

## SCML 2024 @ ANAC @ IJCAI

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<sup>7</sup> IntentExchange, Japan

## SCML Sponsors

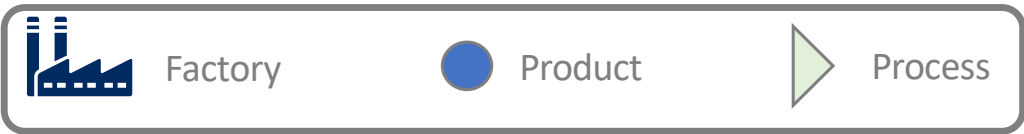
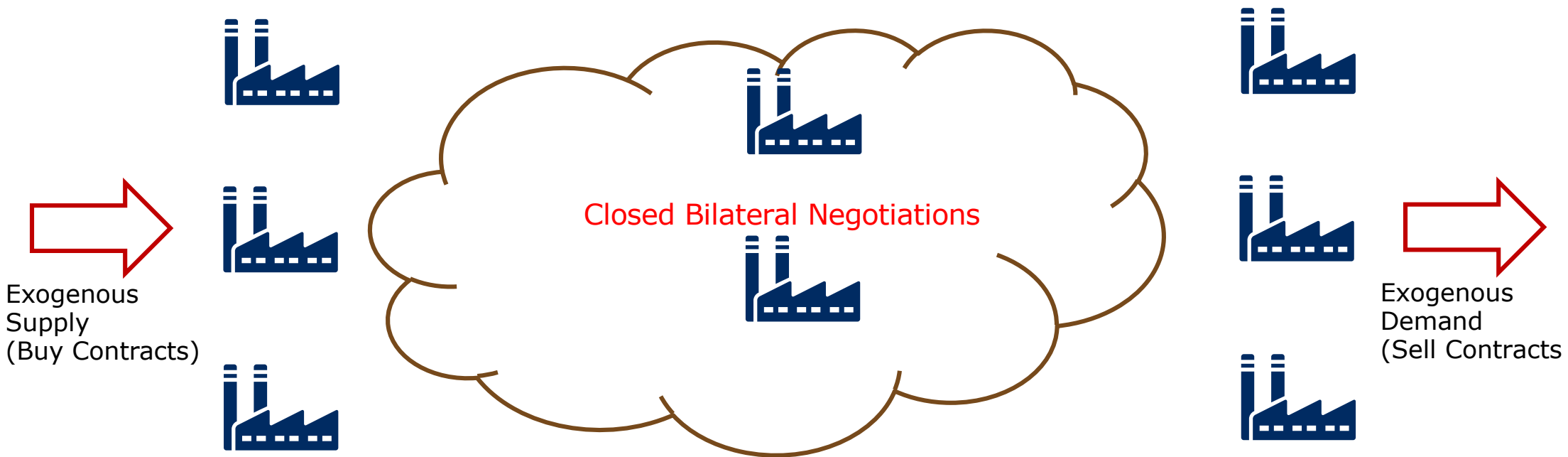
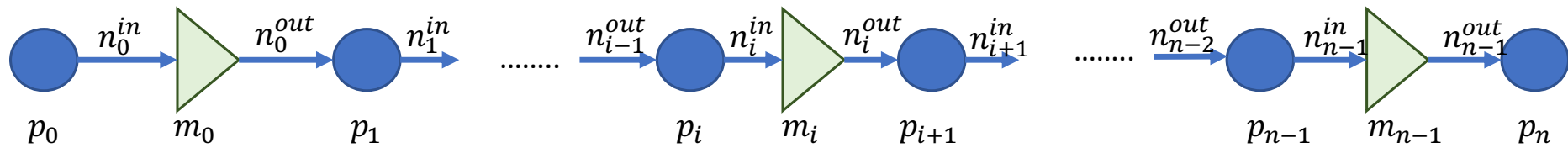


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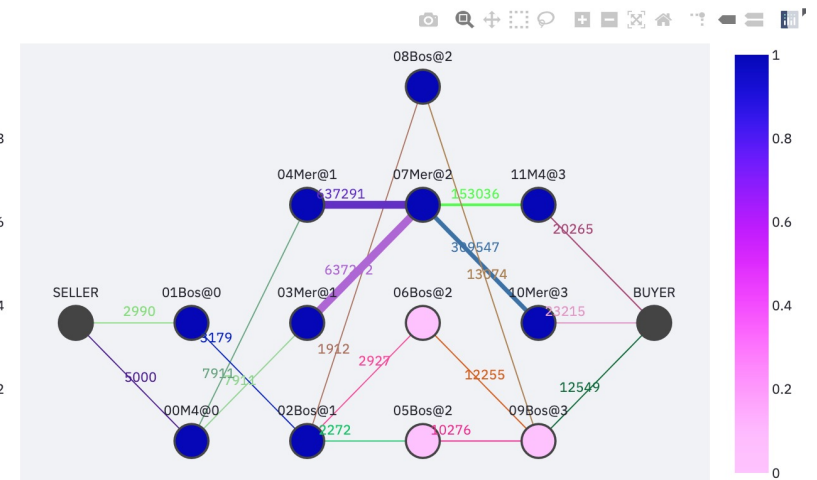
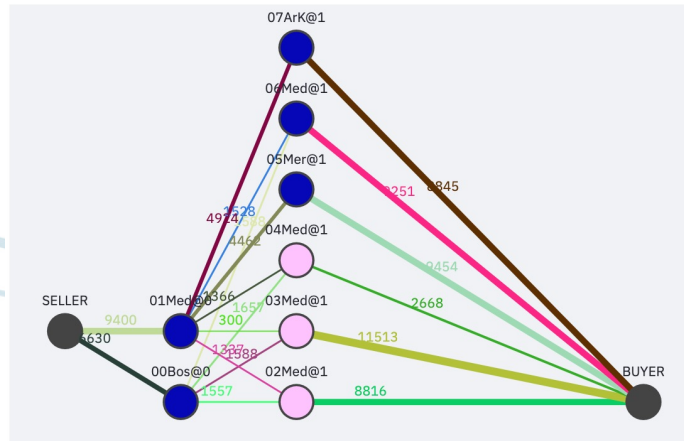
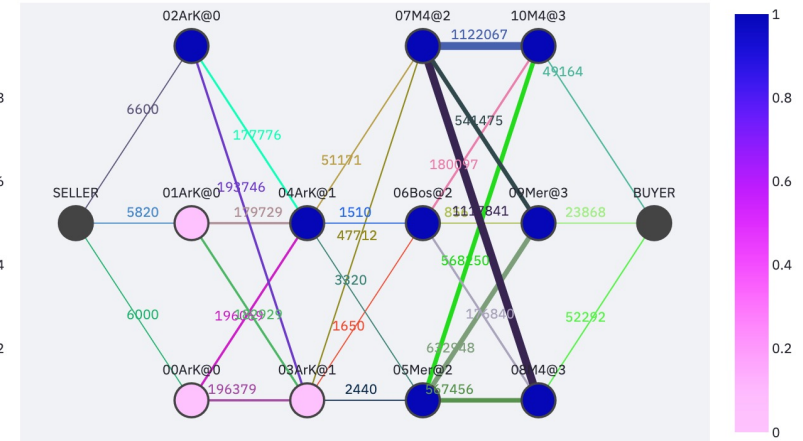
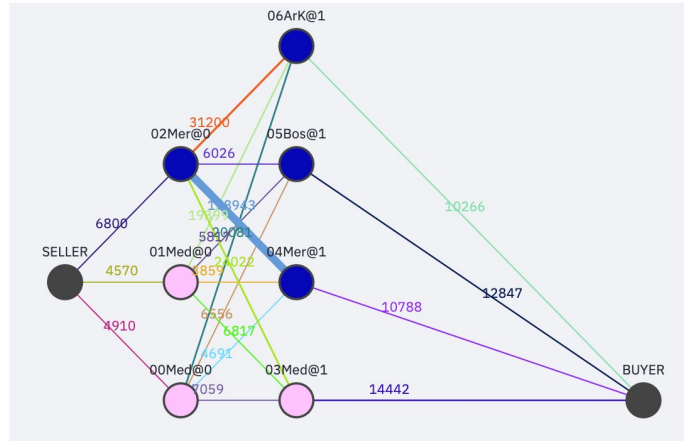


## What is SCML

- ✓ **Goal:** move automated negotiation research further toward the real world
- ✓ **Guiding Principles:**
  - ✓ Simple enough but not too simple
  - ✓ Continuity matters
- ✓ **Domain:**
  - ✓ Situated concurrent negotiation within a market → Oneshot
  - ✓ Repeated sequential concurrent negotiation within a market → Standard

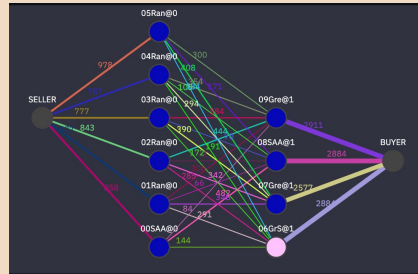


# Examples from the Standard Track



# The Two Tracks

## OneShot



- Delivery is always today
- N. intermediate products: 1
- Perishable Products
- Small Price Range
- Small Quantity Range

