
PSCR
Strategic Planning &
Program Execution
National Institute of
Standards and Technology
U.S. Department of Commerce
CTL
Communications
Technology Laboratory

Management Approach (2013-Present)

1 2013 Stakeholder Workshop

Gathered, prioritized input to determine what R&D investments are necessary to transition public safety from LMR to LTE broadband.

- **Output = 250 possible investment areas, evaluation criteria**

2 Technology Roadmaps & Summits

Convened annual working groups, events to identify gaps and opportunities to meet public safety's highest-priority communications needs.

- **Output = LBS, Analytics, UI/UX roadmap reports**

3 Strategic Planning

Ideas collected in roadmaps and summits informed PSCR's current portfolio structure, project plans, and strategic planning efforts to focus resources.

- **Output = Portfolio Structure, *PSCR Success Framework,* Funnel Vision**

4 Performance Measurement

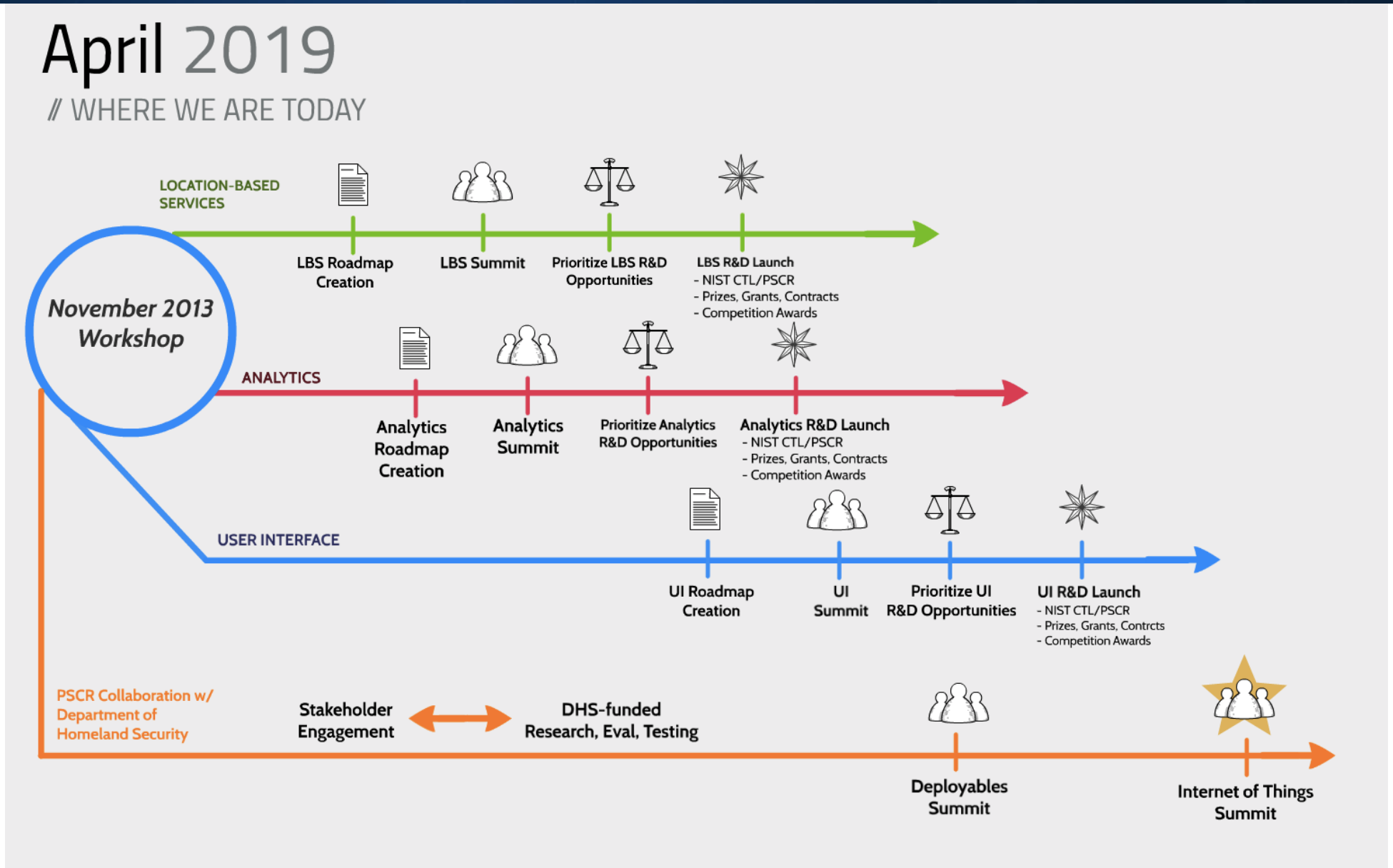
Developed portfolio dashboards, performance metrics to observe research progress and impact over time.

