Framework for Metric Composition

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Status

- Proposed Framework adopted following IETF-64
- Introductory material from the individual temporal and composition drafts combined to form the Framework:
    - draft-svdberg-ippm-temporal-00.txt
    - draft-morton-ippm-composition-01.txt
- New material illustrates the relationship with draft-ietf-ippm-multimetrics

Types of Composition

- Complete/Sub-Path (or Concatenation in Space)

- Aggregation in Time (12x5min stats ->1hr)
- Aggregat. in Space

D_{xy} (not known) $\approx D_{xk} + D_{ly}$???

x --- k --- l --- y

D_{xk} -> known D_{ly} -> Known
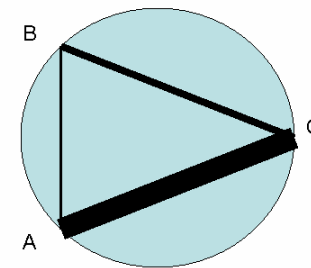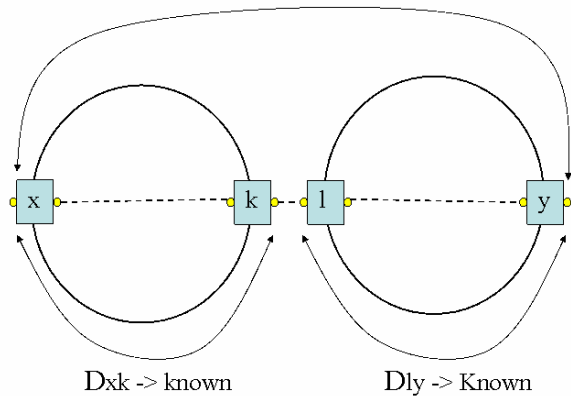
	Delay	Load
A-B	24.5 ms	1 Gbit/s
B-C	7.8 ms	3 Gbit/s
A-C	4 ms	9 Gbit/s
Domain	1/13*24.5+3/13*7.8+9/13*4 = 6.4 ms	13 Gbit/s

draft-ietf-ippm-framework-compagg-00.txt

Overall Framework (includes common concepts and definitions)

Temporal Aggregation Draft

Spatial Aggregation Draft

Spatial Composition Draft

… and maybe others
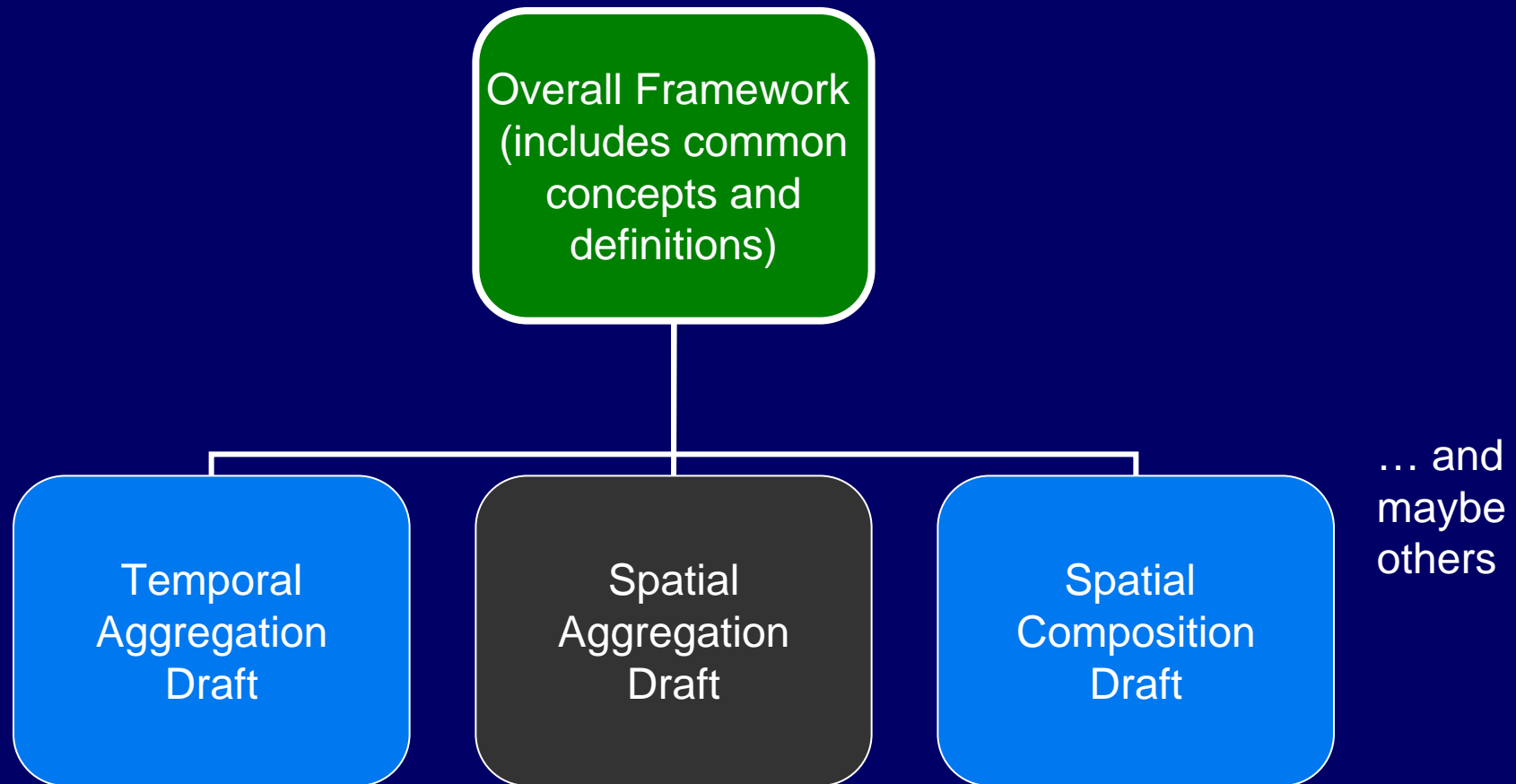
Framework Draft Outline

