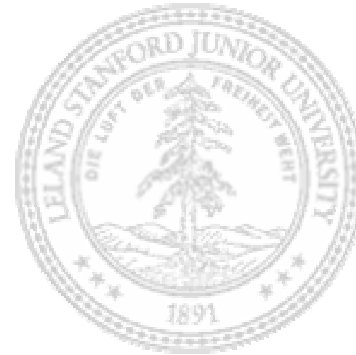


# Cross Cultural Team:

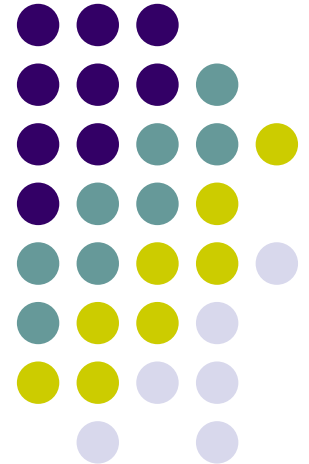
*Characteristics and Analysis of the impacts on the team performances through virtual experiments*

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**Presented by  
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# Objectives



- Understanding the characteristics of the “Cultural Differences” on the construction project: (JP and A)
- Define the “A Cross-Cultural Team”
  - Team Context
  - Team Composition
  - Team Structure
- Modeling an idealized organization
  - VDT – “Theorem prover” (Feldman and Arnold)
- Analysis the impact of their performances
- Calibration (Summer Quarter)



# Cultural Differences



- Hofstede, Trompenaars's theory
  - PDI: Power Distance
  - MAS: Masculinity vs. Femininity
  - IDV: Individualism vs. Collectivism
  - UAI: Uncertainty Avoidance
  - UNI: Universalism vs. Particularism
- Case study (Ethnographic interview)
  - 4 construction projects (Bridge, Tunnel, Building)
  - 4 JP project managers, & 4 AM project managers



# Cultural Differences



- Tendencies is similar to Hofstede's dimensions
- Different degree of importance for each dimension

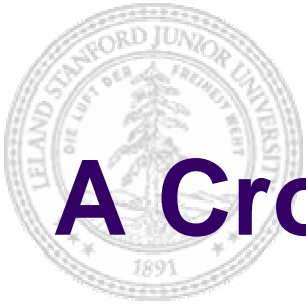
Hofstede		JP	AM	Score Gap	Observation
	<b>PDI</b>	54	40	14	< Medium
	<b>MAS</b>	95	62	33	> Low
	<b>IDV</b>	46	91	45	= High
	<b>UAI</b>	92	46	46	> Medium
Trompenaars	<b>UNI</b>	(0)	(2)	-	< Medium/ High



# Cultural Differences



- **Team Experiences** (L, M, H)
  - L: Most likely
  - H: Cultural conflictions are vanished
  - H: Cox proposed that “*Cultural diversity brings Positive impacts*”
- **JP’s skill level** (L, M, H)
  - L: Language barrier (Many JP staffs came at project-base)
  - L/M/H: Personal experience in the United States
- **Characteristics of the dominant party**
  - Decision making time (JP tends to be long)
  - Centralization (JP tends to be high – PDI/IDV)
- **Meeting is formalized** - Avoiding misunderstanding
- **Technological level** - Incentive to work together/Need time to understand



# A Cross-Cultural Team

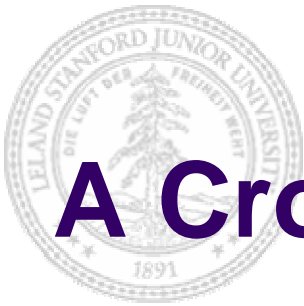


**Team Context**

**Team Composition**

**Team Structure**

- Wong. S., & R. Burton at “Virtual Team”



# A Cross-Cultural Team

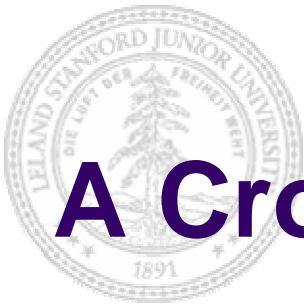
## Team Context

Team Composition

Team Structure

- Definition: The circumstances surrounding a team

Components	Setting	Degree of impact	Descriptions
Team Experience	L	H FPer/IEr	Negative impacts on Fer/Per/IEr
	M	M FPer/IEr	Relatively negative impacts on Fer/Per/IEr
	H	L FPer/IEr	Positive impacts on Fer/Per/IEr
Technological level	L Ex. Team	X 125%	L team ex. cause H Fer
	M Ex. Team	X 110%	M team Ex. cause M Fer
	H Ex. Team	X 90%	H team ex. Improve Fer

