

WP 2: Experimentation

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measurement and architecture for a middleboxed internet

measurement

architecture

experimentation

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Agenda

- Overview
- Classification
- Modeling
- Publications
- Conclusion



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Overview - Goals

- Usage of data collected in WP1
 - middlebox classification
 - middlebox modeling
- NFV-based experimentation
 - evaluation of the MAMI approach applicability to the selected use cases

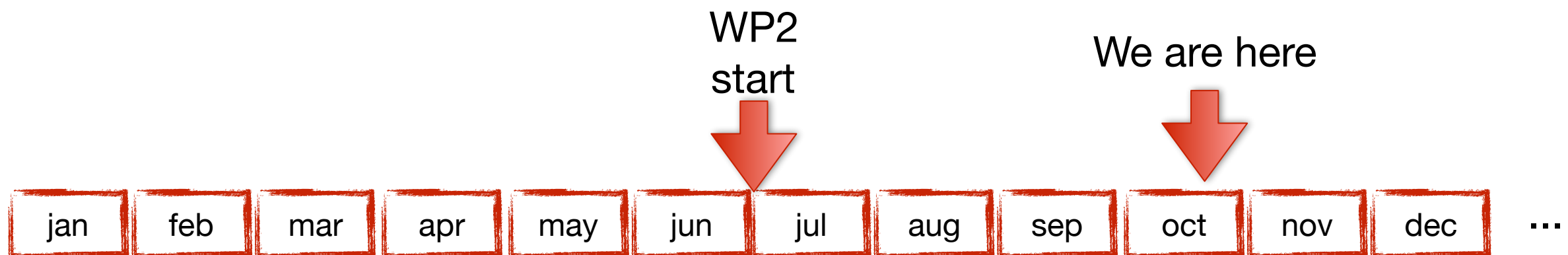


Overview - What are we doing?

- Middlebox classification [2.1, in progress]
 - path-impairment oriented middlebox policy taxonomy
- Middlebox Modeling [2.2, in progress]
 - modeling middleboxes based on their classification
 - lessons learned from measurements (cfr. WP1)
 - longitudinal behavior of middleboxes
 - implementing the model in a simulator
- Experimentation
 - NFV-based experimentation [2.3, from January 2017]
 - testbed-based validation of approach [2.4, from January 2017]

