



Rapidity With Accuracy:

Modernizing the U.S. Army Service Rifle in the Gilded Age 1880-1903



**Presented by
Stephen C. Small, Ph.D.
Of the Joint Service Small
Arms Program (JSSAP)**





Briefing Outline

- Introduction
- U.S. Army Service Rifles (1776-2002)
- The genesis of the military “repeating” rifle
- The Post-Civil War U.S. Army (1880-1889)
- Legacy Weapon: The “Trapdoor” Rifle
- The “Krag” Rifle
- Catalysis for change: The Spanish-American War
- San Juan Hill: A Watershed Event
- The Spanish Mauser
- The American Mauser: The M1900 “Experimental” Rifle



Briefing Outline (Cont.)

- The Refined Prototype: M1901
- The Success Validated: The M1903
- Catastrophic failure
- The Enabling Spitzer Bullet and The .30-06 Springfield
- World War I: The M 1903 in Action
- The Impact of “Rapidly with Accuracy”
- Summary



TACOM
Lethality, Survivability, Mobility and Sustainment for America's Army



U.S. Army Service Rifles (1776-2002)

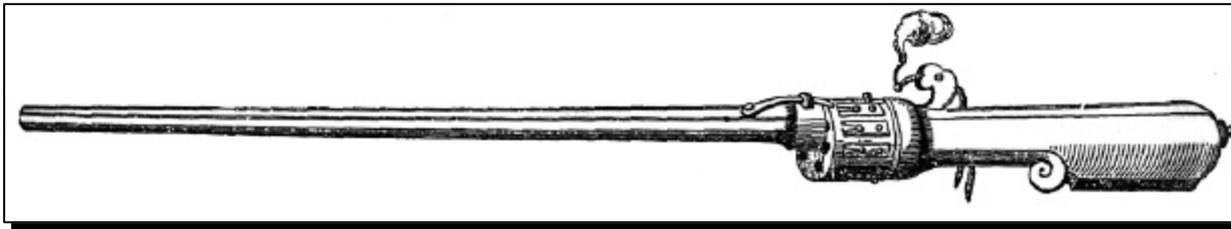


1880-1903



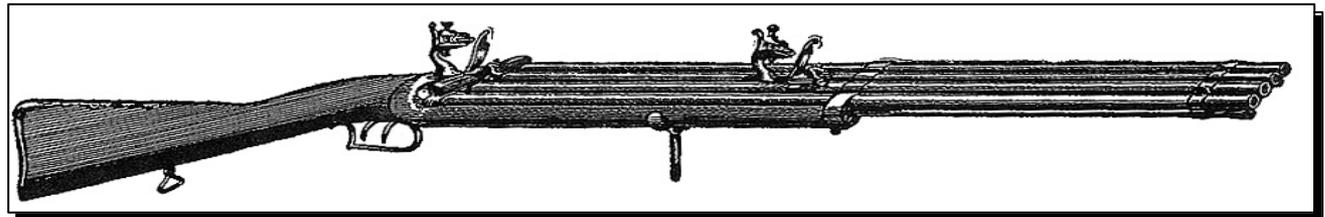
Introduction:

- During the late 19th century technological advances made reliable repeating rifles a practical reality for military usage.



17th Century Self-Loading Gun

18th Century
"Repeating"
Rifle





TACOM

Lethality, Survivability, Mobility and Sustainment for America's Army



The U.S. Army Circa 1880-1889

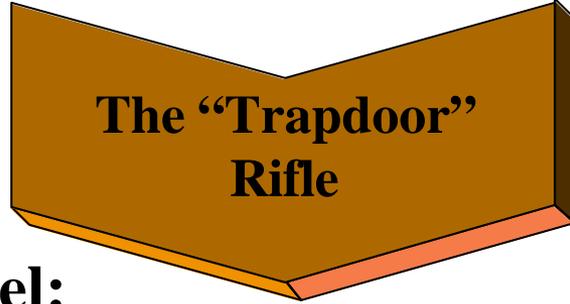


TACOM
Lethality, Survivability, Mobility and
Sustainment for America's Army



The "Trapdoor" Rifle 1868-1892





Single-shot breech-loader

Action:

Total length:

52 inches

Length of barrel:

36 inches

Rifling:

3 grooves, making one turn in 22 inches.

