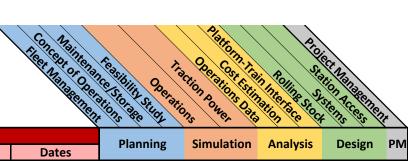
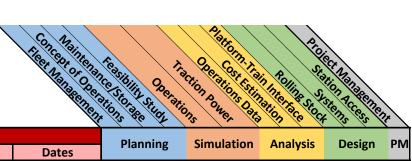
Theodore (Ted) Rosenbaum ted.rosenbaum@gmail.com 847.644.4554 (USA)

to prove adequacy of planned traction power upgrades given network standards criteria.



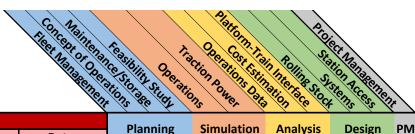
Company -	Location - Role						
Client	Project	Dates	Planning	Simulation	Analysis	Design	PI
Deutsche Bahr	Engineering & Consulting - Denver, CO - Senior	Consultant				2022-Pre	sen
UTA FrontRunner	FrontRunner Forward	2022-Present	<b>√</b>   <b>√</b>	✓	✓ ✓		٧
Author of a 30-year Fleet Plan, laying out operations, storage, and m	naintaining fleet availability while the current diesel fle	et undergoes mid-	life overhauls. Lai	id out a procurer	ment strateg	gy for the	
dditional fleet necessary to operate more frequent service on a po-	tentially extended corridor.						
Caltrain	San Francisco Railyards Study	2022-Present	<b>√</b>				
rought institutional knowledge to an analysis of the feasibility of deaken into account as the team worked with the interested develope	, - ,	•	•				ere
levelopment.	er to determine it or now the terminal rootprint could	De Sili ulikWiletile	er to allow for gro	Junu-11001 devel	opinent or ju	ast all fights	
	Hatch LTK - Denver, CO - Principal Consultant					2020-20	)21
CapMetro (Austin, TX)	O&M Contract Renegotiations	2021	✓		✓		
[Confidential Client]	M&A Transaction Due Diligence	2020-2021	V V		<b>V V</b>		
Supported Capital Metro in its effort to renegotiate the operations a	and maintenance contract with Herzog before deciding	whether or not to	re-tender the co	ntract. Aligned t	he original o	ontract with	the
					Y Y		ㅗ
Provided due diligence insights for a company considering the purch	ase of a major North American private sector transpor	tation provider, fo	cusing on asset c	ondition, fleet a	nd facility m	aintenance, a	and
Provided due diligence insights for a company considering the purch operational KPIs. Completed a meta-analysis of the KPIs currently in			_				
operational KPIs. Completed a meta-analysis of the KPIs currently in and overall provision of services.	use, suggesting a more robust but still easily-collected	dataset which wo	_				
pperational KPIs. Completed a meta-analysis of the KPIs currently in			_				
perational KPIs. Completed a meta-analysis of the KPIs currently in nd overall provision of services.  Caltrain	use, suggesting a more robust but still easily-collected  Peninsula Corridor Electrification Project	dataset which wo 2016-2021	uld produce usef	ul insights into th	ne firm's saf	ety, manager	ne
operational KPIs. Completed a meta-analysis of the KPIs currently in and overall provision of services.  Caltrain  Main author for the FTA-required Fleet Management Plan. Responsi	use, suggesting a more robust but still easily-collected  Peninsula Corridor Electrification Project  ble for data and recommendations related to fleet size	2016-2021  distribution of pa	uld produce usef	ul insights into th	ne firm's saf	ety, manager	me
operational KPIs. Completed a meta-analysis of the KPIs currently in and overall provision of services.  Caltrain  Main author for the FTA-required Fleet Management Plan. Responsinterfaces throughout the corridor. Provided input to plans for trans	Peninsula Corridor Electrification Project  ble for data and recommendations related to fleet size ition from diesel to EMU fleet, including storage and necessitions.	2016-2021 e, distribution of paraintenance move	uld produce useful value of the second value o	ul insights into th	ne firm's saf	ety, manager	mer
operational KPIs. Completed a meta-analysis of the KPIs currently in and overall provision of services.  Caltrain  Main author for the FTA-required Fleet Management Plan. Responsinterfaces throughout the corridor. Provided input to plans for trans  LTK Australia - Melbourne	Peninsula Corridor Electrification Project  ble for data and recommendations related to fleet size ition from diesel to EMU fleet, including storage and not provided to the company of th	2016-2021  e, distribution of paraintenance movel	uld produce useful value of the second value o	ul insights into th	ne firm's saf	ety, manager	ner
operational KPIs. Completed a meta-analysis of the KPIs currently in and overall provision of services.  Caltrain  Main author for the FTA-required Fleet Management Plan. Responsinterfaces throughout the corridor. Provided input to plans for trans  LTK Australia - Melbourne  Yarra Trams (Melbourne, AU)	Peninsula Corridor Electrification Project  ble for data and recommendations related to fleet size ition from diesel to EMU fleet, including storage and not it in the project in the proj	2016-2021  e, distribution of paraintenance movel ons and Asset Place 2019-2020	assenger space, alments during and	ul insights into the line of t	ssues related	ety, manager  v v  d to platform revenue serv  2019-20	ice