- **Output = Quarterly portfolio reviews to monitor program effectiveness, mitigate risk, improve outcomes generated by PSCR**

PSCR Management Core Values

- Continuously solicit stakeholder input through a variety of channels
- Transparency, open information sharing
- Consistent, repeatable planning logic to justify decisions
- Build on momentum from current efforts in industry, academia, federal partners
- Identify highest priority public safety needs before launching R&D projects
- Measure project management effectiveness and R&D impact to continuously improve program outputs

R&D Planning Timeline



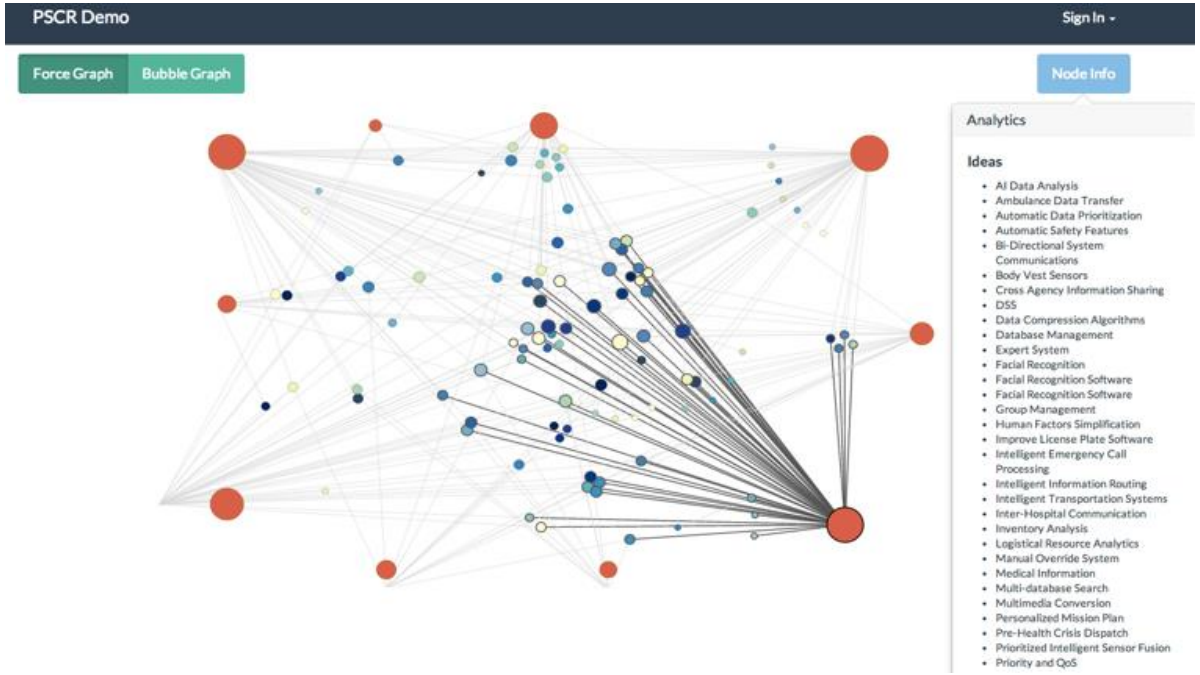
1 Initial R&D Planning

In 2013 PSCR hosted an initial planning workshop during which over 150 stakeholders provided input on the direction of the R&D program.

