

# TERN Evaluation Task Overview and Corpus

Temporal Expression Recognition and Normalization  
(TERN) Evaluation Workshop  
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# TERN Task

- Detect and normalize temporal expressions in natural language texts
  - Two conditions
    - Recognition and Normalization
    - Recognition only
  - Two languages: English and Chinese
- Non-indexical expressions
  - No context needed to interpret
  - “10/19/2000 18:45:45”, “October 19, 2000”
  - Still need to be normalized to common format
- Indexical expressions
  - You have to know “*when* you are” to know what is being referred to
  - “October 19”, “today”
- Annotation specifications use extended form of ISO standard
  - “TIDES 2003 Standard for the Annotation of Temporal Expressions”

# Markable Expressions

Part of Speech	Sample Lexical Triggers
<b>Noun</b>	minute, afternoon, midnight, day, night, weekend, month, summer, season, quarter, year, decade, century, millennium, era, semester, [the] future, [the] past, time, period, point
<b>Name</b>	Monday, January, New Year's Eve, Washington's Birthday
<b>Adjective</b>	recent, former, current, future, past, daily, monthly, biannual, semiannual, daytime, daylong, onetime, ago, preseason
<b>Adverb</b>	currently, lately, hourly, daily, monthly, ago
<b>Time noun/adverb</b>	now, today, yesterday, tomorrow
<b>Specialized time pattern</b>	8:00, 12/2/00, 1994, 1960s

## Attributes for Normalization in TIMEX2 Tag

Attribute	Function	Example
<b>VAL</b>	Contains a form of the date/time.	VAL="1964-10-16" VAL="P5Y"
<b>MOD</b>	Captures temporal modifiers.	MOD="APPROX"
<b>ANCHOR_VAL</b>	Contains a normalized form of an anchoring date/time.	ANCHOR_VAL="1964"
<b>ANCHOR_DIR</b>	Captures the relative direction/ orientation between VAL and ANCHOR_VAL.	ANCHOR_DIR="ENDING"
<b>SET</b>	Identifies expressions denoting sets of times.	SET="YES"
<b>COMMENT</b>	Contains any comments the annotator wants to add.	COMMENT="context garbled"

## Sample Annotations: Precise Expressions

- Calendar Dates (years, months, days) and Times (hours, minutes, seconds)

```
<TIMEX2 val="2000-10-03T20:04:56.18">  
  10/03/2000 20:04:56.18</TIMEX2>
```

```
<TIMEX2 val="T13:00">1 p.m.</TIMEX2>
```

- Special Units (fiscal years, B.C.E., geological eras)

```
<TIMEX2 val="FY2000">fiscal year 2000</TIMEX2>
```

- Week-based Dates

```
<TIMEX2 val="2000-W40">last week</TIMEX2>
```

- Durations

```
<TIMEX2 val="P30Y" anchor_val="1998"  
  anchor_dir="ENDING">30 years</TIMEX2>
```

```
<TIMEX2 val="PT2.5S" anchor_val="2000-10-03"  
  anchor_dir="WITHIN">2.5 seconds</TIMEX2>
```

# Sample Annotations: Imprecise Expressions

- Modified Expressions  
`<TIMEX2 val="2000-W40" mod="END">late last week</TIMEX2>`
- Token Only  
`<TIMEX2 val="PAST_REF" anchor_val="2000-10-03T18:55:19.37" anchor_dir="BEFORE">former</TIMEX2>`
- Partial Token  
`<TIMEX2 val="2000-10-05TNI">Thursday night</TIMEX2>`  
`<TIMEX2 val="2000-Q3">third quarter</TIMEX2>`
- X placeholders  
`<TIMEX2 val="XXXX-XX-XX">day</TIMEX2>`  
`<TIMEX2 val="PXY" anchor_val="2000" anchor_dir="BEFORE">the years</TIMEX2>`
- Partial Token and X Placeholder  
`<TIMEX2 val="XXXX-SP">spring</TIMEX2>`
- Sets  
`<TIMEX2 val="XXXX-XX-XX" set="YES">each day</TIMEX2>`

# English Training Corpus

	Documents	Words
Broadcast News	454	99,858
Newswire	296	151,269
Newspaper	17	14,682
<b>TOTAL</b>	<b>767</b>	<b>265,809</b>

