

# Updates: Information Distribution in Autonomic Networking

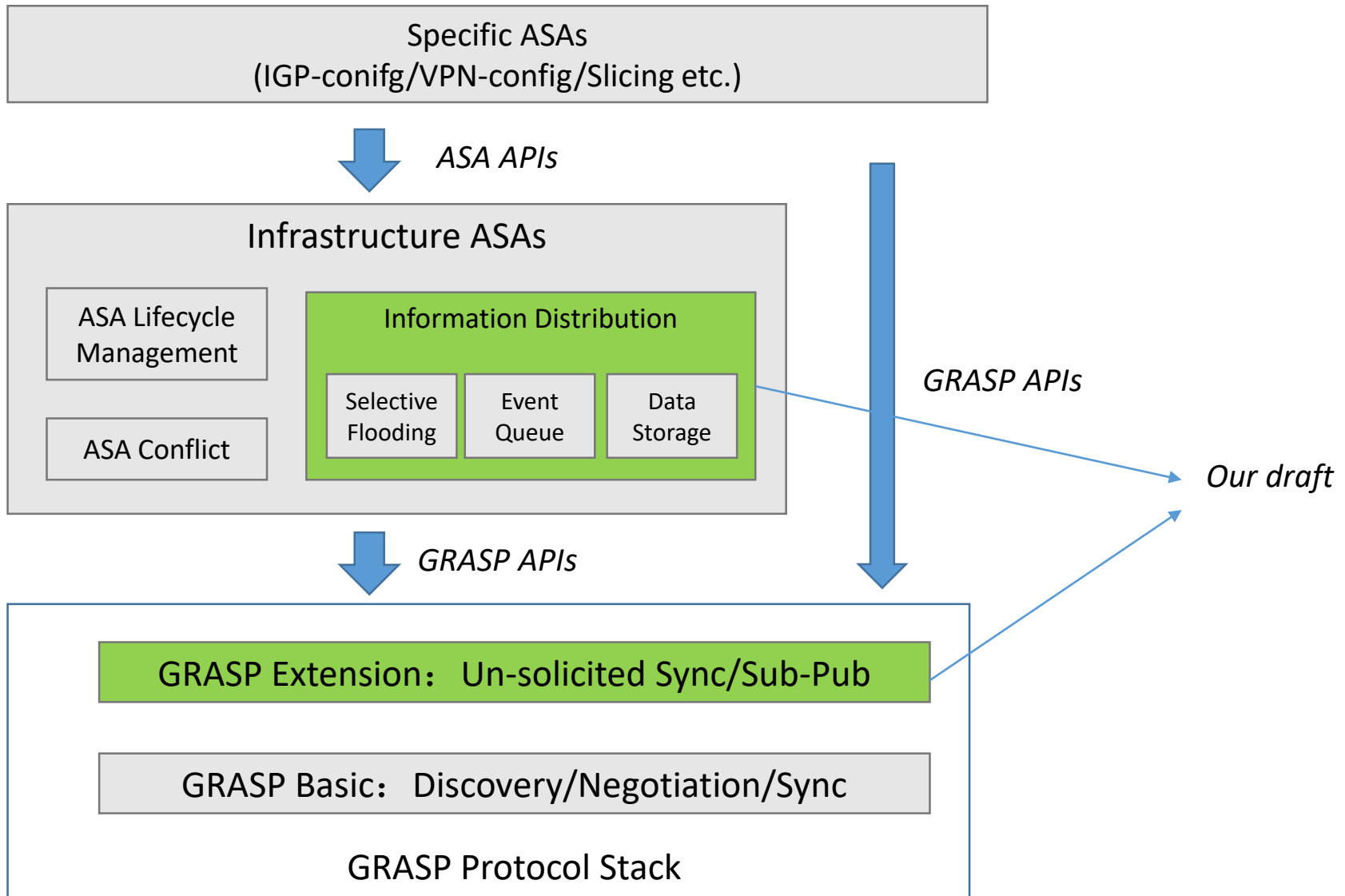
*draft-ietf-anima-grasp-distribution-02-03*

