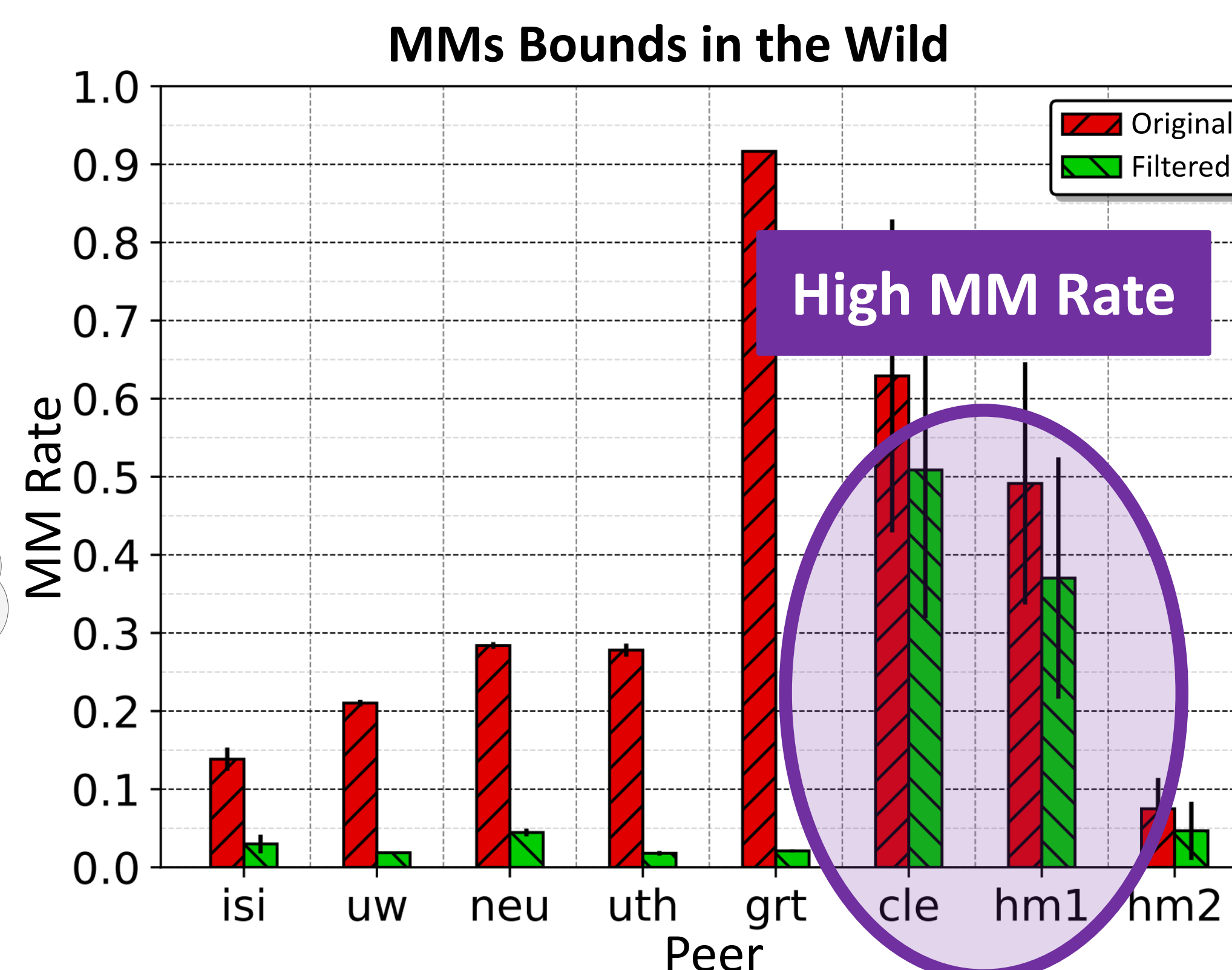