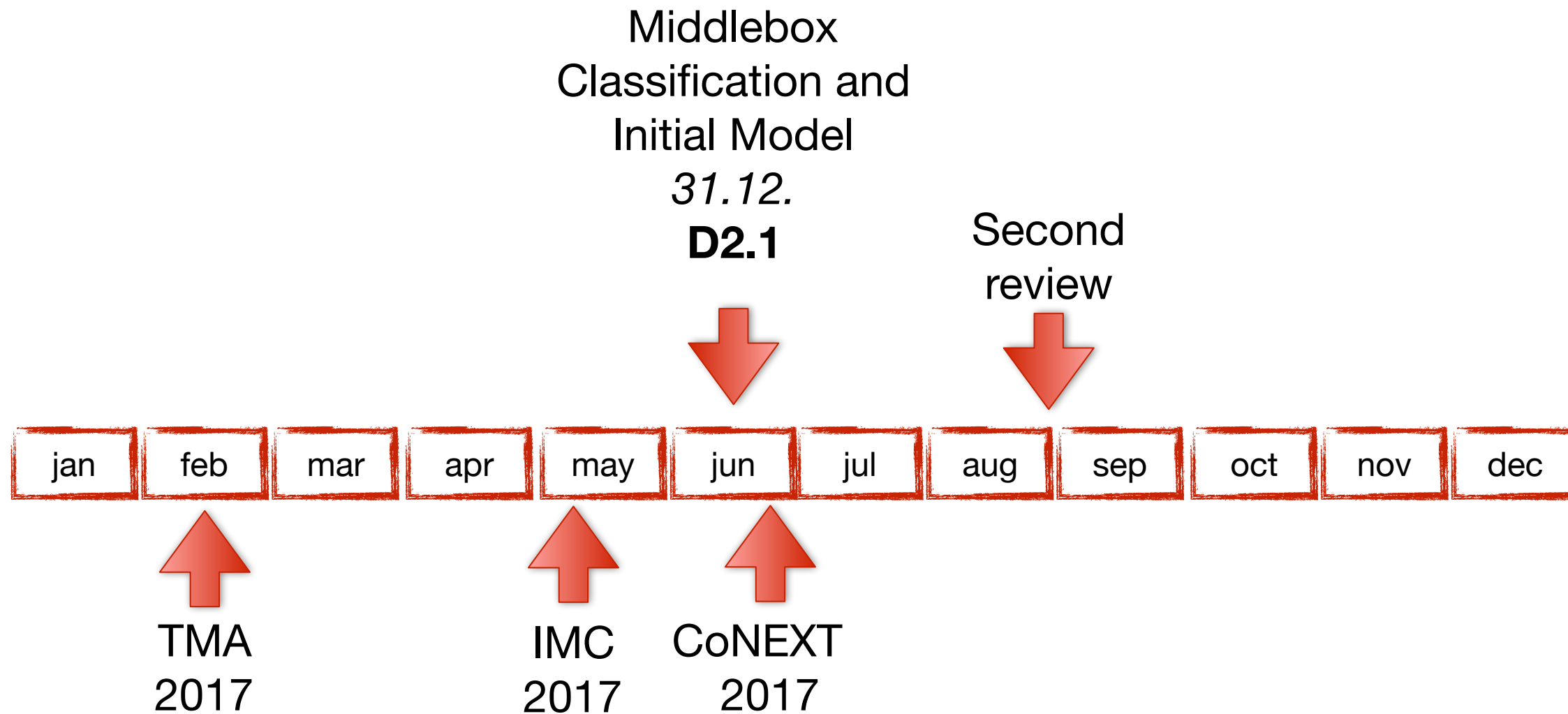


Overview - Timeline 2016 (Y1)





Overview - Timeline 2017 (Y2)





Overview - Who does what?

so far, this is ongoing

Partner	MM	Task 2.1 Middlebox Classification	Task 2.2 Middlebox Modeling	Task 2.3 NFV-based Experimentation	Task 2.4 Validation of Approach
ETH	6			✓	✓
ULg	20	✓	✓		
UoA	6	✓			✓
TID	10		✓	✓	
SRL	5	✓			✓



