



Rebecca Harnagel
California High-Speed Rail Authority
770 L Street, Suite 620 MS 2
Sacramento, CA 95814

Date: September 24, 2015

Subject: RFEI for the Delivery of an Initial Operating Segment Letter of Transmittal

Dear Rebecca,

Ericsson is pleased to respond with a positive Expression of Interest to the California High-Speed Rail Authority for the Delivery of an Initial Operating Segment, RFEI HSR#15-02, Release Date: June 22, 2015.

Per the authority's request, Ericsson is submitting this EOI individually.

Please find enclosed within this submission, the Ericsson RFEI response, outlining the innovative solutions and value Ericsson can deliver for you.

We eagerly welcome the opportunity to support the Authority in this landmark endeavor. We believe Ericsson delivers an unmatched value proposition and solutions portfolio, while also combining a strong California and local presence with global scale, best practices and tested industry experience.

We look forward to future dialogue and learning more about how Ericsson can best support your objectives.

Sincerely,

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Cover Letter

We, at Ericsson, are excited to submit our Expression of Interest for the California High Speed Rail opportunity. Please consider this document our formal declaration as such.

We sincerely believe in the vision of High Speed Rail and understand the multitude of benefits this project can deliver to the State of California. We are very pleased to be considered in your thinking and look forward to the opportunity to be one of your trusted partners in turning this vision into a reality. To execute on this vision, we deeply understand the monumental scale and scope of what lies ahead. As a world leader in communications, media and IP solutions and multi-vendor systems integration, Ericsson is trusted and depended on to deliver mission critical, highly complicated solutions all across the globe.

We welcome the opportunity to discuss with you our experiences and solution offerings and believe that Ericsson's technology leadership and innovation, systems integration capabilities, and highly trusted delivery record will provide the measurable value you seek and expect in your trusted partners.

With that in mind, Ericsson has carefully reviewed the RFEI for the Initial Operating Segment and has expressed the areas where Ericsson can deliver most value.

Namely, this includes, but not limited to,

- Section 7.2.4 Systems for the IOS South and
- 8.2.4 Systems for the IOS North.

Ericsson is a world class Communications, Systems Integrator and Technology Solutions provider. We aim to leverage our vast expertise and partner ecosystem to deliver a full end to end solution for outlined scope of the aforementioned sections.



California High Speed Railway Authority

High Speed Rail Communications

RFEI HSR15-02

Ericsson RFEI Response Submission

September 28th, 2015



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1. Ericsson Experience and Team Structure

1.1. Ericsson Introduction and Team Structure:

Ericsson is the driving force behind the Networked Society – a world leader in communications technology and services. Our long-term relationships with every major telecom operator in the world allow people, businesses and societies to fulfil their potential and create a more sustainable future. Our services, software and infrastructure – especially in mobility, broadband, media and the cloud – are enabling the telecom industry and other sectors to do better business, increase efficiency, improve user experience and capture new opportunities. With more than 110,000 professionals and customers in 180 countries, we combine global scale with technology and services leadership.

Ericsson was first established in the United States in 1902. Through the years, Ericsson has grown tremendously, now counting over 16,000 employees in North America. North America is now the largest region for Ericsson globally, with our headquarters located in Plano, Texas, coupled with large offices in Silicon Valley, New York City, Washington DC, Seattle, Atlanta, Toronto and Montreal to name a few.

In California, Ericsson maintains a significant presence, with substantial offices in San Jose, Pleasanton, Santa Clara, Irvine and El Segundo. Additionally, Ericsson also maintains a significant field service organization, including significant coverage across the state of California. At last count, Ericsson had over 190 field engineers and project leaders geographically dispersed across California, delivering solutions and managing field operations for our customers wherever support is needed.

Today, many of the world's leading transportation companies, from traffic management, to shipping, and of course rail, rely on Ericsson for their next generation communications and ICT solution needs.

Ericsson views Intelligent transport systems (ITS) as critical to enhancing the efficiency, safety and green credentials of the transport sector across the world. We are on the brink of an extraordinary revolution that will change our world forever. In this new world everyone, everything and everywhere will be connected in real time. We call this the Networked Society. It will fundamentally change the way we innovate, collaborate, produce, govern and sustain. The transport industry, including high speed rail will see fantastic benefit from this evolution.