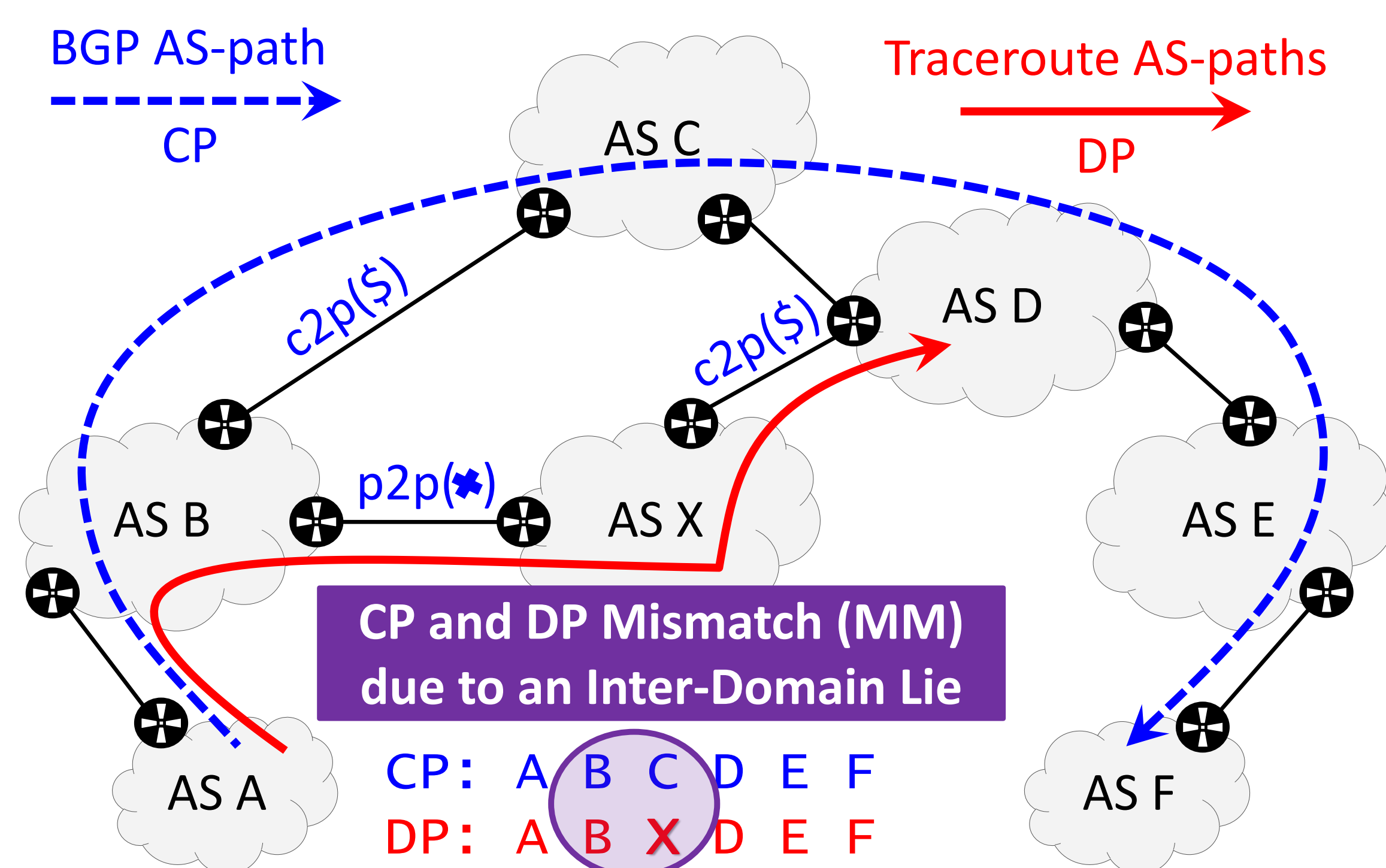