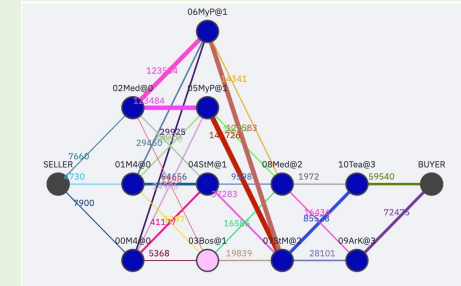


- Profit is defined per step.
  - A greedy ufun is known



- Concurrent Negotiation
  - ~~Long term planning~~

## Standard



- Delivery time is negotiable
- N. Intermediat products: 3
- Accomulated Inventory
- Large Price Range
- Large Quantity Range

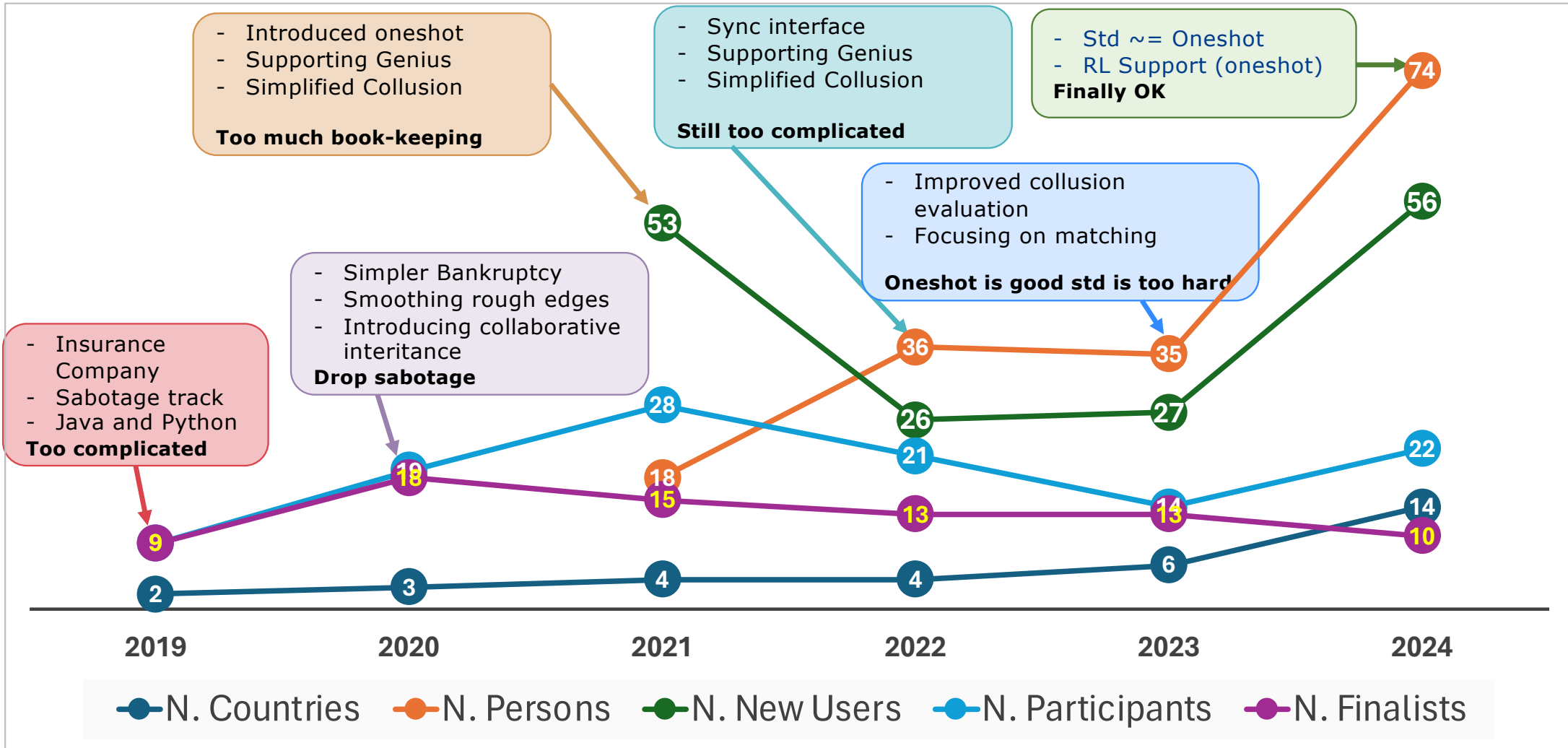


- Profit is known only ex-post
  - No greedy ufun is known

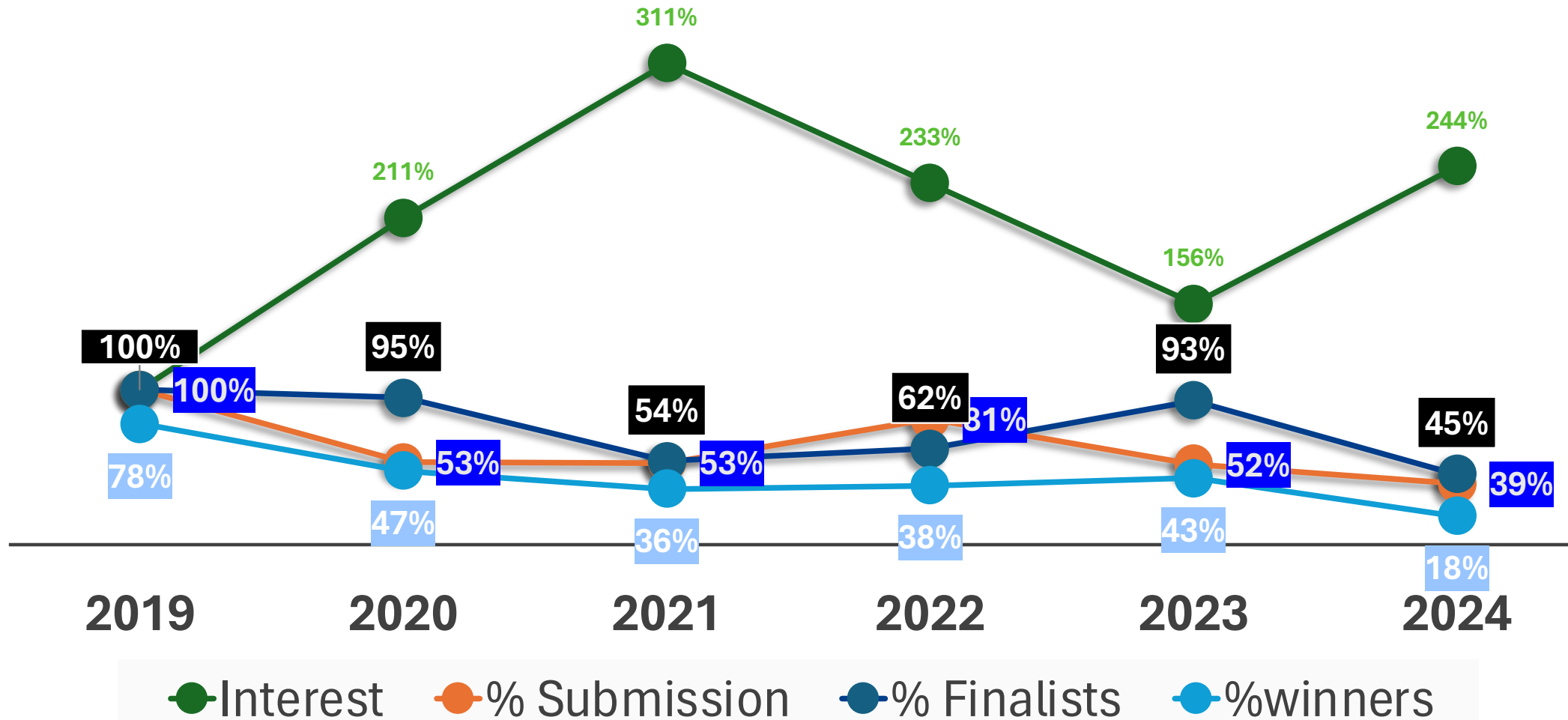


- Long term Planning
  - Concurrent negotiation

# SCML Growth

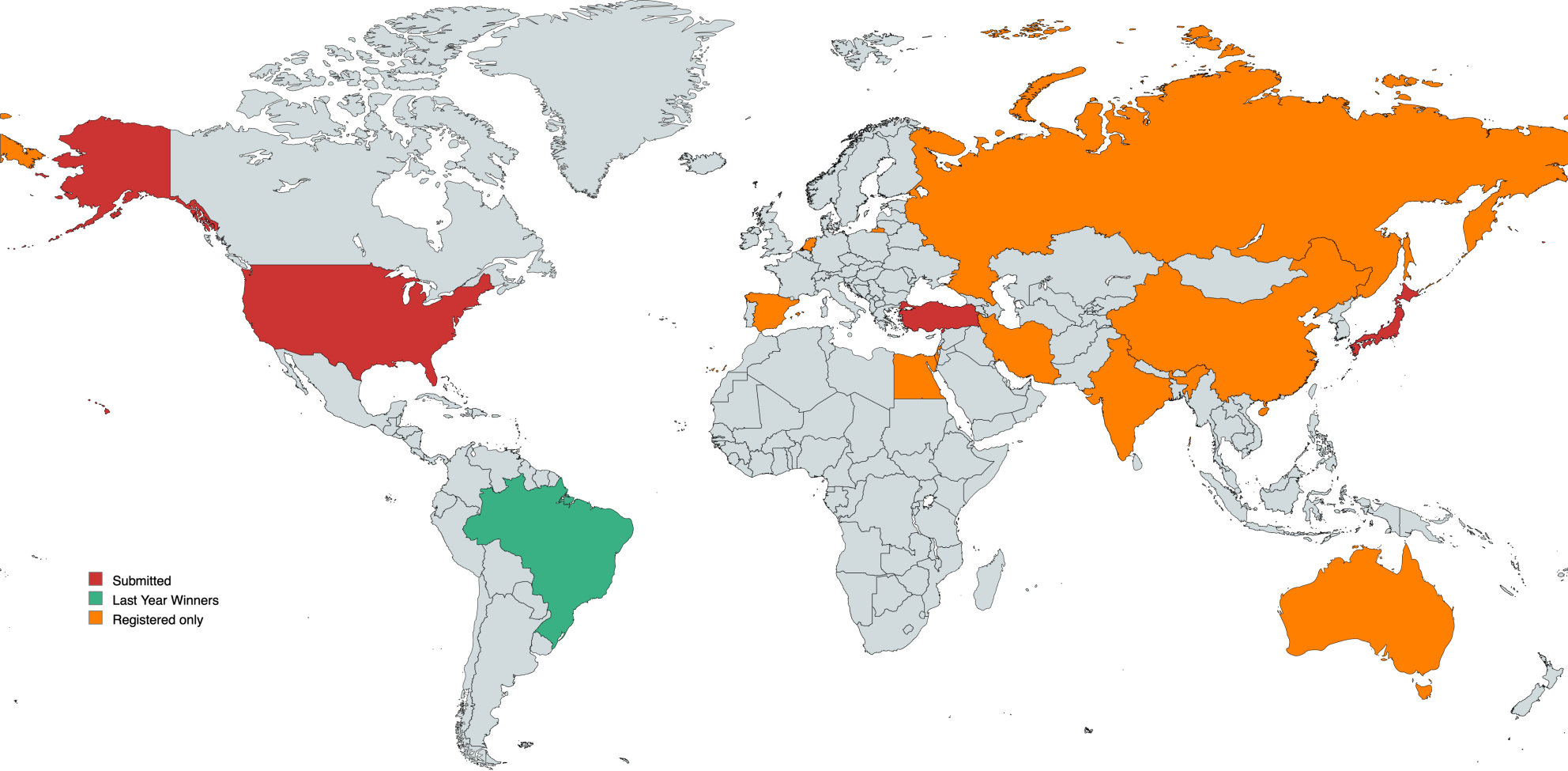


# SCML Growth





# Distribution of Participants

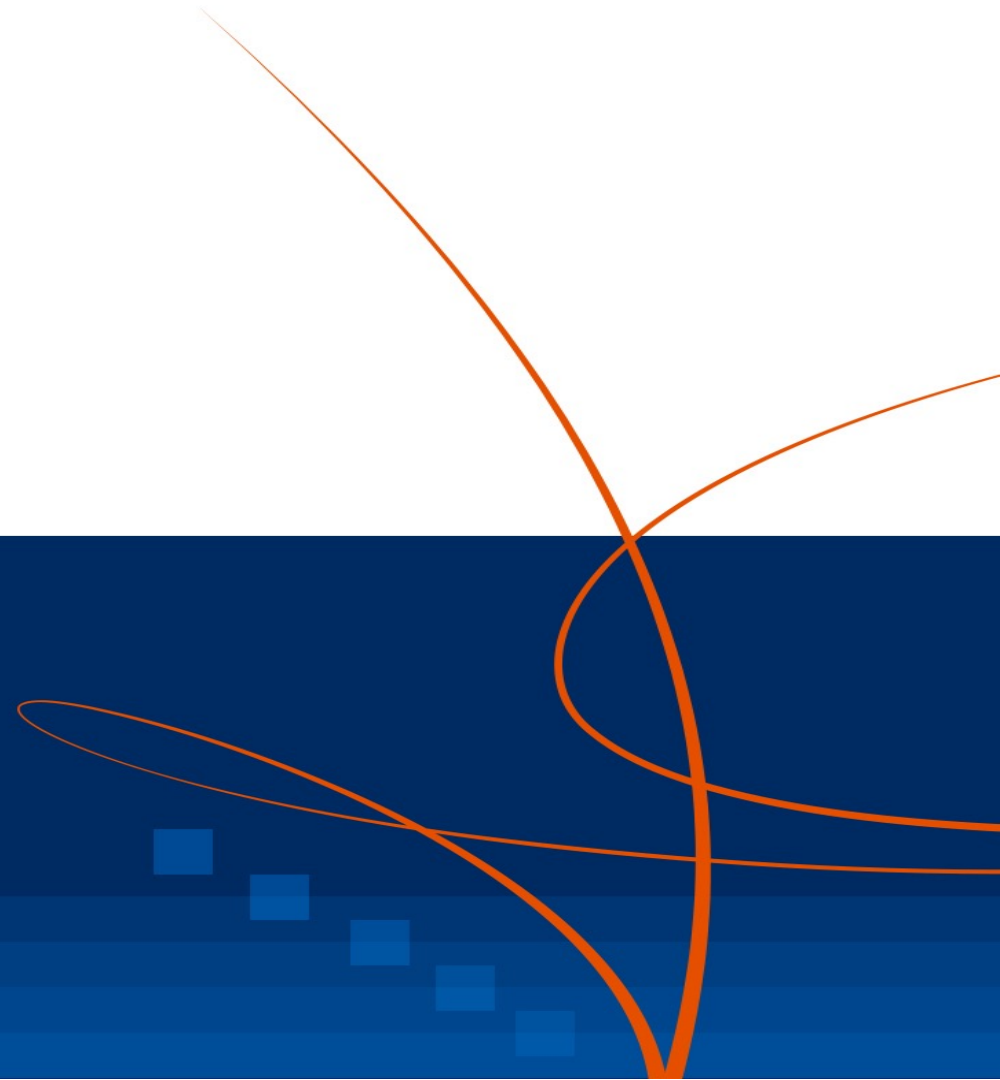


Created with mapchart.net

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## Online Competition



# Online Competition



## SCML 2023

Part of the ANAC Competition @AAMAS 2023

AGENT SUBMISSION IS CLOSED

REPORT SUBMISSION IS CLOSED

The qualification round of SCML 2023 is concluded. We received 25 submissions from 6 countries. Seventeen of these were qualified to enter the official competition. These are the results of the qualifications round (order of agents is random in this table does not reflect the scores of agents). Our congratulations for the finalists.

#	Team Leader	Team Name	Agent Name	Is OneShot?	Disqualified	Finalist
1	Kazuki Komori	Team May	M5	no	no	no
2	Ito Nobuhiro	Team 137	Lobster	no	no	no
3	Ryoga Miyajima	Team 140	Agent VSC	no	no	yes
4	Atsunaga Sadahiro	Team 150	AgentSDH	no	no	yes
5	Takumu Shimizu	Team 102	RLAgent	yes	no	yes
6	Shiraz Nave	Team 126	AgentSAS	yes	no	yes
7	Amit Dayan	Team 127	PHLA	yes	no	yes
8	Masato Kijima	Team 143	KanbeAgent	yes	no	yes