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Carpenter

Huawei Technologies and University of Auckland

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# Recall: Draft Content and Scope

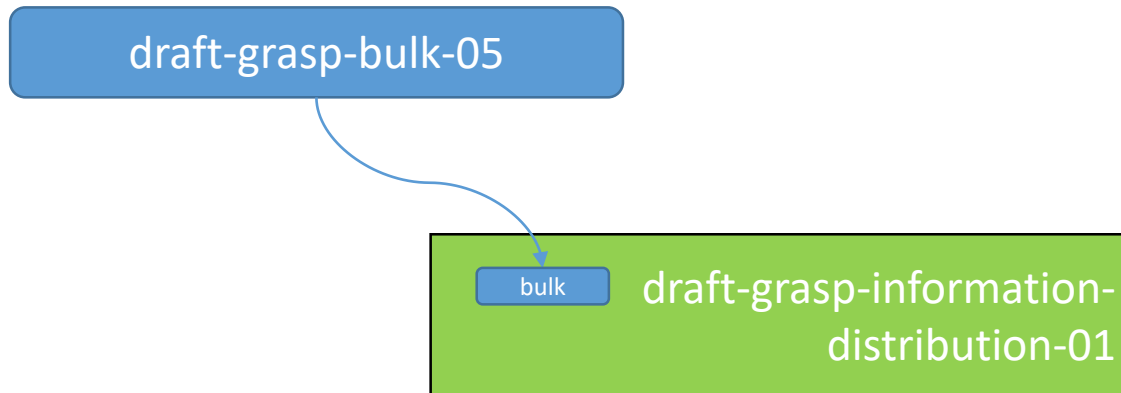


# Recall (since IETF'107)

- Adopted as a working group document in Feb. 2020
  - A “version-00” was uploaded
- Collected all comments in the mailing list, included in version-00 as open issues in Appendix A:
  - More reference to the use cases in the introduction
    - Better explanation of the required context of the Connected-Car
    - Consider use-case/example of firmware update
  - Rethink/refine terminology,
    - e.g.: “module” seems to be too prescriptive
    - better match/reuse-the established terminology from the pre-existing ANIMA documents
  - Provide more protocol behavior description instead of only implementation / software module architecture description
  - Etc.

## Major Changes (since IETF'108) – '00' → '01'

- Integrated “draft-carpenter-anima-grasp-bulk-05”



- Consider bulk information distribution in ANI
  - Information that cannot be transferred at once

# Major Changes (since IETF'109) – '01' → '02'

- Focused on addressing comments about “Use Cases”:

*1. More reference to the use cases in the introduction.*

*2. Better explanation of the required context of the Connected-Car case: Not applicable unless the ACP will be extended to the car, which may not be desirable with the current ACP design, but maybe refocusing on an "autonomous fleet" use-case (e.g.: all cars operated by some taxi like service).*

*3. Consider use-case/example of firmware update. By abstracting the location of the firmware from the name of the firmware, while providing a way to notify about it, this significantly supports distribution of firmware updates. References to SUIT would appropriate.*

*8. Consider moving examples from appendices into core-text. Ideally craft a single use-case showing/applying all extensions (most simple use case that uses them all).*

Next page ...

# Major Changes (since IETF'109) – '02' → '03'

- Authors change: **Xun Xiao took as 1<sup>st</sup> author** (Bing Liu as 2<sup>nd</sup>)
- Still focused on **polishing** “Use Cases” and “Requirements”:

*1. More reference to the use cases in the introduction.*

*2. Better explanation of the required context of the Connected-Car case: Not applicable unless the ACP will be extended to the car, which may not be desirable with the current ACP design, but maybe refocusing on an "autonomous fleet" use-case (e.g.: all cars operated by some taxi like service).*

