

Safety: It's Not an Option

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Safety: is a competitive advantage to increase quality and predictability

- It is what clients expect
- It is fundamental foundation of quality
- Planning vs. execution
- Speed of thought under high stress
- Pretask plans where developed as a productivity tool
- Quality of motion, Quality of tools
- Increased quality through measurements
- Get to the root to Get to Zero

Clients Expect Predictable Quality Outcomes

Week 2

Week 13



But the Process is Unpredictable Just like the Weather



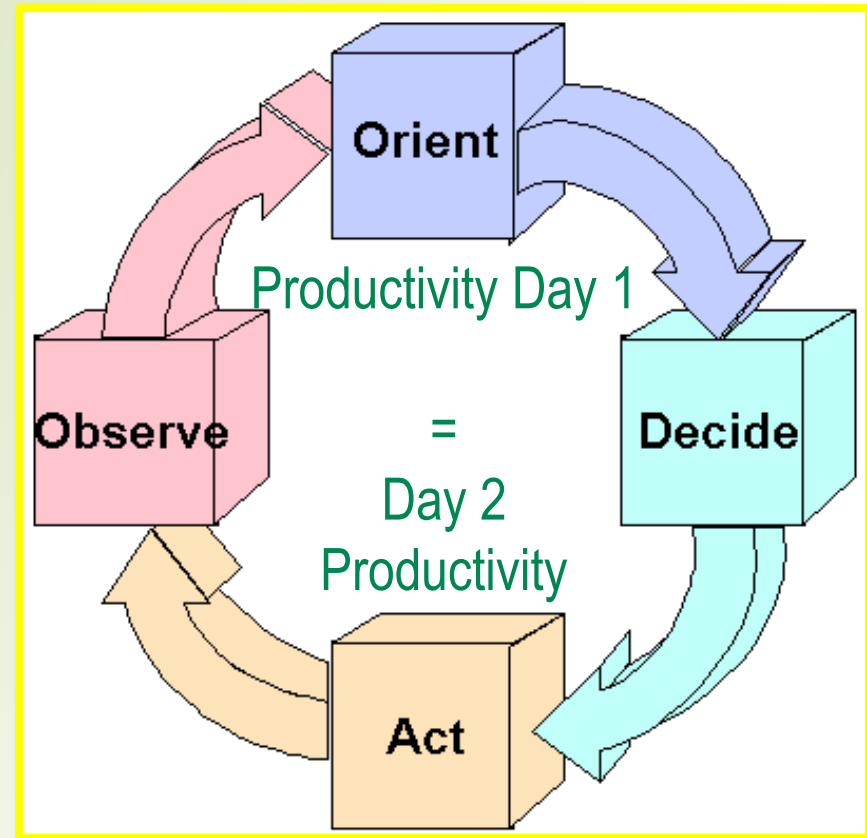
But is it?

Daylight	Rain	Temp	Wind	Average Rain	Max Rain	% of Days that rained over 1/10th of an	% of Days that Below Freezing	% of Days that Below 40 Degrees
Poor	Optimal	Optimal	OK	.000 "	.000 "	33%	0.00%	0.00%
Poor	Sub-Optimal	Optimal	OK	.003 "	.010 "	33%	0.00%	0.00%
Poor	Poor	Optimal	OK	.045 "	.180 "	67%	0.00%	0.00%
Poor	Optimal	Optimal	OK	.000 "	.000 "	33%	0.00%	0.00%

How did you estimate the work?



Planning + Execution = Tempo Quality



By Originated Col John Boyd (USAF)

Process Charts of 1900's are Pretask plans of 2000's

Install drywall Wednesday, February 06, 2013		PRESENT		PROPOSED		DIFFERENCE		ANALYSIS					QUESTION EACH DETAIL
		NO.	TIME	NO.	TIME	NO.	TIME	WHAT?	WHERE?	WHEN?	WHO?	HOW?	
Operations													1. MAKE READY
Transportation													2. DO
Inspection													3. PUT AWAY
Delays													
Storage													
Distance Traveled			500 FT.		250 FT.		250 FT.						