- 250 communications gaps identified across 32 technology areas
- Established a set of prioritization criteria for PSCR to use to inform allocation of broadband investments for public safety

Location-Based Services, Analytics, UI/UX were identified as top need areas for public safety.

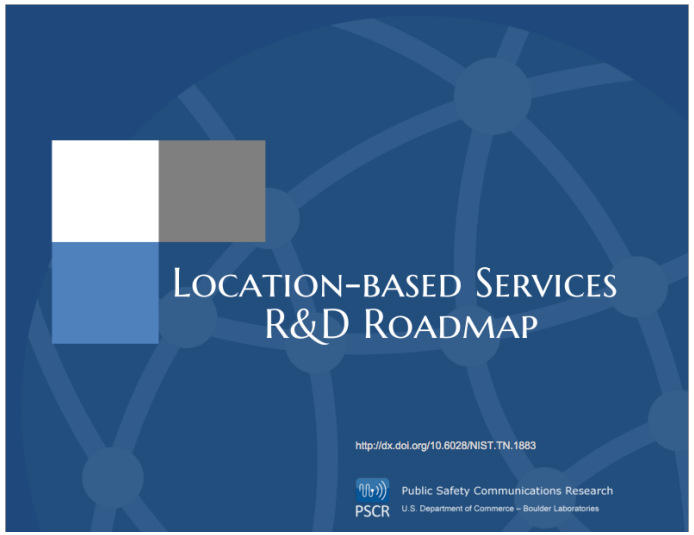
PSCR eventually distilled workshop outcomes into six portfolios managing over 80 internal and extramural research projects



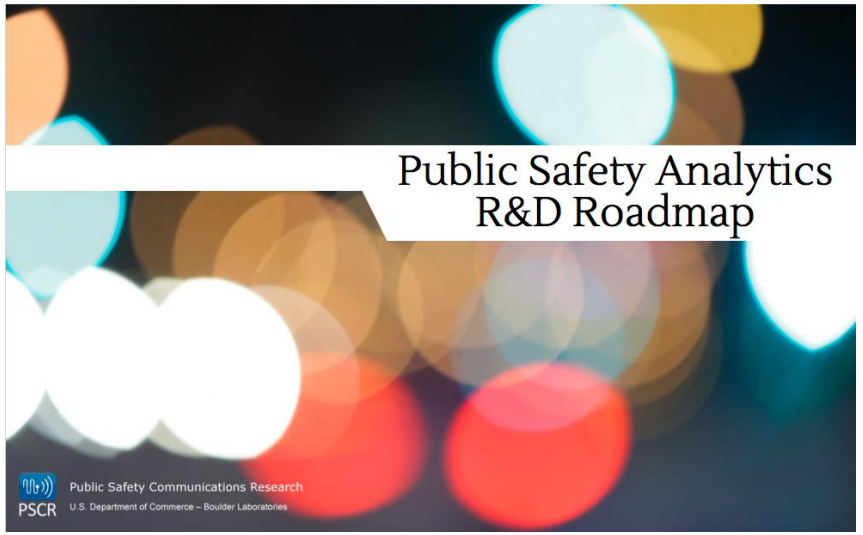
2 Technology Roadmaps

Stakeholders helped PSCR characterize emerging technology areas for public safety:

- **Trends & Drivers** – *What environmental factors may affect public safety's adoption of emerging broadband technology?*
- **Technology Capabilities & Gaps** – *What software, network, or device gaps need to be addressed before public safety can maximize next generation broadband capabilities?*
- **Enabling Actions & Actors** – *What current efforts can public safety leverage in this area?*
- **Enabled Operational Objectives** – *What could public safety achieve with these capabilities?*



2014-2015



2015-2016

2016-2017

2 R&D Evaluation Criteria

Developed in collaboration with stakeholders to prioritize gaps to address through R&D:

1. **Leverage –** *The ability to realize a return in multiple technology areas or public safety disciplines*

2. **Feasibility –** *The probability of a successful return on investment*

3. **Impact / Rewards / Results –** *Outcomes related to increased public safety, common good, and job effectiveness*

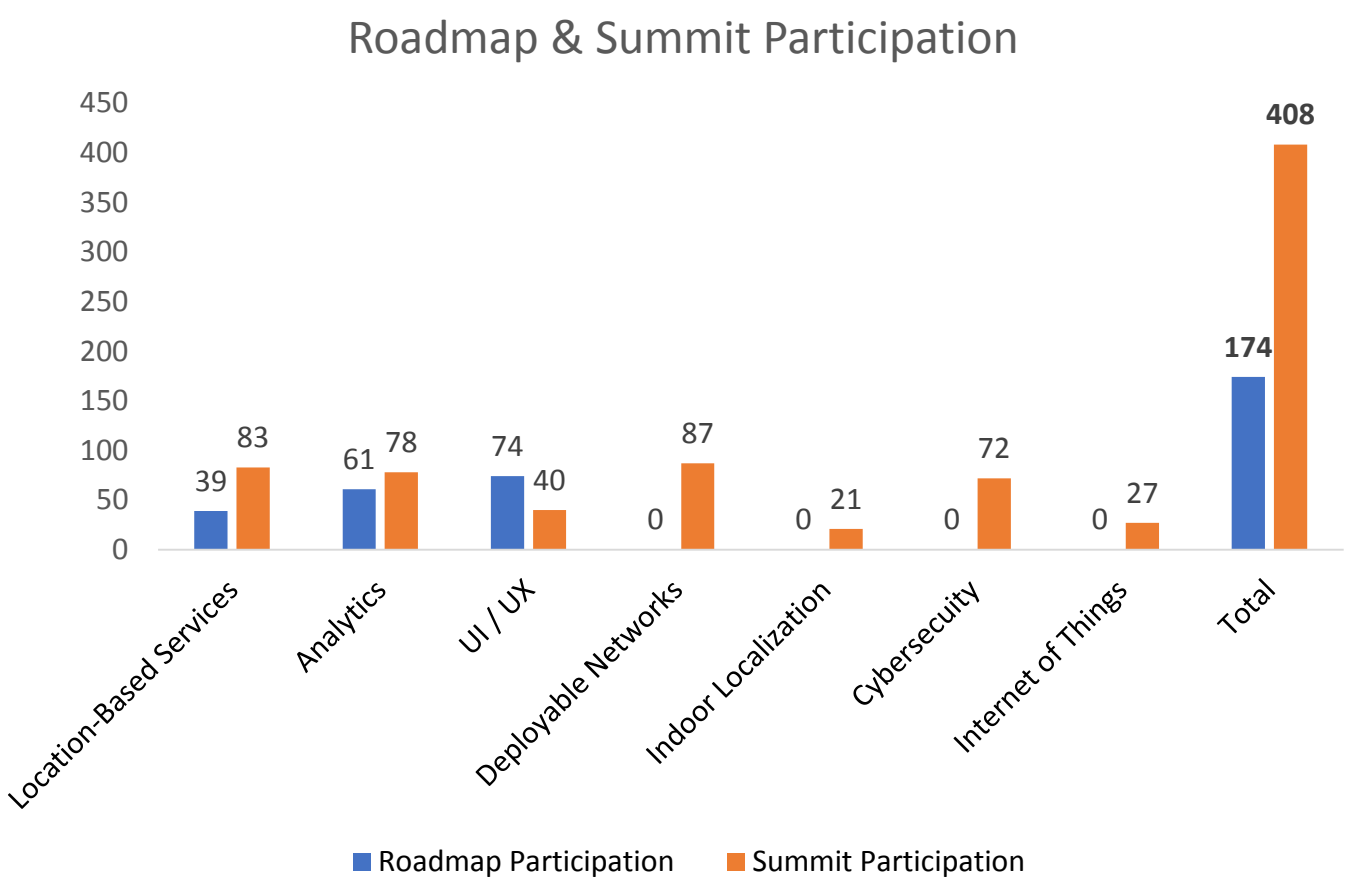
4. **Uniqueness to Public Safety –** *Gap may not receive significant non-governmental investment because of a lack of a clear commercial application*

