

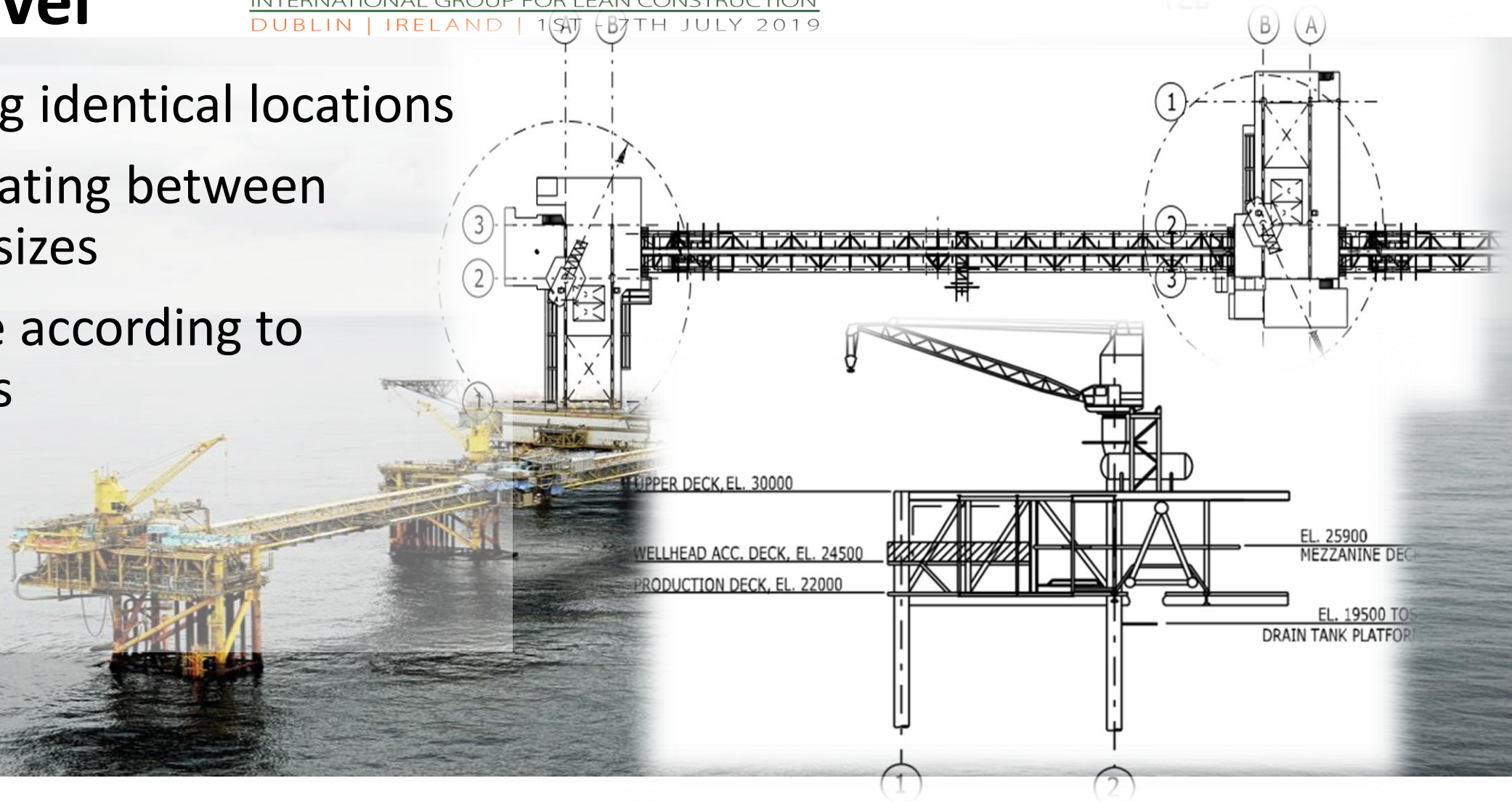
Would LBMS be applicable to Offshore Oil & Gas construction

