



Executive Views for System-of-Systems Decision Making

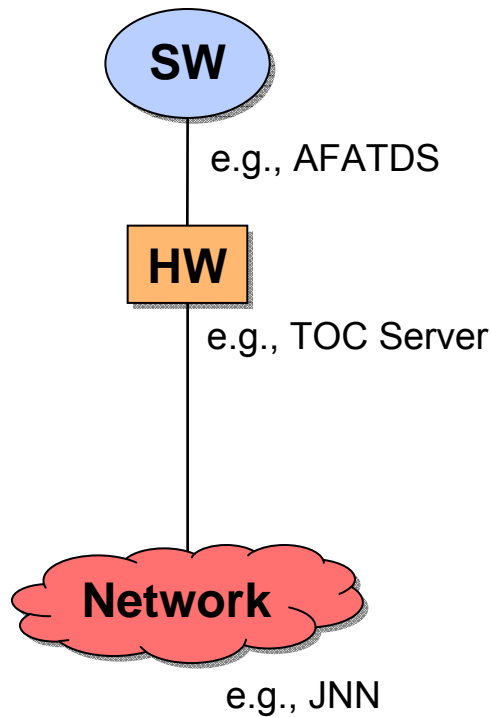
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System and SoS Environments

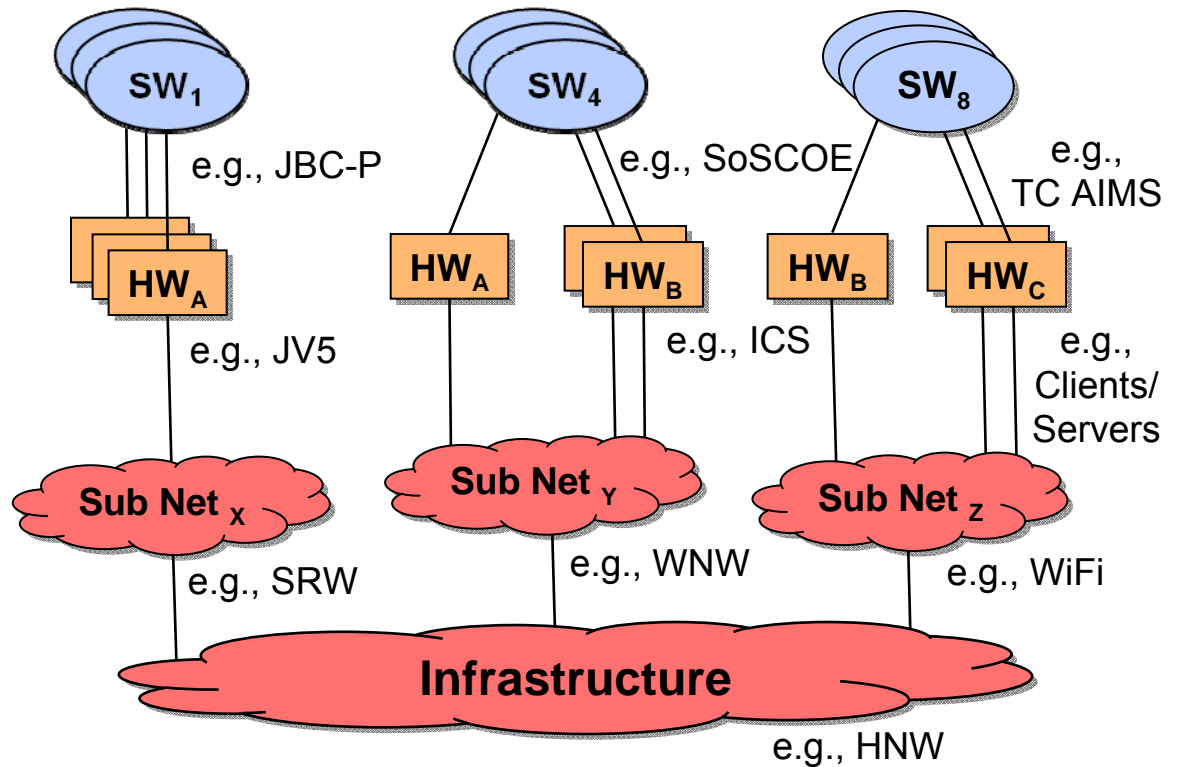


System Environments



Single POR with individual requirements and budget

SoS Environments



Multiple PORs with many capabilities and budgets in the tens of billions of dollars