MAN	OR	MATERIAL
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JOB	CHARTED BY C Heger
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Dr. Kaplan LEAN Equation	16	2	4	4	1
#DIV/0!					

Quality	Appropriateness	Outcomes	Service	Waste
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POSSIBILITIES	Change
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DETAILS OF (PRESENT-PROPOSED) METHOD	Constant / Variable	Operations	Transportation	Inspection	Delays	Storage	Distance In Feet	Quantity	Mass	Number of People	Task Time minutes	Eliminate	Combine	Sequence	Place	Person	Improve	Work	Work Productivity
Uncover truck	Variable	●	→	■	■	▼	312	4000	448	14	3760	0	0	0	0	0	0	1,814 Joules	911.1 Joules/Man-minute
Unstrap units	Variable	●	→	■	■	▼	50	400	32	2	480							139 Joules	69.4 Joules/Man
Hoist into building	Variable	●	→	■	■	▼	50	800	32	2	480							556 Joules	277.8 Joules/Man
Load onto cart	Variable	●	→	■	■	▼	50	400	64	2	480							278 Joules	138.9 Joules/Man
transport to room	Variable	●	→	■	■	▼	100	400	32	2	480							556 Joules	277.8 Joules/Man
set on ground	Constant	●	→	■	■	▼	1	400	64	1	400							0 Joules	0.2 Joules/Man
pick up	Variable	●	→	■	■	▼	5	400	64	1	400							4 Joules	4.0 Joules/Man
lift to wall	Variable	●	→	■	■	▼	5	400	64	1	400							4 Joules	4.0 Joules/Man
screw off to wall 8 + 8 + 8	Variable	●	→	■	■	▼	1	400	64	1	400							0 Joules	0.2 Joules/Man

It acts as the pawl of a ratchet wheel permitting forward motion,
but preventing retracing of steps already taken.

Process Charts of 1900's are Pretask plans of 2000's

Pretask planning worksheet

E. Review by crew lead

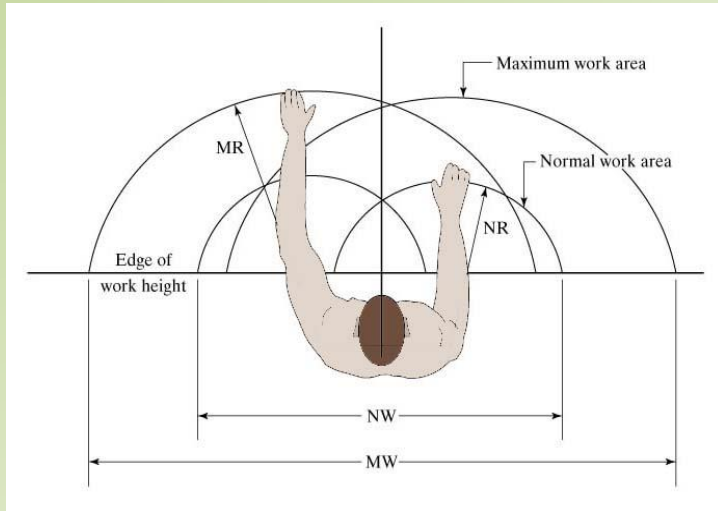
By signing below, I certify the completion of following activities:

1. Crew has walked through the work area to identify safety concerns.
2. Area is safe for working (for example, housekeeping, guarding, congestion, work surfaces, access).
3. Work has been coordinated with others in the area.
4. All tools and equipment are safe and in good condition (includes assured grounding, slings, hand tools, etc.).
5. All necessary training for this task has been completed.
6. All new employees have been familiarized with the work area.
7. Sufficient personnel have been assigned to complete this task safely.
8. Emergency exits and equipment have been identified (phones, fire extinguishers, eyewashes, etc.).
9. Contingency plans have been developed for unexpected events (medical emergency and equipment failure).

Crew lead _____ Crew lead _____
(Signature) (Print name)

Sequence of basic job steps	Risks involved in completing steps	Risk control method

Quality of Motion



On average we
walk 240' per
minute

Quality of Information

Stroke sensing hydraulic cylinder

A stroke sensor is built into the cylinder. This sensor provides accurate, real time bucket position which is immediately displayed on the control box, speeding up your work.