Contribution 120

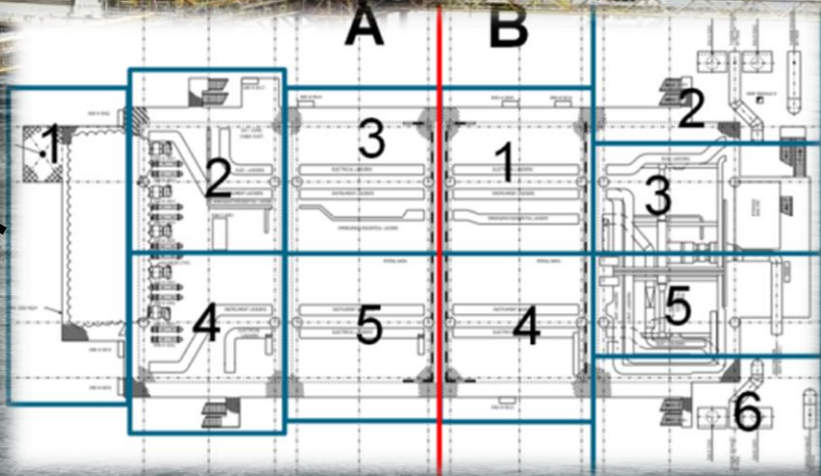
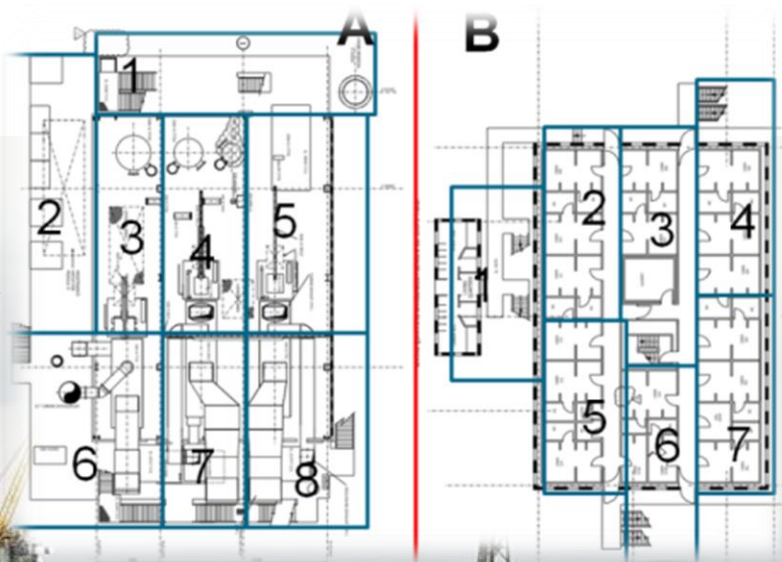
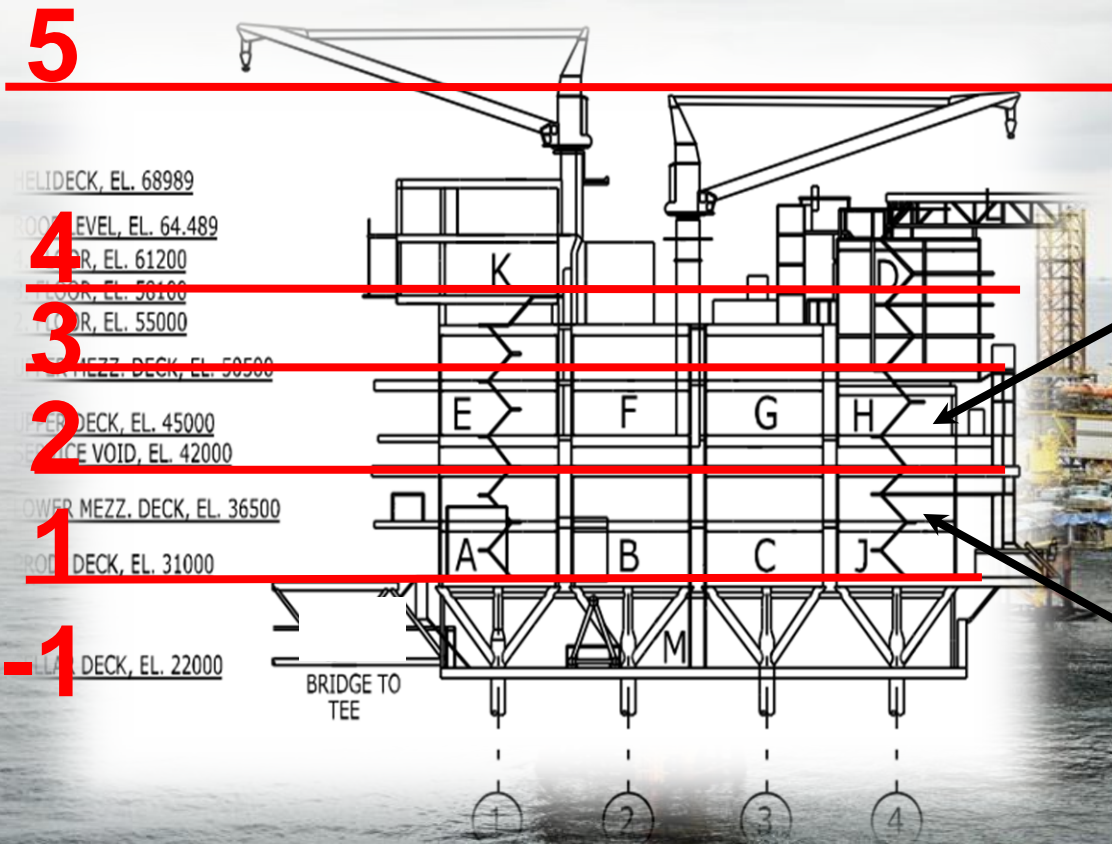
Authors: Jon Lerche , Hasse Neve, Kristian Birch Pedersen,
Søren Wandahl , Allan Gross