Realizing a truly intelligent transport system is challenging, as it must be aligned with the needs and requirements of a complex ecosystem of users and providers. Information and communications technology (ICT) must be integrated with existing transport infrastructure, vehicles, back-end support systems and end users – including drivers and passengers. Connected cars, buses, trucks, vessels, trains, aircraft, roads and infrastructure are key elements of a Networked Society. Real-time information is a critical requirement for effective usage and operation of ITS for public transport, logistics management, road and rail operations, and management of major transport hubs. Transport systems feature hubs such as airports, harbors, railway stations and cargo terminals, where many different modes of transport meet.

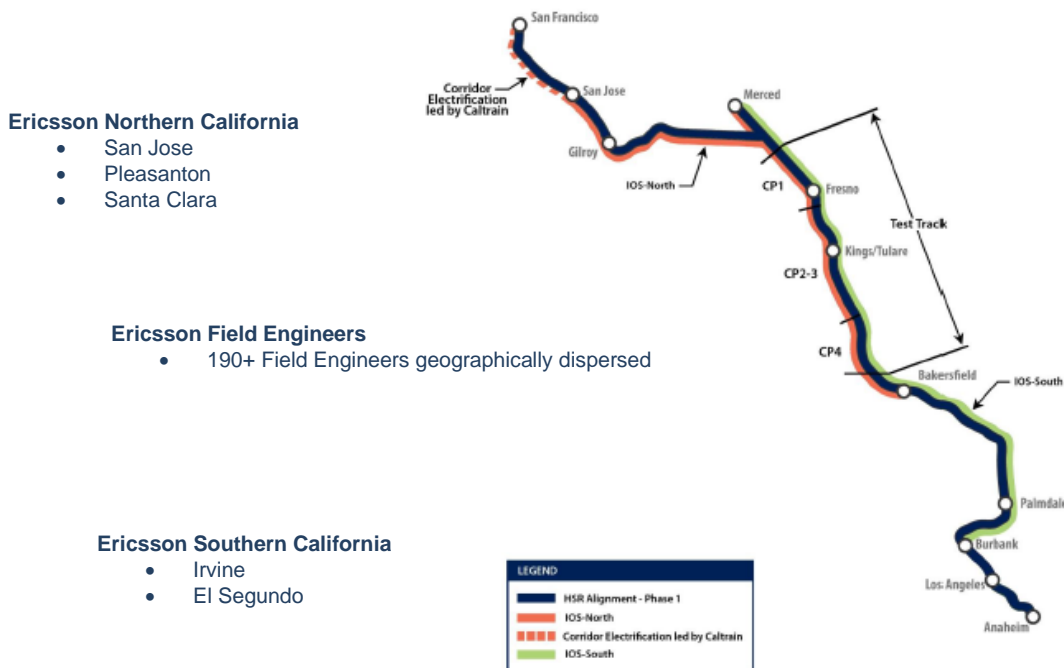


Managing this complexity requires a structured, secure means of communicating and sharing information while on the move. Designing, deploying and managing ITS services for a multitude of applications, devices and means of connectivity, creates a series of challenges in terms of system complexity and cost of deployment and operation.

At Ericsson, our global scale and technology and services leadership delivers and supports networks that connect more than 2.5 billion subscribers. Forty percent of the world’s mobile traffic is carried over Ericsson networks, while over 50% of 4G traffic is carried by Ericsson. Ericsson deep investments in research and development ensure that our solutions – and our customers – stay in front. Founded in 1876, Ericsson has its Global headquarters in Stockholm, Sweden with net sales in 2014 of 34.9 Billion USD.

As requested by the authority in section 11.3 of the RFEI, Firm Experience and Team Structure, Ericsson has been actively involved in working as a Prime Systems integrator in numerous rail and transportation projects over the past few years. Leveraging our System Integration (SI) capabilities, experience in Information Communications & Technology (ICT), and extensive network of trusted partners, we excel at the delivery of turnkey solutions and support. Ericsson believes it can be a key partner for the Rail Authority, and specifically your prime integrator for each of the systems specifically referenced in section 7.2.4 and 8.2.4.