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Previous Results Leading to New Research

"Filtering the Noise to Reveal Inter-Domain Lies", TMA 2019



Results in hm1 were due to
Routing Inconsistencies
and their related Deflections

Research Questions

- ✓ How can they be detected?
- ✓ How many AS suffer them?
- ✓ How is the routing affected?

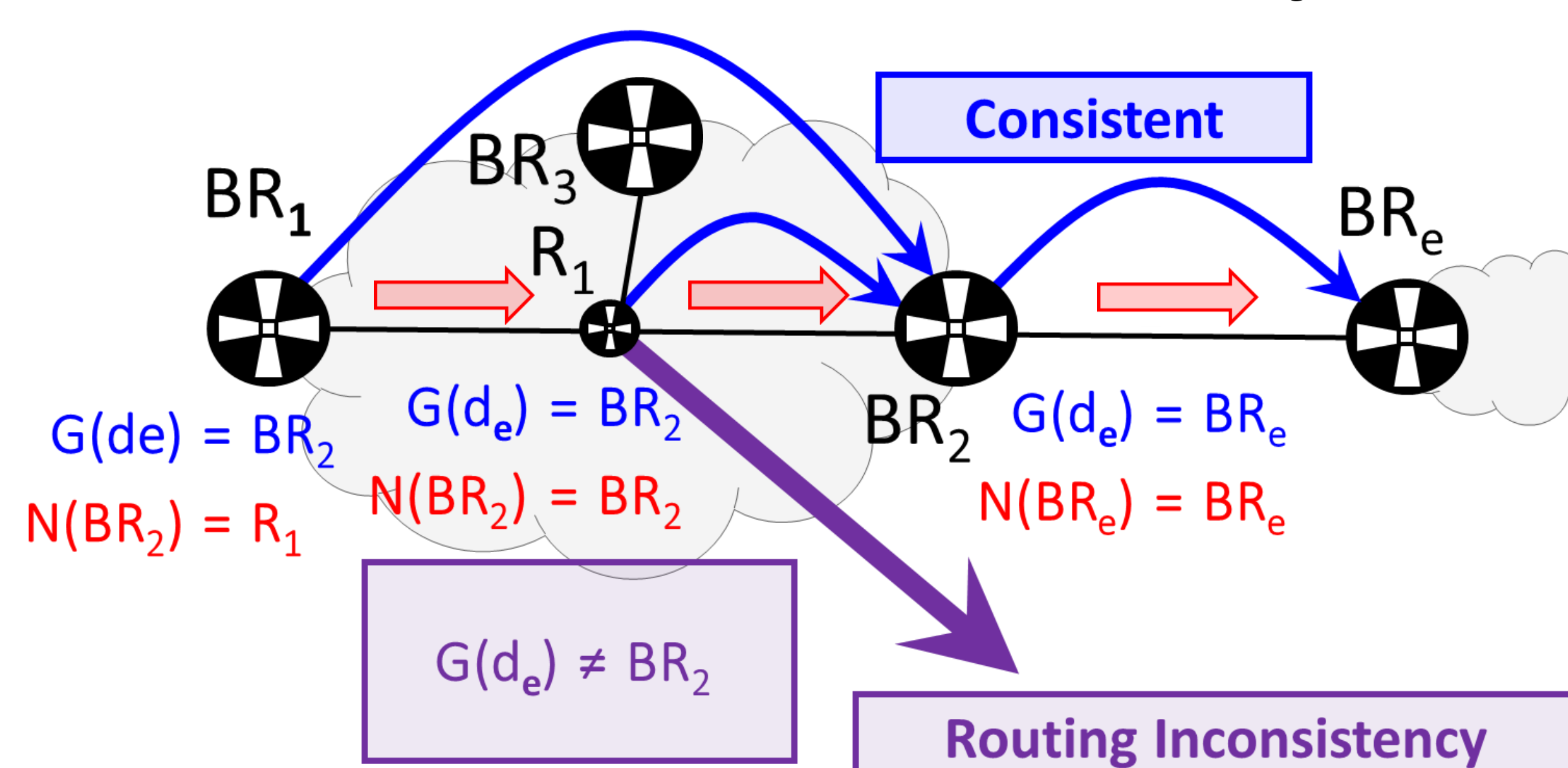
Routing Inconsistencies and Partial-FIBs

What is a Routing Inconsistency (RI)?