9	Shota Kimata	Team 114	CCAgent	yes	no	yes

<https://scml.cs.brown.edu/scml>

### Links

[CFP](#)

[TUTORIALS](#)

[VIDEO TUTORIALS](#)

[DOCS](#)

[FAQ](#)

**DESCRIPTION:**

[STD/COLLUSION](#) [ONESHOT](#)

**TEMPLATES (ONESHOT):**

[SYNC \(RECOMMENDED\)](#) [ASYNC](#)

**TEMPLATES (STANDARD/COLLUSION):**

[MONOLITHIC \(RECOMMENDED\)](#) [COMPONENTS](#)

**DISCUSSIONS:**

[STD](#) [COL.](#) [ONESHOT](#)

**SOURCE CODE:**

[SCML \(GITHUB\)](#)

[NEGMAS \(GITHUB\)](#)

[SCML VISUALIZER \(GITHUB\)](#)

[SCML AGENTS \(GITHUB\)](#)

### Important Dates (GMT)

Registration (Optional) April 1st

# Online Competition Details

<https://scml.cs.brown.edu/scml>

2 Tracks (3 in 2023)

56 New registrations (27 in 2023)

77 New agents uploaded (36 in 2023)

Tournaments Run:

- Oneshot: 113 (74 in 2023)

- Standard: 101 (32 in 2023)

Opened for submission December 15th, 2023

Online: Oneshot

Online: Standard

The screenshot shows the SCML 2024 website. At the top, there is a navigation bar with the NEC AIST Cooperative Research Laboratory logo, links for ANAC, ANL, SCML, and Leader Board, and a user menu with 'Login' and 'Toggle Dark'. The main heading is 'SCML 2024', with a sub-heading 'Part of the ANAC 2024 Competition @ AAMAS 2024, Auckland'. Two green banners indicate 'AGENT SUBMISSION IS CLOSED' and 'REPORT SUBMISSION IS CLOSED'. A paragraph of text thanks participants and mentions the winners announcement at AAMAS on May 9, 2024. Below this is a table titled 'SCML: Finalists (Alphabetical Order)'. To the right, a 'Links' sidebar contains various navigation options like CFP, TUTORIALS, VIDEO TUTORIALS, DOCS, FAQ, DESCRIPTION, and templates.