Figure 1: Ericsson California Presence in Relation to HSR location





1.2. Ericsson Experience

Ericsson has been at the heart of delivering demanding, multi-vendor, highly complex integrated solutions for global transportation leaders for some time. Below is a brief overview of a few select references.

Grand Central Terminal

Ericsson is currently working with a team of carriers, which includes AT&T, Sprint, T-Mobile USA and Verizon Wireless to create a multi-tenant, high capacity, indoor network, including Distributed Antenna System (DAS) and WiFi solutions to ensure robust connectivity services to one of the most demanding travel hubs in the US.

In addition, Ericsson is providing a separate fiber and radio communications network for use by the MTA, MTA Police, NYPD, NYFD, and emergency responders.

An overwhelming 80 percent of rush-hour commuters to NYC's central business districts use mass transit (subways, busses and trains) – most of which is operated by the MTA. Ericsson's extensive experience and record of delivery with highly complex and large scale projects was key in Ericsson being chosen by the MTA.

Hydro One Telecom, Canada: Everything in One place

Safety and reliability have always been top priorities for electric utility companies. With new devices being added to the mix, from wind turbines to smart meters and more, there are now thousands of new potential points of failure. Managing the grid's increasingly complex telecommunications network is critical to ensuring reliable power delivery. Hydro One Telecom has risen to the challenge, using Ericsson's Operational Support Systems (OSS) as the foundation for its network and service management efforts.

Read the full story here: http://www.ericsson.com/article/hydro-one-canada_1595655397

Shinkansen Railway (Japan)

In Japan, Ericsson was responsible for testing and optimizing a wireless network for Shinkansen – a network of high-speed railway lines. Among other results, Ericsson delivered an estimated 75% improvement in signal drops.

Taiwan High Speed Rail

The ubiquity of high speed mobile communications has increased the expectation level for business and consumers alike. People expect excellent communication services and connectivity wherever they are, and travelling at 220 MPH on a high speed rail car is no exception. However, the task of supporting these capabilities for a bevy of demanding users is not a trivial task. Working in partnership with other industry leaders, Ericsson has developed and validated a new technology solution to deliver great mobile services, even at high speeds.



Please see the full story here <http://www.ericsson.com/research-blog/lte/network-on-the-move/#more-2309>

Maersk ICT Solution

Today, over 90 percent of the world's cargo, at some point along its journey, relies on the sea for distribution. In the Shipping industry, Maersk Line is the clear global leader, in both scale and innovation. With the world's largest fleet of cargo ships, and managing 17 million containers through 125 countries, Maersk must drive efficiency and technology to ensure success.

Seeking a trusted partner in innovation and solutions, Maersk and Ericsson started working together in 2011. The ground-breaking collaboration resulted in a solution which aimed to connect the entire Maersk Line fleet, resulting in the building of the world's largest floating mobile network.

With over 350 connected vessels, Maersk Line now has the ability to monitor each connected container in their fleet in real time, giving ultimate visibility and a higher degree of control over each step of the journey. The data collected also provides the company an opportunity to innovate further in areas of importance, such as efficient delivery of cargo, environmentally friendly processes and adaptability to often unpredictable conditions at sea. As part of the agreement, Ericsson provides global managed services support, including 24/7 network monitoring and onboard maintenance services in a large number of ports across all major regions.

Learn the full story here: <http://www.ericsson.com/news/1576938>

Algerian Highway

East-West Highway Project is a \$13BUSD six lane highway, in the country of Algeria. Among many challenges on a project of this scale, one was that the project was already in motion, when the needed ICT (Information & Communications Technology) infrastructure was decided to be added. Additionally, effective management of the ICT interoperability between three different road segments was critical. Ericsson delivered a comprehensive communications solution, including integration of several 3PP solutions and an end-to-end fiber optic multiservice network.

Public Safety LTE

Ericsson's Public Safety LTE solution is a fast, reliable broadband network for public safety organizations. In emergency service call-outs, a picture or a video stream is often vital for achieving a successful outcome. Today's users of communications equipment in the public safety sector have access to narrowband radio. But this needs to be complemented with fast and reliable mobile broadband services. Public Safety LTE is a turnkey solution featuring mobile broadband network infrastructure as well as applications and devices for first responders. Ericsson believes that the authority's current network situation can be handled using a similar solution.