10.5 TIMEX2 tags  
per document

<b>VAL Type (see key in next slide)</b>	<b>Number of Tags</b>	<b>Percent</b>
Calendar Point	4448	55.28%
Week Point	199	2.47%
Duration	797	9.90%
Token	834	10.36%
Non-specific	486	6.04%
Prefixed	14	0.17%
No VAL	476	5.92%
Other	793	9.85%
<b>Total Number of TIMEX2 Tags</b>	<b>8047</b>	<b>100.00%</b>

# (Key to VAL-Type Abbreviations)

## Categorization of expressions according to the form of VAL:

**Calendar Point:** Calendar-based point expressions, with no Xs or tokens

**Week Point:** Week-based point expressions, with no Xs or tokens

**Duration:** Duration expressions, with no Xs or tokens

**Token:** Token-only VALs, i.e.: PAST\_REF, PRESENT\_REF, FUTURE\_REF

**Non-specific:** Any expression with one or more Xs

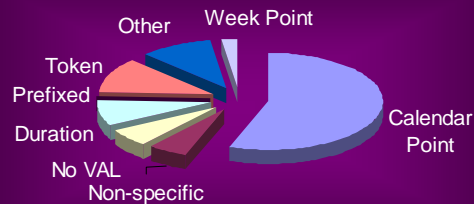
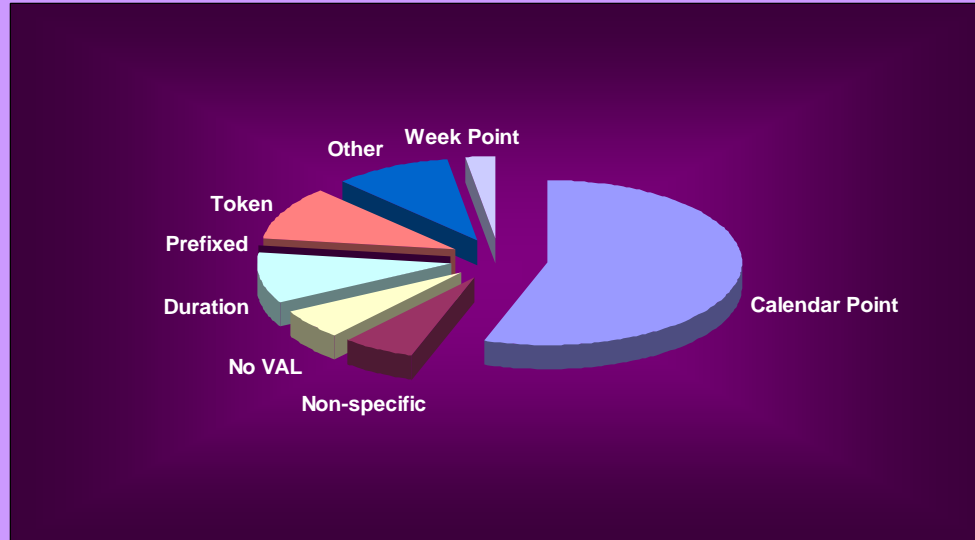
**Prefixed:** Any expression with a two-character prefix (FY, BC, KA, MA, GA)

**No VAL:** No VAL expressions. The tag does not have any value for the VAL attribute

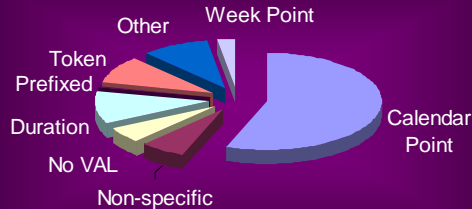
**Other:** None of the above. This includes expressions with partial use of tokens, e.g., 2000-10-20TNI, and time-only expressions (T13:00)

# Expression Types (English)

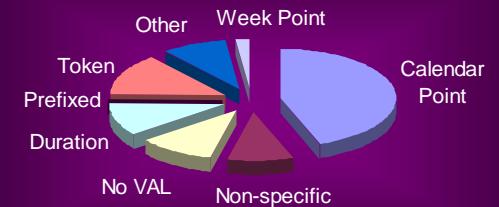
All  
News  
Sources



Broadcast News



Newswire



Newspaper

# Modified Expressions and Set Expressions (English)

- Only 3% of the TIMEX2 tags have MODs
- Only 3% of the TIMEX2 tags are SET expressions