Leader	Institute	Country	Agent	Team	Track
Akash Singirikonda	Brown University	USA	MatchingPennies	Team 193	OneShot
Hajime Endo	Tokyo University of Agriculture and Technology	Japan	DistRedistAgent	Team 171	OneShot
Hisakawa Soto	Kyushu University	Japan	SuzukaAgent	Team ABC	OneShot
Ryoga Miyajima	Tokyo University of Agriculture and Technology	Japan	CautiousOneShotAgent	Team Miyajima OneShot	OneShot
Yuzuru Kitamura	Tokyo university of agriculture and technology	Japan	EpsilonGreedyAgent	TeamYuzuru	OneShot
GouKazusa	Nagoya Institute of Technology	Japan	PenguinAgent	Team Penguin	Std

# Online: Oneshot

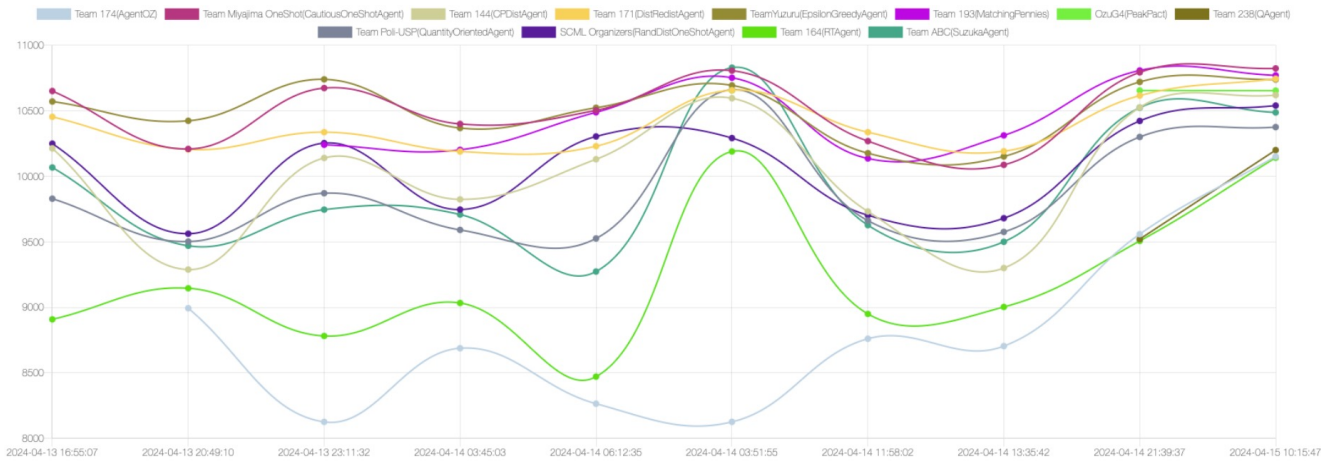
<https://scml.cs.brown.edu/leaderboard>

19 Different Agents

14 Submitted to the official competition

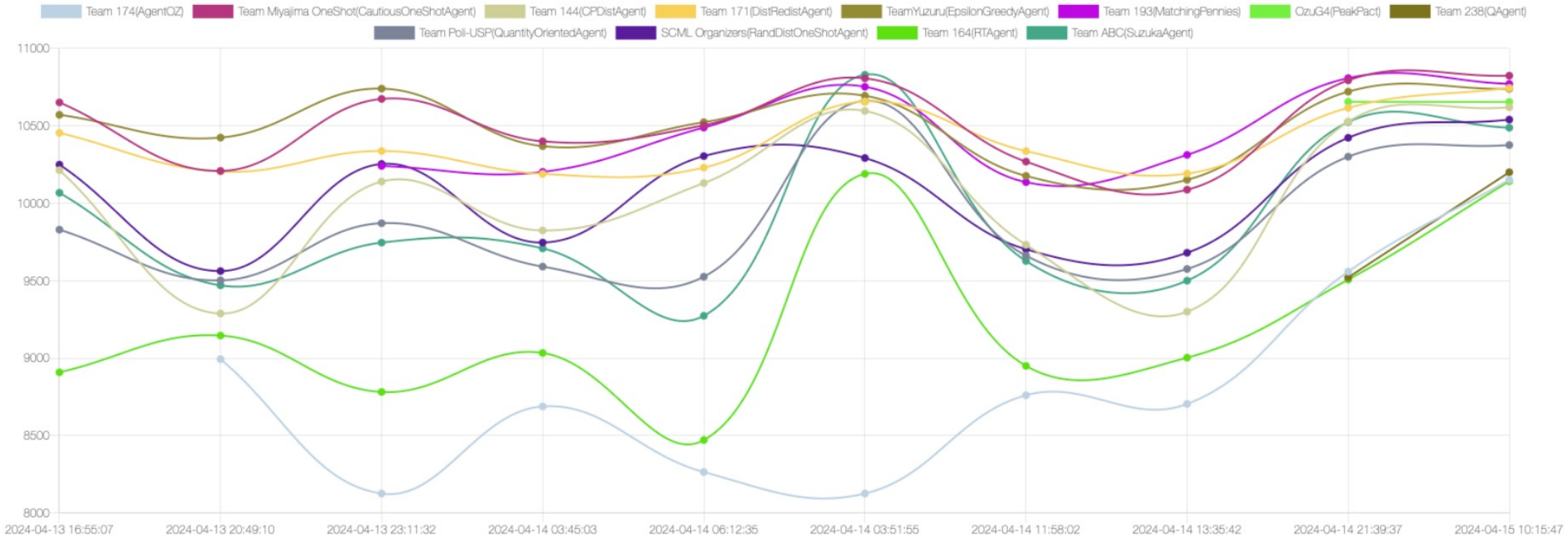
113 tournaments

- Between 1 and 7 hours per tournament



#	Agent	Score
1	CautiousOneShotAgent	10,823
2	MatchingPennies	10,770
3	DistRedistAgent	10,744
4	EpsilonGreedyAgent	10,738
5	PeakPact	10,654
6	CPDistAgent	10,620
7	RandDistOneShotAgent	10,540
8	SuzukaAgent	10,487
9	QuantityOrientedAgent	10,376
10	QAgent	10,200
11	AgentOZ	10,151
12	RTAgent	10,142

# Online: Oneshot

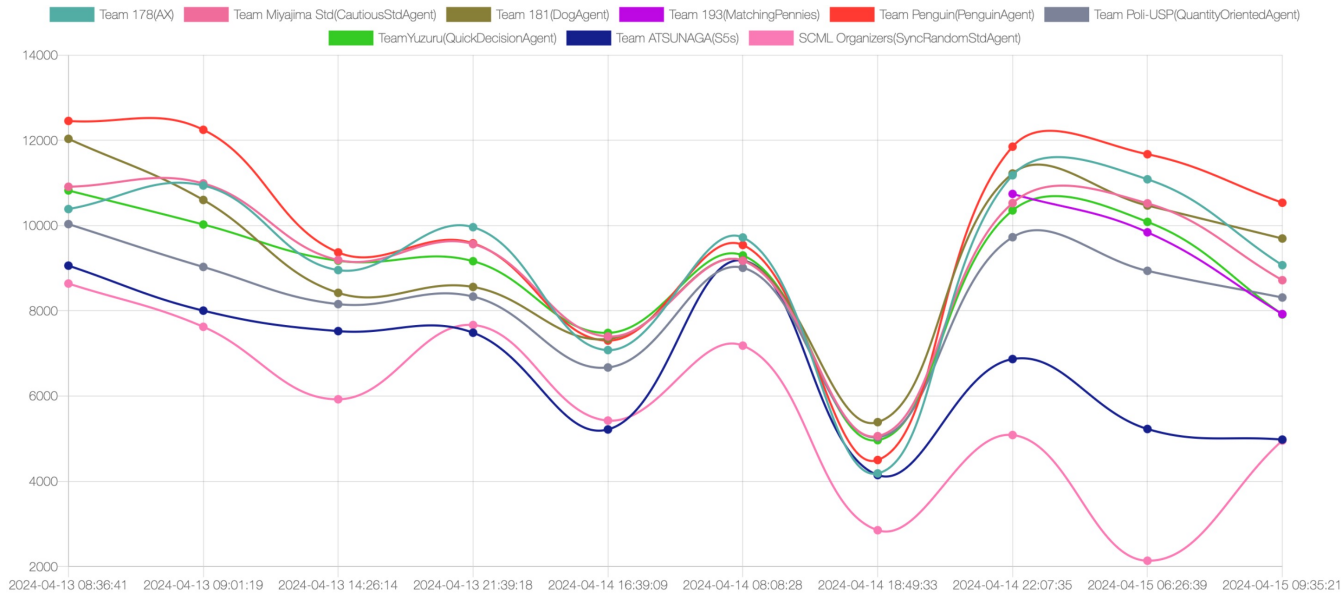


## Submitted Agents: Oneshot

Leader	Institute	Country	Agent	Team
Akash Singirikonda	Brown University	USA	MatchingPennies	Team 193
Altug Karatas	Ozyegin University	Turkey	Group2	CoyoteTeam
Enes Doruk	Ozyegin University	Turkey	AgentOZ	Team 174
Hajime Endo	Tokyo University of Agriculture and Technology	Japan	DistRedistAgent	Team 171
Hisakawa Soto	Kyushu University	Japan	SuzukaAgent	Team ABC
Kaneko Reita	Nagoya Institute of Technology	Japan	RTAgent	Team 164
Kağan Güngör	Özyeğin University	Turkey	QAgent	Team 238
Merve Dogan	Ozyegin University	Turkey	FairT4T	Team 172
Pedro Hrosz Turini	University of São Paulo	Brazil	QuantityOrientedAgent	Team Poli-USP
Ryoga Miyajima	Tokyo University of Agriculture and Technology	Japan	CautiousOneShotAgent	Team Miyajima OneShot
Shota Kimata	Nagoya Institute of Technology	Japan	CPDistAgent	Team 144
Yuzuru Kitamura	Tokyo university of agriculture and technology	Japan	EpsilonGreedyAgent	TeamYuzuru
baris	Ozyegin University	Turkey	PeakPact	OzuG4