See our offering here: <http://www.ericsson.com/ourportfolio/public-safety/public-safety-lte>

2. Ericsson Project Approach and Delivery Strategy

Ericsson takes a very thorough and holistic approach when evaluating solutions and delivery for a railway network. As we have experienced, each network build poses a different set of challenges. Specific consideration must be given to the overall operational demands, but also the specific demands and requirements on the network for passenger comfort, operations, safety and more. Simply stated, the network must be robust, adaptable, and cannot fail.

A reliable network is foundational for the relevant services that underpin efficient operations and excellent customer experience. For sections 7.2.4 and 8.2.4, Ericsson would leverage best in industry competence and a vast network of trusted third party partners. Ericsson has extensive experience in operation control systems and managing of operations for large customers.

In section's 5.3 & 5.4, the authority is requesting a Design-Build-Finance-Maintain (DBFM) for the IOS South and North. Ericsson welcomes the opportunity to discuss a DBFM for the systems referenced in section 7.2.4 and 8.2.4, employing best in practice Systems Integration with numerous ICT partners. This section contains a high level overview of Ericsson's project approach and methodology. Ericsson understands the importance of a rigorous methodology and execution. The Ericsson Delivery Methodology and execution team is built from experience leading and delivering many of the world's largest ICT solutions. This has honed Ericsson's approach and created one of the most successful and trusted delivery engines known today.

For Section 7.2.4 and 8.2.4 systems project scope, highlighted below is the Ericsson Design, Build, Consulting and Integration, and Operation approach and delivery. These include:

- Consulting and Systems Integration (CSI)
- Application Development and Maintenance (ADM)
- Network Roll Out (NRO)
- Network Design and Optimization (NDO)
- Managed Services (MAS)

2.1 Consulting and Systems Integration

Ericsson's Consulting and Systems Integration (CSI) end-to-end approach aggregates processes, methods and tools under a single, common framework, which is complemented with a number of specific tools, methods, procedures and templates. The methodology is optimized through collective application of formal lessons learned across all projects and organizations.



Ericsson provides a holistic CSI approach that will help the California High Speed Rail Authority be a leader in a market that is defined by rapid changes in technology, new players and demanding consumers. At Ericsson, we work with numerous other industries and ambition to identify the needs of the Rail Authority and address them through business-model evolution, service-management innovation and technology strategies.

This universal approach is extended outwards to a wide partner ecosystem we interact with in order to deliver a state of the art customer experience each and every time. To site a few examples pertaining to the Initial Operating Segments systems, Ericsson would apply this methodology along with our own solutions in regards to both the passenger information and Closed Circuit TV systems. In addition, Ericsson can leverage industry leading partners for the signaling and SCADA systems. This is all accomplished through the utilization of Ericsson's integration proficiency and technology.

Utilizing our broad portfolio of services and partners, we cover all areas of today's complex business and technical environments, to ensure the sustained success of our customers.

2.2 Application Development and Maintenance

Based on past experience, Ericsson has encountered many engagements where various operators have had concerns regarding managing applications and systems. Transformed into actions, these concerns can be grouped into a few areas that are addressable:

- Significantly reduced costs
- Improved business performance
- Manage demand for critical skills and free up existing staff to focus on strategic initiatives
- Stability and availability of applications and systems over time.

Ericsson's Application Development and Maintenance (ADM) proposition addresses all of the above in a very concrete manner. This Ericsson capability addresses the evolution and maintenance of solutions and applications. ADM secures that development of new functionality and efficient manner over time in order to meet business needs for short time to market and efficient use of investments, budgets, people and processes. Regarding the railway, this service could be applied to the web portal and platform for the passenger information systems located onboard and in the stations. Additionally, this approach could be used when developing a "smart" fare collecting system and maintaining it 24/7 to ensure customers are able to purchase tickets using such a service.