Significant difference in complexity and scale

Comparison of Views

| | System Views | SoS View |
|---------------------|--|-----------------------------------|
| Views | Operational, System, Technical, other DoDAF 2.0 | Executive |
| Construct | System | System-of-Systems |
| Purpose | Design, Development | Investment Decision Making |
| Stakeholders | PMs, Requirement Developers | Senior Leaders |

- **Traditional management processes are not found to accommodate the complexity and scale of a SoS**
- **Architecture views and tools are emerging to meet SoS challenges**
- **Army, ASD(NII) and USMC have been pursuing novel processes to address SoS environments**



SoS Decision Making

■ Investment decisions

- What should be the distribution or basis of issue (BOI) of systems in platforms across a Service or Theater?
- What is an affordable fleet strategy over the budget cycle (i.e., POM)?
- What should be recommended for the POM?

Distribution/BOI

Every Platform of Type X,
In formation of Type Y
should get a Radio of Type Z

Fleet Strategy

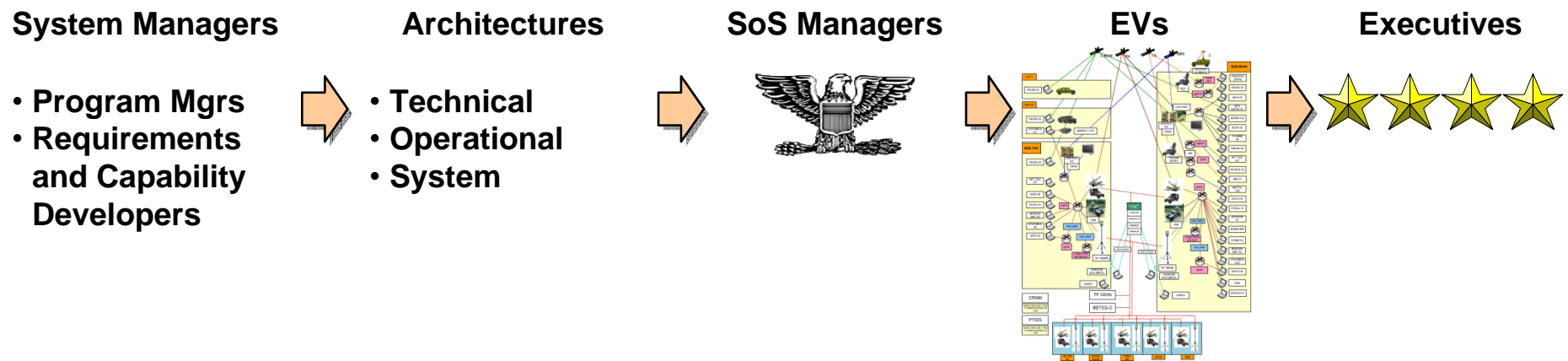
Field radios of Type Z,
to N-number of formations,
in years A through F