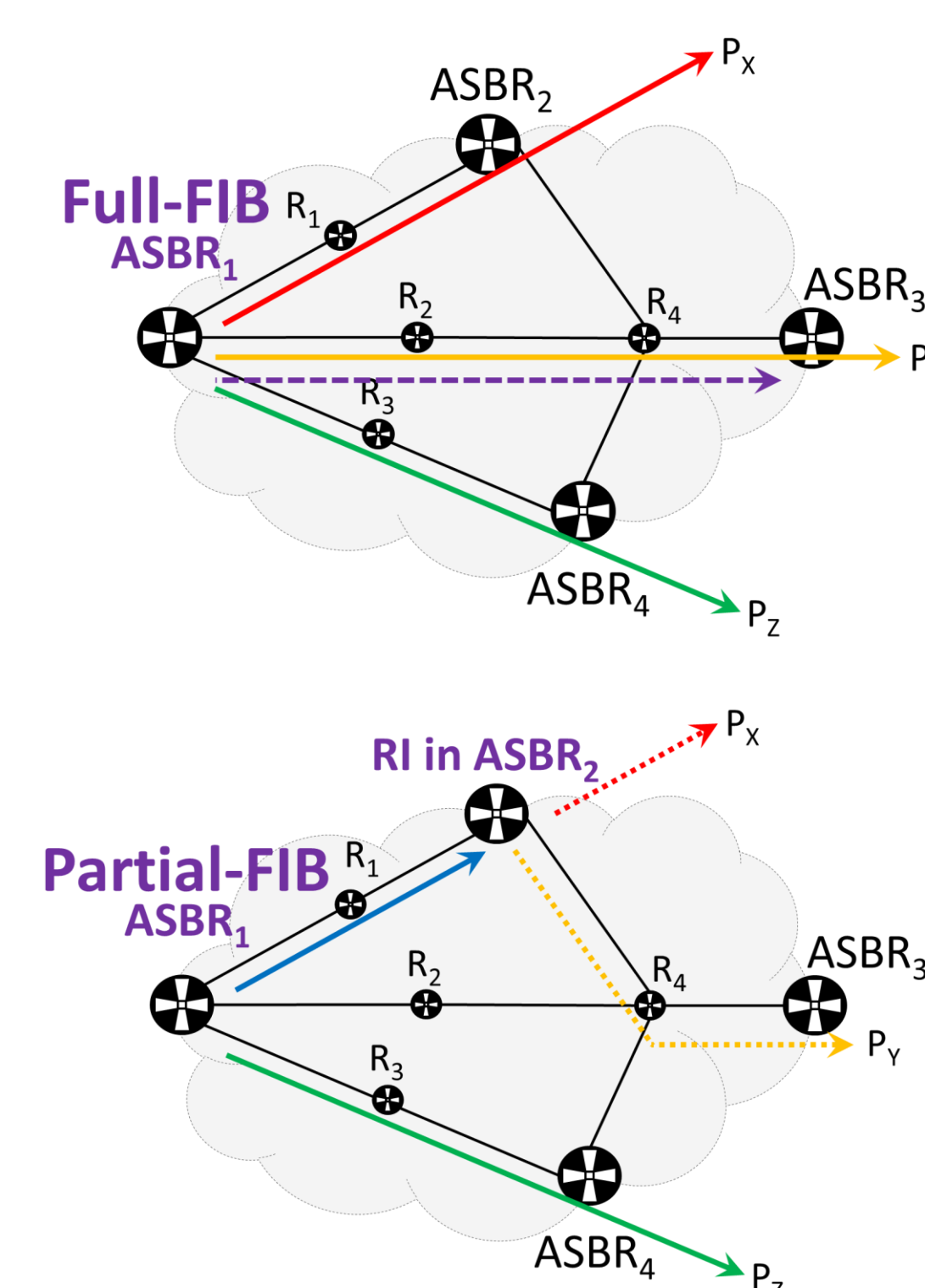
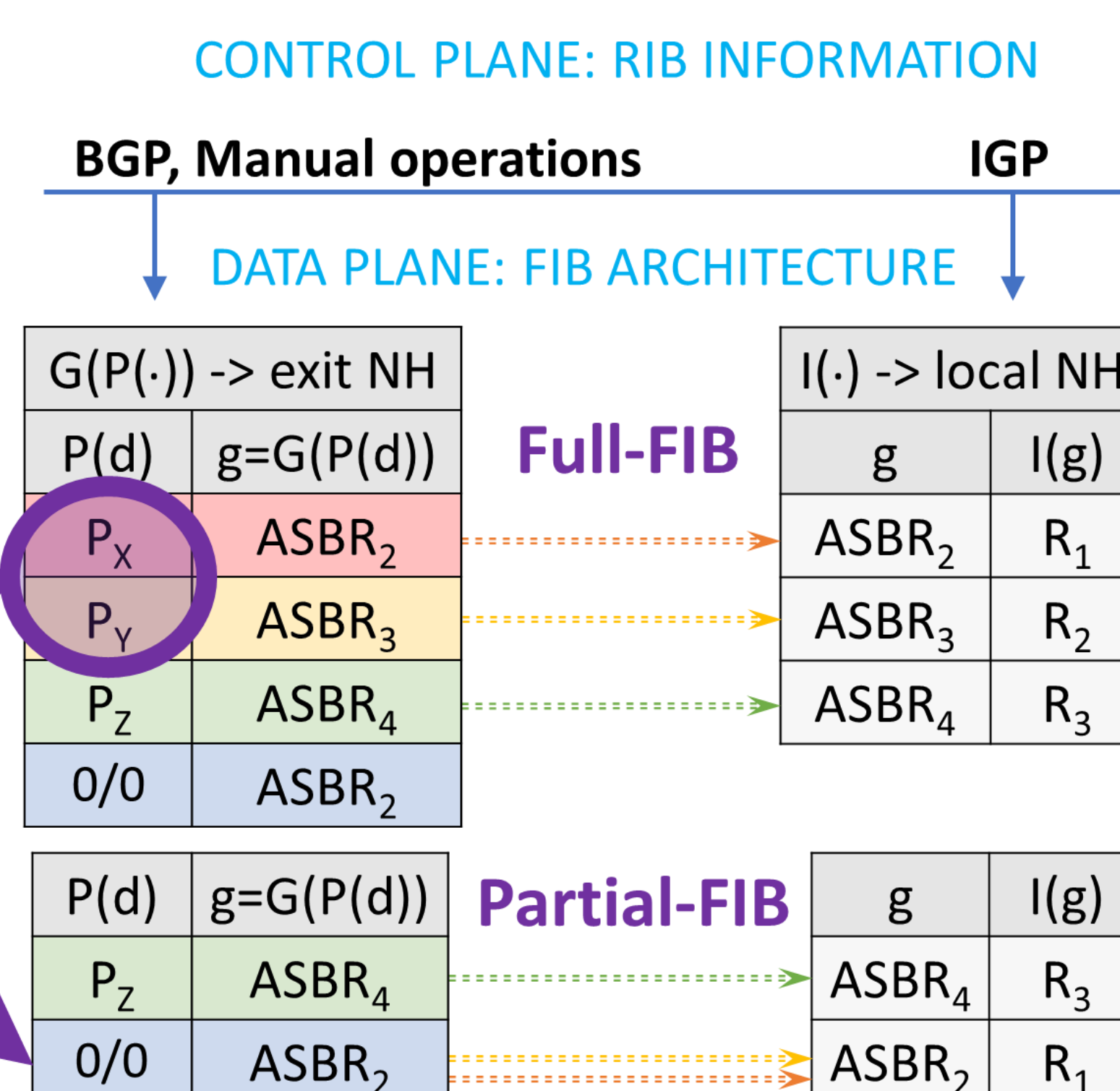
BGP $\rightarrow G(d_e)$: Gateway to reach IP d_e