2.3 Network Design and Optimization (NDO) and Network Roll-Out (NRO)

Ericsson's Network Design and Optimization (NDO) services are a key ingredient in ensuring the railway's network is able to handle the high level of resiliency, latency,



and performance needed to deliver across multiple use case and requirement sets. Ericsson is the undisputed global leader in this space with the capabilities to deliver value-added services in Network Design and Optimization with our highly skilled professionals and a complete portfolio of services and tools. This full range of services addresses everything encompassed by technology deployment and creation in order to assure the necessary performance, optimal user experience and flexibility for the rail authority.

Network Roll-Out (NRO) offers a complete suite of services that address Mobile Broadband, Packet Transport, Transmission, IP, Fiber and Multi-Vendor Networks. The world's largest Network Operators and industry customers rely on Ericsson in this regard more than any other company. Our service undertakings and offerings are built around our capabilities in Project Management, Site Engineering, Civil Work, Installation, Product Configuration and Integration covering end-to-end deployments from Site Acquisition through to Customer Acceptance.



Ericsson leverages industry hardened internal competencies and strategically sourced suppliers, to implement complex network solutions, for our customers. To provide some relevant NRO/NDO insights to the authority, in 2014 Ericsson deployed/constructed, modernized, harvested and/or integrated over 67,000 sites in North America and has over 190 project professionals (Project Managers, Construction Managers & other Project Administration) based in California alone (Irvine, San Jose and Pleasanton). These professionals are complimented by Ericsson's best practices, tools, and logistics management. A timely, efficient network launch is essential to the business needs of our customers. Ericsson manages all aspects of network and service deployment.

2.4 Managed Services

Ericsson's managed services delivery strategy is a partnership between Ericsson and the customer, in which Ericsson would be responsible for activities such as designing, building, operating and managing the day-to-day operations of the railway's network and system solutions provided by Ericsson and any additional partners.



Managed services have been a core business area of Ericsson for over 18 years. Ericsson is the largest Networked Managed Service provider globally, with over 370 Managed Service contracts in 100 countries covering over 1 billion users. Since 2012 globally, Ericsson has won 305 contracts and transitioned nearly 4,000 employees into Ericsson; of which 700 were in the U.S. Along with this, Ericsson has 2800+ Field Technicians across America, meaning properly skilled technicians are present when and where they are needed to service the Rail Authority's network. Within this workforce Ericsson has certified railroad safety technicians for many major railroad companies such as Amtrak, BNSF, Union Pacific, CSX, and more. Ericsson's technicians each year attend railroad safety training directly with these firms to ensure they remain up to date with the current safety procedures and policies. To provide an example, fiber acts as a speciality field for Ericsson's field technicians with over 200 trained specialists managing around 35K miles of fiber network. 85% of this work is along Railroad Right-of-ways.

To learn more about our managed services portfolio, please refer to the following link <http://www.ericsson.com/ourportfolio/services/managed-services-1>

3. Ericsson Project Approach: Addressing the Systems Scope of Work

As highlighted previously in our firm experience, Ericsson has successfully completed a wide variety of complex Information and Communication Technology (ICT) projects leveraging our award winning project approach and methodology within numerous different industries including high speed rail. The purpose of this section is to provide a high level response of how Ericsson's solutions can address and integrate with the components within the 7.2.4 & 8.2.4 Systems Tender.

3.1 Communications:

Fiber optic backbone

The challenge for the railway – characterized by large-scale fiber projects and complex multi-vendor, multi-technology networks – is how to deploy these technologies faster and more predictable. In partnership with operators worldwide, Ericsson has developed a unique service delivery model with global scale and skill that includes common processes, methods, and tools to meet customer challenges and needs. Ericsson has the end-to-end solutions and the skills required to meet the railways Fiber deployment challenges with a range of vendor-agnostic and multi-technology services.

We have a large community of Authorized Service Providers across the country, many of which are well equipped to address the railways committed areas of operation. Ericsson offers extensive end-to-end Program Management and predictive service deployments covering large-scale complex fiber builds; including sales, site surveys, design, construction, and end-to-end project management.

With our capacity model, we have the ability to meet a compressed deployment timeline by altering the resourcing in the models as necessary. It is our intent to



provide a structure that contains all the necessary staffing and Program Management.

Radio Communication for Rail Infrastructure & Cab Radio:

There may be potential limitations in regards to utilization of certain technologies on the 450MHz spectrum, for example FCC and regulatory. Ericsson understands these challenges and welcomes the opportunity to work along-side the California High Speed Rail Authority, FCC and other invested bodies to find the best solution for the authority's objectives.