# Online: Standard

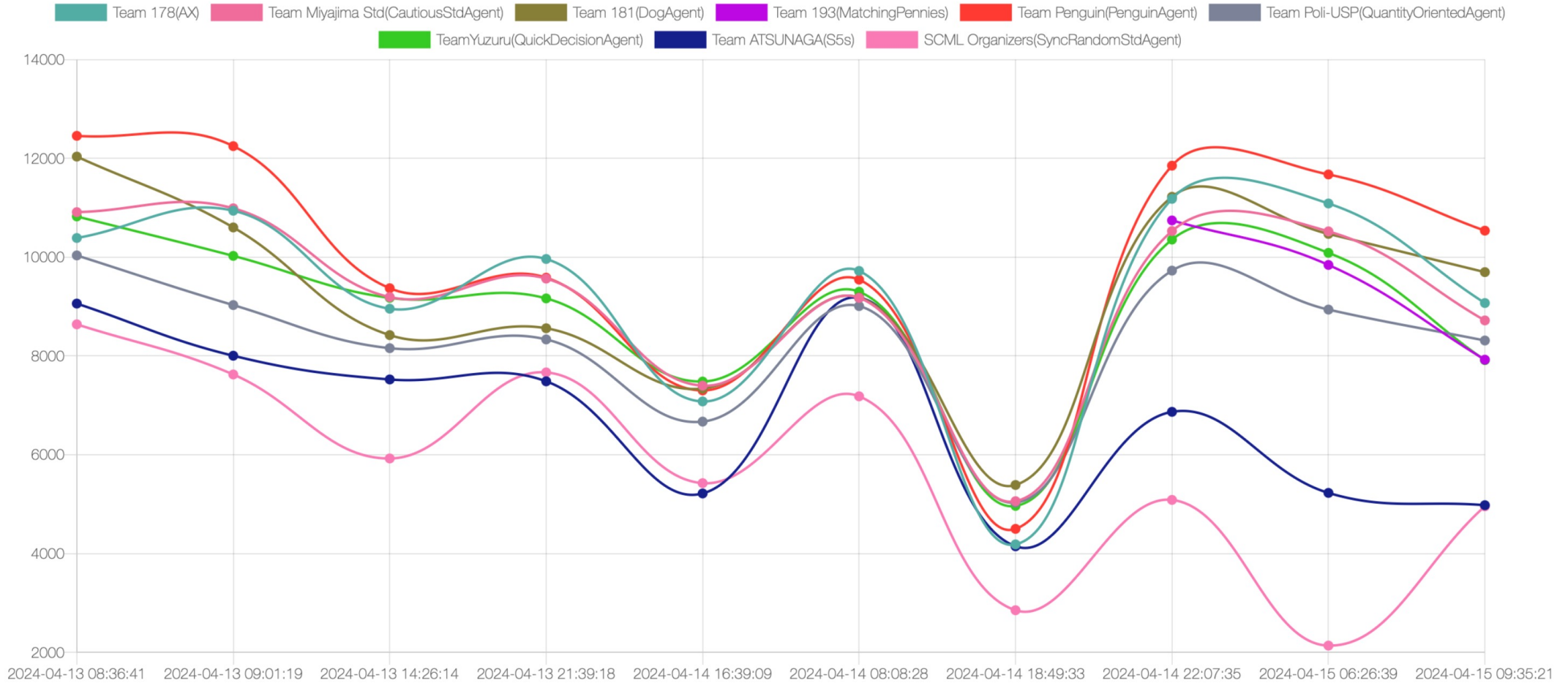
- https://scml.cs.brown.edu/leaderboard
- 13 Different Strategies
- 09 Submitted to the official competition
- 101 tournaments
  - Between 1 and 7 hours per tournament



#	Agent	Score
1	PenguinAgent	10,535
2	DogAgent	9,696
3	AX	9,071
4	CautiousStdAgent	8,718
5	QuantityOrientedAgent	8,312
6	MatchingPennies	7,924
7	QuickDecisionAgent	7,915
8	S5s	4,979
9	SyncRandomStdAgent	4,957



# Online: Standard



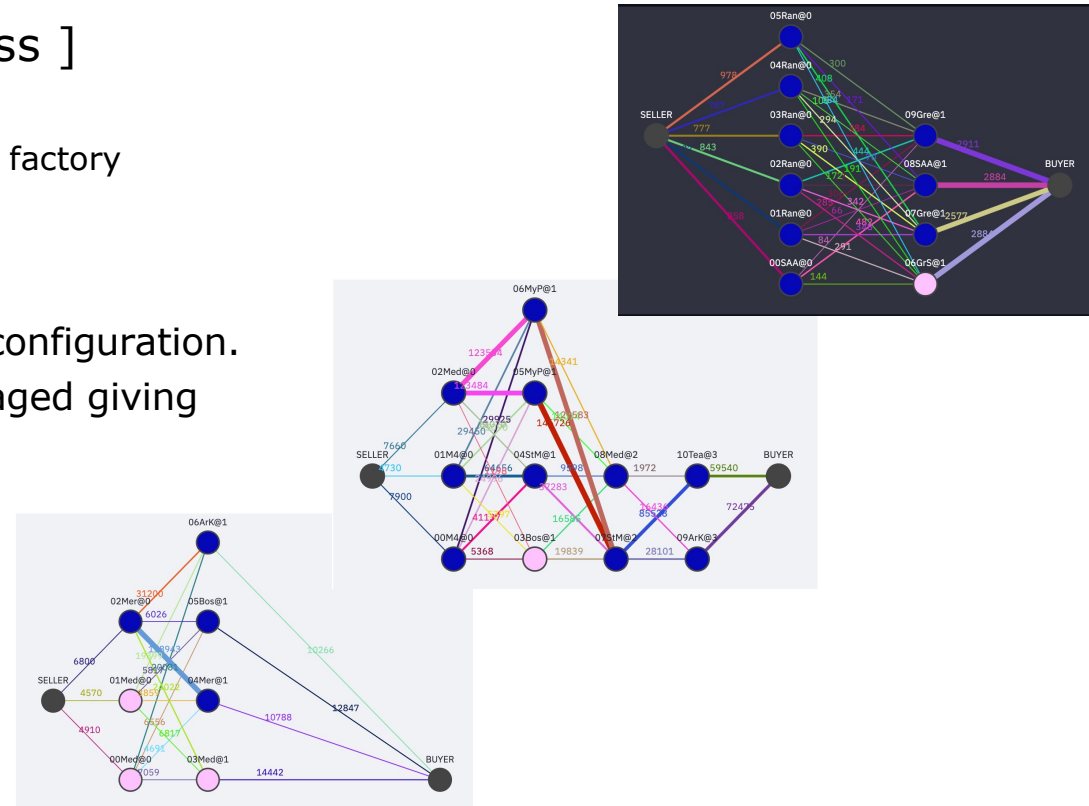
## Submitted Agents: Standard

Leader	Institute	Country	Agent	Team
Akash Singirikonda	Brown University	USA	MatchingPennies	Team 193
Altug Karatas	Ozyegin University	Turkey	Group2	CoyoteTeam
Atsunaga Sadahiro	Fujita Katsuhide	Japan	S5s	Team ATSUNAGA
GouKazusa	Nagoya Institute of Technology	Japan	PenguinAgent	Team Penguin
Pedro Hrosz Turini	University of São Paulo	Brazil	QuantityOrientedAgent	Team Poli-USP
Ryoga Miyajima	Tokyo University of Agriculture and Technology	Japan	CautiousStdAgent	Team Miyajima Std
Ryousuke Nakano	Nagoya Institute of Technology	Japan	AX	Team 178
Yuzuru Kitamura	Tokyo university of agriculture and Technology	Japan	QuickDecisionAgent	TeamYuzuru
hamano izumi	Nagoya Institute of Technology	Japan	DogAgent	Team 181

# Tournament Procedure

Given K agents [ agent = type = class ]

- N Configs are generated.
  - Specifies all world parameters up to the class of one set of factory managers
    - Oneshot, Standard → one set = one factory
    - Collusion → one set = three factories
- NK Simulations are run: Every agent is run in each configuration.
- Scores of all agent instances in each world are averaged giving the agent score in that world
- The score of the agent = **truncated mean**
  - Highest 5% of the scores in the top quadrant are removed
  - Risk averse → penalizes occasional negative scores



The same winners result from using the median, mean, and truncated mean.