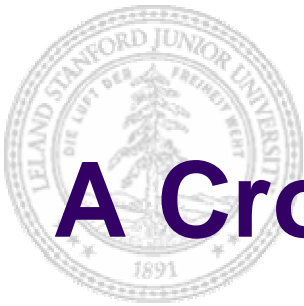


# A Cross-Cultural Team

Team Context	<b>Team Composition</b>	Team Structure
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- Definition: Characteristics of the members in a team

Characteristics of the Dominant party	JP	H Centralization	PDI/IDV
		M/H Formalization	Depends on the team experience
	AM	M Centralization	Average
		L/M Formalization	Depends on the team experience
Project Error (UNI/BUS/IDV)	L Team Ex.	X 125%	Cause relatively large Per.
	M Team Ex.	X 110%	Cause medium Per.
	H Team Ex.	X 90%	Minimize Per.
Formalization (UNI/BUS)	L Team Ex.	H	Most likely to have H -
	M Team Ex.	M	M formalization
	H Team Ex.	L/M	Depends on the dominant party. JP-M, A-L (High IDV country)



# A Cross-Cultural Team

Team Context

Team Composition

**Team Structure**

- Definition: Individual skill/Strength of relationships

Information Exchange (PDI/UAI/IDV)	L Team Ex.	X 150%	Increase IE by 50%
	M Team Ex.	X 125%	Increase IE by 25%
	H Team Ex.	X 90%	Decrease IE by 10%
Time-for-Decision (UAI/IDV)	L Team Ex.	X 125%	Increase by 25% (JP=Dominant)
	M Team Ex.	X 110%	Increase by 10% (JP=Dominant)
	H Team Ex.	X 90%	Decrease by 10%
Skill level of JP Actors	L	-JP actor only	Low experience
	M	-JP actor only	Medium experience
	H	-JP actor only	High experience



# Modeling



- Actors: 1 PM, 2 Eng
- PM is taken by either JP or A
- 4 + 1 Tasks:
- 4 tasks is identical (50 days)
- 6 Communication links
- 4 Rework Links
- Meeting: Once a week
- Finish-to-Start Precedence

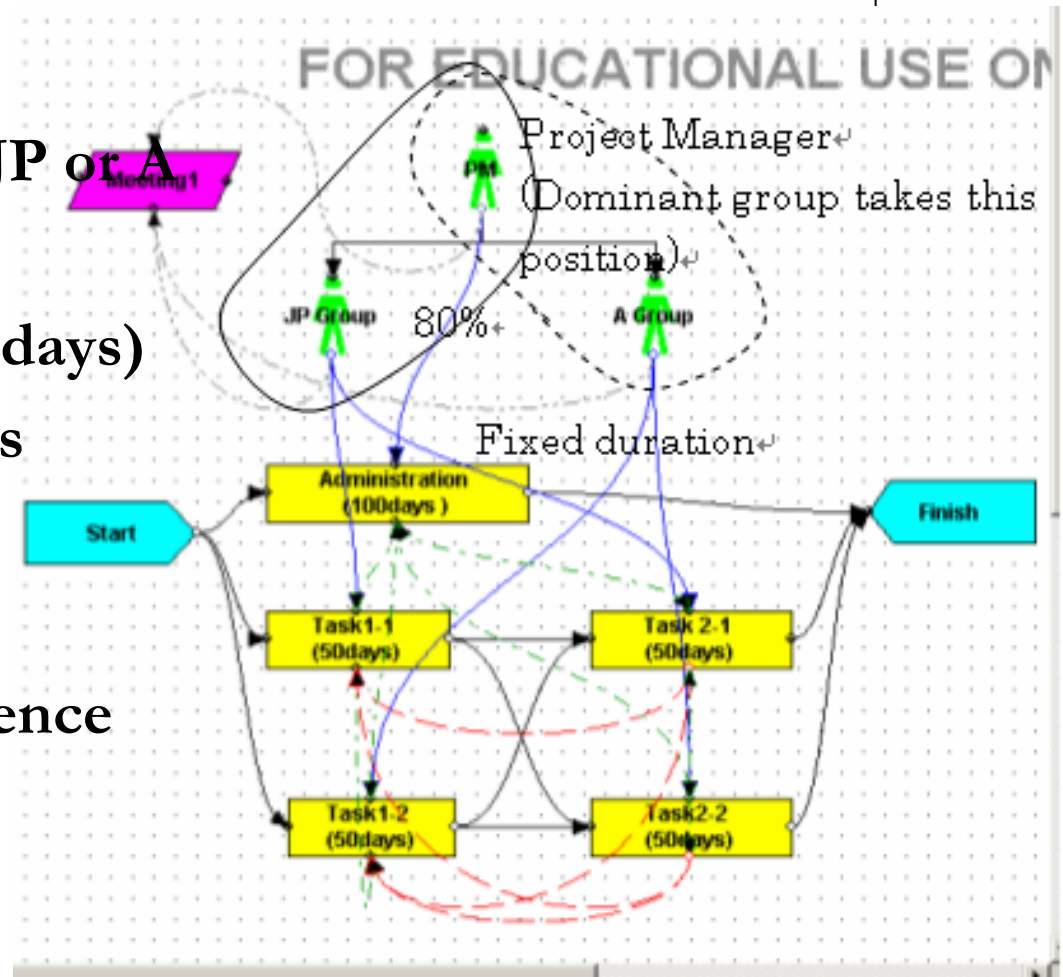
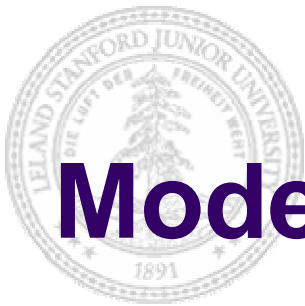
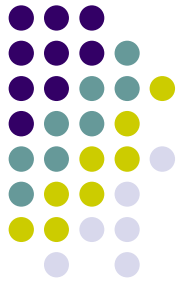