In order to mitigate communication disruption and ensure quality connectivity at high speeds, Ericsson recommends an LTE-based Radio Access Network. The introduction of LTE Networks will deliver an innovative, superior and more future proof solution for the operative-technological communication system.

3.2 Signaling:

Ericsson recognizes that a signaling system is one of the most critical components for the California High Speed Railway. As a turnkey solution provider, Ericsson is able to integrate, manage and support solutions provided by respective industry leading firms in this field, such as Ansaldo, Alstom, Siemens, Bombardier and Thales.

3.3 Operational Control Center (OCC):

Ericsson's approach towards an Operational Control Center consists of a fully integrated system that will service the entire coverage area. The OCC will be used by the Train Operator for the dispatching of trains, for the monitoring of the civil works and infrastructure and for the dispatching of maintenance and inspection crews, and more. Ericsson is an industry leader in regards to managing and maintaining a reliable and effective control center. Ericsson's Global Service Centers – situated in China, India, Mexico and Romania – house Global Network Operations Centers that, in combination with local and regional centers, provide managed services for networks that serve 1 billion subscribers. The Global Service Centers also develop competence to support regional service-delivery organizations in delivering professional services for the ICT sector in areas such as complex consulting, IT, systems integration, network rollout and customer support. Examples with reference customer are included in the figure below.



3.4 Local Operational Control Center:

Ericsson has the same experience as highlighted in the response to the Operational Control Center.

3.5 Warning systems:

Ericsson's IOT/M2M platform includes secure sensor data management, remote site management and works in cooperation with our critical infrastructure protection offerings where intrusion detection is needed. The system will form a unique cohesive system for the access control, intrusion detection management, meteorological and other warnings along the rail corridor.

3.6 Supervisory Control and Data Acquisition (SCADA):

Ericsson's IOT/M2M platform includes the ability to perform real time actions based on rule based behavior and the ability to interact with the best in bred Supervisory Control and Data Acquisition systems for secure remote access.

3.7 Closed Circuit Television (CCTV) System:

Ericsson has a significant presence in the TV & Media space including broadcasted closed circuit TV, infotainment systems, video surveillance, and video sharing and processing systems. Ericsson, as a leader in this space, believes that an effective CCTV System is based upon the ability to capture, store, and playback live and recorded video, images, and meta-data from the rail corridor and inside the train cabin and locomotive cab resulting in increased passenger safety and improved operational efficiency while protecting the infrastructure of the railroad.

To achieve this target, the CCTV system described is an integrated solution, based upon content ingest, preparation, DVR like storage, and delivery that will provide high-resolution video, ease-of-use, management, and multi-screen layout.

Ericsson's network solutions, provided sufficient bandwidth in the 450 MHz spectrum, can deliver real time onboard train surveillance using CCTV. Both train



cabin and locomotive cab can be visually monitored in real time from the Operational Control center or elsewhere as specified (i.e., from a remote site).

3.8 Direct line Telephone:

Ericsson's enterprise PBX solutions business is a leading provider of IP PBX, converged PBX systems and branch office solutions. The product portfolio includes communications solutions for enterprises of all sizes, mobility solutions, telephone terminals and services. Using our experience Ericsson suggests implementing a direct line telephone along the railroad and at stations as the primary method to initiate full duplex audio communications with the appropriate Control Room. The solution can be used for the purpose of reporting an emergency or making an enquiry. The solution would be connected to local telephone system.

3.9 Passenger Information Systems:

Ericsson believes that the proposed solution ensures content management, distribution and the production of both audio and video streams with high reliability and availability. By leveraging the same infrastructure that enables the CCTV system (7.2.4.7), reduction of redundancies and operational efficiencies can be realized.

This information is typically provided to the passengers through a voice-announcement system and by digital signage that is installed throughout the train cabin, and directly to consumer devices such as smart phones, tablets and PCs. The information to be displayed can be general travel information, safety information, and advertisements all in real time.

4. Ericsson Response to Questions

Per the authority's request, Ericsson has provided this section to directly address the authority's commercial, funding and financing and technical questions.