### Qualifications round

*Determines qualified agents*

- Admission rule:
  - Submitted by the deadline
  - Has a report and a requirements file
  - Nontrivial Strategy
- Progression rule:
  - Outperforms last year winner
    - Difference must be statistically significant
  - Within the top half of agents

### Final Round

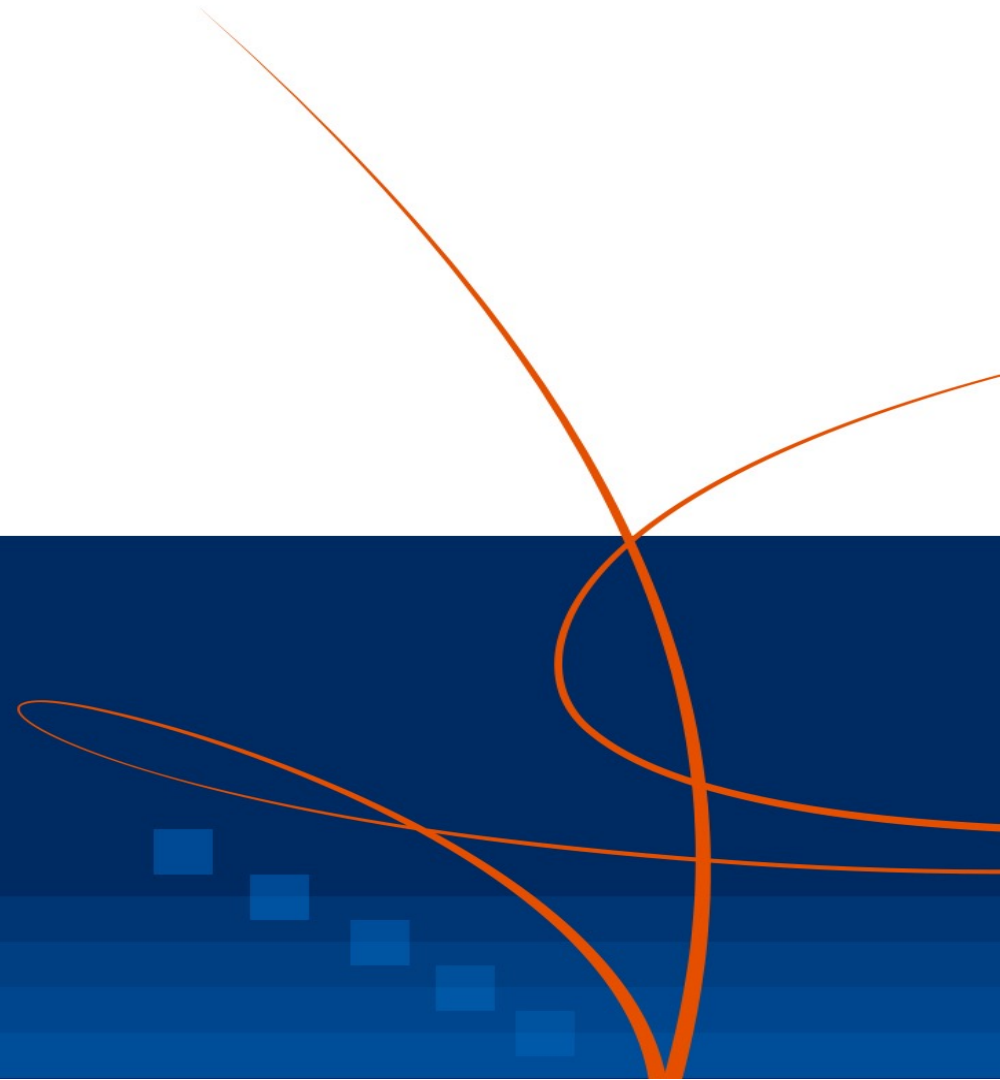
*Determines winners*

- Admission rule:
  - Passed the qualification round
- Progression rule:
  - Outperforms all non winners
    - Difference must be statistically significant
  - Makes a positive profit

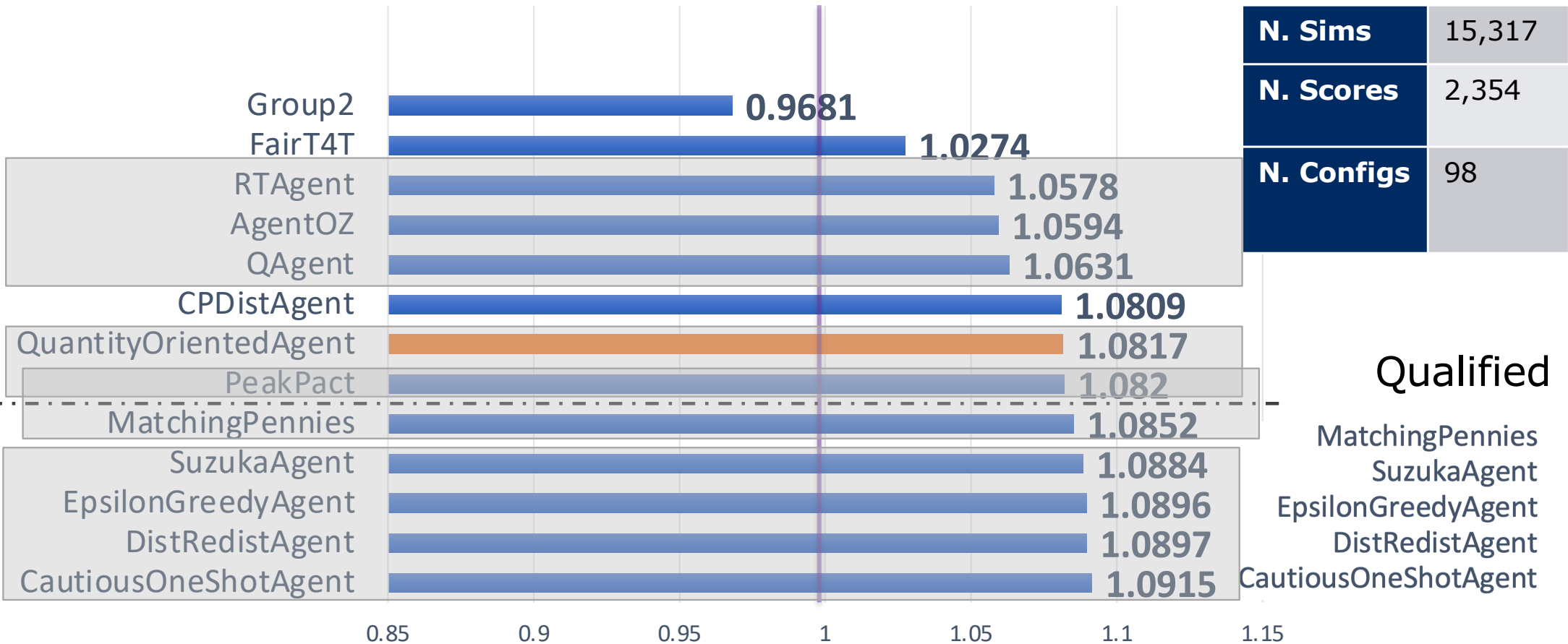
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**NEC**