Locations – High level

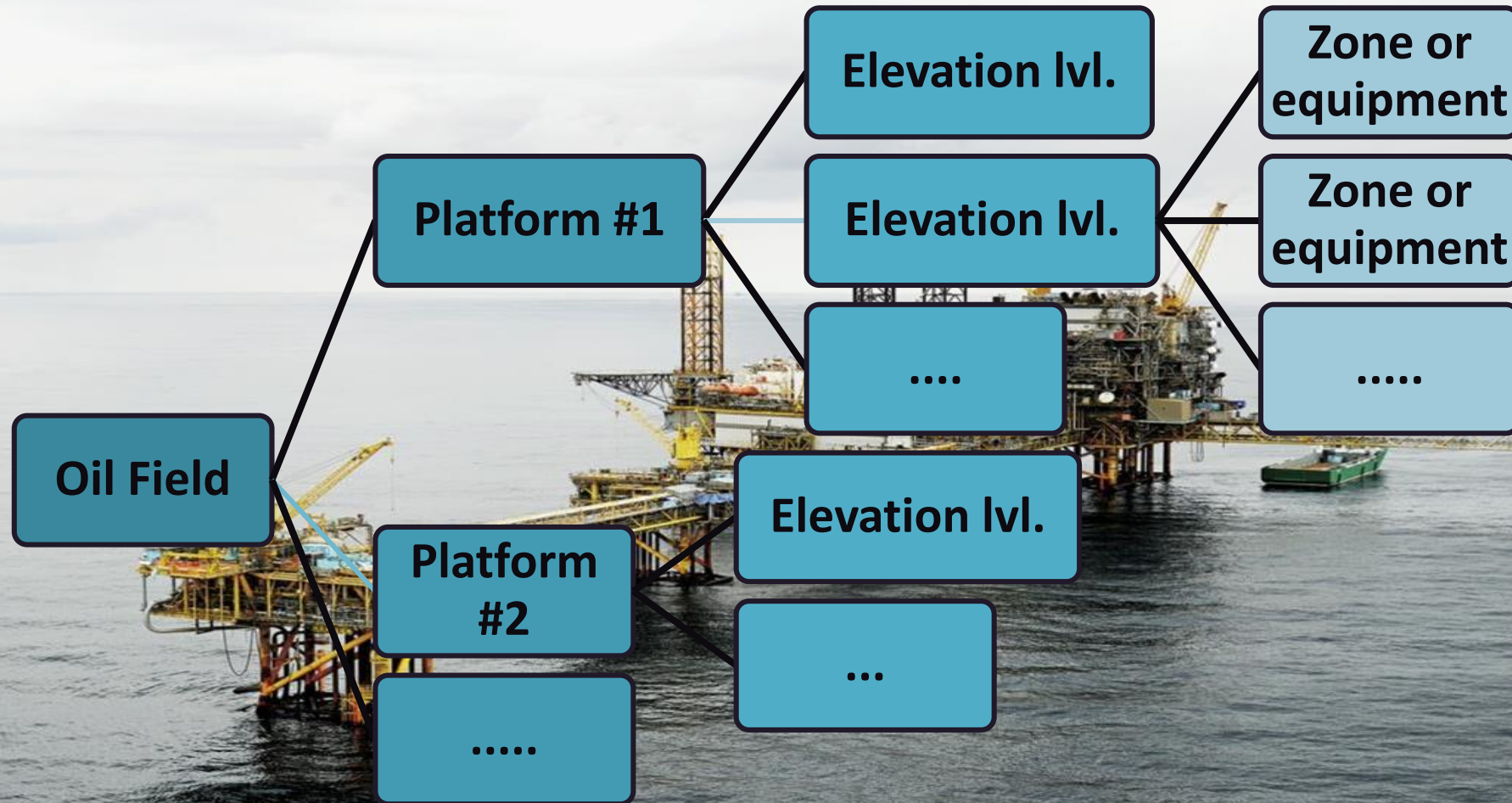
- Identifying identical locations
- Differentiating between platform sizes
- Segregate according to elevations



