NW x Generative AI: Chaos engineering automation technology
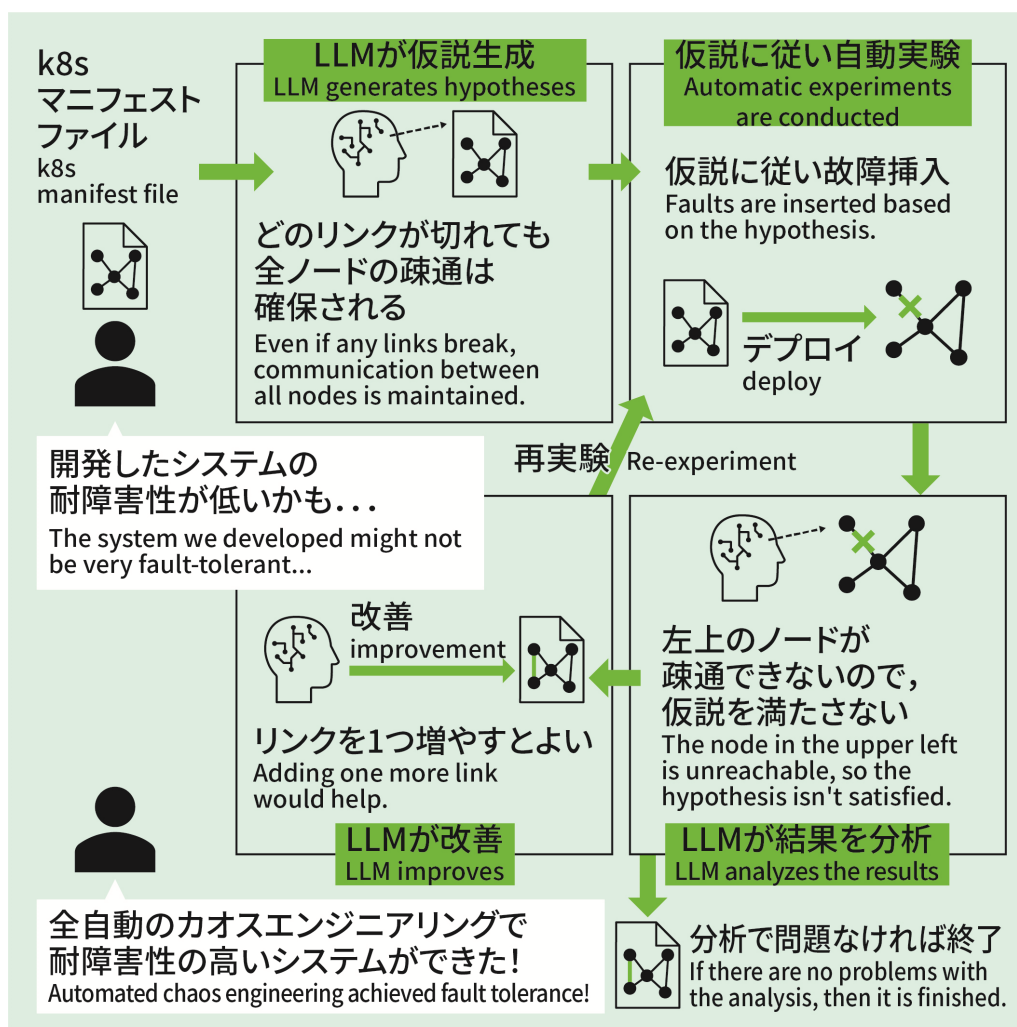### Automate the process of fault tolerance testing in system development using LLMs
#Productivity Improvement #Business Resilience

k8s マニフェスト ファイル
k8s manifest file

LLMが仮説生成
LLM generates hypotheses

どのリンクが切れても全ノードの疎通は確保される
Even if any links break, communication between all nodes is maintained.

仮説に従い自動実験
Automatic experiments are conducted

仮説に従い故障挿入
Faults are inserted based on the hypothesis.

デプロイ
deploy

開発したシステムの耐障害性が低いかも...
The system we developed might not be very fault-tolerant...

再実験 Re-experiment

改善
improvement

リンクを1つ増やすとよい
Adding one more link would help.

左上のノードが疎通できないので，仮説を満たさない
The node in the upper left is unreachable, so the hypothesis isn't satisfied.

LLMが改善
LLM improves

LLMが結果を分析
LLM analyzes the results

全自動のカオスエンジニアリングで耐障害性の高いシステムができた！
Automated chaos engineering achieved fault tolerance!

分析で問題なければ終了
If there are no problems with the analysis, then it is finished.

///Technical Issue
Current manual testing and bug fixing increase costs and risk of residual defects.

///Research Goal
Enhancing system reliability and reducing test efforts through comprehensive, automated chaos engineering.

---Technology
- Using LLM, we have independently realized agents with multiple roles. Agents cooperate with each other to perform fully automated, valid and comprehensive testing.
- We have defined "guard rails" to ensure that agents execute multiple steps of testing. This enables highly reliable testing.

---Novelty
The world's only technology that combines LLM and chaos engineering to fully automate comprehensive and highly reliable fault-tolerance testing.

---Applicable Business
Applied to the automation of testing to improve the fault tolerance of systems in the information and communications industry (around 2026). [market size: 1.9 billion USD]