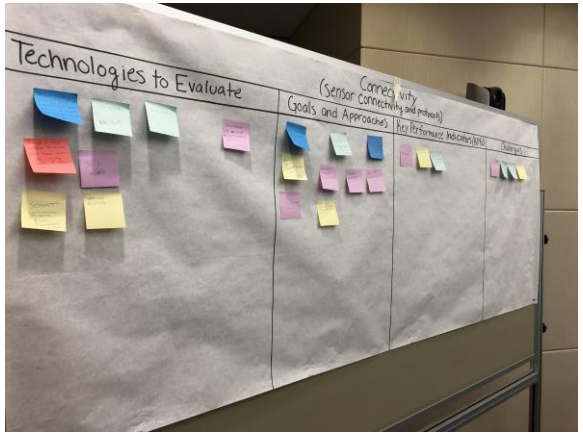
5. **Cost Effectiveness –** *The overall cost of investment and ownership to address gap*

	GAP LIST	TOTAL SCORE (weighted)	Feasibility Score	Impact Score	Cost Score
1	Need to promote interoperability between IoT devices that stores its data in a siloed cloud database.	48.03	40	53	49
2	The lack of a wireless location accuracy standard (x, y, z)	44.31	46	45	39
3	Contextual information must be stored with IoT data to assign data to users, devices, other identifiers (sensors, cell locations) as it moves across system	43.53	37	47	46
4	Develop extendible, backwards compatible IoT data standards that can be added to by industry software developers	42.2	36	45	46
5	Link building infrasturcture (comms, data, security) to buiilding maps / diagrams	42.04	36	44	48
6	Mandate all IoT sensor data sent into Public Safety systems must have a timestamp (min vs. maximum granularity TBD)	41.12	50	37	36
7	Develop regional and/or federal IoT data exchanges (database with APIs for local agencies to tap into)	40.55	34	42	49
8	The lack of a fundamental definition of a level of information across "things."	40.47	42	42	33
9	A need for a mechanism to communicate between smart buildings and first responders.	39.86	38	39	46
10	The ability for Artificial Intelligence to be accurately extended into complex measurements such as hyperspectral algorithms, facial id, object id, and physiological status.	39.66	40	40	38
11	The lack of interoperability of dashboards between vendors.	39.39	30	43	47
12	The utilization of Artificial Intelligence as a service rather than an application feature.	39.33	42	37	41
13	Develop regional and/or national data classification schema for: type of event, role rank, data type to inform access levels	38.64	42	38	34
14	The cost of integrating tech to buildings prevents most owners from doing so.	38.18	35	40	39
15	Geofencing to individual room or floor level not possible using existing CAD systems	30.82	32	31	28
16	Lack of mitigation solutions for privacy policies.	28.53	25	29	34