Locations – lower level



Location Structure



CPM

- More than 3200 activity lines start / end
- Equipment as locations
- No clear dependencies

Construction / Refurbishment

5

status_code	task_code	task_name	user_field_start_date	end_date	Manning	actv_code_	actv_code_
Activity Status	Activity ID	Activity Name	Material St (*)Start	(*)Finish		budgetted	remaining
In Progress	200005838-0010	602808-Udfasning af Løvs flowmåler	01-Apr-15	14-Jun-18	0,02	270	270
Not Started	200036667-0010	Udfasning af Løvs flowmåler El rig	01-Jun-18	02-Jun-18	0,63	15	15
In Progress	200038209-0010	Udfasning af Løvs flowmåler - SCAF	01-Apr-15	24-Jun-18	0,04	555	555
Not Started	200008140-0010	873459-Bypass ventil kan ikke åbnes, sk	01-Jan-19	08-Jan-19	0,47	45	45
Not Started	200059120-0010	Riser guard install. ROW 1	31-Mar-19	06-May-19	0	1400	1400
In Progress	200059121-0010	Riser guard install. ROW 1	01-Apr-15	12-Aug-19	0,14	2700	2700
In Progress	200059122-0010	Riser guard install. ROW 1	01-Apr-15	05-Apr-19	0,02	300	300
In Progress	200059123-0010	Riser guard install. ROW 1	01-Apr-15	29-Apr-19	0,03	500	500

Page 1

Back in operation

Not Started	200365604-0010	TSBA Well 01 Inforce hook-up Inpf	01-Jan-20	12-Jan-20	1,04	150	150
Not Started	200278115-0010	TSB-05 6"-PHS-300501-FO flowline hook-up	01-Jan-20	06-Jan-20	1,04	75	75
Not Started	200278116-0010	TSB-05 6"-PHS-290501-FE Liftgas hook-up	01-Jan-20	04-Jan-20	0,94	45	45
In Progress	200278117-0010	Tyra Syd Øst B - Well 05 hook-up. SCAFF	01-Mar-17	05-Jan-20	0,01	90	90
Not Started	200348113-0010	S-99 TSB-05 Lagger scope.	01-Jan-20	05-Jan-20	1	60	60
Not Started	200348114-0010	S-99 Well TSB-05 Prep work Inpf.	01-Jan-20	06-Jan-20	1,04	75	75
Not Started	200348115-0010	S-99 Well TSB-05 Prep work Elec.	01-Jan-20	12-Jan-20	1,01	145	145