Stock length:

48-3/4 inches

Weight:

8.25 pounds

Ammunition:

.45-70

Charge:

70 grains

Weight of projectile:

405 grains

Muzzle Velocity:

1,360 f.s.





TACOM
Lethality, Survivability, Mobility and
Sustainment for America's Army



The “Krag” Rifle: M1892 (Above) and M1898 (Below)





TACOM
Lethality, Survivability, Mobility and
Sustainment for America's Army



“Krag” Bolt-Action and Magazine (viewed from above)





TACOM

Lethality, Survivability, Mobility and Sustainment for America's Army



The "Krag" Rifle



Action:

Bolt action

Total length:

48 7/8 inches, two bands

Length of barrel:

30 inches

Rifling:

4 grooves, one turn in 10 inches.

Stock length:

46.05 inches

Weight:

8.97 pounds

Ammunition:

.30-40 flanged cartridge

Magazine capacity:

Vertical, under-feed, 5 rounds, but also capable of functioning as a single shot weapon.

Charge:

40 grains of smokeless powder

Weight of projectile:

220 grains

Muzzle Velocity:

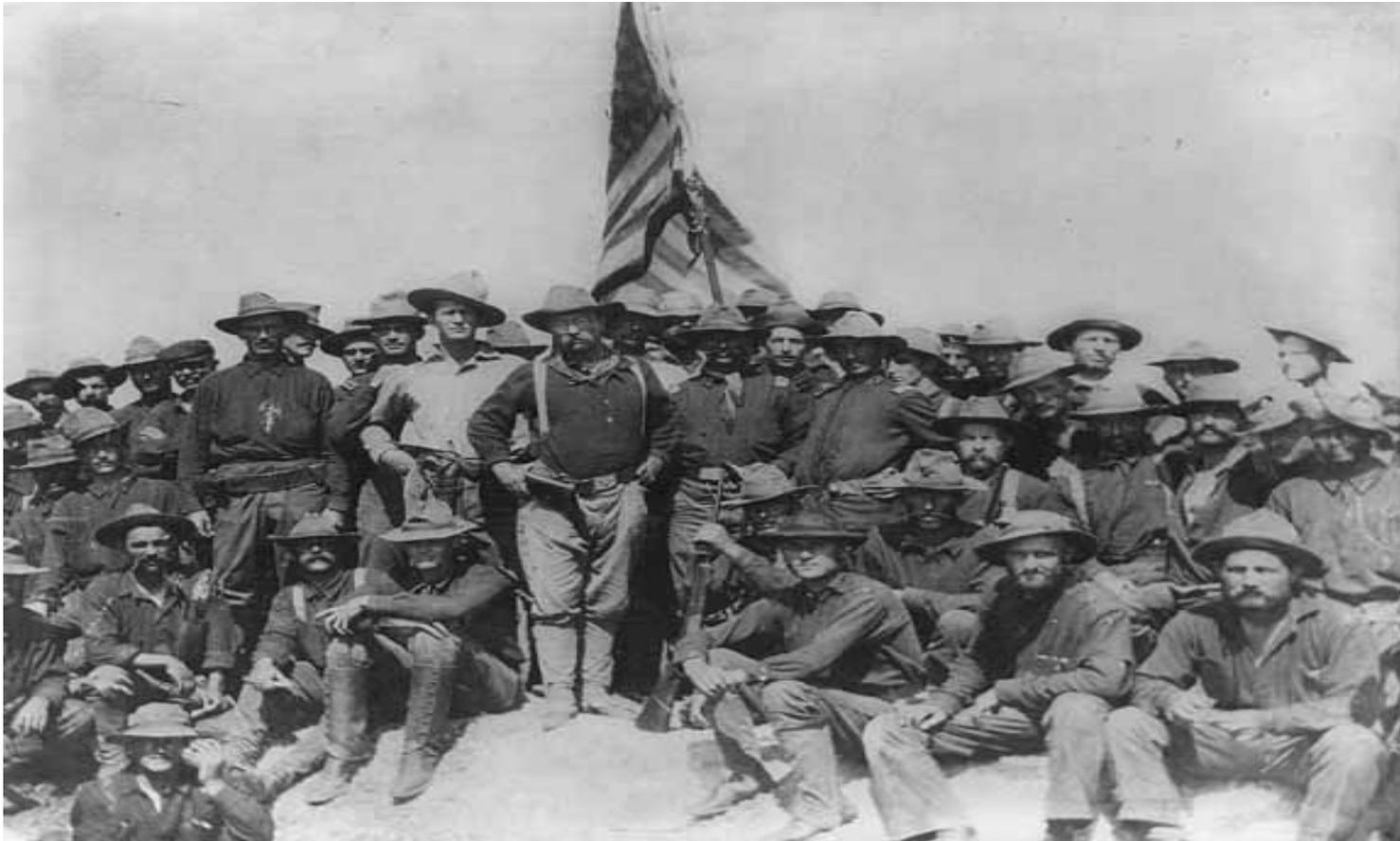
1,960 feet per second



TACOM
Lethality, Survivability, Mobility and
Sustainment for America's Army



The War With Spain 1898





TACOM

Lethality, Survivability, Mobility and Sustainment for America's Army



Teddy Roosevelt's "Rough Riders" in The Spanish-America War



TACOM
Lethality, Survivability, Mobility and
Sustainment for America's Army



The "Krag" Carbine





San Juan Hill, Cuba

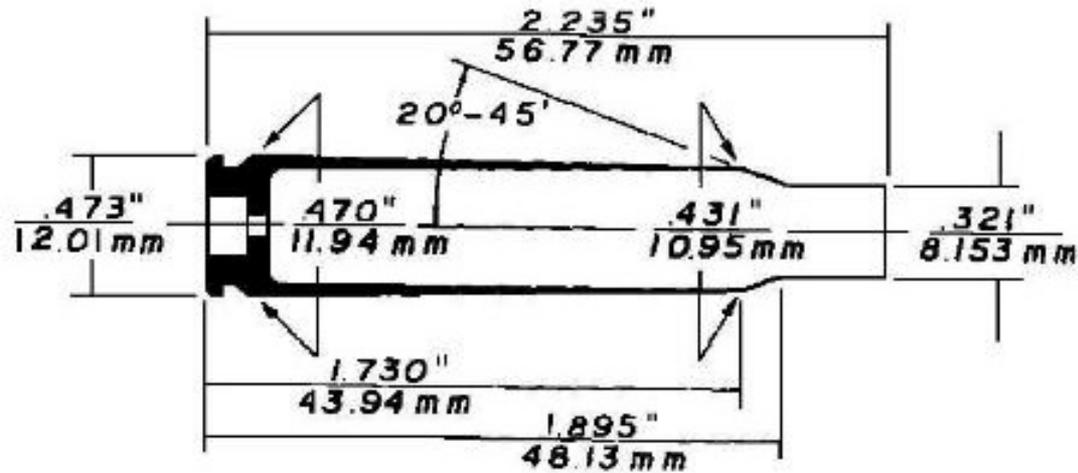
July 1, 1898





TACOM

Lethality, Survivability, Mobility and Sustainment for America's Army



The Spanish Mauser (7x57 mm)

