

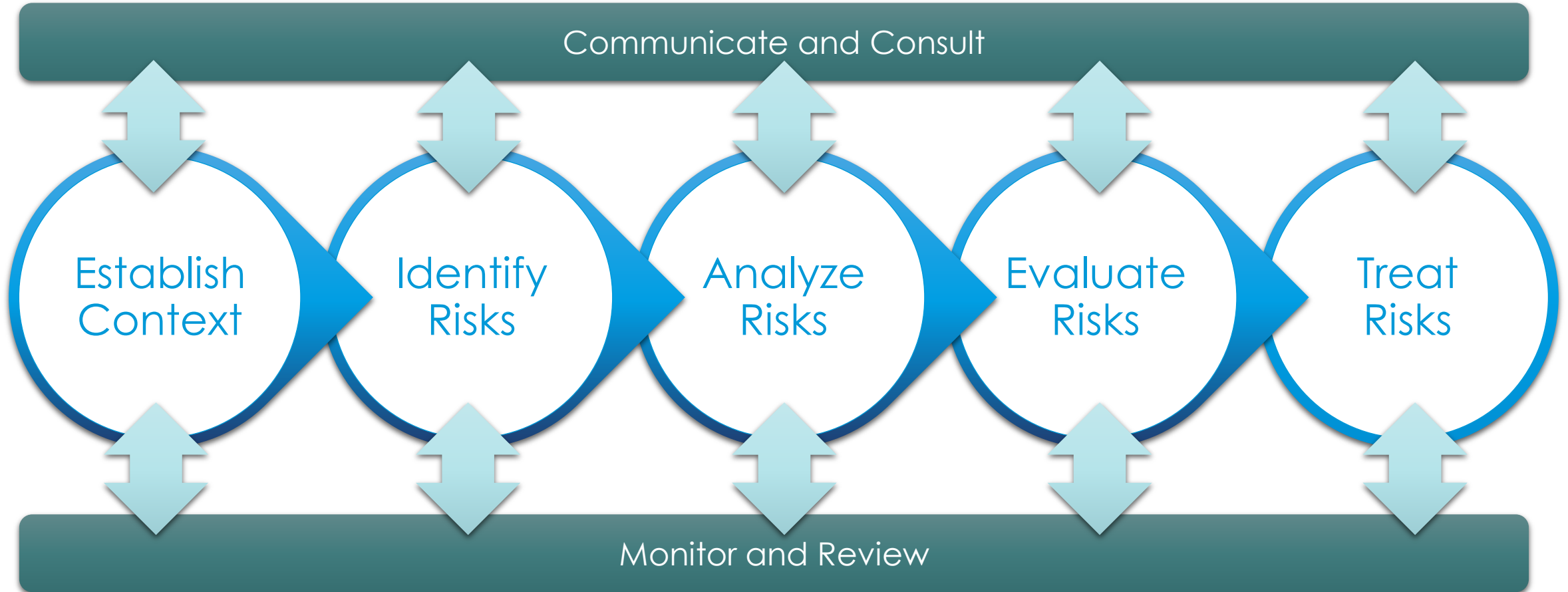
July 21, 2022

Risk Management Process

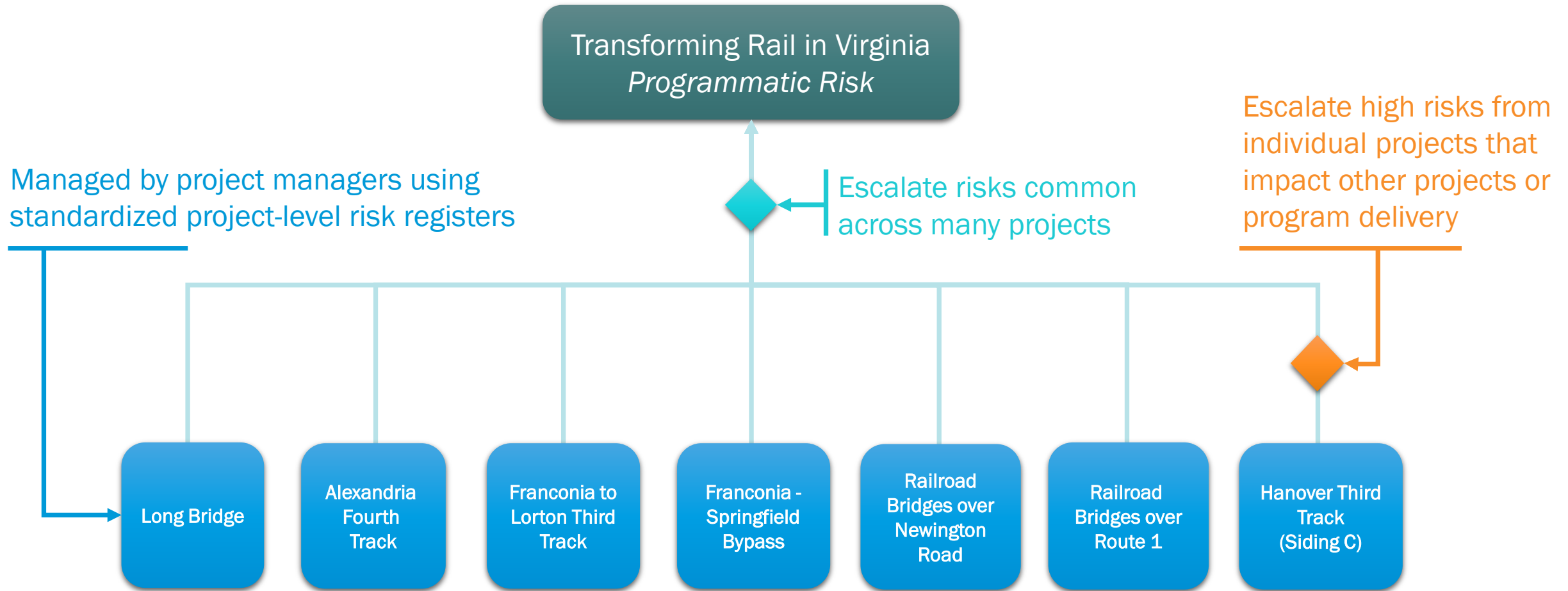
John Kearney
VP, Engineering & Construction



General Risk Management Process



Program Risk Management Process



Phase 1 Project-Level Risk Registers

- ☐ Alexandria Fourth Track
- ☐ Franconia to Springfield Bypass
- ☐ Franconia to Furnace Road Third Track
- ☐ Railroad Bridges Over Newington Road
- ☐ Railroad Bridges Over Route 1
- ☐ Potomac Creek Third Track South (Siding A)
- ☐ Woodford to Milford Third Track (Siding B)
- ☐ Hanover Third Track (Siding C)

Risk Categories

Risk Categories used in the registers align with FRA/FTA categories:

1. **Requirements Risk** – defining agreed upon requirements for a project (generally associated with project development)
2. **Design Risk** – associated with the performance and variability of design activities
3. **Construction Risk** – risks that are due to variability of the project's environment (unusual weather, unexpected subsurface conditions) and unexpected contractor failure
4. **Market Risk** – risk of procuring project management, administrative, right-of-way, design, or construction services, materials and equipment