1. Introduction
   1.1. Motivation
2. Purpose and Scope
3. Description of Metric Types
   3.1. Time Aggregation Description
   3.2. Spatial Aggregation Description
   3.3. Spatial Composition Description
   3.4. Help Metrics
   3.5. Higher Order Composition
4. Requirements for Composed Metrics
5. Guidelines for Defining Composed Metrics
   5.1. Ground Truth: Comparison with other IPPM Metrics
   5.2. Deviation from the Ground Truth
6. IANA Considerations
7. Security Considerations
8. Acknowledgements
9. Normative References

```
                    Sub-Path Metrics
         ++   M1     ++ ++    M2    ++ ++    M3    ++
     Src ||........|| ||........|| ||........|| Dst
         ++    `.   ++ ++    |    ++ ++   .'    ++
                `.        |        .-'
                 `-.      |      .'
                   `._..|.._.'
                 ,-'           `-.
               ,'                 .
               |    Composition    |
               \    Relationship   '
                `._          _,'
                  `--.....--'
                       |
         ++            |           ++
     Src ||.............................|| Dst
         ++       Composed Metric      ++


         ++     Complete Path Metric    ++
     Src ||.............................|| Dst
         ++                             ++
                 Spatial Metric
         ++   S1    ++    S2    ++    S3    ++
     Src ||........||.........||..........|| Dst
         ++         ++         ++         ++
```
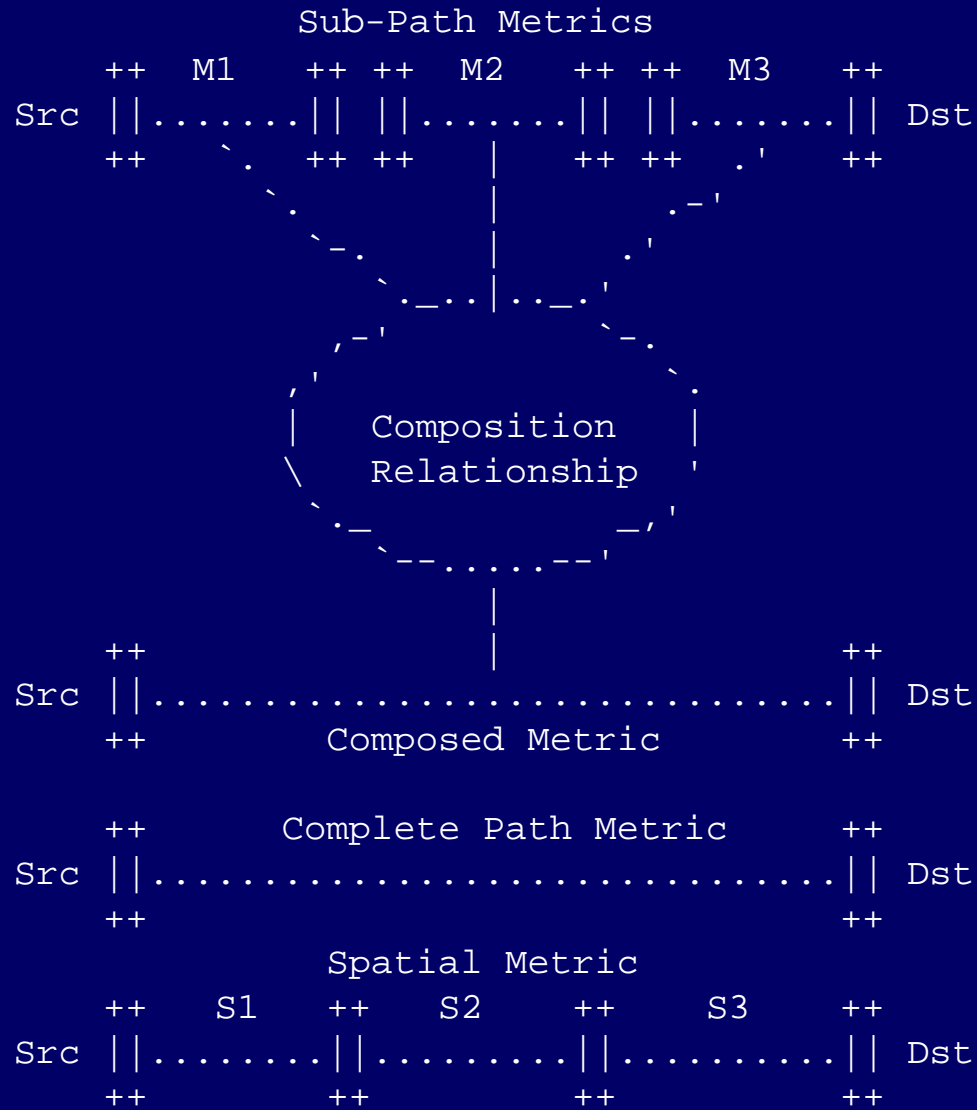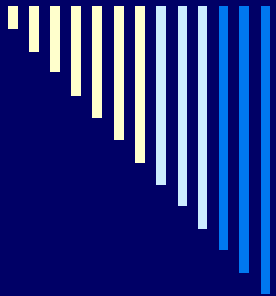
Ground
Truth {