Figure 4.7: VDT model of Cross-Cultural Team<sup>+</sup>



# Modeling



- Scenarios (6 X 3 = 18)

		L Team Ex.			M Team Ex.			H Team Ex.		
JP (A) Team	Baseline	Case 1			Case 2			Case 3		
		1.1	1.2	1.3	2.1	2.2	2.3	3.1	3.2	3.3
Dominant party	–	JP takes PM position (Dominant)								
Team Experience	Medium	Low			Medium			High		
Functional Error	0.1	0.125			0.11			0.09		
Project Error	0.1	0.125			0.11			0.09		
Information Exchange	0.5	0.75			0.625			0.45		
Skill Level (JP)*	Medium	L	M	H	L	M	H	L	M	H
Time-For-Decision	100%	X 125%			X 110%			X 90%		
Centralization	Medium	High								
Formalization	Medium	High			Medium			Medium		
A (JP) Team	Baseline	Case 4			Case 5			Case 6		
		4.1	4.2	4.3	5.1	5.2	5.3	6.1	6.2	6.3
Dominant party	–	A takes PM position (Dominant)								
Team Experience	Medium	Low			Medium			High		
Functional Error	0.1	0.125			0.11			0.09		
Project Error	0.1	0.125			0.11			0.09		
Information Exchange	0.5	0.75			0.625			0.45		
Skill Level (JP)*	Medium	L	M	H	L	M	H	L	M	H
Time-For-Decision	100%	X 100%			X 100%			X 90%		
Centralization	Medium	Medium								
Formalization	Medium	High			Medium			Low		