Control box

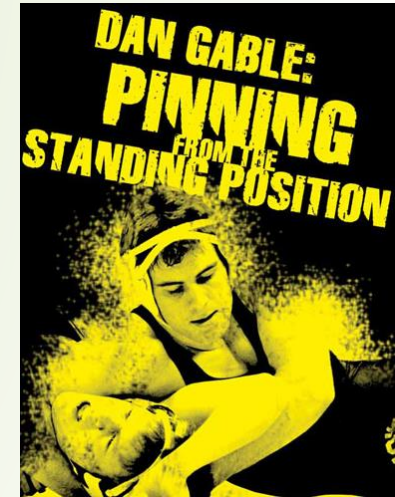
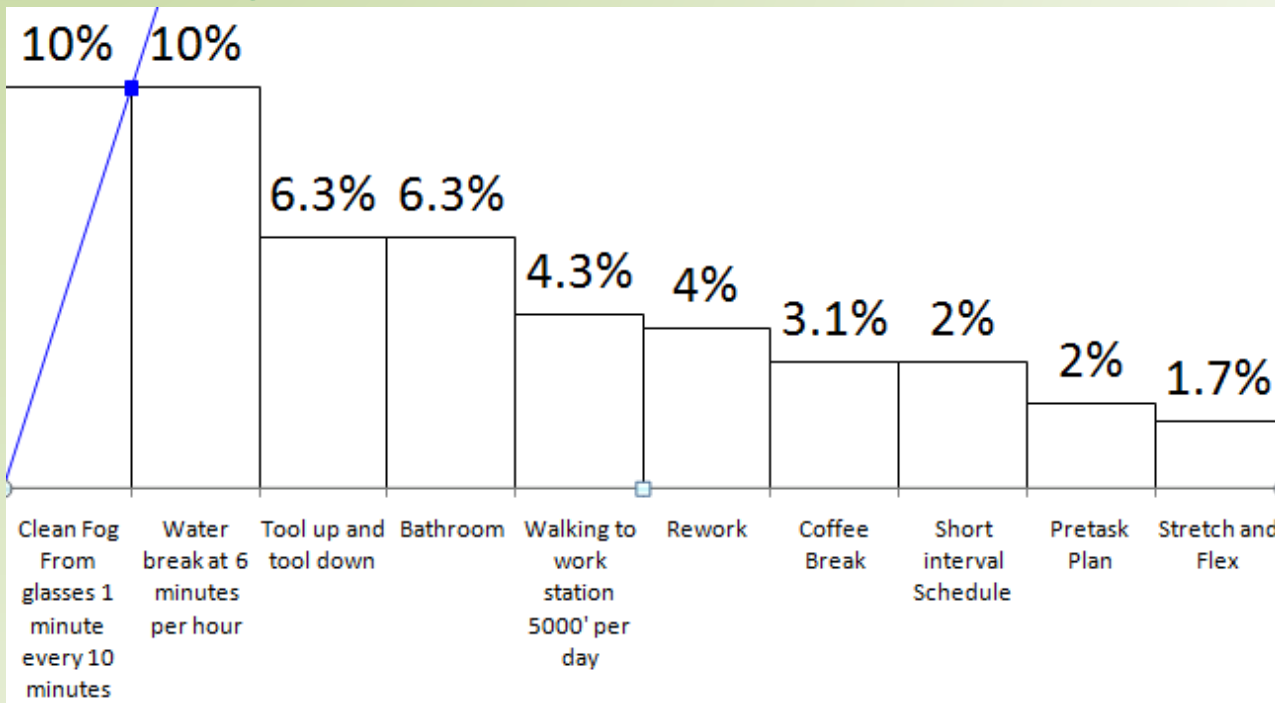
A large, easy-to-view monitor designed for Komatsu intelligent Machine Control.



Inertial Measurement Unit (IMU)

High accuracy in the finishing work is secured by Inertial Measurement Unit (IMU) detecting the machine posture.