4.1 Commercial Questions

1. Is the delivery strategy likely to yield innovation that will minimize whole-life costs and accelerate schedule?
 - a. **Ericsson Response:** Ericsson believes there are many synergies to be realized in delivering the latest in technology and connectivity for High Speed Rail operational, communications, CCTV / Surveillance and more. With Ericsson's leadership and innovation, and working together with the Authority, we look forward to showcasing Ericsson's innovation and delivery capabilities to drive optimal efficiencies.



2. Does the delivery strategy adequately transfer the integration and interface risks associated with delivering and operating a high-speed rail system?
 - a. **Ericsson Response:** Ericsson is not only an innovator in technology and communications, but also in how we deliver and manage solutions for our customers. We understand that Information and Communications Technology is often not our customer's core competencies. With this in mind, we have developed multiple business and operational models aimed at best serving our customers. For example, Ericsson can completely manage and support the Authorities full Communications and IT networks. Ericsson does this today for customers across all industries, including full IT services management and fully managing and maintaining communications networks, where we actively support over 1 Billion active customers. Ericsson would like to learn more about the Authorities requirements, whereby Ericsson can outline more specifically our approach to deliver, manage and maintain the infrastructure, communications and operational solutions for the Authority. Ericsson is confident we can deliver the services and solutions required while also managing and operating them to the specified levels of performance and uptime needed. Additionally, we can deliver based on multiple business models, best suiting The Authorities strategy.

3. Are there any other components of a high-speed rail system that should be included in the scope of work for each project? How will this help meet the authority's objectives?
 - a. From what Ericsson has experienced in other railway projects, the additional subsystems, required for railway operations, should be taken into consideration as a means to benefitting the authority's commercial objectives:
 - i. Station Connectivity & Communications Solutions – Small Cells, Unified Communications, IP Phones, Local Area Networking (LAN) and high performance Wi-Fi for all your station communications and connectivity needs. For a sample of solutions, please read more at <https://www.ericssonlg-enterprise.com>.
 - ii. Metro and Tunnel Connectivity & Coverage - Deploying communication solutions in a tunnel environment is complex and requires optimum design, careful planning and careful project execution. Our Metro and Tunnel Coverage offering provides an end-to-end approach based on indoor cellular (multi-operator, multi-technology) and Wi-Fi solution. In addition, Ericsson provides a full range of professional services securing quality in the deployment of network with predictability



and the best available support during operation. Experience is key to manage these kind of projects. Ericsson has garnered such competences and experiences over the past two decades through more than 1000 implementations of indoor coverage solutions globally.

- iii. On-Board passenger communications Solutions – Wi-Fi and small cell mobile connectivity. Passengers today demand to be connected wherever they are, with both Wi-Fi and Cellular service. Ericsson is the world leader in delivering this connectivity. For more on Ericsson’s leadership and innovation specifically regarding indoor connectivity and mobile telephony, please see Ericsson’s award winning Radio DOT small cell solution here: <http://www.ericsson.com/news/1731153>
- iv. Innovative back haul solutions, delivering significant and reliable throughput, even at speeds of 220 MPH. Read here for how Ericsson innovates to solve issues for HSR: <http://www.ericsson.com/research-blog/lte/network-on-the-move/>
- v. Analytics across a broad spectrum - Related to passengers, traffic patterns, utilization of the network and more. Extremely valuable insights can be gleaned from Ericsson’s communications networks
- vi. Billing and support systems for railway partners and vendors – See Ericsson agreement with O’Hare Airport as an example: <http://www.metratech.com/customers/chicago-ohare-airport/>
- vii. Advertising solutions to drive support and additional revenue
- viii. Core Communication network / Multi Service Network
- ix. Self-care for HSR passengers, delivered with Ericsson’s Multi-Service Delivery Platform. Read here for more info: http://www.ericsson.com/ourportfolio/products/multiservice-delivery-platform?nav=productcategory001%7Cfqb_101_148
- x. Administrative & Operative telephony systems
- xi. On board entertainment / IPTV systems
- xii. Public announcement systems tied into the passenger information system
- xiii. Voice recording system for the public announcement system
- xiv. Smart Fare Collection / Ticketing system – on board terminals and smartphone app support through Ericsson’s ADM service
- xv. A Cloud based system to support value added applications and services. The Ericsson Cloud System is a full-stack solution that is capable of handling a vast array of actions. For example, the Ericsson HDS 8000 (first implementation of the Intel Rack



Scale) would allow for the authority to scale up or scale down to quickly adapt to changing workloads while dramatically reducing waste and operation costs. The infrastructure-as-service layer in Ericsson Cloud System is provided by the Ericsson Cloud Execution Environment.