Page 30

Logical layers

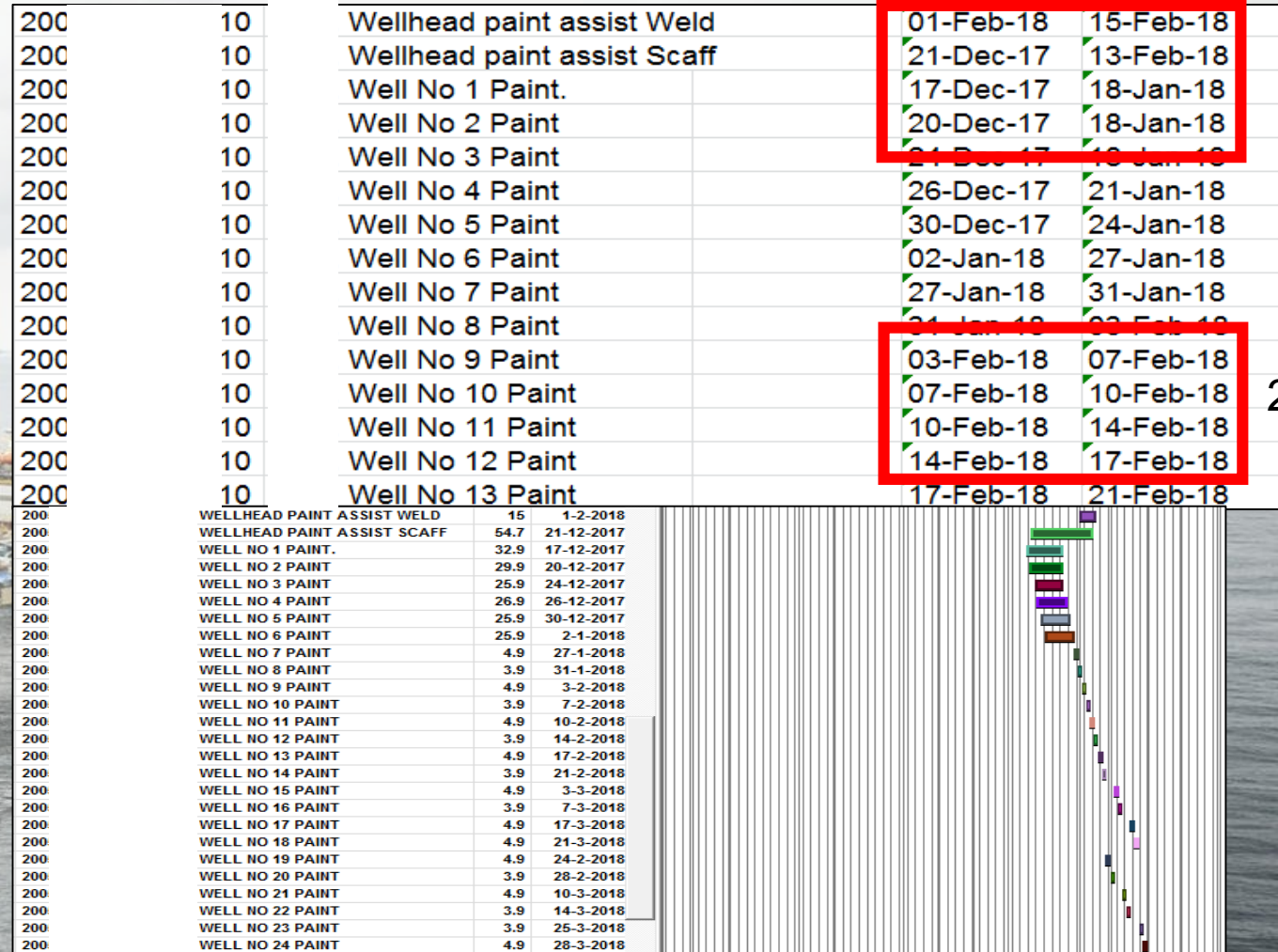
1. External logical relationships between activities within locations.
2. External higher-level logical relationships between activities driven by different levels of accuracy.
3. Internal logic between activities within tasks.
4. Phased hybrid logic between tasks in related locations.
5. Standard CPM links between any tasks and different locations.

Conversion example

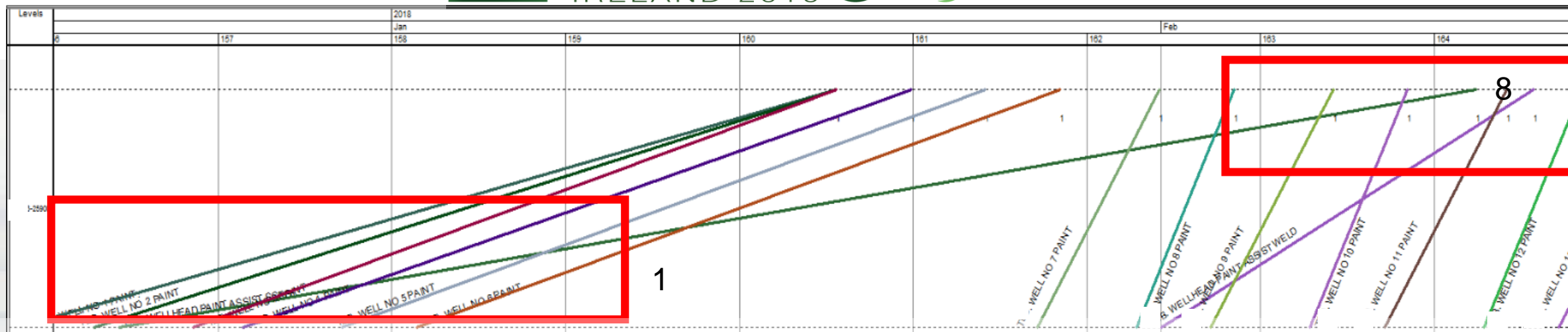
Resources and activities
sequenced randomly