## Number of Set Expressions by VAL Type

VAL Type	Number of SETs	Percent
Non-specific	178	71%
Duration	16	6%
Token	2	1%
No VAL	3	1%
Other	52	21%
<b>Total SET Expressions</b>	<b>251</b>	

# Chinese Training Corpus

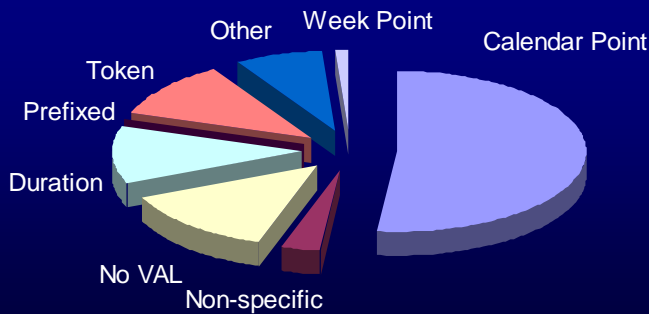
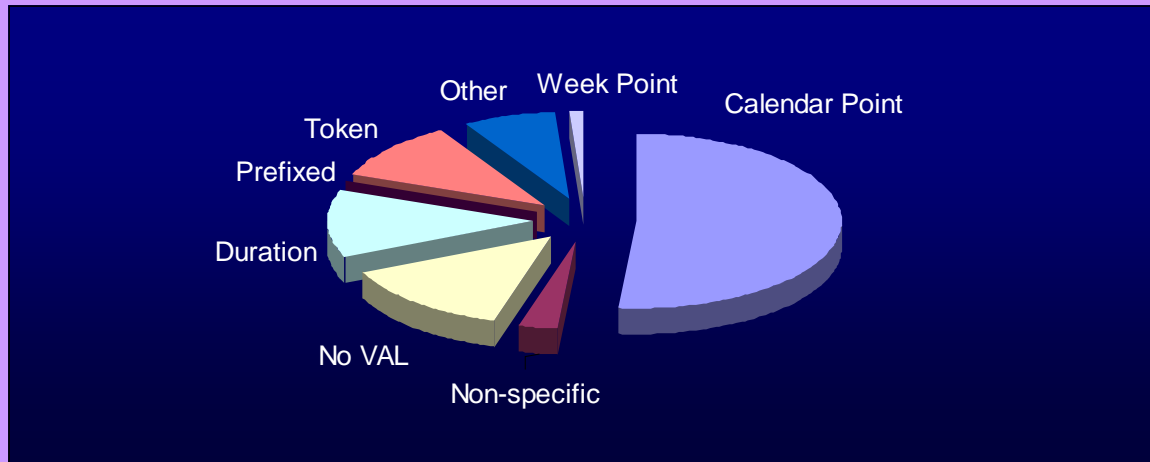
	Documents	Words*
Broadcast News	294	82,300
Newswire	172	65,202
<b>TOTAL</b>	<b>466</b>	<b>147,502</b>

9.5 TIMEX2 tags  
per document

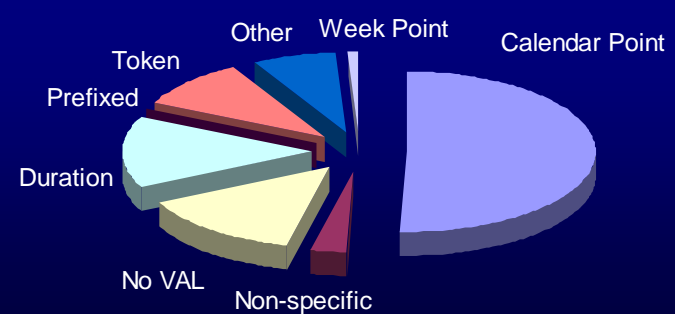
VAL Type	Number of Tags	Percent
Calendar Point	2264	51.28%
Week Point	45	1.02%
Duration	561	12.71%
Token	473	10.71
Non-specific	139	3.15%
No VAL	608	13.77%
Other	325	7.36
<b>Total Number of TIMEX2 Tags</b>	<b>4415</b>	<b>100.00%</b>