■ Decisions are made by senior leaders with warfighting background

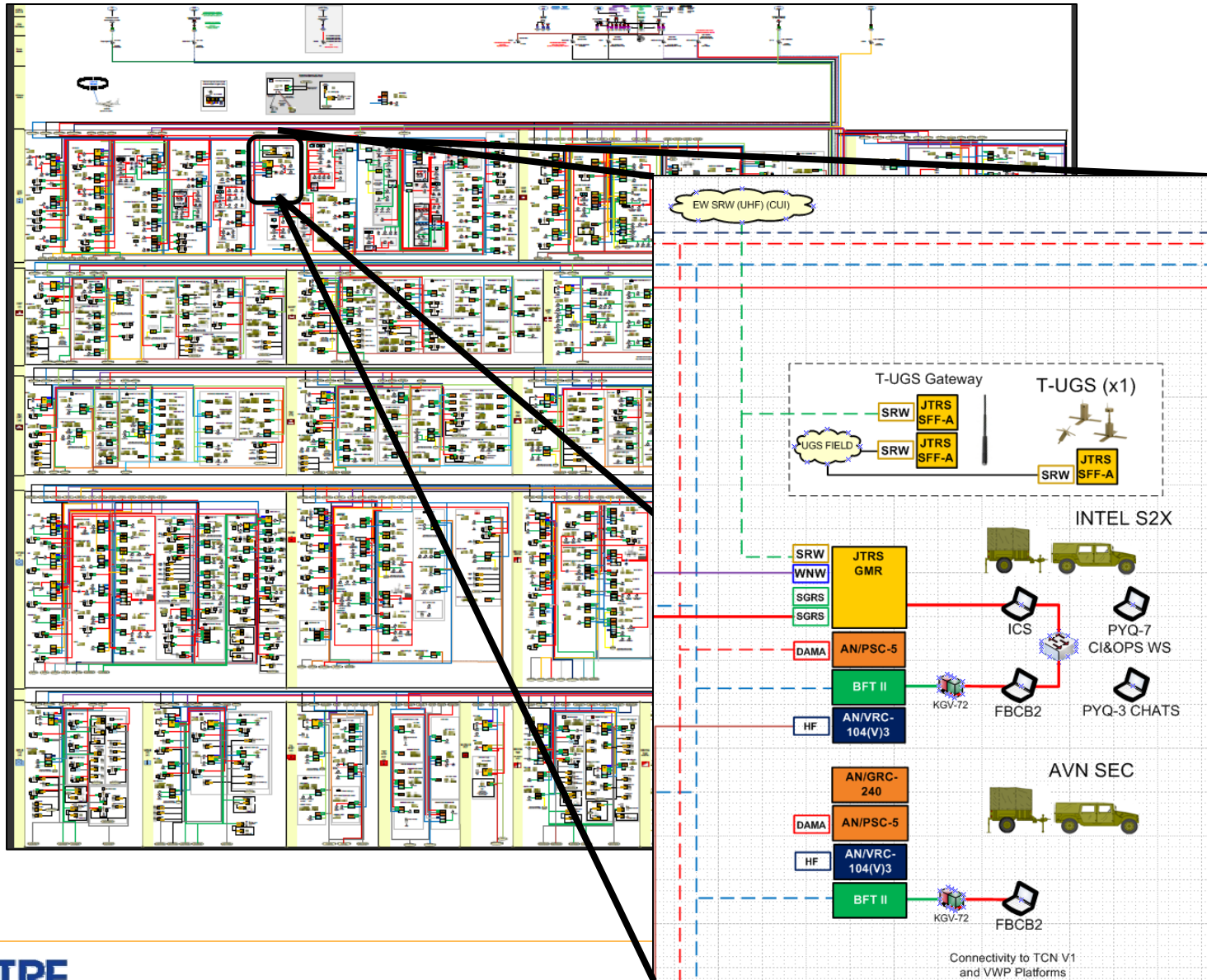
- Must be informed by staffs with relevant technical expertise
- Provided appropriately distilled information

Executive View (EV)

- Recently adopted architectural views
- Upgrade to traditional horseblankets
- Developed to support investment decision making for SoS
- Include systems in platforms on associated networks
- Encompass entire formations, e.g., Infantry Brigade Combat Team (IBCT)
- Combines information from views for system environments, e.g., DoDAF OV-1, OV-2, OV-4, SV-1 and SV-2