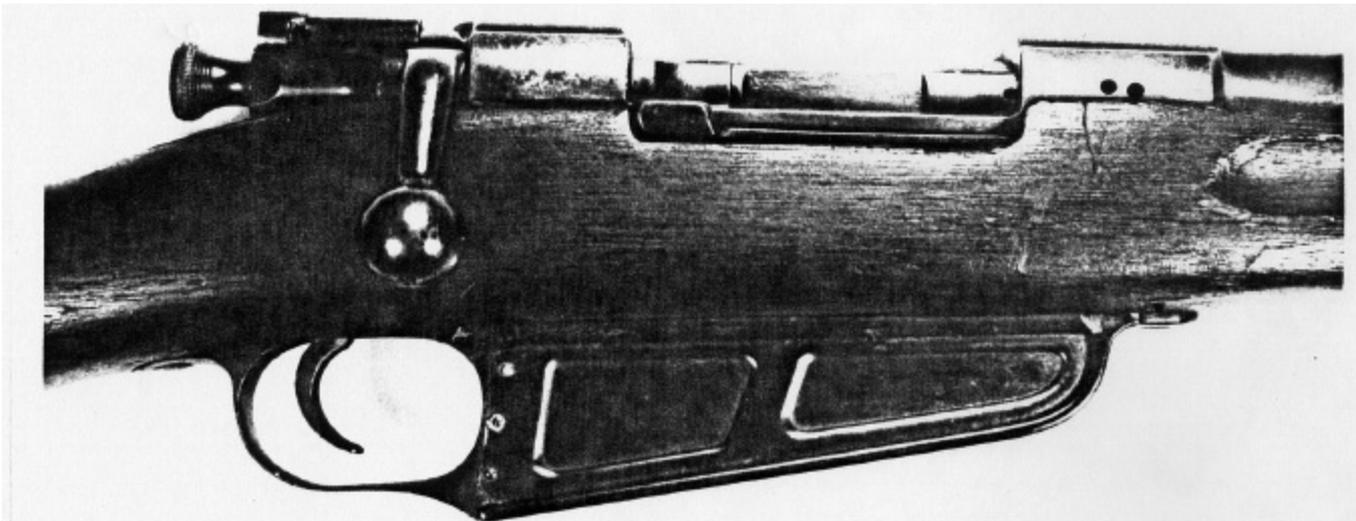




TACOM
Lethality, Survivability, Mobility and
Sustainment for America's Army



The M 1900 Experimental Rifle



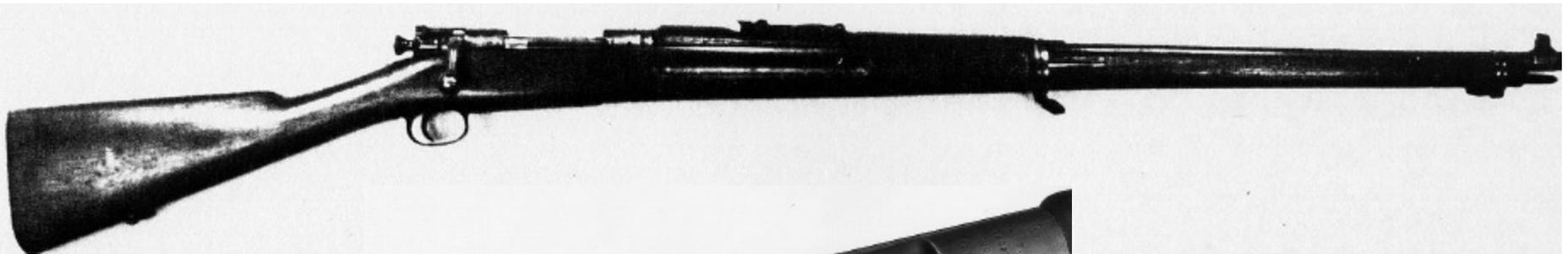


TACOM
Lethality, Survivability, Mobility and
Sustainment for America's Army



The M 1901 Springfield Rifle

Rimless .30 Caliber M1901

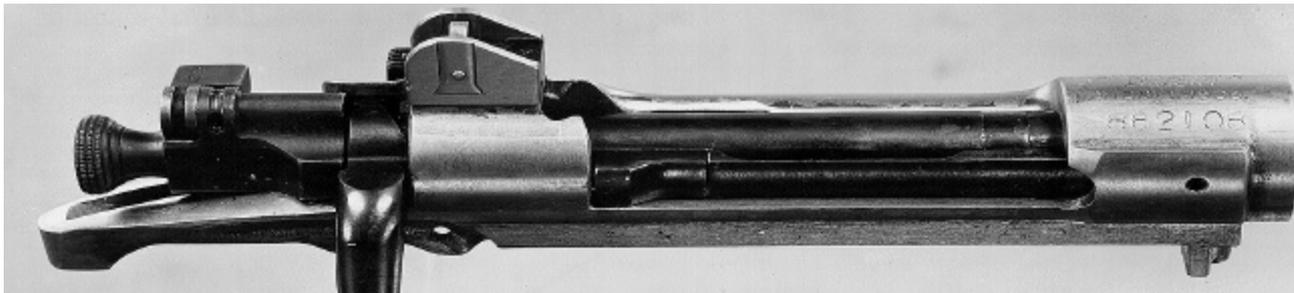