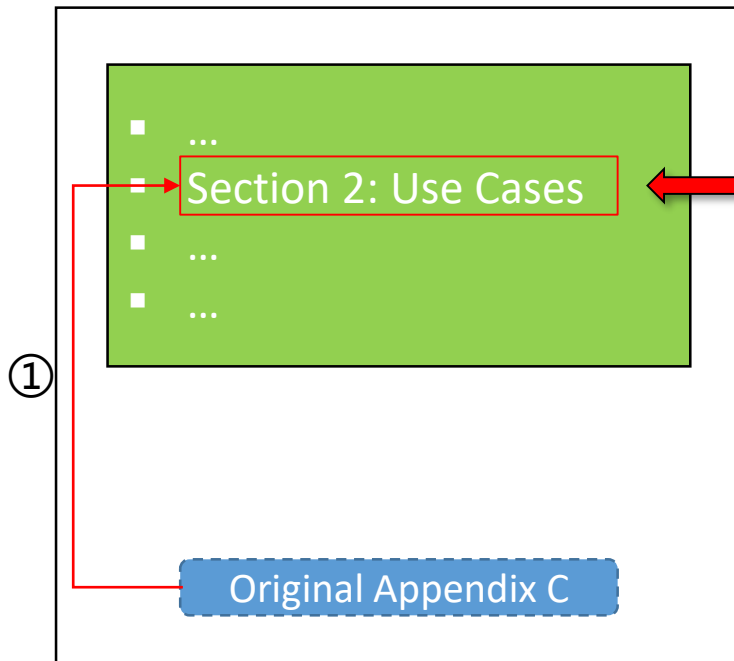
*3. Consider use-case/example of firmware update. By abstracting the location of the firmware from the name of the firmware, while providing a way to notify about it, this significantly supports distribution of firmware updates. References to SUIT would appropriate.*

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# Major Changes (since IETF'109) – '01' → '02'

- Focused on addressing comments about “Use Cases”:

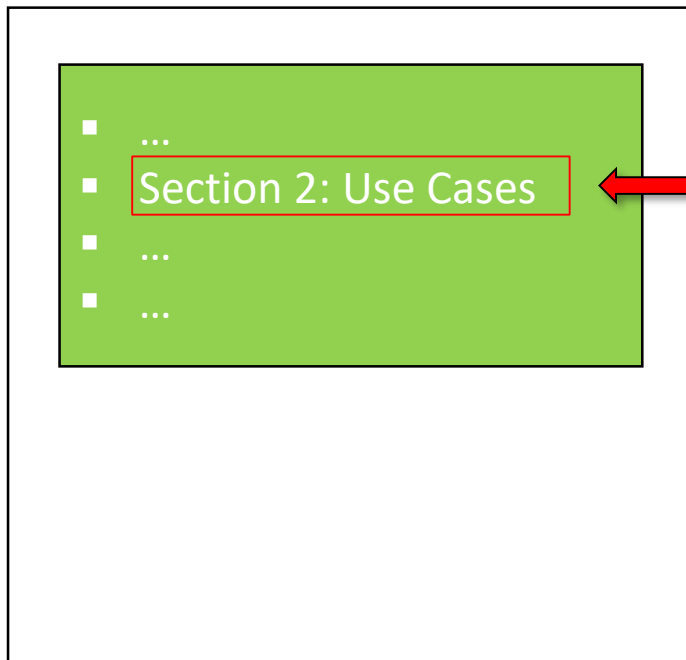


- Moved “Use Cases” appendix to core text

- Completely revised the V2X use cases – referring 5GAA whitepaper
  - **Real-time HD Maps:** real-time information stored in the network and distributed on-demand
  - **In-car Infotainment:** QoS-guaranteed data streaming services, related to edge services
  - Software Updates
- Added a new use case – **distributed computing applications**
  - AFs on autonomic nodes may have to process local data (e.g. data training, 3D rendering and so on)
  - Data privacy considerations
- 3GPP SBA Extension remains

# Major Changes (since IETF'110) – '02' → '03'

- Focused on addressing comments about “Use Cases”:



- ❑ **Changed** use case – distributed computing to **in-network computing (INC)**:
  - Better match current situations / examples
  - Better generalize the requirements of most application scenarios

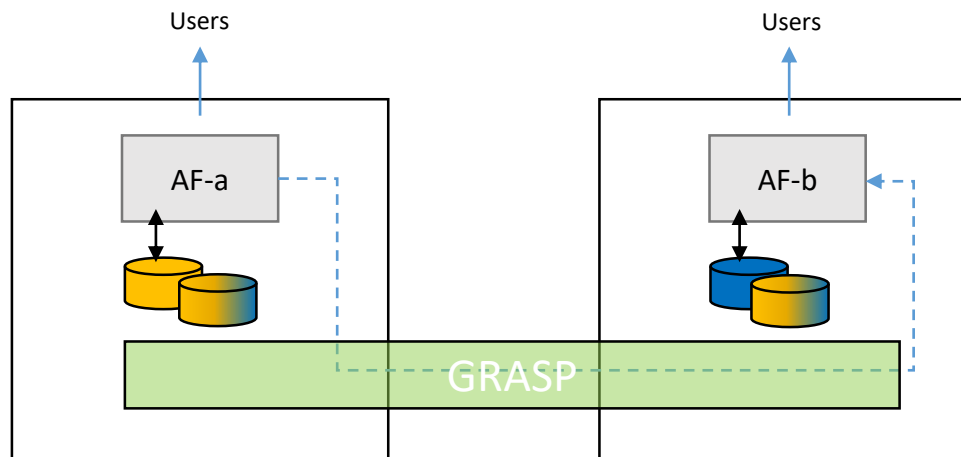
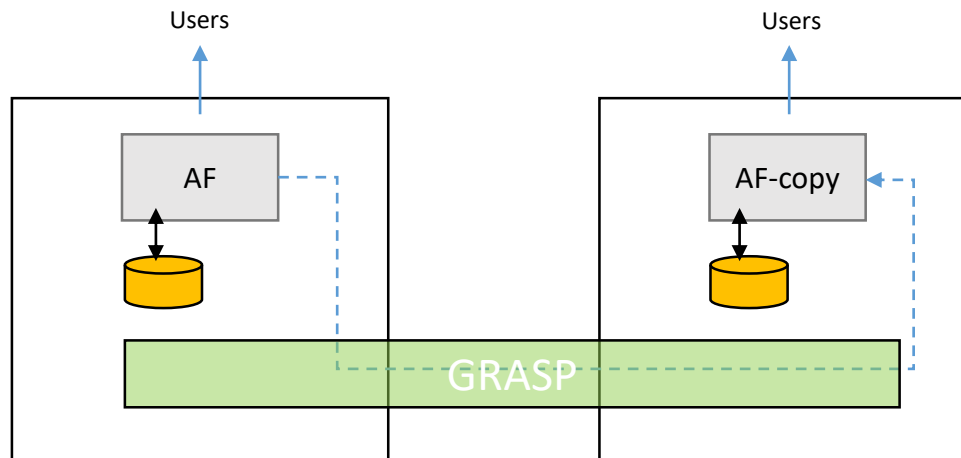


- ❑ Requirements of INC use cases:
  - Data backup
  - Data aggregation
  - ...?



# Major Changes (since IETF'110) – '02' → '03'

## ■ Info. Dist. for INC use cases:



- ❑ Info. Dist. Should consider how to support *Data Backup*:
  - Master-Slave sync.
  - Keep slave nodes up-to-date
- ❑ Examples:
  - Core Network NF Set

- ❑ Info. Dist. Should consider how to support *Data Aggregation*:
  - Data generated at different places have to be “federated”
  - Exchange rules for data aggregation
- ❑ Examples:
  - Derived neural network parameters via dist. AI training

→ Should Info. Dist. Consider “consensus” among AFs?

# Future Work

- Further update the current text
- We will focus on other set of comments to prepare the next version '-04'
- After two more updates, **submit to external review?**

**Thank You**

IETF111-Virtual from Munich, Germany