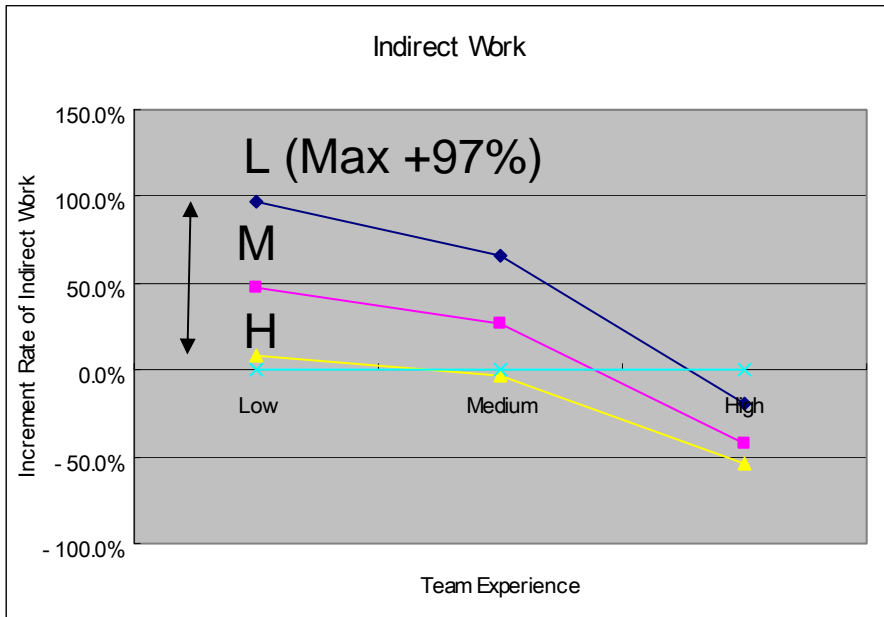


# Results/Analysis

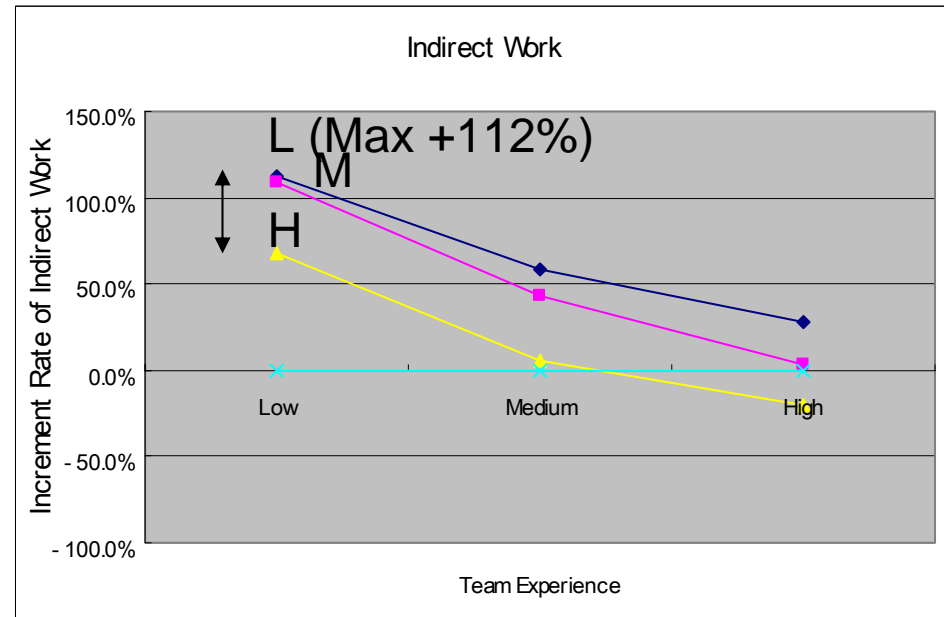


## ● Indirect Work (Increase Rate)

JP (A) Team



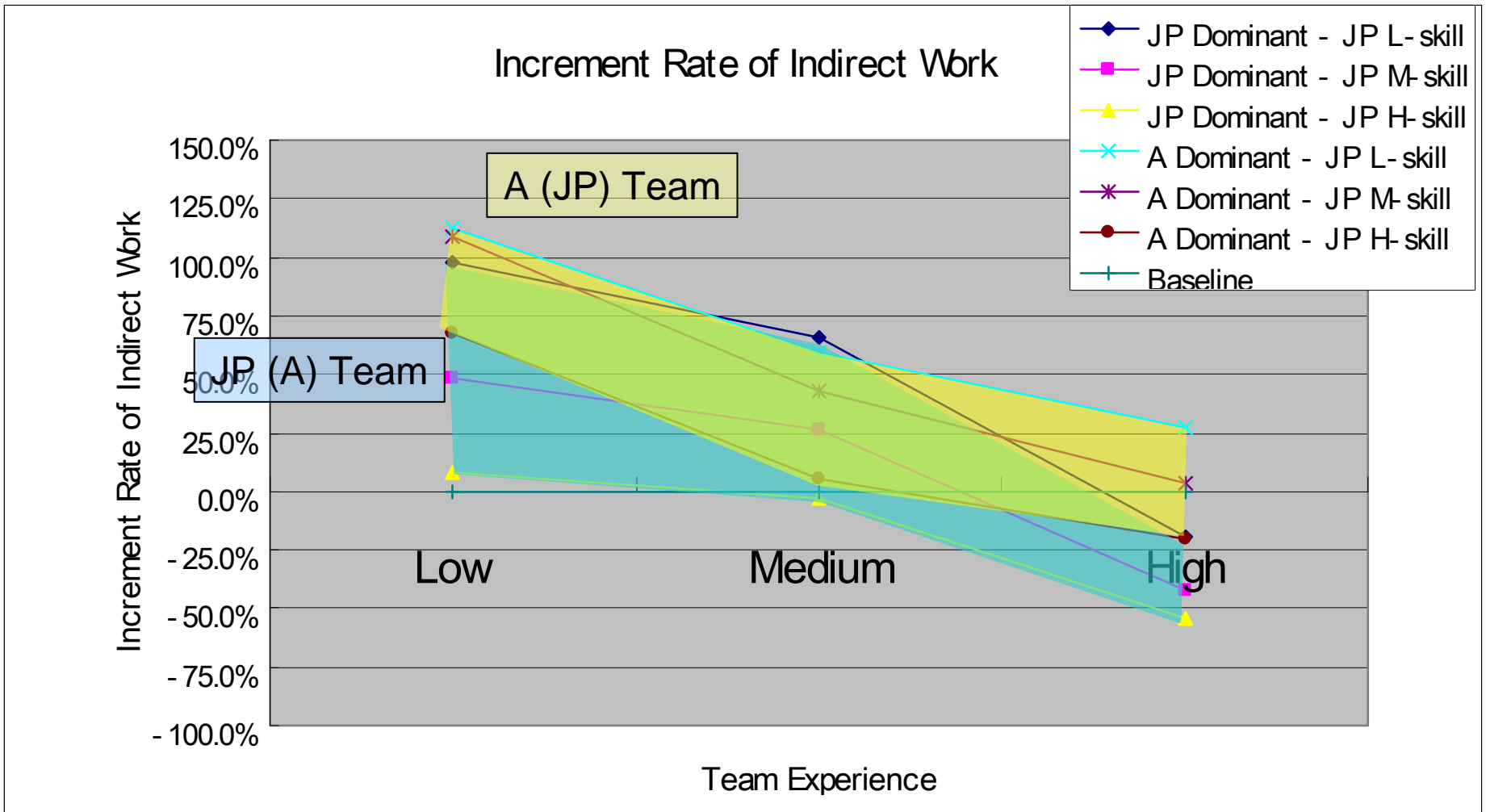
A (JP) Team



- Both H team Ex. prevail over the cultural conflicts
- JP is more sensitive to the skill level
- A has larger impact on their performance than the JP case (centralization?)
- Break points is between M to H experience team