Inconsistent start and stop

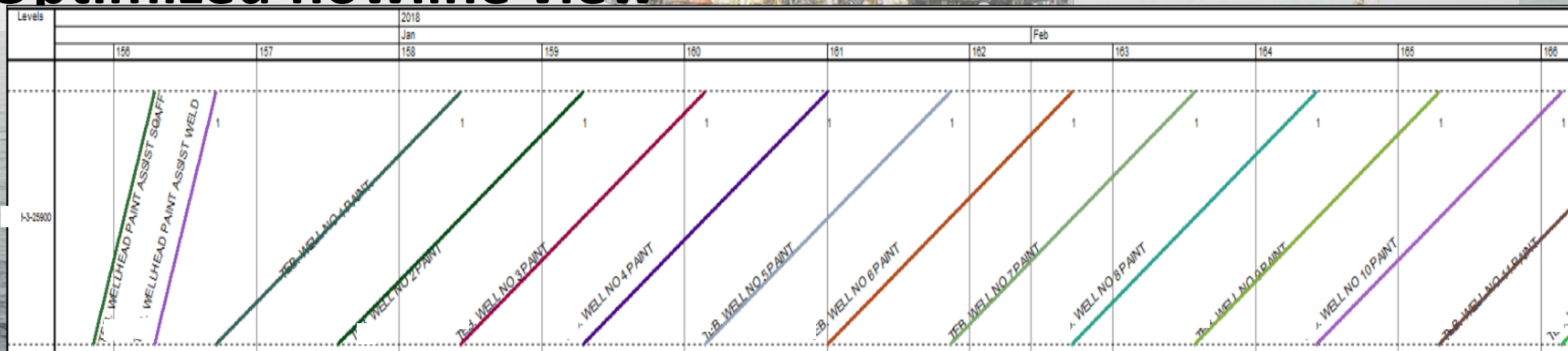
Expected collisions between
activities in same location