# Expression Types (Chinese)

All  
News  
Sources



Broadcast News



Newswire

# Modified Expressions and Set Expressions (Chinese)

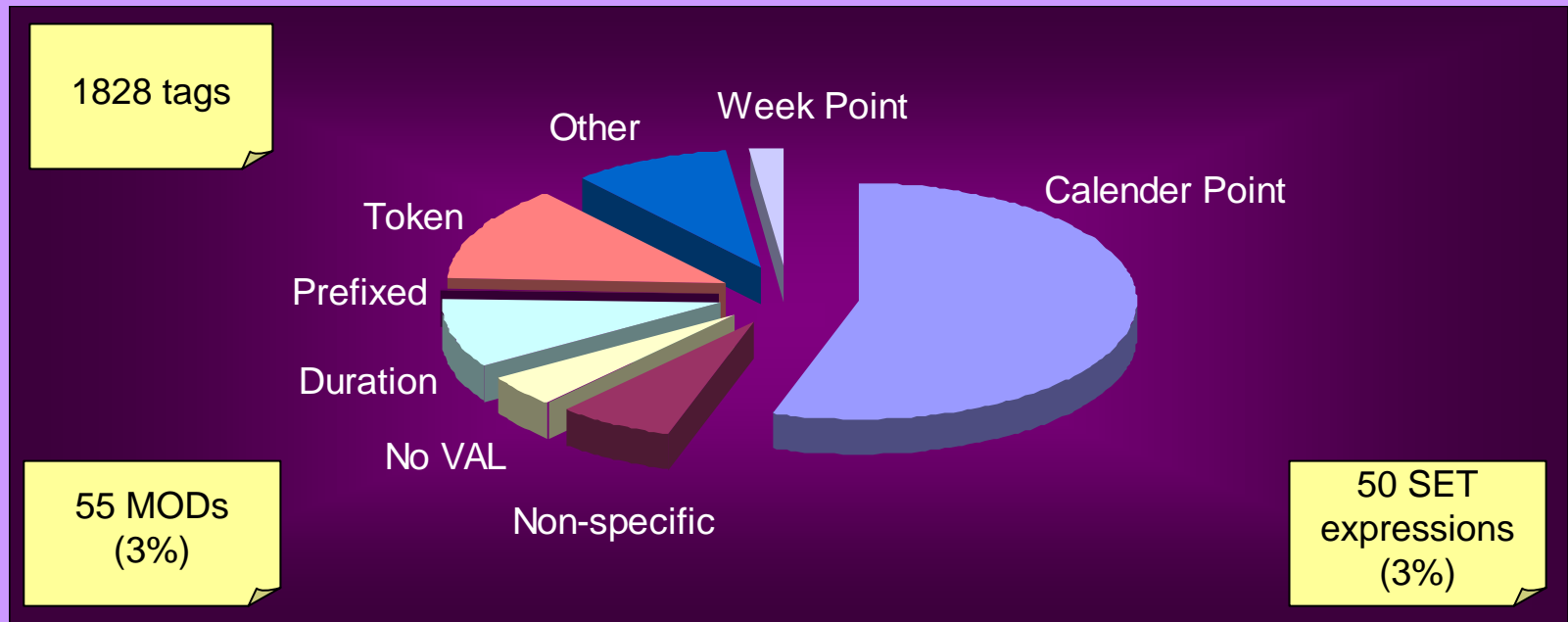
- Only 5% of the TIMEX2 tags have MODs
- Only 2.5% of the TIMEX2 tags are SET expressions

Number of Set Expressions by VAL Type

VAL Type	Number of Tags	Percent
Non-specific	60	55%
Duration	26	24%
No VAL	11	10%
Other	12	11%
<b>Total SET Expressions</b>	<b>109</b>	