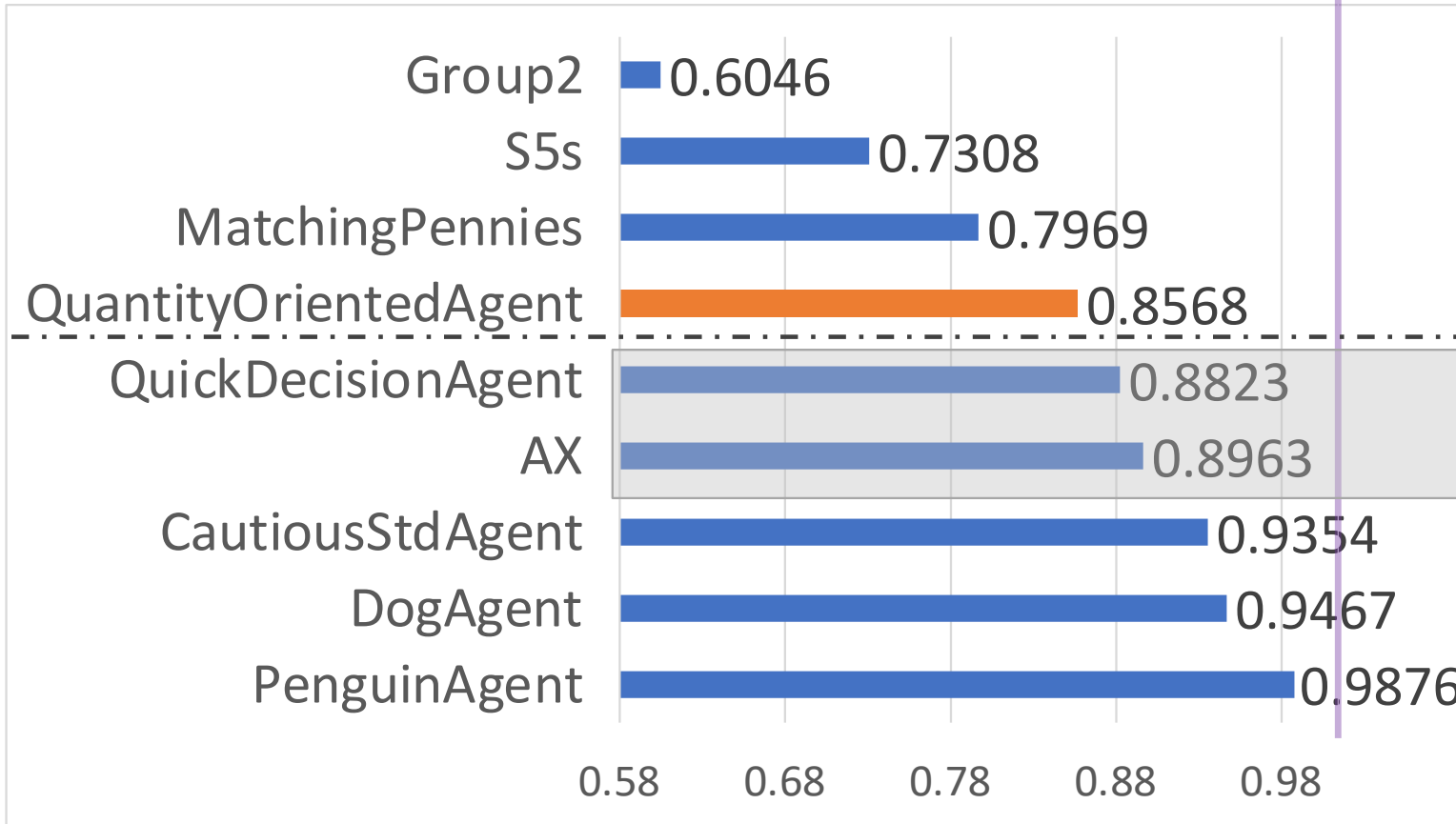
# Qualifications



# Qualifications Results: Oneshot



# Qualifications: Standard



<b>N. Sims</b>	10,278
<b>N. Scores</b>	2,126
<b>N. Configs</b>	159

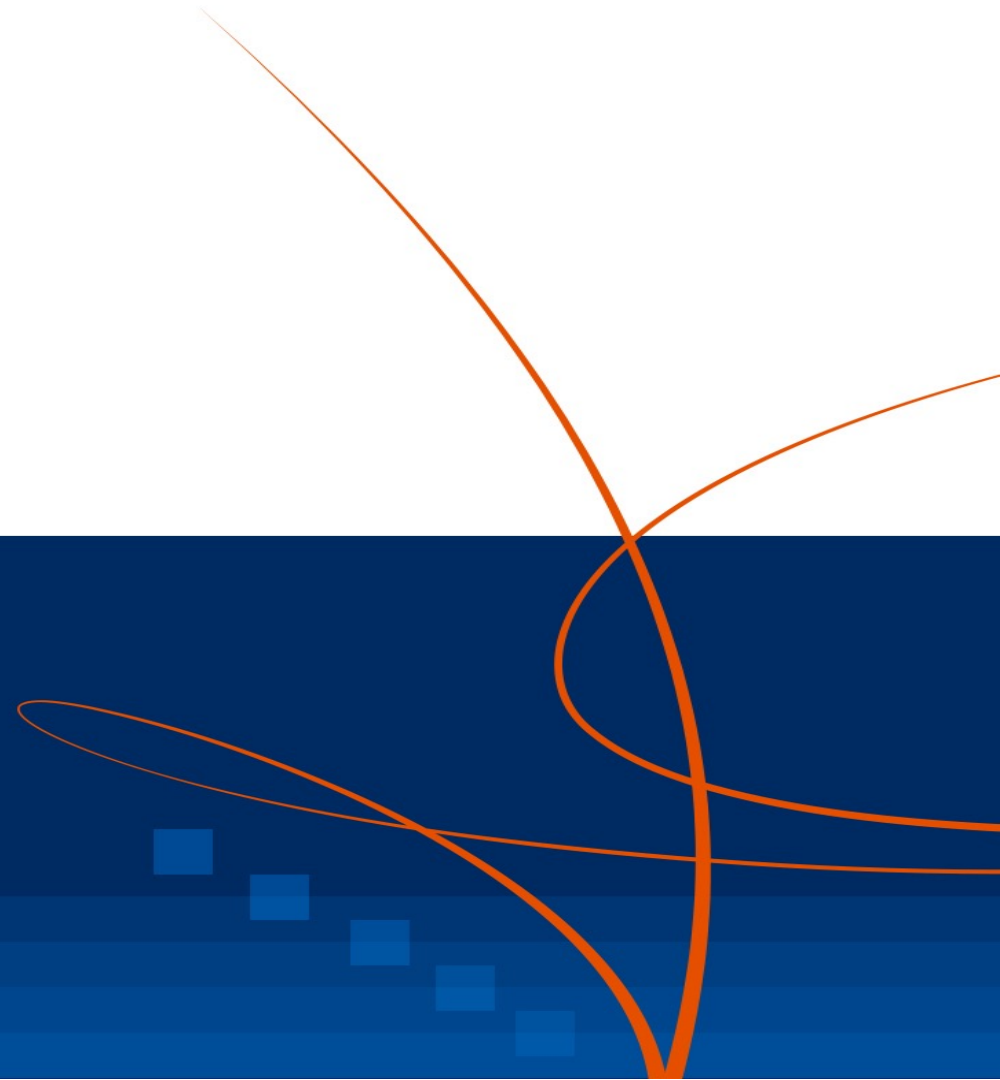
**Qualified**

QuickDecisionAgent  
 AX  
 CautiousStdAgent  
 DogAgent  
 PenguinAgent

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**NEC**

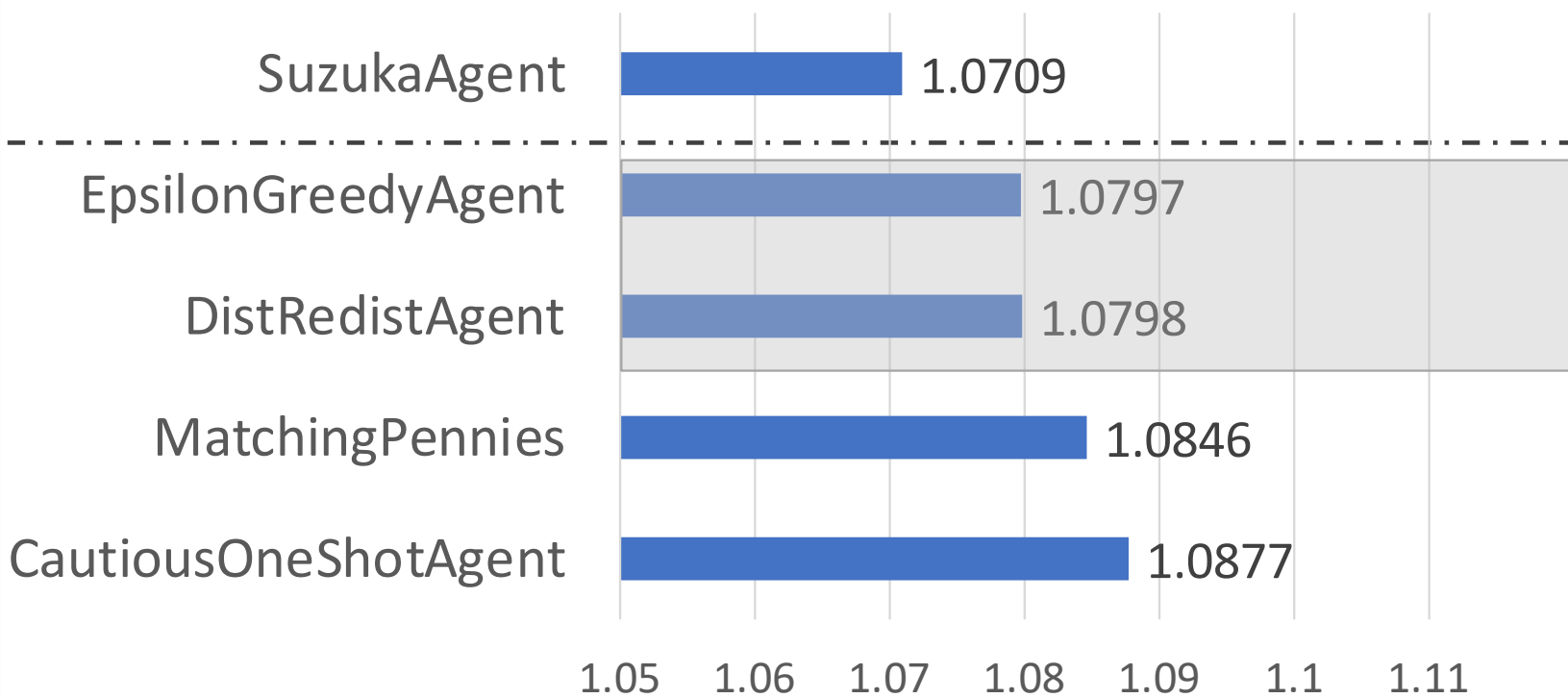
Finals





# Final Results: Oneshot

**N. Scores** 6,856



MatchingPennies  
SuzukaAgent  
EpsilonGreedyAgent  
DistRedistAgent  
CautiousOneShotAgent