perational KPIs. Completed a meta-analysis of the KPIs currently in nd overall provision of services.  Caltrain  Main author for the FTA-required Fleet Management Plan. Responsinterfaces throughout the corridor. Provided input to plans for trans  LTK Australia - Melbourne  Yarra Trams (Melbourne, AU)  Managed a small team to support the Melbourne tram network's fra	Peninsula Corridor Electrification Project  ble for data and recommendations related to fleet size ition from diesel to EMU fleet, including storage and notes.  Victoria, Australia - Manager, Railway Operation  R30 & R58 Operational Integration  enchise operator as they considered the impact of a re	2016-2021  e, distribution of paraintenance moves ons and Asset Pla 2019-2020 distribution of the	assenger space, alments during and anning	nd operational is lafter EMUs are	ssues related placed into	ety, manager  d to platform revenue serv  2019-20  est and simul	merice
operational KPIs. Completed a meta-analysis of the KPIs currently in and overall provision of services.  Caltrain  Main author for the FTA-required Fleet Management Plan. Responsinterfaces throughout the corridor. Provided input to plans for trans  LTK Australia - Melbourne	Peninsula Corridor Electrification Project  ble for data and recommendations related to fleet size ition from diesel to EMU fleet, including storage and notes.  Victoria, Australia - Manager, Railway Operation R30 & R58 Operational Integration anchise operator as they considered the impact of a republishess of the traction power network. Devised less-	2016-2021  e, distribution of paraintenance moves ons and Asset Pla 2019-2020 distribution of the	assenger space, alments during and anning	nd operational is lafter EMUs are	ssues related placed into	ety, manager  d to platform revenue serv  2019-20  est and simul	nei
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Perational KPIs. Completed a meta-analysis of the KPIs currently in nd overall provision of services.  Caltrain  Main author for the FTA-required Fleet Management Plan. Responsinterfaces throughout the corridor. Provided input to plans for trans  LTK Australia - Melbourne  Yarra Trams (Melbourne, AU)  Managed a small team to support the Melbourne tram network's franch presented findings related to reliability, crowding, and overall redequate service without costly new substations or other electrical  Auckland Transport (AT) (Auckland, NZ)	Peninsula Corridor Electrification Project  ble for data and recommendations related to fleet size ition from diesel to EMU fleet, including storage and notes. Victoria, Australia - Manager, Railway Operation R30 & R58 Operational Integration enchise operator as they considered the impact of a resolustness of the traction power network. Devised lessinfrastructure.  Concept Design Fleet Size	2016-2021  e, distribution of paraintenance movel ons and Asset Pla 2019-2020 distribution of the expensive operation	assenger space, a ments during and anning ir fleet. Develope onal fixes for deg	nd operational is after EMUs are d future operational future operational is a future operational is a future operation of the future operation operation of the future operation o	ssues related placed into	d to platform revenue serv  2019-20  est and simulos to deliver	ice
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Perational KPIs. Completed a meta-analysis of the KPIs currently in and overall provision of services.  Caltrain  Main author for the FTA-required Fleet Management Plan. Responsibiliterfaces throughout the corridor. Provided input to plans for transport Trams (Melbourne, AU)  Managed a small team to support the Melbourne tram network's franch presented findings related to reliability, crowding, and overall redequate service without costly new substations or other electrical Auckland Transport (AT) (Auckland, NZ)  Conducted a peer review of Auckland's planned operations and the naintenance duty cycles and stabling needs. Suggested routing and	Peninsula Corridor Electrification Project  ble for data and recommendations related to fleet size ition from diesel to EMU fleet, including storage and notes.  Victoria, Australia - Manager, Railway Operation  R30 & R58 Operational Integration  enchise operator as they considered the impact of a resolustness of the traction power network. Devised lessinfrastructure.  Concept Design Fleet Size  necessary fleet expansions over the next decade. Analyscheduling improvements to match capacity with demonstructions.	2016-2021  e, distribution of paraintenance moves  2019-2020 distribution of the expensive operation  2019-2020 ysed methodology and, and confirme	assenger space, alments during and anning freet. Develope onal fixes for deg and assumptions d need for ongoin	nd operational is lafter EMUs are d future operational raded power quast underlying rideing fleet expansion	ssues related placed into a plans to tality scenarion through 2	to platform revenue serv  2019-20  est and simulos to deliver  tions as well a 028 and beyone	ice