# Results/Analysis



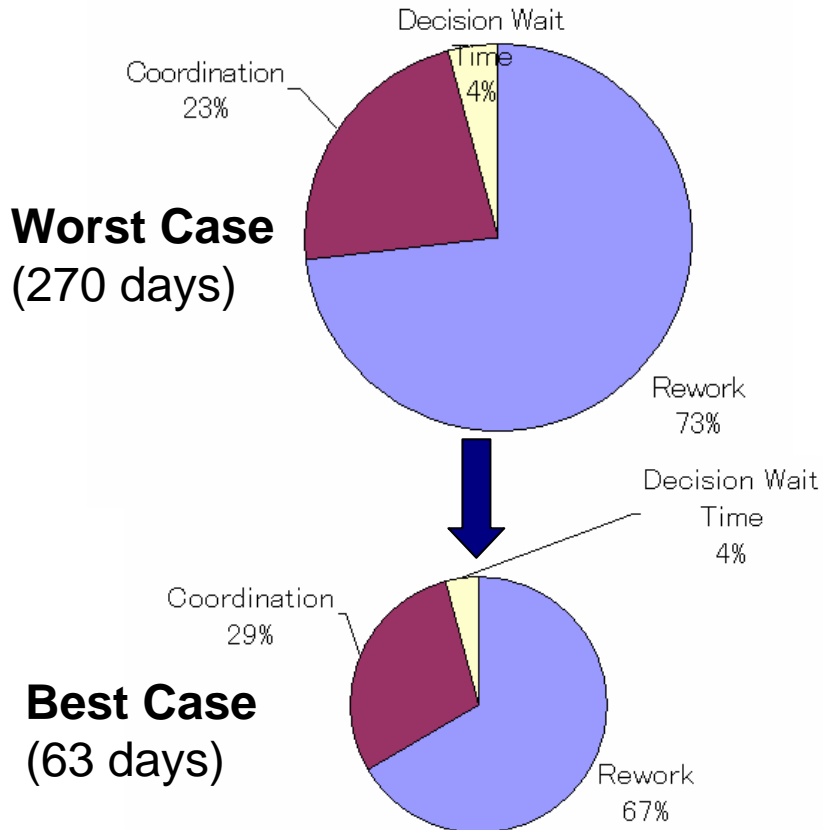


# Results/Analysis

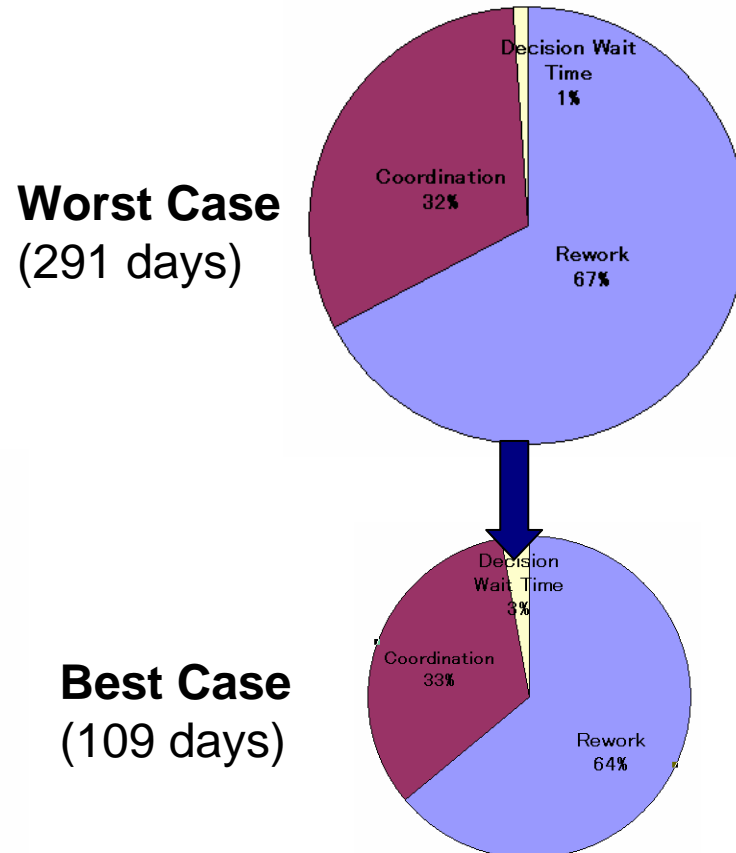


- Rework/Coordination/Decision Wait Time

JP (A) Team



A (JP) Team





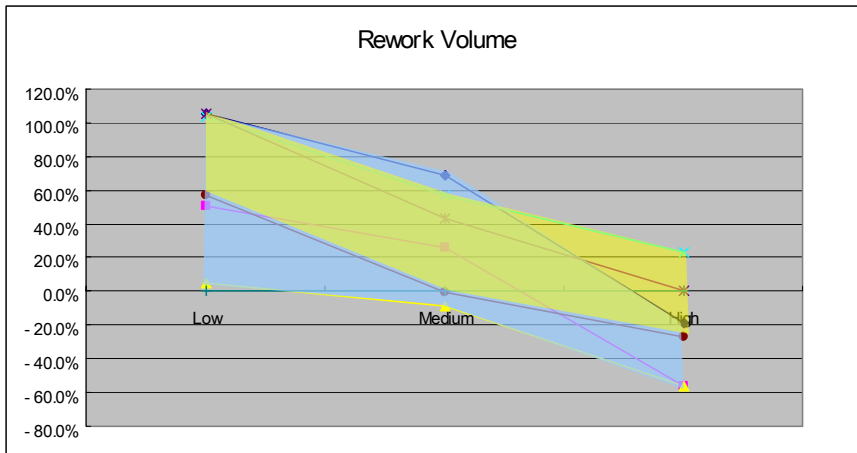