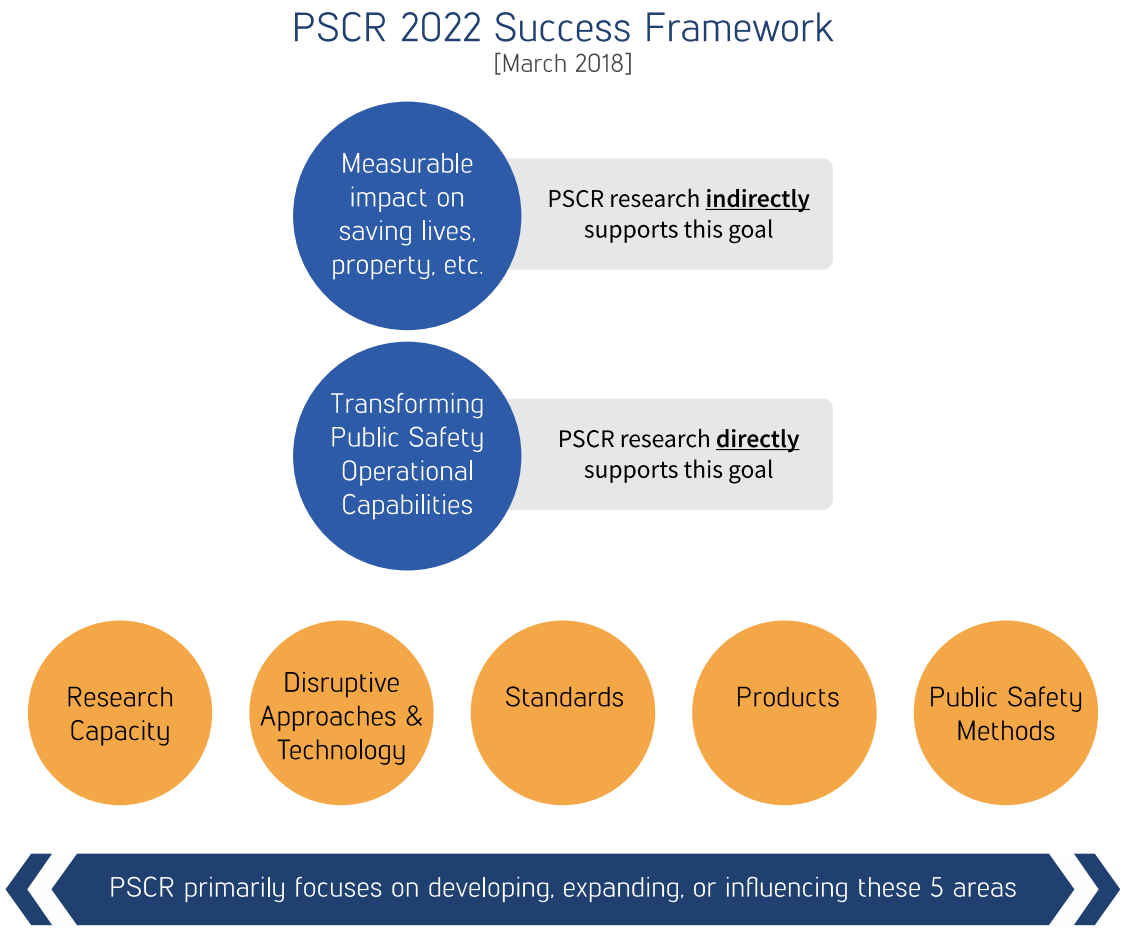
2 R&D Summits

Collect additional input from a broader stakeholder base to build on roadmap findings