4. What is the appropriate contract size/term for this type of contract? What are the advantages and disadvantages of procuring a contract of this size and magnitude? Should both projects be into one DBFM contract?
 - a. **Ericsson Response:** Ericsson would like to discuss further. For large scale managed services contract, the terms and length depend on many variables. We would typically see a 5, 7, or 10 year term for a solution of this scope, but can vary given the Authorities' requirements.

5. Does the scope of work for each project expand or limit the teaming capabilities? Does it increase or reduce competition?
 - a. **Ericsson Response:** Ericsson believes the scope of work, increases the need for teaming capabilities. Ericsson excels in this area, as a true prime integrator, delivering core competency and technology, coupled with a multitude of complex systems from teaming partners. And in the end, ensuring everything works together as expected.

4.2 Funding and Financing Questions

6. Given the delivery approach and available funding sources, do you foresee any issues with raising the necessary financing to fund both projects? What are the limiting factors to the amount of financing that could be raised?
 - a. **Ericsson Response:** Ericsson believes in the industry of high speed rail. Ericsson has delivered and spearheaded solutions in a variety of business constructs. We believe there is a win/win/win opportunity for the Rail Authority, 3rd party finance and the solution partners. Ericsson would like to learn more of the Authorities' thoughts and understand how Ericsson can leverage its experience and assets to support.

7. What changes would you recommend be made to the existing funding sources? What impact would these changes have on raising financing?
 - a. **Ericsson Response:** No recommended changes at this time.



8. Given the delivery approach and available funding sources, is an availability payment mechanism appropriate?
 - a. **Ericsson Response:** No response at this time.

4.3 Technical Questions

9. Based on the Authority' capital, operating, and lifecycle costs from its 2014 Business Plan describe how the preferred delivery model could reduce costs, schedule or both.
 - a. **Ericsson Response:** From an ICT perspective, Ericsson's Managed Services model would reduce upfront cash exposure and create a pay-as-you-go model. Also, looking at synergies across the solutions, Ericsson believes there are both time and capital synergies available.
10. How does this compare to separately procuring each high-speed rail component?
 - a. **Ericsson Response:** Looking holistically can deliver synergies and reduce inefficiencies.
11. For each project, are there any technical changes to the respective scope of work that would yield cost savings and/or schedule acceleration while still achieving the Authority's objectives.



5. Conclusion

Ericsson is excited to be a part of the California High Speed Rail Authorities' consideration to deliver the trusted communications systems for the Initial Operating Segment.

Ericsson is poised to leverage our expertise in supporting Transportation and Rail customers, with our leading networking solutions and services experience to create a communications-oriented partnership with the Rail Authority. Ericsson has a proven track record of delivering. We can identify, build, and manage a tailored solution to best meet the demands of the Authority.

Understanding that the business and technical requirements can vary from market to market, our approach will be to work in partnership with the California High Speed Rail Authority to determine the optimal overall solution both economically and operationally.

As part of this engagement, Ericsson desires to be one of the prime integrators and project leads for the California High Speed Rail's ICT systems. This allows California High Speed Rail Authority to remain focused on its core business, while Ericsson could manage the intricate complexities of the design, build out, and operations and ongoing management of the Communications and multi-vendor IT solutions. Ericsson has the proven processes and methodologies to ensure success in the most complex and demanding of environments.

At Ericsson, we use innovation to empower people, business, and society. We envisage a Networked Society that is sustainable, and where everything that can benefit from a connection will have one.

Our mobile and fixed networks, multimedia solutions, and telecom services make a real difference to people's lives, and for the world.

We look forward to showcasing the power of Ericsson and demonstrating the value of our solutions to the Authority.

Thank you again for your consideration.