# Results/Analysis



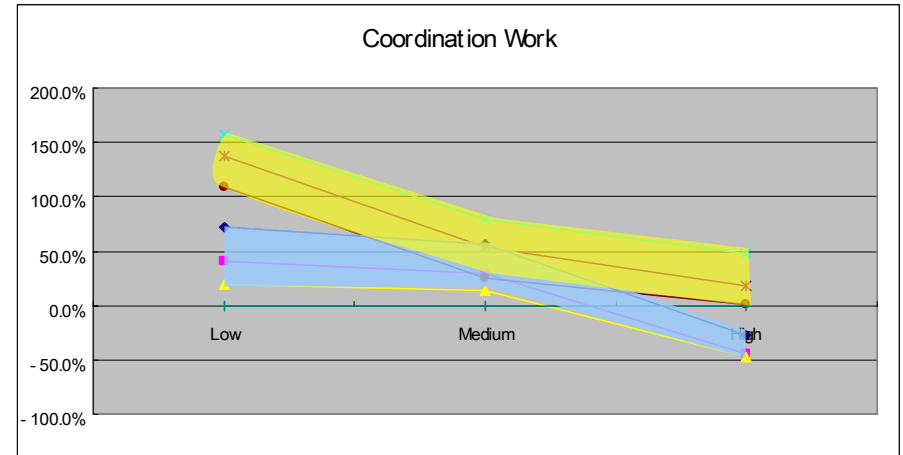
JP (A) Team

A (JP) Team

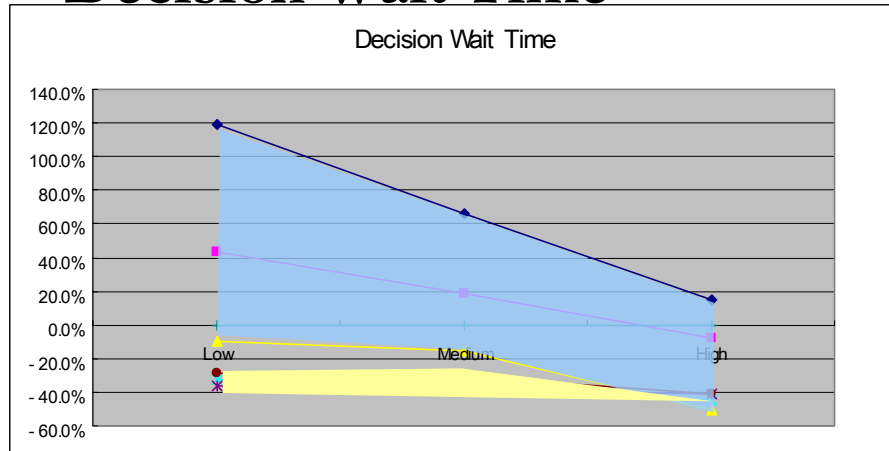
## Rework



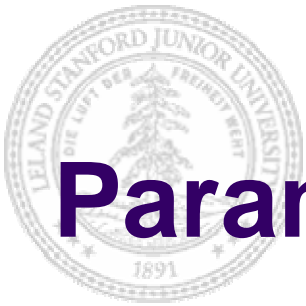
## Coordination



## Decision Wait Time