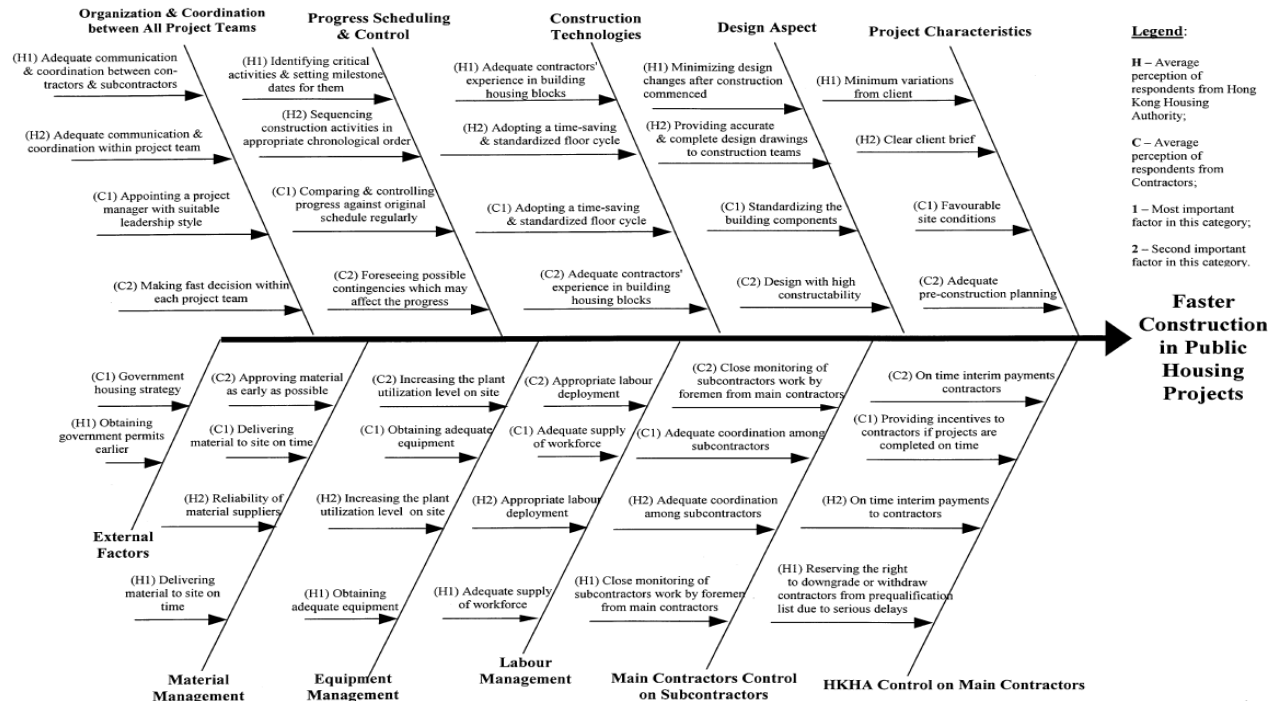
Find out the real issue through analytics



Improve your thinking Stop wasting money and get the right equipment to do the Job.

Imagine what the GDP of the US could be, if we approached work like we do for even High school Sports?

Root Cause analysis “Are you an Improving Organization”



D. W. M. Chan, M. M. Kumaraswamy / International Journal of Project Management 20 (2002) 23–35

Fig. 3. Fish-bone diagram indicating the two most important factors contributing to faster construction in public housing projects as perceived in each factor category by each group of survey respondents (source: [35]).

Provide us the PROOF, not the “Teenager Driving Experience”



Quality Plan

- Is it Specific to the project.
- Is it detailed
- Form follows function
- Who is Responsible
- Incident Response Plan
- Return to work policy
- PPE Productivity items
- Integration of office and field
- Is the documentation up to date
- Does the company “Attack” or “React” to an issue.
- Is Zero Your target! **BECAUSE it is your Clients**

Turn pro! "Amateurs practice until they get it right; Pros practice until they can't get it wrong." —Navy SEALs



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Thank You