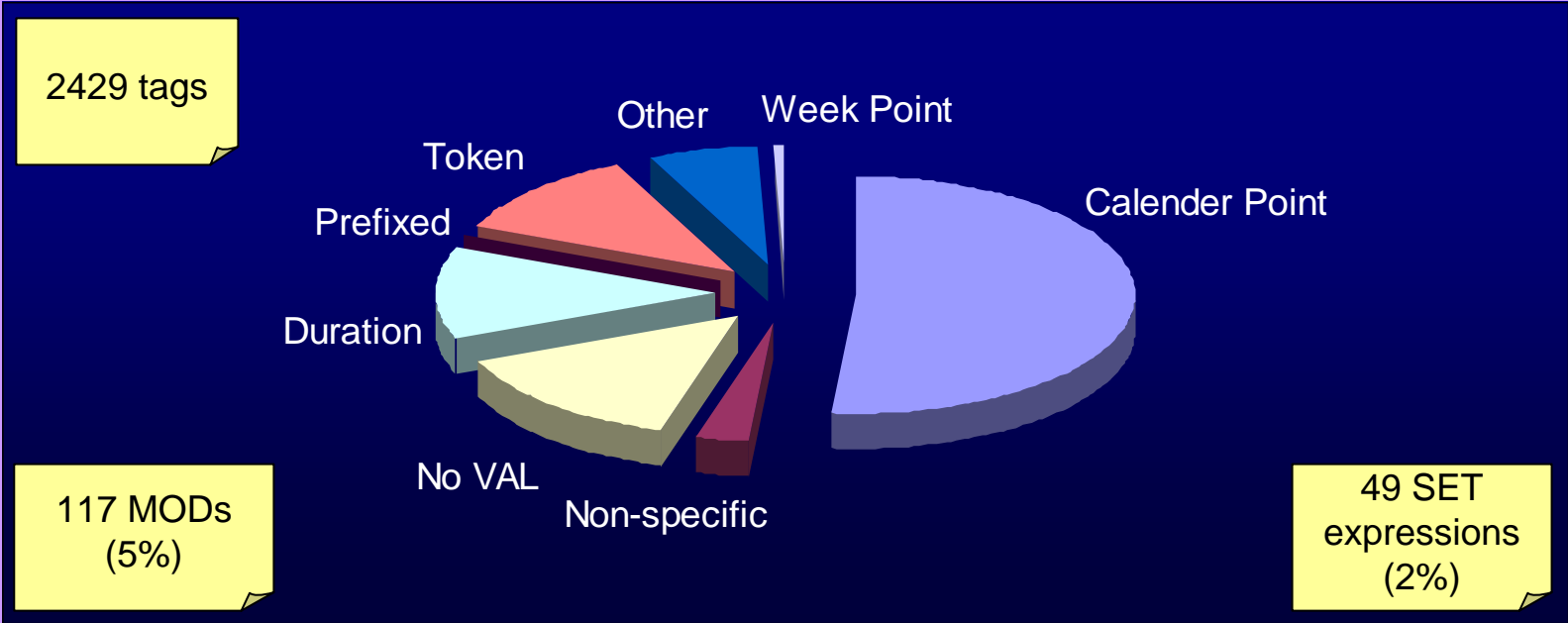
# English Evaluation Corpus

	Documents	Words
Broadcast News	127	26,418
Newswire	65	28,196
TOTAL	192	54,614



# Chinese Evaluation Corpus

	Documents	Words
Broadcast News	138	32,864.5
Newswire	108	34,056.5
TOTAL	256	66,921.0



## Extra Data

Available soon to all participants...

- TIMEX2 annotated
  - English translations of Chinese TreeBank, 12K words
  - English translations of Arabic TreeBank, 13K words
  - Chinese TreeBank (original articles from which English 12K was drawn)

# Scoring

## Example Summary Table from score\_timex2.pl

tag	pos	act	corr	inco	miss	spur	und	ovg	sub	err	prec	rec	F
overall													
TIMEX2	2715	2485	2449	0	266	36	0.098	0.014	0.000	0.110	0.986	0.902	0.942
TIMEX2:ANCHOR_DIR	473	454	403	29	41	22	0.087	0.048	0.067	0.186	0.888	0.852	0.869
TIMEX2:ANCHOR_VAL	473	454	379	53	41	22	0.087	0.048	0.123	0.234	0.835	0.801	0.818
TIMEX2:MOD	87	64	56	8	23	0	0.264	0.000	0.125	0.356	0.875	0.644	0.742
TIMEX2:SET	83	63	58	0	25	5	0.301	0.079	0.000	0.341	0.921	0.699	0.795
TIMEX2:TEXT	2715	2485	2192	257	266	36	0.098	0.014	0.105	0.203	0.882	0.807	0.843
TIMEX2:VAL	2365	2300	2145	142	78	13	0.033	0.006	0.062	0.098	0.933	0.907	0.920

**POSS = CORR + INCO + MISS**

**ACT = CORR + INCO + SPUR**

**REC = CORR/POSS**

**PREC = CORR/ACT**

**UND = MISS / POSS**

**OVG = SPUR / ACT**

**SUB = INCO / CORR + INCO**

**ERR = INCO + SPUR + MISS / CORR + INCO + SPUR + MISS**