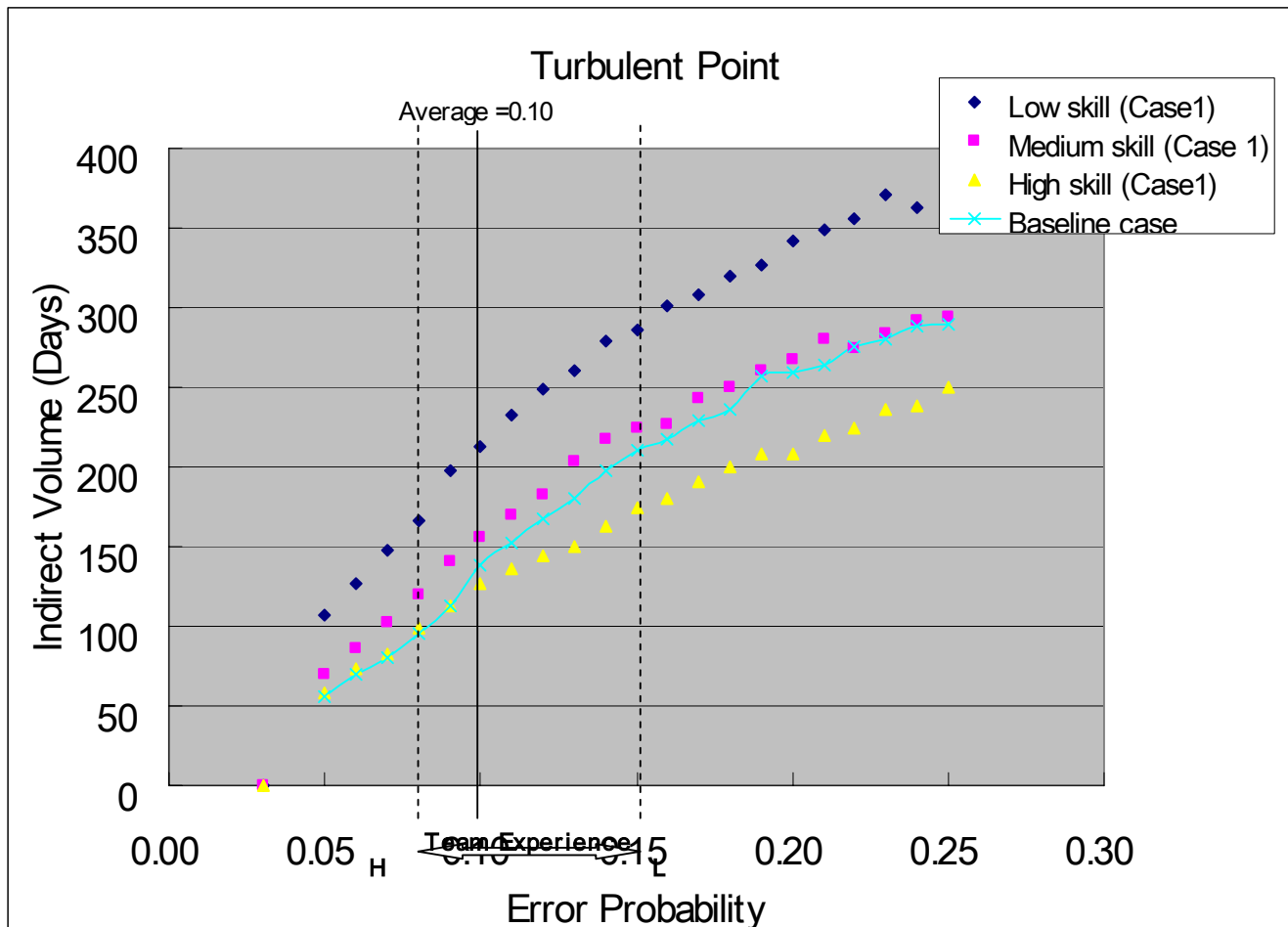
- **Rework:** JP is sensitive to JP skill level
- **Similar tendency to Indirect Work**
- **Coordination:** A is larger than the JP (High Formalization ?)
- **Decision Time:** JP is larger than the A