Example EV for an IBCT



Example EV Spreadsheet

| | Battalion | TOE Title | Para | Para Desc | Platform | Role | # of TOEs | # per TOE | # Platforms | WIN-T | BFT II/MTS | VUHF LOS | PRC-148 | Iridium | SIMCGARS RT | C2 System | BC Tier OTM | Handheld | Uncleared | Long Range | HV Specified | WNW | SRW 1 | SRW 2 | SRW 3 | Call Grp 1 | Call Grp 2 | Call Grp 3 | SIMCGARS | SIMCGARS | SIMCGARS | SIMCGARS | SIMCGARS | MUOS | HF | WNW | SRW | SINC | MUOS | HF | SFF-C | SFF-B | MP | HH | GMR | MP | SINC | UC | |
|----|-----------|-----------|------|-----------|----------|--------------|-----------|-----------|-------------|-------|------------|----------|---------|---------|-------------|-----------|-------------|----------|-----------|------------|--------------|-----|-------|-------|-------|------------|------------|------------|----------|----------|----------|----------|----------|------|---------|-----|-----|------|------|----|-------|-------|----|----|-----|----|------|----|--|
| 5 | BDE HQ | HHC | 1 | Cmd Grp | Stryker | Bde Cdr | 1 | 1 | 1 | POP | | | | | 4 | 3 | | | | | | Bde | | | | | | | Bde Cmd | Bde Cmd | | | | 1 | Bde Cmd | 0 | 1 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | | |
| 6 | BDE HQ | HHC | 1 | Cmd Grp | HMMWV | Bde Cdr | 1 | 1 | 1 | | | | | | 2 | 2 | | | | | | Bde | | | | | | | Bde Cmd | Bde Cmd | | | | | Bde Cmd | 0 | 1 | 2 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | | |
| 7 | BDE HQ | HHC | 1 | Cmd Grp | Soldier | Bde Cdr | 1 | 1 | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | |
| 8 | BDE HQ | HHC | 1 | Cmd Grp | Soldier | RTO 1 | 1 | 1 | 1 | | | | | | | | | | | 1 | | | | | | | | | | | | | | | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | | | |
| 9 | BDE HQ | HHC | 1 | Cmd Grp | Soldier | RTO 2 | 1 | 1 | 1 | | | | | | | | | | | 1 | | | | | | | | | | | | | | | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | |
| 10 | BDE HQ | HHC | 1 | Cmd Grp | HMMWV | Dep Cdr | 1 | 1 | 1 | | | | | | 2 | 2 | | | | | | Bde | | | | | | | Bde Cmd | Bde Cmd | | | | | Bde Cmd | 0 | 1 | 2 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | |
| 11 | BDE HQ | HHC | 1 | Cmd Grp | Soldier | Dep Cdr | 1 | 1 | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | |
| 12 | BDE HQ | HHC | 1 | Cmd Grp | Soldier | RTO 1 | 1 | 1 | 1 | | | | | | | | | | | 1 | | | | | | | | | | | | | | | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | | |
| 13 | BDE HQ | HHC | 1 | Cmd Grp | HMMWV | FSC | 1 | 1 | 1 | | | | | | 2 | 1R | | | | | | Bde | | | | | | | Bde Cmd | Bde Cmd | | | | | Bde Cmd | 0 | 1 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | | |
| 14 | BDE HQ | HHC | 1 | Cmd Grp | HMMWV | CSM | 1 | 1 | 1 | | | | | | 1 | 1R | | | | | | Bde | | | | | | | Bde Cmd | Bde Cmd | | | | | Bde Cmd | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | | | |
| 15 | BDE HQ | HHC | 1 | Cmd Grp | HMMWV | Asst Ops Sgt | 1 | 1 | 1 | | | | | | 1 | NA | | | | | | | | | | | | | Bde Cmd | Bde Cmd | | | | | Bde Cmd | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | | |
| 16 | BDE HQ | HHC | 2 | Cur Ops | HMMWV | XO | 1 | 1 | 1 | | | | | | 2 | 1T | | | | | | Bde | | | | | | | Bde Cmd | Bde Cmd | | | | | Bde Cmd | 0 | 1 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | | |
| 17 | BDE HQ | HHC | 2 | Cur Ops | HMMWV | S1 | 1 | 1 | 1 | 1 | | | | | 1 | 1T | | | | | | Bde | | | | | | | Bde Cmd | Bde Cmd | | | | | Bde Cmd | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | | | |



Findings and Conclusions

- **EV adoption – an enduring method for systems engineering**
 - An Army standard
 - Commonly used by USMC and ASD(NII)

- **EV use**
 - Supporting investment decision making
 - Provide data for M&S and cost analysis for COA comparisons
 - Capture theater baseline

- **Way ahead**
 - Off-the-shelf databases and tools
 - Incorporation in guidance documents