5. **Post Construction Risk** – associated with operations and maintenance of project assets

Risk Scoring

Risk Score = Probability x Impact

Probability

- Is the chance that an event might happen
- Can be defined, determined or measured objectively or subjectively

Impact

- Is the outcome of an event which influences program objectives
- A single event can generate a range of impacts

Impact Types

- Safety and Security
- Environmental
- Schedule
- Cost or Financial
- Public Relations or Reputation
- Legal

Sample Scoring for a Risk Item

Impact Scale

Impact Type	Low - 1	Medium – 2	High – 3	Very High – 4	Significant -5
Safety and Security	10	30	50	100	150
Environmental	10	30	50	100	150
Schedule	10	30	50	100	150
Financial	10	30	50	100	150
Public Relations or Reputation	10	30	50	100	150
Legal	10	30	50	100	150

Aggregate Impact:
 $30 + 50 + 50 + 100 + 30 + 10 = 270$

Probability of Occurrence

Probability	Definition	Probability of Occurrence	Rate	Score
Significant – 5	More likely to occur than not	>90%	1	5
Very High – 4	Almost certain to occur	75-90%	0.8	4
High – 3	Given time, likely that it will occur	50-75%	0.6	3
Medium – 2	More likely not to occur under normal circumstances	10-50%	0.4	2
Low - 1	Unlikely to occur	<10%	0.2	1