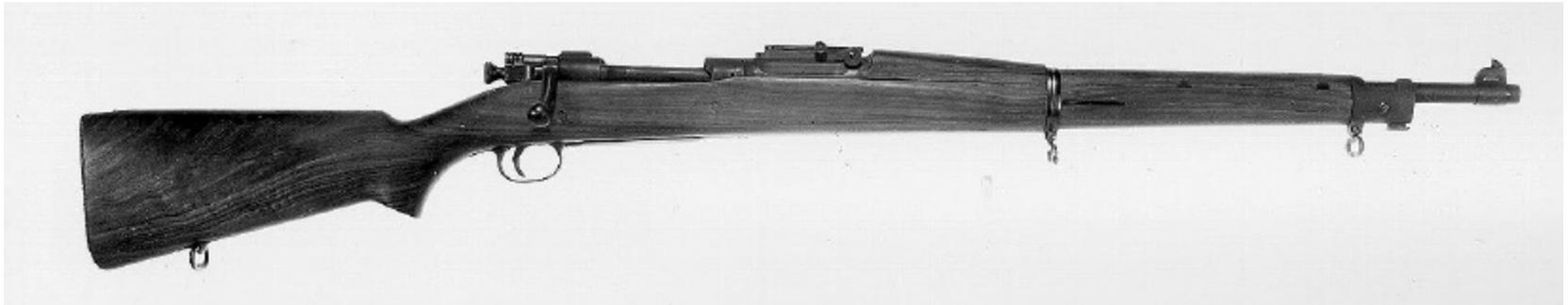




TACOM
Lethality, Survivability, Mobility and
Sustainment for America's Army



The M 1903 Springfield Rifle .30-06





TACOM

Lethality, Survivability, Mobility and Sustainment for America's Army



Action:

Total length:

Length of barrel:



The "M 1903" Rifle:

Weight:

Ammunition:

Magazine capacity:



Charge:

Weight of projectile:

Muzzle Velocity:

Bolt action

43.2 inches

24 inches

8.68 pounds

.30-06 cartridge

5-rounds, internal

48 grains of smokeless powder

150 grains

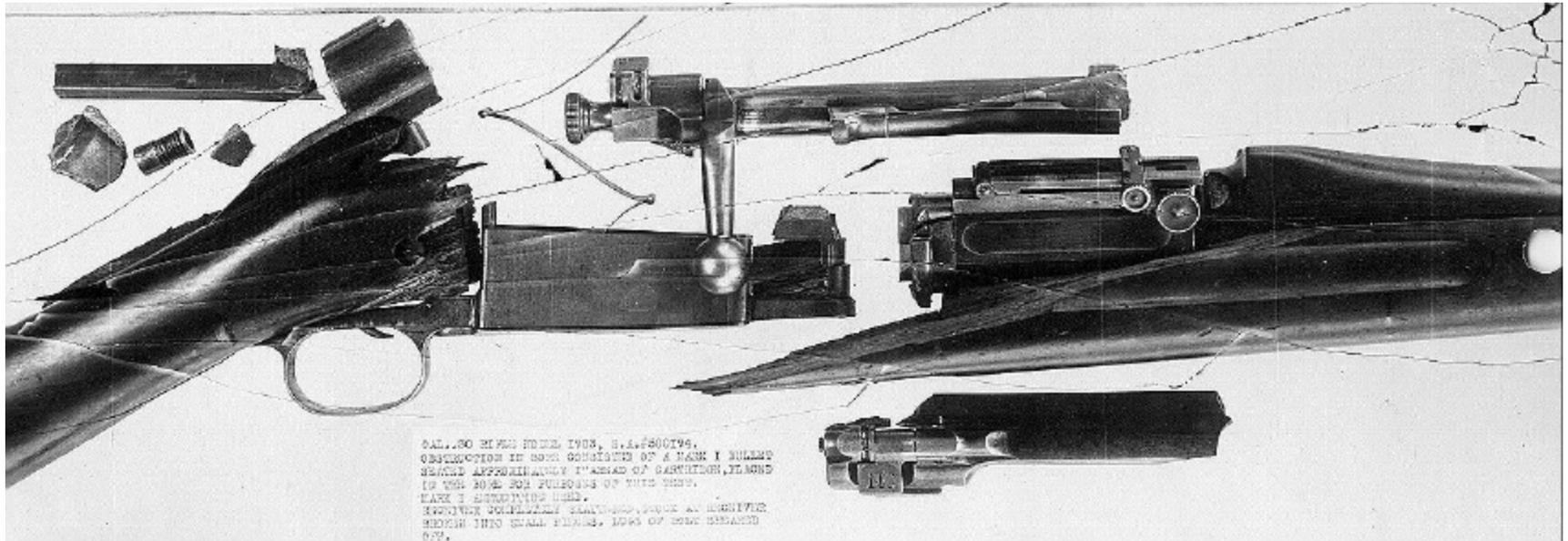
2,800 feet per second



TACOM
Lethality, Survivability, Mobility and
Sustainment for America's Army

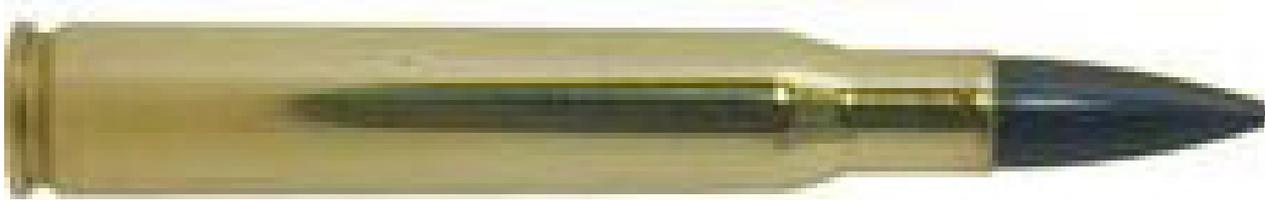


Accidents will happen...





The Enabling Spitzer Bullet and The .30-06 Springfield





TACOM
Lethality, Survivability, Mobility and Sustainment for America's Army



WORLD WAR I U.S. Soldiers In 1917





“They did have machine guns, and they did have **modern bolt action rifles**...I think, it's the intensity..the degree of destruction; the effects they had on men's ability to remain above ground in the battlefield without suffering horrendous casualties.”

The Great War: Interviews Simkins: Modern Warfare





Summary

- Economic
 - The presence of large numbers of legacy systems tend to slow technological change in small arms systems
- Cultural
 - Developers and Users sometimes favor special purpose weapons (carbines) and during other periods attempt to unify all long-arms into one universal service weapon



Summary

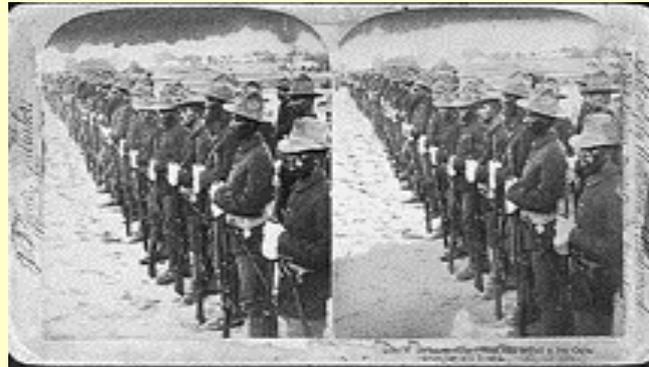
3. Technological

- Absolute originality is rare, developers tend to be eclectic, e.g. they adopt and adapt the useful
- Emerging technologies tend to add complexity to small arms
- Ease of operation, ruggedness and durability are dissatisfiers



TACOM

Lethality, Survivability, Mobility and Sustainment for America's Army



Stephen C. Small, Ph. D.

(973) 724-7043

Ssmall@pica.army.mil

