Motivations

- PCE architecture and path computation need Network Information
  - The Traffic Engineering Database (TED) contains these pertinent and suitable information regarding the underlying networks

- However:
  - No RFC specifies the detailed contents of the PCE TED
    - Only TED MIB specification are ongoing (CCAMP)
  - A PCE TED is not limited to the information disseminated by the IGP
  - The fulfillement method of PCE TED is not specified

- Multi-Domain path computation suffer from a lack of information in the TED
  - Lead to a non optimal result or to some difficulties to deploy them
  - Collaborative PCEs would benefit from neighbouring context

- Goal: Identify some TED requirements for the PCE:
  - identification of the specific information to be stored in the TED
  - and how it may be populated
Inventory of TED elements

- First inventory has been split between Intra (MPLS & GMPLS) and Inter domain
  - Intra-domain
    - Standard TE information exchange by the IGP-TE
  - Inter-domain
    - ASBR of the foreign domains
    - Inter-domain Links TE
    - Traffic Engineering performance between Border Nodes (n)
      - To give performance indication on foreign domain n
      - But only as an abstract view (to not divulgate details of the network)
    - PCE (i) peer address associated with the AS number of the domain (i)
TED Population

- Some mechanisms and protocols have been identified for Intra-domain population
  - Some efforts are necessary for the Inter-domain section

- Intra-domain
  - IGP-TE (IS-IS-TE or OSPF-TE) are commonly used
  - RFC 5088 and RFC 5089 help to auto discover PCE

- Inter-domain
  - RFC 5316 and RFC 5392 provide TE information on inter-domain links
  - BGP just provides reachability
Inter-domain status for TED Population

- But inter-domain needs more effort to correctly populate the PCE TED

- Ongoing identified solutions
  - Management plane
  - North bound distribution of Link-State and TE Information using BGP [I-D.gredler-idr-ls-distribution]
  - PCNtf message to convey, inside vendor attribute (but in a non-standardized way), TE information of foreign domains
  -> All are non standard

- Candidate standardisation efforts
  - A hierarchical TE protocol to advertise abstract TE information at the AS level
  - A PCEP extension to convey such TE information (e.g. through standard PCNtf message)
Next Steps

- Get feedback from PCE WG
  - We are here for that

- Release a 02 version that:
  - Take into account GMPLS stuff
  - Improve Inter-domain definition
    - Consider multi-area / multi-region / multi-layer as inter-domain and not only inter AS
  - Add analysis and best-current practice for Intra-domain solutions
  - Add analysis of Inter-domain solutions