have to resort to technologies built for a different era. I can’t wait to roll it out to everyone!”

Phippy is excited to implement her ideas to protect the outpost from all the unknowns of life on Mars, while Captain Kube is relieved to count on her, and knows Phippy’s solutions will set up the Mars outpost for sucess and growth.

As the spaceship door opens, they look out at the outpost and smile. They’re ready to get started.



To learn more about Kubernetes-native backup, disaster recovery, and application mobility, check out Kasten K10, the leading cloud-native data management platform.

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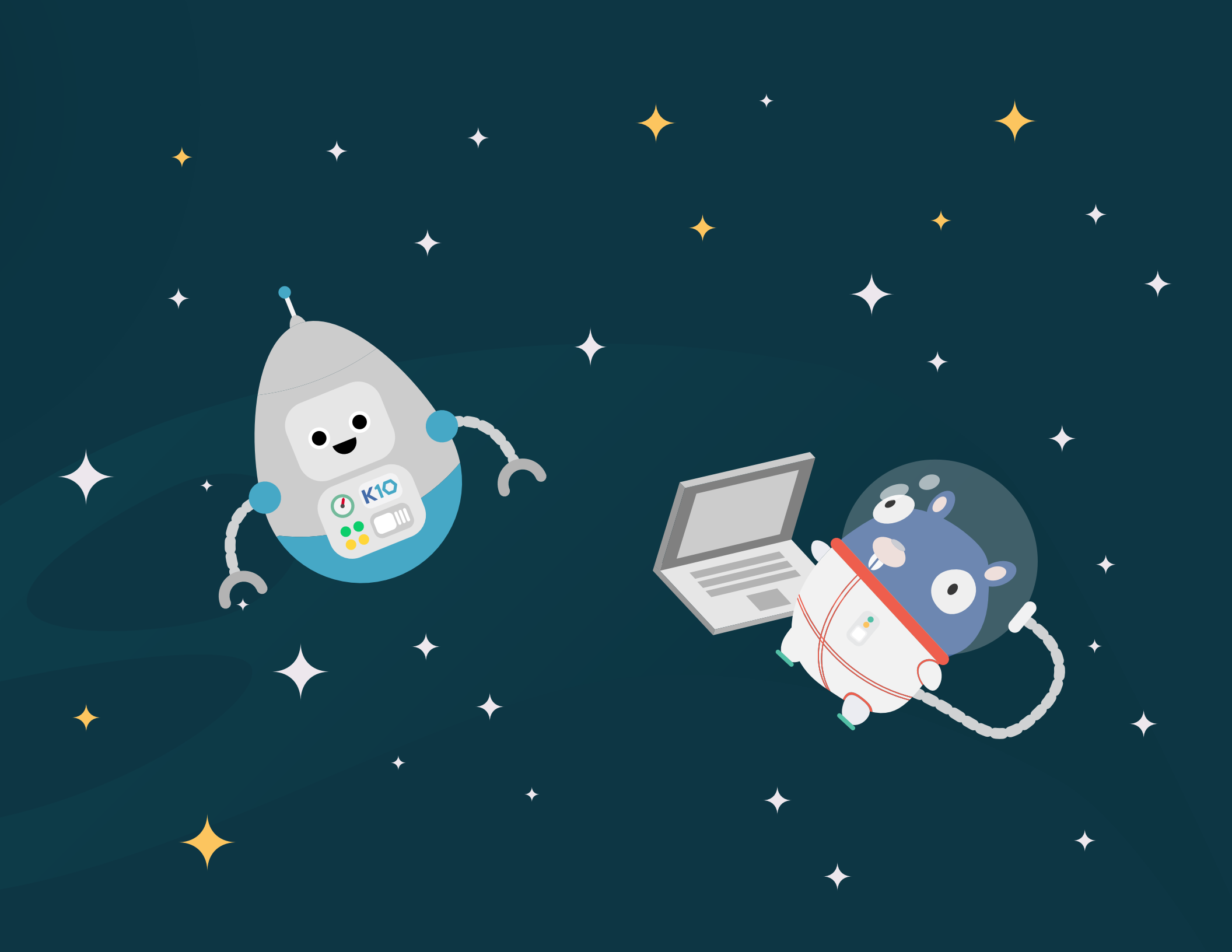
K10