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Ryoga Miyajima



Tokyo University of Agriculture and Technology

# WINNER OF THE AUTOMATED NEGOTIATING AGENTS COMPETITION 2024

*~SUPPLY CHAIN MANAGEMENT LEAGUE~*

*(ONE SHOT)*

THIS CERTIFICATE IS AWARDED TO

**RYOGA MIYAJIMA**

**TOKYO UNIVERSITY OF AGRICULTURE AND TECHNOLOGY, JAPAN**

TO HONOR THEIR EXCELLENT NEGOTIATION STRATEGY

**CAUTIOUS ONESHOT AGENT**

YASSER MOHAMMAD

AMY GREENWALD

MARK KLEIN

SHINJI NAKADAI

SATOSHI MORINAGA

REYHAN AYDOGAN

KATSUHIDE FUJITA

TIM BAARSLAG

CATHOLIJN JONKER

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Artificial  
Intelligence

[www.elsevier.com/locate/artint](http://www.elsevier.com/locate/artint)

CWI



700€



NEC-AIST  
AI Cooperative  
Research Laboratory

Arnie He  
Akash Singirikonda  
Amy Greenwald



BROWN

400€

**SECOND PLACE OF THE AUTOMATED NEGOTIATING  
AGENTS COMPETITION 2024**

**~ SUPPLY CHAIN MANAGEMENT LEAGUE ~**

**(ONE SHOT)**

THIS CERTIFICATE IS AWARDED TO

**ARNIE HE**

**BROWN UNIVERSITY, USA**

TO HONOR THEIR EXCELLENT NEGOTIATION STRATEGY

**MATCHING PENNIES**

YASSER MOHAMMAD

AMY GREENWALD

MARK KLEIN

SHINJI NAKADAI

SATOSHI MORINAGA

REYHAN AYDOGAN

KATSUHIDE FUJITA

TIM BAARSLAG

CATHOLIJN JONKER

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Hajime Endo



Yuzuru Kitamura



300€



# Final Results: Standard

**N. Scores** 3,280

QuickDecisionAgent 0.9321

AX 0.9717

DogAgent 0.9737

CautiousStdAgent 0.9776

PenguinAgent 1.0579

QuickDecisionAgent

AX

CautiousStdAgent

DogAgent

PenguinAgent

0.9 0.95 1 1.05 1.1 1.15



Gou Kazusa



**WINNER OF THE AUTOMATED NEGOTIATING  
AGENTS COMPETITION 2024**

***~ SUPPLY CHAIN MANAGEMENT LEAGUE ~***

**(STANDARD)**

THIS CERTIFICATE IS AWARDED TO

**GOU KAZUSA**

**NAGOYA INSTITUTE OF TECHNOLOGY, JAPAN**

TO HONOR THEIR EXCELLENT NEGOTIATION STRATEGY

**PENGUIN AGENT**

YASSER MOHAMMAD

AMY GREENWALD

MARK KLEIN

SHINJI NAKADAI

SATOSHI MORINAGA

REYHAN AYDOGAN

KATSUHIDE FUJITA

TIM BAARSLAG

CATHOLIJN JONKER

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**700€**



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**NEC**

## Participant Presentations





## Participant Videos

### Ryoga Miyajima:

- Winner of Oneshot Track and second place in the standard track

### Gou Kazusa:

- Winner of Standard Track

# Notes about SCML 2024

## Oneshot was successful

- All finalists could improve upon best strategies from last year

## Standard was successful

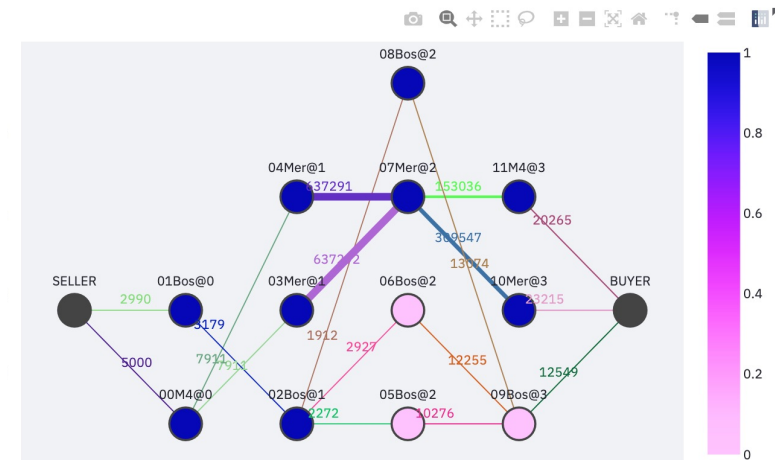
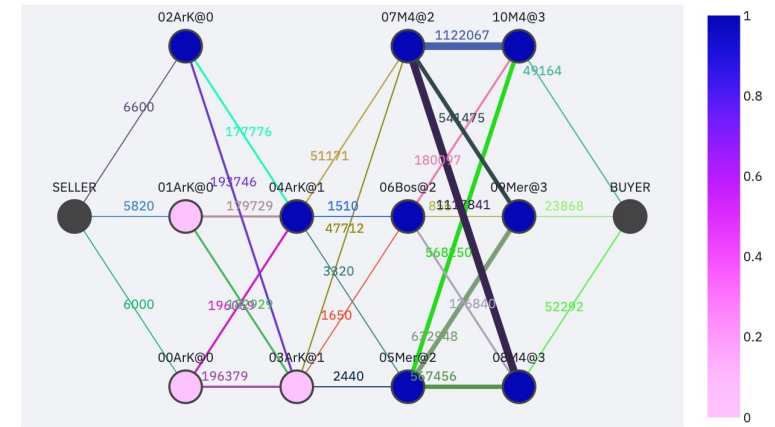
- Number of participants increased by 25%
- The simpler interface allowed the same agent to run in oneshot and standard

## The RL interface

- Used by few agents

## Unmodified winners from 2023 were surpassed

- By all finalists in oneshot and standard



## Plans for the future

### No new tracks are being considered

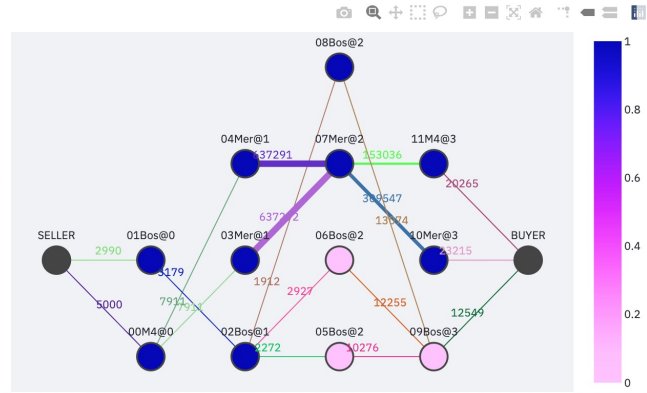
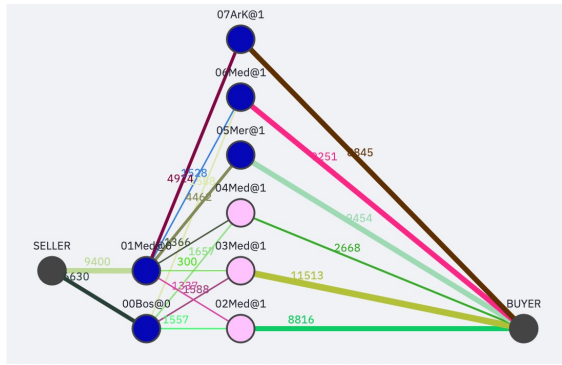
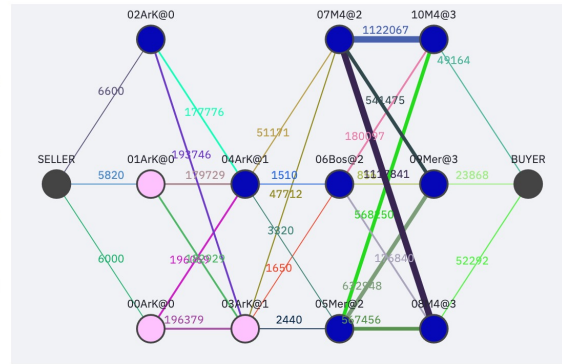
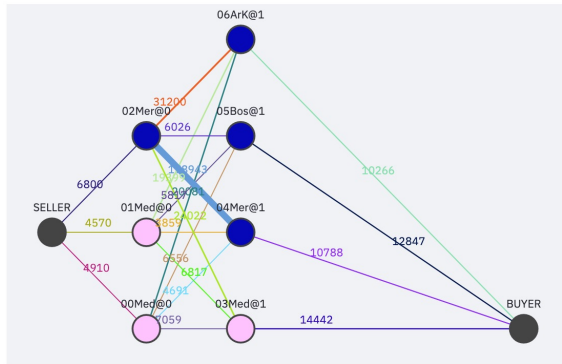
- We are still far from what a benevolent dictator can achieve

### Oneshot

- Supporting MARL
- Maybe, completely remove the price issue --> Single issue negotiations

### Standard

- Supporting RL



Thank you  
See you next year 😊