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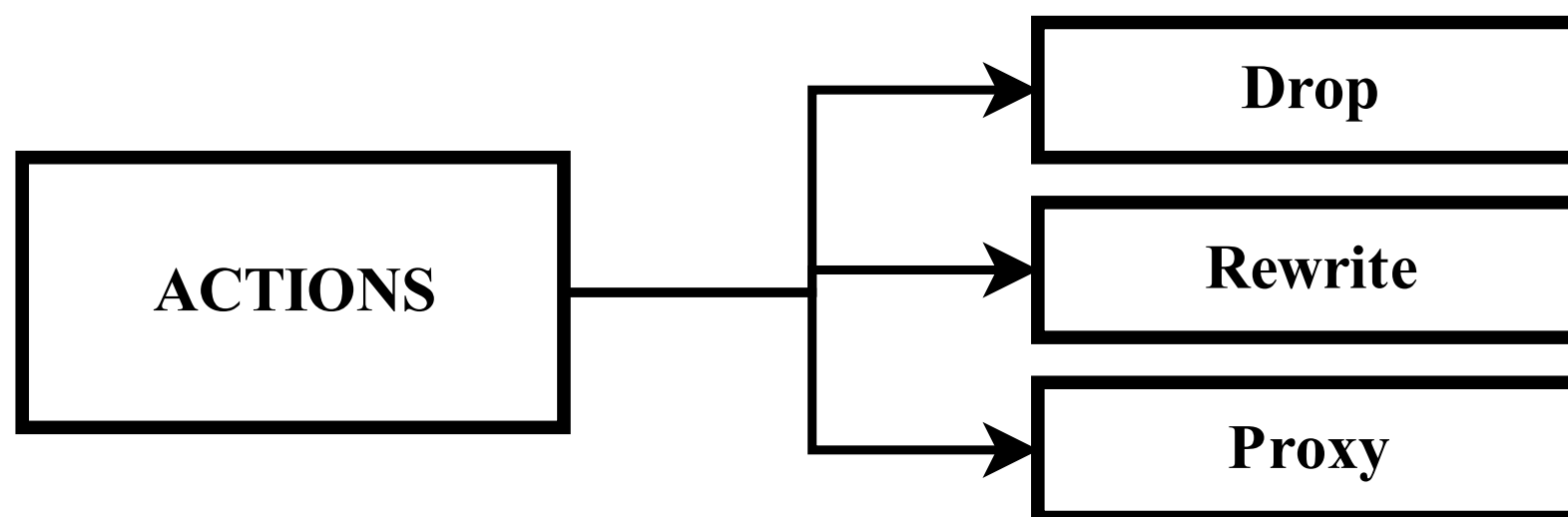
Classification - Overview

- Path-impairment oriented middlebox policy taxonomy
 - categorizes the initial purpose of middlebox policy
 - categorizes middlebox' potential unexpected complications
- 3 main categories
 - *action*
 - the fate of a packet crossing a middlebox implementing this policy
 - *function*
 - the policy purpose
 - *complication*
 - the possible resulting path deterioration