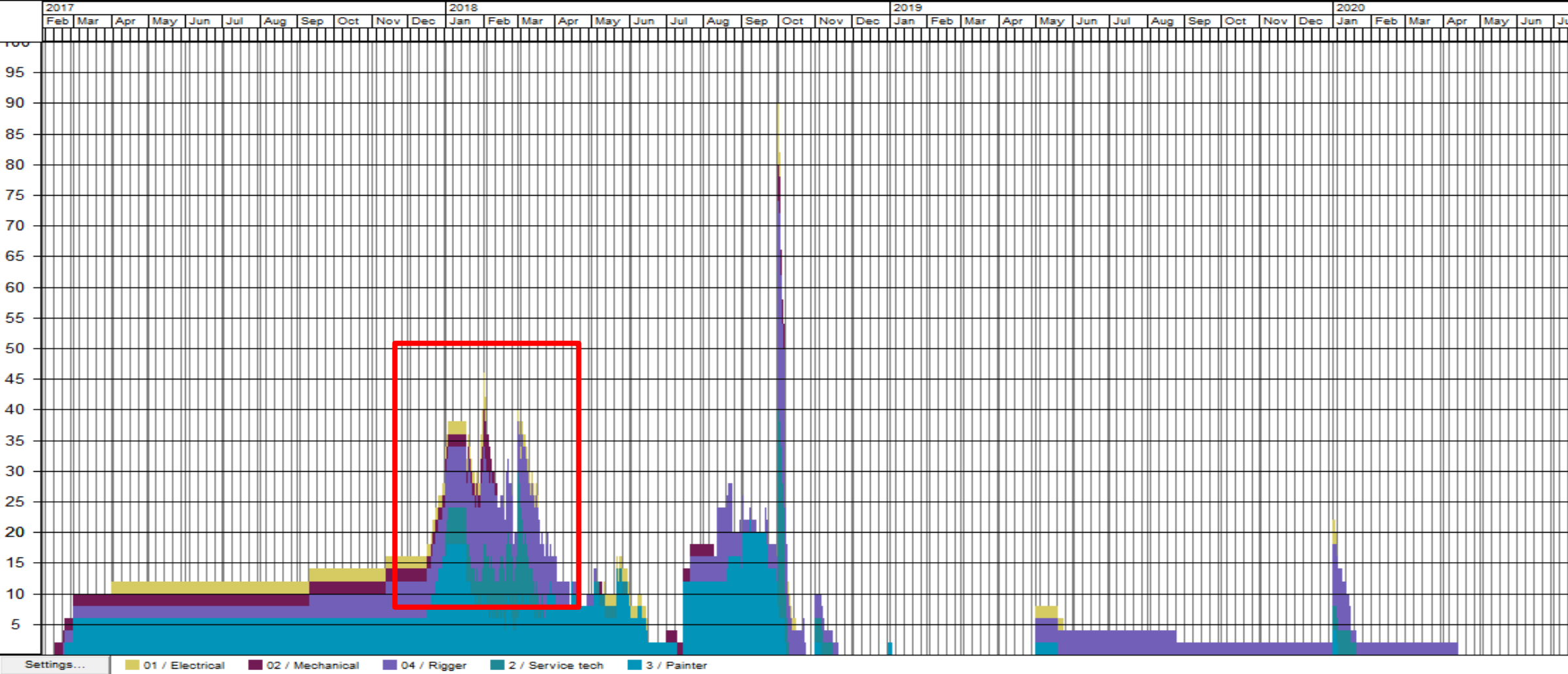
Flowline view



Optimized flowline view



Resource levels



Authors



Jon Lerche

PhD Student, Dep. of Btech. at Aarhus University, Denmark, jon.lerche@btech.au.dk

Hasse Neve,

PhD Student, Department of Engineering at Aarhus University, Denmark, hn@eng.au.dk

Kristian Birch Pedersen

PhD, Dep. of Construction Management at Aalborg University, Denmark, kbp@exigo.dk

Søren Wandahl,

Professor, Department of Engineering at Aarhus University, Denmark, swa@eng.au.dk

Allan Gross

Professor, Dep. of Btech. at Aarhus University, Denmark, agr@btech.au.dk

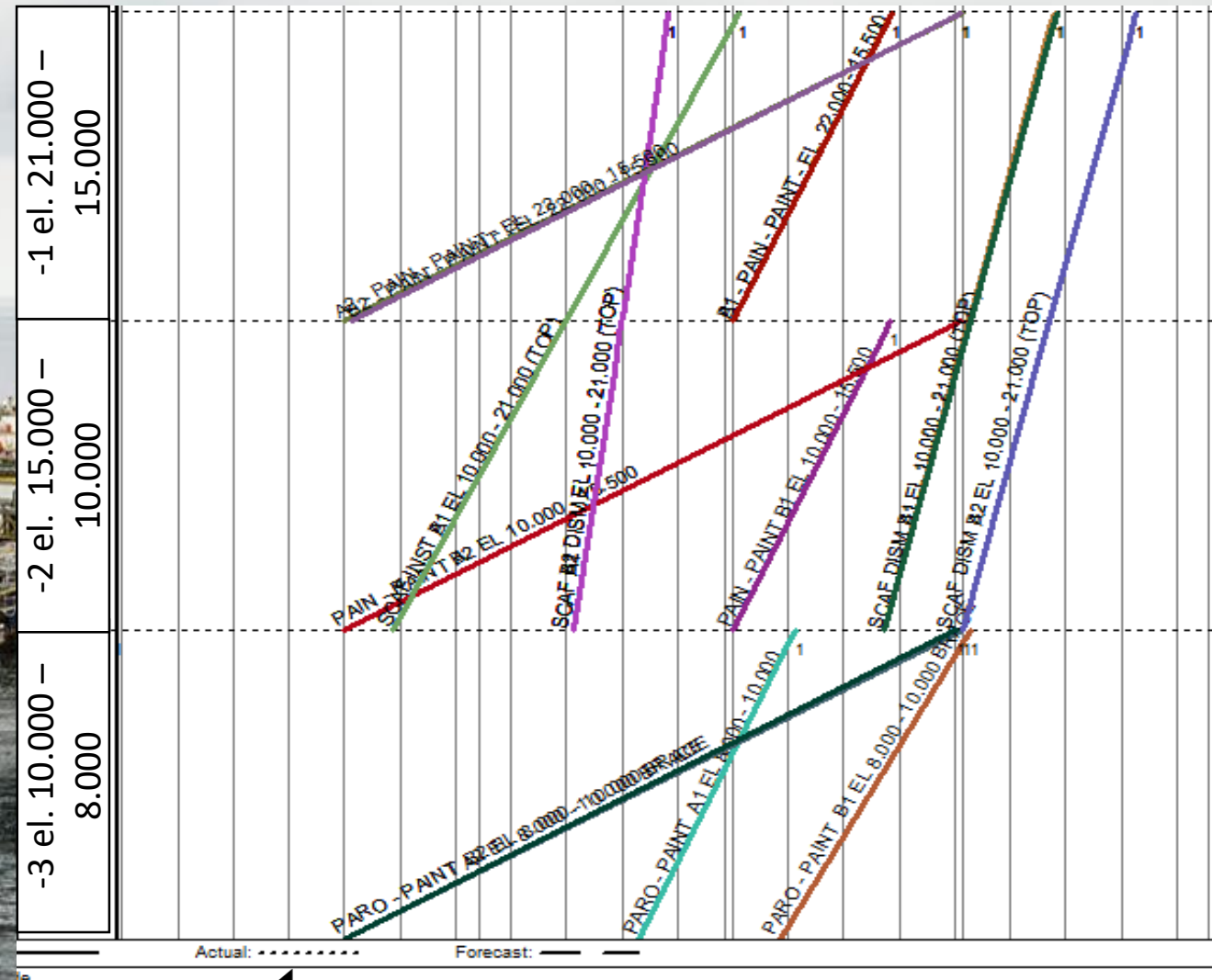
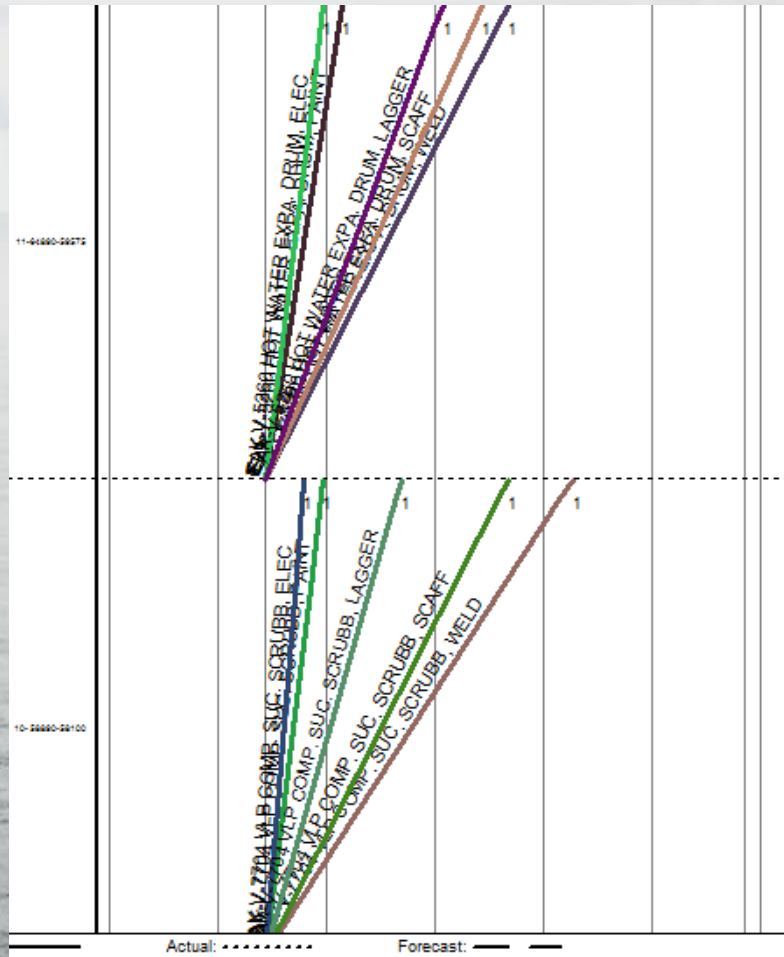