Alanaged a small team to support the Melbourne tram network's frand presented findings related to reliability, crowding, and overall redequate service without costly new substations or other electrical  Auckland Transport (AT) (Auckland, NZ)  Conducted a peer review of Auckland's planned operations and the naintenance duty cycles and stabling needs. Suggested routing and elecommended a timeline for future procurements and offered suggapacity increases given alternative seating configurations.	Peninsula Corridor Electrification Project  ble for data and recommendations related to fleet size ition from diesel to EMU fleet, including storage and notes.  Victoria, Australia - Manager, Railway Operation  R30 & R58 Operational Integration  enchise operator as they considered the impact of a resolustness of the traction power network. Devised lessinfrastructure.  Concept Design Fleet Size  necessary fleet expansions over the next decade. Analyscheduling improvements to match capacity with demonstructions.	2016-2021  e, distribution of paraintenance moves  2019-2020 distribution of the expensive operation  2019-2020 ysed methodology and, and confirme	assenger space, alments during and anning freet. Develope onal fixes for deg and assumptions d need for ongoin	nd operational is lafter EMUs are d future operational raded power quast underlying rideing fleet expansion	ssues related placed into a plans to tality scenarion through 2	to platform revenue serv  2019-20  est and simulos to deliver  tions as well a 028 and beyone	ice
Caltrain  Main author for the FTA-required Fleet Management Plan. Responsing terfaces throughout the corridor. Provided input to plans for transport (All presented findings related to reliability, crowding, and overall redequate service without costly new substations or other electrical Auckland Transport (AT) (Auckland, NZ)  Conducted a peer review of Auckland's planned operations and the maintenance duty cycles and stabling needs. Suggested routing and elecommended a timeline for future procurements and offered suggrapacity increases given alternative seating configurations.  Victoria Department of Transport (Melbourne, AU)	Peninsula Corridor Electrification Project  ble for data and recommendations related to fleet size ition from diesel to EMU fleet, including storage and manager, Railway Operation R30 & R58 Operational Integration anchise operator as they considered the impact of a republishes of the traction power network. Devised lessinfrastructure.  Concept Design Fleet Size necessary fleet expansions over the next decade. Analyscheduling improvements to match capacity with demested vehicle design details with associated quantified	2016-2021  e, distribution of paraintenance moves  ons and Asset Plance  2019-2020  distribution of the expensive operation  2019-2020  ysed methodology and, and confirme benefits, including	assenger space, alments during and anning in fleet. Develope onal fixes for deg and assumptions d need for ongoing dwell time savir	nd operational is lafter EMUs are d future operationaded power quasionaded power quasions resulting from	ssues related placed into ang plans to tality scenarious scenarious through 2 nextra door	d to platform revenue serv  2019-20  est and simulations to deliver  tions as well a 028 and beyonways, and to	ice
Perational KPIs. Completed a meta-analysis of the KPIs currently in and overall provision of services.  Caltrain  Main author for the FTA-required Fleet Management Plan. Responsibiliterfaces throughout the corridor. Provided input to plans for transport Trams (Melbourne, AU)  Managed a small team to support the Melbourne tram network's franch presented findings related to reliability, crowding, and overall redequate service without costly new substations or other electrical  Auckland Transport (AT) (Auckland, NZ)  onducted a peer review of Auckland's planned operations and the naintenance duty cycles and stabling needs. Suggested routing and ecommended a timeline for future procurements and offered suggapacity increases given alternative seating configurations.	Peninsula Corridor Electrification Project  ble for data and recommendations related to fleet size ition from diesel to EMU fleet, including storage and notes it including storage and notes. Australia - Manager, Railway Operation Rao & R58 Operational Integration enchise operator as they considered the impact of a resultant power structure.  Concept Design Fleet Size recessary fleet expansions over the next decade. Analyscheduling improvements to match capacity with demining improvements to match capacity with demining the structure of the stru	2016-2021  e, distribution of paraintenance movel cons and Asset Planaintenance of the expensive operation  2019-2020  ysed methodology and, and confirme benefits, including the expensive operation of the expensive operation.	assenger space, a ments during and anning ir fleet. Develope onal fixes for deg and assumptions d need for ongoing dwell time savir	nd operational is lafter EMUs are d future operational fraded power quasional graded power quasions resulting from the select a single	ssues related placed into ang plans to tality scenarious through 2 mextra door future fleet	d to platform revenue serv  2019-20  est and simulations to deliver  tions as well a 028 and beyonways, and to ways, and to and route	ice