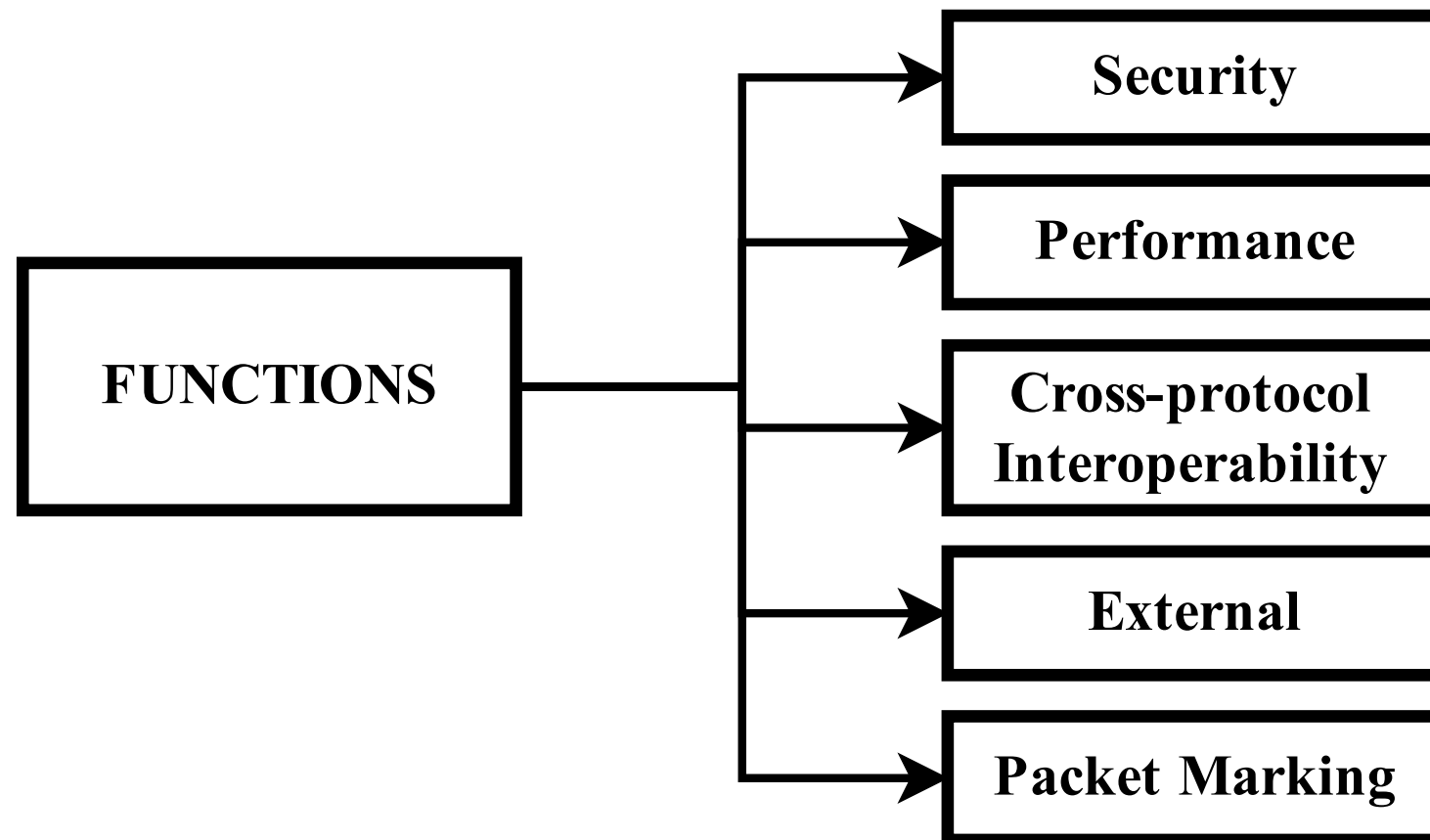
Classification - Action

- Action



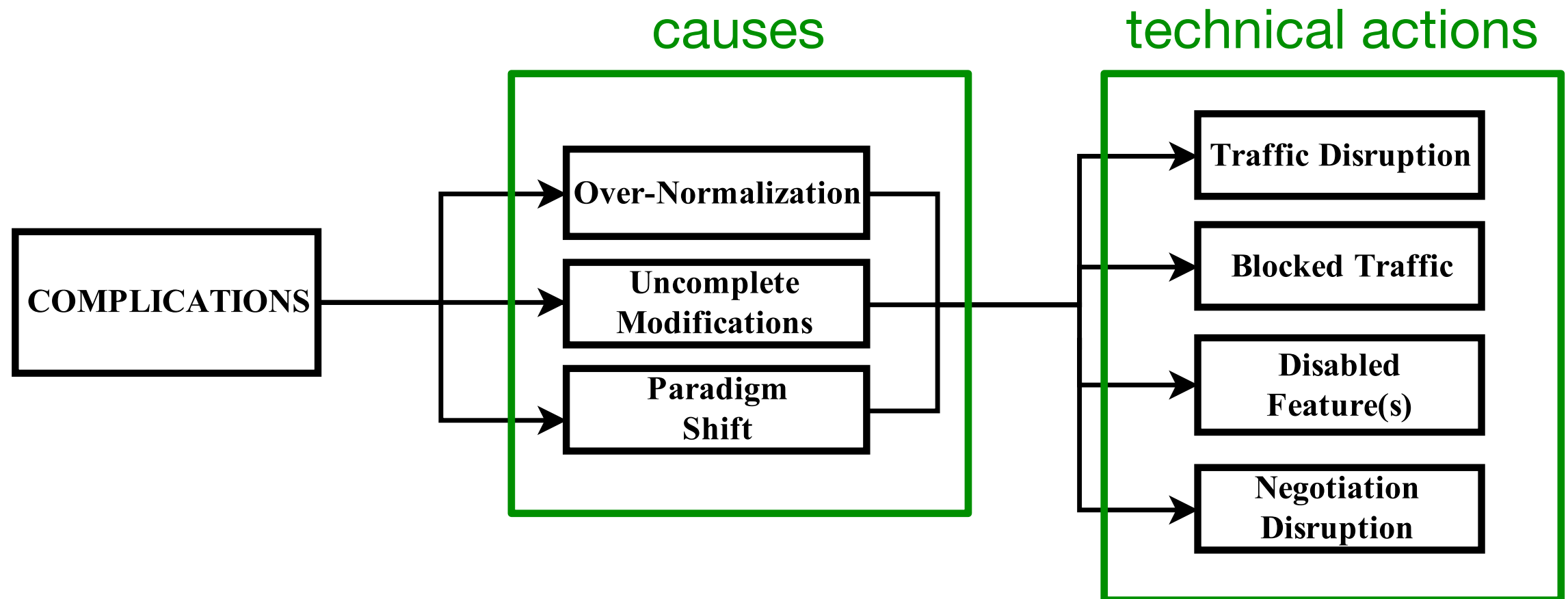


Classification - Functions





Classification - Complications



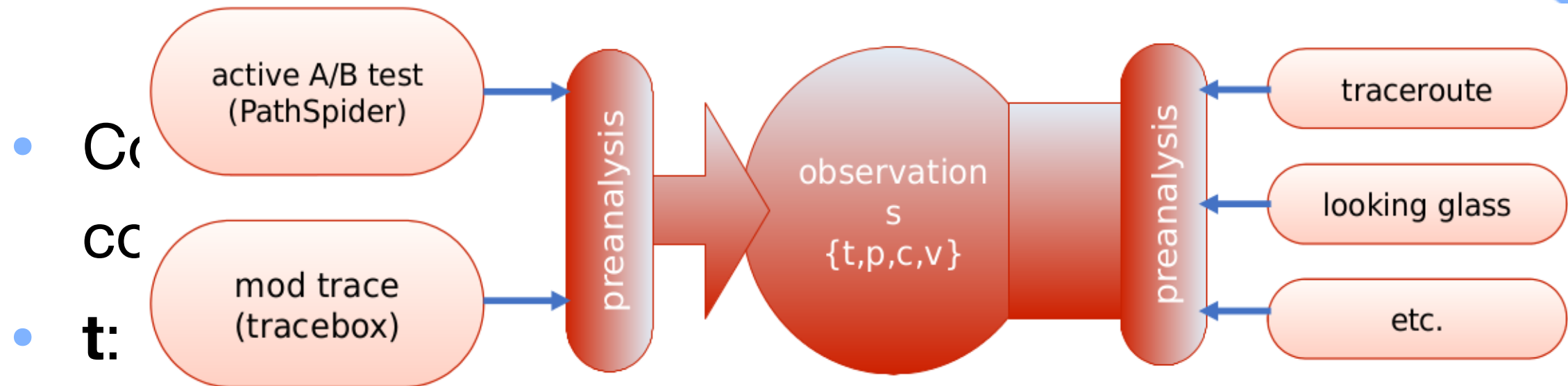


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Modeling - Based on measurement data



- **t**: path to which observation applies
- **c**: condition observed (e.g., "function $X \Rightarrow$ packet loss")
- **v**: vector of condition-specific values



Modeling - Extension

- Extend this with
 - persistence (i.e., temporal aspects)
 - positioning (i.e., location on the path)



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Publications

- Publications are planned in the near future (Year 2)
 - middleboxes persistence
 - classification/modeling



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Conclusion

- Progress has been done, since the beginning of the work package, on all front lines
 - basic classification
 - we are starting the modeling part
- Deliverable 2.1 (middlebox classification and initial model) will be provided on time
 - M18 (June 2017)



Conclusion - Next steps

- Short term (end of 2016)
 - longitudinal analysis of middleboxes behavior
- Mid term (early 2017)
 - starting the simulator implementation
 - testing and initial experimentation of the MCP prototype