3 Strategic Planning – Defining Success

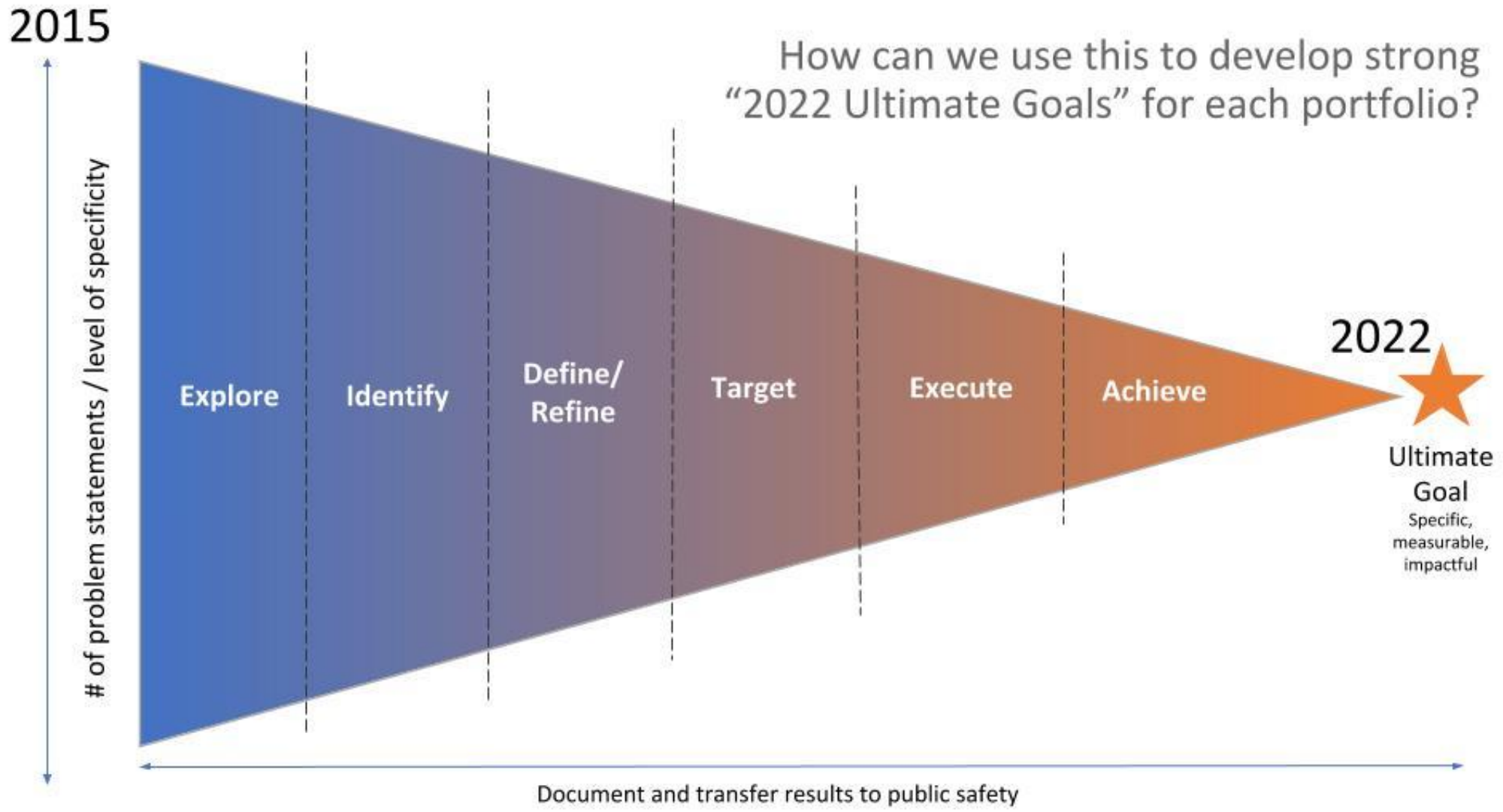


PSCR holds Strategic Planning Sessions 2x per year to check in on progress towards ultimate mission and five impact areas

What constitutes 2022 Success?
PSCR will transform public safety communications by influencing 5 research areas

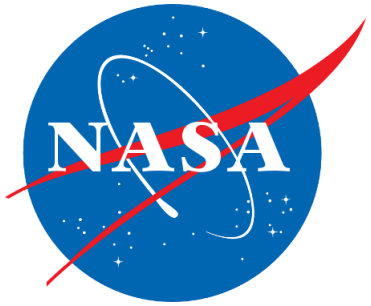
Portfolio and Project Alignment
Portfolios and project leads have aligned their activities with a variety of these areas

3 Strategic Planning – Funnel Vision



4 Project & Portfolio Management

- Portfolio leads develop project plans at the start of each fiscal year and update them each quarter
  - **6 portfolios managing 40 NIST research projects**
- Quarterly Portfolio Review Meetings cover a consistent set of topics:
  - Recent Wins
  - Portfolio / Project Plan Updates
  - Upcoming Funding Opportunities or Prize Challenges
  - Upcoming Major Milestones
  - Stakeholder Engagement Activities
  - Financial Updates