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Company -	Location - Role		21 ·	6: 1 ::		- 18 18 18 18 18 18 18 18 18 18 18 18 18
Client	Project	Dates	Planning	Simulation	Analysis	Design F
LTK Engine	ering Services - San Francisco, CA - Principal Con	sultant				2012-2019
Santa Clara Valley Transportation Authority (VTA)	Light Rail Enhancement Project	2015-2018	✓		✓	<b>✓</b>
Primary provider of operations input for the LREP, which builds on p	revious studies for improving the speed and reliability	of the light rail sy	stem as it is re-or	iented toward a	connection w	ith BART.
Developed alternatives for a new express service connecting passen	gers to regional transit providers and synthesized high-	level running-tim	e and route plann	ing analyses. Als	o, conducted	operator
nterviews and ride-along field surveys to determine best locations f	or targeted improvements.					
LTK Engine	ering Services - San Francisco, CA - Principal Con	sultant				2012-prese
Amtrak	Washington Union Station Redevelopment	2018			✓	
Jsed current and future (2040) operating plans to estimate termina	l-area moves at Washington Union Station with diesel	and electric locom	notives, ultimately	building up an e	emissions sav	ings estimate
esulting from the introduction of Tier 4-compliant diesel locomotiv	es as well as additional electric locomotives.					
Los Angeles Metro (LACMTA)	Fire-Life Safety Signaling Analysis	2018			✓	
Analyzed agency-provided track circuit occupancy data on the Red-F	Purple subway trunk to track train movements through	fire ventilation zo	nes. Built on this	analysis to deve	op different	operating
patterns to simulate with the goal of minimizing necessary infrastru	cture changes while maintaining throughput and safety	<b>'</b> .				
Dallas Area Rapid Transit (DART)	Cotton Belt Project	2017-2018	<b>√ √ √</b>	✓	✓	
Nain author of Operations & Maintenance Plan for new Cotton Belt	line, a 27-mile rail line which will use DMUs to provide	service between	Plano and Dallas-	Fort Worth Inter	national Airp	ort. Built
nultiple service schedule scenarios for use in simulations, each of w	hich had to mesh with connecting rail systems. Determ	nined fleet size for	resulting service	patterns and des	scribed requir	ed maintenan
ctivities and their frequencies. Also estimated total O&M costs bas	ed on staffing requirements and performed a peer com	parison based on	National Transit	Database inform	ation.	
Sonoma-Marin Area Rail Transit (SMART)	SMART Service Planning	2013-2017	<b>√ √ √</b>	✓	✓	<b>✓</b>
Built and performed operational simulations of the 38-mile initial op	perating segment using LTK's TrainOps® program, Simul	lation parameters	included SMART	's time-to-penalt	v train contro	ol system and
andomized dwell times to measure system reliability. Responsible f		•		•	•	•
ommuter rail lines. Also studied and recommended gap-filler soluti	·			,		
		· •				
Caltrain	Caltrain Modernization Program	2013-2016	<b>√ √ √</b>		<b>✓</b>	<b>/</b> _
Responsible for several work directive assignments, most of which e		•		ese included the	South Termir	ial Area Capaci
itudy and the 4th & King Station and Yard Reduction/Removal Feasi			s) document.			
Los Angeles Department of Transportation (LADOT)	LA Streetcar	2016			✓	
Estimated total operating and maintenance costs for multiple corrid						
Santa Cruz County Regional Transportation Commission	Passenger Rail Feasibility Report	2014-2015	<b>√ √</b>	· ·	<b>✓</b>	لبللب
Main author of operations section of the study looking at potential						-
ocations for several different potential stopping patterns. Responsi		arios ranging fron	n 10 to 22 miles lo	ong. Built up cost	estimates fo	r operations a
naintenance of equipment based on simulations and industry trend		1		1 -		
Bay Area Rapid Transit District (BART)	Silicon Valley-Berryessa Extension	2012-2013				<b>✓</b>
As the Design Interface Manager, coordinated interdisciplinary design		eway connections	between the guid	deway and waysi	de facilities a	nd structural
learance with local utilities. Responsible for locating blue-light stati	ons in accordance with the design criteria.					