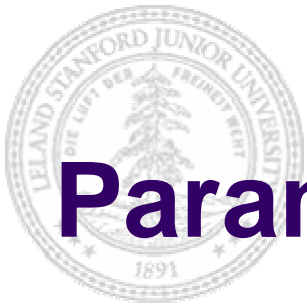


# Parameter Sensitivity



## Functional/Project Error

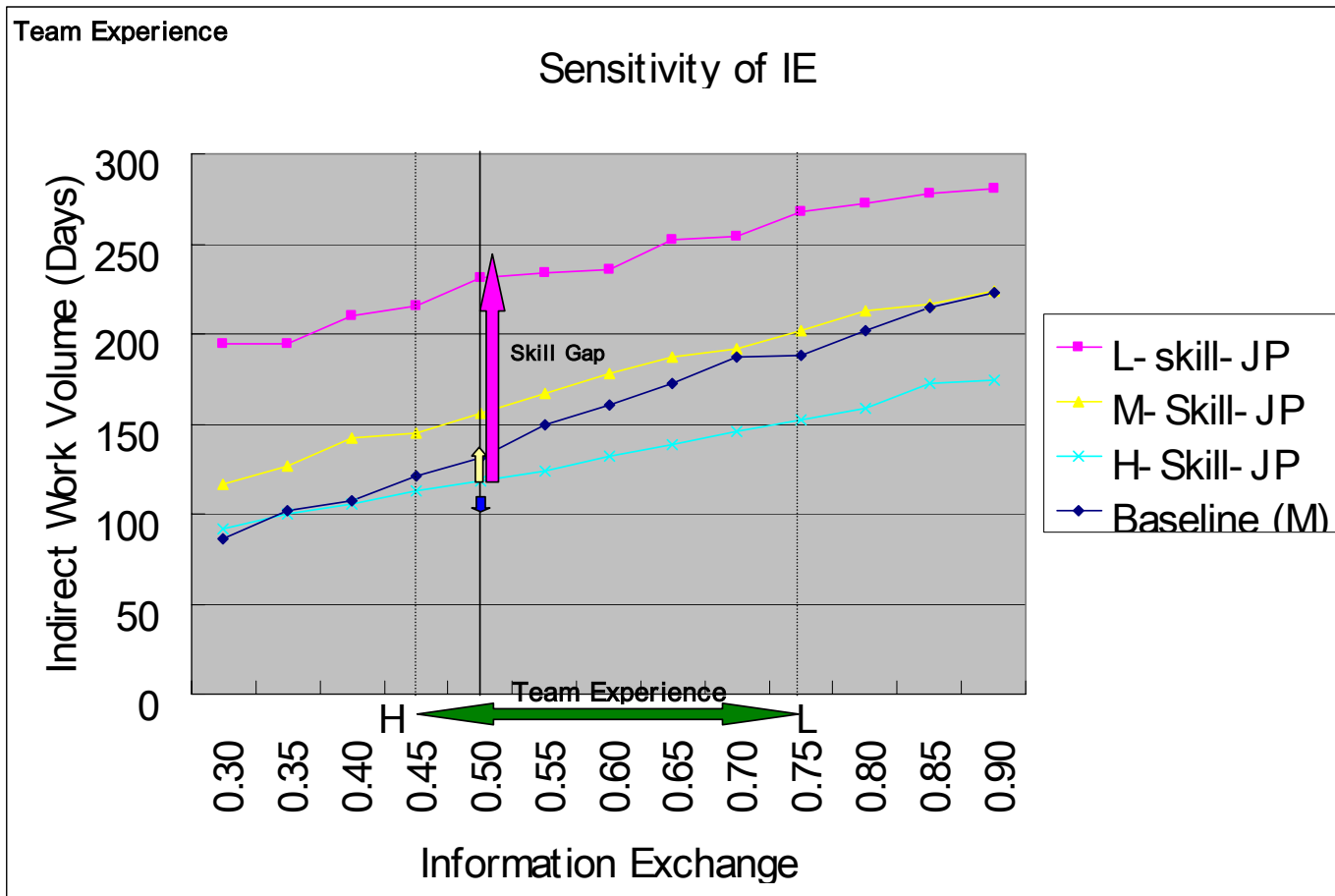




# Parameter Sensitivity



## Information Exchange





# Conclusion/Discussion



- Characteristics of “Cultural Differences”
  - Hofstede / Trompenaars theories are useful
  - The degree of each dimension is different
- Outputs of VDT are matched to my observation
- VDT has the large potential to simulate and predict the impacts on their team performances
- We need to make sure appropriateness about each parameter setting: Ex. IE – 0.45 for High Ex. Team



# Further Research



- Model/Simulate Real construction projects
  - C bridge
  - A semi-conductor facility
  - G bridge
- Calibration
- Possible Interventions
- The other countries (Ashwin/Ryan)
  - Multi-Cross-Cultural team
  - High cultural diversity group