BACK UP SLIDES

Literature List

Source	Domain			Method		
	Construction	Manufacturing	OF O&G	CPM	LBMS	LPS
Alonso et al. (2018)			x	x		
Ballard, H. G. (2000)	x					x
Bull and Love (2019)			x	x		
Carvalho and Pinto (2006)			x	x		
Findlay et al. (1989)			x	x		
Galloway, P. D. (2006)		x		x		
Gomarn and Pongpeng (2018)			x			
Gupta and Grossmann (2012)			x	x		
(Halvorsen-Weare and Fagerholt 2011)			x	x		
Halvorsen-Weare and Fagerholt (2017)			x	x		
Kalsaas (2013b)			x			x
(Kenley 2004)	x				x	
Kenley, R. (2005)	x				x	
Kenley, R., and Seppänen, O. (2010)	x				x	
Kerzner and Kerzner (2017)		x		x		
Lang and Zhao (2016)			x	x		
Lucko, G., and Gattei, G. (2016)	x				x	
Lucko et al. (2014)	x				x	
Norstad et al. (2017)			x	x		
Olivieri et al. (2018)	x			x	x	
Seppänen, O., Ballard, G., and Pesonen, S. (2010).	x				x	x
Seppänen, O., Evinger, J., and Mouflard, C. (2014)	x				x	
Smalley and Chebotar (2017)			x	x		
Tavallali and Karimi (2016)			x	x		
Valente et al. (2014)	x				x	

Location Break Down example



Current flowline overview



14