IGP $\rightarrow N(g_d)$: Next hop to reach Gateway g_d

A route results from the composition of $N(G(d_e))$ at each hop

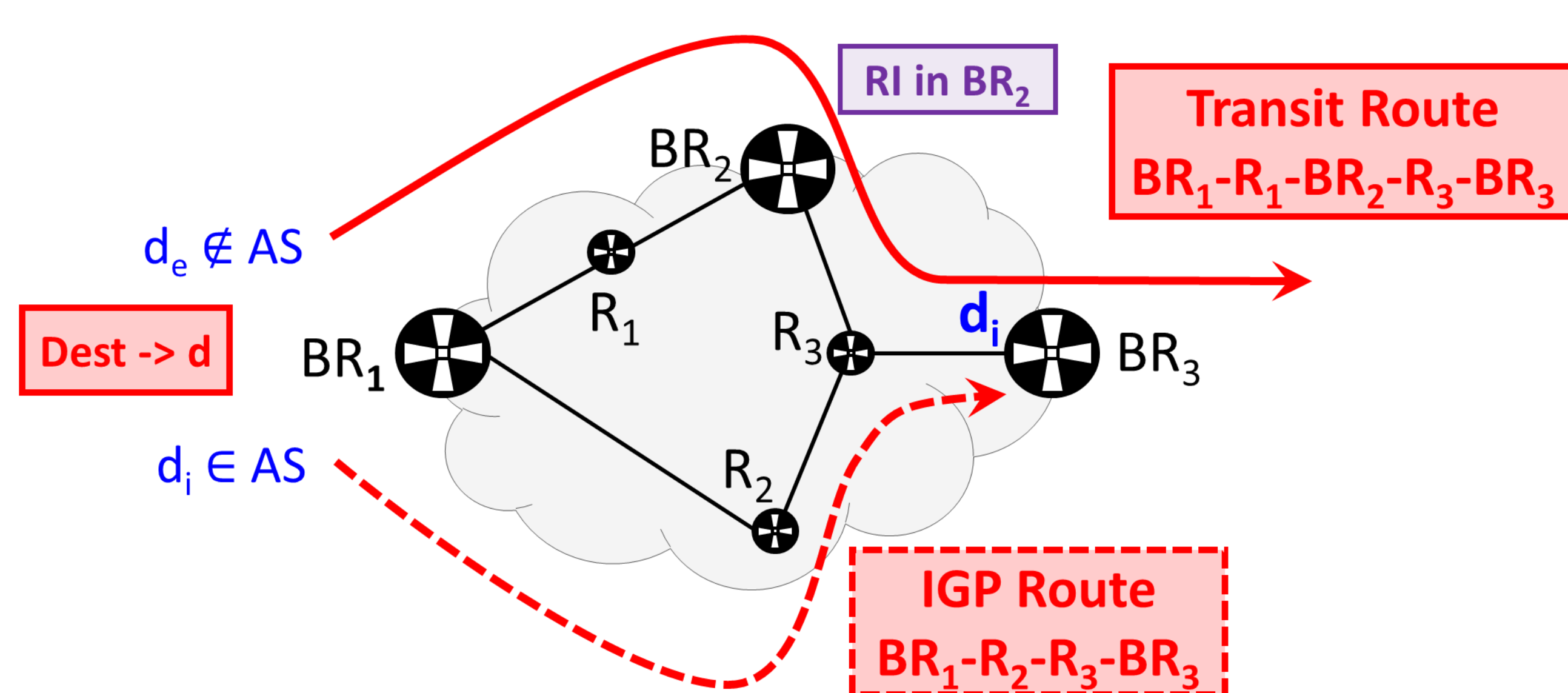


Example of a Routing Inconsistency: partial-FIB

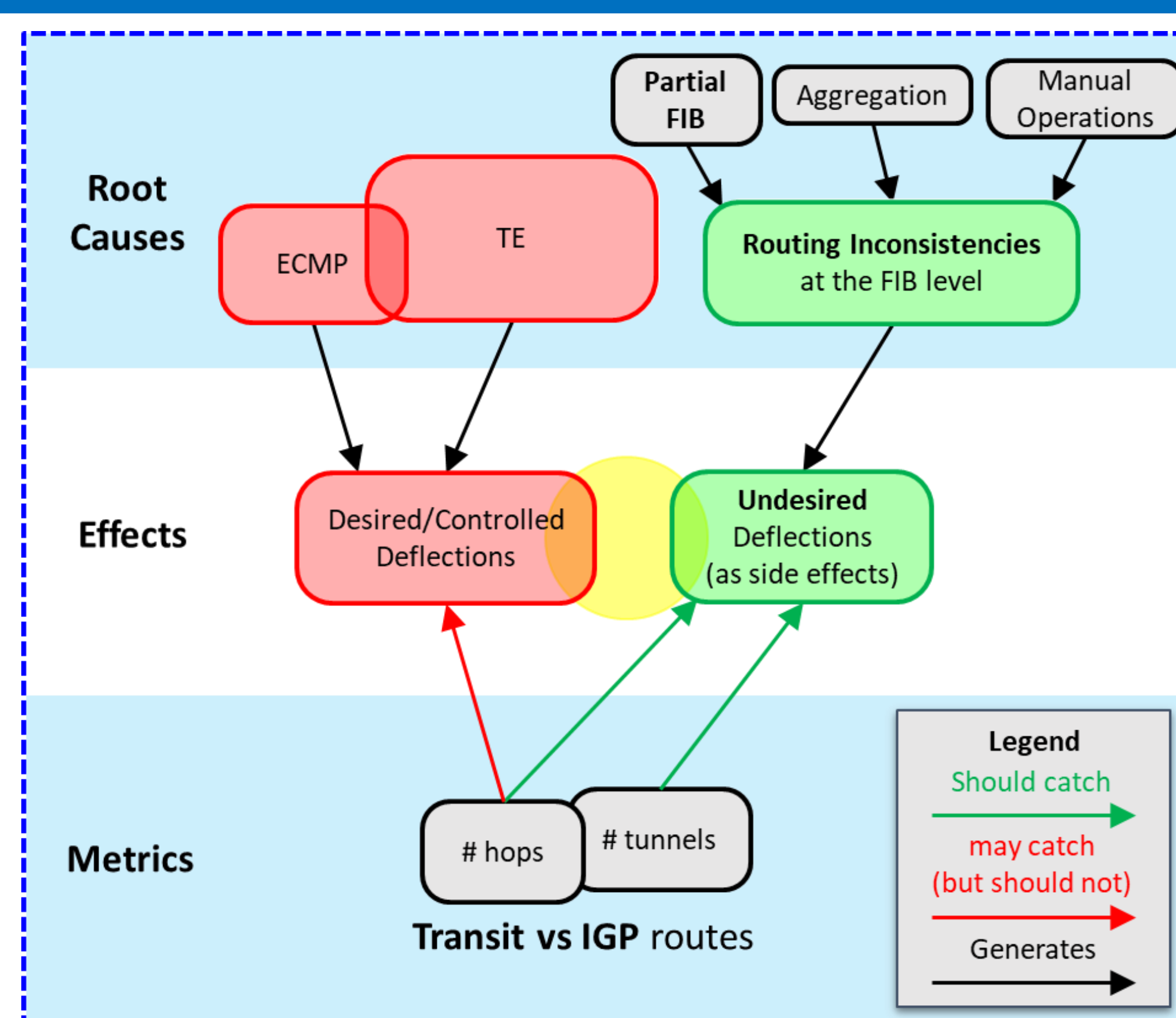


How to capture only the Deflections resulting from RI?

What are the effects of Rles?

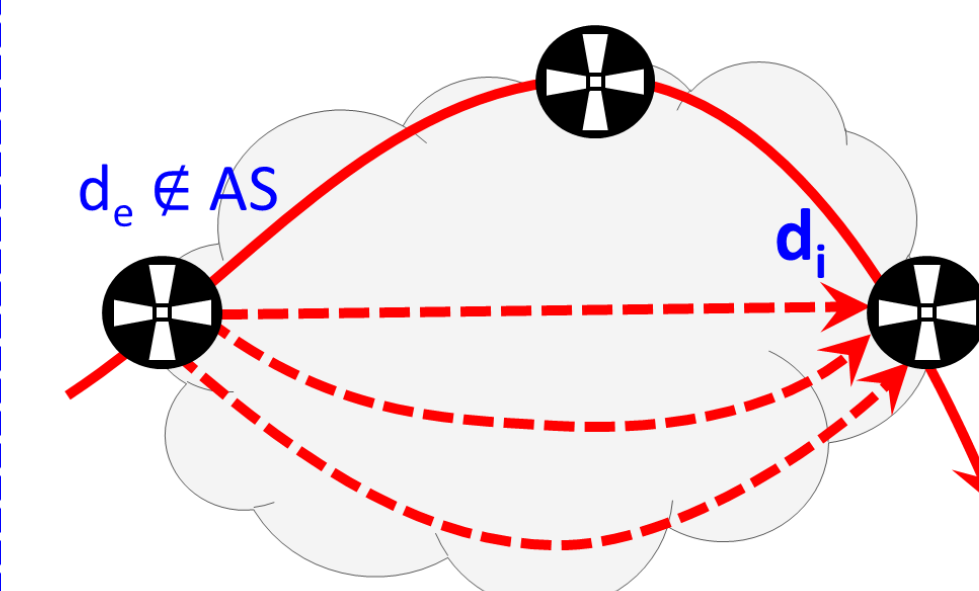


The RI generated a deflection in BR2
The resulting transit forwarding is sub-optimal



How to Overcome ECMP?

Detect all IGP routes with
MDA-traceroute



Results & Future Work

25% of the ASes in our set show
some **Routing Inconsistencies**

Extend BGP to make it **more secure** against
misconfigurations and sophisticated lies

N	ASN	#transit traces	#hops (%)	#tunnels (%)	OR (%)
1	20773	28	100	0.00	100
2	12965	445	61.35	35.73	66.74
3	3491	18.655	40.20	0.00*	40.20
4	174	148.308	9.05	0.00	9.05
5	1299	106.421	2.82	1.81	3.00

It is not so clear that $\text{len}(\text{Transit}) > \text{len}(\text{IGP})$

Next Steps: Deflections generating Inter-Domain Lies

1. How to **discriminate** TE from RI
2. **Pinpointing** the deflection point
3. Detect the **type** of RI (p-FIBs, ...)
4. Determine if lie is **deliberate** or not
5. Define An **RTT** Analysis to detect malicious AS