## Theodore (Ted) Rosenbaum ted.rosenbaum@gmail.com 847.644.4554 (USA)



Company - Location - Role			Planning	Simulation	Analysis	Docian	PM
Client	Project	Dates	Flailling	Sillidiation	Allalysis	Design	PIVI
California Partners for Avanced Transportation Technology (Cal PATH) - Berkeley, CA - Graduate Student Researcher						2011-20	12
Cal PATH	Freight on BART Project	2011-2012	<b>✓ ✓</b>	<b>√</b>	✓		

Assisted Dr. Lu with his ongoing research into using Bay Area Rapid Transit (BART) to transport freight packages between airport hubs at SFO & OAK and regional sorting centres. Modelled and simulated logistical issues with input from BART & FedEx officials, analysed policy issues, and performed cost-benefit analyses under various capital improvement scenarios.

US Department of the Navy - Washington, DC - Marine Engineer			
Naval Sea Systems Command (NAVSEA)	Machinery Integration	2008-2011	<b>✓</b>

Responsible for developing and maintaining specifications and standards for machinery spaces on surface ships, as well as refining the Incentivized Energy Conservation (iEnCon) program. Projects included planning for the cruiser modernization program, development of a new operational tempo for use with hybrid-electric drive systems on destroyer-class ships, and a business case analysis of a new pulse detonation drive system for surface combatants.

## Education

University of California, Berkeley, May 2012 College of Engineering, Berkeley, CA

Master of Science Focus: Transportation Engineering

University of Pennsylvania, May 2008 School of Engineering and Applied Science, Philadelphia, PA Bachelor of Science in Engineering

Minor: Philosophy Major: Mechanical Engineering

## **Presentations and Papers**

- Presenter, "North American Light Rail & Streetcar Status Update". 14th National Light Rail & Streetcar Conference, April 2019.
- Author & Presenter, "Towards a Passenger-focused On-Time Performance TRB Rail Transit Systems Cmte. member Metric for Commuter Rail." APTA Rail Conference, June 2018.
- Co-Author & Presenter, "North American Light Rail & Streetcar Status Update". 13th National Light Rail & Streetcar Conference, Nov. 2015.
- Poster Presenter, "Using Open Data and GIS to Rank Potential Commuter Rail Infill Station Sites." TRB Annual Meeting, Jan. 2013.

## Activities, Skills, and Licenses

- APTA Emerging Leadership Program, 2016-17
- TRB Light Rail Transit Committee Chair, 2022-Present
- Fmr. TRB Light Rail Transit Committee Communications Coordinator (2016-2022)
- Fmr. Co-Chair of the TRB Public Transportation Young Member Subcommittee (2013-17)
- Registered EIT (Mechanical FE, April '09)
- Proficient in ArcGIS/QGIS, MS Office, and graphic design (Inkscape) applications.