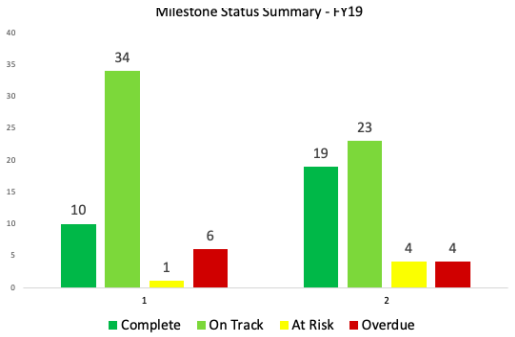
Sandia
National
Laboratories

- PSCR piloted a performance measurement effort in FY19 to more closely monitor project progress, potential risks, and confidence over time

- Approach based on best practices used at other leading R&D labs customized to PSCR goals

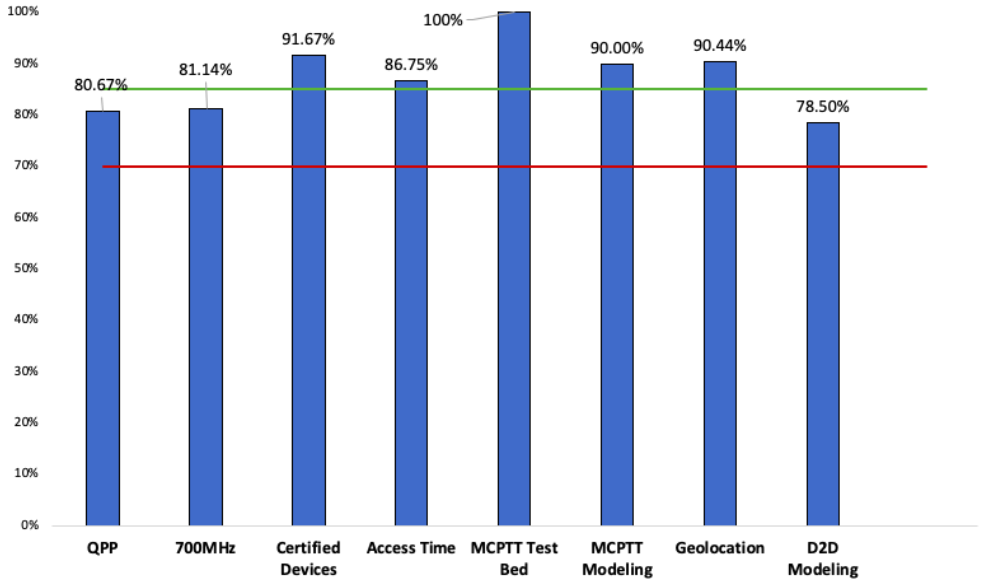
4 Portfolio & Program Dashboard

- PSCR calculates confidence metrics based on updated project plans each quarter for internal and external research activities
- Dashboards classify project priority and completed, on track, at risk, or overdue milestones in project plans
- Consistence use of metrics scale to the program, portfolio, and individual project level
- PSCR uses this data to more proactively manage at risk projects and course correct when necessary



FY19 Q2 Dashboard (updated February 21, 2019)

Project	Milestone	Owner	Percent Priority	Percent Complete	Original Targets	Overall Risk to Portfolio	Confidence
1. QPP Modeling		Richard Rouil	10.94%	8.82	10.94	2.11	80.67%
2. 700 MHz Adjacent Channel LMR Device Impact		Jon Cook	10.94%	8.88	10.94	2.06	81.14%
3. NIST List of Certified Devices and 3GPP RAN5		Jason Kahn	12.50%	11.46	12.50	1.04	91.67%
4. MCV Access Time Measurement Methods		Tim Thompson	15.63%	13.55	15.63	2.07	86.75%
5. MCPTT Research Test Bed		Lisa Soucy	10.94%	10.94	10.94	0.00	100%
6. MCPTT Modeling		Yishen Sun	14.06%	12.66	14.06	1.41	90.00%
7. Geolocation System Development		Chris Dennis	10.94%	9.89	10.94	1.05	90.44%
8. D2D Modeling		Richard Rouil	14.06%	11.04	14.06	3.02	78.50%
TOTAL			100.00%	87.24	100.00	12.76	87.24%



Questions?