Figure 1 Comparison with other IPPM Metrics

6

```
                    Sub-Path Metrics
       ++   M1      ++ ++   M2    ++ ++   M3    ++
   Src ||.......|| ||.......|| ||.......||Rcvr1
       ++         ++ ++`.      ++ ++        ++
                     `-.
                   M4`.++ ++   M5     ++
                     || ||.......||Rcvr2
                     ++ ++`.       ++
                          `-.
                        M6`.++
                           ||Rcvr3
                           ++


                    One-to-Group Metric
       ++         ++         ++          ++
   Src ||........||.........||..........||Rcvr1
       ++        ++.        ++          ++
                   `-.
                      `-.  ++          ++
                         `-||..........||Rcvr2
                        ++.          ++
                           `-.
                              `-.    ++
                                 `-.||Rcvr3
                                    ++
```

Ground
Truth {

Figure 2 Composition of One to Group Metrics

Deviations from Ground Truth

- Inaccuracies of the underlying measurements
  - Errors may propagate
- Differences in Scope between the Ground Truth and component metrics
  - Measured path different from actual, try to minimize

Next Steps

- ☐ Expand coverage of Temporal/Spatial Aggregation classes
- ☐ Collect common terms
- ☐ Convince folks to Read and Comment
- ☐ Master the xml2rfc process and XXE…