Risk Priority Score:
 $270 * 0.6 = 162$

Risk Register and Mitigations



Example Programmatic Risk Register

ID	Identified Risk Description	Risk Category	Status	Internal or External	Safety and Security	Environmental	Schedule	Financial	Reputation	Legal	Probability	Priority Risk Score
XXX	...	REQUIREMENTS RISK	Active	External	Medium - 2	High - 3	Significant - 5	Significant - 5	Very High - 4	High - 3	Significant - 5	530
XXX	...	REQUIREMENTS RISK	Active	External	Low - 1	Very High - 4	Very High - 4	Significant - 5	Very High - 4	Significant - 5	Very High - 4	488
XXX	...	CONSTRUCTION RISK	Active	External	Low - 1	Low - 1	Significant - 5	Significant - 5	Significant - 5	Significant - 5	High - 3	372
XXX	...	DESIGN RISK	Active	External	Medium - 2	High - 3	Very High - 4	Significant - 5	Very High - 4	Low - 1	Very High - 4	352
XXX	...	REQUIREMENTS RISK	Active	External	Low - 1	Very High - 4	Very High - 4	High - 3	Significant - 5	Significant - 5	High - 3	336
XXX	...	REQUIREMENTS RISK	Active	External	Low - 1	Low - 1	High - 3	Low - 1	Significant - 5	Very High - 4	Significant - 5	330
XXX	...	MARKET RISK	Active	External	Low - 1	Very High - 4	High - 3	Low - 1	High - 3	Very High - 4	Significant - 5	320
XXX	...	CONSTRUCTION RISK	Active	Internal	Low - 1	Medium - 2	Very High - 4	High - 3	Medium - 2	High - 3	Significant - 5	270
XXX	...	DESIGN RISK	Active	External	Low - 1	Medium - 2	Very High - 4	Very High - 4	High - 3	Low - 1	Very High - 4	240
XXX	...	REQUIREMENTS RISK	Active	Internal	Low - 1	Low - 1	Very High - 4	High - 3	High - 3	Low - 1	Significant - 5	230

Programmatic Risks are ranked from High to Low for mitigation planning.

Risk Mitigations

Mitigations are assessed for the application and effectiveness to determine if more are needed

Application

- Not Applied
- Partly Applied
- Applied
- Applied/Documented
- Applied/Documented
Communicated/Monitored

Effectiveness

- Very Effective
- Effective
- Partially Effective
- Marginally Effective
- Not Effective

These may
change over time
as mitigation
milestones are met

Risk Mitigations

ID	Identified Risk Description	Risk Category	Priority Risk Score	Responsible Party	Risk Mitigation Type	Mitigation or Control Action	Applicability	Effectiveness
XXX	...	REQUIREMENTS RISK	530	VPRA	Risk Reduction	...	Partly Applied	Partially Effective
XXX	...	REQUIREMENTS RISK	488	VPRA	Risk Reduction	...	Partly Applied	Effective
XXX	...	CONSTRUCTION RISK	372	VPRA	Risk Reduction	...		
XXX	...	DESIGN RISK	352	CSXT	Risk Reduction	...	Not Applied	Marginally Effective
XXX	...	REQUIREMENTS RISK	336	CSXT	Risk Reduction	...	Partly Applied	Very Effective
XXX	...	REQUIREMENTS RISK	330	VRE	Risk Avoidance	...	Applied	Very Effective
XXX	...	MARKET RISK	320	Amtrak	Risk Reduction	...	Partly Applied	Very Effective
XXX	...	CONSTRUCTION RISK	270	VPRA	Risk Reduction	...	Partly Applied	Partially Effective
XXX	...	DESIGN RISK	240	VPRA	Risk Reduction	...	Not Applied	Very Effective
XXX	...	REQUIREMENTS RISK	230	VPRA	Risk Reduction	...	Partly Applied	Effective

Monitoring

- As projects advance, project teams routinely monitor project-level risk registers
- Programmatic risk register is reviewed with VPRA Executive Director and VPRA Chief Operating Officer monthly

Questions?

